REQUEST FOR PROPOSAL

for
Professional Consulting Engineering Services
for the
Snyder/Edgewood Area Storm Water Project
Final Design

RFP # 20-13

City of Ann Arbor
Public Services Area - Engineering

Due Date: February 26, 2020 by 2:00 p.m. (local time)

Issued By:

City of Ann Arbor
Procurement Unit
301 E. Huron Street
Ann Arbor, MI 48104

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SECTION I

GENERAL INFORMATION

A. OBJECTIVE

The City of Ann Arbor is seeking the services of a professional engineering firm to perform final design engineering of the preferred alternative to mitigate flooding that is occurring at, and in the vicinity of, the Snyder Avenue and Edgewood Drive intersection due to insufficiently sized existing storm sewer within this neighborhood.

The final design of this project will build upon the public engagement and preliminary design engineering performed in 2019 as part of the study phase of this project. The final design of the project shall include, but not be limited to; finalize all elements of the project's preferred alternative; provide final hydraulic analysis; review previously completed geotechnical investigations in the project area and complete any needed additional geotechnical investigation; final plan preparation activities including creation of all needed plan sheets, design details, traffic maintenance strategies to be implemented during the various construction stages of the project, developing and defining the anticipated construction sequence(s) to effectively construct the project; preparation of permanent easement and temporary grading permit legal descriptions; preparation of a complete set of contract documents; cost estimate preparation at specified stages of the project's final design; and, all other needed tasks to provide a work product that is 100% complete and ready for advertising and bidding through the City's Procurement Unit.

B. QUESTIONS AND CLARIFICATIONS / DESIGNATED CITY CONTACTS

All questions regarding this Request for Proposal (RFP) shall be submitted via e-mail. Questions will be accepted and answered in accordance with the terms and conditions of this RFP.

All questions shall be submitted on, or before, February 14, 2020 at 10:00 a.m., and should be addressed as follows:

Scope of Work/Proposal Content questions shall be e-mailed to Michael G. Nearing, P.E., Senior Project Manager, Engineering, MNearing@a2gov.org

RFP Process and Compliance questions shall be e-mailed to Colin Spencer, Buyer - CSpencer@a2gov.org

Should any prospective consultant be in doubt as to the true meaning of any portion of this RFP, or should the consultant find any ambiguity, inconsistency, or omission therein, the consultant shall make a written request for an official interpretation or correction by the due date for questions above.

All interpretations, corrections, or additions to this RFP will be made only as an official addendum that will be posted to a2gov.org and MITN.info and it shall be the consultant's responsibility to ensure they have received all addenda before submitting a proposal. Any addendum issued by the City shall become part of the RFP, and must be incorporated in the proposal where applicable.

C. PRE-PROPOSAL MEETING

A pre-proposal meeting will be held:

WHEN: Wednesday, February 12, 2020 at 3:00 p.m.
WHERE: City Hall Building, 6th Floor Conference Room
301 East Huron Street, Ann Arbor, Michigan 48107

The meeting is not mandatory; however, it is highly recommended that interested offerors attend the meeting. The purpose of this meeting is to discuss the project with prospective proposers and to answer any questions concerning RFP No. 20-13. Any questions and answers furnished in the pre-proposal meeting will not be official until verified in writing through an addendum.

D. PROPOSAL FORMAT

To be considered, each firm must submit a response to this RFP using the format provided in Section III. No other distribution of proposals is to be made by the consultant. An official authorized to bind the consultant to its provisions must sign the proposal in ink. Each proposal must remain valid for at least ninety days from the due date of this RFP.

Proposals should be prepared simply and economically providing a straightforward, concise, description of the consultant's ability to meet the requirements of the RFP. No erasures are permitted. Mistakes may be crossed out and corrected and must be initialed in ink by the person signing the proposal.

E. SELECTION CRITERIA

Responses to this RFP will be evaluated using a point system as shown in Section III. A selection committee comprised of staff from the City will complete the evaluation.

The fee proposals will not be reviewed at the initial evaluation. After initial evaluation, the City will determine top consultants, and open only those fee proposals. The City will then determine which, if any, firms will be interviewed. During the interviews, the selected firms will be given the opportunity to discuss their proposal, qualifications, past experience, and their fee proposal in more detail. The City further reserves the right to interview the key personnel assigned by the selected consultant to this project. If the City chooses to interview any respondents, the interviews will be tentatively held the **week of March 9, 2020**. The Consultants must be available on these dates.

All proposals submitted may be subject to clarifications and further negotiation. All agreements resulting from negotiations that differ from what is represented within the RFP or in the consultant's response shall be documented and included as part of the final contract.

F. SEALED PROPOSAL SUBMISSION

All proposals are due and must be delivered to the City on, or before, February 26, 2020 at 2:00 p.m. (local time). Proposals submitted late or via oral, telephonic, telegraphic, electronic mail or facsimile **will not** be considered or accepted.

Each respondent must submit in a sealed envelope

- **one (1) original proposal**
- **three (3) additional proposal copies**
- **one (1) digital copy of the proposal preferably on a USB/flash drive as one file in PDF format**

Each respondent must submit in a single separate sealed envelope marked Fee Proposal

- **two (2) copies of the fee proposal**

The fee proposal and all costs must be separate from the rest of the proposal.

Proposals submitted must be clearly marked: **"RFP No. 20-13 – Snyder/Edgewood Storm Water Project – Final Design**" and list the consultant's name and address.

Proposals must be addressed and delivered to:

City of Ann Arbor
c/o Customer Service
301 East Huron Street
Ann Arbor, MI 48107

All proposals received on, or before, the due date will be publicly opened and recorded on the due date. No immediate decisions will be rendered.

Hand delivered proposals must be date/time stamped by the Customer Service Department at the address above in order to be considered. Delivery hours are 8:00 a.m. to 5:00 p.m. Monday through Friday, excluding Holidays.

The City will not be liable to any consultant for any unforeseen circumstances, delivery, or postal delays. Postmarking on the due date will not substitute for receipt of the proposal. Consultants are responsible for submission of their proposal. Additional time will not be granted to a single consultant. However, additional time may be granted to all consultants at the discretion of the City.

A proposal will be disqualified if:

The forms provided as Attachment C - City of Ann Arbor Non-Discrimination Declaration of Compliance, Attachment D - City of Ann Arbor Living Wage Declaration of Compliance, Attachment E - Vendor Conflict of Interest Disclosure Form of the RFP Document must be included in submitted proposals.

Proposals that fail to provide these completed forms listed above upon proposal opening will be deemed non-responsive and will not be considered for award.

Please provide the forms outlined above (Attachments C, D and E) within your narrative proposal, not within the separately sealed Fee Proposal envelope.

All proposed fees, cost or compensation for the services requested herein should be provided in the separately sealed Fee Proposal envelope only.

G. DISCLOSURES

Under the Freedom of Information Act (Public Act 442), the City is obligated to permit review of its files, if requested by others. All information in a consultant's proposal is subject to disclosure under this provision. This act also provides for a complete disclosure of contracts and attachments thereto.

H. TYPE OF CONTRACT

A sample of the Professional Services Agreement is included as Appendix A. Those who wish to submit a proposal to the City are required to review the sample agreement carefully. **The City will not entertain changes to its Professional Services Agreement.**

The City reserves the right to award the total proposal, to reject any or all proposals in whole or in part, and to waive any informality or technical defects if, in the City's sole judgment, the best interests of the City will be so served.

This RFP and the selected consultant's response thereto, shall serve as a point of beginning for determining the final scope of services in the contract to be executed.

I. NONDISCRIMINATION

All contractors proposing to do business with the City shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the Section 9:158 of the Ann Arbor City Code. Breach of the obligation not to discriminate as outlined in Attachment C shall be a material breach of the contract. Contractors are required to post a copy of Ann Arbor's Non-Discrimination Ordinance attached at all work locations where its employees provide services under a contract with the City.

J. WAGE REQUIREMENTS

The attachments provided herein outline the requirements for payment of prevailing wages or of a "living wage" to employees providing service to the City under this contract. The successful consultant must comply with all applicable requirements and provide documentary proof of compliance when requested.

K. CONFLICT OF INTEREST DISCLOSURE

The City of Ann Arbor Purchasing Policy requires that the consultant complete a Conflict of Interest Disclosure form. A contract may not be awarded to the selected consultant unless and until the Procurement Unit and the City Administrator have reviewed the Disclosure form and determined that no conflict exists under applicable federal, state, or local law or administrative regulation. Not every relationship or situation disclosed on the Disclosure Form may be a disqualifying conflict. Depending on applicable law and regulations, some contracts may be awarded on the recommendation of the City Administrator after full disclosure, where such action is allowed by law, if demonstrated competitive pricing exists and/or it is determined the award is in the best interest of the City. A copy of the Conflict of Interest Disclosure Form is attached.

L. COST LIABILITY

The City of Ann Arbor assumes no responsibility or liability for costs incurred by the consultant prior to the execution of a Professional Services Agreement. The liability of the City is limited to the terms and conditions outlined in the Agreement. By submitting a proposal, consultant agrees to bear all costs incurred or related to the preparation, submission, and selection process for the proposal.

M. DEBARMENT

Submission of a proposal in response to this RFP is certification that the Respondent is not currently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from participation in this transaction by any State or Federal departments or agency. Submission is also agreement that the City will be notified of any changes in this status.

N. PROPOSAL PROTEST

All proposal protests must be in writing and filed with the Purchasing Manager within five (5) business days of the award action. The Consultant must clearly state the reasons for the protest. If a consultant contacts a City Service Area/Unit and indicates a desire to protest an award, the Service Area/Unit shall refer the consultant to the Purchasing Manager. The Purchasing Manager will provide the consultant with the appropriate instructions for filing the protest. The protest shall be reviewed by the City Administrator or designee, whose decision shall be final.

Any inquiries or requests regarding this procurement should be only submitted in writing to the Designated City Contacts provided herein. Attempts by the Offeror to initiate contact with

anyone other than the Designated City Contacts provided herein that the prospective Offeror believes can influence the procurement decision, e.g., Elected Officials, City Administrator, Selection Committee Members, Appointed Committee Members, etc., may lead to immediate elimination from further consideration.

O. SCHEDULE

The proposals submitted should define an appropriate schedule in accordance with the requirements of the Proposed Work Plan in Section III.

The following is the schedule for this RFP process.

Activity/Event	**Anticipated Date**
Written Question Deadline	February 13, 2020, 10:00 a.m.
Addenda Published (if needed)	February 17, 2020
Proposal Due Date	February 26, 2020, 2:00 p.m. (Local Time)
Tentative Interviews	Week of March 9, 2020
Selection/Negotiations	Completed by March 27, 2020
Expected City Council Authorizations	May 18, 2020 (tentative)

The above schedule is for information purposes only and is subject to change at the City's discretion.

P. IRS FORM W-9

The selected consultant will be required to provide the City of Ann Arbor an IRS form W-9.

Q. RESERVATION OF RIGHTS

1. The City reserves the right in its sole and absolute discretion to accept or reject any or all proposals, or alternative proposals, in whole or in part, with or without cause.
2. The City reserves the right to waive, or not waive, informalities or irregularities in any proposal if determined by the City to be in its best interest.
3. The City reserves the right to request additional information from any or all consultants.
4. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested within RFP.
5. The City reserves the right to determine whether the scope of the project will be entirely as described in the RFP, a portion of the scope, or a revised scope be implemented.
6. The City reserves the right to select one or more consultants to perform services.
7. The City reserves the right to retain all proposals submitted and to use any ideas in a proposal regardless of whether that proposal is selected. Submission of a proposal indicates acceptance by the firm of the conditions contained in this RFP, unless clearly and specifically noted in the proposal submitted.

8. The City reserves the right to disqualify proposals that fail to respond to any requirements outlined in the RFP, or failure to enclose copies of the required documents outlined within RFP.

R. ENVIRONMENTAL COMMITMENT

The City of Ann Arbor recognizes its responsibility to minimize negative impacts on human health and the environment while supporting a vibrant community and economy. The City further recognizes that the products and services the City buys have inherent environmental and economic impacts and that the City should make procurement decisions that embody, promote, and encourage the City's commitment to the environment.

The City encourages potential vendors to bring forward emerging and progressive products and services that are best suited to the City's environmental principles.

SECTION II

BACKGROUND AND SCOPE OF WORK

BACKGROUND

The neighborhood surrounding the Snyder and Edgewood Avenues intersection has experienced significant flooding during past rain events. This flooding has contributed to damaging at least one of the surrounding homes. The intersection of Snyder and Edgewood Avenues is a localized low point in the area and most storm water from north and west of the intersection flows to this area. The intersection then drains via a 42" storm sewer southerly towards the Pioneer High School site, is routed around the storm water quality system constructed by the Washtenaw County Water Resources Commission in 2011 and ultimately drains to a 54" storm sewer under S. Main Street to the east. This piping system is essentially the headwaters of the Allen's Creek storm water system that flows through the downtown area.

Attached, please find Attachment "A" which depicts the existing storm sewer system in this sub-watershed in additional detail.

The City of Ann Arbor previously completed a storm water modeling and analysis project entitled "Stormwater Analysis and Calibration Project" from 2012 through 2015. In this study, it was identified that the Snyder and Edgewood Avenues area is prone to flooding. The study identified three, potential, planning level, alternatives to mitigate flooding in the project area. The final version of this study is available for review as stated below.

The City of Ann Arbor has recently completed the public engagement, analysis, and preparation of approximately 30% complete preliminary plans and cost estimate for the Preferred Alternative that was selected upon rigorous analysis and study of ten potential options for mitigating the existing flooding that occurs at this location.

The chosen Consultant shall review the preliminary plans and cost estimates and make written recommendations for modification(s) if they believe that they are warranted or necessary in order to properly complete the project's design and create a successful project that meets or exceeds all project objectives. The work products developed as part of the preliminary design phase of the project will be made available to the chosen Consultant for this purpose.

In addition to the above referenced materials, the City of Ann Arbor currently has the following information and/or tools available to assist the selected Consultant in the work of this project. They are:

- A calibrated InfoSWMM (EPA SWMM 5.0) Storm Water Model covering the entire city;
- For the purposes of this project, the storm water model created as part of the preliminary engineering exercise shall be used and further refined to accurately reflect and predict the local conditions of the project area upon implementation of the completed final design;
- Five rain gauges located throughout the city;
- Stormwater Model Calibration and Analysis Project Final Report (2012-2015);

- Flow monitoring and rain data from the Stormwater Model Calibration Project and the Preliminary Engineering Phase of this project;
- As-built plans for adjacent public streets, water mains, storm and sanitary sewers;
- Available City GIS Layers (available via mapAnnArbor as noted):
    - 2-foot contours (LiDAR Based)
    - Wetlands
    - Woodlands
    - Aerial Photography (1947, 1993, 1997, 2002, 2006, 2009, 2012, 2015, and 2018)
    - Sanitary/Stormwater/Water Systems
    - Soil Survey
    - Historical Soil Boring Records since 2006
    - Impervious and Pervious Areas - 2009, 2012 data
- City Rainfall data;
- Historical flood complaint reports;
- Other relevant information may be available upon request.

Note, the existing Allen's Creek storm water conveyance system downstream of the project area is severely over capacity. As part of the work of this project, it will be necessary to not only understand the storm water conveyance system that serves the Snyder/Edgewood Avenues area, but also the Allen's Creek system. An important goal of this project will be to assess improvements to the Snyder/Edgewood Avenues area in terms of their potential impact to the Allen's Creek conveyance system as well. Adverse impacts that further exacerbate existing issues within the Allen's Creek Storm Water Conveyance System are to be avoided. The Allen's Creek storm water system is owned and operated by the Washtenaw County Water Resources Commission (WCWRC.) The WCWRC will be an important project stakeholder and thought leader in the final design and implementation of this project.

Also note, although the preliminary engineering phase of this project has selected a Preferred Alternative, the City of Ann Arbor **has not** begun the needed discussions in earnest, nor formalized agreements, to use the lands of the Ann Arbor Public Schools to implement the preferred alternative or to enter upon them. The City of Ann Arbor expects to be performing these discussions simultaneously during the final design engineering in order to expedite the project and its implementation. Potential consultants are expected to be discrete in any inquiries they may make as part of the preparation of a proposal.

In summary, it is the objective of this final engineering exercise to finalize the preliminary engineering plans and hydraulic analysis that have been previously developed in order to mitigate the flooding issues that occur at the Snyder and Edgewood Avenues area, perform all needed geotechnical investigations, prepare 100% complete construction plans and specifications, cost estimates, legal descriptions, construction contract documents, and any and all other needed deliverables in order to complete the final design and ready the project for advertising and bidding through the City's Procurement Unit.

A standard, written, City of Ann Arbor Non-disclosure Agreement must be executed by the selected consultant and all sub-consultants for the work of this project.

SCOPE OF WORK

The City of Ann Arbor expects that the construction of this project will begin in mid- to late-November 2022, continue into Spring/Summer 2023, and be completed and the areas restored and fully open to use by the first U of M Home Football Game in 2023. Due to the anticipated construction and the expected level of disturbance, temporary restoration of the project's worksite may be needed in order to allow the use of the area for game day parking and other similar uses with final restoration completed by late Summer 2024. The final schedule of the restoration that is contained within the construction contract and use of the project work site is, of course, subject to negotiations with the Ann Arbor Public Schools and is to be determined and finalized at a later date. The chosen Consultant is expected participate in these discussions and adapt the project plans and contract documents to reflect the final results of the negotiations with the Ann Arbor Public Schools.

All improvements shall be designed in accordance with the applicable City of Ann Arbor, WCWRC, MDEQ, ADA, and any other relevant standards.

We are now seeking proposals from qualified professional engineering consulting firms to provide the necessary hydraulic analysis and design services for the preparation of plans and cost estimates developed to a 100% complete level (final construction plans and contract documents) to allow the City of Ann Arbor to move forward with the advertisement and bidding of the of the project through the City's Procurement Unit as described earlier in this document.

In general, the following items shall need to be addressed by the consulting firm in accordance with Section III of this request, the project schedule detailed in Section I, General Information, Sub-section O, and the aforementioned construction timeline.

1. The Lead Consultant shall manage all aspects of the project design up to the completion of the final plans, specifications, and cost estimate for the project. This includes, but is not limited to; managing all aspects of the project, including the work and work product of all sub-consultants and project coordination with all affected agencies. The Consultant Project Manager must ensure the timely and cost-effective delivery of the project design, as well as provide oversight and thorough and complete review of all project deliverables. The Consultant Project Manager will be responsible for the overall review and coordination of the deliverable documents in order to ensure preparation of plans that are seamless, detailed, thorough, accurate, and meet all the requirements of the City of Ann Arbor and all appropriate oversight agencies.

2. The Consultant shall propose and devise public awareness strategies throughout the course of the project that includes information sharing on a neighborhood level, but is also aware of, and sensitive to, the city-wide financial impacts that this project could have on city funding streams. The plan proposed by the Consultant needs to accommodate both sets of interests in a sensitive and engaged manner. The proposed plan shall include, but not be limited to, two (2) public meetings, one near the commencement of final design activities and one near the end of final design to share the major elements of the project's design, expected impacts, project schedule, and all other relevant project information; stakeholder meetings; graphics

illustrating the nature and pros and cons of the preferred alternative; project webpage content development to be hosted by the City; webpage updates at regular intervals during the project's lifespan; e-mails; and, other information sharing techniques as proposed by the Consultant team. The Consultant must effectively communicate the purpose and the benefits of the preferred alternative in order to adequately depict the major issues associated with the overall project design with the public and the stakeholders and assist with all necessary negotiations with the affected property owners and public and private agencies.

3. Utilize the previously completed, detailed, ground survey of the entire construction influence area associated with the Preferred Alternative. This survey may be augmented by aerial photography, LiDAR, and other surveying and data gathering techniques should the chosen consultant decide it is necessary in order to properly complete the project. The chosen consultant shall review the completed topographic survey and **ensure** that the following items are completed and contained within the survey for the project at, or near, the beginning of final design activities.

   The Consultant shall, at a minimum, provide the following items in their ground survey for the Preferred Alternative:

   - locate all trees 6" in diameter or greater and provide their genus, cultivar (if applicable), and health breakdown;
   - locate all cultural features within the requested survey boundaries;
   - provide a survey with 1' contour intervals;
   - locate all "breaklines" and other features as necessary to develop accurate contours;
   - provide detailed spot elevations at all existing sidewalk and sidewalk ramp areas;
   - provide all survey work to national map accuracy standards;
   - <u>establish and define</u> the existing Right-of-Way of Snyder and Edgewood Avenues, W. Stadium Boulevard, and S. Main Street, as well as all streets and intersecting cross-streets that are affected by the project's proposed construction;
   - coordinate with City of Ann Arbor personnel such that the appropriate title work and appraisals can be obtained for the purposes of right-of-way and grading permit acquisition (the City of Ann Arbor will obtain the needed title work and appraisals required for the project);
   - locate all existing property irons and monuments within the survey limits; and,
   - precisely locate existing public and private utilities.

   All survey work shall be performed in accordance with the City of Ann Arbor Public Services Area's Standards and its Geodetic Control Manual. The Consultant shall complete and submit the City's Survey Package Submittal Checklist upon completion of all needed additional survey work for the City's review and approval.

4. The Consultant shall utilize Innovyze (formerly MWH Soft) InfoSWWM Software for all modeling and analysis. It is the intent of this project that the existing storm water model created during the preliminary engineering phase of this project shall be used and further refined and calibrated to more accurately reflect and predict the local conditions of the project area upon completion of the preferred alternative's construction. At the conclusion of the project, the Consultant shall provide the City with a "merged" data set of their model modifications with the existing City InfoSWWM model and provide it to the City for their future use.

5. The target design storm that the chosen Consultant shall utilize in the design of this project is a 10-year, 12-hour duration storm as described in the City of Ann Arbor Public Services Area Standard Specifications.

6. The Consultant shall be responsible for the preparation of a complete set of Contract Documents and all required specifications meeting the complete satisfaction of the City of Ann Arbor. This will include unique pay items that properly detail all required work to be performed by the Contractor so that City of Ann Arbor Standards and/or best management practices are followed in all areas of the proposed work. The City reserves the right of final determination regarding specific items of work and if detailed specifications will be required to satisfactorily detail and describe the work.

   Due to the expected cost of this project, the Consultant shall also provide the needed resources to create up to three (3) intermediate cost estimates at major milestone dates of the project's design in order to allow the City to make informed decisions with regard to the project's scope and direction.

   The City of Ann Arbor currently has a library of detailed specifications that can be used and will form the nucleus of the specifications to be utilized as part of the final design of this project.

   The Consultant(s) shall prepare and submit to the City for review a list of all needed permit applications required to perform the construction of the Preferred Alternative.

7. Identify potential limits on construction methods and practices (such as identifying potential staging areas, limits of where construction activity can, or cannot, occur in the surrounding area, potential amounts of excavated materials that can be safely placed upon the existing box culvert storage system owned by the WCWRC, University of Michigan property that is "off-limits" to the Contractor, roads/bridges that are not to be used by the contractor, etc.)

8. Review existing geotechnical investigations and perform a supplemental, complete, detailed, geotechnical evaluation and analysis to determine the properties of the existing soils throughout the construction influence area for the purposes of evaluating all sub-surface soil conditions for designing underground storm water detention and infiltration facilities, roadways to be repaired upon completion of the needed underground utility construction, and all other project elements.

   The geotechnical evaluation shall provide, at a minimum; estimates of the soil's resilient modulus of subgrade reaction (M_r) on the subgrade soils of roadways that are disturbed as part of the project's construction; estimates of the soil's permeability and infiltration capacity to be used in the design of storm water systems; determination of existing ground water elevations; and any other information that is necessary to effectively design and detail the project as required.

9. Gather and review information pertaining to existing public and private utilities and determine the precise location, both horizontally and vertically, of all existing utilities. Obtain record drawings from the private utility companies. Coordinate all aspects of the proposed work with

the private utility companies. Where critical crossings of utilities are believed to exist, or the elevation(s) of existing utilities may significantly affect the design, or relocation, of utilities, roadways, and the like, test holes shall be dug to determine the precise location, both horizontally and vertically, of these points. The Consultant shall arrange for these test holes to be dug and shall make arrangements to have the necessary inspection and survey personnel on hand to observe, locate, and verify the results of each excavation.

10. All plan sheets shall be drawn and prepared in accordance with the City of Ann Arbor Public Services Area Drafting Standards. All scales shall be approved by City of Ann Arbor Engineering. The format of the drawings shall be completely compatible with the City's drawing preparation standards and layout(s). The City is using AutoCAD 2020 Civil 3D and it is expected that all drawings will be provided in a compatible format without the need to reconfigure drawings for plotting or other purposes. The City of Ann Arbor shall be provided with one portable flash drive containing all drawings, specifications, and cost estimates upon completion of the project's design.

11. Depending upon the chosen underground storm water storage and infiltration system, the Consultant shall perform the needed structural analysis to ensure that the chosen system is capable of safely carrying all imposed construction, dead, live, and hydraulic load induced upon the chosen system. This structural analysis shall also include potential surcharge loads from excavated soils that could be placed upon the existing WCWRC underground system of box culverts located immediately adjacent to the preferred alternative.
12. The Consultant shall propose a maintenance of traffic plan(s) for the construction operations and make recommendations to the City as part of their work. The maintenance of traffic strategies and resulting plans shall take into account constructability concerns, continuous maintenance of pedestrian and bicycle traffic, ADA needs and requirements, any needed vehicular and pedestrian detour routes, and all other relevant factors in order to create a safe and orderly construction project. The proposed closure of any streets must be approved by the City prior to traffic maintenance strategies and plans being prepared and developed.
13. Prepare pavement marking and permanent signing plans to ensure safety of motorists and pedestrians. This shall include the re-striping of any streets affected by project detour routes.
13. Prepare visual aids and attend at least two public meetings to coordinate the design of the project with the affected residents and project stakeholders, other City Departments, City Council, and other formal and informal committees.
14. Prepare all plans necessary to meet pertinent City of Ann Arbor requirements at a 100% level of completion. For example, plans that could be necessary pursuant to the completion of the work include, but are not limited to; Natural Features Protection Plans; Soil Erosion and Sediment Control Plans; Grading; Landscaping; Planting; and, all other plans needed to satisfy city ordinances, codes, best management practices, and the like. These requirements can be found in Chapters 57 and 60 of the City of Ann Arbor Code of Ordinances. The requirements of the City of Ann Arbor Code of Ordinances shall take precedence over all other MDOT and affected governmental agencies standard practices. In case a conflict arises between the various governmental agencies and City of Ann Arbor Standards, the City shall determine which standard(s) are to be followed.

15. Identify and prepare exhibit drawings for all easements and grading permits that will be required to construct the Preferred Alternative. This is to include technical assistance and preparation of the exhibit drawings in an 8½" x 11" format, as required and directed by the City. It is expected that the areas where the expected grading permits and easements are necessary will be determined as the design of the project progresses.
16. Coordinate all elements of the design with all affected parties, including, but not limited to; the WCWRC; MDEQ; various City Departments; University of Michigan; Ann Arbor Public Schools; private utility companies; other formal and informal committees; and, the public in general.
17. Schedule and chair design progress meetings to be held on a monthly basis. This is to include a design kick-off meeting in which all affected parties to the design will be contacted and invited to attend. Prepare and distribute typed meeting minutes for all progress and coordination meetings.
18. Any other items that the Consultant feels are necessary to complete the work as detailed in this request for proposal.

Design Details

In general, the Consultant shall prepare to City of Ann Arbor Standards plan and profile sheets at a horizontal scale of 1"=20' and a vertical scale of 1=2' for all work. This shall include, but not be limited to, water main, storm sewer, and roadway plans. Other plans, such as utility enlargement plans, traffic control drawings; typical cross-sections, cross-sections, details, etc. shall be drawn at scales as approved by the City in order to properly complete the work of the project. The following is a brief overview of the major or critical elements of the work:

1. Drainage - Provide enclosed conduit drainage systems, storm water infiltration devices, storm water quality units (Vortechnics or similar product) and/or storm water detention facilities in order to adequately convey, store, and infiltrate the chosen storm water event.

2. General Design Standards - Incorporate the City of Ann Arbor Public Services Department Standard Specifications (current edition); WCWRC Standards; 2012 MDOT Standard Specifications for Construction; EGLE Permitting regulations; ADA accessibility standards; and, the City of Ann Arbor Code of Ordinances.

3. Water main(s), Sanitary Sewer(s), and Storm Sewer(s) - The design of any proposed or relocated facility shall be designed in accordance with the City of Ann Arbor, Public Services Area, Standard Specifications and as directed by the City.

4. Roadway and Sidewalk Replacement Plans - All roadway and sidewalk replacements shall be detailed to a 100% plan completion level that includes roadway centerline elevations, curb elevations as measured at the edge of metal, roadway longitudinal and transverse grades, sidewalk and sidewalk ramp spot elevations, and longitudinal and transverse grades, any other large miscellaneous paved areas, and other areas as directed by the City.

These drawings shall be drawn at scales as approved by the City, but in no case shall they be smaller than 1" = 20'.

These drawings shall take into consideration the effects of "part-width" construction on streets (if necessary) and shall be adequately dimensioned to allow key elevations, or dimensions, to be obtained without calculation.

5. Soil Erosion, Grading, Tree Planting, Natural Features Protection Plans, and other miscellaneous Plans - These plans shall be prepared to a 100% plan completion level in accordance with the appropriate Chapters of the City of Ann Arbor Code of Ordinances, and as approved by the Project Manager and/or the appropriate City Departments.

6. Soil Investigation - The Consultant shall employ a qualified geotechnical engineer to perform a detailed, comprehensive, soil investigation, the cost of which shall be detailed separately in the proposal. Soil borings shall be taken at frequencies as determined by the Consultant, and as agreed to by the City, all as necessary to ensure an adequate representation of site soil conditions, expected water table depth, and anticipated limits and depths of **permeable soils**.

   The Consultant shall prepare a soil boring plan which details the location and depth of each soil boring planned to be taken. The depth of all soil borings shall be approved by the City. All soil borings shall be performed to a depth of at least 5' below any proposed structure or utility.

   Based on the soil investigation, the Consultant shall provide the City with recommendations as to the expected permeability of the roadway and site soils for the purpose of designing the storm water mitigation measures and roadway pavements to the extent necessary.

   All traffic control required to perform the soil borings and all related work shall be in accordance with the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) and the City of Ann Arbor Design Standards. The Consultant shall also be responsible for coordinating this work with the Miss-Dig network a minimum of 3 working days in advance of any underground activities. **The costs associated with providing traffic control plans and obtaining the necessary permits, shall be included in the proposal.** The City of Ann Arbor will waive the City of Ann Arbor permit fees associated with this work.

   All findings produced as part of the soil investigation shall be provided in a bound report and made available for review and comment by the City. The geotechnical sub-consultant shall be available to discuss in detail the report and its findings and respond to written comments regarding the report.

7. Pavement Structural Design - The replacement pavement(s) shall be designed in accordance with the "Guide for Design of Pavement Structures" as published by AASHTO

and the City of Ann Arbor Design Standards. The pavements shall be designed for a service life of 20 years.

8. Maintenance of Traffic - The construction of the roadways and utilities associated with this project will be performed under traffic. Provide maintenance of traffic strategies that follow the requirements of the Michigan Manual of Uniform Traffic Control Devices (MMUTCD) and the City of Ann Arbor. The traffic control plans shall be prepared with the intent of ensuring the efficient, safe, and orderly maintenance of vehicular, pedestrian, and bicycle traffic throughout the project and around the construction staging areas at all times.

   A minimum of one lane of vehicular traffic in each direction shall be maintained along S. Main Street and W. Stadium Boulevard within the limits of construction at all times. Pedestrian traffic along one side of the roadway and access to all properties shall be maintained at all times. Work restrictions will be required for the Ann Arbor Street Art Fairs, University of Michigan events such as home football and basketball games, commencement exercises, and other events. The construction operations must carefully consider these events during the preparation of these plans.

9. Right-of-Way Requirements - Identify and prepare exhibit drawings and metes and bounds legal descriptions for all easements and grading permits that will be required to construct the Preferred Alternative. This is to include technical assistance and preparation of the exhibit drawings in an 8½" x 11" recordable format, as required and directed by the City. The areas where the expected grading permits and easements are necessary will be determined as the design of the project progresses.

10. Coordination of Design - The Consultant shall coordinate all elements of the design with all affected parties, including, but not limited to; MDEQ, various City Departments, University of Michigan, WCWRC, Private Utility Companies, other formal and informal committees, and the public in general.

11. Monthly Progress Mtgs./Meeting Attendance - Schedule and chair design progress meetings to be held on a monthly basis. This is to include a design kick-off meeting in which all parties affected by the design and construction of the project are invited to attend. Prepare and distribute typed meeting minutes for all progress and coordination meetings.

INFORMATION AVAILABLE

The completed preliminary design of the project completed to an approximate 30% level is available for review as part of this request. The project's public engagement and public meeting is available on the project's webpage that can be found at the following address:

https://www.a2gov.org/departments/engineering/Pages/Synder-Edgewood-Stormwater-Improvement-Project.aspx

Record drawings of the existing roadways, existing public underground utilities including storm and sanitary sewers within the anticipated limits of the project, quarter section drawings detailing the locations of the existing water mains in, and around, the project area, historic soil boring and

geotechnical investigations within the anticipated project area, and previous utility construction projects are available for review and copying.

Consultant's Proposal

In keeping with the objective, the description, the requirements, and the Consultant's tasks as previously indicated in this Request for Proposal, the Consultants submitting proposals shall outline in detail the manner in which the consultant shall work with the City to fulfill the City's needs.

The outline at a minimum shall address:

A. Staffing and personnel.
B. Communication and coordination.
C. Compatibility with city's standards, goals, and objectives.
D. Working relationship between Consultant and City staff.
E. Information which will assist the City to determine the consultant's capability of performing the work.

SECTION III

MINIMUM INFORMATION REQUIRED

PROPOSAL FORMAT

Consultants should organize Proposals into the following Sections:

A. Professional Qualifications
B. Past Involvement with Similar Projects
C. Proposed Work Plan
D. Fee Proposal (include in a separate sealed envelope clearly marked "Fee Proposal")
E. Authorized Negotiator
F. Attachments

The following describes the elements that should be included in each of the proposal sections and the weighted point system that will be used for evaluation of the proposals.

A. Professional Qualifications – 20 points

1. State the full name and address of your organization and, if applicable, the branch office or other subsidiary element that will perform, or assist in performing, the work hereunder. Indicate whether it operates as an individual, partnership, or corporation. If as a corporation, include whether it is licensed to operate in the State of Michigan.

2. Include the name of executive and professional personnel by skill and qualification that will be employed in the work. Show where these personnel will be physically located during the time they are engaged in the work. Indicate which of these individuals you consider key to the successful completion of the project. Identify only individuals who will do the work on this project by name and title. Resumes and qualifications are required for all proposed project personnel, including all subcontractors. Qualifications and capabilities of any subcontractors must also be included.

3. State history of the firm, in terms of length of existence, types of services provided, etc. Identify the technical details that make the firm uniquely qualified for this work.

B. Past involvement with Similar Projects – 30 points

The written proposal must include a list of specific experience in the project area and indicate proven ability in implementing similar projects for the firm **and** the individuals to be involved in the project. A complete list of client references must be provided for similar projects recently completed. It shall include the firm/agency name, address, telephone number, project title, and contact person.

C. Proposed Work Plan – 40 points

Provide a detailed and comprehensive description of how the Consultant intends to provide the services requested in this RFP. This discussion shall include, but not be limited to: how the project(s) will be managed and scheduled, how and when data will be delivered to the City, specific description of the tasks and sub-tasks to be performed, anticipated deliverables, expected deliverable dates, communication and coordination, the expected working relationship between the consultant and City staff, and the company's general philosophy in regards to providing the requested services.

Consultants shall be evaluated on the clarity, thoroughness, and content of their responses to the above items.

D. Fee Proposal - 10 points

Fee schedules shall be submitted in a separate, sealed, envelope as part of the proposal. Fee quotations are to include the names, title, hourly rates, overhead factors, profit (fee) and any other relevant details of all individuals that are to be engaged in the work. The proposal should highlight key staff and positions that would likely be involved with the project. Consultants shall be capable of justifying the details of the fee proposal relative to personnel costs, overhead, how the overhead rate is derived, anticipated profit, materials and time.

E. Authorized Negotiator

Include the name, phone number, and e-mail address of persons(s) in your organization authorized to negotiate the agreement with the City

F. Attachments

Legal Status of Consultant, Conflict of Interest Form, Living Wage Compliance Form, and the Non-Discrimination Form must be completed and returned with the proposal. These elements should be included as attachments to the proposal submission.

PROPOSAL EVALUATION

1. The selection committee will evaluate each proposal by the above-described criteria and point system (A through C) to select a short-list of firms for further consideration. The City reserves the right to reject any proposal that it determines to be unresponsive and deficient in any of the information requested for evaluation. A proposal with all the requested information does not guarantee the proposing firm to be a candidate for an interview. The committee may contact references to verify material submitted by the consultants.

2. The committee then will schedule interviews with the selected firms if necessary. The selected firms will be given the opportunity to discuss in more detail their qualifications, past experience, proposed work plan and fee proposal.

3. The interview must include the project team members expected to complete a majority of work on the project, but no more than six members total. The interview shall consist of a presentation of up to thirty minutes (or the length provided by the committee) by the consultant, including the person who will be the project manager on this contract, followed by approximately thirty minutes of questions and answers. Audiovisual aids may be used during the oral interviews. The committee may record the oral interviews.

4. The firms interviewed will then be re-evaluated by the above criteria (A through D), and adjustments to scoring will be made as appropriate. After evaluation of the proposals, further negotiation with the selected firm may be pursued leading to the award of a contract by City Council, if suitable proposals are received.

The City reserves the right to waive the interview process and evaluate the consultants based on their proposals and fee schedules alone and open fee schedules before or prior to interviews.

The City will determine whether the final scope of the project to be negotiated will be entirely as described in this RFP, a portion of the scope, or a revised scope.

Any proposal that does not conform fully to these instructions may be rejected.

PREPARATION OF PROPOSALS

Proposals should have no plastic bindings, but will not be rejected as non-responsive for being bound. Staples or binder clips are acceptable. Proposals should be printed double sided on recycled paper. Proposals should not be more than 30 sheets (60 sides), not including required attachments and resumes.

Each person signing the proposal certifies that he or she is the person in the consultant's firm/organization responsible for the decision as to the fees being offered in the Proposal and has not and will not participate in any action contrary to the terms of this provision.

ADDENDA

If it becomes necessary to revise any part of the RFP, notice of the addendum will be posted to Michigan Inter-governmental Trade Network (MITN) www.mitn.info and/or the City of Ann Arbor web site www.A2gov.org for all parties to download.

Each consultant must acknowledge in its proposal all addenda it has received. The failure of a consultant to receive or acknowledge receipt of any addenda shall not relieve the consultant of the responsibility for complying with the terms thereof. The City will not be bound by oral responses to inquiries or written responses other than official written addenda.

SECTION IV

ATTACHMENTS

Attachment A – Generalized Snyder-Edgewood Avenues Storm Sewer System Layout

A.1 – Completed 30% design plans and cost estimate
A.2 – Hydraulic Analysis Memorandum from the preliminary design

Attachment B - Legal Status of Respondent

Attachment C – Non-Discrimination Ordinance Declaration of Compliance Form

Attachment D – Non-Discrimination Ordinance Poster

Attachment E - Living Wage Declaration of Compliance Form

Attachment F – Living Wage Ordinance Poster

Attachment G – Vendor Conflict of Interest Disclosure Form

Appendix A - Sample Professional Services Agreement

ATTACHMENT "A"

NOTE:
SANITARY SEWERS AND WATER MAINS HAVE BEEN OMITTED FROM THIS DRAWING FOR CLARITY

N

Sherwood St
Arbordale St
Northwood St
Russett Rd
Redeemer Ave
Hewett Dr
Mt Pleasant Ave
W Davis Ave
Fifth St
Hutchins Ave
Edgewood Pl
Edgewood
Third St
S First St
Wilder Pl
W Hoover Ave
E Hoover Av
Myron Ct
Pauline Blvd
Kay Pkwy
Arella Blvd
Meadowbrook Ave
Ardmoor Ave
Clague Ave
Algonac Ave
Casey Cres
Van Dusen Dr
Keech Ave
W Keech Ave
Potter Ave
Edgewood Ave
Belmar Pl
Chapel Ct
Martha Ave
Naples Ct
Birk Ave
Franklin Blvd
Berkley Ave
Prescott Ave
Snyder Ave
Stadium Ct
W Stadium Blvd
E Stadium Bl
Westfield Ave
Maywood Ave
Greenview Dr
Marian Ave
Kirtland Dr
Woodland Dr
S Seventh St

FOR TERMS AND CONDITIONS OF THIS MAP, PLEASE SEE WWW.A2GOV.ORG/TERMS FOR MORE INFORMATION.

CITY OF ANN ARBOR ENGINEERING

3:56:25 PM 4/26/2018

811

STATE LAW ACT 174
3 WORKING DAYS
BEFORE YOU DIG
DIAL TOLL FREE
1-800-482-7171 OR 811

SNYDER AND EDGEWOOD AVENUES AREA STORM WATER IMPROVEMENTS PROJECT

GENERAL STORM SEWER SYSTEM DIAGRAM

FILE NO. 2018-034 SCALE: 1" = 300'

4/26/2018

CITY OF ANN ARBOR MICHIGAN

City of Ann Arbor

ATTACHMENT A.1

30% COMPLETE PLAN SET

CITY OF ANN ARBOR
PROJECT MANAGEMENT

SNYDER - EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENTS PROJECT

NOTES:

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, THE CONTRACTOR SHALL CALL 811 OR 1-800-482-7171 A MINIMUM OF THREE FULL WORKING DAYS, EXCLUDING SATURDAYS, SUNDAYS, AND HOLIDAYS PRIOR TO BEGINNING EACH EXCAVATION IN AREAS WHERE PUBLIC UTILITIES HAVE NOT BEEN PREVIOUSLY LOCATED. MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS, TELEPHONE, ELECTRICAL POWER, CABLE TV AND FIBER OPTIC LINES ARE APPROXIMATE. THE CITY OF ANN ARBOR ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFIRM TO THE 1994 EDITION OF THE CITY OF ANN ARBOR PUBLIC SERVICES DEPARTMENT STANDARD SPECIFICATIONS, ITS DETAILS, WHICH ARE INCLUDED BY REFERENCE, AND THIS PROJECT'S CONTRACT DOCUMENTS. THE OMISSION OF ANY CURRENT STANDARD DETAIL DOES NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THESE REQUIREMENTS.

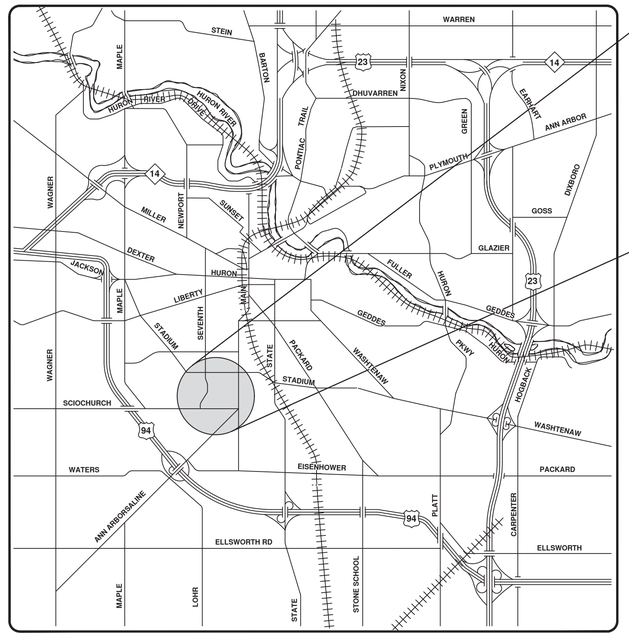
TRAFFIC DATA						
SEGMENT	2020 ANNUAL DAILY TRAFFIC (ADT)	2040 ADT	2020 % COMMERCIAL	2040 % COMMERCIAL	POSTED SPEED	DESIGN SPEED
EDGEWOOD AVE.	X	X	X	X	25 MPH	30 MPH
SNYDER AVE.	X	X	X	X	25 MPH	30 MPH
W. STADIUM BLVD.	X	X	X	X	35 MPH	40 MPH

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
1	COVER SHEET
2	LEGEND
3	NOTES
4-6	PROPOSED TYPICAL SECTIONS
7	WITNESSES AND BENCHMARKS
8-10	RIGHT OF WAY
11	PHS EXCAVATION STOCKPILE AREA
12	PAVING DETAILS
13-15	PAVING
16-20	UTILITY DETAILS
21-34	UTILITIES - STORM SEWERS
35-38	UTILITIES - WATER MAIN
39-47	SOIL BORINGS

STANDARD PLANS		
CONSTRUCTION OF THE FOLLOWING ITEMS, WHERE CALLED FOR ON THE PLANS, WILL BE CONSTRUCTED ACCORDING TO MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD PLANS AS INDICATED.		
REQUIRED ON THIS PROJECT	ITEM OF WORK	STANDARD PLAN NUMBERS
x	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS	R-28-J*
x	SOIL EROSION & SEDIMENTATION CONTROL MEASURES	R-96-E
x	GRADING CROSS-SECTIONS	R-105-D
TRAFFIC AND SAFETY STANDARD PLANS		
x	GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS	WZD-100-A*
x	TEMPORARY TRAFFIC CONTROL DEVICES	WZD-125-E*
x	LONGITUDINAL LINE TYPES AND PLACEMENT	PAVE-905-B

* SPECIAL DETAIL LOCATED IN PROPOSAL

FINAL DESIGN PLANS TO INCLUDE SESC AND LANDSCAPE/RESTORATION PLANS INCLUDING TREE PROTECTION DETAILS.



VICINITY MAP

NORTH

PROJECT MANAGEMENT SERVICE UNIT

NICHOLAS HUTCHINSON, P.E. - MI LICENSE No. 46789
CITY ENGINEER

/ /2019
DATE

ENGINEER'S SEAL

PREPARED UNDER THE SUPERVISION OF

MICHAEL G. NEARING, P.E. - MI LICENSE No. 6201038748
SENIOR PROJECT MANAGER

/ /2019
DATE

ENGINEER'S SEAL

fishbeck
Engineers | Architects | Scientists | Constructors

ANDREW KILPATRICK, P.E. - MI LICENSE No. 6201050984
PROJECT MANAGER

/ /2019
DATE

ENGINEER'S SEAL

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734.794.6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENTS PROJECT
INCLUDED WORK: STORM SEWER IMPROVEMENTS, WATER MAIN REPLACEMENT, UNDERGROUND BASIN CONSTRUCTION, ROAD RECONSTRUCTION, AND SIDEWALK UPGRADES

SCALE

DRAWING No. 2018-034-CS

SHEET No. 1 OF 47

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENTS PROJECT; 2018-034

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-C.dwg — _a2 standard bw.stb — Plot Date: 1/27/2020 7:34:58 AM

EXISTING LEGEND

- FIRE HYDRANT
- GATE VALVE IN BOX
- GATE VALVE IN WELL
- STOP BOX
- WATER VAULT
- WELL
- CATCH BASIN (SQ)
- CATCH BASIN (RD)
- STORM MANHOLE
- NON-CURB CATCH BASIN (SQ)
- END SECTION
- SANITARY MANHOLE
- CLEAN-OUT
- POST
- PEDESTRIAN SIGNAL
- SIGN
- HAND HOLE
- ORNAMENTAL LIGHT
- FLOOD LIGHT
- UNKNOWN MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE RISER
- GAS VALVE
- GAS VENT
- GAS BOX
- ELECTRICAL RISER
- TRANSFORMER
- UTILITY POLE
- LAMP POLE
- GUY ANCHOR
- GUY POLE
- MONITORING WELL
- MAILBOX
- SOIL BORING
- TRAVERSE POINT
- BENCH MARK
- IRON PIPE
- MON BOX

- WATER MAIN (w)
- STORM SEWER (r)
- SANITARY SEWER (s)
- GAS MAIN (g)
- ELECTRICAL OVER HEAD
- ELECTRICAL UNDER GROUND
- ELECTRICAL DUCT BANK (e duct bank)
- TELEPHONE OVER HEAD (oht)
- TELEPHONE UNDER GROUND (t)
- TELEPHONE DUCT BANK (t duct bank)
- CABLE TV OVER HEAD (ohtv)
- CABLE TV UNDER GROUND (tv)
- FIBER OPTIC (fo)
- FIBER OPTIC DUCT BANK (fo duct bank)
- BOUNDARY
- BUILDING
- CENTERLINE OF DITCH
- CENTERLINE/CROWN OF ROAD
- CONTOUR MAJOR (800)
- CONTOUR MINOR (799)
- EDGE OF WATER
- FLOODPLAIN
- FENCE
- GRAVEL
- GUARDRAIL
- STONE WALL
- R.O.W.
- TREELINE
- WETLAND
- EDGE OF BRUSH
- HEDGE
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)
- SHRUB (DECIDUOUS)
- STUMP

PROPOSED LEGEND

- HYDRANT (PLAN)
- WATER GATE WELL
- REDUCER
- WATER GATE VALVE
- WATER STOP BOX
- WATER VAULT
- INLET
- DOUBLE INLET
- INLET JUNCTION CHAMBER
- ROUND CATCH BASIN
- STORM MANHOLE
- DRAIN ARROW
- FLARED END SECTION
- SANITARY MANHOLE
- CLEAN-OUT
- BARREL
- SIGN
- PUSH BUTTON
- HAND HOLE

- WATER MAIN (W)
- STORM SEWER (R)
- SANITARY SEWER (S)
- FIBER OPTIC CONDUIT
- ELECTRICAL (E)
- CENTERLINE OF DITCH
- CENTERLINE OF ROAD
- FENCE
- GRAVEL
- SILT FENCE
- PROTECTIVE FENCE
- GUARDRAIL
- LOT/UNIT
- CURB
- TEMPORARY GRADING PERMIT
- CONTOUR MAJOR (800)
- CONTOUR MINOR (799)
- WATER EASEMENT
- STORM EASEMENT
- SANITARY EASEMENT
- R.O.W.
- LIMITS OF CONSTRUCTION
- LIMIT OF GRADING
- STONE WALL
- DETECTABLE WARNING
- ASPHALT
- CONCRETE
- SIDEWALK
- TREE (DECIDUOUS)
- TREE (CONIFEROUS)

Know what's **below.** **Call before you dig.**

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
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ANN ARBOR, MI 48107-8647
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE **PLAN: NTS**

DRAWING No.
2018-034-LEG

SHEET No.
2 **OF** 47

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

LEGEND SHEET

GENERAL NOTES:

1. DRIVEWAYS AND ENTRANCES TO BUILDINGS, REAL PROPERTY, AND THE LIKE SHALL NOT BE BLOCKED EXCEPT FOR SHORT DURATIONS AND ONLY WHEN APPROVED BY THE ENGINEER. VEHICULAR AND PEDESTRIAN ACCESS SHALL BE MAINTAINED AT ALL TIMES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE ALL NECESSARY DRIVEWAY CLOSURES WITH THE PROPERTY OWNER(S) AND RESIDENT(S) IN THE AREAS OF CONSTRUCTION.
2. THE LOCATION AND DEPTH OF ALL EXISTING UTILITIES AND SERVICE LEADS ARE TO BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
3. DURING NON-WORKING HOURS NO MORE THAN TEN (10) FEET OF TRENCH SHALL REMAIN OPEN. ANY OPEN TRENCH SHALL BE PROPERLY SECURED WITH PROTECTIVE FENCING. THIS WORK SHALL BE INCLUDED IN THE ITEMS OF WORK BEING UNDERTAKEN AND WILL NOT BE PAID FOR SEPARATELY.
4. THE LOCATION OF MATERIAL STOCK PILES AND ON-SITE STAGING AREAS SHALL BE APPROVED BY THE ENGINEER. ALL MATERIAL STOCKPILES SHALL BE MAINTAINED SUCH THAT DRAINAGE AND SIGHT DISTANCES ARE NOT ADVERSELY IMPACTED. SOIL EROSION REQUIREMENTS SHALL APPLY TO ALL MATERIAL STOCKPILES.
5. FOR MAINLINE HMA PAVING, THE WIDTH OF THE MAT FOR EACH PASS OF THE PAVER SHALL BE NOT LESS THAN 10.5', NOR GREATER THAN 16', EXCEPT AS NOTED IN THE PLANS AND AS DIRECTED BY THE ENGINEER. THE ENGINEER WILL DIRECT THE LAYOUT OF ALL HMA LONGITUDINAL JOINTS DURING CONSTRUCTION.
6. ALL EXCAVATION REQUIRED FOR PROJECT GRADING WITHIN THE PROJECT LIMITS, INCLUDING PROPOSED PAVEMENT, SIDEWALK, AND SIDEWALK RAMPS SHALL BE INCLUDED IN "MACHINE GRADING, MODIFIED, ____."
7. EXCAVATION AND BACKFILL BEHIND CURB AND GUTTER SHALL BE INCLUDED IN "MACHINE GRADING, MODIFIED, ____." ALL BACKFILL UNDER PROPOSED CONCRETE PAVEMENTS SUCH AS DRIVE APPROACHES, RAMPS, SIDEWALK, ETC., SHALL BE MDOT CLASS II GRANULAR MATERIAL, COMPACTED TO 95% OF ITS MAX. DRY DENSITY AND WILL BE PAID FOR AS "SUBBASE, CIP, CLASS II GRANULAR MATERIAL, MODIFIED." BACKFILL FOR OTHER AREAS MUST BE APPROVED BY THE ENGINEER AND COMPACTED TO 95% OF ITS MAX. DRY DENSITY. NO PAYMENT WILL BE MADE FOR SUB-BASE OR AGGREGATE BASE THAT EXTENDS BEYOND 12" BEHIND THE BACK OF CURB. REFERENCE THE TYPICAL CROSS SECTIONS.
8. SOME STORM SEWER MAY UNAVOIDABLY BECOME DAMAGED DURING CONSTRUCTION, OR IT MAY BE DETERMINED BY THE ENGINEER THAT EXISTING STORM SEWER NEEDS TO BE REPLACED. IN EITHER CASE THE ENGINEER MAY DIRECT THE SEWER TO BE REMOVED AND REPLACED. THE REMOVAL OF THE EXISTING SEWER AND/OR DRAINAGE STRUCTURES SHALL BE INCLUDED IN THE CONTRACT WORK ITEMS "SEWER, ANY SIZE OR DEPTH, REM" OR "DR STRUCTURE, ANY SIZE OR DEPTH, REM", AND THE REPLACEMENT SEWER SHALL BE INSTALLED AND PAID FOR AT THE CORRESPONDING CONTRACT UNIT PRICE, IF CONTAINED WITHIN THE CONTRACT, FOR THE VARIOUS TYPES AND SIZES OF SEWER TO BE REPLACED.
9. WHERE EXISTING SEWER AND/OR DRAINAGE STRUCTURES ARE TO BE REMOVED, THEY SHALL BE PROPERLY DISPOSED OF OFF-SITE AND THE EXCAVATION SHALL BE BACKFILLED WITH MDOT CLASS II GRANULAR MATERIAL COMPACTED TO 95% OF ITS MAX. DRY DENSITY. THIS WORK SHALL BE INCLUDED IN THE CONTRACT ITEMS "SEWER, ANY SIZE OR DEPTH, REM" AND/OR "DR STRUCTURE, ANY SIZE OR DEPTH, REM."
10. ALL STRUCTURES SHALL RECEIVE NEW CASTINGS, EITHER TYPE B, TYPE K, TYPE Q, OR TYPE R AS SPECIFIED ON THE STANDARD CASTING SCHEDULE. THE EXISTING CASTINGS SHALL BE NEATLY STACKED ON-SITE IN A SINGLE LOCATION SO THAT CITY OF ANN ARBOR FORCES CAN RETRIEVE THEM AT A LATER DATE. THE CONTRACTOR SHALL ASSIST CITY FORCES BY LOADING THEM INTO CITY TRUCKS. ALL COSTS ASSOCIATED WITH STORING, STOCKPILING, AND LOADING CASTINGS INTO CITY VEHICLES SHALL BE INCLUDED IN THE ITEM OF WORK "MOBILIZATION, MAX. ____" AND WILL NOT BE PAID FOR SEPARATELY.
11. ALL FITTINGS, HYDRANTS, VALVES AND CASTINGS REMOVED DURING CONSTRUCTION SHALL BECOME THE PROPERTY OF THE CITY OF ANN ARBOR. THE CONTRACTOR SHALL COORDINATE PICK UP BY THE CITY OF ANN ARBOR FIELD OPERATIONS UNIT.
12. PAYMENT FOR DRAINAGE STRUCTURE SUMPS WHERE SPECIFIED SHALL BE INCLUDED IN THE PAYMENT FOR THE VARIOUS DRAINAGE STRUCTURES SIZES AND/OR TYPES.
13. WHERE PIPES OF DIFFERENT SIZES OR MATERIALS ARE JOINED OR SAWED SEWER PIPE CONNECTIONS ARE MADE, FERNCO FLEXIBLE COUPLINGS WITH STAINLESS STEEL SHEAR RINGS SHALL BE USED. THE CONTRACTOR'S PURCHASE PRICE FOR THESE DEVICES, INCLUDING SHIPPING, SHALL BE PAID AS AN EXTRA. PRIOR TO PAYMENT FOR THIS ITEM, THE CONTRACTOR SHALL SUBMIT RECEIPTS FOR THE ENGINEER'S REVIEW AND APPROVAL. ALL OTHER COSTS ASSOCIATED WITH THE INSTALLATION OF THESE DEVICES SHALL BE INCLUDED IN THE PAYMENT FOR THE SEWER.
14. WHERE STORM SEWER IS TO BE REMOVED AND REPLACED OR ADDED, ALL PIPE SHALL BE INSTALLED USING THE UTILITY TRENCH DETAILS SHOWN ELSEWHERE IN THE PLAN SHEETS AND/OR DETAILED IN THE SPECIFICATIONS. TRENCH DETAILS I AND V REQUIRE THE USE OF MDOT CLASS II GRANULAR MATERIAL.
15. IF THE CONTRACTOR ENCOUNTERS EXISTING EDGE DRAIN(S) DURING CONSTRUCTION OF THE PROPOSED EDGE DRAINS, INLET LEADS, OR CATCH BASINS, IT SHALL BE CAPPED AT EACH END TO PREVENT MATERIAL FROM ENTERING THE PIPE. THE COST OF THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PARTICULAR ITEM OF WORK BEING PERFORMED WHEN EXISTING EDGE DRAIN(S) ARE ENCOUNTERED.
16. IN AREAS WHERE EDGE DRAIN CANNOT BE INSTALLED IN ACCORDANCE WITH THE DETAILS, THE EDGE DRAIN SHALL BE INSTALLED AT THE DEPTH AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER. IN NO CASE SHALL THE EDGE DRAIN BE INSTALLED AT A GRADE LESS THAN 0.50% OR AT A DEPTH LESS THAN 3.25' BELOW THE TOP OF PAVEMENT.
17. EXISTING STREET NAME SIGNS, GUIDE, BUS STOP, AND REGULATORY SIGNS WHICH CONFLICT WITH THE PROPOSED CONSTRUCTION SHALL BE REMOVED PRIOR TO CONSTRUCTION, STORED IN A MANNER WHICH WILL PREVENT DAMAGE, AND RE-SET IN LOCATIONS AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN "PART-WIDTH CONSTRUCTION, SPECIAL."
18. ALL CURB, SIDEWALK, DRIVEWAY APPROACH REMOVALS SHALL BE APPROVED BY THE ENGINEER BEFORE THE WORK IS PERFORMED. ALL CONCRETE AND BITUMINOUS MATERIALS SHALL BE SAW-CUT FULL-DEPTH AT THEIR REMOVAL LIMITS PRIOR TO REMOVAL. SAW-CUTTING WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE ITEM OF WORK "MACHINE GRADING, MODIFIED, ____."
19. PLACE 4" (MINIMUM) OR 6" (MINIMUM) THICKNESS CLASS II GRANULAR MATERIAL COMPACTED TO 95% OF ITS MAX. DRY DENSITY UNDER CONCRETE SIDEWALK AS SHOWN ON THE DETAILS. THIS WORK SHALL BE INCLUDED IN THE CONTRACT ITEMS "SUBBASE, CIP, CLASS II GRANULAR MATERIAL, MODIFIED."
20. PLACE 6" (MINIMUM) CLASS II GRANULAR MATERIAL COMPACTED TO 95% OF ITS MAX. DRY DENSITY UNDER DRIVE APPROACHES. THIS WORK SHALL BE INCLUDED IN THE CONTRACT ITEM "SUBBASE, CIP, CLASS II GRANULAR MATERIAL, MODIFIED."
21. PRIOR TO PLACING THE ADJACENT PAVING PASS ON THE LEVELING AND WEARING COURSES OF HMA, THE CONTRACTOR SHALL CUT AND REMOVE 6" TO 8" OF THE PREVIOUSLY PLACED PAVEMENT BY MEANS OF A COULTER WHEEL. THE ENGINEER RESERVES THE RIGHT TO REJECT ANY METHOD(S) FOR CUTTING THE PAVEMENT THAT DOES NOT PROVIDE A SATISFACTORY EDGE AS DETERMINED BY THE ENGINEER. ANY METHOD(S) EMPLOYED BY THE CONTRACTOR SHALL BE COMPLETELY EFFECTIVE. THE CUT EDGE SHALL HAVE A UNIFORM BEAD OF JOINT ADHESIVE APPLIED. THE REMOVAL OF THIS HMA MATERIAL, CLEANING THE HMA SURFACE AND PAVEMENT EDGE, AND CONDITION OF THE RESULTING EDGE MUST BE APPROVED BY THE ENGINEER PRIOR TO PROCEEDING WITH THE PLACEMENT OF THE SUCCEEDING PASS OF HMA. THE BASE COURSE OF HMA WILL ONLY HAVE ITS EDGES TACKED IN ACCORDANCE WITH STANDARD PAVING PRACTICES. ALL COSTS ASSOCIATED WITH COMPLYING WITH THESE REQUIREMENTS WILL NOT BE PAID FOR SEPARATELY, BUT SHALL BE CONSIDERED TO BE INCLUDED IN THE ITEMS OF WORK "HMA, ____" OR "HMA, APPROACH."
22. A UNIFORM COAT(S) OF CURING COMPOUND SHALL BE APPLIED TO FRESHLY PLACED CONCRETE ACCORDING TO THE STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS REGARDLESS OF THE DIFFICULTY INVOLVED. THE CONTRACTOR SHALL TAKE CARE TO PREVENT OVERSPRAY WHEN APPLYING CURING COMPOUND. SEVERAL DIFFERENT METHODS MAY NEED TO BE DEVELOPED TO PROTECT VARIOUS SITUATIONS, BUT ALL METHODS USED TO PREVENT OVERSPRAY OF THE CURING COMPOUND SHALL BE COMPLETELY EFFECTIVE. METHODS USED SHALL BE APPROVED BY THE ENGINEER PRIOR TO USE, HOWEVER APPROVAL OF A METHOD DOES NOT GUARANTEE SUCCESS OR ACCEPTABILITY. NO ADDITIONAL COMPENSATION SHALL BE MADE FOR COMPLYING WITH THESE REQUIREMENTS.
23. THE CONTRACTOR IS TO TAKE SPECIAL CARE TO PROTECT THE EXISTING WATER MAIN AND BE RESPONSIBLE FOR MAINTAINING CONSISTENT WATER SERVICE.
24. TRENCHES FOR NEW WATER MAIN AND SEWERS SHALL BE EXCAVATED TO MIOSHA AND CITY OF ANN ARBOR FIELD SERVICE REQUIREMENTS.
25. CITY OF ANN ARBOR FIELD SERVICES WILL INSTALL THE CORPORATION AND COPPER SERVICE LEAD(S) TO TRANSFER THE CONNECTION(S). IF AN EXISTING WATER SERVICE IS FOUND TO BE FAILING OR IS NOT COPPER, THE LEAD WILL BE REPLACED TO THE CURB BOX BY FIELD SERVICES.
26. FOR THE INSTALLATION OF CORPORATIONS OR ANY OTHER RELATED ACTIVITIES, THE CONTRACTOR SHALL NOT RECEIVE ADDITIONAL COMPENSATION FOR DELAYS DUE TO THE SCHEDULING OF OR COORDINATION WITH THE CITY OF ANN ARBOR FIELD SERVICES.
27. THE CONTRACTOR SHALL CONSTRUCT, FLUSH, AND BACTERIOLOGICALLY TEST THE WATER MAIN PER DETAILED SPECIFICATIONS "WATER MAIN AND APPURTENANCES" AND AS APPROVED BY THE ENGINEER. ALL CHLORINATED WATER SHALL BE DISCHARGED DIRECTLY INTO AN APPROVED SANITARY SEWER. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY HOSES, FITTINGS AND THE LIKE TO ACCOMPLISH THIS.
28. WATER MAIN FITTINGS, OTHER THAN THOSE SPECIFICALLY LISTED AS SEPARATE PAY ITEMS, WHICH ARE REQUIRED TO COMPLETE THE WORK, SUCH AS, BUT NOT LIMITED TO, BLOW-OFF ASSEMBLIES, CONCRETE THRUST BLOCKS, SOLID SLEEVES, AND MECHANICAL PLUGS, SHALL NOT BE PAID FOR SEPARATELY, BUT SHALL BE INCLUDED IN THE PIPE PAY ITEMS.
29. POSTAL DELIVERY AND REFUSE PICKUP SERVICE SHALL BE MAINTAINED AT ALL TIMES BY THE CONTRACTOR.

PERMITS REQUIRED TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE BEGINNING OF CONSTRUCTION.

PERMIT	ISSUING AUTHORITY
LANE CLOSURE PERMIT *	CITY OF ANN ARBOR PROJECT MANAGEMENT UNIT
"NO PARKING" SIGNS PERMIT *	CITY OF ANN ARBOR PROJECT MANAGEMENT UNIT
GRADING/SOIL EROSION & SEDIMENTATION CONTROL PERMIT *	CITY OF ANN ARBOR CUSTOMER SERVICE
RIGHT-OF-WAY PERMIT *	CITY OF ANN ARBOR CUSTOMER SERVICE

* NO COST TO CONTRACTOR

PERMITS REQUIRED TO BE OBTAINED BY THE CITY OF ANN ARBOR PRIOR TO THE BEGINNING OF CONSTRUCTION.

PERMIT	ISSUING AUTHORITY
M.D.E.Q. WATER MAIN CONSTRUCTION PERMIT	MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

CONTACT INFORMATION

PUBLIC UTILITIES	OWNER	CONTACT
WATER		DAN WOODEN (734) 794-6350
SANITARY		RYAN FERREL (734) 794-6350
STORM	CITY OF ANN ARBOR FIELD OPERATIONS SERVICE UNIT W.R. WHEELER SERVICE CENTER 4251 STONE SCHOOL ROAD ANN ARBOR, MI 48108	PAT MAINO (734) 794-6350
FORESTRY		STEVEN GOEBEL (734) 794-6350
SIGNS SIGNALS STREET LIGHTS		CHUCK FOJTIK (734) 794-6361

PRIVATE UTILITIES	OWNER	CONTACT
GAS	DTE ENERGY 3150 E. MICHIGAN AVE, YPSILANTI TOWNSHIP, MI 48198	LAURIE FORRESTER (313) 389-7261
ELECTRIC	DTE ENERGY WESTERN WAYNE SERVICE CENTER 8001 HAGGERTY ROAD BELLEVILLE, MI 48111	JULIE GOTTARDI (734) 397-4303
CABLE	COMCAST 25626 TELEGRAPH ROAD SOUTHFIELD, MI 48034	JON LABEAU (248) 809-2704
PHONE	AT&T 550 S. MAPLE ROAD ANN ARBOR, MI 48103	ANDY JOHNSON (734) 996-5350
FIBER OPTIC	ANN ARBOR PUBLIC SCHOOLS FIBER LINK 3529 W. GENESEE, SUITE 6 LAPEER, MI 48446	TINA SNOBLEN (810) 667-2891
FIBER OPTIC	MCI/VERIZON 730 W. HENRY STREET INDIANAPOLIS, IN 46225	CHRIS FOWLER (317) 685-8050
FIBER OPTIC	ZAYO GROUP 1060 HARDEES DRIVE, SUITE H ABERDEEN, MD 21001	GEORGE HUSS (443) 403-2023

811 Know what's below. Call before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICES
301 E. HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
(734) 794-6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

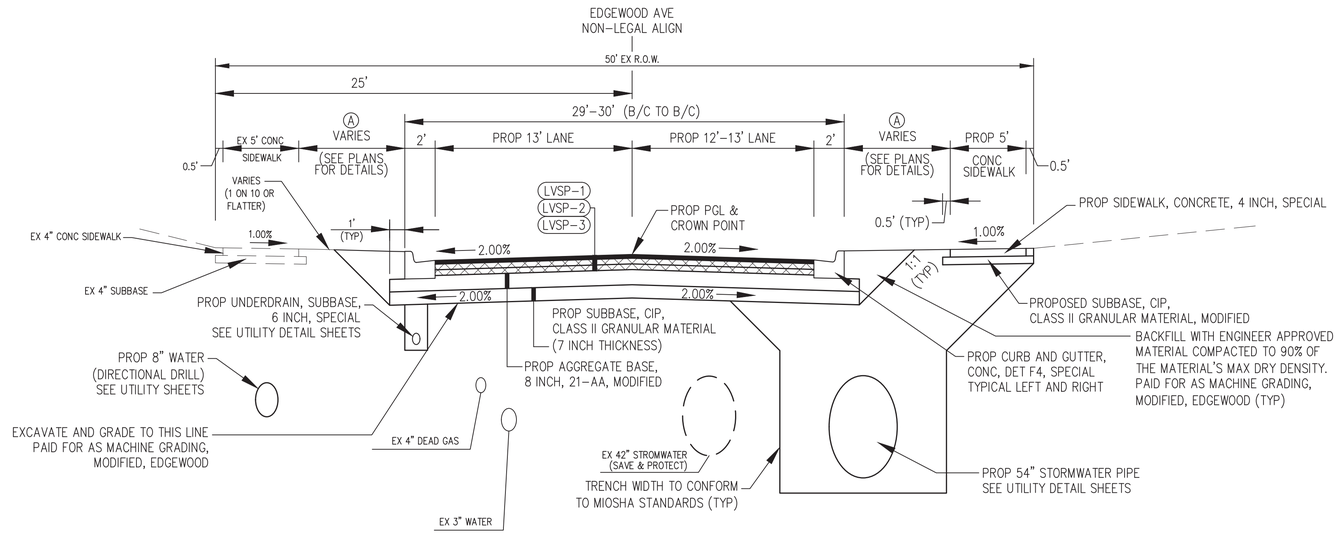
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

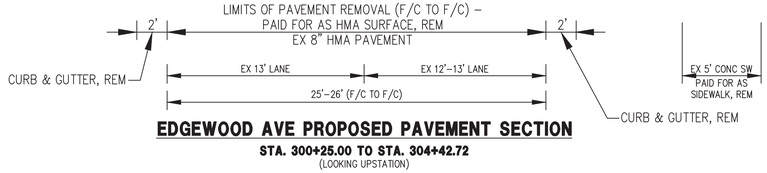
NOTE SHEET

SCALE PLAN: NTS

DRAWING No. 2018-034-NOTE

SHEET No. 3 OF 47





EDGEWOOD AVE PROPOSED PAVEMENT SECTION

STA. 300+25.00 TO STA. 304+42.72

(LOOKING UPSTATION)

Ⓐ TURF ESTABLISHMENT – SEE SPECIAL PROVISION
PAID FOR AS TOPSOIL SURFACE, 4 INCH AND HYDROSEEDING

REVIEW PAVEMENT CROSS SECTION DURING FINAL DESIGN

HMA APPLICATION ESTIMATE

IDENT NO.	ITEM	RATE PER SYD*	PERF. GRADE	
LVSP-1	HMA, LVSP	170 LB	58-28	AWI=260 TOP COURSE, 1.5"
LVSP-2	HMA, LVSP	226 LB	58-28	LEVELING COURSE, 2"
LVSP-3	HMA, LVSP	226 LB	58-22	BASE COURSE, 2"
	BOND COAT	0.10-0.15 GAL/SYD TO BE APPLIED BETWEEN EACH LIFT		FOR INFORMATION ONLY. BOND COAT APPLICATION TO BE APPROVED BY THE ENGINEER; APPLY MATERIAL SUCH THAT NO STREAKS, BARE AREAS, OR SPOTS ARE VISIBLE.

* HMA APPLICATION IS ESTIMATED USING A RATE OF 113 LBS/SYD PER INCH OF DEPTH.

NOTES

1. SEE PLANS FOR UTILITY DEPTH AND LOCATION DETAILS.

Know what's below. Call before you dig.

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

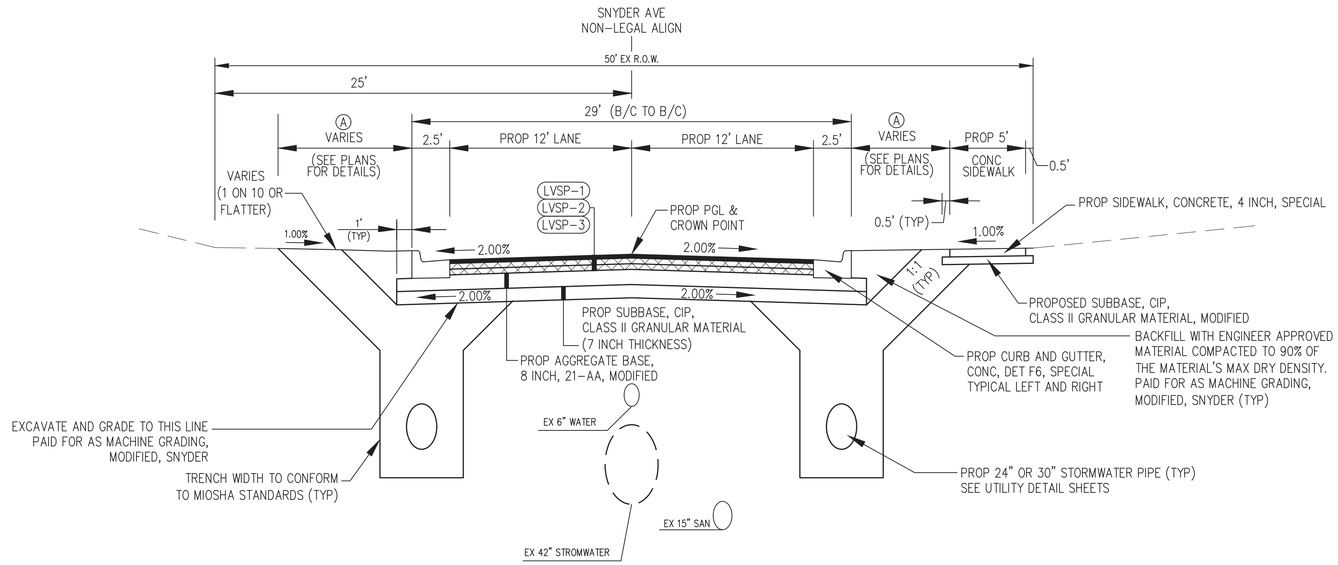
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

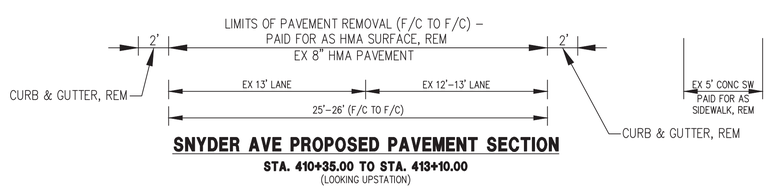
TYPICAL CROSS SECTIONS EDGEWOOD AVE.

SCALE PLAN: NONE HORIZ./VERT.: 1/1/5

DRAWING No. **2018-034-TCS01**

SHEET No. 4 OF 47





SNYDER AVE PROPOSED PAVEMENT SECTION

STA. 410+35.00 TO STA. 413+10.00

(LOOKING UPSTATION)

Ⓐ TURF ESTABLISHMENT – SEE SPECIAL PROVISION
PAID FOR AS TOPSOIL SURFACE, 4 INCH AND HYDROSEEDING

NOTES

1. SEE PLANS FOR UTILITY DEPTH AND LOCATION DETAILS.

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REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

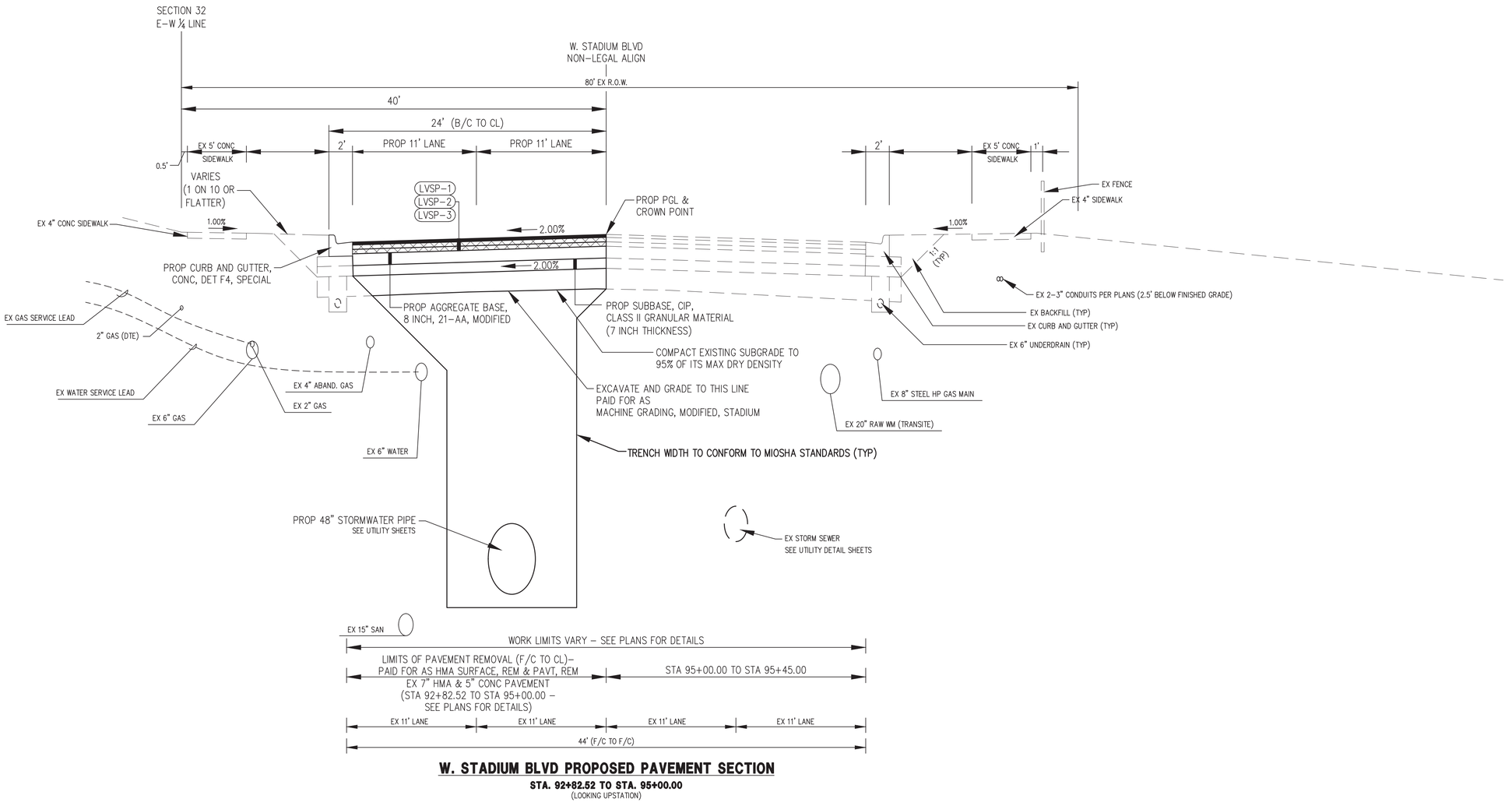
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

TYPICAL CROSS SECTIONS
SNYDER AVE.

SCALE PLAN: NONE
HORIZ/VERT: 1/1/5

DRAWING No.
2018-034-TCS02

SHEET No.
5 OF 47



W. STADIUM BLVD PROPOSED PAVEMENT SECTION

STA. 92+82.52 TO STA. 95+00.00
(LOOKING UPSTATION)

NOTES

1. EXISTING DTE ELECTRIC UNDERGROUND LINES CONNECTING W. STADIUM BLVD. LAMP POSTS NOT SHOWN.
2. SEE PLANS FOR UTILITY DEPTH AND LOCATION DETAILS.

Z:\NCI\Canton\18255020(AA–Snyder)\Design\S–Snyder–TCS.dwg Dwg Created: 30–Dec–19 – _a2 standard bw.stb – Plot Date: 27–Jan–20

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01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

TYPICAL CROSS SECTIONS
W. STADIUM BLVD.

SCALE PLAN: NONE
HORIZ/VERT: 1/1/5
DRAWING No. 2018-034-TCS03

SHEET No.
6 OF 47

SNYDER–EDGEWOOD STORMWATER IMPROVEMENTS PROJECT
CITY OF ANN ARBOR

HORIZONTAL DATUM: NAD 83
VERTICAL DATUM: NAVD 88
UNITS: INTERNATIONAL FEET
SURVEYED BY: NORTHWEST CONSULTANTS, INC.
DATE: NOVEMBER 2014

HORIZONTAL CONTROL POINTS

CONTROL PT: CP200
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN NORTHEAST CORNER OF PRESCOTT AVENUE AND SNYDER AVENUE INTERSECTION
COORDINATES: N=279564.673, E=13288743.480, ELEV=896.415
WITNESS:
1. N14°W, 7.8' TO WATER HYDRANT
2. N73°W, 10.4' TO SQUARE STORM CATCH BASIN
3. S78°W, 8.9' TO NORTHWEST CORNER END OF SW
4. S78°E, 35.0' TO 20" DECIDUOUS TREE

CONTROL PT: CP201
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP ON NORTH SIDE OF POTTER AVE AND ON THE EXTENSION OF WEST SIDE B/C LINE OF PRESCOTT AVENUE
COORDINATES: N=279998.136, E=13288695.327, ELEV=916.495
WITNESS:
1. N89°E, 55.6' TO TRAFFIC SIGN
2. S75°W, 10.2' TO POTTER BACK OF CURB
3. S20°W, 37.6' TO UTILITY POLE
4. S54°E, 57.4' TO POST AT SE CORNER OF POTTER/PRESCOTT

CONTROL PT: CP202
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN SOUTHEAST CORNER OF POTTER AVENUE AND HUTCHINES AVENUE INTERSECTION
COORDINATES: N=279958.427, E=13288416.278, ELEV=911.731
WITNESS:
1. N70°E, 7.8' TO SQUARE STORM CATCH BASIN
2. N12°W, 21.9' TO STORM MANHOLE
3. S42°W, 22.3' TO 24" DECIDUOUS TREE
S88°E, 19.8' TO WATER HYDRANT

CONTROL PT: CP203
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN NORTHWEST CORNER OF POTTER AVE AND SOUTH SEVENTH STREET
COORDINATES: N=279981.735, E=13288004.822, ELEV=911.703
WITNESS:
1. N85°E, 20.8' TO SQUARE STORM CATCH BASIN
2. N57°W, 27.3' TO 12" DECIDUOUS TREE
3. S21°W, 47.3' TO 32" DECIDUOUS TREE
4. S69°E, 9.6' TO SQUARE STORM CATCH BASIN

CONTROL PT: CP204
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN SOUTHWEST CORNER OF SNYDER AVE AND HUTCHINS AVE INTERSECTION
COORDINATES: N=279503.278, E=13288347.674, ELEV=898.304
WITNESS:
1. N61°E, 41.0' TO STORM MANHOLE
2. S47°E, 27.7' TO 36" DECIDUOUS TREE
3. S74°E, 32.9' TO WATER GATE VALVE IN BITUMINOUS
4. S86°E, 20.6' TO SQUARE STORM CATCH BASIN

CONTROL PT: CP205
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP ON SOUTH SIDE OF WEST STADIUM BOULEVARD AND ON THE EXTENSION OF EAST SIDE B/C LINE OF HUTCHINS AVENUE
COORDINATES: N=278997.691, E=13288432.290, ELEV=921.253
WITNESS:
1. N82°E, 52.7' TO STORM MANHOLE
2. N72°E, 50.2' TO SQUARE STORM CATCH BASIN
3. N87°W, 19.4' TO LIGHT POLE
4. N72°W, 19.8' TO ELECTRICAL MANHOLE

CONTROL PT: 206
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN NORTHWEST CORNER OF WEST STADIUM BOULEVARD AND PRESCOTT AVENUE INTERSECTION
COORDINATES: N=279075.780, E=13288696.872, ELEV=912.466
WITNESS:
1. N52°E, 19.1' TO TRAFFIC SIGN
2. N20°E, 30.3' TO 2" DECIDUOUS TREE
3. S37°W, 10.0' TO SQUARE STORM CATCH BASIN
4. S77°W, 14.5' TO 3" DECIDUOUS TREE

CONTROL PT: 207
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP ON SOUTH SIDE OF WEST STADIUM BOULEVARD AND ABOUT 50' EAST OF ENTRANCE TO PIONEER HIGH SCHOOL
COORDINATES: N=279032.733 E=13289123.921 ELEV=899.476
WITNESS:
1. N55°E, 12.9' TO STADIUM BOULEVARD BACK OF CURB
2. N86°W, 36.5' TO LIGHT POLE
3. S86°W, 50.2' TO TRAFFIC SIGN
4. S84°E, 74.9' SQUARE STORM CATCH BASIN

CONTROL PT: 208
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN SOUTHWEST CORNER OF WEST STADIUM BOULEVARD AND MAIN STREET INTERSECTION
COORDINATES: N=279071.782, E=13290143.998 ELEV=891.159
WITNESS:
1. N50°E, 8.6' TO SQUARE STORM CATCH BASIN
2. N81°W, 19.4' TO ELECTRICAL HANDHOLE
3. S82°W, 34.7' TO ELECTRICAL HANDHOLE
4. S82°E, 17.2' TO PEDESTRIAN CROSSWALK PEDESTAL

CONTROL PT: 215
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN SOUTHWEST PART OF GRASS ISLAND IN THE INTERSECTION OF EDGEWOOD AVENUE AND SNYDER AVENUE
COORDINATES: N=279405.207, E=13289000.528, ELEV=893.440
WITNESS:
1. N48°E, 18.1'' TO TRAFFIC SIGN
2. N73°W, 14.6' TO SQUARE STORM CATCH BASIN
3. S51°W, 35.4' TO SQUARE STORM CATCH BASIN
4. S61°E, 16.0' TO TRAFFIC SIGN

CONTROL PT: CP216
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN SOUTHEAST CORNER OF BERKLEY AVENUE AND EDGEWOOD AVENUE INTERSECTION
COORDINATES: N=279636.782, E=13289051.572, ELEV=910.995
WITNESS:
1. N33°E, 8.8' TO SQUARE STORM CATCH BASIN
2. N59°W, 34.4' TO SANITARY SEWER MANHOLE
3. S69°W, 32.4' TO SANITARY SEWER MANHOLE
4. S'LY, 3.0'' TO EDGE OF SIDEWALK

CONTROL PT: CP217
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN NORTHWEST CORNER OF POTTER AVENUE AND EDGEWOOD AVENUE
COORDINATES: N=280003.960, E=13288985.575, ELEV=918.156
WITNESS:
1. N66°E, 16.9' TO TRAFFIC SIGN
2. N65°W, 23.0' TO 14" DECIDUOUS TREE
3. S84°W, 40.7' TO TRAFFIC SIGN
4. S'LY. 7.3' TO POTTER AVENUE BACK OF CURB

CONTROL PT: CP218
DESCRIPTION: SET 5/8" IRON ROD WITH YELLOW "NCI TRAV PT" CAP IN NORTHWEST CORNER OF WEST STADIUM BOULEVARD AND SOUTH SEVENTH STREET INTERSECTION
COORDINATES: N=279049.741, E=13288045.394, ELEV=924.211
WITNESS:
1. N36°E, 12.4' TO ELECTRICAL HANDHOLE
2. N11°E, 8.2' TO PEDESTRIAN CROSSWALK PEDESTAL
3. S70°W, 6.9' TO LIGHT POLE
4. S83°E, 23.0' TO WATER MANHOLE

BENCHMARKS

BM300: CHISELED SQUARE IN CONCRETE SIDEWALK, EAST SIDE OF PRESCOTT AVENUE, AND JUST NORTH OF DRIVE TO HOUSE #1211
STA. 206+69.45, 26.95' RT
ELEV = 904.764

BM301: CHISELED SQUARE IN CONCRETE SIDEWALK, WEST SIDE OF PRESCOTT AVENUE, AND NEAR THE EXTENSION OF PROPERTY LINE BETWEEN HOUSES #1304 AND #1306
STA. 203+06.69, 28.33' LT
ELEV = 903.828

BM302: CHISELED SQUARE IN CONCRETE SIDEWALK, EAST SIDE OF HUTCHINS AVENUE, AND NORTH OF DRIVE TO HOUSE #1325
STA. 87+13.22, 228.16' LT
ELEV = 911.682

BM303: CHISELED SQUARE IN CONCRETE SIDEWALK, EAST SIDE OF HUTCHINS AVENUE, AND JUST NORTH OF DRIVE TO HOUSE #1207
STA. 306+95.28, 207.88' RT
ELEV = 905.234

BM304: CHISELED "X" IN NORTH PART OF THE SANITARY MANHOLE RIM, IN CENTER OF POTTER AVENUE, AND ABOUT HALFWAY BETWEEN FRANKLIN BOULEVARD AND SOUTH SEVENTH STREET
STA. 304+89.25, 5.95' LT
ELEV = 911.735

BM305: FOUND RR SPIKE IN WEST FACE OF LIGHT POLE, IN NORTHEAST CORNER OF FRANKLIN BOULEVARD AND SOUTH SEVENTH STREET INTERSECTION
STA. 303+54.08, 305.20' RT
ELEV = 909.290

BM306: CHISELED "X" ON TOP OF NORTHWEST BOLT OF LIGHT POLE, ON SOUTH SIDE OF WEST STADIUM BOULEVARD, AND AT FRONT OF DENTIST OFFICES (BUILDING #606)
STA. 91+20.31, 25.26' RT
ELEV = 907.869

BM307: CHISELED SQUARE ON TOP AND IN SOUTH PART OF CONCRETE FOUNDATION OF A LIGHT POLE, ON SOUTH SIDE OF WEST STADIUM BOULEVARD, AND ABOUT 100' EAST OF BUILDING #506
STA. 98+02.41, 26.89' RT
ELEV = 897.319

BM313: FOUND RR SPIKE IN THE EAST FACE OF A POWER POLE, ON THE EAST SIDE OF EDGEWOOD AVENUE, AND ABOUT 100' SOUTH OF BARKLEY AVENUE
STA. 204+84.16, 325.19' RT
ELEV = 903.313

BM314: VERY NORTHEAST CORNER OF LOWER CONCRETE STEP IN THE SIDEWALK, LEADING TO HOUSE #1204, ON WEST SIDE OF EDGEWOOD AVENUE
STA. 312+86.40, 168.43' RT
ELEV = 915.996

BM315: CHISELED SQUARE ON TOP AND IN NORTHEAST PART OF CONCRETE FOUNDATION FOR TRAFFIC SIGNAL POLE, IN SOUTHEAST CORNER OF WEST STADIUM BOULEVARD AND SOUTH SEVENTH STREET INTERSECTION
STA. 84+06.62, 53.13' RT
ELEV = 924.994

Know what's below. Call before you dig.

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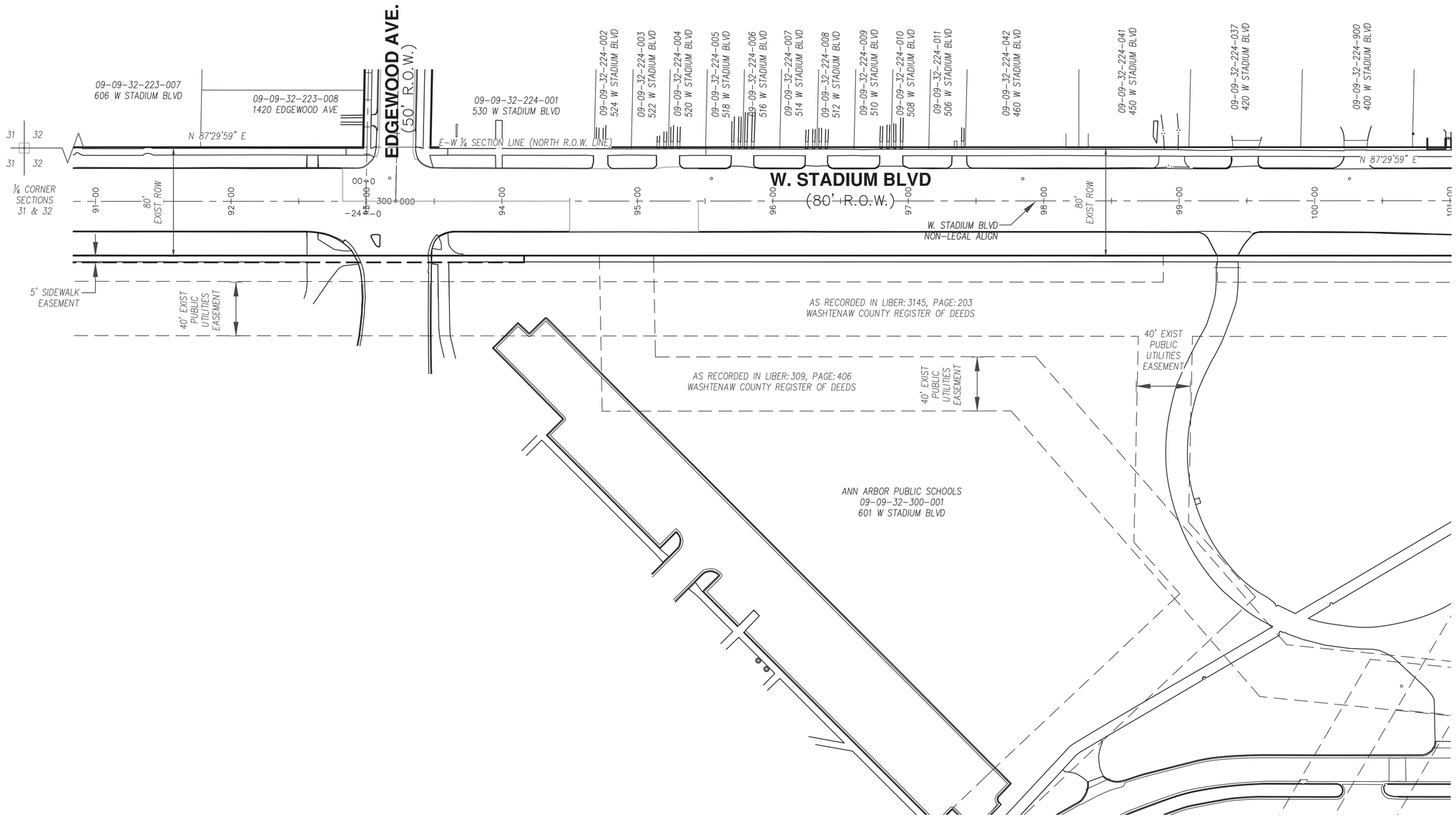
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
WITNESS AND BENCHMARK

SCALE NONE

DRAWING No. 2018-034-WIT

SHEET No.
7 OF 47



811 Know what's **below.** **Call before you dig.**

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	IS/AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

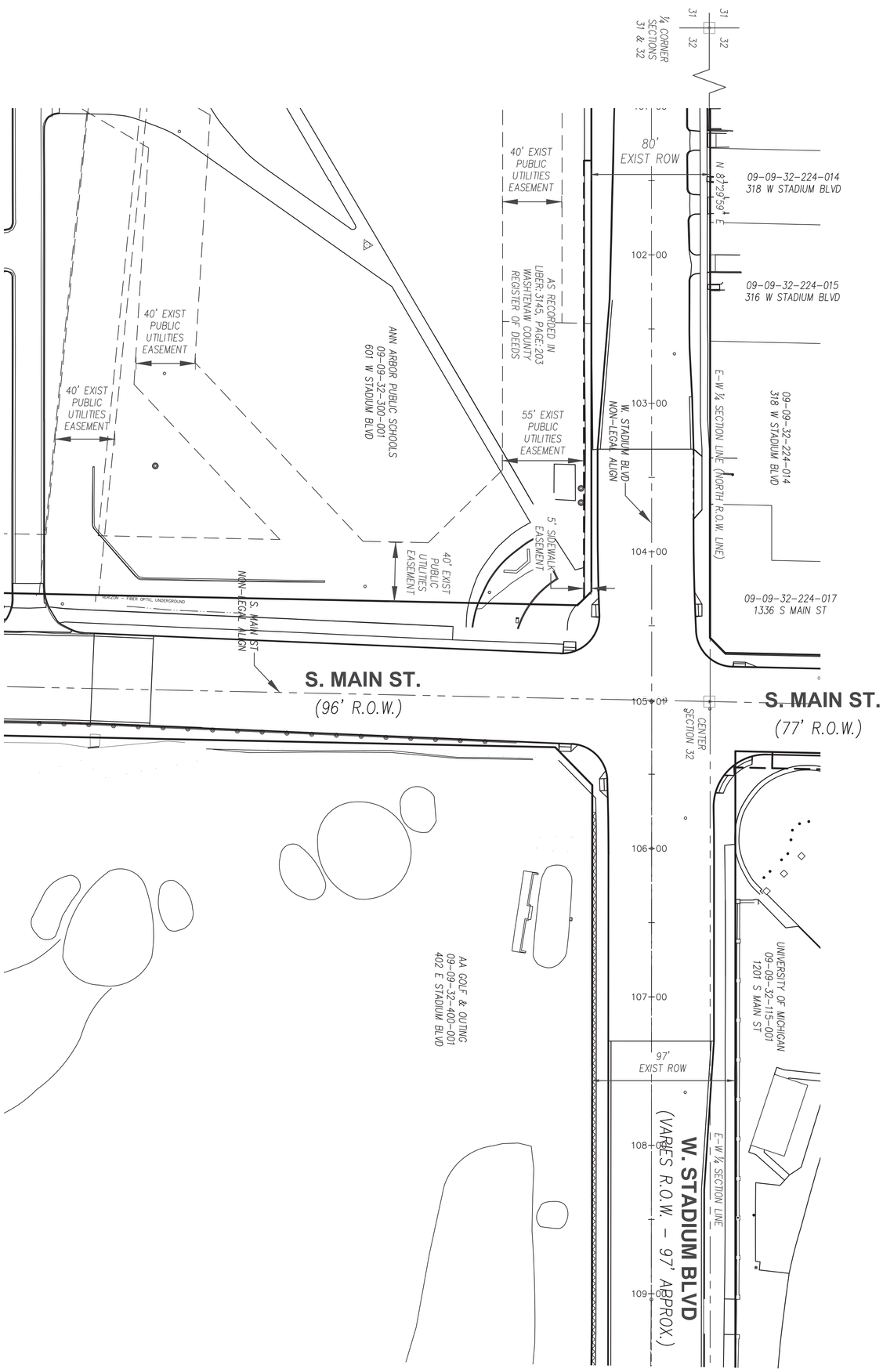
SCALE PLAN: 1" = 40'

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

RIGHT-OF-WAY OVERVIEW

W. STADIUM BLVD. (STA. 91+00 TO STA. 101+00)

DRAWING No.
2018-034-ROW1



PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE PLAN: 1" = 40'

DRAWING No.
2018-034-ROW2

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
RIGHT-OF-WAY OVERVIEW
W. STADIUM BLVD. (STA 101+00 TO STA. 109+50)

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REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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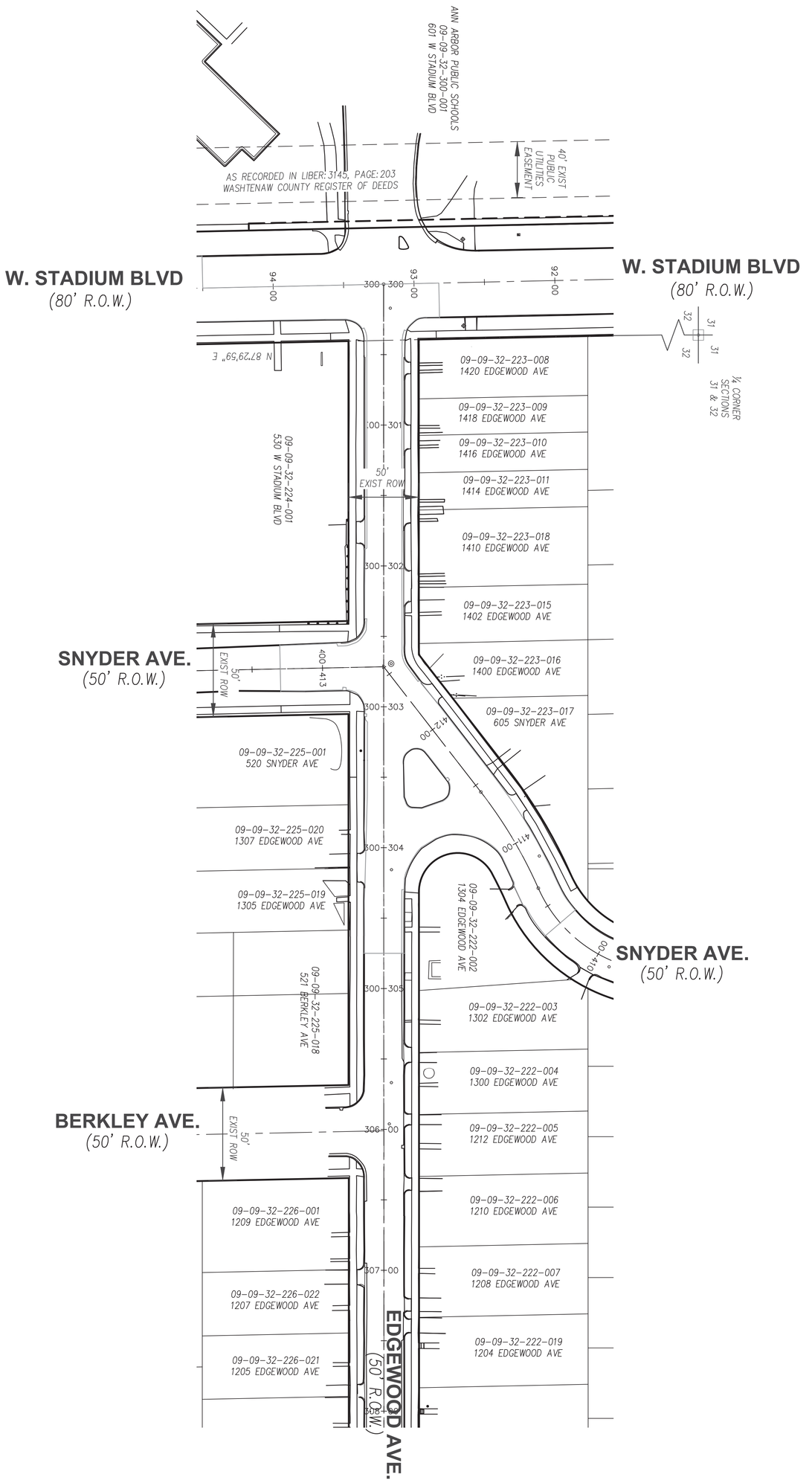

SHEET No. 10 OF 47

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE PLAN: 1" = 40'

DRAWING No. 2018-034-ROW3

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

RIGHT-OF-WAY OVERVIEW

EDGEWOOD AVE. AND SNYDER AVE.

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EDGEWOOD AVE.
(50' R.O.W.)

09-09-32-224-001
530 W STADIUM BLVD

09-09-32-224-002
524 W STADIUM BLVD

09-09-32-224-003
522 W STADIUM BLVD

09-09-32-224-004
520 W STADIUM BLVD

09-09-32-224-005
518 W STADIUM BLVD

09-09-32-224-006
516 W STADIUM BLVD

09-09-32-224-007
514 W STADIUM BLVD

09-09-32-224-008
512 W STADIUM BLVD

09-09-32-224-009
510 W STADIUM BLVD

09-09-32-224-010
508 W STADIUM BLVD

09-09-32-224-011
506 W STADIUM BLVD

09-09-32-224-042
460 W STADIUM BLVD

09-09-32-224-041
450 W STADIUM BLVD

09-09-32-224-037
420 W STADIUM BLVD

09-09-32-224-900
400 W STADIUM BLVD

09-09-32-224-013
320 W STADIUM BLVD

09-09-32-224-014
318 W STADIUM BLVD

09-09-32-224-015
316 W STADIUM BLVD

09-09-32-224-014
318 W STADIUM BLVD

09-09-32-224-017
1336 S MAIN ST

W. STADIUM BLVD
(80' R.O.W.)

96+00 97+00 98+00 99+00 100+00 101+00 102+00 103+00 104+00

80' EXIST ROW

W. STADIUM BLVD
NON-LEGAL ALIGN

40' EXIST PUBLIC UTILITIES EASEMENT

40' EXIST PUBLIC UTILITIES EASEMENT

40' EXIST PUBLIC UTILITIES EASEMENT

EXISTING COUNTY BASIN

PROPOSED BASIN

ANN ARBOR PUBLIC SCHOOLS
09-09-32-300-001
601 W STADIUM BLVD

POTENTIAL AREA FOR EXCAVATED EARTH AND CONTRACTOR STOCKPILE. TO BE FURTHER REVIEWED IN FINAL DESIGN.

MAIN ST.
(96' R.O.W.)

811 Know what's **below.** **Call** before you dig.

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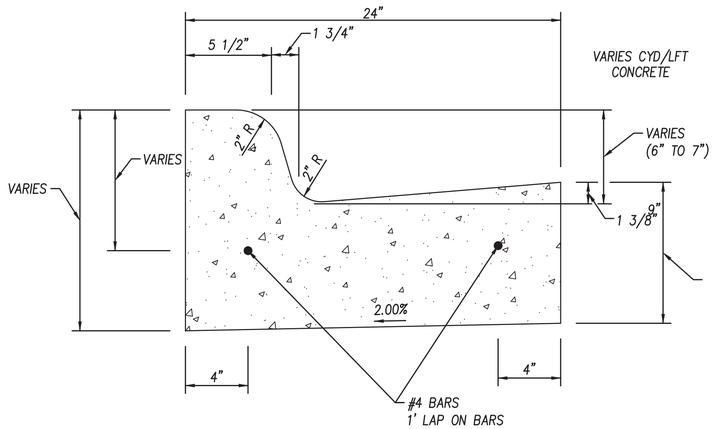
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
PHS EXCAVATION STOCKPILE AREA

SCALE PLAN: 1" = 40'

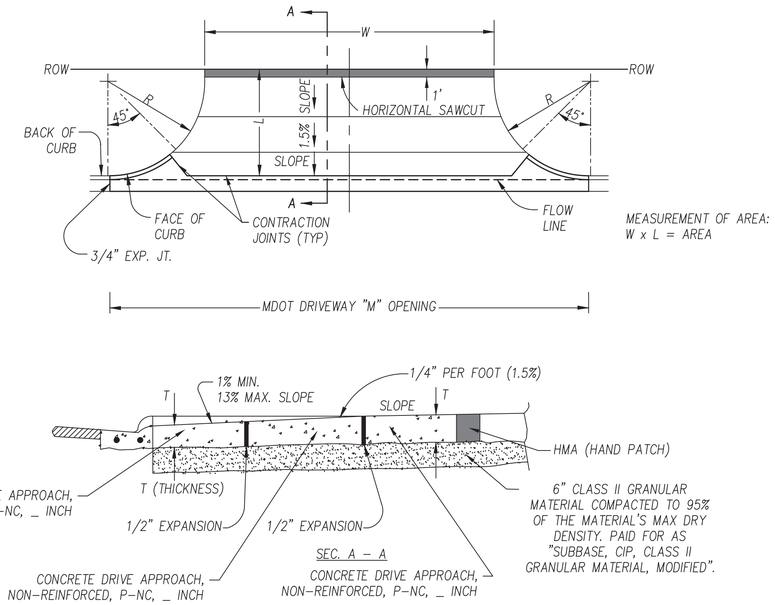
DRAWING No.
2018-034-PHS

SHEET No.
11 OF 47



PAVING DETAIL #1

(MODIFIED MDOT F4 CURB SHAPE WITH VARIABLE HEIGHT, PAID FOR AS CURB AND GUTTER, CONC, F4, SPECIAL)
APPLIES TO: W. STADIUM BOULEVARD AND EDGEWOOD AVENUE



MEASUREMENT OF AREA:
W x L = AREA

NOTE: R(RADIUS) AND W(DRIVE WIDTH) AS REQUIRED FOR ZONING BY CITY CODE.

NOTE: SEE DRIVEWAY TABLES FOR SLOPE.

PAVING DETAIL #2

(TYPE "M" DRIVE APPROACH)
CITY OF ANN ARBOR STANDARD SD-R-8 MODIFIED
APPLIES TO: AAGO DRIVE APPROACH

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

PAVING DETAILS

STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No. **2018-034-PD01**

SHEET No.

Z:\NC\Canton\1825020(AA-Snyder)\Design\S-Snyder-PD.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-P.dwg Dwg Created: 24-Jan-20 — _a2 standard bw.stb — Plot Date: 27-Jan-20

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE **PLAN:** 1" = 20' **PROFILE:** 1" = 4'

DRAWING No. **2018-034-P01**

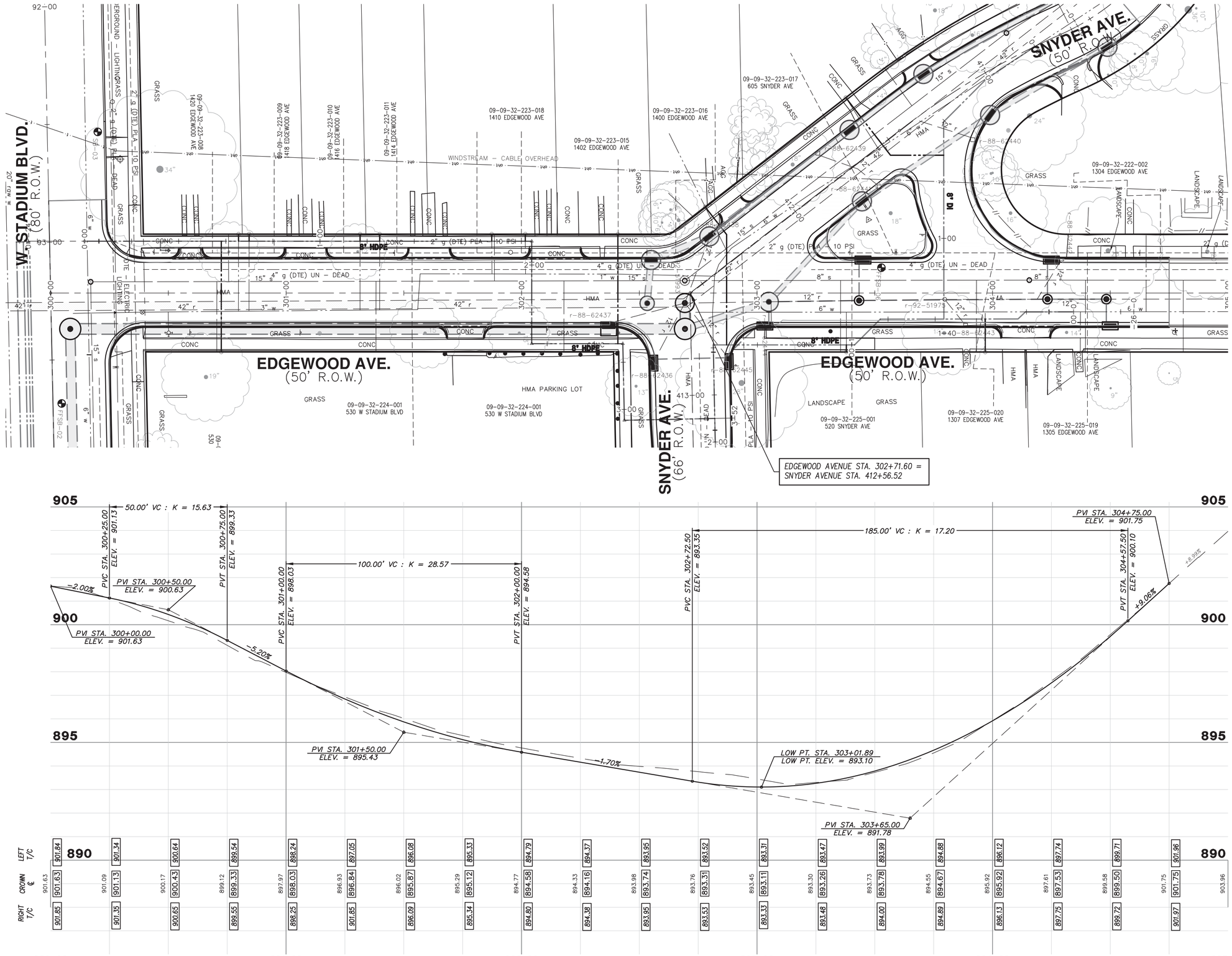
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

PAVING - SNYDER

STA. 410+00 TO STA. 413+50

SHEET No.

13 **OF** 47



811 Know what's below. Call before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

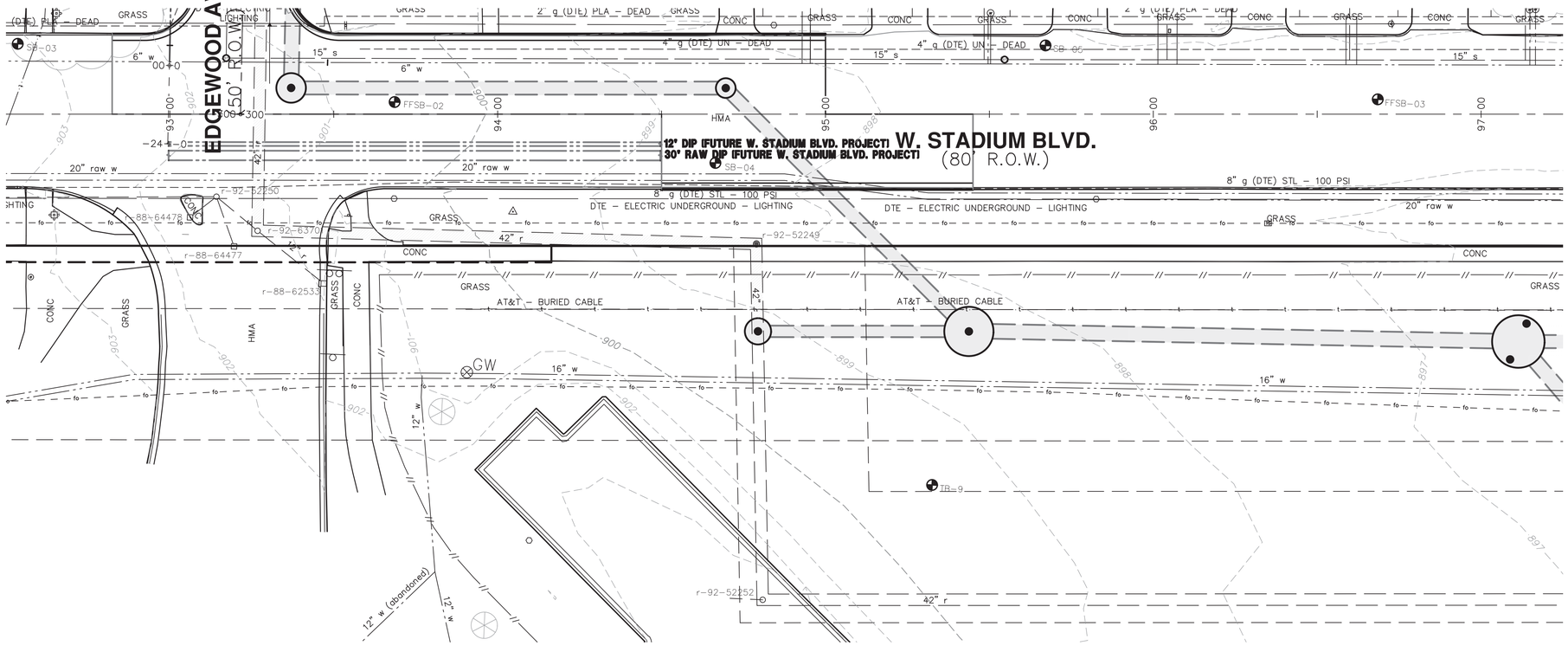
SCALE PLAN: 1" = 20' PROFILE: 1" = 4'

DRAWING No. **2018-034-P02**

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

PAVING - EDGEWOOD

STA. 300+00 TO STA. 305+00



NEEDED FOR FINAL DESIGN:

1. **PAVT REMOVAL LIMITS WITH SHADING**
2. **TRAFFIC CONTROL/STAGING**

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	11/27/2020	FISHBECK	AK

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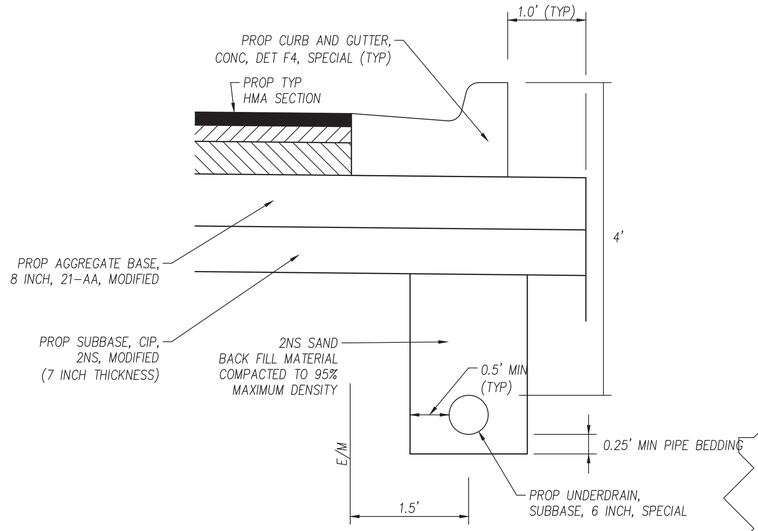
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE PLAN: 1" = 20' PROFILE: 1" = 4'

DRAWING No. **2018-034-P03**

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

PAVING - W. STADIUM BLVD.
STA 92+50 TO STA 97+25



UTILITY DETAIL #1

(TRENCH DETAIL FOR UNDERDRAIN (UNDER HMA PAVEMENT))
BASED ON CITY OF ANN ARBOR STANDARD SD-TD-10
APPLIES TO: HMA PAVEMENT – SEE PLANS FOR LOCATIONS

UNDERDRAIN TRENCH NOTES

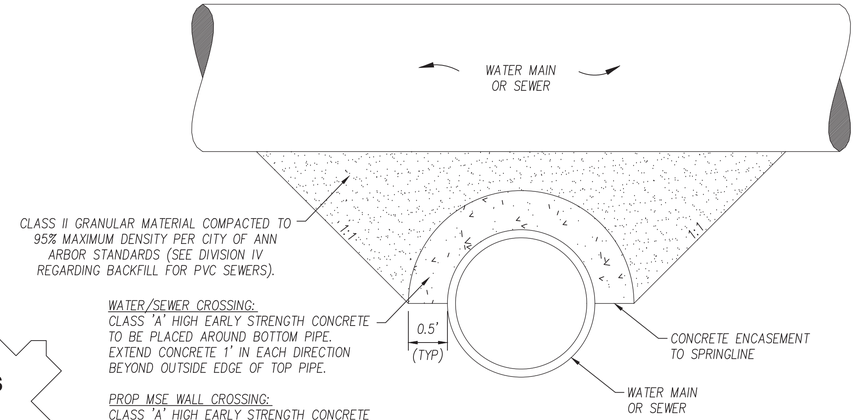
NOTE: FOR PAVEMENT BASE AND SUBBASE THICKNESS, SEE TYPICAL PAVEMENT CROSS-SECTION(S)

NOTE: DENSITY TESTING PER CITY ANN ARBOR SPECIFICATION

NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY

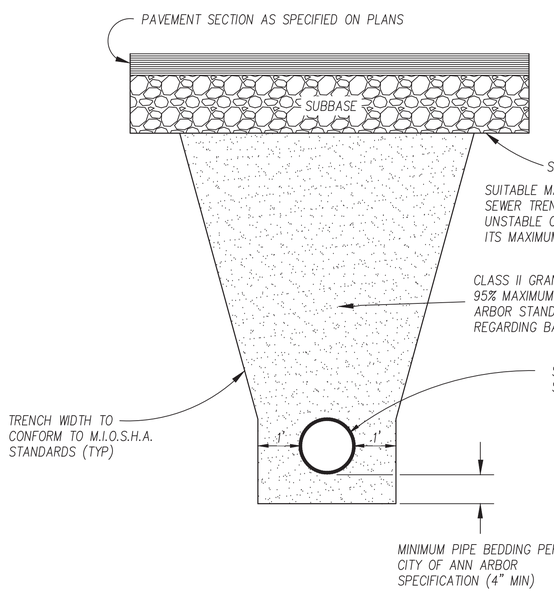
NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS

DURING FINAL DESIGN, ALL DETAILS WILL BE FURTHER REVIEWED AND MODIFIED/ELIMINATED TO MEET THE NEEDS OF THE PROJECT.



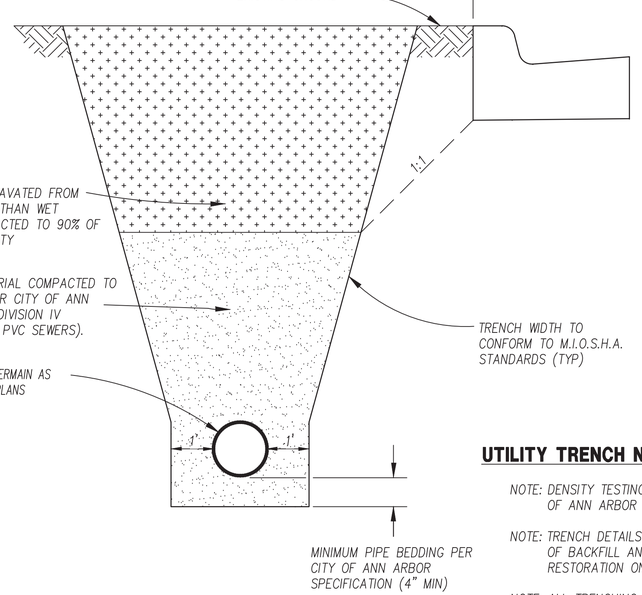
UTILITY DETAIL #2

(CONCRETE UTILITY SADDLE)
APPLIES TO: WATER AND/OR SEWER CROSSINGS WITH LESS THAN 1.5' OF VERTICAL CLEARANCE – SEE PLANS FOR LOCATIONS



UTILITY DETAIL #3

(Tr Det I)
APPLIES TO: SEE PLANS FOR LOCATIONS



UTILITY DETAIL #4

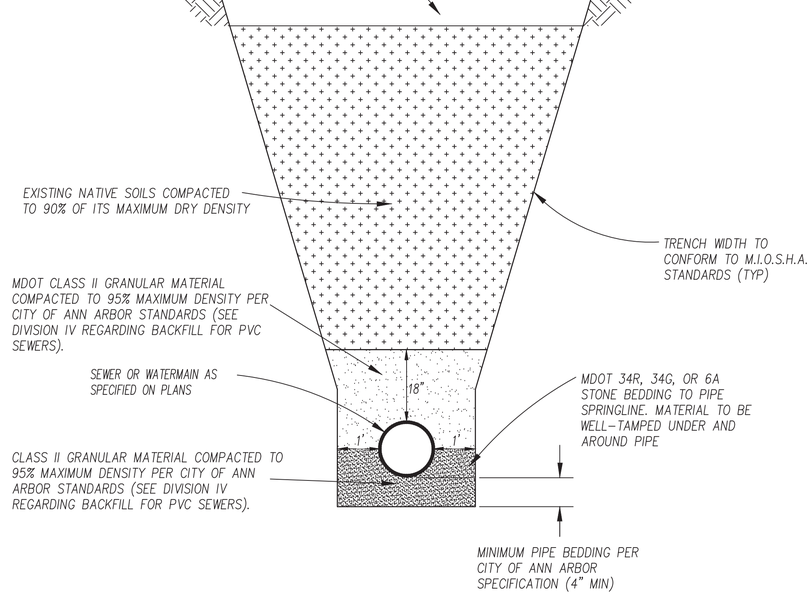
(Tr Det V)
APPLIES TO: SEE PLANS FOR LOCATIONS

UTILITY TRENCH NOTES

NOTE: DENSITY TESTING PER CITY OF ANN ARBOR SPECIFICATION

NOTE: TRENCH DETAILS SHOW TYPE OF BACKFILL AND SURFACE RESTORATION ONLY.

NOTE: ALL TRENCHING TO CONFORM TO ALL APPLICABLE M.I.O.S.H.A. STANDARDS



UTILITY DETAIL #5

(Tr Det V (A))
APPLIES TO: SEE PLANS FOR LOCATIONS

Know what's below. Call before you dig.

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

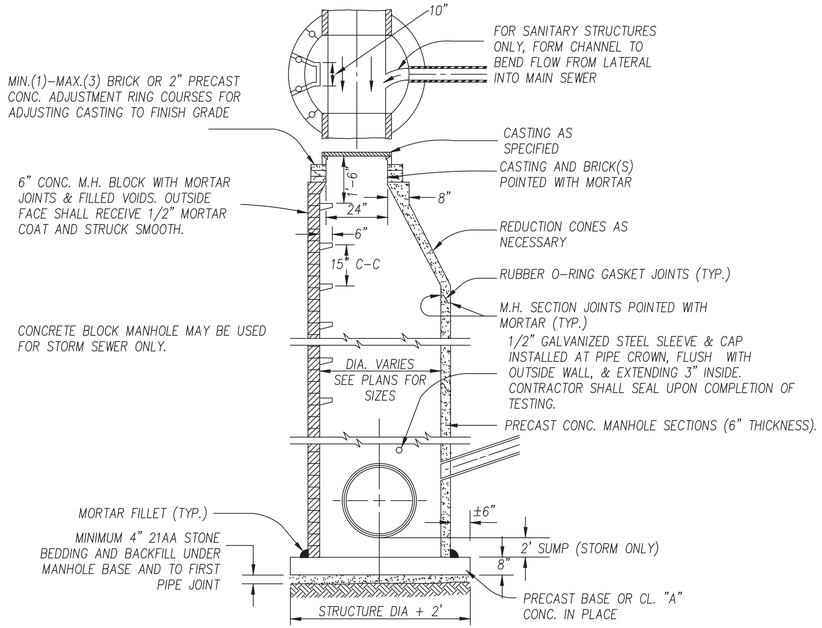
UTILITY DETAILS

STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: #######

DRAWING No. 2018-034-UTD01

SHEET No. 16 OF 47



NOTE: ALL SANITARY MANHOLES SHALL BE PRECAST CONC.

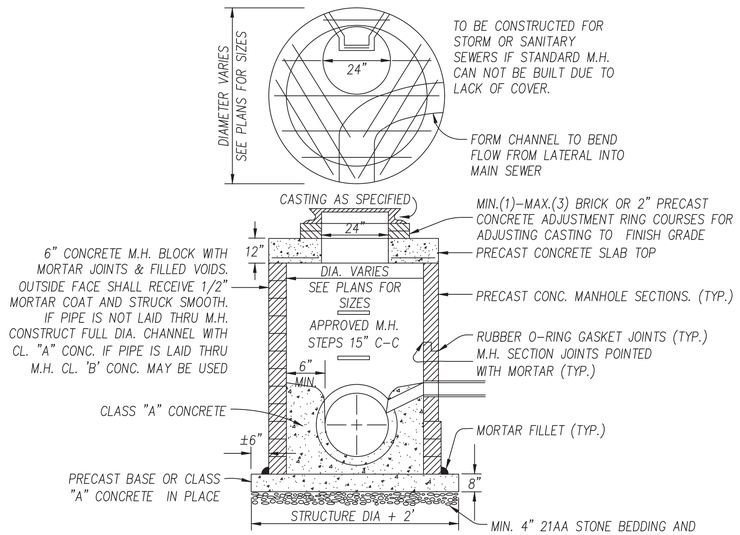
NOTE: ALL MANHOLES MUST HAVE ECCENTRIC CONES– BOTH STORM AND SANITARY

NOTE: ALL SANITARY SEWER OPENINGS SHALL BE PRECAST WITH RUBBER BOOT CONNECTIONS.

NOTE: CONCRETE BLOCK MANHOLE MAY BE USED FOR STORM SEWER ONLY, AND SHALL BE ECCENTRIC

UTILITY DETAIL #6

(STANDARD MANHOLE (TYPE I) MODIFIED)
CITY OF ANN ARBOR STANDARD SD–S–1 (MODIFIED)
APPLIES TO: SEE PLANS FOR LOCATIONS



NOTE: ALL SANITARY MANHOLES SHALL BE PRECAST CONC. STORM MANHOLES MAY BE PRECAST CONC. OR CONC. BLOCK

NOTE: ALL SANITARY SEWER OPENINGS SHALL BE PRECAST WITH RUBBER BOOT CONNECTIONS

UTILITY DETAIL #6A

(SHALLOW MANHOLE (TYPE III) MODIFIED)
CITY OF ANN ARBOR STANDARD SD–S–3 (MODIFIED)
APPLIES TO: SEE PLANS FOR LOCATION

TYPE OF CASTING*

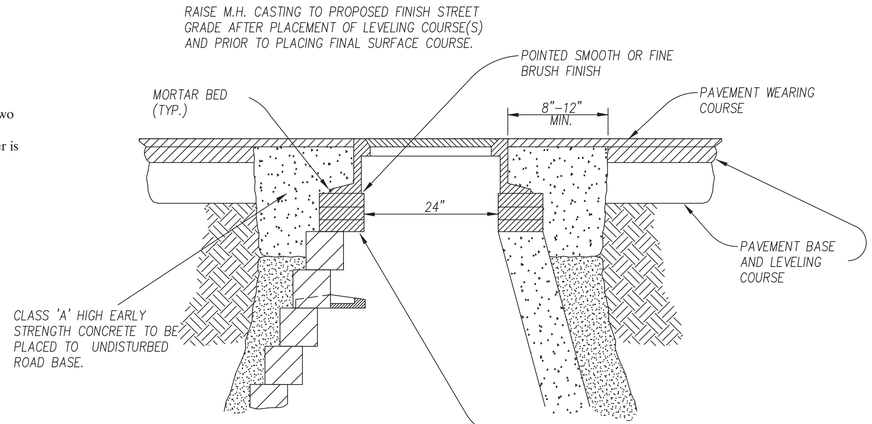
MDOT TYPE B	EJIW 1040 SERIES
MDOT TYPE K	EJIW 7045 SERIES

*Frames and covers must have machined bearing surfaces. Covers must have two (2) 1" vent holes located opposite each other and 6" from the edge of the cover. Each cover shall have "Sewer", "S" or "Water", "W" cast in the surface, whichever is applicable.

UTILITY DETAIL #7

(CASTING SCHEDULE)
APPLIES TO: SEE PLANS FOR LOCATIONS

THE CITY HAS NEW ARTWORK ON MH COVERS. EJIW HAS THE DETAILS. THIS WILL REQUIRE COORDINATION DURING FINAL DESIGN



NOTE: IF MANHOLE TO BE PLACED IN GRAVEL ROAD, CASTING TO BE SET 6" TO 8" BELOW ROADWAY GRADE. ALL CONSTRUCTION METHODS SHALL REMAIN AS SHOWN ABOVE.

UTILITY DETAIL #8

(MANHOLE CASTING ADJUSTMENT)
CITY OF ANN ARBOR STANDARD PLAN SD–GU–6
APPLIES TO: SEE PLANS FOR LOCATIONS

Know what's below. Call before you dig. 811

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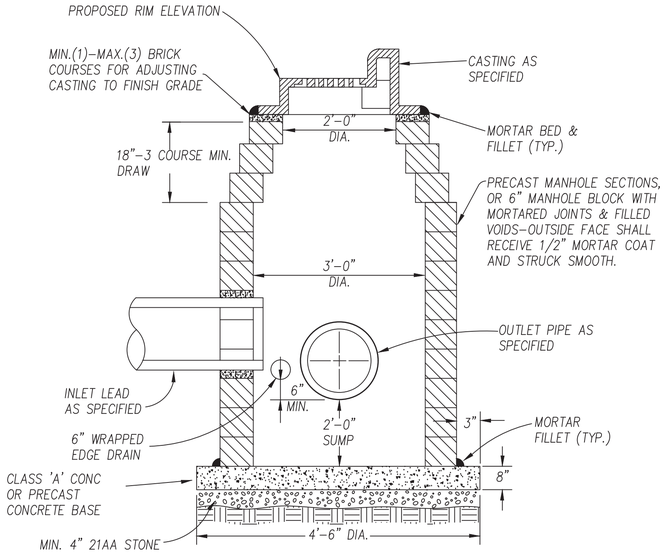
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITY DETAILS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

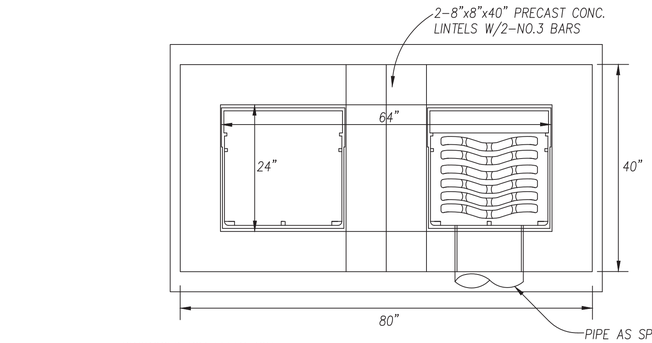
SCALE PLAN: #######
DRAWING No. 2018-034-UTD02
SHEET No. 17 OF 47

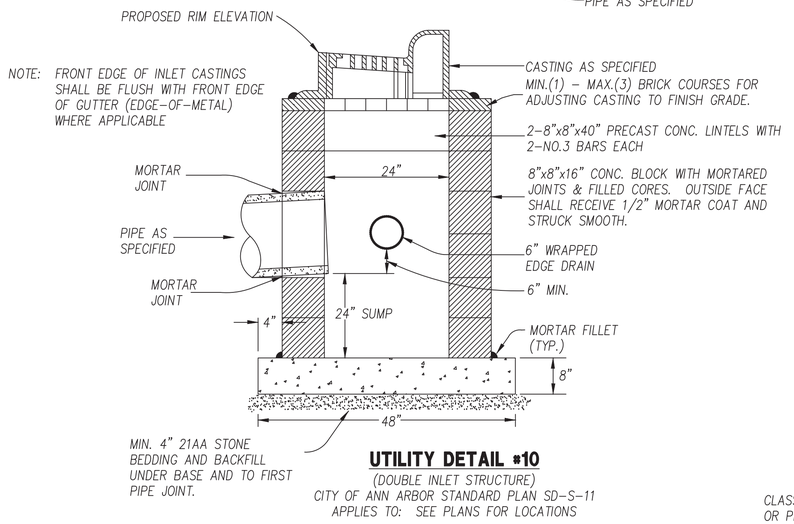


NOTE: FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE–OF–METAL) WHERE APPLICABLE

UTILITY DETAIL #9

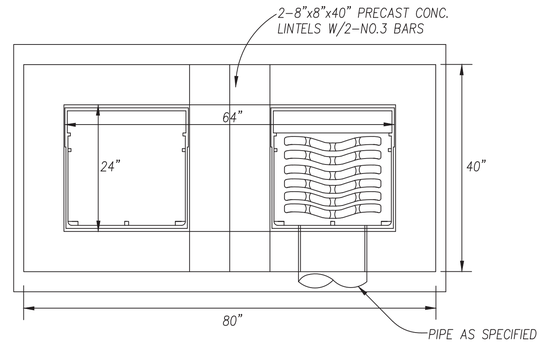
(INLET–JUNCTION CHAMBER)
CITY OF ANN ARBOR STANDARD PLAN SD–S–9
APPLIES TO: SEE PLANS FOR LOCATIONS

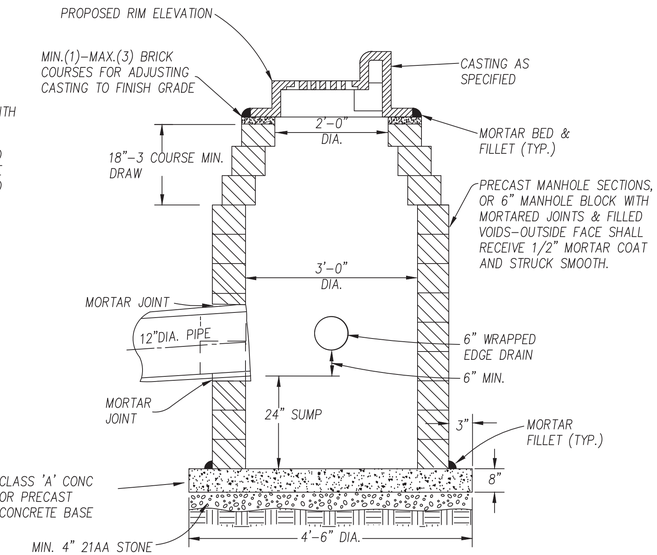




UTILITY DETAIL #10

(DOUBLE INLET STRUCTURE)
CITY OF ANN ARBOR STANDARD PLAN SD–S–11
APPLIES TO: SEE PLANS FOR LOCATIONS



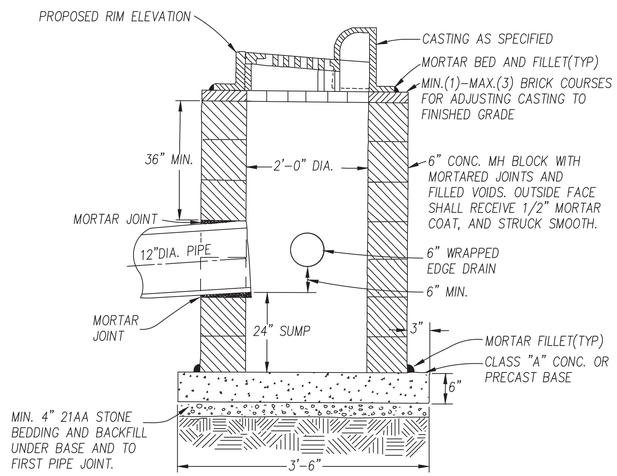


NOTE: FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE–OF–METAL) WHERE APPLICABLE

UTILITY DETAIL #10a

(3' DIAMETER DOUBLE INLET STRUCTURE – MODIFIED)
APPLIES TO: SEE PLANS FOR LOCATIONS

THE HIGH CAPACITY INLETS REQUIRE ADDITIONAL INVESTIGATION AND DESIGN DURING FINAL DESIGN. THIS 3' WIDE DOUBLE INLET WILL NOT BE USED.

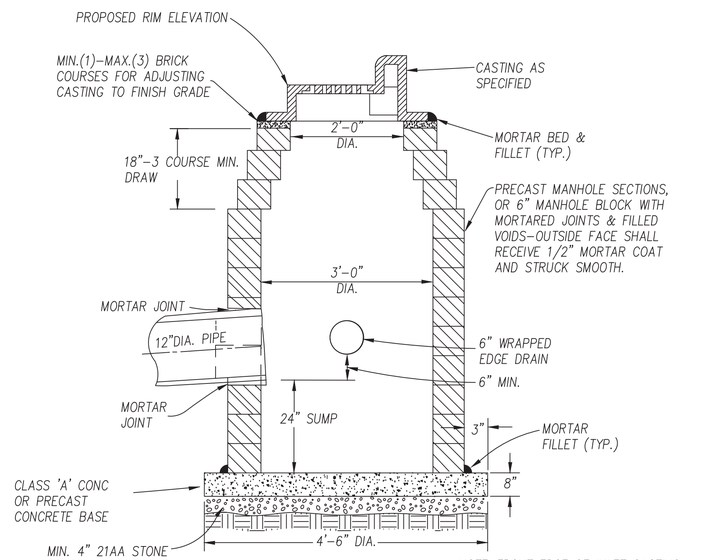


NOTE: MAY BE USED WITH ONLY SINGLE OUTLET PIPE, AND NO INLET PIPE

NOTE: FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE–OF–METAL) WHERE APPLICABLE

UTILITY DETAIL #11

(2' DIAMETER SINGLE INLET STRUCTURE)
CITY OF ANN ARBOR STANDARD PLAN SD–S–10
APPLIES TO: SEE PLANS FOR LOCATIONS



NOTE: FRONT EDGE OF INLET CASTING SHALL BE FLUSH WITH FRONT EDGE OF GUTTER (EDGE–OF–METAL) WHERE APPLICABLE

UTILITY DETAIL #12

(3' DIAMETER SINGLE INLET STRUCTURE)
CITY OF ANN ARBOR STANDARD PLAN SD–S–9
APPLIES TO: SEE PLANS FOR LOCATIONS

Know what's below. Call before you dig. 811

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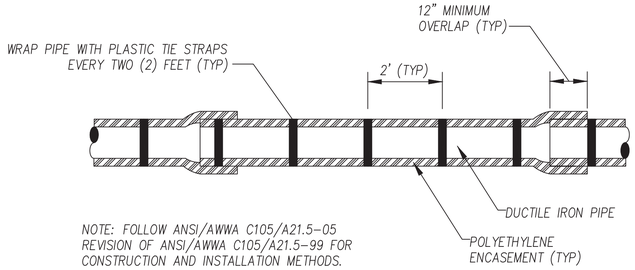
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITY DETAILS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: #######
DRAWING No. 2018-034-UTD03



THE CITY NOW USES A DIFFERENT TONE WIRE DETAIL WITH WM INSTALLATION - DETAILS TO BE UPDATED IN FINAL DESIGN.

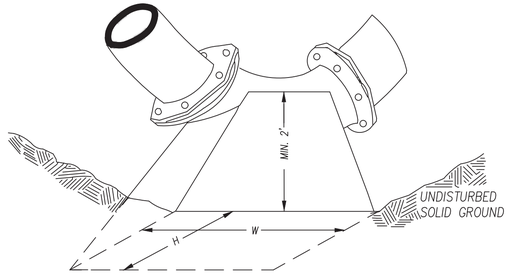
UTILITY DETAIL #13

(POLYETHYLENE ENCASEMENT)
APPLIES TO: POLYETHYLENE WRAPPED D.I. WATERMAIN
SEE PLANS FOR LOCATIONS

MINIMUM STANDARDS

REACTION BACKING: The Class "A" concrete at the Fitting face shall extend to within (2) inches of the bell and shall extend from the fitting face a mini- mum of (2) feet to the UNDISTURBED SOLID GROUND. The dimensions of the reaction backing (thrust block) at the face of the undisturbed solid ground shall be as shown in the Table below. If there isn't sufficient space for the installation of the "thrust block" without interference with other services, another arrangement satisfactory to the engineer shall be used, i.e. encasement.

Fittings I.D. Inches	Plug Tee Cross	Bends 90°		45°		22 1/2°		11 1/4°		Hydrant	
	W	H	W	H	W	H	W	H	W	H	W	H
2.5	1	1	1	1	1	1						
4	1	1	1	1	1	1						
6	2	1.5	2	2	2	1	1	1	1	1	2	1.5
8	2.5	2	3.5	2	2	2	2	1	1	1	2.5	2
12	3.5	3	5.5	3	3.5	2.5	2	2	2	1		
16	6	3.5	6	4	5	3	3.5	2.5	2	2		
20	8	4	12	4	6	4	4	3	3	2		
24	11	4	17	4	9	4	6	4	3.5	2		
30	11	4	17	4	9	4	6	4	3.5	2		

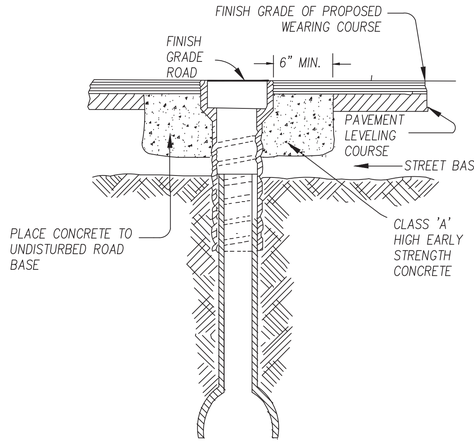


NOTE: THESE ARE MINIMUM STANDARDS. WHERE SOIL CONDITIONS DICTATE, ADJUSTMENTS IN SIZE SHALL BE MADE BY THE PUBLIC SERVICES DIRECTOR.

W = WIDTH IN FEET
H = HEIGHT IN FEET

UTILITY DETAIL #14

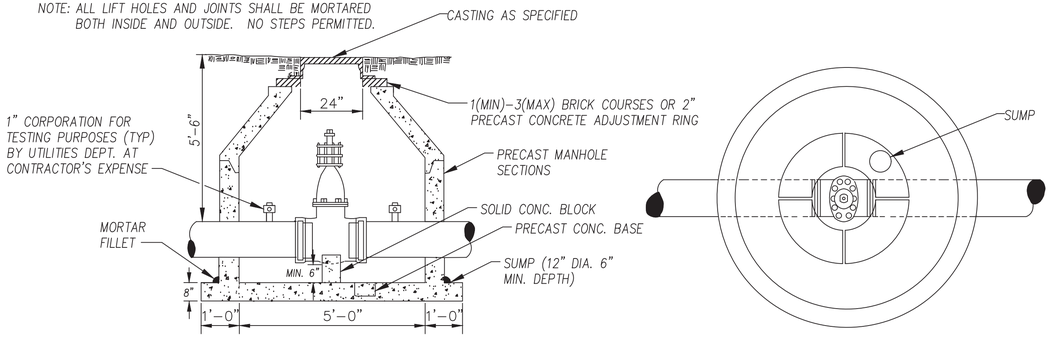
(THRUST BLOCK)
CITY OF ANN ARBOR STANDARD SD-W-2
APPLIES TO: SEE PLANS FOR LOCATIONS



NOTE: RAISE CASTING TO PROPOSED FINISH STREET GRADE AFTER PLACEMENT OF LEVELING COURSE(S) AND PRIOR TO PLACING FINAL SURFACE COURSE

UTILITY DETAIL #15

(WATER VALVE BOX ADJUSTMENT)
CITY OF ANN ARBOR STANDARD SD-GU-7
APPLIES TO: SEE PLANS FOR LOCATIONS



UTILITY DETAIL #16

(GATE WELL FOR 12" AND SMALLER WATER MAIN)
CITY OF ANN ARBOR STANDARD SD-W-3
APPLIES TO: SEE PLANS FOR LOCATIONS

Know what's below. Call before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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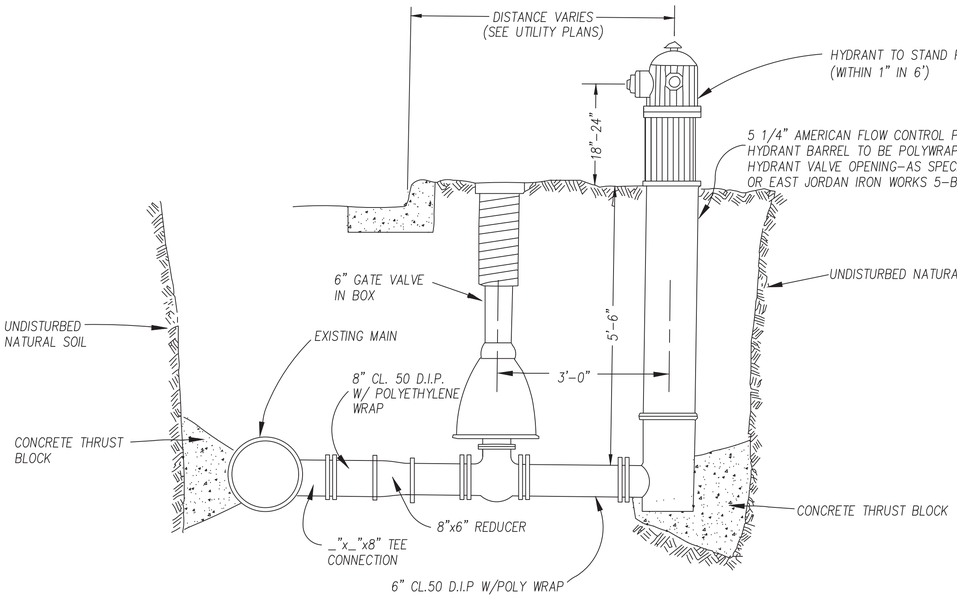
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITY DETAILS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ######
DRAWING No. 2018-034-UTD04
SHEET No. 19 OF 47

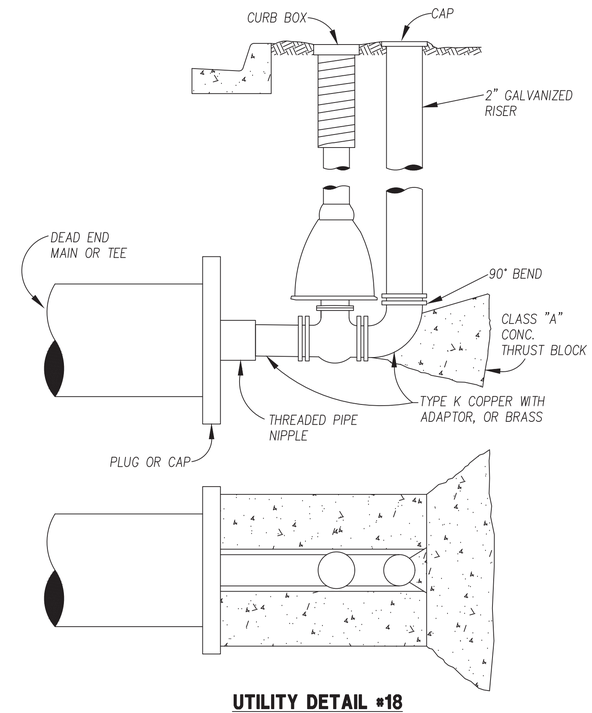
THE CITY NOW USES A DIFFERENT TONE WIRE DETAIL WITH WM INSTALLATION - DETAILS TO BE UPDATED IN FINAL DESIGN.



NOTE: ALL PIPE, FITTINGS AND HYDRANT BARREL TO BE POLYWRAPPED PER AWWA C105

UTILITY DETAIL #17

(FIRE HYDRANT ASSEMBLY)
CITY OF ANN ARBOR STANDARD SD-W-1
APPLIES TO: SEE PLANS FOR LOCATIONS



UTILITY DETAIL #18

(PERMANENT BLOW-OFF)
CITY OF ANN ARBOR STANDARD SD-W-6
APPLIES TO: SEE PLANS FOR LOCATIONS

Know what's **below.** **Call before you dig.**

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

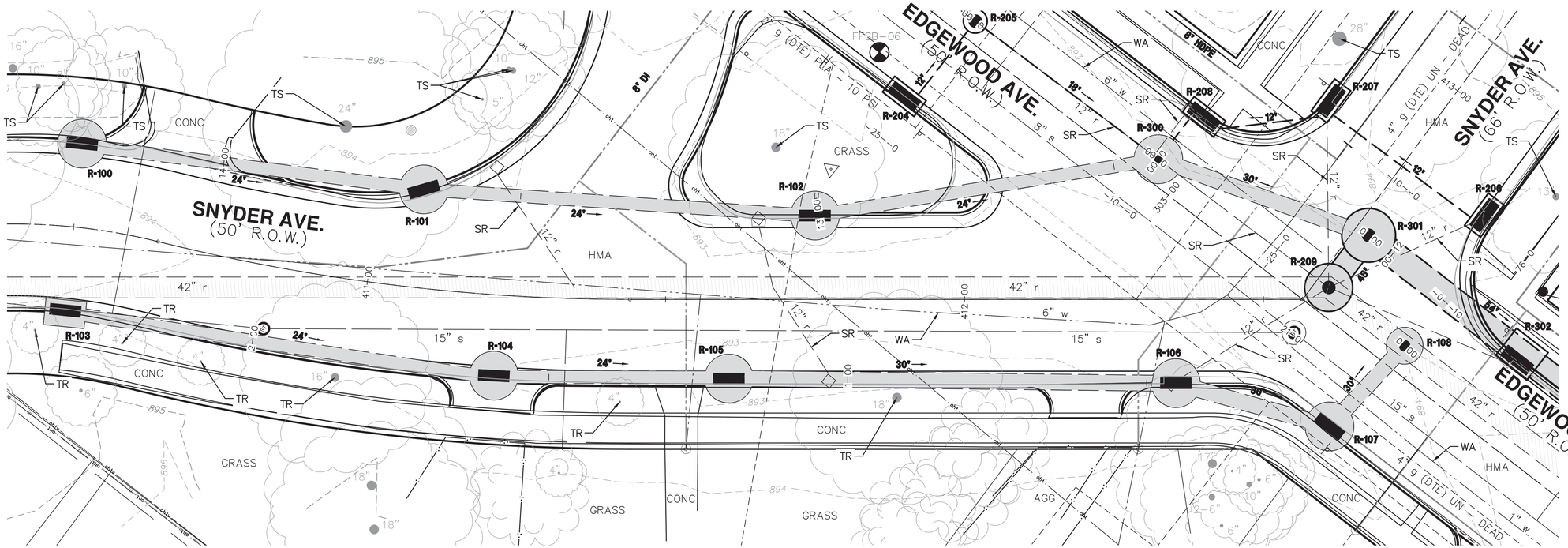
UTILITY DETAILS

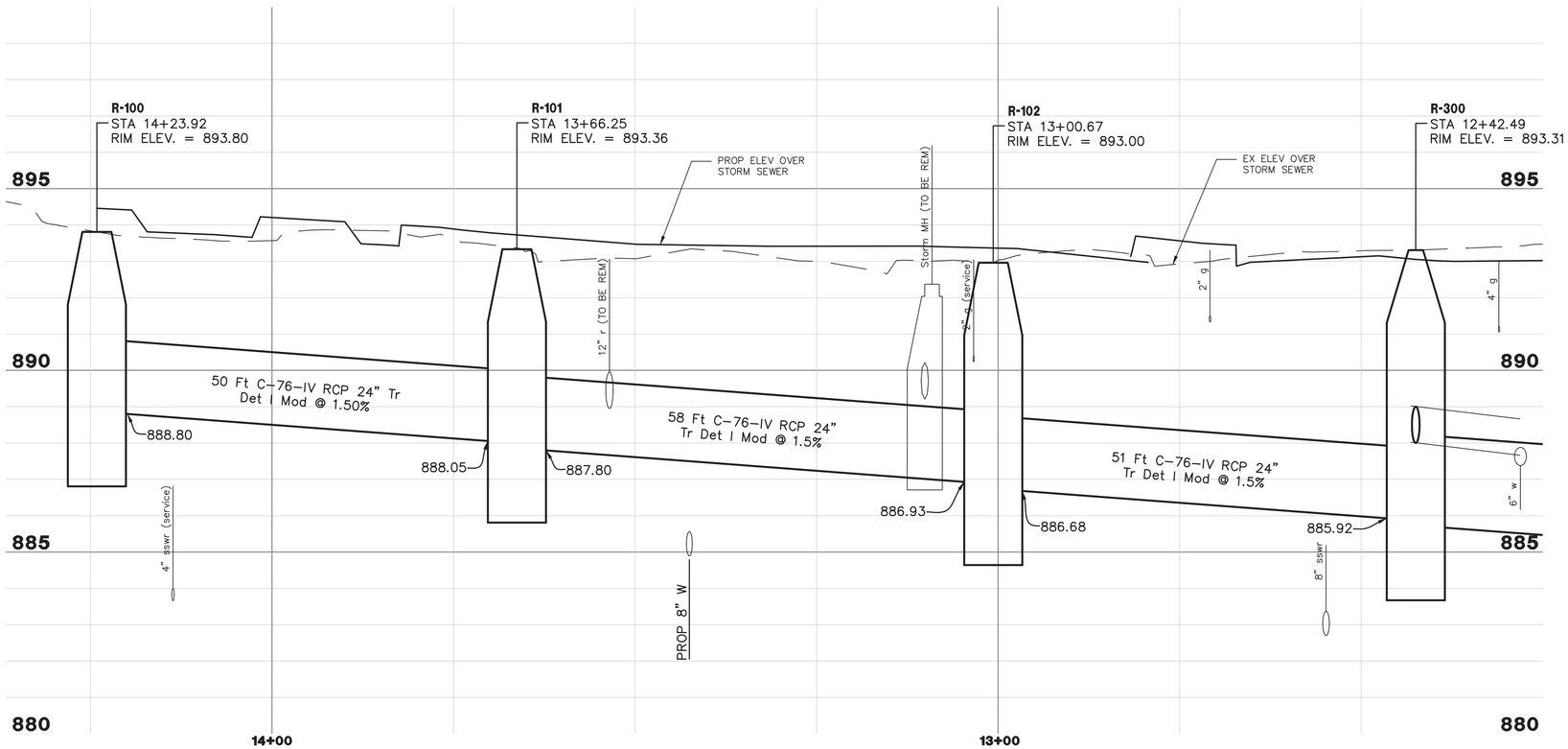
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No. **2018-034-UTD05**

SHEET No.





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-100/ *410+50.00, 14.00' LT*	**893.80 (P)**	**889.80 6" U.D. NW** **889.80 6" U.D. SE** **888.80 24" SE**	*7.00'*	*8' DIA.*	*H-V INLET, NEW, COVER K, (UD #X)*
R-101/ *411+07.66, 16.47' LT*	**893.36 (P)**	**889.36 6" U.D. NW** **889.36 6" U.D. SE** **888.05 24" NW** **887.80 24" SE**	*7.52'*	*8' DIA.*	*H-V INLET, NEW, COVER K, (UD #X)*
R-102/ *411+75.00, 14.00' LT*	**893.00 (P)**	**889.00 6" U.D. NW** **889.00 6" U.D. SE** **886.93 24" NW** **886.68 24" SE**	*8.32'*	*8' DIA.*	*H-V INLET, NEW, COVER K, (UD #X)*
R-300/ *412+32.42, 23.42' LT 303+05.00, 3.73' RT*	**893.31 (P)**	**888.00 12" E** **887.96 18" N** **885.92 24" NW** **885.67 30" SE**	*9.64'*	*8' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
r-88-62438/ 412+35.42, 13.71' RT	*893.19 (e)*	*891.85 4" SW* *890.81 4" NW* *889.96 12" E*	*3.23'*	*12" DIA.*	*EX INLET*
r-88-62439/ 411+77.17, 12.49' RT	*892.36 (e)*	*887.47 12" NE*	*4.89'*	*12" DIA.*	*EX INLET*
r-88-62440/ 411+20.49, 20.15' LT	*892.72 (e)*	*889.28 12" SW*	*3.44'*	*12" DIA.*	*EX INLET*
r-88-62441/ 411+65.64, 12.42' LT	*892.37 (e)*	*892.37 12" SW*	*3.16'*	*12" DIA.*	*EX INLET*
r-92-51993/ 412+60.72, 2.23' RT	*893.87 (e)*	*887.65 12" SE* *887.23 12" NE* *887.20 12" N* *885.13 42" NW* *885.07 42" S*	*8.80'*	*42" DIA.*	*EX STORM MANHOLE*
SMH #501505/ 410+84.30, 10.51' LT	*893.57 (e)*	*882.58 15" NW* *882.56 15" SE*	*11.01'*	*15" DIA.*	*EX SANITARY MANHOLE*
SMH #501506/ 409+89.36, 4.73' LT	*895.04 (e)*	*882.87 15" W* *882.85 15" SE*	*12.19'*	*15" DIA.*	*EX SANITARY MANHOLE*
SMH #430818/ 412+55.09, 5.55' RT	*893.81 (e)*	*882.86 6" W* *(not found)* *882.15 8" N* *881.69 15" NW* *881.66 15" S*	*12.15'*	*15" DIA.*	*EX SANITARY MANHOLE*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation UD=_ = Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

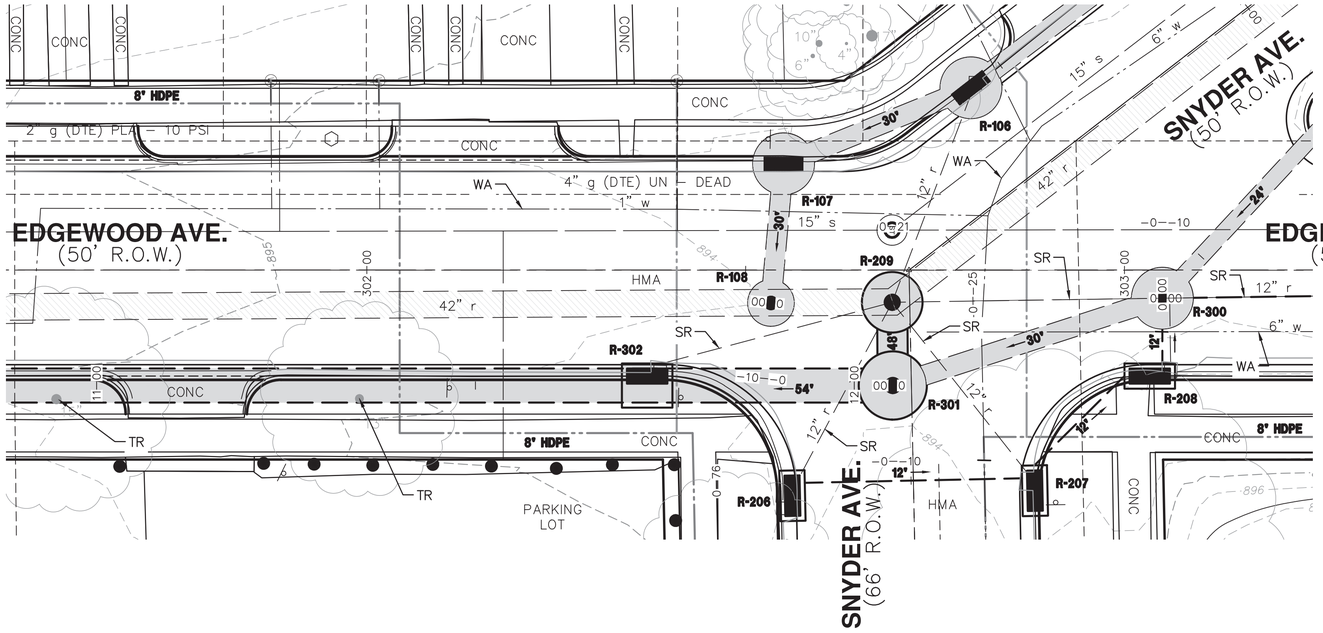
UTILITIES - STORM SEWER

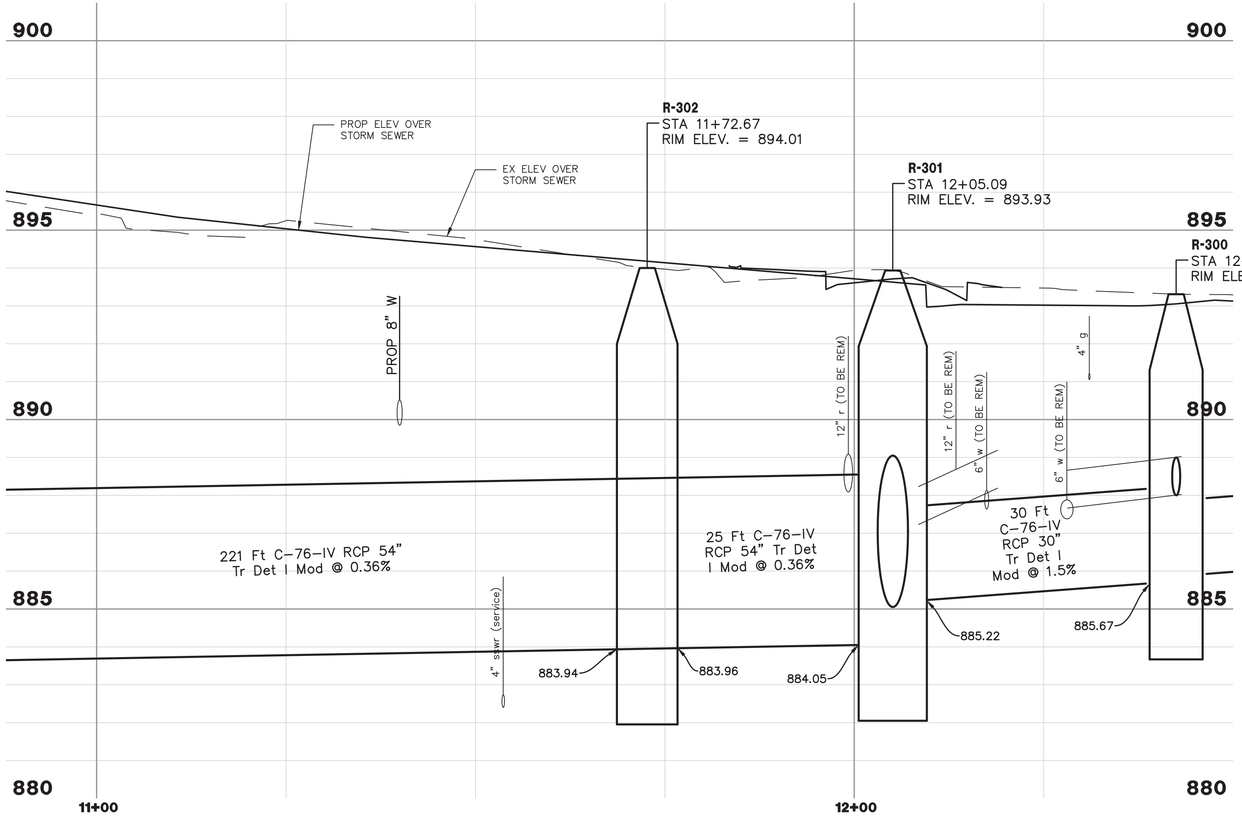
SNYDER AVENUE

SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. **2018-034-UT01**

SHEET No. 21 **OF** 47





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-209 / *302+69.34, 4.27' RT 412+60.15, 2.31' RT*	**893.87 (P)**	*887.65 12" SE* **(REM)** *887.23 12" NE* **(REM)** *887.20 12" N* **(REM)** *885.13 42" NW (EX) 885.07 42" S (EX)* **885.05 48" E**	*10.82'*	*8" DIA.*	*REPLACE EXISTING STORM MANHOLE, NEW, COVER B, (UD #X)*
R-300 / *303+05.00, 3.73' RT 412+32.42, 23.42' LT*	**893.31 (P)**	**888.00 12" E 887.96 18" N 885.92 24" NW 885.67 30" SE**	*9.64'*	*8" DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-301 / *302+69.42, 15.25' RT*	**893.93 (P)**	**885.23 30" NW 885.05 48" W 884.05 54" S**	*11.88'*	*9' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-302 / *302+37.00, 14.00' RT*	**894.01 (P)**	**890.01 6" U.D. N 890.01 6" U.D. S 883.96 54" N 883.94 54" S**	*12.03'*	*SPECIAL*	*H-V DROP INLET, NEW, COVER K, (UD #X)*
r-88-62436/ 302+55.75, 30.64' RT	*893.35 (e)*	*888.73 12" NW*	*4.62'*	*12" DIA.*	*EX INLET*
r-88-62437/ 302+38.69, 12.42' RT	*893.37 (e)*	*888.77 12" W*	*4.60'*	*12" DIA.*	*EX INLET*
r-88-62444/ 303+06.09, 12.36' RT	*892.53 (e)*	*888.17 12" W*	*4.36'*	*12" DIA.*	*EX INLET*
r-88-62445/ 302+87.23. 27.02' RT	*892.83 (e)*	*888.19 12" SW*	*4.64'*	*12" DIA.*	*EX INLET*

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CONSTRUCTION KEY

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▨	EX SEWER PIPE TO REMAIN

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

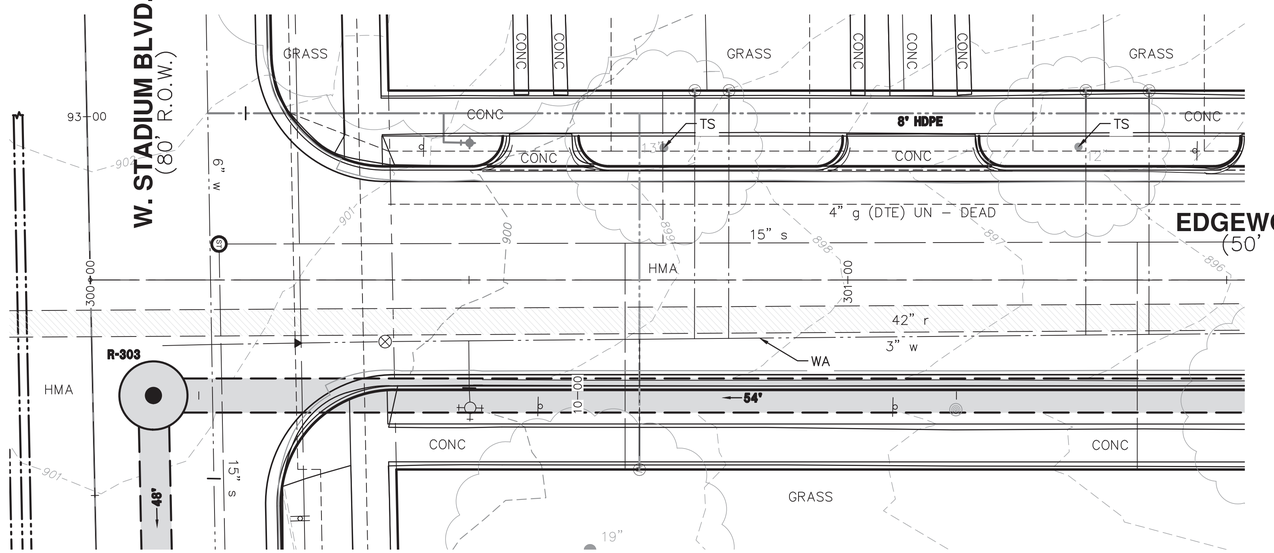
UTILITIES - STORM SEWER

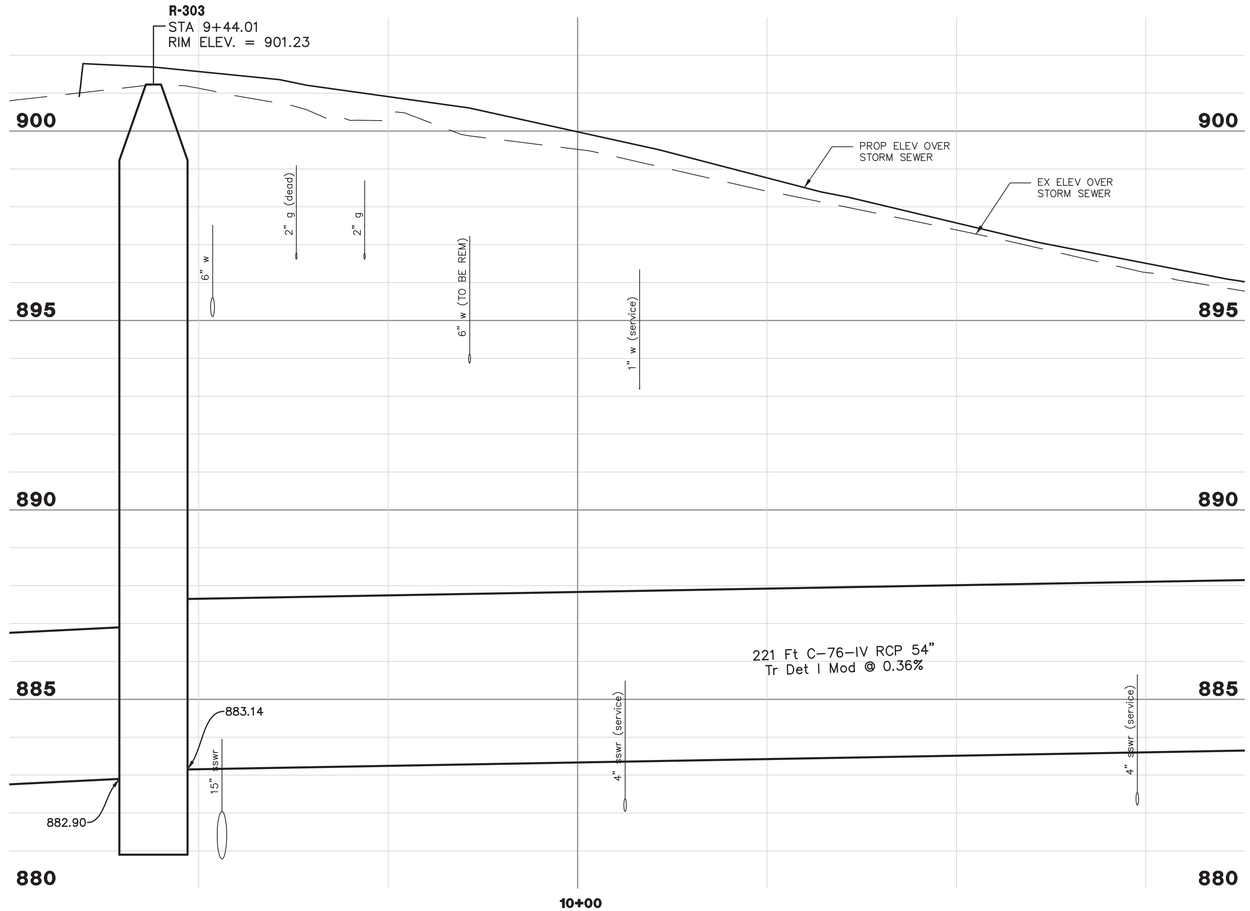
EDGEWOOD AVENUE

SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. **2018-034-UT02**

SHEET No. 22 **OF** 47





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-303 / *300+08.34, 15.25' RT* *93+36.98, 8.00' LT*	**901.23 (P)**	**883.15 54" N** **882.90 48" E**	*20.33'*	*9' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
SMH #435497/ *300+17.00, 4.74' LT*	*901.57 (e)*	*881.05 15" N* *880.86 15" E*	*20.71'*	*15" DIA.*	*EX SANITARY MANHOLE*

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CONSTRUCTION KEY

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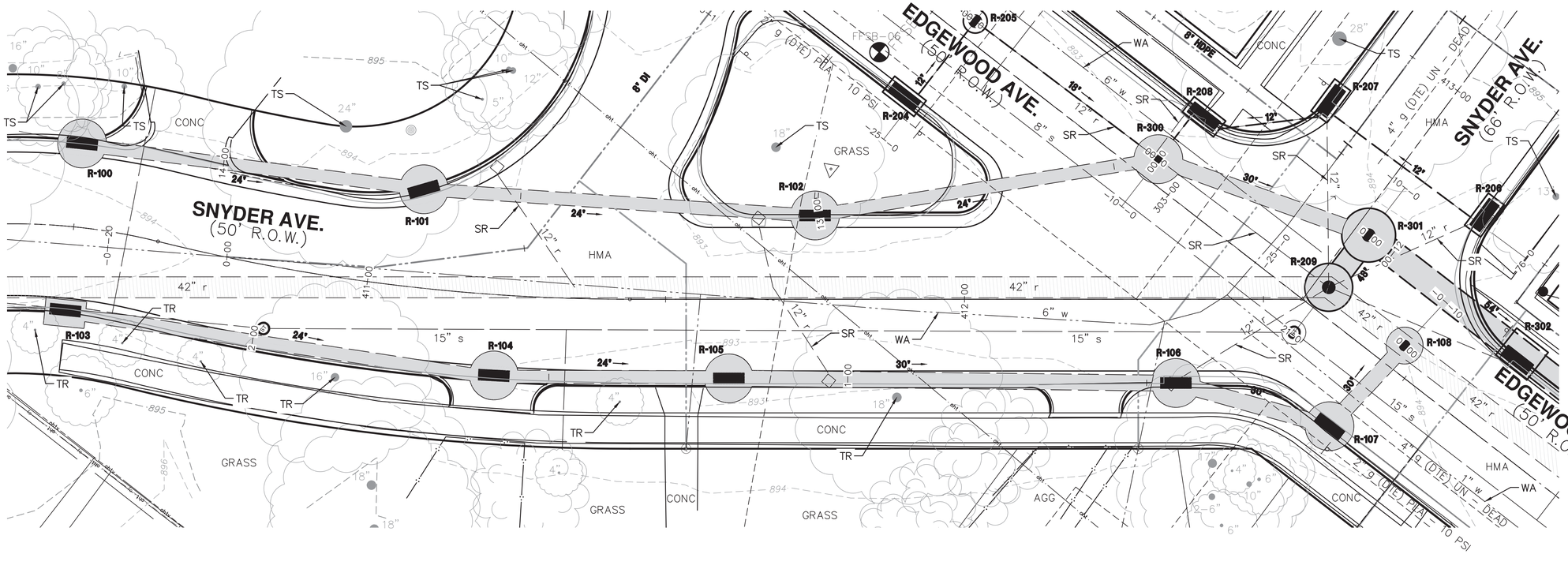
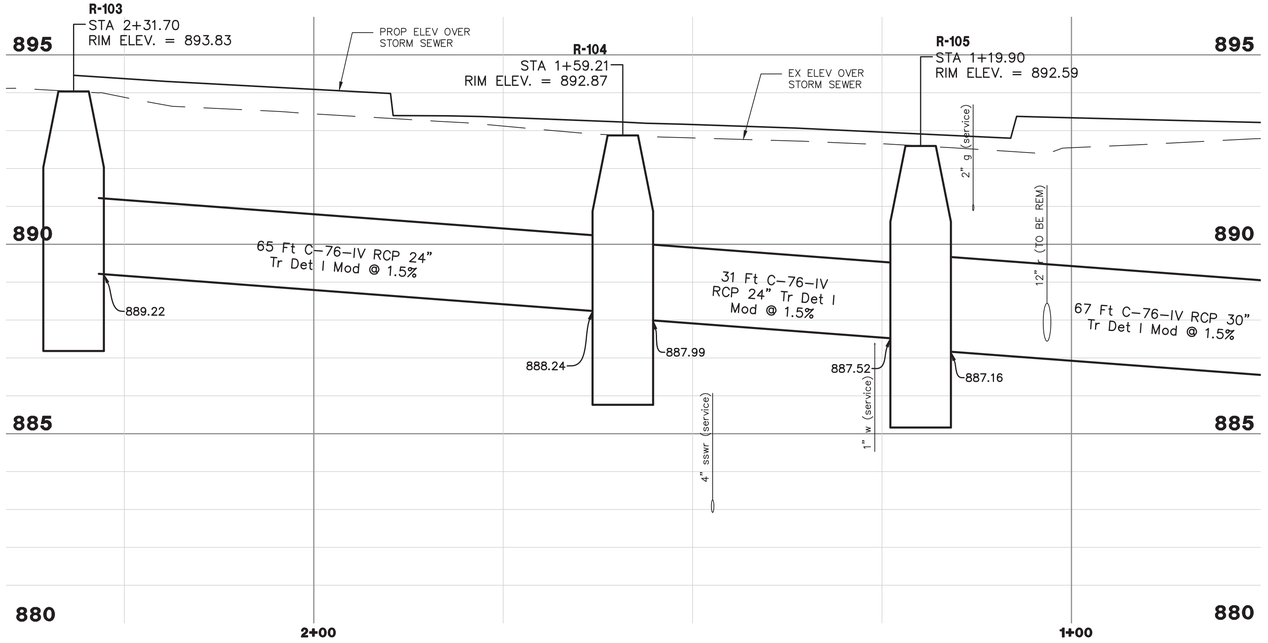
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
EDGEWOOD AVENUE

SCALE **PLAN:** 1" = 10' **PROFILE:** 1" = 2'

DRAWING No. **2018-034-UT03**

SHEET No.
23 **OF** 47





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-103/ *410+50.00, 14.00' RT*	**893.83 (P)**	**889.83 6" U.D. NW** **889.83 6" U.D. SE** **889.22 24" SE**	*6.73'*	*8' DIA.*	*H–V INLET, NEW, COVER K, (UD #X)*
R-104/ *411+22.16, 14.00' RT*	**892.87 (P)**	**888.87 6" U.D. NW** **888.87 6" U.D. SE** **888.24 24" NW** **887.99 24" SE**	*6.96'*	*8' DIA.*	*H–V INLET, NEW, COVER K, (UD #X)*
R-105/ *411+60.58, 14.00' RT*	**892.59 (P)**	**888.59 6" U.D. NW** **888.59 6" U.D. SE** **887.52 24" NW** **887.16 30" SE**	*7.50'*	*8' DIA.*	*H–V INLET, NEW, COVER K, (UD #X)*

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SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - STORM SEWER

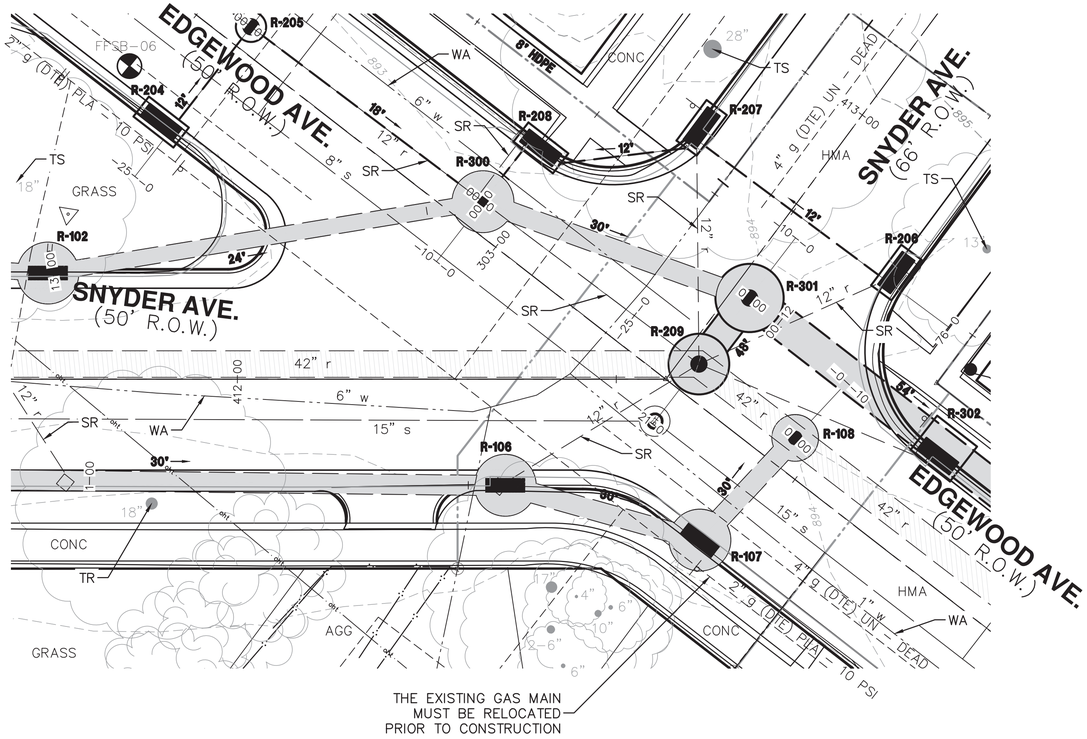
SNYDER AVENUE

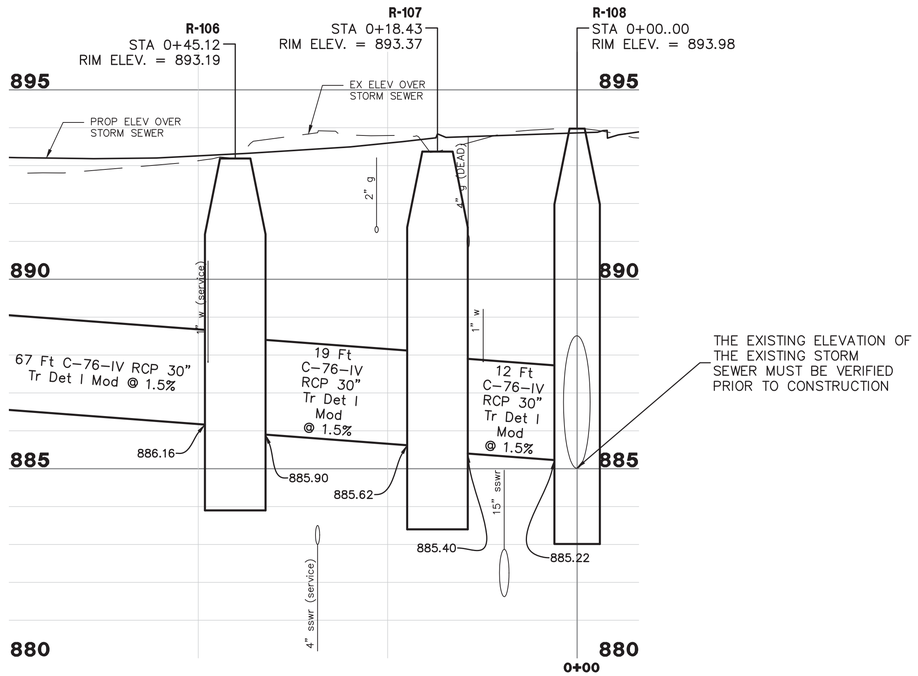
SCALE 1" = 10' PROFILE 1" = 2'

DRAWING No. 2018-034-UT04

SHEET No. 24 OF 47

Z:\NC\Canton\18255020(AA–Snyder)\Design\S–Snyder–UT (10 SCALE).dwg Dwg Created: 27–Jan–20 — _a2 standard bw.stb – Plot Date: 27–Jan–20





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-106/ *412+35.34, 14.00' RT*	**893.19 (P)**	**889.19 6" U.D. NW** **889.19 6" U.D. SE** **886.16 30" NW** **885.90 30" SE**	*9.29'*	*8' DIA.*	*H-V INLET, NEW, COVER K, (UD #X)*
R-107/ *302+55.00, 14.00' LT*	**893.37 (P)**	**889.37 6" U.D. N** **889.37 6" U.D. S** **885.62 30" NW** **885.40 30" E**	*9.97'*	*8' DIA.*	*H-V INLET, NEW, COVER K, (UD #X)*
R-108/ *302+53.53, 4.35' RT*	**893.98 (P)**	**885.22 30" W** **885.00 42" N (EX)** **885.00 42" S (EX)**	*10.98'*	*6' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*

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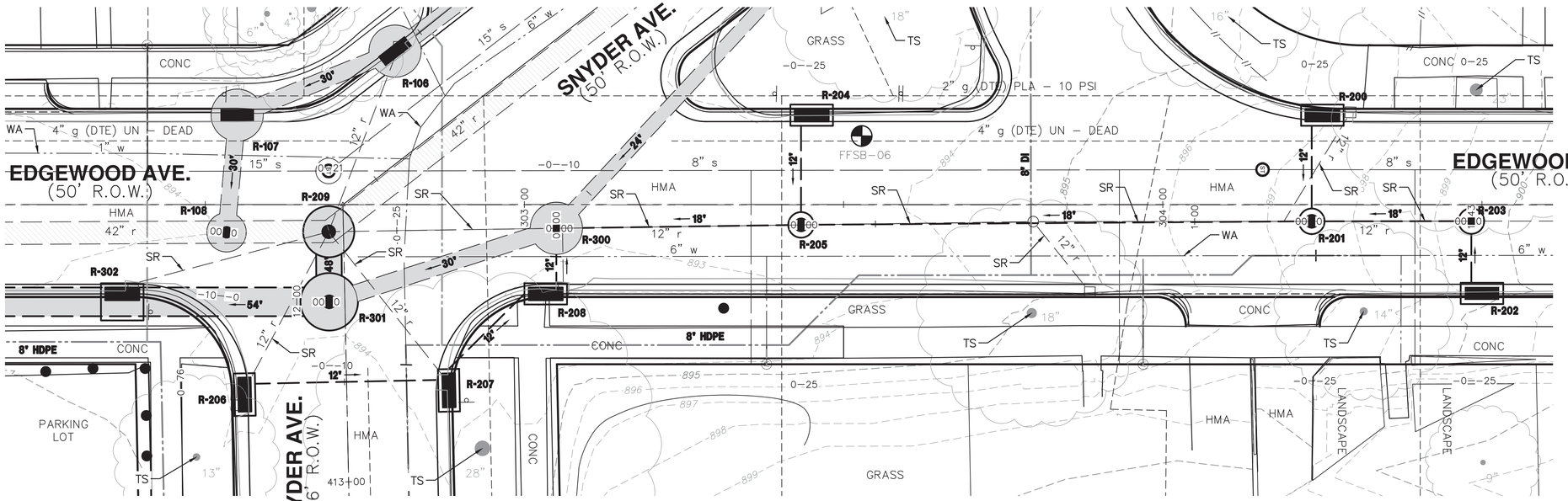
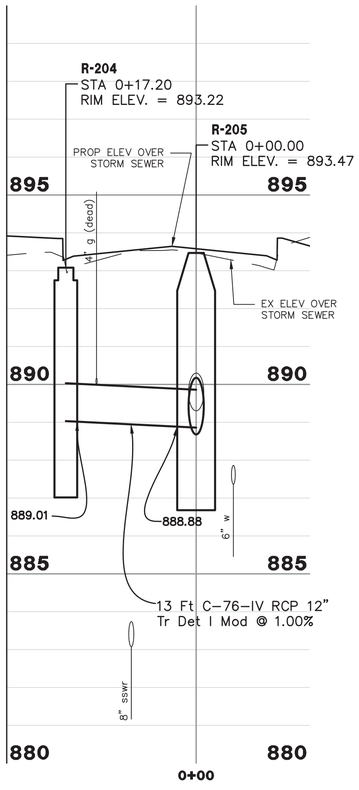
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
SNYDER AVENUE

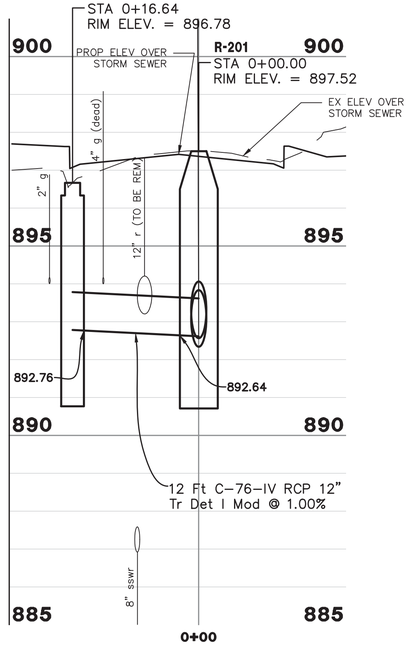
SCALE 1" = 10' | PROFILE: 1" = 2'

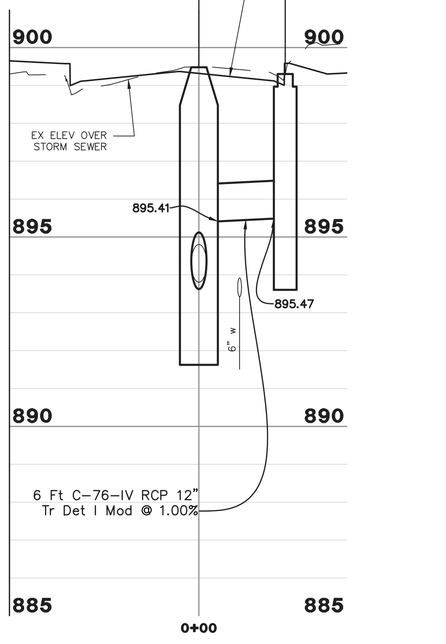
DRAWING No. **2018-034-UT05**

SHEET No.
25 **OF** 47









STRUCTURE / STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION / CONSTRUCTION / DETAIL
R-200 / *304+25.00, 14.00' LT*	**896.78 (P)**	**892.78 6" U.D. N** **892.78 6" U.D. S** **892.70 12" E**	*6.08'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-201 / *304+23.34, 2.64' RT*	**897.52 (P)**	**892.69 12" W** **892.58 12" N** **892.22 18" S**	*7.17'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-202 / *304+48.33, 14.00' RT*	**899.30 (P)**	**895.30 6" U.D. N** **895.30 6" U.D. S** **895.47 12" W**	*7.85'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-203 / *304+48.33, 2.61' RT*	**899.50 (P)**	**895.41 12" E** **893.82 12" N (EX)** **893.54 18" S**	*7.45'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-204 / *303+45.00, 14.00' LT*	**893.22 (P)**	**889.22 6" U.D. N** **889.22 6" U.D. S** **888.95 12" E**	*6.27'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-205 / *303+43.34, 3.20' RT*	**893.47 (P)**	**889.03 18" N** **888.88 12" W** **888.68 18" S**	*6.79'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD=_ = Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN REMOVAL
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

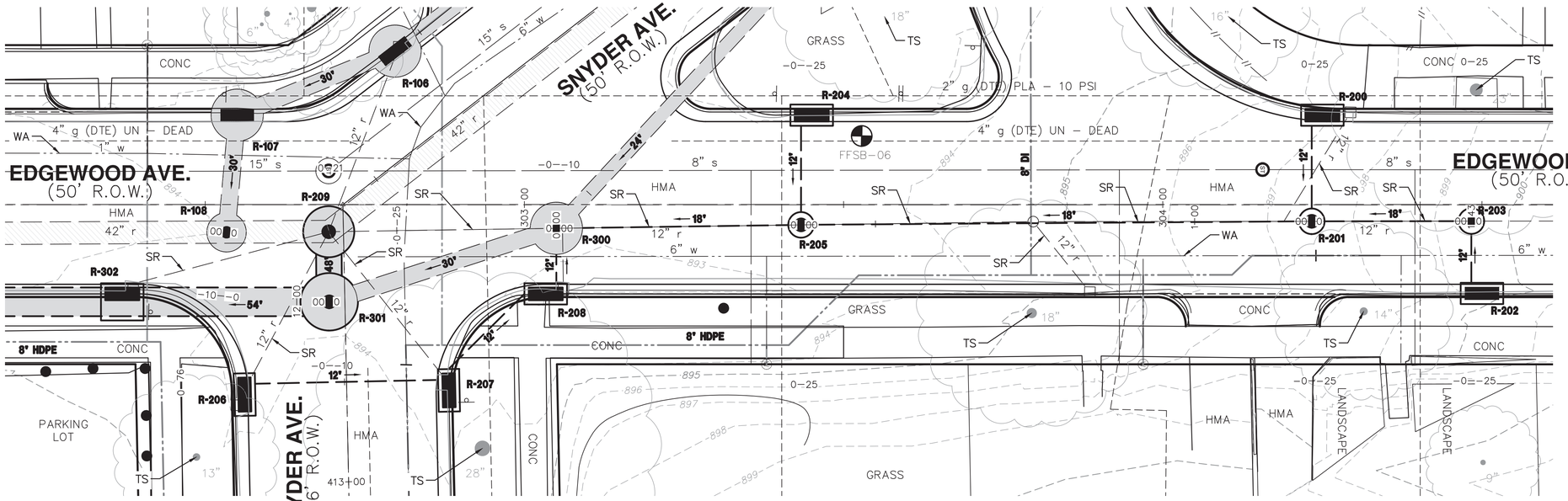
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

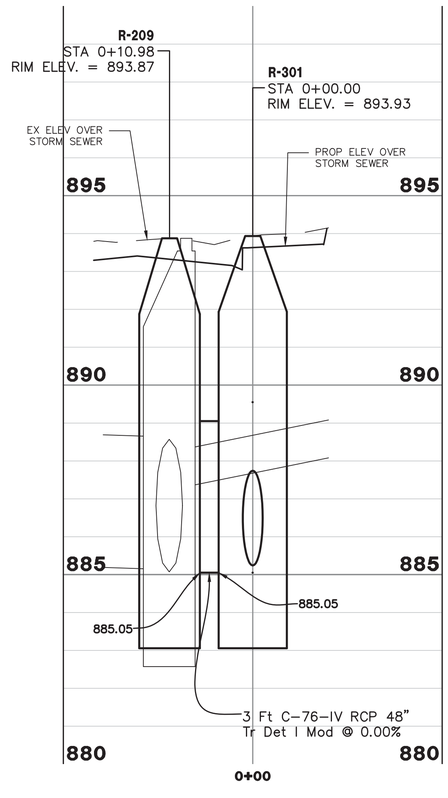
UTILITIES - STORM SEWER
EDGEWOOD AVENUE

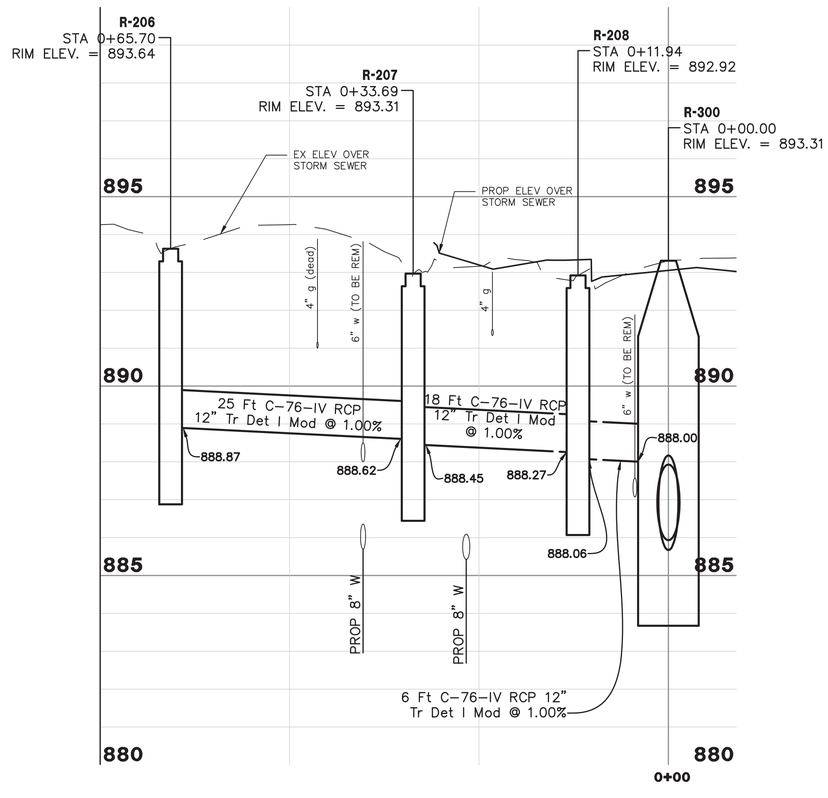
SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. **2018-034-UT06**

SHEET No. 26 **OF** 47







STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-206 / *412+86.00, 16.00' RT*	**893.64 (P)**	**889.64 6" U.D. E** **889.64 6" U.D. W** **888.75 12" N**	*6.89'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-207 / *412+86.00, 16.00' LT*	**893.31 (P)**	**889.31 6" U.D. E** **889.31 6" U.D. W** **888.61 12" S** **888.36 12" NW**	*6.95'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-208 / *303+03.33, 14.00' RT*	**892.92 (P)**	**888.92 6" U.D. N** **888.92 6" U.D. S** **888.28 12" SE** **888.03 12" W**	*6.89'*	*DBL. INLET*	*DOUBLE INLET, NEW, COVER K (2 EA), (UD #X)*
R-209 / *302+69.34, 4.27' RT* *412+60.15, 2.31' RT*	**893.87 (P)**	*887.65 12" SE* **(REM)** *887.23 12" NE* **(REM)** *887.20 12" N* **(REM)** *885.13 42" NW (EX)* *885.07 42" S (EX)* **885.05 48" E**	*10.82'*	*8' DIA.*	*REPLACE EXISTING STORM MANHOLE, NEW, COVER B, (UD #X)*
R-300 / *303+05.00, 3.73' RT* *412+32.42, 23.42' RT*	**893.31 (P)**	**888.00 12" E** **887.96 18" N** **885.92 24" NW** **885.67 30" SE**	*9.64'*	*8' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-301 / *302+69.42, 15.25' RT*	**893.93 (P)**	**885.23 30" NW** **885.05 48" W** **885.05 54" S**	*10.88'*	*9' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD=_ = Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN REMOVAL
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TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - STORM SEWER

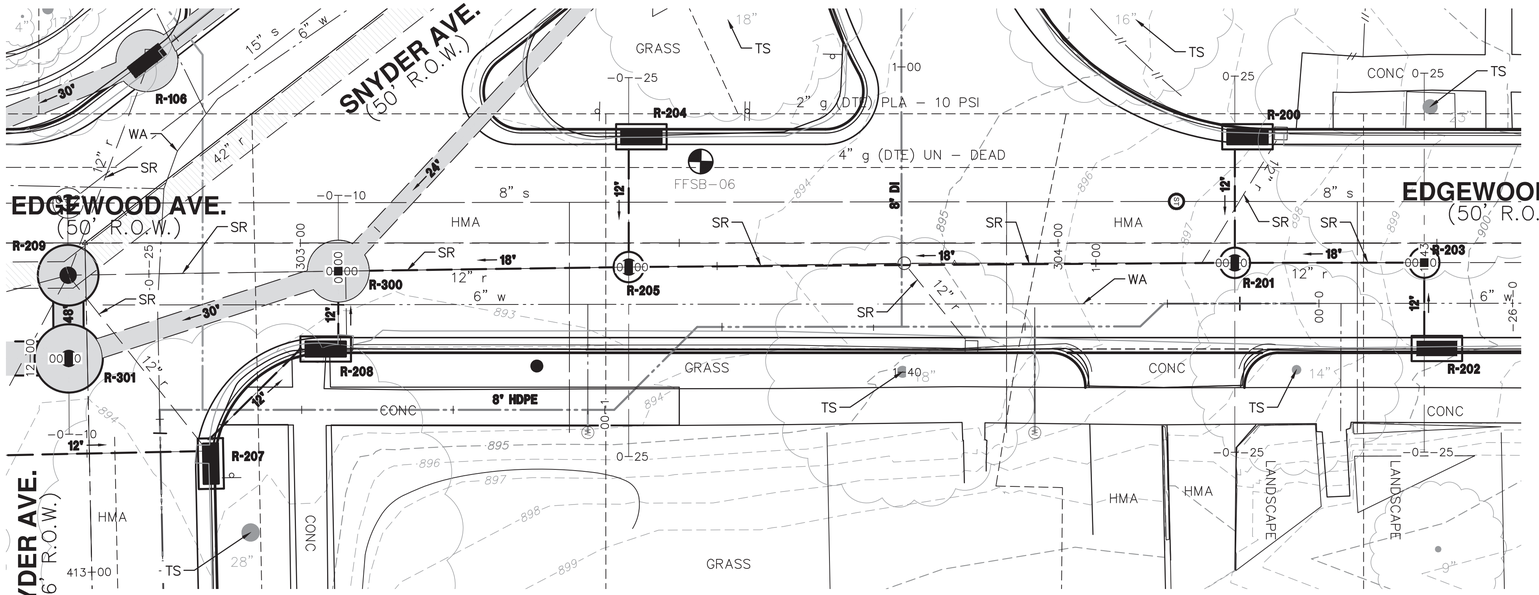
EDGEWOOD AVENUE

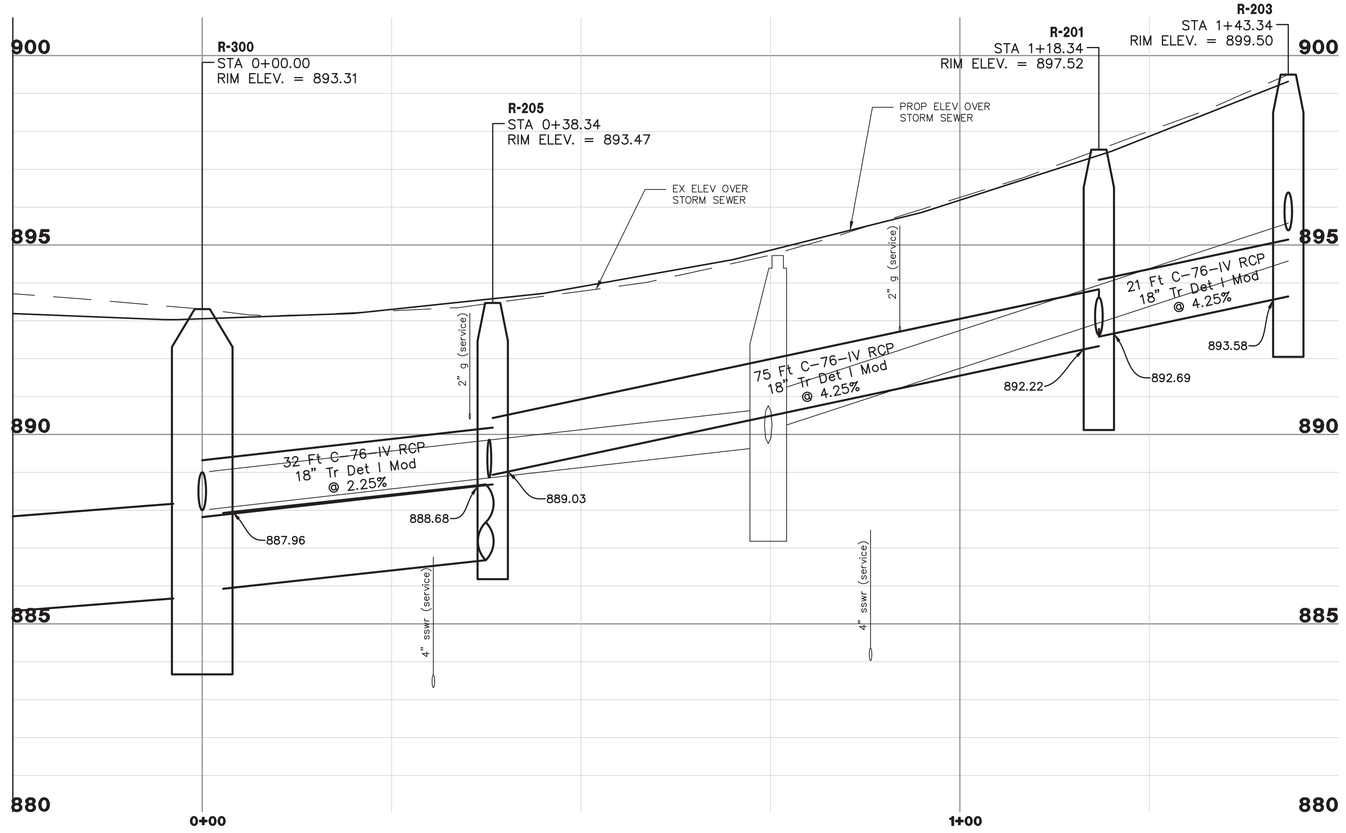
SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT07

SHEET No. 27 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-UT (10 SCALE).dwg Dwg Created: 27-Jan-20 — a2 standard bw.stb — Plot Date: 27-Jan-20





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-201 / *304+23.34, 2.64' RT*	**897.52 (P)**	**892.69 12" W** **892.58 12" N** **892.22 18" S**	*7.17'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-203 / *304+48.33, 2.61' RT*	**899.50 (P)**	**895.41 12" E** **893.82 12" N (EX)** **893.58 18" S**	*7.45'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-205 / *303+43.34, 3.20' RT*	**893.47 (P)**	**889.03 18" N** **888.88 12" W** **888.68 18" S**	*6.79'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-300 / *303+05.00, 3.73' RT* *412+32.42, 23.42' RT*	**893.31 (P)**	**888.00 12" E** **887.96 18" N** **885.92 24" NW** **885.67 30" SE**	*9.64'*	*8' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD= Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN REMOVAL
TR	TREE - REMOVE
TS	TREE - SAVE
▨	EX SEWER PIPE TO REMAIN

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - STORM SEWER

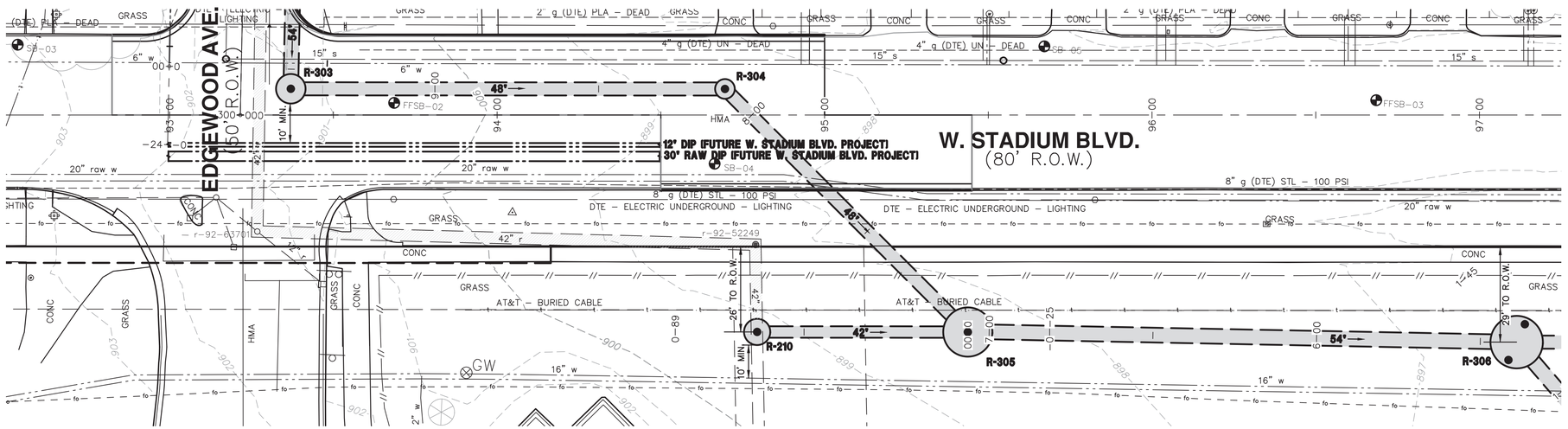
EDGEWOOD AVENUE

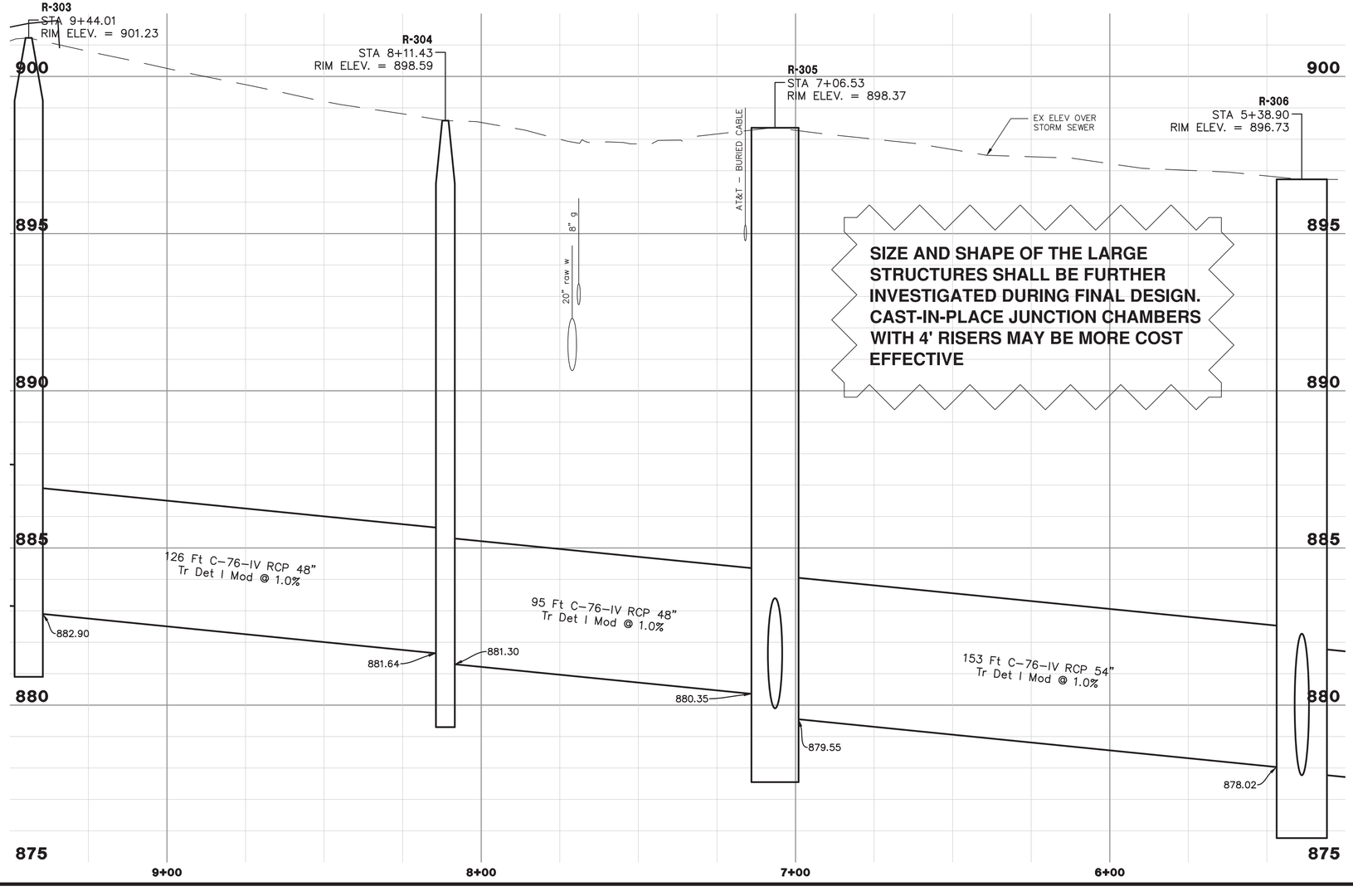
SCALE 1" = 10' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT08

SHEET No. 28 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-UT (10 SCALE).dwg Dwg Created: 27-Jan-20 -- _a2 standard bw.stb -- Plot Date: 27-Jan-20 _a2 standard bw.stb





SIZE AND SHAPE OF THE LARGE STRUCTURES SHALL BE FURTHER INVESTIGATED DURING FINAL DESIGN. CAST-IN-PLACE JUNCTION CHAMBERS WITH 4' RISERS MAY BE MORE COST EFFECTIVE

STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-303 / *93+36.98, 8.00' LT 300+08.34, 15.25' RT*	**901.23 (P)**	**883.15 54" N 882.90 48" E**	*20.33'*	*9' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-304 / *94+69.56, 8.00' LT*	**898.59 (P)**	**881.64 48" W 881.30 48" SE**	*17.86'*	*6" DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-305 / *95+43.73, 66.23' RT*	**898.37 (P)**	**880.35 48" NW 879.90 42" W 879.55 54" E**	*20.82'*	*15' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-306 / *97+11.34, 69.31' RT*	**896.73 (P)**	**878.03 54" W 877.77 48" E 877.77 54" SE**	*20.96'*	*16' DIA.*	*DIVERSION CHAMBER, NEW, COVER B, (UD #X)*
r-92-63701/ 93+26.74, 35.55' RT	*901.25 (e)*	*897.13 12" SW 895.61 12" SE 887.74 12" NW 883.94 42" N 883.93 42" E*	*17.32'*	*X' DIA.*	*RETAIN EX MANHOLE*
r-92-52249/ 94+78.92, 39.57' RT	*898.39' (e)*	*887.29 TO PARTITION WALL 880.87 42" W 880.87 42" S *CHANNEL BOTTOM*	*17.52'*	*X' DIA.*	*RETAIN EX MANHOLE*
r-88-62533/ 93+45.96, 50.84' RT	*900.87 (e)*	*895.89 12" NW*	*4.98'*	*12" DIA.*	*EX INLET*
r-88-64477/ 93+19.22, 39.29' RT	*901.47 (e)*	*897.29 12" NW*	*4.18'*	*12" DIA.*	*EX INLET*
r-88-64478/ 93+06.94, 30.84' RT	*901.64 (e)*	*899.03 4" SW 897.36 12" NE*	*4.28'*	*12" DIA.*	*EX INLET*
r-92-52249/ 94+78.92, 39.57' RT	*898.39 (e)*	*887.29 TO PARTITION WALL 880.87 42" W 880.87 42" S *CHANNEL BOTTOM*	*17.52'*	*X' DIA.*	*RETAIN EX MANHOLE*
r-92-52250/ 93+14.19, 25.16' RT	*901.46 (e)*	*896.97 12" SW 896.92 12" SE 893.14 12" SW 892.90 12" SE*	*8.56'*	*12" DIA.*	*EX STORM MANHOLE*
r-92-63701/ 93+26.74, 35.55' RT	*901.25 (e)*	*897.13 12" SW 895.61 12" SE 887.74 12" NW 883.94 42" N 883.93 42" E*	*17.32'*	*X' DIA.*	*RETAIN EX MANHOLE*
SMH #435496/ 95+54.62, 16.64' LT	*897.43 (e)*	*886.60 6" NW 886.45 6" NE 880.00 15" W 879.95 15" E*	*17.48'*	*15" DIA.*	*EX SANITARY MANHOLE*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD#_ = Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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ANN ARBOR, MI 48107-8647
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

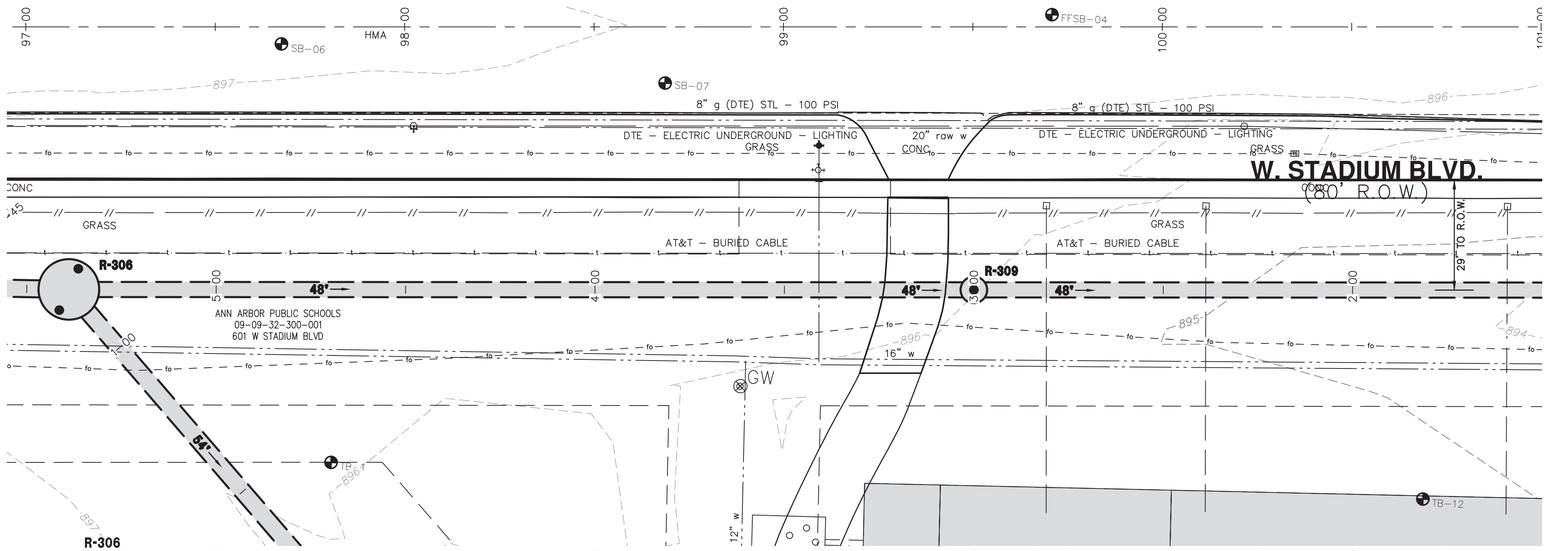
SCALE PLAN: 1" = 20' PROFILE: 1" = 2'

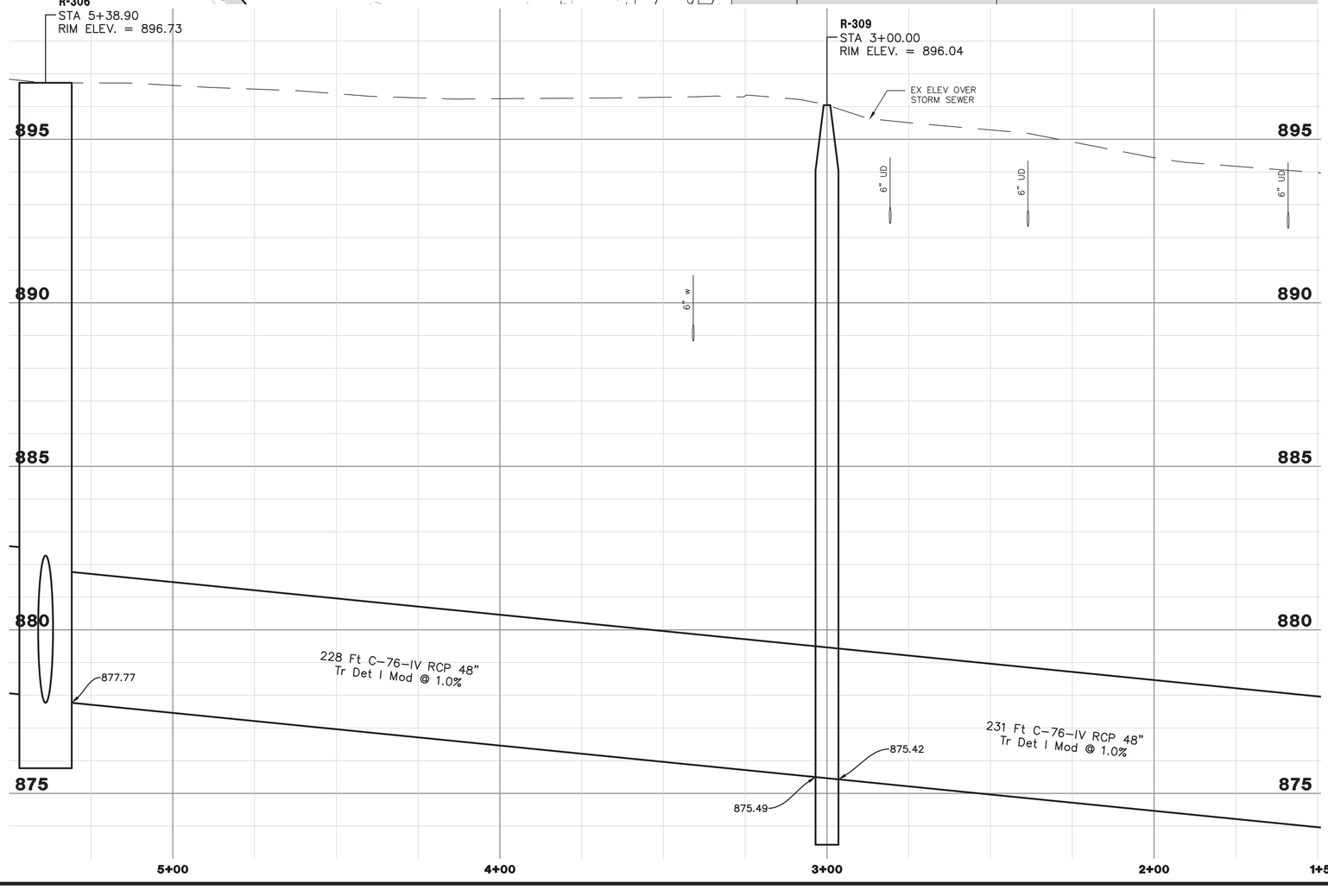
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
W. STADIUM BLVD. STA 92+50 TO STA 97+25

DRAWING No. 2018-034-UT09

SHEET No. 29 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-UT.dwg Dwg Created: 24-Jan-20 — _a2 standard bw.stb — Plot Date: 27-Jan-20





STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-306/ *97+11.34, 69.31' RT*	**896.73 (P)**	**878.02 54' W** **877.77 48' E** **877.77 54' SE**	*20.96'*	*16' DIA.*	*DIVERSION CHAMBER, NEW, COVER B, (UD #X)*
R-309/ *99+50.24, 69.41' RT*	**896.04 (P)**	**875.49 48' W** **875.42 48' E**	*22.62'*	*7' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD#_ = Utility Detail _**

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

Know what's **below.** **Call before you dig.**

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - STORM SEWER

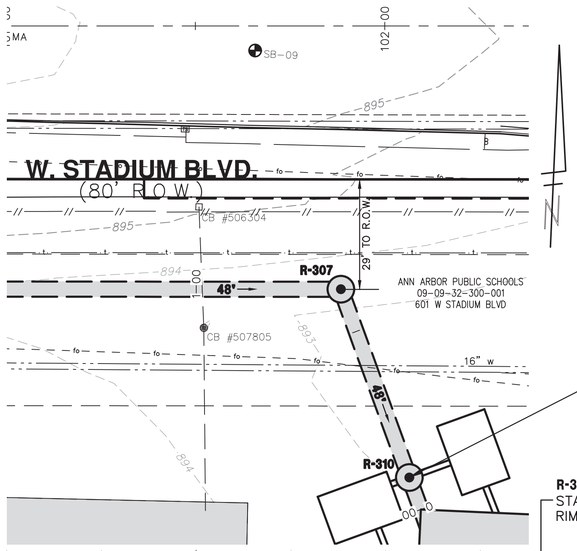
W. STADIUM BLVD. STA 97+25 TO STA 101+00

SCALE PLAN: 1" = 20' PROFILE: 1" = 2'

DRAWING No. **2018-034-UT10**

SHEET No. 30 **OF** 47

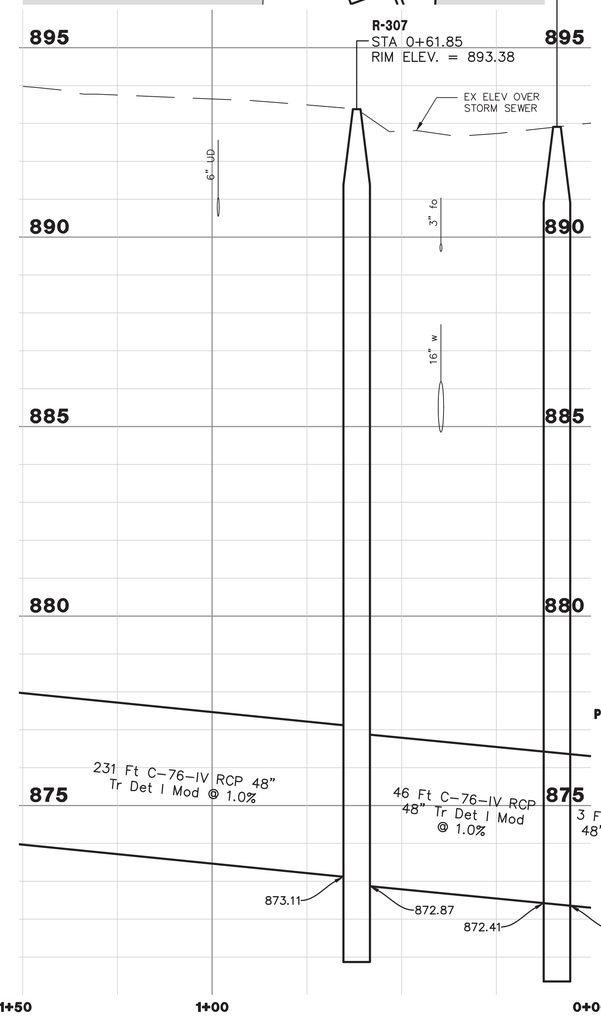
Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-UT.dwg Dwg Created: 24-Jan-20 – _a2 standard bw.stb – Plot Date: 27-Jan-20



VORTECH UNITS MAY BE PLACED IN ADVANCE OF THE PROPOSED BASIN IN A SIMILAR FASHION AS THE EXISTING BASIN TO THE WEST.

R-310 (VORTECH UNIT)
STA 0+08.98
RIM ELEV. = 892.91

VORTECH UNIT CONFIGURATION, SIZING, AND LOCATION TO BE FINALIZED DURING FINAL DESIGN. BASIN MATERIAL/CONFIGURATION MAY REQUIRE A DIFFERENT ALIGNMENT. IT IS ESTIMATED THAT A TOTAL OF 36 CFS MUST BE TREATED TO COVER THE FIRST 1" OF RAINFALL.



STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-307/ *101+88.39, 69.51' RT*	**893.38 (P)**	**873.12 48" W** **872.87 48" SE**	*22.51'*	*7' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-310/ *102+06.45, 119.21' RT*	**892.91 (P)**	**872.41 48" NW** **872.34 48" SE**	*22.56'*	*7' DIA.*	*VORTECH UNIT, NEW, COVER B, (UD #X)*
CB #506304/ 101+50.96, 47.77' RT	*895.20 (e)*	*891.89 6" S*	*3.31'*	*6' DIA.*	*EX INLET*
CB #507805/ 101+52.23, 79.69' RT	*892.98 (e)*	*889.92 6" N* *889.88 6" S*	*3.04'*	*6' DIA.*	*EX INLET*

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CONSTRUCTION KEY
SR SEWER PIPE REMOVAL
WA WATERMAIN ABANDONMENT
TR TREE – REMOVE
TS TREE – SAVE
EX SEWER PIPE TO REMAIN

Know what's **below.** **Call before you dig.** 811

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

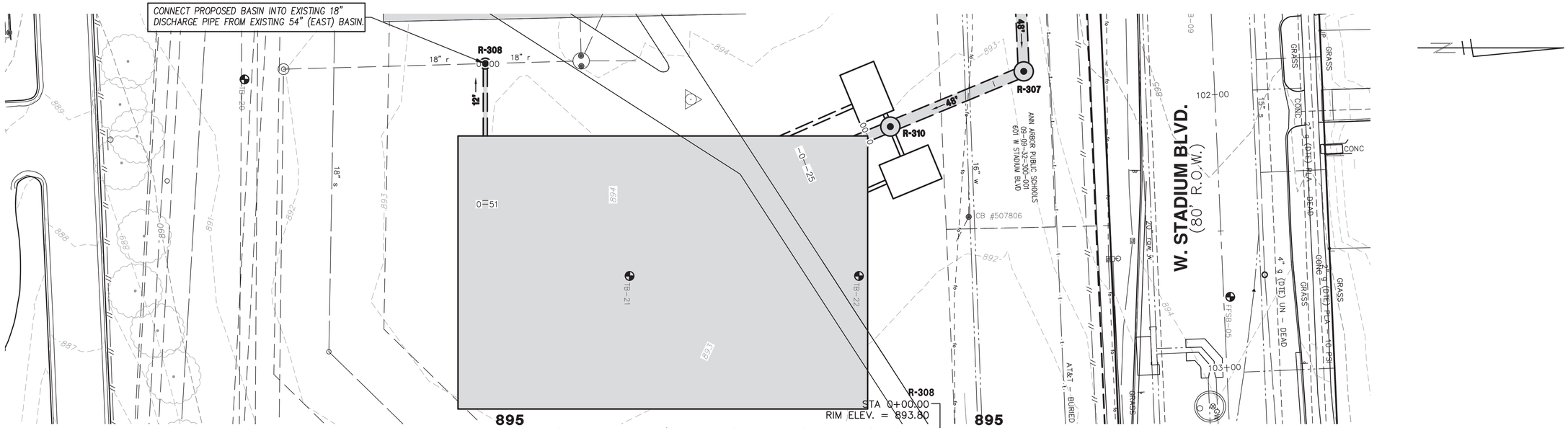
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
W. STADIUM BLVD. STA 101+00 TO STA 102+25

SCALE PLAN: 1" = 20' PROFILE: 1" = 2'

DRAWING No. **2018-034-UT11**

SHEET No. 31 **OF** 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-UT.dwg Dwg Created: 27-Jan-20 - _a2 standard bw.stb - Plot Date: 27-Jan-20



STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-308 / *101+76.85, 266.34' RT*	**893.80 IPI**	**870.95 12" E** *870.90 18" N* *870.90 18" S*	*24.83'*	*4' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
CB #507806/ 102+40.72, 91.98 RT	*892.53 (e)*	*889.66 4" W* *889.21 6" SE*	*3.32'*	*X" DIA.*	*EX INLET*
CB #x (sidewalk)/ 101+77.42, 231.23' RT	*894.08 (e)*	*889.27 12" NW* *886.43 12" NW* *871.14 18" W* *871.04 18" S*	*23.04'*	*X" DIA.*	*EX INLET*
CB #x (grass)/ 101+75.64, 340.25' RT	*891.98 (e)*	*870.82 18" N* *870.63 18" E*	*21.35'*	*X" DIA.*	*EX INLET*
SMH #435493/ 102+66.69, 15.36' LT	*894.28 (e)*	*878.04 15" W* *877.92 15" NE*	*16.36'*	*X" DIA.*	*EX SANITARY MANHOLE*

(e) = Existing Structure Rim Elevation **IPI = Proposed Structure Rim Elevation** **UD#_ = Utility Detail _**

EXISTING BORINGS SHOW SAND LAYER TO BE APPROXIMATELY 2' BELOW THE PROPOSED BASIN. DURING FINAL DESIGN, EXTEND THE PERMEABLE BEDDING (SAND OR AGGREGATE) FOR THE BASIN TO THE SAND LAYER.

CONSTRUCTION KEY

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TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

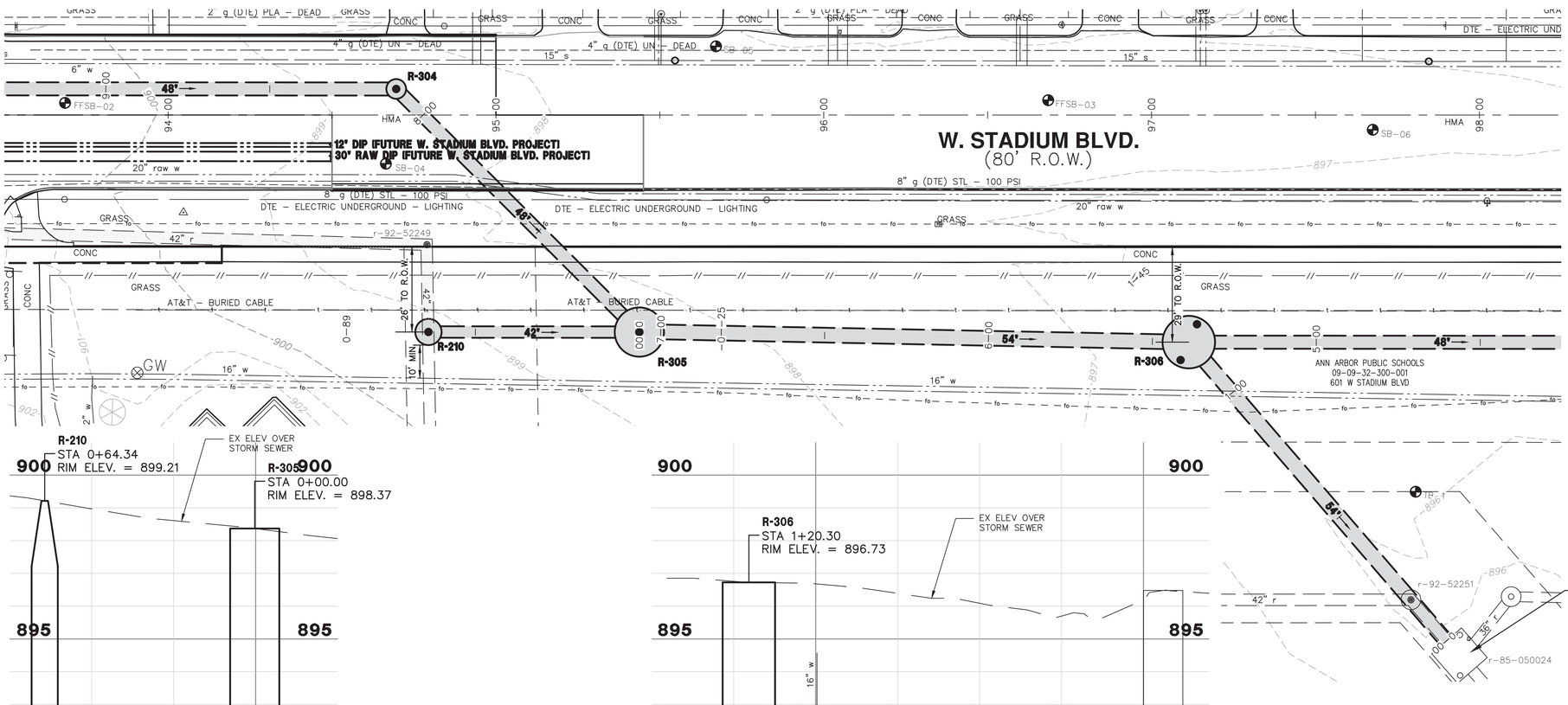
UTILITIES - STORM SEWER

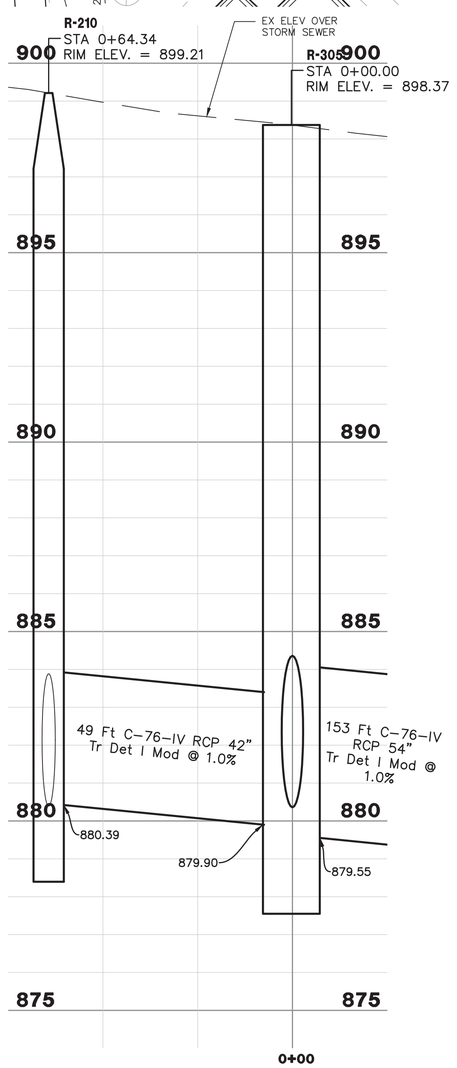
PIONEER HIGH SCHOOL PROPOSED BASIN

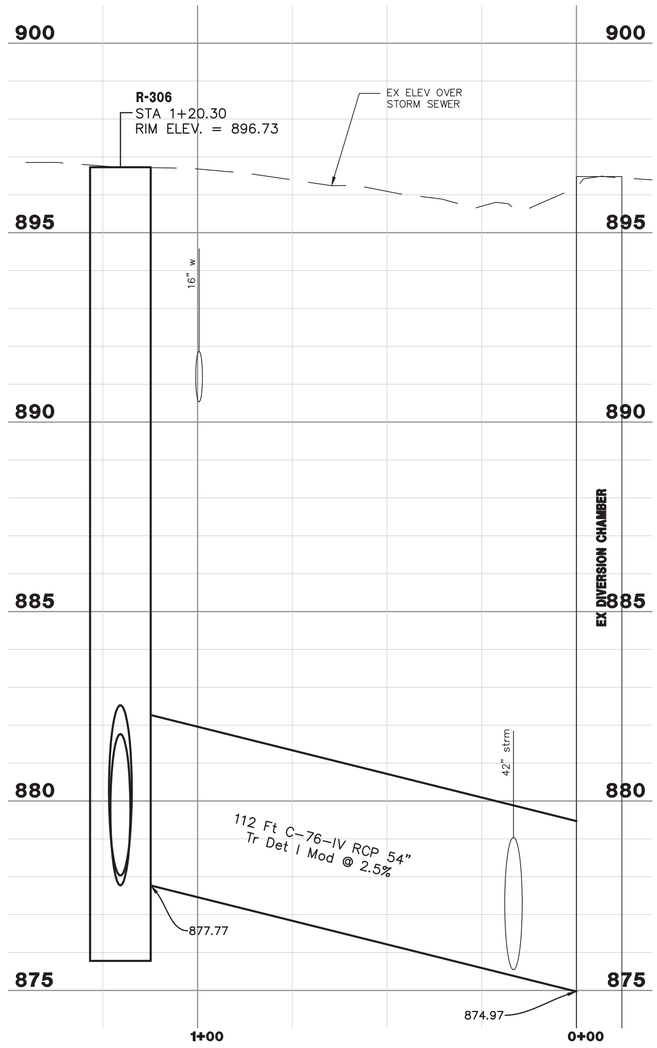
SCALE PLAN: 1" = 20' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT12

SHEET No. 32 OF 47







STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-210 / *94+79.39, 66.20' RT*	**899.21 (P)**	*880.42 42" N* **880.39 42" E**	*20.82'*	*8' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-305 / *95+43.73, 66.23' RT*	**898.37 (P)**	**880.35 48" NW** **879.90 42" W** **879.55 54" E**	*20.82'*	*15' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-306 / *97+11.34, 69.31' RT*	**896.73 (P)**	**878.03 54" W** **877.77 48" E** **877.77 54" SE**	*20.96'*	*16' DIA.*	*DIVERSION CHAMBER, NEW, COVER B, (UD #X)*
r-92-52249/ 94+78.92, 39.57' RT	*898.39' (e)*	*887.29 TO PARTITION WALL* *880.87 42" W* *880.87 42" S* **CHANNEL BOTTOM*	*17.52'*	*X' DIA.*	*RETAIN EX MANHOLE*
r-92-52251/ 97+79.11, 147.31' RT	*895.61 (e)*	*893.66 6" SE* *893.45 6" W* *893.07 6" NE* *875.54 42" NW* *875.52 42" SE (REM)*	*20.09'*	*X' DIA.*	*REMOVE EX MANHOLE*
r-85-050024/ 97+93.93, 164.95' RT	*896.04' (e)*	*880.29 WEIR* *874.97 42" NW* *874.87 42" NE* *874.82 42" SE* *ALL INVERTS PER RECORD*	*21.22'*	*X' DIA.*	*MODIFY EX DIVERSION CHAMBER*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD#_ = Utility Detail _**

CONSTRUCTION KEY

SR SEWER PIPE REMOVAL
WA WATERMAIN ABANDONMENT
TR TREE – REMOVE
TS TREE – SAVE
EX SEWER PIPE TO REMAIN

Know what's **below.** **Call before you dig.** 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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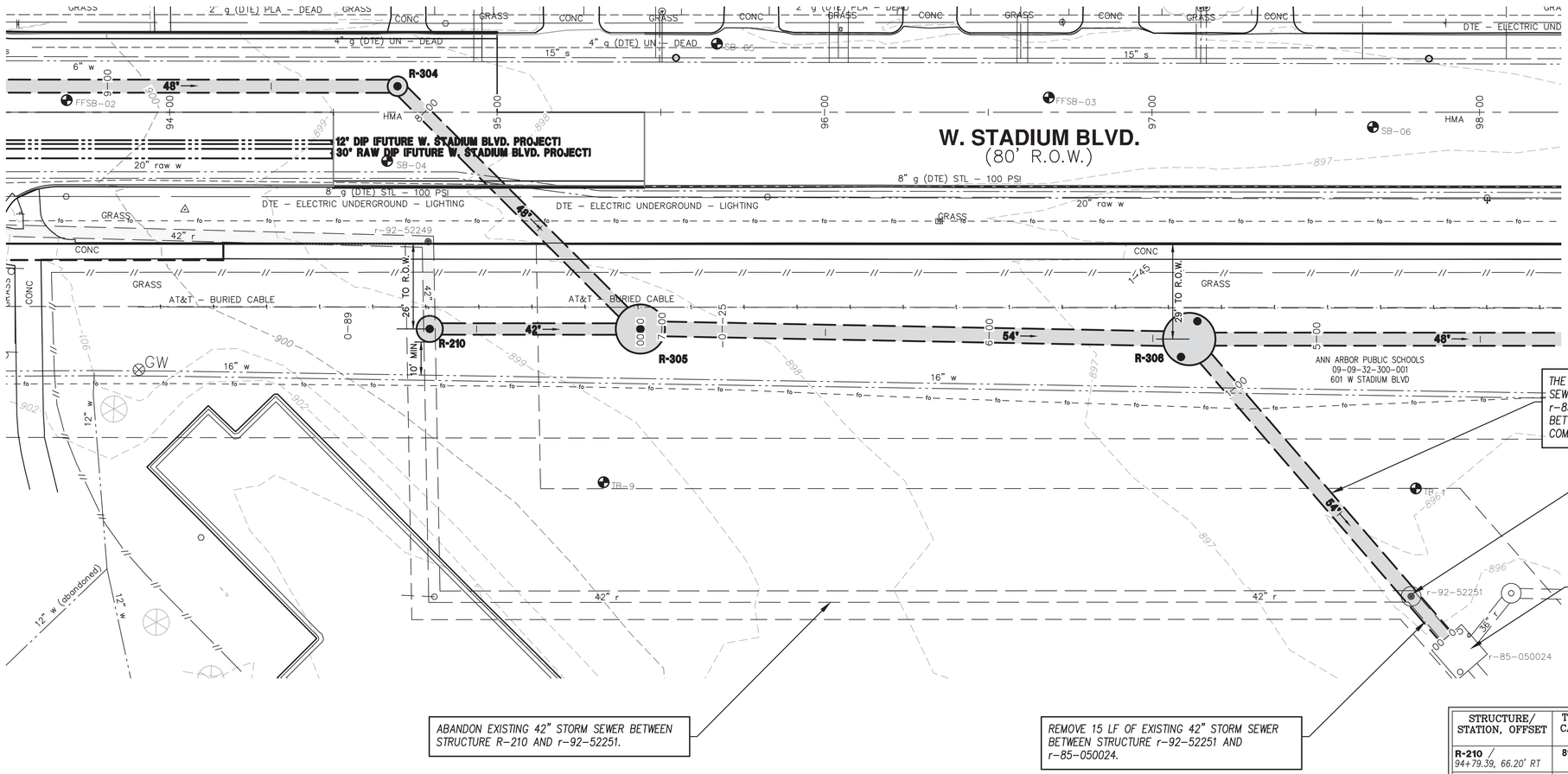
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
W. STADIUM BLVD.

SCALE PLAN: 1" = 20' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT13

SHEET No. 33 OF 47



STRUCTURE/ STATION, OFFSET	TOP OF CASTING ELEV.	INVERT ELEV. SIZE DIRECTION	DEPTH (FEET)	SIZE	APPLICATION/ CONSTRUCTION/ DETAIL
R-210 / *94+79.39, 66.20' RT*	**899.21 (P)**	*880.42 42" N* **880.39 42" E**	*20.82'*	*8' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-305 / *95+43.73, 66.23' RT*	**898.37 (P)**	**881.36 48" NW** **879.90 42" W** **879.55 54" E**	*20.82'*	*15' DIA.*	*STORM MANHOLE, NEW, COVER B, (UD #X)*
R-306 / *97+11.34, 69.31' RT*	**896.73 (P)**	**878.03 54" W** **877.77 48" E** **877.77 54" SE**	*20.96'*	*16' DIA.*	*DIVERSION CHAMBER, NEW, COVER B, (UD #X)*
r–92–52249/ 94+78.92, 39.57' RT	*898.39' (e)*	*887.29 TO PARTITION WALL* *880.87 42" W* *880.87 42" S* **CHANNEL BOTTOM*	*17.52'*	*X' DIA.*	*RETAIN EX MANHOLE*
r–92–52251/ 97+79.11, 147.31' RT	*895.61 (e)*	*893.66 6" SE* *893.45 6" W* *893.07 6" NE* *875.54 42" NW* *875.52 42" SE (REM)*	*20.09'*	*X' DIA.*	*REMOVE EX MANHOLE*
r–85–050024/ 97+93.93, 164.95' RT	*896.04' (e)*	*880.29 WEIR* *874.97 42" NW* *874.87 42" NE* *874.82 42" SE* *ALL INVERTS PER RECORD*	*21.22'*	*X' DIA.*	*MODIFY EX DIVERSION CHAMBER*

(e) = Existing Structure Rim Elevation **(P) = Proposed Structure Rim Elevation** **UD#_ = Utility Detail _**

CONSTRUCTION KEY

SR SEWER PIPE REMOVAL
WA WATERMAIN ABANDONMENT
TR TREE – REMOVE
TS TREE – SAVE
EX SEWER PIPE TO REMAIN

Know what's **below.** **Call before you dig.** 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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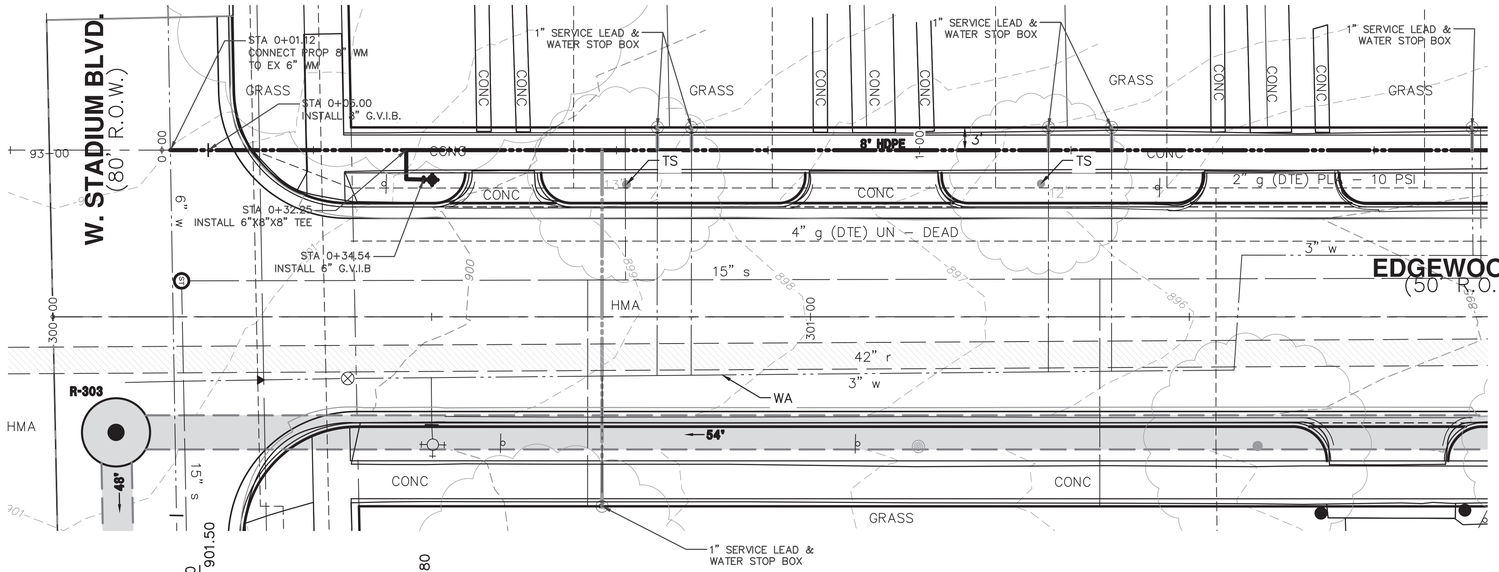
PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - STORM SEWER
W. STADIUM BLVD.

SCALE PLAN: 1" = 20' PROFILE:

DRAWING No. 2018-034-UT14

SHEET No. 34 OF 47



CHECK FIRE HYDRANT COVERAGE AND VALVE LOCATIONS DURING FINAL DESIGN

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

811 Know what's below. Call before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

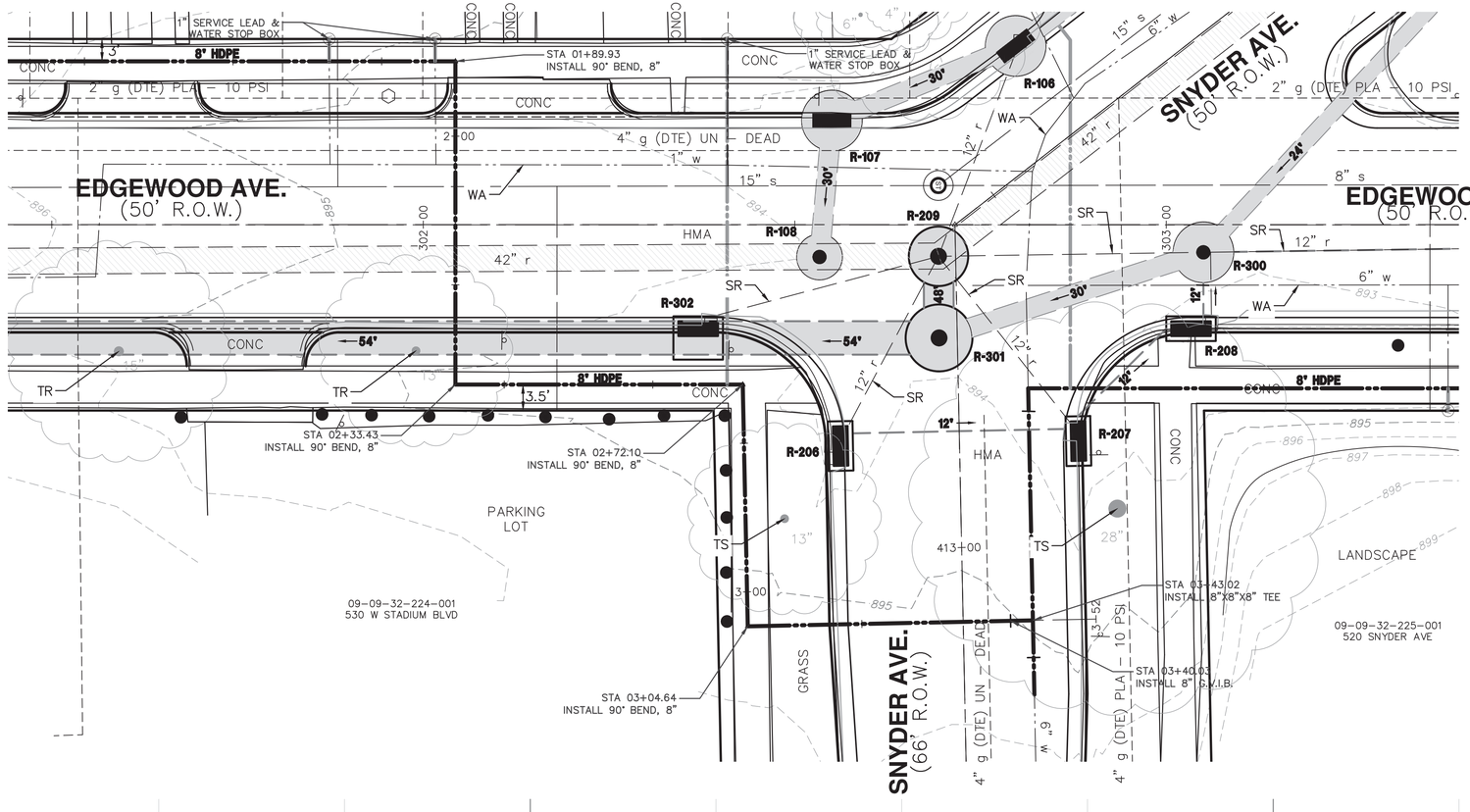
UTILITIES - WATER MAIN

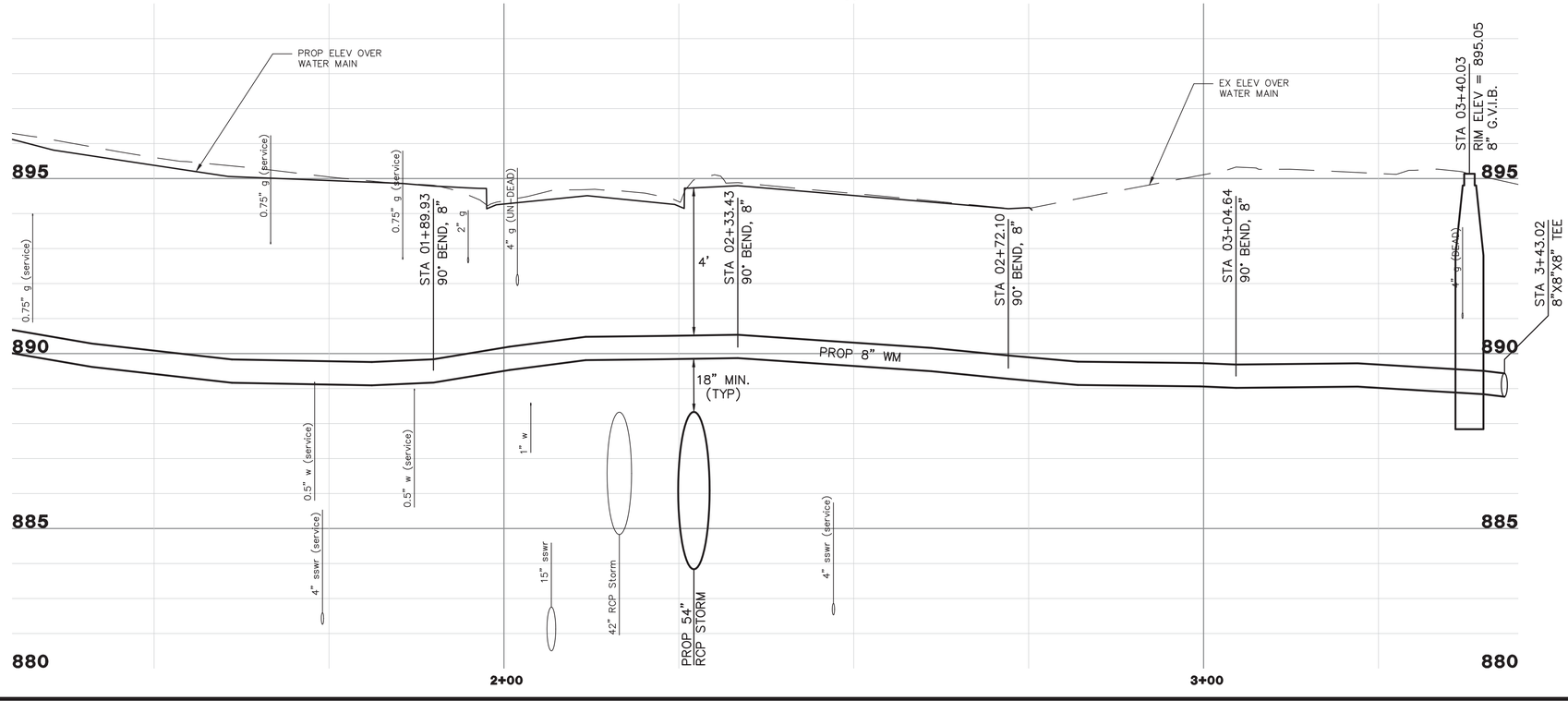
EDGEWOOD AVENUE & SNYDER AVENUE

SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT15

SHEET No. 35 OF 47





WATER MAIN GATE VALVE LOCATIONS TO BE REVIEWED/FINALIZED DURING FINAL DESIGN. CITY STANDARDS ARE CHANGING TO PLACE G.V. IN WELLS AND NOT BOXES. MORE SPACE IS REQUIRED FOR GATE VALVES.

CONSTRUCTION KEY

SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

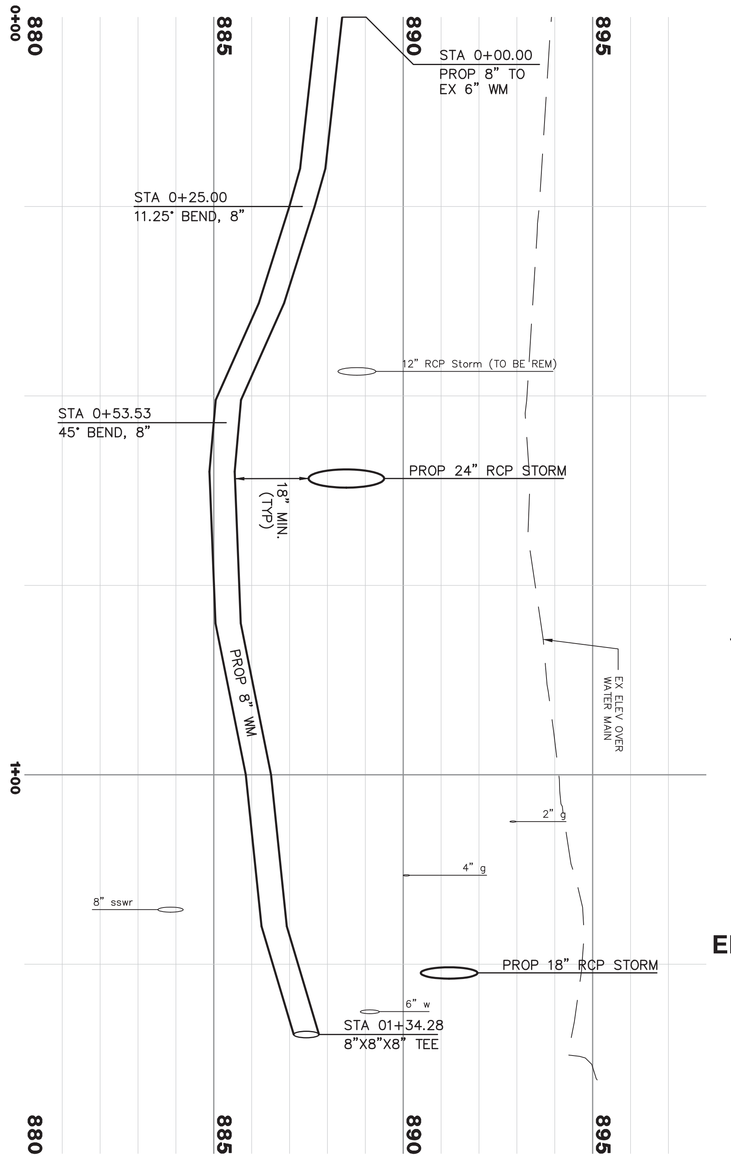
SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

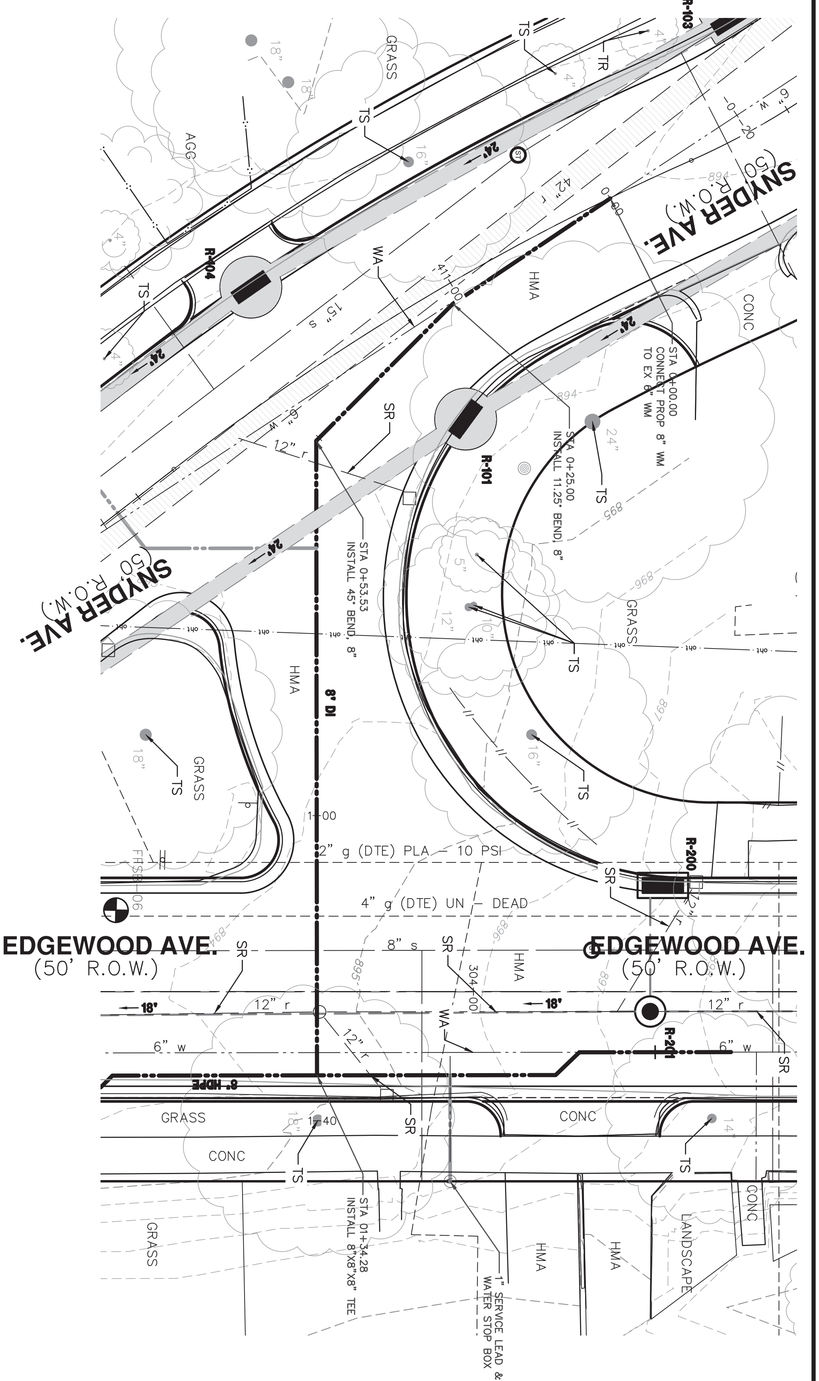
DRAWING No. **2018-034-UT15**

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
UTILITIES - WATER MAIN
EDGEWOOD AVENUE & SNYDER AVENUE

SHEET No.
36 **OF** 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-WATR UT (10 SCALE).dwg Dwg Created: 24-Jan-20 - _a2 standard bw.stb - Plot Date: 27-Jan-20





CONSTRUCTION KEY

SR SEWER PIPE REMOVAL

WA WATERMAIN ABANDONMENT

TR TREE - REMOVE

TS TREE - SAVE

EX SEWER PIPE TO REMAIN

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE PLAN: 1" = 10' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT17

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - WATER MAIN

EDGEWOOD AVENUE & SNYDER AVENUE

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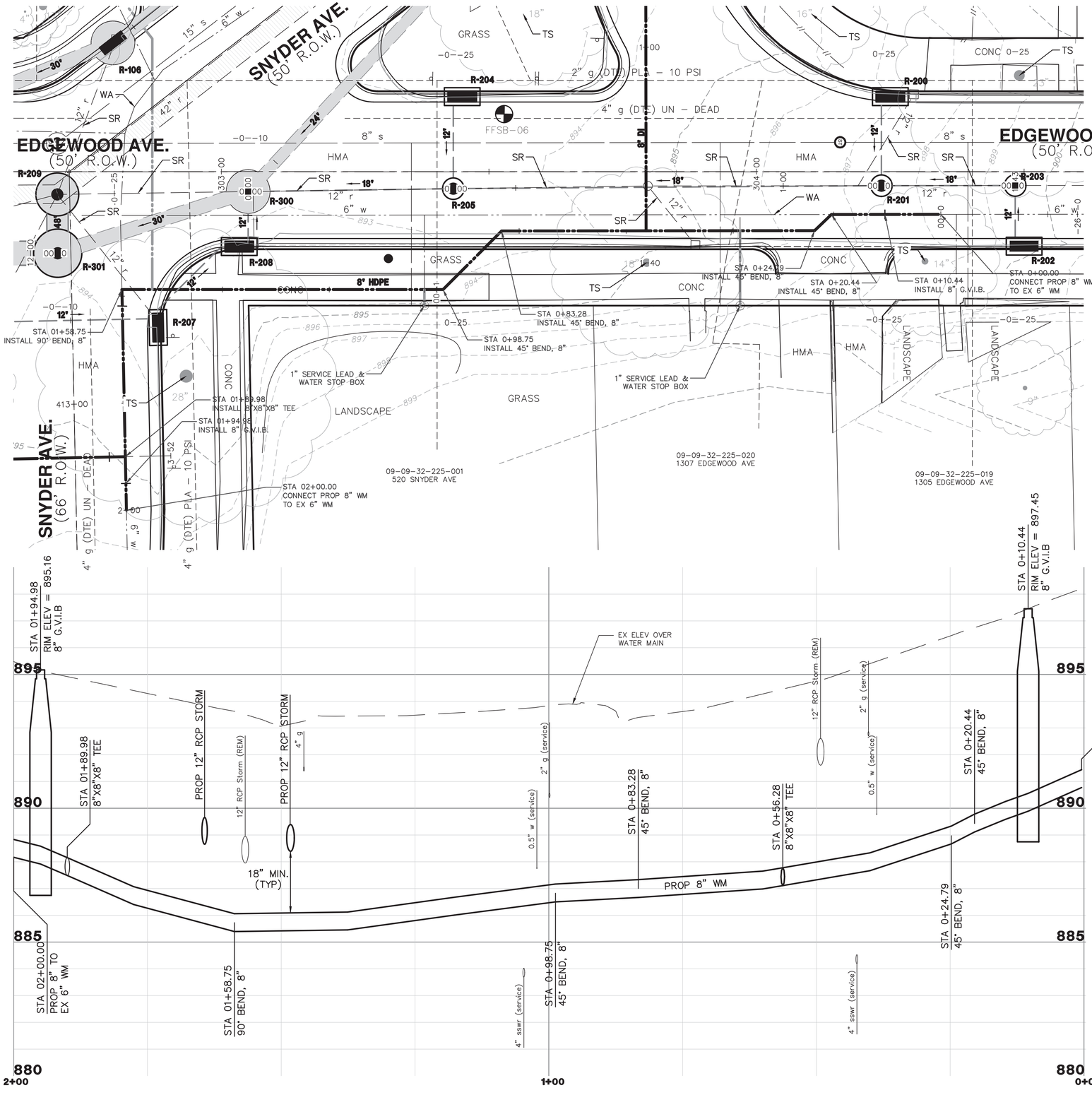
REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

Know what's **below.** **Call** before you dig. 811



CONSTRUCTION KEY	
SR	SEWER PIPE REMOVAL
WA	WATERMAIN ABANDONMENT
TR	TREE – REMOVE
TS	TREE – SAVE
▨	EX SEWER PIPE TO REMAIN

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SCALE 1" = 10' PROFILE: 1" = 2'

DRAWING No. 2018-034-UT18

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

UTILITIES - WATER MAIN

EDGEWOOD AVENUE & SNYDER AVENUE

SHEET No.

38 **OF** 47

Z:\NC\Canton\18255020(AA-Snyder)\Design\S-Snyder-WATR UT (10 SCALE).dwg Dwg Created: 24-Jan-20 - _a2 standard bw.stb - Plot Date: 27-Jan-20

BORING NUMBER FFSB-01

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 909.35 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** 6' 6"
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** 8'
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 21' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		7 inches of ASPHALT PAVEMENT						
		5 inches of CONCRETE PAVEMENT						
		6 inches of SANDY GRAVEL FILL						
		CLAY FILL (CL-FILL) - mottled brown and dark brown; with silt; traces of sand, gravel and organics; occasional sand partings; moist	SS 1	72	4-5-5 (10)		17	
		CLAY (CL) - brown to mottled brown and gray, with silt, traces of sand and gravel, occasional wet sand seams, very stiff, moist	SS 2	56	3-3-7 (10)	3.25	15	
5			SS 3	100	2-3-4 (7)	2.0	14	
		CLAY (CL) - brown, with silt, traces of sand and gravel, occasional silt seams, very stiff, moist	SS 4	100	4-7-11 (18)	4.0	16	
						6940		
10		CLAY (CL) - gray, with silt, some sand, trace gravel, very stiff, moist	SS 5	89	3-4-6 (10)	2.0	17	
		SANDY CLAY (CL) - gray, with silt, traces of gravel, very stiff, moist	SS 6	100	3-6-8 (14)	3.5	8	
15		SAND (SM) - brown, fine, with silt, traces of clay and gravel, medium dense, moist						
		SILTY SAND (SM) - brown, fine, traces of clay and gravel, medium dense, wet	SS 7	67	8-12-14 (26)			
20		SANDY CLAY (CL) - gray, with silt, traces of gravel, very stiff, moist						
			SS 8	100	7-9-11 (20)	2.5	8	
25								

Bottom of borehole at 25.0 feet.

Boring performed on Stadium Boulevard - STA 90+65, 5' R of CL

BORING NUMBER FFSB-02

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 900.56 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** None
LOGGED BY D. Kent **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 22' 10"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		6 inches of CONCRETE PAVEMENT						
		SILTY SAND (SM-POSSIBLE FILL) - brown, fine, some clay, trace gravel, loose, moist	SS 1	83	3-3-5 (8)		13	
			SS 2	72	2-2-2 (4)			
5		CLAY (CL-OL) - dark brown, with sand and silt, trace organics, moist	SS 3	67	2-3-5 (8)	1.25	17 18	
		Loss-on-ignition (organic content) = 2.5%						
		CLAY (CL) - brown, with silt, traces of sand and gravel, stiff to very stiff, moist	SS 4	94	2-3-4 (7)	3.0	18	
10			SS 5	83	3-5-7 (12)	3.0	23	
		SAND (SM) - brown, fine, with silt, very loose, moist	SS 6	100	2-1-2 (3)		12	
15								
		SAND (SC) - brown, fine to medium, with clay, trace gravel, very loose, moist	SS 7	100	2-1-1 (2)		9	
20								
		CLAY (CL) - brown to gray, with silt, some sand, trace gravel, stiff, moist	SS 8	100	2-3-5 (8)	1.5	11	
		** color change to gray						
25								

Bottom of borehole at 25.0 feet.

Boring performed on Stadium Boulevard - STA 93+81, 3' L of CL

BORING NUMBER FFSB-03

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 897.41 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		4 inches of CONCRETE PAVEMENT						
		5 inches of SANDY GRAVEL FILL- brown	SS 1	83	3-2-3 (5)		16	
		SANDY CLAY FILL (CL- FILL) - dark brown, with silt, traces of gravel and organics, moist						
		Loss-on-ignition (organic content) = 2.2%						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, very stiff to hard, moist	SS 2	100	2-3-5 (8)	2.75	23	
5			SS 3	78	2-4-5 (9)	4.25	27	
		CLAY (CL) - brown, with silt, traces of sand and gravel, occasional silt partings, hard, moist	SS 4	100	4-5-8 (13)	4.5+	18	
10								
		SAND (SP-SC) - brown, fine, some clay, trace gravel, very loose, moist	SS 5	83	2-2-1 (3)		6	
			SS 6	83	1-1-3 (4)		10	
15								
		SILTY SAND (SM) - brown, fine, occasional silt and clay lenses, medium dense, moist	SS 7	89	5-7-9 (16)		6	
20								
			SS 8	83	7-9-13 (22)			
25								

Bottom of borehole at 25.0 feet.

Boring performed on Stadium Boulevard - STA 96+69, 5' L of CL

BORING NUMBER FFSB-04

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 896.57 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 22' 7"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		6 inches of SAND and GRAVEL FILL						
		SANDY CLAY (CL) - reddish-brown, with silt, trace gravel, very stiff, moist	SS 1	72	4-5-6 (11)	2.5	14	
		CLAY (CL) - brown, with silt, traces of sand and gravel, occasional very moist sand partings, stiff to hard, moist	SS 2	67	3-3-4 (7)	1.5	15	
5			SS 3	83	3-7-10 (17)	4.5+	13	
		SAND (SP-SM) - brown, fine to medium, some silt, trace gravel, moist						
		CLAY (CL) - gray, with silt, some sand, trace gravel, hard, moist	SS 4	100	3-6-7 (13)	4.5+	17	
10		CLAY (CL) - gray, with silt, traces of sand and gravel, stiff, moist						
			SS 5	100	2-3-5 (8)	1.5	15	
15								
			SS 6	100	3-3-6 (9)	1.5	13	
20								
			SS 7	100	3-5-8 (13)	1.5	14	
25								

Bottom of borehole at 25.0 feet.

Boring performed on Stadium Boulevard - STA 99+72, 3' L of CL

BORING NUMBER FFSB-05

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/11/14 **COMPLETED** 11/11/14 **GROUND ELEVATION** 894.49 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** 8'
LOGGED BY D. Kent **CHECKED BY** T. Marsik **AFTER DRILLING** 14' 1"
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 14' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		6 inches of CONCRETE PAVEMENT						
		CLAYEY SAND FILL (SC-FILL) - dark brown, fine to medium, traces of gravel and organics, moist	SS 1	61	6-8-8 (16)		12	
		Loss-on-ignition (organic content) = 2.1%						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, very stiff to hard, moist	SS 2	100	3-4-6 (10)	2.5	17	
5			SS 3	83	3-6-7 (13)	4.5+	14	
		SAND (SP-SM) - brown, fine to medium, some silt, trace gravel, medium dense, wet	SS 4	72	3-5-6 (11)		23	
10		CLAY (CL) - gray, with silt, traces of sand and gravel, stiff, moist						
			SS 5	83	2-4-6 (10)	2.0	17	
			SS 6	89	3-4-6 (10)	2.0	15	
15								
			SS 7	100	3-3-6 (9)	2.0	18	
20								
			SS 8	100	3-4-7 (11)	1.5	16	
25								

Bottom of borehole at 25.0 feet.

Boring performed on Stadium Boulevard - STA 102+75, 2' L of CL

BORING NUMBER FFSB-06

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/14/14 **COMPLETED** 11/14/14 **GROUND ELEVATION** 893.33 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** 23'
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** 22'
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 22' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		SANDY CLAY FILL - (CL-FILL) - brown to dark brown, with silt, traces of gravel and organics, moist	SS 1	100	3-3-4 (7)		14	
		CLAY (CL-OL) - dark brown, with silt, some organics, trace sand, medium stiff, moist	SS 2	61	3-3-4 (7)		22	
5		Loss-on-Ignition (organic content) = 4.6%						
		SAND (SP-SM) - brown, fine, some silt, traces of gravel and clay, loose to very loose, moist	SS 3	89	3-3-3 (6)			
			SS 4	100	1-2-2 (4)		3	
10			SS 5	61	1-1-1 (2)			
			SS 6	89	1-1-2 (3)			
15								
			SS 7	100	1-2-2 (4)			
20		SAND (SP-SM) - brown, fine, some silt, traces of gravel and clay, loose, wet						
		CLAY (CL) - gray, with silt, traces of sand and gravel, very stiff, moist	SS 8	100	3-3-10 (13)	3.25	18	
25		SAND (SC) - gray, fine, with clay, medium dense, wet						

Bottom of borehole at 25.0 feet.

Boring performed on Edgewood Avenue - 84' N of Snyder Avenue CL, 11' W of Edgewood CL

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
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ANN ARBOR, MI 48107-8647
734.794.6410
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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2018-034-SB01

SHEET No.
39 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

BORING NUMBER SB-01

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14 **GROUND ELEVATION** 913.41 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		3 inches of ASPHALT PAVEMENT						
		8 inches of CONCRETE PAVEMENT						
		CLAY (CL) - brown, with silt, traces of sand and gravel, occasional silt partings, hard, moist	SS 1	67	5-7-7 (14)	4.0	15	
		CLAY (CL) - brown, with silt, traces of sand and gravel, hard, moist	SS 2	100	5-7-9 (16)	4.5+	12	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 89+68, 3' R of CL

BORING NUMBER SB-02

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14 **GROUND ELEVATION** 906.04 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		8 inches of CONCRETE PAVEMENT						
		CLAY FILL (CL-FILL) - mottled brown, dark brown and dark gray; with silt; traces of sand, gravel and organics; moist Loss-on-Ignition (organic content) = 3.8%	SS 1	67	3-3-4 (7)		16	
		SANDY CLAY (CL-POSSIBLE FILL) - dark brown, with silt, traces of gravel and organics, occasional hair roots, medium stiff, moist Loss-on-Ignition (organic content) = 2.3%	SS 2	78	3-3-3 (6)	0.5	16	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 91+65, 5' R of CL

BORING NUMBER SB-03

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14 **GROUND ELEVATION** 903.11 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		8 inches of CONCRETE PAVEMENT						
		10 inches of SAND and GRAVEL FILL - gray						
		SAND FILL (SM-FILL) - brown, with silt, moist	SS 1	78	3-3-5 (8)		24	
		CLAY FILL (CL-FILL) - mottled brown, dark brown and dark gray; with silt; traces of sand, gravel and organics; moist						
		CLAY (CL) - brown, with silt, traces of sand and gravel, very stiff, moist	SS 2	89	3-3-4 (7)	3.5	22	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 92+53, 21' L of CL

BORING NUMBER SB-04

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14 **GROUND ELEVATION** 898.5 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		4 inches of ASPHALT PAVEMENT						
		9 inches of CONCRETE PAVEMENT						
		SANDY CLAY FILL (CL-FILL) - mottled brown, dark brown and dark gray; with silt; traces of gravel and organics; moist Loss-on-Ignition (organic content) = 2.9%	SS 1	72	2-3-4 (7)		6	
		CLAY (CL-POSSIBLE FILL) - brown, with silt, some sand, traces of gravel, medium stiff, very moist	SS 2	100	1-2-2 (4)	0.5	17	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 94+68, 15' R of CL

BORING NUMBER SB-05

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14 **GROUND ELEVATION** 898.2 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** 3' 6"
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		3 inches of ASPHALT PAVEMENT						
		12 inches of CONCRETE PAVEMENT						
		12 inches of SAND and GRAVEL FILL	SS 1	78	3-3-4 (7)		19	
		SAND (SP-SC) - brown, fine, some clay, trace gravel, loose, very moist						
		CLAYEY SAND (SC) - gray, fine, trace gravel, occasional clay seams and peat lenses, very loose, wet	SS 2	100	1-1-1 (2)			
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 95+67, 21' L of CL

BORING NUMBER SB-06

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14 **GROUND ELEVATION** 897.21 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		4 inches of ASPHALT PAVEMENT						
		6 inches of CONCRETE PAVEMENT						
		CLAY (CL) - brown, with silt, traces of sand and gravel, hard, moist	SS 1	56	3-4-6 (10)	4.5+	15	
			SS 2	89	6-9-10 (19)	4.5+	15	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 97+68, 5' R of CL

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

SOIL BORINGS

STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: #######

DRAWING No. **2018-034-SB02**

SHEET No. 40 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

BORING NUMBER SB-07

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14
GROUND ELEVATION 896.61 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		3 inches of ASPHALT PAVEMENT						
		9 inches of CONCRETE PAVEMENT						
		CLAY (CL) - brown to mottled brown and gray, with silt, traces of sand and gravel, very stiff to hard, moist	SS 1	83	3-4-6 (10)	2.5	12	
5		** becomes mottled brown and gray	SS 2	100	3-8-11 (19)	4.5+	14	
		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 98+68, 15' R of CL

BORING NUMBER SB-08

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14
GROUND ELEVATION 896.05 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING 4' 6"
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING 3' 8"
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH 3' 8"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		3 inches of ASPHALT PAVEMENT						
		8" of CONCRETE PAVEMENT						
		SILTY SAND (SM-FILL) - grayish-brown, fine, trace gravel, occasional clay lenses, medium dense, very moist	SS 1	100	5-4-6 (10)			
5		SILTY SAND (SM) - brown, fine, trace gravel, loose, wet	SS 2	100	5-3-2 (5)			
		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 100+64, 20' L of CL

BORING NUMBER SB-09

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/13/14 **COMPLETED** 11/13/14
GROUND ELEVATION 895.66 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		7 inches of ASPHALT PAVEMENT						
		8 inches of CONCRETE PAVEMENT						
		CLAY (CL) - brown, with silt, traces of sand and gravel, very stiff to hard, moist	SS 1	78	4-5-6 (11)	3.5	23	
5		CLAYEY SAND (SC) - brown, fine to medium, trace gravel, loose, very moist	SS 2	61	3-3-4 (7)	4.5+	20	
		Bottom of borehole at 5.0 feet.						

Boring performed on Stadium Boulevard - STA 101+65, 7' R of CL

BORING NUMBER SB-18

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14
GROUND ELEVATION 911.14 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		12 inches of SAND and GRAVEL FILL						
		CLAY (CL) - brown, with silt, traces of sand and gravel, occasional silt partings, very stiff to hard, moist	SS 1	67	3-5-7 (12)	3.25	13	
5			SS 2	72	6-9-15 (24)	4.5+	13	
		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 303+81, 8' R of CL

BORING NUMBER SB-19

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14
GROUND ELEVATION 911.69 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		5 inches of ASPHALT PAVEMENT						
		7 inches of SAND and GRAVEL FILL						
		CLAY FILL (CL-FILL) - dark brown, with silt, traces of sand and organics, moist	SS 1	83	5-3-4 (7)		22	
		Loss-on-ignition (organic content) = 3.9%						
5		CLAY (CL) - mottled brown and gray, with silt, some sand, trace gravel, medium stiff, very moist	SS 2	89	3-3-3 (6)	1.0	20	
		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 305+70, 8' R of CL

BORING NUMBER SB-20

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc.
PROJECT NAME Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052
PROJECT LOCATION Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14
GROUND ELEVATION 912.38 ft +/-
DRILLING CONTRACTOR Brax Drilling
GROUND WATER LEVELS:
DRILLING METHOD 2-1/4 inch Solid Stem Auger
DURING DRILLING None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik
AFTER DRILLING None
NOTES Boring backfilled with auger cuttings and patched
COLLAPSE DEPTH None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		6 inches of SAND and GRAVEL FILL						
		CLAY FILL (CL-FILL) - mottled dark brown and dark gray, with silt, some organics, traces of sand, moist	SS 1	83	3-3-4 (7)		16	
5		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, stiff, moist	SS 2	100	3-3-4 (7)	1.5	19	
		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 307+62, 5' R of CL

811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

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301 EAST HURON STREET
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CITY OF ANN ARBOR MICHIGAN

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR

SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT

SOIL BORINGS

STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2018-034-SB03

SHEET No.
41 OF 47

BORING NUMBER SB-21

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14 **GROUND ELEVATION** 916.08 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		6 inches of ASPHALT PAVEMENT						
		18 inches of SAND and GRAVEL FILL						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, very stiff, moist	SS 1	61	5-4-7 (11)	4.0	18	
			SS 2	50	2-3-7 (10)	2.25	18	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 309+60, 9' L of CL

BORING NUMBER SB-22

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14 **GROUND ELEVATION** 919.28 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		5 inches of ASPHALT PAVEMENT						
		7 inches of SAND and GRAVEL FILL						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, hard, moist	SS 1	61	3-5-7 (12)	4.25	16	
			SS 2	89	5-8-12 (20)	4.5+	13	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 311+18, 7' L of CL

BORING NUMBER SB-23

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/12/14 **COMPLETED** 11/12/14 **GROUND ELEVATION** 918.43 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** None

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		6 inches of ASPHALT PAVEMENT						
		6 inches of SAND and GRAVEL FILL						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, very stiff to hard, moist	SS 1	89	3-5-7 (12)	3.0	14	
			SS 2	72	7-11-15 (26)	4.5+	13	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Potter Avenue - STA 312+58, 8' L of CL

BORING NUMBER SB-24

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 909.82 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY D. Kent **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 4' 1"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		4 inches of ASPHALT PAVEMENT						
		4 inches of GRAVEL FILL						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional silt partings, very stiff, moist	SS 1	83	3-4-5 (9)	2.0	11	
		CLAY (CL) - brown, with silt, some sand, trace gravel, occasional very moist sand partings, very stiff, moist	SS 2	100	3-5-6 (11)	3.0	12	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Prescott Avenue - STA 200+92, 7' L of CL

BORING NUMBER SB-25

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/10/14 **COMPLETED** 11/10/14 **GROUND ELEVATION** 904.78 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 3' 8"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		4 inches of ASPHALT PAVEMENT						
		6 inches of SAND and GRAVEL FILL						
		CLAY (CL) - reddish-brown, with silt, trace sand, very stiff, moist	SS 1	67	2-2-4 (6)	2.0	17	
		SILTY SAND (SM) - brown, fine, some gravel, loose, moist	SS 2	67	2-3-5 (8)			
5		Bottom of borehole at 5.0 feet.						

Boring performed on Prescott Avenue - STA 202+65, 3' L of CL

BORING NUMBER SB-26

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/11/14 **COMPLETED** 11/11/14 **GROUND ELEVATION** 896.62 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 4' 8"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ / PL MC LL / FINES CONTENT (%)
0		5 inches of ASPHALT PAVEMENT						
		7 inches of SAND and GRAVEL FILL						
		SANDY CLAY FILL (CL-FILL) - brown, with silt, trace gravel, frequent sand partings, moist	SS 1	67	3-2-4 (6)		12	
		CLAY FILL (CL-FILL) - dark brown, with silt, some organics, trace sand, moist Loss-on-Ignition (organic content) = 5.4%	SS 2	89	2-2-4 (6)		24	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Prescott Avenue - STA 204+41, 5' L of CL

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICES
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734.794.6410
www.a2gov.org

CITY OF ANN ARBOR MICHIGAN

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########
DRAWING No. **2018-034-SB04**
SHEET No. 42 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

BORING NUMBER SB-27

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/11/14 **COMPLETED** 11/11/14 **GROUND ELEVATION** 903.59 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 3' 4"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		5 inches of ASPHALT PAVEMENT						
		SILTY SAND FILL (SM-FILL) - dark brown, fine, some gravel, trace organics, moist	SS 1	33	3-5-4 (9)			
		CLAY (CL) - brown, with silt, traces of sand and gravel, hard, moist	SS 2	100	2-7-13 (20)	4.5+	15	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Prescott Avenue - STA 206+55, 5' L of CL

BORING NUMBER SB-28

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/11/14 **COMPLETED** 11/11/14 **GROUND ELEVATION** 913.32 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 2-1/4 inch Solid Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 4' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		4 inches of ASPHALT PAVEMENT						
		14 inches of SAND and GRAVEL FILL						
		CLAY FILL (CL-FILL) - dark brown, with silt, traces of sand and organics, moist	SS 1	56	3-2-3 (5)		20	
		Loss-on-Ignition (organic content) = 4.0%						
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, occasional sand partings, stiff, moist	SS 2	100	2-2-4 (6)	1.5	18	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Prescott Avenue - STA 208+52, 8' L of CL

BORING NUMBER SB-29

PAGE 1 OF 1

CTI and Associates, Inc.

CLIENT Northwest Consultants, Inc. **PROJECT NAME** Stadium Boulevard Reconstruction
PROJECT NUMBER 3142040052 **PROJECT LOCATION** Ann Arbor, Michigan
DATE STARTED 11/14/14 **COMPLETED** 11/14/14 **GROUND ELEVATION** 905.71 ft +/-
DRILLING CONTRACTOR Brax Drilling **GROUND WATER LEVELS:**
DRILLING METHOD 3-1/4 inch Hollow Stem Auger **DURING DRILLING** None
LOGGED BY R. Rajan **CHECKED BY** T. Marsik **AFTER DRILLING** None
NOTES Boring backfilled with auger cuttings and patched **COLLAPSE DEPTH** 4' 6"

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf) UNC. STRENGTH (psf)	NATURAL MOISTURE CONTENT (%)	▲ SPT N VALUE ▲ 15 30 45 60 / PL MC LL 10 20 30 40 / FINES CONTENT (%) 20 40 60 80
0		6 inches of ASPHALT PAVEMENT						
		SAND FILL (SP-SM-FILL) - mottled brown and dark brown, fine to medium, some gravel, occasional pieces of asphalt, moist	SS 1	44	4-6-4 (10)			
		CLAY (CL) - mottled brown and gray, with silt, traces of sand and gravel, very stiff, moist	SS 2	100	4-6-7 (13)	3.0	15	
5		Bottom of borehole at 5.0 feet.						

Boring performed on Edgewood Avenue - 250' N of Snyder Avenue CL, 8' E of Edgewood CL

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-1	PROJECT NO.:	82040288
DATE:	10/21/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 6"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and dark brown variegated moist silty CLAY with traces of gravel, sand and organics and frequent silt partings - (FILL)	SS-1	2	7					
			3	9					
			4						
		SS-2	5	6					
			6	7					
7' 6"		SS-3	7	3					
			8	6					
	Brown moist very stiff silty CLAY with traces of gravel and sand and occasional sand partings - (CL-ML)		9	10					
		SS-4	10	4				8000*	
			11	8					
			12	12					
			13						
15' 3"			14						
		SS-5	15	3					
	Brown moist stiff sandy CLAY with a little gravel and occasional clayey sand seams - (CL)		16	4					
			17	6					
			18						
19' 0"			19						
	Brown moist to wet loose to medium compact silty fine SAND with trace of gravel and occasional clay lenses - (SM)	SS-6	20	5					
			21	4					
			22						
			23						
			24						
		SL-7	25	5					
			26	8		14.0			
				13					

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	24' 0"
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	22' 0"
		COLLAPSE DEPTH:	31' 0"

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-1	PROJECT NO.:	82040288
DATE:	10/21/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist to wet loose to medium compact silty fine SAND with trace of gravel and occasional clay lenses - (SM)		27						
29' 0"			28						
			29	6					
	Brown wet compact fine to coarse SAND with a little gravel, trace of silt and occasional fine sand seams - (SP-SM)	SS-8	30	10					
			31	21					
			32						
			33						
34' 0"			34						
				6					
	Gray moist very stiff CLAY with a little silt, traces of gravel and sand and occasional wet sand partings - (CL)	SS-9	35	9		10.1		5000*	
			36	13					
			37						
			38						
			39						
				4					
40' 6"		SS-10	40	6		14.8			
	End of Boring		41	14					
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	24' 0"
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	22' 0"
		COLLAPSE DEPTH:	31' 0"

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-2	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and gray variegated moist CLAY with a little silt, traces of gravel and sand, occasional hair roots and occasional silt partings - (FILL)	SS-1	2	5					
			3	7					
			4	9					
		SS-2	5	3					
6' 0"			6	4					
	Brown, gray and dark brown variegated moist CLAY with a little silt and traces of gravel, sand and organics - (FILL)	SS-3	7	2					
			8	3					
			9	5					
	- Loss-on-Ignition = 5.1%	SS-4	10	2		24.7			
			11	3					
			12	4					
			13						
14' 0"			14						
		SS-5	15	4					
	Brown moist hard CLAY with a little silt, traces of gravel and sand and frequent silt partings - (FILL)		16	10				9000+*	
			17	14					
			18						
19' 0"			19						
	Reddish-brown moist loose fine to medium SAND with traces of gravel, silt, clay and organics - (FILL) - Loss-on-Ignition = 2.9%	SS-6	20	2		9.8			
			21	2					
			22						
23' 0"			23						
	Brown moist compact fine to medium SAND with traces of gravel and silt - (SP-SM)		24						
		SS-7	25	7					
			26	13		9.2			
				18					

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	None
		COLLAPSE DEPTH:	None

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811 Know what's **below.** **Call** before you dig.

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
734-794-6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2018-034-SB05

SHEET No.
43 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-2	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist compact fine to medium SAND with traces of gravel and silt - (SP-SM)		27						
			28						
29' 0"			29						
				2					
	Gray moist stiff CLAY with a little silt and traces of gravel and sand - (CL)	SS-8	30	2		11.1		2000*	
				5					
			31						
			32						
			33						
			34						
				4					
		SS-9	35	5		12.6		2500*	
				9					
			36						
			37						
			38						
			39						
				3					
40' 6"		SS-10	40	4		14.4		3000*	
				7					
	End of Boring		41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: None
AFTER COMPLETION: None
COLLAPSE DEPTH: None

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-3	PROJECT NO.:	82040288
DATE:	10/20/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 1

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and gray variegated moist silty CLAY with traces of gravel, sand and organics and occasional sand partings - (FILL)		2	6					
		SS-1		7					
			3	8					
			4						
				2					
		SS-2	5	6					
				9					
			6						
			7	3					
8' 0"		SS-3		3					
			8	4					
	Brown and dark brown variegated moist silty CLAY with traces of gravel, sand and organics and occasional sand partings - (FILL)		9						
				2					
		SS-4	10	2					
				4					
			11						
			12						
			13						
14' 0"			14						
	Black moist loose silty fine SAND with traces of clay and organics - (POSSIBLE TOPSOIL) - Loss-on-Ignition = 5.5%			3					
		SS-5	15	3					
			16	3					
17' 0"			17						
	Brown and gray variegated moist hard CLAY with a little silt, traces of gravel and sand and occasional cobbles - (CL)		18						
			19						
				6					
		SS-6	20	11		18.7		9000+*	
				15					
			21						
			22						
			23						
			24						
25' 0"		SS-7		50/4"					
	End of Boring		25						
	Note: Boring terminated upon encountering auger refusal.		26						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: None
AFTER COMPLETION: None
COLLAPSE DEPTH: None

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-10	PROJECT NO.:	82040288
DATE:	10/21/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 7"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and gray variegated moist silty CLAY with traces of gravel, sand and organics and frequent silt partings - (FILL)		2	6					
		SS-1		9					
4' 0"			3	9					
			4						
				10					
	Reddish-brown moist clayey fine SAND with traces of gravel and organics and occasional clay seams and cobbles - (FILL)	SS-2	5	11					
				7					
			6						
	**Obstruction encountered at an approximate depth of 6' 9"	SS-3	7	25/3"					
				Obst.					
			8						
9' 0"			9						
				10					
	Brown moist hard CLAY with a little silt, traces of gravel and sand and frequent silt partings - (CL)	SS-4	10	14				9000+*	
				27					
			11						
			12						
			13						
14' 0"			14						
				9					
	Brown moist loose fine SAND with trace of silt - (SP-SM)	SS-5	15	2					
				2					
			16						
			17						
19' 0"			18						
			19						
				24					
	Brown moist very compact silty fine SAND with traces of gravel - (SM)	SS-6	20	30					
				30					
			21						
			22						
			23						
			24						
				40					
		SL-7	25	44		6.9	141.9		
				50/5"					
			26						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 29' 0"
AFTER COMPLETION: 35' 0"
COLLAPSE DEPTH: 38' 0"

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-11	PROJECT NO.:	82040288
DATE:	10/21/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
27' 0"	Brown moist very compact silty fine SAND with traces of gravel - (SM)		27						
			28						
	Brown moist to wet very compact fine to coarse SAND with a little gravel, traces of silt and clay and occasional cobbles - (SP-SM)		29						
		SS-8		50/3"					
32' 0"			30						
			31						
			32						
			33						
			34						
				3					
	Gray moist stiff CLAY with a little silt and traces of gravel and sand - (CL)	SL-9	35	3		16.8	139.6	5000*	
				5					
			36						
			37						
			38						
39' 0"			39						
				5					
40' 6"	Gray moist hard silty CLAY with frequent silt partings and occasional wet sand seams - (CL-ML)	SS-10	40	10		20.4			
				27					
	End of Boring		41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 29' 0"
AFTER COMPLETION: 35' 0"
COLLAPSE DEPTH: 38' 0"

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-11	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 4"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and gray variegated moist silty CLAY with traces of gravel and sand - (FILL)		2	7					
		SS-1		9					
			3	12					
			4						
5' 0"				5					
		SS-2	5	5					
				7					
6' 6"	Dark brown moist silty CLAY with traces of gravel, sand and organics - (FILL)		6						
			7	7					
	Brown moist very stiff CLAY with a little silt, trace of gravel and sand and occasional sand seams and partings - (CL)	SS-3		6				6000*	
			8	7					
9' 0"			9						
				4					
		SS-4	10	5				6000*	
	Brown moist very stiff silty CLAY with traces of gravel and sand - (CL-ML)			7					
			11						
			12						
			13						
			14						
				3					
		SS-5	15	6				6500*	
				10					
			16						
			17						
19' 0"			18						
			19						
				3					
		SS-6	20	4		10.0			
	Brown moist loose silty fine SAND with trace of clay - (SM)			5					
			21						
			22						
24' 0"			23						
			24						
				2					
	Brown moist stiff silty CLAY with traces of gravel and sand and frequent sand seams - (CL-ML)	SS-7	25	3					
				11					
			26						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: None
AFTER COMPLETION: None
COLLAPSE DEPTH: None

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-11	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist stiff silty CLAY with traces of gravel and sand and frequent sand seams - (CL-ML)		27						
			28						
29' 0"			29						
				3					
	Brown and gray variegated moist stiff sandy CLAY with trace of gravel and occasional wet sand seams - (CL)	ST-8	30	6		20.2	133.0	6500*	
				7					
			31						
			32						
			33						
34' 0"			34						
				HW					
		SS-9	35	HW					
				2					
	Gray very moist very soft sandy CLAY with trace of gravel - (CL)		36						
			37						
			38						
39' 0"			39						
				6					
40' 6"	Gray moist hard sandy, silty CLAY with trace of gravel - (CL-ML)	SS-10	40	12		9.2			
				21					
	End of Boring		41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:
SS-Split Spoon
SL-Split Spoon w/liner
ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: None
AFTER COMPLETION: None
COLLAPSE DEPTH: None

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 E. HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
(734) 794-6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2019-034-SB06

SHEET No.
44 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-12	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 6"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown and gray variegated moist very stiff to hard silty CLAY with trace of gravel and sand - (FILL)		2	5					
		SS-1		10					
			3	12					
			4						
				6					
		SS-2	5	12					
				20					
			6						
7' 6"			7	5					
		SS-3		10				7500*	
			8	14					
	Gray moist very stiff CLAY with a little silt and traces of gravel and sand - (CL)		9						
				3					
		SS-4	10	6				5500*	
				8					
			11						
			12						
			13						
			14						
				3					
		SS-5	15	5		16.7		4500*	
				7					
			16						
			17						
			18						
			19						
20' 3"				3					
		SS-6	20	4		17.3		5000*	
				8					
	Brown moist SILT with traces of sand and clay - (ML)		21						
			22						
			23						
24' 0"			24						
				3					
	Gray moist very stiff sandy CLAY with trace of gravel and occasional silt partings - (CL)	SS-7	25	6		11.6		5000*	
				7					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	None
		COLLAPSE DEPTH:	None

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-12	PROJECT NO.:	82040288
DATE:	10/17/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Gray moist very stiff sandy CLAY with trace of gravel and occasional silt partings - (CL)		27						
			28						
29' 0"			29						
				HW					
	Gray very moist medium stiff to stiff sandy CLAY with trace of gravel and occasional silt partings - (CL)	SS-8	30	HW		12.4		1000*	
				4					
			31						
			32						
			33						
			34						
				3					
		SS-9	35	4		11.8			
				10					
			36						
			37						
			38						
39' 0"			39						
	Gray moist very compact silty fine SAND with traces of gravel clay - (SM)	SS-10	40	50/4"		7.7			
40' 0"	End of Boring		41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	None
		COLLAPSE DEPTH:	None

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-16	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 9"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown, gray and dark brown variegated moist silty CLAY with traces of gravel, sand and organics and occasional silt partings - (FILL)		2	3					
		SS-1		7					
			3	5					
			4						
				3					
		SS-2	5	7					
				7					
			6						
			7	3					
		SS-3		3					
9' 0"			8	5					
			9						
				2					
	Brown moist stiff CLAY with a little silt, traces of gravel and sand and occasional sand partings - (CL)	SS-4	10	3		14.3		3000*	
				4					
			11						
			12						
14' 0"			13						
			14						
				7					
	Brown moist medium compact silty fine to medium SAND with traces of gravel and clay - (SM)	SS-5	15	7					
				10					
			16						
			17						
19' 0"			18						
			19						
				5					
	Brown moist loose clayey fine to medium SAND with a little gravel and occasional clay seams - (SC)	SS-6	20	4					
				4					
			21						
			22						
24' 0"			23						
			24						
				3					
	Brown moist medium compact silty fine to coarse SAND with a little clay and trace of gravel - (SM)	SS-7	25	5					
				9					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	None
		COLLAPSE DEPTH:	N/A

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-16	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist to wet medium compact silty fine to coarse SAND with a little gravel and trace of clay - (SM)		27						
29' 0"			28						
			29						
				5					
	Gray moist very stiff to stiff CLAY with a little sand and silt, trace of gravel and occasional silt seams - (CL)	SS-8	30	5		11.7		7000*	
				7					
			31						
			32						
			33						
			34						
				2					
		SS-9	35	3		16.0		2000*	
				4					
			36						
			37						
			38						
39' 0"			39						
				5					
40' 6"	Gray wet compact fine SAND with traces of gravel and silt - (SP-SM)	SS-10	40	12					
				20					
	End of Boring		41						
			42						
			43						
	Note: Following completion of the drilling, a 2-inch diameter temporary well with a 10-foot screen was set at a depth of 30 feet. Sand pack was placed around the well screen to a depth of 19 feet below grade, followed by a 2-foot thick bentonite seal and cuttings to the ground surface.		44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	None
		COLLAPSE DEPTH:	None

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Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-17	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist to wet medium compact silty fine to coarse SAND with a little gravel and trace of clay - (SM)		27						
29' 0"			28						
			29						
				5					
	Gray moist very stiff to stiff CLAY with a little sand and silt, trace of gravel and occasional silt seams - (CL)	SS-8	30	5		11.7		7000*	
				7					
			31						
			32						
			33						
			34						
				2					
		SS-9	35	3		16.0		2000*	
				4					
			36						
			37						
			38						
39' 0"			39						
				5					
40' 6"	Gray wet compact fine SAND with traces of gravel and silt - (SP-SM)	SS-10	40	12					
				20					
	End of Boring		41						
			42						
			43						
	Note: Following completion of the drilling, a 2-inch diameter temporary well with a 10-foot screen was set at a depth of 30 feet. Sand pack was placed around the well screen to a depth of 19 feet below grade, followed by a 2-foot thick bentonite seal and cuttings to the ground surface.		44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	28' 0" & 39' 0"
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	N/A
		COLLAPSE DEPTH:	N/A

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-17	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 6"	Dark brown moist sandy TOPSOIL - (FILL)		1						
	Brown, gray and dark brown variegated moist silty CLAY with traces of gravel, sand and organics and occasional silt partings - (FILL)		2	3					
		SS-1		3					
			3	6					
			4						
				1					
6' 0"		SS-2	5	5					
				9					
			6						
			7	3					
		SS-3		3		19.1		6500*	
	Brown and gray variegated moist very stiff CLAY with a little silt, traces of gravel and sand and occasional silt partings - (CL)		8	6					
			9						
				3					
		SS-4	10	5		14.5		8000*	
				9					
			11						
14' 0"			12						
			13						
			14						
				4					
	Brown moist loose to medium compact silty fine SAND with occasional silt partings - (SM)	SS-5	15	4					
				5					
			16						
			17						
			18						
			19						
				5					
		SS-6	20	7					
				12					
			21						
			22						
			23						
24' 0"			24						
				5					
	Brown moist to wet medium compact silty fine to coarse SAND with a little gravel and trace of clay - (SM)	SS-7	25	7					
				7					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	28' 0" & 39' 0"
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	N/A
		COLLAPSE DEPTH:	N/A

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-17	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Brown moist to wet medium compact silty fine to coarse SAND with a little gravel and trace of clay - (SM)		27						
29' 0"			28						
			29						
				5					
	Gray moist very stiff to stiff CLAY with a little sand and silt, trace of gravel and occasional silt seams - (CL)	SS-8	30	5		11.7		7000*	
				7					
			31						
			32						
			33						
			34						
				2					
		SS-9	35	3		16.0		2000*	
				4					
			36						
			37						
			38						
39' 0"			39						
				5					
40' 6"	Gray wet compact fine SAND with traces of gravel and silt - (SP-SM)	SS-10	40	12					
				20					
	End of Boring		41						
			42						
			43						
	Note: Following completion of the drilling, a 2-inch diameter temporary well with a 10-foot screen was set at a depth of 30 feet. Sand pack was placed around the well screen to a depth of 19 feet below grade, followed by a 2-foot thick bentonite seal and cuttings to the ground surface.		44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	28' 0" & 39' 0"
	BACKFILL MATERIAL: Cuttings * Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	AFTER COMPLETION:	N/A
		COLLAPSE DEPTH:	N/A

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 EAST HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
(734) 794-6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2018-034-SB07

SHEET No.
45 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

CTI and Associates, Inc.
12482 Emerson Drive
Brighton, MI 48116
(248) 486-5100 phone
(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-18	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 9"	Dark brown moist sandy TOPSOIL - (FILL)								
			1						
	Brown and gray variegated moist silty CLAY with traces of gravel, sand and organics and occasional sand partings - (FILL)								
		SS-1	2	2					
				5					
4' 0"			3	7					
			4						
	Brown moist fine SAND with trace gravel and organics - (FILL)			2					
		SS-2	5	3					
6' 6"				7					
			6						
			7	4					
	Brown moist hard CLAY with a little silt, traces of gravel and sand and occasional silt partings - (CL)	SS-3		10		12.6		9000+*	
			8	13					
			9						
				4					
		SS-4	10	10		14.7		9000+*	
14' 0"				16					
			11						
			12						
			13						
			14						
				4					
	Brown and gray variegated moist hard CLAY with a little silt and traces of gravel and sand - (CL)	SS-5	15	9		13.3		9000+*	
				13					
			16						
			17						
			18						
19' 0"									
			19						
				6					
		SS-6	20	11					
	Brown moist medium compact fine to coarse SAND with traces of gravel and clay - (SP-SC)			13					
			21						
			22						
			23						
24' 0"									
			24						
				7					
	Gray moist stiff CLAY with a little sand and silt, trace of gravel and occasional very moist sand partings - (CL)	SS-7	25	7		11.1		2500*	
				7					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	39' 0"
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	N/A
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	N/A

CTI and Associates, Inc.
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LOG OF TEST BORING

NO.:	TB-18	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
			27						
	Gray moist stiff CLAY with a little sand and silt, trace of gravel and occasional very moist sand partings - (CL)								
			28						
29' 6"			29						
				8					
	Gray moist very compact silty fine SAND with traces of gravel and clay and occasional clay lenses - (SM)	SS-8	30	38					
				50/4"					
			31						
			32						
34' 0"									
			33						
			34						
				10					
	Gray moist hard CLAY with a little silt and traces of gravel and sand - (CL)	SS-9	35	14		11.5		9000+*	
				19					
			36						
			37						
39' 0"									
			38						
			39						
				19					
40' 6"	Gray wet compact fine to medium SAND with traces of gravel and silt and occasional silt seams - (SP-SM)	SS-10	40	21					
				21					
	End of Boring		41						
			42						
	Note: Following completion of the drilling, a 2-inch diameter temporary well with a 10-foot screen was set at a depth of 30 feet. Sand pack was placed around the well screen to a depth of 19 feet below grade, followed by a 2-foot thick bentonite seal and cuttings to the ground surface.		43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	39' 0"
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	N/A
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	N/A

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(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-19	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 8"	Dark brown moist sandy TOPSOIL - (FILL)								
			1						
	Brown, gray and dark brown variegated moist silty CLAY with traces of gravel, sand and organics and occasional silt partings - (FILL)								
		SS-1	2	3					
				6					
			3	6					
			4						
7' 0"				3					
		SS-2	5	5					
				6					
			6						
			7	2					
		SS-3		3					
			8	3					
			9						
	Dark brown and gray variegated moist CLAY with a little silt; traces of gravel, sand and organics; and occasional pieces of wood - (FILL)			2					
		SS-4	10	3					
14' 0"				4					
			11						
			12						
			13						
			14						
				5					
		SS-5	15	7					
	Reddish-brown moist medium compact clayey fine SAND with trace of gravel and occasional clay seams - (SC)			8					
			16						
			17						
19' 0"									
			18						
			19						
				3					
		SS-6	20	6					
	Reddish-brown moist medium compact fine to medium sand with a little clay and occasional clay lenses - (SP-SC)			5					
			21						
			22						
			23						
24' 0"									
			24						
				6					
	Brown moist hard CLAY with a little silt, traces of gravel and sand and frequent silty sand seams - (CL)	SS-7	25	14					
				28					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	24' 0" & 39' 0"
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	None
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	None

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LOG OF TEST BORING

NO.:	TB-19	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
			27						
			28						
			29						
			30						
			31						
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						
			41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	None
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	None

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LOG OF TEST BORING

NO.:	TB-20	PROJECT NO.:	82040308
DATE:	12/9/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)								
			1						
	Brown moist CLAY with a little silt; traces of gravel, sand and organics; and occasional sand partings - (FILL)								
		SS-1	2	3					
			3	6					
			4						
				3					
		SS-2	5	4					
				9					
			6						
			7	3					
		SS-3		2					
			8	4					
			9						
14' 0"									
				2					
		SS-4	10	2					
				4					
			11						
			12						
			13						
			14						
				2					
		SS-5	15	4					
	Brown, gray and dark brown variegated moist CLAY with a little silt and traces of gravel, sand and organics - (FILL)			6					
			16						
			17						
19' 0"									
			18						
			19						
				3					
		SS-6	20	5					
	Brown moist loose clayey fine to medium SAND with some gravel and trace of silt - (SC)			3					
			21						
			22						
			23						
24' 0"									
			24						
				10					
	Brown moist medium compact fine SAND with traces of gravel and silt and occasional cobbles - (SP-SM)	SS-7	25	14					
				12					
			26						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: V. Corrin	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	None
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	None

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LOG OF TEST BORING

NO.:	TB-20	PROJECT NO.:	82040308
DATE:	12/5/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
26' 0"	Brown moist medium compact fine SAND with traces of gravel and silt and occasional cobbles - (SP-SM)		27						
	End of Boring								
			28						
			29						
	Note: Boring terminated upon encountering auger refusal on an apparent cobble bed		30						
			31						
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						
			41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE:	DRILLING METHOD: 3 3/4" ID Hollow Stem Auger	GROUNDWATER:	
SS-Split Spoon SL-Split Spoon w/liner ST-Shelby Tube	DRILLING FOREMAN: P. Cody	ENCOUNTERED AT:	None
	BACKFILL MATERIAL: Cuttings	AFTER COMPLETION:	None
	* Pocket Penetrometer Value Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30", Count Made at 6" Intervals	COLLAPSE DEPTH:	None

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 E. HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
Phone: 734.794.6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2019-034-SB08

SHEET No.
46 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

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LOG OF TEST BORING

NO.:	TB-21	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)								
			1						
	Brown and gray variegated moist silty CLAY with traces of gravel, sand and organics and occasional hair roots - (FILL)	SS-1	2	3					
				6					
4' 0"			3	10					
			4						
				3					
	Brown and dark brown variegated moist CLAY with a little silt and traces of gravel, sand and organics - (FILL)	SS-2	5	5					
				6					
			6						
			7	2					
		SS-3		3					
			8	7					
			9						
				4					
		SS-4	10	3					
				4					
			11						
			12						
			13						
14' 0"			14						
				2					
	Brown and dark brown variegated moist sandy CLAY with traces of gravel and organics and occasional very moist sand partings - (FILL)	SS-5	15	2					
				4					
			16						
			17						
			18						
19' 0"			19						
				7					
	Brown moist hard silty CLAY with traces of sand and gravel and occasional silt partings - (CL-ML)	SS-6	20	17		15.0		9000+*	
				25					
			21						
			22						
			23						
24' 0"			24						
				11					
	Brown moist compact silty fine to coarse SAND with trace of gravel and occasional clay lenses - (SM)	SS-7	25	18					
				14					
			26						

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 39' 0"
AFTER COMPLETION: N/A
COLLAPSE DEPTH: N/A

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(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-21	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
			27						
	Brown moist compact silty fine to coarse SAND with trace of gravel and occasional clay lenses - (SM)		28						
29' 0"			29						
				5					
		SS-8	30	12					
				16					
	Gray moist medium compact silty fine SAND with a little clay, trace of gravel and occasional clay lenses - (SM/SC)		31						
			32						
			33						
			34						
				9					
		SS-9	35	11					
				10					
			36						
			37						
			38						
39' 0"			39						
				18					
	Gray wet very compact fine SAND with traces of gravel and silt - (SP-SM)	SS-10	40	38					
40' 6"				50/5"					
	End of Boring		41						
			42						
			43						
	Note: Following completion of the drilling, a 2-inch diameter temporary well with a 20-foot screen was set at a depth of 39 feet. Sand pack was placed around the well screen to a depth of 18 feet below grade, followed by a 2-foot thick bentonite seal and cuttings to the ground surface.		44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 39' 0"
AFTER COMPLETION: N/A
COLLAPSE DEPTH: N/A

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LOG OF TEST BORING

NO.:	TB-22	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)								
			1						
	Brown and dark brown variegated moist CLAY with a little silt; traces of gravel, sand and organics; and occasional silt partings - (FILL)	SS-1	2	4					
				6					
			3	8					
			4						
				4					
		SS-2	5	5					
				7					
			6						
7' 6"			7	6					
		SS-3		6		17.2		4500*	
			8	7					
9' 0"	Reddish-brown moist very stiff sandy CLAY with trace of gravel - (CL)		9						
				6					
		SS-4	10	10		12.2		9000+	
				16					
	Brown and gray variegated moist hard CLAY with a little silt, traces of gravel and sand and frequent sand partings - (CL)		11						
			12						
			13						
			14						
				8					
		SS-5	15	14		13.8		9000+*	
				17					
			16						
			17						
			18						
			19						
20' 0"				4					
		SS-6	20	7					
				13		15.5		6500*	
	Gray moist very stiff CLAY with a little silt, traces of gravel and sand and occasional silt partings - (CL)		21						
			22						
			23						
24' 6"			24						
				6					
	Brown moist compact silty fine SAND with trace of gravel and occasional clay lenses - (SM)	SS-7	25	18					
				20					
			26						

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 39' 0"
AFTER COMPLETION: N/A
COLLAPSE DEPTH: N/A

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(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-22	PROJECT NO.:	82040308
DATE:	12/4/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
			27						
			28						
29' 0"			29						
		SS-8	30	2				8000*	
				50/5"					
	Gray moist very stiff sandy CLAY with trace of gravel - (CL)		31						
			32						
			33						
34' 0"			34						
		SS-9		50/6"					
			35						
	Gray moist to wet very compact to compact silty fine SAND with trace of gravel - (SM)		36						
			37						
			38						
			39						
				9					
		SS-10	40	15					
40' 6"				16					
	End of Boring		41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 24' 0"
AFTER COMPLETION: N/A
COLLAPSE DEPTH: N/A

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LOG OF TEST BORING

NO.:	TB-23	PROJECT NO.:	82040308
DATE:	12/9/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 1 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
0' 5"	Dark brown moist sandy TOPSOIL - (FILL)		1						
				2					
	Brown and dark brown variegated moist CLAY with a little silt; traces of gravel, sand and organics; and occasional sand partings - (FILL)	SS-1	2	5					
				14					
			3						
			4						
				4					
5' 3"		SS-2	5	8					
				12					
			6						
	Brown and gray variegated moist CLAY with a little silt, traces of gravel and sand and occasional pieces of wood - (FILL)		7	3					
		SS-3		3					
			8	4					
			9						
				2					
		SS-4	10	3					
				4					
			11						
			12						
			13						
14' 0"			14						
				4					
		SS-5	15	7		12.0		9000+*	
				6					
	Brown moist hard CLAY with a little silt, traces of gravel and sand and occasional sand partings - (CL)		16						
			17						
			18						
			19						
				3					
20' 0"		SS-6	20	12		14.1		8500*	
				28					
			21						
	Brown moist medium compact fine SAND with traces of gravel and silt and occasional cobbles - (SP-SM)		22						
			23						
24' 0"			24						
				6					
	Brown moist hard sandy, silty CLAY with trace of gravel and occasional wet sand and gravel seams - (CL-ML)	SS-7	25	10		13.9		9000+*	
				11					
26' 0"		SS-8	26	6					

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: V. Corrin
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT:
AFTER COMPLETION: None
COLLAPSE DEPTH: None

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(248) 486-5050 fax

LOG OF TEST BORING

NO.:	TB-23	PROJECT NO.:	82040308
DATE:	12/9/2008	SURFACE ELEV.:	N/A

PROJECT NAME: Pioneer High School Storm Water Improvements - Ann Arbor, MI — PAGE: 2 OF: 2

Depth	SOIL DESCRIPTION	Sample Type	Depth Feet	Penetration Blows for 6"	PID	Moisture %	Natural Wt. P.C.F.	Unconfined Comp. Str. P.S.F.	STR %
	Gray moist medium compact silty, clayey fine SAND with trace of gravel - (SM/SC)	SS-8		10		10.4			
27' 6"			27	13					
				4					
28' 6"	Gray moist very stiff sandy CLAY with trace of gravel and occasional cobbles - (CL)	SS-9	28	10		11.4		7000*	
	End of Boring			12					
			29						
	Note: Boring terminated upon encountering auger refusal on an apparent cobble bed		30						
			31						
			32						
			33						
			34						
			35						
			36						
			37						
			38						
			39						
			40						
			41						
			42						
			43						
			44						
			45						
			46						
			47						
			48						
			49						
			50						
			51						
			52						

TYPE OF SAMPLE: SS-Split Spoon; SL-Split Spoon w/liner; ST-Shelby Tube

DRILLING METHOD: 3 3/4" ID Hollow Stem Auger
DRILLING FOREMAN: P. Cody
BACKFILL MATERIAL: Cuttings
* Pocket Penetrometer Value
Standard Penetration Test - Driving 2" OD Sampler 18" With 140# Hammer Falling 30"; Count Made at 6" Intervals

GROUNDWATER:
ENCOUNTERED AT: 24' 0"
AFTER COMPLETION: None
COLLAPSE DEPTH: None

Know what's below. Call before you dig. 811

REV.	DESCRIPTION	DATE	DRAWN	CHECKED
01	30% PLAN SUBMITTAL	01/27/2020	FISHBECK	AK

CITY OF ANN ARBOR
PUBLIC SERVICE
301 E. HURON STREET
P.O. BOX 8647
ANN ARBOR, MI 48107-8647
(734) 794-6410
www.a2gov.org

PROJECT MANAGEMENT - PUBLIC SERVICES - CITY OF ANN ARBOR
SNYDER-EDGEWOOD AVENUES AREA STORMWATER IMPROVEMENT PROJECT
SOIL BORINGS
STADIUM BLVD, EDGEWOOD AVE, & SNYDER AVE

SCALE PLAN: ########

DRAWING No.
2018-034-SB09

SHEET No.
47 OF 47

Z:\NCI\Canton\18255020(AA-Snyder)\Design\S-Snyder-SB.dwg Dwg Created: 20-Dec-19 - _a2 standard bw.stb - Plot Date: 27-Jan-20

ATTACHMENT A.2

HYDRAULIC ANALYSIS MEMORANDUM

Memorandum

To: *Andy Kilpatrick, Northwest Consultants*

From: *Jay Zawacki, CDM Smith*

Date: *May 24, 2019*

Subject: *Snyder-Edgewood Avenues Area Storm Water Improvements Project - Hydraulic Analysis Memorandum*

The objective of the Snyder-Edgewood Avenues Area Storm Water Improvements Project is to quantify the flooding issues that occur along Snyder Avenue, and to propose implementable options for the mitigation of this flooding. CDM Smith performed hydraulic analysis in support of this objective with the following components:

- Stormwater model validation and updates
- Preliminary alternatives development
- Final alternatives analysis

This memorandum contains a description of the stormwater model used for project hydraulic analysis, details on the preliminary alternatives considered, and results for analysis of final improvement alternatives. Note that the actual storage volumes that can be provided with each alternative may differ from those volumes shown in the analysis due to varying site constraints at each location. This memorandum is intended to summarize the results of all model analysis required by the CDM Smith scope of work, except for 30% design analysis which will be provided after Northwest Consultants, Inc. (NCI) has completed the preliminary design, at which point the final volume of the recommended alternative will be established.

Stormwater Model Background

The City of Ann Arbor citywide stormwater model (the Model) was utilized for hydraulic analysis on the Snyder-Edgewood Avenues Area Storm Water Improvements project. The Model had already been calibrated in 2013 using flow monitoring data from existing USGS stream gauges and 15 temporary meters installed across the City. The Snyder-Edgewood area did not have flow meters installed at that time, therefore model runoff parameters were interpolated from other areas of similar land use and imperviousness characteristics.

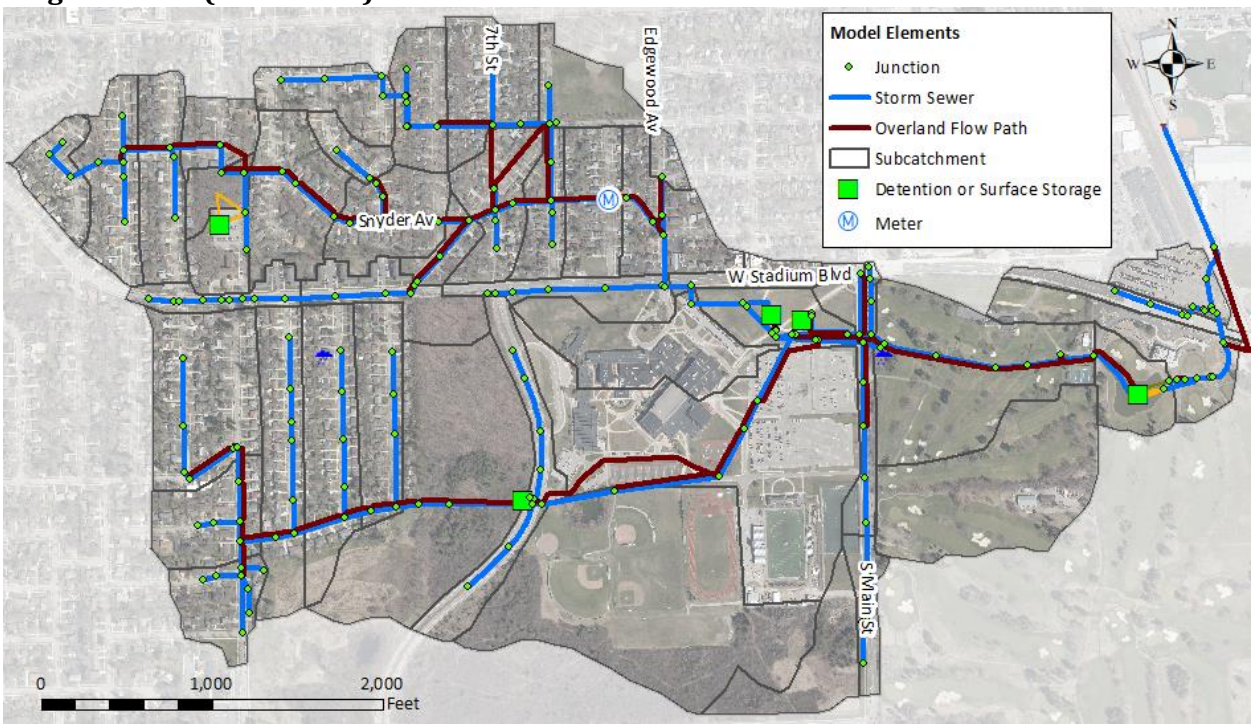
Between May and November of 2018, the City of Ann Arbor installed a rain gauge and temporary flow meter at the intersection of Prescott Avenue and Snyder Avenue, and the collected data were

used to validate model performance. **Figure 1** shows the model elements in the study area. Model analysis was limited to the area tributary to the UM Golf Course pond, located east of South Main Street.

Further refinements were made to the Model to improve the level of detail represented in the study area, including:

- Stormwater detention at Trinity Evangelical Lutheran Church was represented
- Subcatchments between Clague Avenue and Edgewood Avenue that were larger than 10 acres were split into smaller ones
- A minor loss coefficient was added to the locations with bends and turns (up to 1.02 for 90-degree turn); this was added to improve agreement between model-simulated water levels and the observed meter data at Prescott Avenue and Snyder Avenue

Figure 1 – City of Ann Arbor Stormwater Model Representation of Snyder-Edgewood Neighborhood (InfoSWMM)

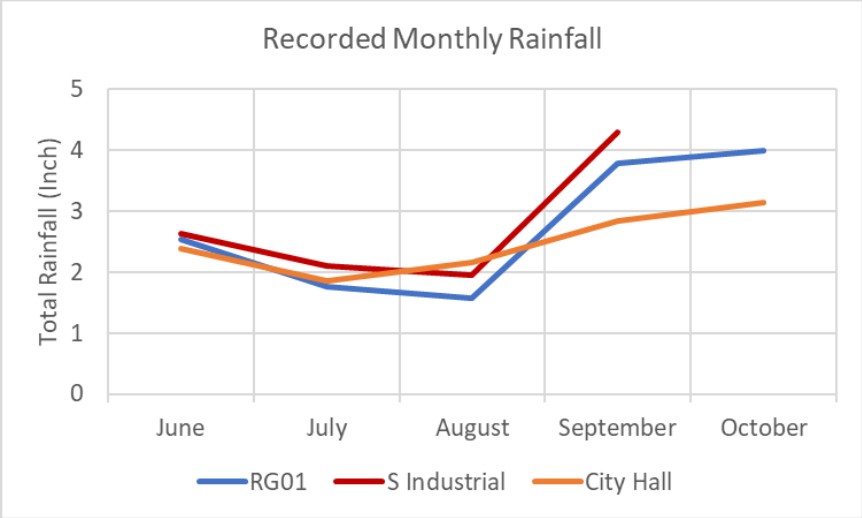


Flow/Rain Data Collection and Model Validation

The City installed a temporary rain gauge (RG01) and flow meter at the intersection of Prescott Avenue and Snyder Avenue (**Figure 1**) between May and November 2018. RG01 recorded a total of 15.8 inches of rainfall during this period, with 30 storm events exceeding 0.1 inch in depth. This monthly total is comparable with the nearby S Industrial and City Hall rain gauges (**Figure 2**). The

largest storm occurred on 10/6/18 with 1.66 inches of rainfall, while the most intense storm event was on 9/1/18 (0.63 inches in 15 minutes).

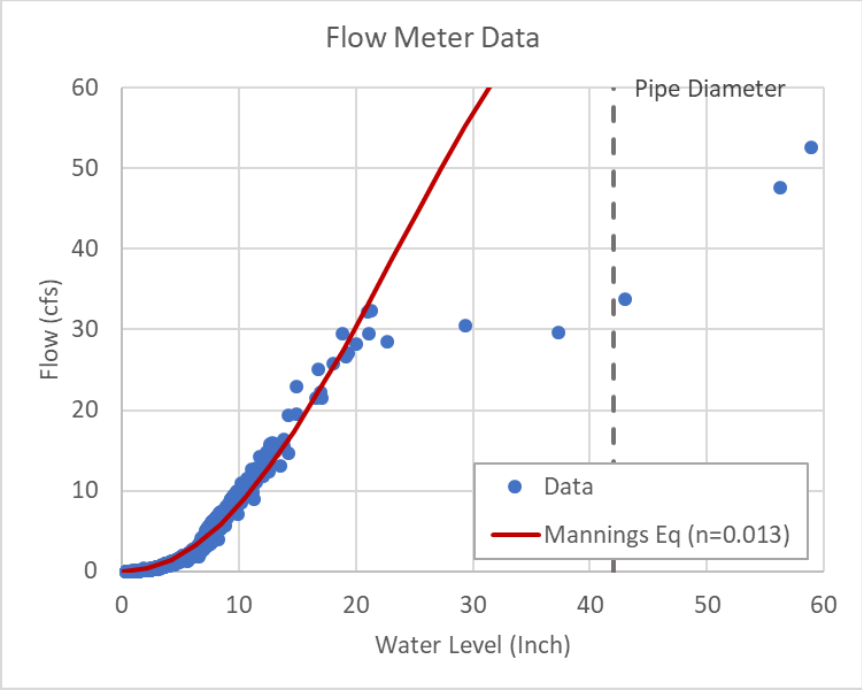
Figure 2 – Monthly Rainfall Comparison with Nearby City Rain Gauges



S Industrial gauge was omitted for October above because it did not record any rainfall between 10/26 and 10/31/2018

Figure 3 plots meter-observed flow against level along with theoretical flow/level relationship from Manning's equation (n = 0.013, slope = 0.43%).

Figure 3 – Meter-Observed Data



The observed data follow the theoretical flow up to about 24 inches of water level. Beyond 24 inches, the observed flow is much lower than theoretical flow, indicating backwater conditions caused by downstream capacity limitations. The pipe in the meter section was surcharged on 9/1 and 9/5/18 for a total of 15 minutes during the entire monitoring period.

Model simulation was performed for the entire flow monitoring period. For the first iteration, the model-simulated peak flows matched within 15% of observed data for most storm events, but the model could not replicate the surcharging on 9/1 and 9/5/18. In subsequent iterations, a minor loss coefficient was added to the model to simulate head loss where pipes bend or turn, especially the three 90-degree bends southeast of the Edgewood/Stadium intersection, and the model was able to replicate the surcharging condition. **Figures 4** and **5,** respectively, compare the model and meter peak water level and depths for the 30 storm events. **Figures 6** and **7** are flow hydrographs of the two most intense storm events with surcharge (9/1 and 9/5/18, respectively).

Figure 4 – Peak Water Level Comparison

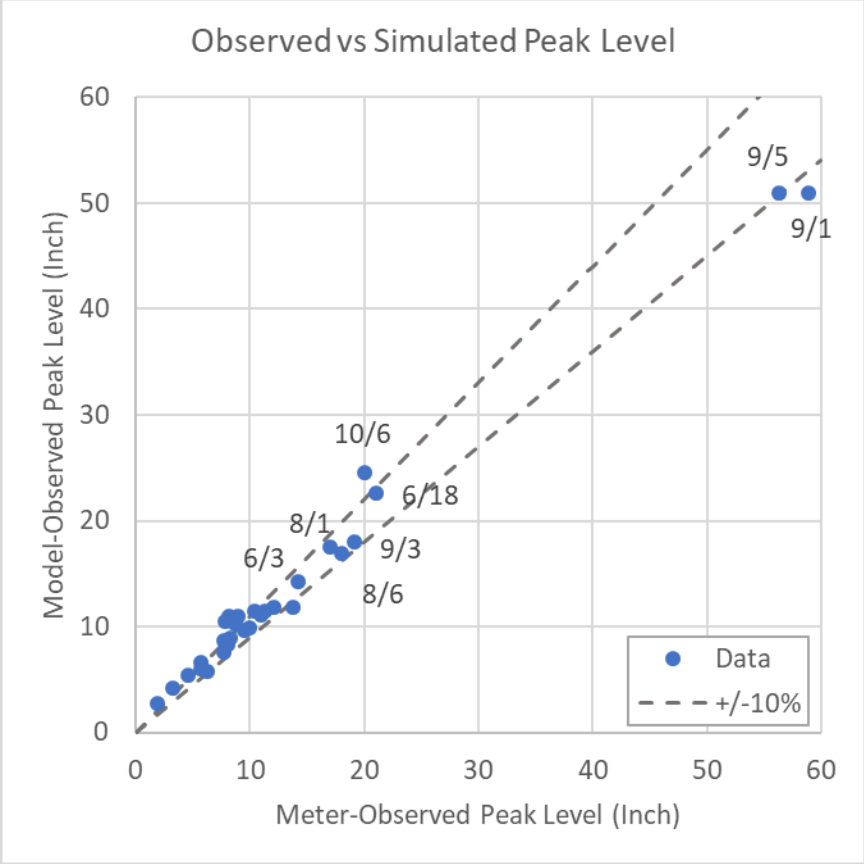


Figure 5 – Peak Flow Comparison

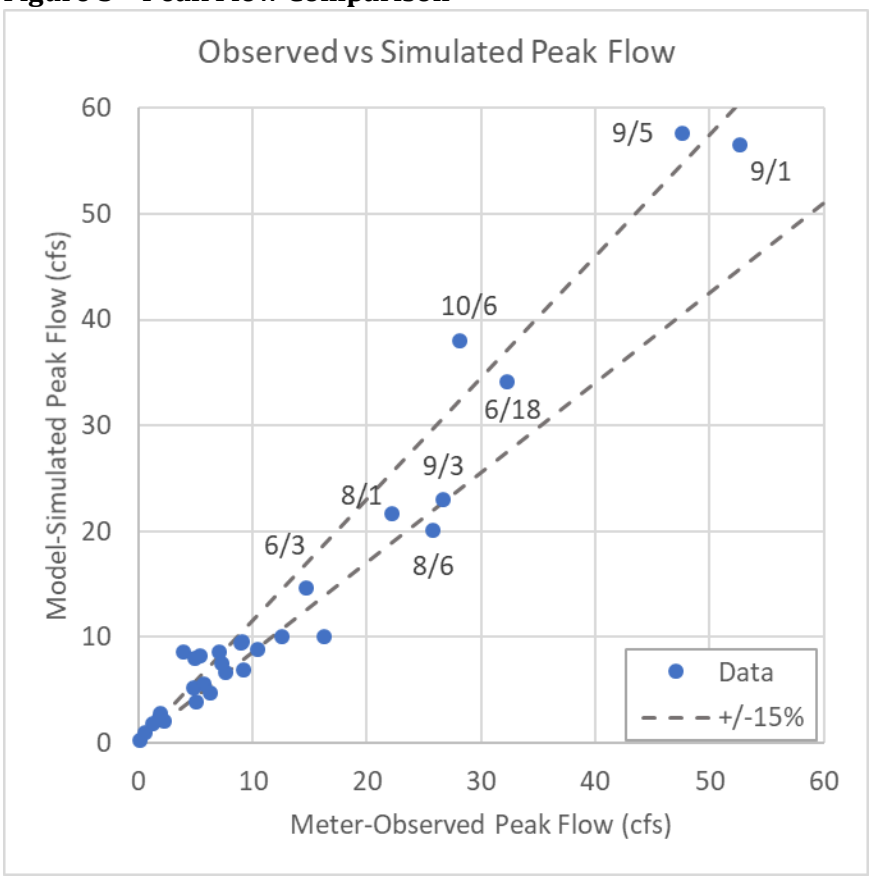


Figure 6 – Flow Hydrograph for 9/1/2018 Event

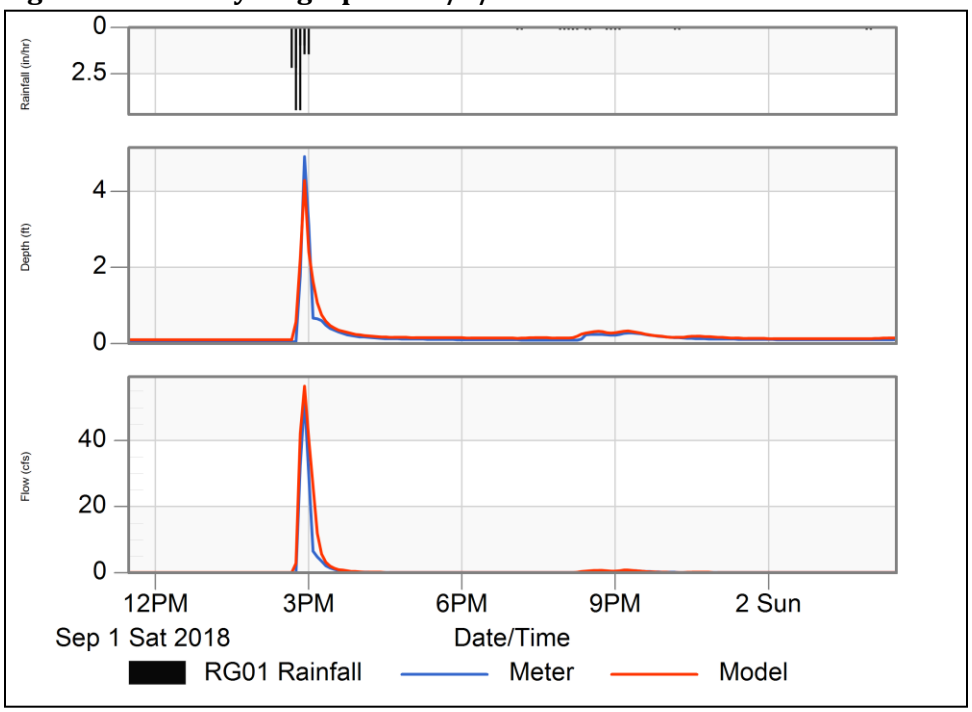
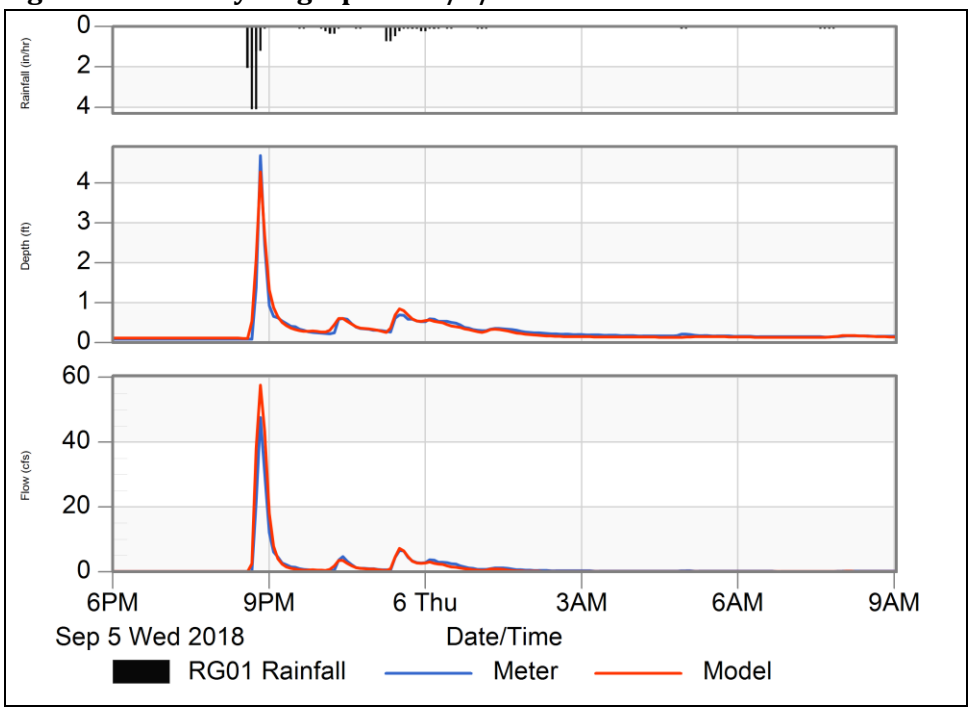


Figure 7 – Flow Hydrograph for 9/5/2018 Event



Preliminary Alternatives

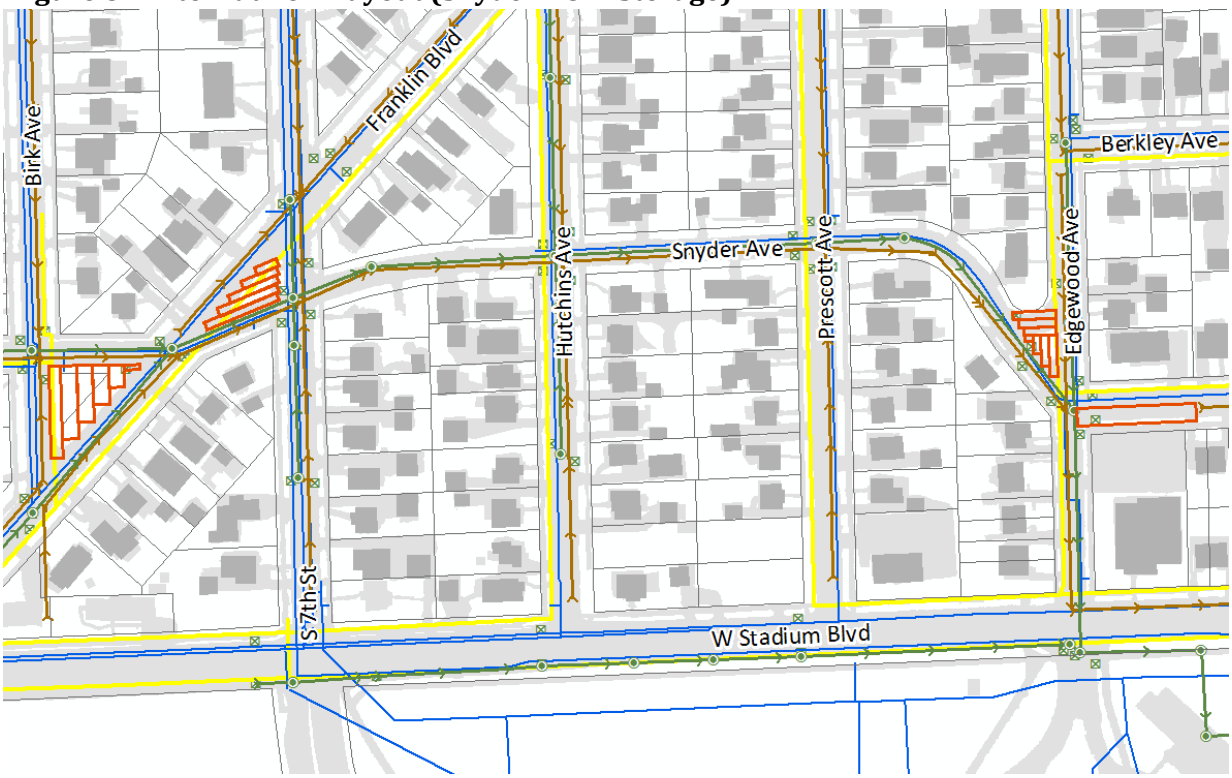
The updated stormwater model was used to develop and evaluate preliminary alternatives to manage stormwater and to reduce flooding at the Snyder-Edgewood intersection. The stormwater model was used for preliminary sizing and to analyze the impacts of each alternative on flows and water levels. The initial design target was to keep the peak hydraulic grade line (HGL) one foot below ground level for the 10-year, 12-hour storm standard. The design storm has a volume of 2.90 inches from NOAA Atlas 14 and a SCS Type II rainfall distribution was selected.

Due to existing capacity and flooding concerns downstream of the project site (lower Allen Creek), any increased conveyance must be mitigated with storage so peak flows and flood levels are not exacerbated downstream. Soils in the area do not appear to be favorable for high rates of infiltration, so the focus of the preliminary alternatives was on identifying suitable stormwater storage locations.

Alternative 1: Snyder Right-of-Way Storage

Alternative 1 includes underground stormwater basins in open spaces within the City right-of-way (ROW). In the project area, there are two intersections with open "islands", located at Edgewood-Snyder and Franklin-Snyder. At both locations, two potential basins were sketched out, as shown in Figure 8 below:

Figure 8 – Alternative 1 Layout (Snyder ROW Storage)

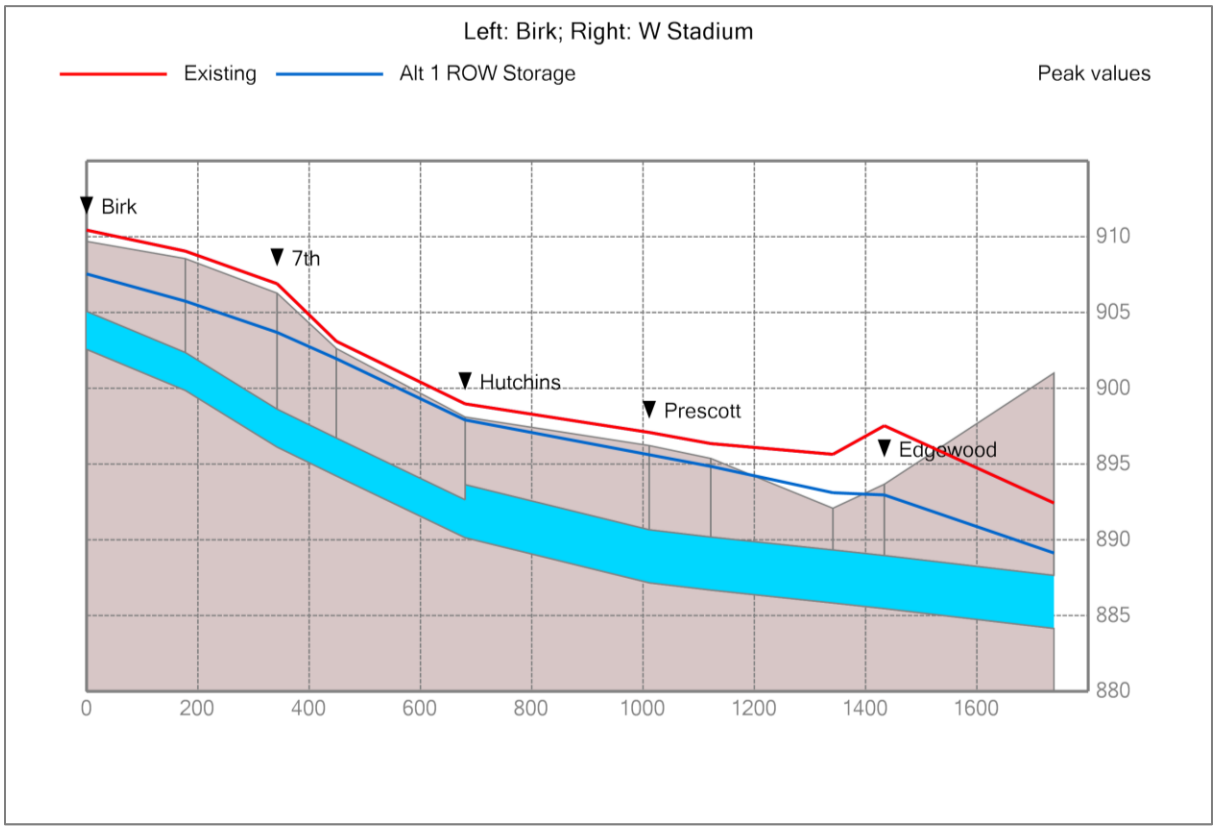


The total storage volume available at these 4 basins is 103,000 cubic feet, assuming the footprints shown and a minimum 18" cover on top of basins. Some utility relocation work is assumed as noted in the table below, which also includes individual basin volumes.

Basin	Description	Notes	Basin Size (ft^3)
1	Edgewood-Snyder ROW (intersection)	Relocate gas line	13,000
2	Snyder east of Edgewood	Eastbound lane along church parking lot	21,500
3	Franklin-Snyder-7th	Relocate gas line	27,500
4	Franklin-Snyder-Birk	Relocate 1 hydrant	41,000
	Total (all locations)		**103,000**

Using the stormwater model to simulate the 10-year, 12-hour design storm results in the following profile in Figure 9, showing the peak HGL for existing conditions and for alternative 1.

Figure 9 – Peak HGL Profile – Alternative 1 (Snyder ROW storage)

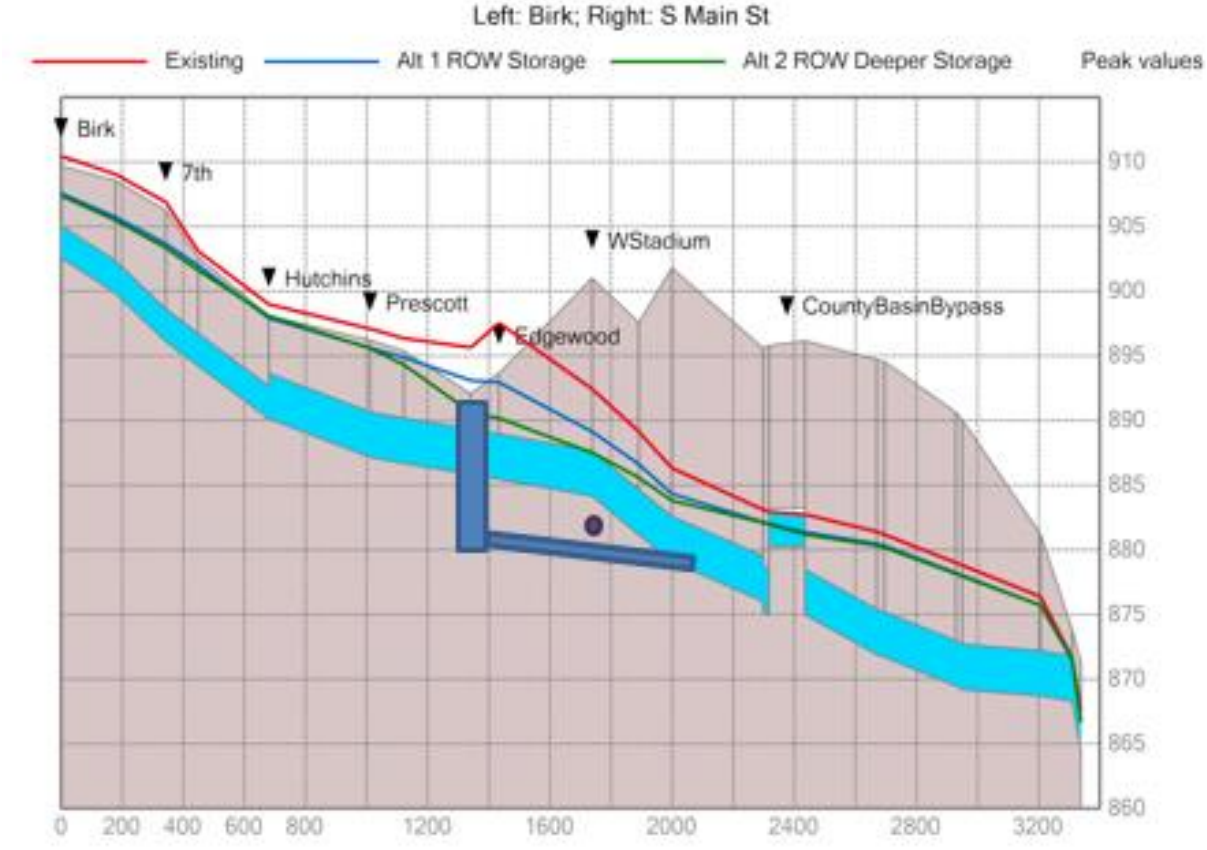


With alternative 1 implemented, the HGL is reduced but the model still predicts approximately 1' of flooding at the Snyder-Edgewood intersection.

Alternative 2: ROW Storage with Deeper Discharge across Stadium Blvd.

This alternative builds onto the alternative 1 concept, adding a new discharge pipe beneath the existing 15" diameter sanitary sewer located under Stadium Blvd. The deeper discharge would allow for deeper basins at the Snyder-Edgewood intersection, providing more storage volume while still draining by gravity. The concept and revised HGL profile are shown in Figure 10.

Figure 10 – Peak HGL Profile – Alternative 2 (Snyder Deeper ROW Storage)



This alternative brings the peak water level below ground at the Snyder-Edgewood intersection. The deeper construction in street areas does create a higher potential for conflict with sanitary sewers and house leads. Construction also likely requires excavation support, leading to more significant access limitations and longer durations.

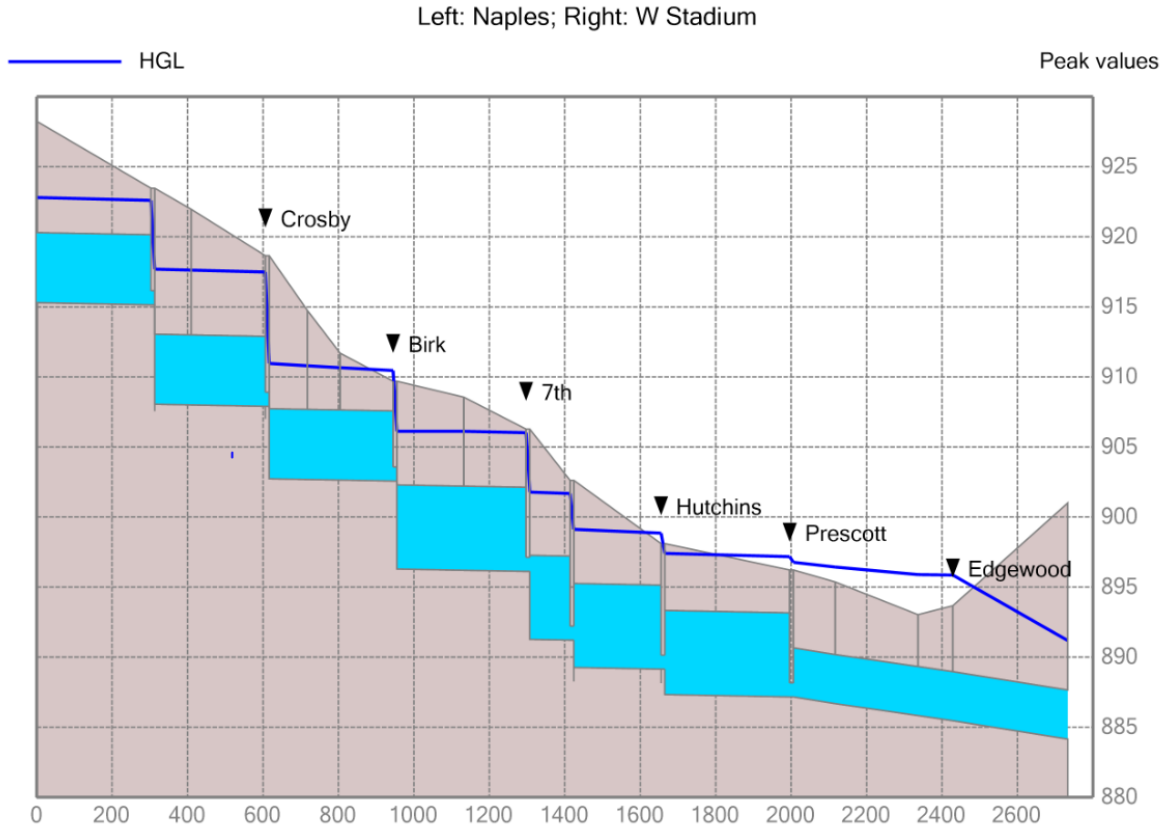
Individual basin volumes for alternative 2, as compared with alternative 1, are shown in the following table:

Basin	Description	Note	Alt 1 Basin Size (ft^3)	Alt 2 Basin Size (ft^3)
1	Edgewood-Snyder ROW (intersection)	Relocate gas line	13,000	28,000
2	Snyder east of Edgewood	Eastbound lane outside church parking lot	21,500	38,200
3	Franklin-Snyder-7th	Relocate gas line	27,500	27,500
4	Franklin-Snyder-Birk	Relocate 1 hydrant	41,000	41,000
	Total (all locations)		**103,000**	**134,700**

Alternative 3: Snyder In-Line Storage

Also building onto alternative 1, alternative 3 provides flatter, deeper pipes along Snyder. The larger pipes have controlled outflow, increasing storage without changing conveyance. Figure 11 shows the locations of pipe replacements and the resulting hydraulic profile.

Figure 11 – Peak HGL Profile – Alternative 3 (Snyder In-Line Storage)



The table below shows the pipe size changes and extents of the changes, which overall stretch from Edgewood west to Naples. These changes would be done in addition to the underground basins included in alternative 1.

Pipe Sections	Description	Original Pipe Size (in)	Revised Pipe Size (in)	Storage Volume Provided (ft^3)
1	Edgewood – Prescott	42	42	--
2	Prescott – Hutchins	42	72	
3	Hutchins – S. Seventh	30	72	
4	S. Seventh – Birk	30	72	
5	Birk – Naples	24 – 30	60	
	Total (all locations)			**48,750**

The linear approach described in this alternative would result in more surface disruption and restoration, as the extent of the project covers a much larger portion of the neighborhood. The pipe size increases may also lead to utility conflicts at each cross street so the project would need to include relocations of more gas lines, water mains, and other drainage utilities.

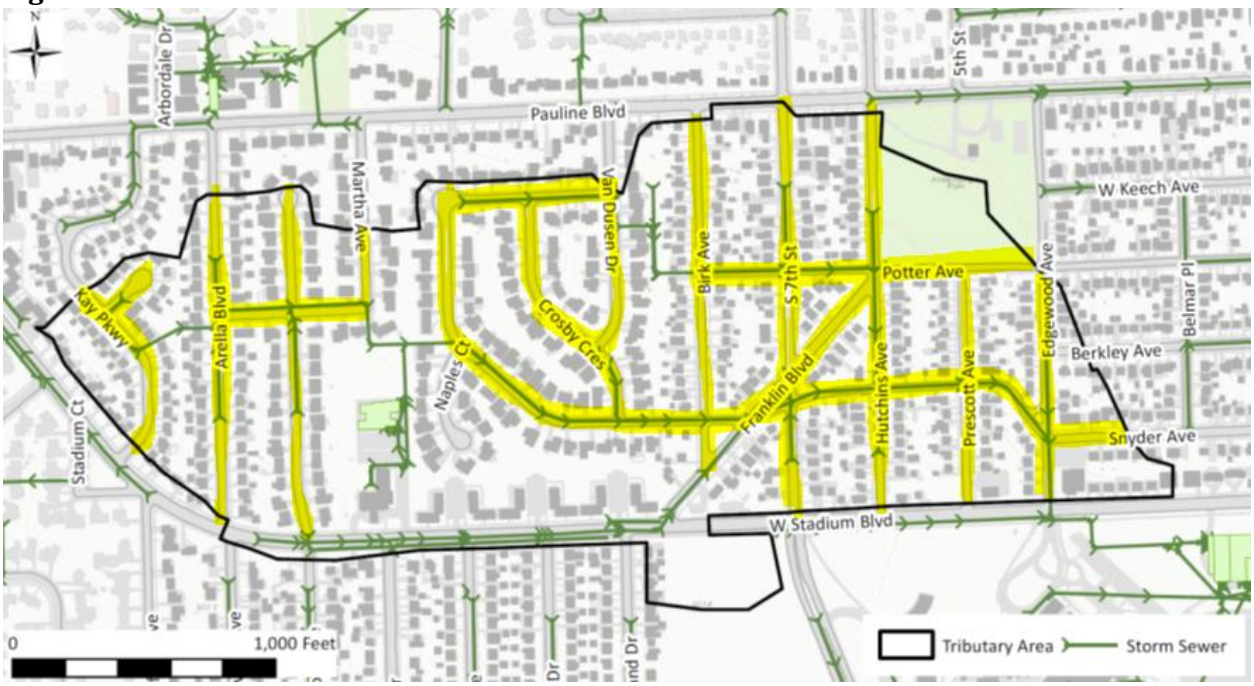
Alternative 4: Future Green Streets

This alternative considers future application of the City of Ann Arbor's Green Streets policy to provide localized stormwater management throughout the drainage area to reduce flooding at the Snyder-Edgewood intersection.

Stormwater management along the 15,000 linear feet of streets in the area could be accomplished with:

- Larger pipes and outlet control
- Linear green infrastructure (infiltration trenches, bioswales)
- Private property programs (rain gardens, rain barrels, etc.)

Figure 12: Potential Street Locations for Future Green Streets



Because of the wide scope of this approach, the construction timeline would be long, and implementation would likely be aligned with other neighborhood improvement projects, which may not take place for many years. In addition, the intent of the Green Streets policy is to provide water quality improvements and "reserving" the future implementation for flood control could make it more difficult to fulfill the purpose of the policy. Considering the timeline constraints and initial public response to this alternative, no further hydraulic analysis was performed beyond what was provided in the 2015 Stormwater Model Calibration and Analysis Project report.

Alternatives 5 and 6: Expanded Storage with Utility Relocations

These two alternatives build on alternative 1 by expanding the project area into roadways where more significant utility relocations would be required. An example of the expanded footprints for the ROW basins can be see in Figure 13.

Figure 13: Example of Expanded Storage for Franklin-Snyder Intersection

No additional hydraulic modeling was performed for these expanded storage options. The alternatives were developed based on physical constraints, including utility offsets, and ROW boundaries, with the intent of determining how much volume could be gained in these areas. Further modeling these were for these scenarios is included in the final alternatives.

Alternative 7: Expanded Storage into Private Property Areas

Another alternative building on the Snyder ROW basins in alternative 1 was to expand into private property areas. This approach would consider where easements or property acquisition could

provide storage at strategic locations. Three properties or property groupings were considered and the volumes that those areas could provide are also shown.

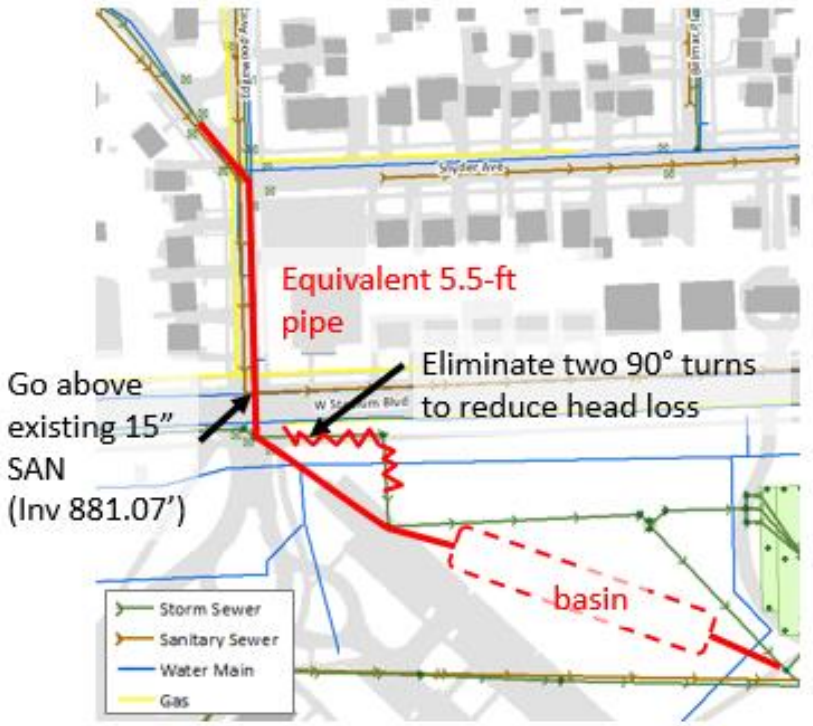
Option	Description	Additional Volume (ft^3)	Net Volume with Alt 1 (ft^3)
1	Edgewood-Snyder Property 1	35,000	138,000
2	Edgewood-Snyder Properties 2 & 3	31,000	132,000
3	West of Seventh Property 1	75,000	178,000

It was noted that property acquisition would be a difficult process and could face problems with acceptability as well as with cost. Also, locations away from main drainage pathway (such as the properties west of Seventh) are less effective and could require additional conveyance improvements.

Alternative 8 – Pioneer High School Basin

This alternative is based on both conveyance improvements and downstream storage. A larger pipe would be installed starting at the Snyder-Edgewood intersections, conveying flow from the Snyder-Edgewood drainage area across Stadium Blvd.

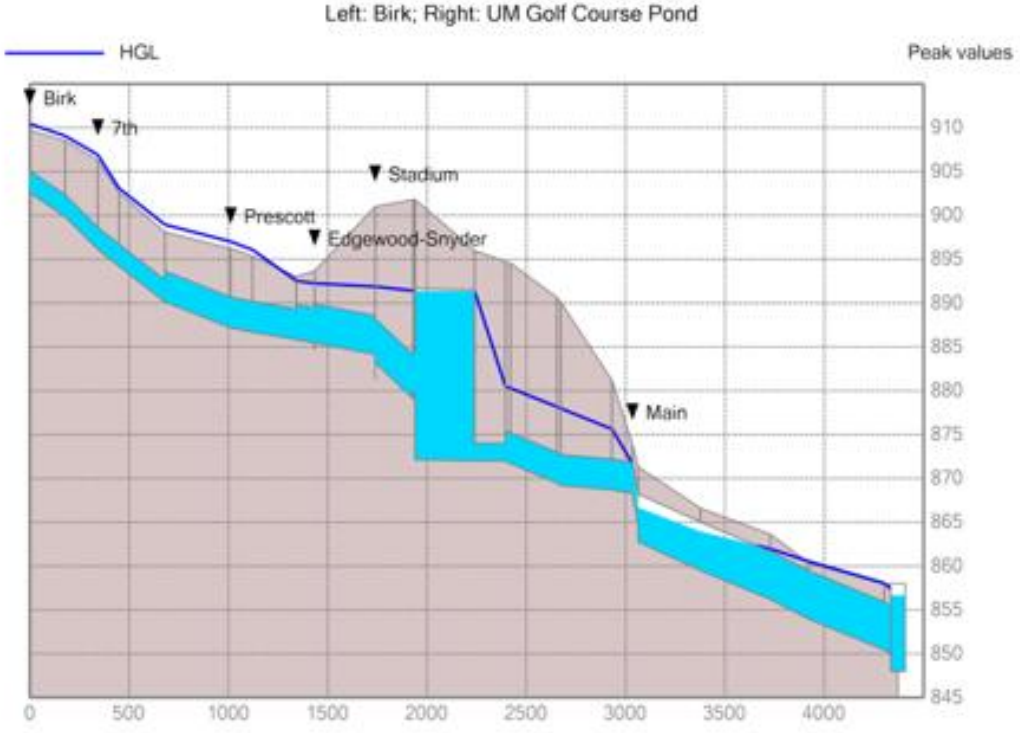
Figure 14: Alternative 8 Layout – Pioneer High School Basin



A new underground storage basin would be located under the soccer field, west of existing Washtenaw County stormwater infiltration basin. The basin size would be approximately 122,000 cubic feet.

Analysis of this alternative shows that it will meet the 10-year, 12-hour design storm standard, keeping the peak flood elevation below ground at the Snyder-Edgewood intersection. However, it does not provide any improvements in conveyance in the upstream drainage area. The model still predicts some overland flow along Snyder where the existing storm pipe does not have sufficient capacity to convey the peak flows.

Figure 15: Hydraulic Profile with Alternative 8 – Pioneer HS Basin



Selection of this alternative would require approval and coordination with the Ann Arbor Public Schools. The concept includes a deeper basin, but the basin location has a much more open work area on the school property as compared with the residential areas north of Stadium Blvd.

Alternative 9: Downstream Storage at UM Golf Course Pond

In this alternative, conveyance improvements would be provided all the way to the existing UM Golf Course pond. In order to maintain the existing condition peak outflow at Golf course pond (200 ft^3/s), the detention volume in the pond would need to be increased by 50%. This would likely entail modifications to the pond outlet and possibly berms or other retention structures allowing for higher water levels during large rain events.

In addition to the pond changes, this alternative would also require extensive conveyance improvements from Snyder-Edgewood, all the way across S. Main Street, and across the Ann Arbor Golf and Outing property. These changes are shown in Figure 16.

Figure 16: Alternative 9 Layout

Construction across Ann Arbor Golf & Outing property in easement but would be highly disruptive and likely cost prohibitive. Increased flows would require physical changes to the UM golf course pond, potentially affecting 18th hole and/or the newly constructed clubhouse.

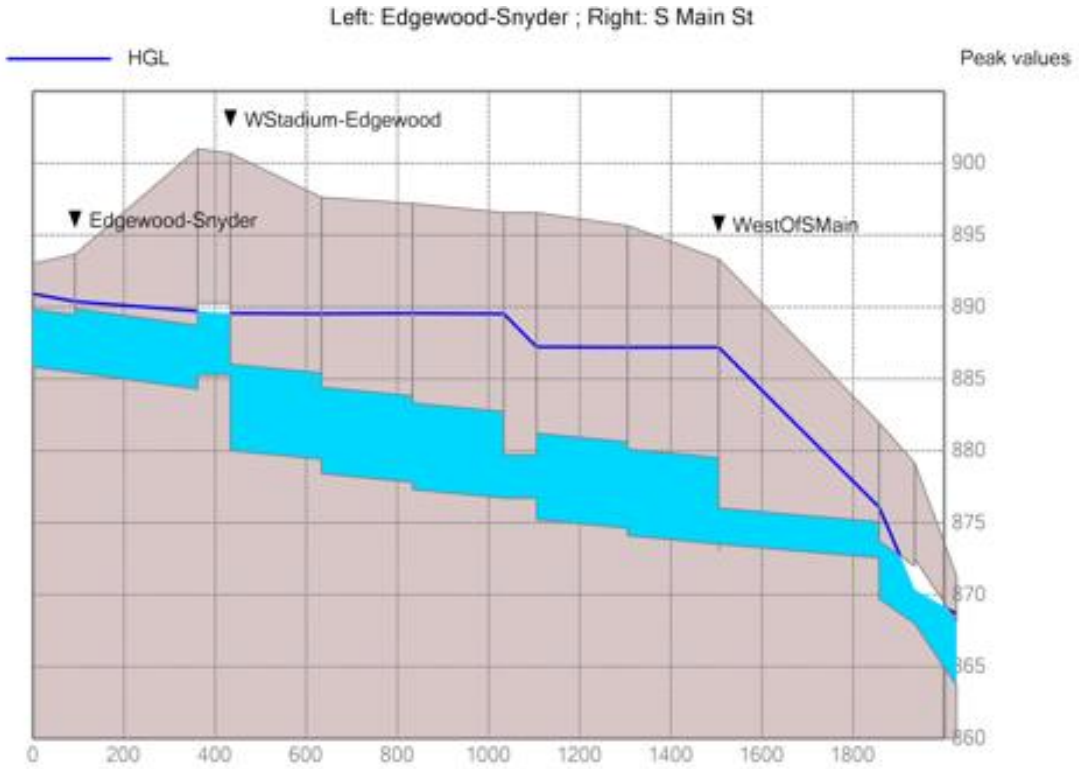
Alternative 10: Inline Storage along W. Stadium Blvd

This alternative includes conveyance improvements across Stadium, similar to alternative 8. Instead of storing flows at a Pioneer High School basin, this alternative includes 80,200 ft^3 of storage underneath W. Stadium Blvd. This would require a basin 13-ft wide within the ROW, as shown in Figure 17.

Due to sequencing and alignment with future reconstruction, this alternative would be combined with planned improvements to W. Stadium (which will likely be scheduled for 2023 or later). As analyzed, this alternative still sends higher peak flows to UM Golf Course pond that would need to be managed, but this approach could be combined with other ROW storage options to function without an increase in peak flows. This combined alternative is discussed in the final alternatives section of this memorandum.

Figure 17 – Alternative 10 Layout

Figure 18 – Alternative 10 Hydraulic Profile



Final Alternatives

Following public meeting no. 2, held on February 28, 2019, the preliminary alternatives were screened based on performance and public feedback. This process resulted in development of 4 final alternatives that met the stormwater performance requirement and had public support. These alternatives were refined and the stormwater model was used once again to evaluate the impacts of each alternative. These results are presented in this section.

Pioneer Basin

Preliminary alternative 8 was directly adapted to a final alternative. This alternative offers improved conveyance out of the Snyder-Edgewood intersection, with 122,000 CF of storage located under the soccer practice field, west of existing stormwater infiltration basin and east of the staff parking lot.

Figure 19 offers some clarifications on the configuration of this alternative, specifically calling out how smaller storms will continue to the existing county basin, while only larger storms will cause the new proposed basin to fill. The hydraulic performance of this final alternative is shown in Figure 20.

Figure 19: Pioneer Basin Alternative Layout

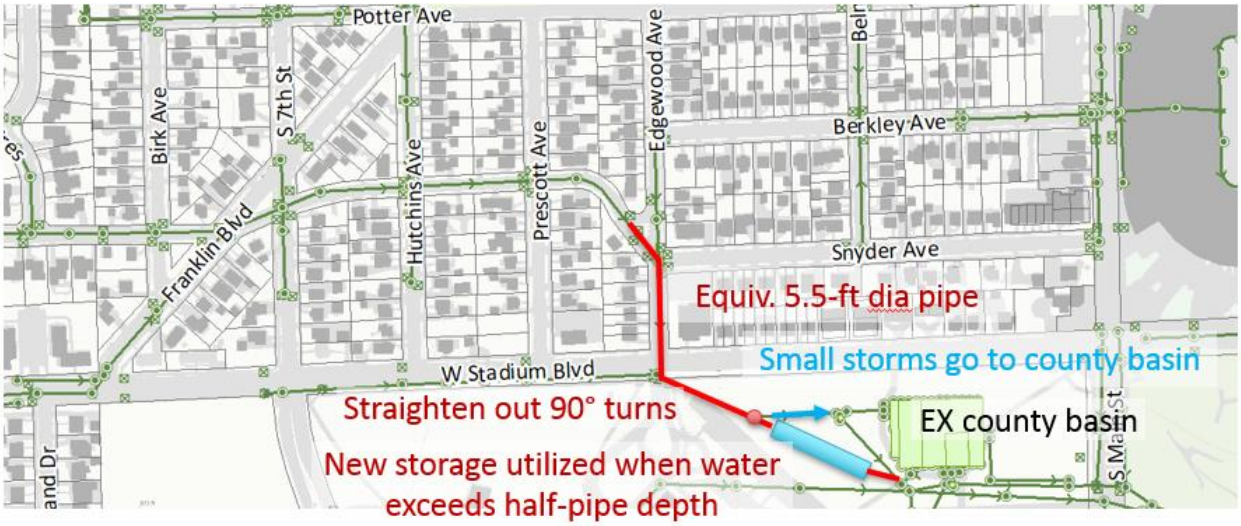
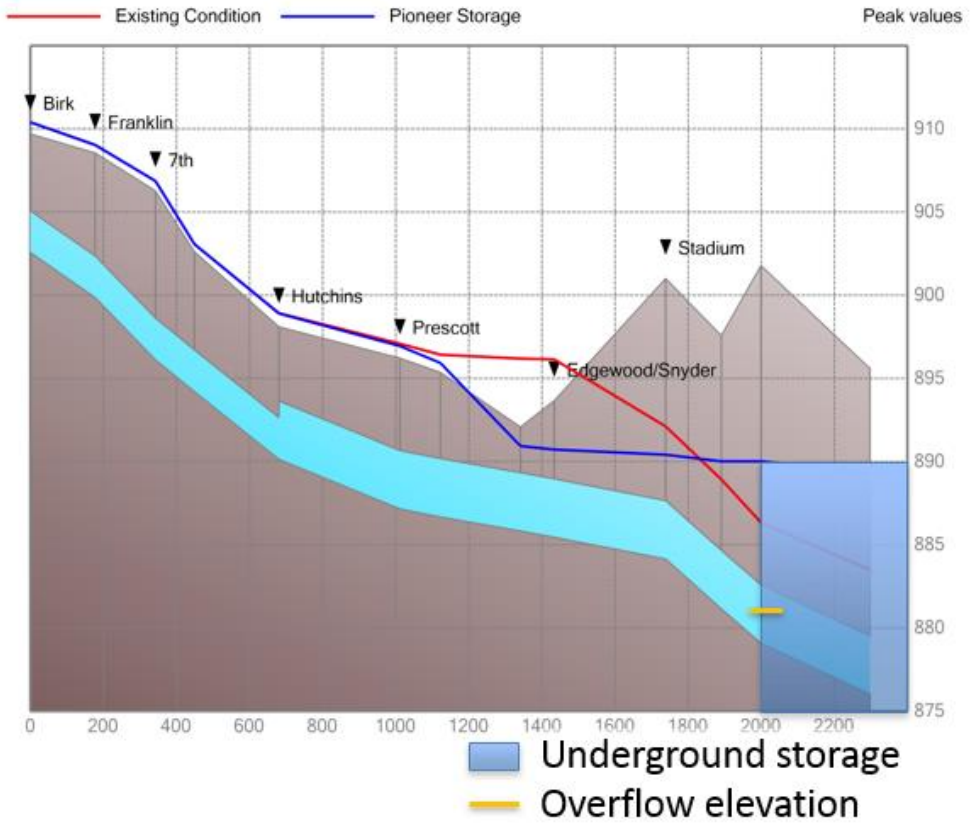


Figure 20 – Pioneer Basin Alternative Peak HGL Profile



Snyder ROW Storage (Deeper Birk)

During the preliminary alternative analysis, the Snyder right-of-way (ROW) option considered underground storage at open intersection "islands" at Snyder-Edgewood and Snyder-Franklin. The preliminary model analysis indicated that these underground basins did not provide sufficient volume to meet the project design criteria. In addition, feedback at public meeting no. 2 indicated some trees along Birk Avenue that should be saved, taking away from the potential basin footprint.

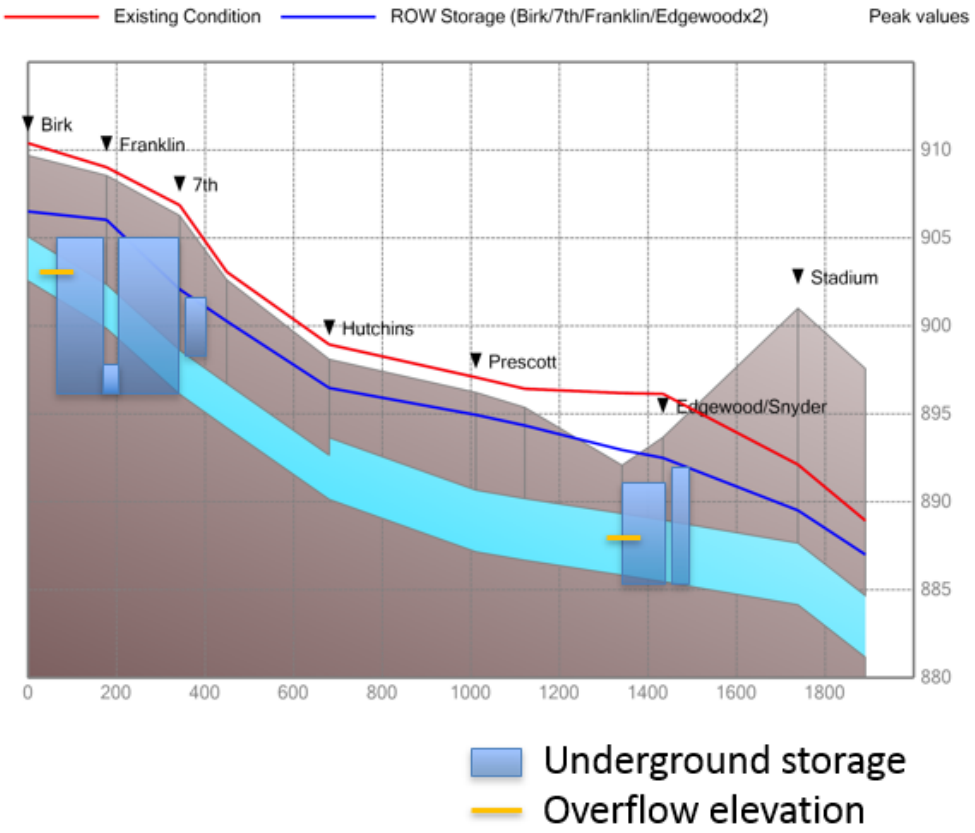
For the final alternatives, a deeper basin at Birk is considered, as well as adding some linear storage along Franklin Avenue, east of S. Seventh. These basins also assume some utility relocation while accommodating the large trees.

Intersection	Basin Vol (CF)
Birk	59,500
7th	42,600
Franklin	14,000
Edgewood	13,300
Edgewood E	30,200
Total	159,600

Figure 21 – Snyder ROW Alternative (Deeper Birk) Layout

While this alternative does not keep peak HGL below ground, it reduces projected flooding to a depth of only 6", which would generally be below the curb height and contained within the street.

Figure 22 – Snyder ROW Alternative (Deeper Birk) Peak HGL Profile



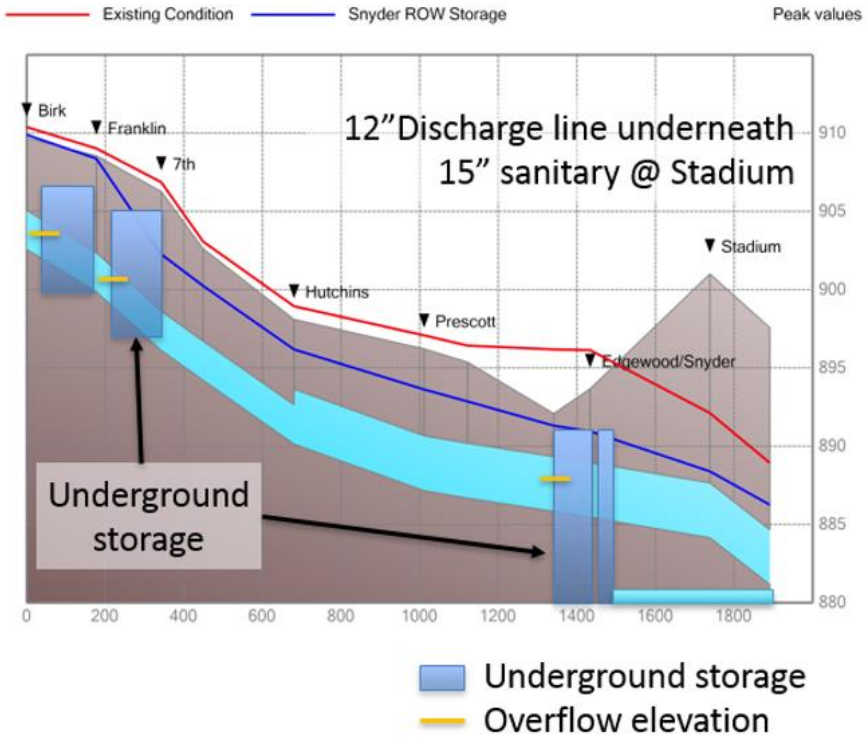
Snyder ROW Storage (Deeper Edgewood)
This final alternative builds on the concept presented in preliminary alternative no. 2. With 156,900 CF of storage spread across 4 basins. The deeper Edgewood-Snyder basins provide additional volume and have dedicated 12" discharge pipes, which are installed beneath the existing sanitary sewer under W. Stadium Blvd.

Figure 23 – Snyder ROW Alternative (Deeper Edgewood) Layout

The basin volumes and hydraulic profile for this alternative are shown in Figure 24. The improved conveyance along Edgewood Ave., in combination with new storage west of S. Seventh St., provides hydraulics that meet the 10-year, 12-hour design standard both at the Snyder-Edgewood intersection and along Snyder Ave.

Figure 24 – Snyder ROW Alternative (Deeper Edgewood) Peak HGL Profile

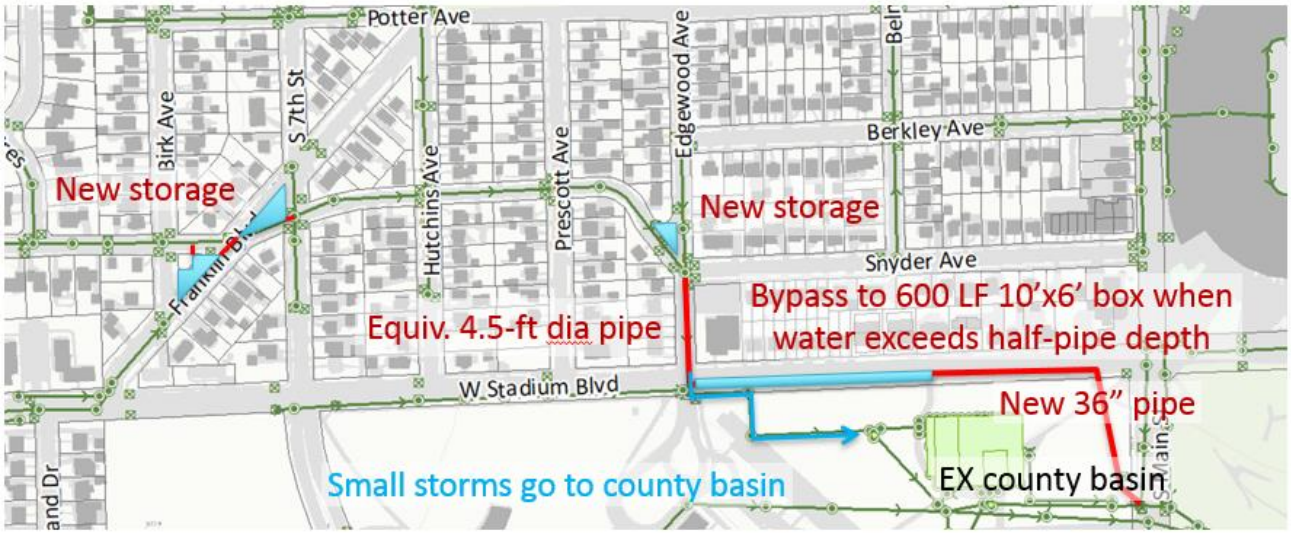
Intersection	Basin Vol (CF)
Birk	53,300
7th	42,700
Edgewood	27,900
Edgewood E	33,000
Total	**156,900**



Snyder and Stadium Storage Alternative

The last final alternative builds on preliminary alternative no. 10. This includes ROW storage along Snyder, improved conveyance from the Edgewood-Snyder intersection, and additional storage under W. Stadium Blvd.

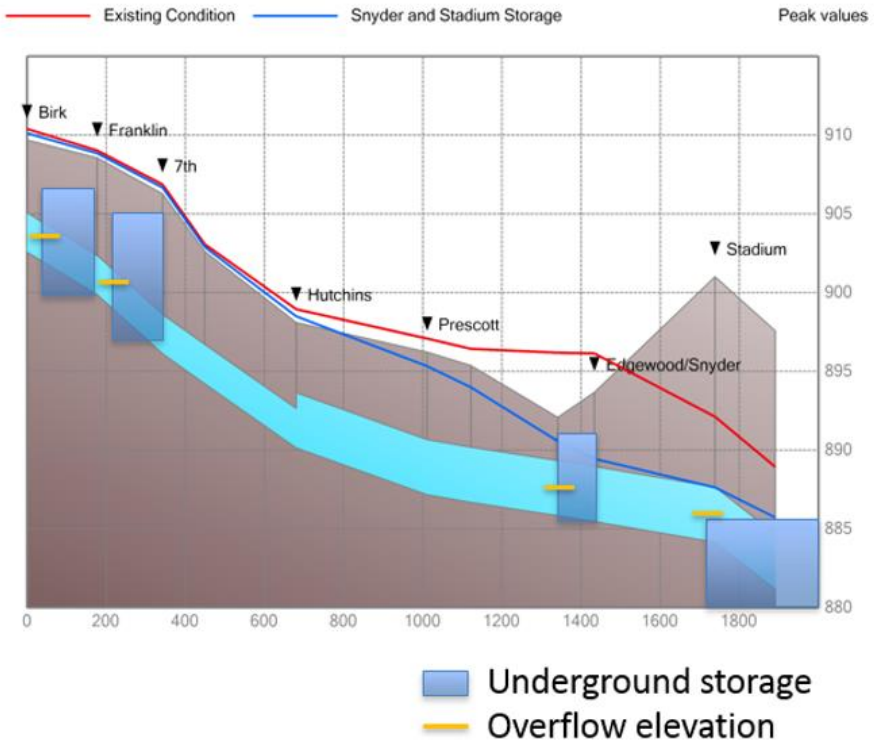
Figure 25 – Snyder and Stadium Storage Alternative Layout



This concept includes 111,300 cubic feet of storage across the 4 basin locations. The basin volumes and predicted hydraulic performance are shown in Figure 26.

Figure 26 – Snyder and Stadium Storage Alternative Peak HGL Profile

Intersection	Basin Vol (CF)
Birk	33,600
7th	27,600
Edgewood	13,300
Stadium	36,800
Total	**111,300**



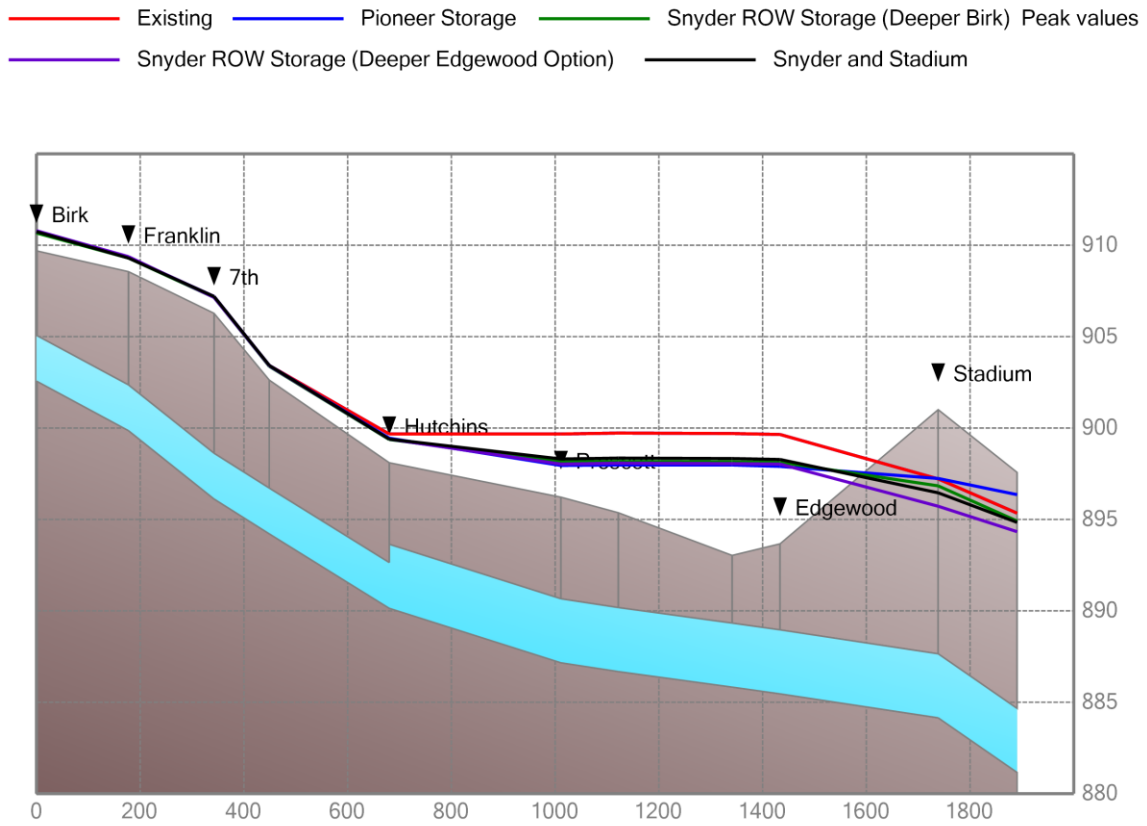
The improved conveyance along Edgewood brings the peak HGL below ground for the Snyder-Edgewood intersection, but the smaller basins west of S. Seventh do not significantly improve the HGL along Snyder Ave. for the 10-year, 12-hour storm simulation.

As with preliminary alternative no. 10, one concern with this alternative would be the construction timeline, since the W. Stadium storage would not be constructed until the street reconstruction project takes place, which could still be a number of years in the future.

100-Year Storm Hydraulic Analysis

To determine if the alternatives perform differently in storms larger than the 10-year, 12-hour design storm, the model was used to analyze each alternative in a 100-year, 24-hour storm. This larger design storm has a volume of 5.11 inches from NOAA Atlas 14 and also uses a SCS Type II rainfall distribution.

Figure 27 – Peak HGL Profiles for 100-year, 24-hour storm



All of the final alternatives have similar performance characteristics in the 100-year, 24-hour storm scenario. Each lowers the peak HGL by 1-2 feet throughout the study area, although surface

flooding will still be significant. None of the alternatives stand out as performing better than another so the 100-year storm performance does not provide a strong criterion for alternatives selection.

Conclusion

The final alternatives presented in this memorandum are sufficient to meet the design standard of conveying and storing flows generated by the 10-year, 12-hour storm, with peak HGL 1' below ground at the Snyder-Edgewood intersection. Selection of an alternative for design should be based on cost and construction impacts, factors that will be key in project approval and acceptance.

Feedback from public meetings and initial cost estimating indicate that the Pioneer Basin Alternative will likely meet the project objectives most effectively. Questions that should be considered as the project moves into preliminary design include:

- Can the required clearances be achieved for the proposed pipe upsizing across Stadium Blvd. or do other alternatives need to be considered?
- Are there locations within the Pioneer High School property that would be preferable for the basin and do the alternate locations provide similar hydraulics?
- Should the basin be configured to allow for infiltration and does outflow from infiltration affect the total storage volume requirement?

Further analysis related to these questions and to other aspects of the 30% design documents will be issued as a supplement to this memorandum.

Memorandum

To: *Andy Kilpatrick, Fishbeck*

From: *Jay Zawacki, CDM Smith*

Date: *December 27, 2019*

Subject: *Snyder-Edgewood Avenues Area Storm Water Improvements Project - Hydraulic Analysis Memorandum Supplement*

The objectives of the Snyder-Edgewood Avenues Area Storm Water Improvements Project are to quantify the flooding issues that occur along Snyder Avenue, propose implementable options for the mitigation of this flooding, and prepare a 30% design concept for the selected alternative. CDM Smith performed hydraulic analysis in support of these objectives.

This memorandum has been issued as a supplement to the project's May 24, 2019 hydraulic report. That original report contained a description of the stormwater model used for project hydraulic analysis, details on the preliminary alternatives considered, and results for analysis of final improvement alternatives. This supplemental memorandum describes hydraulic analysis of the 30% design alternative, as prepared by Fishbeck in the project plan set dated 11/27/2019.

30% Design Changes

Following analyses of final alternatives, the following changes and updates were made to the proposed alternative:

- Instead of replacing the existing storm sewer altogether, the design team decided to keep the existing storm sewer in operation from the Edgewood-Snyder intersection, and construct a parallel storm sewer to provide the additional conveyance capacity required.
- Based on feedback from the Ann Arbor Public Schools, the design team relocated the proposed infiltration basin from the diagonal field located along the staff parking lot to the east side of the existing Washtenaw County infiltration basins.
- The design team was instructed that the proposed basin should provide infiltration and will also provide additional volume to serve the future West Stadium improvements.

These changes are reflected in the model plan view diagram shown in Figure 1. When tested against the project design criteria to reduce flooding at the Snyder-Edgewood intersection to 1' below ground level, and to cause no increases in downstream peak flows, the following design characteristics were determined.

Conveyance Improvements:

- New interconnecting pipe (R-209 to R-301): 42” diameter
- New relief storm pipe (R-301 to R-303): 54” diameter
- New relief storm pipe (R-303 to R-305): 48” diameter
- New storm pipe (R-305 to R-306): 54” diameter
- New storm pipe (R-306 to basin): 48” diameter

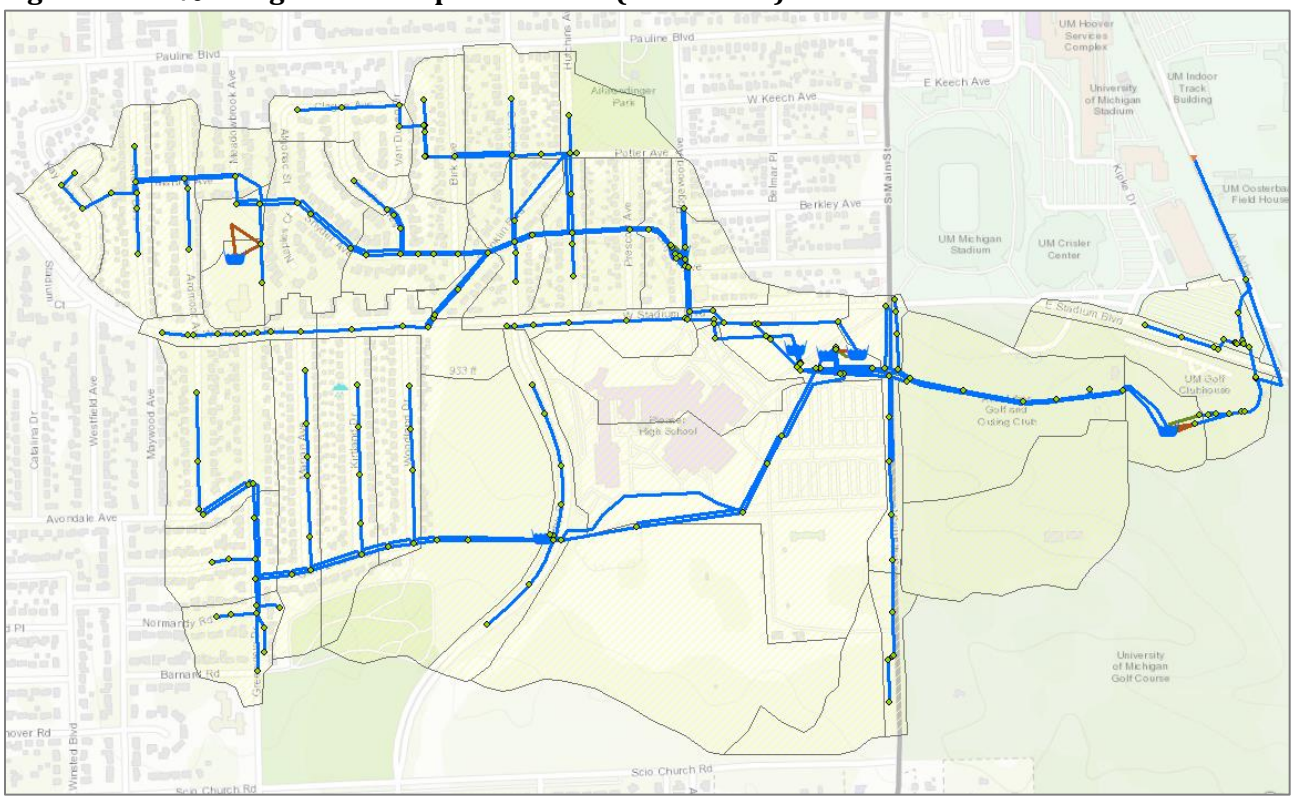
Storage Improvements:

- Basin volume: 140,000 CF
- Bottom elevation: 871.75 ft.
- Top elevation: 880.25 ft. (depth = 8.5 ft.)
- Control weir elevation (inlet): 879.55 ft. (0.7 ft. below county basin bypass weir)
- Basin area/footprint: 16,470 SF

Assumptions related to the West Stadium Improvements project:

- 0.26 ac of additional impervious surfaces
- All discharges to be connected to storm sewer system prior to R-306

Figure 1 – 30% Design Model Representation (InfoSWMM)



30% Design Analysis

CDM Smith ran a 10-year, 12-hour storm scenario with the 30% design. Figure 2 shows the peak HGL profile for the section between S. Seventh St. on the west and S. Main St. on the east. The existing Washtenaw County west and east basins are shown, along with the proposed infiltration basin from this project, which will be located between the existing basins and S. Main St.

Figure 2 – Peak Hydraulic Grade Line (HGL) Profile for 10-year, 12-hour storm

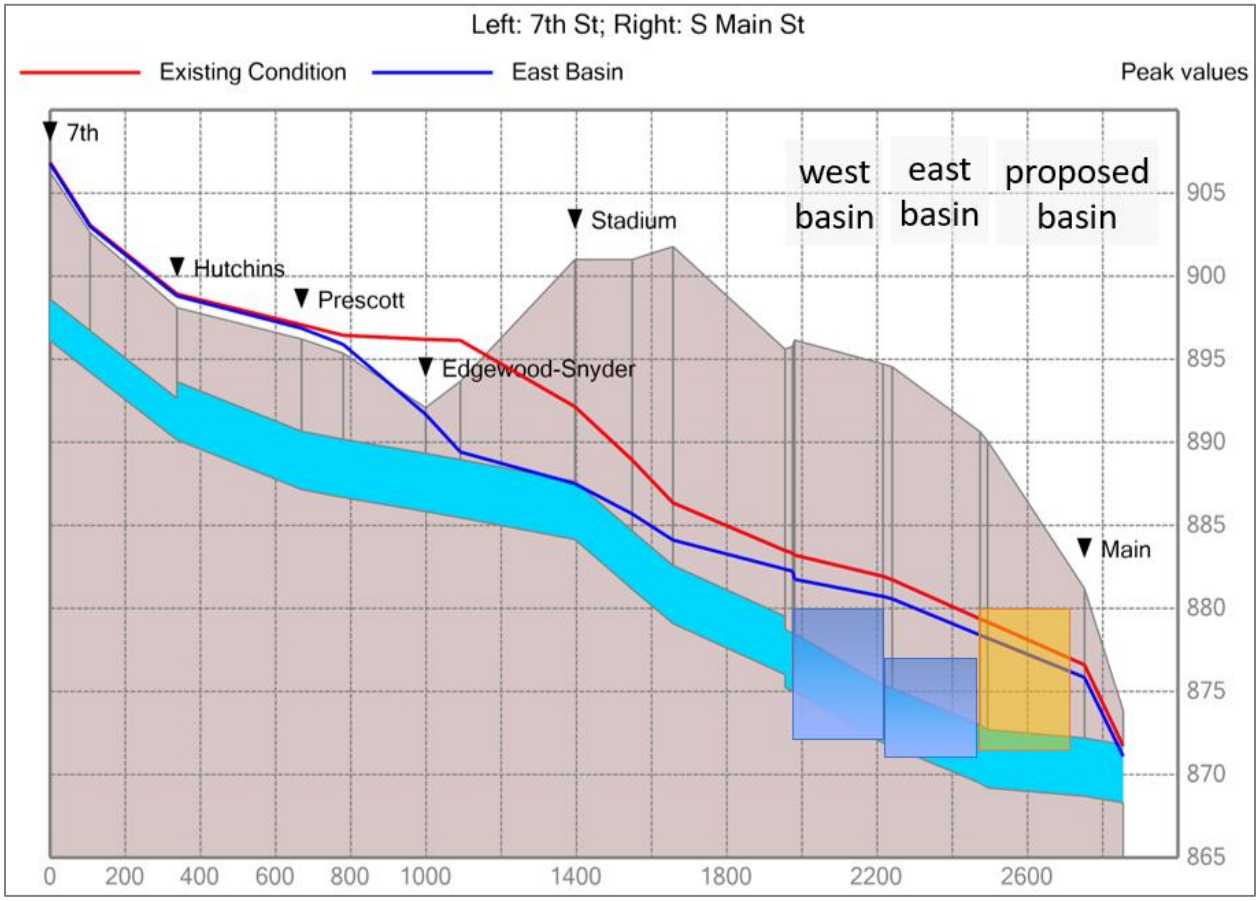


Figure 2 includes a comparison of existing conditions (red line) to proposed conditions (blue line). Peak flood depth at the Edgewood-Snyder intersection drops from 3.5' to below ground. The peak HGL is improved (lowered) for the entire stretch from this point east to S. Main street, and a slight improvement in peak flows and HGL will be seen at downstream locations in the Allen Creekshed.

It is notable that the HGL profile moving east from Prescott remains unchanged. Some of the preliminary alternatives presented in the May 24, 2019 memorandum include improvements upstream in the tributary area that reduce overland flow along Snyder. The selected alternative only includes improvements located at the Snyder-Edgewood intersection, continuing south across W. Stadium and then onto the Pioneer High School property. These improvements do not affect the

hydrology or hydraulics of the tributary area, so the predicted overland flows in the existing conditions are not changed in the proposed conditions. The scope of this project was focused on the surface flooding at Edgewood and Snyder, not on bringing the entire tributary area to the same design standard. However, nothing in the design concept precludes future stormwater improvements in the tributary area that could provide reductions in overland flow and/or eliminate other predicted surface flooding locations.

The modeling work for the 30% design concept was also able to confirm that downstream flows would not be increased. Figure 3 below shows the existing vs. proposed hydrographs for downstream flows at S. Main St.

Figure 3 – Existing vs. Proposed hydrographs for downstream flow at S. Main St.

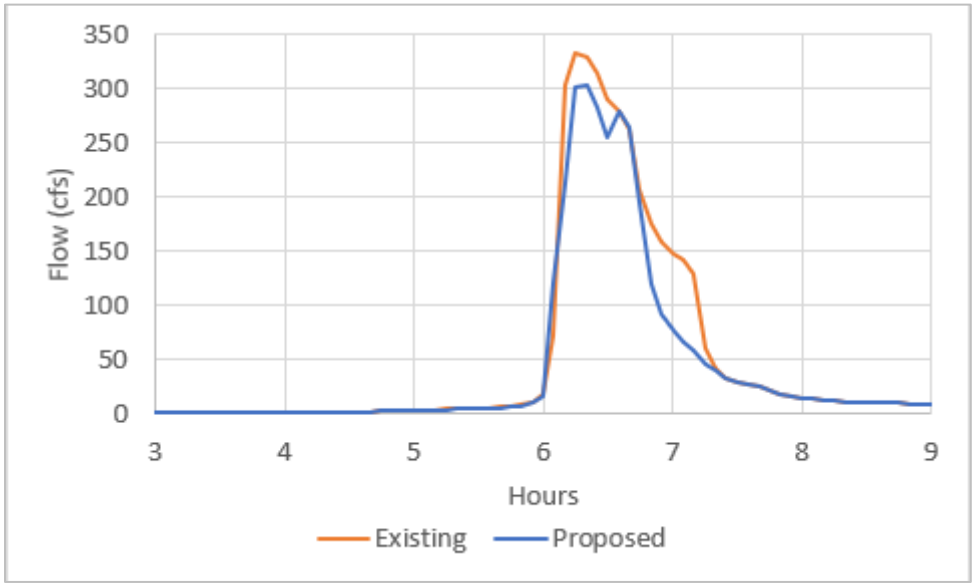
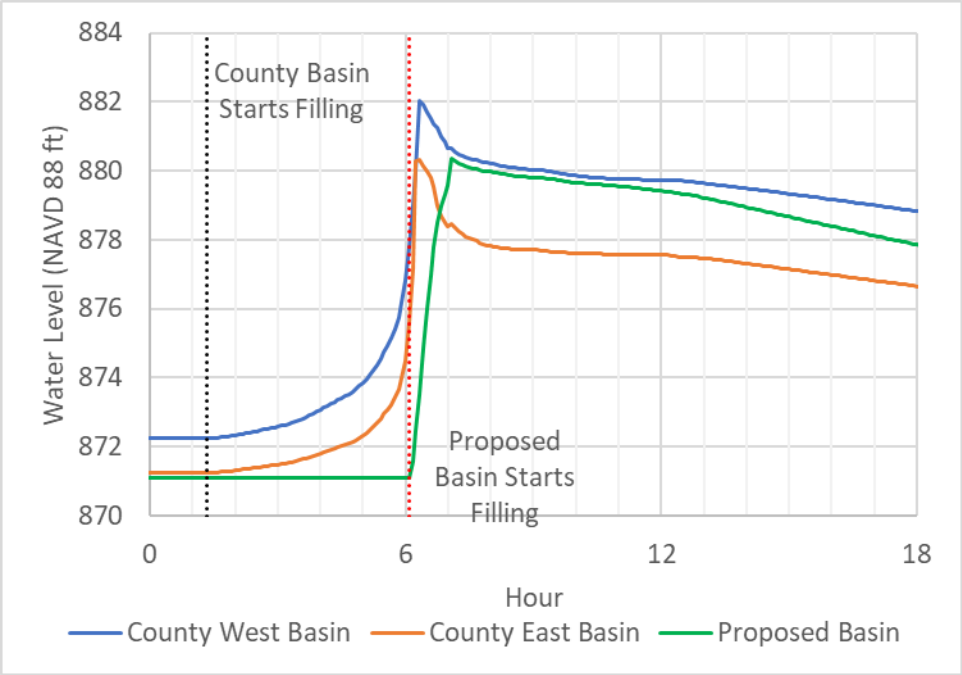


Figure 4 below provides additional insight into the performance of the proposed basin through the duration of the 10-year, 12-hour storm event scenario. This figure compares the predicted water level in the proposed basin (green line) with the predicted water levels in the existing Washtenaw County west (blue) and east (orange) basins.

The water level plot for the 10-year, 12-hour storm provides an illustration of the performance during smaller storms, which can be seen in the leadup to the 6-hour point. The existing basins will begin to fill during smaller storms, and flow will begin to enter the new basin once the existing basins are close to full and water level exceeds the influent weir level. For the modeling effort, this weir was assumed to be 0.7ft below the existing bypass weir, or an elevation of NAVD 879.55 ft.

Adjustments to the influent diversion structure can be made during further design to influence the split of flows between the existing and proposed basins without any significant effects on the system hydraulics.

Figure 4 – Basin Water Levels during 10-year, 12-hour storm



Hydraulic analysis for the proposed basin does not include an infiltration assumption nor additional separation/treatment devices (like the Vortech separation units that are in place for the Washtenaw County basins), which would be required to minimize sediment buildup and associated maintenance requirements for the new basin. There will not be a significant change in performance in large storms, but including infiltration would provide a faster drop in water level, which will help to recover the basin capacity more quickly after each event. Once soil testing is complete during future design activities, hydraulic modeling can be used to determine the significance of performance improvements.

Conclusion

The hydraulics for the 30% design presented by Fishbeck have been analyzed. The design concept meets the design standard of conveying and storing flows generated by the 10-year, 12-hour storm, with peak HGL 1' below ground at the Snyder-Edgewood intersection. The project would not increase downstream flows and would reduce downstream flows over most storm scenarios. The proposed stormwater infiltration basin will work in concert with the existing Washtenaw County (west basin) to achieve multiple objectives, including water quality improvements for smaller storms, flood level reduction for the Snyder-Edgewood intersection, and treatment of additional impervious surfaces for the future West Stadium improvements project.

ATTACHMENT B
LEGAL STATUS OF RESPONDENT

(The Respondent shall fill out the provision and strike out the remaining ones.)

The Respondent is:

- A corporation organized and doing business under the laws of the state of _____, for whom _____ bearing the office title of _____, whose signature is affixed to this proposal, is authorized to execute contracts on behalf of respondent.*

  *If not incorporated in Michigan, please attach the corporation's Certificate of Authority

- A limited liability company doing business under the laws of the State of _____, whom _____ bearing the title of _____ whose signature is affixed to this proposal, is authorized to execute contract on behalf of the LLC.

- A partnership organized under the laws of the State of _____ and filed with the County of _____ , whose members are (attach list including street and mailing address for each.)

- An individual, whose signature with address, is affixed to this RFP.

Respondent has examined the basic requirements of this RFP and its scope of services, including all Addendum (if applicable) and hereby agrees to offer the services as specified in the RFP.

_____Date: _____,
Signature

(Print) Name _____ Title _____

Firm: _____

Address: _____

Contact Phone _____ Fax _____

Email _____

ATTACHMENT C
CITY OF ANN ARBOR DECLARATION OF COMPLIANCE

Non-Discrimination Ordinance

The "non discrimination by city contractors" provision of the City of Ann Arbor Non-Discrimination Ordinance (Ann Arbor City Code Chapter 112, Section 9:158) requires all contractors proposing to do business with the City to treat employees in a manner which provides equal employment opportunity and does not discriminate against any of their employees, any City employee working with them, or any applicant for employment on the basis of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight. It also requires that the contractors include a similar provision in all subcontracts that they execute for City work or programs.

In addition the City Non-Discrimination Ordinance requires that all contractors proposing to do business with the City of Ann Arbor must satisfy the contract compliance administrative policy adopted by the City Administrator. A copy of that policy may be obtained from the Purchasing Manager

The Contractor agrees:

(a) To comply with the terms of the City of Ann Arbor's Non-Discrimination Ordinance and contract compliance administrative policy.

(b) To post the City of Ann Arbor's Non-Discrimination Ordinance Notice in every work place or other location in which employees or other persons are contracted to provide services under a contract with the City.

(c) To provide documentation within the specified time frame in connection with any workforce verification, compliance review or complaint investigation.

(d) To permit access to employees and work sites to City representatives for the purposes of monitoring compliance, or investigating complaints of non-compliance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services in accordance with the terms of the Ann Arbor Non-Discrimination Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Non-Discrimination Ordinance, obligates the Contractor to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract.

_____
Company Name

_____
Signature of Authorized Representative Date

_____
Print Name and Title

_____
Address, City, State, Zip

_____
Phone/Email address

Questions about the Notice or the City Administrative Policy, Please contact:
Procurement Office of the City of Ann Arbor
(734) 794-6500

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ATTACHMENT D
CITY OF ANN ARBOR
LIVING WAGE ORDINANCE DECLARATION OF COMPLIANCE

The Ann Arbor Living Wage Ordinance (Section 1:811-1:821 of Chapter 23 of Title I of the Code) requires that an employer who is (a) a contractor providing services to or for the City for a value greater than $10,000 for any twelve-month contract term, or (b) a recipient of federal, state, or local grant funding administered by the City for a value greater than $10,000, or (c) a recipient of financial assistance awarded by the City for a value greater than $10,000, shall pay its employees a prescribed minimum level of compensation (i.e., Living Wage) for the time those employees perform work on the contract or in connection with the grant or financial assistance. The Living Wage must be paid to these employees for the length of the contract/program.

Companies employing fewer than 5 persons and non-profits employing fewer than 10 persons are exempt from compliance with the Living Wage Ordinance. If this exemption applies to your company/non-profit agency please check here [___] *No. of employees__*

The Contractor or Grantee agrees:

(a) To pay each of its employees whose wage level is not required to comply with federal, state or local prevailing wage law, for work covered or funded by a contract with or grant from the City, no less than the Living Wage. The current Living Wage is defined as $13.61/hour for those employers that provide employee health care (as defined in the Ordinance at Section 1:815 Sec. 1 (a)), or no less than $15.18/hour for those employers that do not provide health care. The Contractor or Grantor understands that the Living Wage is adjusted and established annually on April 30 in accordance with the Ordinance and covered employers shall be required to pay the adjusted amount thereafter to be in compliance with Section 1:815(3).

Check the applicable box below which applies to your workforce

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage without health benefits

[___] Employees who are assigned to any covered City contract/grant will be paid at or above the applicable living wage with health benefits

(b) To post a notice approved by the City regarding the applicability of the Living Wage Ordinance in every work place or other location in which employees or other persons contracting for employment are working.

(c) To provide to the City payroll records or other documentation within ten (10) business days from the receipt of a request by the City.

(d) To permit access to work sites to City representatives for the purposes of monitoring compliance, and investigating complaints or non-compliance.

(e) To take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee covered by the Living Wage Ordinance or any person contracted for employment and covered by the Living Wage Ordinance in order to pay the living wage required by the Living Wage Ordinance.

The undersigned states that he/she has the requisite authority to act on behalf of his/her employer in these matters and has offered to provide the services or agrees to accept financial assistance in accordance with the terms of the Living Wage Ordinance. The undersigned certifies that he/she has read and is familiar with the terms of the Living Wage Ordinance, obligates the Employer/Grantee to those terms and acknowledges that if his/her employer is found to be in violation of Ordinance it may be subject to civil penalties and termination of the awarded contract or grant of financial assistance.

Company Name	Street Address
Signature of Authorized Representative Date	City, State, Zip
Print Name and Title	Phone/Email address

ATTACHMENT E

VENDOR CONFLICT OF INTEREST DISCLOSURE FORM

All vendors interested in conducting business with the City of Ann Arbor must complete and return the Vendor Conflict of Interest Disclosure Form in order to be eligible to be awarded a contract. Please note that all vendors are subject to comply with the City of Ann Arbor's conflict of interest policies as stated within the certification section below.

If a vendor has a relationship with a City of Ann Arbor official or employee, an immediate family member of a City of Ann Arbor official or employee, the vendor shall disclose the information required below.

1. No City official or employee or City employee's immediate family member has an ownership interest in vendor's company or is deriving personal financial gain from this contract.
2. No retired or separated City official or employee who has been retired or separated from the City for less than one (1) year has an ownership interest in vendor's Company.
3. No City employee is contemporaneously employed or prospectively to be employed with the vendor.
4. Vendor hereby declares it has not and will not provide gifts or hospitality of any dollar value or any other gratuities to any City employee or elected official to obtain or maintain a contract.
5. Please note any exceptions below:

Conflict of Interest Disclosure*	
Name of City of Ann Arbor employees, elected officials or immediate family members with whom there may be a potential conflict of interest.	( ) Relationship to employee ( ) Interest in vendor's company ( ) Other (please describe in box below)

*Disclosing a potential conflict of interest does not disqualify vendors. In the event vendors do not disclose potential conflicts of interest and they are detected by the City, vendor will be exempt from doing business with the City.

I certify that this Conflict of Interest Disclosure has been examined by me and that its contents are true and correct to my knowledge and belief and I have the authority to so certify on behalf of the Vendor by my signature below:		
Vendor Name	**Vendor Phone Number**	
Signature of Vendor Authorized Representative	**Date**	**Printed Name of Vendor Authorized Representative**

Questions about this form? Contact Procurement Office City of Ann Arbor Phone: 734/794-6500, procurement@a2gov.org

ATTACHMENT F
CITY OF ANN ARBOR NON-DISCRIMINATION ORDINANCE

Relevant provisions of Chapter 112, Nondiscrimination, of the Ann Arbor City Code are included below. You can review the entire ordinance at www.a2gov.org/humanrights.

Intent: **It is the intent of the city that no individual be denied equal protection of the laws; nor shall any individual be denied the enjoyment of his or her civil or political rights or be discriminated against because of actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight.**

Discriminatory Employment Practices: **No person shall discriminate in the hire, employment, compensation, work classifications, conditions or terms, promotion or demotion, or termination of employment of any individual. No person shall discriminate in limiting membership, conditions of membership or termination of membership in any labor union or apprenticeship program.**

Discriminatory Effects: **No person shall adopt, enforce or employ any policy or requirement which has the effect of creating unequal opportunities according to actual or perceived age, arrest record, color, disability, educational association, familial status, family responsibilities, gender expression, gender identity, genetic information, height, HIV status, marital status, national origin, political beliefs, race, religion, sex, sexual orientation, source of income, veteran status, victim of domestic violence or stalking, or weight for an individual to obtain housing, employment or public accommodation, except for a bona fide business necessity. Such a necessity does not arise due to a mere inconvenience or because of suspected objection to such a person by neighbors, customers or other persons.**

Nondiscrimination by City Contractors: **All contractors proposing to do business with the City of Ann Arbor shall satisfy the contract compliance administrative policy adopted by the City Administrator in accordance with the guidelines of this section. All city contractors shall ensure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity and tends to eliminate inequality based upon any classification protected by this chapter. All contractors shall agree not to discriminate against an employee or applicant for employment with respect to hire, tenure, terms, conditions, or privileges of employment, or a matter directly or indirectly related to employment, because of any applicable protected classification. All contractors shall be required to post a copy of Ann Arbor's Non-Discrimination Ordinance at all work locations where its employees provide services under a contract with the city.**

Complaint Procedure: **If any individual believes there has been a violation of this chapter, he/she may file a complaint with the City's Human Rights Commission. The complaint must be filed within 180 calendar days from the date of the individual's knowledge of the allegedly discriminatory action or 180 calendar days from the date when the individual should have known of the allegedly discriminatory action. A complaint that is not filed within this timeframe cannot be considered by the Human Rights Commission. To file a complaint, first complete the complaint form, which is available at www.a2gov.org/humanrights. Then submit it to the Human Rights Commission by e-mail (hrc@a2gov.org), by mail (Ann Arbor Human Rights Commission, PO Box 8647, Ann Arbor, MI 48107), or in person (City Clerk's Office). For further information, please call the commission at 734-794-6141 or e-mail the commission at hrc@a2gov.org.**

Private Actions For Damages or Injunctive Relief: **To the extent allowed by law, an individual who is the victim of discriminatory action in violation of this chapter may bring a civil action for appropriate injunctive relief or damages or both against the person(s) who acted in violation of this chapter.**

THIS IS AN OFFICIAL GOVERNMENT NOTICE AND
MUST BE DISPLAYED WHERE EMPLOYEES CAN READILY SEE IT.

ATTACHMENT G

CITY OF ANN ARBOR LIVING WAGE ORDINANCE

RATE EFFECTIVE APRIL 30, 2019 - ENDING APRIL 29, 2020

$13.61 per hour
If the employer provides health care benefits*

$15.18 per hour
If the employer does **NOT** provide health care benefits*

Employers providing services to or for the City of Ann Arbor or recipients of grants or financial assistance from the City of Ann Arbor for a value of more than $10,000 in a twelve-month period of time must pay those employees performing work on a City of Ann Arbor contract or grant, the above living wage.

ENFORCEMENT

The City of Ann Arbor may recover back wages either administratively or through court action for the employees that have been underpaid in violation of the law. Persons denied payment of the living wage have the right to bring a civil action for damages in addition to any action taken by the City.

Violation of this Ordinance is punishable by fines of not more than $500/violation plus costs, with each day being considered a separate violation. Additionally, the City of Ann Arbor has the right to modify, terminate, cancel or suspend a contract in the event of a violation of the Ordinance.

* Health Care benefits include those paid for by the employer or making an employer contribution toward the purchase of health care. The employee contribution must not exceed $.50 an hour for an average work week; and the employer cost or contribution must equal no less than $1/hr for the average work week.

The Law Requires Employers to Display This Poster Where Employees Can Readily See It.

For Additional Information or to File a Complaint contact
Colin Spencer at 734/794-6500 or cspencer@a2gov.org

Revised 2/1/2019

APPENDIX A: SAMPLE PROFESSIONAL SERVICES AGREEMENT

If a contract is awarded, the selected Firm(s) will be required to adhere to a set of general contract provisions which will become a part of any formal agreement. These provisions are general principles which apply to all contractors/service providers to the City of Ann Arbor. The required provisions are:

(2019 PSA over $25,000 Auto AI)

PROFESSIONAL SERVICES AGREEMENT BETWEEN

_____

AND THE CITY OF ANN ARBOR

FOR _____

This agreement, dated _____, 20____ ("Agreement"), is between the City of Ann Arbor, a Michigan municipal corporation, having its offices at 301 E. Huron St. Ann Arbor, Michigan 48104 ("City"), and _____ ("Contractor"), a(n) _____ _____
(State where organized) (Partnership, Sole Proprietorship, or Corporation)
with its address at _____. City and Contractor are referred to collectively herein as the "Parties." The Parties agree as follows:

I. DEFINITIONS

Administering Service Area/Unit means _____.

Contract Administrator means _____, acting personally or through any assistants authorized by the Administrator/Manager of the Administering Service Area/Unit.

Deliverables means all Plans, Specifications, Reports, Recommendations, and other materials developed for and delivered to City by Contractor under this Agreement.

Project means _____.
Project name

II. DURATION

Contractor shall commence performance on _____, 20___ ("Commencement Date"). This Agreement shall remain in effect until satisfactory completion of the Services specified below unless terminated as provided for in Article XI. The terms and conditions of this Agreement shall apply to the earlier of the Effective Date or Commencement Date.

III. SERVICES

A. The Contractor agrees to provide _____
Type of service

("Services") in connection with the Project as described in Exhibit A. The City retains the right to make changes to the quantities of service within the general scope of the Agreement at any time by a written order. If the changes add to or deduct from the extent of the services, the compensation shall be adjusted accordingly. All such changes shall be executed under the conditions of the original Agreement.

B. Quality of Services under this Agreement shall be of the level of quality performed by persons regularly rendering this type of service. Determination of acceptable quality shall be made solely by the Contract Administrator.

C. The Contractor shall perform its Services for the Project in compliance with all statutory, regulatory, and contractual requirements now or hereafter in effect as may be applicable to the rights and obligations set forth in the Agreement.

D. The Contractor may rely upon the accuracy of reports and surveys provided to it by the City (if any) except when defects should have been apparent to a reasonably competent professional or when it has actual notice of any defects in the reports and surveys.

IV. INDEPENDENT CONTRACTOR

The Parties agree that at all times and for all purposes under the terms of this Agreement each Party's relationship to any other Party shall be that of an independent contractor. Each Party will be solely responsible for the acts of its own employees, agents, and servants. No liability, right, or benefit arising out of any employer/employee relationship, either express or implied, shall arise or accrue to any Party as a result of this Agreement.

Contractor does not have any authority to execute any contract or agreement on behalf of the City, and is not granted any authority to assume or create any obligation or liability on the City's behalf, or to bind the City in any way.

V. COMPENSATION OF CONTRACTOR

A. The Contractor shall be paid in the manner set forth in Exhibit B. Payment shall be made monthly, unless another payment term is specified in Exhibit B, following receipt of invoices submitted by the Contractor, and approved by the Contract Administrator.

B. The Contractor will be compensated for Services performed in addition to the Services described in Article III, only when the scope of and compensation for those additional Services have received prior written approval of the Contract Administrator.

C. The Contractor shall keep complete records of work performed (e.g. tasks performed, hours allocated, etc.) so that the City may verify invoices submitted by the Contractor. Such records shall be made available to the City upon request and submitted in summary form with each invoice.

VI. INSURANCE/INDEMNIFICATION

A. The Contractor shall procure and maintain from the Effective Date or Commencement Date of this Agreement (whichever is earlier) through the conclusion of this Agreement, such insurance policies, including those set forth in Exhibit C, as will protect itself and the City from all claims for bodily injuries, death or property damage that may arise under this Agreement; whether the act(s) or omission(s) giving rise to the claim were made by the Contractor, any subcontractor, or anyone employed by them directly or indirectly. Prior to commencement of work under this Agreement, Contractor shall provide to the City documentation satisfactory to the City, through City-approved means (currently myCOI), demonstrating it has obtained the policies and endorsements required by Exhibit C. Contractor shall add registration@mycoitracking.com to its safe sender's list so that it will receive necessary communication from myCOI. When requested, Contractor shall provide the same documentation for its subcontractor(s) (if any).

B. Any insurance provider of Contractor shall be authorized to do business in the State of Michigan and shall carry and maintain a minimum rating assigned by A.M. Best & Company's Key Rating Guide of "A-" Overall and a minimum Financial Size Category of "V". Insurance policies and certificates issued by non-authorized insurance companies are not acceptable unless approved in writing by the City.

C. To the fullest extent permitted by law, Contractor shall indemnify, defend, and hold the City, its officers, employees and agents harmless from all suits, claims, judgments and expenses, including attorney's fees, resulting or alleged to result, from any acts or omissions by Contractor or its employees and agents occurring in the performance of or breach in this Agreement, except to the extent that any suit, claim, judgment or expense are finally judicially determined to have resulted from the City's negligence or willful misconduct or its failure to comply with any of its material obligations set forth in this Agreement.

VII. COMPLIANCE REQUIREMENTS

A. Nondiscrimination. The Contractor agrees to comply, and to require its subcontractor(s) to comply, with the nondiscrimination provisions of MCL 37.2209. The Contractor further agrees to comply with the provisions of Section 9:158 of Chapter 112 of the Ann Arbor City Code and to assure that applicants are employed and that employees are treated during employment in a manner which provides equal employment opportunity.

B. Living Wage. If the Contractor is a "covered employer" as defined in Chapter 23 of the Ann Arbor City Code, the Contractor agrees to comply with the living wage provisions of Chapter 23 of the Ann Arbor City Code. The Contractor agrees to pay those employees providing Services to the City under this Agreement a "living wage," as defined in Section 1:815 of the Ann Arbor City Code, as adjusted in accordance with Section 1:815(3); to post a notice approved by the City of the applicability of Chapter 23 in every location in which regular or contract employees providing services under this Agreement are working; to maintain records of compliance; if requested by the City, to provide documentation to verify compliance; to take no action that would reduce the compensation, wages, fringe benefits, or leave available to any employee or person contracted for employment in order to pay the living wage required by Section 1:815; and otherwise to comply with the requirements of Chapter 23.

VIII. WARRANTIES BY THE CONTRACTOR

A. The Contractor warrants that the quality of its Services under this Agreement shall conform to the level of quality performed by persons regularly rendering this type of service.

B. The Contractor warrants that it has all the skills, experience, and professional licenses (if applicable) necessary to perform the Services pursuant to this Agreement.

C. The Contractor warrants that it has available, or will engage, at its own expense, sufficient trained employees to provide the Services pursuant to this Agreement.

D. The Contractor warrants that it has no personal or financial interest in the Project other than the fee it is to receive under this Agreement. The Contractor further certifies that it shall not acquire any such interest, direct or indirect, which would conflict in any manner with the performance of the Services it is to provide pursuant to this Agreement. Further Contractor agrees and certifies that it does not and will not employ or engage any person with a personal or financial interest in this Agreement.

E. The Contractor warrants that it is not, and shall not become overdue or in default to the City for any contract, debt, or any other obligation to the City including real and personal property taxes. Further Contractor agrees that the City shall have the right to set off any such debt against compensation awarded for Services under this Agreement.

F. The Contractor warrants that its proposal for services was made in good faith, it arrived at the costs of its proposal independently, without consultation, communication or agreement, for the purpose of restricting completion as to any matter relating to such fees with any competitor for these Services; and no attempt has been made or shall be made by the Contractor to induce any other person or firm to submit or not to submit a proposal for the purpose of restricting competition.

IX. OBLIGATIONS OF THE CITY

A. The City agrees to give the Contractor access to the Project area and other City-owned properties as required to perform the necessary Services under this Agreement.

B. The City shall notify the Contractor of any defects in the Services of which the Contract Administrator has actual notice.

X. ASSIGNMENT

A. The Contractor shall not subcontract or assign any portion of any right or obligation under this Agreement without prior written consent from the City. Notwithstanding any consent by the City to any assignment, Contractor shall at all times remain bound to all warranties, certifications, indemnifications, promises and performances, however described, as are required of it under the Agreement unless specifically released from the requirement, in writing, by the City.

B. The Contractor shall retain the right to pledge payment(s) due and payable under this Agreement to third parties.

XI. TERMINATION OF AGREEMENT

A. If either party is in breach of this Agreement for a period of fifteen (15) days following receipt of notice from the non-breaching party with respect to a breach, the non-breaching party may pursue any remedies available to it against the breaching party under applicable law, including but not limited to, the right to terminate this Agreement without further notice. The waiver of any breach by any party to this Agreement shall not waive any subsequent breach by any party.

B. The City may terminate this Agreement, on at least thirty (30) days advance notice, for any reason, including convenience, without incurring any penalty, expense or liability to Contractor, except the obligation to pay for Services actually performed under the Agreement before the termination date.

C. Contractor acknowledges that, if this Agreement extends for several fiscal years, continuation of this Agreement is subject to appropriation of funds for this Project. If funds to enable the City to effect continued payment under this Agreement are not appropriated or otherwise made available, the City shall have the right to terminate this Agreement without penalty at the end of the last period for which funds have been appropriated or otherwise made available by giving written notice of termination to Contractor. The Contract Administrator shall give Contractor written notice of such non-appropriation within thirty (30) days after it receives notice of such non-appropriation.

D. The provisions of Articles VI and VIII shall survive the expiration or earlier termination of this Agreement for any reason. The expiration or termination of this Agreement, for any reason, shall not release either party from any obligation or

liability to the other party, including any payment obligation that has already accrued and Contractor's obligation to deliver all Deliverables due as of the date of termination of the Agreement.

XII. REMEDIES

A. This Agreement does not, and is not intended to, impair, divest, delegate or contravene any constitutional, statutory and/or other legal right, privilege, power, obligation, duty or immunity of the Parties.

B. All rights and remedies provided in this Agreement are cumulative and not exclusive, and the exercise by either party of any right or remedy does not preclude the exercise of any other rights or remedies that may now or subsequently be available at law, in equity, by statute, in any agreement between the parties or otherwise.

C. Absent a written waiver, no act, failure, or delay by a Party to pursue or enforce any rights or remedies under this Agreement shall constitute a waiver of those rights with regard to any existing or subsequent breach of this Agreement. No waiver of any term, condition, or provision of this Agreement, whether by conduct or otherwise, in one or more instances, shall be deemed or construed as a continuing waiver of any term, condition, or provision of this Agreement. No waiver by either Party shall subsequently effect its right to require strict performance of this Agreement.

XIII. NOTICE

All notices and submissions required under this Agreement shall be delivered to the respective party in the manner described herein to the address stated below or such other address as either party may designate by prior written notice to the other. Notices given under this Agreement shall be in writing and shall be personally delivered, sent by next day express delivery service, certified mail, or first class U.S. mail postage prepaid, and addressed to the person listed below. Notice will be deemed given on the date when one of the following first occur: (1) the date of actual receipt; (2) the next business day when notice is sent next day express delivery service or personal delivery; or (3) three days after mailing first class or certified U.S. mail.

If Notice is sent to the CONTRACTOR, it shall be addressed and sent to:

If Notice is sent to the CITY, it shall be addressed and sent to:

City of Ann Arbor

_____
(insert name of Administering Service Area Administrator)

301 E. Huron St.
Ann Arbor, Michigan 48104

With a copy to: The City of Ann Arbor
ATTN: Office of the City Attorney
301 East Huron Street, 3rd Floor
Ann Arbor, Michigan 48104

XIV. CHOICE OF LAW AND FORUM

This Agreement will be governed and controlled in all respects by the laws of the State of Michigan, including interpretation, enforceability, validity and construction, excepting the principles of conflicts of law. The parties submit to the jurisdiction and venue of the Circuit Court for Washtenaw County, State of Michigan, or, if original jurisdiction can be established, the United States District Court for the Eastern District of Michigan, Southern Division, with respect to any action arising, directly or indirectly, out of this Agreement or the performance or breach of this Agreement. The parties stipulate that the venues referenced in this Agreement are convenient and waive any claim of non-convenience.

XV. OWNERSHIP OF DOCUMENTS

Upon completion or termination of this Agreement, all documents (i.e., Deliverables) prepared by or obtained by the Contractor as provided under the terms of this Agreement shall be delivered to and become the property of the City. Original basic survey notes, sketches, charts, drawings, partially completed drawings, computations, quantities and other data shall remain inthe possession of the Contractor as instruments of service unless specifically incorporated in a deliverable, but shall be made available, upon request, to the City without restriction or limitation on their use. The City acknowledges that the documents are prepared only for the Project. Prior to completion of the contracted Services the City shall have a recognized proprietary interest in the work product of the Contractor.

XVI. CONFLICTS OF INTEREST OR REPRESENTATION

Contractor certifies it has no financial interest in the Services to be provided under this Agreement other than the compensation specified herein. Contractor further certifies that it presently has no personal or financial interest, and shall not acquire any such interest, direct or indirect, which would conflict in any manner with its performance of the Services under this Agreement.

Contractor agrees to advise the City if Contractor has been or is retained to handle any matter in which its representation is adverse to the City. The City's prospective consent to the Contractor's representation of a client in matters adverse to the City, as identified above, will not apply in any instance where, as the result of Contractor's representation, the Contractor has obtained sensitive, proprietary or otherwise confidential information of a non-public nature that, if known to another client of the Contractor, could be used in any such other matter by the other client to the material disadvantage of the City. Each matter will be reviewed on a case by case basis.

XVII. SEVERABILITY OF PROVISIONS

Whenever possible, each provision of this Agreement will be interpreted in a manner as to be effective and valid under applicable law. However, if any provision of this Agreement or the application of any provision to any party or circumstance will be prohibited by or invalid under applicable law, that provision will be ineffective to the extent of the prohibition or invalidity without invalidating the remainder of the provisions of this Agreement or the application of the provision to other parties and circumstances.

XVIII. EXTENT OF AGREEMENT

This Agreement, together Exhibits A, B, and C, constitutes the entire understanding between the City and the Contractor with respect to the subject matter of the Agreement and it supersedes, unless otherwise incorporated by reference herein, all prior representations, negotiations, agreements or understandings whether written or oral. Neither party has relied on any prior representations, of any kind or nature, in entering into this Agreement. No terms or conditions of either party's invoice, purchase order or other administrative document shall modify the terms and conditions of this Agreement, regardless of the other party's failure to object to such form. This Agreement shall be binding on and shall inure to the benefit of the parties to this Agreement and their permitted successors and permitted assigns and nothing in this Agreement, express or implied, is intended to or shall confer on any other person or entity any legal or equitable right, benefit, or remedy of any nature whatsoever under or by reason of this Agreement. This Agreement may only be altered, amended or modified by written amendment signed by the Contractor and the City. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement.

XIX. ELECTRONIC TRANSACTION

The parties agree that signatures on this Agreement may be delivered electronically in lieu of an original signature and agree to treat electronic signatures as original signatures that bind them to this Agreement. This Agreement may be executed and delivered by facsimile and upon such delivery, the facsimile signature will be deemed to have the same effect as if the original signature had been delivered to the other party.

XX. EFFECTIVE DATE

This Agreement will become effective when all parties have signed it. The Effective Date of this Agreement will be the date this Agreement is signed by the last party to sign it.

[REMAINDER OF PAGE LEFT BLANK; SIGNATURE PAGE FOLLOWS]

FOR CONTRACTOR

By _____
Type Name

Its

Date: _____

FOR THE CITY OF ANN ARBOR

By _____
Christopher Taylor, Mayor

By _____
Jacqueline Beaudry, City Clerk

Date: _____

Approved as to substance

_____
Type Name
Service Area Administrator

_____
Howard S. Lazarus, City Administrator

Approved as to form and content

_____
Stephen K. Postema, City Attorney

EXHIBIT A
SCOPE OF SERVICES

(Insert/Attach Scope of Work & Deliverables Schedule)

EXHIBIT B
COMPENSATION

General

Contractor shall be paid for those Services performed pursuant to this Agreement inclusive of all reimbursable expenses (if applicable), in accordance with the terms and conditions herein. The Compensation Schedule below/attached states nature and amount of compensation the Contractor may charge the City:

(insert/Attach Negotiated Fee Arrangement)

EXHIBIT C
INSURANCE REQUIREMENTS

From the earlier of the Effective Date or the Commencement Date of this Agreement, and continuing without interruption during the term of this Agreement, Contractor shall have, at a minimum, the following insurance, including all endorsements necessary for Contractor to have or provide the required coverage.

A. The Contractor shall have insurance that meets the following minimum requirements:

1. Professional Liability Insurance or Errors and Omissions Insurance protecting the Contractor and its employees in an amount not less than $1,000,000.

2. Worker's Compensation Insurance in accordance with all applicable state and federal statutes. Further, Employers Liability Coverage shall be obtained in the following minimum amounts:

   Bodily Injury by Accident - $500,000 each accident
   Bodily Injury by Disease - $500,000 each employee
   Bodily Injury by Disease - $500,000 each policy limit

3. Commercial General Liability Insurance equivalent to, as a minimum, Insurance Services Office form CG 00 01 04 13 or current equivalent. The City of Ann Arbor shall be an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the following minimum limits of liability are required:

$1,000,000	Each occurrence as respect Bodily Injury Liability or Property Damage Liability, or both combined
$2,000,000	Per Project General Aggregate
$1,000,000	Personal and Advertising Injury

4. Motor Vehicle Liability Insurance equivalent to, as a minimum, Insurance Services Office form CA 00 01 10 13 or current equivalent. Coverage shall include all owned vehicles, all non-owned vehicles and all hired vehicles. The City of Ann Arbor shall be an additional insured. There shall be no added exclusions or limiting endorsements that diminish the City's protections as an additional insured under the policy. Further, the limits of liability shall be $1,000,000 for each occurrence as respects Bodily Injury Liability or Property Damage Liability, or both combined.

5. Umbrella/Excess Liability Insurance shall be provided to apply in excess of the Commercial General Liability, Employers Liability and the Motor Vehicle coverage enumerated above, for each occurrence and for aggregate in the amount of $1,000,000.

B. Insurance required under A.3 and A.4 above shall be considered primary as respects any other valid or collectible insurance that the City may possess, including any self-insured retentions the City may have; and any other insurance the City does possess shall be considered excess insurance only and shall not be required to contribute with this insurance. Further, the Contractor agrees to waive any right of recovery by its insurer against the City for any insurance listed herein.

C. Insurance companies and policy forms are subject to approval of the City Attorney, which approval shall not be unreasonably withheld. Documentation must provide and demonstrate an unconditional and unqualified 30-day written notice of cancellation in favor of the City of Ann Arbor. Further, the documentation must explicitly state the following: (a) the policy number(s); name of insurance company; name(s), email address(es), and address(es) of the agent or authorized representative; name and address of insured; project name; policy expiration date; and specific coverage amounts; (b) any deductibles or self-insured retentions, which may be approved by the City in its sole discretion; (c) that the policy conforms to the requirements specified. Contractor shall furnish the City with satisfactory certificates of insurance and endorsements prior to commencement of any work. Upon request, the Contractor shall provide within 30 days, a copy of the policy(ies) and all required endorsements to the City. If any of the above coverages expire by their terms during the term of this Agreement, the Contractor shall deliver proof of renewal and/or new policies and endorsements to the Administering Service Area/Unit at least ten days prior to the expiration date.