Sheldon Neeley
Mayor

REQUEST FOR PROPOSALS

PROPOSAL NO. 26000532

Publish Date: 03/19/26

The City of Flint, Finance Department of Purchases & Supplies, is soliciting sealed bids for providing:

CONSTRUCTION OF IMPROVEMENTS AT ST JOHNS PARK

PRINCIPAL ITEMS OF WORK INCLUDE BUT ARE NOT LIMITED TO CONCRETE SIDEWALK, HMA PARKING LOT AND TRAIL RECONSTRUCTION, PAVILION, PLAYGROUND AND SURFACING, FENCING, LANDSCAPING AND SIGNAGE AS INCLUDED IN THE ATTACHED CONSTRUCTION PLANS AND SPECIFICATIONS.

Per the attached additional requirements**.**

If your firm is interested in providing the services requested, please submit:

Submit to City:
1 original, printed, signed, original proposals and signed addenda
2 additional copies unbound
1 electronic copy

Please follow the following bid timeline.

Pre-Bid Conference

The City of Flint will host a mandatory pre-bid conference on **April 7, 2026, 2:00pm at Flint City Offices, McKenzie Room, 2nd floor, 1101 S. Saginaw St., Flint, Ml 48502**. Failure to attend this pre-conference may result in disqualification of your bid.

Questions

All written questions shall be directed Lauren Rowley, Purchasing Manager by **April 10, 2026,** by **10am EST** to lrowley@cityofflint.com.

Bid Submission Requirements

1. The mail in **HARD COPY** with the original signature (signed documents) must be received by **April 20th, 2026, 2:00pm City of Flint, Finance Department - Division of Purchases and Supplies, 1101 S. Saginaw St., Room 203, Flint, MI, 48502.** Bids must be in a sealed envelope clearly identifying the proposal name and proposal number.
2. **Electronic Copies** are being accepted on the BidNet Direct platform. Please submit them by **April 20th, 2026, 2:00pm,**
   - **An electronic bid submission user guide can be found here: https://faq.bidnetdirect.com/electronic-bid-submission.**
   - **Bidnet Direct's Vendor Support team is available M-F from 8 a.m. – 8 p.m. ET. You can contact them at (800) 835-4603 or support@bidnet.com.**
   - Emailed copies may be submitted to **PurchasingBids@cityofflint.com** in the event of technical error.

Pease note that in the subject line of the email, type in the proposal name and number. This must be submitted by the due date and time.

3. Faxed bids are not accepted.
4. Both mail in proposal and electronic submittal must be received by the due date and time.

Bid Opening

Bid Opening

INSERT GOOGLE MEET INFORMATION HERE

Any additional proposal documents, requirements, addendums, specifications, and plans/drawings (if utilized) are available on the Purchasing page of the City of Flint's web site at https://www.cityofflint.com/purchasing/.

Effective immediately upon release of these Bidding Documents, and until notice of contract award, all official communications from proposers regarding the requirements of this Bid shall be directed to:

Lauren Rowley
810-766-7266 ext. 2904
lrowley@cityofflint.com

The City, or designee, shall distribute all official changes, modifications, responses to questions or notices relating to the requirements of this Bid. Addendum to this Bid may be developed and shared with all Vendors. Any other information of any kind from any other source shall not be considered official, and proposers relying on other information do so at their own risk.

NOTICE TO VENDOR Offers, subject to the conditions made a part hereof, will be received atthis office, ***1101* S. *Saginaw St., Flint, Ml 48502 for the following:***

City of Flint has partnered with BidNet as part of the MITN Purchasing Group (branded page link) to post bid opportunities to this site. As a vendor, you can register with the MITN Purchasing Group and be sure that you see all available bids and opportunities. By selecting automatic bid notification, your company will receive emails once the City of Flint has a bid opportunity that matches your company's business. In addition, the site handles bid opportunities, RFPs, and RFQs for other member governmental agencies throughout Michigan. The City of Flint looks forward to providing you with more bid information and simplifying the entire bid, proposal, and quote processes for everyone involved. We appreciate your cooperation and welcome your participation. If you need help registering, please call the MITN Purchasing Group support department toll free 1-800-835-4603 option #2.

Link to City of Flint open solicitations:
MITN Purchasing Group (branded page link)

INSTRUCTIONS TO VENDORS

1) **PRE-BID INFORMATION AND QUESTIONS:** Each bid that is timely received will be evaluated on its merit and completeness of all requested information. In preparing bids, Bidders are advised to rely only upon the contents of this Request for Proposals (RFP) and accompanying documents and any written clarifications or addenda issued by the City of Flint. If a Bidder finds a discrepancy, error or omission in the RFP package, or requires any written addendum thereto, the Bidder is requested to notify the Purchasing contact noted on the cover of this RFP, so that written clarification may be sent to all prospective Bidders. **THE CITY OF FLINT IS NOT RESPONSIBLE FOR ANY ORAL INSTRUCTIONS**. All questions must be submitted in writing to the

Finance Department of Purchases and Supplies before any pre-bid deadline (if specified) or at least one (1) week prior to the proposal opening date indicated on the front of this document.

2) **RFP MODIFICATIONS:** The City of Flint has the right to correct, modify or cancel the RFP, in whole or in part, or to reject any Bid, in whole or in part, within the discretion of the City of Flint, or their designee. If any such changes are made, all known recipients of the RFP will be sent a copy of such changes. If any changes are made to this RFP document by any party other than the City of Flint, the original document in the City of Flint's files takes precedence.

3) **PROPOSAL SUBMISSION:**

   a) The Bidder must include the following items, or the proposal may be deemed non-responsive:

      i) All forms contained in this RFP, fully completed.

   b) Bids must be submitted to the Finance Department of Purchases and Supplies, City of Flint, 1101 S. Saginaw Street, Room 203, Flint, Michigan 48502 by the date and time indicated as the deadline**.** The Purchasing Department time stamp will determine the official receipt time. It is each Bidder's responsibility to insure that their proposal is time stamped by the Purchasing Department by the deadline. This responsibility rests entirely with the Bidder, regardless of delays resulting from postal handling or for any other reasons. Proposals will be accepted at any time during the normal course of business only, said hours being 8:00 a.m. to 5:00 p.m. local time, Monday through Friday, legal holidays as exception.

   c) Bids must be enclosed in a sealed, non-transparent envelope, box or package, and clearly marked on the outside with the following: RFP Title, RFP Number, Deadline and Bidder's name.

   d) Submission of a bid establishes a conclusive presumption that the Bidder is thoroughly familiar with the Request for Proposals (RFP), and that the Contractor understands and agrees to abide by each and all of the stipulations and requirements contained therein.

   e) All prices and notations must be typed or printed in ink. No erasures are permitted. Mistakes may be crossed out and corrections must be initialed in ink by the person(s) signing the bid.

   f) Proposals sent by email, facsimile, or other electronic means will not be considered unless specifically authorized in this RFP.

   g) All costs incurred in the preparation and presentation of the bid are the Bidder's sole responsibility; no pre-bid costs will be reimbursed to any Bidder. All documentation submitted with the proposal will become the property of the City of Flint.

   h) Proposals must be held firm for a minimum of 120 days.

4) **EXCEPTIONS:** Bidder shall clearly identify any proposed deviations from the Terms or Scope in the Request for Proposals. Each exception must be clearly defined and referenced to the proper paragraph in this RFP. The exception shall include, at a minimum, the proposed substitute language and opinion as to why the suggested substitution will provide equivalent or better service and performance. If no exceptions are noted in the bid, the City of Flint will assume complete conformance with this specification and the successful Bidder will be required to perform accordingly. Bids not meeting all requirements may be rejected.

5) **DUPLICATE BIDS:** No more than one (1) bid from any Bidder including its subsidiaries, affiliated companies and franchises will be considered by the City of Flint. In the event multiple proposals are submitted in violation of this provision, the City will have the right to determine which bid will be considered or, at its sole option, reject all such multiple proposals.

6) **WITHDRAWAL:** Bids may only be withdrawn by written notice prior to the date and time set for the opening of bids. No bid may be withdrawn after the deadline for submission.

7) **REJECTION/GOOD STANDING:** The City of Flint reserves the right to reject any or all bids, or to accept or reject any bid in part, and to waive any minor informality or irregularity in bids received if it is determined by the City of Flint, or their designee, that the best interest of the City will be served by doing so. No bid will be considered from any person, firm or corporation in arrears or in default to the City on any contract, debt, taxes or other obligation, or if the Bidder is debarred by the City of Flint from consideration for a contract award pursuant to Section 18-21.5 (d) of Article IV of the "Purchasing Ordinance of the City of Flint".

8) **PROCUREMENT POLICY:** Procurement for the City of Flint will be handled in a manner providing fair opportunity to all businesses. This will be accomplished without abrogation or sacrifice of quality and as determined to be in the best interest of the City. The City of Flint and their officials have the vested authority to execute a contract, subject to City Council and Mayoral approval where required.

9) **BID SIGNATURES:** Bids must be signed by an authorized official of the Bidder. Each signature represents binding commitment upon the Bidder to provide the goods and/or services offered to the City of Flint if the Bidder is determined to be the lowest Responsive and Responsible Bidder.

10) **CONTRACT AWARD/SPLIT AWARDS:** The City of Flint reserves the right to award by item and/or group of items. The Bidder to whom the award is made will be notified at the earliest possible date. Tentative acceptance of the bid, intent to recommend award of a contract and actual award of the contract will be provided by written notice sent to the Bidder at the address designated in the bid if a separate Agreement is required to be executed. After a final award of the Agreement by the City of Flint, the Contractor/Vendor must execute and perform said Agreement. All proposals must be firm for at least 120 days from the due date of the proposal. If, for any reason, a contract is not executed with the selected Bidder within 14 days after notice of recommendation for award, then the City may recommend the next lowest responsive and responsible Bidder.

11) **NO RFP RESPONSE:** Bidders who receive this RFP but who do not submit a bid should return this RFP package stating "No Bid" and are encouraged to list the reason(s) for not responding. Failure to return this form may result in removal of the Bidder's name from all future lists.

12) **FREEDOM OF INFORMATION ACT (FOIA) REQUIREMENTS:** Bids are subject to public disclosure after the deadline for submission in accordance with state law.

13) **ARBITRATION:** Contractor/Vendor agrees to submit to arbitration all claims, counterclaims, disputes and other matters in question arising out of or relating to this agreement or the breach thereof. The Contractor's/Vendor's agreement to arbitrate shall be specifically enforceable under the prevailing law of any court having jurisdiction to hear such matters. Contractor's/Vendor's obligation to submit to arbitration shall be subject to the following provisions:

    a) Notice of demand for arbitration must be submitted to the City in writing within a reasonable time after the claim, dispute or other matter in question has arisen. A reasonable time is hereby determined to be fourteen (14) days from the date the party demanding the arbitration knows or should have known the facts giving rise to their claim, dispute or question. In no event may the demand for arbitration be made after the time when institution of legal or equitable proceedings based on such claim dispute or other matters in question would be barred by the applicable statute of limitation.

b) Within fourteen (14) days from the date that demand for arbitration is received by the City, each party shall submit to the other the name of one person to serve as an arbitrator. The two arbitrators together shall then select a third person, the three together shall then serve as a panel in all proceedings. Any decision concurred in by a majority of the three shall be a final binding decision.

c) The final decision rendered by said arbitrators shall be binding and conclusive and shall be subject to specific enforcement by a court of competent jurisdiction.

d) The costs of the arbitration shall be split and borne equally between the parties and such costs are not subject to shifting by the arbitrator.

e) This provision shall survive the expiration or termination of this Agreement in perpetuity.

14) **BID HOLD:** The City of Flint may hold bids for a period of one hundred twenty (120) days from opening, for the purpose of reviewing the results and investigating the qualifications of bidders prior to making an award.

15) **NONCOMPLIANCE:** Failure to deliver in accordance with specifications will be cause for the City of Flint and they may cancel the contract or any part thereof and purchase on the open market, charging any additional cost to the Contractor/Vendor.

16) **DISCLAIMER OF CONTRACTUAL RELATIONSHIP:** Nothing contained in these documents shall create any contractual relationship between the City and any Subcontractor or Sub-subcontractor.

17) **ERRORS AND OMISSIONS:** Bidder is not permitted to take advantage of any obvious errors or omissions in specifications**.**

18) **INTERPRETATION:** In the event that any provision contained herein shall be determined by a court of competent jurisdiction or an appropriate administrative tribunal to be contrary to the provision of law or to be unenforceable for any reason, then, to the extent necessary and possible to render the remainder of this Agreement enforceable, such provision may be modified or severed by such court or administrative tribunal having jurisdiction over this Agreement and the interpretation thereof, or the parties hereto, so as to, as nearly as possible, carry out the intention of the parties hereto, considering the purpose of the entire Agreement in relation to such provision.

19) **LAWS AND ORDINANCES:** The Bidder shall obey and abide by all of the laws, rules and regulations of the Federal Government, State of Michigan, Genesee County and the City of Flint, applicable to the performance of this Agreement, including, but not limited to, labor laws, and laws regulating or applying to public improvement, local government, and its operational requirements.

20) **LOCAL PREFERENCE:** Contractors/bidders located within the corporate city limits of Flint, Michigan may be given a seven percent (7%) competitive price advantage. Additionally, if the lowest responsible bidder is not located within the limits of the City of Flint, but is located within the County of Genesee, and said bidder does not exceed the bid of the lowest non-local bidder by more than three and one-half percent (3-1/2%), then said lowest Genesee County bidder may be determined to be the lowest responsible bidder, and make the award to such Genesee County bidder accordingly, subject to the approval of the City Council. If the lowest non-local bidder does not exceed that of any Proposers/bidders by (7%) inside the City of Flint or (3-1/2%) inside the County of Genesee, then the Purchasing Director shall be allowed to request that the lowest local vendor match the price offered by the lowest non-local vendor.

21) **MATERIAL WORKMANSHIP AND STANDARDS OF PERFORMANCE:** The Bidder agrees to exercise independent judgment and to complete performance under this Agreement in accordance with sound professional practices. In entering into this Agreement, the City is relying upon the professional reputation, experience, certification and ability of the Bidder by her/him/themselves or by others employed by her/him/them and working under their direction and control. The continued effectiveness of this Agreement during its term or any renewal term shall be contingent, in part, upon the Bidder maintaining her/his/their operating qualifications in accordance with the requirements of federal, state and local laws. All materials furnished must be new, of latest model and standard first grade quality, or best workmanship and design, unless otherwise expressly specified. Bidder, if required, must furnish satisfactory evidence of quality materials; offers of experimental or unproven equipment may be disregarded.

22) **MODIFICATIONS/CHANGES:** Any modification to this agreement must be in writing and signed by the authorized employee, officer, board or council representative authorized to make such modifications pursuant to the State law and local ordinances.

23) **NON-COLLUSION:** The Bidder acknowledges that by signing this document that she/he/they is/are duly authorized to make said offer on behalf of the company she/he/they represent(s) and that said bid is genuine and not sham or collusive and not made in the interests or on behalf of any person not therein named, and that she/he/they and said bidder have not directly induced or solicited any other person(s) or corporation to refrain from responding to this solicitation and that she/he/they and said bidder have not in any manner sought by collusion to secure to themselves and said bidder any advantage over any other bidder.

24) **NON-DISCRIMINATION:** Pursuant to the requirements of 1976 P.A. 453 (Michigan Civil Rights Act) and 1976 P.A. 220 (Michigan Handicapped Rights Act), the local unit and its agent agree not to discriminate against any 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 race, color, religion, national origin, age, sex, height, weight, marital status or because of a handicap that is unrelated to the person's ability to perform the duties of nondiscrimination provision identical to this provision and binding upon any and all contractors and subcontractors. A breach of this covenant shall be regarded as a material breach of this contract.

25) **SUBCONTRACTING:** No subcontract work shall be started prior to the written approval of the subcontractor by the City. The City reserves the right to accept or reject any subcontractor.

26) **UNION COMPLIANCE:** Bidder agrees to comply with all regulations and requirements of any national or local union(s) that may have jurisdiction over any of the materials, facilities, services or personnel to be furnished by the City.

27) **WAIVER:** Failure of the City to insist upon strict compliance with any of the terms, covenants or conditions of this Agreement shall not be deemed a waiver of that term, covenant or condition or of any other term, covenant or condition. Any waiver or relinquishment of any right or power hereunder at any one or more times shall not be deemed a waiver or relinquishment of that right or power at any other time.

28) **CITY INCOME TAX WITHHOLDING:** Contractor and any subcontractor engaged in this contract shall withhold from each payment to his employees the City income tax on all of their compensation subject to tax, after giving effect to exemptions, as follows:

    a) Residents of the City:
    At a rate equal to 1% of all compensation paid to the employee who is a resident of the City of Flint.

    b) Non-residents:

At a rate equal to 1/2% of the compensation paid to the employee for work done or services performed in the City of Flint.

These taxes shall be held in trust and paid over to the City of Flint in accordance with City ordinances and State law. Any failure to do so shall constitute a substantial and material breach of this contract.

29) **CONTRACT DOCUMENTS:** The invitation for proposal, instructions to proposal, proposal, affidavit, addenda (if any), statement of Bidder's qualifications (when required), general conditions, special conditions, performance bond, labor and material payment bond, insurance certificates, technical specifications, and drawings, together with this agreement, form the contract, and they are as fully a part of the contract as if attached hereto or repeated herein.

30) **DISCLAIMER OF CONTRACTUAL RELATIONSHIP WITH SUBCONTRACTORS:** Nothing contained in the Contract Documents shall create any contractual relationship between the City and any Subcontractor or Sub-subcontractor.

31) **EFFECTIVE DATE:** Any agreement between the City and the Bidder shall be effective upon the date that it is executed by all parties hereto.

32) **FORCE MAJURE:** Neither party shall be responsible for damages or delays caused by Force Majeure nor other events beyond the control of the other party and which could not reasonably have anticipated the control of the other party and which could not reasonably have been anticipated or prevented. For purposes of this Agreement, Force Majeure includes, but is not limited to, adverse weather conditions, floods, epidemics, war, riot, strikes, lockouts, and other industrial disturbances; unknown site conditions, accidents, sabotage, fire, and acts of God. Should Force Majeure occur, the parties shall mutually agree on the terms and conditions upon which the services may continue.

33) **INDEMNIFICATION:** To the fullest extent permitted by law, Bidder agrees to defend, pay on behalf of, indemnify, and hold harmless the City of Flint, its elected and appointed officials, employees and volunteers and others working on behalf of the City of Flint against any and all claims, demands, suits, or losses, including all costs connected therewith, and for any damages which may be asserted, claimed, or recovered against or from the City of Flint, its elected and appointed officials, employees, volunteers or others working on behalf of the City of Flint, by reason of personal injury, including bodily injury or death and/or property damage, including loss of use thereof, which may arise as a result of Bidder's acts, omissions, faults, and negligence or that of any of his employees, agents, and representatives in connection with the performance of this contract. Should the Bidder fail to indemnify the City in the above-mentioned circumstances, the City may exercise its option to deduct the cost that it incurs from the contract price forthwith. These provisions shall survive the termination or expiration of any agreement entered into as a result of this request.

34) **INDEPENDENT CONTRACTOR:** No provision of this contract shall be construed as creating an employer-employee relationship. It is hereby expressly understood and agreed that Bidder is an "independent contractor" as that phrase has been defined and interpreted by the courts of the State of Michigan and, as such, Bidder is not entitled to any benefits not otherwise specified herein.

35) **NO THIRD-PARTY BENEFICIARY:** No contractor, subcontractor, mechanic, material man, laborer, vendor, or other person dealing with the principal Contractor shall be, nor shall any of them be deemed to be, third-party beneficiaries of this contract, but each such person shall be deemed to have agreed (a) that they shall look to the principal Contractor as their sole source of recovery if not paid, and (b) except as otherwise agreed to by the principal Contractor and any such person in writing, they may not enter any

claim or bring any such action against the City under any circumstances. Except as provided by law, or as otherwise agreed to in writing between the City and such person, each such person shall be deemed to have waived in writing all rights to seek redress from the City under any circumstances whatsoever.

36) **NON-ASSIGNABILITY:** Contractor shall not assign or transfer any interest in this contract without the prior written consent of the City provided, however, that claims for money due or to become due to Contractor from the City under this contract may be assigned to a bank, trust company, or other financial institution without such approval. Notice of any such assignment or transfer shall be furnished promptly to the City.

37) **NON-DISCLOSURE/CONFIDENTIALITY:** Contractor agrees that the documents identified herein as the contract documents are confidential information intended for the sole use of the City and that Contractor will not disclose any such information, or in any other way make such documents public, without the express written approval of the City or the order of the court of appropriate jurisdiction or as required by the laws of the State of Michigan.

38) **RECORDS PROPERTY OF CITY:** All documents, information, reports and the like prepared or generated by Contractor as a result of this contract shall become the sole property of the City of Flint.

39) **SEVERABILITY:** In the event that any provision contained herein shall be determined by a court or administrative tribunal to be contrary to a provision of state or federal law or to be unenforceable for any reason, then, to the extent necessary and possible to render the remainder of this Agreement enforceable, such provision may be modified or severed by such court or administrative tribunal so as to, as nearly as possible, carry out the intention of the parties hereto, considering the purpose of the entire Agreement in relation to such provision. The invalidation of one or more terms of this contract shall not affect the validity of the remaining terms.

40) **TERMINATION:** This contract may be terminated by either party hereto by submitting a notice of termination to the other party. Such notice shall be in writing and shall be effective 30 days from the date it is submitted unless otherwise agreed to by the parties hereto. Contractor, upon receiving such notice and prorated payment upon termination of this contract shall give to the City all pertinent records, data, and information created up to the date of termination to which the City, under the terms of this contract, is entitled.

41) **TIME PERFORMANCE:** Contractor's services shall commence immediately upon receipt of the notice to proceed and shall be carried out forthwith and without reasonable delay.

42) **EVALUATION OF PROPOSAL:** In the City's evaluation of proposals, at minimum: cost, serviceability, financial stability, and all requirements set forth in this document shall be considered as selection and award criteria unless otherwise specified.

43) **PREVAILING WAGE:** All work for this project, including that of any subcontractor or sub-subcontractor, must meet Davis-Bacon Act requirements and full prevailing wage. Information on Davis-Bacon reporting and requirements, including payroll reporting, can be found at: **https://www.dol.gov/whd/govcontracts/dbra.htm**. City of Flint may preferentially award construction contracts to successful bidder, to the extent provided by law, that pay their subcontractors and construction mechanics not less than prevailing wage rates and fringe benefits.

44) **INSURANCE & BONDS:** The bidder whose proposal is accepted will be required to furnish bonds and evidence of insurance within five days from date of Notice of Award. In case of failure or refusal on the part of the bidder to furnish bonds, if required, within the set period, the amount of deposit may be

forfeited to the city and the contract may be awarded to the next lowest responsible bidder. Upon the notification of award and approval of the bond, the deposit will be returned to the proposer. The deposit of persons other than the one to whom and award is made will be returned to the person or persons making the proposal immediately after the contract and bonds have been executed.

45) **PROPOSAL SUBMISSION:** Proposals and all information requested of the vendor shall be entered in the appropriate spaces. Failure to do so may disqualify the vendor's offer. An authorized officer or employee of the bidder shall submit the proposal.

46) **PRICES:** Prices proposed shall be for new products in current production unless otherwise specified. Where refurbished or discontinued items are offered they must be clearly identified as such. Prices proposed shall be exclusive of any rebates due the City. Any rebates the City may be entitled to should be shown as a separate line item and include expiration date.
Corrections and/or modifications received after the bid closing time specified will not be accepted. Unit prices prevail.
All prices will be bid F.O.B. DESTINATION, INCLUDE ALL DELIVERY AND ANY ADDITIONAL CHARGES, and remain in effect as specified in the quotation.

47) **AWARD:** Unless otherwise stated in the proposal documents, the City cannot guarantee exclusivity of the contract for the proposed products or services.
Award of the proposal shall be based upon a combination of factors, including but not limited to, adherence to proposal requirements, references and any other factors that may be in the City's best interest.
The City reserves the right to reject any and all bids, and to waive any defect or irregularity in bids. The City reserves the right to accept and separate items in the bid;
and to accept the proposal that in the opinion of the City is to the best advantage and interest of the public we serve. The City also has the right to re-solicit bids if it is deemed to be in the best interest of the City.

The City reserves the right to reject low bids which have major deviations from our specification; to accept a higher quotation which has only minor deviations. By signing the bid, the vendor agrees to accept a split award unless the awarded vendor clearly indicates that it takes exception. The bid will be awarded to that responsible, responsive bidder whose proposal conforms to this solicitation, and will be most advantageous to the City, with regard not only to price, but also to availability of product, location and quality of product considered.

The City reserves the right to award all line items, to make no award or to award on an individual line item basis, whichever is deemed to be in the best interest of the City.

Time of delivery may be a consideration in the award.

48) **ETHICS IN PURCHASING:** Bidders and proposers are required to comply with Flint City Ordinance 3865 in its entirety. It is incumbent upon and the responsibility of the bidder to become familiar with and comply with the Purchasing ordinances as outlined in 3865 covering chapter 18 of the Flint City Ordinances. Bidder/Proposer acknowledges in accordance with Flint City Ordinance Section 18-21.19 Ethics in Purchasing, any and all communication about the bid selection process should be directed to those City employees delegated with the authority with respect to all purchases of goods and services.
Bidder/Proposer acknowledges and agrees that while a procurement is pending, bidders and proposers shall not communicate about the solicitation with any City employee, agent, or elected official, other than the

purchasing director or other City personnel identify in the solicitation. This means that bidder and proposer are prohibited from communicating orally or by written communications, including but not limited to voicemail messages, social media, email, in person, among any other form of communication while the award is pending, to the aforementioned, with the exception to those employees designated by the City. If you are unclear about the process, it is your duty and obligation to contact the designated employee(s) for clarification.

Violations of the ethics provision of the ordinance, without regard to if the violation rises to the level of a criminal violation, may subject the bidder or proposer to debarment.

49) **BID PROTESTS:** If Bidder/Proposal believe that they are aggrieved in connection with the solicitation or award of the purchase order or contract, they may protest the action to the City as outlined in Flint City Charter Section 18-21.15.

50) **FUNDING**: This project is being funded in part with proceeds from a Michigan Department of Natural Resources SPARK Grant Program and is therefore required to follow all related federal, state, and local orders, policies, executive directives, public acts, and ordinances as deemed necessary. The Contractor must comply with all applicable and related requirements including but not limited to, the 1976 PA 453 (Elliot-Larsen Civil Rights Act); the 1976 PA 220 (persons with Disabilities Civil Rights Act), as amended; and in accordance with: Governor's Executive Directive 2019-09 and the Playground Safety Act, P.A. 16 of 1997 and Davis Bacon Wage Rates.

THE FOLLOWING PAGES MUST BE COMPLETED AND INCLUDED WITH SUBMITTAL IN THE FOLLOWING ORDER.

Purchasing Checklist:

□ Exhibit A – Complete Proposal Submittal with detailed Summary of Pricing
□ Exhibit A.1 – Bid Bond
□ Exhibit B – Qualifications and Licenses Requirements
□ Exhibit C – Disclosure of Supplier Responsibility Statement
□ Exhibit D – List of References
□ Exhibit E – Non-Bidder's Response
□ Exhibit F – City of Flint Affidavit

❖ EXHIBIT A – SUBMITTAL WITH DETAILED SUMMARY OF PRICING

BID FORM FOR CONSTRUCTION CONTRACT

St. John's Park Improvements, City of Flint

26000532

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

City of Flint

1101 S. Saginaw St.,

Flint, MI, 48502

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security; and

B. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

ARTICLE 3—BASIS OF BID

3.01 Lump Sum Bids

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s):

1. Lump Sum Price (Base Bid and Alternates)

Parking Lot	LSUM	$_____
Play Equipment (including Fencing, Landscape, Safety Surfacing – Engineered Wood Fiber)	LSUM	$_____
Picnic Area/Pavilion	LSUM	$_____
Trail – 8' Wide (Remove and Replace)	LSUM	$_____
Trail – 6'-8' Wide (Concrete)	LSUM	$_____
Park Memorial Signage	LSUM	$_____

All associated costs will be included within the pay items listed above.

BASE BID TOTAL **LSUM: $_____**

Alternate A	**Unit**	**Cost**
Remove and replace HMA Trail - _____ Wide	100'/Station	$_____

Alternate B	**Unit**	**Cost**
Type IV subgrade undercut, wrapped with non-woven geotextile	CYD	$_____

Alternates are for the purpose of adding or reducing scope to match the project funding available.

1) Failure to use this bid form shall result in bid disqualification.
2) Failure to bid on all items shall result in an "incomplete bid" determination.
3) List value-added considerations on a separate sheet of paper.
4) All bid pricing to include shipping and freight charges.

ARTICLE 4—TIME of COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—Bidder's ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S Representations AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following :

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, if any, with respect to the Technical Data in such reports and drawings.

5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on a) the cost, progress, and performance of the Work; b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 6.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

THIS PAGE MUST BE COMPLETED AND INCLUDED WITH THE BID

The undersigned hereby certifies, on behalf of the respondent named in this Certification (the "Respondent"), that the information provided in this offer submitted to the City of Flint, Department of Purchase and Supplies is accurate and complete, and that I am duly authorized to submit same. I hereby certify that the Respondent has reviewed all documents and requirements included in this offer and accept its terms and conditions.

Terms: _____ Fed. ID #: _____

Company (Respondent): _____

Address: _____

_____

City, State & Zip Code: _____

Phone / Fax Number: _____ FAX: _____

Email: _____

Print Name and Title: _____

(Authorized Representative)

Signed: _____

(Authorized Representative)

❖ EXHIBIT A.1 – SUPPLEMENTAL DOCUMENTS

C-430 Bid Bond
C-510 Notice of Award
C-520 Agreement
C-550 Notice to Proceed
C-610 Performance Bond
C-612 Warranty Bond
C-615 Payment Bond
C-620 Application for Payment
C-625 Certificate of Substantial Completion
C-700 Standard General Conditions
C-800 Supplementary Conditions
C-940 Work Change Directive
C-941 Change Order
C-942 Field Order

Bid Bond (PENAL SUM FORM)

Bidder	**Surety**
Name:	Name: [
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Bid**
Name: City of Flint	Project *(name and location)*:
Address *(principal place of business)*:	St. John's Memorial Park Improvements, Flint, MI
1101 S. Saginaw Street Flint, MI 48502	Bid Due Date: April 20, 2026

Bond

Penal Sum:

Date of Bond:

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

Bidder	Surety
_____	_____
(Full formal name of Bidder)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature) (Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title:	Title:

Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation will be null and void if:

   3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

   3.2 All Bids are rejected by Owner, or

   3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

NOTICE OF AWARD

Date of Issuance:

Owner:	City of Flint	Owner's Contract No.:	
Engineer:	ROWE Professional Services Company	Engineer's Project No.:	2500057
Project:	St. John's Memorial Park Improvements		
Contract Name:	St. John's Memorial Park Improvements		
Bidder:			
Bidder's Address:			

TO BIDDER:

You are notified that Owner has accepted your Bid dated [_____] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded].

The Contract Price of the awarded Contract is: $_____[Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.]

[ ] unexecuted counterparts of the Agreement accompany this Notice of Award, and three copies of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [____] counterparts of the Agreement, signed by Bidder (as Contractor), or make available to Owner electronically.
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): *[Describe other conditions that require Successful Bidder's compliance]*

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner**:** City of Flint

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Copy: Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

THIS AGREEMENT is by and between City of Flint ("Owner") and

("Contractor").

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Removal of existing trail, installation of new trail; new parking lot, playground equipment, and memorial plaques. Site furnishing (50'x70') pavilion, benches, picnic tables, and trash receptacles are also included in the site plan.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

St. John's Memorial Park Improvements

ARTICLE 3 – ENGINEER

3.01 The Owner has retained ROWE Professional Services Company ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by ROWE Professional Services Company

ARTICLE 4 – CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially complete on or before August 15, 2026, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before September 15, 2026.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration

proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $500 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on the basis of Contractor's Applications for Payment at monthly intervals during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.

a. 90 percent of the value of the Work completed (with the balance being retainage).

1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work

remain satisfactory to Owner and Engineer, there will be no additional retainage.

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

A. All amounts not paid when due will bear interest at the rate of 2 percent per annum.

ARTICLE 7 – CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of all of the following:

1. This Agreement.
2. Bonds:
    a. Performance bond (together with power of attorney).
    b. Payment bond (together with power of attorney).
    c. __ (together with power of attorney).
3. General Conditions.
4. Supplementary Conditions.
5. Specifications as listed in the table of contents of the project manual (copy of list attached).
6. Drawings (not attached but incorporated by reference) consisting of __ sheets with each sheet bearing the following general title: __ **[or]** the Drawings listed on the attached sheet index.
7. Addenda (numbers __ to __, inclusive).
8. Exhibits to this Agreement (enumerated as follows):
    a. Contractor's Bid.
9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Work Change Directives.

c. Change Orders.

d. Field Orders.

e. Warranty Bond, if any.

B. The documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 – REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents.

2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, if any, with respect to Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, if any, with respect to the effect of such information, observations, and Technical Data on a) the cost, progress, and performance of the Work; b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and c) Contractor's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:	Contractor:
City of Flint *(typed or printed name of organization)*	_____ *(typed or printed name of organization)*
By: _____ *(individual's signature)*	By: _____ *(individual's signature)*
Date: _____ *(date signed)*	Date: _____ *(date signed)*
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____ *(individual's signature)*	Attest: _____ *(individual's signature)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Designated Representative (if necessary):	Designated Representative (if necessary):
Name: _____ *(typed or printed)*	Name: _____ *(typed or printed)*
Title: _____ *(typed or printed)*	Title: _____ *(typed or printed)*
Address for giving notices: 1101 S. Saginaw Street Flint, MI 48502	Address for giving notices:
Phone: _____	Phone: _____
Email: _____	Email: _____
(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)	License No.: _____ *(where applicable)* State: _____ *NOTE TO USER: Use in those states or other jurisdictions where applicable or required.*

NOTICE TO PROCEED

Owner:	City of Flint	Owner's Project No.:	
Engineer:	ROWE Professional Services Company	Engineer's Project No.:	2500057
Contractor:		Contractor's Project No.:	
Project:	St. John's Memorial Park Improvements		
Contract Name:	St. John's Memorial Park Improvements		
Effective Date of Contract:			

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 20___ pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

the date by which Substantial Completion must be achieved is _____, and the date by which readiness for final payment must be achieved is _____.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner**:** City of Flint

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Date Issued: _____

Copy: Engineer

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

PERFORMANCE BOND

Contractor	**Surety**
Name: [Full formal name of Contractor]	Name: [Full formal name of Surety]
Address *(principal place of business)*:	Address *(principal place of business)*:
[Address of Contractor's principal place of business]	[Address of Surety's principal place of business]

Owner	**Contract**
Name: City of Flint	Description *(name and location)*:
Mailing address *(principal place of business)*: 1101 S. Saginaw Street Flint, MI 48502	St. John's Memorial Park Improvements, Flint, MI Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]

Bond
Bond Amount: [Amount]
Date of Bond: [Date]
(Date of Bond cannot be earlier than Effective Date of Contract):
Modifications to this Bond Form:
☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
(Full formal name of Contractor)	*(Full formal name of Surety) (Corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

    3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

   7.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

   7.2 Additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

   7.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1 Balance of the Contract Price- The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2 Construction Contract- The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3 Contractor Default- Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4 Owner Default- Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

    14.5 Contract Documents- All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows: None.

WARRANTY BOND

Contractor	**Surety**
Name: [Full formal name of Contractor] Address *(principal place of business)*: [Address of Contractor's principal place of business]	Name: [Full formal name of Surety] Address *(principal place of business)*: [Insert address of Surety's principal place of business]
Owner	**Construction Contract**
Name: City of Flint Address *(principal place of business)*: 1101 S. Saginaw Street Flint, MI 48502	Description *(name and location)*: St. John's Memorial Park Improvements, Flint, MI Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract] Contract's Date of Substantial Completion: [Date from Contract]

Bond

Bond Amount: [Amount]

Date of Bond: [Date]

Bond Period: Commencing 364 days after Substantial Completion of the Work under the Construction Contract, and continuing until two years after such Substantial Completion.

Modifications to this Bond form:
☐ None ☐ See Paragraph 9

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth herein, do each cause this Warranty Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature) (Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title:	Title:

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract's Correction Period Obligations. The Construction Contract is incorporated herein by reference.
2. If the Contractor performs the Correction Period Obligations, the Surety and the Contractor shall have no obligation under this Warranty Bond.
3. If Owner gives written notice to Contractor and Surety during the Bond Period of Contractor's obligation under the Correction Period Obligations, and Contractor does not fulfill such obligation, then Surety shall be responsible for fulfillment of such Correction Period Obligations. Surety shall either fulfill the Correction Period Obligations itself, through its agents or contractors, or, in the alternative, Surety may waive the right to fulfill the Correction Period Obligations itself, and reimburse the Owner for all resulting costs incurred by Owner in performing Contractor's Correction Period Obligations, including but not limited to correction, removal, replacement, and repair costs.
4. The Surety's liability is limited to the amount of this Warranty Bond. Renewal or continuation of the Warranty Bond will not modify such amount, unless expressly agreed to by Surety in writing.
5. The Surety shall have no liability under this Warranty Bond for obligations of the Contractor that are unrelated to the Construction Contract. No right of action will accrue on this Warranty Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
6. Any proceeding, legal or equitable, under this Warranty Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and must be instituted within two years after the Surety refuses or fails to perform its obligations under this Warranty Bond.
7. Written notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown in this Warranty Bond.
8. Definitions

    8.1. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page of this Warranty Bond, including all Contract Documents and changes made to the agreement and the Contract Documents.

    8.2. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

    8.3. *Correction Period Obligations*—The duties, responsibilities, commitments, and obligations of the Contractor with respect to correction or replacement of defective Work, as set forth in the Construction Contract's Correction Period clause, EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), Paragraph 15.08, as duly modified.

    8.4. *Substantial Completion*—As defined in the Construction Contract.

    8.5. *Work*—As defined in the Construction Contract.
9. Modifications to this Bond are as follows: None

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PAYMENT BOND

Contractor Name: [Full formal name of Contractor] Address*(principal place of business)*: [Address of Contractor's principal place of business]	**Surety** Name: [Full formal name of Surety] Address *(principal place of business)*: [Address of Surety's principal place of business]
Owner: Name: City of Flint Mailing address *(principal place of business)*: 1101 S. Saginaw Street Flint, MI 48502	**Contract** Description *(name and location)*: St. John's Memorial Park Improvements, Flint, MI Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]

Bond
Bond Amount: [Amount]
Date of Bond: [Date]
(Date of Bond cannot earlier than Effective Date of Contract)
Modifications to this Bond Form:
☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1 Claimants who do not have a direct contract with the Contractor

        5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2 Pay or arrange for payment of any undisputed amounts.

    7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

    16.1 *Claim*- A written statement by the Claimant including at a minimum:

        16.1.1. The name of the Claimant;

        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;

        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;

        16.1.4. A brief description of the labor, materials, or equipment furnished;

16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

16.1.7. The total amount of previous payments received by the Claimant; and

16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 *Claimant*- An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 *Construction Contract*- The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 *Owner Default*- Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 *Contract Documents*- All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows: None.

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Contractor's Application for Payment

Owner: _____ **Owner's Project No.:** _____
Engineer: _____ **Engineer's Project No.:** _____
Contractor: _____ **Contractor's Project No.:** _____
Project: _____
Contract: _____
Application No.: _____ **Application Date:** _____
Application Period: **From** _____ **to** _____

1. Original Contract Price		$ -
2. Net change by Change Orders		$ -
3. Current Contract Price (Line 1 + Line 2)		$ -
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)		$ -
5. Retainage		
a. _____ X $ - Work Completed =	$ -	
b. _____ X $ - Stored Materials =	$ -	
c. Total Retainage (Line 5.a + Line 5.b)		$ -
6. Amount eligible to date (Line 4 - Line 5.c)		$ -
7. Less previous payments (Line 6 from prior application)		
8. Amount due this application		$ -
9. Balance to finish, including retainage (Line 3 - Line 4 + Line 5.c)		$ -

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:
(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;
(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and
(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor: _____
Signature: _____ **Date:** _____

Recommended by Engineer	**Approved by Owner**
By: _____	**By:** _____
Title: _____	**Title:** _____
Date: _____	**Date:** _____
Approved by Funding Agency	
By: _____	**By:** _____
Title: _____	**Title:** _____
Date: _____	**Date:** _____

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Owner's Project No.:
Engineer:	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: [Enter date, as determined by Engineer]

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's responsibilities: ☐ None ☐ As follows

[List amendments to Owner's Responsibilities]

Amendments to Contractor's responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

Supplementary Conditions

These Supplementary Conditions amend or supplement EJCDC® C 700 Standard General Conditions of the Construction Contract, (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC 4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

No suggested Supplementary Conditions in this Article.

ARTICLE 2—PRELIMINARY MATTERS

2.06 *Electronic Transmittals*

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.

2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:

a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.

b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived

from such data will be at the Contractor's sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.

c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.

d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

SC-3.01 Delete Paragraph 3.01.C in its entirety.

SC-3.03 Reporting and Resolving Discrepancies

SC-3.03.B Add the following paragraph immediately after Paragraph 3.03.B.1.b

c. In the event of a conflict between two or more sections of the Contract Documents prepared by the Engineer, the contract requirements will be defined by the provisions of these sections in the following order of precedence:
   - Addenda (in descending order)
   - Drawings
   - Specifications.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

SC-5.03 Subsurface and Physical Conditions

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which the Contractor may rely:

Report Title	Date of Report	Technical Data
To be determined	TBD	None

F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
To be determined	TBD	None

SC-5.06 Hazardous Environmental Conditions at Site

SC-5.06 Add the following new paragraphs immediately after 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	**Date of Report**	**Technical Data**
N/A	N/A	None

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	**Date of Drawings**	**Technical Data**
N/A	N/A	None

ARTICLE 6—BONDS AND INSURANCE

SC-6.01 Performance, Payment, and Other Bonds

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2010, 2013, or 2018 edition).

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.B:

1. After Substantial Completion, Contractor shall furnish a warranty bond issued in the form of EJCDC® C-612, Warranty Bond (2018). The warranty bond must be in a bond amount of the total as-bid Contract Price. The warranty bond period will extend to a date 2 years after Substantial Completion of the Work. Contractor shall deliver the fully executed warranty bond to Owner prior to or with the final application for payment, and in any event no later than 11 months after Substantial Completion.
2. The warranty bond must be issued by the same surety that issues the performance bond required under Paragraph 6.01.A of the General Conditions.

SC-6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in

the state in which the project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.03 Contractor's Insurance

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

D. The following shall be named additional insureds in the Contractor's liability policy:

a. The City of Flint

b. ROWE Professional Services Company

E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	**Policy limits of not less than:**
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	$1,000,000
Bodily injury by disease—aggregate	$1,000,000
Employer's Liability	
Each accident	$1,000,000
Each employee	$1,000,000
Policy limit	$1,000,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	$1,000,000

F. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:

1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,

2. damages insured by reasonably available personal injury liability coverage, and

3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

G. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
    a. Such insurance must be maintained for three years after final payment.
    b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
4. Underground, explosion, and collapse coverage.
5. Personal injury coverage.
6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
6. Any limitation or exclusion based on the nature of Contractor's work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	$2,000,000
Products—Completed Operations Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Bodily Injury and Property Damage—Each Occurrence	$1,000,000

J. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	$500,000
Each Accident	$500,000
Property Damage	
Each Accident	$250,000
[or]	
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	$1,000,000

K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	$1,000,000
General Aggregate	$2,000,000

L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements:* Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of $2,000,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

M. *Contractor's Pollution Liability Insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of

pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	$2,000,000
General Aggregate	$4,000,000

N. *Contractor's Professional Liability Insurance:* If Contractor will provide or furnish professional services under this *Contract*, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	Policy limits of not less than:
Each Claim	$2,000,000
Annual Aggregate	$4,000,000

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Delete Paragraph 6.04.A in its entirety.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

SC-7.03 Labor; Working Hours

SC-7.03 Delete Paragraph 7.03.C in its entirety, and insert the following:

B. In the absence of any Laws or Regulations to the contrary, Contractor may perform the Work between 7:00 A.M. and 7:00 P.M. any day other than Sunday or the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Eve and Christmas Day. Work is not permitted on Sundays or the listed holidays.

ARTICLE 8—OTHER WORK AT THE SITE

No suggested Supplementary Conditions in this Article.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

No suggested Supplementary Conditions in this Article.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

SC-10.03 Resident Project Representative

SC-10.03 Replace the following paragraphs of Paragraph 10.03.B:

B. The Owner will serve as the Resident Project Representative and will assume all duties and responsibilities of the "Engineer", and have the rights and authority assigned to the Engineer.

ARTICLE 11 – CHANGES TO THE CONTRACT

No suggested Supplementary Conditions in this Article.

ARTICLE 12 – CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

SC-13.01 Cost of the Work

SC 13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of "*Rental Rate Blue Book for Construction Equipment, Volumes 1, 2, and 3"* by Equipment Watch, Inc.

SC 13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

a. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than $500.

SC-13.03 Unit Price Work

SC 13.03.E Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the extended price of a particular item of Unit Price Work amounts to 10 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14 –TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.02 Testing, Inspections, and Approvals

SC-14.02.B – Add new paragraph immediately after Paragraph 14.02.B:

B. Direct reimbursable; material testing – retained by ROWE.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

SC-15.01 Progress Payments

SC 15.01.D Delete Section 15.01.D and replace with the following:

D. The amount recommended for payment to the Contractor is due 30 days after approval by the Owner, except where the Owner is receiving funds from a federal or state funding program. Where funds for payment are provided by a federal or state funding program, the recommended payment to the Contractor is due 30 days after approval by the Owner or ten days following receipt of funds from the federal or state funding program, whichever is later. Where only a portion of the funding is provided by federal or state funding programs, the Owner is not required to make a partial payment to the Contractor in advance of receipt of funds from the federal or state program.

SC-15.01 Add the following new Paragraph 15.01.E:

F. For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

SC-15.03 Substantial Completion

SC 15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

SC-17.02 Arbitration

SC-17.02 Add the following new paragraphs immediately after Paragraph 17.01.

SC-17.02 Arbitration

A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC 17.02). Any controversy or claim in the amount of $100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.

B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.

C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.

D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.

E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.

F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.

G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:

1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;

2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings;

3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and

4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.

H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.

I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

SC-17.03 Attorneys' Fees

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

SC-17.03 Attorneys' Fees:

A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18 – MISCELLANEOUS

No suggested Supplementary Conditions in this Article.

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

WORK CHANGE DIRECTIVE NO.: *[Number of Work Change Directive]*

Owner:
Engineer:
Contractor:
Project:
Contract Name:
Date Issued:

Owner's Project No.:
Engineer's Project No.:
Contractor's Project No.:

Effective Date of Work Change Directive:

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for Work Change Directive:

[Describe the purpose of the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

[check one or both of the following]

☐ Non-agreement on pricing of proposed change. ☐ Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ [increase] [decrease] [not yet estimated].
Contract Time days [increase] [decrease] [not yet estimated].

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price ☐ Cost of the Work ☐ Other

Recommended by Engineer:		Authorized by Owner:	
By:		By:	
Title:		Title:	
Date:		Date:	

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

CHANGE ORDER NO.: *[Number of Change Order]*

Owner: Owner's Project No.:

Engineer: Engineer's Project No.:

Contractor: Contractor's Project No.:

Project:

Contract Name:

Date Issued: Effective Date of Change Order:

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change In Contract Price	**Change In Contract Times** *[State Contract Times as either a specific date or a number of days]*
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____
[Increase] [Decrease] from previously approved Change Orders No. _ to No. _: $ _____	*[Increase] [Decrease]* from previously approved Change Orders No. _ to No. _: Substantial Completion: _____ Ready for Final Payment: _____
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____
[Increase] [Decrease] of this Change Order: $ _____	*[Increase] [Decrease]* of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____

Recommended by Engineer (if required):	Accepted by Contractor:
By: _____	_____
Title: _____	_____
Date: _____	_____
Authorized by Owner	**Approved by Funding Agency (if applicable)**
By: _____	_____
Title: _____	_____
Date: _____	_____

FIELD ORDER NO.: *[Number of Field Order]*

Owner: Owner's Contract No.:
Engineer: Engineer's Project No.:
Contractor: Contractor's Project No.:
Project:
Contract Name:
Date Issued: Effective Date of Field Order:

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification(s):

Drawing(s) / Detail(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

EXHIBIT B - QUALIFICATIONS AND LICENSES REQUIREMENTS

Please give a synopsis of your qualifications and experience with this service:

Please list Licenses:

How long have you been in business?

Have you done business with the City of Flint?

If yes, please state the project name.

EXHIBIT C – DISCLOSURE OF SUPPLIER RESPONSIBILITY STATEMENT

1. List any convictions of any person, subsidiary, or affiliate of the company, arising out of obtaining, or attempting to obtain a public or private contract, or subcontract, or in the performance of such contract or subcontract.

2. List any convictions of any person, subsidiary, or affiliate of this company for offenses such as embezzlement, theft, fraudulent schemes, etc. or any other offense indicating a lack of business integrity or business honesty which affect the responsibility of the contractor.

3. List any convictions or civil judgments under state or federal antitrust statutes.

4. List any violations of contract provisions such as knowingly (without good cause) to perform, or unsatisfactory performance, in accordance with the specifications of a contract.

5. List any prior suspensions or debarments by any government agency.

6. List any contracts not completed on time.

7. List any documented violations of federal or state labor laws, regulations or standards, or occupational safety and health rules.

❖ EXHIBIT D – LIST OF REFERENCES: (3) SIMILAR SCOPE OF WORK FROM THE LAST 5 YEARS

Providing the following contact information enables the City of Flint to contact those accounts as references.

Reference #1:

Company/Municipality: _____

Contact Person: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

Email: _____

Type of Project: _____

_____

Project Timeline (Dates): _____ Budget: _____

Reference #2:

Company/Municipality: _____

Contact Person: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

Email: _____

Type of Project: _____

_____

Project Timeline (Dates): _____ Budget: _____

❖ EXHIBIT D – LIST OF REFERENCES: (3) SIMILAR SCOPE OF WORK FROM THE LAST 5 YEARS (CONTINUES)

Reference #3:

Company/Municipality: _____

Contact Person: _____ Title: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____ Fax: _____

Email: _____

Type of Project: _____

_____

Project Timeline (Dates): _____ Budget: _____

❖ EXHIBIT E – NON-BIDDER'S RESPONSE

VENDOR'S NAME: _____

NON-BIDDER'SRESPONSE

For the purpose of facilitating your firm's response to our invitation to bid, the City of Flint is interested in ascertaining reasons for prospective bidder's failure to respond to "Invitations to Bid". If your firm is not responding to this bid, please indicate the reason(s) by checking any appropriate item(s) below and return this form to the above address.

We are ***not*** responding to this "Invitation to Bid" for the following reason(s):

_____ Items or materials requested not manufactured by us or not available to our company.

_____ Our items and/or materials do not meet specifications.

_____ Specifications not clearly understood or applicable (too vague, too rigid, etc.).

_____ Quantities too Small.

_____ Insufficient time allowed for preparation of bid.

_____ Incorrect address used. Our correct mailing address is:

_____

_____ Our branch / division handles this type of bid. We have forwarded this bid on to them but for the future the correct name and mailing address is:_____

_____ **OTHER:** _____

_____

Thank you for your participation in this bid.

❖ EXHIBIT F – CITY OF FLINT AFFADAVIT

AFFIDAVIT FOR INDIVIDUAL

STATE OF _____

S.S.

COUNTY OF _____

_____being duly sworn, deposes and says that they are the person making the above bid; and that said bid is genuine and not sham or collusive, and is not made in the interest of or on behalf of any person not therein named, and that they have not directly or indirectly induced or solicited any bidder to put in a sham bid; that they have not directly or indirectly induced or solicited any other person or corporation to refrain from bidding, and that they have not in any manner sought by collusion to secure themselves any advantage over other bidders.

Subscribed and sworn to before me at _____, in said County and State,

this _____day of _____, A.D. 20_____,

_____

*Notary Public, _____County,_____

My Commission expires_____,20_____

❖ EXHIBIT F – CITY OF FLINT AFFADAVIT

FOR CORPORATION

STATE OF _____

S.S.

COUNTY OF _____

_____being duly sworn, deposes and says that she/he/they

is_____of_____

(Official Title) (Name of Corporation)

a corporation duly organized and doing business under the laws of the State of _____ the corporation making the within and foregoing bid; that they executed said bid in behalf of said corporation by authority of its Board of Directors; that said bid is genuine and not sham or collusive and is not made in the interests of or on behalf of any person not herein named, and that they have not and said bidder has not directly or indirectly induced or solicited any other person or corporation to refrain from bidding; that they have not and said bidder has not in any manner sought by collusion to secure to themselves or to said corporation an advantage over other bidders.

Subscribed and sworn to before me at _____, in said County and State,

this _____day of _____, A.D. 20_____,

_____

*Notary Public, _____County,_____

My Commission expires_____,20_____

❖ EXHIBIT G – TECHINCAL SPECIFICATIONS

01 25 00	Materials and Equipment
01 32 14	Schedule Requirements
01 33 00	Submittal Procedures
01 41 26	Permit Requirements
01 45 16.01	Concrete Testing
01 45 16.02	Density and Aggregate Testing
01 50 00	Construction Facilities and Temporary Controls
01 57 26	Dust Control
01 71 13	Mobilization
01 71 23.15	Construction Staking
01 74 50	Cleanup and Restoration
02 41 13.13	Pavement Removal
03 30 53	Concrete
11 68 13	Playground Equipment
31 23 01	Excavating, Filling, and Grading
31 25 00	Soil Erosion and Sedimentation Control
31 37 00	Riprap
32 11 16	Granular Subbase
32 11 23	Aggregate Base
32 12 16	HMA Paving
32 13 00	Concrete Curb and Gutter, Sidewalk, and Miscellaneous Pavement
32 17 23	Pavement Markings
32 31 13	PVC Coated Chain Link Fences and Gates
32 31 29	Split Rail Fence
32 92 00	Turf Establishment
32 93 00	Landscaping
33 46 16	Underdrains

SECTION 01 25 00
MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 Work Included

Unless specifically indicated otherwise on the plans or in the contract documents, all materials and equipment shall be new and undamaged.

A. Materials and Equipment

1. Materials and equipment incorporated into the work shall conform to applicable specifications and standards. Materials and equipment shall comply with size, make, type, and quality specified or as specifically approved by the Engineer.

2. Manufactured and fabricated products shall be designed, fabricated, and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units are to be manufactured to standard sizes and gauges to be interchangeable. Two or more items of the same kind shall be identical and manufactured by the same manufacturer. Products shall be suitable for the service conditions. Equipment capacities, sizes, and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing. Materials or equipment shall not be used for any purpose other than that for which it is designed or specified.

1.02 Substitutions

A. Where specific materials and equipment items are identified in the specifications by manufacturer's name or model number, bids shall be based on the products of one of the manufacturers so named or added thereto by addendum during the bidding period.

B. During the bidding period, all requests for substitutions will be given full consideration by the Engineer; and if approved, an addendum will be issued to incorporate the approved material or equipment into the contract documents.

C. Requests for substitutions must be received by the Engineer in ample time, not later than ten days before the bid due date, so that any necessary addendum will be received by all prospective bidders before submission of the bids.

D. After award of the contract, requests for substitutions will be considered only for one of the following reasons:

1. Increased value to the Owner

2. Decreased cost to the Owner

3. Specified items not procurable

E. Requests for substitutions after award of the contract shall be accompanied by manufacturer's data or other detailed descriptions of the proposed material or equipment.

F. A request for a substitution constitutes a representation that the Contractor has investigated and determined the proposed product is equal to or superior in all respects to that specified.

G. The Contractor shall coordinate the installation of an accepted substitution into the project to provide a complete and operable system. Modifications or re-work of other parts of the project resulting because of substitutes will be at the Contractor's expense.

H. The Engineer shall be the judge of the acceptability of the proposed substitutions.

1.03 Manufacturer's Instructions

A. When contract documents require that installation of work shall comply with the manufacturer's printed instructions, the Contractor shall obtain and distribute copies of such instructions to the parties involved in the installation, including two sets to the Engineer. The instructions shall be provided in advance of installation. The Contractor shall notify the Engineer in the event job conditions or the requirements of the plans or specifications conflict with the manufacturer's instructions.

B. The Contractor shall handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformity with the specified requirements.

C. The Contractor shall perform work in accordance with manufacturer's instructions. No preparatory step or installation procedures shall be omitted unless specifically modified or exempted by contract documents.

PART 2 - PRODUCTS

Product	Quantity	Unit
Bollard – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #L-89, Matte Black Metal Finish, 4' High Bollard, or approved equal.	**4**	**EA**
Standard Bench – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #FB-324, Matte Black Metal Finish; IPE Wood Finish, or approved equal.	**11**	**EA**
Commemorative Bench – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #FB-324, Matte Black Metal Finish; IPE Wood Finish or approved equal; Accommodate Metal Plaque by Others.	**7**	**EA**
Trash Receptacles – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #EB-36SD, Matte Black Metal Finish, or approved equal.	**5**	**EA**
Bike Racks – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #BRWA-101, Matte Black Metal Finish, or approved equal.	**4**	**EA**
Signage – Manufactured by Flutter and WOW Museum Projects (734) 224-3727; park entrance signage and Heritage Trail Signage or approved equal.	**16**	**EA**
ADA Signage – MDOT approved signage; install per MDOT guidelines.	**5**	**EA**
Pavilion – 50'x70' Pavilion by Icon Shelter Systems Inc. (616) 396-0919 or approved equal; with steel roof panels, structural steel plates, wide flange sections and connection bolts with a 4/12 pitch roof.	**1**	**EA**

Product	Quantity	Unit
Stop/Yield Sign – MDOT approved signage; install per MDOT guidelines.	**4**	**EA**
Picnic Tables – As manufactured by Victor Stanley (800) 365-2573 www.victorstanley.com. Model #ST-5, Matte Black Metal Finish with Recycled Plastic Heirloom Grain Wood Slats, tubular steel, freestanding and surface mounted, or approved equal.	**8**	**EA**

PART 3 - EXECUTION

3.01 Transportation and Handling

A. The Contractor shall arrange deliveries of products in accordance with construction schedules and coordinate them to avoid conflict with work and conditions at the site.

1. Products shall be delivered in undamaged condition, in the manufacturer's original containers or packaging with identifying labels intact and legible.

2. Immediately upon delivery, the Contractor shall inspect shipments to assure compliance with requirements of contract documents and approved submittals and that products are properly protected and undamaged.

B. The Contractor shall provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

3.02 Storage and Protection

A. Products shall be stored in accordance with the manufacturer's instructions, with seals and labels intact and legible.

1. Products subject to damage by the elements shall be stored in weather tight enclosures.

2. Temperature and humidity shall be maintained within the ranges required by manufacturer's instructions.

B. The Contractor shall arrange storage in a manner to provide easy access for inspection and make periodic inspections to assure that products are maintained under specified conditions and free from damage or deterioration.

C. For products specified by naming one or more products or manufacturers and "or equal", the Contractor must submit a request for substitutions for any product or manufacturer not specifically named.

END OF SECTION

SECTION 01 32 14
SCHEDULE REQUIREMENTS

PART 1 - GENERAL

1.01 Work Included

The Contractor shall develop a detailed schedule, identifying various phases or divisions of work, indicating a start date and duration required for each. The schedule shall be presented to the Engineer or Owner in sufficient detail, as may be required by the Engineer or Owner, for their approval.

Periodically through the life of the project and as required by the Engineer or Owner, the Contractor shall update the schedule and provide copies to the Engineer and Owner.

1.02 Requirements

The Contractor shall schedule work to be performed during normal business hours, unless otherwise directed on the plans or approved by the Engineer.

Once work has begun on the project, the Contractor shall work continuously and expeditiously to complete all work provided for by the contract.

Project shall be substantially completed in accordance with the date specified in the agreement. Substantial completion is the stage of completion where the project is fit for occupancy and use without hindrance for its intended purpose.

Project shall be fully completed and ready for final payment in accordance with the date specified in the agreement.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 Work Included

A. This section includes procedures for preparing and transmitting submittals required by specification sections for a product, material, or construction method. Submittals shall include the following:

1. Shop drawings
2. Product data
3. Manufacturer's certificates
4. Design data and calculations
5. Manufacturer's instructions
6. Manufacturer's field service reports
7. Samples
8. Operation and maintenance manuals (timing, quantity, content, and form)

B. It is the responsibility of the General Contractor to convey the requirements of this section to their sub-contractors and their suppliers and vendors.

1.02 Submittals

A. Schedule submittals to expedite work. Unless otherwise indicated in this section, submittals shall be submitted within 30 days of date of Notice to Proceed.

B. Preparation

1. Provide separate submittals for each specification section requiring submittals. Where multiple sections relate to the same system or element and are being provided from the same source, a single combined submittal is acceptable.
2. Coordinate submission of related items. Group submittals of related products in a single transmission.
3. Include all submittal material requested for that section.
4. Identify variations from requirements of contract documents. State product and system limitations which may adversely affect work.
5. Mark or show dimensions and values in same units as specified.

C. Contractor Responsibilities

1. Review submittals prior to transmittal. Verify compatibility with field conditions and dimensions, product selections and designations, quantities, and conformance of

submittal with requirements of contract documents. Return non-conforming submittals to preparer for revision, rather than submitting for review.

2. Coordinate submittals to avoid conflicts between various items of work.

3. Submittal Transmittal Form

    a. Include with each submittal a transmittal form. A sample copy of an acceptable form is included in Attachment A. The Contractor's standard submittal form may be used, provided it contains essentially the same information as the sample.

    b. Identify project, Contractor, subcontractor, supplier, manufacturer, pertinent drawing sheet and detail numbers, and associated specification section numbers.

    c. Sequentially number transmittal forms. Re-submittals shall have original number with a suffix. Acceptable form of number is SS SS SS-NN-T where:

        i. SS SS SS indicates specification section number;

        ii. NN indicates different submittals for that specification section; and

        iii. T indicates the number of times that submittal has been made.

4. Failure of the Contractor to review submittals, prior to transmittal for review, shall be cause for rejection.

5. Incomplete, improperly packaged, and submittals from sources other than the Contractor will not be accepted.

D. Transmittal

Where possible, transmit all submittals electronically. Where electronic submittal is not possible, submit four paper copies for the Engineer’s retention, plus as many copies as the Contractor desires returned after review. Samples shall be submitted as described elsewhere in this specification.

E. Review

The Engineer will review and return submittals with comments.

F. Do not fabricate products or begin work which requires submittals until return of reviewed submittal with A/E or SNL SE acceptance.

G. On return, promptly distribute reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

H. Resubmission

1. Revise and resubmit submittals, as required, within 15 days of return from initial review.

2. Make re-submittals under procedures specified for initial submittals.

3. Identify all changes made since previous submittal.

1.03 Quality Assurance and Quality Control

A. Where required by specification sections, provide quality assurance submittals:

1. Qualification Data

Contractor shall submit written information demonstrating capabilities and experience of firm or person. Include lists of complete projects with names and contact information for references.

2. Manufacturer's Certificates

Submit reference data, affidavits, and certifications on manufacturer's letterhead certifying that products conform to or exceed specified requirements. Certificates may be based on recent or previous test results supplied by manufacturer and accepted by the Engineer.

3. Installer Approval

Certification on manufacturer's letterhead that installer complies with requirements and is approved for installing manufacturer's products.

4. Welding Certificates

Written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specifications (WPS) and Procedure Qualification Record (PQR) on American Welding Society (AWS) forms. Include names of firms and personnel certified.

5. Field Test Reports

Written reports from qualified testing agency indicating and interpreting results of field tests performed either during or after installation for compliance with specified requirements.

1.04 Submittal Review

A. The Engineer will review submittals for the sole purpose of verifying general conformance with design intent and general compliance with contract documents. Approval of submittal by the Engineer does not relieve the Contractor of responsibility for correcting errors which may exist in submittal, or from meeting requirements of contract documents.

B. Review Time

Initial review will be performed within 14 days of receipt. Reviewer reserves the right to withhold action on a submittal requiring review of related submittals, until related submittal is received. Additional time will be required if processing must be delayed to permit review of related subsequent submittals. The Engineer will review re-submittals within 14 days.

C. Review Actions

After review, submittals will be returned and marked as follows to indicate action taken:

1. Reviewed, No Comments

Part of work covered by submittal may proceed, provided it complies with requirements of contract documents. Final acceptance will depend upon that compliance.

2. Reviewed, With Comments

   Part of work covered by submittal may proceed, provided it complies with notations and corrections on submittal and requirements of contract documents. Final acceptance will depend upon that compliance.

3. Revise and Resubmit

   Do not proceed with part of work covered by submittal including purchasing, fabricating, and delivering. Revise or prepare new submittal in accordance with notations and resubmit.

1.05 Drawings

A. Where required by specifications or otherwise needed, prepare drawings illustrating portion of work for use in fabricating, interfacing with other work, and installing products. Contract drawings shall not be reproduced and submitted as shop drawings.

B. When construction is complete, prepare and submit red-lined copies of the contract drawings showing clearly how construction deviated from the design, along with the authority for the deviation or change.

C. Electronic Format

1. Size printable to: 8½ inches by 11 inches minimum and 24 inches by 36 inches maximum.

2. Present in a clear and thorough manner. Title each drawing with project name. Identify each element of drawing with reference number.

3. Plans, elevations, sections, and detail shop drawings shall be to scale, with scale indicated.

4. Indicate field verified dimensions. Show relationship of products to adjacent work. Note coordination requirements.

5. Schematics and diagrams shall be logically arranged and presented in a clear, understandable manner with all items labeled.

6. Internal wiring diagrams: Provide internal wiring and elementary ladder diagrams for factory pre-wired equipment.

7. Control diagrams: Show relative positions of each component as a system diagram.

1.06 Product Data

A. Provide product data such as manufacturer's brochures, catalog pages, illustrations, diagrams, tables, performance charts, and other material which describe appearance, size, attributes, code and standard compliance, ratings, and other product characteristics.

B. Form

1. Provide all critical information such as reference standards, performance characteristics, capacities, power requirements, wiring and piping diagrams, controls, component parts, finishes, dimensions, and required clearances.

2. Submit only data which are pertinent. Mark each copy of manufacturer's standard printed data to identify products, models, options, and other data pertinent to project.

3. Modify manufacturer's standard schematic drawings and diagrams and supplement standard data to provide specific information applicable to project. Delete information not applicable.

4. Colors and Patterns: Unless color and pattern is specified for product, submit accurate color and pattern charts or samples illustrating manufacturer's full range for selection by the Engineer. Submit two hard copies only.

1.07 Design Data and Calculations

A. Where required by specification sections, provide basic calculations, analyses, and data to support design decisions and demonstrate compliance with specified requirements. State assumptions and define parameters. Give general formulas and references. Provide sketches, as required, to illustrate design method and application.

B. Arrange calculations and data in a logical manner, with suitable text to explain procedures and order.

C. Indicate name, title, and telephone number of individual performing design and include professional seal of designer where applicable or required.

1.08 Manufacturer's Instructions

A. Where required by specification sections, provide manufacturer's instructions for activities such as delivery, storage, assembly, installation, wiring, start-up, adjusting, and finishing.

B. Indicate pertinent portions and identify conflicts between manufacturer's instructions and contract documents.

C. Where appropriate, include preparation procedures; service connection requirements; critical ambient conditions; foundation requirements; special precautions; adjustment requirements; alignment procedures; leveling; purging; charging; lubrication; and cleaning prior to operation and/or Owner’s acceptance.

D. Installation (e.g., assembly, mounting, or wiring) and start-up instructions shall be submitted and available for review in the field prior to scheduled material or equipment installation.

1.09 Samples

A. Submit samples to illustrate functional and aesthetic characteristics of products with all integral parts and attachment devices. Include full range of manufacturer's standard finishes, indicating colors, textures, and patterns for Engineer selection.

B. Submission

Submit the number of samples specified in individual specification sections. One sample will be retained by the Engineer.

C. Label with identification related to submittal transmittal form.

1.10 Manufacturer's Field Service Reports

A. When an individual specification section requires services of manufacturer's field representative, submit report of observations, site decisions, and instructions given to installers.

B. Form

1. Present complete information in clear concise manner.

2. Bind with titled cover in folder or binder.

C. Report shall include:

1. Time, location, conditions, and duration of activity;

2. Names of persons performing and witnessing activity;

3. Equipment used;

4. Description of activity, data recorded, and results;

5. Deficiencies found, corrective measures, and results of retesting; and

6. Other pertinent data.

D. Submit report within 30 days of construction site service visit.

1.11 Operation and Maintenance Data

A. Where required by specification sections, provide operation and maintenance manuals.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

Not Applicable

END OF SECTION

ATTACHMENT A - SAMPLE SUBMITTAL TRANSMITTAL FORM

Attachment A

SAMPLE SUBMITTAL TRANSMITTAL FORM

PROJECT: _____
CONTRACT NUMBER: _____
SUBMITTAL NUMBER: _____ RESUBMITTAL: YES NO
DATE: _____ NUMBER OF COPIES SUBMITTED: _____
SUBMITTAL DESCRIPTION: _____
_____
RELATED DESIGN DISCIPLINE (circle):

Civil	Landscape	Architectural	Structural
Mechanical	Electrical	Telecommunications	Security
Fire Protection	Controls	Other: _____	

ASSOCIATED SPECIFICATION SECTION NO: _____
REFERENCED DRAWING SHEET NO: _____
SUBCONTRACTOR/SUPPLIER/MANUFACTURER PROVIDING SUBMITTAL DATA:
Name: _____
Address: _____
Telephone Number: _____

CONTRACTOR:
Name: _____
Address: _____
Telephone Number: _____

CONTRACTOR'S CERTIFICATION:

The undersigned, as representative of the Contractor for the above project, submits the following and certifies that:

1. Submittal has been reviewed and it is complete and conforms to requirements of contract documents, except as noted.
2. Required dimensions have been field verified and are acceptable for installation of proposed products and construction of proposed work.
3. Required quantities for products and materials covered by this submittal have been verified as correct.
4. Fabrication processes and construction methods proposed in this submittal are acceptable for this project and will result in a complete, functional installation.
5. Submittal has been coordinated with other submittals and work and proposed products and construction will properly interface with other construction.

NAME OF CONTRACTOR REVIEWER: _____
SIGNATURE OF CONTRACTOR REVIEWER: _____
DATE: _____

SECTION 01 41 26
PERMIT REQUIREMENTS

PART 1 - GENERAL

1.01 Work Included

The Contractor shall complete work in accordance with all applicable regulations, laws, and ordinances. Work shall be completed in accordance with permits issued by regulatory agencies.

The Contractor shall obtain permits, including the paying of fees, posting bonds, and providing insurance coverage, to secure permits which have not been obtained by the Owner.

Where permits have been obtained by the Owner, the Contractor shall conduct work and operations consistent with the requirements of the permits.

Where changed conditions or other issues arise such that the conditions of a permit which has been issued cannot be met, the Contractor shall promptly notify the Owner and the permitting agency. The Contractor shall provide such additional information as may be necessary to secure a modification to the original permit to allow the planned work to continue.

1.02 Permits Obtained by the Owner

The Owner has obtained the following permits to allow for constructing the proposed project. Copies of these permits are included in the project manual.

Permit Agency	Permit No.	Permitted Activity	Copy of Permit
Michigan Department of Environment, Great Lakes, and Energy (EGLE)	WRP045049v.1	Replacement of an existing path, reconfiguration of the existing parking lot, and installation of new playground equipment.	Yes

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Permits to be Obtained by Contractor

A. Permit Applications Completed by the Owner

The Owner has submitted information and reviewed the proposed work with the following agencies. Final permits have not yet been issued. The Contractor is required to obtain the permits for the proposed project including the paying of fees, posting bonds, and providing insurance coverage to secure permits.

Permit Agency	Permit Type	Requirements
Genesee County Drain Commission	Soil Erosion and Sedimentation Control	Complete application, submit, and execute.

B. Other Permits to be Obtained by the Contractor

The Contractor is responsible to obtain all permits necessary to complete the proposed work, which have not been obtained by the Owner.

Permit Agency	Permit Type	Requirements
City of Flint	Building Permit	Complete application, submit to the City of Flint.

END OF SECTION

SECTION 01 45 16.01
CONCRETE TESTING

PART 1 - GENERAL

1.01 Work Included

This work includes requirements for concrete, concrete submittals, and testing.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ACI PRC-211.1 – Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete

B. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field

C. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens

D. ASTM C138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete

E. ASTM C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete

F. ASTM C172 – Standard Practice for Sampling Freshly Mixed Concrete

G. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

H. ASTM C595 – Standard Specification for Blended Hydraulic Cements

I. ASTM C1064 – Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete

J. ASTM C1260 – Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)

K. ASTM C1293 – Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction

L. ASTM C1567 – Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)

M. ASTM E29 – Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

N. Michigan Department of Transportation 2020 Standard Specifications for Construction

O. Michigan Test Methods (MTM)

P. Michigan Department of Transportation Qualified Products List

1.03 Related Work

A. Section 32 13 00 – Concrete Curb and Gutter, Sidewalk, and Miscellaneous Pavement

1.04 Submittals

A. Prior to beginning construction, the Contractor shall submit the name and plant location of the proposed NRMCA certified concrete supplier for the project.

B. Prior to beginning construction, the Contractor shall submit mix designs for the proposed concrete mixtures proposed for use on the project for the Engineer to review.

C. The Contractor shall submit a Quality Control Testing plan to be approved by the Engineer.

1.05 Quality Assurance and Quality Control

A. The Contractor will be responsible for Quality Control Testing and the Owner will be responsible for Quality Assurance Testing.

B. Concrete Testing

1. The temperature of concrete will be determined in accordance with ASTM C1064.

2. Samples of concrete for testing will be obtained in accordance with ASTM C172.

3. The slump of concrete will be determined in accordance with ASTM C143.

4. The air content of concrete will be measured in accordance with ASTM C231.

5. Concrete cylinders for compressive testing will be made in accordance with ASTM C31. The Engineer and Contractor shall use the same size cylinder for test specimens. Four-inch cylinders are preferred, as allowed by ASTM C31.

6. The compressive strength of concrete will be determined in accordance with ASTM C39.

PART 2 - PRODUCTS

2.01 Mix Design and Documentation

Design concrete mixtures shall meet the requirements specified in Table 1. The Contractor shall provide the grade of concrete for the section number reference application specified in Table 1, or as specified in the contract. The Contractor shall submit a request variance, in writing, when proposing a mix design that exhibits temperature, slump, or air content other than those specified. This submittal shall include the proposed mix design, Job Mix Formula (JMF), and associated trial batch verification test data. Do not use a grade of concrete with a lower specification limit (LSL) 28-day compressive strength less than what is designated for the application.

Blended cement meeting the requirements of ASTM C595 Type IL is permitted.

Secure prior approval from the Engineer to use concrete intended for early opening to traffic to facilitate driveway gaps or other features necessary for required local access.

Unless otherwise specified in the contract, set accelerating admixtures are prohibited.

Unless otherwise specified in the contract, do not exceed 40 percent replacement of the Portland cement in the concrete mixture with slag cement (Grade 100 minimum) or fly ash. Do not exceed 40 percent total replacement of the Portland cement if both slag cement and fly ash are used in the concrete mixture.

Use the combined weight of all cementitious materials to determine compliance with the maximum water-cementitious ratio and cementitious material content requirements specified in Table 1.

Table 1: Minimum Mix Design Requirements for Concrete					
		Concrete Grade			
		3,000	**3,500**	**4,000**	**4,500**
Compressive strength (psi)	7-day	2,200	2,600	3,000	3,200
	28-day	3,000	3,500	4,000	4,500
	70%	2,100	2,450	2,800	3,150
Flexural Strength (psi)	7-day	500	550	600	625
	28-day	600	650	700	750
	70%	420	455	490	525
Slump (inch)		(c)-(f)	(c)-(k)	(l)-(n)	(d)-(f)
Cementitious material content (lb/cyd)		489-517	517-611 (o)	517-611	517-658
Class of coarse aggregate		(p)-(r)			
Maximum w/cm ratio		0.45			
Air content range		5.5-8.5%			

a. Reserved for future use.
b. Reserved for future use.
c. 0- to 3-inch slump for mixtures for pavements.
d. 0- to 3-inch slump without admixtures or with Type A or D admixture.
e. 0- to 6-inch slump after the addition of Type MR admixture.
f. 0- to 7-inch slump after the addition of Type F or G admixture.
g. 3- to 7-inch slump for tremie applications without admixture or with Type A or D admixture.
h. 3- to 7-inch slump for tremie applications after the addition of Type MR admixture.
i. 3- to 8-inch slump for tremie applications after the addition of Type F or G admixture.
j. 6- to 8-inch slump for dry placed drilled shafts.
k. 7- to 9-inch slump for wet placed drilled shafts.
l. 3- to 5-inch slump without admixtures or with Type A or D admixture.
m. 3- to 6-inch slump after the addition of Type MR admixture.
n. 3- to 7-inch slump after the addition of Type F or G admixture.
o. For concrete pavement repair mixtures, use 658 lb/cyd of cement when the weather is forecast to be above 50 degrees Fahrenheit or 752 lb/cyd when the weather is forecast to be 50 degrees Fahrenheit or below.
p. Use aggregates only from geologically natural sources for pavement, shoulder, miscellaneous pavement (including ramps), concrete pavement overlay, bridge approach slab, structural concrete, drilled shaft, bridge railing, and bridge sidewalk applications.

q. Unless otherwise required, use Coarse Aggregate 6AA or 17A for exposed structural concrete in bridges, retaining walls, and pump stations.
r. The flexural and compressive strengths are not part of the specifications but are listed for informational purposes only and are the minimum strengths anticipated for the mix proportions specified for the various grades of concrete when cured under standard conditions.

A. Alkali-Silica Reactivity

Provide documentation to the Engineer that the concrete mixture does not present the potential for excessive expansion caused by alkali-silica reactivity (ASR). Provide current ASR test results (valid for two years from completion of testing), for the fine aggregate that is proposed to be used in the concrete from an independent testing laboratory proficient in ASR testing. The independent testing laboratory must certify, in writing, that all testing was conducted in accordance with the designated standard test procedures described herein. Test results must conform to the specified criterion for one of the following standard test methods. Use the Rounding Method described in ASTM E29 when determining significant digits for reporting expansion test results.

1. Method 1 – ASTM C1260 Mortar Bar Test

   If the expansion of the mortar bars is less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the fine aggregate is considered non-deleterious to ASR and may be used in the concrete without the need for ASR mitigation.

2. Method 2 – ASTM C1293 Concrete Prism Test

   a. If the expansion of concrete prisms is not greater than 0.040 percent (rounded to the nearest 0.001 percent) after 1 year, the fine aggregate is considered non-deleterious to ASR and may be used in the concrete without the need for ASR mitigation.

   b. If the expansion of concrete prisms is greater than 0.040 percent, but not exceeding 0.120 percent (rounded to the nearest 0.001 percent) after 1 year, the fine aggregate is considered moderately deleterious to ASR and mitigation is required, as follows. A low-alkali cement with Na_2O equivalent alkalies (Na_2O + 0.658 × percent K_2O) not exceeding 0.60 percent must be used in the concrete mixture to mitigate the potential for ASR. Slag cement or fly ash may be used in conjunction with the low-alkali cement. The total alkali content for the cementitious materials combination must not exceed 3 pounds per cubic yard of Na_2O equivalent.

3. Method 3 – ASTM C1567 Accelerated Mortar Bar Test

   If no previous test data are available for the fine aggregate that shows it is resistant to ASR using either Method 1 or 2 above, replace 25 percent to 40 percent of the Portland cement in the concrete mixture with slag cement (Grade 100 minimum) or fly ash. A blended cement meeting the requirements of ASTM C595 containing Portland cement and slag cement or fly ash may also be used.

   Demonstrate the ability of the fly ash or slag cement to control the deleterious expansion caused by ASR by molding and testing mortar bars according to the standard test method described in ASTM C1567, using the mix proportions and constituent sources for both the aggregates and the cementitious materials that will be used for the project. Make at least three test specimens for each cementitious materials-aggregate combination. If the

average of 3 mortar bars for a given cementitious materials-aggregate combination produces an expansion less than 0.10 percent (rounded to the nearest 0.01 percent) at 14 days of immersion, the JMF associated with that combination will be considered non-deleterious to ASR. If the average expansion is 0.10 percent (rounded to the nearest 0.01 percent) or greater, the JMF associated with that combination will be considered not sufficient to control the deleterious expansion caused by ASR and the JMF will be rejected.

The Engineer will not approve the use of the JMF if the expansion exceeds the respective threshold limits for the respective ASTM test method used.

B. Mix Documentation

Provide mix design and accompanying JMFs using the methods of verification included in this specification. Include sufficient information on constituent materials and admixtures, along with trial batch verified physical properties of the fresh concrete, mix proportions per cubic yard for all constituents, and compressive strength test results necessary to allow the Engineer to fully evaluate the expected performance of the concrete mixture.

Submit mix design and JMF; include accompanying documentation. List the source of materials, bulk density (unit weight) of coarse aggregate (rodding procedure or shoveling procedure), absorption of aggregates, relative density (specific gravity) of aggregates, aggregate correction factors, batch weights, and project specific or historical laboratory test data. Include the recorded air content of fresh concrete using the same admixture and cementitious material sources to be used in the production of the concrete for the project. A JMF will be approved only if all of the minimum mix design requirements specified in the contract have been met. Use of the MDOT Job Mix Formula Concrete Field Communication Form (MDOT Form Number 1976) is encouraged.

1. Job Mix Formula

Select proportions for concrete mixtures according to ACI Standard 211.1. The volume (oven-dry-rodded) of coarse aggregate per unit volume of concrete must be 65 percent, minimum.

Four methods of verification of proposed JMF are acceptable.

a. Method 1 – Trial Batches

Verification of JMF is based on trial batches with the same materials and proportions proposed for use on the project. Prepare at least one trial batch for each mix design in sufficient time before starting concrete placement to allow for review, according to subsection 2.01.A of this specification. Provide the results of temperature, slump, density (unit weight), air content of fresh concrete, 28-day compressive strength, and age of concrete at the time of strength testing, for a minimum of 3 independent samples. All samples may be taken from a single trial batch for a mix design, provided the trial batch is at least 4 cubic yards in volume. For JMF trial batch verification purposes only, 7-day compressive strength test results which report at least 70 percent of the specified 28-day lower specification limit will be sufficient documentation, in lieu of 28-day compressive strengths. The average of at least two strength test specimens represents one compressive strength sample test result for

each independent sample. Provide the necessary ASR documentation as described in subsection 2.01.A of this specification.

b. Method 2 – Same Mix

Verification of JMF is based on experience with the same mix design, JMF, and the same materials. Provide the results of temperature, slump, density (unit weight), air content of fresh concrete, 28-day compressive strength, and age of concrete at the time of strength testing, for a minimum of 3 independent samples produced within the previous 12 months. The average of at least two strength test specimens represents one compressive strength sample test result for each independent sample. Do not substitute material types or sources, including admixtures or cementitious materials, nor change mix proportions in the JMF. Provide the necessary ASR documentation as described in subsection 2.01.A of this specification.

c. Method 3 – Similar Mix

Verification of JMF is based on requirements described in Method 2 above. Substitution of coarse aggregate source is permitted if the new source is of the same geologic type as the original aggregate, and conforms to the specification requirements for the application. Substitution of fine aggregate is permitted only if the new source has been tested for ASR. Provide the necessary ASR documentation as described in subsection 2.01.A of this specification.

Provide the supporting laboratory trial batch documentation and accompanying calculations showing how the mix proportions in the JMF were adjusted, based on the documented differences in relative density (specific gravity), bulk density (unit weight), and absorption of the substituted aggregate sources, to produce a theoretical yield of 100 percent and the required fresh concrete properties.

d. Method 4 – Annual Verification

At the Engineer's option, verification may be accepted annually for a concrete plant rather than on a project basis provided the sources and proportions of the constituent materials, including cementitious materials and source and types admixtures, do not change. If the project is the continuation of work in progress during the previous construction season and written certification is submitted to the Engineer that materials from the same source and with the same mixture properties are to be used, the Engineer may waive the requirement for annual renewal verification of the JMF for the project. Provide the necessary ASR documentation as described in subsection 2.01.A of this specification.

C. Concrete Testing and Break Results

The Contractor shall submit a sample form that will be used to document concrete testing and break results, prior to start of construction, to be approved by the Engineer. The Contractor shall submit the approved form documenting results within three days of concrete testing.

PART 3 - EXECUTION

3.01 Sampling and Testing

The Engineer shall verify the Contractor's daily startup sampling and testing of temperature, slump, and air content of fresh concrete on the first load; conduct QA sampling and testing; monitor Contractor adherence to the QC plan; and inspect field placed materials in such a manner as to ensure that all concrete for the project is represented at a rate determined by the Engineer/Owner.

A. The following ASTM test methods will apply.

1. C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field
2. C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
3. C138 – Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
4. C143 – Standard Test Method for Slump of Hydraulic-Cement Concrete
5. C172 – Standard Practice for Sampling Freshly Mixed Concrete
6. C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

B. Sampling

Sampling and testing shall be conducted by the Engineer at a rate determined by the Engineer during placement of the concrete. The Contractor shall take a random sample at a rate of approximately once per 50 cubic yards, based on the anticipated total quantity of concrete to be placed and site conditions, with a minimum of 1 sampling for each day of production per mix design. The sampling rate may be increased by the Engineer if project conditions warrant increased testing. A minimum of 3 cylinders shall be taken for each test (one 7-day break and two 28-day breaks).

The Contractor may elect to provide early concrete cylinder breaks. The Contractor is responsible for all additional costs and materials for providing early concrete cylinder breaks. Results for early cylinder breaks shall be submitted to and approved by the Engineer prior to beginning next related work item.

The Engineer shall perform Quality Assurance testing, on an as-needed basis, at a rate determined by the Engineer/Owner.

Samples will be taken from the concrete at the location as close to its final placement into the forms or on the grade as practical. If sampling from the discharge of the haul unit, the sample will be taken from approximately the middle $^1/_3$ of the load.

Samples for acceptance will not be taken at the concrete production facility (batch plant), nor prior to discharge from a concrete pump (excluding tremie seal placement applications).

3.02 Suspension Limits

If during the pour the concrete is found to be out of the specifications in Table 2, then the pour shall be stopped until concrete can be provided that meets the project specifications. The Engineer will not pay for items placed with concrete that does not meet the following specifications.

Table 2	
Quality Characteristic	**Suspension Limits**
Air Content (percent)	<5.0 or >9.0
Air Content Loss (percent)	Greater than 1.5
Concrete Temperature (degrees Fahrenheit)	<45 or >90 at time of placement
Slump	See Table 1

3.03 Acceptance

Concrete items will be accepted based on the criteria in the items specification; concrete was placed within the limits of Table 2 and the average of the corresponding 28-day test cylinders being above the design strength.

END OF SECTION

SECTION 01 45 16.02
DENSITY AND AGGREGATE TESTING

PART 1 - GENERAL

1.01 Work Included

This work includes material testing of soil, aggregates, stabilized mixtures, and pulverized pavement mixtures.

1.02 References

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

B. Michigan Department of Transportation Density Testing and Inspection Manual

C. Michigan Department of Transportation Procedures for Aggregate Inspection

D. Michigan Test Methods (MTM)

1.03 Related Work

A. Section 01 74 50 – Cleanup and Restoration

B. Section 31 23 01 – Excavating, Filling, and Grading

C. Section 32 11 16 – Granular Subbase

D. Section 32 11 23 – Aggregate Base

E. Section 32 12 16 – HMA Paving

F. Section 32 13 00 – Concrete Curb and Gutter, Sidewalk, and Miscellaneous Pavement

G. Section 33 46 16 – Underdrains

1.04 Quality Assurance and Quality Control

A. Soil and Aggregate Density Testing

1. The Contractor is responsible for all quality control density testing on this project. The Engineer will complete quality assurance density testing at a random rate.

B. Sand and Aggregate Gradation

The Contractor is to supply sand and aggregates in the Michigan Department of Transportation gradations, as specified by the project specifications.

Contractors are encouraged to use “prequalified” Michigan Department of Transportation aggregate sources. If the Contractor elects to use a non-prequalified source, then the Contractor shall be responsible for supplying the Engineer with Sieve Analysis (MTM109) and Loss by Washing (MTM108) at the following rates:

Coarse Aggregates	1 per 1,000 tons
Dense-Graded Aggregates	1 per 1,000 tons

Open-Graded Aggregates	1 per 1,000 tons
Granular Material Class I	1 per 1,000 tons
Granular Material Class II and IIA	1 per 3,000 cubic yards
Granular Material Class III	1 per 10,000 cubic yards
Fine Aggregate	1 per 1,000 tons

All Sieve Analysis and Loss by Washing reports shall be signed and sealed by a Professional Engineer.

1.05 Job Conditions

A. Access for Testing

The Contractor shall provide the Engineer safe access for testing technicians to complete any required testing. Reasonable time for testing shall be allowed by the Contractor.

B. Safety

The Contractor is responsible for conducting operations in a safe and orderly manner and in conformance with MIOSHA P.A. 154.

PART 2 - PRODUCTS

2.01 Submittals

The Contractor shall submit a Quality Control Testing plan to be approved by the Engineer. The Quality Control Testing plan shall include, at a minimum, the company performing the testing, certifications, equipment calibration reports, frequency of testing, procedure for notifying the Engineer if tests fail to meet specifications, corrective action plan, and sample form that will be used to document material testing results. The Contractor shall submit the approved form documenting results within three days of material testing.

PART 3 - EXECUTION

3.01 Minimum Percent of Compaction for Aggregates

The following are a minimum percent compaction for typical items of work. Note: Higher percent compaction may be required for specific items of work, see Section 3.06.03.B of the Michigan Department of Transportation 2020 Standard Specifications for Construction for those items.

A. Original Ground

Road Embankment Areas	90 percent
Bridges – within the limits as shown on the plans	95 percent

B. Cut Areas

Cuts requiring Sand Subbase	95 percent
Cuts not requiring Sand Subbase	95 percent
Subgrade for HMA Base, Aggregate Base, and Concrete Widening	95 percent
Trenches for under HMA Shoulders	98 percent*

C. Embankments and Backfill

Regular	95 percent* (within top 3 feet)
Abutments with Piling	95 percent
Abutments without Piling	100 percent
Foundation Undercut Backfill	100 percent
Backfill for Bridges, Culverts, Utilities, Manholes, Catch Basins, Edge Drains, and Subgrade Undercuts	95 percent
Foundations and Miscellaneous Structures	95 percent

D. Pavement Structure

Subbase	95 percent*
Subbase for Slope Paving	90 percent
Aggregate Base under Concrete Pavement	95 percent*
Aggregate Base under HMA Pavement	98 percent*
Pulverized HMA Aggregate Base	98 percent
Recycled Concrete Aggregate Base – under Concrete Pavement	95 percent
Recycled Concrete Aggregate Base – under HMA Pavement	98 percent
Aggregate Base – Sleeper Slab and Bridge Approach	98 percent
Shoulders – Class I	98 percent*
Shoulders – Class II, III, and IV	95 percent*
Aggregate Surface	95 percent*
OGDC – used under Concrete and HMA Pavement	95 percent*
OGDC – used under Concrete and HMA Pavement (recycled material)	98 percent*

* May NOT exceed optimum moisture

3.02 HMA Density

The density control target, "Theoretical Maximum Density" (TMD) for HMA shall be calculated using the Gmm from the Contractors approved HMA mix design. TMD = Gmm X 62.4.

HMA Base Course	92 percent to 98 percent
HMA Leveling Course	92 percent to 98 percent
HMA Top Course	92 percent to 98 percent

The HMA layer must meet the required density target before the succeeding lift or traffic is placed on the pavement.

3.03 Testing Frequency

Each layer must be tested and meet compaction requirements before the succeeding layer is placed. The Engineer will test at a rate that is warranted for field conditions and Contractor means and methods. The list of frequencies below are minimums.

Subgrade	1 test per 500 feet per width of 24 feet or less
Embankment	1 test per 1,000 cubic yards of material and every lift
Subbase	1 test per 500 feet per width of 24 feet or less

Backfill	1 test per 300 cubic yards of material
Aggregate Base Course	1 test per 500 feet per width of 24 feet or less
HMA Mixtures	1 test per 500 feet per width of 24 feet or less
Shoulders	1 test per 1,000 feet each side
Sleeper Slab	1 test per bridge approach per stage
Foundations and Miscellaneous Structures	1 test per 1-foot lift or per 300 cubic yards
Trenching	1 test per 1,000 feet each side

3.04 Compaction Efforts

The Contractor shall continue to make compaction efforts to obtain the minimum standards given within this specification upon notification of a failing test. A passing test is required at every location of a failing test prior to starting the next related item of work.

END OF SECTION

SECTION 01 50 00
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 Work Included

This work includes providing temporary facilities and controls during the construction of the project.

1.02 Related Work

A. Section 01 57 26 – Dust Control

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Electricity

Electricity for use by the Contractor during the construction of the project shall be provided by the Contractor. The Contractor shall provide such temporary systems necessary to convey the electricity to the work area from the point of supply.

Temporary power supply systems shall comply with all applicable codes.

3.02 Lighting

The Contractor shall provide lighting for construction activities. The Contractor shall provide fixtures, switches, conductors, and other equipment for a complete system. The lighting system shall meet the requirements of all applicable codes.

Electricity for lighting will be paid for as described in Section 3.01.

3.03 Water

The Owner will provide water for construction activities, at the location of existing water lines, faucets, and hydrants. The Contractor shall provide such piping extensions, as necessary, to deliver the water to the location(s) required for construction activities.

3.04 Barriers

The Contractor shall provide barriers to prevent entry to construction areas or hazardous areas.

3.05 Enclosures

The Contractor shall provide temporary weather tight enclosures of openings in exterior surfaces

to provide acceptable working conditions, protection of materials from the elements, and to prevent entry of unauthorized persons.

3.06 Protection of Installed Work

The Contractor shall control vehicle and pedestrian traffic and/or provide temporary protective coverings, as required, to protect installed or uncompleted work from damage.

3.07 Water Control

The Contractor shall grade the site to drain. Excavations shall be kept free of water. The Contractor shall provide pumps as required.

Water shall not be run to detrimentally affect adjacent buildings or properties.

3.08 Dust Control

The Contractor shall provide such measures, as necessary, to control dust emanating from the construction area in accordance with Section 01 57 26 – Dust Control.

3.09 Cleaning

The Contractor shall maintain the construction area free of debris and waste material. Debris and waste material resulting from construction operations shall be properly disposed of by the Contractor.

The Contractor shall clean areas, as required, for proper execution of the project work.

3.10 Drinking Water

The Contractor shall furnish drinking water for their workers.

3.11 Sanitary Facilities

The Contractor shall provide sanitary facilities for their workers as required by laws and regulations. The Contractor shall service and clean the facilities as needed or as directed by the Engineer.

END OF SECTION

SECTION 01 57 26
DUST CONTROL

PART 1 - GENERAL

1.01 Work Included

The Contractor shall provide and maintain adequate measures to control dust from the project area.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ASTM D98 – Standard Specification for Calcium Chloride

B. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 50 00 – Construction Facilities and Temporary Controls

B. Section 31 23 01 – Excavating, Filling, and Grading

C. Section 31 25 00 – Soil Erosion and Sedimentation Control

PART 2 - PRODUCTS

2.01 Materials

A. Dust palliative shall be calcium chloride conforming to ASTM D98, except as modified here: Calcium chloride solids shall have a minimum concentration of 77 percent $CaCl_2$, and may be of any gradation provided that all particles will pass a $^3/_8$-inch sieve, and that less than 5 percent pass a No. 30 sieve. Calcium chloride liquid must be furnished in solution with a concentration of 33, 35, or 38 percent $CaCl_2$.

At the time of delivery, the Engineer shall be provided a delivery report with the following information:

1. The volume in gallons or weight of solution delivered, or the weight of solids delivered.
2. The concentration of solids or solution delivered, expressed as the percent of $CaCl_2$.
3. The equivalent tons of calcium chloride, $CaCl_2$. The equivalent weight of calcium chloride shall be determined in accordance with Table 922-2, of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

PART 3 - EXECUTION

3.01 Requirements for Dust Control Measures

The Contractor shall provide adequate dust control measures to prevent dust from the construction area from being a health or safety hazard or a nuisance. The Contractor is responsible for control of dust from the construction area, even if the dust is caused by traffic other than the Contractor's operations.

The Contractor shall maintain the dust control measures through the life of the project.

When, in the Engineer's opinion, the Contractor's measures for the control of dust are inadequate, the Engineer will provide notice to the Contractor to take such measures as necessary to control the dust. If the Contractor fails to provide for the required controls, the Engineer may make arrangements for providing dust control measures by another party, and deduct the cost thereof from the Contractor's earnings.

3.02 Application

Water or dust palliative shall be uniformly applied to exposed soil areas which may be the source of dust. The application(s) shall be repeated as necessary to control dust emanating from the project area. If water is used, it shall be applied at a rate to not cause mud to be tracked out of the project limits.

END OF SECTION

SECTION 01 71 13
MOBILIZATION

PART 1 - GENERAL

1.01 Work Included

Mobilization consists of preparatory work and operations, including but not limited to the following:

A. The movement of people, equipment, and materials to the project site;

B. The establishment of the Contractor's facilities to work on the project (offices, storage yards, borrow and disposal sites, etc.);

C. Expenses incurred prior to beginning work on specific contract pay items;

D. Pre-construction costs (not bidding costs) which are direct costs to the project, rather than direct costs to specific pay items.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Mobilization

Following Notice of Award, the Contractor shall expeditiously prosecute such work necessary for execution of the contract.

Following Notice to Proceed, the Contractor shall commence such work necessary to prepare for the beginning work on the project.

END OF SECTION

SECTION 01 71 23.15
CONSTRUCTION STAKING

PART 1 - GENERAL

1.01 Work Included

This section describes the responsibilities of the Contractor regarding construction staking and describes what staking, if any, will be provided to the Contractor by the Owner or Engineer.

1.02 Notifications

The Contractor shall notify the Owner or Engineer to arrange for staking and shall provide as much notice as possible. A minimum of three working days' notice shall be provided.

The Contractor shall inform the Owner or Engineer of any preferred offset dimensions for stakes or other desires. In the absence of direction from the Contractor, the Owner or Engineer will locate offset stakes based on their best judgment.

If it appears there is an error or contradiction between plan grades, construction stakes, and/or actual conditions, the Contractor shall notify the Owner or Engineer immediately.

1.03 Construction Staking Provided by the Owner or Engineer

The following construction staking will be provided for the project by the Engineer at no cost to the Contractor.

Proposed Construction	**Staking Provided**	**Frequency**
Proposed Buildings or Structures/Playground	1. Edge of playground layout (not individual components). 2. Pavilion footings 3. Rough grading	One time only
Parking Lot w/Curb & Gutter	1. Edge of Existing Parking Lot 2. Edge of Proposed Parking Lot 3. Rough Grading 4. Curb Staking/Drainage	One time only
Sidewalk, Trails, and/or ADA ramps	1. Existing trail (2.5-mile) centerline and trail edge of trail 2. Alignment for 2.5-mile trail (centerline and trail edges) 3. Sidewalk	One time only

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Layout by the Contractor

The Contractor is responsible to provide such layout and control work as may be required for construction of the proposed improvements, in addition to that provided by the Engineer or Owner.

The Contractor shall provide workers competent in the layout and control work necessary. The Contractor shall provide the equipment and materials necessary for establishing the necessary control and layout.

Openings through proposed curb for driveways and sidewalks will not be staked by the Engineer. The Contractor shall locate and establish the grades for the openings.

3.02 Plan Grades and Alignments

Final casting elevations for drainage structures and manholes shall be established by the Engineer after grading is completed.

Trail grading will be field verified. Rough grading for playground layout, parking lot, and pavilion footings will be conducted by Engineer.

END OF SECTION

SECTION 01 74 50
CLEANUP AND RESTORATION

PART 1 - GENERAL

1.01 Work Included

The Contractor shall restore areas disturbed by construction activities to a condition reasonably close to their condition before the project, unless shown otherwise on the plans. Restoration work should be performed as soon as possible after construction work is completed in a particular area.

Upon the completion of work in an area, all excess materials, debris, equipment, and similar items shall be removed from the project area by the Contractor and disposed of properly.

1.02 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

B. Section 31 25 00 – Soil Erosion and Sedimentation Control

C. Section 32 11 23 – Aggregate Base

D. Section 32 12 16 – HMA Paving

E. Section 32 13 00 – Concrete Curb and Gutter, Sidewalk, and Miscellaneous Pavement

F. Section 32 92 00 – Turf Establishment

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Restoration

Unless otherwise provided, HMA pavements and concrete pavements shall be restored by construction of similar replacement surfaces. HMA pavement shall be replaced with the cross section(s) shown on the plans and in accordance with Section 32 12 16 – HMA Paving. Concrete pavement shall be replaced with pavement in accordance with Section 32 13 00 – Concrete Curb and Gutter, Sidewalk, and Miscellaneous Pavement.

Turf areas shall be restored by re-establishing the turf as described in Section 32 92 00 – Turf Establishment. All areas disturbed by construction that are not to be surfaced with aggregate or pavement shall be restored with turf, unless otherwise directed.

Fences, signs, ornaments, and similar items shall be replaced at the completion of construction. Posts shall be installed plumb. Items that are lost or stolen shall be repaired or replaced at the Contractor's expense. Repairs or replacements shall meet the Owner's approval.

3.02 Temporary Restoration of Driving Surfaces

Where a pavement or gravel surface is removed as a result of construction activities, a temporary surface shall be provided and maintained by the Contractor until the permanent surface is provided. Unless otherwise directed, the temporary surface shall be 8 inches of aggregate compacted according to Section 01 45 16.02 – Density and Aggregate Testing and graded to meet the adjacent, remaining surfaces. Aggregate shall meet the requirements of Series 23A as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction. Recycled HMA may also be utilized after approval of material by the Engineer.

The Contractor shall regrade the temporary surface and add additional aggregate periodically, as necessary, to maintain them in a relatively smooth condition.

END OF SECTION

SECTION 02 41 13.13
PAVEMENT REMOVAL

PART 1 - GENERAL

1.01 Work Included

This work includes removal of an existing pavement, including streets, driveways, sidewalks, curb and/or gutter, and parking areas. For purposes of the work "pavement removal", pavement material may include HMA, concrete, brick, or any combination thereof, including any reinforcement materials.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.01 Limits of Removal

Pavement shall be removed to the limits shown on the plans, or as directed by the Engineer in the field. Where pavement is to be removed to allow for improvements, pavement shall be removed to the limits required for their construction.

3.02 Pavement Removal (Including Curb and Gutter Removal)

Pavement shall be removed to an existing joint or to a sawed joint. An existing crack is not suitable for the limit of removal. Sawed joints for pavement removal are to be either parallel or perpendicular to the longitudinal centerline. Sawed joints shall extend substantially through the full thickness of the pavement so that a "clean break" is made and that the adjacent pavement or structures that are to remain are not damaged. If adjacent pavement or structures that are to remain are damaged as a result of the Contractor's removal operations, they shall be replaced to the Owner's satisfaction at the Contractor's expense.

Curb and gutter removal shall be as directed by the Engineer. The Contractor shall sawcut existing curb and/or gutter perpendicular to and completely through the existing concrete.

Broken concrete, HMA, brick, and other debris resulting from pavement removal operations shall become the Contractor's property and disposed of properly.

Where pavements are encountered that are composed of more than one material or multiple courses of the same material, the pavement shall be removed in its entirety and all components shall be considered part of the same pavement area.

The Contractor shall provide sufficient barricades and fences to protect pedestrians and vehicles from hazardous areas.

END OF SECTION

SECTION 03 30 53
CONCRETE

PART 1 - GENERAL

1.01 Work Included

This work includes furnishing labor, equipment, and materials for the construction of cast-in-place concrete structures, foundations, walls, floor, slabs, and related members. Included in this work is the construction of formwork, including shoring, bracing, and anchorage.

This work includes furnishing and installing reinforcing, including supports.

This work includes curing of concrete and stripping of formwork.

1.02 References

A. ASTM A615 – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

B. ASTM A82 – Standard Specification for Steel Wire, Plain, for Concrete Reinforcement

C. ASTM A185 – Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

D. ASTM C150 – Standard Specification for Portland Cement

E. Michigan Department of Transportation 2020 Standard Specification for Construction

F. ASTM C33 – Standard Specification for Concrete Aggregates

G. ASTM C260 – Standard Specification for Air Entraining Admixtures for Concrete

H. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete

I. ASTM C509 – Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material

J. ASTM C595 – Standard Specification for Blended Hydraulic Cements

K. ASTM D1056 – Standard Specification for Flexible Cellular Materials – Sponge or Expanded Rubber

L. ASTM C309 – Standard Specification for Liquid Membrane – Forming Compounds for Curing Concrete

M. ACI 301 – Specifications for Structural Concrete

N. ACI 318 – ACI Building Code Requirements for Structural Concrete

O. CRSI Manual of Standard Practice

1.03 Submittals

The Contractor shall prepare shop drawings showing layout of reinforcement and submit them to the Engineer for review. The drawings shall indicate sizes, lengths, spacing, locations and quantities of reinforcing steel; bending and cutting schedules; splicing; stirrup spacing; and supporting and spacing devices. Dimensions and spacing shall be shown based on computed figures, not sealed dimensions from the plans.

The Contractor shall submit a mix design for each mixture that is proposed for use on the project. The cost for testing of aggregate and materials for the purpose of preparing mix designs shall be the Contractor's responsibility.

The Contractor shall submit technical data on any proposed admixtures and curing agents for review by the Engineer.

PART 2 - PRODUCTS

2.01 Forms

A. Plywood

Douglas Fir species; materials shall minimally be select sheathing-tight face grade; sound, undamaged sheets with straight edges.

2.02 Formwork Accessories

A. Form Ties

Removable or Snap-off metal of fixed length; cone type; 1-inch break back dimension; free of defects that will leave holes no larger than 1-inch diameter in concrete surface.

B. Form Release Agents

Colorless material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of rubbed finish intended for use on concrete.

C. Fillets for Chamfered Corners

Wood strips, typically ¾-inch by ¾-inch size; maximum possible lengths.

D. Dovetail Anchor Slots

Minimum 22-gauge galvanized steel; sealed slots; 16-gauge bent tab anchors; securable to concrete formwork; acceptable manufacturers are:

1. National Wire Products Corporation
2. Heckmann Building Products
3. Dur-O-Wal
4. A.A. Wire Products Co.
5. Approved equal

E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages

Sized as required; strength and character to maintain formwork in place while placing concrete.

2.03 Reinforcing Steel

A. Reinforcing Bars

ASTM A615, 60 ksi yield grade billet-steel deformed bars, uncoated finish; or 40 ksi as indicated on drawings.

1. No. 3 bars and column ties may be Grade 40 steel.
2. Stirrup steel shall meet requirements of ANSI/ASTM A82.
3. All other re-steel shall be Grade 60.

B. Reinforcing Steel Fabric

Welded steel wire fabric shall conform to ANSI/ASTM A185 plain type; in flat sheets; uncoated finish. Sized per drawings.

C. Accessories for Steel Reinforcement

1. Tie Wire
   Tie wire shall be minimum 16-gauge annealed type.
2. Chairs, Bolsters, Supports
   Chairs, bolsters, bar supports, and spacers adjacent to exposed architectural concrete surfaces shall be plastic coated, plastic tipped or stainless steel type, sized and shaped as required.

   Chairs, bolsters, bar supports, and spacers shall be sized and shaped for strength and support of reinforcement during installation and placement of concrete.

2.04 Concrete Materials

A. Portland Cement

Portland Cement shall be ASTM C150 Type I and ASTM C595.

B. Air-Entrained Portland Cement

Air-Entrained Portland Cement shall be ASTM C150, Type IA and ASTM C595.

C. Fine Aggregate

Fine aggregate shall be clean, hard, natural sand conforming to Michigan Department of Transportation 2020 Standard Specifications for Construction and gradation for 2NS-fine aggregate.

D. Coarse Aggregate

Coarse aggregate shall be clear, hard, uncoated crushed stone conforming to ASTM C33 and shall conform to the grading requirements for coarse aggregates.

E. Mixing Water

Mixing water shall be fresh, clean, potable quality water which is free of oils, alkalis, organic matter, or deleterious substances.

2.05 Admixtures

A. Air-Entraining Admixtures

Air-entraining admixtures shall conform to ASTM C260.

B. Chemical Admixtures

Water-reducing admixtures, retarding admixtures, accelerating admixtures, water-reducing and retarding admixtures, and water-reducing and accelerating admixtures, where permitted by the Engineer, shall conform to ASTM C494.

C. Calcium Chloride

Calcium chloride shall not be an admixture nor constitute a part of any admixture. Submit manufacturer certification that material supplied for this project is identical in all respects, including concentration and chloride content, to material tested in accordance with ASTM C260 and C494.

D. Acceptable Manufacturers

Acceptable manufacturers for admixtures are:

1. Chemical Corporation
2. Master Builders
3. W.R. Grace & Co.
4. Engineer approved equal

2.06 Concrete Accessories

A. Bonding Agents

Bonding agents shall be a ready-to-use resin emulsion applied in accordance with manufacturer's recommendations. Acceptable manufacturers are:

1. W.R. Grace & Co. “Daraweld-C”
2. L & M Construction Chemicals “Everbond”
3. Larsen Products Corp. “Weld-crete”
4. Engineer approved equal

B. Non-Shrink Grout

Non-shrink grout shall be non-metallic, non-staining, dimensionally stable, premixed inorganic grout. Prepare area, form, mix and place grout in accordance with the manufacturers written recommendations. Acceptable manufacturers are:

1. W.R. Meadows Co. “588 Non-Ferrous Non-Shrink Grout”
2. Master Builders “Set Non-Shrink Grout”

3. U.S. Grout Corp. “Five - Star Grout”

4. Engineer approved equal

C. Joint Filler

Joint filler shall be black, closed cell neoprene conforming to ASTM C509 and D1056. Other properties are as follows:

Density (PCF):	12 to 35
Compression Set:	15 percent
Water Absorption:	15 percent max.
Flammability:	Self extinguishing
Temperature Resistance:	-40 degrees Fahrenheit to +158 degrees Fahrenheit

Acceptable Manufacturers are:

1. Williams Products, Inc.: “Everlast Neoprene Type NN-1”

2. W.L. Brady Co: “Closed Cell Neoprene”

3. Engineer approved equal

D. Joint Sealer

Joint sealer shall match the color of adjacent concrete. Sealer shall be a two-part polyurethane sealant. Self-leveling type sealant shall be used on horizontal joints, and non-sagging type shall be used on vertical joints.

Approved manufacturers are:

1. W.R. Grace & Co.: “Daraseal-U”

2. Sonneborn Buildings Products: “Sonalastic Paving Joint Sealant”

3. Pecora Corporation: “Urexpan NR-200”

4. Tremco: “THC-900”

5. Engineer approved equal

E. Liquid Membrane Curing Compound

Curing compound shall be provided in accordance with the following schedule:

Surface to be Treated	Compound Description
Concrete surfaces exposed after completion of structure to 1 foot below finish grade	Waterproofing Acrylic Sealer
Exposed floors in dry area; buildings, galleries	Silicate cure & hardener
Exposed floors in wet areas; tanks, flumes, wetwells, top surface of tank	Acrylic cure seal & dustproofer
Other surfaces not in contact with forms & formed surfaces if forms period	Resin cure ASTM C309 Type 1-0 with dye.

Suggested manufacturers and products for curing compound follow:

Compound Description	Manufacturer/Product		
	L&M Cont. Chemicals	Sonneborn	Toch Division of Carboline
Waterproofing acrylic sealer	Hyro Pel	White Poc 8	Toxstop
Silicate cure & hardener	L&M Cure Chem Hard	Sonosil	Curetox
Acrylic cure seal & dustproofer	Dress & Seal	Kure-N-Seal	Seal Kure
Resin cure	L&M Cure Resin	Hydrocide Curing Compound	Torkline

Alternate manufacturers may be utilized, with Engineers approval. Apply compounds in accordance with the manufacturer's written recommendations. Apply compounds which are compatible with subsequent surface treatment.

2.07 Concrete Mixtures

Concrete shall be a mixture of cement, fine aggregate, coarse aggregate, water and admixtures. Use methods and materials to produce a dense, homogeneous, impervious, watertight, durable, and workable concrete of the highest quality without defects of any kind. Only one brand of cement produced by the same mill shall be used. Aggregates shall be sampled and tested in accordance with ASTM C33. Fine aggregate shall be natural sand; loss by washing shall not exceed 3 percent. Coarse particles, chert and hard absorbent particles shall not exceed 3 percent by weight. Thin or elongated particles shall not exceed 10 percent.

Provide concrete mixtures with the following characteristics

Mud Mat Concrete

Compressive Strength (28 day)	2.0 ksi
Cement Type	I
Cement Content (min)	376 lb/cyd
Water/Cement Ratio (max)	
Aggregate (fine) (MDOT 2020)	2NS
Aggregate (coarse) (MDOT 2020)	6A
Air Content	
Chemical Admixture	
Slump (max)	

Isolated Columns, Baffle Beams, Pile Fill

Compressive Strength (28 day)	5.0 ksi
Cement Type	I or IA
Cement Content (min)	611 lb/cyd
Water/Cement Ratio (max)	5.0 gal/94 lb. sack
Aggregate (fine) (MDOT 2020)	2NS

Aggregate (coarse) (MDOT 2020)	6AA
Air Content	5 percent+ 1 percent
Chemical Admixture*	Type A
Slump (max)	4 inches

All Other Concrete

Compressive Strength (28 day)	3.5 ksi
Cement Type	I or IA
Cement Content (min)	517 lb/cyd
Water/Cement Ratio (max)	5.0 gal/94 lb
Aggregate (fine) (MDOT 2020)	2NS
Aggregate (coarse) (MDOT 2020)	6AA
Air Content	5 percent + 1 percent
Chemical Admixture*	Type A
Slump (max)	4 inches

*Use Type D admixture in hot weather; Type E admixture in cold weather.

Slump tolerances of up to 1 inch above the indicated maximum shall be allowed for individual batches provided the average for all the batches, or the most recent ten batches tested, whichever is fewer, does not exceed the maximum specified. Concrete of lower slump than specified may be used, provided it is properly placed and consolidated.

PART 3 - EXECUTION

3.01 Formwork

The Contractor shall verify lines, levels, and measurements before proceeding with formwork.

Earth forms are not permitted. Minimize form joints. Symmetrically align joints and make them water-tight to prevent leakage of mortar. Arrange and assemble formwork to permit dismantling and stripping so that concrete is not damaged during its removal. Arrange forms to allow stripping without removal of principal shores where required to remain in place.

Provide bracing to ensure stability of formwork. Camber slabs and beams to achieve ACI 30 tolerances. Provide temporary ports in formwork to facilities cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

Provide chamfer strips on external corners of beams, columns, and walls as shown on drawings. Do not displace or damage vapor barrier.

3.02 Formwork Tolerances

Unless otherwise specified, formwork shall be constructed so that the concrete surfaces will conform to the tolerance limits listed in "Specifications for Structural Concrete for Buildings" (ACI 301) as follows:

A. Variation from plumb:

1. In the line and surfaces of columns, walls, arises, etc:
   In any 10 feet of length ¼ inch
   Maximum for the entire length 1 inch

2. For exposed corner columns, control-joint grooves, etc:
   In any 20 feet length ¼ inch
   Maximum for the entire length ½ inch

B. Variation from the level or from the grades shown on the plans:

1. In slab soffits, ceilings, beam soffits and in arises, measured before removal of support shores:
   In any 10 feet length $^1/_4$ inch
   In any bay or in any 20 feet length $^3/_8$ inch
   Maximum for entire length $^3/_4$ inch

2. In exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines:
   In any bay or in 20 feet length $^1/_4$ inch
   Maximum for entire length $^1/_2$ inch

C. Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:

   In any bay $^1/_2$ inch
   In any 20 feet length $^1/_2$ inch
   Maximum for the entire length 1 inch

D. Variation in the sizes and location of sleeves, floor openings, and wall openings:

   ± ¼ inch

E. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:

   Minus $^1/_4$ inch
   Plus $^1/_2$ inch

F. Foundation (Piers and Footage)

1. Variations in dimensions in plan:
   Minus $^1/_2$ inch
   Plus 2 inches

2. Misplacement or eccentricity:
   Two percent of the footing width in the direction of misplacement but not more than 2 inches.

   The Contractor shall establish and maintain, in an undisturbed condition and until final completion and acceptance of the project, sufficient control points and bench marks to be used for reference purposes to check tolerances.

3.03 Application of Form Release Agent

Apply form release agent on formwork in accordance with the manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items. Do not apply form release agent where concrete surfaces are scheduled to receive special finishes or applied coverings which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.04 Inserts, Embedded Parts, and Openings

Provide formed openings where required for work embedded in or passing through concrete. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and space other inserts. Install accessories in accordance with the manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

3.05 Form Removal

Engineer shall be notified prior to removal of formwork. Do not disturb formwork until concrete has hardened adequately. Determine possible start of formwork disturbance or removal on the basis of minimum time and minimum strength, as follows.

Element	Minimum Time	Minimum Strength
Walls, Columns, Sides of Beams	20-24 hours	No Minimum
Beam or Joist Soffits	7 days	60 percent of specified compressive strength
Slabs:		
Clear span under 10 feet	4 days	
Clear span 10 feet to 20 feet	5 days	
Clear span over 20 feet	7 days	

Notes:
(a) Minimum time is cumulative period during which concrete is curing with air temperature above 50 degrees Fahrenheit.
(b) Shores or reshores shall not be removed until supported element has attained specified compressive strength.

Reshore structural members due to design requirements or construction conditions to permit successive construction, as required. Remove formwork progressively so no unbalanced loads are imposed on structure. Do not damage concrete surfaces during form removal. Remove formwork in same sequence as concrete placement to achieve similar concrete surface coloration. Store reusable forms for exposed architectural concrete to prevent damage to contact surfaces. Patched formwork for exposed concrete shall not be used.

3.06 Cleaning

Clean forms to remove foreign matter as erection proceeds. Ensure that water and debris drain to exterior through clean-out ports.

During cold weather, remove ice and snow from forms. Do not use deicing salts. Do not use water

to clean out completed forms, unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter where possible.

3.07 Bending of Reinforcement

Bending of steel shall be in compliance with the provisions of ACI 318-83. Bend bars accurately to the dimensions shown on the approved shop drawings, within tolerances shown on the drawings. Bars shall be bent cold. Do not shop weld reinforcement.

3.08 Placement of Reinforcement

All reinforcement shall be held in position by wiring reinforcement together and to suitable chairs, bolsters, or other approved devices which will ensure accurate spacings, both horizontally and vertically, and which will be sufficient to avoid displacement of bars during placing of concrete. Welding of reinforcement is not permitted. Wire tie bars at intersections at 18 inches maximum, in any direction. When concrete is to be placed over membrane or vapor barrier, continuous rod supports shall be used to prevent punctures. Tolerances shall be as indicated in the drawings. Where reinforcement in beams is placed in two or more layers, the clear distance between layers shall not be less than 1 inch, and the bars in the upper layer shall be placed directly above those in the bottom layer. Reinforcement shall continue through all construction joints and additional shear reinforcement provided as necessary. Terminate reinforcement at expansion joints, with a minimum cover of 2 inches at the end of bars. Prior to placement of concrete, check all reinforcing after it is placed to insure that placement conforms to contract drawings, approved shop drawings, and specification requirements. Engineer shall be notified a minimum of 24 hours prior to concrete placement in order to verify placement of reinforcement.

Reinforcement supports shall be as follows:

Concrete Element	**Location of Reinforcement**	**Type of Support**
Slabs placed on ground or mud mat	Top Bottom	Contractor option Precast conc. Black w/wires
Concrete surfaces exposed to view in finished structure	All	Plastic
All other concrete	All	Basic bright

Bar supports shall conform to CRSI "Manual of Standard Practice," except as otherwise noted. Principal reinforcement shall not be relocated to support bar mats. Provide additional net support bars as required. WWF may be placed after concrete below the specified reinforcement level has been placed.

3.09 Protection of Reinforcement

Reinforcement protection shall be as indicated on the drawings. Reinforcing bars extending between two or more adjacent subsequent concrete placements, intended for bonding with the subsequent placements, shall be protected during the preceding placement from becoming coated with concrete, mortar, or other material which may adversely affect bonding capacity.

3.10 Splices

All splices shall be in conformance with ACI 318-83, or as shown on design drawings or approved shop drawings.

3.11 Embedded Electrical Conduit

Minimum concrete protection for conduit shall be 1½ inches clear. Embedded conduit shall be located between the layers of reinforcement.

3.12 Embedded Items

Embedded items include anchors; bolts; conduits; dowels; drains; frames for checkered plate, grating or manholes; inserts; manhole steps; steel curbs; sleeves; stair nosings; sump linings; ties; waterstops; weep holes; and other items to be cast in concrete.

See architectural, electrical and mechanical drawings for embedded items. Contractor shall refer to approved shop drawings for placement of embedded items, where applicable.

Provide sleeves, as detailed in the drawings, for conduits, ducts, pipes and other items passing through concrete floors and walls. Notify Contractors whose work is related to concrete or must be supported by it, to allow for placement of embedded items prior to placement of concrete.

Embedded items shall be accurately and securely fastened to prevent displacement prior to and during concrete placement. Voids in anchor slots, inserts and sleeves shall be temporarily filled with readily removable material to prevent entry of concrete into voids. Exposed metal surfaces shall be protected from cement oversplash with readily removable material.

Contractor shall notify the Engineer a minimum of 24 hours prior to each placement of concrete, in order to provide ample time for inspection of forms, reinforcement and embedded items.

3.13 Treatment of Hardened Concrete

Before depositing fresh concrete on or against hardened concrete, prepare the surface as follows:

A. Clean surface thoroughly to remove foreign material and laitance.

B. Wet surface and remove excess water.

C. Apply bonding agent.

D. Brush surface with two coats of metallic waterproofing.

E. Slush vertical surface with grout of same proportions as mortar in concrete mixture, as thickly as possible.

F. Coat horizontal surface with grout of same proportion as mortar in concrete mixture to a minimum thickness of 2 inches.

G. Place fresh concrete.

3.14 Cold Joints

Avoid cold joints by coordinating size of placement with weather conditions, equipment, and labor to provide continuous concrete placement. The Engineer shall be notified immediately if an unavoidable situation arises to interrupt continuous placement and which might result in cold joints.

Salvage as much of the placed concrete as possible, unless otherwise instructed by proceeding as follows:

Walls:	Level off concrete and install shear key.
Slabs and beams:	Install full depth vertical bulkhead with shear key in a line perpendicular to face of support.

Install waterstop if adjacent construction joints require them.

3.15 Construction Joints

Locate construction joints as indicted on the drawings. Vertical wall and slab joints shall be located in the same plane, unless otherwise shown. Horizontal joints shall be screed level. Joints shall be truly horizontal or vertical and perpendicular to reinforcement. Slabs and beams shall be placed monolithically, unless otherwise noted on the drawings. Any proposed deviation from joints indicted on the drawings shall be submitted for approval.

Vertical construction joints shall be spaced as follows:

Walls:	40 feet o.c max
Slabs and Beams:	80 feet o.c max
Topping:	20 feet o.c max

Waterstops shall be placed symmetrically in construction joints where possible. When slab reinforcement does not permit symmetrical placement, locate waterstop in contact with reinforcement, with remainder projecting into next placement.

3.16 Preparation before Placing

Formwork shall be completed and free of ice, snow, or water. Reinforcement and embedded items shall be installed and secured.

3.17 Concrete Placement

Concrete shall be handled from the truck to the place of deposit as rapidly as practicable, using methods that prevent segregation or loss of ingredients, in a manner which will maintain the required concrete quality. Conveying equipment shall be of sufficient size and design, such that detectable settling of concrete shall not occur before adjacent concrete is place. Conveying equipment shall be cleaned at frequent intervals during placement. Concrete shall be placed at a rate which will allow integration with fresh plastic concrete and within 45 minutes of prior placement. Hoppers with "elephant trucks" shall be utilized to prevent concrete free fall to 4 feet

or less within formed sections. Concreting operation shall be conducted in a manner to prevent segregation and mortar splash. Concrete shall be deposited as near as practicable to its final position to avoid segregation and mortar splash. Concrete shall be deposited as near as practicable to final position to avoid segregation due to rehandling and flowing. Vibrators shall not be used to transport concrete. Concrete shall be deposited in layers not exceeding 24 inches and consolidated following placement. Consolidate concrete using mechanical internal vibrating equipment, having a minimum frequency of 8,000 vibrations per minute, and of sufficient amplitude to consolidate concrete effectively. Vibrator shall be operated by a competent, energetic worker. The vibrator shall be inserted at approximately 18-inch spacing, and withdrawn after 5-15 seconds. The vibrator shall partially penetrate the previous lift of concrete placed. A spare vibrator, in good working order, shall be kept onsite during concrete placement operations. Placement of supported elements shall be delayed for a minimum of two hours, and at least until previously placed concrete in columns and walls is no longer plastic. Threads of all anchor bolts and dowels, where required, shall be greased before placing concrete and protected with weatherproof wrapping.

3.18 Repair Surface Defects

Areas displaying surface defects or honeycomb shall be repaired as follows:

A. Defective concrete shall be removed to sound concrete. Edges shall be cut perpendicular to the surface or slightly undercut to a minimum depth of 1 inch. Feathered edges shall not be permitted.

B. The surface shall be thoroughly cleaned of all base material. Patch area shall be washed with clean water prior to filling with patching mortar.

C. Slush surface with approved bonding agent and patching material. All exposed surface, reinforcing steel, and embedded items shall be thoroughly covered with slush coat.

D. Point repair area in successive ½-inch to 1-inch layers, with a patching mortar coating of approved premixed patching material mixed with a 1 to 3 mixture of approved bonding agent and water. Each layer shall be scratched prior to applying the successive layer. If patched area heats excessively, cool with water.

E. Immediately after filling patch areas, coat with approved concrete finish material.

F. Approved Materials:

1. Patching material shall be quickset hydraulic cement, prepared and ready to use when mixed with water. Material shall be of non-shrink type, and shall not contain calcium chloride, waxes, tars, emulsions or metallic materials. Material shall be "Thorite", Thoro System Products, Inc. or equal.

2. Bonding agent shall be a ready to use liquid, composed of acrylic polymers and modifiers. Material shall be flexible when applied, resistant to ultraviolet light, resistant to heat, and exhibit good adhesive qualities. Material shall be "Acry 60". Thoro System Products, Inc. or equal.

G. The Contractor shall adhere to manufacturer's written recommendations for proper use and application of materials.

3.19 Grout Surface Finish

Grout surface finish shall consist of a pre-mixed, waterproofing cement compound suitable for interior or exterior use. Compound shall be mixed with one part of approved bonding compound and three parts water, to the consistency of thick paint. Prior to application of grout surface finish, all wall ties shall be cut to a depth of 1 inch (minimum), and patched as specified. Mix cement compound as specified above and apply heavy first coat at 2 pounds per square yard. The first coat shall be applied with manufacturer recommended brush, and shall fill completely all air bubbles and voids. After the first coat has set, a second coat shall be applied at the same rate as the first coat. After the finish coat has set, float to a uniform texture with sponge float.

A. Approved Materials:

1. Waterproofing Cement Compound: "Thoroseal", Thoro System Products, or equal.

2. Bonding compound: "Acryl 60", Thoro System Products, Inc., or equal.

The Contractor shall adhere to manufacturer's written recommendations for approved methods of product application and use of materials.

3.20 Concrete Formed Surface Finish

Formed concrete surface finishes shall be as indicated in the following table:

	As Cast		**After Removal of Form**		
Formed Element[a]	**Type of Finish**	**Facing Material**	**Remove**	**Repair Surface Defects**	**Surface Treatment**
Surface exposed to earth after completion of structure to 1'0" below finish grade	Rough form	Contractor's option	Fins over ¼-inch by chipping or rubbing		None required
Exterior surfaces exposed after completion of structure to 1'0" below finish grade	Smooth form	Plywood, form grade tempered hardboard, plastic, or approved material[b]	Fins, rough spots & hardened mortar removed completely by rubbing[c]	Patch tie holders repair holes, honeycomb, broken corners, edges & other defects	Grout surface finish (See specs)
All other formed surfaces					Remove stains[d]

NOTES:

(a) Related uniform surfaces, such as tops of walls, horizontal offsets, and similar surfaces shall be struck smooth and floated to a texture consistent with formed surface. Final treatment on formed surfaces shall continue across unformed surfaces.

(b) Material with raised grain, torn surfaces, worn edges, patches, dents, or other defects that will impair the concrete surface texture shall not be used.

(c) Rub with abrasive stone or hone. The use of power driven grinders is permissible.

(d) Remove stains caused by excessive use of form coating material by rubbing wetted surfaces with 5 percent to 10 percent solution of muriatic acid using bristle brushes; rinse with clean water.

3.21 Concrete Slab Finishes

Concrete slab surface finishes shall be as indicated in the following table:

Slab Surface	Type Of Finish		Tolerance Measured In Any Direction
	Initial	Final	
Surface to receive bonded concrete topping	Struck off and leveled	Scratched	¼-inch in 2 feet
Surface to receive waterproof membrane or non composite topping	Struck off and leveled	Floated	$^{1}/_{8}$-inch in 10 feet
Exterior slabs; interior slabs subject to vehicular traffic	Floated	Broom in direction of drainage	$^{1}/_{8}$-inch in 10 feet
Landings & stairs	Floated	Non-slip	$^{1}/_{8}$-inch in 10 feet
Floors of buildings, tanks, wetwells, and all other surfaces	Floated	Troweled	$^{1}/_{8}$-inch in 10 feet
NOTES: (a) Abrasive aggregate shall be applied at 50 pounds per 100 square feet. Apply in accordance with manufacturer's recommendation. Product to be "Frictex H", Sonneborn Building Products, or equal.			

3.22 Separate Floor Topping

Where indicated in the plans, a separate floor topping shall be placed over an existing concrete floor or slab.

Prior to placing, all loose scaled concrete; aggregates and/or cement paste; dirt; oil; grease; fungus; mildew; paint; previous coatings; form release and curing agents; laitance and any other foreign materials, shall be removed so that a clean substrate remains. High pressure waterblasting, scrubbing, sandblasting, wetblasting, steam-cleaning, or other Engineer approved method may be used to prepare the substrate surface.

Any holes, pockmarks, spalls, or other surface defects greater than $^{3}/_{8}$ inches in depth shall be patched with a cement base acrylic patching material compatible with the floor topping material.

Apply approved bonding agent on base course in accordance with the manufacturer's recommendations. All exposed surfaces shall be thoroughly covered with bonding agent. A slurry coat consisting of grout of same proportions as mortar in concrete shall be placed on the base course immediately prior to placing topping.

Place concrete topping to the required lines and levels as indicated in the drawings. The concrete mixture shall be as specified elsewhere within these specifications. Methods of placement shall be as specified elsewhere within these specifications. Concrete slab shall be finished, cured and hardened as specified elsewhere within these specifications. Joints which exist in the substrate shall be recut in the topping material after curing. Contractor shall mark joints prior to applying

topping in order to accurately locate joints. Contractor shall adhere strictly to manufacturer's written recommendations for approved methods of product application and use of materials.

END OF SECTION

SECTION 11 68 13
PLAYGROUND EQUIPMENT

PART 1 - GENERAL

1.01 Description

Playground equipment, parts and components specifications and assembly instructions.

1.02 Quality Control:

A. Equipment and Design Qualifications

1. All playground equipment shall comply will all the requirements of CPSC, ASTM, ADA and will be IPEMA certified.

2. All safety fall zones shall be determined in accordance with ASTM 1487-07 and CPSC Handbook for Public Playground Safety Publication number 325. All playground equipment designs shall be evaluated and signed off by a NPSI certified playground inspector.

1.03 Manufacturer Qualifications

The manufacturer of the playground equipment must carry a minimum of 10 million dollars of liability insurance with an AM best rating. The manufacturer of the playground equipment must have a minimum of 10 years' experience in manufacturing commercial playground equipment.

1.04 Applicable Standards

A. ASTM F1487-07
Standard consumer performance specification for playground equipment for public use.

B. CPSC Handbook for Public Playground Safety, publication number 325.

C. CSA Z614-20

D. EN 1176-98 (if requested)
European Standard for Playground equipment

E. All manufactured components must be IPEMA certified International Playground Equipment Manufacturers Association.

PART 2 - PRODUCTS

2.01 Materials

Part Number	**Description**
100001127	1/2-deck-to1/2-deck, 205 mm (8") (brown or blue vinyl)
100011367	Dragonfly, Contemporary
105295	BAG ZIPLOCK 12" X 14"
200006946	Bridge w/safety rails, 2440 mm (8')

Part Number	Description
200006976	Double Wide Slide, 1220 mm (48")
200007003	Pommel Climber, 1220 mm (48") deck
200008193	TOOL BOX KID BUILDERS #2, S.S. (MM)
200013800	KB 136" POST PLUS W/CAP
200013812	KB 148" POST PLUS W/CAP
200015483	KB 164" POST PLUS W/CAP
200058823	Two-Talk Tubes, w/15.24 m (50') of pipe
200095003	Stone Climber, 1220 mm (48") deck
200111492	Label, Identification stamped w/rivets
200131016	KB 180" POST W/CAP
200200137	KB 186" SWAGE POST PLUS
200200185	Balcony Deck (Small hole)
200200267	Curly Climber, 1422 mm (56") deck
200200377	Inter-Deck Step, 405 mm (16") safety loops (Small hole)
200200402	Deck-To-Deck Steps, 815 mm (32"), w/safety rails (Small hole)
200200506	Steel Reach Panel, Gear style (accent color)
200200530	KIT MAINTENANCE KB W/PAINT W/O LIST
200200686	KB 186" POST PLUS W/CAP
200201307	Deck-to-Deck Steps, 406 mm (16"), w/safety rails(Small hole)
200202105	Hypersonic Slide (96")
200202122	Infinity Hi-Climb 64"(1625 MM)
200202170	Wavy Rung Climber 64"
200202304	KB Hang Out
200202305	Freestanding Game Table
200202442	KB Hoopla Bridge 2440MM (96")
200202501	KB Deck 1/2 Square Small Hole 11GA
200202503	KB Deck Square Small Hole 11GA
200202504	Deck Triangle Small Hole 11GA
200202521	Morphous Slide, 1625 mm (64") Straight
200202562	KB Transfer Station 1220 SFTY RL 11GA
200202835	ASSY BELT SEAT F/8' SWING W/CHAIN
200202836	ASSY TOT SEAT F/8' SWING W/CHAIN
200202965	NU-EDGE TRI-ROCK F/KB 2 ENCL (ING ONLY)
200203205	KB BOINGO
200203332	Spiral Slide, 1625 mm (64") with 2014 Hood, Small Hole Deck
200203433	Inclusive Swing Seat with Chains 8'
200203459	NU-Edge X Trail Climber 64" KB
200203574	Steering Wheel, plastic, post mount
200203589	Silo Scramble with Single Enclosure
200305597	14' LARGE CRATE (ASSY DOMESTIC)
787Z	RISK MANAGEMENT SIGN - ENGLISH
8030565LT	Spin Rocker
925603	LABEL P/C (5 TO 12 YRS) PPLT
925960	THUMB DRIVE 2GB - PPLT
HW7704-1	HRDW PKG F/CLAMP ELIMINATION S1/1
INSTALL BOOK	INSTALL BOOK FOR PP ORDERS
LT0931	5" 2 Seat Arch Swing

Part Number	Description
LT0933	5" 2 Seat Arch Swing Add-A-Bay
LT0939	5.00" OD Arch Swing (Multi-User)

2.02 Manufacturer

PlayPower Operations, Monett, Missouri or approved equal.

2.03 General Equipment Specifications:

A. Plastic Caps shall fit snugly into 127 mm (5") and 33 mm (1.315") tube ends and shall be injection molded Low Density Polyethylene. This plastic shall be stabilized against ultraviolet (UV) degradation and shall have color molded in. All caps will be installed at the factory and 127 mm (5”) caps will be secured with aluminum hammer drive pins.

B. Aluminum Caps shall fit snugly into 127 mm (5") tube ends. The Aluminum cap shall be made from SAE 413 aluminum with a minimum wall thickness of 4 mm. Prior to insertion into the post, all caps shall be painted per PPLT PAINT Specification. All caps will be installed at the factory and 127 mm (5”) caps will be secured with aluminum hammer drive pins.

C. PAINT Specification

Primer shall be electrostatically applied and cured in an infrared oven. Paint shall be an electrostatically applied polyester TGIC (triglycidyl isocyanurate) powder coating which shall be cured at temperatures between 400 and 500 degrees Fahrenheit. The thickness of the combined primer/paint shall be between 5 mils and 11 mils. The polyester powder shall comply with ASTM standards: D-2794 (Impact Resistance Test), B-117 (Salt Spray Resistance Test), G26 (Weatherability Test), and D3359B (Adhesion Crosshatching Test).

D. ROTO Specification

Rotationally Molded Plastic Parts shall be molded from linear low density polyethylene with ultraviolet (UV) light stabilizers, anti-static guard (for Molding purposes) and color molded in. This material shall comply with ASTM-D-790 (Flex Modulus), ASTM -D-638 (Tensile Strength), ASTM-D-648 (Heat Deflection Temperature), ARM-STD (Low Temperature Impact) and rated UL 94.

E. PVC Specification

Textured Poly-Vinyl-Chloride coating shall be an average of 3 mm (.125”) thick. Poly-vinyl-chloride coating shall be oven cured and textured for added traction when wet or dry.

F. Hardware

Bolts, Nuts, Screws, Threaded Spacers, Washers and Other Hardware used in the assembly of components shall be metric stainless steel and tamper resistant. All necessary hardware shall be provided.

G. Deck Clamp assemblies shall consist of two steel half-clamps. Clamp profiles shall be designed to eliminate protrusions. Clamps shall be die formed from 12 gauge HRPO steel. Clamps shall have a 6 mm (.25") radius rib formed in the top and bottom of the clamp for structural integrity.

H. The clamp attachment bracket shall be formed from 11 gauge sheet steel and shall be welded securely to the clamp half. All clamp halves shall be zinc plated, yellow dichromate coated and phosphate coated before being TGIC (triglycidyl isocyanurate) polyester powder coated. Tamper-resistant fasteners shall be used to retain clamps and shall consist of M10 six lobe socket head stainless steel cap screws and M10 slab-base Tee nuts. All clamps shall be provided with aluminum hammer drive pins to protect against slippage.

I. Rail Clamp assemblies shall consist of two steel half-clamps. Clamp profiles shall be designed to eliminate protrusions. Clamps shall be die formed from 12 gauge HRPO steel. Clamps shall have a minimum 6 mm (.25") radius rib formed in the top and bottom of the clamp for structural integrity. All clamp halves shall be zinc plated, yellow dichromate coated and phosphate coated before being TGIC (triglycidyl isocyanurate) polyester powder coated. Tamper-resistant fasteners shall be used to retain clamps and shall consist of M10 six lobe socket head stainless steel cap screws and M10 slab-base Tee nuts. All clamps shall be provided with aluminum hammer drive pins to protect against slippage.

J. Wing and Panel Clamp assemblies shall consist of two steel half-clamps. Clamp profiles shall be designed to eliminate protrusions. Clamps shall be die formed from 12 gauge HRPO steel. Clamps shall have a 6 mm (.25") radius rib formed in the top and bottom of the clamp for structural integrity. The clamp wing bracket shall be formed from 7 gauge sheet steel and shall be welded securely to the clamp half. All clamp halves shall be zinc plated, yellow dichromate coated and phosphate coated before being TGIC (triglycidyl isocyanurate) polyester powder coated. Tamper-resistant fasteners shall be used to retain clamps and shall consist of M10 six lobe socket head stainless steel cap screws and M10 slab-base Tee nuts. All clamps shall be provided with aluminum hammer drive pins to protect against slippage.

K. All Steel Tube Components shall comply with ASTM standards

A-500, Or A-513. The steel tube components contain five layers including an inside galvanized coating, high tensile strength cold formed steel, hot dipped pure zinc meeting ASTM B-6 applied at 3.5 tenths of an once per square foot, and a proprietary conversion and advanced polymer coatings. The components are freed of excess weld spatter and shall be cleaned in a multiple bath system which shall include a rust-inhibitive iron phosphate wash prior to painting. Exceptions: 127 mm (5") O.D. aluminum posts.

L. Brackets shall be fabricated from punched and formed 4.5 mm pre- galvanized sheet steel.

M. Gaskets shall be rubber injection molded from ultraviolet (U.V.) protected synthetic rubber. Rubber gaskets shall provide an aesthetic seal around the wonder fastener and bracket.

N. Footing for 127 mm (5") diameter upright posts shall be 305 mm (12") diameter x 940 mm (37") depth. Galvanized steel posts shall be 127 mm (5") O.D., 11 gauge pre-galvanized round tubing. Minimum tensile strength shall be 330MPa (48,000 psi). Minimum yield point shall be 310MPa (45,000 psi). The bottom portion of all upright posts shall be crimped slightly

O. Component Specifications:

1. 11 GAUGE GALVANIZED STEEL POST shall be 127 mm (5") O.D., 11 gauge pre-galvanized round tubing.Minimum tensile strength shall be 380MPa (55,000 psi). Minimum yield point shall be 345MPa (50,000 psi).Plastic or Aluminum caps shall fit into the end of the 127 mm (5") tube. After fabrication, all posts shall be painted per PPLT PAINT Specification.

2. 360Âº SPIRAL SLIDE (U.S. Patent #D335,517) WITH HOOD shall be two piece with a seamless bed way, rotationally molded per PPLT ROTO Specification. Slide side rails shall be a minimum of 355 mm (14") high from the slide surface. Center post shall be 89 mm (3.5") pre-galvanized tubing. Spiral slide shall provide a full 360Â° of rotation. Slide transition decks shall be fabricated from punched sheet steel and shall cover a minimum of 0.7 square meters (1,080 square inches) of top surface. This assembly shall be coated per PPLT PVC Specification. Slide enclosures shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3/4" X 1" FSO pre-galvanized steel tubing. Enclosure shall be painted per PPLT PAINT Specification. Slide enclosures shall have no gaps greater than 76 mm (3") and less than 254 mm (10"), especially between vertical rungs and posts.

3. ACCESSIBLE BRIDGE WITH SAFETY RAILS shall be fabricated from 33 mm (1.315") pre-galvanized steel tubing. Safety rails shall provide an enclosure, and shall have no gaps greater than 76 mm (3") and less than 254 mm (10"), especially between vertical rungs and posts. The vertical rungs of safety rails shall be flattened prior to welding to the horizontal top and bottom bar and shall be welded continuously around the entire perimeter. Safety Rails shall be painted per PPLT PAINT Specification. Bridges shall be fabricated from 11 gauge steel with 76 mm (3") formed sides. Bridge assemblies shall be vinyl dipped per PPLT PVC Specification.

4. BALCONY VINYL CLAD METAL DECK shall cover a minimum of.365 square meters (567 square inches) of top surface area and be designed to maintain a full 1.2 m (48") on center post spacing. Construction shall consist of one semi circle shaped deck. Metal decks shall be fabricated from 13 gauge hot rolled steel, which shall be punched, formed and reinforced with welded in place 11 gauge strips. Deck shall have a pattern of equally spaced holes on one edge to provide flush mounting to the deck. This assembly shall be coated per PPLT PVC Specification. Balcony Rails provide full enclosure and shall be fabricated from 33 mm (1.315") O.D. pre- galvanized steel tubing. Rails shall be painted per PPLT PAINT Specification.

5. Boingo Drum shall be rotationally molded per PPLT ROTO Specification. Support ring shall be constructed from 19mm (3/4") thick high density polyethylene sheet. Support shall be constructed from 33mm (1.315") O.D. pre-galvanized steel tubing welded to 7ga. (4.5mm) thick plates and painted per PPLT PAINT Specification.

6. COLORED KICK PLATES AND DECK TO DECK ACTIVITY PLATES shall be fabricated from 13 gauge (2.3 mm) pre- galvanized sheet steel for the 8", 12", and 16", 24", 28", and 32" plain models.Models with slots or Parachutes (24", 28", 32") shall be fabricated from 11 gauge (3.0 mm) pre-galvanized sheet steel. After fabrication, deck to deck plates shall be painted per PPLT PAINT Specification. 8", 12" and 16" plates shall have fun faces laser cut into them. 24", 28" and 32" plates shall have grooves cut into them with optional slider "Parachute/shapes" fabricated from CNC Routed high density polyethylene sheet.

7. CURLY CLIMBER shall be of a design which will not allow children to climb into the interior of the coil. Curly Climber coils shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing. The center support post shall be fabricated out of 42.2 mm (1.66") O.D. pre-galvanized steel tubing. Enclosure shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 gauge) pre-galvanized sheet steel. Also available in post mount. Curly Climbers shall be an all welded construction and shall be painted per PPLT PAINT Specification.

8. DECK TO DECK STEPS WITH SAFETY RAIL shall consist of welded tread, riser and stringer sections fabricated from 13 gauge hot rolled steel. This assembly shall be coated per PPLT PVC Specification. Safety Rails shall be fabricated from 33 mm (1.315") O.D. and 3/4" X 1" FSO pre-galvanized tubing. Safety rails shall provide an enclosure and shall have no gaps greater than 80 mm (3.15") and less than 254 mm (10"), especially between vertical rungs and posts. Safety Rails to be painted per PPLT PAINT Specification.

9. DOUBLE WIDE SLIDE WITH HOOD shall be rotationally molded per PPLT ROTO Specification. Plastic double wide slide sides shall be 203 mm (8") high from the slide surface and slide bed way shall be designed with a 406 mm (16") minimum width. Double wide slide shall be a one-piece design with a center divider having no seams, joints or gaps. Slide end support shall be fabricated from 38 mm (1.5") square tubing. Mid support shall be fabricated from 60.3 mm (2.37") O.D. tubing. All steel tubing shall be painted per PPLT PAINT Specification.

10. DRAGONFLY See-Saw wings are to be fabricated from 48.3 mm (1.90") O.D. 11 gauge pre-galvanized tubing with a 33.4 mm (1.3") O.D. cross bar. The seat is to be 16 gauge sheet steel coated per PPLT PVC Specifications. The wings rest on two 3/8" steel plate supports. The Dragonfly Stand is to be fabricated from 88.9 mm (3.5") O.D. pre-galvanized tubing and a 1/2" steel plate for the spring to attach to. The Dragonfly spring shall be a two way torsion rubber spring.Two 3/8" steel plates provide positive stops for a 38.1 mm (1.5") square axel bar which the dragonfly rotates about. The wing assembly and stand assembly are to be painted per PPLT PAINT Specifications.

11. Frame shall be fabricated from 60.3 mm (2-3/8") O.D. tubing and 12 ga galv steel Tube. The frame shall be painted per PPLT PAINT Specification. Sign shall be aluminum 3003-H14 .08" thick- powder coated white with screen printed overlay. The sign is to be fastened to the frame using all stainless steel hardware and will be fully supported by the steel frame.

12. Freestanding GameTable Post shall be constructed from 88.9mm [3.5"] O.D. x 3mm thick [11 ga.] and 48.3mm [1 7/8"] O.D. x 3mm thick [11 ga.] pre-galvanized tubing welded to 4.5mm [7ga.] galvanized sheet steel. All steel components shall be painted per PPLT PAINT Specification. Seats and table top shall be rotationally molded per PPLT ROTO Specification.

13. Fun Rocks are climbers and shall be fabricated from Naturtek Material and shall be molded from real rock models, not hand sculpted. Mounting plates are integrally molded into the rocks and made from 4.5 mm (7 Ga) pregalvanized sheet steel. Inground supports shall be fabricated from 89 mm (3.5") O.D. pregalvanized tube and 4.5 mm (7 Ga) pregalvanized sheet steel. Enclosures shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 gauge) pre-galvanized sheet steel. Supports and enclosures shall be painted per PPLT PAINT Specification.NATURETEK material is a Polyester Composite: Color impregnated, UV stabilized, non-mold-supporting, formed from virgin corrosion-resistant polyester resin; with 1/2- to 3/4- inch (12 to 18 mm) wall thickness, with the following characteristics: Flexural Strength, ASTM D 790: 18,000 psi. ; Tensile Strength, ASTM D 638: 9,000 psi. ; Compressive Strength, ASTM D 695: 17,000 psi.; Barcol Hardness, ASTM D 2583: 40 minimum.

14. HOOPLA BRIDGE shall be rotationally molded per PPLT ROTO Specification. Supports are fabricated from pre-galvanized 60.3 mm (2.375") diameter steel tubing with 11 gauge pre-galvanized sheet steel plates. Enclosures shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 gauge) pre- galvanized sheet steel. All steel components shall be painted per PPLT PAINT Specification.

15. HYPERSONIC SLIDE shall be rotationally molded per PPLT ROTO Specification. Plastic slide bed way shall be designed with a 406 mm (16") minimum width. Slide end and mid support shall be fabricated from 60.3 mm (2.37") O.D. tubing and 4.55mm (7 gauge) pre-galvanized sheet steel. All steel components shall be painted per PPLT PAINT Specification.

16. Identification label shall be fabricated from alluminum sheet .016" (4 mm) thick and attached with aluminum pop rivets.

17. INTER-DECK STEP shall be completely fabricated from 11 gauge steel. The step surface shall measure 203 mm (8") deep by a minimum of 406 mm (16") wide, with rises limited to 203mm (8"). The complete assembly shall be coated per PPLT PVC Specification after fabrication. Available with hand hold loops or safety loops. Safety Loops shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 gauge) pre- galvanized sheet steel. Hand Hold Loops shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing. After fabrication loops shall be painted per PPLT PAINT Specification.

18. KB Hangout Frame shall be constructed from 48.3mm [1 7/8"] O.D. pre-galvanized tubing welded to 4.5mm [7ga.] galvanized sheet steel. All steel components shall be painted per PPLT PAINT Specification. Seats shall be rotationally molded per PPLT ROTO Specification.

19. KB INFINITY HI-CLIMB LADDER shall be fabricated out of 42.2 mm (1.66") O.D. pre-galvanized steel tubing and 33 mm (1.315") O.D. pre-galvanized steel tubing. Enclosure shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 gauge) pre-galvanized sheet steel. After fabrication all parts shall be painted per PPLT PAINT Specification. INFINITY CLIMBER shall be rotationally molded per PPLT ROTO Specification.

20. KB MORPHOUS SLIDE tunnel sections shall be configured to approximately a 762 mm (30") internal diameter cross section. Tunnel sections shall be assembled using an overlap joint on section connections and shall not have any internal hardware. Quantum slide sections shall bolt together to form a single bed way slide. Tunnel sections, panels, quantum sections and the morphous connection components shall all be rotationally molded per PPLT ROTO specification. Footing supports are fabricated from pre-galvanized 48.3mm (1.90") diameter steel tubing welded with 7 gauge pre-galvanized sheet steel. All steel components shall be painted per PPLT PAINT Specification.

21. KB REACH GEAR PANEL shall be fabricated from a combination of 33.4 mm (1.312") O.D. pre-galvanized steel tubing and a laser cut plate fabricated from 3.0mm (11 gauge) pre-galvanized sheet steel. Gears, frames, and handles shall be CNC Routed from HDPE sheet. The covers shall be CNC Routed from clear Polycarbonate material (Lexan). Panel shall be painted per PPLT PAINT Specification.

22. KB SILO SCRAMBLE CLIMBER frame shall be fabricated from pre-galvanized 60.3 mm (2.375") O.D. 12-gauge steel tubing, pre- galvanized 33.4 mm (1.315") O.D. 11-gauge steel tubing, and mild steel blocks. Enclosures shall be fabricated per KB WIRE MESH PANELS specification. After fabrication, all metal shall be painted per PPLT PAINT Specification. Ropes shall be fabricated from rope consisting of six galvanized steel cables (2.5 mm O.D. each) twisted together and wrapped with 6mm of high strength polyester fiber. Enclosures and ropes shall be secured with SAE 841 Bronze bushings and other provided HARDWARE.

23. KB TRAIL CLIMBER shall be made from pre-galvanized 102 x 102 mm (4" x 4") 13 ga steel tubing and shall be welded to plate made from 11 ga pre-galvanized sheet steel. Enclosures shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing and 3 mm (11 ga) pre-galvanized sheet steel. All steel components shall be painted per PPLT PAINT specification. Steps shall be fabricated from CNC routed 25 mm (1") x 140 mm (5.5") durable plastic boards made from a polypropylene and mineral filler blend and HDPE.

24. KB WILD AND WAVY RUNG CLIMBERS shall be fabricated from 48.3 mm (1.90") O.D. and 33.4 mm (1.315") pre-galvanized steel tubing. The climber shall be an all welded construction. Enclosures shall be fabricated from 33 mm (1.315") O.D. pre- galvanized steel tubing and 3 mm (11 gauge) pre-galvanized sheet steel. After fabrication all parts shall be painted per PPLT PAINT Specification.

25. POMMEL CLIMBER shall be fabricated from 33 mm (1.315") x 14 gauge pre-galvanized steel tubing. Brackets shall be fabricated from 4.554 (.179") mild steel. Pommels shall be fabricated from E.P.D.M. 50 duro black rubber with a steel insert molded inside, rendering them slash proof. Enclosure for 1220 mm and 1625 mm climber shall be fabricated from 33 mm (1.315") O.D. pre- galvanized steel tubing and 3 mm (11 gauge) pre-galvanized sheet steel. Enclosure for 1830 mm climber shall be fabricated from 33 mm (1.315") O.D. pre-galvanized steel tubing, 3 mm (11 gauge) pre-galvanized sheet steel and 4.5 mm (7 gauge) sheet steel. After assembly, panels shall be painted per PPLT PAINT Specification.

26. SPIN ROCKER consists of a carousel like design with two moving possibilities: spinning and rocking. The rocking bearing is made of a rubber system. The dish shall be 14 gauge (2mm) metal plate with an outer ring of 33.7mm (1.325") O.D. x 12 gauge (2.6mm) tubing.

27. SQUARE VINYL CLAD METAL DECK shall cover a minimum of 1.46 square meters (2,275 square inches) of top surface area, be a one-piece construction and be designed to maintain a full 1.2 m (48") on center post spacing. Metal decks shall be fabricated from 11 gauge hot rolled steel which shall be punched, formed and reinforced with welded in place 11 gauge strips and 7 gauge plates. Decks shall have a pattern of equally spaced holes on each edge to provide flush mounting of play events that attach to the deck. This hole pattern shall allow multiple decks to be assembled at the same level providing a surface without size limitations. This assembly shall be coated per PPLT PVC Specification.

28. Standard Belt Swing Seats shall be heavy duty construction, fabricated from 70 durometer EPDM rubber with a tempered steel insert molded inside, rendering them slash proof.

29. STEPPING STONES shall be rotationally molded per PPLT ROTO Specification and mounted on 60 mm (2.375") O.D. pre- galvanized support posts painted per PPLT PAINT Specification after fabrication.

30. TALK TUBE shall be fabricated from 48 x 3.4 mm (1.90" x .135") wall steel tubing. The "Phone funnel" shall be fabricated from sheet steel capped with tubing and have a perforated steel insert inside. Talk Tubes shall be painted per PPLT PAINT Specification.

31. THE INCLUSIVE SWING SEAT shall be rotationally molded from linear low density polyethylene with molded in graphics. Attached to the seat is a reinforced polyurethane rubber bumper. The sliding latch mechanism is constructed from 6061 machined aluminum. Swing chains shall be 4/0 straight link galvanized steel.

32. Tot Swing Seats shall be heavy duty construction, fabricated from black EPDM rubber with a tempered steel insert molded inside, rendering them slash proof. Tot seat shall be fully enclosed to prevent slipping out and provide lower back support. Two sizes of leg cutouts make this seat versatile enough to accommodate larger children with special needs also.

33. TRANSFER STATION WITH SAFETY RAIL shall consist of two triangular decks and step assemblies for the handrails. Each triangular deck shall be fabricated from 11 gauge sheet steel, covering .37 square meters (575 square inches) and have three 25 x 152 mm (1" x 6") hand slots incorporated into the deck surface for aid in user transition. The step assemblies provide access from the transfer decks to a 915 mm (36"), 1016 mm (40"), 1220 mm (48"), 1422 mm (56"), 1625 mm (64") deck height. Each step shall have a tread depth of 406 mm (16") and a tread width of 953 mm (37.5"), with each rise 203 mm (8") or less. Each step assembly shall have an all welded construction from 13 gauge sheet steel. Each step assembly and Transfer Deck shall be coated per PPLT PVC Specification. Transfer Station Safety Rails shall be fabricated from 33 mm (1.315") O.D., pre-galvanized, 11 gauge tubing and 3/4" X 1" FSO pre-galvanized tubing. Safety rails shall provide an enclosure and shall have no gaps greater than 80 mm (3.15") and less than 254 mm (10"), especially between vertical rungs and posts. Transfer Station loops shall be fabricated from 42.2 mm (1.66") O.D., pre-galvanized, 11 gauge tubing. All welded handrail assemblies shall be painted per PPLT PAINT Specification.

34. TRIANGULAR VINYL CLAD METAL DECK shall be fabricated from 11 gauge hot rolled steel which shall be punched, formed and reinforced with welded in place 11 gauge strips and 7 gauge plates. Each triangular deck shall cover a minimum of 0.63 square meters (985 square inches) of top surface area, be a one-piece construction and be designed to maintain a full 1.2 m (48") on center post spacing. Decks shall have a pattern of equally spaced holes on each edge to provide flush mounting of play events that attach to the deck. This hole pattern shall allow multiple decks at the same level to be assembled providing a surface without size limitations. This assembly shall be coated per PPLT PVC Specification.

35. VINYL CLAD HALF DECK shall cover a minimum of .73 square meters (1,138 square inches) of top surface area and be a one- piece construction. Metal decks shall be fabricated from 11 gauge hot rolled steel which shall be punched, formed and reinforced with welded in place 11 gauge strips and 7 gauge corner plates. Decks shall have a pattern of equally spaced holes on each edge to provide flush mounting of play events that attach to the deck. This hole pattern shall allow multiple decks to be assembled at the same level providing a surface without size limitations. This assembly shall be coated per PPLT PVC Specification.

PART 3 - EXECUTION

Not Applicable

END OF SECTION

SECTION 31 23 01
EXCAVATING, FILLING, AND GRADING

PART 1 - GENERAL

1.01 Work Included

The work of excavating, filling, and grading includes, but is not necessarily limited to:

A. Excavating for footings and foundations;

B. Filling and backfilling to attain indicated grades;

C. Trenching and trench backfilling;

D. Rough and finish grading of the site; and

E. Furnishing and installing granular cushion under concrete slabs on grade.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

B. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 41 26 – Permit Requirements

B. Section 01 45 16.02 – Density and Aggregate Testing

C. Section 01 57 26 – Dust Control

D. Section 02 41 13.13 – Pavement Removal

E. Section 31 25 00 – Soil Erosion and Sedimentation Control

1.04 Job Conditions

A. Dust Control

Dust caused by the Contractor's operations during performance of the work, or resulting from the condition in which the Contractor leaves the site, shall be controlled by the Contractor. The Contractor shall use all means necessary to control dust on and near the work zone and all off-site borrow areas.

All surfaces shall be thoroughly moistened, as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

B. Protection

The Contractor shall use all means necessary to protect all materials before, during, and after installation and to protect all objects designated to remain.

In the event of damage, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

C. Safety

The Contractor is responsible for conducting operations in a safe and orderly manner and in conformance with MIOSHA P.A. 154.

D. Permits

Unless otherwise provided, the Contractor is responsible to obtain and comply with permits required under Parts 31 and 91 of Michigan PA 451 of 1994 (Natural Resources and Environmental Protection Act) and any local ordinances.

PART 2 - PRODUCTS

2.01 Fill Material – General

All fill material shall be subject to the approval of the Engineer.

For approval of fill material, notify the Engineer at least four working days in advance of intention to import material, designate the proposed borrow area, and permit the Engineer to sample, as necessary, from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

2.02 Fill, Trench, and Structural Backfill Material

Fill material, unless specified otherwise, shall be soil or soil-rock mixture that is free from organic matter and other deleterious substance. It shall contain no rocks or lumps over 6 inches in greatest dimension and not more than 15 percent of the rocks or lumps shall be larger than 2½ inches in greatest dimension.

Fill material obtained from offsite sources shall meet the requirements of the preceding paragraph and additionally, shall be predominantly granular with a maximum particle size of 2 inches and a plasticity index of 12 or less.

Fill material placed within 2 feet horizontally of the base of building foundations and/or slabs shall have a plasticity index of 15 or less.

2.03 Sand

Sand shall meet the requirements of Granular Material Class II, as specified in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

2.04 Granular Cushion

Granular cushion under slabs shall meet the requirements of Granular Material Class II, as specified in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

2.05 Aggregate for Backfill

Aggregate shall meet the requirements of 21AA crushed aggregate or 4G open-graded aggregate, as specified in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

2.06 Flowable Fill

Flowable fill shall be a mixture of Portland cement, fly ash, sand, and water in the following proportions.

Flowable Fill Mixture Ratios		
Material	**Type**	**Quantity**
Portland Cement	Type I or IA	50 lb/cyd
Fly Ash	ASTM C618, Class C or F	500 lb/cyd
Sand	MDOT 2NS	2,850 lb/cyd
Water		Approx. 376 lb/cyd (sufficient to produce desired flowability)

Flowable fill shall be produced and delivered at a minimum temperature of 50 degrees Fahrenheit. Mixtures shall be transported to the point of placement in a revolving drum mixer or agitator.

2.07 Geotextile

Geosynthetics must be composed of long-chain synthetic fiber of at least 85 percent, by weight, polyolefins or polyesters. Geosynthetics must be capable of resisting degradation from chemicals, mildew, rot, and ultraviolet (UV) light.

Geotextile used to prevent intermixing of soft subgrade and subbase materials shall meet the requirements per the Michigan Department of Transportation 2020 Standard Specifications for Construction, as shown in Table 910-1 for geotextile stabilization and separator.

2.08 Other Materials

All other materials not specifically described, but required for a complete and proper installation, shall be as selected by the Contractor and subject to the approval of the Engineer.

PART 3 - EXECUTION

3.01 General

Prior to all work of this section, the Contractor shall become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this section. The Contractor shall not allow or cause any of the work performed or installed to be covered up or enclosed by work of this section prior to all required inspections, tests, and approvals. Should any of the work be enclosed or covered up before it has been approved, the Contractor shall uncover all such work at no additional cost to the Owner. After the work has been completely tested, inspected, and approved, the Contractor shall make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.

The Contractor shall excavate ahead of the proposed utility installation to expose any existing buried utilities. If existing utility grades conflict with the proposed utility grade, the proposed utility grade may be adjusted by the Engineer, if necessary, to miss the existing utility grade at no additional expense to the contract.

3.02 Geotextile Stabilization and Geotextile Separator

Deliver and store geosynthetics in packaging capable of resisting UV radiation, contaminants, and moisture. Label each unit of material with product information, including supplier and lot identification. Do not expose geosynthetics to direct sunlight for prolonged periods. Repair or replace damaged geosynthetics at no additional cost to the project.

A. Geotextile Placement

Place or install geotextile products in accordance with the manufacturer's installation guidelines and this subsection.

Do not operate equipment required to place backfill directly on geotextile products. Eliminate wrinkles or waves that develop during placement. Place the products in direct contact with the soil below before placing backfill on the geotextile products.

Shingle-lap longitudinal and transverse joints at least 2 feet, or seam the joints in accordance with the manufacturer's recommendations. Ensure field or factory seams meet the minimum grab tensile strength for the product application. Place seams facing upward for inspection purposes.

Repair tears or damage to the geotextile in accordance with the manufacturer's recommendations.

B. Aggregate or Granular Material Placement

Spread and grade the first layer of aggregate or granular material after placing geotextile to create a stable work platform before compaction. Place additional aggregate or granular material, as required, and compact. Fill ruts with additional aggregate or granular material and compact before placing each subsequent layer. The cost of aggregate or granular

material, including additional quantities required to fill ruts, is included in the unit prices for related pay item(s).

3.03 Excavating

Where depressions result from, or have resulted from, the removal of surface or subsurface obstructions, the Contractor shall open the depression and remove all debris and soft material as directed by the Engineer.

The Contractor shall excavate to the grades shown on the drawings. Where excavation grades are not shown on the drawings, excavation shall be completed, as required, to accommodate the installation.

All over-excavated areas shall be backfilled and compacted at no additional cost to the Owner.

3.04 Preparation of Subgrade

After the site has been cleared, stripped, and excavated to within 6 inches of the specified depths for recompaction, the exposed surface shall be scarified to a minimum depth of 6 inches, thoroughly moisture-conditioned, and compacted to the requirements specified below for fill.

All ruts, hummocks, and other uneven surfaces shall be removed by surface grading prior to placement of fill.

3.05 Subgrade Undercutting

Subgrade undercutting shall be performed to replace material susceptible to frost heaving, differential frost action, or unstable soil conditions, as determined by the Engineer.

After the subgrade has been excavated to the approximate grade, the Engineer will inspect the grade to determine if subgrade undercutting is required and to determine the limits of such undercutting. The Contractor shall provide suitable equipment for proof rolling the grade. The inspection, proof rolling, and subgrade undercutting shall be completed prior to placing any embankment, road base, or pavement.

The Contractor shall undercut the subgrade within the limits defined by the Engineer. All excavated material resulting from the undercutting shall become the Contractor's property disposed of outside the project limits, unless otherwise directed. The volume of earth removed by subgrade undercutting shall be replaced by suitable soils as follows:

A. Type I Subgrade Undercutting - backfill with selected clay or similar material approved by the Engineer.

B. Type II Subgrade Undercutting - backfill with sand.

C. Type III Subgrade Undercutting

   Backfill with the material excavated from subgrade undercut areas after mixing the excavated material to break up the undesirable strata of soils or with other Engineer-approved backfill material.

D. Type IV Subgrade Undercutting

Backfill with 21AA crushed aggregate or 4G open-graded aggregate. Encapsulate 4G aggregate with geotextile separator.

Backfill material shall be compacted according to Section 01 45 16.02 – Density and Aggregate Testing.

3.06 Excess Water Control

Fill material shall not be placed, spread, or rolled during unfavorable weather conditions. Operations shall not resume until moisture content and fill density are satisfactory to the Engineer. Berms or channels shall be provided to prevent flooding of subgrade. All water collecting in depressions shall be promptly removed.

Where soil has been softened or eroded by flooding or placement during unfavorable weather, all damaged areas shall be removed and compacted as specified below for fill and compaction.

The Contractor shall provide suitable means and equipment to maintain excavations and other parts of the work free from water.

Dewatering means and methods shall provide dry excavations and the preservation of the final lines and grades of bottoms of excavations.

3.07 Fill and Compaction

After subgrade compaction has been approved by the Engineer, the Contractor shall place approved fill material in layers not exceeding 8 inches in uncompacted thickness.

The fill material shall be watered or aerated, as necessary, and thoroughly mixed to obtain a moisture content that will permit proper compaction.

Each soil layer shall be compacted to at least the specified minimum degree. The filling and compaction process shall be repeated until plan grade is attained.

A. Compaction Requirements

Unless otherwise specified on the drawings or in other sections of the specifications, fill and backfill shall be placed in 8-inch lifts and each lift shall be compacted to not less than the percentages of the maximum density stated in Section 01 45 16.02 – Density and Aggregate Testing.

Compaction by jetting will not be permitted unless specifically authorized by the Engineer.

3.08 Grading

Except as otherwise directed by the Engineer, the Contractor shall perform all rough and finish grading required to attain the elevations shown on the drawings.

Tolerances For Grading			
Rough Grade		**Finish Grade**	
Building, roads, and parking areas	Plus or minus 0.1 feet	Granular cushion under concrete slabs	Plus or minus 0.05 feet
Landscaped areas	Plus or minus 0.25 feet	Parking areas	Plus or minus 0.03 feet
		Landscaped areas	Plus or minus 0.1 feet

After grading is completed and has been accepted by the Engineer, the Contractor shall permit no further excavating, filling, or grading.

The Contractor shall use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

3.09 Excavating for Footings

Earth surfaces, upon which footings will be placed, shall be compacted in accordance with the compaction requirements established in this section of these specifications.

The Contractor shall verify that all compaction is complete and approved prior to excavating for footings.

The Contractor shall excavate to the required lines and grades. The bottom of trenches shall be cut level and all loose soil shall be removed. Where soft spots are encountered, unsuitable materials shall be removed and replaced with flowable fill at no additional cost to the Owner.

3.10 Placing Granular Cushion

The Contractor shall carefully place the specified granular cushion in areas to receive concrete slabs on grade, uniformly attaining the thickness indicated on the drawings, and providing all required transition planes.

3.11 Trenching

The Contractor shall perform all trenching required for the installation of items where the trenching is not specifically described in other sections of these specifications.

All trenches shall be open construction, with sufficient width to provide free working space at both sides of the trench and around the installed item as required for pipelaying, backfilling, and compacting.

Trenching shall be completed, as required, to provide the elevations shown on the drawings. Where elevations are not shown on the drawings, trench to sufficient depth to give a minimum of 18 inches of fill above the top of the pipe, measured from the adjacent finished grade.

Where trench excavation is inadvertently carried below proper elevations, the over-excavated area shall be backfilled with material approved by the Engineer, and then compacted to provide

a firm and unyielding subgrade and/or foundation to the approval of the Engineer and at no additional cost to the Owner.

The Contractor shall properly support all trenches in accordance with all applicable rules and regulations.

The Contractor shall brace, sheet, and support trench walls in such a manner that they will be safe and that the ground alongside the excavation will not slide or settle, and that all existing improvements of every kind, whether on public or private property, will be fully protected from damage.

In the event of damage to such improvements, the Contractor shall immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

Bracing, sheeting, and shoring shall be constructed so as to not place stress on any portion of the completed work until the general construction thereof has proceeded far enough to provide sufficient strength. The Contractor shall exercise care in the drawing and removal of sheeting, shoring, bracing, and timbering to prevent collapse and caving of the excavation faces being supported.

Trenched material shall be stockpiled in a manner to prevent water running into the excavations. Surface drainage shall not be obstructed. A means shall be provided whereby storm and wastewaters are diverted into existing gutters, other surface drains, or temporary drains.

3.12 Miscellaneous Pipe Repair

When an existing sewer pipe, drain pipe, field tile, or other existing pipe is damaged as a result of construction activities and is not designated for removal or abandonment on the plans or by the Engineer, it shall be repaired by the Contractor.

The section of damaged pipe shall be removed to existing joints or to sawed joints where the existing pipe is sound and undamaged. A length of new pipe of the same size as the original pipe shall be furnished and installed to replace the section of pipe removed. The new pipe may be any one of the following materials:

A. Same material, class or thicknesses, as the original pipe

B. PVC Schedule 40, for pipes 8 inches or less in diameter

C. PVC SDR 26, for pipes 8 inches or greater in diameter

D. Other pipe material approved by the Engineer

Each end of the new section of pipe shall be connected to the remaining sections of existing pipe using a rubber gasketed sleeve, suitable for the pipe materials and sizes being joined, to provide

a watertight connection. The repaired section of pipe shall be firmly bedded in sand or aggregate, compacted according to Section 01 45 16.02 – Density and Aggregate Testing.

END OF SECTION

SECTION 31 25 00
SOIL EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 Work Included

The Contractor shall provide permanent and/or temporary erosion and sedimentation control as called for on the plans and as required by the county soil erosion agent and permit.

1.02 Definitions

A. Major rainfall event – ¼-inch or more precipitation over a period, delineated by dry periods of at least 24 hours.

1.03 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method

B. ASTM D4355 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus

C. ASTM D4491 – Standard Test Method for Water Permeability of Geotextiles by Permittivity

D. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles

E. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

F. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile

G. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products

H. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.04 Related Work

A. Section 01 41 26 – Permit Requirements

B. Section 01 57 26 – Dust Control

C. Section 31 37 00 – Riprap

D. Section 32 92 00 – Turf Establishment

1.05 Permit

The Contractor shall apply for and obtain an Act 451 permit from the local Soil Erosion and Sedimentation Control Enforcing Agent. The Contractor shall pay all permit fees and provide any required bonds or insurance.

1.06 Scheduling

A. Control measures shall be constructed by the Contractor prior to the time construction starts uphill or upstream from the control measure location.

B. The Contractor shall inspect all temporary erosion control measures weekly and within 18 hours of major rainfall events.

C. Maintenance and replacement of erosion control measures shall be completed by the Contractor when necessary, or as directed by the soil erosion control agent or the Engineer.

D. Removal and cleanup of temporary control structures shall be provided by the Contractor within one week after the control measure is no longer needed.

1.07 General Soil Erosion and Sedimentation Content Procedures

A. Keep disturbed areas small.

B. Stabilize and protect disturbed areas as soon as possible.

C. Keep storm water runoff velocities low.

D. Protect disturbed areas from runoff.

E. Retain sediment within the construction area.

PART 2 - PRODUCTS

2.01 Materials

A. Geotextiles

Geotextiles for filters shall be non-woven, meeting the requirements of the table below.

Silt fence geotextiles shall meet the requirements of the following table and shall be designed to collect eroded sediment transported in storm water runoff. The fabric shall have at least 70 percent minimum retained strength after 500 hours of U.V. exposure when tested according to ASTM D4355.

Geotextile Category	Property/Test Method					
	Grab Tensile Strength (min) ASTM D4632 lbs	**Trapezoid Tear Strength (min) ASTM D4533 lbs**	**Puncture Strength (min) ASTM D4833 lbs**	**Mullen burst strength (min) ASTM D3786 psi (a)**	**Permittivity ASTM D4491 Per second**	**Apparent Opening Size (max) ASTM D4751 (b) Millimeters**
Filters	90	45	45	140	0.5	0.21
Silt Fence	100(c)	45	--	--	0.1	0.60

(a) ASTM D3786. The fluid displacement rate for the Mullen burst test equipment must be 170± 5 ml/minute. Subtract tare strength from the ultimate burst strength as specified by ASTM.
(b) Filtration opening size (FOS, Canadian General Standards Board, method 148.1 No. 10) is permitted as an alternate test method to ASTM D4751 for non-woven geotextiles.
(c) Elongation at the specified grab tensile strength not to exceed 40 percent for silt fence.

B. Stone

Unless otherwise directed, stone shall meet the requirements of Series 6AA as specified in Michigan Department of Transportation 2020 Standard Specifications for Construction.

2.02 Mixtures

A. Seed

Seed shall meet the requirements of Section 32 92 00 – Turf Establishment.

2.03 Fabricated Items

A. Silt Fence

Geotextile for silt fences shall meet the requirements of Section 2.01. The geotextile shall be attached to machine pointed No. 2 common grade hardwood posts, using at least 5 staples through wood lath a minimum of $^3/_8$-inch thick and 2 feet long. Post spacing shall not exceed $6^1/_2$ feet. Posts must be of sufficient length and cross-section to support the installed silt fence under full sediment load; however, posts shall have cross-sectional area of at least $2^1/_4$ square inches and shall be a minimum of 36 inches in length. Silt fence fabric must be a minimum height of $2^1/_2$ feet. Silt fence shall have at least two permanent markings or affixed labels per assembled roll which positively identifies the fabricator.

B. Mulch Blankets

Mulch blankets shall meet the requirements of Section 32 92 00 – Turf Establishment.

C. Filter Sacks

All materials shall adhere to the requirements of the Michigan Department of Transportation 2020 Standard Specifications for Construction, except fabric drop, which shall consist of a geotextile filter sack inserted into the drainage structure under the cover.

Filter sack shall be as manufactured by “Siltsack”, “Catch-All”, “Ultra-Urban Filter”, “Flogard + Plus”, or approved equal. The filter sacks shall be installed and maintained in accordance with the manufacturer’s specifications.

PART 3 - EXECUTION

3.01 General Requirements

The Contractor shall perform work on the project in a manner which prevents or reduces erosion and controls sedimentation. The Contractor shall provide controls which keep sedimentation from the project area, within the limits of the project area, and out of any lake, river, stream, wetland, or storm drain.

The Contractor shall install appropriate controls or measures to control or prevent erosion or sedimentation from the project area before beginning any earth disturbance operations. Temporary erosion and sedimentation control measures shall be maintained by the Contractor, until such times as disturbed areas have become permanently stabilized.

During the life of the project, the Contractor shall provide any additional soil erosion or sedimentation control measures necessary to address specific problems which develop in and adjacent to the project area.

3.02 Time Limitations

Grading operations shall be completed as soon as practical. Permanent soil erosion controls for disturbed areas shall be completed within 5 calendar days of the completion of grading, except that permanent measures shall be completed within 24 hours when the disturbed area is within 150 feet of a lake, stream, river, or wetland area.

Temporary soil erosion measures shall be implemented when it is not practical to complete the permanent measures.

3.03 Area Limitations

For linear projects (roads, sewers, water main, etc.), the length of the disturbed area shall be limited to ½-mile, unless otherwise approved by the Engineer.

Areas outside the project right-of-way or outside the grading limits shown on the drawings shall not be disturbed, unless otherwise approved by the Engineer.

3.04 Construction of Erosion and Sedimentation Controls

The Contractor shall provide all permanent and temporary erosion and sedimentation controls shown on the drawings, required by the permitting agency, or necessary to appropriately control erosion and sedimentation from the project area.

A. Check Dams

Check dams shall be installed and maintained across ditches and watercourses, which might convey surface runoff from disturbed areas within the project area, or where shown on the drawings or required by the Engineer or permitting agency.

B. Silt Fence

The Contractor shall furnish, erect, and maintain silt fence around the perimeter of the project area where earth will be disturbed and sediment from the disturbed area could be conveyed.

C. Filters

Fabric or stone filters shall be installed in waterways or in advance of inlets to drainage courses or storm sewers.

D. Sediment Traps and Basins

Sediment traps shall be excavated upstream of check dams and where shown on the drawings or directed by the Engineer or permitting agency. Check dams shall be installed downstream of the sediment traps and basins prior to the sediment traps and basins being excavated.

E. Seeding

Earth areas shall be stabilized with turf immediately following the completion of earthwork and grading activities. Where permanent seeding cannot be completed, earth areas shall be stabilized with temporary seeding. Areas which are properly seeded temporarily for stabilization shall be permanently seeded, as shown, as the work can be appropriately completed.

F. Mulch Blankets

Areas susceptible to erosion from moving water, which are not to be paved, shall be seeded and protected with high velocity mulch blankets.

3.05 Maintenance and Erosion and Sedimentation Control

The Contractor shall maintain all temporary erosion and sedimentation controls until such time as the permanent measures have been completed and established.

The Contractor shall inspect all erosion and sedimentation controls weekly and within 18 hours of a major rain event.

Damaged controls or measures shall be replaced or repaired. Sediment shall be cleaned from traps, sumps, basins, filters, and fences periodically. Sediment shall be removed to prevent the accumulation of sediment from exceeding half of the volume of traps, sumps, and basins. Sediment or debris along silt fences shall be removed before the accumulation reaches half the height of the fence.

Sediment and debris removed from soil erosion and sedimentation control devices shall be disposed of properly by the Contractor. Sediment shall not be used for fill or backfill in the project area, except when an area is specifically designated on the plans or by the Engineer.

Drainage filters shall be cleaned when an accumulation of silt might reduce flow and result in flooding.

Any sediment from the construction area which enters storm sewers or drainage ditches shall be removed by the Contractor. Since sediment can be carried great distances within storm sewers, it may be necessary for many segments of downstream storm sewer segments to be televised,

jetted, and vacuumed. If the Engineer believes that the Contractor has allowed or provided the potential for sediment to enter storm sewers or drainage courses, the Contractor will be responsible for the costs of inspection and removing sediment from downstream drains, whether it can be conclusively proven that the sediment was the result of the Contractor's actions (or inaction).

3.06 Removal of Erosion and Sedimentation Control Devices

Temporary soil erosion and sedimentation control devices shall be removed or obliterated by the Contractor when the permanent measures are in place and established. Any areas damaged by the removal of the temporary devices shall be corrected by the Contractor.

Mulch used for temporary erosion control may either be removed or worked into the soil before the permanent topsoil and seeding is completed.

END OF SECTION

SECTION 31 37 00
RIPRAP

PART 1 - GENERAL

1.01 Work Included

This work includes providing slope or erosion protection where shown on the drawings or where directed by the Engineer. This work includes all necessary excavation and disposal of excavated material. A protective cobblestone and/or riprap covering of the type shown on plans shall be constructed on a prepared foundation, including headers along the edges of the slope protection, when specified. Unless otherwise noted, all cobblestone and/or riprap shall be installed over a geotextile liner. Slope protection may be of the following types:

A. Cobblestone

B. Plain Riprap

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ASTM C94 – Standard Specification for Ready-Mixed Concrete

B. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method

C. ASTM D4491 – Standard Test Method for Water Permeability of Geotextiles by Permittivity

D. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles

E. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

F. ASTM D4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile

G. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products

H. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

B. Section 31 25 00 – Soil Erosion and Sedimentation Control

PART 2 - PRODUCTS

2.01 Materials

A. Cobblestone

Furnish cobblestone that consists of rounded or semi-rounded rock fragments with an average dimension from 3 to 10 inches.

B. Plain Riprap

Provide natural stone with footprint dimensions of 8 to 16 inches and an in-place thickness of at least 18 inches. The Contractor may use smaller pieces to fill spaces for better slope protection.

C. Geotextile Liner

Geotextile material shall be non-woven, and designed for use for erosion control with riprap or similar applications.

Geotextile fabric shall meet the following physical requirements:

Physical Property	Test Method	Requirements for Riprap (except heavy)	Requirements for Heavy Riprap
Grab Tensile Strength (minimum)	ASTM D4632	200 pounds	270 pounds
Trapezoid Tear Strength (minimum)	ASTM D4533	75 pounds	100 pounds
Puncture Strength (minimum)	ASTM D4833	75 pounds	100 pounds
Mullen Burst Strength (minimum)	ASTM D3786	200 pounds	400 pounds
Permittivity	ASTM D4491	0.5 per second	0.5 per second
Apparent Opening Size (maximum)	ASTM D4751	0.21 mm	0.21 mm

D. Fine Aggregate

Fine aggregate for mortar mixtures shall meet the requirements of 2NS fine aggregate, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

2.02 Mixtures

A. Mortar

Mortar used with grouted riprap shall be a mixture of 1 part Type 1L or 1A Portland cement and 3½ parts fine aggregate. The water to cement ratio shall be between 0.45 and 0.48.

PART 3 - EXECUTION

3.01 Preparation of Subgrade for Slope Protection

The subgrade shall be formed by trenching or filling to the required elevation for the bottom of riprap. The subgrade shall be thoroughly tamped or otherwise compacted to ensure its stability and trimmed to the necessary tolerances. The subgrade shall be compacted according to Section 01 45 16.02 – Density and Aggregate Testing.

3.02 Cobblestone

The bank on which the cobblestone is to be placed shall be trimmed to a uniform slope, as shown on the plans. A geotextile liner shall be installed on the subgrade.

The cobblestone shall commence in a trench below the toe of the slope, and shall progress upward, with each stone being laid by hand and firmly bedded into the slope and against the adjoining stones. The stones shall be laid perpendicular to the slope, with the surfaces in contact and with well broken joints. The cobblestone shall be thoroughly compacted as the construction progresses, and the finished surface of cobblestone shall present an even, tight surface. The in-place thickness must be at least 10 inches.

3.03 Plain Riprap

The bank on which the plain riprap is to be placed shall be trimmed to a uniform slope, as shown on the plans. A geotextile liner shall be installed on the subgrade.

The riprap shall commence in a trench below the toe of the slope, and shall progress upward, with each stone being laid by hand and firmly bedded into the slope and against the adjoining stones. The stones shall be laid perpendicular to the slope, with the surfaces in contact and with well broken joints. The riprap shall be thoroughly compacted as the construction progresses, and the finished surface of the riprap shall present an even, tight surface.

When completed, the geotextile liner shall not be visible.

END OF SECTION

SECTION 32 11 16
GRANULAR SUBBASE

PART 1 - GENERAL

1.01 Work Included

This specification describes the requirements for constructing granular subbase under a proposed aggregate surface.

1.02 References

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

PART 2 - PRODUCTS

2.01 Materials

A. Granular subbase shall meet the requirements of Class II Sand, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction, unless otherwise noted on the plans, proposal, or specifications.

PART 3 - EXECUTION

3.01 Subgrade Preparation

Granular subbase shall not be placed until the subgrade is properly prepared. The subgrade shall be graded to the required elevations and shape for placement of the specified granular subbase thickness. The subgrade shall be compacted according to Section 01 45 16.02 – Density and Aggregate Testing. Soft or yielding spots shall be excavated and replaced with sound material.

3.02 Placement

Granular subbase shall be placed in a manner that provides a uniform cross section of the specified thickness and the required surface grades. The edges of the area of granular subbase shall be straight and uniform.

Material shall not be placed over frozen, soft, unstable, or rutted subgrade.

Granular subbase shall be placed in lifts not exceeding 12 inches (loose measure) and compacted according to Section 01 45 16.02 – Density and Aggregate Testing.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE

PART 1 - GENERAL

1.01 Work Included

This specification describes the requirements for constructing an aggregate base under a proposed pavement surface.

1.02 References

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

PART 2 - PRODUCTS

2.01 Materials

A. Aggregate shall meet the requirements of Series 21AA aggregate, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction, unless otherwise noted on the plans, proposal, or specifications.

PART 3 - EXECUTION

3.01 Subgrade Preparation

Aggregate shall not be placed until the subgrade is properly prepared. The subgrade shall be graded to the required elevations and shape for placement of the specified aggregate thickness. The subgrade shall be compacted according to Section 01 45 16.02 – Density and Aggregate Testing. Soft or yielding spots shall be excavated and replaced with sound material.

3.02 Placement

Aggregate shall be placed in a manner that provides a uniform cross section of the specified thickness and the required surface grades. The edges of the area of aggregate surface shall be straight and uniform.

Aggregate shall be placed in lifts not exceeding 8 inches (loose measure) and compacted according to Section 01 45 16.02 – Density and Aggregate Testing.

END OF SECTION

SECTION 32 12 16
HMA PAVING

PART 1 - GENERAL

1.01 Work Included

This work includes preparation for and construction of one or more courses of plant mixed Hot Mix Asphalt (HMA).

1.02 References

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

B. Michigan Testing Methods (MTM)

C. Michigan Department of Transportation HMA Production Manual

D. ASTM E965 – Standard Test Method for Measuring Pavement Macrotexture Depth Using a Volumetric Technique

1.03 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

B. Section 32 11 23 – Aggregate Base

1.04 Quality Assurance and Quality Control

A. The Engineer will take 20,000 gram samples of the HMA mixture using the mini-stockpile method. The rate of sampling will be determined by the Engineer.

PART 2 - PRODUCTS

2.01 Submittals

The Contractor shall submit material source and mix designs to the Engineer for approval prior to the start of construction.

2.02 Mixtures

Materials shall meet the requirements of Sections 501.02, 902, and 904 of the Michigan Department of Transportation 2020 Standard Specifications for Construction. If milling, the mix design to initially cover the milled surface must be approved prior to milling operations.

Provide aggregates, mineral filler (if required) and asphalt binder to produce a mixture proportioned within Superpave Final Aggregate Blend Gradation Requirements, and meeting the uniformity tolerance limits in the Uniformity Tolerance Limits for HMA Mixtures tables below.

Superpave Final Aggregate Blend Gradation Requirements					
	Mix Number				
	5	4	3 Leveling Course	3 Base Course	2
Standard Sieve	**% Passing Criteria (Control Points)**				
1½ inch	-	-	-	-	100
1 inch	-	-	100	100	90-100
$^3/_4$ inch	-	100	90-100	90-100	≤90
$^1/_2$ inch	100	90-100	≤90	≤90	-
$^3/_8$ inch	90-100	≤90	-	-	-
No. 4	≤90	-	-	-	-
No. 8	47-67	39-58	35-52	23-52	19-45
No. 16	-	-	-	-	-
No. 30	-	-	-	-	-
No. 50	-	-	-	-	-
No. 100	-	-	-	-	-
No. 200	2.0-10.0	2.0-10.0	2.0-8.0	2.0-8.0	1.0-7.0

Uniformity Tolerance Limits for HMA Mixtures						
Parameter			**Top and Leveling Course**		**Base Course**	
Number	**Description**		**Range 1 (a)**	**Range 2 (b)**	**Range 1 (a)**	**Range 2 (b)**
1	% Binder Content		-0.3 to +.4	+/- 0.5	-0.3 to +0.4	+/- 0.5
2	% passing	# 8 and Larger Sieves	+/- 5	+/-8	+/- 7	+/- 9
		# 30 Sieve	+/- 4	+/- 6	+/-6	+/-9
		# 200 Sieve	+/- 1	+/- 2	+/- 2	+/- 3
3	Crushed Particle Content		Below 10%	Below 15%	Below 10%	Below 15%

(a) This range allows for normal mixture and testing variations. The mixture must be proportioned to test as closely as possible to the Job-Mix-Formula (JMF).
(b) Deviation from JMF.

Parameter Number 2, as shown in the Uniformity Tolerance Limits for HMA Mixtures table, is aggregate gradation. Each sieve will be evaluated on one of the three gradation tolerances. If more than one sieve is exceeding Range 1 or Range 2 tolerances, only the one with the largest exceedance will be counted as the gradation parameter.

The master gradation should be maintained throughout production; however, price adjustments will be based on the Uniformity Tolerance Limits for HMA Mixtures table. Aggregates which are used in plant-mixed HMA mixtures must not contain topsoil, clay, or loam.

The mixture will be considered out-of-specification, as determined by the acceptance tests, if for any one mixture, two consecutive tests per parameter, (for Parameter 2, two consecutive aggregate gradations on one sieve) are outside Range 1 or Range 2 tolerance limits. If a parameter is outside of Range 1 tolerance limits and the second consecutive test shows that the parameter is outside of Range 2, then it will be considered to be a Range 1 out-of-specification. Consecutive

refers to the production order and not necessarily the testing order. Out-of-specification mixtures are subject to a price adjustment of 50 percent of the bid amount.

HMA mixtures and application rates shall be as shown on the plans.

Reclaimed Asphalt Pavement (RAP) shall be limited to 0 percent to 17 percent RAP by weight of the total binder in the mixture. No binder grade adjustment is made to compensate for the stiffness of the asphalt binder in the RAP.

Reclaimed Asphalt Shingles (RAS) will not be allowed in the mixture.

Oil bottoms/recycled motor oil will not be allowed in the mixture.

PART 3 - EXECUTION

3.01 Equipment

Equipment shall meet the requirements of Section 501.03 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

3.02 HMA Sampling and Testing

The HMA will be sampled at a rate determined by the Engineer that is appropriate for the project. Samples will be obtained using the "Mini-stockpile" method in accordance with MTM 324.

Quantitative Extraction of Bitumen from HMA Paving Mixtures (MTM 325) will be used to determine the asphalt content of the HMA mixture.

The Engineer is responsible for HMA testing.

The Contactor shall submit test results to the Engineer within seven days of HMA placement.

At the Engineer's discretion, original samples of asphalt binder will be taken by the Contractor and delivered to the Engineer prior to incorporation into the mixture. The frequency of sampling will be determined by the Engineer. The cost of obtaining and delivering the samples to the Engineer will be included in the HMA pay item(s). The Contractor must certify, in writing, that the materials used in the HMA mixture are from the same source as the materials used in developing the HMA mixture design and the bond coat is from an approved supplier, as stated in the Material Quality Assurance Procedures Manual.

3.03 Preparation

A. Aggregate Base (for Pavements Constructed on an Aggregate Base)
   See Section 32 11 23 – Aggregate Base.

B. Removal of Existing Pavement Surface

1. Butt Joints

When a butt joint is to be provided, the existing HMA surface shall be removed to a thickness equal to the thickness of the proposed overlay, for the full width of the butt joint, where the overlay is to meet the existing pavement surface. The depth of pavement removal shall be uniformly tapered from the full depth of the overlay at the butt joint to zero, at a rate of 1-inch per 10 feet.

2. Edge Trimming

Where the edge of an existing HMA pavement is required, the HMA pavement shall be cut its full depth in a manner that provides a vertical, straight edge.

C. Hand Patching

When hand patching is called for on the plans or directed by the Engineer, the Contractor shall fill holes, depressions, joints and cracks, and areas to be repaired in an existing pavement. HMA material used for hand patching may be any HMA material approved for use as a top course. A bond coat shall be applied to the exposed pavement surfaces within the area to be patched. The HMA material shall be placed in lifts to the level of the surface of the adjacent existing pavement surface. Each lift shall be within the minimum and maximum thickness range allowed for the mix design, and shall be compacted using a mechanical vibrator or an approved roller.

D. Bond Coat

Bond coat shall be applied to existing pavement surfaces, only when they are clean and dry. Bond coats shall be uniformly applied to the pavement surface with a pressure applicator. Bond coat shall be placed in advance of HMA placement to provide for its curing prior to HMA placement.

Bond coat shall not be allowed to pool on the surface; pooling shall be removed. The adjacent pavement surfaces which are not to be overlaid shall not be sprayed with bond coat.

Bond coat shall be applied to each layer of the HMA pavement and to the vertical edges of the adjacent pavements before placing subsequent courses.

E. Transportation of HMA

HMA shall be transported to the project site in accordance with the requirements of Section 501.03.E of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

Each load of HMA delivered to the project site shall be weighed on an approved scale with automatic print out system. Weights shall be measured to the nearest 20 pounds. Scales and print out systems shall meet the requirements of Section 109 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

F. Placement of HMA

HMA shall be placed in accordance with the requirements of Section 501.03.F of the Michigan Department of Transportation 2020 Standard Specifications for Construction and at the rate shown in the HMA Application Rate table in the project plans.

G. Rolling

HMA shall be rolled in accordance with the requirements of Section 501.03.G of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

H. Smoothness requirements as per the requirements of Section 501.03.H of the Michigan Department of Transportation 2020 Standard Specifications for Construction shall be adhered to.

I. Weather and Seasonal Limitations

1. The Contractor shall not place bond coat or HMA when precipitation is imminent or when there is moisture on the existing surface to be overlaid.

2. HMA shall not be placed when the underlying base is frozen, and the surface being paved is at least 35 degrees Fahrenheit.

3. Unless otherwise approved by the Engineer in writing, HMA shall not be placed before May 15 or after November 15.

J. Protection

The Contractor shall protect surfaces, structures, signs, poles, vehicles, and other items adjacent to the area to be paved from being discolored or damaged. Damaged items shall be corrected at the Contractor's expense. The Contractor shall protect the newly placed HMA surface from damage by traffic and construction activities.

K. Aggregate Shoulders

On resurfacing projects, existing aggregate shoulders shall be scarified prior to placing new aggregate.

Shoulders shall be maintained in a satisfactory condition to allow for vehicles to pass construction operations or for the operation of construction equipment. The Contractor shall restore any damages or disturbances to the shoulders, or to the surface between the edge of pavement and the right-of-way. The cost of restoration is considered included in the other work performed by the Contractor and will not be paid for separately.

END OF SECTION

SECTION 32 13 00
CONCRETE CURB AND GUTTER, SIDEWALK,
AND MISCELLANEOUS PAVEMENT

PART 1 - GENERAL

1.01 Work Included

This work includes all preparation, forming, concrete production and placement, finishing, jointing, reinforcing, curing, protection, and restoration for the construction of concrete curb and gutter, sidewalk, and miscellaneous pavement.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ASTM A1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

B. ASTM C94 – Standard Specification for Ready-Mixed Concrete

C. ASTM C150 – Standard Specification for Portland Cement

D. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

E. ASTM C595 – Standard Specification for Blended Hydraulic Cements

F. ASTM A706, ASTM A615, or ASTM A996 (Type R or Type A only) for Grade 60 steel bars

G. ASTM A775 for epoxy coated steel reinforcement

H. ASTM D1751 – Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

I. Michigan Department of Transportation 2020 Standard Specifications for Construction

J. Michigan Department of Transportation Standard Plan

1.03 Related Work

A. Section 01 45 16.01 – Concrete Testing

B. Section 01 45 16.02 – Density and Aggregate Testing

C. Section 02 41 13.13 – Pavement Removal

PART 2 - PRODUCTS

2.01 Materials

A. Portland cement shall meet the requirements of ASTM C150 and ASTM C595.

B. Coarse aggregate shall meet the requirements of Class 6AA aggregate, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

C. Intermediate aggregate shall meet the requirements of Class 26A aggregate, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

D. Fine aggregate shall meet the requirements of Class 2NS, 2SS, or 2MS aggregate, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

E. Reinforcing steel fabric shall meet the requirements of ASTM A1064.

F. Deformed bars must meet the requirements of ASTM A706, ASTM A615, or ASTM A996 (Type R or Type A only) for Grade 60 steel bars, unless otherwise required. All deformed bars shall be epoxy coated.

G. Epoxy coated steel reinforcement must be coated in accordance with ASTM A775.

H. White membrane curing compound shall conform to ASTM C309, Type 2. Curing compound shall be agitated to provide a uniform consistency prior to transfer between containers or before application.

I. Fiber joint filler shall meet the requirements of ASTM D1751.

J. Sand for base shall meet the requirements of Granular Material Class II, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

K. The detectable warning surface shall contrast visually with adjacent walking surfaces. The Contractor shall submit the detectable warning product information to the Engineer for approval.

L. Geotextile liner shall meet the requirements per the Michigan Department of Transportation 2020 Standard Specifications for Construction, as shown in Table 910-1 for physical requirements of geotextile.

2.02 Mixtures

Concrete shall be transit mixed 3,500 psi concrete in accordance with ASTM C94 and Section 01 45 16.01 – Concrete Testing.

Air content, slump, and compressive strength shall be according to Section 01 45 16.01 – Concrete Testing. Concrete shall contain at least six sacks of cement per cubic yard of concrete. Modifications and the use of admixtures may be submitted and shall be approved by the Engineer.

2.03 Submittals

A. Prior to beginning construction, the Contractor shall submit the name and plant location of the proposed concrete supplier for the project.

B. Prior to beginning construction, the Contractor shall submit mix designs for the proposed concrete mixtures proposed for use on the project for the Engineer to review.

2.04 Cross Sections

A. Sidewalk

Unless indicated otherwise on the plans, sidewalk shall have a minimum thickness of 4 inches. Sidewalk through residential driveways shall have a minimum thickness of 6 inches. Sidewalk through commercial driveways shall have a minimum thickness of 8 inches. Sidewalk through driveways shall be reinforced with #10 by 6 inches by 6 inches welded wire fabric.

B. Pavement

Concrete pavement section shall be as indicated on the plans.

C. Concrete Curbs and Concrete Curb and Gutter

Unless shown otherwise on the plans, concrete curb and concrete curb and gutters shall be in accordance with Michigan Department of Transportation Standard Road Plan R-30 Series.

D. Spillways

Unless shown otherwise in the plans, spillways shall be constructed in accordance with Michigan Department of Transportation Standard Plan R-35-series.

PART 3 - EXECUTION

3.01 Coordination of Traffic

Hazardous areas shall be barricaded to protect pedestrian and vehicular traffic.

Work shall be scheduled so that access is maintained to driveways and entrances through the project area to the extent possible. Where a driveway or entrance must be closed for a period, the property owner or occupant shall be notified in advance of the closing.

3.02 Removal of Existing Sidewalk, Curb and Gutter, and Pavement

Where an existing sidewalk, curb and gutter, and/or pavement are to be removed and replaced, the existing structure shall be removed in accordance with Section 02 41 13.13 – Pavement Removal.

3.03 Preparation

The base shall be excavated, filled, and shaped, as required, to construct pavement of the required thickness at the proposed grades and alignment. The base shall be compacted according to Section 01 45 16.02 – Density and Aggregate Testing. Soft and yielding soils shall be excavated and replaced with suitable soils.

Where existing curb and gutter has been removed and prior to constructing new curb and gutter, the Contractor shall install 2 dowels, $^{1}/_{2}$-inch in diameter, into existing curb and gutter at each end. Cost of dowels are included in the payment for curb and gutter.

Concrete may be placed by slipforming, unless indicated otherwise.

Where forms are used, the forms shall extend the full depth of the concrete. Forms shall be of

sufficient strength and staked to prevent springing or yielding after placement of concrete. Flexible forms capable of making a smooth arc shall be used for curved sections. Face forms for the exposed face of curb are not required.

Where steel reinforcement is used, it shall be spliced and held in place in a manner approved by the Engineer. Splices shall be overlapped by 10 inches.

3.04 Required Grades

A. Driveways shall be constructed with a maximum slope of 10 percent.

B. Sidewalks shall be constructed with a maximum transverse slope of 2 percent. Transverse slopes shall be at least 1 percent, unless longitudinal drainage is provided. The longitudinal slope of sidewalk shall not exceed the general grade established for the adjacent street or highway. Where adjacent street or highway general grades are less than 5 percent, the longitudinal slope of sidewalk may exceed the general road grade to a maximum of 5 percent.

C. Gutter grades shall not be constructed flatter than 0.4 percent, or less than the grades shown on the plans, whichever is less.

3.05 ADA Requirements

A. Sidewalks and sidewalk ramps shall meet ADA requirements and shall follow the Michigan Department of Transportation Standard Road Plan R-28-series.

B. ADA sidewalk ramps shall include polymer, cast in, detectable warning surfaces, red in color. ADA ramps shall be constructed per Michigan Department of Transportation and ADA specifications.

C. Concrete ramp thickness shall be 6 inches within the first 5 feet behind the back of curb and 4 inches thick beyond the first 5 feet, with a minimum of 4 inches of Michigan Department of Transportation Class II granular material base compacted in place.

3.06 Placement of Concrete

Concrete shall not be placed until the forms (or grade, if the concrete will be slipformed) have been inspected by the Engineer. The Contractor shall notify the Engineer a minimum of 24 hours prior to scheduling a concrete pour.

The base shall be moistened just prior to placement of the concrete.

Concrete shall have a temperature between 45 degrees Fahrenheit and 90 degrees Fahrenheit at the time of placement.

Concrete shall be deposited to the proper depth and spaded or vibrated to ensure proper consolidation. Concrete shall be placed and finished in a continuous operation.

Any material required to fill low spots shall be obtained from the mixture used in the work. Exposed surfaces of the concrete slab shall be finished smooth and even by means of a moistened wood float. Sidewalk and pavement slabs shall be lightly brushed perpendicular to the normal

direction of traffic. Water shall not be added to the concrete surface as an aid to finishing. The top edges of the slab and all transverse joints shall be rounded with a finishing tool having a radius of ¼-inch. Surfaces shall not vary more than $^{3}/_{8}$-inch from the alignment and typical cross section.

Joints shall be constructed in accordance with the Michigan Department of Transportation Standard Road Plan R-29 and R-30 Series.

Expansion joint filler shall extend the full depth of the concrete, with the top of the filler material just below the finished concrete surface.

Exposed concrete surfaces shall be cured using white membrane curing compound, applied uniformly at a rate of 200 square feet per gallon. Curing compound shall be applied regardless of temperature or humidity conditions.

3.07 Protection

Concrete shall not be placed if the air temperature is not at least 25 degrees Fahrenheit and rising, or more than 90 degrees Fahrenheit. Concrete shall be protected from damage caused by freezing or rain.

The Contractor shall provide protection for existing surfaces (building faces, light poles etc.) from splattering of concrete. Any damage to building faces, light poles, etc. from concrete splatter shall be repaired or replaced at the Contractor's expense.

The Contractor shall provide sufficient barricading and security to protect fresh concrete from accidental damage or vandalism. Damaged concrete shall be removed to a joint and replaced at the Contractor's expense.

3.08 Cleanup

After the concrete has attained sufficient strength, the forms shall be removed.

Where adjacent areas are turf, the area next to the pavement shall be backfilled with sound earth and topsoil, and graded so the surface is about 1-inch below the pavement or as necessary to provide proper drainage.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 Work Included

This work includes furnishing and applying pavement markings at locations shown on the plans, in the proposal, or as directed by the Engineer, in accordance with the Michigan Manual on Uniform Traffic Control Devices and as specified herein.

The Contractor is responsible for all layout work necessary for the location and placement of pavement markings, as shown on the plans or in the proposal or as directed by the Engineer.

All markings, shapes, and dimensions shall conform to the Michigan Department of Transportation Pavement Marking Standards or other details provided.

1.02 References

A. Michigan Department of Transportation 2020 Standard Specifications for Construction

B. Michigan Manual on Uniform Traffic Control Devices

C. Michigan Department of Transportation's Qualified Products List

1.03 Submittals

The Contractor shall submit a list of all proposed materials and suppliers for pavement marking materials for review prior to performing the work.

1.04 Quality Assurance and Quality Control

The Contractor shall maintain and provide the Engineer with records of application of pavement marking materials, including paint and beads. The records shall include descriptions of the materials used (manufacturer, batch, date of manufacture, etc.) and quantities of each (gallons of paint or binder, pounds of beads).

PART 2 - PRODUCTS

2.01 Materials

A. General Requirements

All pavement markings must be lead-free and selected from the Michigan Department of Transportation's Qualified Products List. Pavement marking materials must be manufactured in the calendar year in which they are to be applied.

B. Packaging and Labeling

Materials shall be furnished in containers or packages plainly marked showing the manufacturer, description of materials, product identification number, batch number, date of manufacture, contents weight, and contents volume.

Thermoplastic material shall be packaged in a manner to prevent it to adhere during storage or shipment. The label on the material shall include the manufacturer's recommendations for the application temperature.

Glass beads shall be packaged in moisture resistant bags.

C. Glass Beads

Glass beads shall meet the requirements of Section 920.02 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

PART 3 - EXECUTION

3.01 Applying Pavement Markings

Prior to the application of pavement markings, the pavement surfaces shall be clean, dry, and free of foreign materials. The Contractor shall be responsible for removal of foreign material, which can be removed by air-blasting. The Contractor shall also be responsible for removing occasional debris or dead animals from the line track. When shown on the plans or in the proposal, or when directed by the Engineer, curing compound on new concrete shall be removed by light sandblasting.

All materials and glass beads shall be placed according to the manufacturer's requirement.

Pavement markings shall be applied uniformly to the surface and so that they adhere adequately, following manufacturer's recommendations. All materials shall be thoroughly mixed at all times during application. Thinning of liquid materials will not be permitted.

Pavement markings shall be of the width called for on the plans, details, or pay item(s). The markings shall be of the color(s) and configuration as shown on the plans, in the proposal, or as directed by the Engineer. A solid line of the color and width specified shall have no gaps or spaces of unapplied material.

Improperly located markings shall be removed at the Contractor's expense, in accordance with Section 811 of the Michigan Department of Transportation 2020 Standard Specifications for Construction and shall be reapplied in the correct locations at no cost to the Owner.

Applied markings shall be sharp and well-defined. The markings shall be free of uneven edges, overspray, or other readily visible defects which, in the opinion of the Engineer, detract from the appearance or function of the pavement markings. Appropriate care shall be taken to prevent motorists and adjacent properties from being sprayed. Shields or other devices may be used for this purpose.

Pavement marking lines shall be straight or of uniform curvature and shall conform with the tangents, curves, and transitions, as specified in the pavement marking plans and/or directed by the Engineer. The lateral deviation of the finished lines shall not exceed ½-inch from the proposed location alignment, as specified in the plans and/or directed by the Engineer.

Any deviation of the pavement marking lines greater than that specified herein, or shown on the pavement marking plans, shall be sufficient cause for requiring the Contractor to remove and correct such pavement markings at no additional expense to the Owner.

Pavement markings shall be protected from damage by the Contractor during the cure period. Pavement markings damaged by traffic, that were not applied and/or suitably protected, shall be traced at the Contractor's expense as directed by the Engineer. Tracked lines shall be removed at the Contractor's expense when ordered by the Engineer.

Application, temperature, protection, and seasonal restrictions shall be in accordance with Section 811 of the Michigan Department of Transportation 2020 Standard Specifications for Construction.

END OF SECTION

SECTION 32 31 13
PVC COATED CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

This work shall include the excavation for and installation of concrete post bases, and the installation of fence framework, fabric, and accessories.

PART 2 - PRODUCTS

2.01 Fence Materials

A. Acceptable manufacturers and products:

1. Merchants Metals – Colorbond I

2. Ameristar – PermaCoat PC-40

3. Design Professional approved equivalent

B. Framework: ASTM F1043 Group I-A and I-C Heavy Industrial Fence and also conform to Federal Specification RR-F-191 Class 1 Grades A and B. Terminal Posts shall be 3-inch SS 40, line posts shall be 2 1/2-inch SS 40 and rails shall be 1 5/8-inch SS 40.

C. Fabric: Federal Specification SRR F191, Type I, Hot Dipped Galvanized steel wire; 11-gauge, 2-inch mesh size.

D. Vinyl Coating shall conform to ASTM F 668 Class 2B. Minimum thickness shall be 0.022 inches for a final finished gauge of 8+/-. Coating color shall be black

2.02 Accessories

A. Chain link fence accessories: [ASTM F626] Provide items required to complete fence system. Galvanize each ferrous metal item and finish to match framing. All accessories shall be PVC coated to match fabric and framing.

B. Post caps: PVC-coated formed steel, cast malleable iron, or aluminum alloy weather tight closure cap for tubular posts. Provide one cap for each post. Cap to have provision for barbed wire when necessary. “C” shaped line post without top rail or barbed wire supporting arms do not require post caps. Where top rail is used, provide tops to permit passage of top rail.

C. Top/bottom rail and brace rail ends: PVC-coated pressed steel per ASTM F626, for connection of rail and brace to terminal posts.

D. Sleeves: Lengths of top rails to be connected using 6-inch PVC-coated sleeves that allow for expansion or contraction of the rail.

E. Tie Wire: PVC-coated 9-gauge galvanized steel or 6-gauge aluminum for attachment of chain link fabric to posts and rails. Hog rings attach fabric to tension wire to be 12½-gauge (0.0985-inch).

F. Brace and tension (stretcher bar) bands: PVC-coated pressed steel.

G. Tension (stretcher) bars made of one continuous piece of steel or aluminum, 3/16-inch by 3/4-inch. Provide one bar per end or gate post and two bars per corner or pull post.

H. Tension wire: PVC applied to metallic coated steel wire: Per ASTM F 1664 Class 2a, 6-gauge, (0.1920-inch) diameter core wire with tensile strength of 75,000 psi.

I. Truss rods and tightener: PVC-coated steel rods with minimum diameter of 5/16-inch. Capable of withstanding a tension of minimum 2,000 pounds.

J. Nuts and bolts are galvanized but not vinyl coated. Touch up nuts and bolts with PVC touch up paint to match fencing.

2.03 Swing Gates

A. Gate frames shall be constructed of same material used for fencing.

B. Provide hinges capable of supporting gate and swinging 180 degrees in or out.

C. Latch shall be Fulcrum type with pad lock hasp.

D. Provide drop bar to hold one leaf stationary.

E. Provide hold opens on all gates.

2.04 Warranty

A. Fencing shall be warranted for a minimum of 15 years against failure due to rust or corrosion.

2.05 Concrete Mix

A. Concrete Mix shall have a minimum compressive strength of 3,500 psi and shall conform to the requirements of grade 35S concrete as outlined in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

PART 3 - EXECUTION

3.01 Chain Link Fence Framing Installation

A. Install chain link fence in accordance with ASTM F567 and manufacturer's instructions.

B. Locate terminal post at each fence termination and change in horizontal or vertical direction of 30 degrees or more.

C. Space line posts uniformly [at 10-foot on center].

D. Set terminal, corner, gate, and line posts per details on plan.

E. Check each post for vertical and top alignment and maintain in position during placement and finishing operations.

F. Bracing: Install horizontal pipe brace at mid-height for fences 6-foot and over, on each side of terminal posts. Firmly attach with fittings. Install diagonal truss rods at these points. Adjust truss rod, ensuring posts remain plumb.

G. Top/center/bottom rail: Install lengths, 21-foot. Connect joints with sleeves for rigid connections for expansion/contraction.

H. Center rails are to be installed when fence fabric is 10-foot or higher, or when shown on drawings.

I. Bottom rails to be installed when shown on drawings.

3.02 Chain Link Fabric Installation

A. Fabric: Install fabric on court side and attach so that fabric remains in tension after pulling force is released. Leave approximately ¾-inch between finish grade and bottom selvage. Attach fabric with wire ties to line posts at 15-inch on center and to rails, braces, and tension wire at 24-inch on center.

B. Tension (stretcher) bars: Pull fabric taut; thread tension bar through fabric and attach to terminal posts with bands or clips spaced maximum of 15-inch on center.

3.03 Accessories

A. Tie wires: Bend ends of wire to minimize hazard to persons and clothing.

B. Fasteners: Install nuts on side of fence opposite fabric side for added security.

3.04 Cleanup and Repair

A. Repair or replace any damaged finish on the fencing.

B. Clean up and dispose of any unused materials.

END OF SECTION

SECTION 32 92 00
TURF ESTABLISHMENT

PART 1 - GENERAL

1.01 Work Included

This work includes soil preparation, seeding, fertilizing, and mulching on those areas designated for turf establishment.

1.02 References

A. Michigan Department of Transportation Qualified Products List

1.03 Related Work

A. Section 31 25 00 – Soil Erosion and Sedimentation Control

1.04 Performance Requirements for Guaranteed Growth and Smooth Ground Surface

The Contractor is responsible to provide turf, substantially free of bare spots and free of weeds. The ground in turf areas shall be smooth, graded to provide positive drainage, and graded to provide a smooth transition to adjacent areas. The Engineer will determine when the requirements of guaranteed growth and smooth ground surface have been met.

Materials, requirements, and methods described in this specification are provided to establish minimum levels. Where the Contractor believes that other materials or methods are appropriate for the specific site conditions or better suited to the Contractor's schedule, the Contractor shall submit details of the alternative materials and/or methods to the Engineer for approval.

The Contractor shall provide re-seeding, watering, and herbicides, as necessary, to achieve the desired results.

There will be no adjustment in project cost for re-seeding, watering, application of herbicides, or using alternative methods of turf establishment.

1.05 Areas Designated for Turf Establishment

All areas disturbed by the Contractor's activities or as a result of the project, which are not to be restored with a pavement or aggregate surface, are to be restored with turf, unless specifically directed otherwise.

Turf shall be established on borrow areas and areas where excess soil is stockpiled.

When shown on the drawings or directed by the Engineer, the Contractor shall establish turf in other areas.

PART 2 - PRODUCTS

2.01 Materials

A. Topsoil

Topsoil shall be a humus-bearing, natural mineral soil of loam, sandy loam, silty loam, or clay loam classification. Topsoil shall neither be excessively acidic or alkaline.

Topsoil shall be screened and free of stones, roots, debris, and other foreign matter. Topsoil which is stripped from the project area shall be removed, transported, and stockpiled in a manner which prevents it from becoming mixed with sub-soils.

B. Fertilizer

Fertilizers shall be standard, commercial packaged or bulk products in granular or liquid form. Each container of packaged fertilizer shall be marked by the manufacturer with the following information: manufacturer name; lot number; date; analysis of contents, including the minimum percentages of total nitrogen, available phosphoric acid, and soluble potash; and the net weight. Bulk fertilizer shall be accompanied with an invoice indicating the manufacturer name; lot number; date; analysis of contents, including the minimum percentages of total nitrogen, available phosphoric acid, and soluble potash; and the net weight or volume.

Fertilizer for seeding or sodding shall be comprised of both a water insoluble component and a water soluble component. The water insoluble nitrogen must be from ureaformaldehydes and/or coarse grade isobutylidene diurea.

Fertilizer shall provide 33 pounds of actual water insoluble nitrogen per acre. The water soluble component of the fertilizer shall provide 65 pounds of actual nitrogen, phosphorus, and potassium nutrient per acre, in equal proportions. The water soluble component of the fertilizer shall include urea, diammonium phosphate, and potassium chloride.

C. Mulch

1. Loose Mulch

Mulch shall be straw or marsh hay, in an air-dried condition. Mulch material must be clean, undamaged, and rot-free. It must be substantially free of weed seed and other objectionable foreign matter.

2. Turf Mulch Blankets

Mulch blankets shall be manufactured by a company currently listed on the Michigan Department of Transportation's Qualified Products List.

Mulch blankets shall have a net covering on both sides of the blanket and shall be manufactured from either excelsior or straw. Excelsior blankets shall be manufactured from a uniform layer of interlocking excelsior fibers cut from sound, green timber, with an average dry weight of 12 ounces per square yard. Straw blankets shall be made of a uniform layer of clean wheat straw, free of weeds and weed seed, with the straw and net covering securely stitched together to form a uniform mat having an average dry weight of 8 ounces per square yard.

3. Mulch Anchoring

Mulching anchoring shall be manufactured by a company currently listed on the Michigan Department of Transportation's Qualified Products List. Remove mulch anchoring after substantial completion date; ensure that anchoring does not cause issues with mowing.

Latex-based anchoring shall have a composition, by weight, of 48 percent styrene, 50 percent butadiene, and 2 percent additive, 42 percent to 46 percent solids, and a pH of 8.5 to 10.

Recycled newsprint mulch shall be comprised of specifically prepared, biodegradable, shredded newspaper particles consisting of recycled newsprint fibers. The recycled newsprint must contain a wetting agent, defoaming agent, and nontoxic dyestuff that will impart a bright green or blue color. The dyestuff must adhere tightly to the fiber. Recycled newsprint shall meet the following minimum requirements:

Moisture content (total weight)	12 percent maximum
Shredded high-grade newsprint (oven dry)	96 percent minimum
Tackifier, by weight	1½ percent to 3 percent
Water holding capacity (water per 3½ ounces of fiber)	32 ounces minimum

Wood fiber shall be specially prepared, biodegradable, air-dried virgin wood fibers manufactured from 100 percent whole wood chips. The wood fiber must be manufactured with a tackifier. Recycled materials are not acceptable. The fibers must be dyed with a green or blue biodegradable dye to aid in visual metering during construction. The process and materials must not contain growth or germination inhibiting materials. The wood fiber must conform to the following specifications:

Moisture content (total weight)	12 percent maximum
Organic wood fiber (oven dry)	95 percent minimum
Tackifier, by weight	3 percent to 5 percent
Water holding capacity (water per 3½ ounces of fiber)	35 ounces minimum

Guar gum tackifiers shall contain a minimum of 95 percent guar gum by weight. The remaining components shall be dispersing and crosslinking additives.

Other tackifiers may include water soluble natural vegetable gums, or guar gums blended with gelling and hardening agents, or a water soluble blend of hydrophilic polymers, viscosifiers, sticking aids, and other gums.

4. Mulch Netting

Netting shall have a mesh size not larger than 1½ inches by 2 inches and not smaller than ½-inch by ½-inch. The netting shall be fabricated from a plastic formulated from or treated with a chemical which will promote the breakdown of the net within the first growing season after its placement. The net shall have sufficient strength to hold the mulch in place and still deteriorate rapidly upon exposure to sunlight. Steel staples or pins shall not be used for anchoring of netting.

D. Weed Control

Herbicides must be approved for use by the Michigan Department of Agriculture and the U.S. Environmental Protection Agency.

2.02 Seeding Mixtures

Seed shall be furnished in durable bags, each with a tag indicating the seed supplier, lot number, date, mixture proportions, purity, germination, and net weight.

Seed mixtures shall meet the requirements of one or more of the following mixtures, or other mixtures that are approved in advance by the Engineer. Where the Contractor believes that another mixture is appropriate for areas within the limit of the project, the Contractor shall request that the Engineer review and approve the substituted mixture(s). Requests for substitutions shall include the name of the seed supplier, the mixture proportions, the purity, and the germination.

Species	Purity, Minimum (percent)	Germination (percent)	Seed Mixture						
			Mixture Proportions (percent by weight)						
			TDS	THV	TUF	TGM	THM	CR	TSM
Kentucky Blue Grass	98	85	5	15	10	10	30		
Perennial Ryegrass	96	85	25	30	20	20	20		50
Hard Fescue	97	85	25		20	30			
Creeping Red Fescue	97	85	45	45	40	40	50		
Fults Salt Grass	98	85		10	10				
Cereal Rye	85	85						100	
Spring Oats	85	85							50

PART 3 - EXECUTION

3.01 Preparation for Turf Establishment

A. Topsoil Stripping

Prior to performing any excavation, filling, grading, or other earthwork, the Contractor shall strip and stockpile topsoil for later use on the project. Excess topsoil shall not be removed from the project site unless specifically provided elsewhere in the contract documents.

B. Finish Grading

The areas that are to be seeded shall be properly graded, sloped, and shaped with an allowance for the thickness of the topsoil layer. The earth bed upon which topsoil will be placed shall be friable to a depth of at least 4 inches. Earth beds not in a friable condition shall be harrowed with a disk, spring tooth drag, or similar equipment.

C. Placement and Preparation of Topsoil

Topsoil shall be spread on the prepared areas to a depth of 3 inches (in place, after rolling or compaction), unless otherwise shown on the plans or proposal. After spreading, any large clods or lumps shall be broken and all stones larger than 1-inch diameter, rocks, roots, litter, and other foreign debris shall be raked up and disposed of by the Contractor. After

spreading and raking, the topsoil surface shall be in a friable condition and the surface shall be reasonably close to the proposed grades and cross section.

The topsoil surface shall be shaped to provide proper drainage. Where proposed grades are not shown on the plans, the topsoil surface shall be graded to provide a smooth transition between the new construction and the existing, adjacent ground.

Excess topsoil shall be stockpiled in a location acceptable to the Owner and neatly trimmed to present a neat appearance.

3.02 Turf Establishment

A. Permanent Seeding and Fertilizing

Disturbed areas shall be seeded upon completion of earthwork and grading operations. Disturbed areas shall be stabilized with temporary seeding if permanent seeding cannot be completed.

Seed mixtures for permanent seeding shall be appropriate for the soil type and location, as indicated in the following table. The Contractor may propose and submit alternative mixtures to the Engineer for review and approval. It is the Contractor's responsibility to provide turf areas which are substantially free of bare spots and generally weed-free.

Mixture Designation	Soil Type	Location
TDS	Dry Sandy to Sand Loam	Rural or Urban
TUF	All Types	City Streets

Fertilizer and seed shall be applied uniformly on areas prepared for seeding. Seed shall be applied at a rate of 220 pounds per acre. Seed and fertilizer may be applied by drilling, broadcasting, or hydraulically. Seed and fertilizer shall be applied before applying mulch. Seed and fertilizer shall be lightly raked or rolled into the prepared topsoil surface.

Neither broadcast seeding nor hydraulic seeding shall be performed during windy weather.

There shall be provisions for mixing or agitating the seed – fertilizer mixture used for hydraulic seeding to keep it evenly distributed in suspension. Mixtures shall be applied within an hour of mixing the seed with water; unused portions shall be discarded.

B. Temporary Seeding

Temporary seeding shall be completed when the permanent seeding cannot be completed because of seasonal conditions. Temporary seeding shall be applied at a rate of 100 pounds per acre, and shall be of the following designation.

Mixture Designation	Soil Type	Location
CR	All Types	Temporary, less than 6 months
TSM	All Types	Temporary, more than 6 months

Before completion of the contract, the Contractor shall complete permanent seeding of all areas which are temporary seeded.

C. Dormant Seeding

Dormant seeding should be used only when necessary to complete a project when seasonal conditions are not conducive to permanent seeding. Dormant seeding shall not be completed on frozen ground. Dormant seeding shall be completed, as required, for permanent seeding.

The Contractor is responsible to establish turf which is substantially free of bare spots and generally free of weeds.

3.03 Mulching

A. Mulch Placement

Immediately after the seed has been set into the topsoil surface by light raking or rolling, the Contractor shall spread mulch and anchor it as appropriate. Mulching shall not be performed during windy conditions.

Loose mulch shall be placed thick enough to shade the ground, conserve moisture, and resist erosion, but open enough to allow sunlight to penetrate and air to circulate.

The Contractor shall maintain mulched areas and repair any areas where damage from erosion, wind, traffic, fire, or other causes occur.

Mulch shall be applied at a uniform rate of 2 tons per acre, except that a rate of 3 tons per acre is required with dormant seeding.

B. Mulch Anchoring

Mulch anchoring (tackifiers) shall be sprayed immediately after the mulch is placed. Spraying shall not be performed when wind might prevent the proper placement of the adhesive. The Contractor shall provide protection measures, as necessary, to protect traffic, signs, structures, and other objects from being marked or disfigured by tackifier materials.

Latex based adhesive shall be mixed at a rate of at least 15 gallons of adhesive with a minimum of 250 pounds of recycled newsprint and 375 gallons of water.

Recycled newsprint shall be mixed at a minimum rate of 750 pounds of newsprint with 1,500 gallons of water.

Wood fiber shall be mixed at a minimum rate of 750 pounds of wood fiber with 1,500 gallons of water.

Guar gum shall be mixed at a minimum rate of 100 pounds of dry adhesive and a minimum of 250 pounds of recycled newsprint and 1,300 gallons of water.

Other tackifiers shall be mixed at a minimum rate of 100 pounds of dry adhesive with a minimum of 250 pounds of recycled newsprint with 1,300 gallons of water.

C. Mulching Netting

When netting is used to secure mulch, it shall be secured with anchors, staples, or pins. The

net shall be spread over the mulch so that a worker can walk between adjacent widths of the net. The edges of adjacent widths of net shall be pulled together and held in place with net anchors. Net anchors shall be spaced not more than 30 inches apart along the edges, joints, and centerline. The net shall not be installed in direct contact with the ground. If the Contractor elects to use mulch netting or blankets, the Contractor will be required to remove the netting fabric once the turf is established.

D. Mulch Blankets

Mulch blankets shall be installed within one day of seeding. The side edges of blankets shall be overlapped by 2 inches. Blanket ends shall be shingle lapped 6 inches. Non-metallic staples or pegs shall be placed along all joint edges and along blanket centerlines at a maximum spacing of 2 feet. Blankets in waterways shall be shingle lapped 12 inches on the downslope edge. If the Contractor elects to use mulch netting or blankets, the Contractor will be required to remove the netting fabric once the turf is established.

High velocity blankets shall be installed on slopes of 1:2, or steeper, on ditch bottoms, on ditch side slopes (to an elevation 1 foot above the ditch bottom), and where specifically shown on the drawings or directed by the Engineer.

3.04 Weed Control

Weed control shall be provided by the Contractor, as necessary, to develop turf areas which are relatively free of weeds. Herbicides shall be applied in accordance with federal, state, and local regulations. Herbicides shall be applied in accordance with manufacturer's instructions. Herbicides shall be applied by commercial applicators, licensed in the State of Michigan and certified by the Michigan Department of Agriculture in the appropriate category(ies).

Target weeds shall be sprayed in the newly seeded turf when the new turf grass is sufficiently established to withstand the application of herbicide. Herbicide application shall be repeated if the first application failed to control target weeds.

The Contractor shall take appropriate measures to preserve and protect adjacent property from damages resulting from the application of herbicides. Herbicides shall not be applied when wind may carry it to adjacent areas.

END OF SECTION

SECTION 32 93 00
LANDSCAPING

PART 1 - GENERAL

1.01 Work Included

This work includes excavating planting areas for trees and shrubs, disposing of excess soils, furnishing and planting trees and shrubs of the size and type shown on the plans, backfilling the planting holes with prepared soil, watering and cultivating, and such other work necessary to complete the landscaping as described herein.

This work includes a guarantee of one complete growing season for all planted materials. Where planted materials fail to become established after one complete season, they shall be replaced by the Contractor.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. ANSI Z60.1 – Nursery Stock

PART 2 - PRODUCTS

2.01 Materials

A. Nursery Stock

1. Requirements – General

Nursery stock shall be from nurseries located in Zones 4, 5, or 6 of the USDA Hardiness Zone Map.

All stock shall comply with state and federal laws, with respect to inspection for plant diseases and insect infestation, and the Contractor shall maintain the file with the department with all certificates of such inspection.

Any stock which does not conform to these specifications will be rejected and shall be immediately removed by the Contractor.

All nursery stock shall be true to type and name, in accordance with the current edition of *Standardized Plant Names* published by the American Joint Committee on Horticultural Nomenclature. Stock shall be clearly labeled as to species and variety, giving both the common name and scientific names of the plant. The label or tag shall be securely attached to the plant. When age is specified, the label shall also provide such information. The plant shall be of first-class quality, with well-developed branch systems and vigorous, healthy root systems. All stock shall be well-formed and the trunks of trees shall be uniform and straight. They shall be free from insects, disease, and defects. Thin, weak

plants will not be accepted. All stock shall be nursery grown and shall qualify under ANSI Z60.1, except that the size of ball shall not be less than that shown on the plans.

The stock shall come directly from the nursery row. Cold storage plants will not be accepted unless authorized. Substitution shall not be made except with the written permission of the Engineer, and then only when sufficient evidence is shown that the stock called for cannot be secured. Container grown plants shall be used, as called for on the plans or as approved by the Engineer. Such plant material shall meet current ANSI Z60.1.

Inspection of nursery stock will be made at the nursery, by the Engineer, whenever such inspection is deemed advisable. Approval on such inspection shall not be construed as an acceptance of it. Acceptance for planting will not be made until the stock has been delivered and inspected at the planting project site. Inspection will include examination of the root systems of plants. Plants may be examined by removing soil from the root systems of balled or container-grown plants, or digging in the nursery row. Sufficient plant root systems will be inspected for each species and separate plant source to determine the extent and condition of plant root systems. Payment will not be made for plants rendered unsuitable for planting because of the root system inspection. The Contractor shall give the Engineer at least 24 hours' notice before making any delivery of stock, and each shipment shall be accompanied by an invoice showing sizes, species, and varieties included.

Deciduous shade trees shall be straight and symmetrical, with a crown having a persistent main leader. The amount of crown shall be in good overall proportion to the total height of the tree.

Where a clump is specified, it shall have a minimum of two stems originating from a common base at the ground line.

B. Natural Materials

1. Mulching Materials

   Shredded Bark: This material shall consist of tree bark which has been stripped and shredded from saw logs by means of a de-barking machine. The material shall be sufficiently fine and free from extraneous material so that it will readily pass through a conventional mulch blower.

2. Prepared Soil

   Topsoil shall consist of the dark brown or black loam, clay loam, silt loam, or sandy loam surface of a fertile, friable, humus soil, or mineral origin.

   Peat moss shall consist of finely-shredded sphagnum or fibrous peat moss of an approved commercial grade, free from woody substance.

   The fertilizer for mixing with peat moss and topsoil shall be a ready-mixed granular material containing equal amounts, by weight, of phosphorus and potassium.

   Prepared soil shall consist of a uniform mixture of topsoil, peat moss, and fertilizer. The

prepared soil shall be proportioned such that a cubic yard of the prepared soil will contain ¾-cubic yard of topsoil, ¼-cubic yard of peat moss, and sufficient chemical fertilizer to provide 1 pound each of available phosphorus and potassium (5 pounds of 0-20-20, 10 pounds of 0-10-10, etc).

Prepared soil shall be produced by thoroughly mixing the component materials prior to final placement.

C. Accessories

1. Wrapping and Balling Materials

   Twine for use in tree wrapping shall be composed of a minimum of two-ply jute material. Balling material shall be untreated burlap or other material which will readily decompose. Synthetic materials, such as nylon or plastic, will not be permitted for wrapping or balling.

2. Weed Suppressing Permeable Fabric

   Fabric used shall be permeable to air and water. Material shall be black polypropylene with polyester blend. Fabric thickness shall be at least 25 mils.

3. Aluminum Planting Bed Edging

   Edging shall have an average wall thickness of $^{1}/_{8}$-inch. Edging height shall be 6 inches. The edging shall be secured in the ground with stakes every 5 feet or per manufacturer recommendations.

4. Tree Stakes

   Tree stakes shall be 2-inch by 2-inch hardwood. All stakes shall be straight and free of large knots.

PART 3 - EXECUTION

3.01 Preparation

Individual holes shall be centered at the proposed plant locations, dug cylindrical in shape with perpendicular sides and flat bottoms. Unless otherwise specified, the minimum diameters and depths of planting holes shall be large enough to permit placing a minimum of 8 inches of prepared soil below, and 12 inches laterally, beyond the ends of bare roots of root balls. Where special conditions of soil or plant requirements so dictate, planting hole sizes shall be subject to reasonable variation.

If site preparation precedes planting by more than two weeks, the planting holes shall be immediately backfilled with prepared soil.

All plant material shall be clearly labeled as to species and variety. At time of planting, the label or tag shall be securely attached to each plant and shall show the scientific name of the plant. Unless otherwise shown on the plans, all plants shall be balled and burlapped or container grown.

Nursery stock shall be prepared for shipment, in accordance with the requirements of the current ANSI Z60.1, and shall be enclosed or covered during transportation to prevent drying.

In preparation for spring planting, all balling operations shall be completed prior to "bud break". All stock shall be dug and packed with care immediately prior to shipment. Plants shall be dug and transported so as to provide and retain a firm ball of earth. The roots shall be carefully protected with wet straw, moss or other material. The root balls shall be adequately protected from rain or sudden changes in the weather. Trees or plants will not be accepted if the balls of earth are loosened or broken.

Plants furnished in containers shall have grown in the container for at least one growing season. Plants other than ground covers, over-established in the container as evidenced by "pot bound" root ends, will not be accepted.

Immediately following delivery and inspection at the job, all plants with exposed roots shall be "heeled in" in moist soil. All "heeled in" plants shall be protected and their roots kept moist until planted. The "heeling in" grounds shall be a well-protected, shaded area or a well-ventilated enclosure.

The roots of all planting stock shall be kept moist and adequately protected at all times.

The trunks and branches of all trees shall be carefully protected from injury of any kind during all operations. Any trees that are injured may be rejected.

Planting Beds: Before planting beds are covered with weed control fabric, the beds shall be edged and free of all turf, weeds, dirt clumps, etc. The bed edging lines shall consist of smooth curves, free of kinks, as shown on the plans.

3.02 Planting

Just prior to planting, the earth in the bottom of the holes shall be loosened to a depth of 2 inches minimum, and the earth in the sides shall be loosened to the extent necessary to break the glaze caused by digging.

For plants located on slopes, an earth saucer or berm shall be constructed halfway around each plant on the down-slope side. The saucer or berm shall have an inside diameter equal to that of the planting hole, and a maximum height of 6 inches. Soil shall not spill down-slope more than 18 inches.

Plants shall be set plumb. Their depth, after setting, shall be the same as the depth in their original location. The prepared soil shall be carefully puddled and thoroughly firmed at intervals during backfilling, under and around the ball. Care should be exercised to prevent damaging the root ball during the tamping operation. When the plant hole has been backfilled and compacted to one-half depth, the burlap and lacing shall be removed from the upper half of the ball. The backfilling of the hole with prepared soil should then continue to an elevation which, after compaction, is flush with the ground line.

When plants are furnished in containers, the containers shall be removed at the time of planting. Handling methods, which result in a broken or excessively loosened root and soil ball mass, will be sufficient reason for rejection of the plant.

A maximum of root growth shall be preserved and no root pruning will be permitted. Plants shall be set plumb and at a depth equal to the depth in their original location. The exposed roots shall be held firmly in the proper position with the roots spread out. The prepared soil shall be puddled around the roots and thoroughly firmed at intervals during the process of backfilling. Sufficient water shall be used to ensure thorough saturation of the prepared soil placed in the plant hole.

All new and existing trees shall be provided with a 4-foot diameter spade cut mowing ring. Each mowing ring shall be covered with 1 layer of weed suppressing permeable fabric and then 2 inches of shredded bark mulch.

3.03 Placement of Bed Edging and Weed Control Fabric

Placing both the bed edging and the weed suppressing permeable fabric shall be performed as recommended by the manufacturer. The weed control fabric shall cover 100 percent of exposed earth within the bed lines. All fabric edges shall be "tucked in" and covered by 2 inches of mulch. Edging is not required around individual tree mowing rings.

Annual beds shall be excavated to a depth of 12 inches and filled with 12-inch screened topsoil base and be mulched with Hoffman CoCoa Shell mulch or comparable light mulch. Material weed suppressing permeable fabric shall not be recommended for annual bed areas.

3.04 Pruning, Watering, Cultivating

All pruning shall be done by workmen experienced in this type of work. Pruning shall be completed prior to planting.

The branches shall be pruned to balance the loss of roots in such manner as to retain the natural form of the plant type. Usually one-third to one-half of the branches shall be removed, but the proportion shall in all cases be subject to the approval of the Engineer. The height ratio of crown to trunk, after pruning, shall be approximately one-third crown to two-thirds trunk. The primary leader shall not normally be cut back. Branches to be removed shall be cut off flush with the trunk or main branch.

Immediately upon completion of the planting work, the Contractor shall clean up the area of surplus materials.

The Contractor shall be responsible to water plants, as necessary, throughout the period of establishment. The intervals between waterings shall be determined by the Contractor, based on their experience and climatic conditions.

At the time of final watering, wrapping material, identification tags, and inspection tags shall be removed and disposed of off the project.

3.05 Period of Establishment

A period of establishment, commencing at the completion of the initial planting and extending through the following complete growing seasons, will be required for all plants. A growing season is defined as the months of June, July, and August.

All plants shall be in a thriving growing condition at the start of the establishment period.

The Engineer will inspect the plants at the end of the first complete growing season to determine any unacceptable plants. Replacement plants shall be planted, as specified in this specification, prior to May 10 of the following spring planting season. This will fulfill the one-year warrantee on the original plantings and no additional warrantee is required for the replacement plants.

END OF SECTION

SECTION 33 46 16
UNDERDRAINS

PART 1 - GENERAL

1.01 Work Included

This work includes constructing a subsurface drainage system.

1.02 References

Where materials or methods of construction are listed as being in conformance with a standard specification, it shall refer to the latest edition of the standard specification or any interim revision.

A. AASHTO M36 – Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

B. AASHTO M218 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized), for Corrugated Steel Pipe

C. AASHTO M252 – Standard Specification for Corrugated Polyethylene Drainage Pipe

D. AASHTO M274 – Standard Specification for Steel Sheet, Aluminum-Coated (Type 2), for Corrugated Steel Pipe

E. AASHTO M278 – Standard Specification for Class PS46 Poly(Vinyl Chloride) (PVC) Pipe

F. ASTM D1785 – Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120

G. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings

H. ASTM D3786 – Standard Test Method for Bursting Strength of Textile Fabrics-Diaphragm Bursting Strength Tester Method

I. ASTM D4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity

J. ASTM D4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles

K. ASTM D4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles

L. ASTM D4751 – Standard Test Methods for Determining Apparent Opening Size of a Geotextile

M. ASTM D4833 – Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products

N. ASTM F949 – Standard Specification for Poly(Vinyl Chloride) (PVC) Corrugated Sewer Pipe With a Smooth Interior and Fittings

O. ASTM F2806 – Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (Metric SDR-PR)

P. Michigan Department of Transportation 2020 Standard Specifications for Construction

1.03 Related Work

A. Section 01 45 16.02 – Density and Aggregate Testing

PART 2 - PRODUCTS

2.01 Materials

A. Pipe for Underdrains

1. Corrugated Plastic Tubing

Corrugated plastic tubing shall conform to AASHTO M252 for polyethylene (PE) tubing or ASTM F949 for polyvinyl chloride (PVC) tubing. Perforations shall meet the requirements of AASHTO M252.

Corrugated plastic tubing shall be wrapped with a non-woven geotextile filter fabric meeting the requirements of Section 2.01 E.

B. Pipe for Outlets

Underdrain outlets into ditches or open watercourses shall be corrugated steel pipe meeting the requirements of AASHTO M36. Pipe shall be fabricated from zinc coated steel sheet conforming to AASHTO M218 or from aluminum coated sheet conforming to AASHTO M274. Pipe wall thickness shall be 0.05 inches or greater.

C. Aggregate

Aggregate shall be open graded aggregate meeting gradation and requirements of Series 34R, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

D. Sand

Sand shall meet the gradation and requirements of Granular Material Class II, as described in the Michigan Department of Transportation 2020 Standard Specifications for Construction.

E. Geosynthetic Fabric

Geosynthetic fabric for trench lining and pipe wrap shall be a non-woven geotextile meeting the following requirements:

Physical Property	Test Method	Physical Requirements
Grab Tensile Strength (minimum)	ASTM D4632	90 pounds
Trapezoid Tear Strength (minimum)	ASTM D4533	45 pounds
Puncture Strength (minimum)	ASTM D4833	45 pounds
Mullen Burst Strength (minimum)	ASTM D3786	140 pounds
Permittivity	ASTM D4491	0.5 per second
Apparent Opening Size (maximum)	ASTM D4751	0.21 mm

PART 3 - EXECUTION

3.01 Construction

Underdrains shall be constructed where shown on the plans or where directed by the Engineer.

Underdrain outlets shall be provided where shown on the plans or as necessary to provide positive drainage.

A. Trench Excavation

Trenches for underdrain installation shall be excavated using a wheel or chain type trencher, or other method which can excavate to the required depth and grade. The trench width shall be wide enough to accommodate installation of the drain pipe, or as necessary to prevent the trench walls from collapsing.

B. Laying Underdrains

Underdrains shall be laid to the line and grade shown on the plans or as directed by the Engineer. The trench bottom shall be uniform and provide uniform bearing for the pipe. Two inches of aggregate shall be laid in the bottom of the trench before the pipe is installed.

The underdrain pipe shall be fitted with the appropriate fittings (end caps, tees, bends, etc.) before the pipe is placed.

C. Connections

Joints for fittings and pipe shall be made using mechanical methods, which will prevent separation and not cause an obstruction in the pipe. Joints shall be wrapped with geotextile fabric. The fabric shall be sealed to the pipe with waterproof tape.

D. Backfill

Trenches shall not be backfilled until the Engineer has observed the installation.

Trenches shall be backfilled with sand. Sand shall be placed around the pipe and to a depth of 6 inches below the top of the curb or pavement. The remaining portion of the trench shall be backfilled with other material according to the plans. Trenches shall be compacted in accordance with Section 01 45 16.02 – Density and Aggregate Testing.

E. Underdrain Outlets

Underdrain outlets shall be installed immediately after installation of the underdrains.

Where storm sewers are not available, underdrain outlets shall be installed at intervals not exceeding 300 feet. Outlet pipes shall be run to the receiving ditch line at a minimum grade of 4 percent. The outlet elevation shall be at least 4 inches above the ditch bottom. A concrete collar shall be formed around the circumference of the outlet pipe. The outside diameter of the collar shall be 12 inches greater than the pipe diameter. The face of the concrete collar shall be sloped, flush with the side slope of the ditch.

END OF SECTION

❖ EXHIBIT H – CONSTRUCTION PLANS

See attached separate construction plans including:

- St. John Memorial Trail
- Icon Shelter Systems, Inc. Pavilion
- St. John Neighborhood Playground

ST. JOHN MEMORIAL TRAIL

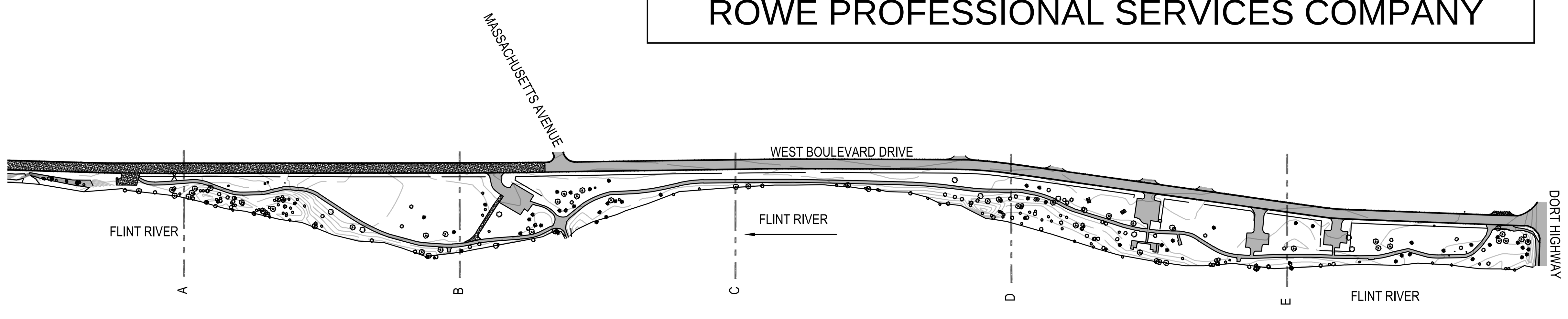
3400 WEST MEMORIAL DRIVE
FLINT, MICHIGAN

NOTICE:
PLAN SHEETS AS PROVIDED BY JIMA STUDIO. REFER TO SPECIFICATIONS IN BID BOOK 01 25 00 (MATERIALS AND EQUIPMENT) AND 11 68 13 (PLAYGROUND EQUIPMENT) FOR MORE INFORMATION ON PLAYGROUND, PAVILION AND SPARK GRANT PROJECT PAY ITEMS. "OR EQUAL" MATERIALS WILL BE CONSIDERED TO MEET THE MDNR SPARK GRANT REQUIREMENT.

SHEET INDEX

SITE OVERVIEW: 1" = 250'

NOTATIONS AND CLARIFICATIONS PROVIDED BY ROWE PROFESSIONAL SERVICES COMPANY



For Review
03/18/2026 11:10:17 AM

SITE NOTES

SEE SITE SURVEY FOR ZONING CLASSIFICATIONS AND LEGAL DESCRIPTION.

GENERAL NOTES

1. PRIOR TO START OF PROJECT WORK, VERIFY ALL SITE CONDITIONS AND SUBMIT A PROJECT WORK PLAN TO THE LANDSCAPE ARCHITECT FOR REVIEW AND COMMENT. PRESENT THE WORK PLAN AT THE OWNER'S PRE-CONSTRUCTION MEETING. DO NOT BEGIN PRIOR TO THE 'PRE-CONSTRUCTION MEETING', AND UNTIL WRITTEN AUTHORIZATION TO PROCEED IS ISSUED BY THE OWNER.
2. PRIOR TO THE COMMENCEMENT OF WORK, VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION AND TAKE RESPONSIBILITY FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION, INCLUDING DAMAGES TO UTILITIES, WALKS, WALLS, DRIVES, CURBS, ETC. **CALL MISS DIGG (800) 482-7171 A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.**
3. NOTIFY THE ENGINEER IN WRITING OF ANY IDENTIFIED DISCREPANCIES WITHIN THE CONTRACT DOCUMENTS PRIOR TO THE START OF WORK. DURING PERFORMANCE OF WORK, VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND CROSS-CHECK DETAILS AND DIMENSIONS SHOWN ON THE DRAWINGS. CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS PRIOR TO STARTING WORK. IN ALL CASES WHERE A CONFLICT MAY OCCUR, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
4. IF THERE ARE DISCREPANCIES BETWEEN THIS SET OF PLANS AND THE SPECIFICATIONS, THE SPECIFICATIONS SHALL CONTROL. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPENCIES.
5. PRIOR TO THE COMMENCEMENT OF WORK, VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION AND TAKE RESPONSIBILITY FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF CONSTRUCTION. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO ANY SITE DEMOLITION OR SUBSURFACE IMPROVEMENT.
6. TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION, INCLUDING DAMAGES TO UTILITIES, WALKS, WALLS, DRIVES, CURBS, ETC.
7. SECURE ALL NECESSARY PERMITS AND NOTIFY ALL UTILITY COMPANIES WITH UTILITIES ON THE SITE PRIOR TO THE CONSTRUCTION OF THE PROJECT. PROTECT ALL PUBLIC AND PRIVATE UTILITIES FROM DAMAGE DURING SITE REMOVALS.
8. ESTABLISH AND MAINTAIN SITE SECURITY UNTIL PROJECT ACCEPTANCE. AVOID LEAVING UNINSURED MATERIALS AND EQUIPMENT ON THE SITE OVERNIGHT. THE OWNER IS NOT RESPONSIBLE FOR STOLEN OR DAMAGED ITEMS LEFT ON SITE.
9. USE DIMENSIONS SHOWN ON DRAWINGS FOR LAYOUT OF THE WORK. DO NOT USE SCALE DIMENSIONS FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS. DIMENSIONS ARE FRONT CENTERLINE, BACK OR CURB, CENTER OF POST, OR EDGE OR PAVEMENT, UNLESS OTHERWISE NOTED. VERIFY LOCATIONS IN FIELD WITH LANDSCAPE ARCHITECT. ALL DIMENSIONS MUST BE FIELD VERIFIED AND ANY DISCREPANCIES REPORTED TO THE LANDSCAPE ARCHITECT/OWNER IMMEDIATELY.
10. DETAILS NOTED AS TYPICAL SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THIS PROJECT.
11. DISPOSE ALL ELEMENTS DESIGNATED FOR REMOVAL IN A LEGAL MANNER. PROVIDE RECEIPTS AND LETTERS FROM DISPOSAL SITES TO OWNER AS REQUIRED BY THE OWNER. REMOVE OBSTRUCTIONS, TREES, SHRUBS AND OTHER VEGETATION TO PERMIT INSTALLATION OF NEW CONSTRUCTION. REMOVE EXISTING SOD, GRASS AND WEEDS BEFORE STRIPPING TOPSOIL. LEGALLY DISPOSE OF DEBRIS ASSOCIATED WITH PLANTING OFF-SITE. REMOVE SURPLUS SOIL MATERIALS, UNSUITABLE TOPSOIL, OBSTRUCTIONS, DEMOLISHED MATERIALS AND WASTE MATERIALS INCLUDING TRASH AND DEBRIS, AND LEGALLY DISPOSE OF THEM OFF OWNER'S PROPERTY.
12. COORDINATE WORK OF SUBCONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
13. MINIMIZE INTERFERENCE WITH ADJOINING ROADS, STREETS, WALKS AND OTHER ADJACENT OCCUPIED OR USED FACILITIES DURING SITE-CLEARING OPERATIONS. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM OWNER AND AUTHORITIES HAVING JURISDICTION.
14. PROVIDE TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES TO PREVENT SOIL EROSION AND DISCHARGE OF SOIL BEARING WATER RUN-OFF OR AIRBORNE DUST TO ADJACENT PROPERTIES AND WALKWAYS, ACCORDING TO LOCAL CITY ORDINANCE AND EROSION CONTROL REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION. ANY PERMITS REQUIRED ARE THE RESPONSIBILITY OF THE CONTRACTOR.
15. INSPECT, MAINTAIN AND REPAIR EROSION CONTROLS UNTIL CONSTRUCTION IS COMPLETE. REMOVE EROSION AND SEDIMENT CONTROLS, AND RESTORE AND STABILIZED AREAS DISTURBED DURING REMOVAL AT THE END OF CONSTRUCTION.
16. ADHERE TO ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS, CODES, ORDINANCES OR REGULATIONS PERTAINING TO THE PROJECT.

ABBREVIATIONS

A
ABD ABANDONED
ABS ACRYLONITRILE BUTADIENE STYRENE
AC ACRES
ADA AMERICANS WITH DISABILITIES ACT
ANLA AMERICAN NURSERY AND LANDSCAPE ASSOCIATION
APPROX APPROXIMATE
ARCH ARCHITECT(URAL)
ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS

B
B.M. BENCHMARK
BIT BITUMINOUS
BLDG BUILDING
B/F BOTTOM OF FOOTING
B/S BOTTOM OF SWALE
BVCE BEGINNING OF VERTICAL CURVE ELEVATION
BVCS BEGINNING OF VERTICAL CURVE STATION
B/W BOTTOM OF WALL (FINISH GRADE)

C
CB CATCH BASIN
CI CURB INLET
CIP CAST IRON PIPE
CL CLASS
CMP CORRUGATED METAL PIPE
CON CONDENSATE
CO CLEANOUT
CONC CONCRETE
CONTR CONTRACTOR
CU FT CUBIC FOOT
CURV CURVATURE
CU YD CUBIC YARD
CWR CHILLED WATER RETURN
CWS CHILLED WATER SUPPLY

D
DEMO DEMOLISH
DEPT DEPARTMENT
DIA DIAMETER
DIP DUCTILE IRON PIPE
DWG DRAWING

E
E EAST, EASTING COORDINATE
EA EACH
EG EXISTING GRADE
ELEV ELEVATION
E/P EDGE OF PAVEMENT (EDGE OF METAL)
EQ EQUAL
ESVCP EXTRA STRENGTH VITRIFIED CLAY PIPE
EVCE END OF VERTICAL CURVE ELEVATION
EVCS END OF VERTICAL CURVE STATION
EX EXISTING

F
FF: FINISH FLOOR ELEVATION
FG FINISH GRADE
FHWA FEDERAL HIGHWAY ADMINISTRATION
FLASH FLASHING
FM FORCE MAIN
FT FOOT, FEET
FURN FURNISHING

G
GALV GALVANIZED
GAS NATURAL GAS
G/C: GUTTER OF CURB (FLOWLINE)
GVL GRAVEL

H
H HIGH
HB HOSE BIBB
HCAP ADA HANDICAP
HDPE HIGH-DENSITY POLYETHYLENE
HMA HOT MIX ASPHALT
HORZ HORIZONTAL
HP HIGH POINT
HT HEIGHT

I
I.D. INNER DIAMETER
IN INCH, INCHES
INCL INCLUDE, INCLUDING
INL INLET
INV: PIPE INVERT ELEVATION
IRR IRRIGATION

K
K K VALUE

J
JT JOINT

L
L LENGTH
LF LINEAR FEET
LPT LOW POINT
LN LANE
LT LIGHT
LTG LIGHTING
LVC LENGTH OF VERTICAL CURVE

M
MAS MASONRY
MATL MATERIAL
MAX MAXIMUM
M.E. MATCH EXISTING
MED MEDIUM
MFR MANUFACTURER
MH MANHOLE
MIN MINIMUM
MISC MISCELLANEOUS
MOD MODIFIED

N
N NORTH, NORTHING COORDINATE
NA NOT APPLICABLE
NIC NOT IN CONTRACT
N.T.S. NOT TO SCALE

O
O.C. ON CENTER
O.D. OUTER DIAMETER
OFF OFFSET
OPT OPTIONAL

P
PC POINT OF CURVATURE (POC)
PED PEDESTRIAN
PERF PERFORATED
PERP PERPENDICULAR
PLMB PLUMBING
PREFAB PREFABRICATED
PREP PREPARATION
PROJ PROJECTED
PROP PROPOSED
PSF POUNDS PER SQUARE FOOT
PSI POUNDS PER SQUARE INCH
PT POINT, POINT OF TANGENCY (POT)
PVC POINT OF VERTICAL CURVATURE, POLYVINYL CHLORIDE
PVI POINT OF VERTICAL INTERSECTION
PVMT PAVEMENT
PWR POWER

Q
QTY QUANTITY

R
RAD RADIUS
RCP REINFORCED CONCRETE PIPE
RCPT RECEPTACLE
RD ROAD
REF REFERENCE
REINF REINFORCED, REINFORCEMENT
REM REMOVE
REQD REQUIRED
RIM: RIM ELEVATION
ROW RIGHT OF WAY

S
S SOUTH
SAN SANITARY SEWER
SCH SCHEDULE
SECT SECTION
SESC SOIL EROSION AND SEDIMENTATION CONTROL
SIM SIMILAR
SP SPACE, SPACED, SPACING
SQ FT SQUARE FEET
SQ YD SQUARE YARD
ST STREET
ST LT STREET LIGHT
STA STATION
STAG STAGGER, STAGGERED
STD STANDARD
STL STEEL
SSL STAINLESS STEEL
STM STORM SEWER
STRUCT STRUCTURAL
SUBCONTR SUBCONTRACTOR
SWPPP STORMWATER POLLUTION PREVENTION PLAN

T
T TELECOM
T/C TOP OF CURB
TEMP TEMPORARY
T/F TOP OF FOOTING
T/S TOP OF SWALE
T/W TOP OF WALL
TYP. TYPICAL

U
UD UNDERDRAIN
UTIL UTILITY

V
V/B: VALVE BOX
VERT VERTICAL

W
W WEST
WM WATER MAIN
W/O WITHOUT
WWF WELDED WIRE FABRIC

Y
YD YARD DRAIN

SYMBOL
Ø DIAMETER
± PLUS/MINUS
Δ DELTA

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CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:
ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

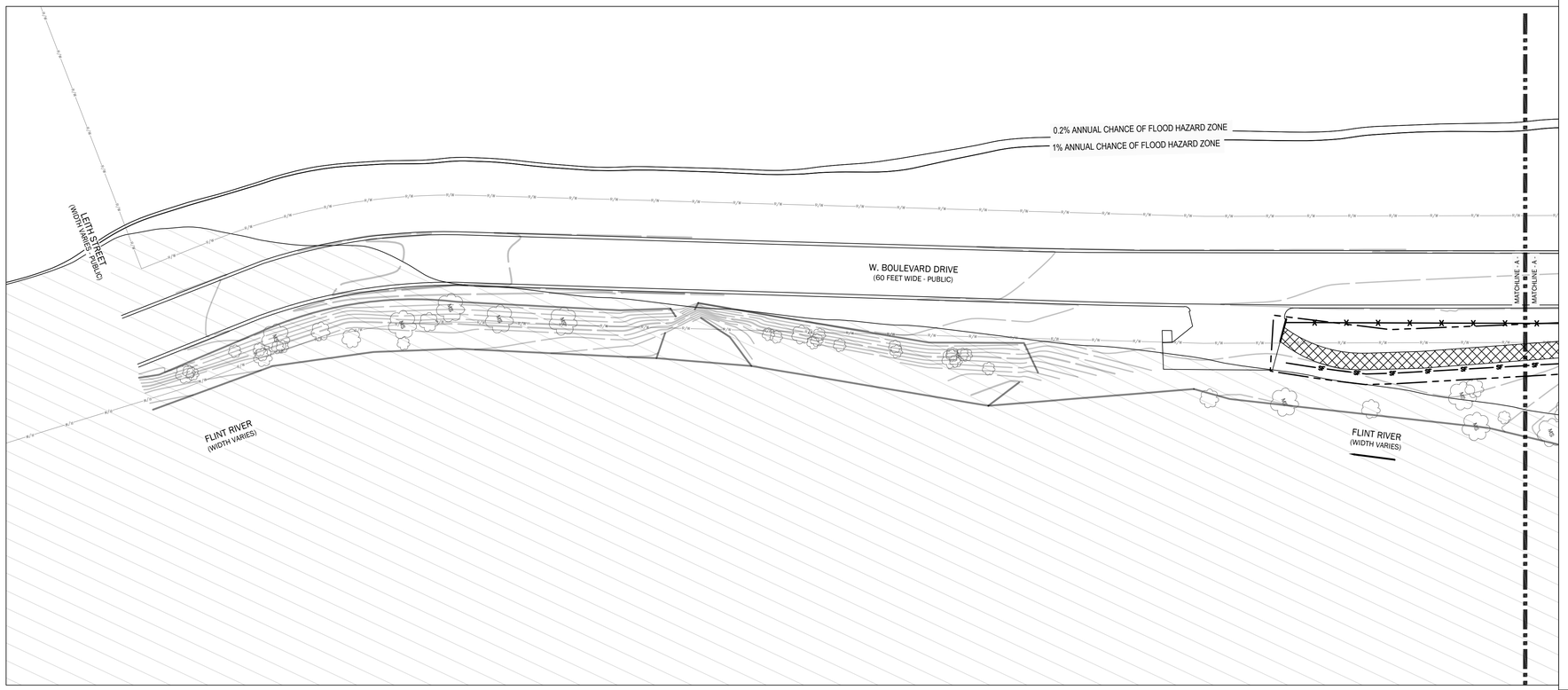
REVISION	DATE
BID SET	07/17/2025
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

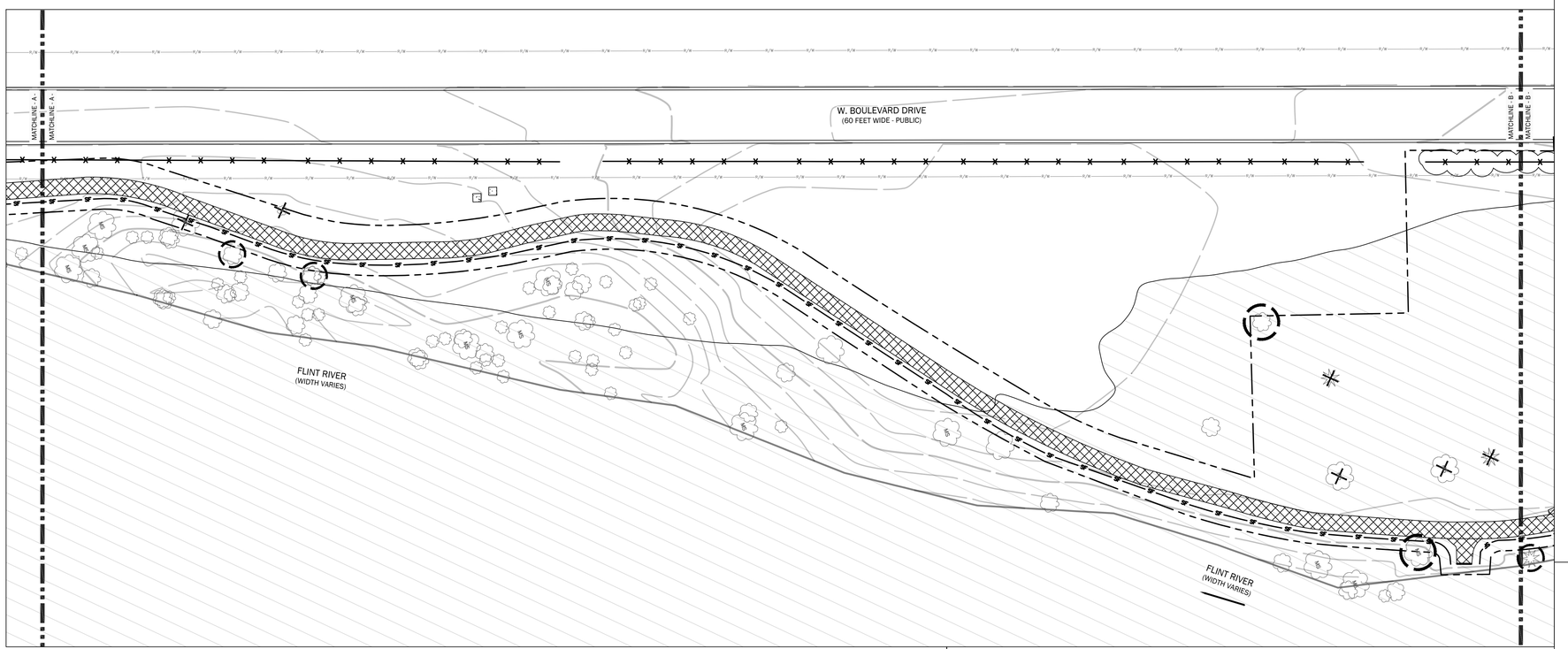
SEAL:
STATE OF MICHIGAN
LICENSED LANDSCAPE ARCHITECT

SHEET TITLE:
COVER AND INDEX SHEET

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-000





DEMOLITION SHEET NOTES

1. PRIOR TO START OF PROJECT WORK, VERIFY ALL SITE CONDITIONS AND SUBMIT A PROJECT WORK PLAN TO THE ENGINEER FOR REVIEW AND COMMENT. PRESENT THE WORK PLAN AT THE OWNER'S PRE-CONSTRUCTION MEETING. DO NOT BEGIN PRIOR TO THE 'PRE-CONSTRUCTION MEETING' AND WRITTEN AUTHORIZATION TO PROCEED IS ISSUED BY THE OWNER.
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3. PRIOR TO THE COMMENCEMENT OF WORK, VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION AND TAKE RESPONSIBILITY FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION, INCLUDING DAMAGES TO UTILITIES, WALKS, WALLS, DRIVES, CURBS, ETC. **CALL MISS DIGG (800) 482-7171 A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.**
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12. CONTACT '811' UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO DEMOLITION OF THE SITE.
13. REFER TO THE FEMA FLOOD ZONES AND FEMA FLOODWAY AND ADHERE TO STATE REGULATIONS DURING CONSTRUCTION WITHIN THESE ZONES.

LEGEND

- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- EXISTING FENCE, TO REMAIN
- EXISTING FENCE, TO REMOVE
- 1 / L-701 — ASPHALT SAWCUT LOCATIONS
- FULL DEPTH PAVEMENT REMOVAL
- EXISTING TREE TO REMOVE
- 1 / L-700 — EXISTING TREE TO PROTECT
- 2 / L-700 — SF — SILT FENCE
- FEMA REGULATORY FLOODWAY

SCALE: 1"=30'

NORTH

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CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

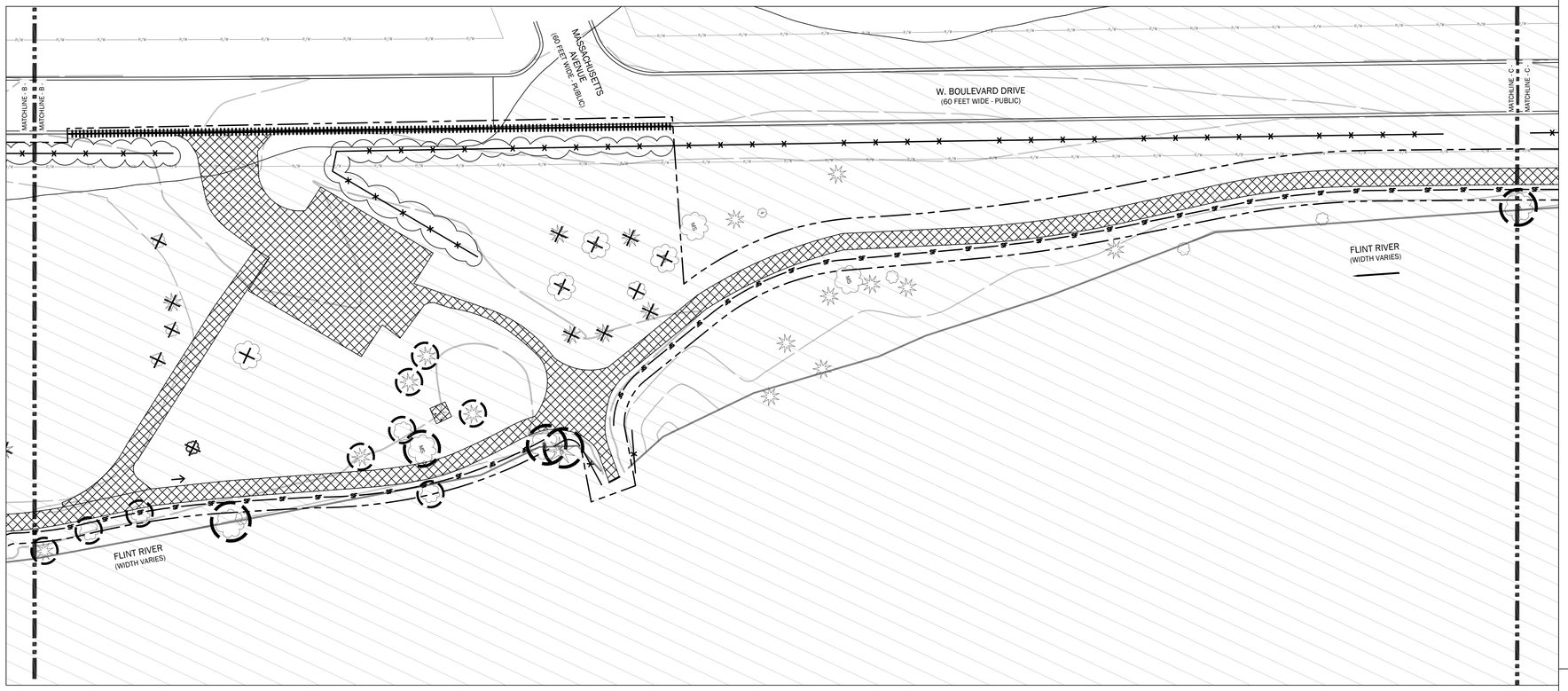
DEMOLITION PLAN - A

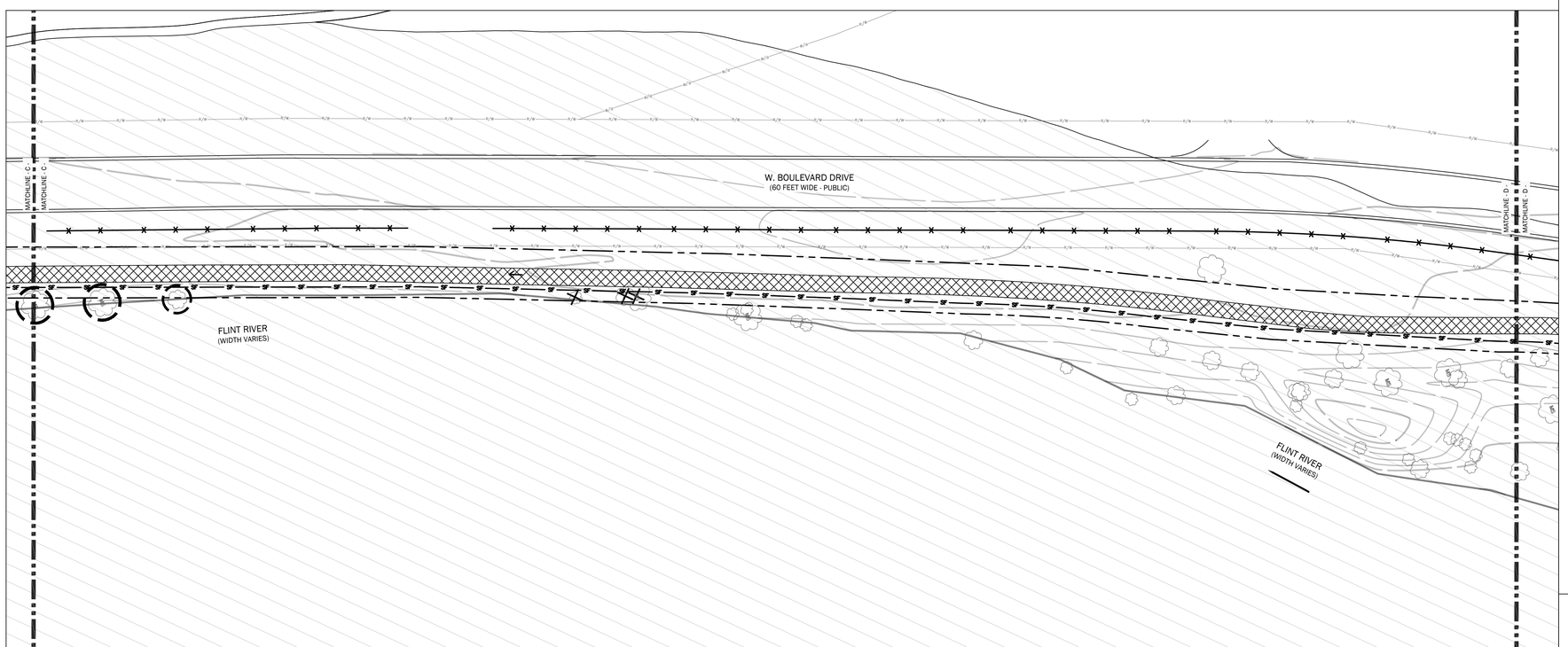
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-100





DEMOLITION SHEET NOTES

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2. NOTIFY THE ENGINEER IN WRITING OF ANY IDENTIFIED DISCREPANCIES WITHIN THE CONSTRUCTION DOCUMENTS PRIOR TO THE START OF WORK. DURING PERFORMANCE OF THE WORK, VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND CROSS-CHECK DETAILS AND DIMENSION SHOWN ON THE DRAWINGS WITH RELATED REQUIREMENTS ON THE ARCHITECTURAL AND ELECTRICAL DRAWINGS. CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS PRIOR TO STARTING WORK. IN ALL CASES WHERE A CONFLICT MAY OCCUR, THE ENGINEER SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
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9. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
10. REFER TO THE PLAN FOR SAWCUT LOCATIONS. ASPHALT HAND PATCHING AND/OR REPAVING MAY BE REQUIRED TO COMPLETE THE CURB REPLACEMENT IN SELECT AREAS TO BE DETERMINED UPON THE COMPLETION OF DEMOLITION.
11. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
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LEGEND

- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- EXISTING FENCE, TO REMAIN
- EXISTING FENCE, TO REMOVE
- CONCRETE CURB FULL REMOVAL, ASPHALT PATCHING MAY BE REQUIRED
- 1 / L-701 — ASPHALT SAWCUT LOCATIONS
- FULL DEPTH PAVEMENT REMOVAL
- EXISTING TREE TO REMOVE
- 1 / L-700 — EXISTING TREE TO PROTECT
- 2 / L-700 — SF — SILT FENCE
- FEMA REGULATORY FLOODWAY

0' 15' 30' 60'
SCALE: 1"=30'
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REVISION	DATE
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DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

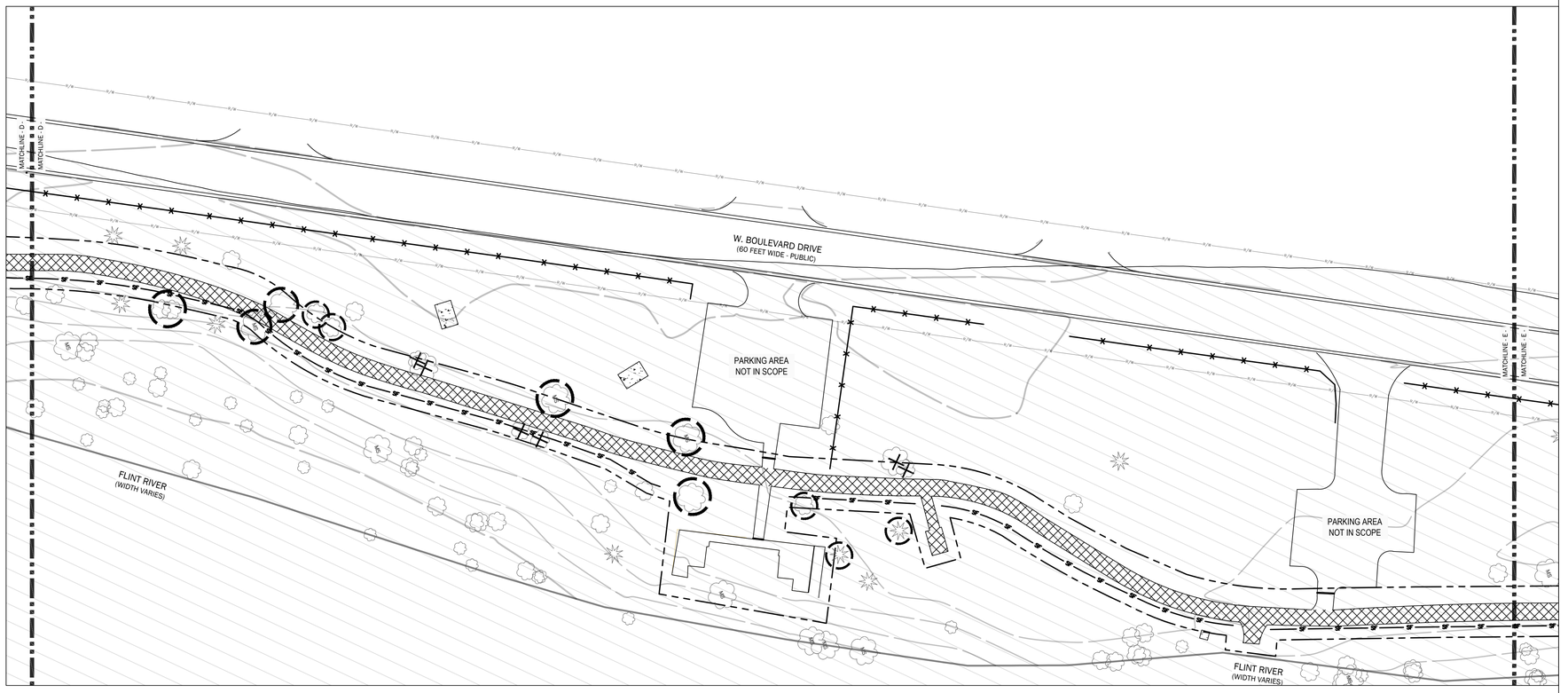
SHEET TITLE:

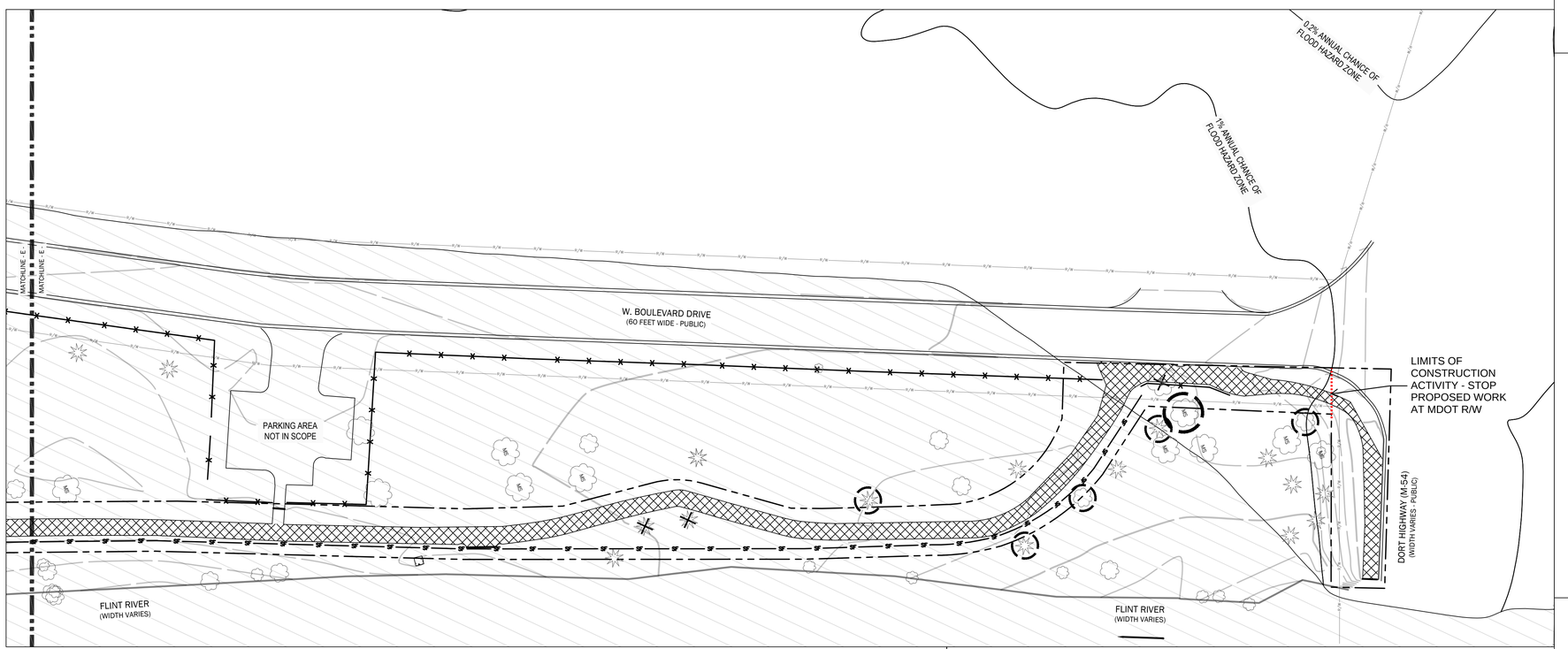
DEMOLITION PLAN - B

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:

L-101





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LEGEND

- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- EXISTING FENCE, TO REMAIN
- 1 / L-701 — ASPHALT SAWCUT LOCATIONS
- FULL DEPTH PAVMENT REMOVAL
- EXISTING TREE TO REMOVE
- 1 / L-700 — EXISTING TREE TO PROTECT
- 2 / L-700 — SF — SILT FENCE
- FEMA REGULATORY FLOODWAY

0' 15' 30' 60'
SCALE: 1"=30'

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REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

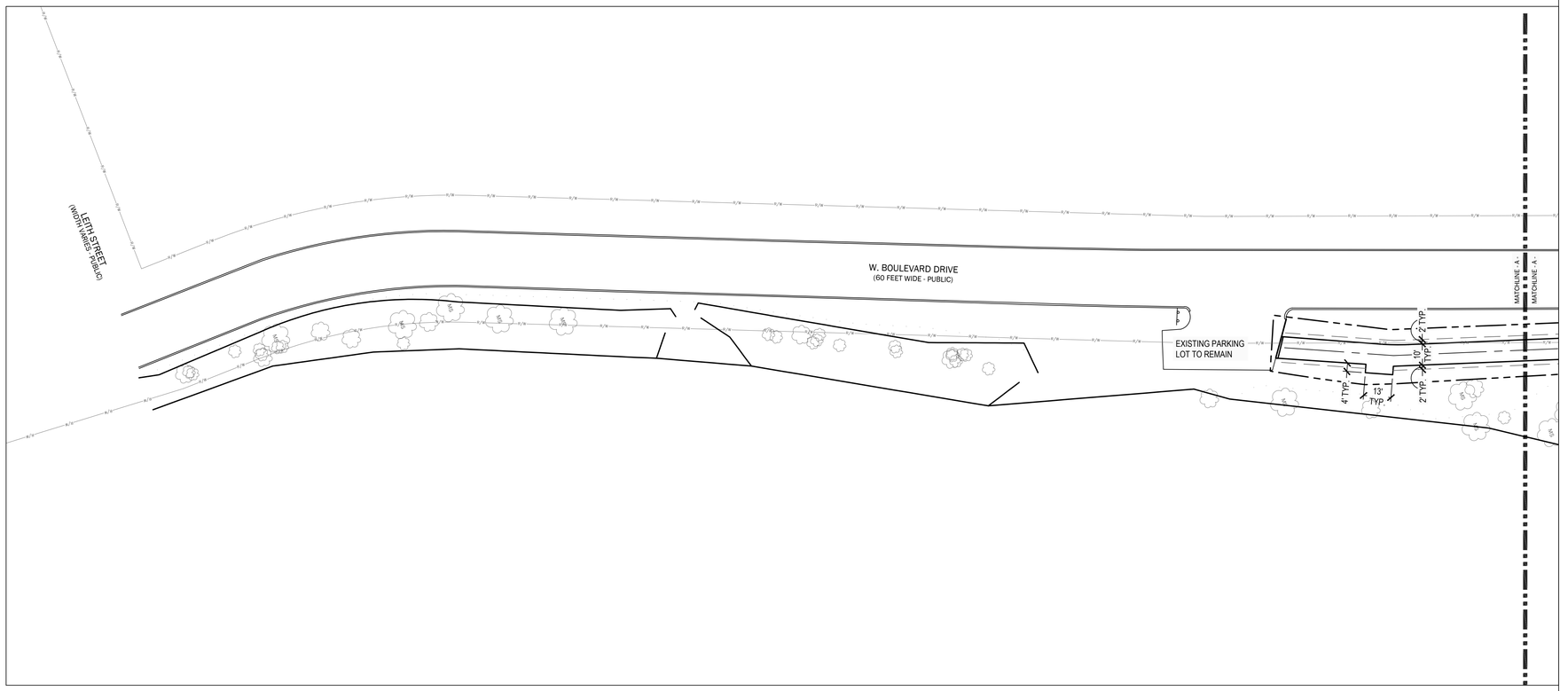
DEMOLITION PLAN - C

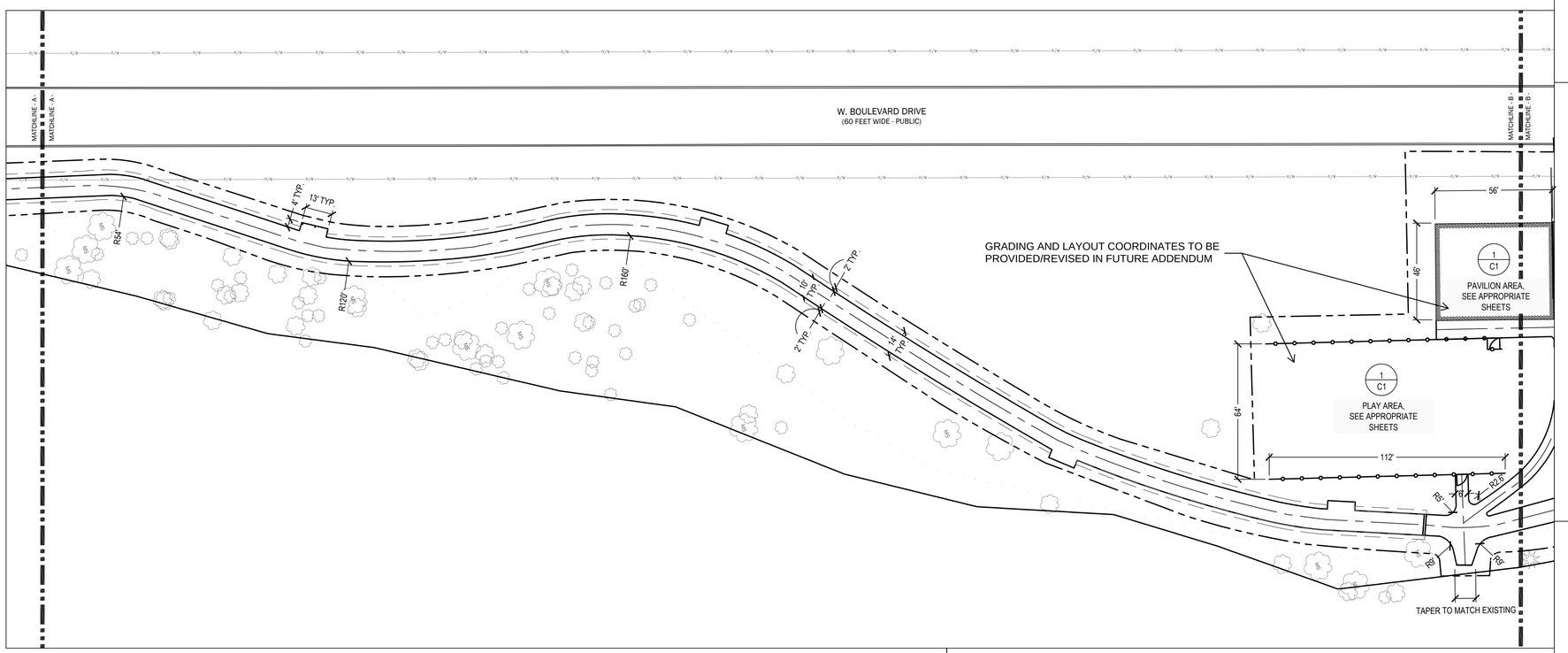
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-102





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LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 6 / L-701 — EXTENT OF CLEAR ZONE, 2' WIDE ON EITHER SIDE
- PATH CENTER LINE

SCALE: 1"=30'

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FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
PERMIT SET DRAFT UPDATES	01/29/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

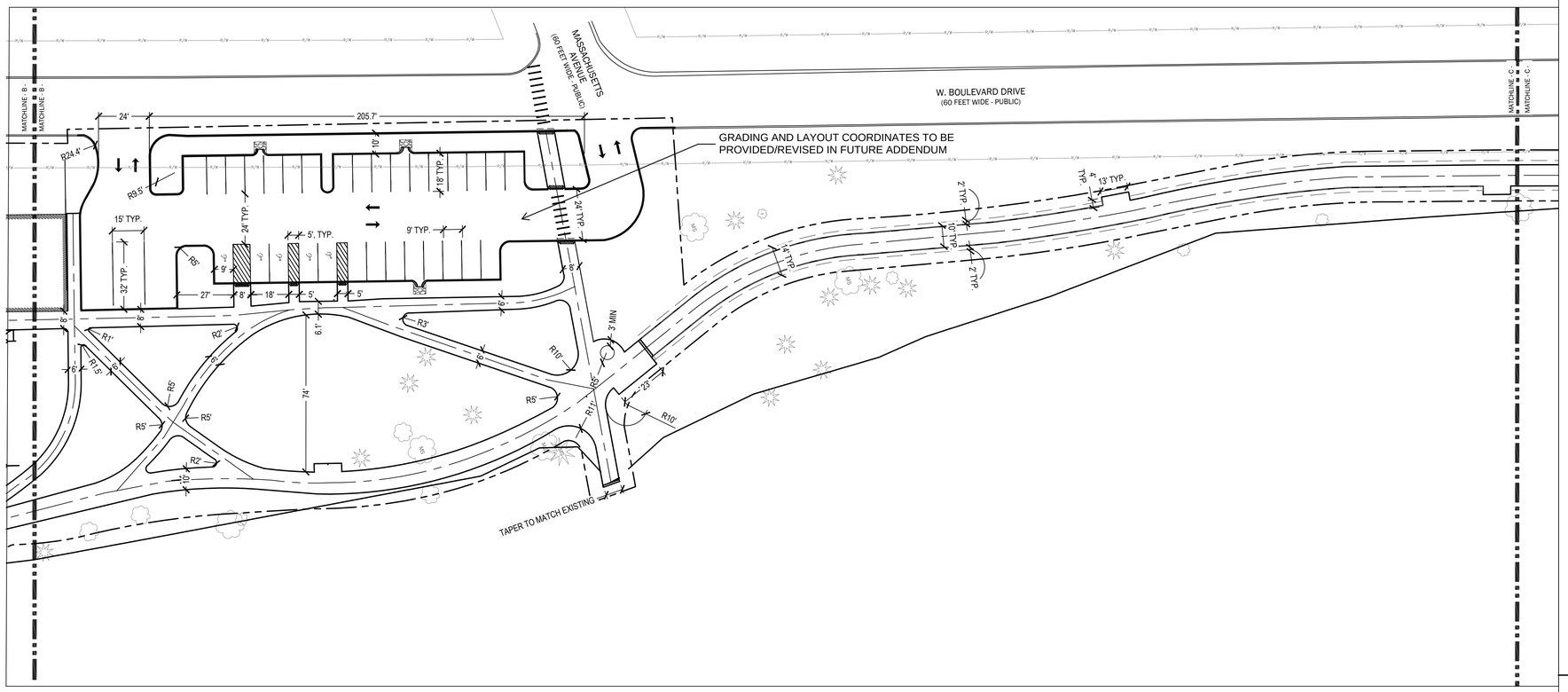
LAYOUT PLAN

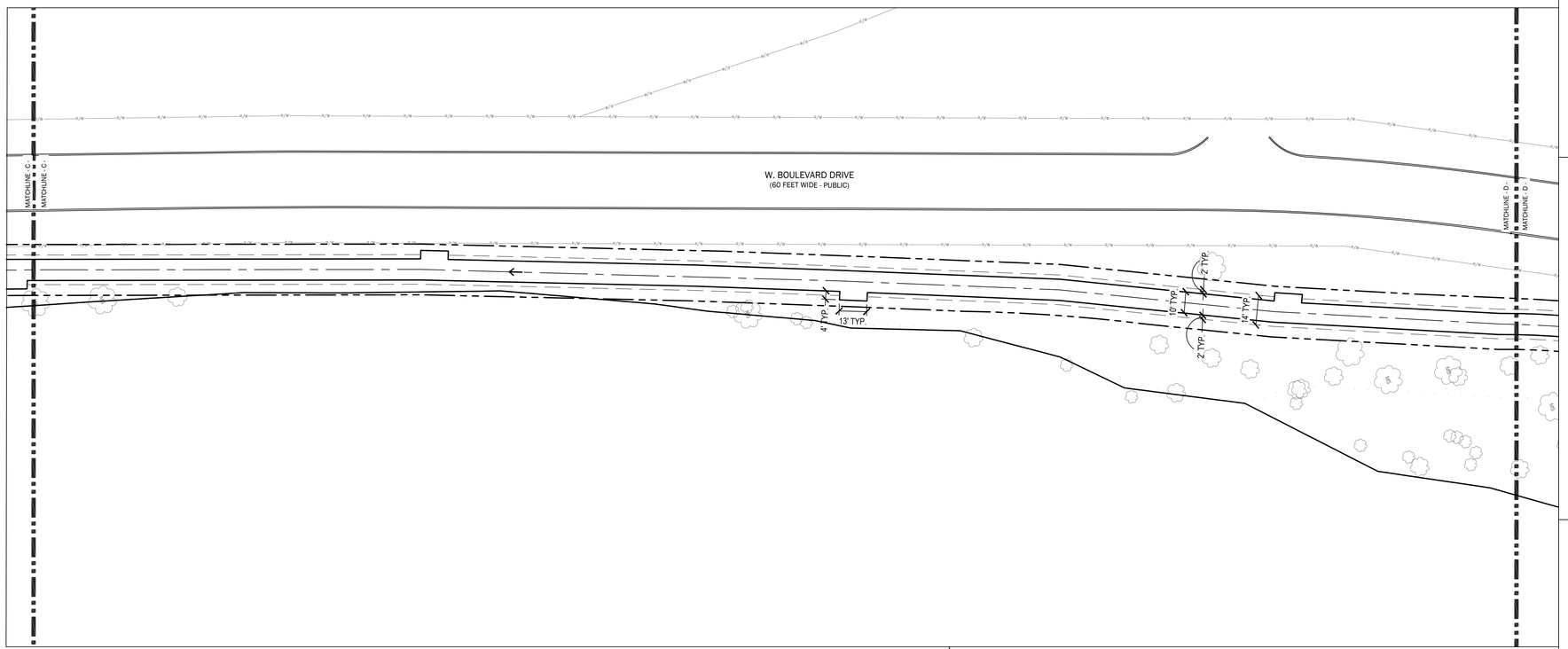
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-200





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PARKING SCHEDULE

#	TYPE	DIMENSIONS	NOTES
25	PARKING SPACE	18' X 9',90°	
4	ADA PARKING SPACE	18' X 8', 90°	5' WIDE AISLE
1	VAN ADA PARKING SPACE	18' X 8', 90°	8' WIDE AISLE
3	LARGE VEHICLE PARKING	15' X 30', 90°	

ENTRANCE AISLES TO BE 24' CURB TO CURB; DRIVE AISLE TO BE 24'. SEE DETAILS ON L-703 FOR MDOT STANDARD PAVEMENT STRIPING INFORMATION.

LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 6 / L-701 — EXTENT OF CLEAR ZONE, 2' WIDE ON EITHER SIDE
- PATH CENTER LINE

0' 15' 30' 60'
SCALE: 1"=30'
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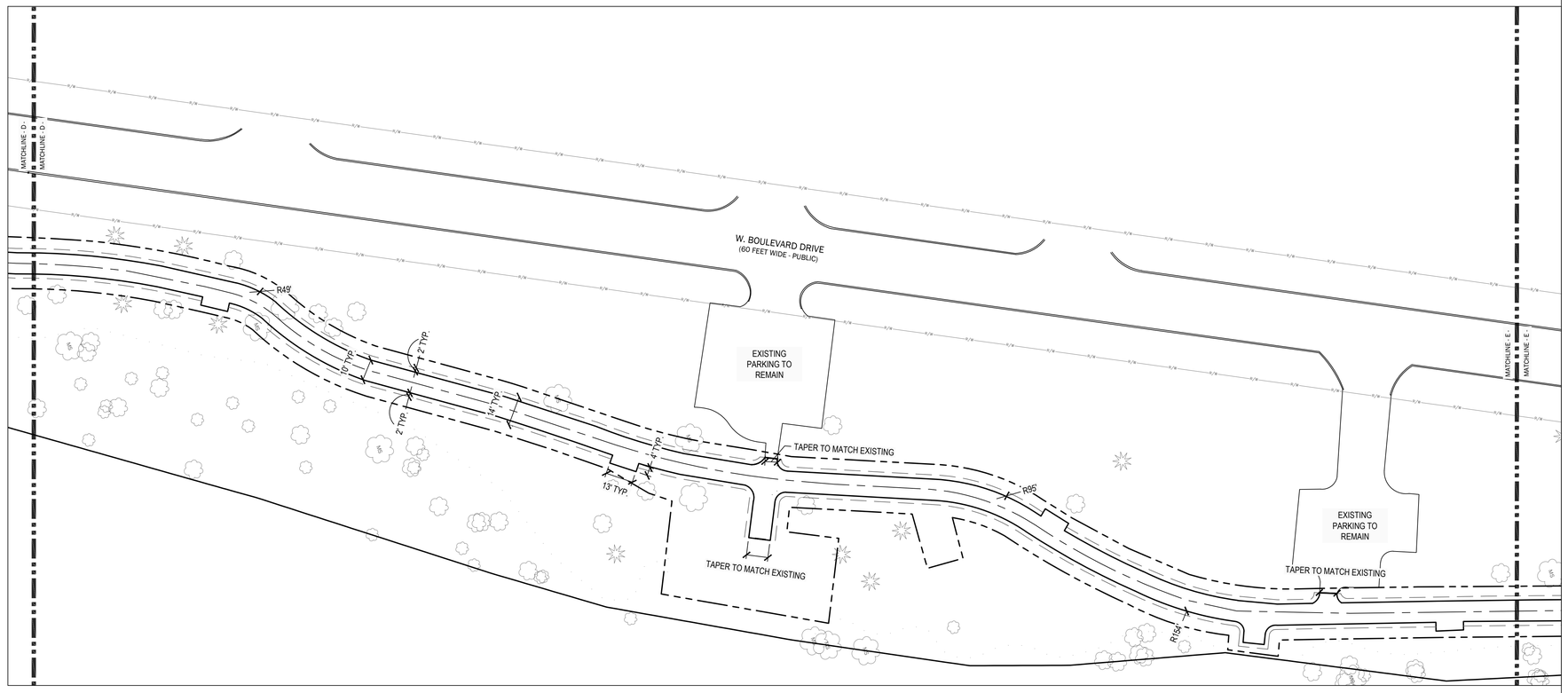
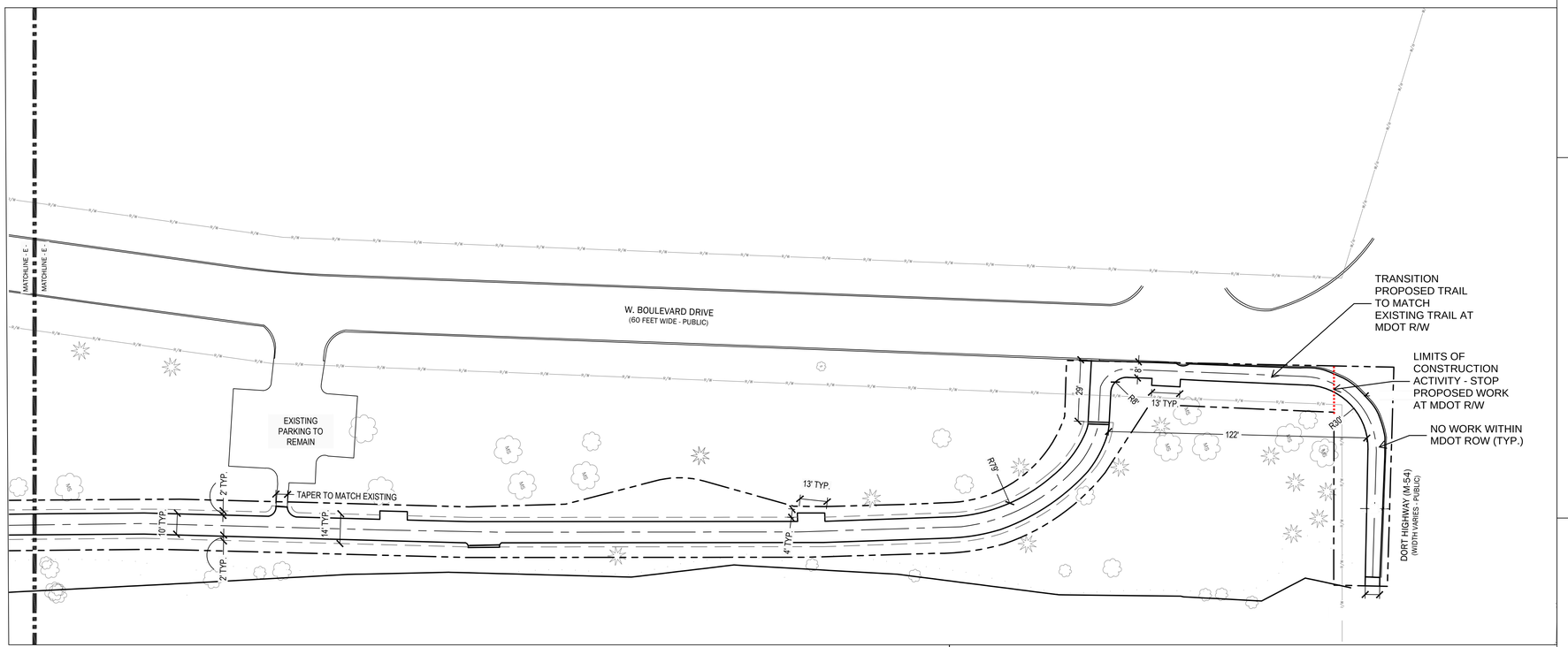
SEAL:

SHEET TITLE:
LAYOUT PLAN

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-201





LAYOUT SHEET NOTES

1. PRIOR TO START OF PROJECT WORK, VERIFY ALL SITE CONDITIONS AND SUBMIT A PROJECT WORK PLAN TO THE ENGINEER FOR REVIEW AND COMMENT. PRESENT THE WORK PLAN AT THE OWNER'S PRE-CONSTRUCTION MEETING. DO NOT BEGIN PRIOR TO THE 'PRE-CONSTRUCTION MEETING' AND WRITTEN AUTHORIZATION TO PROCEED IS ISSUED BY THE OWNER.
2. NOTIFY THE ENGINEER IN WRITING OF ANY IDENTIFIED DISCREPANCIES WITHIN THE CONSTRUCTION DOCUMENTS PRIOR TO THE START OF WORK. DURING PERFORMANCE OF THE WORK, VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND CROSS-CHECK DETAILS AND DIMENSION SHOWN ON THE DRAWINGS WITH RELATED REQUIREMENTS ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS PRIOR TO STARTING WORK. IN ALL CASES WHERE A CONFLICT MAY OCCUR, THE ENGINEER SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
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5. SECURE ALL NECESSARY PERMITS AND NOTIFY ALL UTILITY COMPANIES WITH UTILITIES ON THE SITE PRIOR TO THE CONSTRUCTION OF THE PROJECT. ADHERE TO ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS OR REGULATIONS PERTAINING TO THE PROJECT.
6. ESTABLISH AND MAINTAIN SITE SECURITY UNTIL PROJECT ACCEPTANCE.
7. USE DIMENSIONS SHOWN ON DRAWINGS FOR LAYOUT OF THE WORK. DO NOT USE SCALE DIMENSIONS FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
8. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS NOT SHOWN ON DRAWINGS.
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11. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
12. REFER TO THE FEMA FLOOD ZONES AND FEMA FLOODWAY AND ADHERE TO STATE REGULATIONS DURING CONSTRUCTION WITHIN THESE ZONES.

LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 6 / L-701 — EXTENT OF CLEAR ZONE, 2' WIDE ON EITHER SIDE
- PATH CENTER LINE

SCALE: 1"=30'

NORTH

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WTS

CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
PERMIT SET DRAFT UPDATES	01/29/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

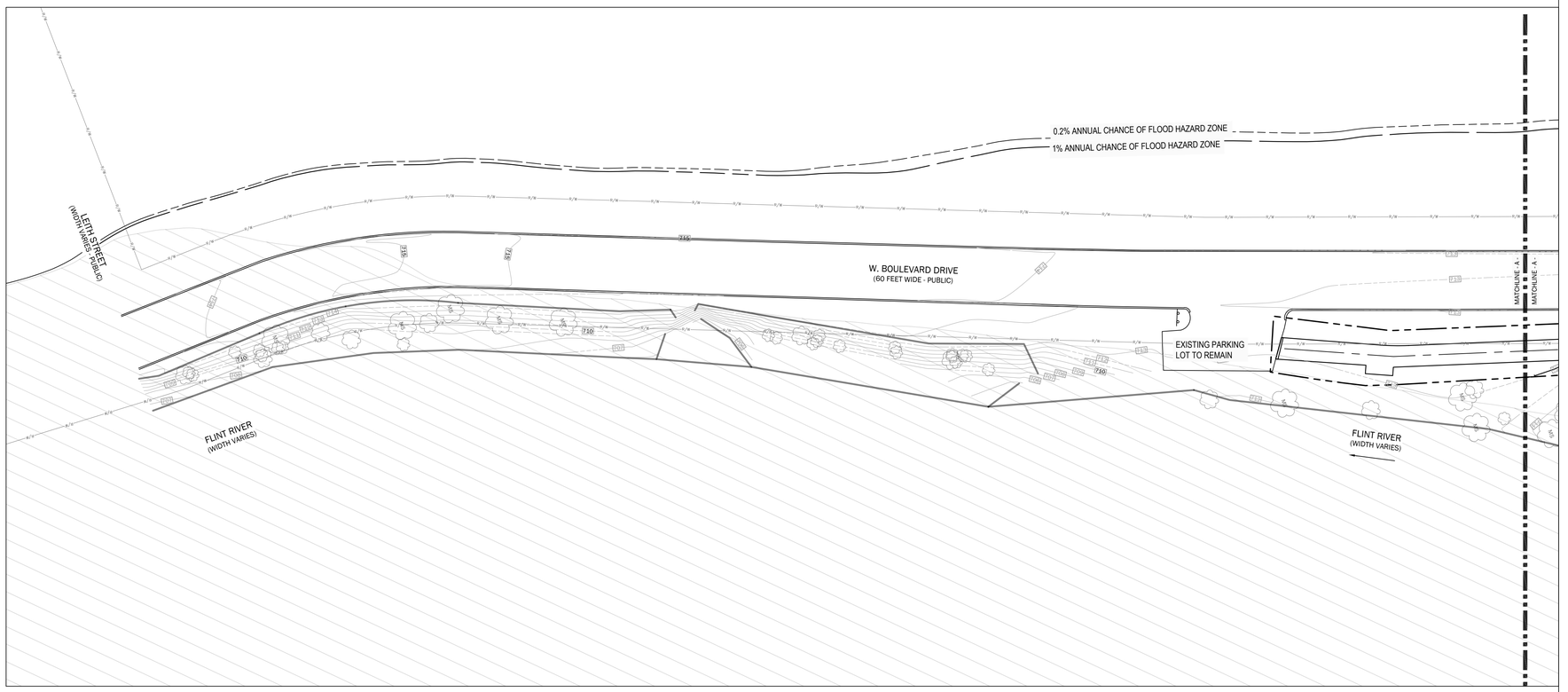
LAYOUT PLAN

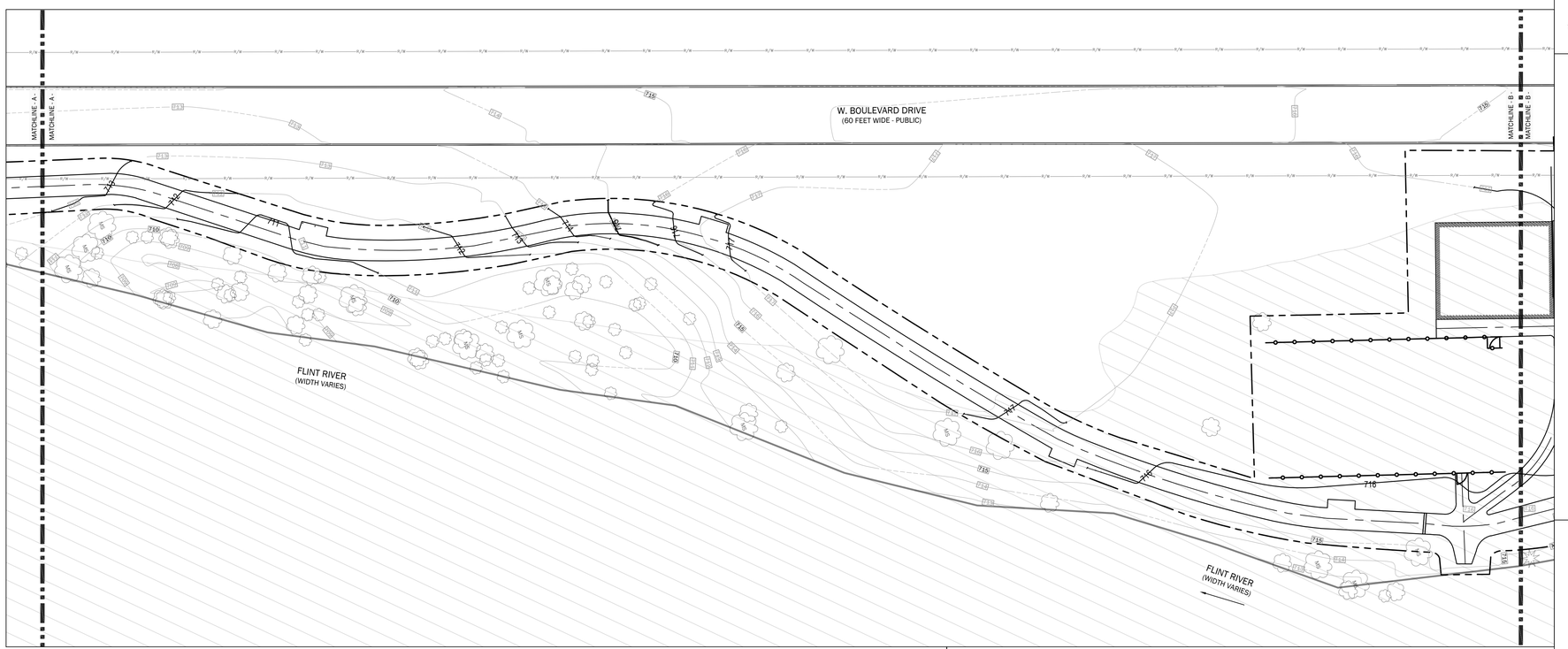
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-202





FEMA OVERLAY NOTES

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5. SECURE ALL NECESSARY PERMITS AND NOTIFY ALL UTILITY COMPANIES WITH UTILITIES ON THE SITE PRIOR TO THE CONSTRUCTION OF THE PROJECT. ADHERE TO ALL APPLICABLE LOCAL, STATE AND FEDERAL LAWS OR REGULATIONS PERTAINING TO THE PROJECT.
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10. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
11. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
12. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO INSTALLATION OF PLANT MATERIAL AND IRRIGATION SYSTEM.
13. THIS TRACT LIES PARTIALLY IN ZONE "X" (UNSHADED), DESIGNATED AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN", PARTIALLY IN ZONE "X" (SHADED), DESIGNATED AS "AREAS OF THE 0.2% ANNUAL CHANCE FLOOD; AREAS OF THE 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FORM 1% ANNUAL CHANCE FLOOD", AND PARTIALLY IN ZONE "AE", DEFINED AS "SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 0.1% ANNUAL CHANCE FLOOD EVENT, WHERE THE BASE FLOOD ELEVATIONS ARE DETERMINED", AS PER THE NATIONAL FLOOD INSURANCE PROGRAM FIRM COMMUNITY PANEL NUMBER.
14. 26049C0191D, LATEST AVAILABLE PUBLISHED REVISION DATED SEPTEMBER 25, 2009. THE BASE FLOOD ELEVATION IS 715.
15. REGULATORY FLOODWAY, 1% AND 0.2% ANNUAL CHANGE OF FLOOD HAZARD INFORMATION ARE BASED ON JUNE 27, 2024 EXTRACT OF THE NATIONAL FLOOD HAZARD LAYER FEATURE CLASS S_Fld_Haz_Ar. SOURCE: FEMA, Esri.
16. REFER TO THE FEMA FLOOD ZONES AND FEMA FLOODWAY AND ADHERE TO STATE REGULATIONS DURING CONSTRUCTION WITHIN THESE ZONES.

LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 1% ANNUAL CHANCE OF FLOOD HAZARD ZONE
- 0.2% ANNUAL CHANCE OF FLOOD HAZARD ZONE
- FEMA REGULATORY FLOODWAY
- 710 — MAJOR CONTOUR LINES
- 712 — MINOR CONTOUR LINES
- 710 — EXISTING MAJOR CONTOUR LINES, TO REMAIN
- 712 — EXISTING MINOR CONTOUR LINES, TO REMAIN
- BC 715.50 — BOTTOM OF CURB
- TC 716 — TOP OF CURB

SCALE: 1"=30'

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REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

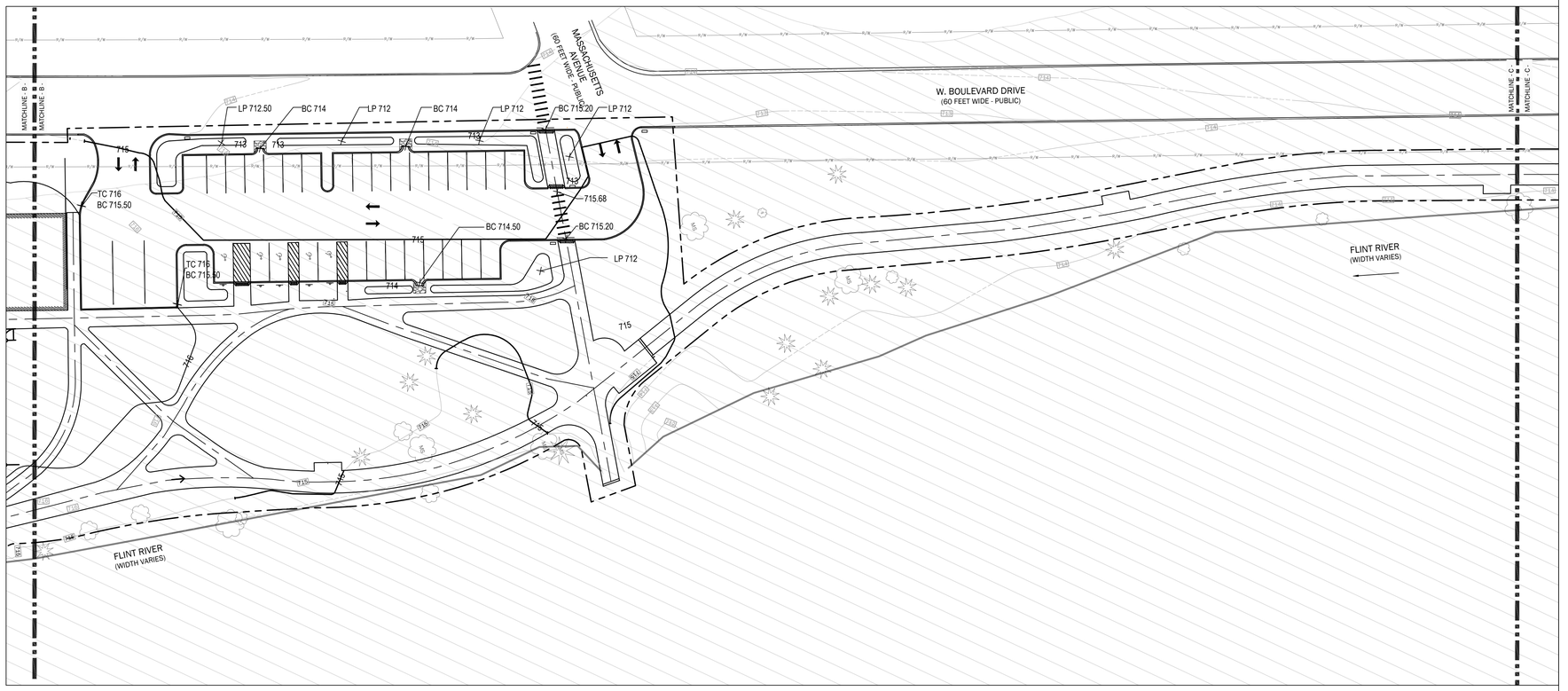
FEMA OVERLAY PLAN
- A -
REFERENCE ONLY

Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-210



FEMA OVERLAY NOTES

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14. 26049C0191D, LATEST AVAILABLE PUBLISHED REVISION DATED SEPTEMBER 25, 2009. THE BASE FLOOD ELEVATION IS 715.
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LEGEND

	EXISTING TREE
	LIMITS OF CONSTRUCTION
	PUBLIC RIGHT OF WAY
	1% ANNUAL CHANCE OF FLOOD HAZARD ZONE
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710	MAJOR CONTOUR LINES
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712	EXISTING MINOR CONTOUR LINES, TO REMAIN
BC 715.50	BOTTOM OF CURB
TC 716	TOP OF CURB

SCALE: 1"=30'

NORTH

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Great Lakes recreation
FLUTTER & WOW MUSEUM PROJECTS
WTS

CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

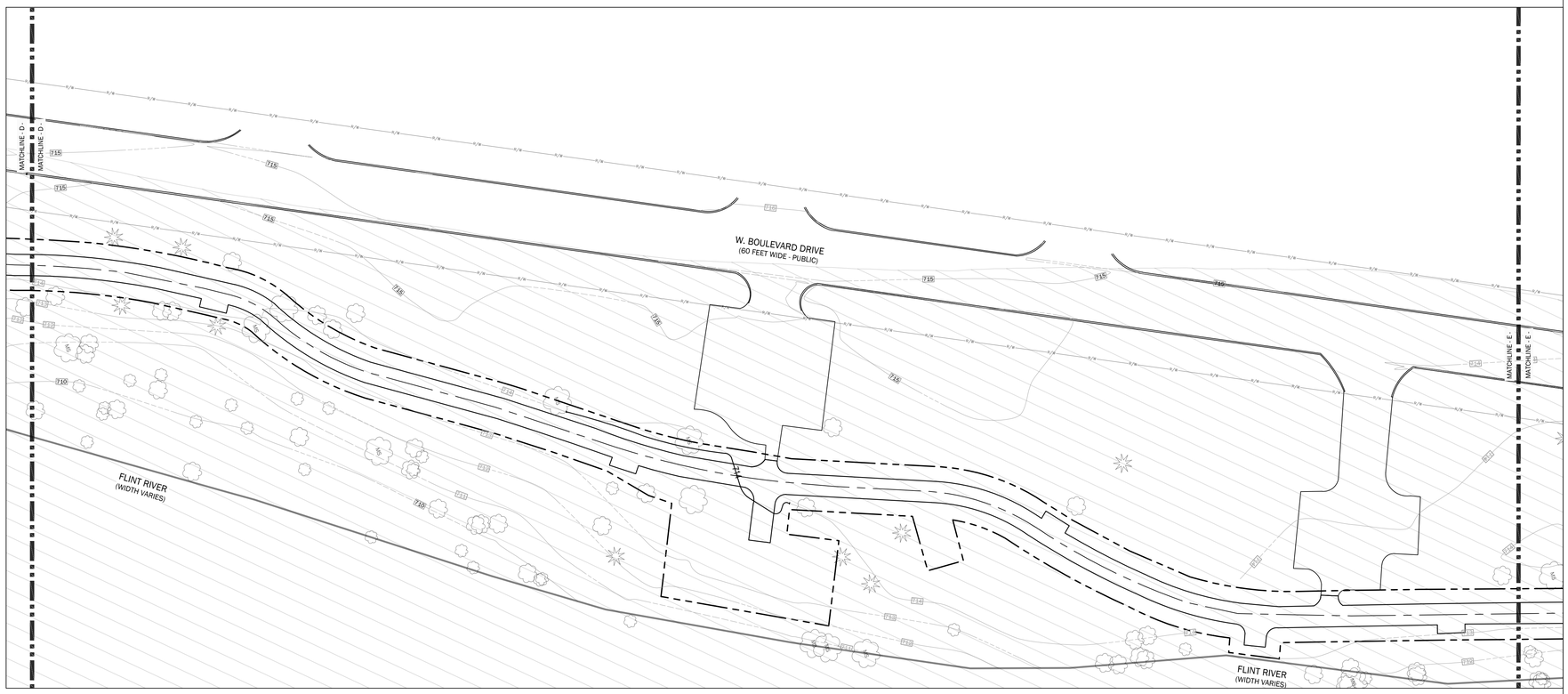
FEMA OVERLAY PLAN
- B -
REFERENCE ONLY

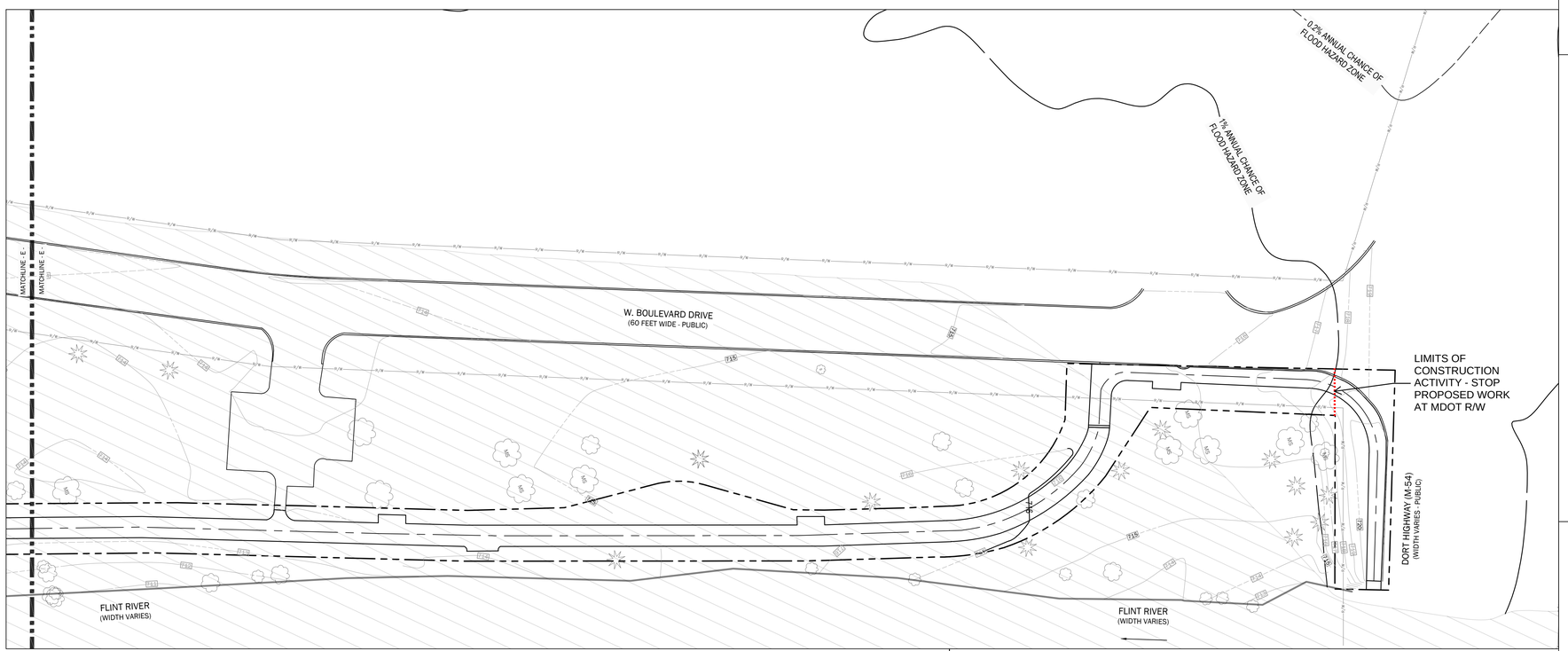
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-211





FEMA OVERLAY NOTES

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0' 15' 30' 60'
SCALE: 1"=30'

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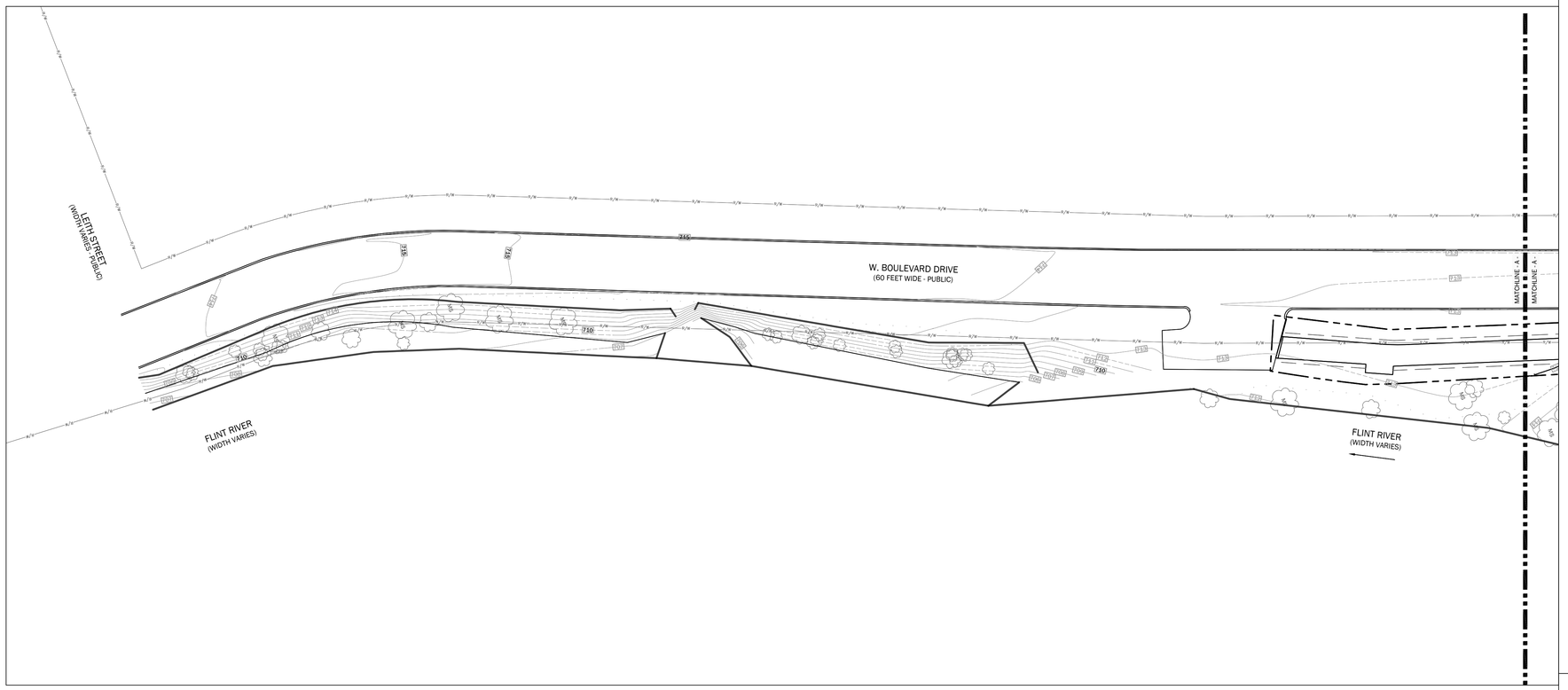
REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

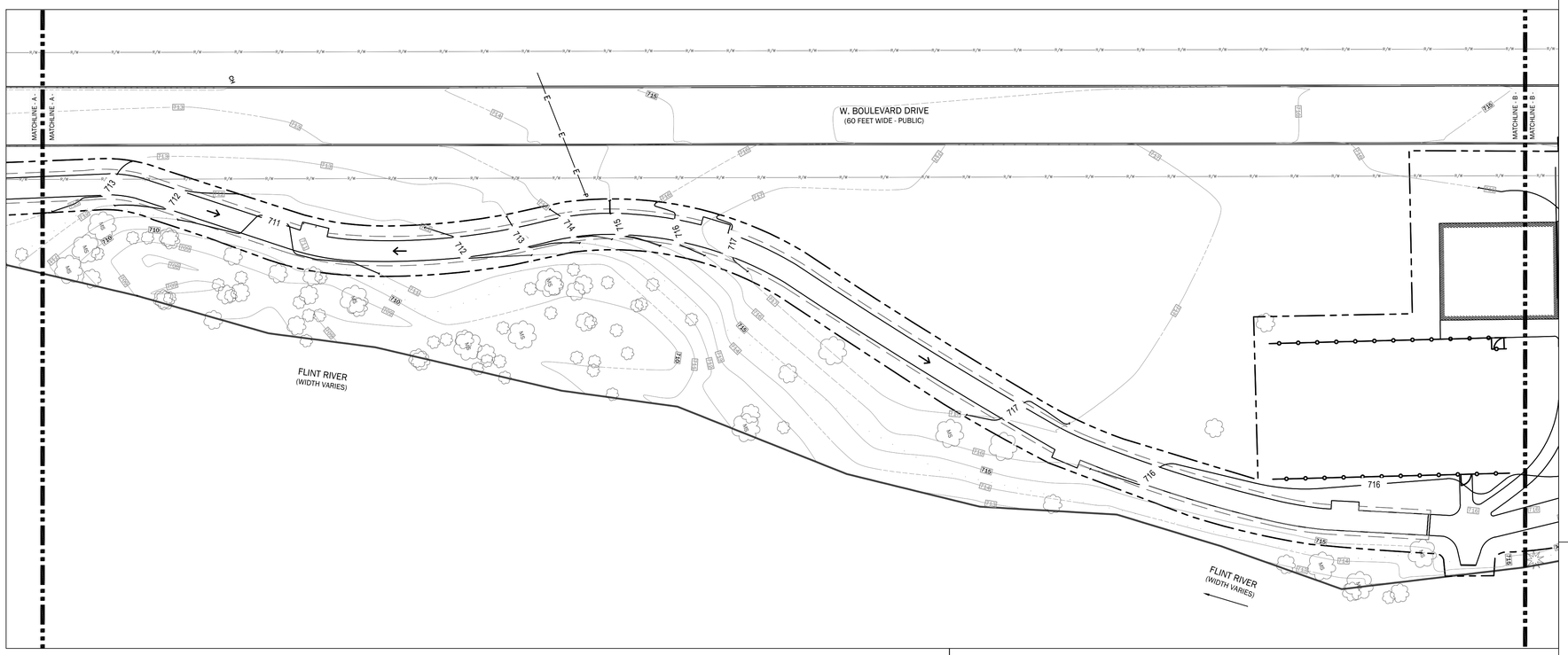
SEAL:

SHEET TITLE:
FEMA OVERLAY PLAN
- C -
REFERENCE ONLY

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-212





GRADING SHEET NOTES

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7. TAKE NOTE OF ALL GRADING AND DRAINAGE WAYS AND MAINTAIN THESE DRAIN WAYS FLOWS FREE OF OBSTRUCTIONS.
8. DISPOSE ALL ELEMENTS DESIGNATED FOR REMOVAL IN A LEGAL MANNER. PROVIDE RECEIPTS AND LETTERS FROM DISPOSAL SITES TO OWNER AS REQUIRED BY THE OWNER.
9. PREPARE ALL SUBGRADES IN ACCORDANCE WITH RECOMMENDATIONS OF GEOTECHNICAL ENGINEER. PROVIDE PROOF OF ALL REQUIRED SOIL COMPACTION TO THE OWNER.
10. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
11. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK..
12. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO INSTALLATION OF PLANT MATERIAL AND IRRIGATION SYSTEM.
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LEGEND

- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- EXISTING FENCE, TO REMAIN
- ELECTRIC LINE
- UT LINE
- 710 — MAJOR CONTOUR LINES
- 712 — MINOR CONTOUR LINES
- 710 — EXISTING MAJOR CONTOUR LINES, TO REMAIN
- 712 — EXISTING MINOR CONTOUR LINES, TO REMAIN
- 715.50 — BOTTOM OF CURB
- 716 — TOP OF CURB

SCALE: 1"=30'

NORTH

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CUSTOMER:
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PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

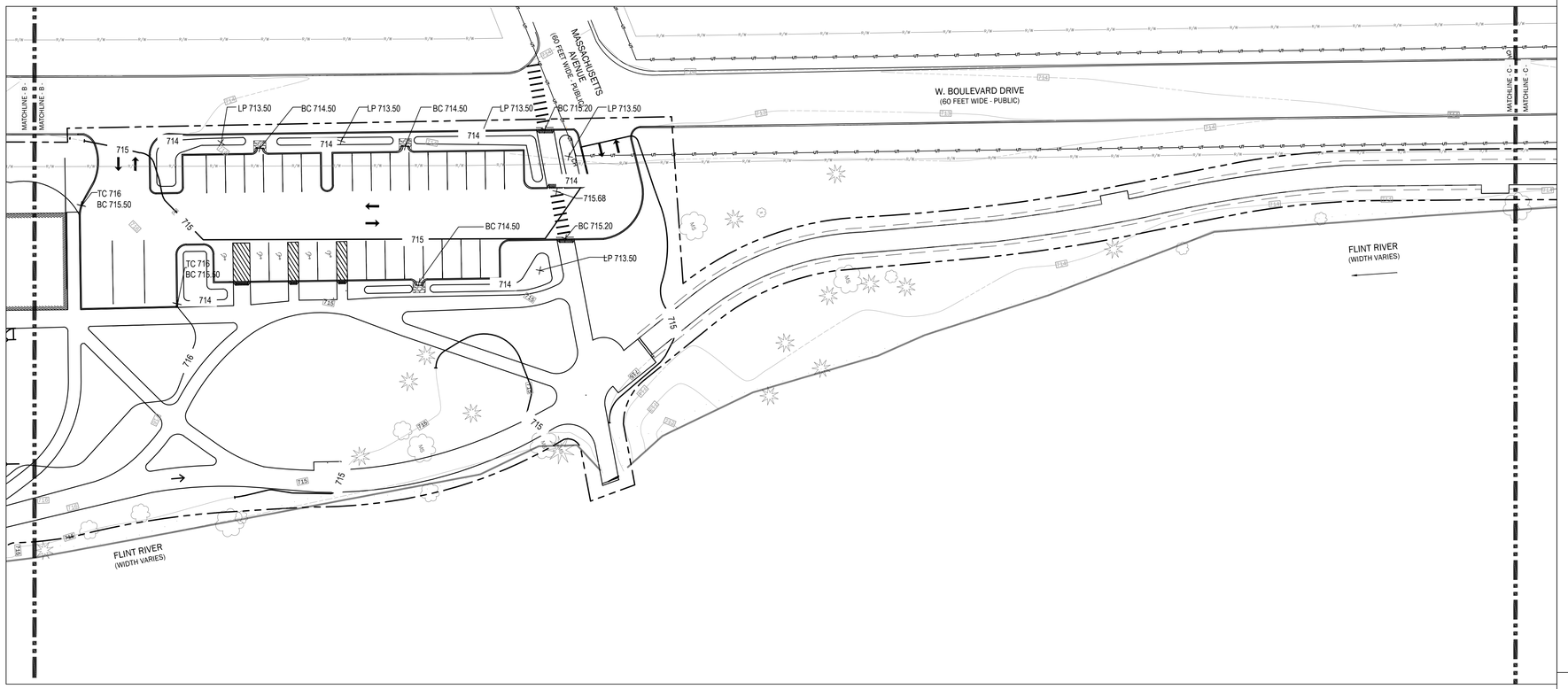
GRADING PLAN

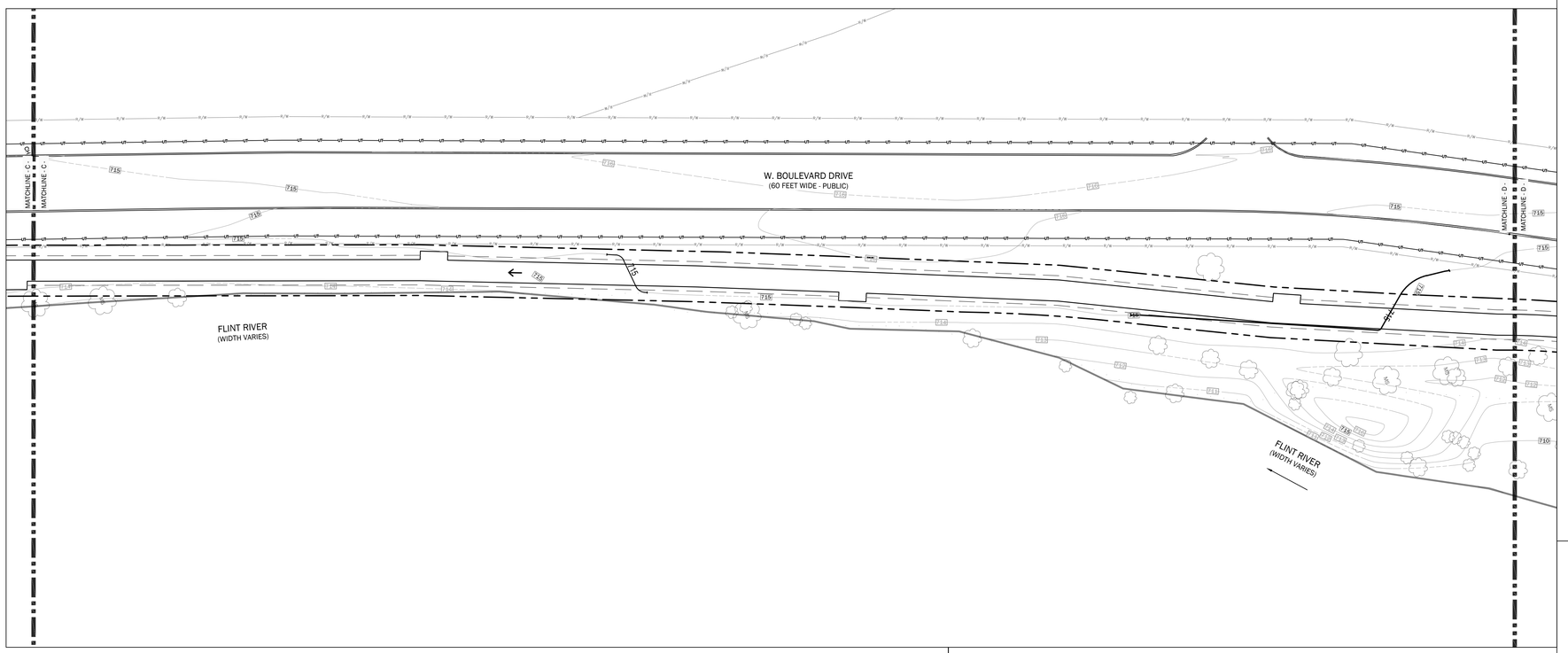
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-300





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X X	EXISTING FENCE, TO REMAIN
E E	ELECTRIC LINE
UT UT	UT LINE
710	MAJOR CONTOUR LINES
712	MINOR CONTOUR LINES
710	EXISTING MAJOR CONTOUR LINES, TO REMAIN
712	EXISTING MINOR CONTOUR LINES, TO REMAIN
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716	TOP OF CURB

SCALE: 1"=30'

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SHEET TITLE:

GRADING PLAN

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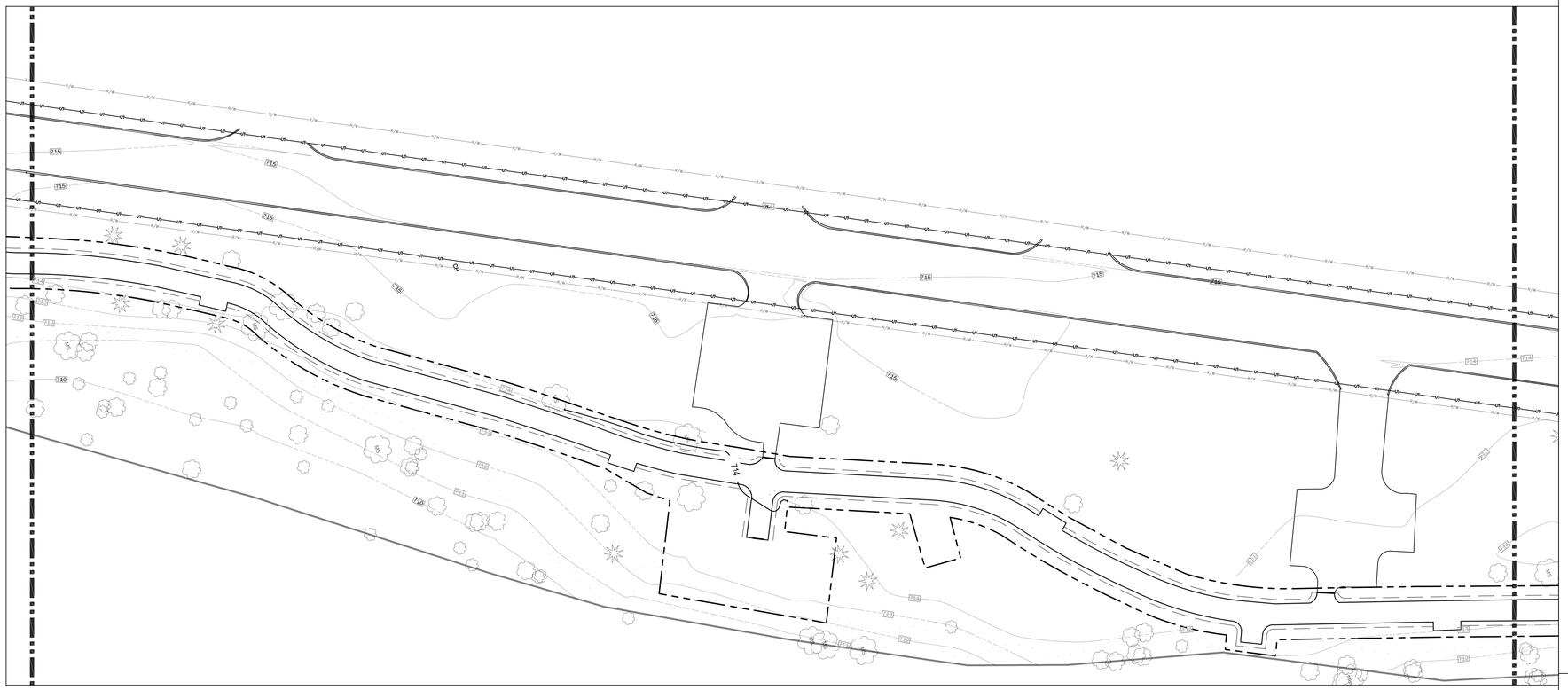
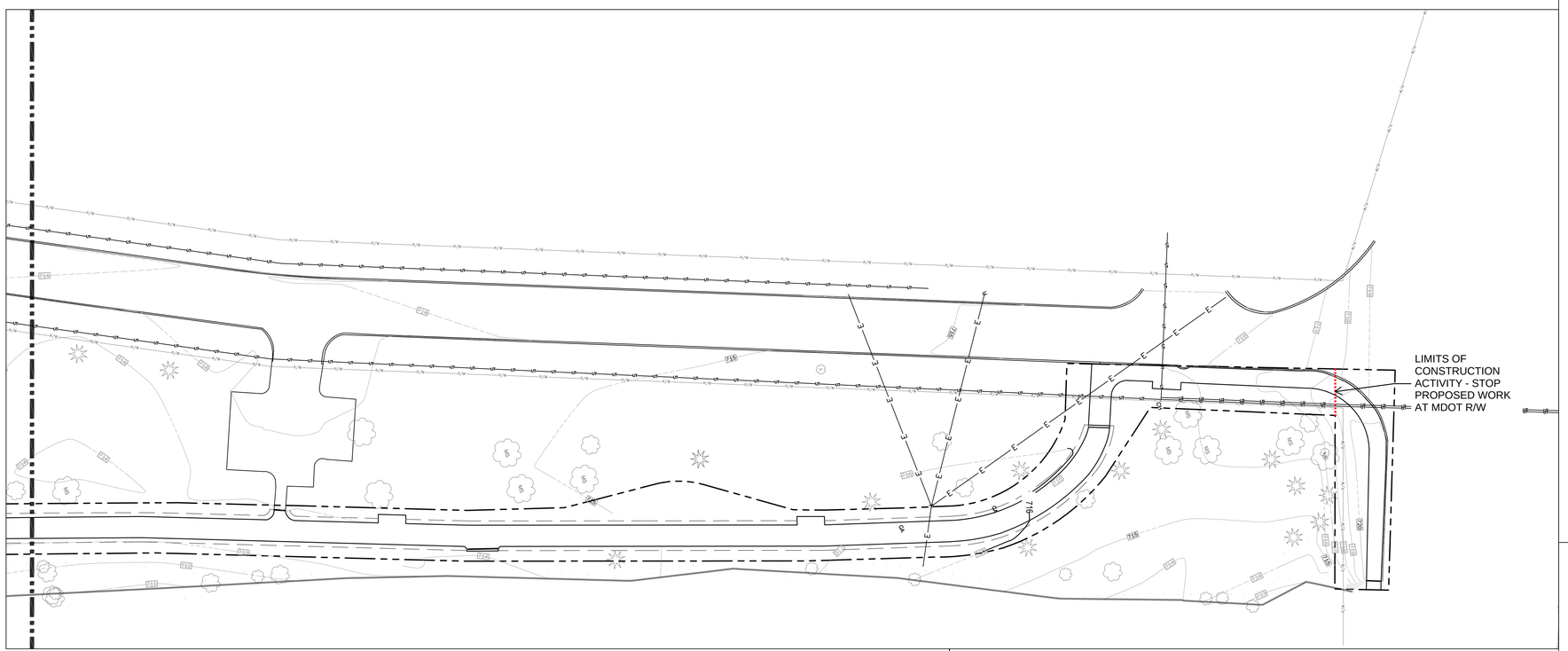
Project Number: 240401

SHEET NUMBER:

L-301





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0' 15' 30' 60'
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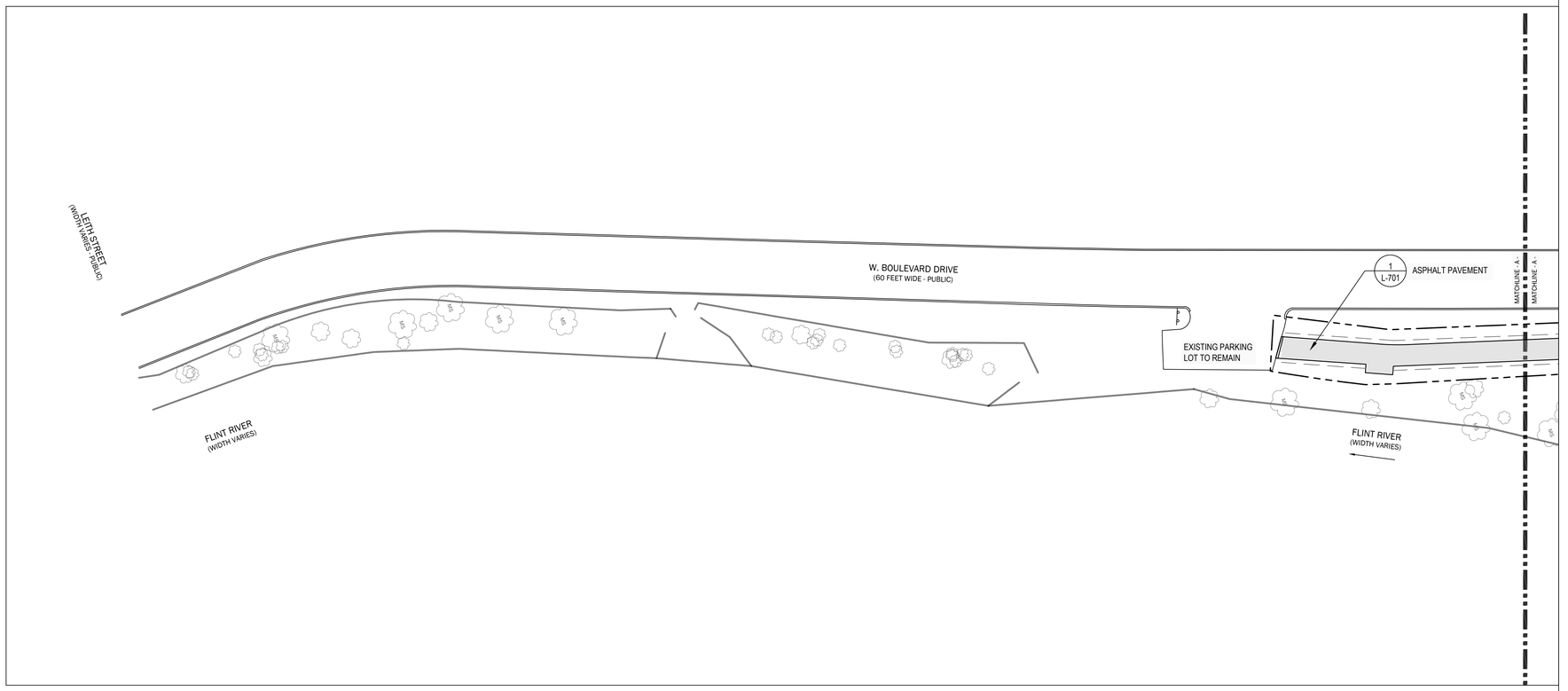
50% DESIGN DEVELOPMENT	08/30/2024

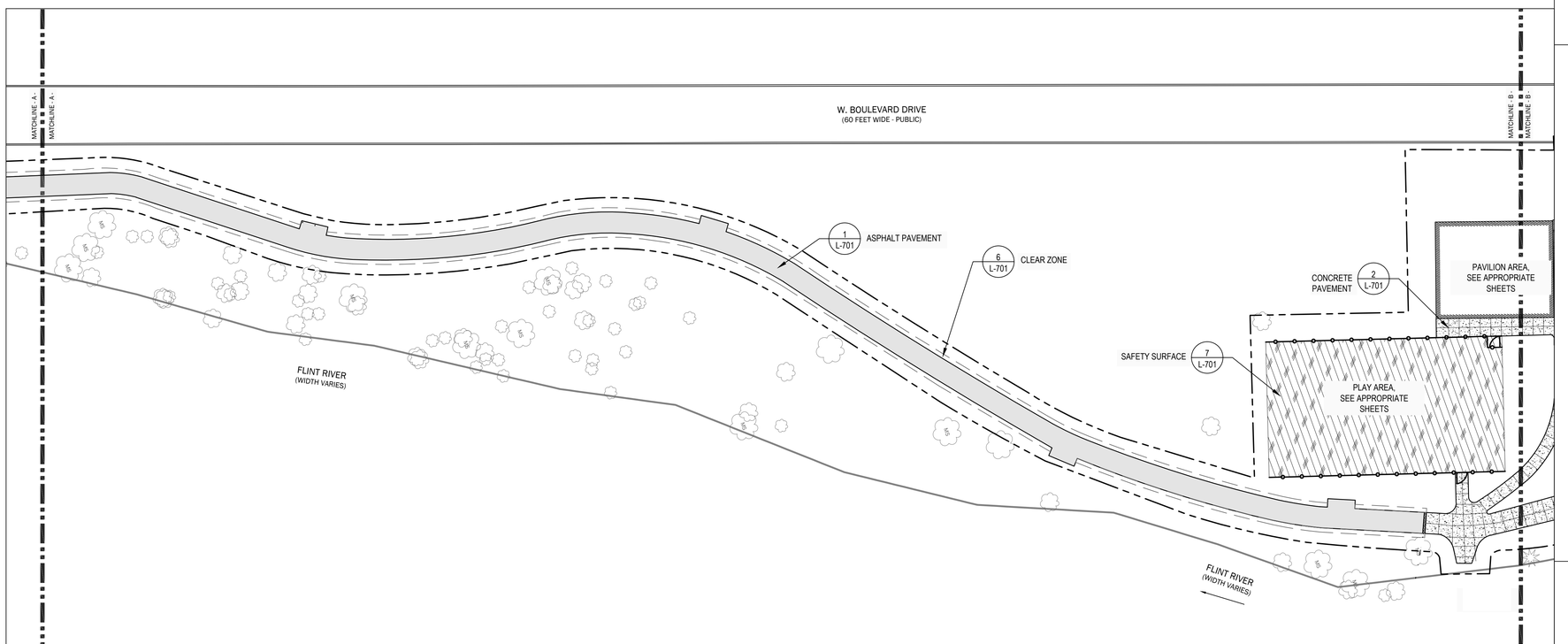
SEAL:

SHEET TITLE:
GRADING PLAN

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-302





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LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- 1 / L-701 — ASPHALT PAVEMENT
- 2 / L-701 — CONCRETE PAVEMENT
- 5 / L-701 — BRICK CURB TRANSITION
- 7 / L-701 — SAFETY SURFACE
- 5 / L-702 — PLAYGROUND FENCE
- 6 / L-701 — CLEAR ZONE

0' 15' 30' 60'

SCALE: 1"=30'

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REVISION	DATE
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DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

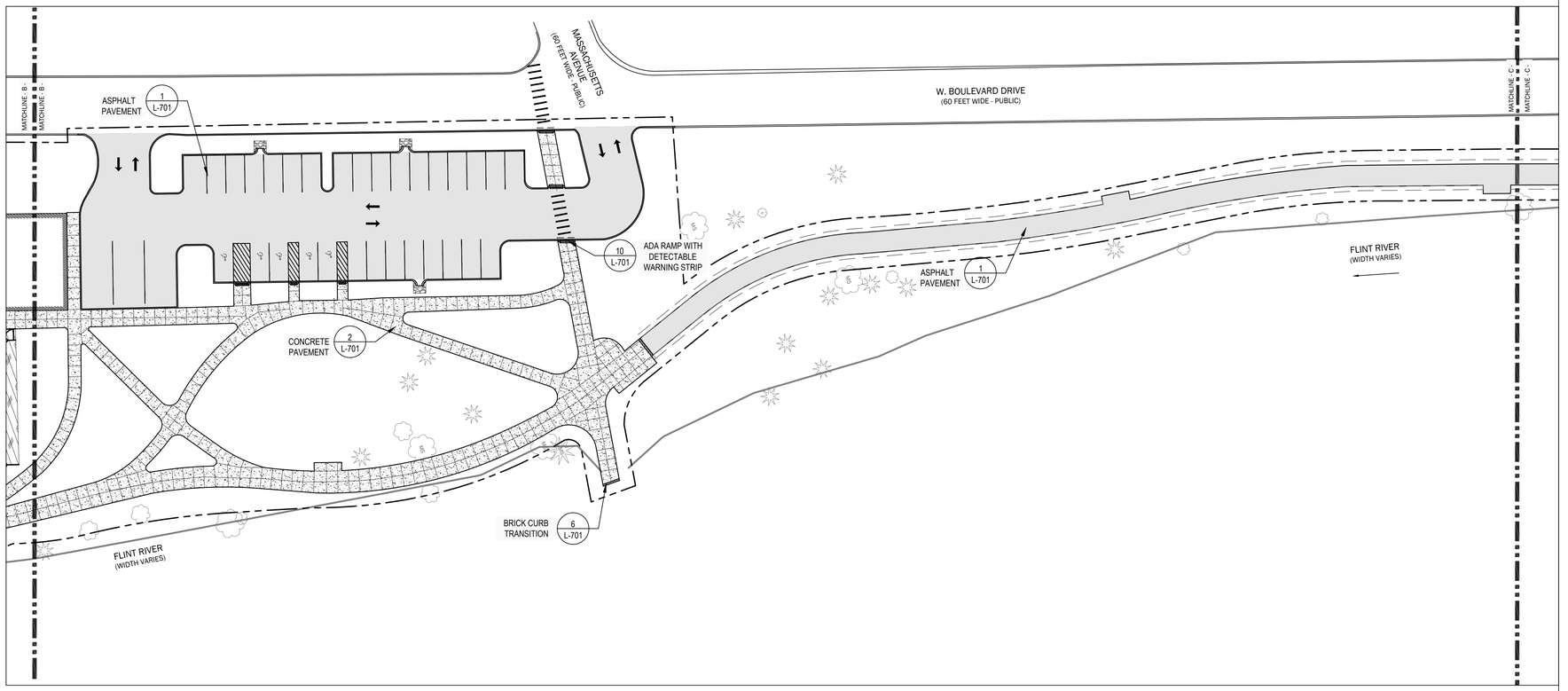
MATERIALS PLAN

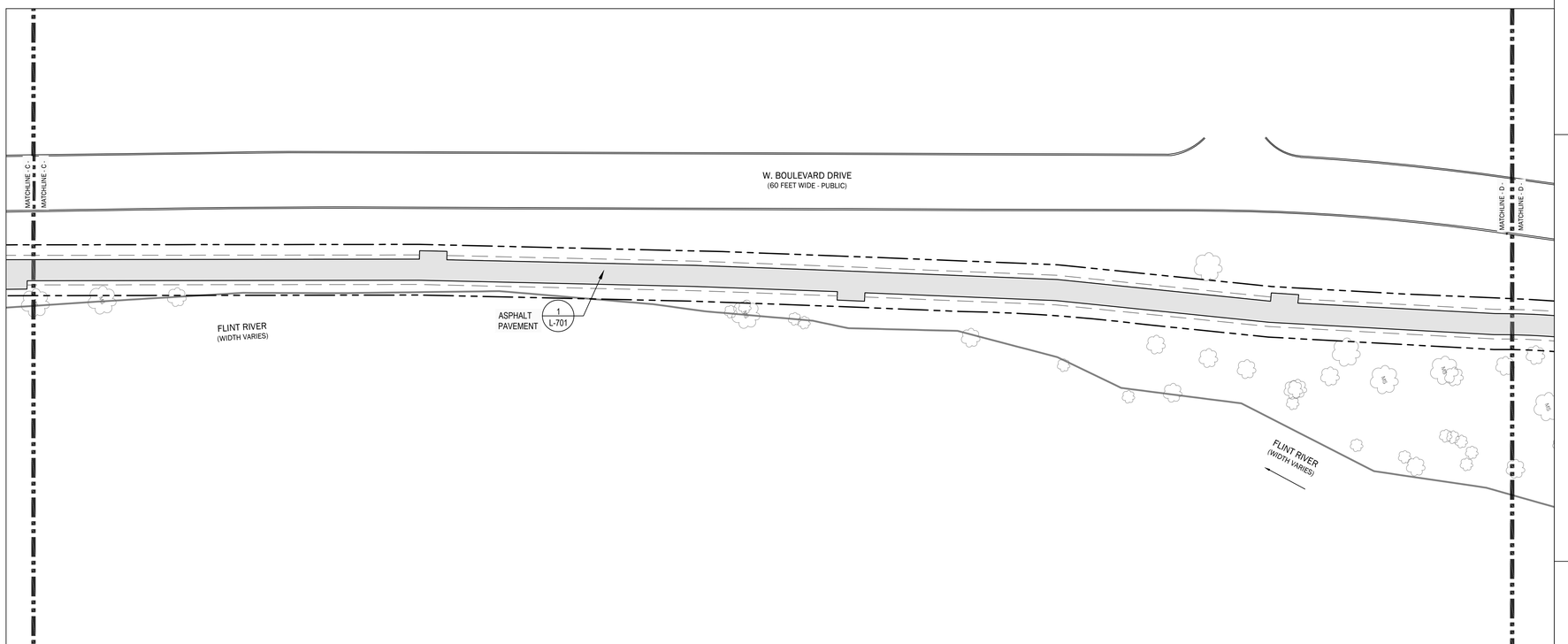
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-400





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- 1 / L-701 — ASPHALT PAVEMENT
- 2 / L-701 — CONCRETE PAVEMENT
- 6 / L-701 — BRICK CURB TRANSITION
- 9 / L-701 — RIP RAP (REFER TO BIOSWALE DETAIL)
- 11 / L-701 — ADA PARKING SPACE
- 10 / L-701 — ADA RAMP WITH DETECTABLE WARNING STRP
- 6 / L-701 — CLEAR ZONE

0' 15' 30' 60'

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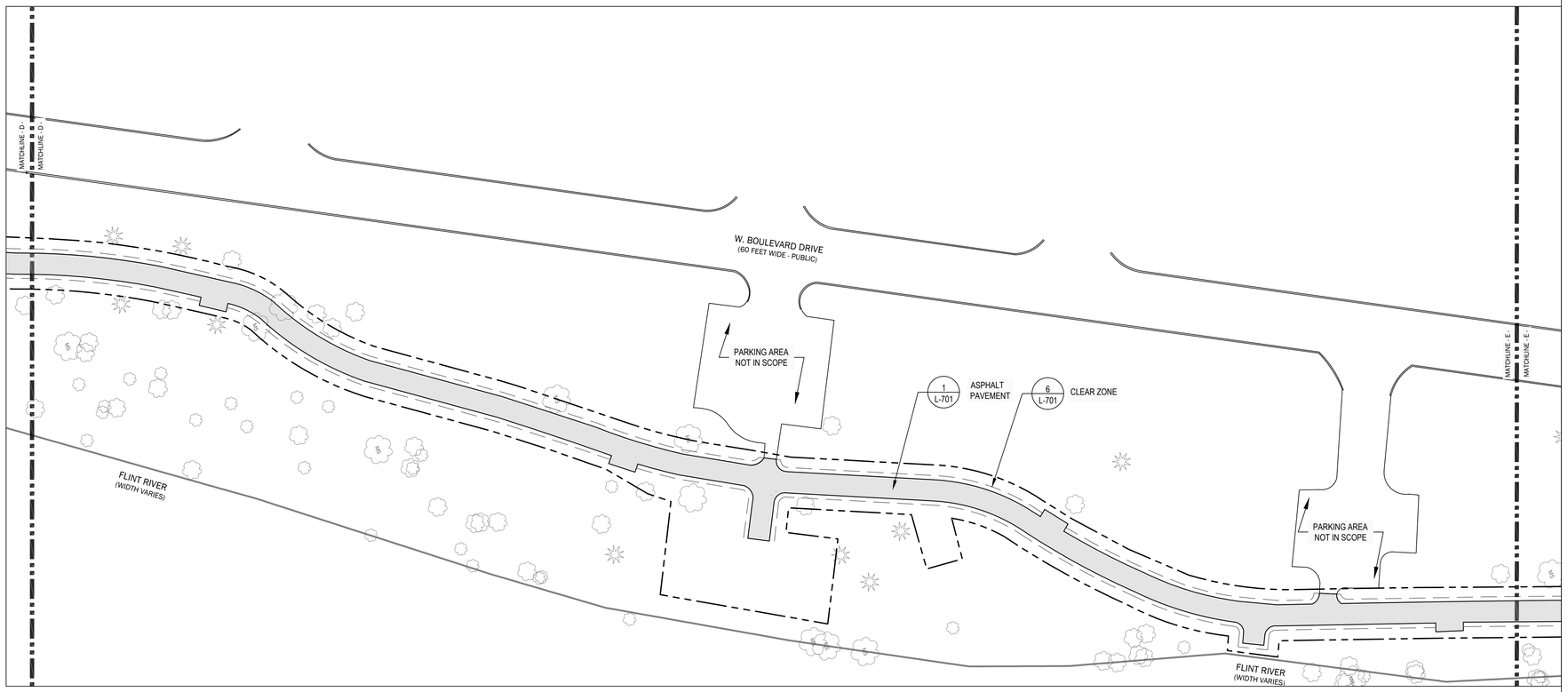

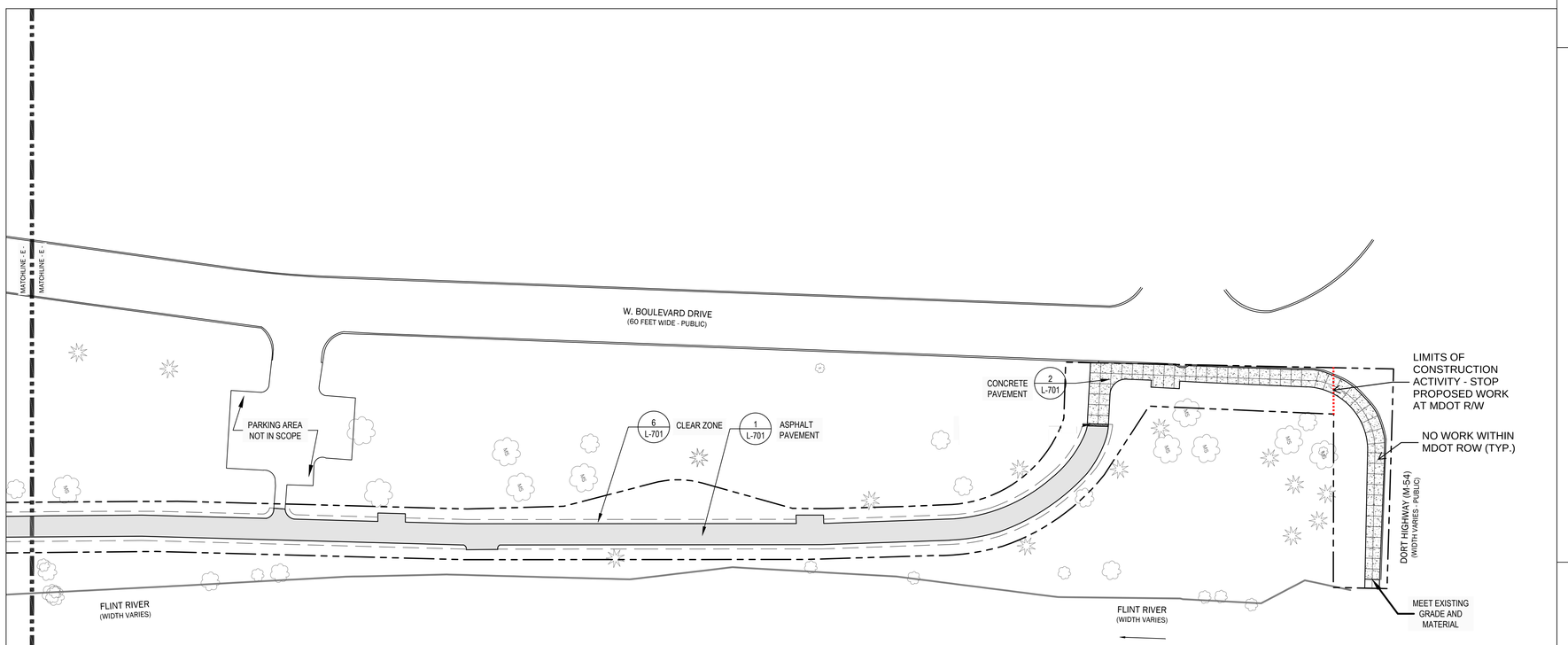

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8. REFER TO THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS NOT SHOWN ON DRAWINGS.
9. DETAILS NOTED AS TYPICAL SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THIS PROJECT.
10. COORDINATE CONSTRUCTION OF PENETRATIONS, SLEEVES, VARIATIONS IN THE SLAB ELEVATIONS, DEPRESSED AREAS AND ALL OTHER ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING REQUIREMENTS.
11. DISPOSE ALL ELEMENTS DESIGNATED FOR REMOVAL IN A LEGAL MANNER. PROVIDE RECEIPTS AND LETTERS FROM DISPOSAL SITES TO OWNER AS REQUIRED BY THE OWNER.
12. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
13. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
14. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO INSTALLATION OF PLANT MATERIAL AND IRRIGATION SYSTEM.
15. ALL ABBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ON THIS DRAWING ARE NOT NECESSARILY USED.
13. REFER TO THE FEMA FLOOD ZONES AND FEMA FLOODWAY AND ADHERE TO STATE REGULATIONS DURING CONSTRUCTION WITHIN THESE ZONES.

LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- 6 / L-701 — CLEAR ZONE
- 1 / L-701 — ASPHALT PAVEMENT
- 2 / L-701 — CONCRETE PAVEMENT
- 5 / L-701 — BRICK CURB TRANSITION

0' 15' 30' 60'

SCALE: 1"=30'

NORTH

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Great Lakes recreation
FLUTTER & WOW MUSEUM PROJECTS
WTS

CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

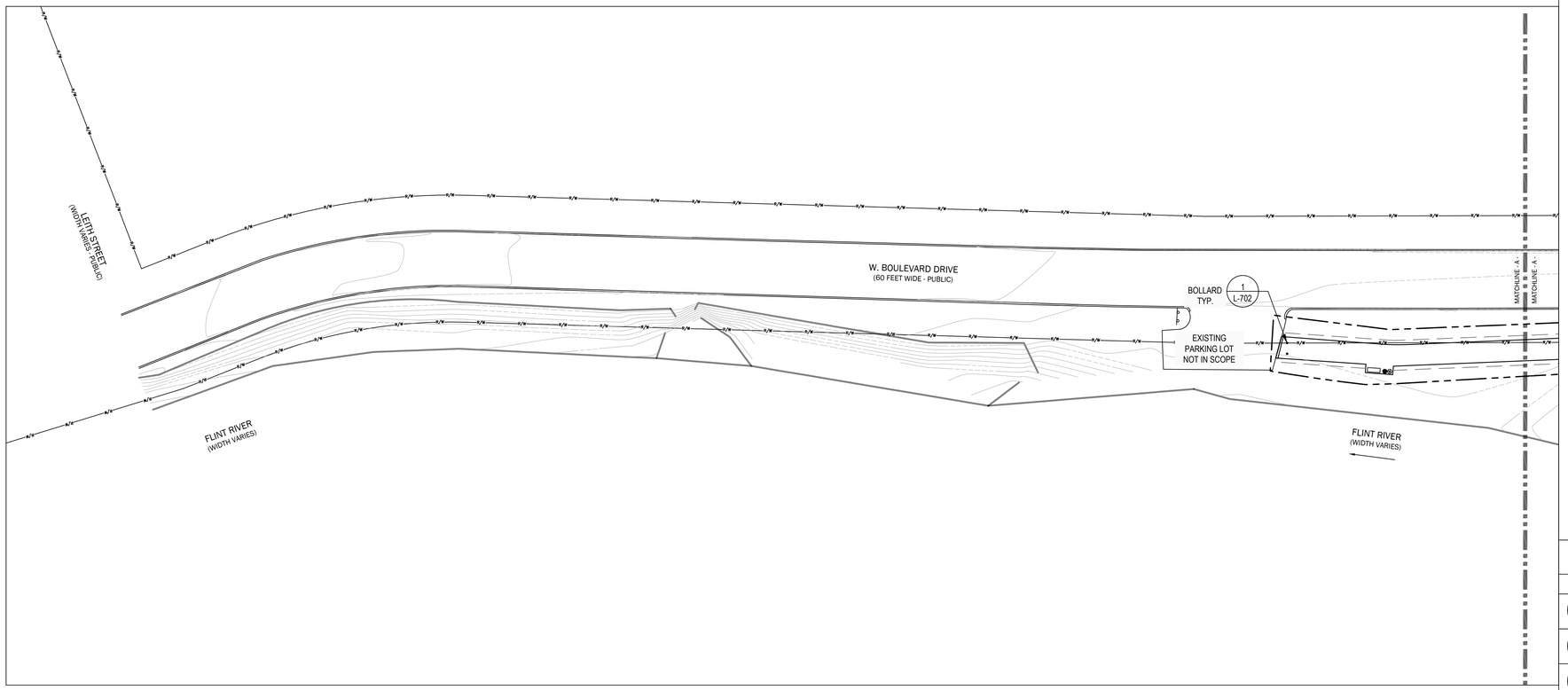
MATERIALS PLAN

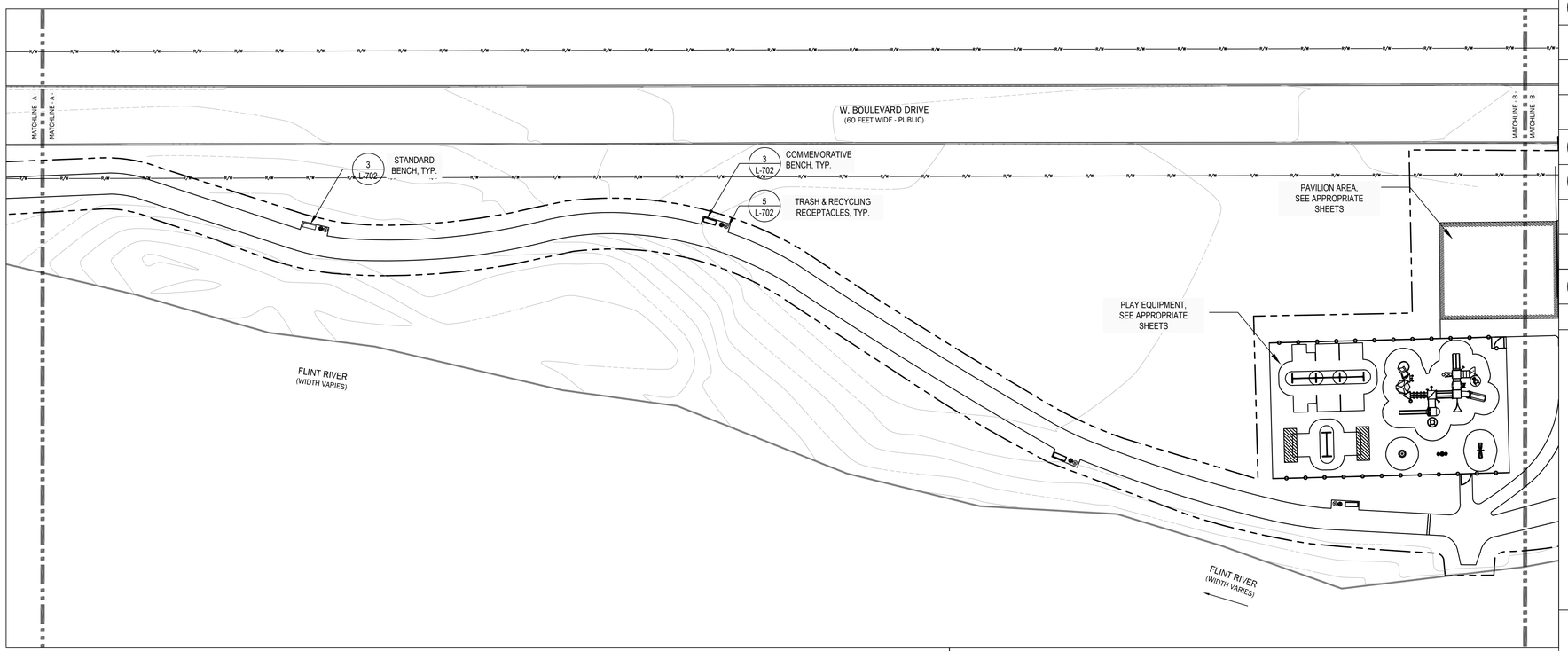
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-402





FURNISHING SHEET NOTES

1. PRIOR TO START OF PROJECT WORK, VERIFY ALL SITE CONDITIONS AND SUBMIT A PROJECT WORK PLAN TO THE ENGINEER FOR REVIEW AND COMMENT. PRESENT THE WORK PLAN AT THE OWNER'S PRE-CONSTRUCTION MEETING. DO NOT BEGIN PRIOR TO THE 'PRE-CONSTRUCTION MEETING' AND WRITTEN AUTHORIZATION TO PROCEED IS ISSUED BY THE OWNER.
2. NOTIFY THE ENGINEER IN WRITING OF ANY IDENTIFIED DISCREPANCIES WITHIN THE CONSTRUCTION DOCUMENTS PRIOR TO THE START OF WORK. DURING PERFORMANCE OF THE WORK, VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE AND CROSS-CHECK DETAILS AND DIMENSION SHOWN ON THE DRAWINGS WITH RELATED REQUIREMENTS ON THE ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS. CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS PRIOR TO STARTING WORK. IN ALL CASES WHERE A CONFLICT MAY OCCUR, THE ENGINEER SHALL BE NOTIFIED AND WILL INTERPRET THE INTENT OF THE CONTRACT DOCUMENTS.
3. ESTABLISH AND MAINTAIN SITE SECURITY UNTIL PROJECT ACCEPTANCE.
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5. DETAILS NOTED AS TYPICAL SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION ON THIS PROJECT.
6. TAKE NOTE OF ALL GRADING AND DRAINAGE WAYS AND MAINTAIN THESE DRAIN WAYS FLOWS FREE OF OBSTRUCTIONS.
7. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
8. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
9. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO INSTALLATION OF SITE FURNISHINGS.
10. ALL ABBREVIATIONS, SYMBOLS, AND LEGENDS SHOWN ON THIS DRAWING ARE NOT NECESSARILY USED.
11. INSTALL ALL FURNISHINGS TO THE MANUFACTURERS SPECIFICATIONS AND GUIDELINES. PROVIDE WARRANTY FOR ALL FURNITURE INSTALLED.
12. REFER TO THE FEMA FLOOD ZONES AND FEMA FLOODWAY AND ADHERE TO STATE REGULATIONS DURING CONSTRUCTION WITHIN THESE ZONES.

FURNISHING SCHEDULE

	QTY	QTY	PRODUCT	NOTES
1 L-702	**BOLLARD**	*4*	*VICTOR STANLEY L-89*	*MATTE BLACK METAL FINISH; 4' HEIGHT*
3 L-702	**STANDARD BENCH**	*11*	*VICTOR STANLEY FB-324*	*MATTE BLACK METAL FINISH; IPE WOOD FINISH*
3 L-702	**COMMEMORATIVE BENCH**	*7*	*VICTOR STANLEY FB-324*	*MATTE BLACK METAL FINISH; IPE WOOD FINISH; ACCOMMODATE METAL PLAQUE BY OTHERS*
5 L-702	**TRASH RECEPTACLES**	*5*	*VICTOR STANLEY EB-36 SD*	*MATTE BLACK, METAL FINISH*
	PAVILION	*/*	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
	PICNIC TABLES	*/*	*GREAT LAKES RECREATION*	*UNDER PAVILION, SEE SHEETS*
	PLAY UNITS	*/*	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
2 L-702	**BIKE RACK**	*4*	*VICTOR STABLEY BRWA-101*	*MATTE BLACK METAL FINISH*
1 L-703	**STOP / YIELD SIGN**	*4*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*
	TRAIL SIGNAGE	*1*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
	HERITAGE TRAIL SIGNAGE	*1*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
11 L-701	**ADA SIGN**	*5*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*

LEGEND

- LIMITS OF CONSTRUCTION
- 6 L-702 — PLAYGROUND FENCE
- 1 L-702 — BOLLARD
- 3 L-702 — STANDARD PARK BENCH
- 3 L-702 — COMMEMORATIVE PARK BENCH
- 5 L-702 — TRASH & RECYCLING RECEPTACLES

0' 15' 30' 60'
SCALE: 1"=30'

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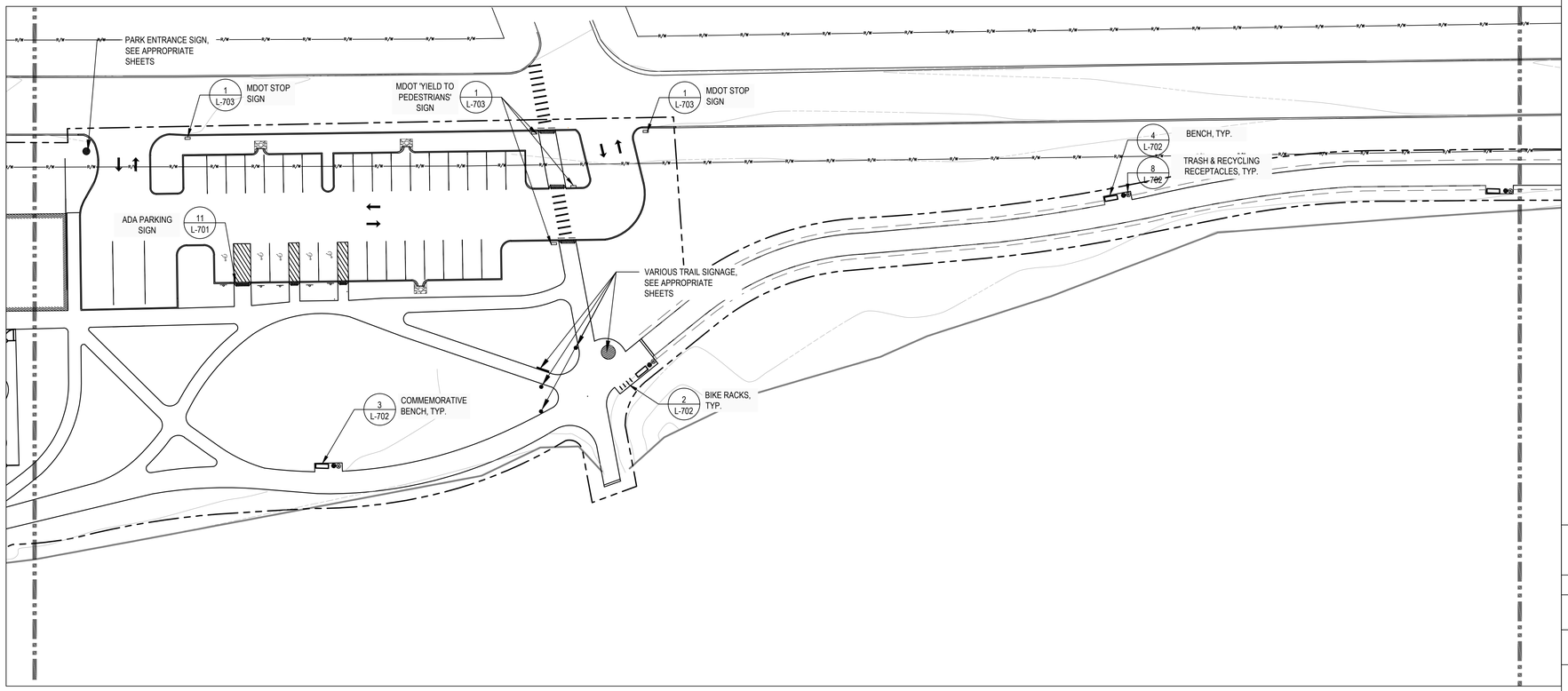
REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/31/2024

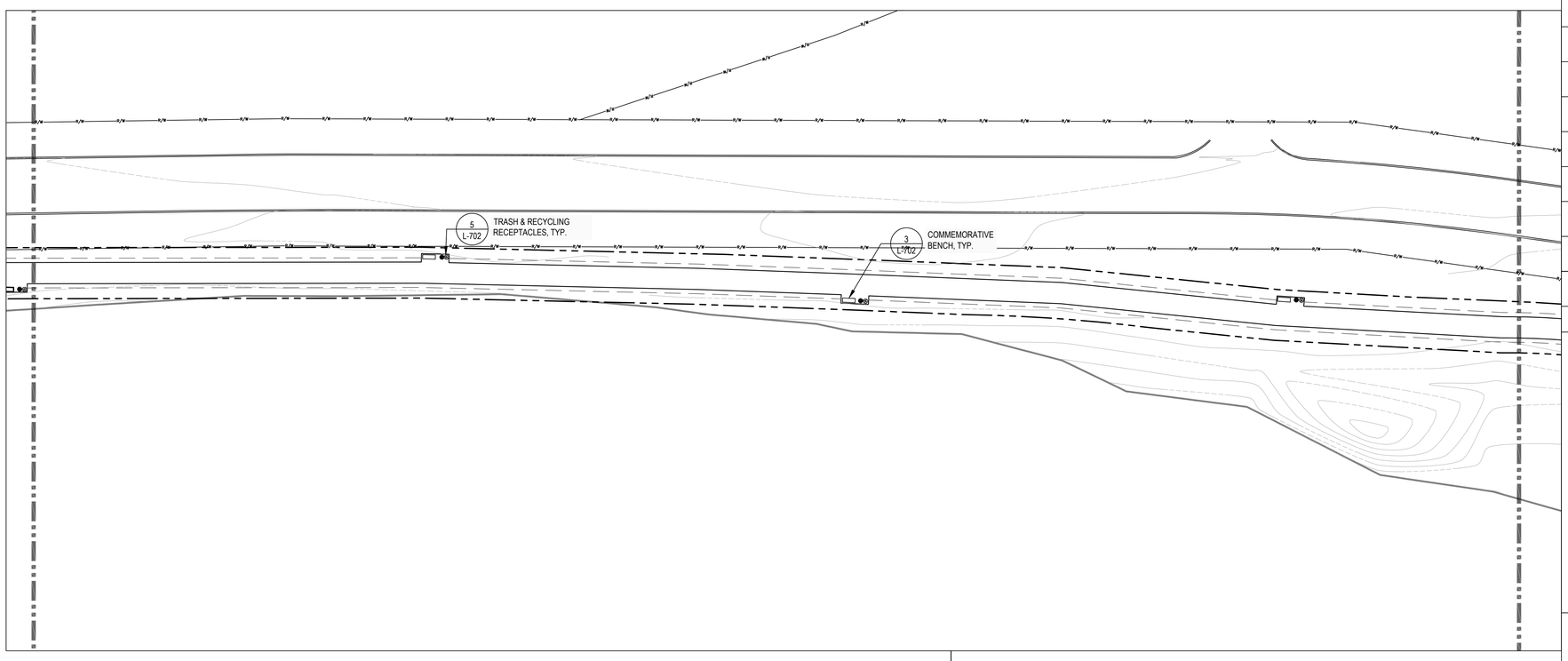
SEAL:

SHEET TITLE:
FURNISHING PLAN

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-500





FURNISHING SHEET NOTES

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9. CONTACT "811" UNDERGROUND UTILITIES LOCATION CENTER PRIOR TO INSTALLATION OF SITE FURNISHINGS.
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FURNISHING SCHEDULE

	QTY	QTY	PRODUCT	NOTES
1 L-702	**BOLLARD**	*4*	*VICTOR STANLEY L-89*	*MATTE BLACK METAL FINISH; 4' HEIGHT*
3 L-702	**STANDARD BENCH**	*11*	*VICTOR STANLEY FB-324*	*MATTE BLACK METAL FINISH; IPE WOOD FINISH*
3 L-702	**COMMEMORATIVE BENCH**	*7*	*VICTOR STANLEY FB-324*	*MATTE BLACK METAL FINISH; IPE WOOD FINISH; ACCOMMODATE METAL PLAQUE BY OTHERS*
5 L-702	**TRASH RECEPTACLES**	*5*	*VICTOR STANLEY EB-36 SD*	*MATTE BLACK, METAL FINISH*
	PAVILION	/	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
	PICNIC TABLES	/	*GREAT LAKES RECREATION*	*UNDER PAVILION, SEE SHEETS*
	PLAY UNITS	/	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
2 L-702	**BIKE RACK**	*4*	*VICTOR STABLEY BRWA-101*	*MATTE BLACK METAL FINISH*
1 L-703	**STOP / YIELD SIGN**	*4*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*
	TRAIL SIGNAGE	*1*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
	HERITAGE TRAIL SIGNAGE	*1*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
11 L-701	**ADA SIGN**	*5*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*

LEGEND

- LIMITS OF CONSTRUCTION
- 6 L-702 PLAYGROUND FENCE
- 1 L-702 BOLLARD
- 3 L-702 STANDARD PARK BENCH
- 3 L-702 COMMEMORATIVE PARK BENCH
- 5 L-702 TRASH & RECYCLING RECEPTACLES

0' 15' 30' 60'
SCALE: 1"=30'

NORTH

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REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/31/2024

SEAL:

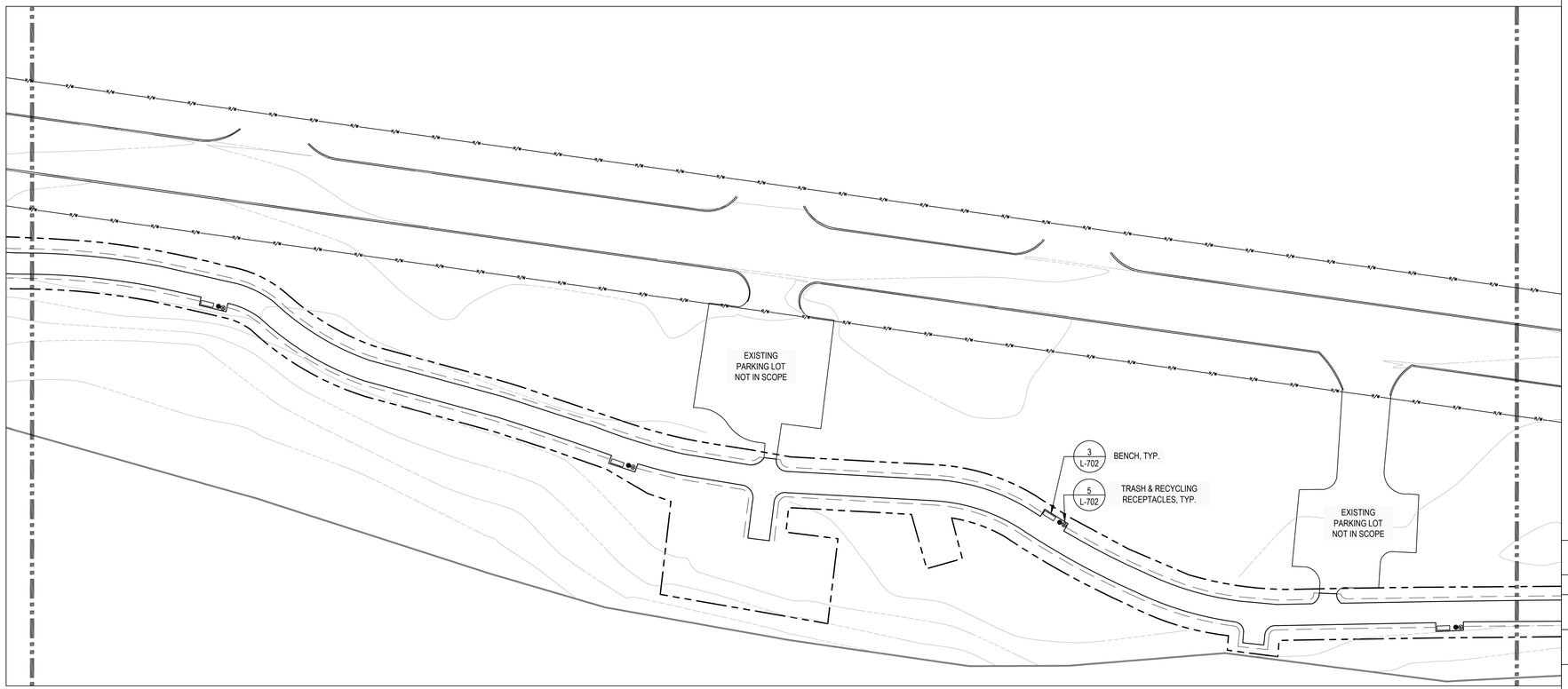
SHEET TITLE:

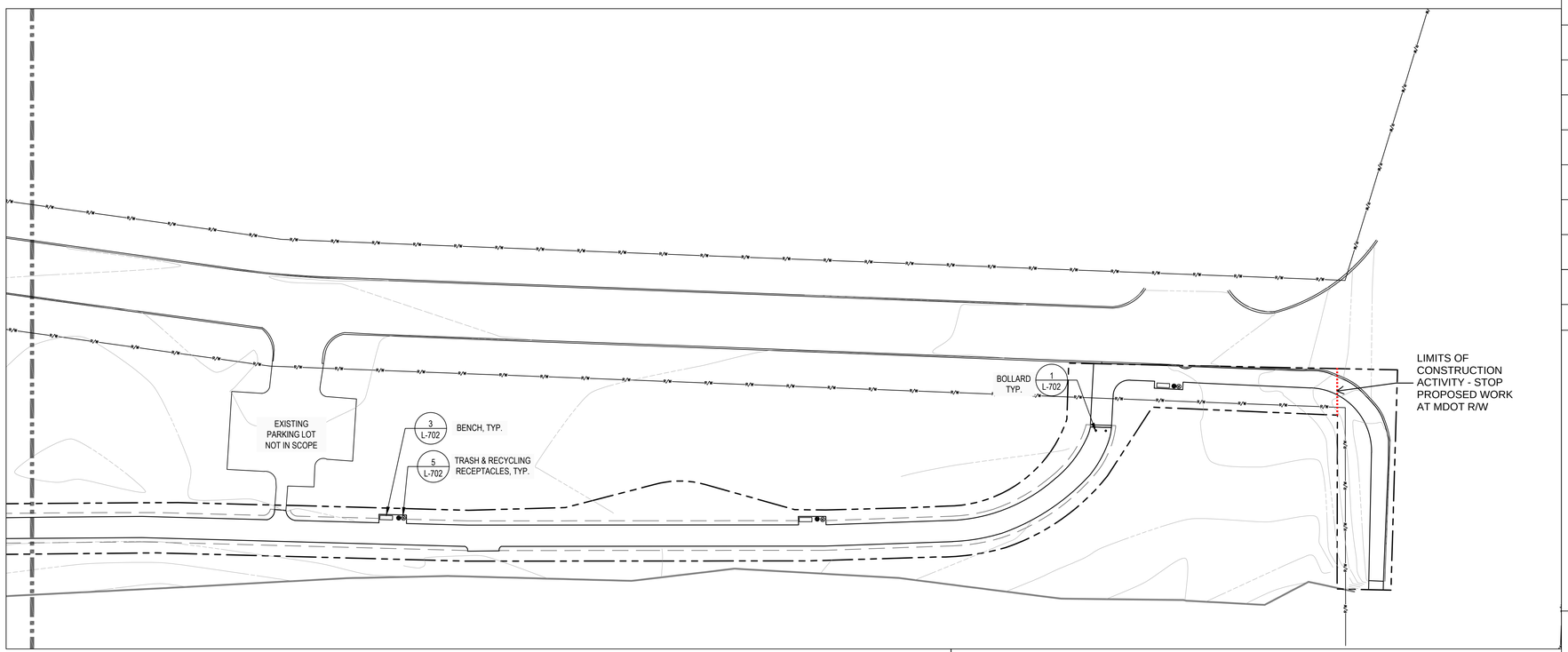
FURNISHING PLAN

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:

L-501





FURNISHING SHEET NOTES

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8. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
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FURNISHING SCHEDULE

	QTY	QTY	PRODUCT	NOTES
1 L-702	**BOLLARD**	*4*	*VICTOR STANLEY L-89*	*MATTE BLACK METAL FINISH; 4' HEIGHT*
3 L-702	**STANDARD BENCH**	*11*	*VICTOR STANLEY FB-324*	*MATTE BLACK METAL FINISH; IPE WOOD FINISH*
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	PAVILION	*/*	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
	PICNIC TABLES	*/*	*GREAT LAKES RECREATION*	*UNDER PAVILION, SEE SHEETS*
	PLAY UNITS	*/*	*GREAT LAKES RECREATION*	*SEE APPROPRIATE SHEETS*
2 L-702	**BIKE RACK**	*4*	*VICTOR STABLEY BRWA-101*	*MATTE BLACK METAL FINISH*
1 L-703	**STOP / YIELD SIGN**	*4*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*
	PARK ENTRANCE SIGNAGE	*/*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
	HERITAGE TRAIL SIGNAGE	*/*	*SEE CUSTOMIZED DRAWINGS*	*INSTALLATION DETAILS BY FLUTTER AND WOW*
11 L-701	**ADA SIGN**	*5*	*MDOT APPROVED SIGN*	*IINSTALL PER MDOT GUIDELINES*

LEGEND

- LIMITS OF CONSTRUCTION
- 6 L-702 — PLAYGROUND FENCE
- 1 L-702 — BOLLARD
- 3 L-702 — STANDARD PARK BENCH
- 3 L-702 — COMMEMORATIVE PARK BENCH
- 5 L-702 — TRASH & RECYCLING RECEPTACLES

0' 15' 30' 60'

SCALE: 1"=30'

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EGLE PERMIT REVIEW	02/14/2025
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100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/31/2024

SEAL:

SHEET TITLE:

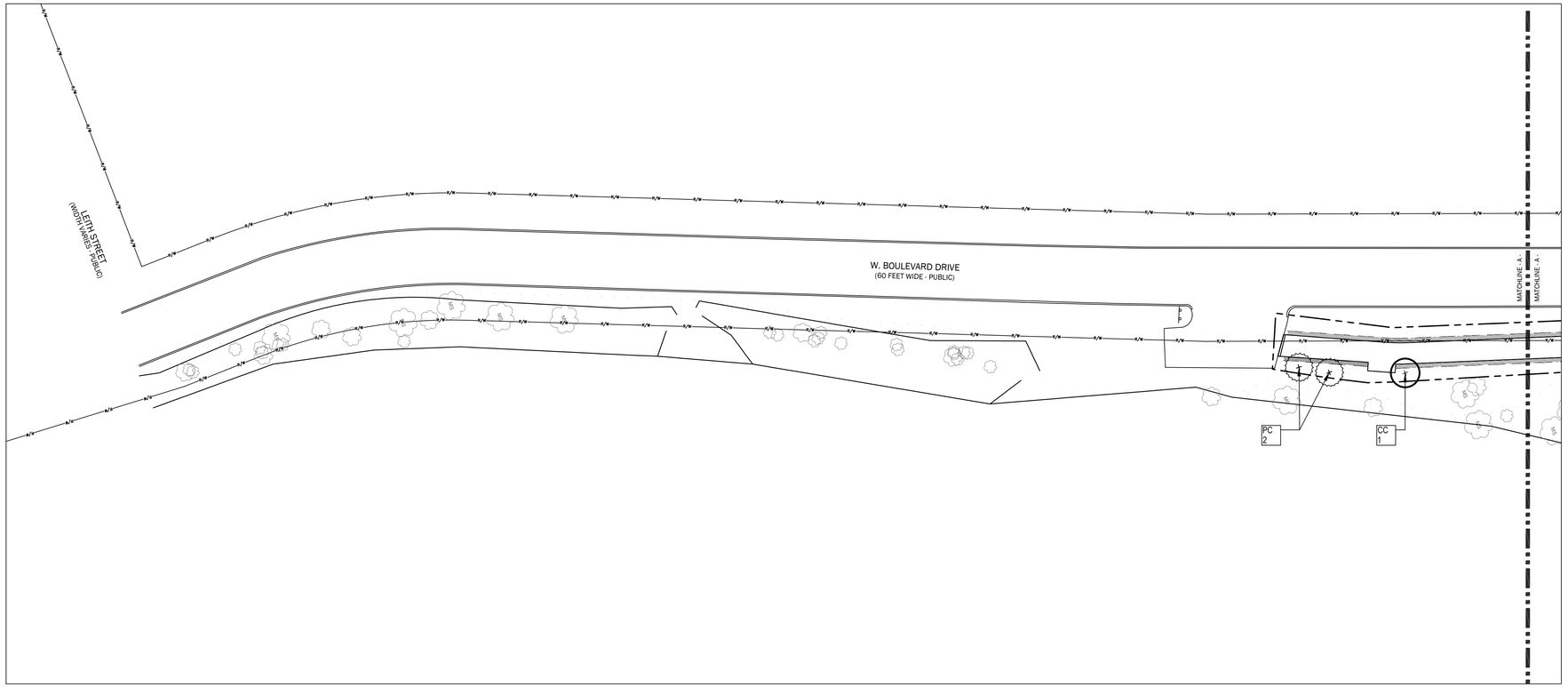
FURNISHING PLAN

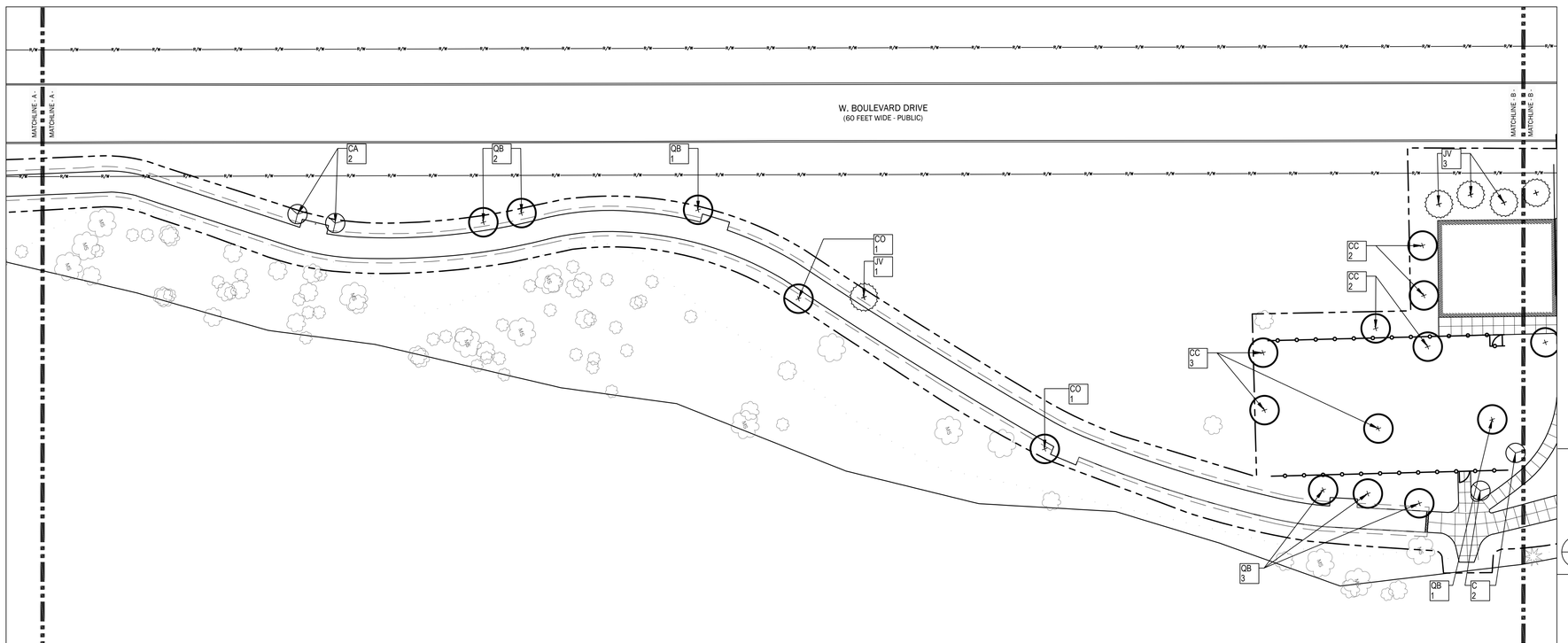
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-502





LANDSCAPE SHEET NOTES

1. PRIOR TO THE COMMENCEMENT OF WORK, VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION AND TAKE RESPONSIBILITY FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION, INCLUDING DAMAGES TO UTILITIES, WALKS, WALLS, DRIVES, CURBS, ETC. CALL MISS DIG (800) 482-7171 A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.
2. USE DIMENSIONS SHOWN ON DRAWINGS FOR LAYOUT OF THE WORK. DO NOT USE SCALE DIMENSIONS FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS. VERIFY LOCATIONS IN FIELD WITH ENGINEER . DETAILS NOTED AS TYPICAL SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION.
3. DISPOSE ALL ELEMENTS DESIGNATED FOR REMOVAL IN A LEGAL MANNER. PROVIDE RECEIPTS AND LETTERS FROM DISPOSAL SITES TO OWNER AS REQUIRED BY THE OWNER. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.
4. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
5. INDEPENDENT OF NUMERIC QUANTITIES ON DRAWINGS OR IN THE PLANT SCHEDULE, DETERMINE THE PLANT MATERIAL QUANTITIES REQUIRED BY THE PLANS. SPACE PLANT MATERIALS AS SHOWN ON PLANS AND INDICATED IN PLANT SCHEDULE. PLANT MATERIALS SHALL CONFORM TO PLANT SCHEDULES AND SIZES SHALL BE THE MINIMUM INDICATED ON THE PLANT SCHEDULE OR LARGER - AT NO ADDITIONAL COST TO OWNER. ALL MEASUREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ANLA "STANDARDS FOR NURSERY STOCK".
6. PRIOR TO INSTALLATION, DEMARCATE LAYOUT OF ALL PLANTING BEDS, SEED AREAS, AND INDIVIDUAL TREES FOR REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT. INCLUDE PERENNIAL GROUPINGS BY SPECIES FOR INTERNAL LAYOUTS. FLAGGING, OR STAKES MAY BE USED TO DELINEATE LOCATIONS AS SCALED FROM THE PLANS. THE LANDSCAPE ARCHITECT WILL REVIEW THESE LOCATIONS WITH THE CONTRACTOR AND MAY MAKE MINOR ADJUSTMENTS AS NECESSARY. SUCH ADJUSTMENTS WILL BE AT NO ADDITIONAL COST TO THE OWNER.
7. SHOVEL-CUT PLANTING BED EDGES UNLESS LABELED OTHERWISE, ADD 2 INCHES OF MULCH ON ALL PLANTING BEDS . KEEP MULCH 4 INCHES FROM TREE TRUNKS AND SHRUB CROWNS.
8. INSTALL EROSION CONTROL MEASURES PRIOR TO COMMENCING GRADING ACTIVITIES. THERE ARE NO REGULATED WOODLAND TREES PROXIMATE TO THE PROPOSED SITE CONSTRUCTION. MAINTAIN GENERAL PROTECTION AROUND EXISTING TREES. NO EQUIPMENT OR DEBRIS TO BE STORED NEAR THESE TREES.
9. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN PROPOSED GRADES AND EXISTING SITE ELEVATIONS. ANY AREAS OF POOR DRAINAGE OR INADEQUATE DRAINAGE FROM PROPOSED IMPROVEMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHALL BE MODIFIED AS REQUIRED AND APPROVED AT NO ADDITIONAL COST TO THE OWNER.
10. ALL PLANTINGS SHALL BE PLANTED DURING APPROPRIATED PLANTING SEASONS, AS RECOMMENDED BY ANLA. FOR THIS TEMPERATE ZONE, IT IS PREFERRED THAT PLANTING OCCUR DURING EITHER THE SPRING SEASON (APRIL - MID-JUNE) OR THE FALL SEASON (SEPTEMBER - MID-NOVEMBER). WHERE TEMPERATURES REMAIN BETWEEN 40-70 DEGREES FAHRENHEIT. THIS WILL ALLOW SUFFICIENT TIME FOR PLANT STABILIZATION AND GERMINATION AND LIMIT SHOCK ASSOCIATED TO TRANSPLANTATION.
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LEGEND

EXISTING TREE

EVERGREEN TREE (4 / L-700)

DECIDUOUS TREE (3 / L-700; 4 / L-703)

ORNAMENTAL TREE (5 / L-700)

0' 15' 30' 60'

SCALE: 1"=30'

NORTH

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Great Lakes recreation

FLUTTER & WOW MUSEUM PROJECTS

WTS

CUSTOMER:

CITY OF FLINT, MICHIGAN 1855

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
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REVISION	DATE

SEAL:

SHEET TITLE:

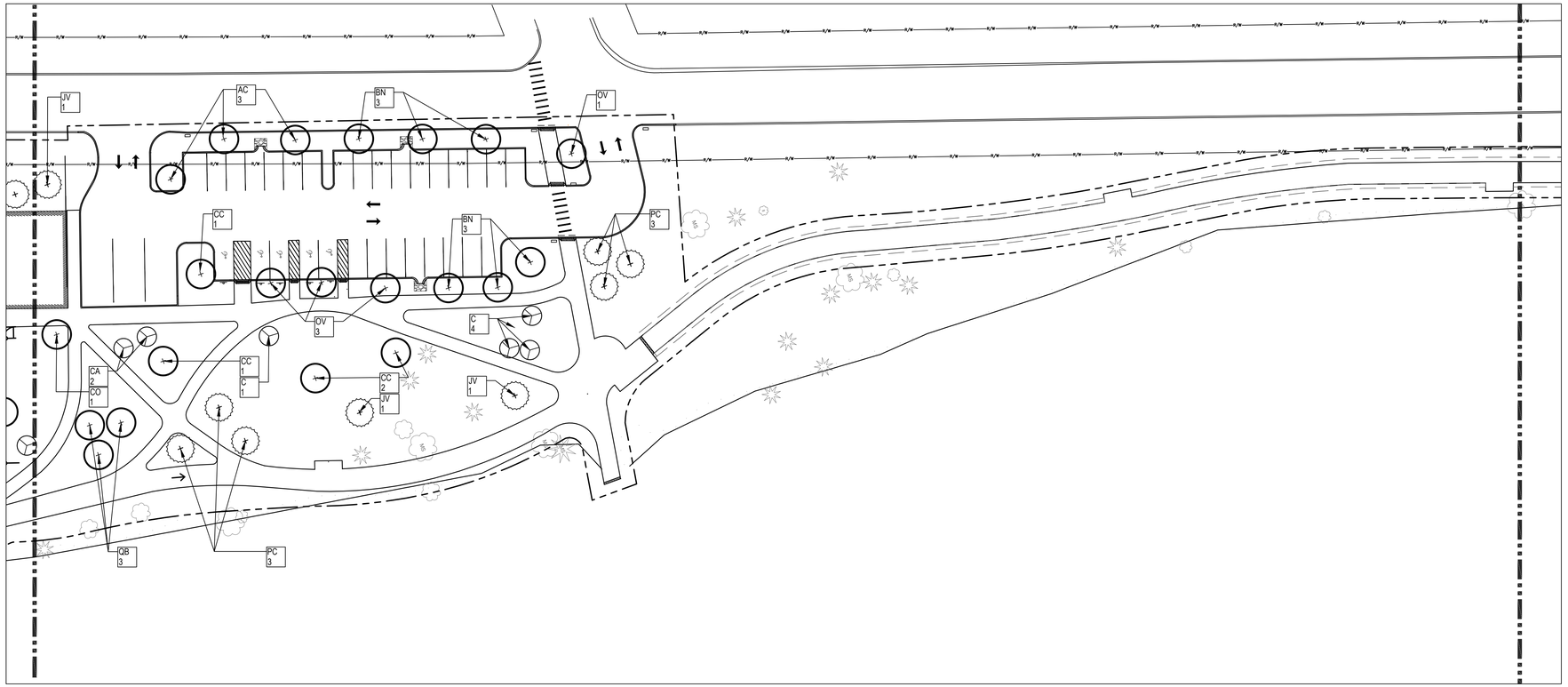
TREE PLAN

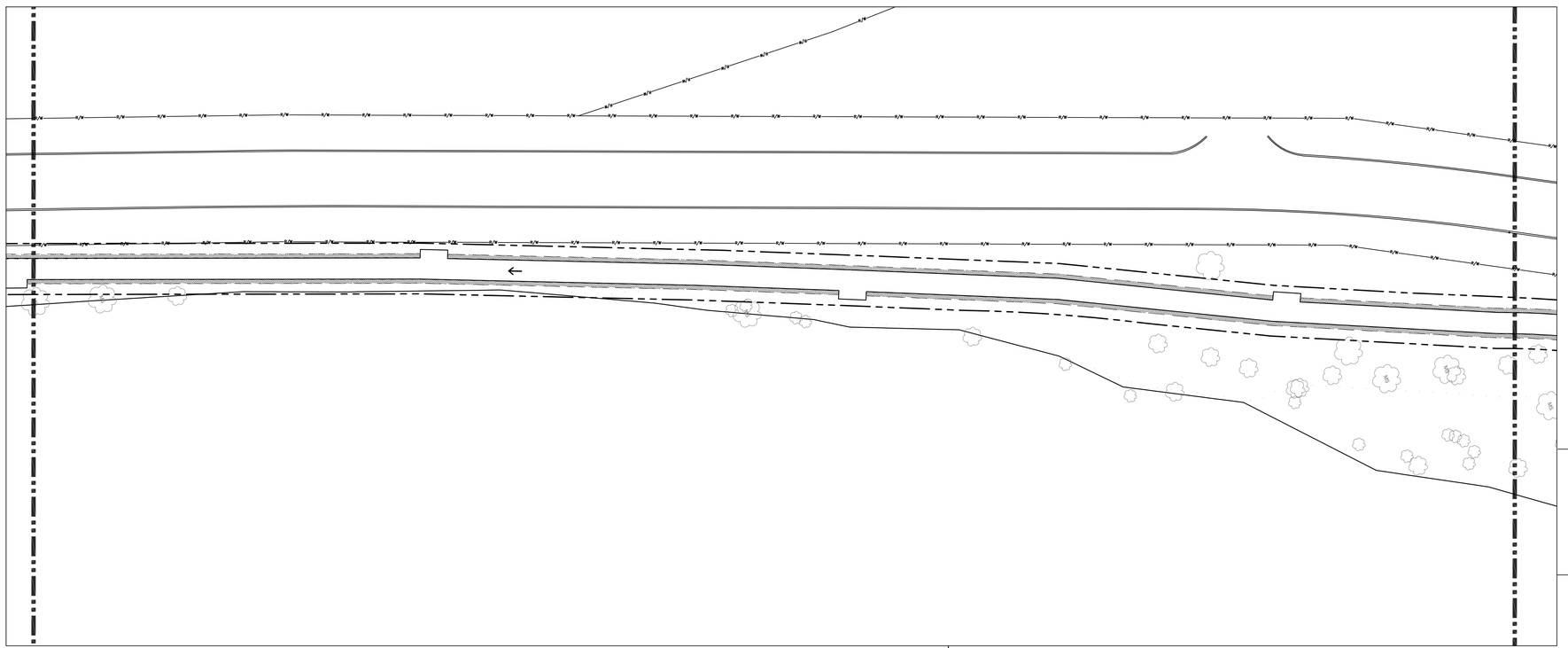
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-600





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0' 15' 30' 60'

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Great Lakes recreation

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1101 SOUTH SAGINAW STREET
FLINT, MICHIGAN 48502

WTS

ASSUMED:

ST. JOHN MEMORIAL TRAIL
3400, 3600, & 3800
WEST BOULEVARD DRIVE
FLINT, MICHIGAN 48505

PROJECT:

ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
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SEAL:

SHEET TITLE:

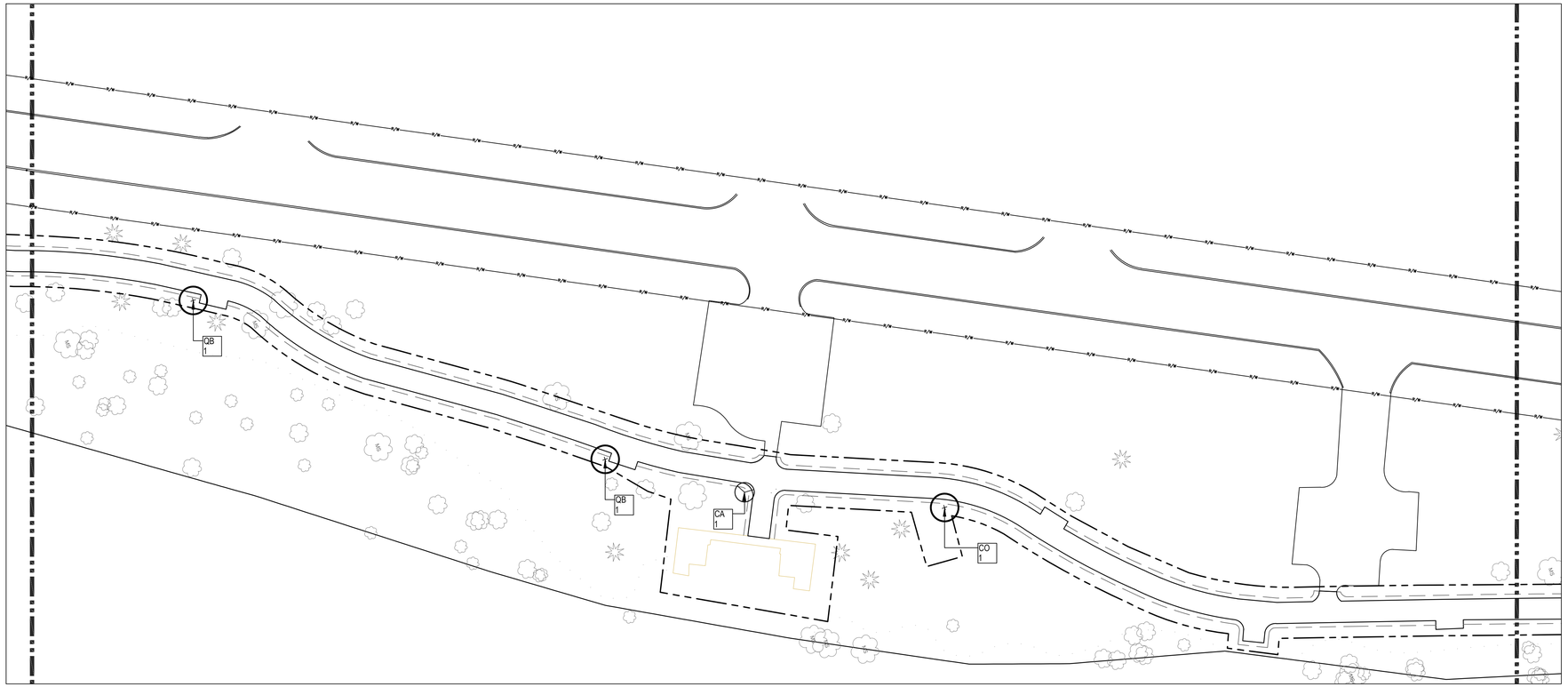
TREE PLAN

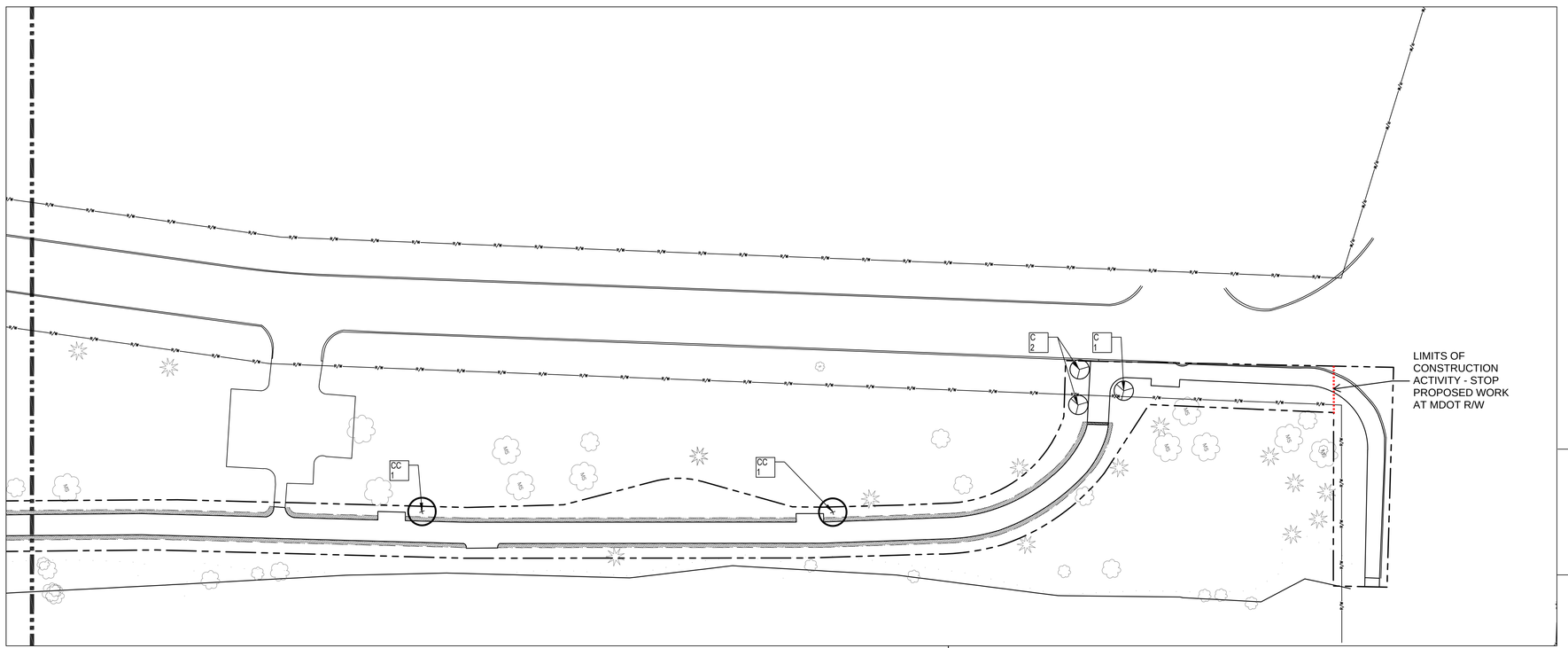
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-601





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ORNAMENTAL TREE (5 / L-700)

0' 15' 30' 60'

SCALE: 1"=30'

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PROJECT:
ST. JOHN MEMORIAL TRAIL
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REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
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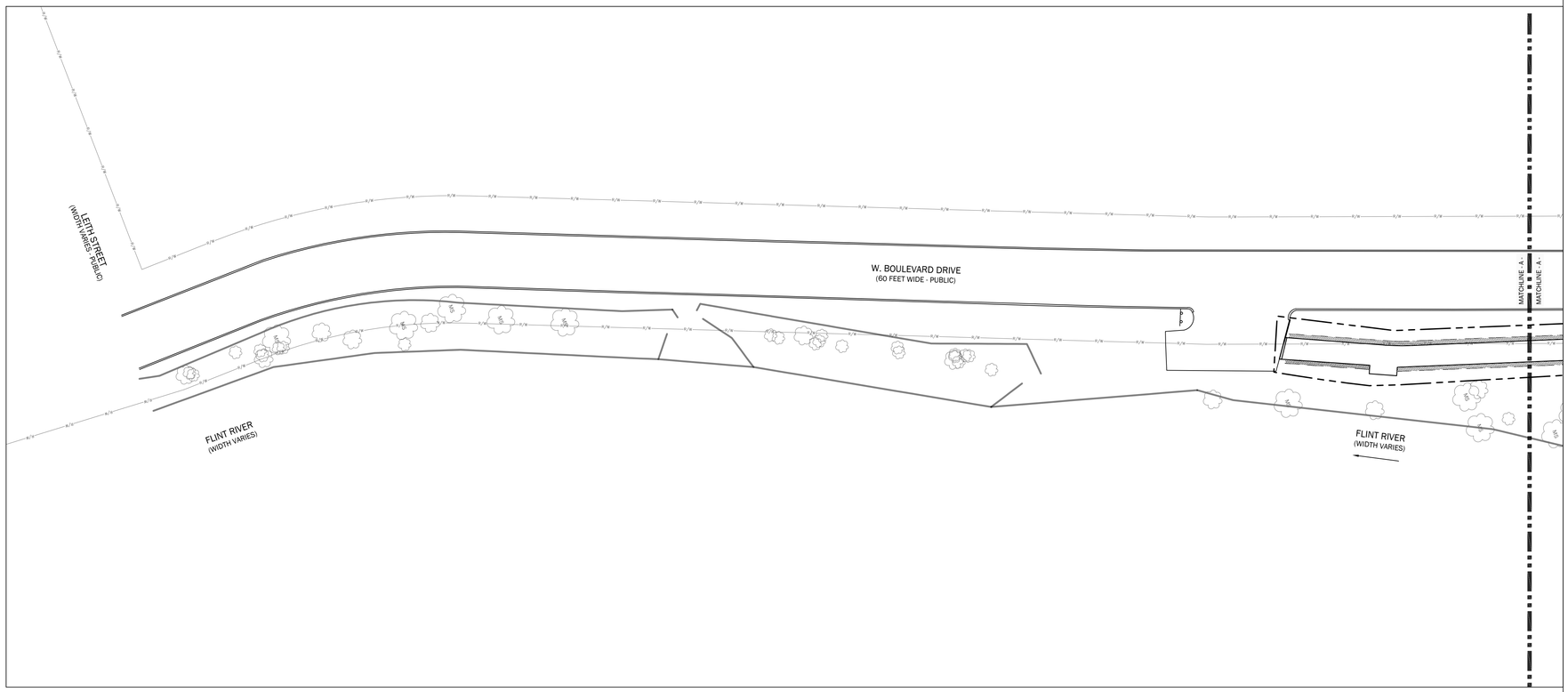
50% DESIGN DEVELOPMENT	08/30/2024

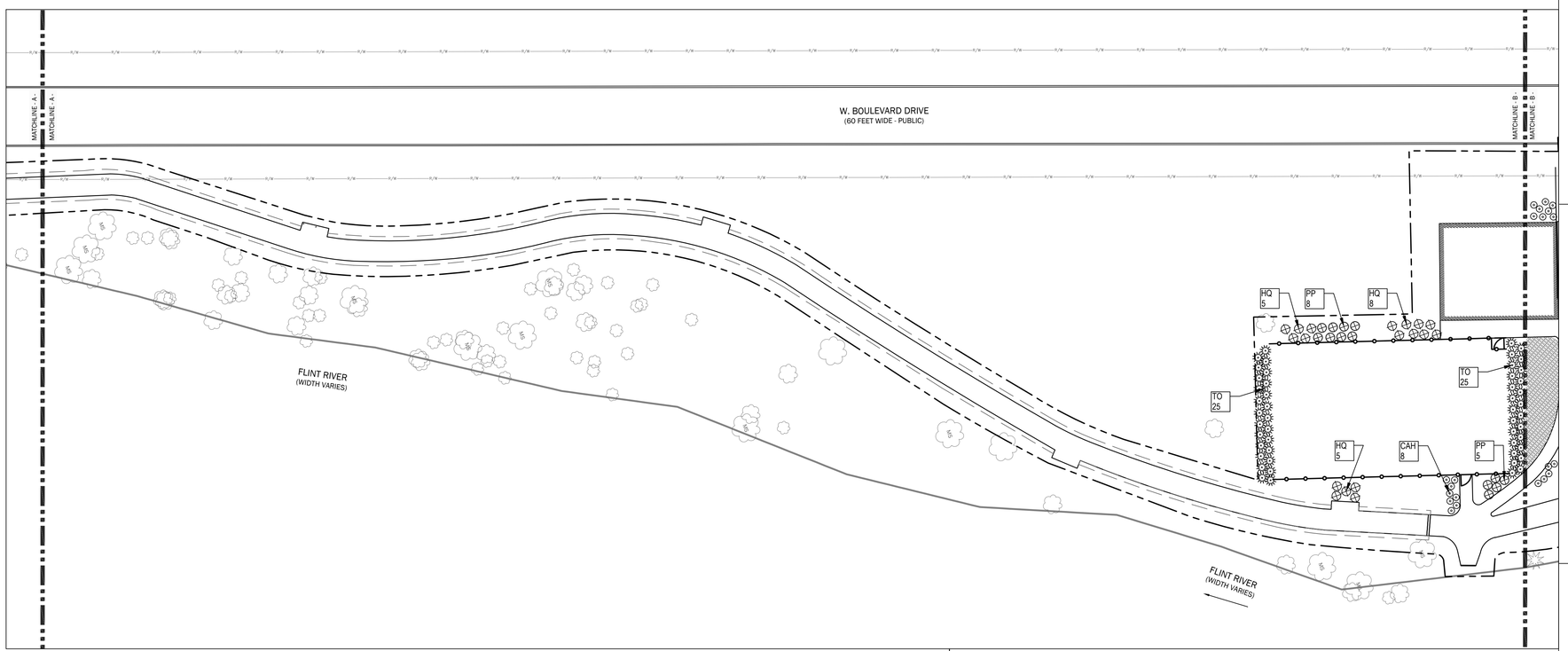
SEAL:

SHEET TITLE:
TREE PLAN

Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-602





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LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 7 / L-700 — DECIDUOUS SHRUBS
- 8 / L-700 — MEADOW PERENNIAL MIX
- 6 / L-702 — PLAYGROUND FENCE

0' 15' 30' 60'

SCALE: 1"=30'

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SEAL:

SHEET TITLE:

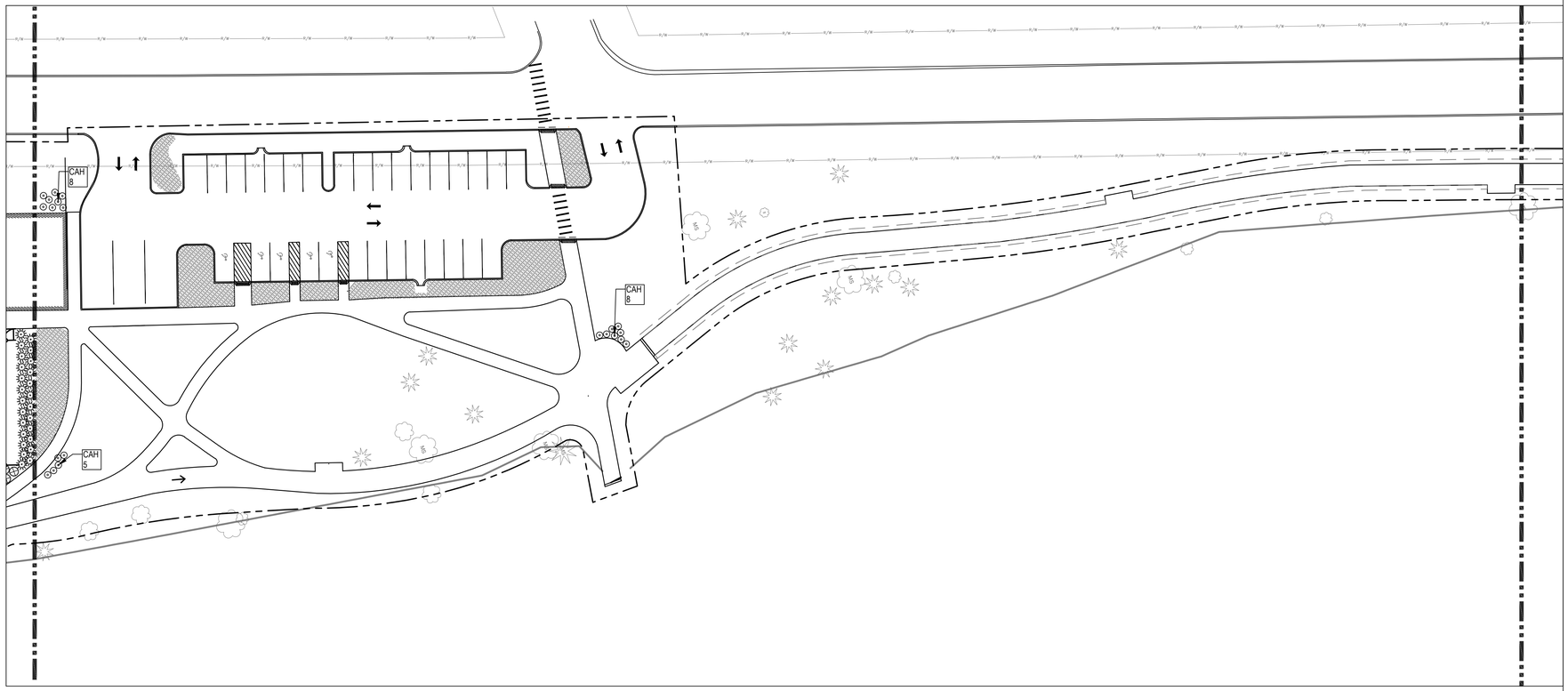
SHRUB AND PERENNIAL PLANTING PLAN

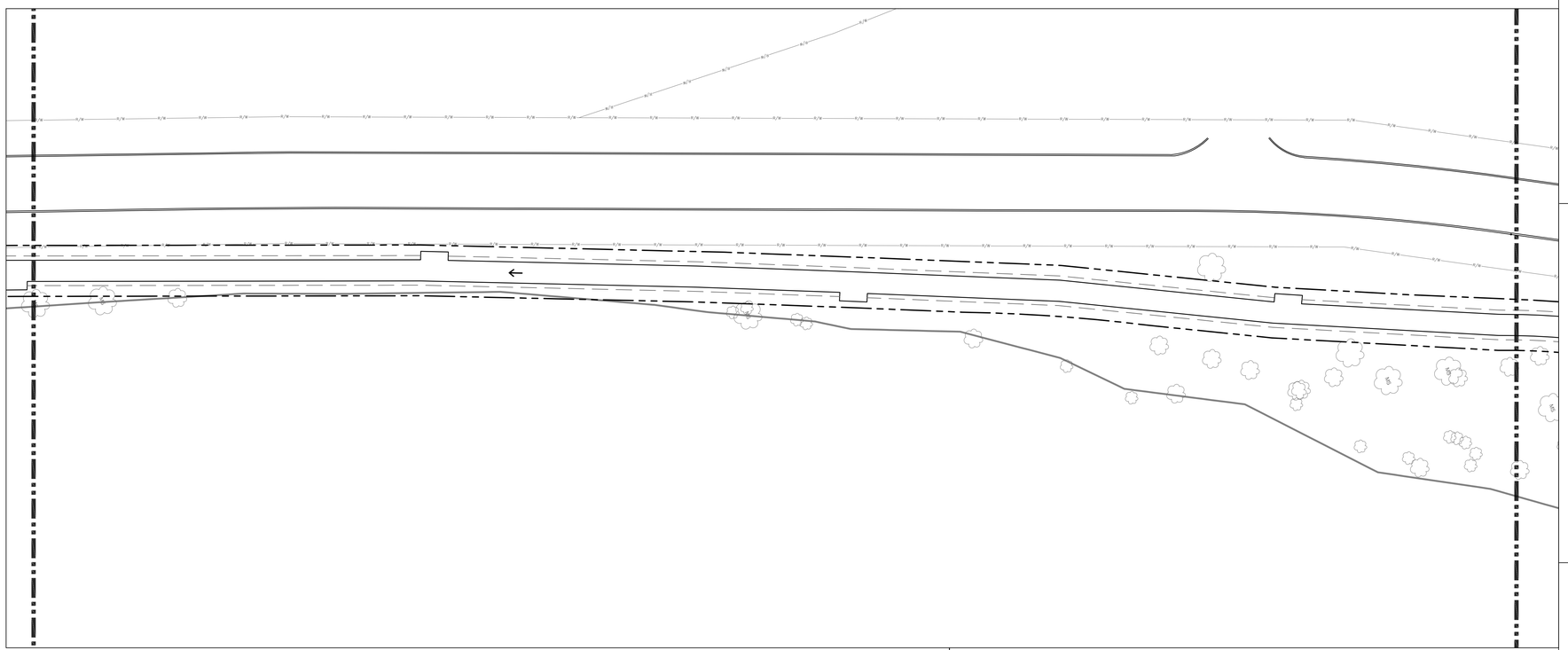
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-610





LANDSCAPE SHEET NOTES

1. PRIOR TO THE COMMENCEMENT OF WORK, VERIFY LOCATIONS AND DEPTHS OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY CONSTRUCTION AND TAKE RESPONSIBILITY FOR DAMAGES TO SUCH UTILITIES CAUSED AS A RESULT OF CONSTRUCTION. TAKE ALL NECESSARY PRECAUTIONARY MEASURES TO PROTECT THE PUBLIC AND ADJACENT PROPERTIES FROM DAMAGE THROUGHOUT CONSTRUCTION, INCLUDING DAMAGES TO UTILITIES, WALKS, WALLS, DRIVES, CURBS, ETC. CALL MISS DIG (800) 482-7171 A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION.

2. USE DIMENSIONS SHOWN ON DRAWINGS FOR LAYOUT OF THE WORK. DO NOT USE SCALE DIMENSIONS FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS. VERIFY LOCATIONS IN FIELD WITH ENGINEER DETAILS NOTED AS TYPICAL SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY SHOWN OR NOTED OTHERWISE. WHERE NO SPECIFIC DETAIL IS SHOWN, THE CONSTRUCTION SHALL BE IDENTICAL OR SIMILAR TO THAT INDICATED FOR LIKE CASES OF CONSTRUCTION.

3. DISPOSE ALL ELEMENTS DESIGNATED FOR REMOVAL IN A LEGAL MANNER. PROVIDE RECEIPTS AND LETTERS FROM DISPOSAL SITES TO OWNER AS REQUIRED BY THE OWNER. COORDINATE WORK OF SUBCONTRACTORS AND ALL OTHER CONTRACTORS TO ENSURE ORDERLY AND EFFICIENT COMPLETIONS OF ALL WORK.

4. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.

5. INDEPENDENT OF NUMERIC QUANTITIES ON DRAWINGS OR IN THE PLANT SCHEDULE, DETERMINE THE PLANT MATERIAL QUANTITIES REQUIRED BY THE PLANS. SPACE PLANT MATERIALS AS SHOWN ON PLANS AND INDICATED IN PLANT SCHEDULE. PLANT MATERIALS SHALL CONFORM TO PLANT SCHEDULES AND SIZES SHALL BE THE MINIMUM INDICATED ON THE PLANT SCHEDULE OR LARGER - AT NO ADDITIONAL COST TO OWNER. ALL MEASUREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ANLA "STANDARDS FOR NURSERY STOCK".

6. PRIOR TO INSTALLATION, DEMARCATE LAYOUT OF ALL PLANTING BEDS, SEED AREAS, AND INDIVIDUAL TREES FOR REVIEW AND APPROVAL BY ENGINEER . INCLUDE PERENNIAL GROUPINGS BY SPECIES FOR INTERNAL LAYOUTS. FLAGGING OR STAKES MAY BE USED TO DELINEATE LOCATIONS AS SCALED FROM THE PLANS. THE ENGINEER WILL REVIEW THESE LOCATIONS WITH THE CONTRACTOR AND MAY MAKE MINOR ADJUSTMENTS AS NECESSARY. SUCH ADJUSTMENTS WILL BE AT NO ADDITIONAL COST TO THE OWNER.

7. SHOVEL-CUT PLANTING BED EDGES UNLESS LABELED OTHERWISE. ADD 2 INCHES OF MULCH ON ALL PLANTING BEDS . KEEP MULCH 4 INCHES FROM TREE TRUNKS AND SHRUB CROWNS.

8. INSTALL EROSION CONTROL MEASURES PRIOR TO COMMENCING GRADING ACTIVITIES. THERE ARE NO REGULATED WOODLAND TREES PROXIMATE TO THE PROPOSED SITE CONSTRUCTION. MAINTAIN GENERAL PROTECTION AROUND EXISTING TREES. NO EQUIPMENT OR DEBRIS TO BE STORED NEAR THESE TREES.

9. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BETWEEN PROPOSED GRADES AND EXISTING SITE ELEVATIONS. ANY AREAS OF POOR DRAINAGE OR INADEQUATE DRAINAGE FROM PROPOSED IMPROVEMENTS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND SHALL BE MODIFIED AS REQUIRED AND APPROVED AT NO ADDITIONAL COST TO THE OWNER.

10. ALL PLANTINGS SHALL BE PLANTED DURING APPROPRIATED PLANTING SEASONS, AS RECOMMENDED BY ANLA. FOR THIS TEMPERATE ZONE, IT IS PREFERRED THAT PLANTING OCCUR DURING EITHER THE SPRING SEASON (APRIL - MID-JUNE) OR THE FALL SEASON (SEPTEMBER - MID-NOVEMBER), WHERE TEMPERATURES REMAIN BETWEEN 40-70 DEGREES FAHRENHEIT. THIS WILL ALLOW SUFFICIENT TIME FOR PLANT STABILIZATION AND GERMINATION AND LIMIT SHOCK ASSOCIATED TO TRANSPLANTATION.

11. GENERAL CONTRACTOR SELECTED TO PERFORM THE LANDSCAPE WORK FOR THIS SITE MUST INSTALL AND GUARANTEE ALL MATERIALS FOR A MINIMUM OF 1 YEARS. THIS INCLUDES A MINIMUM OF A 90 CONSECUTIVE DAY WATERING PERIOD FROM THE TIME OF FULL INSTALLATION TO ENSURE THE ESTABLISHMENT OF ALL PLANTS INSTALLED SAVE DAYS OF ADEQUATE RAIN. WATERING PERIODS MAY OVERLAP DEPENDENT ON PLANTING SEASON SELECTED. NO IRRIGATION PLAN IS PROPOSED AS SELECTED NATIVE PLANTS ARE ACCLIMATED TO THE LOCAL CLIMATE. AFTER ESTABLISHMENT, ADDITIONAL WATERING WILL BE THE RESPONSIBILITY OF THE OWNER. EXISTING DRAINAGE TO REMAIN IN PLACE.

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13. ALL PLANTINGS SELECTED SHALL BE NORTHERN NURSERY GROWN, NO.1 GRADE. TO SUPPORT LOCAL SUSTAINABILITY GOALS, IT IS PREFERRED THAT ALL PLANT SELECTION COME FROM WITHIN THE STATE OF MICHIGAN.

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15. SEED ALL OTHER AREAS NOT SPECIFIED FOR PLANTING WITHIN THE LIMITS OF CONSTRUCTION.

LEGEND

- EXISTING TREE
- LIMITS OF CONSTRUCTION
- PUBLIC RIGHT OF WAY
- 7 / L-700 — DECIDUOUS SHRUBS
- 8 / L-700 — MEADOW PERENNIAL MIX

0' 15' 30' 60'

SCALE: 1"=30'

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REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:

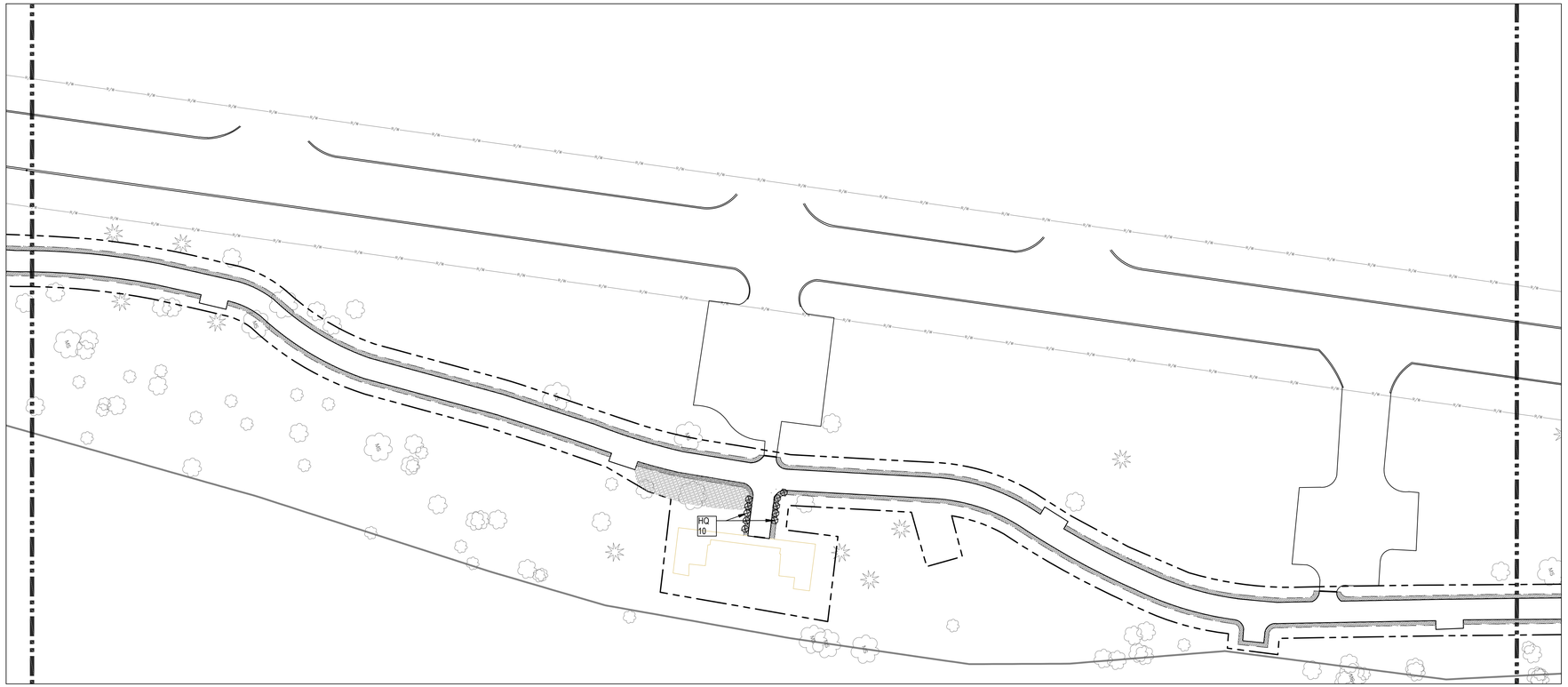
SHRUB AND PERENNIAL PLANTING PLAN

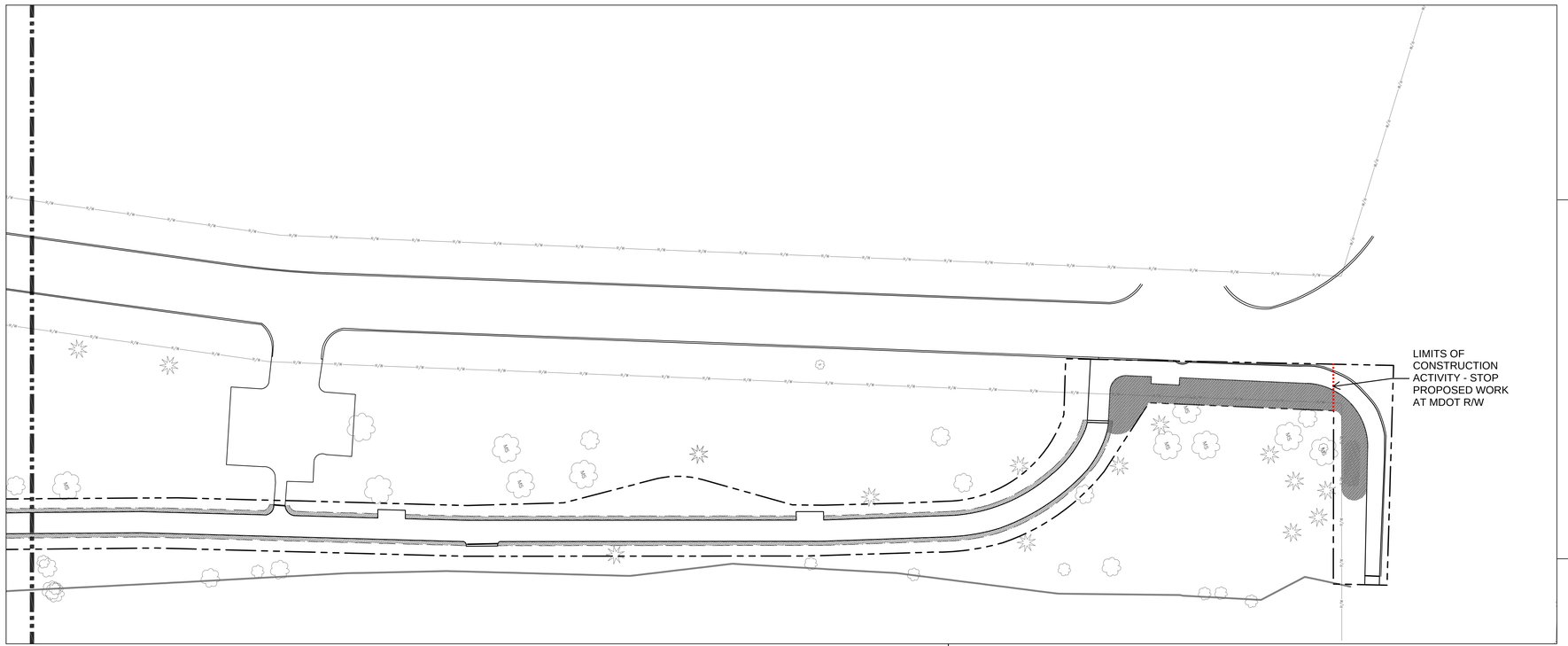
Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-611





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- 8 / L-700 — MEADOW PERENNIAL MIX
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0' 15' 30' 60'

SCALE: 1"=30'

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SEAL:

SHEET TITLE:

SHRUB AND PERENNIAL PLANTING PLAN

Date: 02.14.2025

Project Number: 240401

SHEET NUMBER:

L-612

TYPE	SYM	QTY	ID	BOTANIC NAME	COMMON NAME	SIZE	SPACING	REMARKS
DECIDUOUS TREES	+	15	CC	CARYA CORDIFORMIS	BITTERNUT HICKORY	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		3	CO	CELTIS OCCIDENTALIS	COMMON HACKBERRY	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		12	QB	QUERCUS BICOLOR	SWAMP WHITE OAK	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		3	AF	ACER 'FREEMANII' JEDDERSRED	FREEMAN MAPLE AUTUMN BLAZE	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		6	BN	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		4	OV	OSTRYA VIRGINIANA	AMERICAN HOP HORNBEAM	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
CONIFEROUS TREES	+	8	PC	PICEA MARIANA	BLACK SPRUCE	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		7	JV	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	2.5" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
ORNAMENTAL TREES		9	C	CERCIS CANADENSIS 'APPALACHIAN RED'	'APPALACHIAN RED' EASTERN REDBUD	1" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
		5	CA	CORNUS ALTERNIFOLIA	PAGODA DOGWOOD	1" CAL.	SEE PLAN	FULL, WELL ROOTED, SINGLE LEADER, B+B
SHRUBS		13	PP	PICEA PUNGENS 'GLOBOSA'	DWARF SPRUCE 'GLOBOSA'	18-24"	SEE PLAN	FULL, WELL ROOTED, B+B
		28	HQ	HYDRANGEA QUERCIFOLIA 'GATSBY GAL'	'GATSBY GAL' OAKLEAF HYDRANGEA	18-24"	SEE PLAN	FULL, WELL ROOTED, B+B
		29	CAH	CLETHRA ALNIFOLIA 'HUMMINGBIRD'	'HUMMINGBIRD' DWARF SUMMERSWEET	18-24"	SEE PLAN	FULL, WELL ROOTED, B+B
		50	TO	THUJA OCCIDENTALIS ' LITTLE GIANT'	"LITTLE GIANT' SHRUB ARBORVITAE	#5 CONT.	SEE PLAN	FULL, WELL ROOTED, B+B
MEADOW PERENNIALS		--	AT	ASCLEPIAS TUBEROSA	BUTTERFLY WEED	#1 CONT.	1' O.C	FULL, WELL ROOTED, CONTAINER
		--	PH	PENSTEMON HIRSUTUS	HAIRY BEARDTONGUE	#1 CONT.	1' O.C	FULL, WELL ROOTED, CONTAINER
		--	OS	ONOCLEA SENSIBILIS	SENSITIVE FERN	#1 CONT.	1' O.C	FULL, WELL ROOTED, CONTAINER
		--	JE	JUNCUS EFFUSUS	SOFT STEM RUSH	#1 CONT.	1' O.C	FULL, WELL ROOTED, CONTAINER
		--	AC	ANEMONE CANADENSIS	CANADA ANEMONE	#1 CONT.	1' O.C	FULL, WELL ROOTED, CONTAINER
FOREST EDGE PERENNIALS		70	GM	GERANIUM MACULATUM	WILD GERANIUM	#1 CONT.	18" O.C	FULL, WELL ROOTED, CONTAINER
		60	IV	IRIS VERSICOLOR	BLUE FLAG IRIS	#1 CONT.	18" O.C	FULL, WELL ROOTED, CONTAINER
		40	AD	ADIANTUM PEDATUM	MAIDENHAIR FERN	#1 CONT.	18" O.C	FULL, WELL ROOTED, CONTAINER
		100	PD	PHLOX DIVARICATA	BLUE WOODLAND PHLOX	#1 CONT.	18" O.C	FULL, WELL ROOTED, CONTAINER
		120	AQ	ANEMONE QUINQUEFOLIA	WOOD ANENOME	#1 CONT.	18" O.C	FULL, WELL ROOTED, CONTAINER

NOTES:
- PLANTS WITHIN PLANTING MIXES TO BE DISTRIBUTED EVENLY THROUGHOUT HATCHED AREA, INSTALLED ACCORDING TO PLANT LAYOUT DETAIL AND WITHOUT ANY DISTINGUISHABLE PATTERN, IN GROUPS OF NO LESS THAN 5 INDIVIDUAL PLANTS.

0 MASTER PLANT LIST

SCHEDULES

SIZE	STAKING / GUYING	MULCH SAUCER DIMENSION (NON-BED AREAS)
• 2" CAL. & SMALLER • BETWEEN 2.5" & 3.5" CAL. • 4" CAL. - 6" CAL.	• DOUBLE STAKE • TRIPLE STAKE • TRIPLE GUY	• 4' DIA. • 5' DIA. • MIN. 8' DIA.- EXTEND OUTSIDE DIAMETER TO INCLUDE GUYING STAKES

NOTES:
NEVER CUT CENTRAL LEADERS PRUNE ONLY TO REMOVE DEAD OR DAMAGED BRANCHES.

TOP OF STAKES AND GUYS TO BE SET ABOVE FIRST BRANCHES. SET STAKES VERTICAL AND AT SAME HEIGHT
GUYING CABLE 3 GUYS PER TREE
TURNBUCKLE
TREE WRAP
REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL
2" DEEP MULCH. DO NOT COVER ROOT FLARE
PLANT BED MIX
MOUND PLANTING BACKFILL TO FORM SAUCER AROUND PLANT PIT. SET SAUCER OUTSIDE OF GUY STAKES
2 x 4 HARDWOOD OR #3/LF METAL FENCE POST. ANCHOR STAKE TO BE DRIVEN BELOW FINISH GRADE. MIN. LENGTH TO BE 24
COMPACTED PLANTING BACKFILL
STAKES TO EXTEND 12" BELOW TREE PIT IN UNDISTURBED GROUND
30"- 45"
MULCH SAUCER DIMENSION - SEE SCHEDULE
12" MIN. FOR UP TO 3" CAL.
18" MIN. FOR 3" CAL. & LARGER

3 DECIDUOUS TREE
SECTION — SCALE: 3/4" = 1'

SCHEDULES

SIZE	STAKING / GUYING	MULCH SAUCER DIMENSION (NON-BED AREAS)
• UP TO 6' TALL • 6' - 12' TALL • > 12' TALL	• DOUBLE STAKE • TRIPLE STAKE • TRIPLE GUY	• 4' MIN. OR 2' WIDER THAN TREE CANOPY AT GROUND LEVEL • 5' MIN. OR 2' WIDER THAN TREE CANOPY AT GROUND LEVEL • 8' MIN. OR 2' WIDER THAN TREE CANOPY AT GROUND LEVEL

NOTE:
NEVER CUT CENTRAL LEADERS. PRUNE ONLY TO REMOVE DEAD OR BROKEN BRANCHES.

1 TOP OF STAKES AND GUYS TO BE SET 1/2 TO 2/3 UP TREE. SET STAKES VERTICAL AND AT SAME HEIGHT
2 GUYING CABLE 3 GUYS PER TREE
3 TURNBUCKLE
4 REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL
5 2" DEEP MULCH. DO NOT COVER ROOT FLARE
6 PLANTING BACKFILL
7 MOUND TO FORM SAUCER
8 COMPACTED PLANTING BACKFILL
9 2 x 4 HARDWOOD OR #3/LF METAL FENCE POST. ANCHOR STAKE TO BE DRIVEN BELOW FINISH GRADE. MIN. LENGTH TO BE 24"
10 STAKES TO EXTEND 12" BELOW TREE PIT IN UNDISTURBED GROUND
GUYS BETWEEN ANGLE 30"- 45"
MULCH SAUCER DIMENSION - SEE SCHEDULE
12" MIN. FOR UP TO 3" CAL.
18" MIN. FOR 3" CAL. & LARGER

4 CONIFEROUS TREE
SECTION — SCALE: 3/4" = 1'

SCHEDULES

SIZE	STAKING / GUYING	MULCH SAUCER DIMENSION (NON-BED AREAS)
• UP TO 2" CAL. • 2" CAL. AND LARGER	• DOUBLE STAKE • TRIPLE STAKE	• 4' DIA. • 5' DIA.

STAKE TREE ABOVE FIRST BRANCHES, MIN. ⅓ UP TREE. SET STAKES VERTICAL AND AT THE SAME HEIGHT.
TREE WRAP
REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL
2" DEEP MULCH. DO NOT COVER ROOT COLLAR
MOUND PLANTING BACKFILL TO FORM SAUCER AROUND PLANT PIT
PLANT BED MIX
COMPACTED PLANTING BACKFILL
STAKES TO EXTEND 12" BELOW TREE PIT IN UNDISTURBED GROUND
12" MIN.

NOTES:
NEVER CUT CENTRAL LEADERS. PRUNE ONLY TO REMOVE DEAD AND DAMAGED BRANCHES

5 ORNAMENTAL TREE
SECTION — SCALE: 3/4" = 1'

NOTES:
- REMOVE BURLAP FROM TOP 1/3 OF ROOT BALL, OR, WITH CONTAINER PLANTS, REMOVE POTS AND SEPARATE POT BOUND ROOTS AS SPECIFIED.
- DO NOT PRUNE SHRUBS EXCEPT TO REMOVE DEAD OR BROKEN BRANCHES

SPACING AS SHOWN ON PLANS OR PLANT LIST
SET ROOT FLARE CROWN OF BALL AT FINISHED GRADE.
2" DEEP MULCH. DO NOT COVER ROOT FLARE
BALLED AND BURLAPPED SHRUB
PLANT BED MIX
BARE ROOT OR CONTAINER SHRUBS
SCARIFY TO 4" DEPTH AND RECOMPACT.
SUBGRADE - SLOPE TO FOLLOW FINISH GRADES TO MAINTAIN UNIFORM PLANT BED MIX DEPTH
2'-0" MIN.

7 SHRUB PLANTING BED
SECTION — SCALE: 3/4"=1'

NOTE:
- CONTAINER PLANTS: REMOVE POTS AND SEPARATE BOUND ROOTS AS SPECIFIED.

SPACING AS SHOW ON PLANS AND ON PLANT LIST
SET ROOT FLARE (COLLAR) AT FINISH GRADE
2" DEEP MULCH. DO NOT COVER ROOT FLARE
PLANT BED MIX
SCARIFY TO 4" DEPTH AND RECOMPACT
SUBGRADE
2" MIN.

8 PERENNIAL PLANTING BED
SECTION — SCALE: 3/4"=1'

2" DEEP MULCH
SHOVEL-CUT 6" DEEP WEDGE. MAINTAIN VEGETATION FREE
6"
45°
FINISH GRADE
EXISTING SOIL
PLANTING SOIL MIX

9 HAND DUG TRENCH EDGE
SECTION — SCALE: 3/4"=1'

D=DIMENSION OF PLANT SPACING (SHRUB, GROUNDCOVER OR PERENNIAL) AS INDICATED ON PLANTING SCHEDULE.

10 PLANT SPACING
PLAN — N.T.S.

SEEDED LAWN
TOP SOIL
SUBGRADE
2" MIN.

NOTES:
- APPLY APPROVED SEED MIX FOR THE SITE:
  - CREEPING RED FESCUE (RATE: 20)
  - REDTOP (RATE: 20)
  - SMOOTH BROME GRASS (RATE: 20)
  - PERENNIAL RYE GRASS (RATE: 5)

11 LAWN
SECTION — SCALE: 3/4"=1'

NOTES:
NEVER PUT EQUIPMENT OR MATERIALS WITHIN THE DRIPLINE OF THE TREE OR WITHIN THE TREE PROTECTION FENCE LINE.

TREES REQUIRING TREE PROTECTION FENCE TO BE INDICATED IN FIELD BY LANDSCAPE ARCHITECT.

EXISTING TREE
2" X 2" HORIZONTAL SUPPORTS, TYP.
(4) 2" x 4 : x 8'-0" STAKES, TO REMAIN ON FLUSH SURFACE. DO NOT INSTALL BELOW GRADE
EXISTING GRADE
1' OUTSIDE OF DRIPLINE, TYP.
6'-0" MIN.

ROWE REVISED DETAIL

1 TREE PROTECTION
SECTION — SCALE: 3/4" = 1'

HARDWOOD STAKES (36" x 2" x 2") SPACED 6' O.C.
WOVEN GEOTEXTILE FASTENED TO STAKE WITH WIRE OR PLASTIC TIES
SLOPE
FINISH GRADE
UNCOMPACTED SUBGRADE
3'-0"
1'-8"
1'-0"
1'-0"
5"
5" MIN.

SECTION

6' ON CENTER
HARDWOOD STAKES (36" x 2" x 2") SPACED 6' O.C.
WOVEN GEOTEXTILE FASTENED TO STAKE WITH WIRE OR PLASTIC TIES
FINISH GRADE
1'-8"

ELEVATION

NOTES:
- REFER AND ADHERE TO STATE AND FEDERAL GUIDELINES FOR SEDIMENT CONTROL IN A FEMA REGULATORY FLOODWAY THROUGHOUT CONSTRUCTION. SEE PLAN FOR SILT FENCE EXTENTS.
- FLOW SHALL NOT RUN PARALLEL WITH THE SILT FENCE
- USE UV RESISTANCE WOVEN GEOTEXTILE
- TO JOIN TWO ROLLS OF GEOTEXTILE, OVERLAP ROLLS TO ELIMINATE ANY GAPS IN THE SILT FENCE
- SILT FENCE TO BE INSPECTED REGULARLY OR IMMEDIATELY AFTER RAINFALL OF 1 INCH OR GREATER, AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIR AND REPLACE WHERE THE SILT FENCE FAILS OR IS DAMAGED IMMEDIATELY.
- ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS REMOVED SHALL BE DRESSED AND SEEDED TO CONFORM WITH EXISTING GRADE.

2 SILT FENCE
SECTION — SCALE: 3/4" = 1'

NOTES:
ORIENT STAKING/GUYING TO PREVAILING WINDS AND SLOPES, EXCEPT ON SLOPES GREATER THAN 3:1 ORIENT TO SLOPE.

USE SAME STAKING/GUYING ORIENTATION FOR ALL PLANTS WITHIN EACH GROUPING OR AREA.

120° 120° 120°
DOWNHILL SLOPE OR PREVAILING WIND

STAKING/GUYING LOCATION PLAN

1 1/2" DIA. RUBBER HOSE CHAFING GUARD 2-PLY, COLOR BLACK
2 GUYING CABLE SECURED W/CLAMPS
3 TURNBUCKLE WITH 6" OPENING
4 1/2" DIA. RUBBER HOSE CHAFING GUARD 2-PLY, COLOR BLACK
5 DOUBLE STRAND #14 GAUGE GALV. WIRE, NEATLY TWISTED
6 NOTCH POSTS TO SET STAKE WIRE
7 STAKES AS SPECIFIED 2 PER TREE

ROWE REVISED DETAIL

GUYING CABLE DETAIL PLAN

STAKING DETAIL

NOTE TO SPECIFIER:
- INCLUDE THIS DETAIL WITH ALL TREE STAKING DETAILS
- DELETE NON-APPLICABLE INFORMATION

6 TREE STAKING AND GUYING
N.T.S.

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CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:
ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

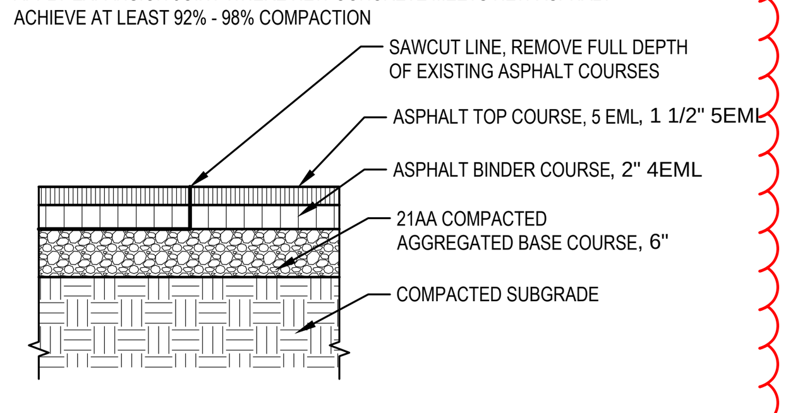
SEAL:

SHEET TITLE:
PLANTING DETAILS

Date: 02.14.2025
Project Number: 240401

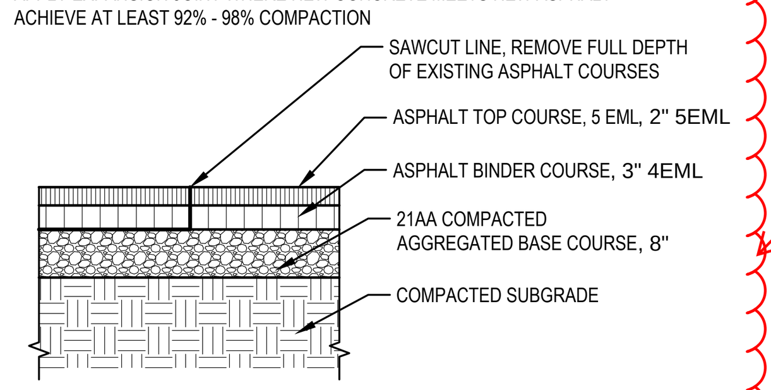
SHEET NUMBER:
L-700

NOTES:
- SAWCUT AND ASPHALT REPAIR TO BE USED WHERE INDICATED ON LAYOUT AND MATERIALS PLAN. FULL DEPTH REMOVAL IS REQUIRED.
- CONTRACTOR TO INFORM LANDSCAPE ARCHITECT AND OWNER IF SUBGRADE MATERIAL INCLUDES A CONCRETE BASE PRIOR TO FULL EXCAVATION
- APPLY EXPANSION JOINT WHERE NEW CONCRETE MEETS NEW ASPHALT
- ACHIEVE AT LEAST 92% - 98% COMPACTION



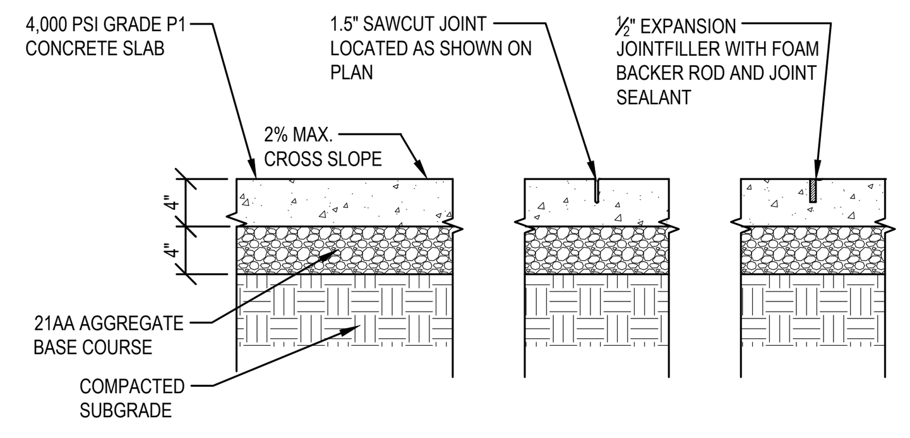
1A ASPHALT PAVEMENT/ TRAIL
SECTION SCALE: 3/4"=1'

NOTES:
- SAWCUT AND ASPHALT REPAIR TO BE USED WHERE INDICATED ON LAYOUT AND MATERIALS PLAN. FULL DEPTH REMOVAL IS REQUIRED.
- CONTRACTOR TO INFORM LANDSCAPE ARCHITECT AND OWNER IF SUBGRADE MATERIAL INCLUDES A CONCRETE BASE PRIOR TO FULL EXCAVATION
- APPLY EXPANSION JOINT WHERE NEW CONCRETE MEETS NEW ASPHALT
- ACHIEVE AT LEAST 92% - 98% COMPACTION



1B ASPHALT PAVEMENT/ PARKING LOT
SECTION SCALE: 3/4"=1'

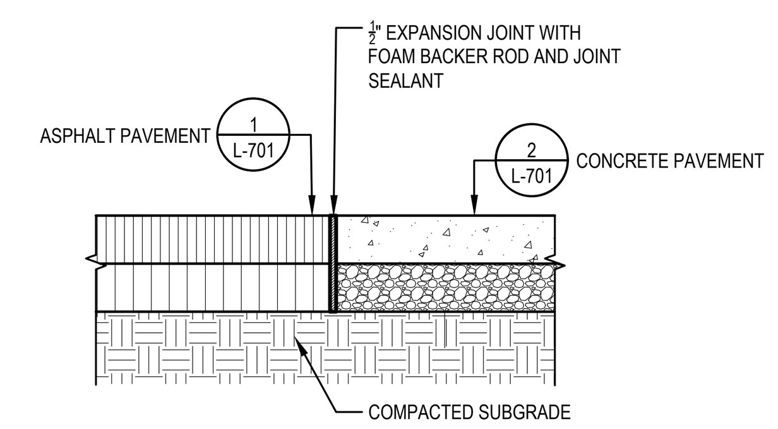
ROWE REVISED DETAIL



NOTES:
- SEE CONCRETE PAVEMENT DETAIL ON APPROPRIATE SHEETS.
- ½" SEALED EXPANSION JOINTS SHALL BE PLACED AT ALL LOCATIONS WHERE SIDEWALK ABUTS CONCRETE CURB, EXISTING SIDEWALK, LIGHT POLE BASES, AND/OR RETAINING WALLS.
- SEE MATERIALS PLAN FOR FULL CONCRETE SCORING JOINT PATTERN AND JOINT TYPE LOCATIONS.
- STANDARD 5' X 5' SCORING PATTERN TO BE APPLIED TO CONCRETE SIDEWALK AND BUILDING ENTRANCES. CONTROL JOINT EVERY 10' FEET IN BOTH NS AND EW DIRECTIONS; SCORE JOINT EVERY 10' IN BOTH NS AND EW DIRECTIONS; EXPANSION JOINT AT ALL LOCATIONS WHERE SIDEWALK ABUTS CONCRETE CURB, PLANTER SEAT WALLS, EXISTING SIDEWALK, LIGHT POLE BASES AND OTHER CONCRETE BASES.
- SAWCUTS SHOULD BE INDUSTRY STANDARD WIDTH, NO MORE THAN ½"
- SEE SPECIFICATIONS FOR CONCRETE FINISHES AND APPLICATION METHODS

2 CONCRETE PAVEMENT
SECTION SCALE: 3/4"=1'

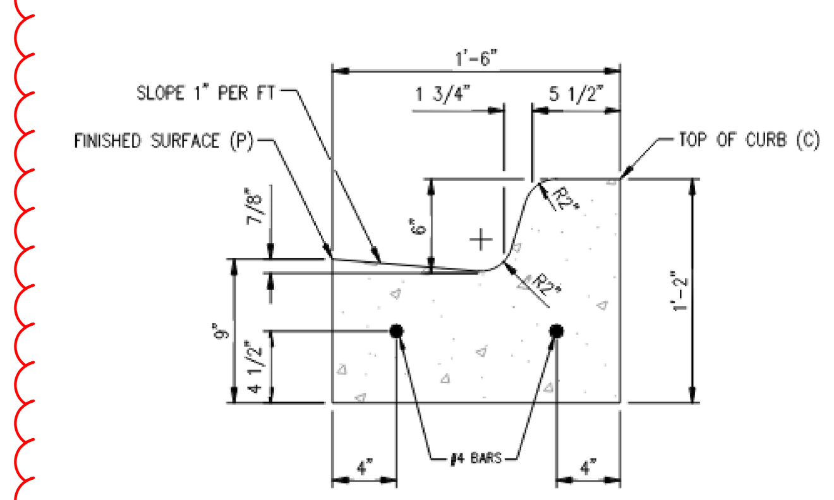
NOTES:
- CONFIRM COLOR OF EXPANSION JOINT WITH LANDSCAPE ARCHITECT IN FIELD.



3 ASPHALT AND CONCRETE TRANSITION
SCALE: 3/4"=1'

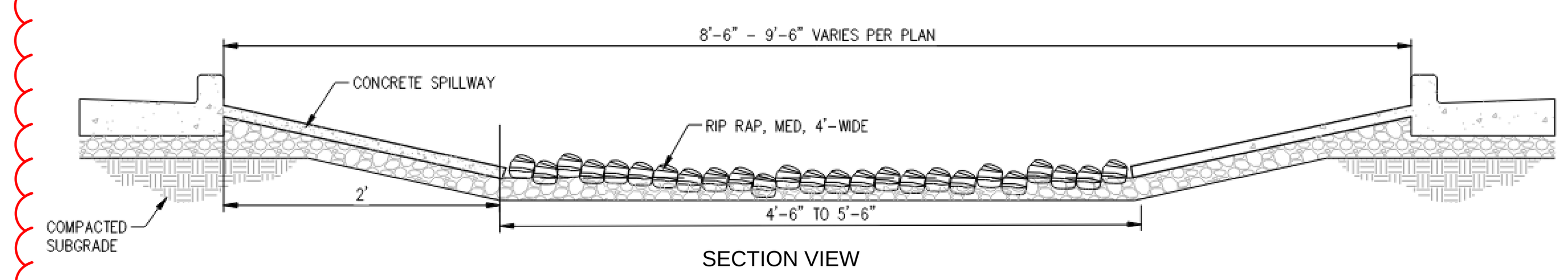
ROWE ADDED DETAIL

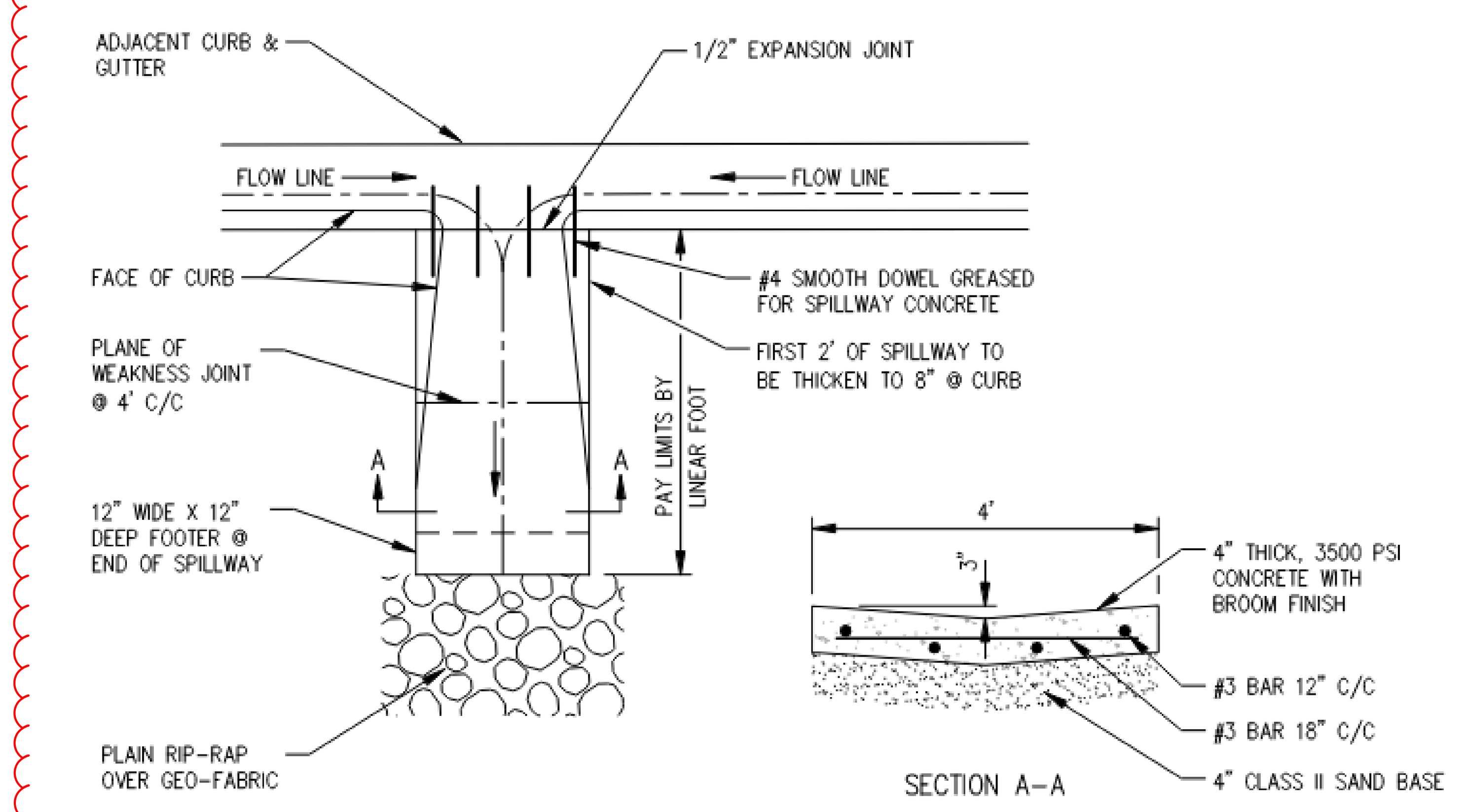
NOTES:
- CONCRETE CURB TO MATCH FINISHED GRADE MATERIALS AS INDICATED IN LAYOUT PLANS (LANDSCAPE BED, ASPHALT ETC.)



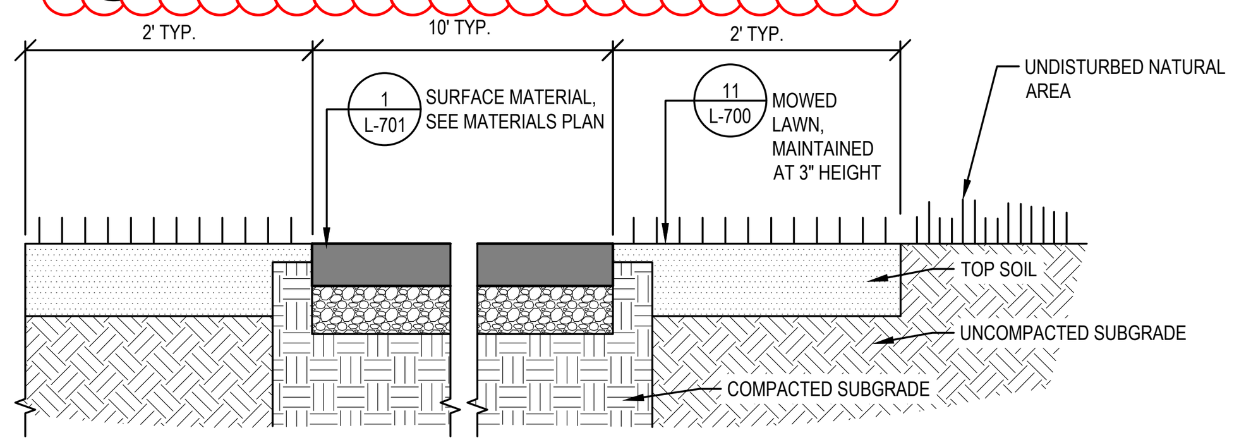
4 MDOT TYPE F2 CONCRETE CURB
SECTION SCALE: NOT TO SCALE

ROWE ADDED DETAIL





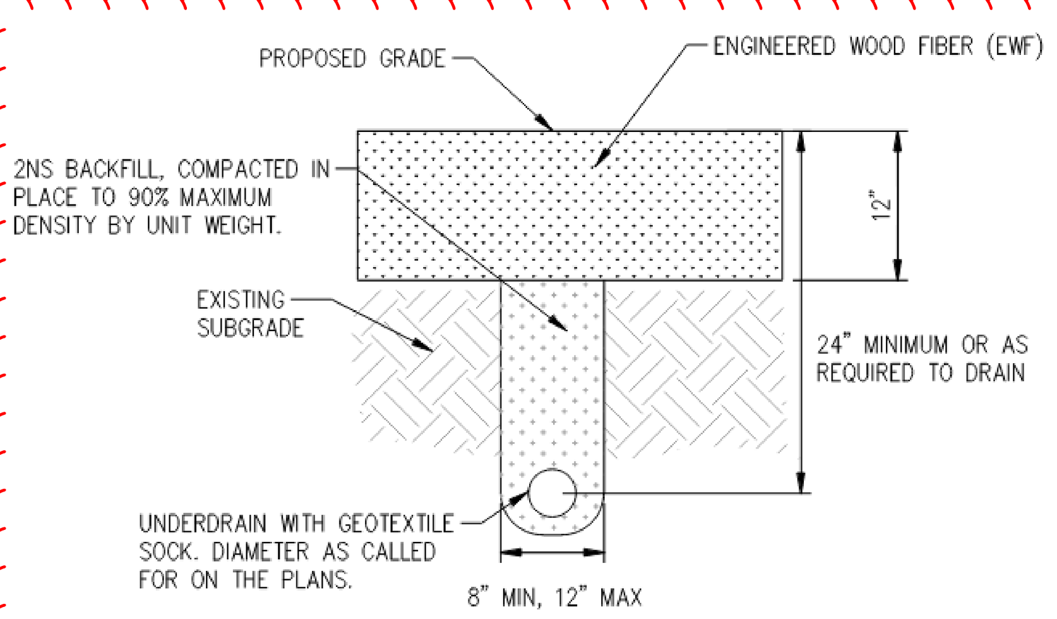
9 DRAINAGE AT PARKING LOT
SCALE: NOT TO SCALE



NOTES:
- ALL TRAIL SURFACE COURSES MUST MEET ALL ADA ACCESSIBILITY REQUIREMENTS AND CODES.
- FINISH GRADE OF MULTI-USE PATH AND SEEDED CLEAR ZONE SHALL BE FLUSH.
- CLEAR ZONE TO BE MAINTAINED FREE OF SIGNAGE, POSTS, DEBRIS, AND ANY VEGETATION EXCLUDING SEEDED LAWN.
- LAWN SEED SHALL ALSO BE APPLIED TO ANY DISTURBED AREA BEYOND THE 2' CLEAR ZONE.

6 PEDESTRIAN MULTI-USE PATH WITH 2' CLEAR ZONE
SECTION SCALE: 3/4"=1'

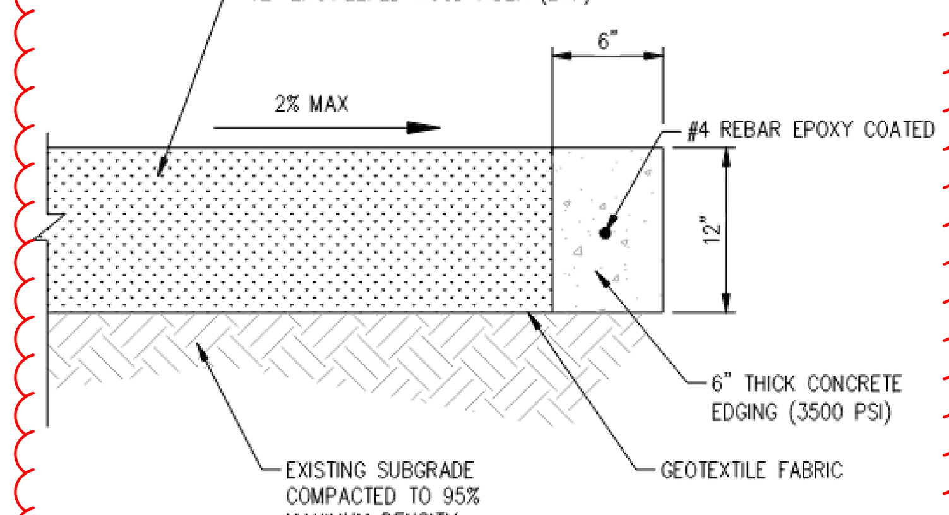
ROWE ADDED DETAIL



NOTES:
1. THICKNESS AS DETERMINED BY ASTM AND CPSC GUIDELINES.
2. COSTS INCLUDED IN PLAYGROUND PAY ITEM.

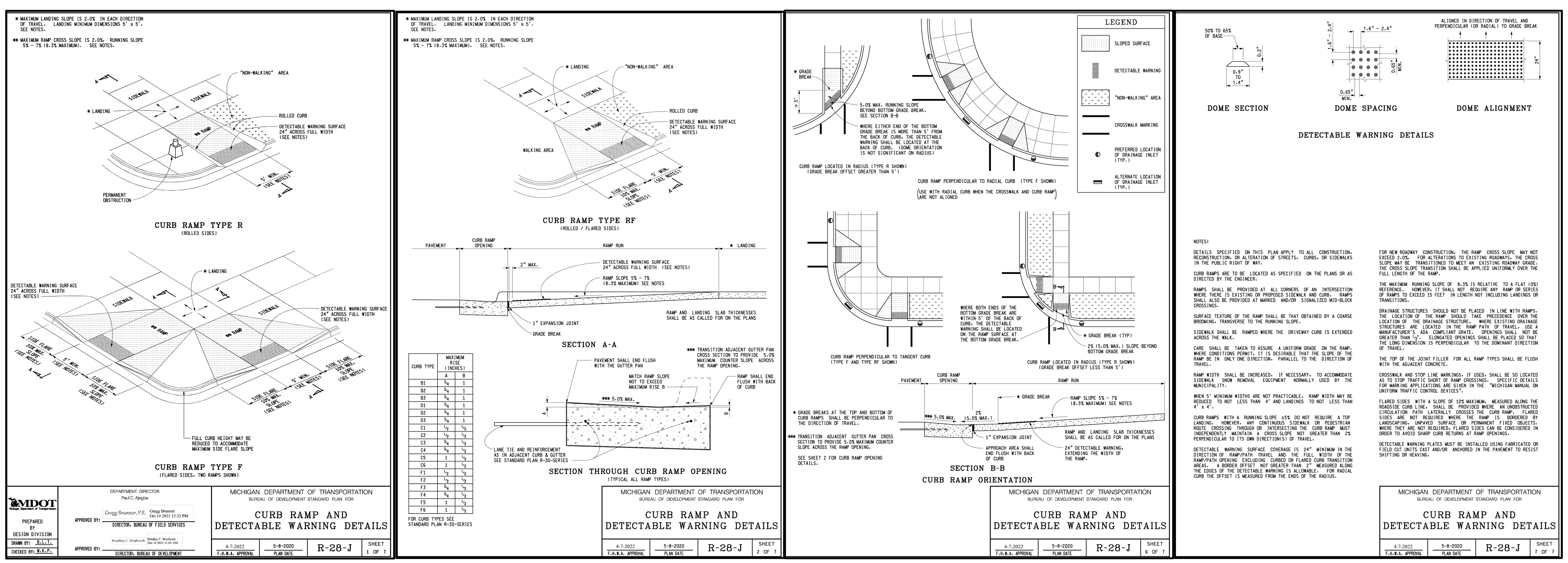
7 ENGINEERED WOOD FIBER SAFETY SURFACE
SECTION SCALE: NOT TO SCALE

ROWE ADDED DETAIL

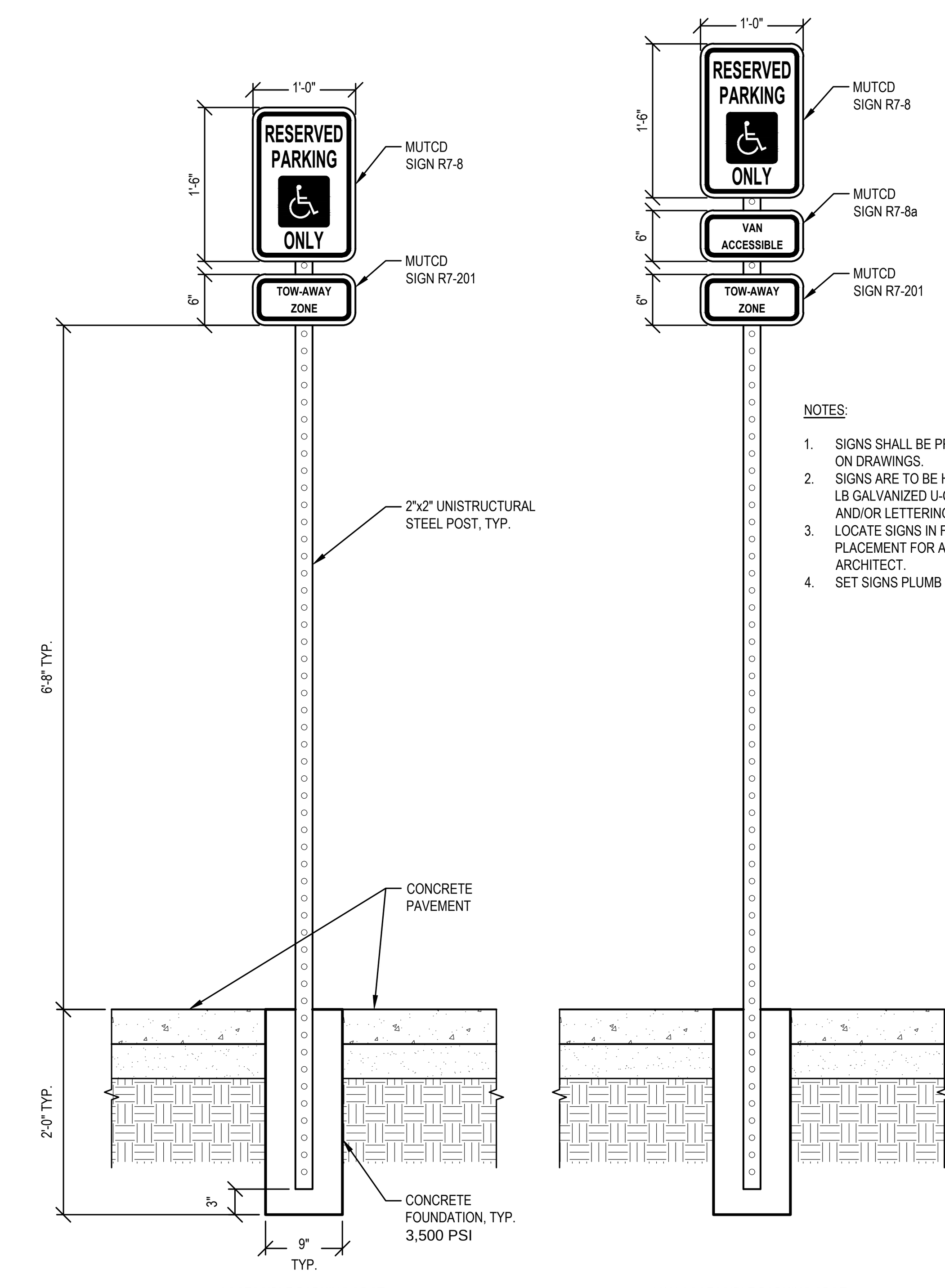


NOTES:
1. COSTS INCLUDED IN PLAYGROUND PAY ITEM.

8 SAFETY SURFACE CURBED EDGE
SECTION SCALE: NOT TO SCALE



10 MDOT STANDARD RAMP AND ACCESSIBLE WARNING STRIP
N.T.S.



NOTES:
1. SIGNS SHALL BE PROVIDED AS INDICATED ON DRAWINGS.
2. SIGNS ARE TO BE HIP SHEETING, 2 LB OR 3 LB GALVANIZED U-CHANNEL WITH LOGOS AND/OR LETTERING AS INDICATED.
3. LOCATE SIGNS IN FIELD PRIOR TO PLACEMENT FOR APPROVAL BY THE ARCHITECT.
4. SET SIGNS PLUMB

11 ADA SIGNAGE FOR PARKING
SECTION SCALE: 3/4" = 1'

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FLUTTER & WOW MUSEUM PROJECTS

CUSTOMER:
CITY OF FLINT, MICHIGAN 1855

PROJECT:
ST. JOHN MEMORIAL TRAIL
3400 W BOULEVARD DRIVE
FLINT, MI 48505

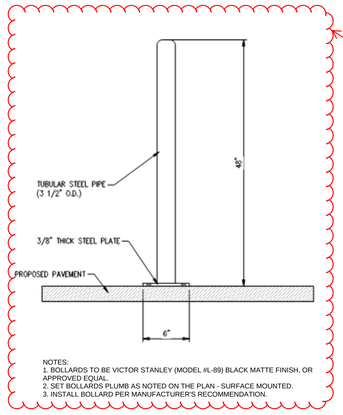
REVISION	DATE
EGLE PERMIT REVIEW	02/14/2025
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:
SITE DETAILS

Date: 02.14.2025
Project Number: 240401
SHEET NUMBER:
L-701

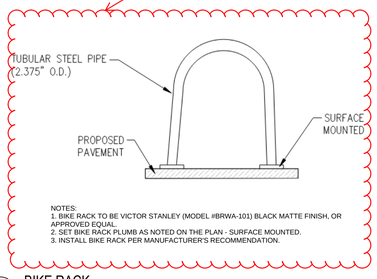
REFER THE FURNISHING SCHEDULE ON SHEET SERIES L-500 FOR PRODUCT INFORMATION. ALL PRODUCTS LISTED SHOULD BE CONSIDERED THE BASIS OF DESIGN. THE GENERAL CONTRACTOR SHALL SECURE THESE PRODUCTS, OR THOSE OF SIMILAR QUALITY, FOR FINAL APPROVAL BY THE LANDSCAPE ARCHITECT AND THE OWNER. PROVIDE SAMPLES AND MOCK UPS AS NECESSARY.



NOTES:
1. BOLLARDS TO BE VICTOR STANLEY (MODEL #L-89) BLACK MATTE FINISH, OR APPROVED EQUAL.
2. SET BOLLARDS PLUMB AS NOTED ON THE PLAN - SURFACE MOUNTED.
3. INSTALL BOLLARD PER MANUFACTURER'S RECOMMENDATION.

1 SECURITY BOLLARD
SECTION
SCALE: NOT TO SCALE

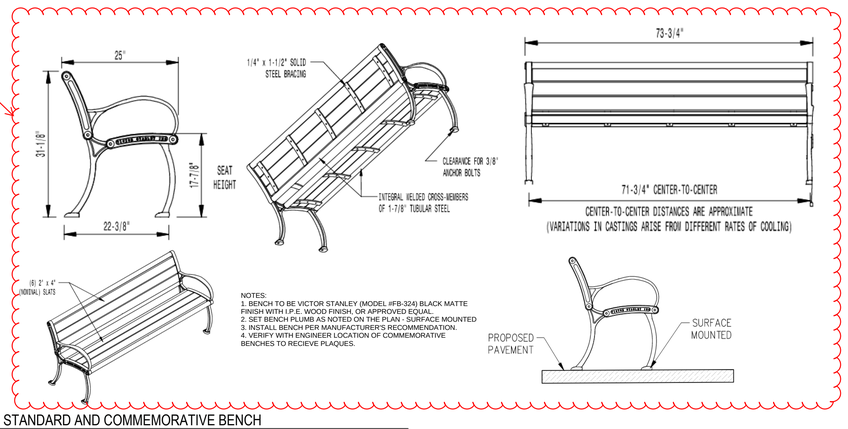
ROWE ADDED DETAIL



NOTES:
1. BIKE RACK TO BE VICTOR STANLEY (MODEL #BRWA-101) BLACK MATTE FINISH, OR APPROVED EQUAL.
2. SET BIKE RACK PLUMB AS NOTED ON THE PLAN - SURFACE MOUNTED.
3. INSTALL BIKE RACK PER MANUFACTURER'S RECOMMENDATION.

2 BIKE RACK
SECTION
SCALE: NOT TO SCALE

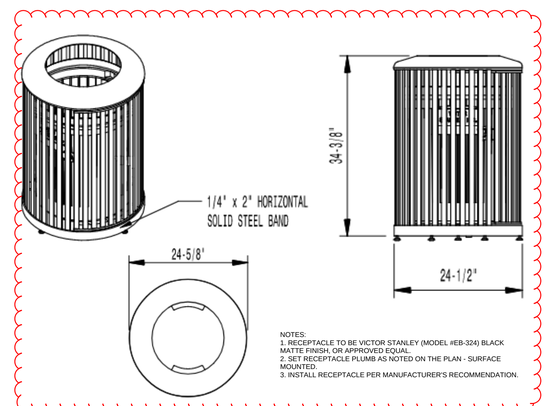
ROWE ADDED DETAIL



NOTES:
1. BENCH TO BE VICTOR STANLEY (MODEL #FB-324) BLACK MATTE FINISH WITH I.P.E. WOOD FINISH, OR APPROVED EQUAL.
2. SET BENCH PLUMB AS NOTED ON THE PLAN - SURFACE MOUNTED
3. INSTALL BENCH PER MANUFACTURER'S RECOMMENDATION.
4. VERIFY WITH ENGINEER LOCATION OF COMMEMORATIVE BENCHES TO RECIEVE PLAQUES.

3 STANDARD AND COMMEMORATIVE BENCH
SECTION
SCALE: NOT TO SCALE

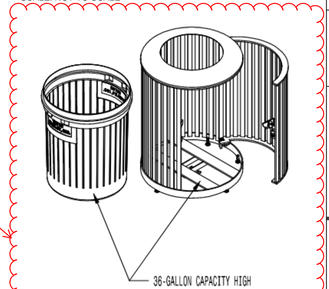
ROWE ADDED DETAIL



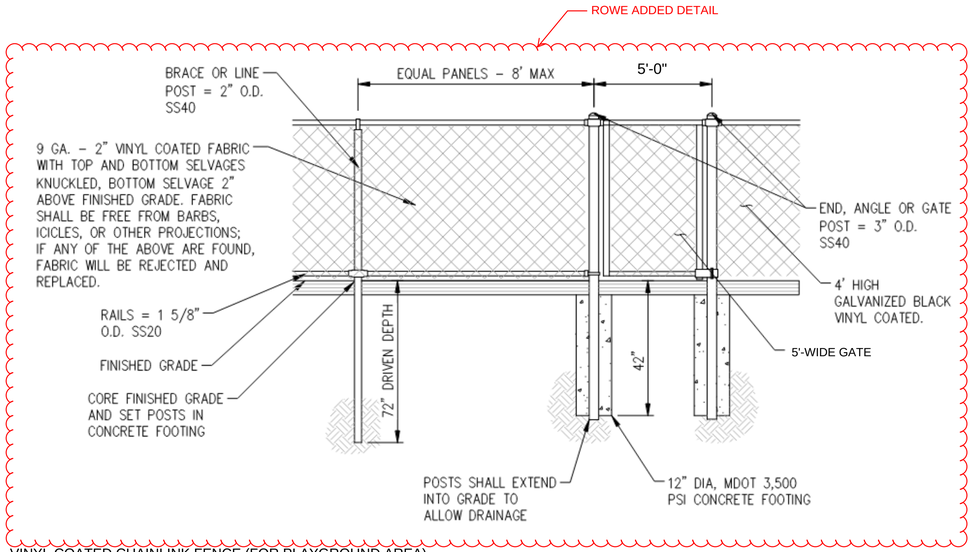
NOTES:
1. RECEPTACLE TO BE VICTOR STANLEY (MODEL #EB-324) BLACK MATTE FINISH, OR APPROVED EQUAL.
2. SET RECEPTACLE PLUMB AS NOTED ON THE PLAN - SURFACE MOUNTED.
3. INSTALL RECEPTACLE PER MANUFACTURER'S RECOMMENDATION.

5 TRASH & RECYCLING BIN
SECTION
SCALE: NOT TO SCALE

ROWE ADDED DETAIL



ROWE ADDED DETAIL



6 VINYL COATED CHAINLINK FENCE (FOR PLAYGROUND AREA)
SECTION
SCALE: NOT TO SCALE

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PROJECT:

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3400 W BOULEVARD DRIVE
FLINT, MI 48505

REVISION	DATE
DD UPDATE	12/20/2024
100% DESIGN DEVELOPMENT	09/20/2024
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

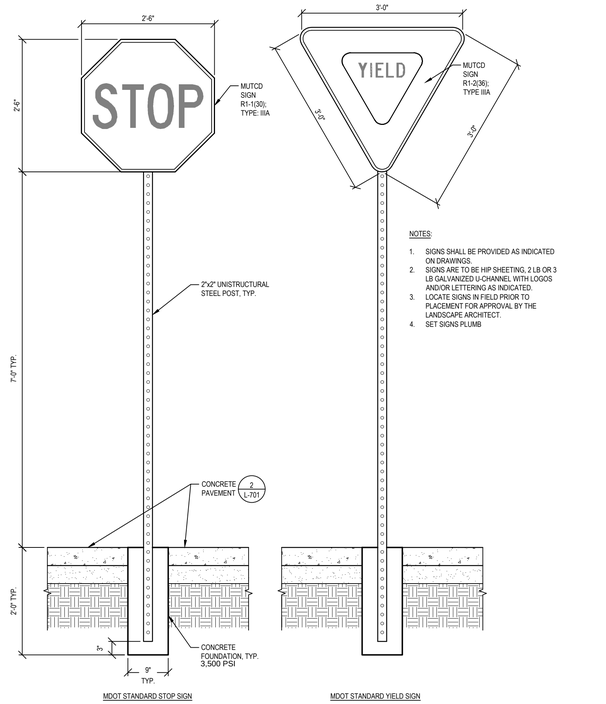
SHEET TITLE:

FURNISHING DETAILS

Date: 02.14.2025
Project Number: 240401

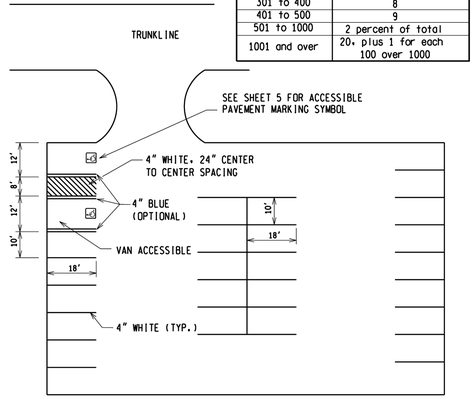
SHEET NUMBER:

L-702



1 MDOT STOP & YIELD SIGNS
SECTION
SCALE: 3/4"=1'

Total Parking in Lot	Required Minimum Number of Accessible Spaces
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
1001 and over	20, plus 1 for each 100 over 1000



TYPICAL PARK AND RIDE LOT LAYOUT

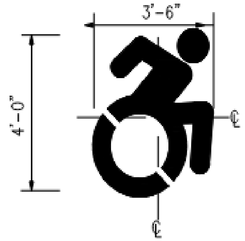
NOTES:
1. Refer to the Road Design Manual for typical parking lot dimensions.
2. Shown for typical stall striping information only.
3. All stall lines are single white lines. White lines may be supplemented with blue in accessible stalls.
4. 1 van accessible stall is required for every 6 accessible stalls, with a minimum of 1.
5. Buffers adjacent to a van accessible stall must be 8 ft wide. Buffers adjacent to other accessible stalls may be 5 ft width. Two accessible stalls may share a buffer. Buffers may be on either side of the stall except for angled van accessible stalls, where the buffer must be on the right (passenger) side.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	09/21/20 F.H.W.A. APPROVAL	03/25/20 PLAN DATE	PAVE-956-D	SHEET 2 OF 6

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

2 MDOT STANDARD PARKING AND ACCESSIBLE PAVEMENT MARKING
SECTION
SCALE: 1"=1'



ACCESSIBLE PAVEMENT MARKING SYMBOL

NOTES:
1. SYMBOL LINES SHALL BE APPLIED AT A WIDTH OF 4"
2. MATERIAL SHALL BE BLUE WATERBORNE
3. CENTERLINE OF SYMBOL SHALL BE PARALELL TO PARKING STALL STRIPE AND IN CENTER OF STALL.

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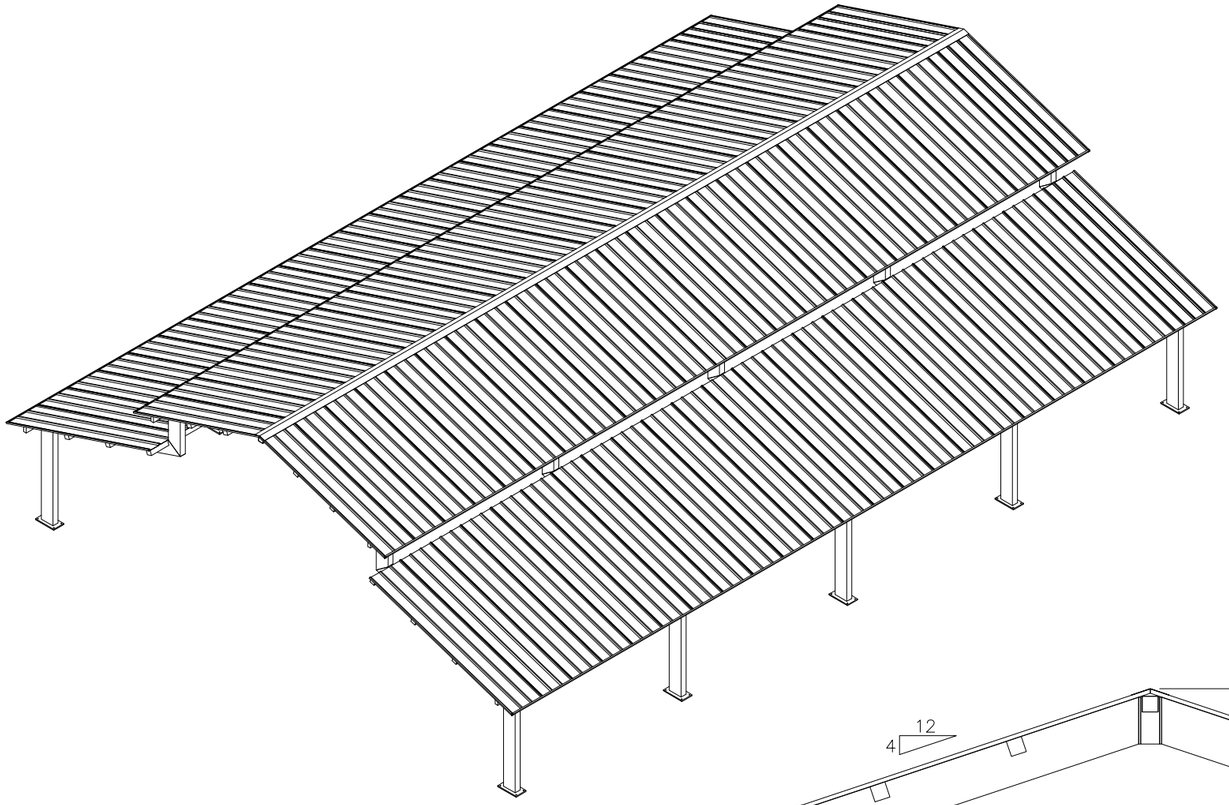
50% DESIGN DEVELOPMENT	08/30/2024

SEAL:

SHEET TITLE:
FURNISHING DETAILS

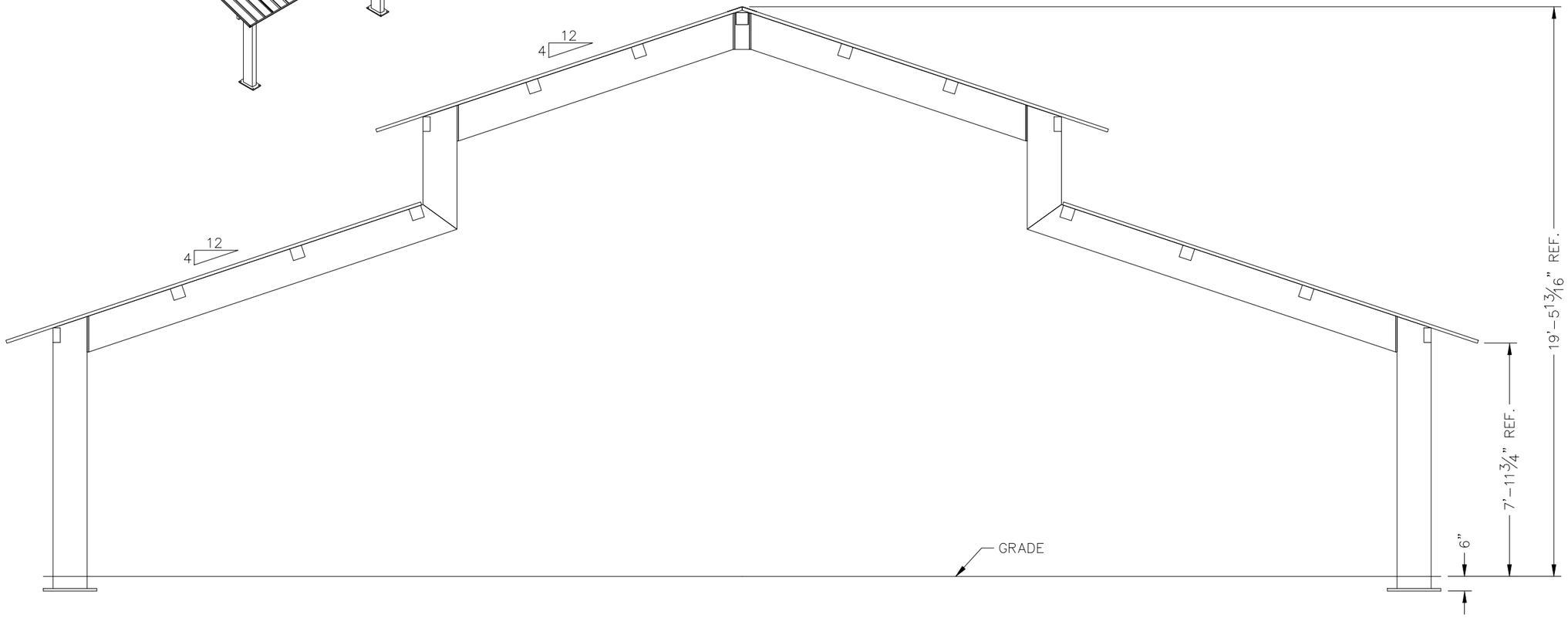
Date: 02.14.2025
Project Number: 240401

SHEET NUMBER:
L-703



PRELIMINARY: NOT FOR CONSTRUCTION

NOTICE:
PLAN LAYOUT SHEET AS PROVIDED BY ICON SHELTER SYSTEMS, OR APPROVED EQUAL. REFER TO SPECIFICATIONS IN BID BOOK 01 25 00 FOR MORE INFORMATION.



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1455 LINCOLN AVE.
HOLLAND MI, 49423

616.396.0919
800.748.0985
616.396.0944 FX

Elevation

DRAWN BY:	RGB
DATE:	1/18/2024
PRELIMINARY ID:	82159
REVISION:	A
BUILDING TYPE:	RG50X70M-P4
PROJECT NAME:	

SHEET
1.0

Engineering\AcadStandard\Blocks\Titles\ICONPRETB
QF-73-01-42

DWG:ineering\Standards\Shelters\RG\50X70\M-P4-20-90-30\Drawings\Preliminary\RG50x70M-P44-20-90-30~82159.DWG

Z (INSIDE OF BUILDING)

Y

THESE FOUNDATION LOADS ARE FOR ESTIMATING PURPOSE ONLY.
THE ACTUAL LOADS WILL BE DETERMINED IN THE FINAL ENGINEERING

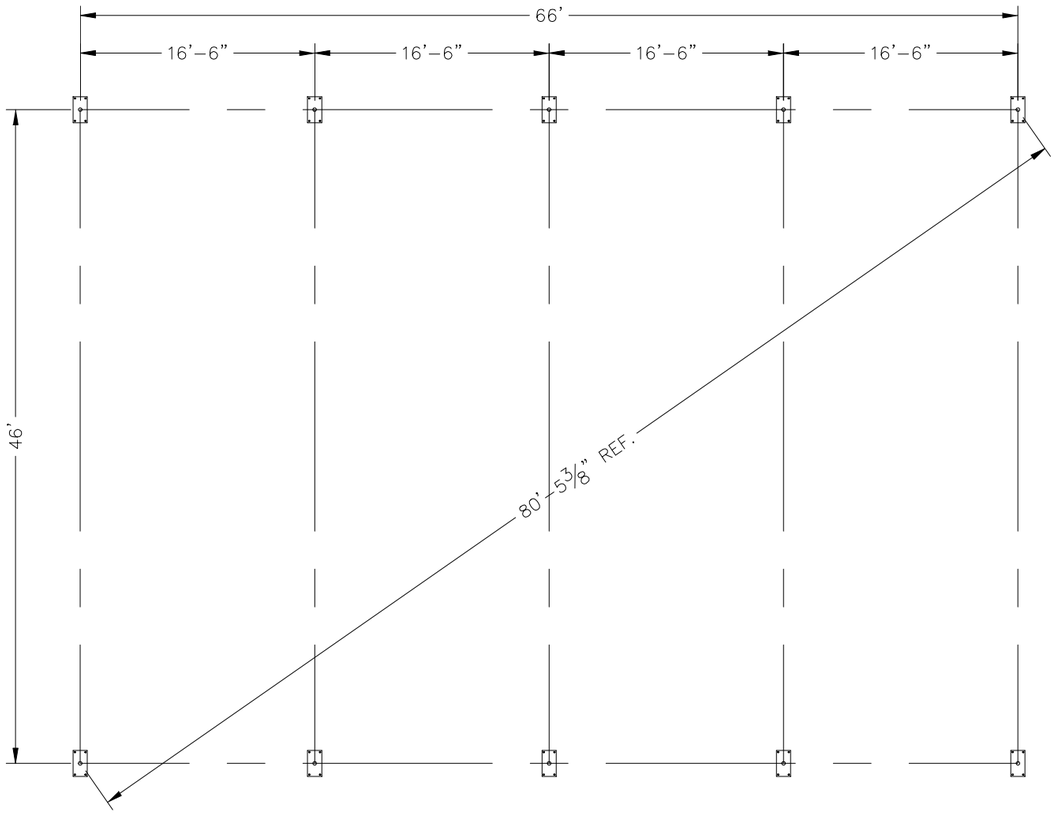
CL1

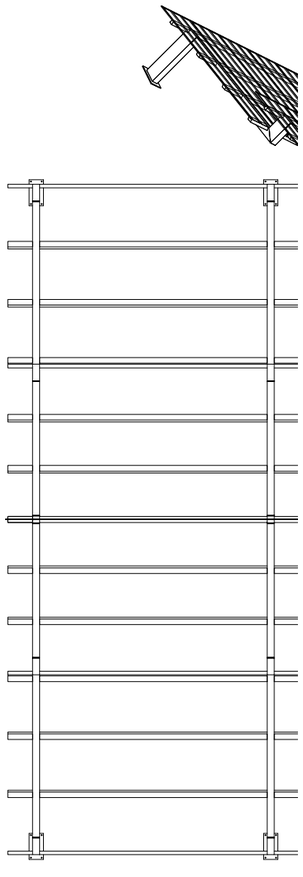
LOADS TO FOUNDATION (KIPS, IN-KIPS)	FOUNDATION LOADS				
LOAD COMBINATION	AXIAL (Fx)	SHEAR (Fy)	SHEAR (Fz)	MOMENT (My)	MOMENT (Mz)
DL	4.90	0.00	3.59	-192.12	0.00
SL	9.38	0.00	7.13	-381.18	0.00
W-UPLIFT	-4.77	0.62	-3.18	160.14	55.52
W-FY	3.21	-0.63	2.16	-110.50	-55.84
W-FZ	-4.77	-0.62	-3.18	160.14	-55.52
E-FY	-0.01	-0.45	0.00	0.21	-40.28
E-Z	-0.14	0.00	-0.49	41.76	-0.02

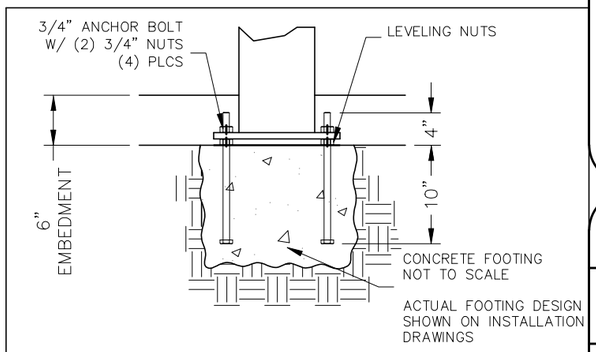
NOTES:
- TABLE SHOWS UNFACTORED SERVICE LOADS
- A FOUNDATION DESIGN HAS NOT BEEN PERFORMED BY ICON SHELTER SYSTEMS INC.
- A LICENSED ENGINEER FAMILIAR WITH SOIL CONDITIONS AT CONSTRUCTION SITE MUST PERFORM A FOUNDATION DESIGN.
- THE STRUCTURE HAS BEEN ENGINEERED AS AN OPEN STRUCTURE.
- CONSULT ICON SHELTER SYSTEMS INC. IF THE STRUCTURE IS TO BE ENCLOSED.
- COORDINATES ARE LOCAL TO THE COLUMN

DEFINITIONS:
DL = SERVICE LEVEL DEAD LOAD REACTION WITH THE GREATEST AXIAL LOAD
SL = SERVICE LEVEL SNOW LOAD REACTION WITH THE GREATEST AXIAL LOAD
W-UL = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST UPLIFT LOAD
W-Y = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Y DIRECTION
W-Z = SERVICE LEVEL WIND LOAD REACTION WITH THE GREATEST SHEAR VALUE ACTING IN THE SAME DIRECTION AS THE DL SHEAR LOAD
E-Y = SERVICE LEVEL SEISMIC LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Y DIRECTION
E-Z = SERVICE LEVEL SEISMIC LOAD REACTION WITH THE GREATEST MAGNITUDE OF SHEAR IN THE LOCAL Z DIRECTION

PRELIMINARY: NOT FOR CONSTRUCTION

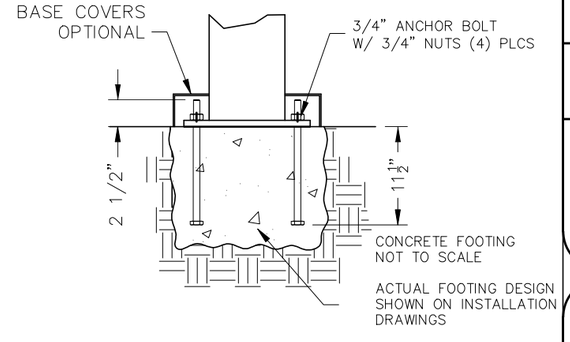






PRELIMINARY DRAWINGS SHOWN AS 6" BURIED

STANDARD BASE CONNECTION
COLUMN TYPE: A (6" BURIED)



OPTIONAL BASE CONNECTION
COLUMN TYPE: B (SURFACE MOUNT W/ COVERS)

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800.748.0985
616.396.0944 FX

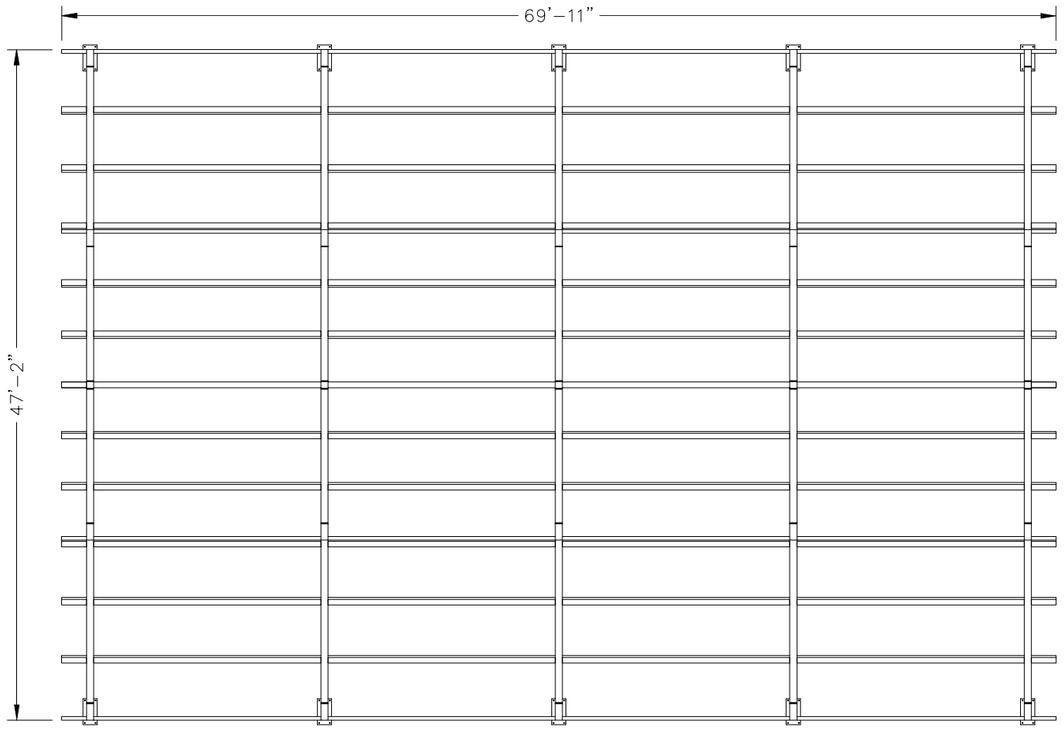
Anchor Bolt Layout

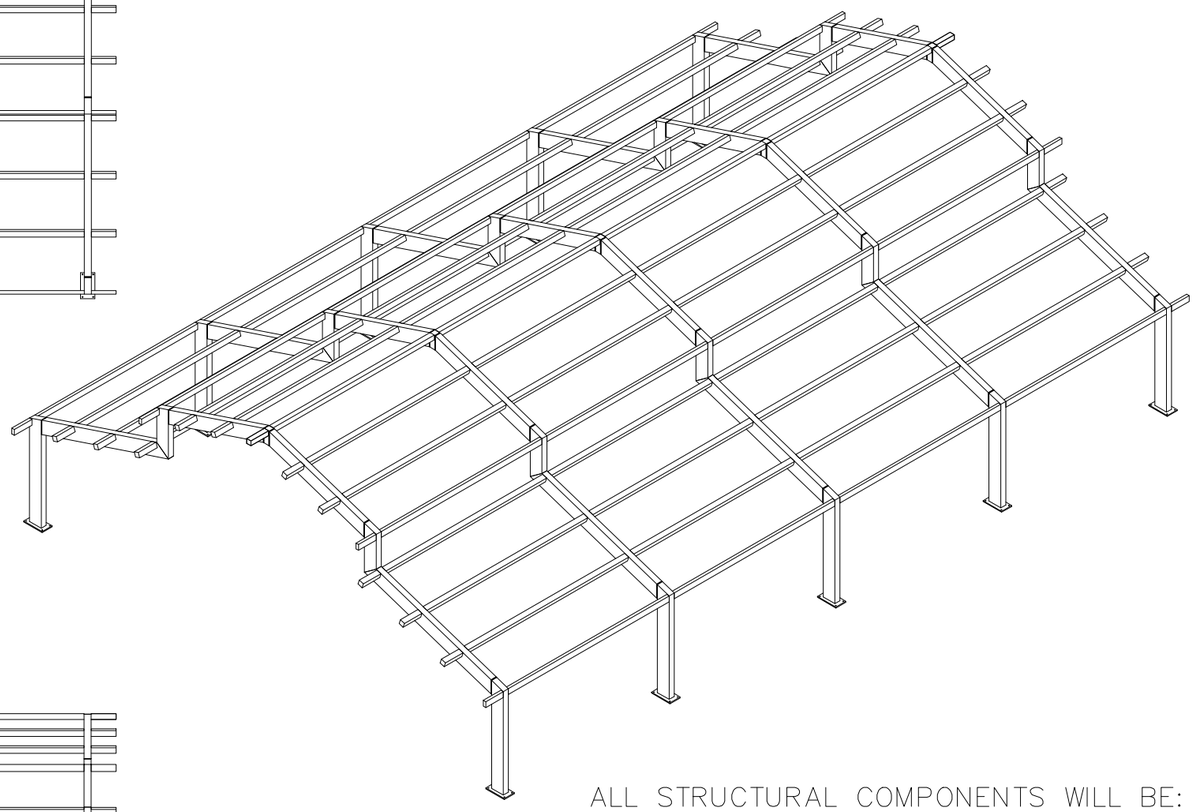
DRAWN BY:	RGB
DATE:	1/18/2024
PRELIMINARY ID:	82159
REVISION:	A
BUILDING TYPE:	RG50X70M-P4
PROJECT NAME:	

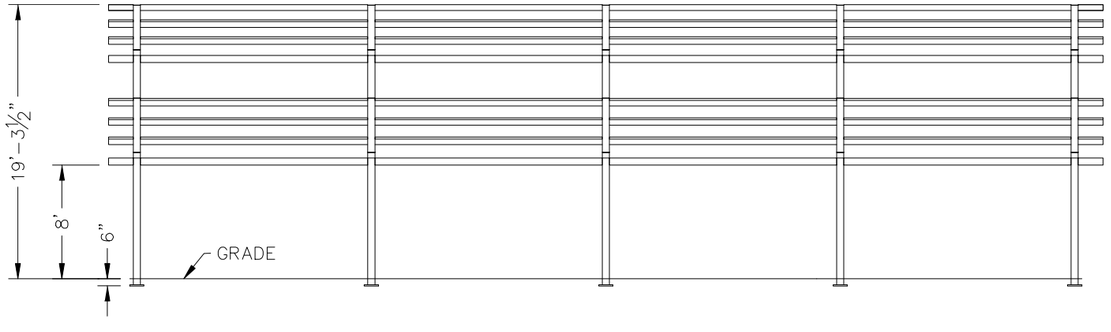
SHEET 2.0

Engineering\AcadStandard\Blocks\Titles\ICONPRETB
QF-73-01-42

DWG:ineering\Standards\Shelters\RG\50X70\M-P4-20-90-30\Drawings\Preliminary\RG50x70M-P44-20-90-30~82159.DWG







ALL STRUCTURAL COMPONENTS WILL BE:
TUBE: ASTM A500 GRADE B
PLATE: ASTM A36
BOLTS: ASTM A325
NUTS: ASTM A563
WELDING: GMAW

NOTE:
COLUMN SIZE: HSS 14x6x1/4

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Frame

DRAWN BY:	RGB
DATE:	1/18/2024
PRELIMINARY ID:	82159
REVISION:	A
BUILDING TYPE:	RG50X70M-P4
PROJECT NAME:	

SHEET
3.0

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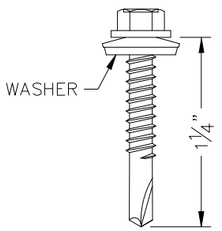
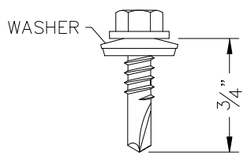
QF-73-01-42

DWG:ineering\Standards\Shelters\RG\50X70\M-P4-20-90-30\Drawings\Preliminary\RG50x70M-P44-20-90-30~82159.DWG

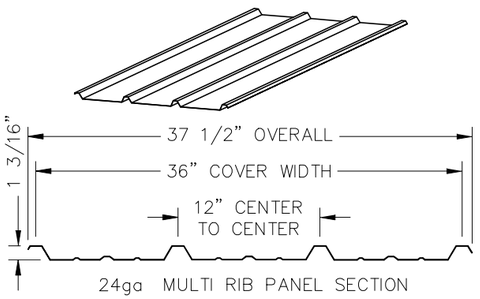
FASTENERS



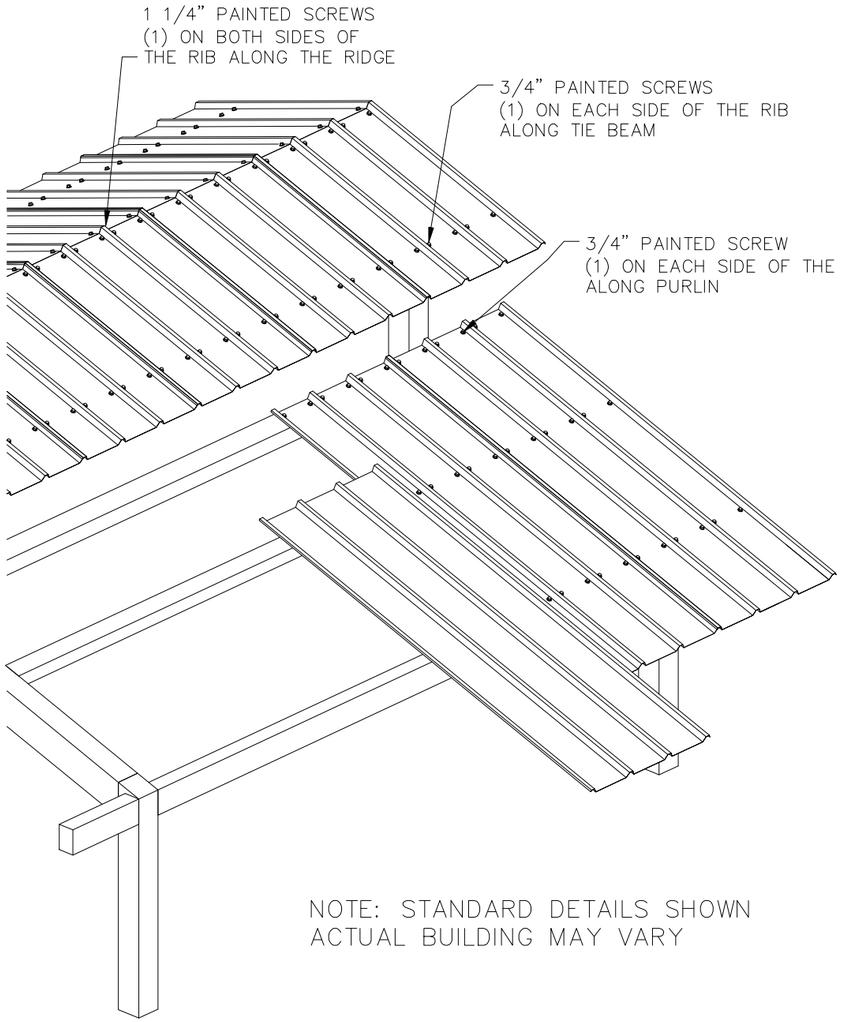
1 1/4" PAINTED SCREW



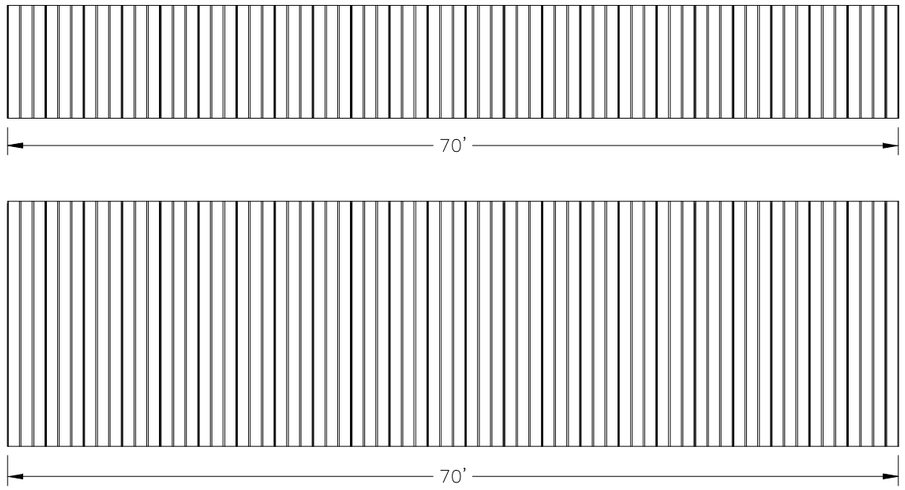
3/4" PAINTED SCREW



24ga MULTI RIB PANEL SECTION



NOTE: STANDARD DETAILS SHOWN
ACTUAL BUILDING MAY VARY



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616.396.0944 FX

Roof Layout

DRAWN BY:	RGB
DATE:	1/18/2024
PRELIMINARY ID:	82159
REVISION:	A
BUILDING TYPE:	RG50X70M-P4
PROJECT NAME:	

SHEET
4.0

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DWG:ineering\Standards\Shelters\RG\50X70\M-P4-20-90-30\Drawings\Preliminary\RG50x70M-P44-20-90-30~82159.DWG

ELECTRICAL INFORMATION - RECTANGULAR GABLE

ICON'S STANDARD ELECTRICAL IS DESIGNED TO ACCOMMODATE Ø1/2" CONDUIT WITH A Ø3" INLET HOLE ON THE BOTTOM OF EACH COLUMN.
THE CONDUIT PATHWAY RUNS THROUGH THE COLUMN, RAFTER, AND RIDGE BEAM THROUGH ALL BOLTED CONNECTIONS AS SHOWN.
IF YOU HAVE SPECIAL ELECTRICAL REQUIREMENTS, PLEASE OUTLINE ANY CHANGES BELOW AS DESCRIBED.

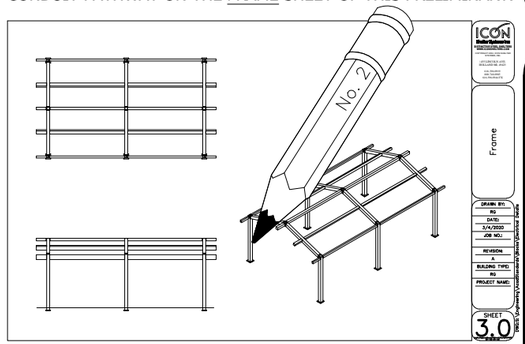
PLEASE NOTE: DESIGN LIMITATIONS ON HOLE/CUTOUT SIZES MAY APPLY.
ICON WILL REACH OUT TO DISCUSS ANY SUCH LIMITATIONS AS NEEDED.

NOTE: ICON SHELTER FRAME IS NOT UL LISTED TO ACT AS A CONDUIT FOR ELECTRICAL WIRING. CONSULT LOCAL BUILDING CODES WHEN PLANNING YOUR ELECTRICAL SYSTEM.

PRELIMINARY: NOT FOR CONSTRUCTION

STEPS:
1. CONDUIT HOLE SIZE (DETAIL A)
2. ELECTRICAL EXIT HOLES (DETAIL B)
3. ELECTRICAL ACCESS & COVER PLATES (DETAIL C)
4. ELECTRICAL CONDUIT PATHWAY (DETAIL D)

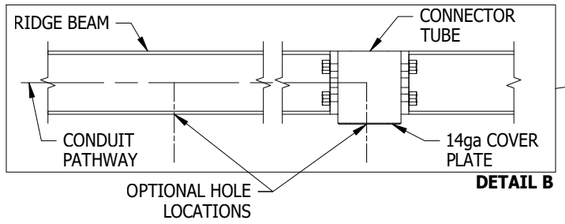
IF REQUIRED, PLEASE DRAW THE NECESSARY ELECTRICAL CONDUIT PATHWAY ON THE FRAME SHEET OF THIS PRELIMINARY.



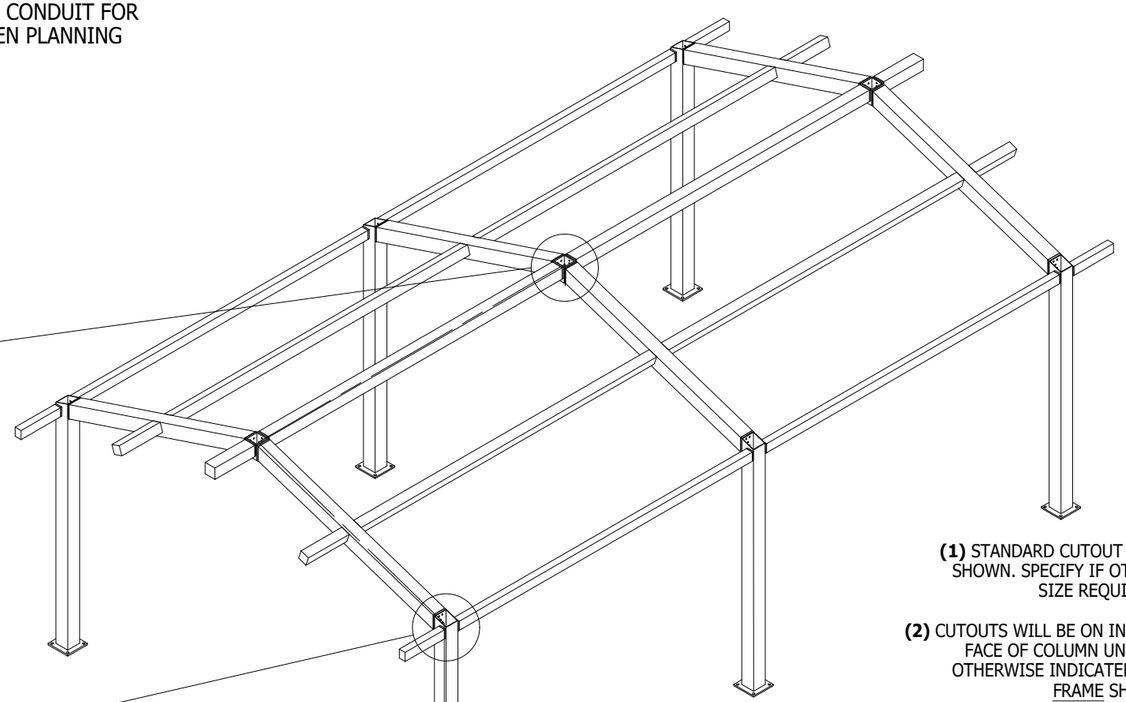
DETAIL D

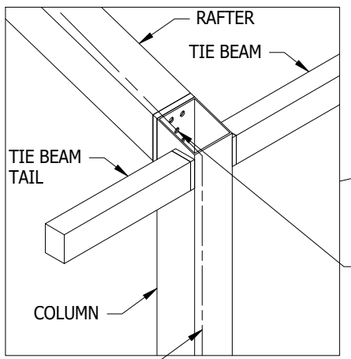
OPTIONAL EXIT HOLES

IF REQUIRED, EXIT HOLES FOR LIGHTING, ETC. CAN BE PLACED IN THE RIDGE BEAM AND/OR CONNECTOR TUBE WITH 14ga COVER PLATE AS SHOWN (CHARGES APPLY)
USE FRAME SHEET OF THIS PRELIMINARY TO SPECIFY REQUIRED EXIT HOLE LOCATIONS AND SIZE.



DETAIL B



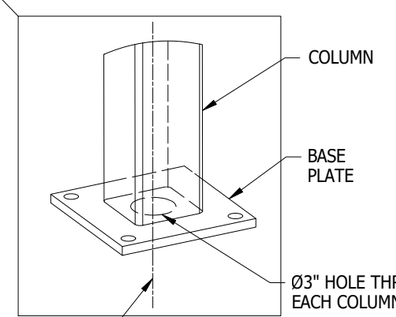


DETAIL A

ICON PROVIDES A MINIMUM OF (1) 3/4" HOLE AT
EACH CONNECTION FOR 1/2" CONDUIT.
IF APPLICABLE, PLEASE SPECIFY REQUIRED CONDUIT SIZE: (CHARGES APPLY)

- ☐ 3/4" CONDUIT (1" HOLES)
- ☐ 1" CONDUIT (1 1/4" HOLES)
- ☐ OTHER (PLEASE SPECIFY _____)

CONDUIT PATHWAY PROVIDED FOR EACH COLUMN.



CONDUIT (NOT BY ICON)

BASE DETAIL

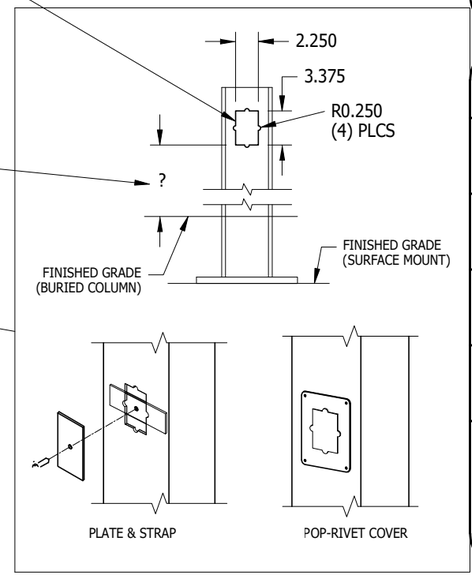
OPTIONAL CUTOUTS

USE FRAME SHEET OF THIS PRELIMINARY TO SPECIFY REQUIRED CUTOUT LOCATIONS (CHARGES APPLY)
SEE REQUIRED INFO BELOW

(1) STANDARD CUTOUT SIZE SHOWN. SPECIFY IF OTHER SIZE REQUIRED.

(2) CUTOUTS WILL BE ON INSIDE FACE OF COLUMN UNLESS OTHERWISE INDICATED ON FRAME SHEET.

(3) SPECIFY HEIGHT ABOVE FINISHED GRADE FOR EACH CUTOUT AS SHOWN



DETAIL C

(4) COVER PLATES PROVIDED UPON REQUEST (CHARGES APPLY)
PLEASE SPECIFY TYPE AND QUANTITY REQUIRED:

- ☐ PLATE & STRAP
- ☐ POP-RIVET COVER PLATE
  HOW MANY REQUIRED?_____

NOTE: BUILDING DEPICTED ON THIS SHEET FOR ILLUSTRATION PURPOSES ONLY. ACTUAL LAYOUT AND FRAME MEMBER QUANTITIES VARY BY DESIGN. PLEASE REFER TO ELEVATION AND FRAME SHEETS IN THIS PRELIMINARY FOR ORDER-SPECIFIC CONFIGURATION.

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616.396.0944 FX

Electrical

DRAWN BY:	RGB
DATE:	1/18/2024
PRELIMINARY ID:	82159
REVISION:	A
BUILDING TYPE:	RG50X70M-P4
PROJECT NAME:	

SHEET 5.0

DWG:ineering\Standards\Shelters\RG\50X70\M-P4-20-90-30\Drawings\Preliminary\RG50x70M-P44-20-90-30-82159.DWG

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General Notes:

Age Group

☐ 2-5yrs ☑ 5-12 yrs ☐ 2-12yrs ☐ 13 yrs

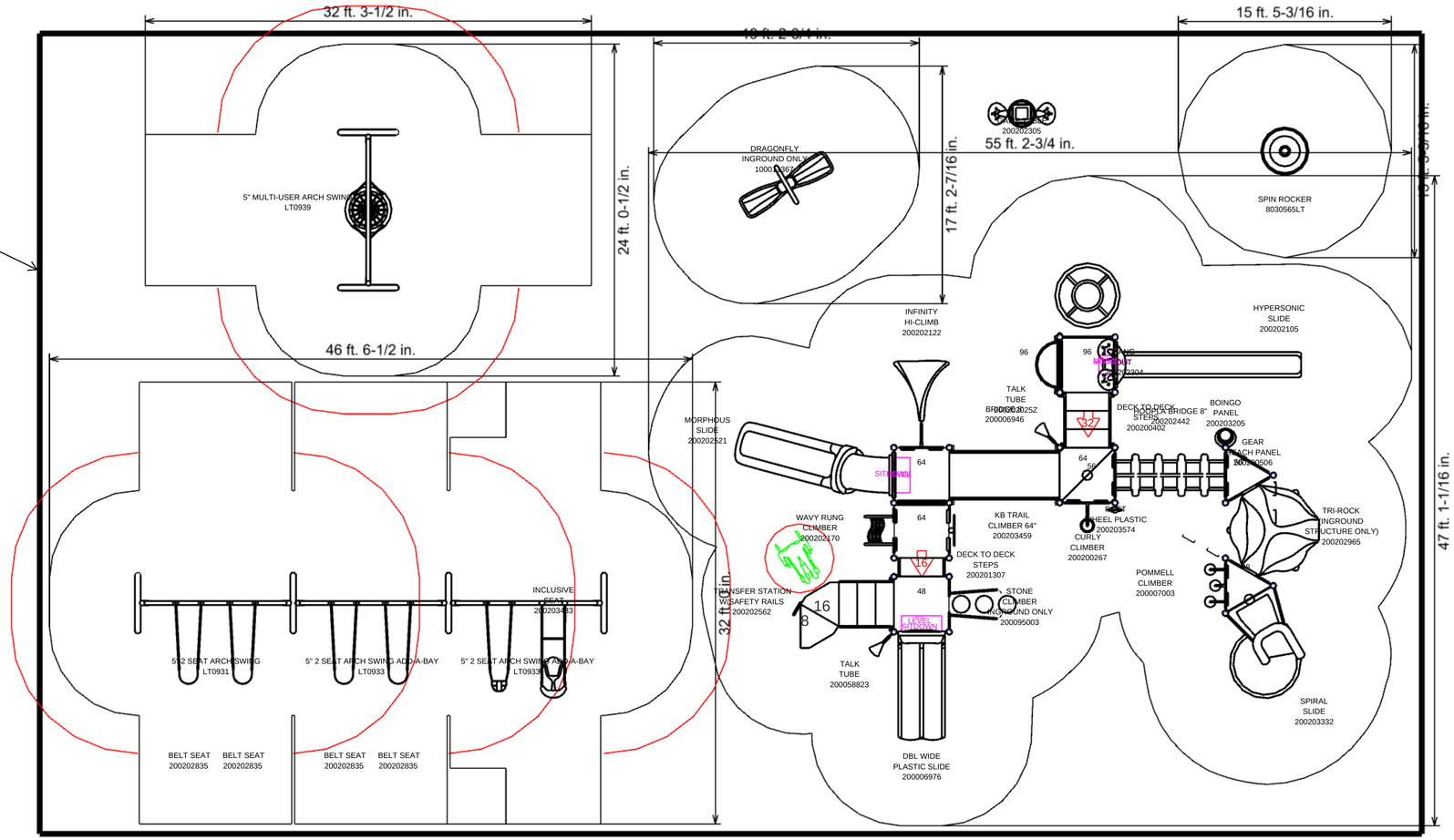
1. The Americans with Disabilities Act (ADA) may require that you make your park and/or playground accessible when viewed in its entirety. Please consult your legal counsel to determine if the ADA applies to you.
2. For playground equipment to be considered accessible accessible surfacing must be utilized in applicable areas.
3. Although a particular playground design may not meet the proposed Access Board Regulations in regards to the appropriate number of ground level events the actual playground may be in compliance when considering existing play components.
4. All deck heights are measured from top of ground cover.
5. Fall absorbing ground cover is required under and around all play equipment.
6. The minimum recommended fall zone around the entire playstructure is shown. This zone is to be free of all tripping or collision hazards (i.e. roots rocks border material etc.).
7. All post lengths are identified by text showing the post lengths i.e. 96 represents a 96 inch post.
8. Not all equipment may be appropriate for all children. Supervision is required.

AGE GROUP: 5-12_ASTM			
ELEVATED PLAY ACTIVITIES - TOTAL:	13		
ELEVATED PLAY ACTIVITIES ACCESIBLE BY TRANSFER:	13	REQ'D	7
ELEVATED PLAY ACTIVITIES ACCESIBLE BY RAMP:	0	REQ'D	0
GROUND LEVEL ACTIVITY TYPE:	9	REQ'D	3
GROUND LEVEL QUANTITY:	16	REQ'D	4

little tikes COMMERCIAL

NOTICE:
PLAN LAYOUT SHEET AS PROVIDED BY GREAT LAKES RECREATION COMPANY, OR APPROVED EQUAL. REFER TO SPECIFICATIONS IN BID BOOK 11 68 13 (PLAYGROUND EQUIPMENT).

PLAYGROUND CONCRETE CURB EDGE - SEE CONSTRUCTION PLANS L-701 (DETAIL #8)



Project: St John Neighborhood
Flint, MI

LTCPS rep:
Steve Sharda
GREAT LAKES RECREATION COMPANY
616-210-4522

Ground Space: 86' x 46'-6"
Protective Area: 99' x 57'

Drawn by: Steve Sharda
Date: 08/11/2025
DWG Name: 24007860

LTCPS - Farmington
878 East Highway 60
Monett Missouri 65708
Voice: 1-800-325-8828
Fax: 417-354-2273

Playground Layout Compliance:

☑ ASTM F1487 - Playground Equipment for Public Use.
☑ CPSC Handbook for Public Playground Safety

☑ This playground design meets the final Access Board Regulations.

IPEMA CERTIFIED ASTM F1487

The play components identified in this plan are IPEMA certified.The use and layout of these components conform to the requirements of ASTM F1487.