February 13, 2017

Bidder:

The City of Traverse City will receive sealed bids at the City Engineering Dept., Second floor, Governmental Center, 400 Boardman Avenue, Traverse City, Michigan, 49684, until Monday February 27, 2017, at 10:00 a.m. for the following:

**2017 MURCHIE BRIDGE PEDESTRIAN RAILING**
(Plans & Specifications attached)

If the specifications are obtained from the City’s website at http://www.traversecitymi.gov/bids_and_rfps.asp it is the sole responsibility of the Bidder to check the website for updates and addendums prior to the bid being submitted. You may also register on the website to receive notifications when requests for proposals or bids, updates and addendums are posted.

The City of Traverse City reserves the right to accept or reject any or all bids, waive irregularities, and to accept the bids either on an entire or individual basis that is in the best interest of the City.

The City accepts no responsibility for any expense incurred by the Bidder in the preparation and presentation of a bid. Such expenses shall be borne exclusively by the Bidder.

Only the successful Bidder will be notified. If you so desire, you may call for results.

You must indicate on the outside of the sealed envelope that the bid is for the “**2017 Murchie Bridge Pedestrian Railing**”

You must submit **TWO (2) bids** to the City Engineer’s Office prior to the above-indicated time and date or the bid will not be accepted. Telefaxed or E-Mail bids will not be accepted.

Please note that if you have previously submitted an informal quote, you will still need to submit a sealed bid prior to the date and time specified above in order to be considered. Please ensure that all requirements listed in the specifications are met.

If you have any questions, please contact **Timothy J. Lodge, P.E., City Engineer**, at (231) 922-4455, before the bid is submitted.
INSTRUCTIONS TO BIDDERS

1. All bids must be submitted to Timothy J. Lodge, City Engineer, City of Traverse City, Governmental Center, Second Floor, 400 Boardman Avenue, Traverse City, Michigan, 49684, no later than 10:00 a.m. on Monday February 27, 2017.

2. All bids must be submitted in a sealed envelope and clearly marked “2017 Murchie Bridge Pedestrian Railing” TELEFAXED AND E-MAIL BIDS ARE NOT ACCEPTABLE.

3. The bid form(s) must be completed and signed by an authorized representative of the Bidder.

4. The City reserves the right to accept or reject any or all proposals, waive irregularities, and to accept the bid which in its opinion is in the best interests of the City.

5. All bids must remain firm for a period of thirty (30) days following the City's receipt of the bid.

6. Payment shall be paid within 30 days of satisfactory completion of project. It is the Vendor’s responsibility to submit an invoice to the City of Traverse City.

The City’s standard practice is to run checks for the payment of bills received, on the 10th and 25th day of each month. In order to receive payment on the 10th or 25th of the month, the Vendor shall submit an invoice for all work completed up to the fifth or twentieth day of the month to the City of Traverse City, Engineering Dept., 400 Boardman Ave., Traverse City, Michigan, 49684. This normally allows enough time for the City to review and approve the Vendor’s invoice and process it for payment. Failure of the Vendor to properly submit invoices by the fifth or twentieth day of the month may be cause for the City to postpone payment of the invoice until the next scheduled run of checks.

The City may withhold any portion of payment as necessary from loss on account of:

- Defective work not remedied, or
- Failure of Vendor to make payments properly to subcontractors for material or labor, or
- Damage to another Vendor, or
- Damage to City Property

8. The City reserves the right to delete portions of the work without reducing the unit cost.
9. **Standards.** All work shall be done in accordance with the City of Traverse City Specifications and/or the MDOT 2012 Standard Specifications for Construction unless otherwise indicated.

10. **Completion.** Work on the Pedestrian is to be coordinated with the Contractor completing work for MDOT under a separate contract to take advantage of the lane closures. Work for the pedestrian railing requiring lane closures shall be completed by June 9, 2017.

11. **Experience.** Bidders shall be experienced in this type of work and evidence of bidder's qualifications may be requested.

12. **Insurance:** The Vendor agrees not to change and agrees to maintain the following insurance throughout the period of performance of this Agreement. The Vendor will upon execution of this Agreement provide a certificate of insurance to the City Clerk. The policy shall contain endorsements stating that at least a 10-day notice will be given to the City prior to termination or any change in the policy; and in the case where Vendor is required to name the City as additional insured, and shall provide an endorsement stating that the City has been named as an additional insured onto such policy for all claims arising out of the Vendor’s work. Should any required insurance be cancelled, materially reduced or expired, all activities under this Agreement shall immediately cease until substitute insurance in compliance with all requirements hereof has been procured and evidence thereof presented to the City.

   A. **Commercial General Liability.** The Vendor shall acquire and maintain commercial general liability insurance coverage in the amount of $1,000,000 per occurrence with the City being named as additional insured for all claims arising out of the Vendor’s work, including completed operations coverage (if required in the Request for Proposals/Bids).

   B. **Workers Compensation.** The parties shall maintain suitable workers compensation insurance pursuant to Michigan law and the Vendor shall provide a certificate of insurance or copy of state approval for self insurance to the City Clerk upon execution of this Agreement.

13. **Traffic Control.** Traffic shall be maintained during the Vendor's operations in accordance with the current Michigan Manual of Uniform Traffic Control Devices. The City will not use the fuel depot while the project is being constructed.
Bidder - Please complete and return

BID SUMMARY

TITLE: 2017 Murchie Bridge Pedestrian Railing

DUE DATE: Monday, February 27, 2017 AT 10:00 AM

Having carefully examined the attached specifications and any other applicable information, the undersigned proposes to furnish all items necessary for and reasonably incidental to the proper completion of this bid. Bidder submits this bid and agrees to meet or exceed all requirements and specifications unless otherwise indicated in writing and attached hereto.

Bidder certifies that as of the date of this bid the Company or he/she is not in arrears to the City of Traverse City for debt or contract and is in no way a defaulter as provided in Section 152, Chapter XVI of the Charter of the City of Traverse City.

Bidder understands and agrees, if selected as the successful Bidder, to accept a purchase/service order and to provide proof of the required insurance.

The Bidder shall comply with all applicable federal, state, local and building codes, laws, rules and regulations and obtain any required permits for this work.

The Bidder certifies that it is in compliance with the City's Nondiscrimination Policy as set forth in Administrative Order No. 47 and Chapter 605 of the City's Codified Ordinances.

The Bidder certifies that none of the following circumstances have occurred with respect to the Bidder, an officer of the Bidder, or an owner of a 25% or more share in the Bidder's business, within 3 years prior to the bid:

(a) conviction of a criminal offense incident to the application for or performance of a contract;

(b) conviction of embezzlement, theft, forgery, bribery, falsification or destruction of records, receiving stolen property, or any other offense which currently, seriously and directly reflects on the Bidder's business integrity;

(c) conviction under state or federal antitrust statutes;

(d) attempting to influence a public employee to breach ethical conduct standards; or

(e) conviction of a criminal offense or other violation of other state, local, or federal law, as determined by a court of competent jurisdiction or an administrative proceeding, which in the opinion of the City indicates that the bidder is unable to
perform responsibility or which reflects a lack of integrity that could negatively impact or reflect upon the City of Traverse City, including but not limited to, any of the following offenses or violations of:

i. The Natural Resources and Environmental Protection Act.


iv. A violation of federal, local, or state civil rights, equal rights, or non-discrimination laws, rules, or regulations.

v. Repeated or flagrant violations of laws related to the payment of wages and fringe benefits.

(f) the loss of a license or the right to do business or practice a profession, the loss or suspension of which indicates dishonesty, a lack of integrity, or a failure or refusal to perform in accordance with the ethical standards of the business or profession in question.

Bidder understands that the City reserves the right to accept any or all bids in whole or part and to waive irregularities in any bid in the best interest of the City. The bid will be evaluated and awarded on the basis of the best value to the City. The criteria used by the City may include, but will not be limited to: ability, qualifications, timeframe, experience, price, type and amount of equipment, accessories, options, insurance, permits, licenses, other pertinent factors and overall capability to meet the needs of the City. The City is sales tax exempt – Government.

Having read and clearly understood the instructions to bidders, plans and specifications for the fuel depot improvements, the quantities estimated and being thoroughly familiar with the work to be performed, I/we hereby submit the following bid as Exhibit A (attached).
EXHIBIT A

BIDDER: PLEASE COMPLETE AND RETURN  DUE:  10:00 a.m., Monday  
February 27, 2017

BID  
2017 Murchie Bridge Pedestrian Railing

The undersigned bidder, having carefully examined the local conditions affecting the cost of the work and with the specifications, contract documents and any other applicable information, hereby proposes to perform everything required to be performed and to provide and furnish all labor, materials, necessary tools, equipment and all utility and transportation services necessary to perform and complete this project in a workmanlike manner in accordance with the plans and the work description.

Bidder submits this bid and agrees to meet or exceed all of the City of Traverse City’s requirements and specifications unless otherwise indicated in writing and attached hereto.

Bidder certifies that as of the date of this bid, Bidder’s company or Bidder is not in arrear to the City of Traverse City for debt or contract and is in no way a defaulter as provided in Section 152, Chapter XVI of the Charter of the City of Traverse City.

Bidder understands and agrees, if selected as successful bidder, to enter with the City into the contract included with the specifications.

Bidder understands that the City reserves the right to accept any or all bids in whole or in part and to waive irregularities in any bid in the best interest of the City of Traverse City. The bids will be evaluated and awarded on the basis of the best value to the City. Criteria used will include, but not be limited to, price, accessories, options and overall capability meeting the needs of the City.

Bidder agrees that the bid may not be withdrawn for a period of sixty-three (63) days from the actual date of the opening of the bid.

The prices shown in this bid reflect an anticipated working time of 60 calendar days starting from the dates specified in the "Notice to Proceed". The Bidder shall be responsible for liquidated damages of Four Hundred Dollars ($400) per calendar day for each day after the 60 Calendar day working time limit as specified in the Notice to Proceed. It is the intent of the City to have this project completed by May 26, 2017.
## 2017 Murchie Bridge Pedestrian Railing

<table>
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<tr>
<th>Item No</th>
<th>Est Qty</th>
<th>Unit</th>
<th>Description of Items</th>
<th>Unit Price</th>
<th>Total Price</th>
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<td>LSUM</td>
<td>Railing, Remove</td>
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<td>Trenching</td>
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<td>4</td>
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<td>Continuous Footing</td>
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<td>LSUM</td>
<td>Restoration</td>
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Total Bid for Project (Items 1 through 6, inclusive)

$ ___________________________ DOLLARS

(Write in amount)

## 2017 Murchie Bridge Pedestrian Railing - Alternate Items

<table>
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<tr>
<th>Item No</th>
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Bidder guarantees that he or she has authority to submit this bid for the firm named below.
Submitted by:

Signature ____________________________ Company Name ____________________________
Name and Title (Print) ____________________________ Company Address ____________________________
Phone ____________________________ City, State, Zip ____________________________

Sole proprietorship/partnership/corporation
If corporation, state of corporation

REFERENCES: (include name of organization, address, contact person, daytime phone number, and length of time services have been performed).
1. ___________________________________________________________________________________________

2. ___________________________________________________________________________________________

SUBCONTRACTORS: (include name of organization, address, contact person, daytime phone number, and services to be performed).
1. ___________________________________________________________________________________________

2. ___________________________________________________________________________________________

RAILING FABRICATOR OR MANUFACTURER: (include name of organization, address, contact person, daytime phone number, and services to be performed).
1. ___________________________________________________________________________________________

2. ___________________________________________________________________________________________

SCHEDULE: (Contractor shall provide anticipated start date and date of substantial completion below)
Start Date: ____________________________
Substantial Completion Date: ____________________________
Index of Special Provisions and Clauses
Murchie Bridge Pedestrian Railing
City of Traverse City
February 13, 2017

1. Coordination Clause
2. Site Preparation
3. Concrete Work
4. Railing, Remove
5. Trenching
6. Continuous Footing
7. Pedestrian Railing
8. Pedestrian Railing, Alternate
9. Restoration
COORDINATION CLAUSE

DESCRIPTION

Other Contracts within the immediate area may be in force during the life of this contract.

- The City of Traverse City will remove and replace the pedestrian railing system along the north side of the project, station 289+61 to 293+12. The work will include removing the existing railing system, installing a new concrete curb along the north edge of the existing HMA path, installing the new railing system and related work. The work is anticipated to be completed in conjunction with and concurrent to westbound lane closures and traffic shifts to the eastbound lanes.

The Contractor shall take due account of all such work and shall arrange his methods of operation and storage of materials and equipment so as to cause a minimum of interference with the work to be performed by other Contractors.
1. **SCOPE:**

The work covered by this section shall consist of furnishing all materials, equipment and labor necessary to accomplish site preparation including but not limited to removal of miscellaneous items, demolition, excavation, filling and grading to achieve grades as shown or indicated on the plans and referred to in these specifications.

2. **PROTECTION OF EXISTING IMPROVEMENTS:**

Provide protection necessary to prevent damage to existing improvements designated to remain in place. Protect improvements on adjoining properties and on the Owner's property. Restore damaged improvements to their original conditions as directed by the Engineer.

3. **PROTECTION OF EXISTING TREES AND VEGETATION:**

A. Protect existing trees and other vegetation indicated to remain in place against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated material within the drip line. Also prevent excess foot or vehicular traffic or parking of vehicles within drip line by providing temporary guards to protect trees and vegetation to be left standing.

B. Provide protection for roots greater than 1½ inch in diameter which are cut during construction operations. Coat cut faces with an emulsified asphalt or other acceptable coating formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

C. Repair or replace trees and vegetation designated to remain which are damaged by construction operations in a manner acceptable to the Engineer.

D. Water trees and other vegetation that are required to remain within the limits of the contract work area to maintain their health during the course of construction operations.

4. **SITE CLEARING:**

A. Remove vegetation, improvements or obstructions interfering with installation of new construction. Remove such items elsewhere on the site or premises as specifically indicated. Removal includes digging out stumps and roots.
B. Carefully and cleanly cut roots and branches of trees indicated to be left standing where such roots and branches obstruct new construction. Coat cut faces as directed by the Engineer.

5. **CLEARING AND GRUBBING:**

A. Clear indicated areas of the project site of trees, shrubs and other vegetation, except for those indicated to be left standing.

B. Completely remove stumps, roots and other debris protruding through the ground surface. Use only hand methods for grubbing inside the drip line of trees indicated to be left standing.

C. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 9 inches loose depth, and thoroughly compact to a density equal to the adjacent original ground.

6. **DEMOLITION:**

A. Demolition work applies to any existing structure, above or below ground, that is to be removed as shown on the drawings and specified herein.

B. The Contractor shall remove existing below-grade utilities and improvements necessary to permit proposed construction. Below-grade utilities and improvements shall be removed only to excavation limits for proposed construction.

C. Fill depressions caused by demolition operations with satisfactory soil material unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 9 inches loose depth, and thoroughly compact to 95% of maximum density.

7. **SELECTIVE DEMOLITION:**

A. The extent of selective demolition work is as shown on the drawings and specified herein. Engage only subcontractors who can demonstrate not less than five (5) years successful experience in work of similar character.

B. Performance Criteria:

1. Requirements for structural work: Do not cut and patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.
2. Operational and safety limitations: Do not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance or decreased safety.

3. Visual requirements: Do not cut and patch work which is exposed on the exterior or in occupied spaces in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut and patch work.

C. Job Conditions:

The Owner assumes no responsibility for the actual condition of structures to be demolished. Items of salvageable value to the Contractor may be removed from the structure as the work progresses if not claimed by the Owner. Salvaged items must be transported from the site as they are removed. Carefully remove, clean, crate and store salvaged material claimed by the Owner as directed by the Engineer. Ensure the safe passage of persons around the area of demolition. Conduct operations to prevent injury to adjacent buildings, structures, and facilities, and persons.

D. Materials:

Except as otherwise indicated or approved by the Engineer, provide materials for cutting and patching which will result in equal or better work than the work being cut and patched in terms of performance characteristics and including visual effect where applicable.

Comply with the requirements and use materials identical to the original materials where feasible and where recognized that satisfactory results can be produced thereby.

E. Preparation:

Provide adequate temporary support for work to be cut to prevent failure. Do not endanger other work. Provide adequate protection of other work during selective demolition to prevent damage, and provide protection of the work from adverse weather exposure.

F. Procedures:

Employ only skilled tradesmen to perform selective demolition. In general, where physical cutting action is required, cut work with sawing and grinding tools and
not with hammering and chopping tools. Core drill openings through concrete work.

Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work. Restore exposed finishes of patched areas, and, where necessary, extend finish restoration onto adjoining retained work in a manner which will eliminate evidence of patching.

Where selective demolition terminates at a surface, finish or substrate to remain, completely remove all traces of material selectively demolished including mortar beds. Provide smooth, even substrate transition.

Use temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air.

Clean adjacent portion of the structure and improvements of dust, dirt, and other debris caused by demolition operations as directed by the Engineer. Return adjacent areas to the condition existing prior to the start of the work.

8. REMOVAL OF MISCELLANEOUS ITEMS

A. Remove existing pavements, curbing, sidewalk, fencing and miscellaneous items to prepare the site for the proposed work as shown on the plans and as directed by the Engineer. Sawcut existing items at the work limits. Use water equipped saws to limit dust from sawing work.

9. DISPOSAL OF WASTE MATERIALS:

Contractor shall be responsible for removal of all waste materials and unsuitable soils from the project site and dispose of legally off the site.

10. EXCAVATION:

A. All unsatisfactory soil material, such as muck, peat or organic material, within the grading limits shall be excavated and removed from the site. The Contractor should visit the site and acquaint himself with all existing conditions prior to bidding. Bidders may make their own subsurface investigation to satisfy themselves as to site and subsurface conditions.

B. Notify "MISS DIG" before excavating. Locate existing utilities by hand-excavation as required, and protect them from damage. Should uncharted or incorrectly charted utilities be encountered during excavation, consult the utility owner and the Engineer immediately for directions.
C. Cooperate with the Engineer and utility companies in order to keep services in operation. Do not interrupt utility connections without providing temporary utility services acceptable to the Engineer. Repair damaged utilities to the satisfaction of the utility owner and the Engineer.

11. **ON-SITE FILL MATERIALS:**

On-site fill materials shall be soil or soil-rock mixture which is free from organic matter and other deleterious substance; it shall contain no rocks or lumps over 6 inches in greatest dimension, and not more than 15% of the rocks or lumps shall be larger than 2½ inches in greatest dimension.

12. **IMPORTED FILL MATERIALS:**

Imported fill materials shall be pit-run sand or gravelly sand with a maximum particle size of 2 inches and not more than 12% finer than 75 microns (200 mesh sieve) unless otherwise specified by the Engineer. Clay, silt, peat or other organic soils, rubble, debris, etc., as defined by the Engineer, will not be accepted as imported fill.

13. **DRAINAGE FILL MATERIALS:**

For drainage fill behind retaining walls or other structures, provide clean imported gravel where shown on the drawings as drainage zones. Provide material that has been sampled, tested and approved. The gravel provided shall be Type 34R open-graded aggregate as described in the latest edition of the MDOT Standard Specifications.

14. **FILL MATERIAL APPROVAL:**

A. For approval of imported fill material, notify the Engineer at least five (5) working days in advance of intention to import material, designate the proposed area from which fill material is to be imported and provide a representative sample of the imported fill to the Engineer for the purpose of performing acceptance tests to establish the quality of the material. Notify the Engineer at least two (2) full working days prior to commencing filling operations.

B. All fill material used under pavement shall meet the requirements of the imported fill materials.

C. All other materials not specifically described but required for proper completion of the work of this section shall be selected by the Contractor subject to the approval of the Engineer.
15. **PREPARATION OF SUBGRADE:**

After the site has been cleared and stripped, any unsatisfactory material has been excavated and the site filled and compacted to the specified levels, scarify all exposed soil surfaces to a minimum depth of six (6") inches, moisture-condition if necessary and compact to the requirements specified herein. The work covered in the section shall conform to the MDOT Standard Specifications for Construction, latest edition.

16. **FILL AND COMPACTION:**

A. After subgrade compaction has been approved by the Engineer, spread approved fill material.

B. All fill material placed in the work site shall be approved clean, inorganic material meeting these specifications and shall be laid in lifts of 9 inches maximum loose thickness and compacted to the herein-designated percentage of the maximum density obtained in the laboratory on a representative sample of that soil using the Standard Proctor Test procedure (ASTM D698) or Michigan Cone Method. The Contractor shall exercise control of moisture at his expense in order to achieve the minimum degree of compaction as required herein. All compacted fill shall extend down to an approved surface of suitable natural material. The compaction equipment shall be appropriate for the intended use. If the Contractor wishes to use thicker lifts than those specified, he should demonstrate that the compaction will uniformly achieve the specified compaction throughout the entire lift thickness to the satisfaction of the Engineer.

17. **DEGREE OF COMPACTION REQUIREMENTS:**

A. Compact all fill to 95% under pavements, curbs, shoulders, drives, sidewalks, structures or where such items are undercut by the excavation or where noted on the plans.

B. Fill under lawns and in other such areas, as designated on the drawings, shall be compacted by soil compactors or by the wheels or track of the earth-moving equipment in lifts of 24 inches maximum thickness. A minimum density requirement of 85% applies to these fills.

18. **GRADING:**

Except as otherwise directed by the Engineer, perform all rough and finish grading required to obtain the elevations indicated on the drawings.
19. **GRADING TOLERANCES:**

Rough grade for roads and parking areas shall be ± 0.1 foot; finish grade for landscaped areas shall be ± 0.2 foot.

20. **TREATMENT AFTER COMPLETION OF GRADING:**

After grading is completed and the Engineer has finished his inspection, no further excavation, filling or grading will be permitted except with written approval of the Engineer. Use all means necessary to prevent erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed as herein specified.

21. **OTHER DEBRIS:**

Upon completion of the work the Contractor shall, as directed by the Engineer, remove from the vicinity of the work all equipment and all temporary structures, waste materials and rubbish resulting from his operations, leaving the premises in a neat and presentable condition. In the event of his failure to do so, the same may be done by the City at the expense of the Contractor.

22. **MEASUREMENT AND PAYMENT:**

The work included in this specification shall be measured and paid included in the following pay items which shall include all labor, materials and equipment necessary to complete the work, whether specifically mentioned or implied:

A. Site Preparation:

Site Preparation shall include removal of miscellaneous items, saw-cutting earthwork, grading, backfill and all work to prepare the site for the proposed work that is not paid for separately.
1. SCOPE OF WORK:

The work under this section shall include all materials, labor and equipment necessary to complete all of the concrete work, including but not limited to the items in these specifications and those shown on the working drawings.

2. GENERAL:

All procedures and materials under this section, where not specifically stated, shall be in accordance with standards and recommendations of the American Concrete Institute's "Building Code Requirements for Reinforced Concrete" (ACI 318, latest edition); "Specifications for Structural Concrete Buildings," (ACI 301, latest edition); 2012 Standard Specifications for Construction of the Michigan Department of Transportation.

3. MATERIALS AND PRODUCTS:

A. Portland Cement shall conform to "Standard Specifications for Portland Cement" (ASTM C150, latest edition) or "Specifications for Air-Entrained Portland Cement" (ASTM C175, latest edition) and shall be Type 1A.

B. Concrete aggregates shall conform to "Standard Specifications for Concrete Aggregates" (ASTM C33, latest edition).

C. All water used in concrete shall be from a potable water supply.


E. Water-reducing admixture shall conform to ASTM C494. Only use admixtures which have been tested and accepted in mix designs, unless otherwise acceptable in writing by the Engineer.

F. Moisture barrier shall be clear 4 mils thick polyethylene. Membrane-forming curing compound shall be ASTM C309, Type 1, white membranous curing compound and applied in accordance with MDOT Standard Specification Section 602, 2012 Edition.

G. Expansion Joint Filler shall be pre-formed joint filler conforming to ASTM D1751 or D1752, or shall be resin-impregnated fiberboard conforming to physical
requirements of ASTM D1752, and shall be 1 inch thick unless otherwise indicated on the drawings.

H. Steel reinforcing bars shall conform to ASTM A615, Grade 40, ASTM A616, Grade 50, or ASTM A617, Grade 40. A minimum cover of 3 inches is required on horizontal and vertical surfaces.

I. Welded wire fabric shall conform to ASTM A185.

J. Concrete for this project, unless specified otherwise or modified herein, shall be transit mixed concrete from an approved mixing plant. Concrete shall be mixed and delivered in accordance with the requirements of ASTM C94, "Standard Specifications for Ready Mixed Concrete." Each cubic yard of concrete shall have a minimum compressive strength of 4000 psi at 28 days, an air-entraining content of 6.5 ± 1.5%, and a maximum 4-inch slump. Aggregates shall meet the current ASTM C33 Standard for severe exposure conditions.

4. CONCRETE MIX PROPORTIONS:

One month prior to placement of concrete, unless otherwise approved by the Engineer, mix proportions and trial batch test results (including 28-day compressive strength tests) shall be submitted to the Engineer for his review and approval. The trial batch shall be prepared by an agency acceptable to the Engineer, and shall be proportioned to meet the herein specified slump, air content and compressive strength requirements.

5. MIXING CONCRETE:

A. Mixing and transporting equipment for ready-mixed concrete shall be capable of providing concrete which meets the ASTM C94 requirements for uniformity.

B. For job-mixed concrete, when approved by the Engineer, the mixer shall be rotated at a speed recommended by the manufacturer. If mixer performance tests are not made, each batch of 1 cubic yard or less shall be mixed for at least 2 minutes after all materials are in the mixer. The mixing time shall be increased by 15 seconds for each additional cubic yard or fraction thereof. The entire batch shall be discharged before the mixer is recharged.

6. CONVEYING CONCRETE:

A. Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation or loss of materials.
B. Equipment for chuting, pumping, and pneumatically conveying concrete shall be of such size and design as to ensure a practically continuous flow of concrete at the delivery end without separation of materials.

7. PREPARATION OF EQUIPMENT AND PLACE OF DEPOSIT:

A. Before placement, all equipment for mixing and transport of the concrete shall be cleaned, and all debris and ice shall be removed from the places to be occupied by the concrete. Forms shall be thoroughly wetted (except in freezing weather) or oiled, and masonry filler units that will be in contact with concrete shall be well-drenched (except in freezing weather).

B. Water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Engineer. All latents and other unsound material shall be removed from hardened concrete before additional concrete is added.

8. FORM WORK:

A. All form-work shall be constructed so that concrete members and structures are of correct size, shape, alignment, elevation and position. Side forms shall be of wood or metal straight and free from warp and of sufficient strength to resist springing when the concrete is placed against them. Forms shall be firmly staked to such line and grade so that the surface and width will conform with the surface and width of the adjacent work or as directed by the Engineer, and shall provide for a transverse slope so as to conform with the slope of the adjacent work or as indicated on the drawings. All forms must be inspected and approved by the Engineering Department before concrete is placed therein.

B. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Re-tighten forms during concrete placement if required to eliminate mortar leaks.

C. Set and build into work anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.

9. STEEL REINFORCEMENT:

A. The Contractor shall furnish, cut, bend and place all steel reinforcement as indicated on the drawings or as otherwise required. When surrounding concrete is place, all reinforcement shall be free from loose flaky rust and scale and free from oil, grease or other coating which might destroy or reduce its bond with the concrete. Position, support and secure reinforcement against displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers as
required. Set wire ties so that ends are directed into concrete, not toward exposed concrete surfaces.

B. All spliced bars shall be lapped a minimum of 24 bar diameters or as shown on the drawings. The lapped ends of bars may be separated sufficiently to permit embedment of the entire surface of the bar in concrete, or may be securely wired together. Butt-welding of bars in lieu of lapping will not be permitted.

C. Before placing concrete, care shall be taken to determine that all embedded items are firmly and securely fastened in place as indicated on the drawings. Embedded items shall be free of oil and other foreign matter such as loose coatings of rust, paint and scale. The embedding of wood in the concrete will not be permitted.

D. Install welded wire fabric in as long lengths as is practicable, lapping at least one mesh.

10. **PLACING CONCRETE:**

A. The required curing compound in sufficient quantity to complete the pour along with all necessary application equipment shall be on site and approved by the Engineer prior to ordering and/or placing any concrete.

B. Concrete shall be worked into the corners and angles of the forms and around all reinforcements without permitting the materials to segregate. Concrete shall be placed within 30 minutes after it has been mixed unless otherwise authorized. It shall be placed on clean, damp surfaces free from water, ice, frost, mud debris or objectionable coatings. The placement shall be carried on at such a rate that the formation of cold joints will be prevented. All concrete placing equipment and methods shall be subject to approval of the Engineer.

C. Samples of concrete shall be taken in the field from mixtures used to determine the adequacy of control of materials and the slump, consistency, compressive strength and air content of the concrete in accordance with ASTM C360. The Owner shall furnish all material, concrete technicians, labor and facilities required for molding and curing test specimens at the site. Molding, curing and testing shall be performed by the Engineer. The Owner reserves the right to require the Contractor to mold and test additional specimens as it considers necessary. Additional tests which fail to achieve results established under the design mix shall be paid for by the Contractor. Additional tests which do achieve results established under the design will be paid for by the Owner.

D. The following procedure shall be followed in restoring or replacing any Portland Cement concrete street, driveway or alley wearing surface:
Backfill trench and compact sub-base as directed by the Engineer. The condition of the base shall be approved by the Engineer before concrete is placed thereon. Place the mixed Portland Cement concrete on the base and distribute to such depth and sufficiently above grade so that when consolidated and finished, the surface shall conform to the surface of the adjacent pavement. The finished patch shall have a thickness of not less than the thickness of the original pavement or a minimum of 9 inches in streets.

Consolidate the concrete within the entire area of the patch by means of either hand-spading or use of a mechanical vibrator so as to assure a minimum of voids. Strike off flush with the surface of the adjacent pavement. The strike board shall be moved forward with a combined longitudinal and transverse motion, the manipulation being such that neither end is raised from the adjacent pavement during the process. A slight excess of concrete shall be kept ahead of the cutting edge at all times.

After striking off, the surface shall be made uniform by longitudinal or transverse floating.

The concrete shall be cured as specified in MDOT Specification Section 602 or as directed by the Engineer. The curing process shall be pursued for a period of not less than 48 hours after pouring the concrete at which time the street may be opened to traffic.

The Engineer may require the use of an approved bonding agent so as to assure a lasting bond between the patch and the adjacent pavement.

11. **JOINTS:**

All joints shall conform to the details and shall be constructed in the locations as specified or indicated on the drawings. All equipment and methods used in forming or cutting of joints shall be approved by the Engineer.

A. **Expansion Joints:**

Expansion joints shall be placed as shown on the drawings and as specified herein. Devices used for installation of the joints shall be adequate to hold the parts of the joint in proper position and protect the filler from damage during concreting operations. Adjacent sections of filler shall be fitted tightly together and held in line to ensure continuity and prevent any concrete from entering the expansion space. Any concrete which has flowed into a gap between an expansion joint strip and the edge forms of the concrete shall be cut out immediately after the forms have been removed. Expansion joints shall form a complete and uniform separation between the adjoining sections.
B. Construction Joints:

Transverse construction joints shall be installed at the end of a day's placing operations and at any other point when concrete placement is interrupted for 30 minutes or longer.

C. Contraction Joints for Sidewalks & Slabs:

Longitudinal contraction joints shall be of the weakened plane or dummy type. Joints shall be constructed true-to-line with their faces perpendicular to the surface of the sidewalk or curb line. Transverse joints shall be constructed at right angles to the centerline, and longitudinal joints shall be constructed parallel to the centerline, unless otherwise required. In sidewalks having an overall width of 5 feet, transverse contraction joints shall be constructed at intervals of 5 feet. All contraction joints shall be produced by the use of slab division forms extending to the full depth of the concrete or by cutting joints in the concrete, after floating, to a depth of not less than ¼ the thickness of the sidewalk. The cut joints shall not be less than 1/8 inch nor more than ¼ inch in width and shall be finished smooth and true to line. The concrete at the faces of all joints shall be thoroughly spaded and compacted to fill all voids, and the surface shall be finished smooth and true to grade. All joints are incidental to concrete work.

D. Expansion Joints for Sidewalks:

1-inch transverse joints shall be placed through concrete sidewalk in line with all expansion joints in the adjacent curb, gutter or combination curb and gutter.

½-inch expansion joints shall be placed between the sidewalk and back of adjacent parallel curb or gutter and between the sidewalk and buildings or other rigid structures. When directed by the Engineer, the expansion joint between sidewalks and buildings shall be placed one foot from the property line and parallel to it.

½-inch transverse expansion joints shall be placed through concrete sidewalk in line with back of adjacent sidewalk when pouring sidewalk around a corner at intersections. When pouring crosswalks out to the curb line at intersections in conjunction with installation of new sidewalk around a corner, ½-inch expansion joints shall be placed through concrete sidewalk in line with the back of both adjacent sidewalks.
E. Joints Around Trees:

Where trees occur within 3 feet of the sidewalk on either side of the sidewalk, the sidewalk shall be divided as follows:

½-inch expansion joints shall be placed along the centerline of the sidewalk and parallel with the edge of the sidewalk, 5 feet on either side of the tree. ½-inch transverse expansion joints shall be placed at 5 feet either side of the tree from the edge of the sidewalk nearest the tree to the expansion joint on the centerline of the sidewalk.

A transverse cut joint shall be made from the centerline of the sidewalk to the edge of the sidewalk opposite the side of the tree 5 feet either side of the tree and a cut joint the full width of the sidewalk directly opposite the tree. The cut joints shall not be less than 1/8 inch nor more than ¼ inch in width and shall be finished smooth and true-to-line to a depth of not less than ¼ the thickness of the sidewalk.

F. Joints for Curb and Gutter Work:

Expansion joints composed of pre-molded joint filler shall be used. All such materials shall be of one piece ½ inch thick and shall occupy the full cross section of the curb and gutter. Joints shall be placed at intervals of not more than 60 feet (100 feet for paving machine) and at the ends of each curve, driveway or alley opening. A joint shall be provided for the full sidewalk section where a new piece of walk adjoins a curb. Joints will be considered as paid for in the unit prices for concrete items. Concrete widening shall match as well as possible the joints in the existing pavement. Steel divider plates shall be used at the end of each pour. 1½-inch tooled joints shall be placed at 10-foot intervals.

12. CURB OPENINGS:

Unless otherwise indicated on the plans or directed by the Engineer, curb openings shall be constructed by dropping off the 6" x 6" curb in a length of 18 inches with radii top and bottom. The bottom width of such openings shall generally be 14 feet for driveways and 24 feet for alleys. There shall be a 1½-inch slope from the gutter line up to the back of the concrete. No special payment will be made for these openings. They will be measured as curb and gutter and the Contractor shall place sufficient gravel behind them to permit use after the concrete is seven days old.

13. SEALING JOINTS:

Unless otherwise approved by the Engineer, all joints shall be sealed in accordance with Section 602 of the MDOT Standard Specifications for Construction, 2012 edition. The
joints shall be sealed immediately following the curing period or as soon thereafter as the weather conditions permit, as directed by the Contracting Officer. Immediately before installing the sealer, joints shall be thoroughly cleaned and shall be free from concrete, dust, dirt or other objectionable material.

14. **CONCRETE FINISHES:**

   A. **Slab Trowel Finish:**

      Apply trowel finish to monolithic slab surfaces that are exposed to view. Screed fresh concrete to grade while placing within forms. Floating and troweling operations shall not begin until free water on the surface of the fresh concrete has disappeared. Water may not be sprayed onto fresh concrete to increase workability, nor may Portland Cement be applied to "dry up" the surface. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.

   B. **Edging and Final Finishing:**

      Unless otherwise directed by the Engineer, immediately after the initial finishing, the edges of the slab and all specified joints shall be finished with an edging tool. The pavements shall then be given a final finish by dragging a broom over the concrete surface and that portion of the pavement disturbed by the edging operation.

15. **CURING AND PROTECTION:**

   A. **General:**

      The Contractor shall have all equipment needed for adequate curing and protection of the concrete on hand and ready to install before actual concrete placement begins. The curing medium shall be applied so as to prevent loss of moisture from the concrete. All concrete shall be adequately protected from damage at all times.

   B. **Curing:**

      After the finishing operations have been completed and immediately after the free water has left the surface, the surface of the slab shall be completely coated and sealed with a uniform layer of white membranous curing compound, complying with ASTM C309, unless otherwise directed by the Engineer.
The compound shall be applied in a continuous uniform film by means of mechanically pumped pressure sprayer equipment at the rate directed by the Engineer, but not less than one gallon per 200 square feet of surface.

The equipment shall provide adequate stirring of the compound during application. The equipment for application of the compound must be on the project and approved by the Engineer before work is started. If rain falls on the newly coated pavement before the film has dried sufficiently to resist damage, or if the film is damaged in any other way, the Contractor will be required to apply a new coat of material to the affected areas equal in curing value to that specified for the original coat. The treated surface shall be protected by the Contractor from injury for a period of at least 7 days unless otherwise approved by the Engineer. All traffic, either foot or otherwise, will be considered as injurious to the film of the applied compound. A minimum of foot traffic will be permitted on the dried film as necessary to properly carry on the work, including the removal of any high spots, provided any damage to the film is immediately repaired by the application of a second coat of the compound. Immediately after the forms are removed, the entire area of the sides of the slab shall be coated with the curing compound at the rate specified for the pavement surface.

The Contractor shall provide on the project sufficient alternate coverings for the protection of the pavement in case of rain or breakdown of the spray equipment.

Failure to provide proper curing will be considered as sufficient cause for immediate suspension of the concreting operations.

C. Protection Against Accidents:

The Contractor shall furnish and maintain during the continuance of the work such barriers, lights and other protective devices and shall furnish such watchmen as will effectively prevent any accidents in consequence of his work; and he shall be liable for all accidents and damages occasioned in any way by his acts of neglect or by the acts or neglect of his sub-contractors, agents, employees or workmen.

It shall be the responsibility of the Contractor to plan his pours so the concrete will be sufficiently hardened before terminating work for that particular day. All surfaces of newly poured work shall be protected by the Contractor from any damage caused by pedestrians, vehicles, bikes, dogs and others until the concrete has sufficiently hardened.
D. Cold Weather Requirements:

Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. No frozen materials or materials containing snow or ice shall be used.

All reinforcement, forms, fillers and ground with which the concrete is to come in contact shall be free from snow and ice.

Construction during cold weather shall be performed in accordance with ACI 306, "Recommended Practice for Cold Weather Concreting," as directed by the Engineer.

16. QUALITY CONTROL:

The Contractor shall establish and maintain a quality control system for all operations performed under this section to assure compliance with contract requirements and maintain records of his quality control for all operations performed including, but not limited to, the following:

A. Composition, quality & testing of concrete material
B. Gradation of concrete aggregates
C. Form work
D. Placement of reinforcing steel and embedded items
E. Batching and mixing concrete
F. Conveying and placing concrete
G. Joint installation and treatment
H. Finishing of concrete surfaces
I. Curing and protection of concrete
J. Dimension tolerances
K. Observance of safety regulations
17. **DEFECTIVE WORK:**

A. Any concrete that is found to be lacking in the requirements listed in this specification or of poor workmanship, and not approved by the Engineer shall be considered as Defective Concrete.

B. Defective concrete, voids, honeycombing, ridges and local bulging on all concrete surfaces permanently exposed to view shall be repaired to the satisfaction of the Engineer after the removal of forms. Defective concrete shall be repaired by cutting out the unsatisfactory material and placing new concrete which shall be secured with keys, dovetails or anchors. Excessive rubbing of formed surfaces will not be permitted. All unformed surfaces of concrete, exposed in the completed work, shall have a broomed finish without additional mortar and shall be true to elevation as shown on the drawings. Other surfaces shall be brought to the specified elevations and left true and regular.

18. **MEASUREMENT:**

Only concrete acceptably placed or used will be measured for payment.

Measurement of concrete for payment will be made on the basis of those items listed in the proposal within the pay lines of the structures as indicated on the drawings or herein.
DESCRIPTION

This item shall consist of furnishing all labor, equipment and materials necessary to remove and dispose existing pedestrian railing as shown on the plans and as specified herein. Work shall be in accordance with Section 204 of the Standard Specifications for Construction and as directed by the Engineer.

MATERIAL

None specified.

CONSTRUCTION

Coordinate removal of the existing railing and trenching to minimize the time that the Pedestrian Railing is not in service. The Contractor shall remove the existing pedestrian railings as shown on the plans in accordance with Section 204 of the Standard Specifications for Construction and as directed by the Engineer.

MEASUREMENT AND PAYMENT

The completed work includes all labor, equipment and materials necessary to complete the work as described and will be measured and paid for at the contract unit price using the following pay item:

<table>
<thead>
<tr>
<th>PAY ITEM</th>
<th>PAY UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railing, Remove</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>
a. Description – Excavate, shape, and compact trench for continuous footing to the width and depth shown on the plans.


c. Construction - Coordinate removal of the existing railing and trenching to minimize the time that the Pedestrian Railing is not in service. Excavate, shape, and compact trench for continuous footing to the width and depth shown on the plans. Do not over excavate trench.

d. Measurement and Payment - This work will be measured and paid using the following contract item (pay item).

<table>
<thead>
<tr>
<th>Contract Item (Pay Item)</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenching</td>
<td>Foot</td>
</tr>
</tbody>
</table>
a. **Description** - Install concrete continuous footing according to this special provision and as shown on the plans.


c. **Construction** - Coordinate removal of the existing railing and trenching to minimize the time that the Pedestrian Railing is not in service. Construct concrete continuous footing including two #4 epoxy coated continuous reinforcing steel bars, according to the details on the plans, special detail R-30 series, and section 802 of the Standard Specifications for Construction. The work will include sloping the surface of the footing for proper drainage, installing the anchor bolts for the railing, tool edging all exposed corners meet conditions noted on the plans.

d. **Measurement and Payment** - This work will be measured and paid as specified in section 802 of the standard specifications using the following contract item (pay item).

<table>
<thead>
<tr>
<th>Contract Item (Pay Item)</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuous Footing</td>
<td>Foot</td>
</tr>
</tbody>
</table>
a. Description. This work consists of furnishing, manufacturing and installing a pedestrian railing at the locations specified on the plans. Complete all work in accordance with the 2012 MDOT Standard Specifications, except as modified herein.

Pedestrian railing may be shop fabricated or furnished from the one of the following manufacturers listed below, or approved equal.

**Ultra Aluminum Mfg., Inc.**
2124 Grand Commerce Drive
Howell, MI 48855
(800) 656-4420
[www.ultrafence.com](http://www.ultrafence.com)

**Alumi-Guard, Inc.**
2401 Corporate Bvld.
Brooksville, FL 34604
(877) 258-6448
[www.alumi-guard.com](http://www.alumi-guard.com)

**Ameristar Fence Products**
1555 North Mingo
Tulsa, OK 74116
(800) 321-8724
[www.ameristarfence.com](http://www.ameristarfence.com)

The furnished railing and all components must be from one shop fabricator or manufacturer.

b. Materials. Aluminum material for railing framework (i.e., tubular pickets, rails and posts) must conform to the requirements of ASTM B 221. The aluminum extrusions for posts and rails (outer channels) must be Alloy and Temper Designation 6005-T5. The aluminum extrusions for pickets and rail inner slide channels must be Alloy and Temper Designation 6063-T5.

Elastomeric sheet. Use elastomeric bound fabric pad according to subsection 914.12 of the Standard Specifications for Construction under each post base plate. Decorative caps shall be hinge type or matched to anchor bolt manufactured by Pro-Dec Products, Inc. or equal to assure that the caps stay in place.

Anchor studs and hardware. Use stainless steel anchor studs, bolts, screws and washers that conform to ASTM A 320, Class 1, Grade B8. Nuts must be self-locking nylon insert type and must conform to ASTM A 320, Grade 8F. Provide decorative cap for all anchor bolts.

The various railing components must meet the following dimensions listed below:

<table>
<thead>
<tr>
<th>Components</th>
<th>Dimension (in inches)/Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickets</td>
<td>3/4 x 3/4 x 0.125 thick</td>
</tr>
<tr>
<td>Rails: Top Walls</td>
<td>2 x 2 x 0.125 thick</td>
</tr>
<tr>
<td>Side Walls</td>
<td>2 x 2 x 0.125 thick</td>
</tr>
<tr>
<td>Three per section</td>
<td></td>
</tr>
<tr>
<td>Cantilever sections</td>
<td>3/4 x 3/4 x 0.125 thick pickets</td>
</tr>
<tr>
<td>(All rail and upright intersections and all picket and rail intersections shall be joined by welding)</td>
<td>3 x 3 x 0.25 posts</td>
</tr>
<tr>
<td></td>
<td>2 x 2 x 0.125 thick rails</td>
</tr>
</tbody>
</table>
c. **Construction.** Field measure existing anchor bolts to remain in place and provide shop drawings showing proposed layout. Construct the pedestrian railing in conformance with subsection 808.03 of the Standard Specifications for Construction and as specified herein and as shown on the plans.

Shop fabricate railing in panel sections or assemble and install railing components in panel sections per the manufacturer’s recommendations.

Railing posts, both end and line, must be shop welded to the base plates. The anchors for railing base plates must be accurately positioned according to the plans and firmly held by means of a template. The bolt heads must be painted to match the finish of the railing. In addition, a decorative cap shall be installed to hide all of the anchor bolts.

Shop weld aluminum according to AWS D1.2 and as specified in the contract. Field welding is prohibited.

Any painted surface that has been damaged during shipping or assembly must be repaired per the manufacturer’s recommendations.

Submit working drawings to the Engineer for review and approval, not less than 14 calendar days prior to fabrication.

d. **Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

<table>
<thead>
<tr>
<th><strong>Pay Item</strong></th>
<th><strong>Pay Unit</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Railing</td>
<td>Foot</td>
</tr>
</tbody>
</table>

1. **Pedestrian Railing** will be measured along centerline of the railing without deducting the gaps between panels. The price includes all labor, materials and other appurtenances for furnishing, fabricating and installing the Pedestrian Railing complete and in place including aluminum base plates, bolts, nuts, washers, elastomeric pads and all hardware required for erection.
DESCRIPTION

The work for Pedestrian Railing includes the furnishing of the materials, equipment and labor required for the installation of the following:

   Extruded aluminum hand railing system with aluminum picket infill.

MATERIALS


B. Stainless steel washers, anchor bolts and other fastening hardware as shown on the plans or referred to in these special provisions.

C. Special Warranty:

   1. Cable and Connectors: 10 year limited warranty against defects in materials and workmanship.
   2. Paint Finish on Aluminum Extrusions and Components: 10 year limited warranty against cracking, flaking, blister, and peeling.

D. Extra Materials: Provide one, approximately 3 ounce (85 grams) can, of touch-up paint per 100 feet (30 m) of each color railing.

MANUFACTURER

A. Feeney Inc
   2603 Union St
   Oakland, CA 94607
   Toll Free: (800) 888-2418
   Tel: (510) 893-9473
   Fax: (510) 893-9484
   E-mail: sales@feeneywire.com
   Website: http://www.designrail.com

B. Product: DesignRail™ Aluminum Railing Systems, or an approved equal.

Quality Assurance

A. Qualifications:

   1. Manufacturer Qualifications: Minimum five years experience in producing aluminum railing systems.

Products

A. Posts: 2-3/8 inch (61mm) square by 3/32 inch (2.4 mm) thick extruded aluminum tube. Surface mount as shown on Drawings.
B. Cap Rail: Series 350: 3-1/2 inch by 1-1/4 inch (89 by 32 mm) by 3/32 inch (2.4 mm) thick extruded aluminum elliptical profile.

C. Cap Infill Channel: Extruded aluminum profile configured to secure specified infill.

D. Foot Rail: Extruded aluminum profile configured to secure specified infill.

E. Infill: Pickets: 3/4 inch (19 mm) square extruded aluminum tubes.

F. Fasteners for Interconnecting Railing Components: Stainless steel screws of type and size recommended by railing manufacturer.

G. Aluminum end caps for exposed open ends of rails, tubes, and profiles.

FINISH

A. Shop Finish: Powder coat aluminum components in compliance with AAMA 2604.

B. Color: Standard color as selected by Engineer.

CONSTRUCTION METHODS

Examination

A. Submit Shop Drawings for Railing System showing the field measured spacing.

B. Examine work upon which railings will be installed.

C. Coordinate with responsible entity to correct unsatisfactory conditions.

D. Commencement of work by installer is acceptance of substrate conditions.

E. Follow manufacturer’s installation instructions.

F. Isolate dissimilar metals where indicated on the Drawings with grommets, bushings, or coatings as appropriate.

G. Touch-up damaged paint surfaces with touch-up paint provided.

MEASUREMENT AND PAYMANT

The complete work as measured for Pedestrian Railing, Alternate will be measured and will be paid for at the contract unit price per foot and includes all material, equipment, and labor to install the pedestrian railing in the areas shown on the plans.

<table>
<thead>
<tr>
<th>PAY ITEM</th>
<th>PAY UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrian Railing, Alternate</td>
<td>Foot</td>
</tr>
</tbody>
</table>
DESCRIPTION

This work shall be done in accordance with the requirements of Section 816 of the 2012 MDOT Standard Specifications for Construction except as superceded by the specifications below.

Turf establishment and restoration shall consist of fine grading of topsoil, seeding, fertilizing, mulching and anchoring of materials to re-establish / establish turf as designated on the plans and specifications.

1.01 QUALITY ASSURANCE

A. General: Comply with applicable federal, state, county and local regulations governing landscape materials and work.

B. Employ only experienced personnel familiar with required work. Provide adequate supervision by qualified foreman.

C. Substitutions: Substitutions of turf materials are not allowed. If required turf material is not obtainable, submit proof of non-availability to the Engineer, together with proposal for use of equivalent material.

1.02 DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials in containers showing weight, analysis and manufacturer's name. Protect materials from deterioration during delivery and while stored at site.

1.03 PROJECT CONDITIONS

A. Proceed with and complete restoration work as rapidly as portions of site become available, working within seasonal limitations for each kind of restoration work required.

B. Coordinate with work of other sections
   1. Utilities: Determine location of underground utilities and perform work in a manner to avoid possible damage. Excavate by hand as required. Repair any utilities damaged during site work to satisfaction of utility owner at Contractor's expense,
C. Planting Time

1. For each type of restoration work required, install materials during normal seeding seasons for the project locale.

2. Correlate seeding with specified maintenance periods to provide maintenance from date of substantial completion.

CONSTRUCTION METHODS

2.01 PREPARATION

A. Preparation for Lawn Areas

1. Topsoil to be placed at no greater than 4" of loose soil tamped in place until evenly compacted.

2. Limit fine grading / soil preparation to areas that will promptly be fertilized, seeding and mulched after preparation.

3. Fine grade areas to smooth, even surface with smooth fine texture. Roll rake and drag lawn areas removing ridges and filling depressions as required to meet finish grades.

4. Soil must be free of perennial weed cover including quake grass prior to planting. To remove weeds spray area with weed killer closely following manufacturer instructions. Remove all weed material, fine grade as necessary to finish grade.

5. Moisten prepared lawn soil before planting. Water thoroughly and allow surface moisture to dry before planting lawn areas. Do not create a muddy soil condition.

6. Apply fertilizer at rate previously specified to upper 2" of soil, rake to spread evenly and seed with approved seed mixture and approved hydro-mulch.
2.02 RECONDITIONING LAWNS

A. Reconditioning existing lawns damaged by Contractor's operations including storage of materials or equipment and movement of vehicles. Also recondition lawn areas where settlement or washouts occur or where minor regrading is required.

B. Removals: Strip diseased, contaminated or otherwise unsatisfactory lawn areas and dispose of vegetation off site; do not bury into topsoil.

1. Remove topsoil containing foreign materials resulting from Contractor's operations, including, but not limited to, oil drippings, stone gravel and other construction material; replace with new topsoil.

2. Plant lawns as specified for new lawns in similar areas.

C. Reseeding: Where substantial lawn remains (but is thin), mow, rake, aerate if compacted, fill low spots, remove humps, remove thatch, remove lumps and cultivate soil, fertilize and seed.

1. If weeds are extensive, apply selective chemical weed killers as required.

D. Apply seed mulch if required to keep soil moist.

E. Water newly planted areas and keep moist until new grass is established per Section 816.03 of the MDOT 2003 Standard Specifications for Construction.

Additional watering may be required by the Engineer. The water, sodding / seeding pay item is intended to account for one additional watering beyond the standard requirements.

2.03 INSTALLATION OF MISCELLANOUS MATERIALS

A. Erosion Control

1. Straw mulch: Spread uniform layer 1 ½" thick over all seeded locations, protect erosion prone slopes with erosion netting or other acceptable method to the Engineer.
2. Mulch Blankets shall be placed on slopes greater than 1 on 4 as directed by the Engineer. Mulch blankets shall be included in the item for restoration and will not be measured for payment separately.

MATERIALS

3.01 TOPSOIL

A. Topsoil: Fertile agricultural soil, typical for locality, capable of sustaining vigorous plant growth and taken from a drained site; screened; free of subsoil, rocks larger than 2" in diameter, clay, toxic matter, plants, weeds and roots.

3.02 GRASS MATERIALS

A. Grass seed: Provide fresh, clean, new crop seed complying with tolerance for purity and germination established by the Association of Official Seed Analysts.

B. Grass Seed Mix:

   Seeding mixture as listed below, shall be applied at the rate of 6 pounds per 1,000 square feet. Fertilizer (6/24/04) shall be applied at the rate of 300 pounds per acre.

<table>
<thead>
<tr>
<th>Seeding Mixture Species</th>
<th>Mixture Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kentucky Blue Grass</td>
<td>30%</td>
</tr>
<tr>
<td>Rivera Perennial Rye Grass</td>
<td>40%</td>
</tr>
<tr>
<td>Creeping Red Fescue</td>
<td>30%</td>
</tr>
</tbody>
</table>

3.03 MISCELLANOUS LANDSCAPE MATERIALS

A. Hydro-mulch or recycled newsprint shall consist of a minimum of 96% shredded high-grade newsprint fibers with a maximum of 8% moisture content. The recycled newsprint mulch shall contain a wetting agent, defoaming agent and non-toxic dye stuff to achieve a bright green color. The dye stuff shall adhere tightly to the fiber to minimize leaching.
The following manufacturers are acceptable as suppliers for recycled newsprint mulch:

Applegate Mulch, P.O. Box 292, Okemos, MI 48864
Greenstar Company (Amturf), Brighton, MI 48116
Nu-Wool Company, Inc., P.O. Box 158-5338, Hudsonville, MI 49426

Or approved equal.

All mulch shall be packaged in a waterproof material.

1. Tackifier – the mulch shall contain a minimum of 0.8% by weight of gaurum tacifier.

2. Installation Method and Rate: Recycled newsprint shall be applied over the seeding after the seeding and fertilizer have been applied (see 2.03) at a rate of 2000 lb per acre.

B. Anti-erosion Mulch: Clean, seed-free salt hay or threshed straw of wheat, rye, oats or barley, well seasoned before bailing, free from mature seed – bearing stalks or roots of prohibited or noxious weeds.

MEASUREMENT and PAYMENT

The compete work as measured for the following pay items will be paid for at the contract unit prices and includes all material, equipment and labor to complete this item as specified above.

<table>
<thead>
<tr>
<th>PAY ITEM</th>
<th>PAY UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restoration</td>
<td>Lump Sum</td>
</tr>
</tbody>
</table>
**Construction Notes**

1. Existing pavement shall be protected from damage. Damaged pavement, as determined by the engineer, shall be removed and replaced at no additional cost to the project.

2. All areas disturbed during construction and not paved shall be topsoiled, seeded, and mulched per specifications.

3. All existing landscaped areas shall be protected. Property owner shall be notified if landscaping is to be disturbed.

4. All aluminum railings shall have rounded edges on all surfaces. All posts shall be welded or mechanically fastened to the rails, and rails welded to posts. Welds and mechanical fasteners shall be stronger than the material. All aluminum finished surfaces shall meet the specifications.

5. Field finishes shall not be allowed. Each section shall be prepared ready for final installation prior to arrival.

**Estimated Quantities**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenching</td>
<td>FT</td>
<td>204</td>
</tr>
<tr>
<td>Pedestrian Railing</td>
<td>FT</td>
<td>375</td>
</tr>
<tr>
<td>Pedestrian Railing, Alternate</td>
<td>FT</td>
<td>375</td>
</tr>
<tr>
<td>Continuous Footing</td>
<td>FT</td>
<td>204</td>
</tr>
<tr>
<td>Restoration</td>
<td>LSUM</td>
<td>1</td>
</tr>
</tbody>
</table>
1. CONTRACTOR TO COORDINATE WITH THE MDOT CONTRACTOR FOR THE MURCHIE BRIDGE RAILING CONTRACT FOR SITE ACCESS, STAGING, AND TRAFFIC CONTROL.

2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE INSTALLATION AND USE OF WORKING PLATFORMS ANDgoto ln 18 FOR NEXT LINE


4. SPECIAL CARE SHALL BE TAKEN IN EXCAVATING IN THE PROXIMITY OF ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL SECURE ASSISTANCE FROM THE APPROPRIATE UTILITY COMPANY IN LOCATING ITS LINES. THE CONTRACTOR SHALL ALSO PROVIDE SUPPORT FOR ANY UTILITY WITHIN THE EXCAVATION, PROVIDE PROPER COMPACTION UNDER ANY UNDERMINED UTILITY STRUCTURE, AND, IF NECESSARY, INSTALL TEMPORARY SHEETING OR USE A TRENCH BOX TO MINIMIZE THE EXCAVATION.

5. 0.5" MIN. 3" = 1' PROPOSED 3" SQUARE ALUMINUM TUBE WITH 0.125" WALL THICKNESS AND 6" ALUMINUM BASE PLATE INCLUDED.

6. PEDESTRIAN RAILING SHALL BE MANUFACTURED WITH A TWO BOLT (TYP.) OR CONTINUOUS FOOTING SYSTEM OR MAY BE SHOP FABRICATED SYSTEM, SEE BID TAB.

GENERAL NOTES:

1. CONTRACTOR TO COORDINATE WITH THE MDOT CONTRACTOR FOR THE MURCHIE BRIDGE RAILING CONTRACT FOR SITE ACCESS, STAGING, AND TRAFFIC CONTROL.

2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS AND REGULATIONS GOVERNING THE INSTALLATION AND USE OF WORKING PLATFORMS AND GOVERNMENTAL CENTER ENGINEERING DEPARTMENT 400 BOARDMAN AVENUE TRAVERSE CITY, MICHIGAN 49684


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During the performance of this contract, the contractor, for itself, its assignees and successors, in interest (hereinafter referred to as the “contractor”) agrees, as follows:

1. **Compliance with Regulations**: The contractor shall comply with Regulations relative to nondiscrimination in Federally-assisted programs of the Department of Transportation, Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

2. **Nondiscrimination**: The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, sex, or national origin in the selection, retention, and treatment of subcontractors, including procurements of materials in the discrimination prohibited by Section 21.5 of the Regulation, including employment practices when the contractor covers a program set for in Appendix B of the Regulations.

3. **Solicitation for Subcontracts, Including Procurements of Materials and Equipment**: In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier shall be notified by the contractor of the contractor’s obligations under the contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

4. **Information and Reports**: The contractor shall provide all information and reports required by the Regulations, or directives issues pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the State Highway Department of the Federal Highway Administration to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the State Highway Department or the Federal Highway Administration, as appropriate, and shall set forth what efforts it has made to obtain the information.

5. **Sanctions for Noncompliance**: In the event the contractor’s noncompliance with the nondiscrimination provisions of this contract, the State Highway Department shall impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

   a. Withholding payments to the contractor under the contract until the contractor complies and/or
b. Cancellation, termination or suspension of the contract, in whole or in part.

6. **Incorporation of Provisions:** The contractor shall include provisions of paragraphs (1) through (6) in every subcontract, including procurement of material and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the State Highway Department or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance: provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the State Highway Department to enter into such litigation to protect the interests of the State, and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.