

ADDENDUM NO. 1

**DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
City of Chattanooga Project W-17-020-201
Burns & McDonnell Project 111107**

CITY OF CHATTANOOGA, TENNESSEE

The following modifications are hereby introduced as part of the Contract Documents:

- 1) Delete Wage Rate Determination “General Decision Number: TN 20190145 10/25/2019 (7 pages)” in its entirety and replace with the attached Water Rate Determination “General Decision Number: TN20200145 01/03/2020 (5 pages)”
- 2) Appendix A –
 - a. Following the “Permit for Work Zone Usage of City Right-of-Way” form, insert the attached State of Tennessee Department of Transportation permit (46 pages).

The following documents are enclosed herein for reference:

- 1) Pre-bid meeting minutes and sign-in sheet
- 2) Question and Response No. 1

END OF ADDENDUM NO. 1

January 14, 2020

/s/ Justin C. Holland, Administrator
City of Chattanooga
Department of Public Works

Please acknowledge receipt of all addenda in your submitted Bid Form.

Only questions answered in writing by Addenda will be binding.

Addendum Prepared By
BURNS & MCDONNELL
January 14, 2020

| | Rates | Fringes |
|------------------|----------|---------|
| Electrician..... | \$ 27.24 | 13.21 |

 ENGI0917-022 05/01/2017

| | Rates | Fringes |
|--------------------------|----------|---------|
| Operating Engineers: | | |
| Bulldozer and Crane..... | \$ 28.26 | 10.10 |
| Forklift..... | \$ 25.97 | 10.10 |

 LAB00846-001 05/01/2018

| | Rates | Fringes |
|---------------------------------|----------|---------|
| LABORER: Common or General..... | \$ 15.36 | 5.97 |

 SUTN2009-144 12/02/2009

| | Rates | Fringes |
|---------------------------------|----------|---------|
| LABORER: Flagger..... | \$ 8.73 | 0.00 |
| LABORER: Pipelayer..... | \$ 11.68 | 0.00 |
| OPERATOR: | | |
| Backhoe/Excavator/Trackhoe..... | \$ 16.82 | 0.00 |
| OPERATOR: Loader..... | \$ 13.50 | 0.00 |
| TRUCK DRIVER: Dump Truck..... | \$ 10.76 | 0.00 |

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

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

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

Union Rate Identifiers

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

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

Survey Rate Identifiers

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

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

Union Average Rate Identifiers

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

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

WAGE DETERMINATION APPEALS PROCESS

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

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

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

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

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

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

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

Washington, DC 20210

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

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

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

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

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END OF GENERAL DECISION

"



STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION
REGION 2 RIGHT OF WAY
7512 VOLKSWAGEN DRIVE
CHATTANOOGA, TN 37416
(423) 892-3430

CLAY BRIGHT
COMMISSIONER

BILL LEE
GOVERNOR

Authorization Date: SEPTEMBER 23, 2019

William C Payne
Chattanooga, City of
1250 Market Street, Suite 2100
Chattanooga, TN 37402-2713

Permittee is responsible for compliance of attached conditions

PERMIT NO.: UO-2007055729-2019 2019-507

BOND: \$50,000.00

DESCRIPTION: Rehabilitate sanitary sewer segments by installing cured-in-placed pipe and to perform manhole rehab, using trenchless methods. 9; 10ft by 10ft excavations for new manhole installations

| Route | Begin LM | Ending LM | County | Start Long/Lat | End Long/Lat |
|-------|----------|-----------|----------|--------------------------|--------------------------|
| SR2 | 9.53 | 11.33 | Hamilton | -85.282696, 35.019098 | -85.263913, 35.031607 |
| SR8 | 5.73 | 6.07 | Hamilton | -85.269547, 35.022251 | -85.275032, 35.02425 |
| SR17 | 2.86 | 3.16 | Hamilton | -85.274927, 35.029287 | -85.272701, 35.033157 |
| I24 | 11.05 | 11.16 | Hamilton | -85.266388, 35.019555 | -85.264847, 35.020536 |

Dear William C Payne:

Enclosed is an approved drawing covering the installation of the above referenced facilities. This permit was approved **09/23/2019**. The performance of this work will be covered under terms of the enclosed permit or general agreement between the utility and the Department of Transportation and the attached Permit Notes.

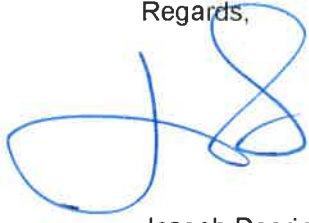
Please make sure your work forces have a copy of this approved drawing on hand at all times while working on the state rights-of-way. The attached notes are approval conditions to this permit and drawings.

In accordance with the State's Rules and Regulations, the Utility shall provide appropriate signing at all times during the construction and maintenance of facilities; therefore, signs must be in place before construction begins.

Please notify the District Utility Inspector at least three working days prior to the proposed date to begin work, of the date construction will begin in order to determine if a preconstruction conference is needed and to arrange proper inspection.

The Utility must notify the District Utility Inspector upon completion of the installation in order that a final inspection can be made to facilitate the release of the bond. This permit expires one year from date of issuance.

Regards,

A handwritten signature in blue ink, appearing to be 'JD', is written over the word 'Regards,'.

Joseph Deering, Assistant Chief Engineer, Region 2 Director
Tennessee Dept of Transportation
7512 Volkswagen Drive Chattanooga TN 37416

Enclosure:

CC: Kris Robbins

Conditions:

- 1 **Note: The permit proprietor will be responsible for the repair of any damage to the roadway or TDOT appurtenances caused by utility construction.**
Comments:

Existing pavements, buses, curbs and gutters, and sidewalks shall be cut and brought to a neat line by mechanically sawing or by use of an air hammer. Expansion joints removed shall be replaced.

Adjust all manholes and concrete reinforcements to the finished grades of the pavement. Concrete reinforcement shall be 8” thickness or greater.

- 2 Note: The Permit Proprietor is to ensure that all Parties associated with this project complies with all “Rules and Regulations for Accommodating Utilities within Highway Rights-of-Ways.”
Comments:

- 3 Note: All installations and repairs are to be installed in compliance to TDOT’S “Rules and Regulations for Accommodating Utilities within Highway Rights-of Ways”.
Comments:

- 4 Note: The Permit Proprietor is responsible for all erosion and sediment control required for the Utility installation
Comments:

- 5 **Note: The T.D.O.T. inspector Kris Robbins, 615-879-6284, must be notified at least three (3) days before the commencement of the work to arrange proper inspection to ensure a valid permit.**
Comments:

- **Work hours are restricted to 9 am – 2 pm, Monday - Friday**
- **Coordinate with our TDOT District 29 Supervisor Billy Curtis, William.curtis@tn.gov, (423) 634-6456 office (423) 715-0397 mobile**
- **Utility must submit a lane closure request and traffic control plans 15 days prior to commencement of work. Submit to TDOT.R2.Util@tn.gov**

Utility must coordinate ramp/lane closures with Jim Micka and Josh Rose. TDOT has planned projects that will impact traffic in the

Chattanooga area in the very near future. Coordination for the lane closures with TDOT will be extremely important to ensure continuity of traffic flow in the area.

**James Micka, TDOT District Operations Supervisor,
james.micka@tn.gov, office phone: 423-510-1247, mobile
phone 423-463-7374**

**Josh Rose, TDOT Operations District Supervisor,
William.rose@tn.gov, office phone: 423-486-5231, mobile
phone 423-486-5231.**

- 6 Note: T.D.O.T. approved drawings and permit must be present at the job site while work is in progress.
Comments:
- 7 **Tennessee811. Dial 811 for Utility locates**
Comments:
- 8 Note: Flaggers and workers in work zones shall wear Safety apparel meeting the requirements of ISEA "American National Standard for High Visibility Apparel" Refer to the latest edition of the "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES." (MUTCD), Section 6E.02
Comments:
- 9 Note: Delineator cones or barrels required along with the proper signage to close shoulders or lanes for Work-Zones or Buffer-Zones according to the latest edition of the "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES." (MUTCD)
Comments:
- 10 Note: Signing and Traffic Control Must be in conformance with the latest edition of the "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES." (MUTCD)
Comments:
- 11 Note: Machinery, materials and workers are not to be located in the roadway, shoulders or in the clear-zones without proper traffic control measures in compliance with the MUTCD requirements. D)
Comments:
- 12 Note: Stay Out Of Wetlands.
Comments:
- 13 Note: All logs, stumps, and other construction related debris must be removed from the Right-of-Ways.
Comments:
- 14 Note: The highway shoulder must not be disturbed.
Comments:
- 15 Note: The highway fill slopes must not be disturbed.
Comments:
- 16 Note: Rule 1680-6-1-.06,(f) Pedestals, fire hydrants, markers, or other above Ground utility appurtenances installed as a part of Underground utility facilities shall be located at or as near the highway Right-of-Way lines as practical. In all cases they must be outside the Clear-Zone.
Comments:
- 17 **Note: Underground Pneumatic Piercing tools (Hammerhead Mole, Hole-Hog, etc..) shall not be used for boring under State Routes.**

Comments:

18 **Note: All casings and conduits installed under State Routes shall meet or exceed the minimum AASHTO requirements.**

Comments:

19 **Note: All steel casings must have continuous welds around every joint.**

Comments:

20 **Note: The Utility installation must be installed with 36" or more of cover where installed within 5 feet of the drainage ditch.**

Comments:

21 **Note: Buried installation shall not go over culverts or other TDOT structures.**

Comments:

22 Note: All side roads must be bored where installation is within the state Right-of-Way.

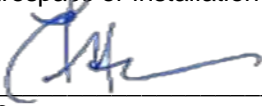
Comments:

23 Note: The Pipeline or Transmission line shall be identified by a permanent marker at the Right-of-Way lines or as near thereto as possible.

Comments:

24 Note: Applicant is responsible for identifying, surveying, and staking the State highway right-of-way boundary in the above-described work area, and for maintaining said staking for the duration of the installation of Applicant's facilities. Applicant is responsible for acquiring all utility rights-of-way or easements outside the State highway right-of-way as may be needed to perform the installation and maintenance of its facilities, and is responsible for any damages caused by trespass or installation or maintenance of facilities outside the State highway right-of-way.

Comments:

25 APPROVED AS NOTED BY:  TDOT REGION 2 UTILITY
DEPARTMENT DATE: 10/11/19

Comments:

2019-507



Application and Utility Use and Occupancy Agreement

| | |
|-----------------|-------|
| Agreement No | _____ |
| State Route No | _____ |
| Project No | _____ |
| County | _____ |
| Type of Surety | _____ |
| Bond / Check No | _____ |

RECEIVED

AUG 07 2019

Application is hereby made by Name: City of Chattanooga ("Applicant")
 Address: Department of Public Works, 1250 Market St, Chattanooga, TN 37402
 for permission to install and maintain the following described utility facilities on the right-of-way of
 State Highway No. HWY 11, 41, 64, Interstate 24, and State Route 17 in Hamilton County,
 Tennessee.

Description: To rehabilitate sanitary sewer segments by installing cured-in-place pipe and to perform manhole rehabilitation, using trenchless methods. There will be 9 total, 10 foot by 10 foot excavations for new manhole installations located on these roads. Pipe segments and manholes are shown on the attached drawings.

At the following described location: South of McCallie Ave and East of Missionary Ridge within the City of Chattanooga City Limits:

GPS = Start N 35.024264 W -85.275049 , End N 35.009861 W -85.271462
 Log Mile = Start N/A End N/A

in accordance with the attached plans and subject to *RULES AND REGULATIONS FOR ACCOMMODATING UTILITIES WITHIN HIGHWAY RIGHTS-OF-WAY* hereto issued by the Tennessee Department of Transportation ("TDOT"), and made a part hereof by reference thereto, and particularly to those provisions shown on this agreement and any special provisions set forth herein.

Special Provisions: N/A

A) Applicant is to deliver a **bond**, in a form acceptable to TDOT, in the sum of \$ _____ to guarantee installation of facilities consistent with provisions of this Agreement and maintenance of the State highway right of way for a period of _____ months after acceptance of the condition of the State highway right-of-way by an authorized representative of TDOT.

OR

B) An active, fully executed **General Agreement** is in effect for Applicant, dated: General Agreement on file

This agreement is to be strictly construed and no work other than that specifically described above is authorized.

The applicant, in applying for this agreement, agrees to the following:

- Applicant shall design, install and maintain its facilities in accordance with *RULES AND REGULATIONS FOR ACCOMMODATING UTILITIES WITHIN HIGHWAY RIGHTS-OF-WAY* hereto issued by TDOT.
- Applicant, before commencing any work or installing any facilities, shall submit plans to TDOT's regional utility office showing the location, type, and scope of all work to be done or appliances to be installed in order that the Regional Utilities Coordinator may recommend approval of the proposed work.
- Applicant is responsible for any damages caused by any negligence on its part, including but not limited to the improper placing of or failure to display construction signs, danger signs, and other required signing, and shall bear any expense proximately caused by its operation on the State highway right-of-way.
- Applicant is responsible for identifying, surveying, and staking the State highway right-of-way boundary in the above-described work area, and for maintaining said staking for the duration of the installation of Applicant's facilities.
- Applicant is responsible for acquiring all utility rights-of-way or easements outside the State highway right-of-way as may be needed to perform the installation and maintenance of its facilities, and is responsible for any damages caused by trespass or installation or maintenance of facilities outside the State highway right-of-way.
- Applicant shall pay the salary and expenses of any inspector(s) that TDOT may see fit to place upon the work while such inspector(s) is/are assigned to this work. TDOT, before incurring any expenses expected to be charged to the Applicant, shall advise the Applicant in writing of this fact.
- Applicant shall replace or repair any portion of the pavement, shoulders, bridges, private driveways or any part of said highway which may be disturbed or damaged. Replacements and repairs shall be made in accordance with the TDOT *Standard Specifications for Road and Bridge Construction* and any additional instructions which may be issued by TDOT. Applicant agrees that TDOT may accomplish further replacements or repairs if those made by the Applicant are not satisfactory, in which event the Applicant will reimburse TDOT for the cost of such other replacements or repairs. Except in cases of emergency, TDOT shall notify the Applicant of the nature and extent of such further replacements or repairs to be accomplished prior to undertaking the work.
- If at any future time it should become necessary in the maintenance, construction, or reconstruction of said highway to have Applicant's facilities removed in order that said highway may be properly maintained, constructed or reconstructed, or in the event said facilities should, at any time, interfere with the use of said highway, the Applicant agrees, upon being requested so to do by TDOT, to remove said facilities as promptly as the magnitude of the work to be accomplished will permit, at its own expense and without cost to TDOT, unless any requested removal should be contrary to any law of the State. The relocation of the Applicant's facilities shall be accomplished in accordance with the provisions of Tennessee Code Annotated, Title 54, Chapter 5, Part 8, Relocation of Utilities. If the Applicant fails to remove and relocate its facilities promptly and timely in accordance with the plan and schedule approved, or as directed, by TDOT pursuant to these provisions, the Applicant understands and agrees that it shall be subject to any or all of the following remedies in accordance with T.C.A. § 54-5-854:

Pamala Griffin

From: thollis@burnsmcd.com
Sent: Wednesday, August 7, 2019 11:08 AM
To: TDOT.R2 Util
Cc: mbracewell@burnsmcd.com
Subject: [EXTERNAL] Dobbs Branch Basin Phase 2 TDOT Permit Package

***** This is an EXTERNAL email. Please exercise caution. DO NOT open attachments or click links from unknown senders or unexpected email - STS-Security. *****

You have received 1 secure file from thollis@burnsmcd.com.

Use the secure link below to download.

Hi TDOT,

Attached is our permit request for the City of Chattanooga's Dobbs Branch Basin sanitary sewer collection system rehabilitation.

Please let me know if you have any questions. This is our company's large file transfer service.

Thank you,

Trent Hollis

423-779-5096
Burns & McDonnell
thollis@burnsmcd.com

Secure File Downloads:

Available until: **21 August 2019**

Click link to download:

[Dobbs Branch Basin Phase 2 TDOT Permit Package.pdf](#)

36.49 MB

You have received attachment link(s) within this email sent via Burns & McDonnell Secure File Transfer. To retrieve the attachment(s), please click on the link(s). If you are a new user you will be required to create an account in order to download the attachment(s).

Secured by [Acellion](#)



City of Chattanooga
MAYOR ANDY BERKE

Stephanie Allen
Permit Coordinator
Region 2 Project Development
2nd Floor Administration Building, Utilities Office
7512 Volkswagen Drive
Chattanooga, TN 37416

RE: Dobbs Branch Basin Improvements – Phase 2
TDOT Permit Package

Dear Ms. Allen,

We are applying for the appropriate permits for the rehabilitation of sewer lines and manholes within the right of way of TDOT roads: Highway 11, 41, and 64, Interstate 24, and State Route 17 (map included with permit submittal). The trenchless rehabilitation of the sewer system will be performed with cured-in-place piping while the process of adding 9 new manholes will be performed by excavating an area of approximately 10ft by 10ft for each manhole. Detailed locations of the sewer system rehabilitation are outlined in the subsequent drawings prepared by Burns & McDonnell. Also attached is the Use and Occupancy Agreement, Pipeline Encroachment form, Cured-In-Place pipe specifications, and the drawings legend.

During the course of the project we expect there will be additional areas that require excavations for point repairs of sewer piping or service laterals, though at this time they have not been identified as the sewer closed circuit television investigation will be performed by the selected construction contractor. If any of these areas are in TDOT right of way, the required permits will be acquired prior to any excavation.

If you have questions about the project or need further information, please contact our consultant's project manager Matt Bracewell with Burns & McDonnell at (423) 779-5089 or mbracewell@burnsmcd.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "W. Payne", written over a circular stamp.

William C. Payne, P.E.
City Engineer

CC: P. Mathis Bracewell, PE, Burns & McDonnell
Brent Cunningham, Jacobs

Pipeline Encroachments

The following information is required to accompany all plans for pipeline encroachments.

| | Carrier Pipe | Casing Pipe |
|---|--|-------------|
| 1. Contents to be handled | <u>Sanitary Wastewater</u> | _____ |
| 2. Outside Diameter | <u>8", 10", 20" and 24"</u> | _____ |
| 3. Pipe material | <u>Cured-in-place Pipe</u> | _____ |
| 4. Pipe Specification and grade | <u>See Attached Drawings</u> | _____ |
| 5. Wall thickness | <u>8.5, 7.5, and 6.0 mm</u> | _____ |
| 6. Design Pressure | <u>Gravity</u> | _____ |
| 7. Actual Working Pressure | <u>Gravity Sewer</u> | _____ |
| 8. Type of joint | <u>Continuous, no joints</u> | _____ |
| 9. Coating | <u>N/A</u> | _____ |
| 10. Method of installation | <u>Cured-in-Place</u> | _____ |
| 11. Protection at end of casing | <u>N/A</u> | _____ |
| | Both Ends _____ One end _____ Type _____ | |
| 12. Cover: Finished grade to top of casing or carrier | <u>Varies but typically 8' deep</u> | |
| Bottom of ditch or toe of slope to top of carrier to casing | <u>N/A</u> | |
| _____ | | |
| 13. Cathodic protection | <u>N/A</u> | |
| 14. Size and height of casing vent | <u>N/A</u> | |
| 15. Distance from casing vent to edge of nearest traffic lane | <u>N/A</u> | |

Part 1 General

1.01 Scope

- A. Furnish all labor, material and equipment to provide for the reconstruction of existing sewer pipes using an approved Cured-In-Place Pipe (CIPP) method by forming a new pipe within an existing pipe. See Section 33 01 30.74 for Lateral Rehabilitation by CIPP.
- B. The sewer reconstruction shall be accomplished by the installation of a thermosetting resin-impregnated flexible felt-fiber tube coated on one side with an impermeable plastic which is installed into the existing sewer utilizing hydrostatic head. Curing is accomplished by circulating hot water throughout the length of the inverted tube to cure the resin into a hard, impermeable pipe with the plastic coating on the interior surface of the newly formed pipe. The CIPP shall extend the full length of the original pipe segment and shall provide a structurally sound, joint-less, close fitting and corrosion resistant cured-in-place pipe.
- C. The work performed under this Section of the Specifications is deemed to be Specialty Contractor Work and is subject to the provisions of Section 00 72 00 General Conditions, Article 6.06, Paragraph (I).
- D. The deterioration of sewers is an on-going process. In the event pre-construction inspections reveal the sewers to be in substantially different conditions than those in the design requirements specified herein, the Contractor shall submit a changed site condition notice and request such changes in liner thickness, supporting such requests with the appropriate design data satisfactory to the Engineer.

1.02 Reference Standards

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. The latest revisions of all standards in effect on the date of advertisement are applicable. Where differences exist, or any latitude is either inferred or interpreted between this Specification and referenced product/process standards, this Specification shall govern.

1.03 Quality Assurance

- A. In order to establish minimum product quality and Installer capability, the following minimum requirements shall be met. The purpose for these submittals is to allow the Owner/Engineer the opportunity to conduct a complete, thorough and objective evaluation of proposed CIPP products and the Installing Contractor and to determine if the submitted products and Installer meet all experience, quality and utility standards required by the Specifications.
- B. CIPP System Manufacturer: The CIPP system must have a minimum proven

Cured-In-Place Pipe (CIPP)

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 over the last five years. In addition, a minimum of 10,000 linear feet of 36-inch diameter or larger, of the exact name brand product must have been installed in the United States. Documentation shall be submitted with the Bid in accordance with the Instructions to Bidders.

- C. Contractor/Installer Experience: The Installing Contractor for the cured-in-place reconstruction of sewers must have a minimum of five years of experience using the exact named product proposed and, have installed at least 300,000 linear feet of the exact named proposed product including at least 20,000 feet of 24-inch diameter or larger cured-in-place product. Documentation along with contact names and telephone numbers from the last ten projects shall be submitted with the Bid in accordance with the Instructions to Bidders.
- D. On Site Field Superintendent: The Qualifying Superintendent must have a minimum of five years of 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 Contractor shall submit information to document this with the Bid in accordance with the Instructions to Bidders. The superintendent for the Project 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.
- E. Resin Class
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 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 Engineer shall have the right to inspect the designated wet-out facility and draw samples from one or both sampling valves without prior notice to the Contractor for the duration of the Contract.
 4. Infrared Analysis
 - a. The Engineer 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.

- b. 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. For Standard Polyester, an overlaid IR spectrum of Reichhold Polylite® 33420 shall be used as a baseline comparison for the purpose of a test under this contract. For Enhanced Polyester resin, an overlaid IR spectrum of Reichhold Polylite® 33420-E shall be used as a baseline comparison for the purpose of a test under this contract.
- c. The Engineer may perform random Infrared Scans (IR Scans) and/or Composite Burn-offs to ensure resin quality and consistency throughout the duration of the Contract and shall be responsible for the cost of IR testing.

1.04 Submittals

- A. Submit shop drawings in accordance with the requirements of Section 01 33 23 of these Specifications. Specific submittal information shall include the following:
 1. The Contractor shall furnish submittal data establishing the structural capabilities, chemical composition, and other mechanical properties of the liner system proposed.
 2. The Contractor shall furnish the proposed liner thickness for each pipe size and depth categories, along with a certification, signed and sealed by an engineer registered in the state that the Project is located, to the effect that the proposed liner thicknesses were calculated based on the parameters specified in Article 2.04 of this section of the Specifications and the site specific external loads. In no case will the proposed liner thicknesses be less than those specified in Article 2.04 of this section of the Specifications. The Standard Dimension Ratio (SDR) is the ratio of the outside diameter (OD) of the pipe to its minimum wall thickness. All CIPP wall thicknesses, SDRs by diameters, and depth ranges corresponding to the requirements of the Contract Documents, must be submitted to the Engineer for approval prior to installation.
 3. The Contractor shall furnish 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.
 4. Pre- and post-installation videos and logs per Article 3.03 shall be submitted during the course of work.
 5. Catalyst system and resin/catalyst ratio.
 6. The proposed curing schedules and process shall be approved by the resin manufacturer in writing. Cure schedules shall include specific information on curing procedures, "post exothermic cooking times" duration and "cool down" procedures – all to be approved by the resin manufacturer in writing.

7. 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.
- B. The manufacturer shall submit written certification that the lining system complies with all applicable requirements of these Specifications.
- C. The Contractor shall submit its proposed plan for ensuring that the finished and installed CIPP meets the minimum thickness requirements. The plan shall include detailed inversion procedures to reduce stretching and resin loss and to minimize shrinkage.

1.05 Warranty

The Contractor shall warrant all work and materials installed under this Contract for five years from the date of final acceptance. All CIPP liners shall have a minimum design and service life of 50 years. The date of final acceptance shall be the date final payment is made to the Contractor.

Part 2 Products

2.01 Resins

- A. The resin for CIPP installed under this Contract shall be a Standard Polyester Resin or Enhanced Polyester Resin unless otherwise directed by the Engineer due to site-specific field conditions and/or design requirements.
- B. Standard Polyester Resins
 1. The resin used shall be a corrosion resistant isophthalic polyester specifically designed for the CIPP being installed. Only premium, virgin, non-recycled resin shall be used. The resin shall be manufactured under ISO 9001 certified procedures.
 2. The resin shall have been tested according to ASTM D2990, D5813, and F1216 by accredited, third-party testing facilities. Results of these tests shall be made available to Engineer upon request.
 3. 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.
- C. Enhanced Polyester Resins
 1. The resin used shall be a corrosion resistant enhanced thixotropic, medium reactivity, high viscosity, and rigid, chemical resistant isophthalic resin. These resins contain a mineral filler to enhance mechanical properties and are specifically formulated for use in the cured-in-place pipe (CIPP) industry.

2. The resin shall have physical and chemical properties equal to those of Reichhold PolyLite® 33420-E and shall have been tested according to ASTM D 2990, D 5813 and F 1216 by accredited third party testing facilities. Results of these tests shall be made available to the Engineer upon request.
 3. The resin must be manufactured under ISO 9001 certified procedures. The resin vendor must be able to reference the corrosion scale with the resin itself having a heat deflection temperature greater than 224 degrees Fahrenheit. Only premium, non-recycled resins will be accepted.
- D. Resins shall be shipped directly from the resin manufacturer's facility to the CIPP wet-out facility. Resins 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.

2.02 Catalyst Systems

- A. The catalyst system shall be made up of a primary catalyst and a secondary catalyst. The primary catalyst 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 added at a maximum of 0.05% of the resin volume by weight unless otherwise approved by the Engineer.
- B. Resins, catalysts and resin/catalyst mix ratios shall not be changed or altered during this Contract unless specifically approved by the Engineer in writing.

2.03 Liner Tube

- A. The tube shall consist of one or more layers of absorbent non-woven felt fabric and meet the requirements of ASTM F1216.
- B. The acceptable liner tube shall be constructed under ISO 9001 certified procedures. Proper certification shall be provided prior to the manufacture or installation of any CIPP.
- C. The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular shaped pipe sections.
- D. The wet-out tube shall have a uniform thickness that when compressed at installation pressures shall meet or exceed design thickness.
- E. 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.
- F. The outside layer of the tube, before installation, shall have an impermeable polyurethane or polyethylene plastic coating. This coating shall be an impermeable, flexible membrane that shall contain the resin and facilitate monitoring of resin

Cured-In-Place Pipe (CIPP)

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.

- G. 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.
- H. The wall color of the interior liner surface after installation shall be such that a clear, detailed inspection with closed-circuit television equipment may be conducted.
- I. The outside of the tube shall be marked for distance at regular intervals not to exceed 10 feet. The tube shall be stamped with the manufacturer's name or identifying symbol in regular intervals not to exceed 20 feet.
- J. The minimum length shall be that deemed necessary by the Contractor 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.

2.04 CIPP Design

A. Liner Thickness

- 1. The CIPP thickness shall be designed in accordance with the applicable provisions of ASTM F 1216 and D 2412 for "fully deteriorated gravity pipe conditions" and the following design conditions:
 - a. AASHTO HS20-44 Live Load, whether under streets or not. The live load will vary based on depth of pipe.
 - b. A dead load based on the depth of pipe and a soil modulus of elasticity of 700 psi, soil weight of 120 pounds per cubic foot and a coefficient of friction of $Ku'=0.130r$.
 - c. Short-term flexural modulus and long-term modulus when tested in accordance with ASTM D790.
 - i. Standard Polyester: 250,000 psi and 125,000 psi, respectively
 - ii. Enhanced Polyester: 400,000 psi and 200,000 psi, respectively
 - d. Minimum Flexural Stress of 4,500 psi, when tested in accordance with ASTM D790.
 - e. Safety factor of 2.0.
 - f. Groundwater height at the ground surface.

- g. Maximum pipe ovality of 5%.
- h. Poisson ratio of 0.3.
- i. Enhancement factor (K) of 7.
- j. Service temperature range shall be 40 to 140 degrees F.
- k. Maximum long-term deflection shall be 5%.
- l. Any and all other site specific external loads. It is the Contractor's responsibility to determine the site specific external loads.

2. Minimum Acceptable Pipe Thickness

| Pipe Diameter (Inches) | Depth to Invert (Feet) | Minimum Thickness (mm) |
|------------------------|------------------------|------------------------|
| 8 | 0-17 | 6.0 |
| 10 | 0-9 | 6.0 |
| 10 | 9.1-16 | 7.5 |
| 12 | 0-11 | 7.5 |
| 12 | 11.1-13 | 7.5 |
| 15 | 0-8 | 7.5 |
| 15 | 8.1-11 | 9.0 |
| 18 | 0-13.5 | 10.5 |
| 18 | 13.6-17 | 12.0 |
| 24 | 0-9.5 | 12.0 |
| 24 | 9.6-12.5 | 13.5 |
| 24 | 12.6-15.8 | 15.0 |
| 24 | 15.9-19.5 | 16.5 |

- 3. The liner thickness shall be the greater of the calculated thickness to meet the design requirements of Paragraph 1 above or the minimum acceptable pipe thickness from Paragraph 2 above. If calculations require a thicker wall, round to the next higher multiple of 1.5 mm currently in manufacture.
 - 4. All references to liner thickness shall be defined as total thickness after installation and after curing is complete.
- B. The finished CIPP shall provide a uniform smooth interior wall surface with a Manning "n" coefficient of 0.011.

Part 3 Execution

3.01 General

- A. All reconstruction of existing gravity sewers using an approved CIPP product and installer shall be performed in strict accordance with this Specification and ASTM

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F1216.

- B. Pull-in and inflate methods of CIPP installations (reference ASTM F1743) will not be acceptable without written approval by the Engineer.
- 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 and the operation of high-pressure air/steam equipment.
- D. The Contractor shall be responsible for obtaining water necessary for cleaning, inversion and other work items requiring water. The Contractor shall be responsible for obtaining a hydrant use permit from Tennessee American Water.
- E. The Contractor shall be responsible for locating and access to all manholes.
- F. 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 Engineer, shall be used for such restoration. The restoration of existing property or structures shall be performed 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.
- G. 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.
- H. 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 Engineer.
- I. Protruding Service Connections: When service connections protrude into the existing pipe, the Contractor shall remove the protruding portion of the service connection to be flush with the inside pipe wall or to the satisfaction of the Engineer. Removal of the protruding portion of the service connection shall be accomplished using a television camera and internal cutting device, which shall not damage the collection line or the portion of the service line to remain in place. This work shall be accomplished prior to the installation of the CIPP.
- J. 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 local and state requirements for streets and highways. 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 / or detours will require advance scheduling and prior approval by the Engineer.

3.02 Daily Work Schedule

Insofar as is possible, Work shall be so scheduled that the lining of the pipe, curing of the tube, and the reinstatement of service connections can be accomplished in a single working day or shift. Prior approval must be obtained from the Engineer if work is to be performed at night or on weekends to minimize traffic disturbance. At the end of each working day, temporary tie connections shall be made between the relined section of pipe and the existing system and the plug in the upstream manhole removed, but not before the section being lined has been properly cured in accordance with the manufacturer's instructions and all service connections are reinstated. In some instances, it may be necessary to bypass effluent from service connections.

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. Bypass pumping system shall comply with Section 01 51 43 of these Specifications.
- 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 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

Cured-In-Place Pipe (CIPP)

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 Preliminary Installation Requirements

- A. Contractor shall notify the Engineer prior to beginning cleaning activities and pre-construction closed-circuit televising (CCTV) inspection. Contractor shall plan cleaning and pre-construction CCTV inspection activities far enough in advance of CIPP lining activities to allow Engineer time to review any critical damage reports that may develop from the CCTV inspection results.
- B. Prior to CIPP installation, the pipe shall be cleaned to the satisfaction of the Engineer in accordance with Section 33 01 30.14 of these Specifications.
- C. Debris Disposal: All debris cleaned from the pipe shall be removed and disposed of at the Owner's Wastewater Treatment Plant or another location determined by the Contractor and approved by the Engineer. Debris shall not be allowed to wash into any other pipe segment either upstream or downstream from the pipe segment being cleaned. All waste disposal at the Owner's Wastewater Treatment Plant shall meet the requirements set forth by the Owner including dewatering of waste prior to disposal.
- D. Pre-Installation CCTV Video Inspection: The section of sewer designated for CIPP shall to be televised its full length using a remote television camera in accordance with Section 33 01 30.16 of these Specifications and shall be submitted to the Engineer for review.

3.05 Resin Impregnation of the CIPP Tube (Wet-Out)

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 (below 45^o Fahrenheit or as specified by the resin manufacturer) 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 Engineer. The volume of resin used shall be sufficient to fill all voids in the tube material at normal or required 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.

3.06 Inversion of CIPP

- A. The preferred method of installation and cure for CIPP shall be inversion using hydrostatic head (water column) pressure and curing with heated, circulated water. The use of pressurized air inversion/steam cure will be considered on a case-by-case basis only. The Contractor shall submit a written request for the use of pressurized air/steam in sewer segments where the Contractor feels that the utilization of pressurized air/steam will be beneficial to the Owner. The Contractor shall not assume in any case that the use of pressurized air/steam is acceptable to the Owner without prior written authorization from the Owner. The impregnated tube shall be inverted through an existing manhole or other approved access point utilizing a hydrostatic water column until it has fully traversed the designated line length and the inversion face breaches the destination manhole or termination point. Contractor must have written approval from the Engineer prior to using pressurized air for inversion. The fluid column 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. The lubricant used should be a nontoxic, oil-based product that has no detrimental effects on the tube, heating source and pump system, will not support the growth of bacteria, and will not adversely affect the fluid to be transported. Lubricant shall be used in processes with permeable coatings. Thermocouples shall be placed at the top and bottom interface of termination manhole which is furthest from the heat source for monitoring temperature during the cure cycle. Care should be taken during tube installation not to over-stress the fabric fiber and to minimize longitudinal stretch, resin loss and thinning of the liner wall.
- B. Before the inversion begins, the tube manufacturer shall submit to the Contractor, and the Contractor to the Engineer, the minimum pressure required to hold the tube tight against the host pipe and the maximum allowable pressure so as not to damage the tube.
- C. When using pressurized air, particular attention should be given to the maintenance of the minimum required "finished and installed" thickness of the CIPP.
- D. Once the inversion has started, pressure shall be maintained between the minimum and maximum pressures until the inversion has been accomplished.

3.07 Curing

- A. Using Circulated Water
1. A suitable source of heat 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.
 2. 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

Cured-In-Place Pipe (CIPP)

thermocouples indicate that the temperature is of a magnitude to realize an exotherm 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.

3. 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.
4. 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).

3.09 Cool-Down

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.

3.10 Termination and Sealing at Manhole Outlets

- A. Termination of the cured-in-place pipe at the manhole shall be completed by trimming the inverted pipe end back in accordance with the CIPP manufacturer's recommendations and to the satisfaction of the Engineer
- B. No annular space shall be visible between the CIPP and manhole wall. If, in the judgment of the Engineer the CIPP does not fit tightly against the sewer main at its termination point(s), the void between the host pipe and the CIPP shall be sealed by filling it with a resin/epoxy mixture compatible with the CIPP approved by the Engineer or by utilizing manhole end seals or hydro-tite gaskets, all at no additional cost to the Owner.

3.11 Testing of CIPP

- A. The Contractor shall prepare CIPP Acceptance Tests for each CIPP line segment during the duration of this Contract. The samples shall be for laboratory determination of flexural strength, flexural modulus and wall thickness for each test sample. These three individual analyses shall comprise one completed test. All samples shall be collected per the sampling protocols set forth in ASTM F1216.
- B. For each line segment, from the point most distant from the heat source, the Contractor shall remove one 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 12 inch in length representative sample (taken at least 2 inches from the end of the specimen) to the Engineer. The sample delivered to the Engineer shall be clearly labeled with the date of installation and sewer segment and removed from any restraining mold. The samples shall be taken in the presence of the Engineer. The Engineer may return such samples to the Contractor for disposal.

- C. The tests shall be used to verify that the installed CIPP meets these Specifications. CIPP thickness shall be measured in accordance with ASTM D5813. Flexural properties shall be determined per ASTM D790. The Contractor shall label and date all samples and deliver the samples directly to the Engineer. All testing shall be performed by an independent, ASTM-certified testing laboratory of Engineer's designation. Payment to the Contractor shall be withheld pending the Engineer's acceptance of the CIPP test results. The Laboratory costs will be paid in accordance with the terms and conditions of Cash Allowances specified elsewhere.
- 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 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 may be considered by the Engineer include removing the liner and re-lining the sewer, or excavating and replacing the sewer from manhole to manhole, or providing the Owner with a 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, 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:

$$\text{Credit} = (1 - \text{Installed CIPP thickness/required CIPP thickness}) \times \text{bid price}$$

- E. The Contractor shall not assume a credit will be acceptable to the Owner in any case.

3.12 Lateral Service Reconnection - Internal

- A. 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 Engineer. In some cases, remote reinstatement may not be possible. In these instances, reconnection by excavation as specified below is acceptable. All connections must be reinstated by at least 95-percent of the original opening. Holes cut outside the lateral opening or oversized cutting (more than 100%) must be repaired at the Contractor's expense. Particular attention shall be given to the lower quadrant of the opening to ensure that no accumulation of solids or debris will occur at the service tie-in.
- B. All capped or factory plugged service connections shall not be opened unless otherwise directed by the Engineer.

3.13 Lateral Service Reconnection By Excavation

- A. General: Sewer lateral house connections accomplished by excavation shall be connected to the pipe by dual-strapped saddles. The Contractor shall connect existing sewer house lateral service pipe to the saddle using a flexible coupling. After connection to the saddle, the sewer house connection pipe shall have a slope toward the newly lined sewer equal to the pre-existing on the lateral pipe or a minimum of two percent.
- B. Execution
 - 1. The Contractor shall excavate the area of the lateral connection so that the host pipe and existing connection is exposed. The host pipe shall be broken back or removed in such a manner that the new CIPP liner is exposed without causing damage to the liner.
 - 2. An appropriately sized hole acceptable to the Engineer shall be cut into the CIPP using a circular hole cutter. Hanging or loose cuttings shall be removed so that the newly opened hole is smoothed around its edges.
 - 3. A sealant compatible with CIPP and acceptable to the Engineer shall be liberally applied around the newly cut hole to form a watertight seal between the CIPP liner and PVC pipe saddle used to make the connection.
 - 4. A dual-strap PVC pipe saddle acceptable to the Engineer shall be secured to the CIPP in accordance with the manufacturer's recommendations.
 - 5. Before the service lateral pipe is connected to the saddle, the Contractor shall hand wipe a hydrogen sulfide resistant composite epoxy resin mixture inside the saddle where the saddle and CIPP surfaces meet to ensure a watertight seal.
 - 6. The Contractor shall connect the lateral service pipe to the saddle according to the manufacturer's recommendations and in a manner acceptable to the Engineer.

3.14 Final Acceptance

- A. Post-installation videos shall be conducted and submitted to the Engineer in accordance with Section 33 01 30.16 of these Specifications. 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.
- B. Wrinkles in the CIPP (other than minor, longitudinal pressure wrinkles) will not be acceptable. The Engineer shall determine as to the acceptability of pressure wrinkling with that decision being final.
- C. After curing of the resin is completed, the hardened CIPP shall 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 manhole walls shall be watertight at the time of final inspection. No annular space shall be visible between the CIPP and manhole wall.

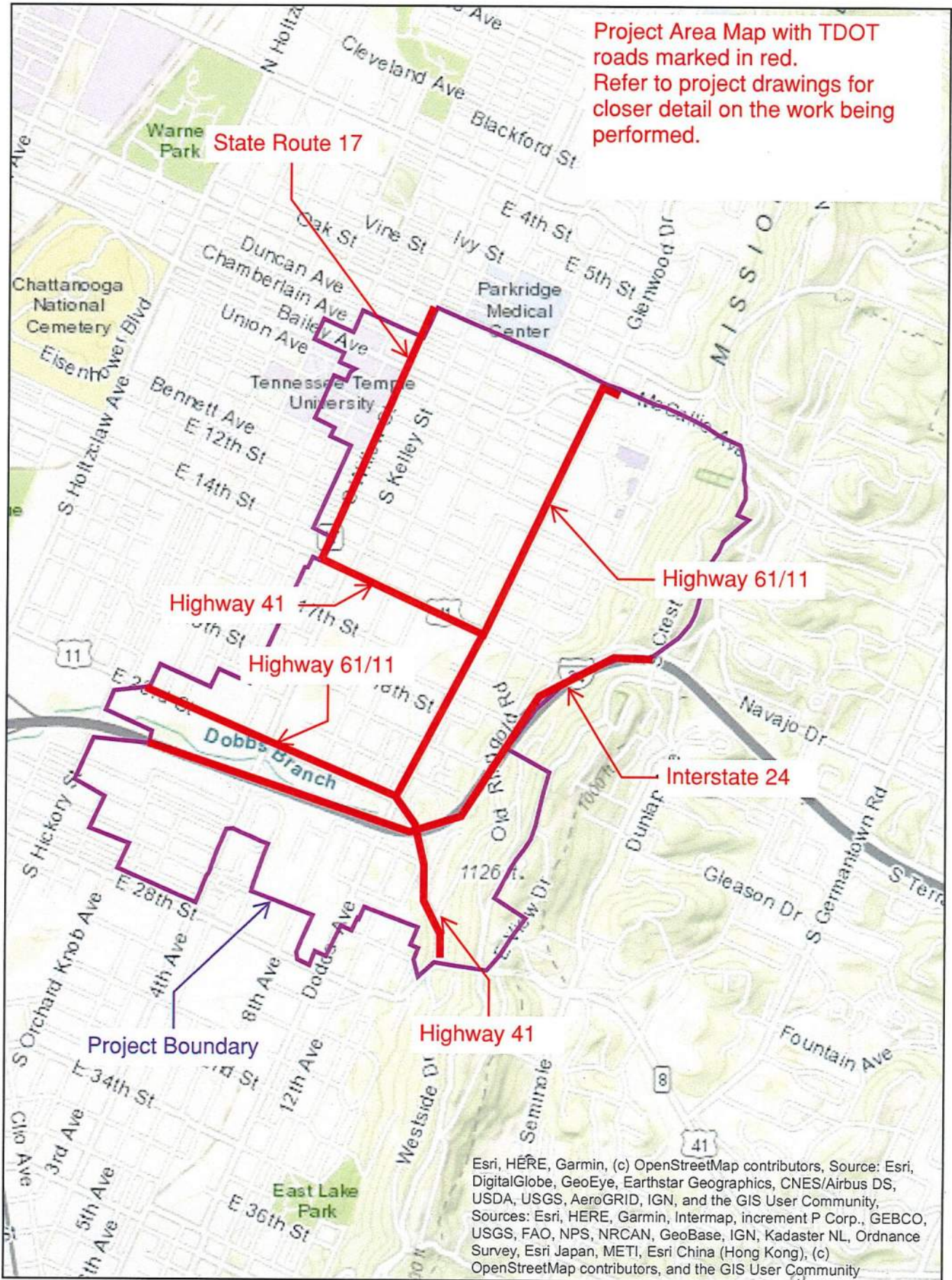
- D. The finished pipe must be such that when the thermosetting resin cures, the total wall thickness will be a homogeneous, monolithic felt and resin composite matrix that will be chemically resistant to withstand internal exposure to domestic sewage. When cured, the CIPP must form a mechanical bond with the host pipe.

3.15 Customer Notifications

- A. The Contractor shall contact all residential and commercial customers whose service is to be interrupted by rehabilitation work or who may be affected by upstream or downstream rehabilitations. The customer shall be informed that they will be temporarily out of service. This notification shall be made a minimum of 24 hours prior to beginning rehabilitation work.
- B. For all residences the Contractor shall leave a door hanger detailing the service outage and providing contact information. Door hanger samples shall be submitted to the Engineer for review and approval. The Contractor shall also advise those customers against water usage until the mainline and lateral are back in service. After completing the necessary work on the main line and lateral to allow their reuse, the Contractor shall advise those customers that the sewer is back in service. 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.
- C. All customer notification documentation and procedures shall meet the requirements of the Owner.













END OF SECTION

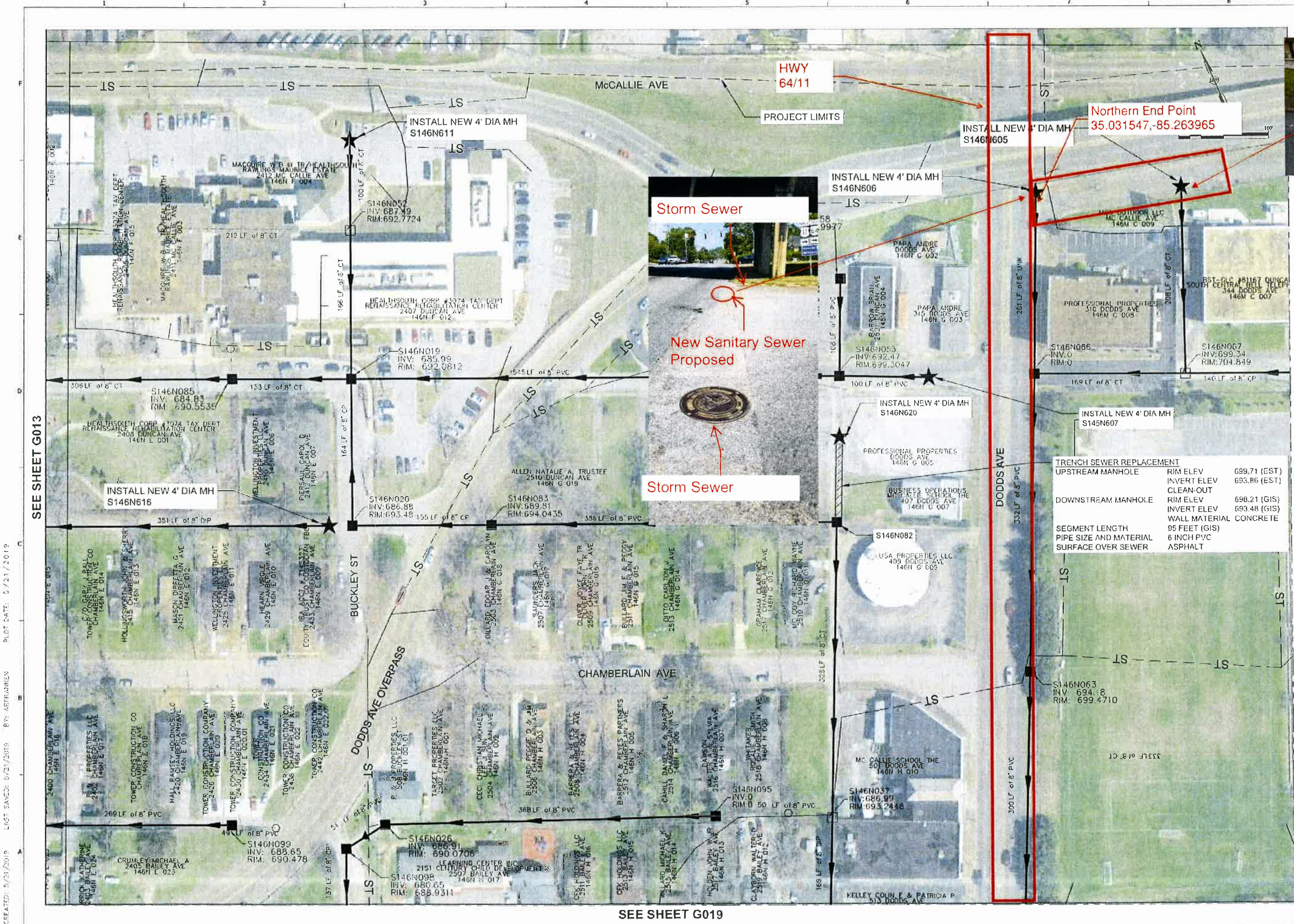
Project Area Map with TDOT roads marked in red.
Refer to project drawings for closer detail on the work being performed.



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PLAN VIEW LEGEND

| | |
|---|--|
|  | PROJECT LIMITS |
|  | EXISTING SANITARY SEWER MANHOLE |
|  | EXISTING SANITARY SEWER |
|  | EXISTING STORM SEWER |
|  | STREAM BUFFER |
|  | PREVIOUSLY REHABBED SANITARY SEWER |
|  | PREVIOUSLY REHABBED SANITARY SEWER MANHOLE |
|  | CURED-IN-PLACE PIPE (CIPP) LINING INSTALLATION |
|  | MANHOLE REHABILITATION |
|  | REMOVE AND REPLACE / INSTALL NEW MANHOLE |
|  | TOTAL LINE REPLACEMENT - UPSIZE TO 8" |
|  | CCTV LINE |



Northern End Point
35.031547, -85.263965

Storm Sewer

New Sanitary Sewer Proposed

Storm Sewer

NOT RELEASED FOR CONSTRUCTION

Proposed new manhole, currently no manhole

TRENCH SEWER REPLACEMENT

| | | |
|------------------------|---------------|---------------|
| UPSTREAM MANHOLE | RIM ELEV | 689.71 (EST) |
| | INVERT ELEV | 693.86 (EST) |
| | CLEAN-OUT | |
| DOWNSTREAM MANHOLE | RIM ELEV | 698.21 (GIS) |
| | INVERT ELEV | 693.48 (GIS) |
| | WALL MATERIAL | CONCRETE |
| SEGMENT LENGTH | | 95 FEET (GIS) |
| PIPE SIZE AND MATERIAL | | 6 INCH PVC |
| SURFACE OVER SEWER | | ASPHALT |

SEE SHEET G015

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|----------|----------------------|
| 1 | 02/21/19 | 10% REVIEW SUBMITTAL |
| 2 | 03/01/19 | 30% REVIEW SUBMITTAL |

THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.

DATE: MAY 2019

| | | |
|------------|-----------|----------|
| DISC LEAD: | DESIGNER: | CHECKER: |
| PHB | ARF | CHD |

SHEET TITLE: CIVIL

GENERAL LAYOUT 3

SHEET: G014

CREATED: 5/21/2019 LAST SAVED: 5/21/2019 BY: APTASHKIN PLOT DATE: 5/21/2019

SEE SHEET G013

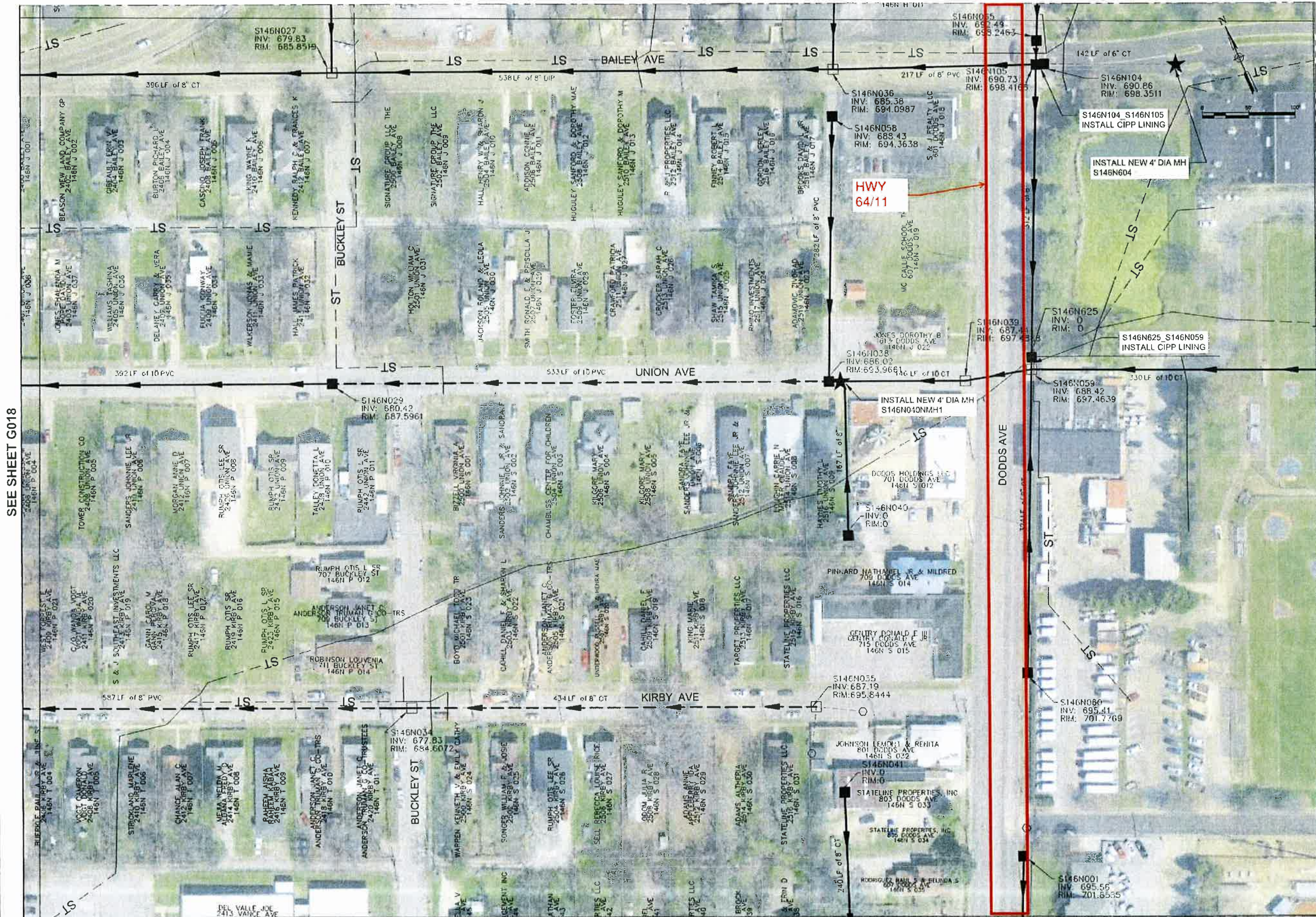
SEE SHEET G019

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APPRMANEN PLOT DATE: 5/21/2019

SEE SHEET G018

SEE SHEET G014

SEE SHEET G024



SEE SHEET G020

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/27/19 | 25% REVIEW SUBMITTAL |
| 2 | 6/03/19 | 10% REVIEW SUBMITTAL |

THIS LINE 15' OVER 100' LONG WHEN PLOTTED FULL SCALE

THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.

DATE: MAY 2019

| | | |
|-------------|-----------|----------|
| DISC. LEAD: | DESIGNER: | CHECKER: |
| P/B | ARF | GHD |

SHEET TITLE CIVIL

GENERAL LAYOUT 8

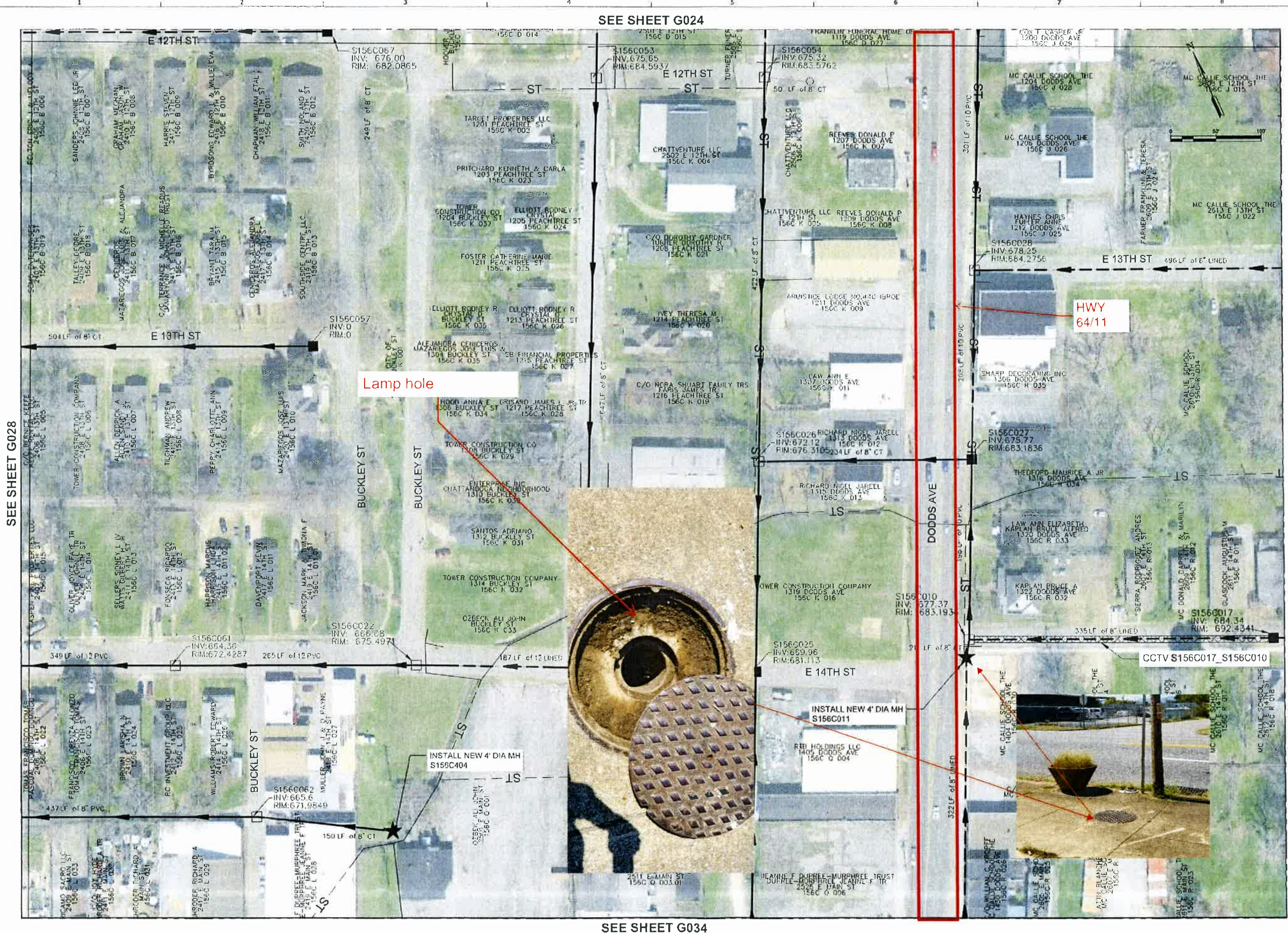
SHEET G019



100 W. HUK BLVD
SUITE 900, TN, 37402
CHATTANOOGA, TN
423.265.2946

NOT RELEASED FOR
CONSTRUCTION

SEE SHEET G024



SEE SHEET G034

BURNS MEDONNELL
 100 W MLK BLVD
 SUITE 900
 CHATTANOOGA, TN 37402
 423-285-2396

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
 CITY OF CHATTANOOGA, TN
 CONSENT DECREE PROGRAM

| REV | DATE | REVISION DESCRIPTION |
|-----|------|--------------------------------|
| 1 | | WORK REVIEW SUBMITTAL |
| 2 | | CORRECTED 10% REVIEW SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
 THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
 DATE: MAY 2019
 DISC. LEAD: PHB DESIGNER: ARF CHECKER: GHD

SHEET TITLE: CIVIL
 GENERAL LAYOUT 16

SHEET G029

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APPAPKEN FLOY DATE: 5/21/2019

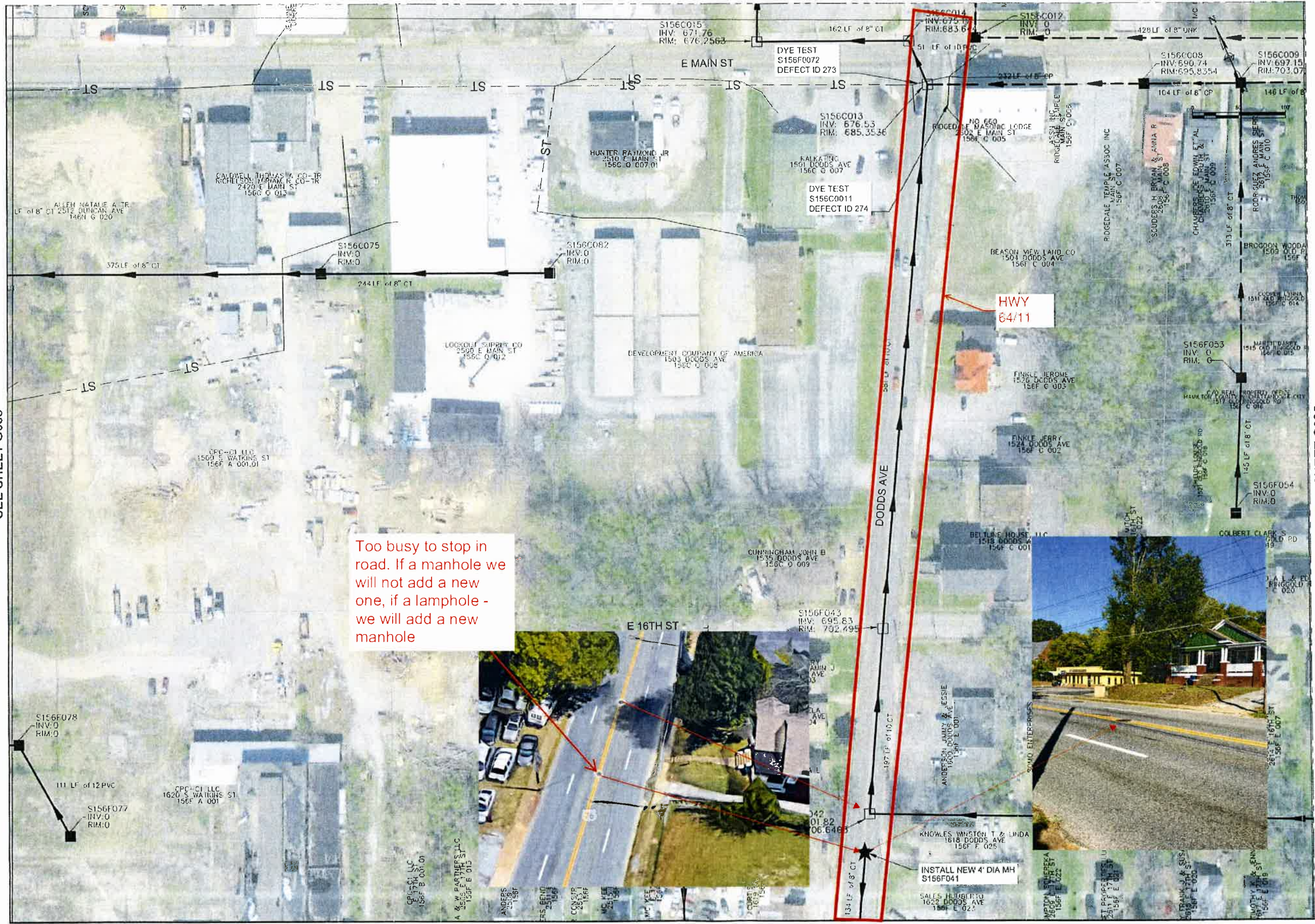
SEE SHEET G028

SEE SHEET G030

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APPROXIMEN PLOT DATE: 5/21/2019

SEE SHEET G033

SEE SHEET G029




Too busy to stop in road. If a manhole we will not add a new one, if a lamphole - we will add a new manhole

HWY 64/11



SEE SHEET G038

SEE SHEET G035




**BURNS
& MCDONNELL**

100 W. HICK BLVD
SUITE 300, TN, 37402
CHATTANOOGA, TN 37402
423.285.2996

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
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THIS LITE IS ONE INCH LONG WHICH PLOTTED FULL SCALE

THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.

DATE: MAY 2019

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|-------------|-----------|----------|
| DISC. LEAD: | DESIGNER: | CHECKER: |
| PMB | ARF | GHD |

SHEET TITLE: CIVIL

GENERAL LAYOUT 23

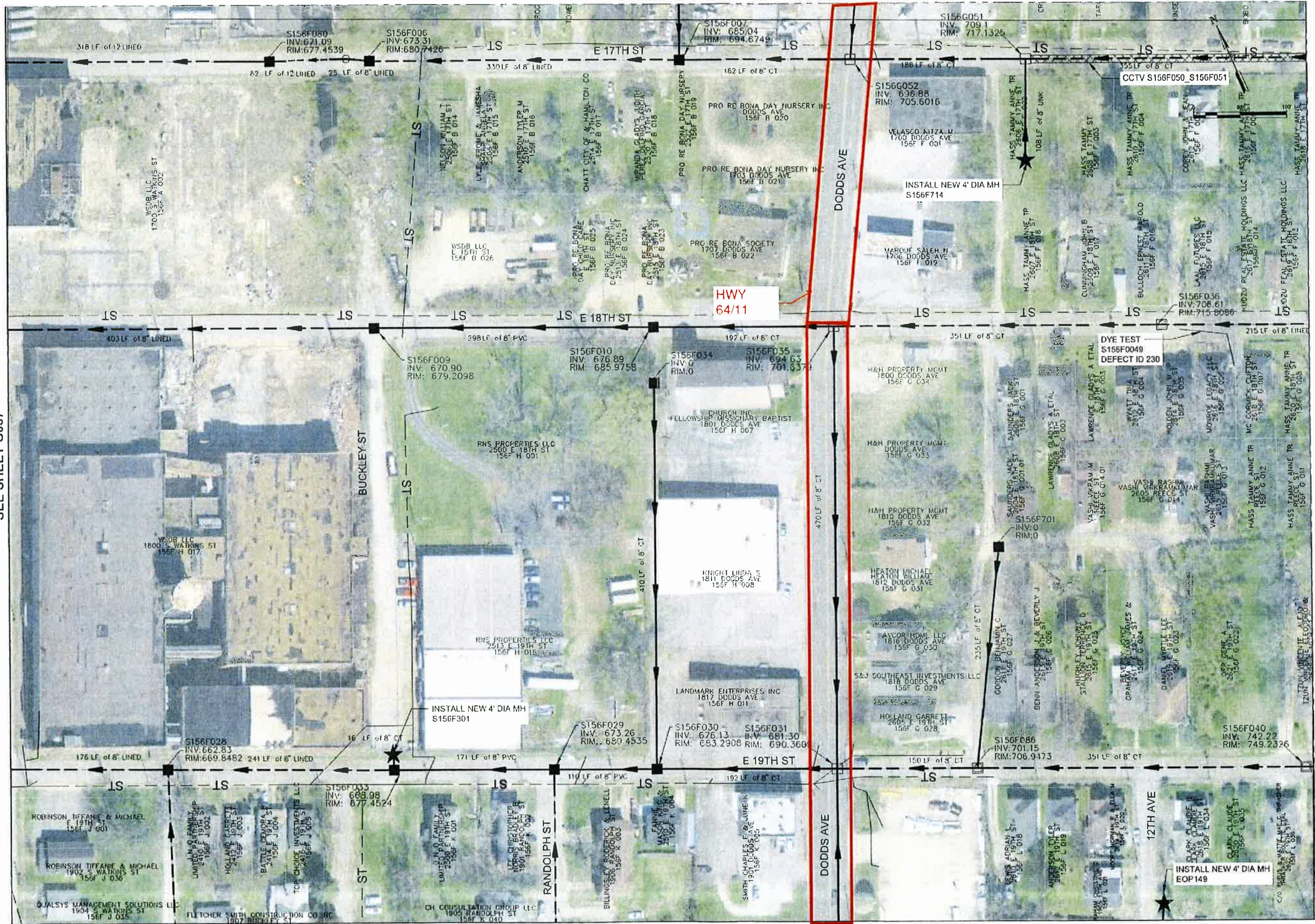
SHEET G034

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: ABFRANKEN PLOT DATE: 5/21/2019


SEE SHEET G037

SEE SHEET G034

SEE SHEET G042



SEE SHEET G039




**BURNS
& MCDONNELL**

100 W. PLEASANT BLVD
SUITE 900
CHATTANOOGA, TN 37402
423.852.2376

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | DESCRIPTION |
|-----|----------|----------------------|
| 1 | 05/21/19 | 30% DESIGN SUBMITTAL |
| 2 | 05/27/19 | 90% REVIEW SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED: FULL SCALE

THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.

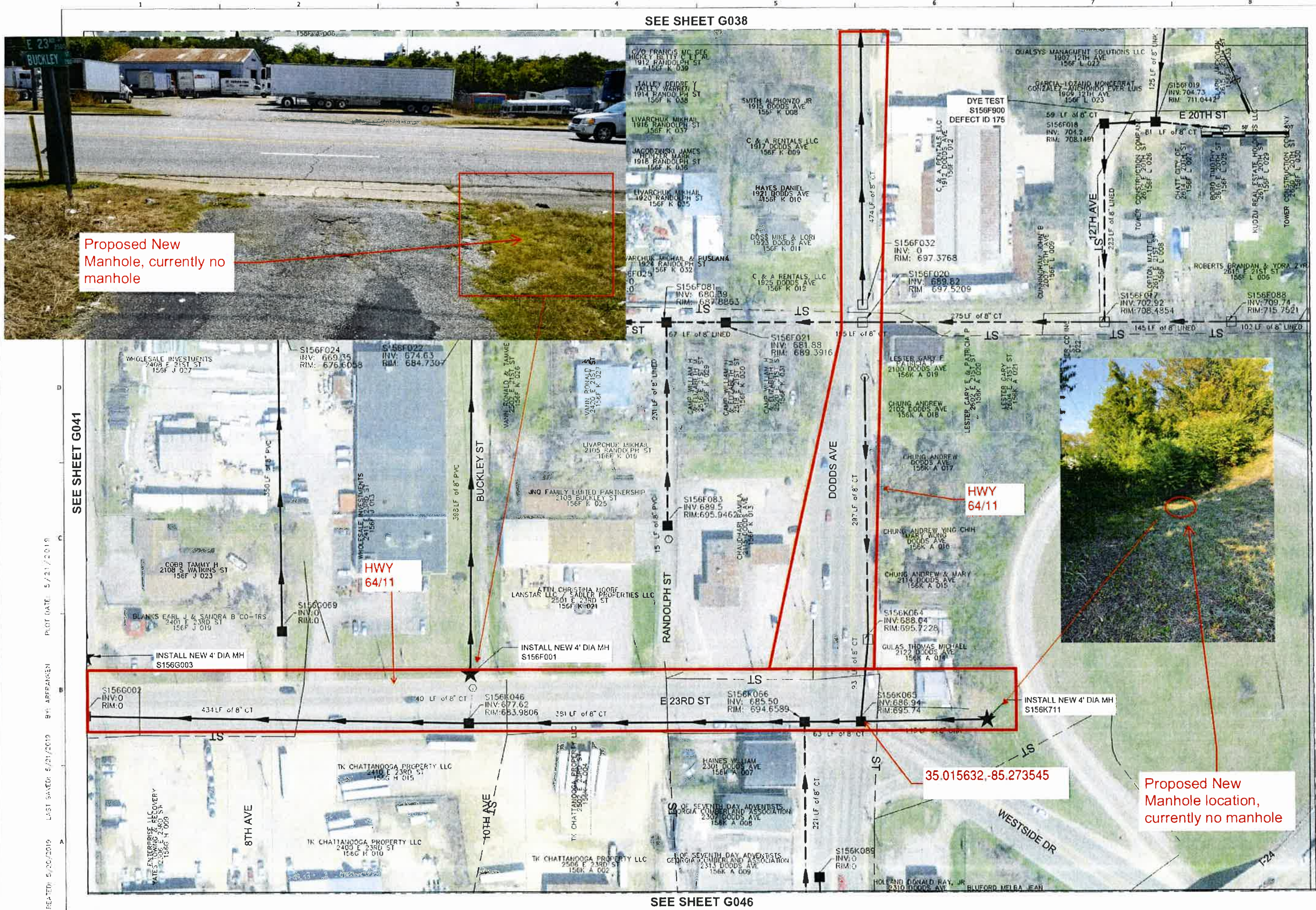
DATE: MAY 2019

| | | |
|----------------|---------------|--------------|
| DISC LEAD: PMB | DESIGNER: ARF | CHECKER: GHD |
|----------------|---------------|--------------|

SHEET TITLE: CIVIL

GENERAL LAYOUT 27

SHEET G038



SEE SHEET G038

SEE SHEET G046

Proposed New Manhole, currently no manhole

Proposed New Manhole location, currently no manhole

HWY 64/11

HWY 64/11

35.015632, -85.273545

SEE SHEET G041

SEE SHEET G043

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APPRAREN PLOT DATE: 5/21/2019



100 W. HICK BLVD
SUITE 900, TN, 37402
CHATTANOOGA, TN
423.265.2796

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|----------|----------------------|
| 1 | 02/01/19 | 50% REVIEW SUBMITTAL |
| 2 | 03/01/19 | 50% REVIEW SUBMITTAL |

THIS DRAWING IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC LEAD: PMB DESIGNER: ARF CHECKER: GHD

SHEET TITLE: CIVIL
GENERAL LAYOUT 31

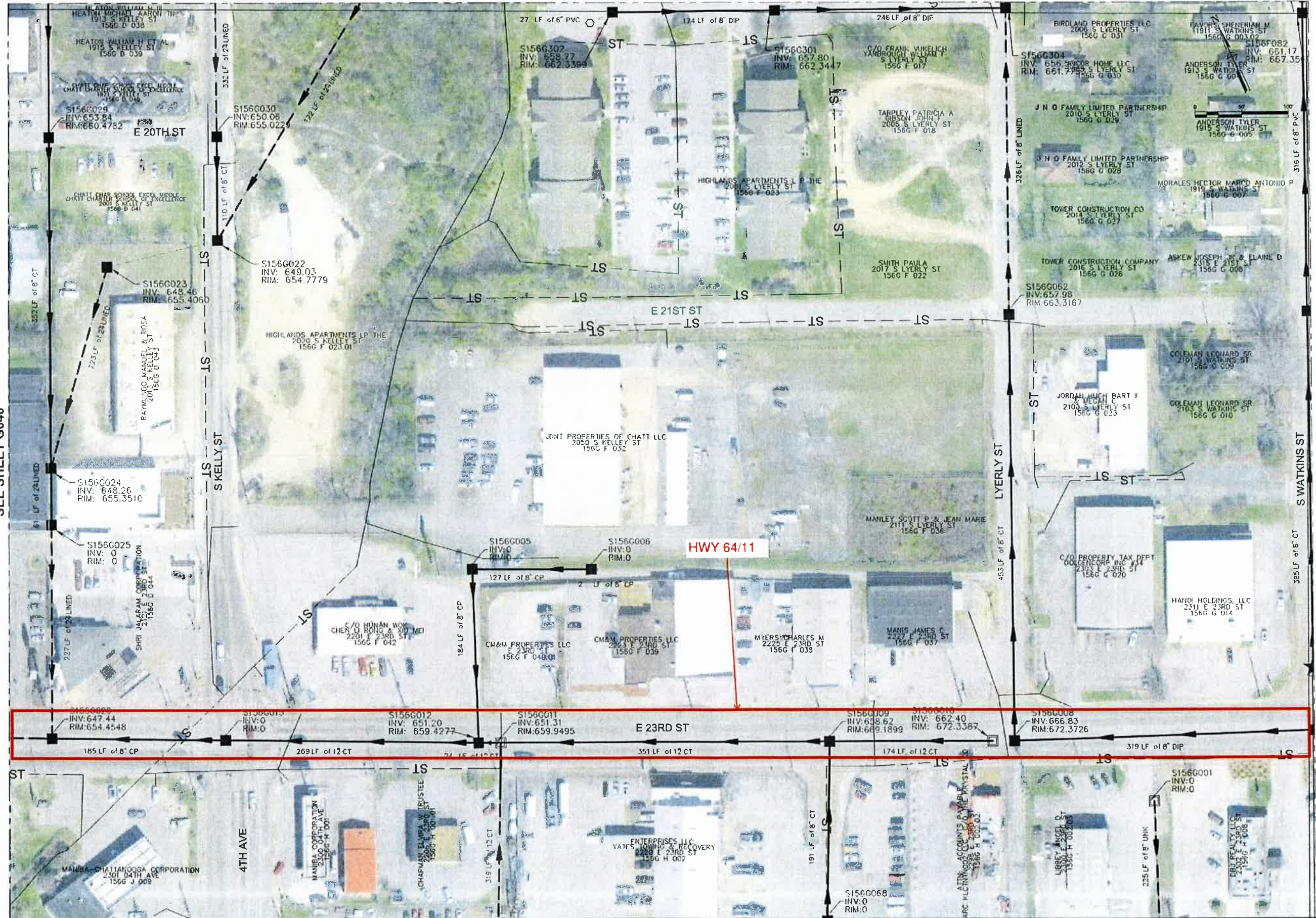
SHEET: G042

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APFRANKEN PLOT DATE: 5/21/2019

SEE SHEET G040

SEE SHEET G037

SEE SHEET G045



SEE SHEET G042



100 W MILK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423.262.2976

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/27/19 | 94% REVIEW SUBMITTAL |
| 2 | 6/20/19 | 30% REVIEW SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONFORMANCE WITH THE APPLICABLE AND GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019

| | | |
|------------|-----------|----------|
| DISC LEAD: | DESIGNER: | CHECKER: |
| PMB | ARF | GHD |

SHEET TITLE: CIVIL

GENERAL LAYOUT 30

SHEET: G041

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: ARFRANKEN PLOT DATE: 5/21/2019

SEE SHEET G036

SEE SHEET G044



E 20TH ST

E 21ST ST

E 23RD ST

S ORCHARD KNOB AVE

S WILLOW ST



PROJECT LIMITS

HWY 64/11

Southern End point
35.018984, -85.282501

SEE SHEET G041

BURNS MEDONNELL
 100 W HLK BLVD
 SUITE 900
 CHATTANOOGA, TN 37402
 423-265-5396

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM

| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| B | 5/27/19 | 90% REVIEW PERMITAL |
| A | 5/28/19 | 30% REVIEW SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
 THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
 DATE: MAY 2019
 DISC. LEAD: PWB DESIGNER: ARF CHECKER: GHD

SHEET TITLE CIVIL
 GENERAL LAYOUT 29
 SHEET G040

SEE SHEET G028

Western Most End Point,
35.024264,-85.275049

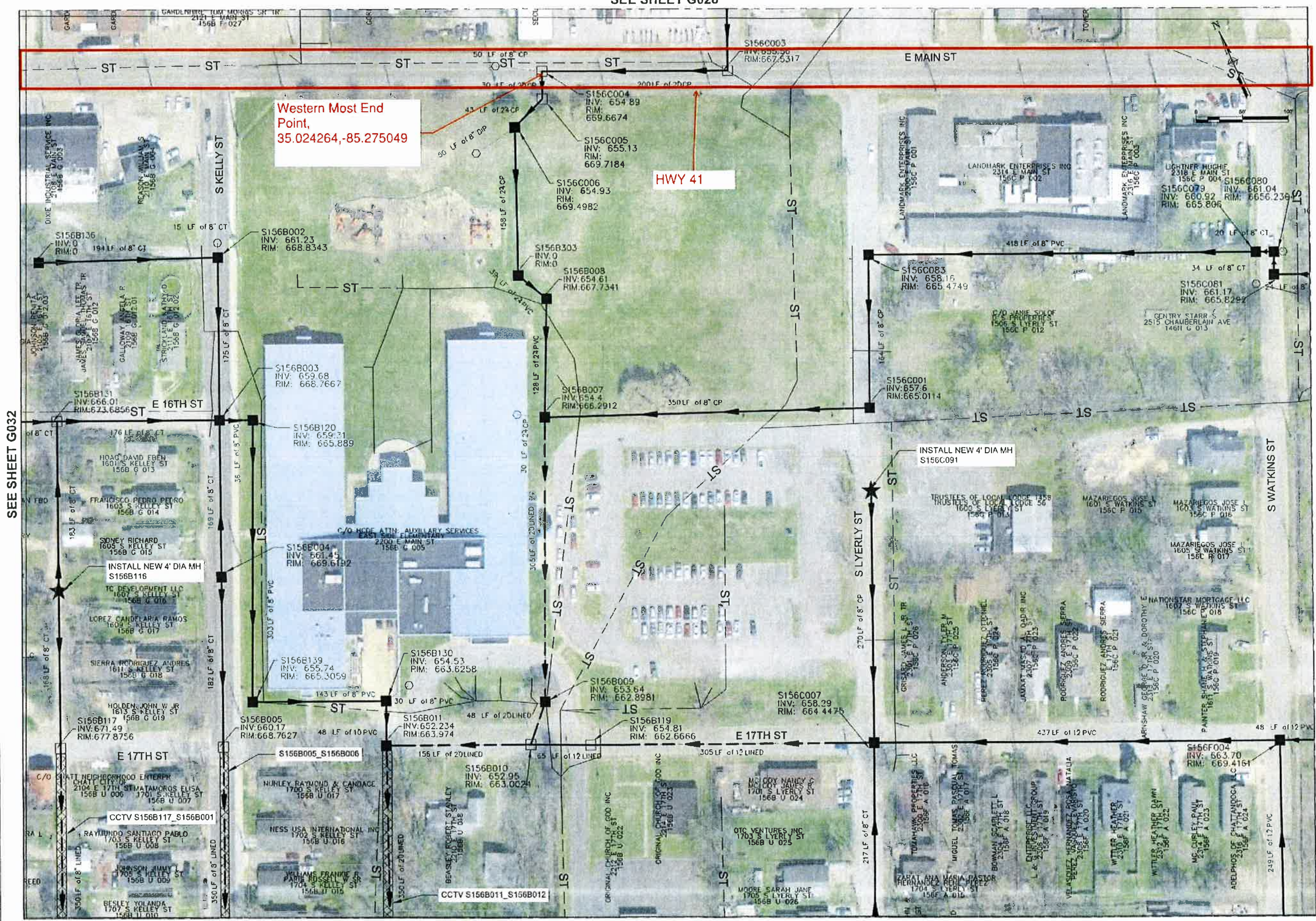
HWY 41

SEE SHEET G032

SEE SHEET G034

SEE SHEET G037

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: ARFRAMEN PLOT DATE: 5/21/2019



BURNS MEDONNELL
 100 W MILK BLVD
 SUITE 600
 CHATTANOOGA, TN 37402
 423-385-3396

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN
 IMPROVEMENTS PHASE 2
 CITY OF CHATTANOOGA, TN
 CONSENT DECREE PROGRAM

| REV | DATE | DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/27/19 | 90% REVIEW SUBMITTAL |
| 2 | 5/28/19 | 30% REVIEW SUBMITTAL |

THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS.

PROJECT NO: PROJECT NO.
 DATE: MAY 2019
 DISC. LEAD: PHB
 DESIGNER: ARF
 CHECKER: GHD

SHEET TITLE: CIVIL
 GENERAL LAYOUT 22
 SHEET: G033

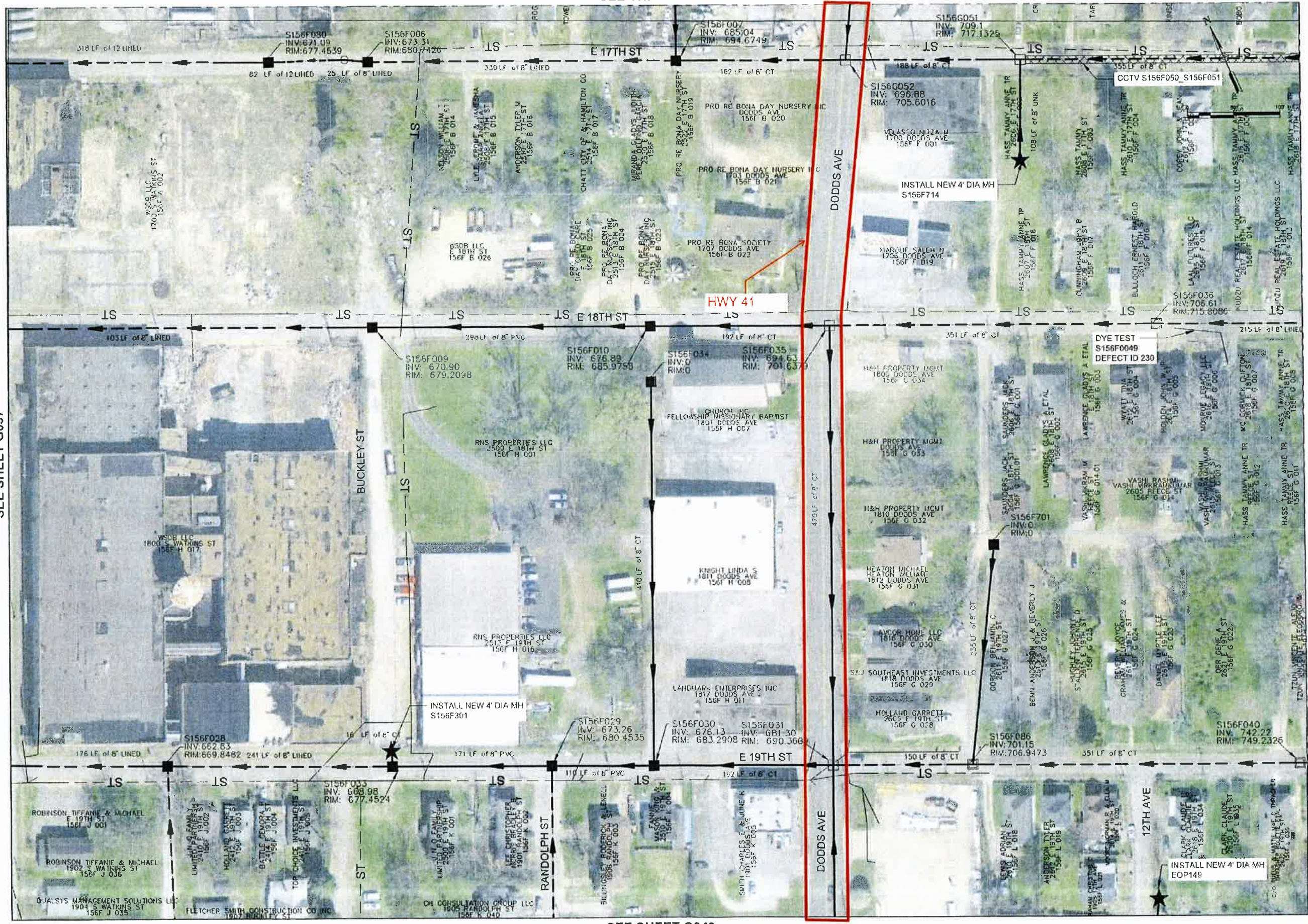
CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: AFFRAIKEN PLOT DATE: 5/21/2019

SEE SHEET G037

SEE SHEET G034

SEE SHEET G042

SEE SHEET G039



DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



100 W. HUK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423.852.2796

NOT RELEASED FOR
CONSTRUCTION

| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/27/19 | 50% REVIEW SUBMITTAL |
| 2 | 6/20/19 | 30% REVIEW SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC LEAD: PMS
DESIGNER: ARF
CHECKER: GHD

SHEET TITLE: CIVIL

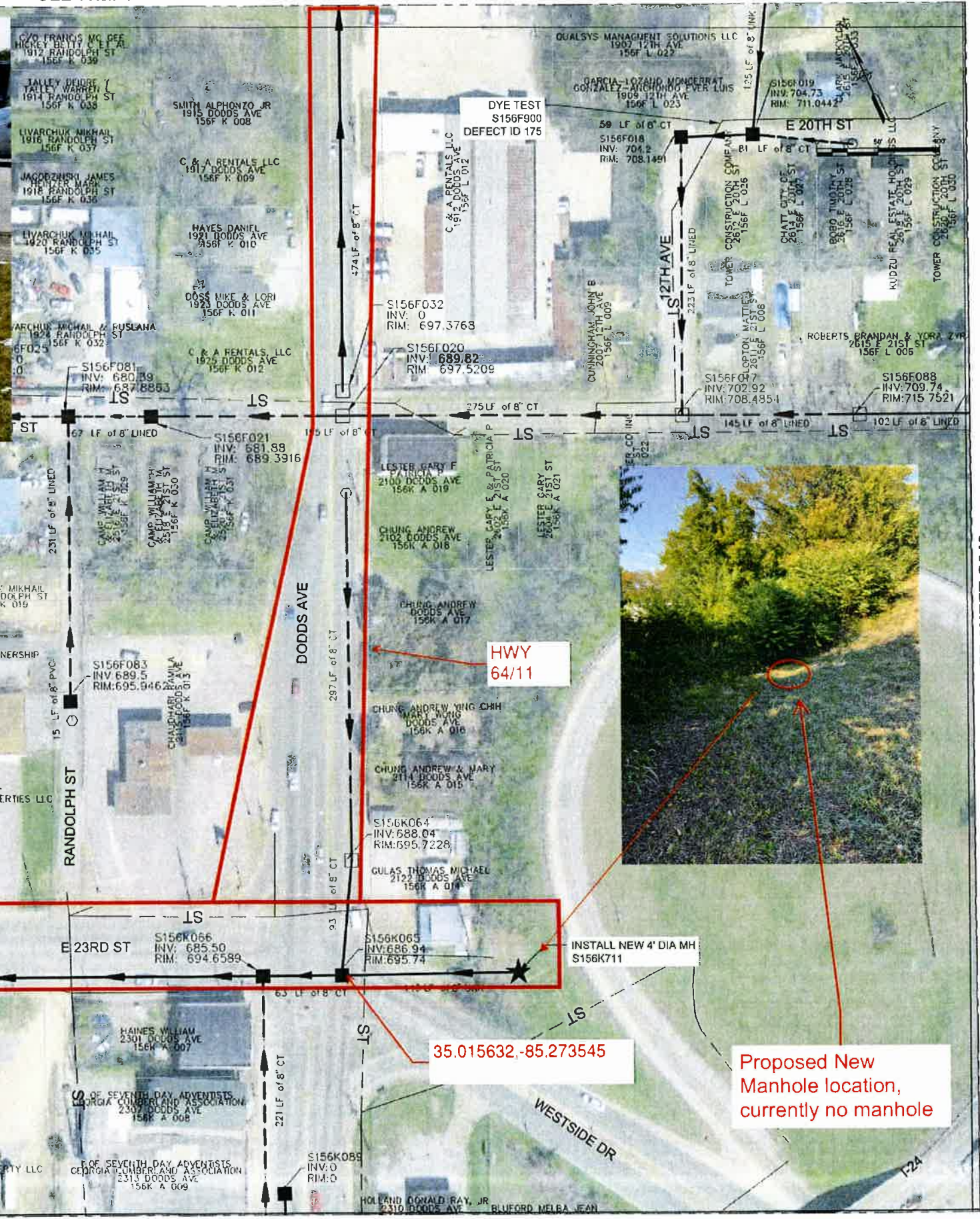
GENERAL LAYOUT 27

SHEET G038

SEE SHEET G038



Proposed New Manhole, currently no manhole



SEE SHEET G046

SEE SHEET G043



NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2 CITY OF CHATTANOOGA, TN CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|----------|----------------------|
| 1 | 02/01/19 | 15% REVIEW SUBMITTAL |
| 2 | 02/01/19 | 30% REVIEW SUBMITTAL |

THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

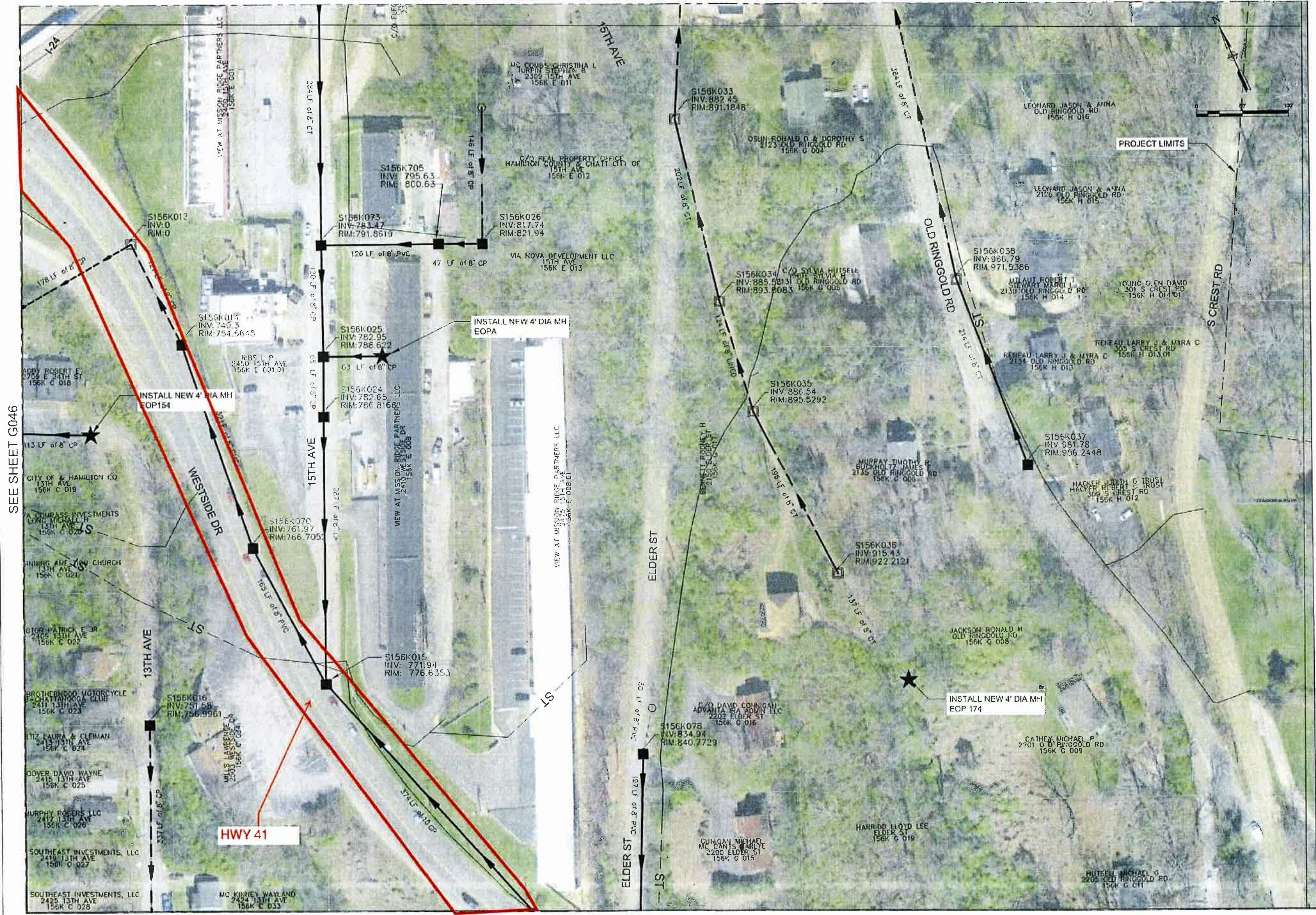
PROJECT NO: PROJECT NO.
 DATE: MAY 2019
 DISC LEAD: PHB
 DESIGNER: ARF
 CHECKER: GHD

SHEET TITLE: CIVIL
 GENERAL LAYOUT 31
 SHEET: G042

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APPFARRIN PLOT DATE: 5/21/2019

SEE SHEET G043

SEE SHEET G051



100 W MILK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423-652-2996

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
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THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE

THIS DRAWING MUST BE USED IN CONSTRUCTION WITH THE APPLICABLE OR GETTING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.

DATE: MAY 2019

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| DISC LEAD: | DESIGNER: | CHECKER: |
| PMB | ARF | GHD |

SHEET TITLE: CIVIL

GENERAL LAYOUT 36

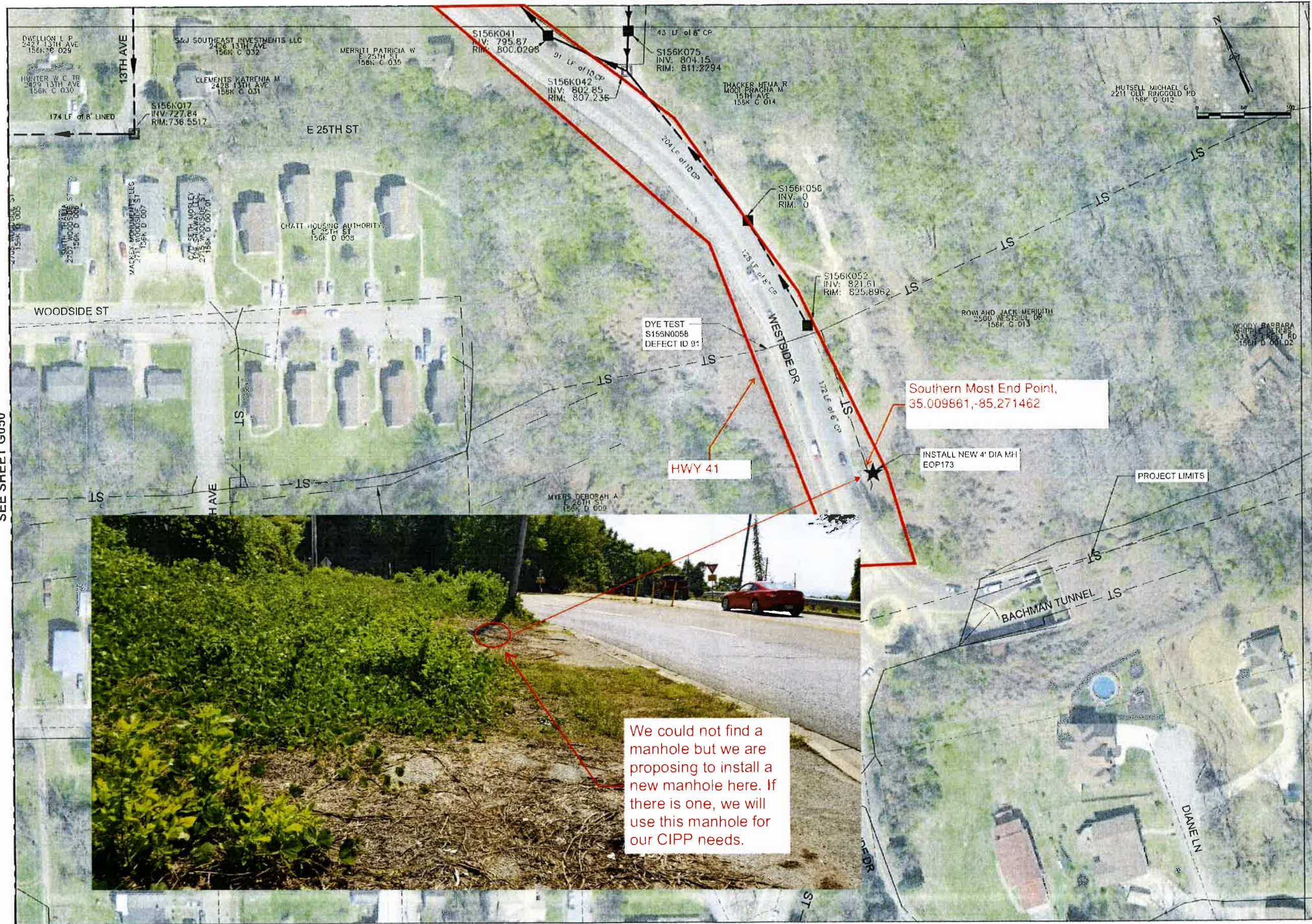
SHEET: G047

CREATOR: 5/20/2019
 LAST SAVED: 5/21/2019
 50% APPROXIMATE
 PLOT DATE: 5/21/2019

CREATED: 5/20/2019 LAST SAVED: 5/20/2019 BY: ABBASREHMAN PLOT DATE: 5/21/2019

SEE SHEET G050

SEE SHEET G047



We could not find a manhole but we are proposing to install a new manhole here. If there is one, we will use this manhole for our CIPP needs.



100 W HICK BLVD
SUITE 300
CHATTANOOGA, TN 37402
423.885.2976

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/20/19 | 50% REVIEW SUBMITTAL |
| 2 | 5/20/19 | 50% REVIEW SUBMITTAL |

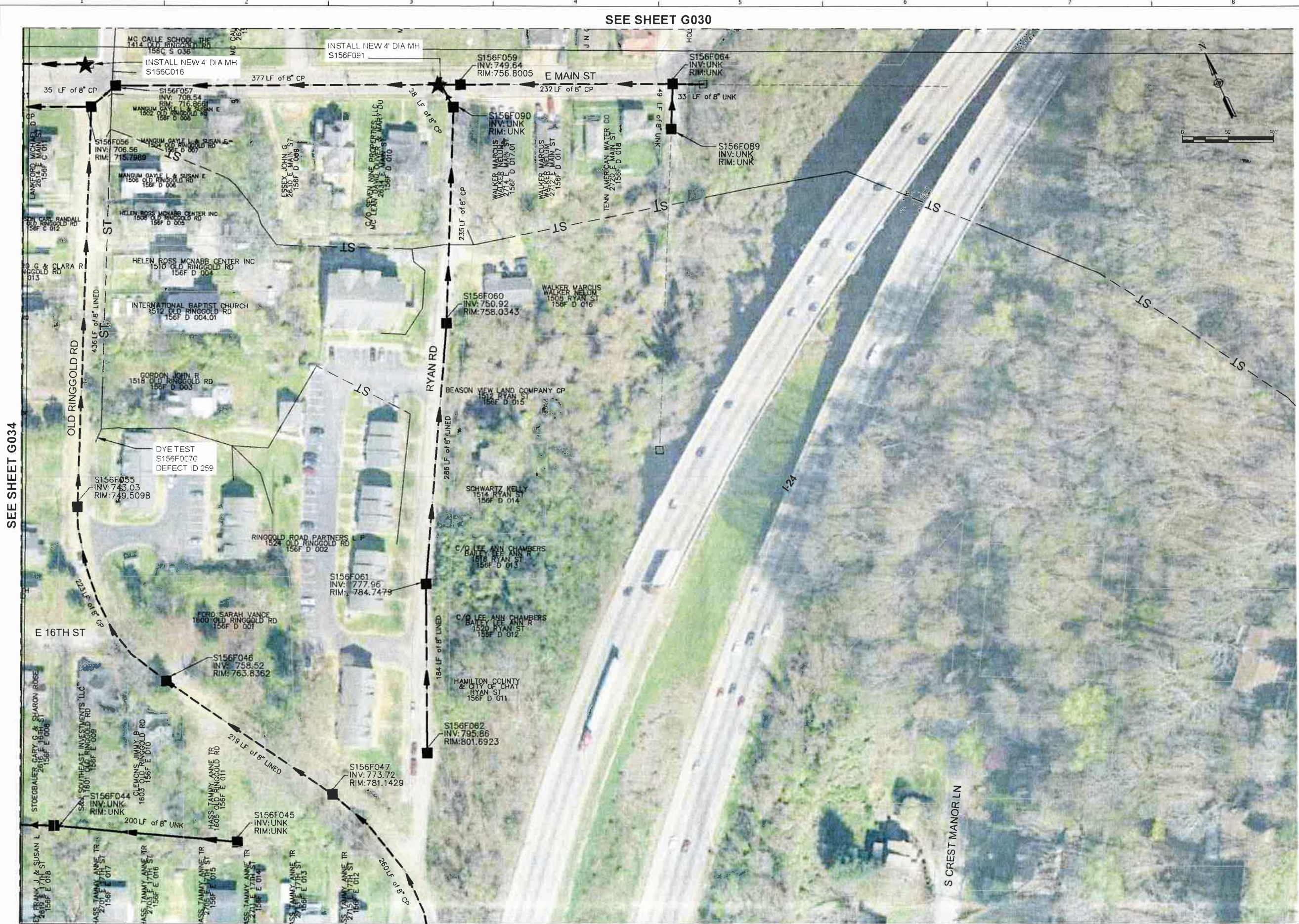
THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC. LEAD: ARB DESIGNER: ARB CHECKER: GHJ

SHEET TITLE CIVIL
GENERAL LAYOUT 40
SHEET G051

SEE SHEET G030


SEE SHEET G039



BURNS MEDONNELL
 100 W. HILL BLVD
 SUITE 900
 CHATTANOOGA, TN 37402
 423-265-2996



DOBBS BRANCH BASIN
 IMPROVEMENTS PHASE 2
 CITY OF CHATTANOOGA, TN
 CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|------|----------------------|
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PROJECT NO: 111107
 DATE: 07/30/2019
 DISC. LEAD: DESIGNER: CHECKER:
 PMB ARF GHD

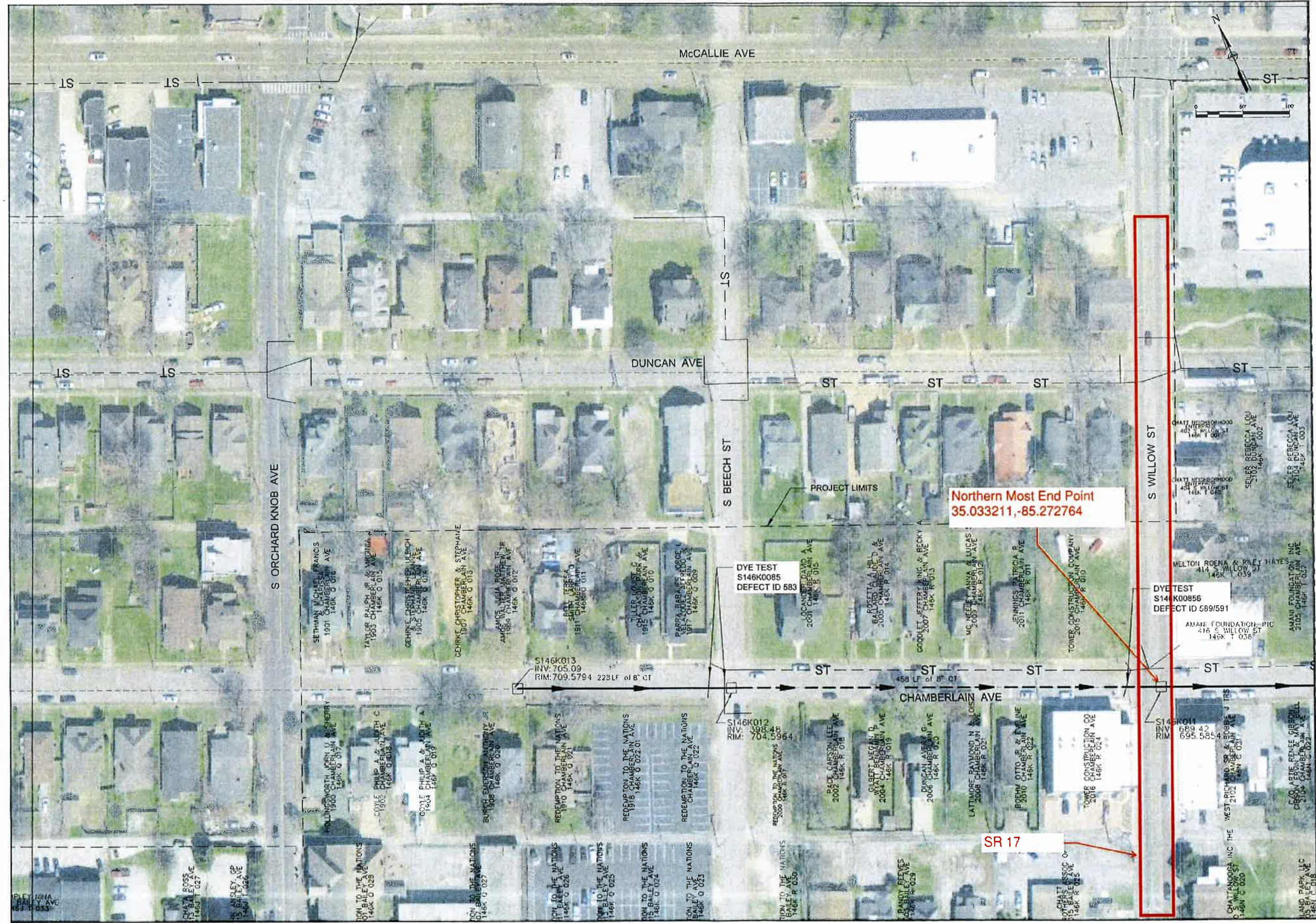
SHEET TITLE
 CIVIL
 GENERAL LAYOUT 24

SHEET
 G035

CREATED: 9/27/2019 LAST SAVED: 9/30/2019 BY: THOLLIS PLOT DATE: 9/30/2019

SEE SHEET G034

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 PLOT DATE: 5/21/2019 BY: AFFRANKEN



SEE SHEET G017

SEE SHEET G013



100 W MILK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423.265.2396

NOT RELEASED FOR
CONSTRUCTION

DOBBS BRANCH BASIN
IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM



| REV | DATE | REVISION DESCRIPTION |
|-----|----------|----------------------|
| A | 02/27/19 | 30% DESIGN SUBMITTAL |
| B | 02/27/19 | 90% DESIGN SUBMITTAL |

THIS LINE IS ONE INCH LOGIC WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR COVERING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC. LEAD: PNB DESIGNER: ARF CHECKER: GHD

SHEET TITLE CIVIL

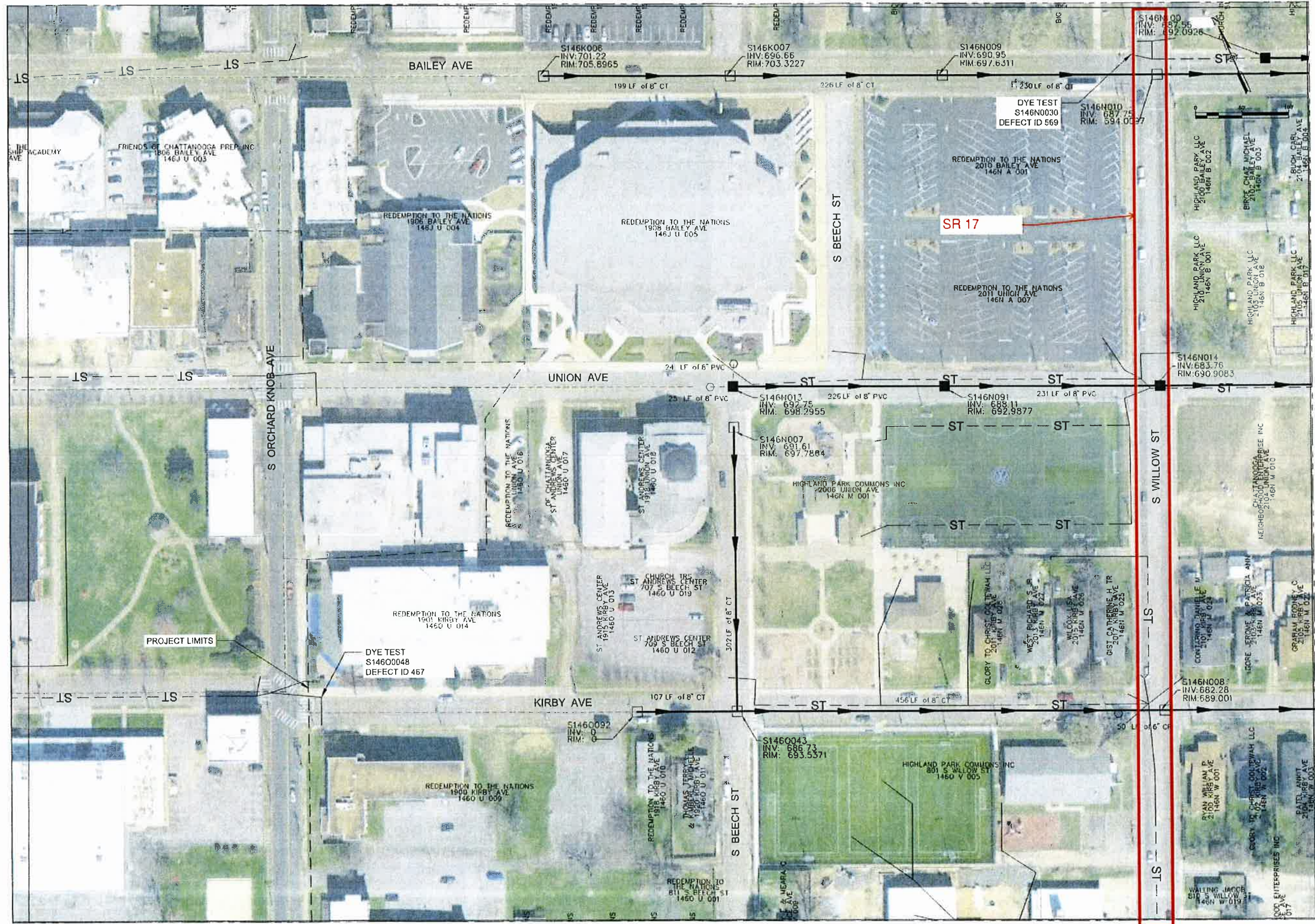
GENERAL LAYOUT 1

SHEET G012

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: APERAKHEN PLOT DATE: 5/21/2019

SEE SHEET G012

SEE SHEET G022



SR 17

PROJECT LIMITS

DYE TEST
S14600048
DEFECT ID 467

DYE TEST
S146N0030
DEFECT ID 569

SEE SHEET G018

BURNS MEDONNELL
100 W HUK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423-265-3795

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM

| REV | DATE | REVISION DESCRIPTION |
|-----|---------|----------------------|
| 1 | 5/21/19 | REVISED SUBMITTAL |
| 2 | 5/21/19 | REVISED SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE OR GOVERNING TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

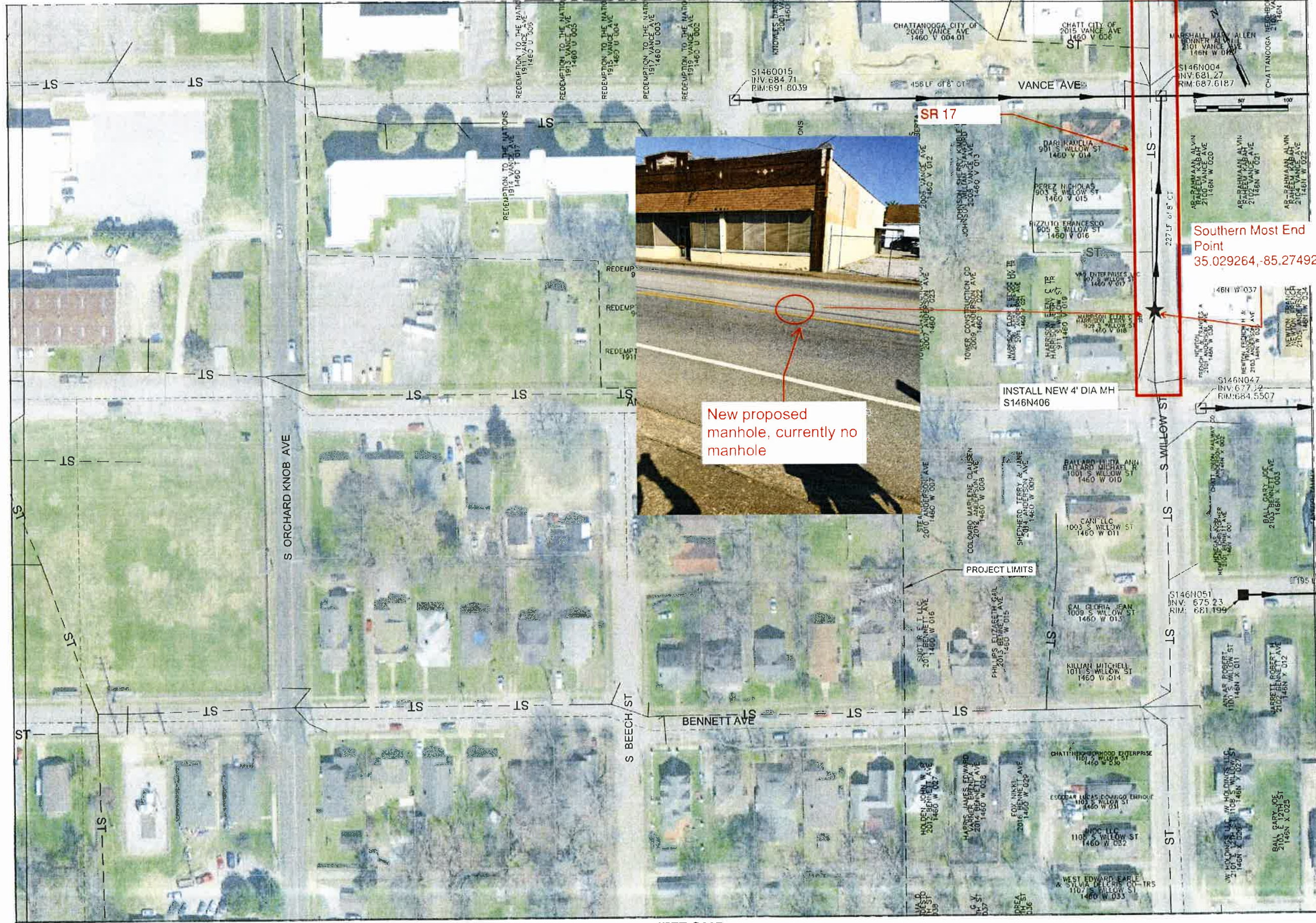
PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC. LEAD: PMB DESIGNER: ARF CHECKER: GHD

SHEET TITLE: CIVIL
GENERAL LAYOUT 6
SHEET: G017

CREATED: 5/20/2019 LAST SAVED: 5/21/2019 BY: AFFRANKE PLOT DATE: 5/21/2019

SEE SHEET G017

SEE SHEET G027



New proposed manhole, currently no manhole

INSTALL NEW 4' DIA MH S146N406

Southern Most End Point
35.029264, -85.274925

PROJECT LIMITS

SEE SHEET G023

BURNS MEDONNELL
100 W. HICK BLVD
SUITE 900
CHATTANOOGA, TN 37402
423.65.2976

NOT RELEASED FOR CONSTRUCTION

DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CITY OF CHATTANOOGA, TN
CONSENT DECREE PROGRAM

| REV | DATE | REVISION DESCRIPTION |
|-----|----------|-----------------------|
| B | 5/22/19 | 90% REVISED SUBMITTAL |
| A | 02/01/19 | 10% REVISED SUBMITTAL |

THIS LINE IS ONE INCH LONG WHEN PLOTTED FULL SCALE
THIS DRAWING MUST BE USED IN CONJUNCTION WITH THE APPLICABLE CITY OF CHATTANOOGA TECHNICAL SPECIFICATIONS AND OTHER CONTRACT DOCUMENTS

PROJECT NO: PROJECT NO.
DATE: MAY 2019
DISC. LEAD: FMB DESIGNER: ARF CHECKER: GHD

SHEET TITLE: CIVIL
GENERAL LAYOUT 11
SHEET: G022

**PRE-BID CONFERENCE MINUTES
DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
CONTRACT #W-17-020-201
December 20, 2019**

Moccasin Bend Wastewater Treatment Plant – Training Center

Start time: 10:45am

End time: 11:05am

This pre-bid meeting was originally scheduled to start at 11am, but all the participants were already present for the Dobbs Branch Basin Improvements Phase 1 meeting that started at 10am. It was agreed that if anyone new arrived at 11am for the Phase 2 meeting only, the meeting would be started over at the originally scheduled time. There were no additional attendees for the Phase 2 meeting only, so it was concluded at 11:05am.

Text in Italics below indicates notes from the pre-bid meeting.

1. Introductions

- a. Owner – City of Chattanooga – Ron Simmons, PM
- b. Program Manager – Jacobs – Will Shelton, PMPC
- c. Engineer – Burns & McDonnell – Matt Bracewell, PM
- d. TDEC State Revolving Fund – Derrick Byrd
- e. Southeast Tennessee Development District – Jillian Hale

2. Project Scope/Description

- a. Project generally consists of pipeline cured-in-place-pipe rehabilitation and manhole lining in which approximately:
 - i. 67,000 LF is 8-inch diameter
 - ii. 7,800 LF is 10-inch diameter
 - iii. 3,500 LF is 12-inch diameter
 - iv. 2,000 LF is 10-inch diameter
 - v. 2,400 LF is 18 to 24-inch diameter
 - vi. 2,400 VF of manhole lining
 - vii. 60 4-foot diameter precast manholes
 - viii. Associated cleaning and CCTV
- b. No pre-design SSES was performed on this sub-basin so several pay items that may be needed are included on the bid form under Additional Work if Ordered by the Engineer

3. Bid Documents

The agenda included incorrect phone and fax numbers for the City Purchasing Department and those have been corrected in these minutes.

- a. Refer to Section 00 21 13 Instructions to Bidders
- b. Purchase Contract Documents from 8:00 a.m. to 4:30 p.m., Monday through Friday, at the City of Chattanooga Purchasing Department, 101 East 11th Street, Suite G13, Chattanooga, TN 37402, phone (423) 643-7230, fax (423) 643-7244.
- c. Cost of Contract Documents is \$100 per set. No part of the purchase will be refunded for any reason. Documents will be provided electronically on a USB flash drive.
- d. Bid Bond in the amount of 5% of Bid with Surety licensed to do business in TN and listed in U.S. Treasury Circular 570.
- e. Bids cannot be withdrawn within 120 calendar days of receipt of Bids.

4. Qualifications

- a. Refer to Section 00 21 13 Instructions to Bidders, Section 00 45 13 Statement of Bidder's Qualifications, Article 1.03 of Section 33 01 30.73 Cured-In-Place-Pipe
 - i. Bidder shall maintain permanent place of business
 - ii. Must be licensed by State of Tennessee to perform work under contract
 - iii. Bidder shall demonstrate adequate construction experience and sufficient equipment resources to properly perform work.
 - iv. Owner reserves the right to reject any bid if bidder fails to satisfy qualifications.

5. Bidding Requirements

It was stated that bidders need to make sure the Contractor's Identification page must be attached to the outside of the bid envelope or it will not be opened. Also N/A should be placed in non-applicable fields so that there is nothing left blank on the form.

- a. Bid Bond in the amount of 5% of Bid with Surety licensed to do business in TN and listed in U.S. Treasury Circular 570.
- b. No Bid withdrawn within 120 calendar days of receipt of Bids.
- c. Section 00 45 77 – Contractor's Identification must be completed, with one copy attached to the bid package, and one copy inside the bid package.

6. Bidder Questions and Addenda

- a. Use Section 00 21 14 – Request for Bidder Information. Submit by fax, email or mail to City of Chattanooga Purchasing Department. bidinfo@chattanooga.gov.
- b. Questions received less than ten (10) days prior to the date for opening the Bids may not be answered.
- c. Required to purchase set of plans and specifications to get on the plan holders list. Only bidders on plan holders list will receive addenda; which must be acknowledged in the Bid Form.

7. Bid Opening

It was stated that questions must be received by January 13, 2020 to ensure they get a response.

- a. Date/Time – 2:00 p.m. on January 23, 2020
- b. Location – City of Chattanooga Purchasing Department, 101 East 11th Street, Suite G13, Chattanooga, TN

8. Contract Completion Time

- a. Substantial Completion within 485 Calendar Days of Notice To Proceed
- b. Final Completion within 515 calendar days of Notice To Proceed

9. Liquidated Damages

- a. \$500.00 for each day after Substantial Completion if work is deemed to not be substantially complete, and \$500.00 for each day after Final Completion if Contractor has not completed the work.

10. Project Specific Requirements

- a. CCTV to be performed on all piping within the sub-basins
- b. Some sewers in the basin have already been rehabilitated

- c. Following review of CCTV, Engineer will determine if CIPP is appropriate and thickness of liner
- d. Contractor to allow 30 days per 20,000 LF of CCTV for Engineer review and response
- e. If point repairs or other excavation is needed, permitting may be required that would delay the final direction from the Engineer for the segment
- f. Permits
 - i. TDOT
 - ii. City of Chattanooga Land Disturbance
 - iii. City of Chattanooga Street Cut
- g. Pavement Replacement
 - i. CDOT Requirements
- h. Odor Mitigation
 - i. Work in residential area
 - ii. Contractor is responsible for managing odors

11. Site Access

- a. All work to be completed shall be on the City of Chattanooga's property or public rights-of-way.
- b. If needed, the Contractor is responsible for acquiring all required right of entry and temporary construction easements on private properties in order to access existing sewers and perform the required work.
- c. Contractor is responsible for acquiring any laydown areas
- d. Some of the work is within TDOT right-of-way and will be subject to the TDOT permit requirements

12. Safety

- a. Refer to Section 00 72 00 and 00 73 00 General and Supplementary Conditions

13. Work Hours

- a. Work Hour Restrictions – Work hours are defined in Article 6.02 of the General Conditions and shall be limited to 7:00 a.m. to 6:00 p.m.
- b. Normal work weeks are 40 hours
- c. Inspection costs outside of regular working hours and in excess of 40 hours per week are the responsibility of the Contractor to reimburse the City as described in the General Conditions

14. DAVIS-BACON Act

The agenda had the incorrect EPA Fiscal year and it has been corrected in these minutes.

- a. This project is being funded by a State Revolving Fund loan on or after 2014 EPA Fiscal Year. The loan recipient must be in compliance with all applicable requirements of the Davis-Bacon Act.
- b. Southeast Tennessee Development District will validate payrolls and conduct interviews with employees and subs. Contact is Jill Hale – jhale@sedev.org , 423-424-4268

15. Allowances

- a. 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.

16. Other Items

- a. It is the Contractor's responsibility to repair any existing utilities that are damaged during construction.
- b. The items discussed here today are not intended to be all-inclusive. It is the Contractor's responsibility to review the Contract Documents and comply with all provisions.
- c. The purpose of the project is to rehabilitate all pipelines and manholes in Dobbs Branch Sub-Basins 5 and 6 (Phase 2) that have not been previously rehabilitated in earlier projects. Because

17. Questions

No questions were received at the pre-bid meeting.



City of Chattanooga Waste Resources Division
 Dobbs Branch Basin Improvements Phase 2
 Pre-Bid Conference
 December 19, 2019

| NAME | ORGANIZATION | ROLE | PHONE NO. | E-MAIL |
|---------------|-------------------|----------------|--------------|------------------------------|
| John Sybrandt | SAK Const. | PM | 770 403 4395 | jsybrandt@sak.com.com |
| Troy Reed | CTR Coatings | VP | 317-110-2144 | troy@ctrcoatings.com |
| Mike Weichold | CTR Coatings | Super | 865-387-2318 | Mike@ctrcoatings.com |
| Jeremy Parks | Granite T liners | Super | 812-569-0809 | Jeremy.parks@gcinc.com |
| Mark Miles | M&M Pipe Services | GM | 865-313-0028 | MarkM@pipeservices@gmail.com |
| JULIAN HALE | SETD | payroll review | 423-424-4268 | jnhale@sedev.org |
| Will She Her | JACOBS | CM | 864-593-7703 | will.sheher@jacobs.com |
| DERRICK BYRD | SRF PROGRAM | FUNDING AGENCY | 615-532-7594 | derrick.byrd@tn.gov |
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City of Chattanooga Waste Resources Division
Dobbs Branch Basin Improvements Phase 2
Pre-Bid Conference
December 19, 2019

| NAME | ORGANIZATION | ROLE | PHONE NO. | E-MAIL |
|-----------------|---------------|---------|------------------------------|---|
| Rich Schici | IPR Southeast | BD Mgr | 404-308-3263 | rschici@teamipr.com; ^{ajones@} teamipr.com |
| Mark Milne | M+M Pipe | Gen Mgr | 865-313-0028 | mark@mm-pipe.com |
| Marshall Stomp | Hurst Exc | - | 865- ⁹²² 922-6142 | david@hurstexc.com |
| JUSTIN BOLENDER | HDR | - | 423-414-3559 | justin.bolender@hdrinc.com |
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City of Chattanooga Waste Resources Division
 Dobbs Branch Basin Improvements Phase 2
 Pre-Bid Conference
 December 19, 2019

| NAME | ORGANIZATION | ROLE | PHONE NO. | E-MAIL |
|----------------|----------------------------|-------|--------------|---------------------------------|
| Cain Maynard | Sunbelt Pump | Sales | 615-838-2854 | cain.maynard@sunbeltrentals.com |
| Chad Freund | Xylene Inc Goodwin pump | sales | 404-557-2085 | chad.freund@xyleneinc.com |
| RONALD SIMMONS | CITY | PM | 423-643-5869 | rlsimmons@chattanooga.gov |
| BONNIE MUMFORD | CITY | ENGR | 643 6031 | BMUMFORD@CHATTANOOGA.GOV |
| DEBBIE TALEY | CITY | DIR | 643 7239 | DTALEY@CHATTANOOGA.GOV |
| Jeff Woodcock | Spectra Tech | | 317-362-7526 | jwoodcock@spectratechlining.com |
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QUESTION AND RESPONSE NO. 1

**DOBBS BRANCH BASIN IMPROVEMENTS PHASE 2
City of Chattanooga Project W-17-020-201
Burns & McDonnell Project 111107**

CITY OF CHATTANOOGA, TENNESSEE

The following responses are provided to bidder requests for information:

1. *Question: •Who is the contact person to reach out to obtain the TDOT, Land Disturbance and Street Cut Permits?*

Response: The contract documents' Appendix A has the permit contact information within the individual forms, please use that information.

2. *Question: •The quantities for various thicknesses for the CIPP on the bid form are not matching with the ones on the drawings. Please clarify?*

Response: Final determination of CIPP thickness for a particular segment of pipe will be made following CCTV review by the Engineer. CIPP thicknesses are not shown on the drawings.

3. *Question: •Does the owner have existing videos of the sewer lines to be CIPP lined?*

Response: There are no videos to be released.

4. *Question: •Can the CIPP warranty period be changed to the Standard 1-year?*

Response: Provide as specified.

5. *Question: •Will the owner accept Hydrotite as an approved equal for the LMK End Seals?*

Response: Provide as specified. Hydrotite is not an equivalent product to LMK End Seals.

6. *Question: •For the CIPP, will the owner accept air inversion and steam cure?*

Response: See specification section 33 01 30.73, Article 3.06 for inversion requirements.

END OF QUESTION AND RESPONSE NO. 1