



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



The Paint Creek Trailways Commission, in partnership with the Oakland Township Parks and Recreation Commission, is seeking proposals from experienced and qualified firms to provide engineering design services for Paint Creek Trail Bridge 33.7. This project's engineering design services must meet all the requirements of the Transportation Alternatives Program and the Michigan Natural Resources Trust Fund grants that are matching local funding to finance this project. Sealed proposals must be received at the Oakland Township Clerk's Office at 4393 Collins Road, Rochester, MI 48306 by **Thursday July 20, 2017 at 2:00 P.M., Local Time**, when the names of proposers will be announced.

The Oakland Township Parks and Recreation Commission, in partnership with the Paint Creek Trailways Commission, officially distributes bid documents from the Charter Township of Oakland Clerk's Office, 4393 Collins Road, Rochester, MI 48306; the Oakland Township website [www.oaklandtownship.org](http://www.oaklandtownship.org); the Paint Creek Trailways Commission office, 4480 Orion Road, Rochester, MI 48306; the Paint Creek Trail website [www.paintcreektrail.org](http://www.paintcreektrail.org); or through the Michigan Intergovernmental Trade Network (MITN) at [www.mitn.info](http://www.mitn.info)). Copies of bid documents obtained from any other source are not considered official copies. Only those vendors who obtain bid documents from either Charter Township of Oakland Clerk's Office or website, the Paint Creek Trailways Commission office or website, or the MITN System are guaranteed access to receive addendum information, if such information is issued.

The Paint Creek Trailways Commission, in partnership with the Oakland Township Parks and Recreation Commission, reserve the right to reject any and all proposals. Any deviation from the specifications must be noted on the proposal.

**SUBMIT SEALED PROPOSAL ON OR BEFORE JULY 20, 2017 AT 2:00 P.M. TO:  
OAKLAND TOWNSHIP CLERK  
CHARTER TOWNSHIP OF OAKLAND  
4393 COLLINS ROAD  
ROCHESTER, MICHIGAN 48306**

All proposals (including 8 copies) must be marked "**RFP – ENGINEERING DESIGN SERVICES PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION**" and submitted in a Sealed Envelope **TO THE PHYSICAL ADDRESS LISTED ABOVE** BY 2:00 P.M. Local Time on THURSDAY JULY 20, 2017. Proposals submitted after this time will be returned unopened.

Questions regarding the proposal **must be made in writing and sent to Kristen Myers, Trail Manager, Paint Creek Trailways Commission, 4393 Collins Road, Rochester, Michigan 48306; [manager@paintcreektrail.org](mailto:manager@paintcreektrail.org); (fax: 248-601-0106) prior to Monday July 17, 2017, at 10 A.M. (local time)**, at which time a response will be prepared and forwarded to all vendors.

**Mandatory Pre-Proposal Meeting**

A mandatory pre-proposal meeting, including a site visit to Bridge 33.7, will be held starting at **10:00 a.m. at the Paint Creek Cider Mill on THURSDAY JULY 6, 2017**. Contractors will have an opportunity to observe the project location for bid purposes. Bids will not be accepted from firms who fail to attend this meeting.



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**Overview**

The Paint Creek Trailways Commission is seeking engineering design services for Paint Creek Trail Bridge 33.7. The Commission's objective is to replace a 93 year old timber railroad bridge that is 61' long, and less than 9' wide, with a universal design bridge to greatly improve accessibility for both trail users as well as emergency and maintenance vehicles. We are interested in designs and structure options that require almost no maintenance during the life of the bridge, and are aesthetically appropriate for the Paint Creek Trail. The proposed bridge designs shall also satisfy the following conditions:

1. Minimum clear bike/multi-use path width of 14 feet
2. Bicycle speed of 20mph
3. The structure shall be designed for 90 psf pedestrian live load and a 10-ton (20,000 pound) emergency vehicle loading
4. The live load deflection shall not exceed 1/500 of the span length

In addition, the proposed bridge designs shall be designed in accordance with the current AASHTO Specifications for Highway Bridges, the AASHTO Guide for the Development of Bicycle Facilities, and the Americans with Disabilities Act (ADA).

**Background**

The Paint Creek Trailways Commission is an intergovernmental agency comprised of Rochester, Rochester Hills, Oakland Township, and Orion Township in Oakland County, Michigan. It owns and manages the 8.9 mile Paint Creek Trail, and two additional undeveloped parcels in the City of Rochester. The Paint Creek Trail is located approximately 30 miles north of Detroit. General information regarding the Paint Creek Trail and the Paint Creek Trailways Commission is available at [www.paintcreektrail.org](http://www.paintcreektrail.org).

The Paint Creek Trailways Commission owns Bridge 33.7 and the parcel on which it is located in Oakland Township. The bridge is located on the Paint Creek Trail between Dutton and Silver Bell Roads. The bridge crosses the Paint Creek, southeast Michigan's premier cold-water trout stream. Through an intergovernmental and maintenance agreement, Oakland Township Parks and Recreation maintains the surface, Right-of-Way, and bridges in the Oakland Township section of the Paint Creek Trail

Funding for the Paint Creek Trail Bridge Renovation will be through a Michigan Natural Resources Trust Fund (MNRTF) grant, a Transportation Alternatives Program (TAP) grant, and Oakland Township Parks and Recreation. The Road Commission for Oakland County (RCOC) will be acting as the Act 51 Agency for the TAP grant. All MDOT submittals will be initially reviewed and approved by the RCOC prior to submittal to MDOT. Services provided under this proposal must follow the Code of Federal Regulations Title 23 and Michigan Department of Transportation Local Agency Programs Instructions for Preparing Federal Aid Projects to Bid through MDOT, dated May 2007.



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RFP-PCTC-17-02**



**Scope of Work**

Services sought by this Request for Proposal generally include, but are not limited to:

1. **Document Existing Conditions:** After review of existing engineering data, field investigations, surveys and environmental studies, recommend and obtain any additional necessary site information including but not limited to topography, hydrology including water levels, creek bed/floodplain delineation, scour analysis, and geotech study (soil borings).

Document Paint Creek Trailways Commission Right-of-Way and adjacent property ownership near the project site. This information should identify public/private ownership and any existing easements or restrictions on affected property. Design engineer will map Right-of-Way information. The Paint Creek Trailways Commission completed an Act 132 property survey in 2008; this information is available for use, if requested.

Existing conditions to be noted are property ownership, topography, natural resource constraints, utilities, historic and archaeological constraints, Right-of-Way, construction access constraints, and any other potential constraints as determined by the design engineer.

2. **Identify Right-of-Way Issues:** This project may require temporary grading permits/easements, temporary construction permits/easements, and permanent easements. The consultant will identify the type, location and scope of any required permits or easements and map that information.
3. **Identify Utility Conflicts:** Identify and discuss all public and private underground and overhead utilities. Include a preliminary assessment of whether any relocation will be required. The assessment should include identification of owners potentially impacted by utilities.
4. **Identify Natural and Cultural Resource Constraints and Permitting Requirements:** Review natural and cultural resource issues including wetlands, surface waters, flora/fauna, endangered species, storm water, hazardous material sites, forest land, historic, archaeological and architectural resources and agricultural lands. Assess the impact of future stream instability, and evaluate scour and adverse flow conditions. Identify potential impacts on these resources and permitting requirements. When possible, documentation from appropriate state and federal agencies should be included to summarize the extent to which resources may or may not be impacted. The consultant will identify any permits that will likely be needed for the project.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



5. **Develop Conceptual Alternatives:** The consultant will be responsible for identifying potential alternatives for the renovation of Bridge 33.7. Design(s) shall be compatible with the existing trail and natural environment.
6. **Develop Preliminary Cost Estimates:** The consultant will develop preliminary cost estimates for further planning, design, construction and maintenance of the project. Cost estimates should include preliminary bid item quantities. Per foot or lump sum costs will not be acceptable. The estimates should be based on the assumption that the project will be constructed using a combination of grant and local funding and will be managed by the local community. The cost estimates should include amounts for construction, engineering, and inspection.
7. **Project Time Line:** The consultant will provide a project development time line that takes the project through design, permitting, and construction, including all tasks required to meet Project Planning Deadlines for Submittals to MDOT Local Agency Programs (LAP) (RCOC submittal must occur 4 weeks prior to LAP submittal):

October 2017:	Type, Size and Location Submittal
December 2017:	Grade Inspection Package Submittal to MDOT LAP including Preliminary Plans, Cost Estimate and indication of ROW needed
February 2018:	ROW Certification, Final Plans, Proposal and Estimate Submittal to MDOT LAP
May 2018:	Advertisement Start Date
June 2018:	Construction Letting Date
July 2018:	Construction Start Date
October 2018:	Construction End Date

8. **Presentation of Alternatives:** All of the proposed alternatives will be evaluated. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission will evaluate and consider each alternative based on, but not limited to, impact to natural resources, need for additional right-of-way, utility impacts, compatibility with trail aesthetics, impact to trail users, as well as estimated cost. Consultant will present different alternatives to both the Oakland Township Parks and Recreation Commission and the Paint Creek Trailways Commission, or at a joint meeting of both agencies. A public information meeting may be required. The outcome of this meeting(s) should be an alternative selected by both agencies for further development.
9. **Preliminary Report:** Using information from the above scope of work items, and site visits, the consultant shall submit a draft and final report outlining the findings of the study. A public informational meeting will be held to review the draft report before



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RFP-PCTC-17-02**



completion of the final report. The consultant is expected to include all of the elements listed in the RFP.

10. **Deliverables:** All documents should be provided in both hard copy (paper) and digital format per MDOT guidelines. All copies of draft and final reports shall be printed double sided. The consultant will provide four copies of the draft and final reports and an electronic version of both. Reports must be submitted a minimum of one full week prior to meetings at which they will be discussed, to be included in meeting packets.

The engineering design services may include, but not be limited to:

**Phase I**

- **Preliminary Design (Feasibility Study):**
  - Review all studies, constraints and parameters as may be applicable to the design of the project.
  - Conduct all meetings with Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission staff and communicate with affected Federal, State and other regulatory agencies to obtain information and to coordinate or resolve design matters, including historical, cultural and Threatened and Endangered species reviews.
  - Evaluate and review existing and proposed systems and facilities, including engineering data, field investigations, surveys and environmental studies, as required for Preliminary Design.
  - Recommend design alternatives and meet with Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission and staff at a joint meeting to determine design direction.
  - Prepare necessary evaluation reports and recommendations.
  - Prepare preliminary plan and timeline inclusive of design, obtaining construction easement(s) (if required) and construction.
  - Prepare preliminary cost estimates for construction, obtaining construction easement(s) (if required) and annual maintenance costs related to the bridge renovation.
  - Present the Phase I results at a joint meeting with the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.
  - Submit Type, Size and Location Information to RCOC/MDOT

**Phase II**

- **Final Design:**
  - Participate in public hearings conducted by Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission to assist in answering questions.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



- Prepare final plans, specifications, and cost estimates based on the preliminary plan approval and applicable Federal, State and Local regulations and requirements.
  - Adhere to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission published design standards and standard bidding format.
  - Prepare documents and submit to the MNRTF and TAP Programs (Submittal to RCOC/MDOT LAP of Grade Inspection Package including Plans when 60 – 80% complete, Cost Estimate, and indication of ROW needed)
  - Provide six (6) copies of engineering drawings and final contract specifications and two (2) complete copies on CD in format meeting MDOT requirements
  - Specifications shall be prepared in Microsoft Word format.
  - Submit and obtain all applicable permit approvals necessary for construction of the facilities. Permit review fees shall be covered by the Paint Creek Trailways Commission.
  - Attendance at joint meeting to present the final design to Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.
  - Submit ROW Certification, Final Completed Plans, Proposal and Cost Estimate to MNRTF and TAP Programs (RCOC/MDOT LAP)
- **Bidding:**  
MDOT LAP will oversee the advertisement for bids and the bidding process.
  - **Construction Engineering/Administration Services:**  
There will be the potential for the engineering firm that is awarded the contract for design engineering to also assume responsibility for the Construction Engineering/Administration Services.

To assist the engineering design firm, the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission will do the following:

- Provide the engineering design firm all information, as legally possible, in possession of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, which are relevant to the project.
- Examine all studies, test results, reports, sketches, drawings, specifications proposals and other documents presented/forwarded by the engineering design firm.
- Pay all advertising costs necessary to obtain bids from contractors.
- Pay all special permit fees, plan review fees, code review fees and engineering review fees.
- Pay for and/or arrange for reproduction and related costs associated with this project, such as blueprinting, photocopying, photographs, printing, binding, plans and specifications, etc. The engineering design firm shall provide estimated costs at the time of submitting a project cost estimate to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Deliverables:**

**Phase I**

- Evaluation Reports and Recommendations including geotech investigation (soil borings)
- Preliminary Plan and Timelines
- Construction, Grading, or other Permit/Easement Recommendations, if applicable
- Concept Plan and preliminary cost estimates and savings, including projected annual maintenance costs
- Provide four (4) hard copies of the draft Preliminary Design and electronic PDF, Microsoft Word files, and formats meeting MDOT requirements.
- Type, Size and Location Submittal

**Phase II**

- Grade Inspection Package Submittal to MDOT LAP including Preliminary Plans, Cost Estimate, and indication of ROW needed
- Submittal of ROW Certification, Final Plans, Proposal and Cost Estimate to MDOT LAP
- Final Construction Schedule
- Final Plans, Construction Documents and Specifications (6 sets copy-ready hard copy and electronic PDF, Microsoft Word files, and formats meeting MDOT requirements) to advertise for bids
- List of obtained applicable permit approvals and/or clearance letters concerning historical, cultural and Threatened and Endangered species reviews, MDEQ/USACE permit and RCOC Temporary Road Closure Permit

Included in this Request for Proposals are the following documents to assist firms in the submission of a proposal:

- Attachment A  
Bridge Inspection Report from 2013
- Attachment B  
Bridge Scoping Report from 2014
- Attachment C – Maps
  - a. Site Development Plan
  - b. Parcel Boundary Map
  - c. Topography Map
  - d. Project Location Map

Please also see the following link to the MNRTF grant application:  
<http://paintcreektrail.org/wordpress/mnrftf-grant-application>



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Mandatory Requirements**

These guidelines are provided to assist participating firms in formulating a thorough response. The successful firm shall ensure/understand that:

1. They will work closely with Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission staff during all phases of the work. The successful firm will be considered a key part of the project team. A strong, positive working relationship must be maintained.
2. All licenses required for a discipline by the State of Michigan shall be maintained during the course of the contract.
3. The firm will provide a single point of contact for the duration of the contract.
4. The firm will ensure a timely completion of plans and specifications.
5. The firm will comply with administrative procedures related to the project such as change orders, shop drawings, contract pay requests, etc.
6. The firm will utilize construction contract documents that have been approved by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.
7. The firm will meet with applicable Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission committees, Board of Trustees, and applicable municipal commissions to review project status, project budget and project planning, as required.

**Contract Period and Payment Terms**

A contractual period will begin following Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission approval of Phase I - Preliminary Design (Feasibility Study). Phase II work will commence following subsequent Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission authorization to proceed with Phase II.





**REQUEST FOR PROPOSALS  
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FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



Payment will be remitted net 30 days following receipt and authorization of an accurate monthly invoice that includes the following detailed project information:

Information for each discipline on each individual project:

- Itemization of all services performed
- Number of hours spent on each project
- Number of hours spent on project estimating
- Number of hours spent on miscellaneous services
- Fees associated with these hours
- Balance of costs remaining
- Reimbursable Expenses

**Qualifications and Minimum Evaluation Factors**

The following represents the principal selection criteria, which will be considered during the evaluation process.

1. Experience and Qualifications.

Engineering design firm shall have personnel who have experience with similar projects as described herein as well as experience in working with municipal government. Provide information on technical training and education of staff to be assigned to this project.

2. Capacity.

Enumeration of the firm's capability to accomplish the project with its present work force. Firms should clearly identify all disciplines available within the firm and those which will be subcontracted to others. State firm's availability, based on current and anticipated workload.

List of outside firms that will be involved in the design process. Provide for each firm the scope of responsibility and staff experience and qualifications.

3. Comparable Projects.

Provide a list of comparable projects that have been successfully completed by your firm. Include name, location and brief description of project, date of project, dollar value, name of company, contact name, address, and telephone number. List should include public sector (governmental) clients.

4. Methodology.

Provide the engineering design firm's method of approach or work plan summary to meet the Paint Creek Trailways Commission and Oakland Township Parks and



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FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



Recreation Commission's needs for this project. Include a proposed time frame for each phase of the project (A proposed construction date has not been established).

5. Cost Proposal.

Submit a description of how your firm proposes to charge the Paint Creek Trailways Commission for its services. Provide a not-to-exceed cost proposal for each project phase, including an hourly fee schedule for all personnel, number of hours proposed and reimbursable costs for this project. Submit the same information for all consulting firms affiliated with the project. Explain the Paint Creek Trailways Commission's responsibility for reimbursables and list all reimbursable expenses.

**General Conditions**

All proposals will be evaluated and ranked. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to reject any and all proposals or to make an award based directly on the proposals. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to negotiate separately with any proposer, when such action is considered in its best interest. Subsequent negotiations may be conducted, but such negotiations will not constitute acceptance, rejection or a counter-offer on the part of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. The firm selected for the award will be chosen on the basis of the apparent greatest benefit to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to interview any number of qualifying providers as part of the evaluation process. The decision of which provider to contact (if any) will be based on the selection criteria outlined in this document and as determined in the evaluation process. Meetings with shortlisted proposers will provide additional information and criteria upon which the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission will base its selection decision. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to select, and subsequently recommend for award, the proposed services which best meet their required needs, quality levels and budget constraints.

All proposals shall be in accordance with requirements of this notice in order to be deemed "responsive."

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission are not required to accept the lowest cost proposal in all or in part. The proposal award will not be based solely upon cost, but will be evaluated based upon criteria formulated around the most important features of the services, of which qualifications, experience,



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



references, or capacity may be overriding factors. The proposal evaluation criteria should be viewed as standards, which measure how well a vendor's approach meets the desired requirements and needs of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to reject any and all proposals, to waive any informality in the proposals received, and to accept any proposal (or part thereof) which it will deem to be most favorable to the interests of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission or to award to multiple proposers.

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to modify the scope of services during the course of the contract. Such modification may include adding or deleting any tasks this project will encompass and/or any other modifications deemed necessary. Any changes in pricing or payment terms proposed by the consultant resulting from the requested changes are subject to acceptance by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. Changes may be increases or decreases.

No proposal will be accepted from any person, firm or corporation who is in arrears upon any obligation to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission or who otherwise may be deemed irresponsible or unreliable by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.

All costs incurred in the preparation and presentation of this proposal, in any way whatsoever, shall be wholly absorbed by the prospective firm. All supporting documentation shall become the property of the Paint Creek Trailways Commission unless requested otherwise at the time of submission. The confidentiality or disclosure of any information submitted is governed by the Michigan FOIA. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission cannot promise, warrant or guarantee confidentiality nor that the information presented will be exempt from disclosure under the FOIA. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission may honor requests for confidentiality only to the extent that FOIA permits.

Ownership of all data, materials and documentation originated and prepared for the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission pursuant to the Request for Proposals and the subsequent contract shall belong exclusively to the Paint Creek Trailways Commission.

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to waive any informality in the proposal received, and to accept any proposal or part thereof, which it shall deem to be most favorable to the interests of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation. In no event will an award be made until all necessary investigations are made as to the responsibility and



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



qualifications of the consultant to whom it is proposed to make such award. Any contract awarded to a person or company who is discovered to have been in default or disqualified at the time of the award of the contract shall be voidable at the discretion of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.

Any deviation from the specifications must be noted in the proposal.

No proposal may be withdrawn after it has been submitted to the Oakland Township Clerk.

Municipalities are exempt from Michigan State Sales and Federal Excise Taxes. Prices quoted shall not include Federal or State taxes. The Paint Creek Trailways Commission will furnish the successful bidder with tax exemption certificates when requested.

Questions regarding the proposal must be made in writing and sent to Kristen Myers, Trail Manager, Paint Creek Trailways Commission, 4393 Collins Road, Rochester, Michigan 48306; [manager@paintcreektrail.org](mailto:manager@paintcreektrail.org); (fax: 248-601-0106) prior to Monday July 17, 2017, at 10 A.M. (local time), at which time a response will be prepared and forwarded to all vendors.

Only those persons designated above are authorized to seek additional information from prospective firms regarding their proposals. Correspondence or inquiries made directly to firms regarding their proposals from all other persons are to be directed to those employees designated above for appropriate review and response.

The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission shall reserve the right to terminate the contract without penalty upon 30 days written notice due to poor performance or for any reason deemed to be in its best interest. Designated representatives of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission will be solely responsible for determining acceptable performance levels. Their decision will be deemed in the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission's best interest and will be final. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserve the right to re-award the contract to the second most qualified proposal, re-bid the contract, or do whatever is deemed to be in its best interest.

The proposer will provide competent, suitable and qualified personnel to perform the work as required by the specifications. The proposer will designate a representative who will be the point of contact and will have the authority to act on behalf of the company. The proposer's representative will not be replaced without prior written notice to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. All communications given the proposer's representative will be as binding as if given to the company.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



No contract may be assigned, sublet or transferred without the written consent of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. Any subcontractor, so approved, shall be bound by the terms and conditions of this contract. The consultant shall be fully liable for all acts and omissions of its subcontractor(s) and shall indemnify the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission for such acts or omissions.

Advanced payments will not be authorized. Payments will be made on a time and materials basis and acceptance of services rendered. Correct invoices will be paid net 30 days, following the Paint Creek Trailways Commission's schedule for payment of invoices.

Contracts for work under this proposal will obligate the firm to not discriminate on the grounds of race, color, creed, religion or national origin in their employment practices.

It shall be the proposer's responsibility to make inquiry as to the changes or addenda issued. All such changes or addenda shall become a part of the contract and all bidders shall be bound by such changes or addenda. Addendums will be posted on the MITN system.

In the event bankruptcy proceedings are commenced by or against contractor or under any provisions of the United States Bankruptcy Act or for the appointment of a receiver or trustee or a general assignment for the benefit creditors of either party, the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission shall be entitled to terminate without further cost or liability. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission may cancel the Agreement/Contract or affirm the Contract and hold the contractor responsible for damages.

As this Request for Proposals is being made available by electronic means, the proposer accepts full responsibility to ensure that no changes are made to the Request for Proposals documents. In the event of conflict between a version of the Request for Proposals submitted by proposer and the version maintained by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, the version maintained by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission shall govern.

Proposers are advised that their proposal is considered to be under evaluation until contract award. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission staff are restricted from giving any information relative to the proposals or the "progress" of the evaluation during this time, except as described in this RFP and as required to administer the evaluation process. Proposers will be notified when an award is made and a notice posted on the MITN website. Proposal information will be available upon award of the contract.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Discrimination Prohibited**

The contractor shall not discriminate against any employee or applicant for employment with respect to hire, tenure, terms, condition or privileges of employment on a matter directly or indirectly related to employment, because of race, color, religion, national origin, age, sex, height, weight, or marital status pursuant to the Elliot Larsen Civil Rights Act, 1976, P.A. 453. The Agency and the Municipality shall also comply with the provisions of the Michigan Handicappers Civil Rights Act, 1976, P.A. 220 and the Federal Rehabilitation Act of 1973, P.A. 93-112, 87 Stat. 394, which require that no employee or client or otherwise qualified handicapped individual shall, solely by reason of his/her handicap, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal Assistance. No person shall, on the grounds of race, creed, color, sex, age, national origin, height, weight, handicap, or marital status be excluded from participation in, be denied the proceeds of, or be subject to discrimination in the performance of this contract. The Agency shall comply with all applicable regulations promulgated pursuant to the Civil Rights Act of 1964 as amended.

These general requirements shall be incorporated in the entire agreement between the Paint Creek Trailways Commission and the Contractor. The contract shall be binding upon the parties hereto and their respective successors and assigns.

**Insurance Regulations**

The vendor shall not commence work until he has obtained and delivered to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission the certificate of insurance and any endorsements required under this paragraph. All insurance carriers must be acceptable to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission and licensed and admitted to do business in the State of Michigan.

A new certificate of insurance shall be provided to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission each year at the time of policy renewal. Failure of the Vendor to maintain the required insurance shall be grounds for contract cancellation.

1. **Workers' Compensation Insurance.** The Vendor shall procure and maintain during the life of this contract, Workers' Compensation Insurance, including employers Liability Coverage, in accordance with all applicable statutes of the State of Michigan.
  
2. **Commercial General Liability Insurance.** The Vendor shall procure and maintain during the life of the blanket purchase order, Commercial General Liability Insurance on an "Occurrence Basis" with limits of liability not less than \$1,000,000 per occurrence and/or aggregate combined single limit, Personal Injury, Bodily Injury and Property Damage. Coverage shall include the following extensions: (A) Contractual Liability; (B) Products and Completed Operations Liability with limits of liability not less than \$1,000,000; (C)



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



Independent Contractors Coverage; (D) Broad Form General Liability Extensions or equivalent; (E) Deletion of all Explosion, Collapse and Underground (XCU) Exclusions, if applicable.

3. Motor Vehicle Liability. The Vendor shall procure and maintain during the life of this contract Motor Vehicle Liability Insurance, including Michigan No-Fault Coverages, with limits of liability of not less than \$1,000,000 per occurrence combined single limit Bodily Injury and Property Damage. Coverage shall include all owned vehicles, all non-owned vehicles, and all hired vehicles.
4. Umbrella Liability Insurance. The Vendor shall procure and maintain during the life of this contract Umbrella Liability Insurance with limits of liability of not less than \$1,000,000 per occurrence.
5. Professional Liability. Errors and Omissions of not less than \$2,000,000 per claim.
6. Additional Insured. Commercial General Liability and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following shall be Additional Insureds: "The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, and the Charter Township of Oakland, and each one's elected and appointed officials, all employees and volunteers, all boards, commissions and/or authorities and board members, including employees and volunteers thereof. This coverage shall be primary to the Additional Insureds, and not contributing with any other insurance or similar protection available to the Additional Insureds, whether other available coverage be primary, contributing or excess."
6. Cancellation Notice. Workers' Compensation Insurance, Commercial General Liability Insurance and Motor Vehicle Liability Insurance, as described above, shall include an endorsement stating the following "It is understood and agreed that Sixty (60) days Advance Written Notice of Cancellation, Non-Renewal, Reduction and/or Material Change shall be sent to Paint Creek Trailways Commission, 4393 Collins Road, Rochester, Michigan 48306."
7. Renewals. If any of the above coverages expire during the term of the contract, the Vendor shall deliver renewal certificates and/or policies to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission at least ten (10) days prior to the expiration date.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Hold Harmless**

To the fullest extent permitted by law, Vendor agrees to defend, pay on behalf of, indemnify and hold harmless the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, and the Charter Township of Oakland, and each one's elected and appointed officials, employees and volunteers and others working on behalf of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, and/or or the Charter Township of Oakland, against any and all claims, demands, suits, or loss, including all costs and attorney's fees connected therewith, and for any damages which may be asserted, claimed or recovered against or from the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, or the Charter Township of Oakland, and each one's elected and appointed officials, employees, volunteers or others working on behalf of the Paint Creek Trailways Commission by reason of personal injury, including bodily injury and death and/or property damage, including loss of use thereof, which arises out of or is in any way connected or associated with this contract.

**Instructions to Proposers**

- The following pages include a vendor questionnaire to be completed and submitted as your proposal with eight (8) copies. Each item must be completed with a response. Bidders not responding to any of the specifications or questions may be classified as unresponsive. The response must follow the format outlined in this proposal. Supplemental information may be attached.
- Any significant explanation desired by a proposer, regarding the meaning or interpretation of the Request for Proposals must be requested with sufficient time allowed for a reply to reach all prospective proposers before the submission of their proposals. Any information given to a prospective proposer concerning the RFP will be furnished to all prospective proposers as an amendment or an addendum to the RFP, if such information would be of significance to uninformed proposers. The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission shall make the sole determination as to the significance to uninformed proposers. Questions regarding the proposal **must be made in writing and sent to Kristen Myers, Trail Manager, Paint Creek Trailways Commission, 4393 Collins Road, Rochester, Michigan 48306; manager@paintcreektrail.org; (fax: 248-601-0106) prior to Monday July 17, 2017, at 10 A.M. (local time)**, at which time a response will be prepared and forwarded to all vendors.
- The proposal is to be completed in legible form, preferably typewritten.
- PLEASE MARK YOUR ENVELOPES: **"RFP – ENGINEERING DESIGN SERVICES PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION"**
- NO FAXED PROPOSALS WILL BE ACCEPTED.
- TIMELY SUBMITTAL: Proposals are accepted until **THURSDAY JULY 20, 2017, at 2:00 P.M. (local time)**. Late submittals will not be accepted.





**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



- All information requested herein shall be submitted with the Request for Proposals (RFP); failure to do so may result in rejection of the RFP as non-responsive and/or incomplete.
- The Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission reserves the right to reject any and all Request for Proposals (RFP), to waive any irregularity or informality in any RFP received, and to accept any RFP or part thereof, which shall be deemed to be most favorable to the interests of the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission.

**VENDOR QUESTIONNAIRE.**

Date:	
Firm Name:	
Address:	
City/State/Zip Code:	
Telephone Number:	
Fax Number:	
Contact Person:	
Contact Person Email:	

Date Firm Established:	
Years in Business:	

Type of Organization: (Circle One)
a. Individual
b. Partnership
c. Corporation
d. Joint Venture
e. Other

How many years has your company been providing engineering design services? Please explain.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



How many years has your company been providing engineering design, and construction engineering for municipal projects? Please explain.

--

How many clients does your company currently service with the type of service described? Explain the capacity of the services provided.

--

Please provide a list of client references (minimum of 5; maximum of 10 public sector clients). Include name, address, phone number, contact person and briefly describe scope of services performed.

--



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



How many employees does your company employ?
Full-Time:
Part-Time:

How many engineers/surveyors does your company employ?	
Total Engineers:	P.E. Licensed:
Traffic Engineers:	Civil Engineers:
Total Surveyors:	P.S. Licensed:

Describe the resources and experience you are capable of bringing to the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. Include specialty areas as follows:

**Engineering Design:**

**Bridges:**



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Construction Engineering/Administration (if you are interested in providing service in future):**

**Pathways:**

Submit profiles of staff that will work on this project and examples of similar work performed by each staff member.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



Describe methods of communication with your clients.

How are consultants managed within your organization?

Can you provide daily pick-up and deliveries? Please explain your process.

Is a contract required? If so, please attach a copy of your standard contract.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



What are your billing procedures?

Have you been involved in any litigation during the past five years? If so, provide an explanation.

Provide a description of the deliverables to be provided for the following:

**Preliminary Design:**



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



**Final Design:**

Provide a detailed work plan and project schedule for efficient turnaround time.

Provide a complete Cost Proposal including hourly rates for all personnel and services fee schedule (including meeting fees). Clearly define all relative direct and indirect costs. If you charge for administrative overhead, please explain.



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



Can you meet insurance requirements?	
YES <input type="checkbox"/>	NO <input type="checkbox"/>

List any exceptions/alternates to the specifications contained in this Request for Proposal.

**ADDENDA RECEIVED**

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

Addendum No. \_\_\_\_\_ Dated \_\_\_\_\_

The undersigned hereby declares that he/she has carefully examined the general conditions and specifications and will provide professional engineering services as described herein for the prices set forth in this proposal. Any changes to the specifications and its impact on the final cost will be discussed and mutually agreed upon before the delivery of the services.

It is understood that all proposed prices shall remain in effect for at least one hundred twenty (120) days from the date of the proposal opening to allow for the award and that, if chosen, the successful vendor's prices will remain firm through invoice.

The proposer affirms that he/she is duly authorized to execute this proposal, that this company, corporation, firm partnership, or individual has not prepared this proposal in collusion with any other proposer and that the contents of this proposal as to prices, terms or conditions have not been communicated by the undersigned, nor by any employee or agent, to any competitor, and will not be prior to the award and the proposer has full authority to execute any resulting contract awarded as the result of, or on the basis of the proposal.

By submission of a response the Proposer agrees that at the time of submittal, he/she: (1) has no interest (including financial benefit, commission, finder's fee, or any other remuneration) and shall not acquire any interest, either direct or indirect, that would conflict in any manner or degree with the performance of Proposer's services, or (2) benefit from an award resulting in a "Conflict of Interest." A "Conflict of Interest" shall include holding or retaining membership or employment on a board, elected office, department, division or bureau, or committee sanctioned





**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



by and/or governed by the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission. Proposers shall identify any interests, and the individuals involved on a separate paper with the response and shall understand that the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission, at their discretion may reject their proposal.

The Proposer, in submitting this proposal, agrees that the Proposer shall include in their resume any and all information pertinent to aiding the Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission in determining the abilities of the Proposer. Proposer shall submit, along with their proposal, a list of their equipment for Paint Creek Trailways Commission and Oakland Township Parks and Recreation Commission inspection. Proposer shall execute a contract awarded on the basis of this proposal within ten (10) days after being notified to proceed with work.

The undersigned certifies on behalf of the Proposer that the Proposer is not an "Iran Linked Business," as defined in the Iran Economic Sanctions Act of the State of Michigan, 2012 PA 517.

Firm Name: \_\_\_\_\_

Representative's Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



- **Attachment A: Bridge Inspection Report from 2013**

# Oakland Township BRIDGE INSPECTION REPORT PAINT CREEK TRAIL

Bridge Identification No. 33-7

## Bridge 33-7 over Paint Creek

INSPECTION DATE: August 28, 2013

INSPECTED BY: Gerrad A. Godley, PE  
Mukesh Bhatt

PREPARED BY: Spalding DeDecker Associates, Inc.  
905 South Boulevard East  
Rochester Hills, MI 48307  
(248) 844-5400

REPORT DATE: September 13, 2013



# TABLE OF CONTENTS

	Page #
1. Introduction.....	2
2. Project Information.....	2
3. Field Inspection.....	3
<i>Deck</i> .....	3
<i>Superstructure</i> .....	3
<i>Substructure</i> .....	3
4. Load Carrying Capacity .....	4
5. Conclusions & Recommendations .....	4
<i>Overall Condition</i> .....	4
<i>Observed Deficiencies and Recommendations</i> .....	6
 APPENDIX	
A. <i>Photographs</i>	
B. <i>MDOT BSIR (Bridge Safety Inspection Report) Form P2502</i>	
C. <i>Cross Sections (Upstream and Downstream Face)</i>	
D. <i>Level One Scour Analysis</i>	

# **BRIDGE INSPECTION REPORT**

## **Bridge 33-7 over Paint Creek**

### **Oakland Township**

## **INTRODUCTION**

Bridge 33-7 over Paint Creek was inspected by Spalding DeDecker Associates, Inc. on August 28, 2013 per the request by the owner, the Charter Township of Oakland, Parks and Recreation. The scope of the inspection is to detail the present condition of the structure, reviewing and evaluating prior reports, existing plans, construction details or other documents if available, and to perform a Level One Scour Analysis. The identification of findings is limited to the field visual inspection, review of previous inspection reports, and the review of previous computations. The contents of this report is not to provide a detailed engineering evaluation of the structure, but to identify possible deficiencies and to serve as a supplement to previous inspections performed on the structure. (Last inspected by Spalding DeDecker Associates, Inc. on June 3, 2004.)

## **PROJECT INFORMATION**

Structure 33-7 over Paint Creek was originally a timber railroad bridge built in 1924 and then converted into a pedestrian bridge for the Paint Creek Trail. The bridge width is 10'-2" with a clear trail way width of 8'-9½" and a length of 61'-4". The bridge has four (4) spans, each approximately 15' in length. The substructure is comprised of five (5) timber piers/bents, which appear to be supported on timber piles, with independent timber abutment/retaining walls at the north and south ends. The superstructure consists of 8"x8" square transverse wooden ties at 1'-2" on-center over six (6) steel beams with an 18" depth. The deck surface was constructed of wooden planks when the bridge was converted to pedestrian traffic.

## FIELD INSPECTION

The observations by Spalding DeDecker Associates, Inc. during the field visual inspection on August 28, 2013 of Bridge 33-7 over Paint Creek are summarized in this section, and include photographs taken while onsite (See Appendix A).

### *Deck*

Overall the deck is in FAIR condition with the main surface of the deck in good condition. The outer edges are showing signs of decay, with vegetation growth along the edges on both sides. Besides the timber railing having substandard opening widths, the southeast connection into the wooden ties is loose and is a safety concern if someone using the trail was to lean on/up against it. The wood tie has deteriorated at the railing connection point, and no longer provides the proper anchorage for the railing. The deck does not hold any surface water, and is draining properly, but the vegetation along the edges holds moisture, further contributing to the decay of the deck surface.

### *Superstructure*

The overall superstructure is in FAIR condition. The steel beams have lost most of its paint over the years and is rusted throughout the beam. Due to the rusting, signs of minor section loss are in the beginning stages. At this point, the beams are functioning as designed. As part of the superstructure, the 8"x8" wood ties are showing signs of decay along the outer edges; this is especially evident where the southeast railing is loose. The bearing plates have surface rust where exposed, and are functioning properly and in good condition.

### *Substructure*

The substructure is in FAIR condition, with concerns. The north abutment/retaining wall is in good condition with tight joints and is sound. The northern two (2) piers/bents are also in good condition. These locations are not exposed to the creek's normal water level and the footings and timber piles on the piers/bents are completely buried.

The south abutment/retaining wall is in poor condition. The entire wall (down to and below the footing) has been exposed, and is deteriorated with open joints. With the bottom exposed and the open joints causing deterioration, the abutment/retaining wall is

susceptible to the creek's flow and the backfill behind the abutment/retaining wall is being undermined and washing out. Evidence of this is from past experiences the Charter Township of Oakland Parks & Recreations has had with necessary repairs at the south approach, where sink holes have been repairs several times throughout the years (2009, 2011, and 2013).

The southern three (3) piers/bents are in fair condition, having exposed timber piles and footings. Scour is evident at these three (3) locations, and has undermined the entire footings.

## **LOAD CARRYING CAPACITY**

No significant changes in the structural bridge carrying capacity were observed during this inspection compared to conditions reported in 2004. Based on the previous calculations, the bridge live load capacity should remain limited to 12,000 pounds per axel.

## **CONCLUSIONS & RECOMMENDATIONS**

### *Overall Condition*

Bridge 33-7 over Paint Creek is in FAIR condition and is currently functioning as intended, but with some deficiencies. The most notable deficiency is the south abutment/retaining wall. This abutment/retaining wall has been exposed to the creek over the years and it has caused excessive deterioration. The wooden planks have shifted, creating gaps and open joints where the creek has infiltrated behind the wall, undermining/scouring the backfill (It was noted by Doug Caruso, Maintenance Foreman of the Charter Township of Oakland Parks and Recreation Department, that the Creek water level was at a season low, and typically the water level is much higher, this suggesting that the backfill is typically receiving the flow of the creek at a more constant interval). Due to this undermining/scouring of the abutment/retaining wall backfill, the Charter Township of Oakland Parks and Recreation has experienced the issue of the south approach getting sink holes. This has occurred several times in the past, first noticed in April 2009, again in 2011, and most recently, the day of the inspection. It

appears that the deterioration of the south abutment/retaining wall is the cause of the sink holes being experienced along the south approach.

Another significant deficiency is the southern three (3) piers/bents. A probe rod was used to check the stability of the creek bed at the footing locations, and the results indicated where the bottom of the footing wasn't exposed, the silt built up was easily penetrated and during a high flow event, the silt would be washed out. Each has evidence of scour along the footings/bottom beam of bents; the first indication is the exposed timber piles. The complete bottom beams of the bents were exposed on one side of each of the three piers/bents and there is evidence of scour at these three locations. The south most footing is exposed on the north side, the next footing to the north is exposed on the north side, with stone/rip rap protection along the south side, and the center pier/bent's footing is exposed on the south side and buried on the north side. At all three piers/bents, the probe rod was able to be inserted under the footings approximately one foot, approximately the entire width of the footing. Additional deficiencies include the railing openings, the southeast railing connection, and the deterioration/decay of the outer edges of both the wooden decking and ties.

Due to the age and apparent continuing deterioration observed during the field inspection of bridge 33-7 over Paint Creek, it is recommended that the Charter Township of Oakland, Parks and Recreation, implement a long term plan to replace this structure. The estimated cost associated with repairs and maintenance accumulated over the next 6 to 12 years will approach the replacement cost of the bridge. The items listed in the next section, *observed deficiencies and recommendations*, are considered short term (1 to 8 years) recommendations for this structure.



### *Observed Deficiencies and Recommendations*

1. *Observation:* The south abutment/retaining wall is in POOR condition, with exposed footing and open joints allowing the creek's flow to penetrate the backside of the wall and undermining/scouring the backfill.

*Recommendation:* Replace the abutment/retaining wall; sealing is an expensive option with temporary results due to the continue decay of the timbers.

*Estimated Construction Cost:* \$35,000 – \$50,000 (this replacement would be independent from the structure)

2. *Observation:* The southern three (3) piers/bents are in fair condition, with exposed footings and timber piles.

*Recommendation:* Place large/heavy rip rap protection along exposed footings. (NOTE: Rip rap used needs to be heavy enough to make sure it will not be washed away during a high flow event.)

*Estimated Construction Cost:* \$5,000 – \$10,000

3. *Observation:* There is vegetation growth along the east and west edges of the deck along the entire length of the bridge. This holds moisture and is accelerating the decay of the wooden deck.

*Recommendation:* Remove or inhibit vegetation. (NOTE: Removal of vegetation may expose more decay/rot of the deck boards; additional work maybe necessary once this area is exposed.)

4. *Observation:* The railing opening widths are not to standard. The southeast railing connection is loose; deterioration of the wooden tie has weakened the anchorage of the railing.

*Recommendation:* Replace railing to meet current standards with new connection points; at a minimum, secure the southeast connection.

*Estimated Construction Cost:* \$15,000 – \$25,000 to replace the railing.

# APPENDIX A

## Photographs



Looking North



Upstream Looking East

**APPENDIX A**  
Photographs



South Abutment/Retaining Wall / Pier/Bent Looking South



South Abutment/Retaining Wall Joint Openings / Holes

**APPENDIX A**  
Photographs



South Abutment/Retaining Wall Settlement of Timbers



South Pier/Bent Exposed Footing & Timber Piles

# APPENDIX A

## Photographs



Second Pier/Bent from the South Stone / Rip Rap protection on South Side



Second Pier/Bent from South Exposed Footing on North Side

# APPENDIX A

## Photographs



Downstream Looking West



North Abutment/Retaining Wall / Pier/Bent Looking North

**APPENDIX A**  
Photographs



Deck Edge at Southwest Corner



Pier/Bent Cap Second from the North, West Side

# APPENDIX B

## Bridge Safety Inspection Report (BSIR)

Michigan Department of Transportation  
Form P2502

Bridge Safety Inspection Report

Page 1

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date	<b>Legend</b> 9 New 7-8 Good 5-6 Fair 3-4 Poor 2 or Less Critical		
Bridge 33-7 over Paint Creek		GG/MB	SDA	8/28/13			
Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key		
Paint Creek	42.716	-88.157	33-7	2.4			
Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No. Pins
Oakland Twp/N. Dutton Rd	61.33	10.17	1924	N/A			

NBI INSPECTION

DECK

- |   |   |     |   |
|---|---|-----|---|
| 1. Surface<br>SIA-58A                   | 7 | 6   | Timber Deck - the main surface of the deck is in fair to good condition. The outer edges show signs of decay/rot with vegetation growth along both edges, entire length of structure. |
| 2. Expansion<br>Jts                     |   | N/A |   |
| 3. Other<br>Joints                      |   | N/A |   |
| 4. Railings                             | 7 | 6   | Timber Railings - have substandard opening widths. The Southeast connection into the wooden ties is very loose, wooden tie has deteriorated, not providing proper anchorage.          |
| 5. Sidewalks<br>or curbs                |   | N/A |   |
| 6. Deck<br>Bottom<br>Surface<br>SIA-58B |   | N/A | 8" x 8" Wooden Ties - showing signs of deterioration at outer edges and exposed surface. Vegetation growth is evident at exposed surfaces.  |
| 7. Deck<br>SIA-58                       | 6 | 6   | See Item 1 - fair condition overall   |
| 8. Drainage                             | 8 | 7   | Deck is draining, but debris is building up along edges, which will hold moisture and expedite deterioration.   |

Page 1



# APPENDIX B

## Bridge Safety Inspection Report (BSIR)

Michigan Department of Transportation  
Form P2502

Bridge Safety Inspection Report

Page 2

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date	Legend		
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	9 New		
Feature	Latitude	Longitude	Struc Num	Insp Freq	Insp Key		
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		
Location	Length	Width	Year Built	Year Recon	Br Type	Scour Eval	No.Pins
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>					<b>NBI INSPECTION</b> 04 13		

SUPERSTRUCTURE

- |                          |     |   |   |
|--------------------------|-----|---|---|
| 9. Superstructure SIA-59 | 7   | 6 | Beams are exposed with rust. Paint is barely evident. Minor section loss is beginning.  |
| 10. Paint SIA-59A        | 4   | 3 | Paint is barely evident, rust is on all beams.  |
| 11. Section Loss         | 7   | 6 | Rust buildup is beginning, showing signs of minor section loss.   |
| 12. Bearings             | 7   | 7 | Have surface rust where exposed, functioning properly and in good condition   |
| 13. Abutments SIA-60     | 6   | 5 | Timber Abutments - North Abutment is in good condition, tight joints and sound (out of water). South Abutment is in fair to poor condition, entire wall is exposed with much deterioration and opened joints. Backfill is exposed to water, allowing to undermine fill and washout of material. |
| 14. Piers SIA-60         | 6   | 6 | Timber Piers - South 3 piers have exposed timber piles and footings, scour is evident at these 3 locations under the entire footing. North 2 piers are not exposed to creek under normal water elevations and are completely buried   |
| 15. Slope Protection     | N/A |   | Appears that some stone/rip rap was placed at the south abutment/ pier, which is unstable and washing away with high water and creek flows.   |
| 16. Approach Pavt        | 7   | 7 | Gravel Approach - Non-motorized TRAIL. Aggregate path well maintained and in good condition. Repair made this morning on South approach. Appears due to washout from Abutment conditions.   |

Page 2

# APPENDIX B

## Bridge Safety Inspection Report (BSIR)

Michigan Department of Transportation  
Form P2502

Bridge Safety Inspection Report

Page 3

Facility	Federal Structure ID	Inspector Name	Agency/Consultant	Inspection Date	<b>Legend</b> 9 New 7-8 Good 5-6 Fair 3-4 Poor 2 or Less Critical		
Feature	Latitude	Longitude	Struc Num	Insp Freq		Insp Key	
Location	Length	Width	Year Built	Year Recon		Br Type	Scour Eval

04 13  
**NBI INSPECTION**

- 17. Approach Shldr Swalks 7 Approach Shoulders are grass covered, mowed and well maintained.
  
- 18. Approach Slopes Approximately 1 on 4, vegetation covered and stable.
  
- 19. Utilities N/A
  
- 20. Channel SIA-61 7 6 Minor debris present, tree branches, large limbs, rip rap washing out (unstable). Scour is evident at south 3 piers, under entire footing, timber piles are exposed.
  
- 21. Drainage Culverts N/A

<b>Guard Rail</b>	<b>Crit Feat Insp(SIA-92)</b>	<b>71 Watr Adeq</b> <input type="checkbox"/>	<b>General Notes</b>
36A <input type="checkbox"/>	<b>Freq</b> <b>Date</b>	72 Aprr Align <input type="checkbox"/>	
36B <input type="checkbox"/>	92A Frac Crit <input type="checkbox"/> <input type="checkbox"/>	Temp Supp <input type="checkbox"/>	
36C <input type="checkbox"/>	92B Und. Watr <input type="checkbox"/> <input type="checkbox"/>	Hi Ld Hit (M) <input type="checkbox"/>	
36D <input type="checkbox"/>	92C Spl.Insp <input type="checkbox"/> <input type="checkbox"/>	Special Insp Equip. <input type="checkbox"/>	
	Fatg Sntv.Insp <input type="checkbox"/> <input type="checkbox"/>		

# APPENDIX C

## Cross Sections

### BRIDGE CROSS-SECTIONS

DATE: 8/28/2013  
 STRUCTURE NO.: 33-7  
 CONTROL SECTION: N/A  
 ROUTE:  
 WATERCOURSE: Paint Creek

#### PREVIOUS CROSS SECTION

##### UPSTREAM FACE

BENCHMARK ELEVATION:             
 DESCRIPTION OF BENCHMARK:

UNDERCLEARANCE ELEVATION:  
 TOP OF ROAD ELEVATION:  
 WATER SURFACE ELEVATION:

DATE:	N/A		
REFERENCE ELEV:	<span style="background-color: yellow;">          </span>		
STATION	READING	ELEVATION	DESCRIPTION
0		0	
10		0	
15.5		0	
20		0	
22.5		0	
25		0	
30		0	
31		0	
40		0	
45		0	
50		0	
60		0	
61.3		0	

#### CURRENT CROSS SECTION

##### UPSTREAM FACE

BENCHMARK ELEVATION: 100  
 DESCRIPTION OF BENCHMARK: Deck

UNDERCLEARANCE ELEVATION: 97.3  
 TOP OF ROAD ELEVATION: 100  
 WATER SURFACE ELEVATION: 88.86

DATE:	8/28/2013		
REFERENCE ELEV:	<span style="background-color: yellow;">100</span>		
READING	ELEVATION	DESCRIPTION	
11.1	88.9	S. Abutment	
11.6	88.4	Channel Bottom	
2.7	97.3	S. Pier/Bent	
12.8	87.2	Channel Bottom	
13.6	86.4	Channel Bottom	
12.5	87.5	Channel Bottom	
12	88	Channel Bottom	
2.7	97.3	Mid Pier/Bent	
9	91	Channel Bottom	
2.7	97.3	N. Pier/Bent	
8.5	91.5	Channel Bottom	
6.1	93.9	Channel Bottom	
6.6	93.4	N. Abutment	

##### DOWNSTREAM FACE

BENCHMARK ELEVATION:  
 DESCRIPTION OF BENCHMARK:

UNDERCLEARANCE ELEVATION:  
 TOP OF ROAD ELEVATION:  
 WATER SURFACE ELEVATION:

DATE:	N/A		
REFERENCE ELEV:	<span style="background-color: yellow;">          </span>		
STATION	READING	ELEVATION	DESCRIPTION
0		0	
10		0	
15.5		0	
20		0	
22.5		0	
25		0	
30		0	
31		0	
40		0	
45		0	
50		0	
60		0	
61.3		0	

##### DOWNSTREAM FACE

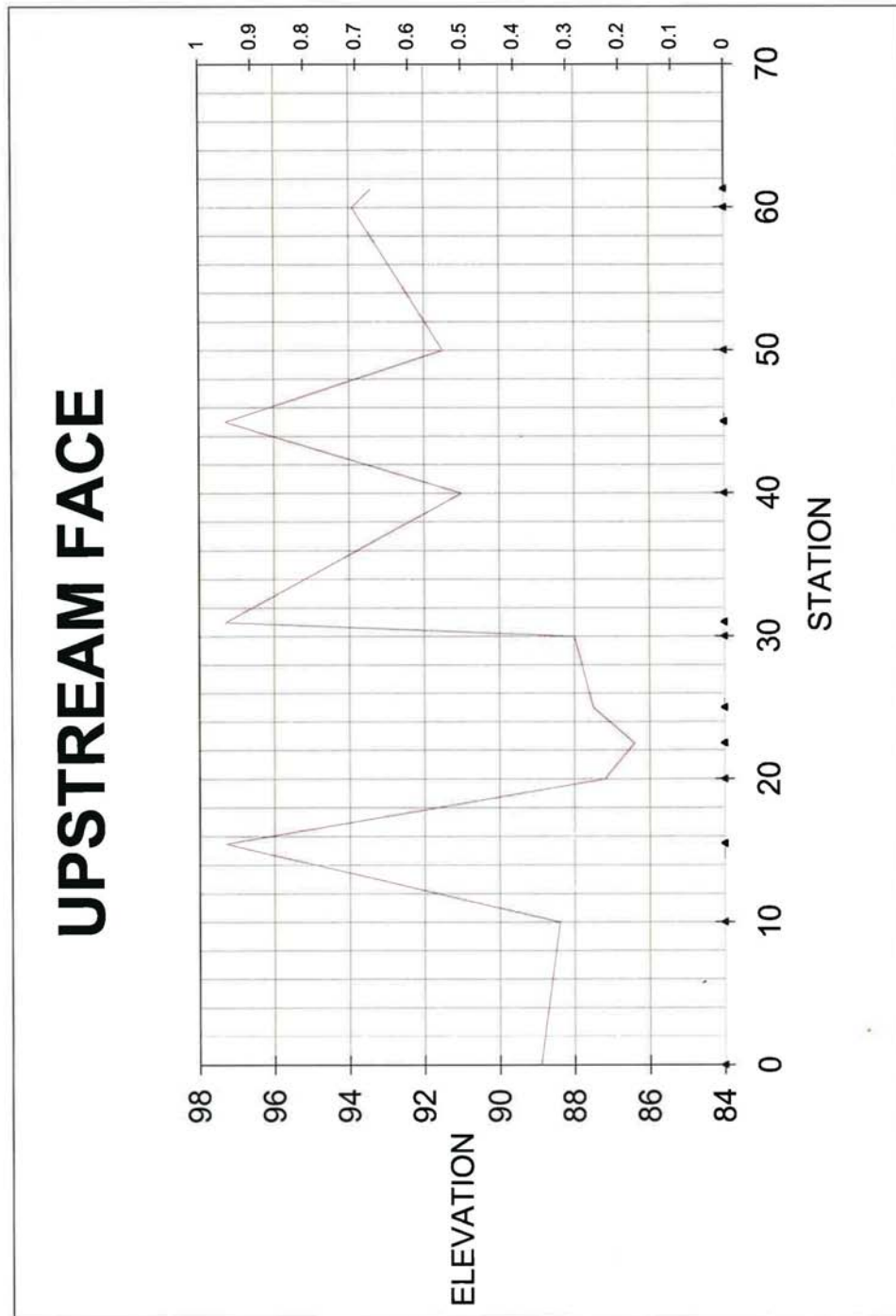
BENCHMARK ELEVATION: 100  
 DESCRIPTION OF BENCHMARK: Deck

UNDERCLEARANCE ELEVATION: 97.3  
 TOP OF ROAD ELEVATION: 100  
 WATER SURFACE ELEVATION: 88.86

DATE:	8/28/2013		
REFERENCE ELEV:	<span style="background-color: yellow;">100</span>		
READING	ELEVATION	DESCRIPTION	
11.1	88.9	S. Abutment	
11.8	88.2	Channel Bottom	
2.7	97.3	S. Pier/Bent	
12.65	87.35	Channel Bottom	
13.1	86.9	Channel Bottom	
13.4	86.6	Channel Bottom	
16.65	83.35	Channel Bottom	
2.7	97.3	Mid Pier/Bent	
9.4	90.6	Channel Bottom	
2.7	97.3	N. Pier/Bent	
8	92	Channel Bottom	
6.4	93.6	Channel Bottom	
5.9	94.1	N. Abutment	

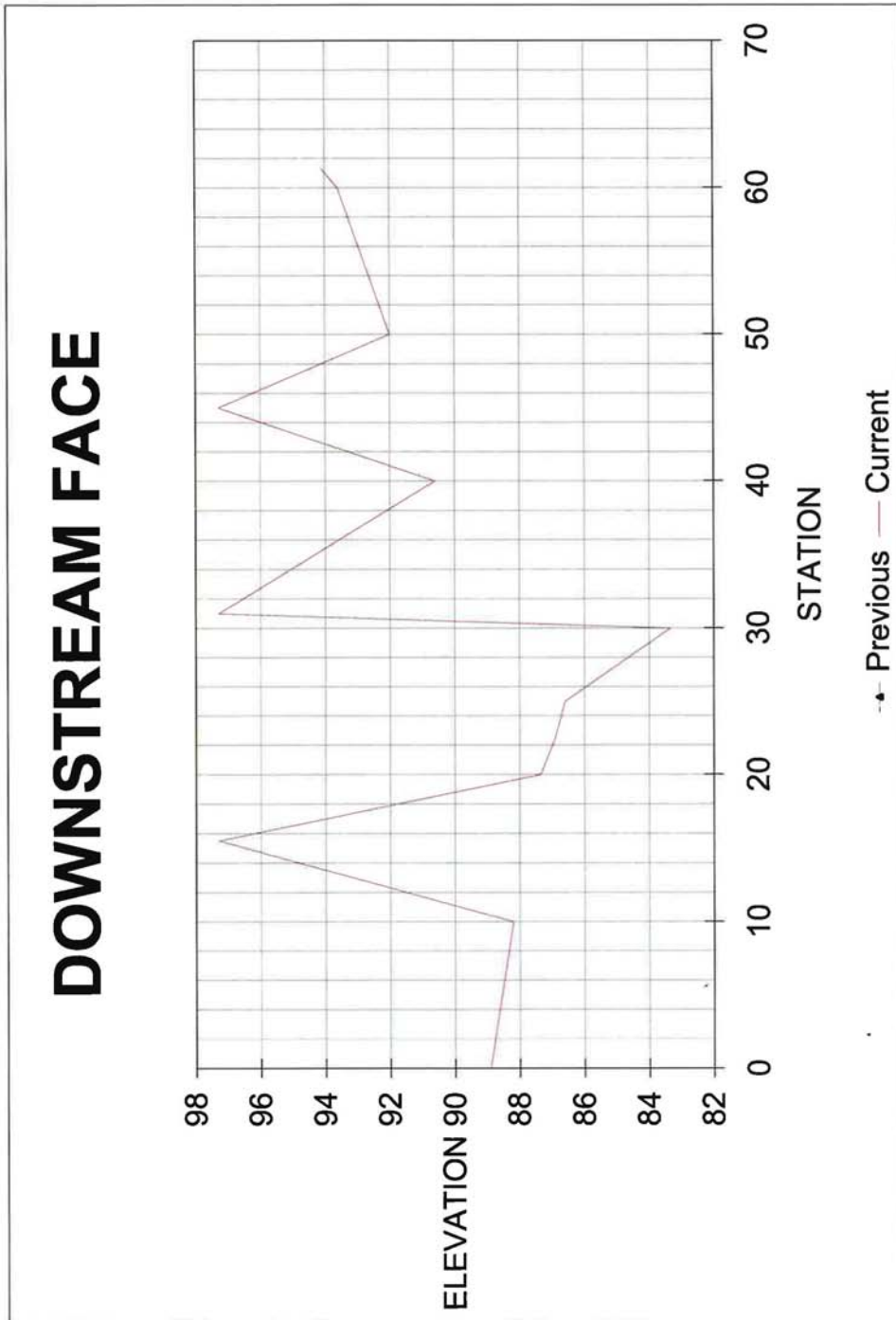
# APPENDIX C

## Cross Sections



# APPENDIX C

## Cross Sections



# APPENDIX D

## Level One Scour Analysis

6-D-9

Revised 5/06/02

### MICHIGAN DEPARTMENT OF TRANSPORTATION LEVEL ONE SCOUR ANALYSIS WORKSHEET

Date: 8/28/13 By: GAG Structure No: 33-7 Control Section: \_\_\_\_\_

Job No. \_\_\_\_\_ Route: \_\_\_\_\_ Watercourse: PAINT CREEK

All references are to HEC-20, 3<sup>rd</sup> Edition.

#### Data Collection

- N/A Plans
- Bridge Inspection Reports (Maintenance Division)
- N/A Underwater Inspection Reports (Maintenance Division)
- N/A Review existing items 60, 61, 71, 92, 93, and 113 of the NBIS
- N/A Review available construction, design, and maintenance files for repair and maintenance work done on structure

Field Investigation Date: 8/28/13

Channel bottom width approximately one bridge span upstream  $\cong$  30 feet

Overbank and channel Manning's roughness coefficients

~0.028 Left ~0.025 Channel ~0.040 Right

Is there sufficient riprap? Abutments SOUTH :: No Piers SOUTH 3 :: No  
NORTH :: Yes NORTH 2 :: Yes

Photographs

Cross sections at upstream and downstream faces of bridge

Comments:

#### Stream Characteristics

Complete the attached Figure 2.6 from HEC-20.

Comments:

**Land Use:** Identify the existing and past land use of the upstream watershed:

Urban Area	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Comments:
Sand and Gravel Mining	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Comments:
Undeveloped Land	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Comments:

MDOT Drainage Manual

# APPENDIX D

## Level One Scour Analysis

6-D-10

**Lateral Stability:** Refer to HEC-20, Section 2.3.9 on Channel Boundaries and Vegetation for channel bank stability. Comment:

**Vertical Stability:**

- |  |   |  |     |
|--|---|--|-----|
| - streambed elevation change from as-built plans?            | Yes <input type="checkbox"/>            | No <input type="checkbox"/>            | N/A |
| - exposed pier footings (degradation)?                       | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |     |
| - exposed abutment footings (degradation)?                   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |     |
| - channel bank caving in (degradation)?                      | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |     |
| - eroding floodplain (aggradation)?                          | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |     |
| - crossing at confluence or tributaries?                     | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |     |
| - bridge sites upstream and downstream?                      | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |     |
| - grade or hydraulic controls, i.e. dams, weirs, diversions? | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |     |
| - foundation on rock   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |     |
| - channel armoring potential                                 | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |     |

Comments:

**Stream Stability:** Make a qualitative assessment of the overall stream stability by referring to the above information and Figure 2.6 and Table 3.2 from HEC-20 (attach copies of figures).

Stable  Unstable  Degrading  Aggrading

Comments:

**RECOMMENDED NBIS ITEM 113 CODE:** \_\_\_\_\_

**LEVEL TWO ANALYSIS NEEDED:** YES  NO  N/A

Worksheet approved by: \_\_\_\_\_ P.E. License # \_\_\_\_\_ Date \_\_\_\_\_

MDOT Drainage Manual

# APPENDIX D

## Level One Scour Analysis

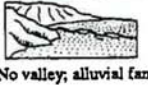
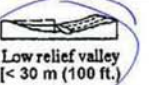


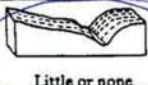
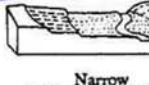
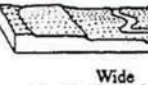
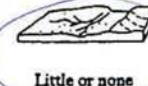



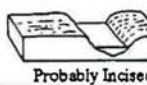
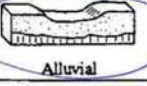

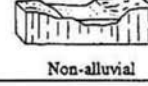


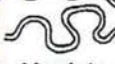

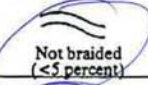
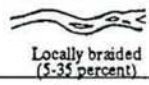
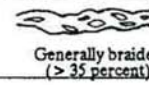
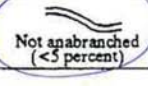
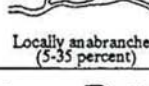
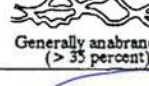

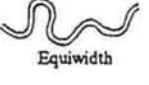
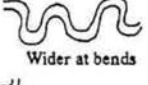

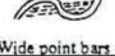
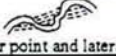
STREAM SIZE (Sect 2.3.2)	Small [< 30 m (100 ft.) wide]	Medium [30-160 m (100-500 ft.)]	Wide [> 150 m (500 ft.)]		
FLOW HABIT (Sect 2.3.3)	Ephemeral	(Intermittant)	Perennial but flashy	Perennial	
BED MATERIAL (Sect 2.3.4)	Silt-Clay	Silt	Sand	Gravel	Cobble or Boulder
VALLEY SETTING (Sect 2.3.5)	 No valley; alluvial fan	 Low relief valley [< 30 m (100 ft.) deep]	 Moderate relief [30-300 m (100-1000 ft.) deep]	 High relief [> 300 m (1000 ft.) deep]	
FLOODPLAINS (Sect 2.3.6)	 Little or none (< 2 x channel width)	 Narrow (2-10 x channel width)	 Wide (> 10 x channel width)		
NATURAL LEVEES (Sect 2.3.7)	 Little or none	 Mainly on concave	 Well developed on both banks		
APPARENT INCISION (Sect 2.3.8)		 Not Incised	 Probably Incised		
CHANNEL BOUNDARIES (Sect 2.3.9)	 Alluvial	 Semi-alluvial	 Non-alluvial		
TREE COVER ON BANKS (Sect 2.3.9)	< 50 percent of bankline	50-90 percent of bankline	> 90 percent of bankline		
SINUOSITY (Sect 2.3.10)	 Straight Sinuosity (1-1.05)	 Sinuous (1.06-1.25)	 Meandering (1.25-2.0)	 Highly Meandering (> 2.0)	
BRAIDED STREAMS (Sect 2.3.11)	 Not braided (< 5 percent)	 Locally braided (5-35 percent)	 Generally braided (> 35 percent)		
ANABRANCHED STREAMS (Sect 2.3.12)	 Not anabranching (< 5 percent)	 Locally anabranching (5-35 percent)	 Generally anabranching (> 35 percent)		
VARIABILITY OF WIDTH AND DEVELOPMENT OF BARS (Sect 2.3.13)	 Narrow point bars	 Equiwidth	 Wider at bends	 Random variation	
		 Wide point bars	 Irregular point and lateral bars		

Figure 2.6. Geomorphic factors that affect stream stability (adapted from FHWA 1978a).



## APPENDIX D

### Level One Scour Analysis

Table 3.2. Adjustment Factors for the Determination of n Values for Channels.

n factor	Conditions	n Value	Remarks
n <sub>1</sub>	Smooth	0	Smoothest channel
	Minor	0.001-0.005	Slightly eroded side slopes
	Moderate	0.006-0.010	Moderately rough bed and banks
	Severe	0.011-0.020	Badly sloughed and scalloped banks
n <sub>2</sub>	Gradual	0	Gradual Changes
	Alternating Occasionally	0.001-0.005	Occasional shifts from large to small sections
	Alternating Frequently	0.010-0.015	Frequent changes in cross-sectional shape
n <sub>3</sub>	Negligible	0-0.004	Obstructions < 5% of cross-section area
	Minor	0.005-0.015	Obstructions < 15% of cross-section area
	Appreciable	0.020-0.030	Obstructions 15-50% of cross-section area
	Severe	0.040-0.060	Obstructions > 50% of cross-section area
n <sub>4</sub>	Small	0.002-0.010	Flow depth > 2 x vegetation height
	Medium	0.010-0.025	Flow depth > vegetation height
	Large	0.025-0.050	Flow depth < vegetation height
	Very Large	0.050-0.100	Flow depth < 0.5 vegetation height
m	Minor	1.00	Sinuosity < 1.2
	Appreciable	1.15	1.2 < Sinuosity < 1.5
	Severe	1.30	Sinuosity > 1.5

3.12



**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



- **Attachment B: Bridge Scoping Report from 2014**

# Oakland Township BRIDGE SCOPING REPORT Paint Creek Trail

Bridge Identification No. 33-7

## Bridge 33-7 over Paint Creek

PREPARED BY: Spalding DeDecker Associates, Inc.  
905 South Boulevard East  
Rochester Hills, MI 48307  
(248) 844-5400

REPORT DATE: April 2, 2014



# TABLE OF CONTENTS

	Page #
1. Introduction/Scope.....	1
2. Existing Bridge and Site.....	2
3. Rehabilitation and Replacement Options .....	2
<i>Alternate #1 (Comprehensive Rehabilitation)</i> .....	3
<i>Alternate #2 (Precast Concrete Arch)</i> .....	5
<i>Alternate #3 (Prefabricated Steel Bridge)</i> .....	6
<i>Alternate #4 (Conventional Box Beam Bridge)</i> .....	7
4. Challenges.....	8
5. Innovations .....	9
6. Summary of Repair/Replacement Recommendations.....	12

## APPENDIX

### A. General Plan of Site

- i. Existing Site
- ii. Existing Site Topo
- iii. Existing Bridge w/ Rehabilitation Options
- iv. Precast Concrete Arch
- v. Prefabricated Steel Bridge
- vi. Conventional Box Beam Bridge

### B. Estimate Sheets

- i. Alternate #1
- ii. Alternate #2
- iii. Alternate #3
- iv. Alternate #4

### C. Detailed Estimate Sheets

- i. Alternate #1
- ii. Alternate #2
- iii. Alternate #3
- iv. Alternate #4

# BRIDGE SCOPING REPORT

## Bridge 33-7 over Paint Creek

### Oakland Township

#### INTRODUCTION/SCOPE

The existing structure, Bridge #33-7 over Paint Creek, is located within the Right-of-Way of the old Michigan Central Railroad (Formally known as the Detroit and Bay City Railroad Company), which is now the current location of the Paint Creek Trail. The bridge was inspected by Spalding DeDecker Associates, Inc. on August 28, 2013 per the request of the owner, the Charter Township of Oakland, Parks and Recreation. The inspection included visual observations of the bridge deck, superstructure, and substructure, including an evaluation of scour at the bents. During this inspection, the overall condition of Bridge #33-7 was found to be in fair condition; however, deficiencies were identified at the south retaining wall, scour at the three southern bents, decay of the wooden deck ties, and substandard and loose railings. Recommendations were made within the inspection report for repairs to the existing bridge, and are reviewed in more detail in this report. In addition to the rehabilitation of the existing bridge, several alternatives were explored for the reconstruction of the bridge over the Paint Creek for the Charter Township of Oakland's review to compare the costs of rehabilitation to replacement.

The contents of this report are to provide improvement strategy options for the bridge, including comprehensive rehabilitation to the complete replacement with detailed engineer's opinion of construction costs. The proposed bridge shall be designed in accordance with the current AASHTO Specifications for Highway Bridges, the AASHTO Guide for the Development of Bicycle Facilities, and the Americans with Disabilities Act (ADA).

## EXISTING BRIDGE and SITE

Bridge #33-7 over Paint Creek was originally a timber railroad bridge built in 1924 and then converted into a pedestrian bridge for the Paint Creek Trail. The bridge width is 10'-2" with a clear trail way width of 8'-9½" and a length of 61'-4". The bridge has four (4) spans, each approximately 15' in length. The substructure is comprised of five (5) timber bents, which appear to be supported on timber piles, with independent timber retaining walls at the north and south ends. The superstructure consists of 8"x8" square transverse wooden ties at 1'-2" on-center over six (6) steel beams with an 18" depth. The deck surface was constructed of wooden planks when the bridge was converted to pedestrian traffic.

Bridge #33-7 is along the Paint Creek Trail System, between Silverbell Road and Dutton Road. Within this mile of trail, there are three bridges over the Paint Creek, including Bridge #33-7, which is the middle bridge and is approximately 0.4 miles north of Dutton Road. Going across either the north or south bridge are currently the only access points available to get to Bridge #33-7. Due to this constraint, it creates challenges in doing any major work on the bridge. Details of these challenges will be discussed in a separate section below.

## REHABILITATION and REPLACEMENT OPTIONS

The proposed bridge, if replaced, shall be designed to satisfy the following conditions:

1. Minimum clear bike/multi-use path width of 14 feet.
2. The design bicycle speed of 20 mph.
3. The structure shall be designed for 90 psf pedestrian live load and a 10-ton (20,000 pound) emergency vehicle loading.
4. The live load deflection shall not exceed 1/500 of the span length.

The above standards were taken from the following design manuals:

The American Association of State Highway and Transportation Officials, *Guide for the Development of Bicycle Facilities*, 4<sup>th</sup> Edition, 2012 (*AASHTO Bike Guide*)

The American Association of State Highway and Transportation Officials, *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, 1<sup>st</sup> Edition, 2004 (AASHTO Pedestrian Guide)

The American Association of State Highway and Transportation Officials, *LRFD Guide Specifications for Design of Pedestrian Bridges*, 2<sup>nd</sup> Edition, 2009

Modifications for AASHTO LRFD Bridge Design Specifications to Incorporate or Update the *Guide Specifications for Design of Pedestrian Bridges*, 2009

These standards were developed to provide the safest traveled way for pedestrians on multi-use paths of both walking and riding individuals. The fourteen feet path width is to provide adequate shy distance between a walking and bicyclist meeting at the same location on the pathway. The bridge requirements are provided to meet the capacity of emergency vehicles. Utilizing these standards for the proposed bridge will enable the structure to meet the guidelines for potential funding.

Three alternate replacement designs were evaluated to determine the best option for replacement of the bridge. In addition, the first alternate is a rehabilitation option, maintaining the existing characteristics of the bridge.

### **Alternate #1 – Extensive Rehabilitation**



***Character of Existing Bridge Relatively Unchanged with Rehabilitation***

The existing four-span bridge is supported by five bents (piers) that work integrally to support the bridge superstructure (deck). Wooden retaining walls at the north and south end of the bridge retain the earth under the bridge approaches. Recommended rehabilitation items begin with the replacement of the failed southern retaining wall. This will require trail closure during the excavation, removal and replacement of the retaining wall. Other rehabilitation work addresses loose connections on the existing railings due to the deck decay. Replacement of rails to current standards is recommended, which will result in a new attachment location, as well. Deck preservation is necessary to remove or inhibit vegetation growth along the east and west edges of the deck; existing deck will be retained (replacement of deck is not necessary at this time, but will need to be considered within 10-15 years with an approximate cost of \$60,000, including removal and replacement to standard 14-foot clear width). Placement of heavy riprap (large natural or broken rocks, average 16-inch dimension) is needed at the exposed southern three bents to provide scour protection.

A design exception would be required for the clear width of the deck with this alternative, without the replacement of the deck, if federal funds were used. Expected life of repairs would be 1-8 years and would require annual maintenance.

*Alt #1 ADVANTAGES:* Lowest initial cost; addresses immediate maintenance concerns of the bridge; shortest trail closure time; replaces substandard railing

*Alt #1 DISADVANTAGES:* Does not eliminate bents within the waterway, causing log jams, maintenance to remove, and high water flows causing additional scour; existing deteriorating deck remains, not to current standards for clear width; trail needs to be closed for retaining wall replacement



## Alternate #2 – Precast Concrete



*Precast Concrete Arch with Decorative Finish and Weathered Steel Railing*

The proposed precast concrete arch bridge is a single span, 60-foot long, 3-sided or arch segmental precast concrete culvert (each segment is six feet wide). The superstructure consists of a precast concrete arch that will be filled with structural granular backfill. Since this type of structure is earthen backfilled over the arch, the trailway surface will be placed to match the existing aggregate trail. The arch is supported by concrete footings and precast wingwalls. Pedestrian railings will be integrated across the bridge and may be steel, wood or concrete. We have estimated and recommend weathered steel railings for minimal to no maintenance.

No design exceptions are required for this alternative. Expected life of precast concrete arch would be 50 years.

*Alt #2 ADVANTAGES:* Requires almost no maintenance during the life of the bridge; eliminates the maintenance of a bridge deck; once materials are delivered to site, speed of construction is relatively quick (arch and wingwalls are precast and delivered to site; quick assembly of delivered components compared to other alternatives); eliminates bents within the waterway, thus eliminating log jams that currently occur; aesthetics.

*Alt #2 DISADVANTAGES:* Highest cost of all alternatives; delivery of materials to site is difficult due to size and weight of precast concrete arches; may not be able to cross adjacent bridges if delivery route is along trail.

### **Alternate #3 – Prefabricated Steel Truss**



*Prefabricated Steel Truss, Weathered Steel*

This proposed steel arch bridge is a single span, 60-foot long prefabricated steel truss bridge. The superstructure will consist of a 60-foot long, prefabricated steel truss with a concrete deck. It can be a single unit or split and bolted together for project delivery. The bridge is supported by concrete abutments and wingwalls. The structural steel is weathered steel, with a natural oxidized appearance, requiring no painting or other maintenance schedule. Pedestrian railing is included for the safety of the trail users.

No design exceptions are required for this alternative. Expected life of prefabricated steel truss bridge would be 50 years.

*Alt #3 ADVANTAGES:* Structure requires little maintenance during the life of the bridge; weathered steel eliminates the need for painting; aesthetics; ease of delivery due to lighter weight of structure; lowest cost of the replacement options; speed of

construction is relatively quick (steel structure is preassembled prior to delivery); eliminates bents within the waterway, thus eliminating log jams that currently occur

*Alt #3 DISADVANTAGES:* May require occasional approach maintenance at the bridge/trail interface due to steel's high expansion/contraction rate in changing temperature

#### **Alternate #4 – Precast Prestressed Box Beam**



***Prestressed Concrete Box Beam and Weathered Steel Railing***

The proposed bridge is a single span, 60-foot long, precast, prestressed concrete box beam bridge consisting of approximately 6, 21-inch deep concrete box beams with a concrete deck. The bridge is supported by concrete abutments and wingwalls. Pedestrian railings will be integrated across the bridge and may be steel, wood or concrete. We have estimated and recommend weathered steel railings for a low maintenance solution.

No design exceptions are required for this alternative. Expected life of precast prestressed box beam bridge would be 50 years.

*Alt #4 ADVANTAGES:* Requires little maintenance during the life of the bridge; eliminates bents within the waterway, thus eliminating log jams that currently occur

*Alt #4 DISADVANTAGES:* This alternative has the longest construction duration and trail closure period of the alternatives; aesthetics are limited; delivery of materials to site is difficult due to size and weight of concrete beams; may not be able to cross adjacent bridges if delivery route is along trail.

## **CHALLENGES**

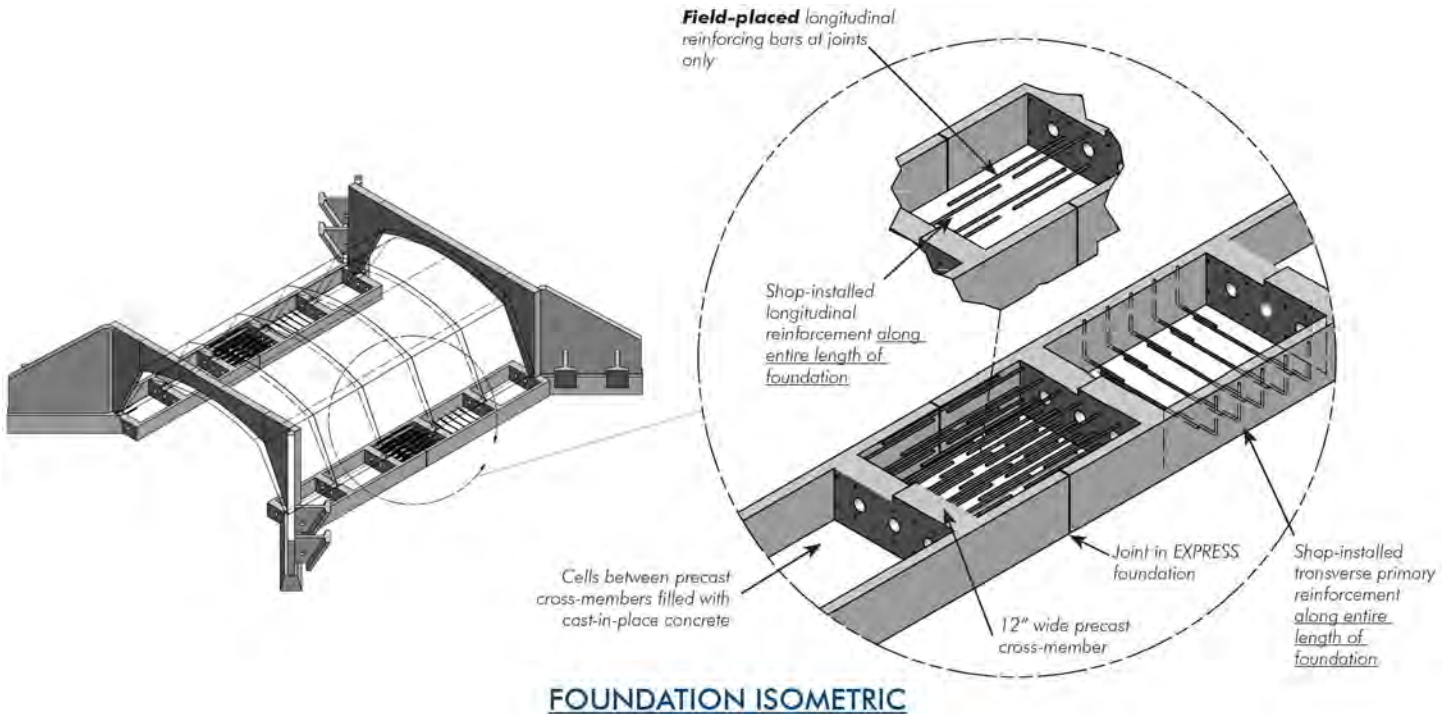
Bridge #33-7 is currently only accessible from the trail intersections at Silverbell Road or Dutton Road. Access from either point requires crossing of other structures to reach Bridge #33-7. From Silverbell Road, Bridge #34 must be crossed. Bridge #34 has an approximate 14-foot clear width, an approximate span of 48' 11" and was considered in overall good condition, based on the inspection completed in 2011. Accessing from the south off of Dutton Road, Bridge #33-4 will have to be crossed to access Bridge #33-7. Bridge #33-4 has an approximate 10' 9" clear width and an approximate span of 48-feet and was considered in overall good condition, based on the inspection completed in 2011. Both of these bridges have a carrying capacity of 42-Ton for a single unit truck and 77-Ton for a 2-unit or 3-unit truck.

Due to the constraints of the trail width and the necessity of having to cross other structures to get to the location of Bridge #33-7, access for equipment and materials will need to be closely evaluated during the design.

There is potential direct access to Bridge #33-7 via the adjacent private properties at the east end of Sunnywood Place. This would require the Township to obtain temporary easements through private properties.

## INNOVATIONS

Considering new ideas and methods can sometimes be beneficial to projects. They can reduce cost and/or the amount of time of construction. They provide an option, or different approach to the construction of typical projects. The following innovations have been provided for reference only. They have not been included in the estimates, and need to be evaluated during the design phase.

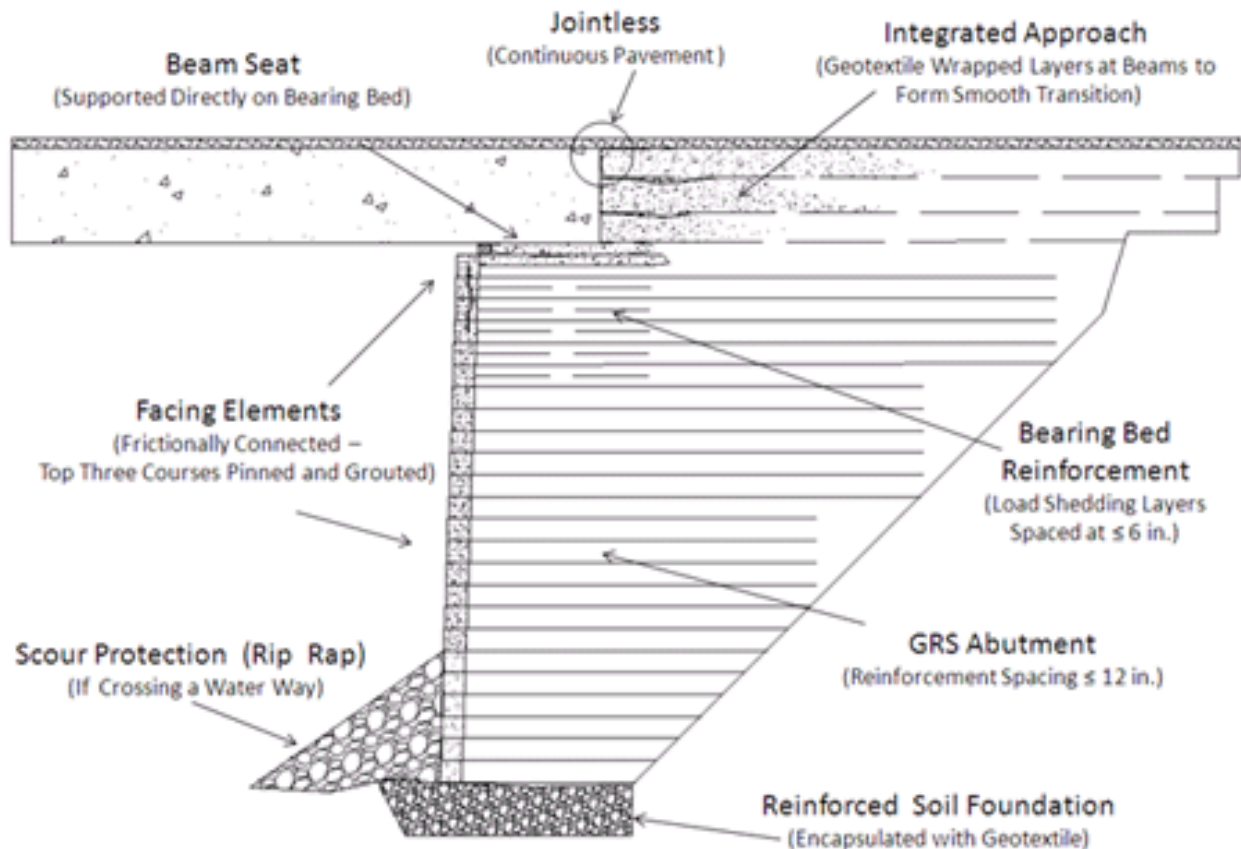


Precast Foundations are an alternative to conventional cast-in-place abutments, foundations, headwalls and wingwalls for the structure. They are utilized with the concrete precast arch.

**ADVANTAGES:** The advantage of precast foundations is that they provide ease and speed of installation. Reduces wingwall concrete quantities and the reinforcement to be placed on-site. Can be pile supported for scour alleviation.

**DISADVANTAGES:** Still requires access for field placed concrete, as only 27% is placed precast and 73% is cast-in-place concrete. This option will only work with the concrete precast arch alternative 2.

Utilizing a Geosynthetic Reinforced Soil (GRS) Integrated Bridge System (IBS) is an alternative to conventional bridge abutments. GRS IBS uses alternating layers of compacted granular fill material and fabric sheets of geo-textile reinforcement to provide support for the bridge. GRS IBS would be a viable alternative to conventional bridge abutments for alternative #3 and alternative #4 and can be evaluated during the design of these structures.



*ADVANTAGES:* The advantage of GRS IBS is that they are easier and faster to build with conventional equipment and materials, and construction cost is estimated to be 25 to 60 percent lower and easy to maintain because of fewer parts. The design can be easily modified in the field for unforeseen site conditions including, unfavorable weather conditions. GRS IBS is an environmentally sensitive option and results in minimal environmental impacts.



*DISADVANTAGES:* GRS IBS resists only small amounts of scour. Assessment of the impact of the stream instability, scour and adverse flow conditions would need to be evaluated carefully during design. Additional scour countermeasures could be necessary, reducing the cost-effectiveness of the GBS IBS abutments. A very new technology, only a few have been constructed in the United States, approximately 27.

## SUMMARY OF REPAIR/REPLACEMENT RECOMMENDATIONS

The table below summarizes the estimated construction costs for the four alternate designs analyzed:

	Alternative		Construction Cost*	% Difference**	Design Life (Years)	Cost Per Year of Service
	#1	Rehabilitation***	\$71,000		1-8	\$17,750
REPLACEMENT	#2	Precast Conc	\$521,000	32.6%	50	\$10,400
	#3	Prefab Steel	\$393,000	0%	50	\$7,900
	#4	Conc Box Beam	\$487,000	24.0%	50	\$9,750

\* Includes 20% Construction Contingency; does not include Design Engineering or Construction Engineering costs

\*\* Compared to the lowest *Replacement* cost alternative

\*\*\* Rehabilitation cost shown in above chart are immediate items of maintenance as outlined herein. Continuous maintenance will be required over the next fifty years and the items that are likely to be included, but not limited to, over that time frame are:

- Timber Bearing Replacement on Bent Caps (\$125,000)
- Deck Replacement (\$60,000)
- Potential Bent Replacement (\$145,000)
- 2<sup>nd</sup> Deck Replacement (\$60,000)

*Note: All cost are estimated in 2014 dollar values.*

Spalding DeDecker Associates' recommendation to the Charter Township of Oakland, Parks and Recreation is Alternate #3, the prefabricated steel bridge. This alternative has the lowest construction cost and requires little maintenance during the life of the structure. Materials and equipment for construction and delivery to the site is less complicated than the other replacement alternatives, as well.



**APPENDIX A**  
General Site of Plan

*Existing Site*

*Existing Site Topo*

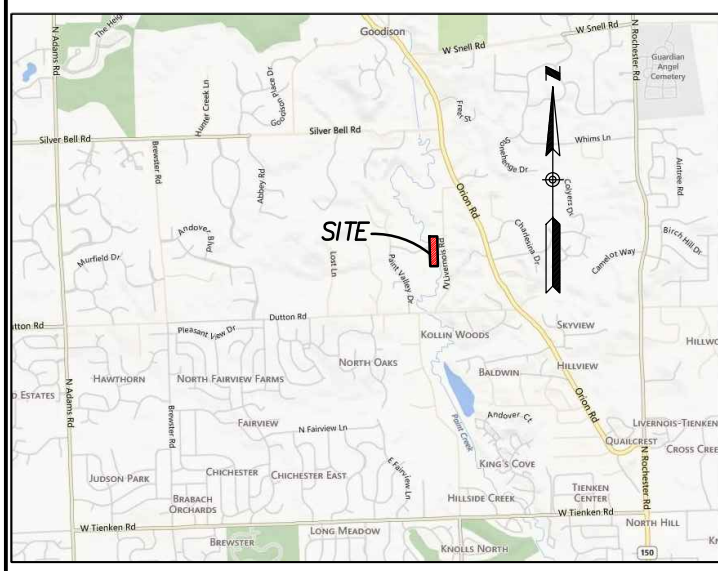
*Existing Bridge*

*Precast Concrete Arch*

*Prefabricated Steel Bridge*

*Conventional Box Beam Bridge*

- LEGEND**
- GAS
  - SANITARY SEWER (S/W)
  - STORM SEWER (S/W)
  - WATERMAIN (W/M)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CBL)
  - MANHOLE
  - CATCH BASIN
  - + SEWER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
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  - FIRE HYDRANT
  - SPRINKLER VALVE BOX
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  - CABLE TV RISER
  - AIR CONDITION UNIT
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  - UTILITY POLE WITH TRANSFORMER
  - UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
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  - LIGHT POLE WITH LAMP EXTENSION
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  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
  - GUY WIRE
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  - GROUND LEVEL OR DECORATIVE LIGHTING
  - FLAG POLE
  - PHONE OR PHONE BOOTH
  - CHAIN LINK FENCE (CL)
  - WOOD FENCE
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  - GUARD RAIL
  - METAL OR CONC. POST
  - MAILBOX
  - SIGN
  - WATER FOUNTAIN
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  - BILLBOARD OR LARGE SIGN
  - BASKETBALL HOOP
  - BOULDER
  - STATUE OR SCULPTURE
  - BENCH
  - INV. INVERT ELEVATION
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  - CENTERLINE OF DITCH
  - DITCH BANK/TOP OF SLOPE
  - PROPERTY LINES
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**PAINT CREEK TRAIL BRIDGE**  
AT MARKER 33.7

TOPOGRAPHICAL SURVEY

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

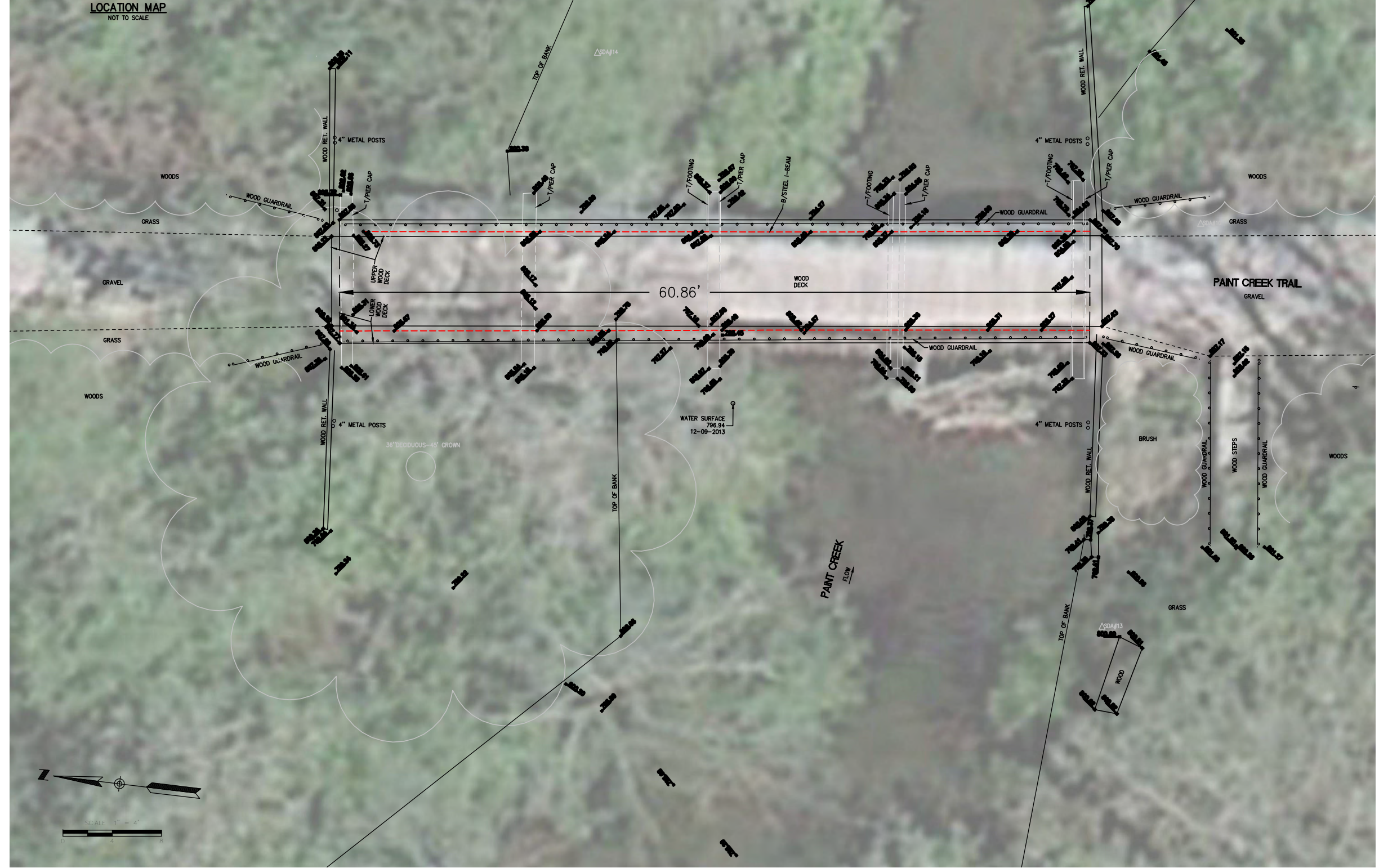
NO.	DATE	REVISION

DRAFTER L. THORNTON	DATE 12-18-13
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER	DEPARTMENT MANAGER G. PLATZ

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JOB NO. RB13-010	DRAWING NO. RB13010TP
SCALE 1" = 20'	SHEET NO. 1 OF 2

- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STW)
  - WATERMAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CBL)
  - MANHOLE
  - CATCH BASIN
  - + SEWER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
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  - HAND HOLE
  - ELECTRIC RISER OR METER
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  - CABLE TV RISER
  - AIR CONDITION UNIT
  - UTILITY POLE
  - UTILITY POLE WITH TRANSFORMER
  - UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
  - LIGHT POLE
  - LIGHT POLE WITH LAMP EXTENSION
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  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
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  - DITCH BANK/TOP OF SLOPE
  - PROPERTY LINES
  - STUMP
  - CONIFEROUS TREE
  - DECIDUOUS TREE
  - DECIDUOUS SHRUB
  - CONIFEROUS SHRUB
  - SECTION CORNER
  - TRAVERSE POINT
  - ① STRUCTURE NUMBER
  - ⑩ SDA POINT No.
  - SPOT ELEVATION
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**PAINT CREEK TRAIL BRIDGE AT MARKER 33.7**

TOPOGRAPHICAL SURVEY

SECTION 33  
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OAKLAND TOWNSHIP  
OAKLAND COUNTY

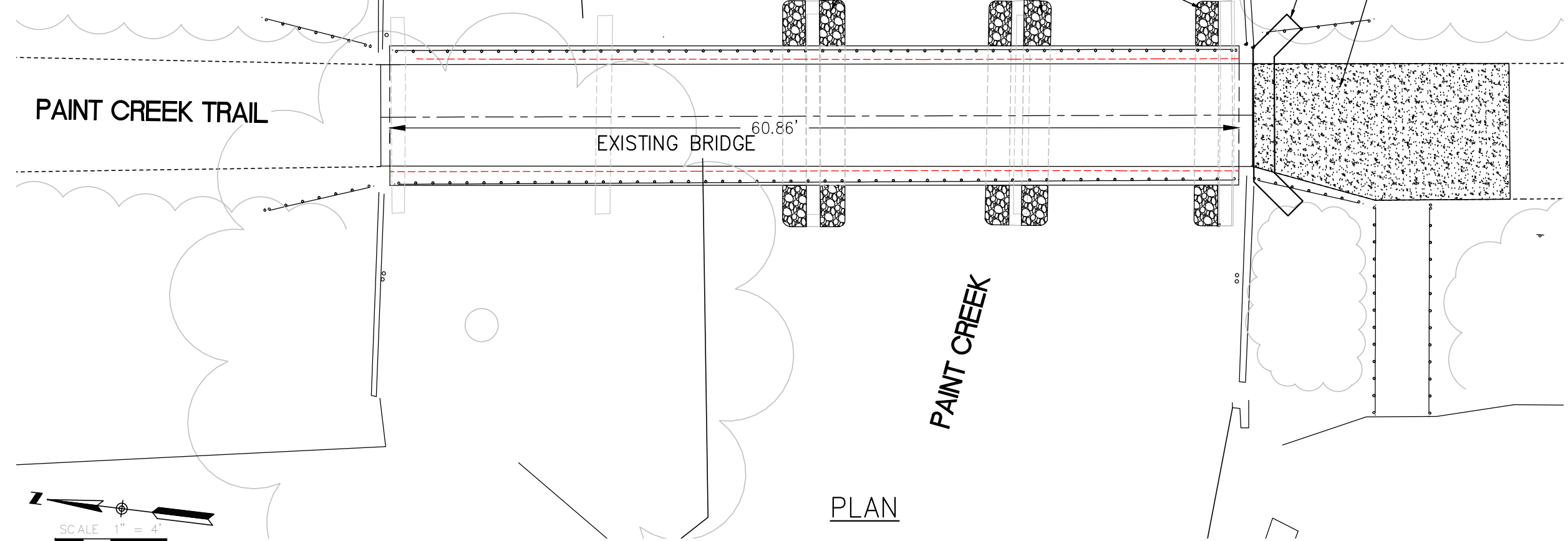
NO.	DATE	REVISION

DRAFTER L. THORNTON	DATE 12-18-13
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER	DEPARTMENT MANAGER G. PLATZ
<b>VERIFY SCALES</b>	
<b>BAR IS ONE INCH ON ORIGINAL DRAWING</b>	
<b>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</b>	
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SCALE 1" = 4'	SHEET NO. 2 OF 2

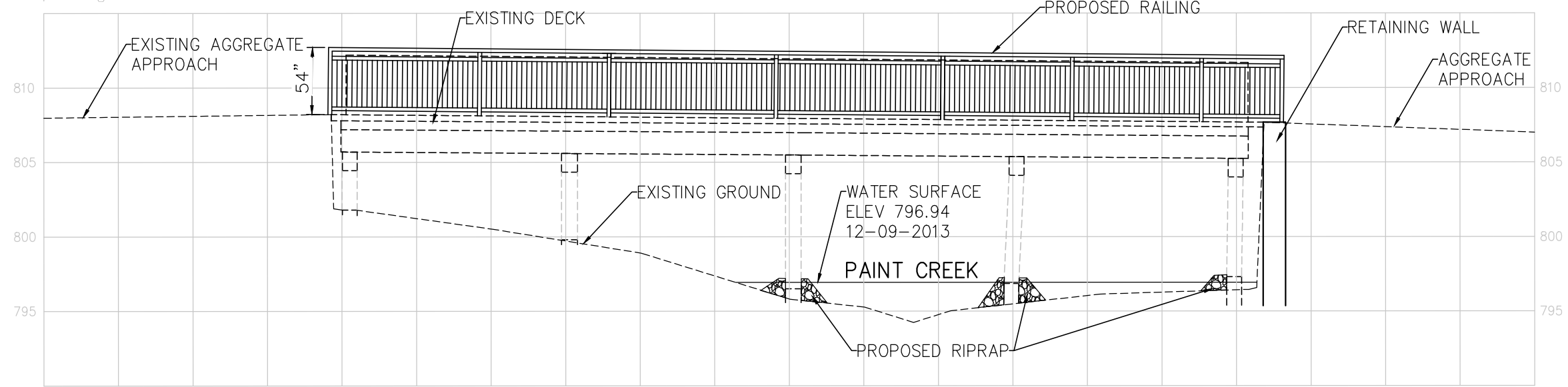
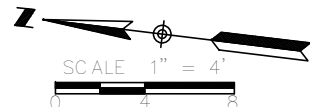
- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STM)
  - WATERMAIN (WM)
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  - CATCH BASIN
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  - MAG/TAG SET MAGNETIC NAIL W/SDA TAG
  - M MEASURED
  - R RECORD
  - C CALCULATED



**LOCATION MAP**  
NOT TO SCALE



**PLAN**



**PROPOSED BRIDGE ELEVATION**

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**PAINT CREEK TRAIL BRIDGE**

ALTERNATE #2  
PRECAST CONCRETE ARCH

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

NO.	DATE	REVISION

DRAFTER M. TONUCCI	DATE
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER G. GODLEY	DEPARTMENT MANAGER C. GREGORY

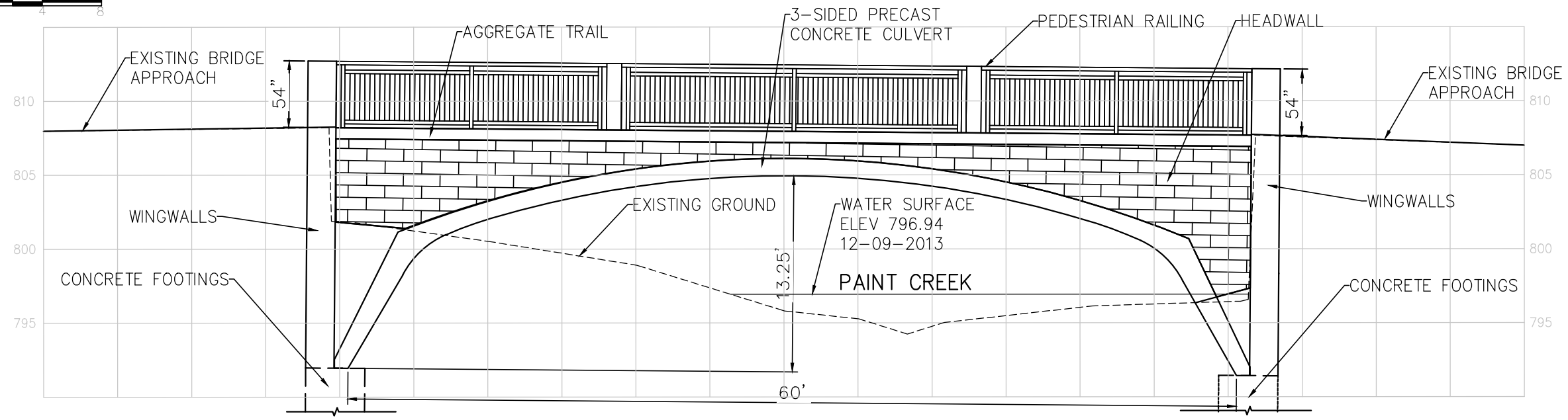
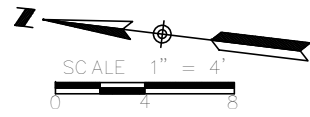
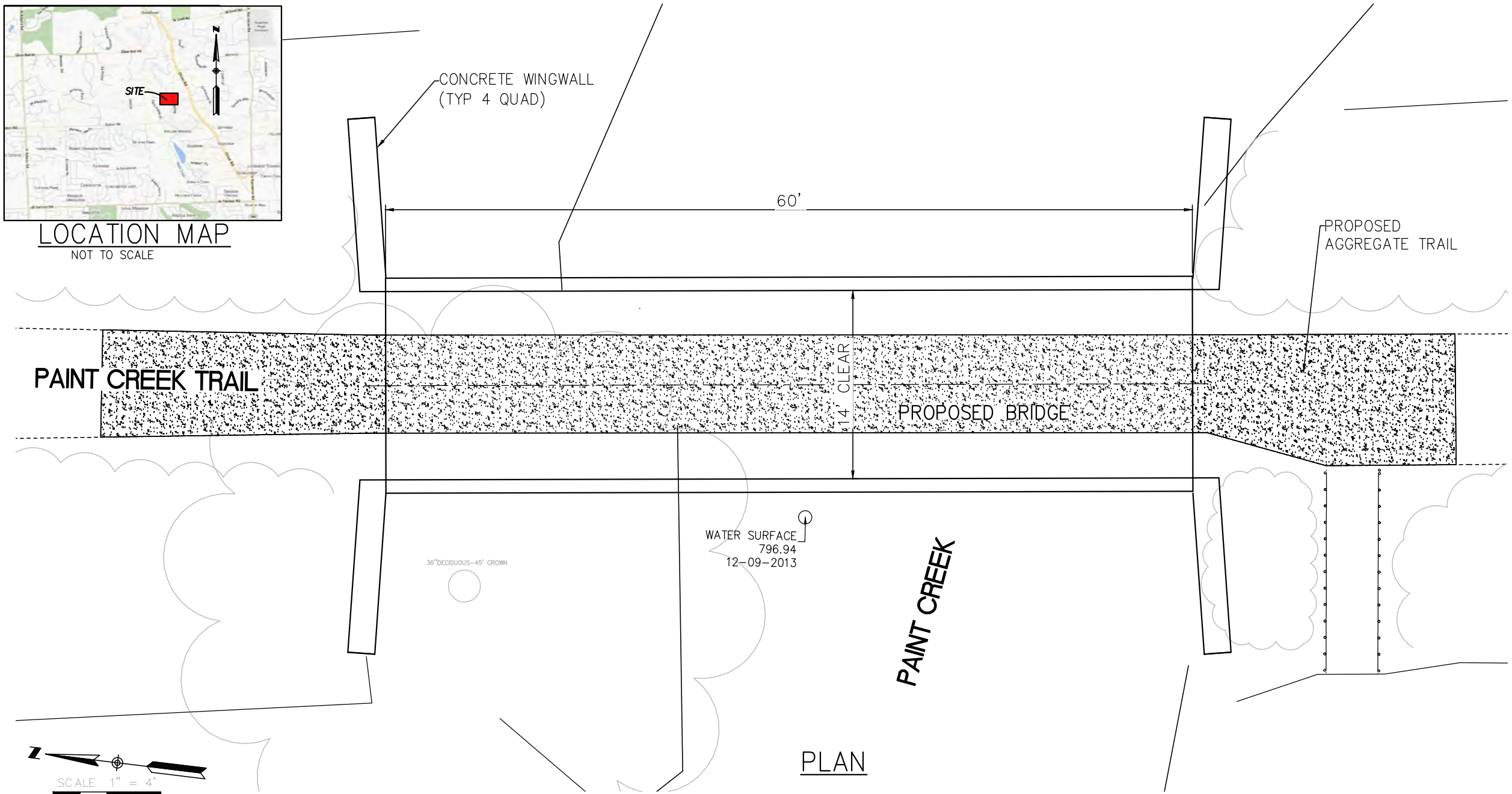
VERIFY SCALES  
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JOB NO. RB13010	DRAWING NO. RB13010SP
SCALE: 1" = 4'	SHEET NO. 1 OF 3

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Fax: (734) 671-4347

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(800) 598-1600



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PAINT CREEK TRAIL BRIDGE

ALTERNATE #2  
PRECAST CONCRETE ARCH

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

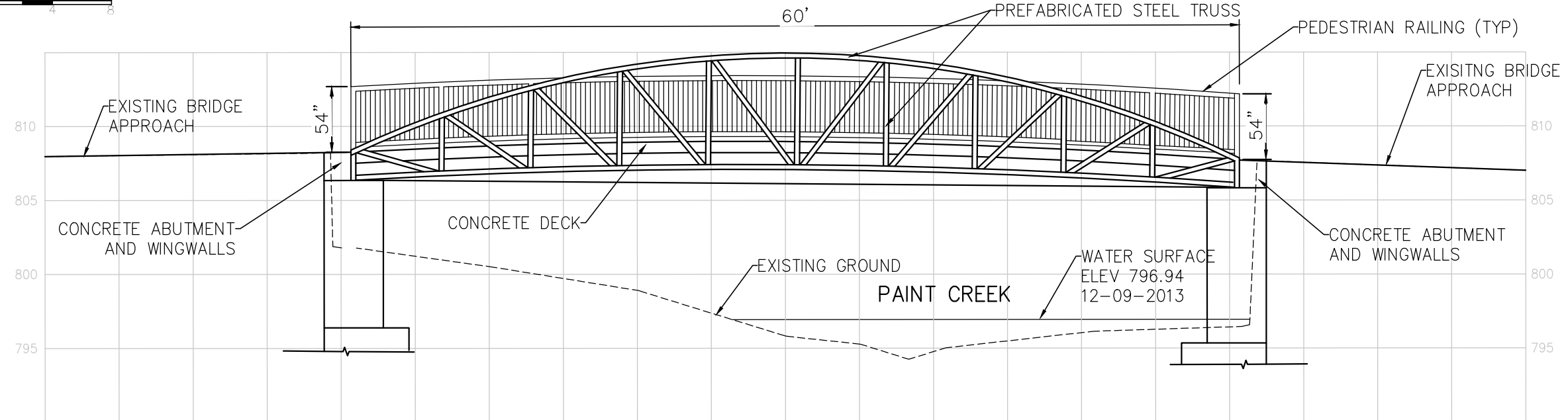
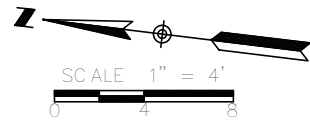
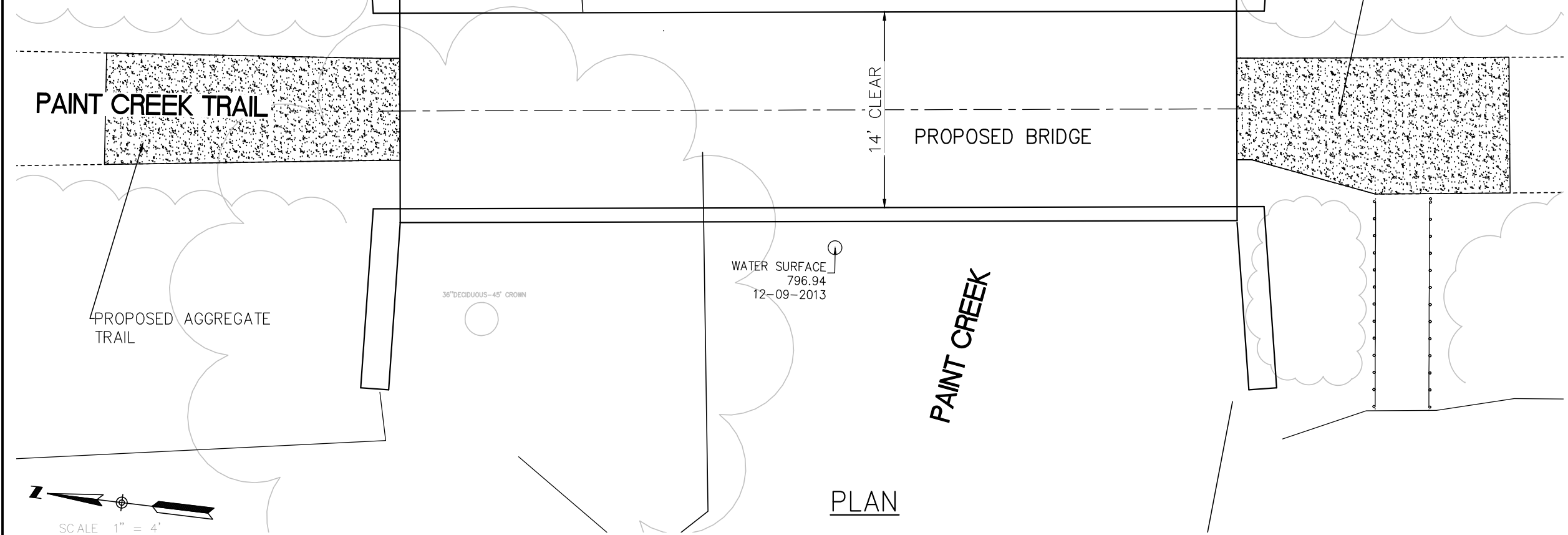
NO.	DATE	REVISION

DRAFTER M. TONUCCI	DATE
CHECKED	DATE
FIELD LEADER G. GODLEY	PROJECT SURVEYOR C. GREGORY
PROJECT MANAGER G. GODLEY	DEPARTMENT MANAGER C. GREGORY
VERIFY SCALES	
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	
JOB NO. RB13010	DRAWING NO. RB13010SP
SCALE: 1" = 4'	SHEET NO. 1 OF 3

- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STM)
  - WATER MAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CBL)
  - MANHOLE
  - CATCH BASIN
  - SEWER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
  - WATER SHUT OFF VALVE
  - FIRE HYDRANT
  - SPRINKLER VALVE BOX
  - LAMN SPRINKLER HEAD
  - HAND HOLE
  - ELECTRIC RISER OR METER
  - TELEPHONE RISER
  - CABLE TV RISER
  - AIR CONDITION UNIT
  - UTILITY POLE
  - UTILITY POLE WITH TRANSFORMER
  - UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
  - LIGHT POLE
  - LIGHT POLE WITH LAMP EXTENSION
  - TRAFFIC SIGNAL
  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
  - GUY WIRE
  - GUY POLE
  - GROUND LEVEL OR DECORATIVE LIGHTING
  - FLAG POLE
  - PHONE OR PHONE BOOTH
  - CHAIN LINK FENCE (CL)
  - WOOD FENCE
  - WOVEN WIRE FENCE (W.W.)
  - GUARD RAIL
  - METAL OR CONC. POST
  - MAILBOX
  - SIGN
  - WATER FOUNTAIN
  - PARKING METER
  - BILLBOARD OR LARGE SIGN
  - BASKETBALL HOOP
  - BOULDER
  - STATUE OR SCULPTURE
  - BENCH
  - INV. INVERT ELEVATION
  - CMP CORRUGATED METAL PIPE
  - CENTERLINE OF DITCH
  - DITCH BANK/TOP OF SLOPE
  - PROPERTY LINES
  - STUMP
  - CONIFEROUS TREE
  - DECIDUOUS TREE
  - DECIDUOUS SHRUB
  - CONIFEROUS SHRUB
  - SECTION CORNER
  - TRAVERSE POINT
  - STRUCTURE NUMBER
  - SDA POINT No.
  - SPOT ELEVATION
  - TC TOP OF CURB ELEVATION
  - GUTTER ELEVATION
  - TP TOP OF PAVEMENT ELEVATION
  - EM EDGE OF METAL ELEVATION
  - TW TOP OF WALK ELEVATION
  - WALL TOP OF WALL ELEVATION
  - GR GROUND ELEVATION
  - U.G. UNDERGROUND
  - F.O. FIBER OPTIC
  - CONC. CONCRETE
  - ASPHL ASPHALT
  - L.S. LANDSCAPED
  - F.F. FINISH FLOOR ELEVATION
  - D.L. DOOR LEDGE ELEVATION
  - F.I. FOUND IRON
  - F.M. FOUND MONUMENT
  - F.P.K. FOUND P.K. NAIL
  - S.I. SET IRON W/SDA CAP
  - S.P.K. SET P.K. NAIL
  - S.P.K./TAG SET P.K. NAIL W/SDA TAG
  - M.A.G. SET MAGNETIC NAIL
  - M.A.G./TAG SET MAGNETIC NAIL W/SDA TAG
  - M MEASURED
  - R RECORD
  - C CALCULATED



LOCATION MAP  
NOT TO SCALE



PROPOSED BRIDGE ELEVATION

Spalding DeDecker Associates, Inc.



Engineering Consultants  
Infrastructure • Land Development • Surveying

905 South Blvd. East  
Rochester Hills, MI 48307  
Phone: (248) 844-5400  
Fax: (248) 844-5404

1435 Randolph, Suite 400  
Detroit, MI 48226  
Phone: (313) 967-4700  
Fax: (313) 967-4707

39293 Plymouth, Suite 102  
Livonia, MI 48150  
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PAINT CREEK TRAIL BRIDGE

ALTERNATE # 3  
PREFABRICATED STEEL TRUSS

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

NO.	DATE	REVISION

DRATER M. TONUCCI	DATE
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER G. GODLEY	DEPARTMENT MANAGER C. GREGORY

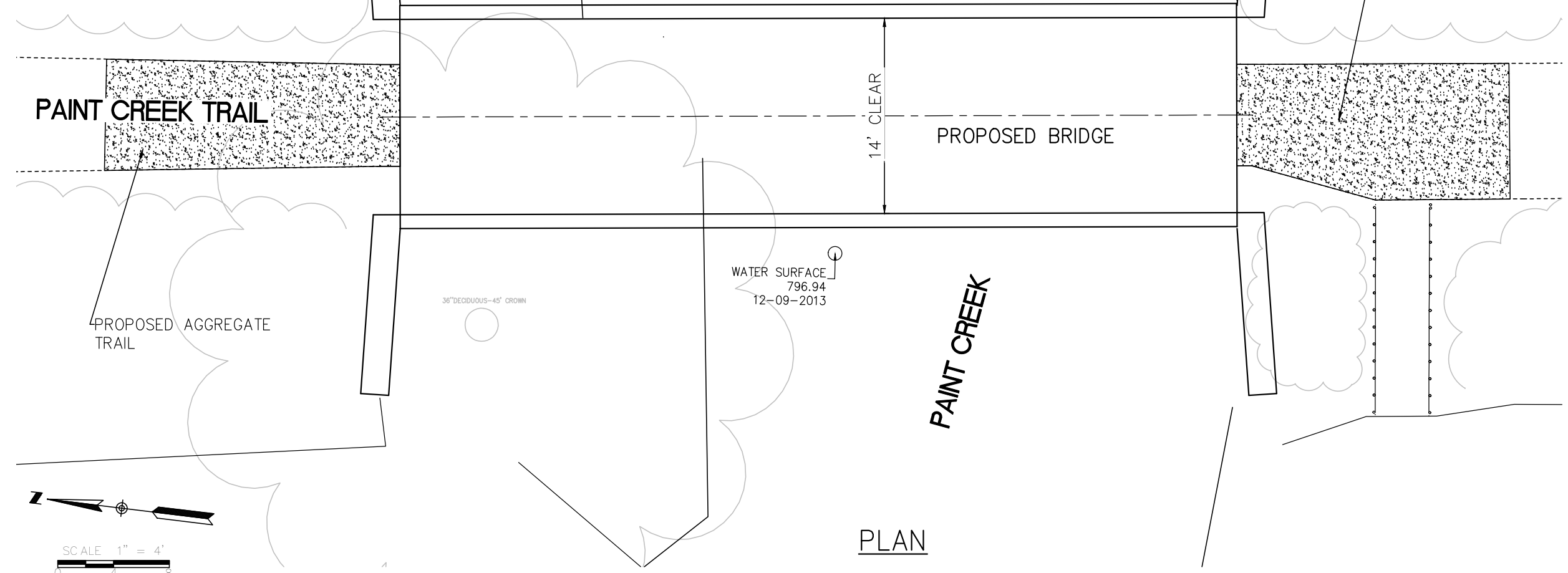
VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
IF NOT ONE INCH ON THIS SHEET,  
ADJUST SCALES ACCORDINGLY

JOB NO. RB13010 DRAWING NO. RB13010SP  
SCALE: 1" = 4' SHEET NO. 2 OF 3

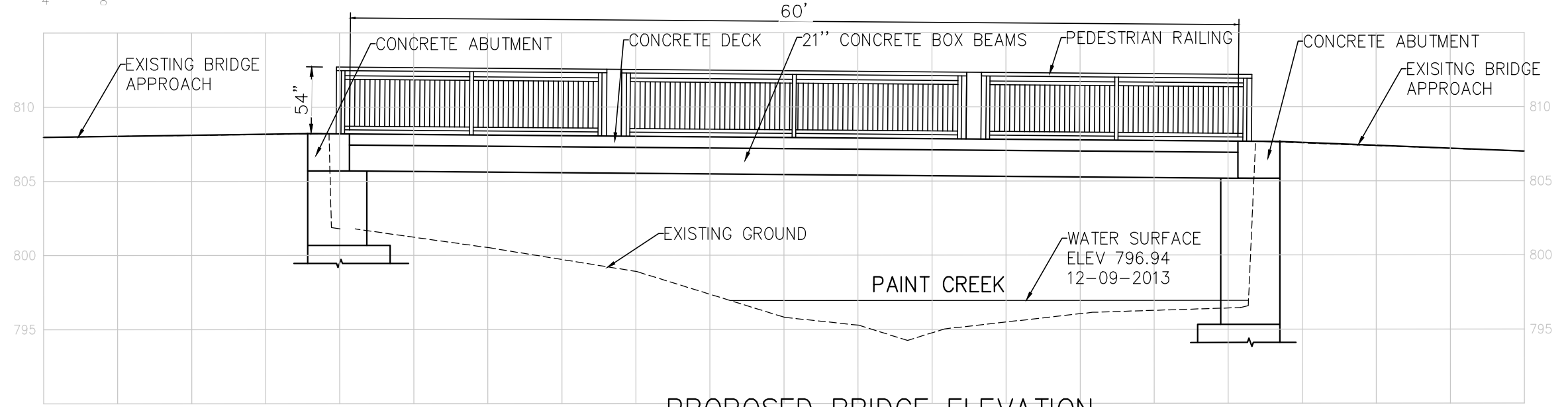
- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STM)
  - WATERMAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CBL)
  - MANHOLE
  - CATCH BASIN
  - SEMI CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
  - WATER SHUT OFF VALVE
  - FIRE HYDRANT
  - SPRINKLER VALVE BOX
  - LAWN SPRINKLER HEAD
  - HAND HOLE
  - ELECTRIC RISER OR METER
  - TELEPHONE RISER
  - CABLE TV RISER
  - AIR CONDITION UNIT
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  - UTILITY POLE WITH TRANSFORMER
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  - TRAFFIC SIGNAL
  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
  - GUY WIRE
  - GUY POLE
  - GROUND LEVEL OR DECORATIVE LIGHTING
  - FLAG POLE
  - PHONE OR PHONE BOOTH
  - CHAIN LINK FENCE (CL)
  - WOOD FENCE
  - WOVEN WIRE FENCE (W.W.)
  - GUARD RAIL
  - METAL OR CONC. POST
  - MAILBOX
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  - WATER FOUNTAIN
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  - CULVERT
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  - F.P.K. FOUND P.K. NAIL
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  - S.P.K. SET P.K. NAIL
  - S.P.K./TAG SET P.K. NAIL W/SDA TAG
  - MAG SET MAGNETIC NAIL
  - MAG/TAG SET MAGNETIC NAIL W/SDA TAG
  - M MEASURED
  - R RECORD
  - C CALCULATED



LOCATION MAP  
NOT TO SCALE



PLAN



PROPOSED BRIDGE ELEVATION

Spalding DeDecker Associates, Inc.



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**PAINT CREEK TRAIL BRIDGE**

ALTERNATE # 4  
PRECAST PRESTRESSED BOX BEAM

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

NO.	DATE	REVISION

DRAFTER M. TONUCCI	DATE
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER G. GODLEY	DEPARTMENT MANAGER C. GREGORY

VERIFY SCALES  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. RB13010	DRAWING NO. RB13010SP
SCALE: 1" = 4'	SHEET NO. 3 OF 3

# APPENDIX B

## Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 1 ~ Rehab Existing Bridge

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
	Mobilization, Max. %	LS	1	\$3,000	\$3,000
	Clearing/Excavation	LS	1	\$5,000	\$5,000
	Erosion Control	LS	1	\$5,000	\$5,000
	Superstructure	LS	1	\$26,000	\$26,000
	Substructure	LS	1	\$16,000	\$16,000
	Scour Protection/Slope Restoration	LS	1	\$5,000	\$5,000

Construction Contingency, 20% \$11,000

*SubTotal Construction = \$71,000*

Design Engineering \$11,000

Structure Survey (Completed) (\$7,100)

Construction Engineering \$14,000

*SubTotal Engineering = \$17,900*

**TOTAL = \$88,900**



# APPENDIX B

## Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### **BRIDGE #33-7 over PAINT CREEK**

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 2 ~ 3-Sided or Arch Concrete Culvert

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
	Mobilization, Max. %	LS	1	\$25,000	\$25,000
	Structure Removal/Clearing/Excavation	LS	1	\$33,500	\$33,500
	Erosion Control	LS	1	\$19,000	\$19,000
	Superstructure	LS	1	\$26,500	\$26,500
	Substructure	LS	1	\$324,000	\$324,000
	Scour Protection/Slope Restoration	LS	1	\$10,000	\$10,000

Construction Contingency, 20% \$83,000

*SubTotal Construction = \$521,000*

Design Engineering \$78,000

Structure Survey (Completed) (\$7,100)

Construction Engineering \$104,000

*SubTotal Engineering = \$174,900*

**TOTAL = \$695,900**

# APPENDIX B

## Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### **BRIDGE #33-7 over PAINT CREEK**

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### **Alternate 3 ~ Prefabricated Steel Bridge**

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
	Mobilization, Max. %	LS	1	\$19,000.00	\$19,000.00
	Structure Removal/Clearing/Excavation	LS	1	\$33,500.00	\$33,500.00
	Erosion Control	LS	1	\$19,000.00	\$19,000.00
	Superstructure	LS	1	\$97,500.00	\$97,500.00
	Substructure	LS	1	\$152,000.00	\$152,000.00
	Scour Protection/Slope Restoration	LS	1	\$10,000.00	\$10,000.00

Construction Contingency, 20% \$62,000.00

*SubTotal Construction = \$393,000.00*

Design Engineering \$59,000.00

Structure Survey (Completed) (\$7,100.00)

Construction Engineering \$79,000.00

*SubTotal Engineering = \$130,900.00*

**TOTAL = \$523,900.00**

# APPENDIX B

## Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 4 ~ Concrete Box Beam Bridge

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
	Mobilization, Max. %	LS	1	\$23,000.00	\$23,000.00
	Structure Removal/Clearing/Excavation	LS	1	\$32,500.00	\$32,500.00
	Erosion Control	LS	1	\$19,000.00	\$19,000.00
	Superstructure	LS	1	\$143,500.00	\$143,500.00
	Substructure	LS	1	\$182,000.00	\$182,000.00
	Scour Protection/Slope Restoration	LS	1	\$10,000.00	\$10,000.00

Construction Contingency, 20% \$77,000.00

*SubTotal Construction = \$487,000.00*

Design Engineering \$73,000.00

Structure Survey (*Completed*) (\$7,100.00)

Construction Engineering \$97,000.00

*SubTotal Engineering = \$162,900.00*

**TOTAL = \$649,900.00**

# APPENDIX C

## Detailed Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

**Spalding DeDecker Associates, Inc.**

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 1 ~ Rehab Existing Bridge

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
1500001	Mobilization, Max. ____ %	LS	1	\$3,000.00	\$3,000.00
2010001	Clearing	Acre	0.1	\$5,000.00	\$500.00
2060002	Backfill, Structure, CIP	Cyd	110	\$25.00	\$2,750.00
2060010	Excavation, Fdn	Cyd	125	\$12.00	\$1,500.00
2080012	Erosion Control, Check Dam, Stone	Ft	50	\$16.50	\$825.00
2080014	Erosion Control, Filter Bag	Ea	1	\$250.00	\$250.00
2080034	Erosion Control, Sediment Trap	Ea	2	\$100.00	\$200.00
2080036	Erosion Control, Silt Fence	Ft	250	\$3.00	\$750.00
2080042	Erosion Control, Turbidity Curtain, Deep	Ft	150	\$20.00	\$3,000.00
3027011	Aggregate Base, 21AA	Syd	50	\$15.00	\$750.00
4040031	Underdrain, Fdn, 4 inch	Ft	25	\$8.00	\$200.00
4040091	Underdrain, Outlet, 4 inch	Ft	10	\$15.00	\$150.00
4040111	Underdrain, Outlet Ending, 4 inch	Ea	2	\$250.00	\$500.00
7060092	Reinforcement, Steel, Epoxy Coated	Lb	800	\$3.00	\$2,400.00
7060100	Substructure Conc	Cyd	23	\$550.00	\$12,650.00
7120025	Bridge Deck Preservation	Syd	100	\$10.00	\$1,000.00
8077001	Railing	Ft	160	\$150.00	\$24,000.00
8130005	Riprap, Heavy	Syd	70	\$40.00	\$2,800.00
8160101	Slope Restoration, Type B	Syd	250	\$8.00	\$2,000.00

Construction Contingency, 20% \$11,000.00

*SubTotal Construction = \$70,225.00*

Design Engineering \$11,000.00

Structure Survey (Completed) (\$7,100.00)

Construction Engineering \$14,000.00

*SubTotal Engineering = \$17,900.00*

**TOTAL = \$88,125.00**

# APPENDIX C

## Detailed Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

**Spalding DeDecker Associates, Inc.**

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 2 ~ 3-Sided or Arch Concrete Culvert

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
1500001	Mobilization, Max. ____ %	LS	1	\$25,000.00	\$25,000.00
2010001	Clearing	Acre	0.25	\$5,000.00	\$1,250.00
2040060	Structure, Rem	LS	1	\$22,500.00	\$22,500.00
2060002	Backfill, Structure, CIP	Cyd	250	\$25.00	\$6,250.00
2060010	Excavation, Fdn	Cyd	290	\$12.00	\$3,480.00
2080012	Erosion Control, Check Dam, Stone	Ft	50	\$16.50	\$825.00
2080014	Erosion Control, Filter Bag	Ea	2	\$250.00	\$500.00
2080034	Erosion Control, Sediment Trap	Ea	4	\$100.00	\$400.00
2080036	Erosion Control, Silt Fence	Ft	500	\$3.00	\$1,500.00
2080042	Erosion Control, Turbidity Curtain, Deep	Ft	800	\$20.00	\$16,000.00
3027011	Aggregate Base, 21AA	Syd	100	\$15.00	\$1,500.00
4040031	Underdrain, Fdn, 4 inch	Ft	50	\$8.00	\$400.00
4040091	Underdrain, Outlet, 4 inch	Ft	20	\$15.00	\$300.00
4040111	Underdrain, Outlet Ending, 4 inch	Ea	4	\$250.00	\$1,000.00
4067001	Culv, Precast Three-Sided or Arch, 60 foot by 10 foot	Ft	15	\$12,000.00	\$180,000.00
7040007	Cofferdams	LS	1	\$25,000.00	\$25,000.00
7040009	Cofferdams, Left in Place	LS	1	\$50,000.00	\$50,000.00
7050002	Pile Driving Equipment, Furn	LS	1	\$15,000.00	\$15,000.00
7050030	Pile, Steel, Furn and Driven, 12 inch	Ft	260	\$50.00	\$13,000.00
7050031	Test Pile, Steel, 12 inch	Ea	2	\$1,500.00	\$3,000.00
7050050	Pile, Steel, Splice	Ea	2	\$750.00	\$1,500.00
7060092	Reinforcement, Steel, Epoxy Coated	Lb	2000	\$3.00	\$6,000.00
7060100	Substructure Conc	Cyd	50	\$550.00	\$27,500.00
7100001	Joint Waterproofing	Sft	200	\$5.00	\$1,000.00
8077001	Railing	Ft	160	\$150.00	\$24,000.00
8130005	Riprap, Heavy	Syd	140	\$40.00	\$5,600.00
8160101	Slope Restoration, Type B	Syd	550	\$8.00	\$4,400.00

Construction Contingency, 20% \$82,000.00

*SubTotal Construction = \$518,905.00*

Design Engineering \$78,000.00

Structure Survey (Completed) (\$7,100.00)

Construction Engineering \$104,000.00

*SubTotal Engineering = \$174,900.00*

**TOTAL = \$693,805.00**

# APPENDIX C

## Detailed Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 3 ~ Prefabricated Steel Bridge

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
1500001	Mobilization, Max. ____ %	LS	1	\$19,000.00	\$19,000.00
2010001	Clearing	Acre	0.25	\$5,000.00	\$1,250.00
2040060	Structure, Rem	LS	1	\$22,500.00	\$22,500.00
2060002	Backfill, Structure, CIP	Cyd	250	\$25.00	\$6,250.00
2060010	Excavation, Fdn	Cyd	290	\$12.00	\$3,480.00
2080012	Erosion Control, Check Dam, Stone	Ft	50	\$16.50	\$825.00
2080014	Erosion Control, Filter Bag	Ea	2	\$250.00	\$500.00
2080034	Erosion Control, Sediment Trap	Ea	4	\$100.00	\$400.00
2080036	Erosion Control, Silt Fence	Ft	500	\$3.00	\$1,500.00
2080042	Erosion Control, Turbidity Curtain, Deep	Ft	800	\$20.00	\$16,000.00
3027011	Aggregate Base, 21AA	Syd	100	\$15.00	\$1,500.00
4040031	Underdrain, Fdn, 4 inch	Ft	50	\$8.00	\$400.00
4040091	Underdrain, Outlet, 4 inch	Ft	20	\$15.00	\$300.00
4040111	Underdrain, Outlet Ending, 4 inch	Ea	4	\$250.00	\$1,000.00
7040007	Cofferdams	LS	1	\$25,000.00	\$25,000.00
7040009	Cofferdams, Left in Place	LS	1	\$50,000.00	\$50,000.00
7050002	Pile Driving Equipment, Furn	LS	1	\$15,000.00	\$15,000.00
7050030	Pile, Steel, Furn and Driven, 12 inch	Ft	260	\$50.00	\$13,000.00
7050031	Test Pile, Steel, 12 inch	Ea	2	\$1,500.00	\$3,000.00
7050050	Pile, Steel, Splice	Ea	2	\$750.00	\$1,500.00
7060092	Reinforcement, Steel, Epoxy Coated	Lb	2000	\$3.00	\$6,000.00
7060100	Substructure Conc	Cyd	50	\$550.00	\$27,500.00
7070050	Structural Steel, Mixed, Erect	Lb	235	\$25.00	\$5,875.00
7070051	Structural Steel, Mixed, Furn and Fab	Lb	235	\$5.00	\$1,175.00
7077051	Prefabricated Pedestrian Bridge, Installed	LS	1	\$25,000.00	\$25,000.00
7077051	Prefabricated Pedestrian Bridge, Furn	LS	1	\$70,000.00	\$70,000.00
7100001	Joint Waterproofing	Sft	50	\$5.00	\$250.00
7100011	Conc Surface Coating	Syd	22	\$40.00	\$880.00
7100030	Substructure Horizontal Surface Sealer	Syd	8	\$100.00	\$800.00
7160001	Field Repair of Damaged Coating	LS	1	\$900.00	\$900.00
8130005	Riprap, Heavy	Syd	140	\$40.00	\$5,600.00
8160101	Slope Restoration, Type B	Syd	550	\$8.00	\$4,400.00

Construction Contingency, 20% \$62,000.00

*SubTotal Construction = \$392,785.00*

Design Engineering \$59,000.00

Structure Survey (Completed) (\$7,100.00)

Construction Engineering \$79,000.00

*SubTotal Engineering = \$130,900.00*

**TOTAL = \$523,685.00**

# APPENDIX C

## Detailed Estimate Sheets

### PRELIMINARY ENGINEERS ESTIMATE

Prepared for

**Charter Township Of Oakland**

By

*Spalding DeDecker Associates, Inc.*

### BRIDGE #33-7 over PAINT CREEK

Basis of Estimate: TS&L

Estimator: G. Godley

Checked By: P. Wade

Date: 1/10/2014

SDA Proj. No. RB13010

#### Alternate 4 ~ Concrete Box Beam Bridge

Item Code	Item Description	Unit	Quantity	Unit Price	Amount
1500001	Mobilization, Max. %	LS	1	\$23,000.00	\$23,000.00
2010001	Clearing	Acre	0.25	\$5,000.00	\$1,250.00
2040060	Structure, Rem	LS	1	\$22,500.00	\$22,500.00
2060002	Backfill, Structure, CIP	Cyd	200	\$25.00	\$5,000.00
2060010	Excavation, Fdn	Cyd	290	\$12.00	\$3,480.00
2080012	Erosion Control, Check Dam, Stone	Ft	50	\$16.50	\$825.00
2080014	Erosion Control, Filter Bag	Ea	2	\$250.00	\$500.00
2080034	Erosion Control, Sediment Trap	Ea	4	\$100.00	\$400.00
2080036	Erosion Control, Silt Fence	Ft	500	\$3.00	\$1,500.00
2080042	Erosion Control, Turbidity Curtain, Deep	Ft	800	\$2.00	\$16,000.00
3027011	Aggregate Base, 21AA	Syd	100	\$15.00	\$1,500.00
4040031	Underdrain, Fdn, 4 inch	Ft	50	\$8.00	\$400.00
4040091	Underdrain, Outlet, 4 inch	Ft	20	\$15.00	\$300.00
4040111	Underdrain, Outlet Ending, 4 inch	Ea	4	\$250.00	\$1,000.00
7040007	Cofferdams	LS	1	\$25,000.00	\$25,000.00
7040009	Cofferdams, Left in Place	LS	1	\$50,000.00	\$50,000.00
7050002	Pile Driving Equipment, Furn	LS	1	\$15,000.00	\$15,000.00
7050030	Pile, Steel, Furn and Driven, 12 inch	Ft	290	\$50.00	\$14,500.00
7050031	Test Pile, Steel, 12 inch	Ea	2	\$1,500.00	\$3,000.00
7050050	Pile, Steel, Splice	Ea	2	\$750.00	\$1,500.00
7060092	Reinforcement, Steel, Epoxy Coated	Lb	2000	\$3.00	\$6,000.00
7060100	Substructure Conc	Cyd	50	\$550.00	\$27,500.00
7060110	Superstructure Conc	Cyd	35	\$250.00	\$8,750.00
7060111	Superstructure Conc, Form, Finish, and Cure	LS	1	\$15,000.00	\$15,000.00
7060140	Water Repellent Treatment, Penetrating	Syd	500	\$5.00	\$2,500.00
7070012	Bearing, Elastomeric, 1 inch	Sin	4320	\$0.75	\$3,240.00
7070050	Structural Steel, Mixed, Erect	Lb	235	\$25.00	\$5,875.00
7070051	Structural Steel, Mixed, Furn and Fab	Lb	235	\$5.00	\$1,175.00
7080003	Prest Conc Deck, 21 inch	Sft	900	\$125.00	\$112,500.00
7080015	Post Tensioning	LS	1	\$5,500.00	\$5,500.00
7100001	Joint Waterproofing	Sft	50	\$5.00	\$250.00
7100010	Conc Surface Coating	LS	1	\$1,250.00	\$1,250.00
8077001	Railing	Ft	160	\$150.00	\$24,000.00
8130005	Riprap, Heavy	Syd	140	\$40.00	\$5,600.00
8160101	Slope Restoration, Type B	Syd	550	\$8.00	\$4,400.00

Construction Contingency, 20% \$77,000.00

*SubTotal Construction = \$487,195.00*

Design Engineering \$73,000.00

Structure Survey (Completed) (\$7,100.00)

Construction Engineering \$97,000.00

*SubTotal Engineering = \$162,900.00*

**TOTAL = \$650,095.00**



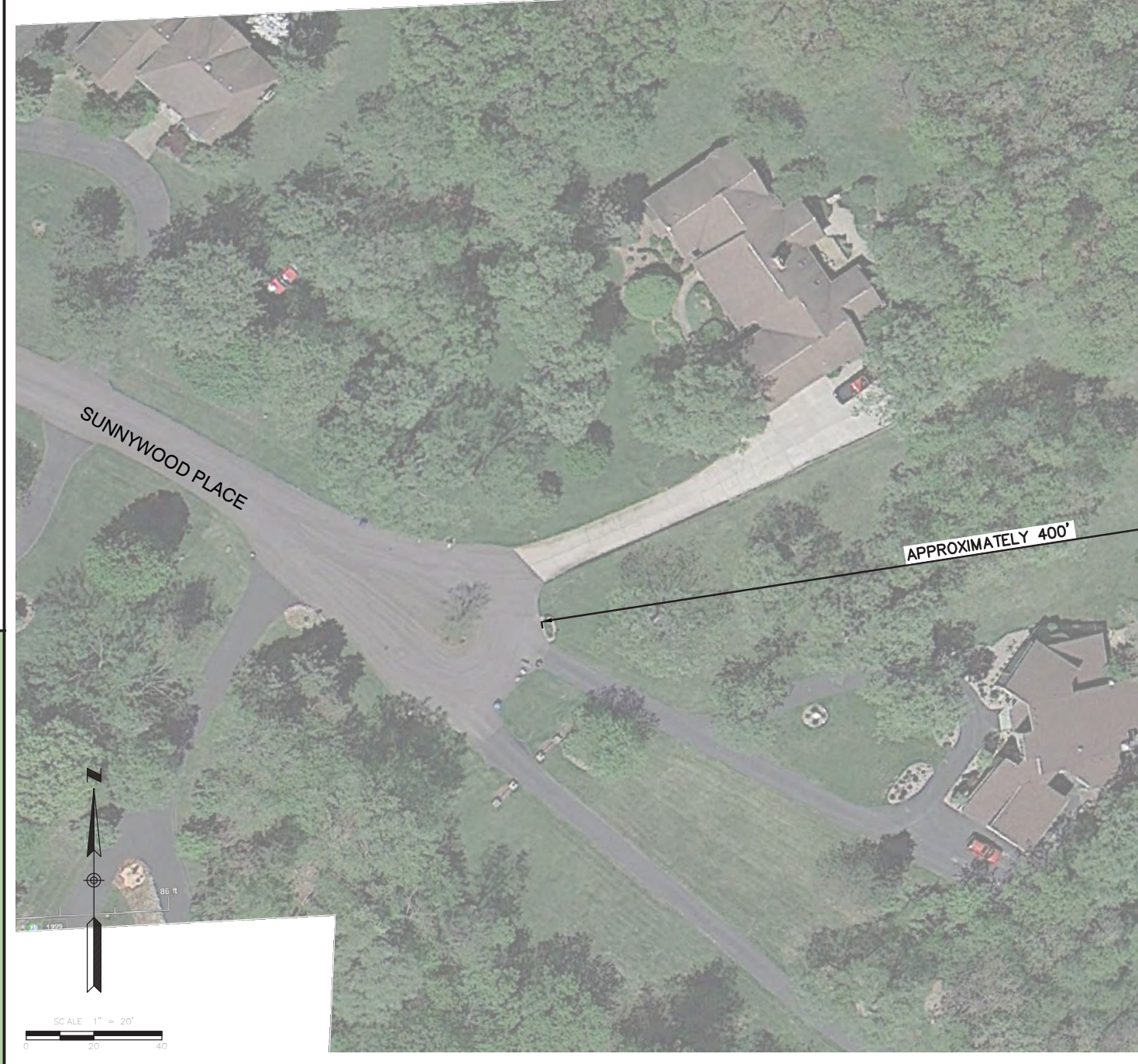
**REQUEST FOR PROPOSALS  
FOR ENGINEERING DESIGN SERVICES  
FOR PAINT CREEK TRAIL BRIDGE 33.7 RENOVATION  
RFP-PCTC-17-02**



- **Attachment C – Maps**
  - a. **Site Development Plan**
  - b. **Parcel Boundary Map**
  - c. **Topography Map**
  - d. **Project Location Map**



- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STW)
  - WATERMAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CB)
  - MANHOLE
  - CATCH BASIN
  - SINKER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
  - WATER SHUT OFF VALVE
  - FIRE HYDRANT
  - SPRINKLER VALVE BOX
  - LAWN SPRINKLER HEAD
  - HAND HOLE
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  - AIR CONDITION UNIT
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  - UTILITY POLE WITH TRANSFORMER
  - UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
  - LIGHT POLE
  - LIGHT POLE WITH LAMP EXTENSION
  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
  - GUY WIRE
  - GUY POLE
  - GROUND LEVEL OR DECORATIVE LIGHTING
  - FLAG POLE
  - PHONE OR PHONE BOOTH
  - CHAIN LINK FENCE (CL)
  - WOOD FENCE
  - WOVEN WIRE FENCE (W.W.)
  - GUARD RAIL
  - METAL OR CONC. POST
  - MAILBOX
  - SIGN
  - WATER FOUNTAIN
  - PARKING METER
  - BILLBOARD OR LARGE SIGN
  - BASKETBALL HOOP
  - BOULDER
  - STATUE OR SCULPTURE
  - BENCH
  - INV. INVERT ELEVATION
  - CMP CORRUGATED METAL PIPE
  - CENTERLINE OF DITCH
  - CULVERT
  - DITCH BANK/TOP OF SLOPE
  - PROPERTY LINES
  - STUMP
  - CONIFEROUS TREE
  - DECIDUOUS TREE
  - DECIDUOUS SHRUB
  - CONIFEROUS SHRUB
  - SECTION CORNER
  - TRAVERSE POINT
  - STRUCTURE NUMBER
  - SDA POINT No.
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  - WALL TOP OF WALL ELEVATION
  - GR GROUND ELEVATION
  - U.G. UNDERGROUND
  - F.O. FIBER OPTIC
  - CONC. CONCRETE
  - ASPH. ASPHALT
  - L.S. LANDSCAPED
  - F.F. FINISH FLOOR ELEVATION
  - D.L. DOOR LEJSE ELEVATION
  - F.I. FOUND IRON
  - F.M. FOUND MONUMENT
  - F.P.K. FOUND P.K. NAIL
  - S.I. SET IRON W/SDA CAP
  - S.P.K. SET P.K. NAIL
  - S.P.K./TAG SET P.K. NAIL W/SDA TAG
  - MAG. SET MAGNETIC NAIL
  - MAG./TAG SET MAGNETIC NAIL W/SDA TAG
  - M MEASURED
  - R RECORD
  - C CALCULATED



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**PAINT CREEK TRAIL BRIDGE**  
AT MARKER 33.7

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OKLAND TOWNSHIP  
OKLAND COUNTY

NO.	DATE	REVISION

DRAFTER L. THORNTON	DATE 12-18-13
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER	DEPARTMENT MANAGER G. PLATZ
<b>VERIFY SCALES</b>	
<b>BAR IS ONE INCH ON ORIGINAL DRAWING</b>	
<b>IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY</b>	
JOB NO. RB13-010	DRAWING NO. RB13010TP
SCALE 1" = 20'	SHEET NO. 1 OF 2



**TF16-0008**

**PROJECT LOCATION**



- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STW)
  - WATERMAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CB)
  - MANHOLE
  - CATCH BASIN
  - SEWER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
  - WATER SHUT OFF VALVE
  - FIRE HYDRANT
  - SPRINKLER VALVE BOX
  - LAWN SPRINKLER HEAD
  - HAND HOLE
  - ELECTRIC RISER OR METER
  - TELEPHONE RISER
  - CABLE TV RISER
  - AIR CONDITION UNIT
  - UTILITY POLE
  - UTILITY POLE WITH TRANSFORMER
  - UTILITY POLE W/ LAMP EXTENSION (ARROW INDICATES DIRECTION OF ARM)
  - LIGHT POLE
  - LIGHT POLE WITH LAMP EXTENSION
  - TRAFFIC SIGNAL
  - POLE WITH TRAFFIC SIGNAL (OVER ROAD)
  - GUY WIRE
  - GUY POLE
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  - FLAG POLE
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  - GUARD RAIL
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  - L.S. LANDSCAPED
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  - F.I. FOUND IRON
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  - F.P.K. FOUND P.K. NAIL
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  - C CALCULATED



**Engineering Consultants**  
Infrastructure • Land Development • Surveying

905 South Blvd. East  
Rochester Hills, MI 48307  
Phone: (248) 844-5400  
Fax: (248) 844-5404

1435 Randolph, Suite 400  
Detroit, MI 48226  
Phone: (313) 967-4700  
Fax: (313) 967-4707

39293 Plymouth, Suite 102  
Livonia, MI 48150  
Phone: (734) 671-4344  
Fax: (734) 671-4347

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(800) 598-1600



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**PAINT CREEK TRAIL BRIDGE AT MARKER 33.7**

TOPOGRAPHICAL SURVEY

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

NO.	DATE	REVISION

DRAFTER L. THORNTON	DATE 12-18-13
CHECKED	DATE
FIELD LEADER	PROJECT SURVEYOR
PROJECT MANAGER	DEPARTMENT MANAGER G. PLATZ

**VERIFY SCALES**  
**IF NOT ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES ACCORDINGLY**

JOB NO. RB13-010	DRAWING NO. RB13010TP
SCALE 1" = 4'	SHEET NO. 2 OF 2

**PAINT CREEK TRAILWAYS COMMISSION**

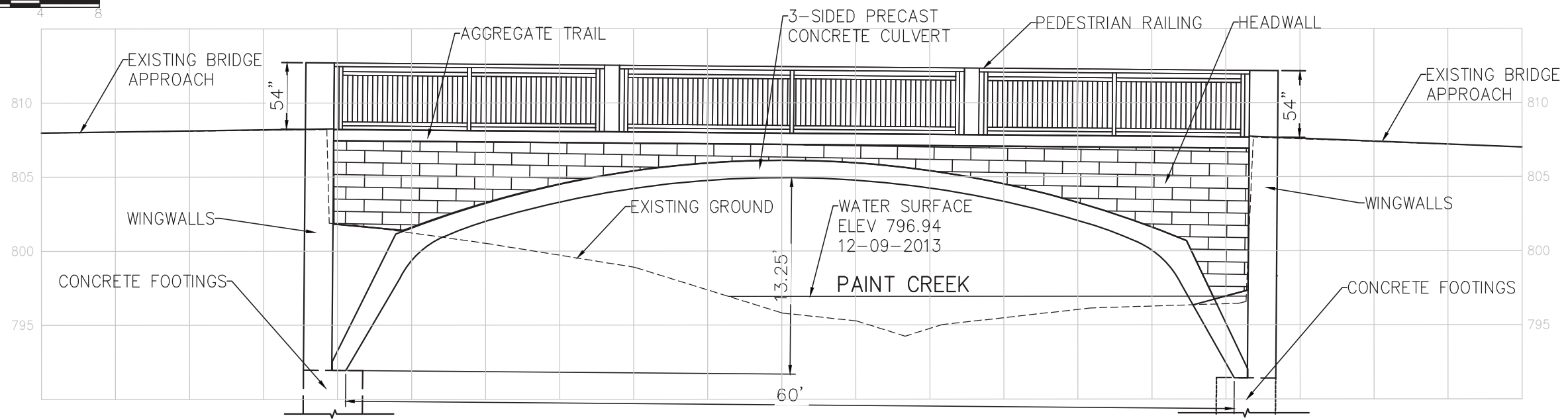
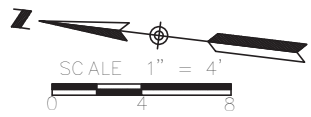
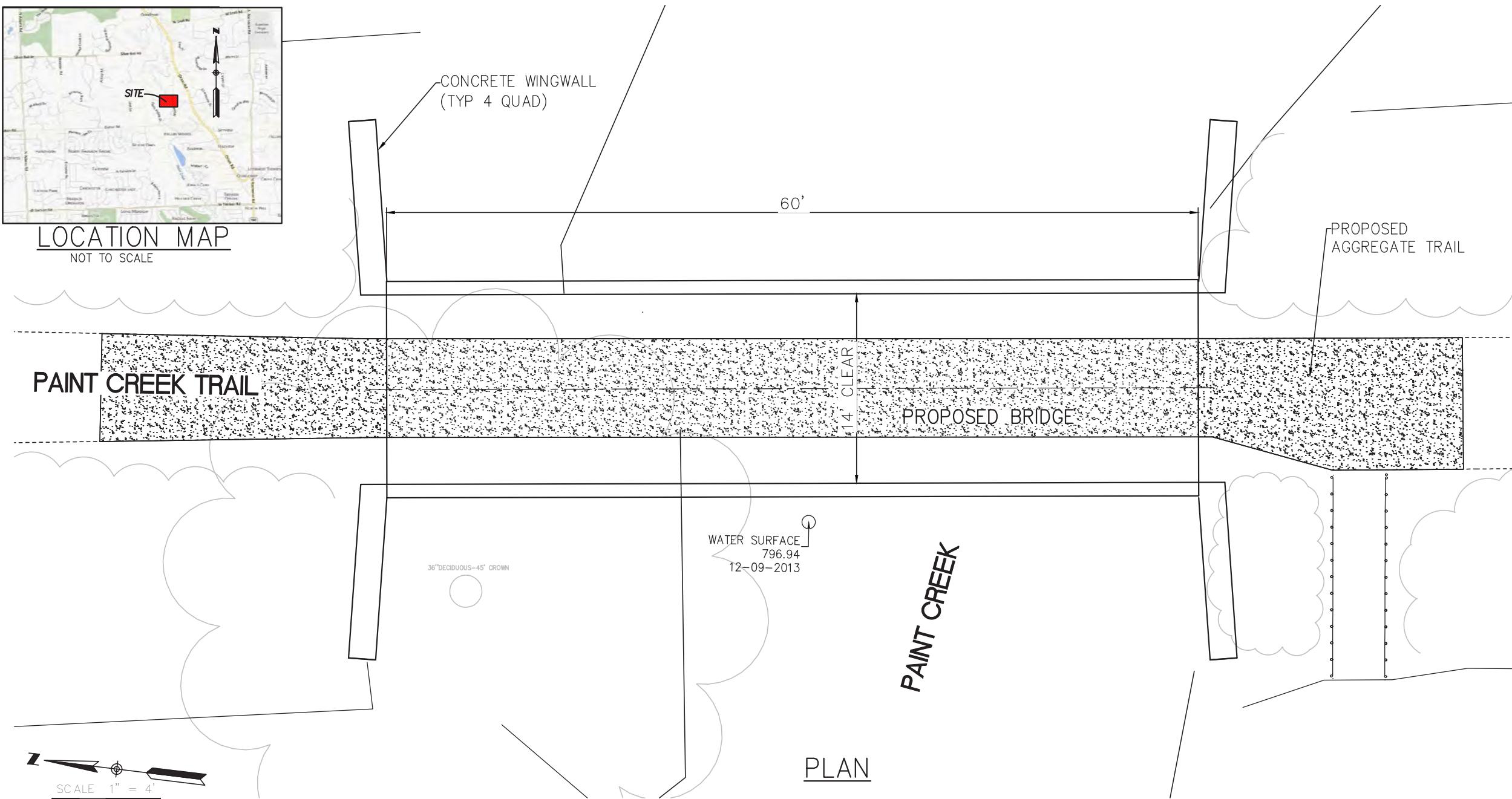
**TF16-0008**

**TOPOGRAPHICAL SURVEY**

- LEGEND**
- GAS
  - SANITARY SEWER (SAN)
  - STORM SEWER (STW)
  - WATERMAIN (WM)
  - OVERHEAD WIRE
  - UNDERGROUND ELECTRIC (ELEC.)
  - UNDERGROUND PHONE (PH)
  - UNDERGROUND CABLE (CBL)
  - MANHOLE
  - CATCH BASIN
  - SEWER CLEAN OUT
  - GAS METER
  - GAS SHUT OFF VALVE
  - VALVE BOX
  - GATE VALVE & WELL
  - WATER SHUT OFF VALVE
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  - MAG. SET MAGNETIC NAIL
  - MAG/TAG SET MAGNETIC NAIL W/SDA TAG
  - M MEASURED
  - R RECORD
  - C CALCULATED



LOCATION MAP  
NOT TO SCALE



Spalding DeDecker Associates, Inc.



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PAINT CREEK TRAIL BRIDGE

PRECAST CONCRETE ARCH

SECTION 33  
TOWN 4 NORTH RANGE 11 EAST  
OAKLAND TOWNSHIP  
OAKLAND COUNTY

NO.	DATE	REVISION

DRAFTER M. TONUCCI	DATE
CHECKED	DATE
FIELD LEADER G. GODLEY	PROJECT SURVEYOR
PROJECT MANAGER G. GODLEY	DEPARTMENT MANAGER C. GREGORY
VERIFY SCALES	
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	
JOB NO. RB13010	DRAWING NO. RB13010SP
SCALE: 1" = 4'	SHEET NO. 1 OF 3



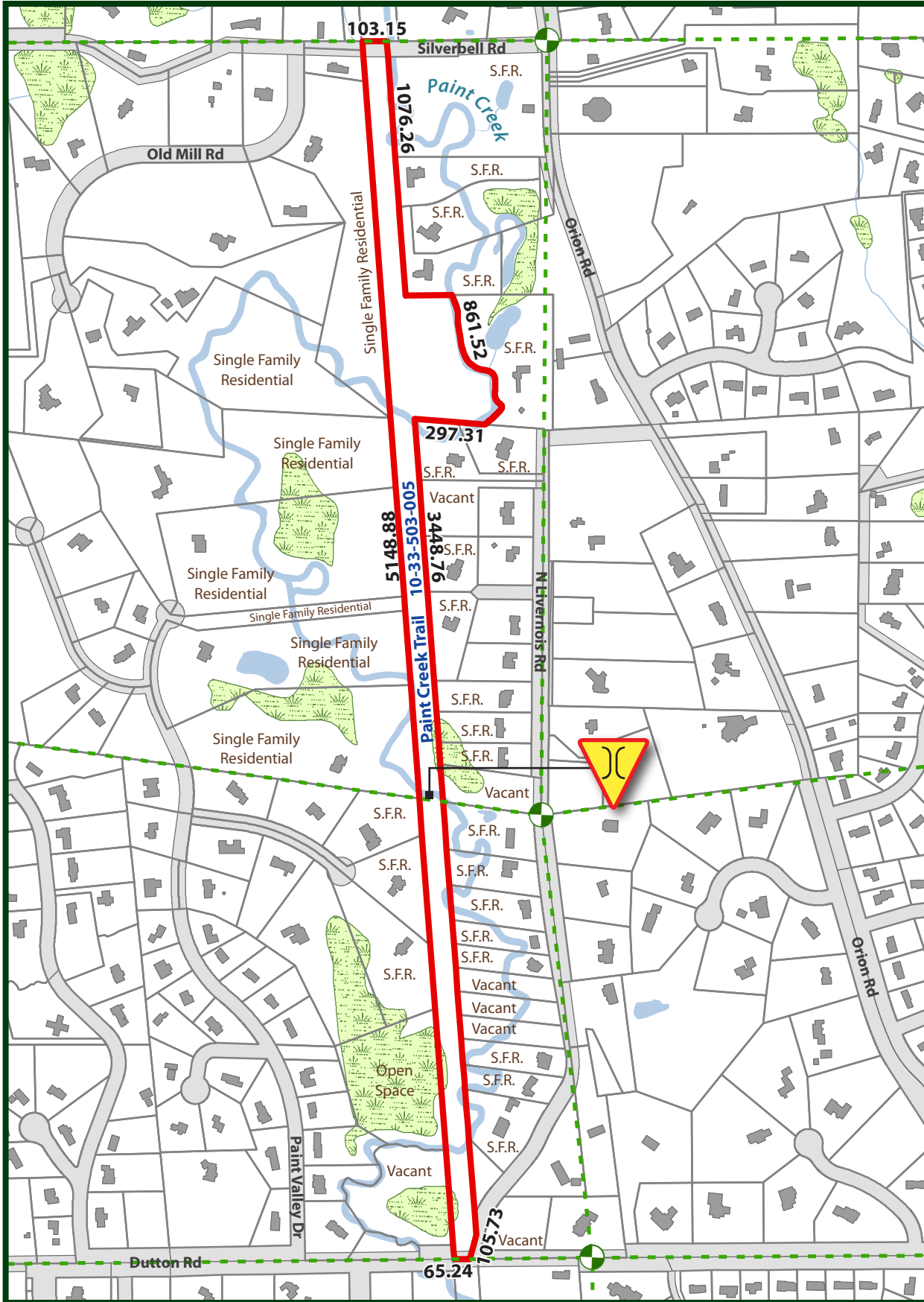
TF16-0008

SITE DEVELOPMENT PLAN



TF16-0008

# PARCEL BOUNDARY MAP



Additional copies can be obtained from:  
 Oakland County Planning Department  
 21 Waterford, Michigan 48328  
 www.aor.aorackland.com  
 (973) 230-721

**OAKLAND COUNTY**  
 ECONOMIC DEVELOPMENT  
 L. Brooke Peterson  
 Oakland County Executive

The information contained herewith has been compiled from the best available sources, including aerial photography, field surveys, and other public records. It is not a legally recorded map or survey and is not intended to be used as one. Users should consult the information sources mentioned above when applicable.

**Legend**

- Project Location
- Sec Corner
- Sec Lines
- Swamp or Marsh
- Lake
- Tax Parcel Line

Distance in Feet

0 300 600

**Geographic Township of:**  
**Oakland**

TWP-SEC  
**10-33**