

SECTION 9

SPECIFICATIONS FOR NON-MOTORIZED MULTI-USE PATHWAYS

9.01 DESCRIPTION OF WORK

The Work shall consist of furnishing and installing non-motorized multi-use pathways of the specified widths and thicknesses as shown on the Plans specified herein, and furnishing all labor, materials, tools, and equipment for receiving, unloading, transporting, laying, and testing of the sidewalk. Contractor shall furnish all necessary accessories to complete the pathway work as shown on the Plans and specified herein.

The work shall be performed in accordance with the specifications and plans, the 2020 MDOT Standard Specifications for Construction and the following Specifications.

9.02 RIGHT-OF-WAY/EASEMENTS

The Contractor shall confine the Contractor's work to the public right-of-way or easements as shown on the Plans. Any other area required for equipment or material storage or for construction operations shall be the Contractor's responsibility.

9.03 LIMITATION ON OPERATIONS

The Contractor shall at all times conduct Work so that there is a minimum of inconvenience to the residents of the streets in this project. A traffic control plan must be submitted to, and approved by, the municipality and/or agency of jurisdiction prior to the start of construction.

9.04 PERMITS

The Contractor shall obtain all necessary permits including but not limited to those from the Road Commission and Water Resources Commissioner. The Owner will receive Plan approval from these agencies. The Contractor shall pay for any charges or bonds for those permits and related inspection by those agencies. All costs shall be considered part of the major Work items.

9.05 HOT MIX ASPHALT (HMA) PATHWAY CONSTRUCTION

9.05.01 Grade

The pathway shall be constructed to match the existing grade, or as noted on the construction Plans. The pathway will have a maximum 2% transverse slope either toward or away from the road to maintain existing drainage patterns. Minor fills and cuts will be made in the field during construction to provide smooth transition of the pathway and maintain existing drainage patterns. The cost to make all cuts and fills required to construct the pathway shall be included in the price bid for the pathway grading and restoration.

9.05.02 Subbase Preparation

Existing vegetation shall be removed and topsoil excavated to provide a minimum of six (6) inch sand subbase for the proposed pathway. The existing sand subbase shall be compacted to ninety-five (95%) percent maximum unit weight in accordance with MDOT procedures. Where fill sand is required it shall be compacted to achieve ninety-five (95%) percent maximum unit weight in accordance with MDOT procedures. The cost to prepare the subbase shall be included in the price bid for the pathway grading and restoration.

9.05.03 Gravel Base

The gravel base shall be ten (10') feet wide and consist of six (6) inches of compacted MDOT 21AA gravel in accordance with the section as indicated on the construction Plans. Density of the gravel shall be ninety five (98%) percent. The cost for gravel base shall be included in the price bid for aggregate base under bituminous (6" compacted in place).

9.05.04 Hot Mix Asphalt (HMA) Surface

The hot mix asphalt surface shall consist of 165 lbs/s.y. MDOT 36A hot mix asphalt (top) over 165 lbs/s.y. of MDOT 13A hot mix asphalt (level) placed in accordance with the section as indicated on the construction Plans. The asphalt performance grade shall be 58-28. The hot mix asphalt shall be placed with a self-propelled paver; spreader boxes will not be permitted.

A bond coat shall be applied between successive courses of hot mix asphalt at an application rate of 0.1 gal/s.y. The bond coat shall be included in the cost of hot mix asphalt pathway.

9.06 CONCRETE PATHWAY CONSTRUCTION

Concrete pathway shall conform to 2020 MDOT Standard Specifications for Construction Section 803, "Concrete Sidewalks, Sidewalk Ramps and Steps".

9.06.01 Grade

The pathway shall be constructed to match the existing grade, or as noted on the construction Plans. The pathway will have a maximum 2% transverse slope either toward or away from the road to maintain existing drainage patterns. Minor fills and cuts will be made in the field during construction to provide smooth transition of the pathway and maintain existing drainage patterns. The cost to make all cuts and fills required to construct the pathway shall be included in the price bid for the pathway grading and restoration.

9.06.02 Sub-base Preparation

Existing vegetation shall be removed and topsoil excavated to provide a four (4") inch sand sub-base for the proposed pathway. The existing sand sub-base shall be compacted to ninety-five (95%) percent maximum unit weight in accordance with MDOT procedures. Where fill sand is required it shall be compacted to achieve ninety-five (95%) percent maximum unit weight in accordance with MDOT procedures. The cost to prepare and provide the four (4") inch sand sub-base shall be included in the unit price bid for the pathway grading restoration.

9.06.03 Concrete

Concrete shall meet the requirements for Grade 3000 Concrete as specified in the 2020 MDOT Standard Specifications for Construction Section 1004.

All concrete pathways shall be paved with a single course of concrete. Pathways through driveways shall be six (6") inches thick. All other pathways shall be four (4") inches thick. Unless otherwise specified, saw cuts and removal of existing pathway shall be considered incidental to the major items of Work.

9.06.04 Joints

Full depth transverse expansion joints shall be constructed perpendicular to the surface of the pathways at intervals not to exceed fifty (50') feet. Expansion joint material shall be one-half (1/2") inch wide pre-molded expansion joints and shall be set 1/4" below the surface of the pathway. Sealing of joints will not be required.

One (1") inch pre-molded expansion joints must be placed between the pathway and back-of-curb when pathway is constructed between the curb and building or other rigid structures. Sealing of joints will not be required.

Transverse plane of weakness joints shall be true to line and grade, and shall be placed at four (4') foot intervals and shall be formed with a grooving tool or sawcut to match adjoining sidewalk. Planes of weakness joints shall be constructed to a depth of at least one (1") inch and a width of 1/8 inch to 1/4 inch. Sealing of joints will not be required.

9.06.05 Surface

The surface of the concrete shall be floated to a level uniform surface and left with a slightly rounded surface. The surface shall be roughened with mechanic's brush to prevent smooth and slippery surfaces. No surface shall be troweled to a glassy finish. Edges at the forms and joints shall be rounded with an edging tool.

9.07 HANDICAP CONCRETE CURB

At locations where pathway is constructed to a concrete curb, the curb shall be constructed as shown per the latest MDOT special detail for handicap concrete curb detail. If the curb is existing and does not meet the current standard, the curb shall be sawcut at the nearest joint of removal and shall be completely removed. Unless otherwise specified, this item of work including removal, if needed, shall be paid by the lineal foot as measured along the edge of metal.

9.08 ADA RAMPS

ADA ramps shall be constructed to conform to the 2020 MDOT Standard Specifications for Construction sections 803 “Concrete Sidewalks, Concrete Ramps and Steps”, and 806 “Shared Use Paths”. ADA ramps shall meet the latest special details per the MDOT Standard Plans. Unless otherwise specified, this item of Work shall be paid by the square foot of concrete sidewalk ramp installed.

9.09 TREES

Trees marked “REMOVE” on the Plans shall be taken down and removed from the right-of-way in a manner that does not endanger the adjoining property, or persons or traffic using the right-of-way. Tree limbs (less than three (3) inches in diameter) and tree stumps shall be completely removed and disposed of by the Contractor.

Firewood from the trees removed shall remain the property of the adjoining property owner. If the adjoining property owner does not want the remaining firewood, it shall be the property of the Contractor and disposed of by the Contractor.

Because of the special concern for preservation of trees in the area, only those trees that have been indicated on the construction Plans are to be removed.

Trees six (6) inches and smaller that are removed will not be considered a pay item. If shown in the proposal, trees over six (6) inches that are removed shall be a pay item or otherwise shall be considered part of the major items of Work. All other trees are to be preserved unless written permission for removal is obtained from the adjoining property owner and the Township. Selective pruning of trees will be permitted to allow operation of the Contractor’s equipment and this will be required for the necessary clearances along the proposed pathway. Tree branches and roots shall be pruned neatly and the scars shall be covered with an approved tree dressing.

9.10 STUMP REMOVAL

As noted on the plans or as authorized by the Township, existing tree stumps as well as stumps remaining from trees which are removed shall be completely removed and disposed of by the Contractor. Grinding stumps down will not be permitted except as specifically authorized by the Township; however, all stumps and root material within two feet (2’) of the pathway shall be completely removed. Unless otherwise specified, the cost of stump removal shall be considered part of the major Work items.

9.11 TREE REPLACEMENT

Replacement trees shall be the size and type specified in the proposal. Transplanting replacement trees shall be performed in accordance with the current MDOT Standard Specifications for Construction Section 815 "Landscaping". The Contractor shall replace transplanted trees that are not in a vigorous growing condition one year after transplanting. Unless otherwise specified, tree replacement shall be a pay item.

9.12 TREE TRIMMING

Adjacent trees shall be trimmed to allow for a minimum of ten (10) feet overhead clearance and one (1) foot side clearance to the edge of the pathway. Unless otherwise specified, cost shall be considered part of the major items of Work.

9.13 RELOCATIONS

9.13.01 Existing Utility Structures

Existing utility poles, guy anchors, hydrants (unless listed in the proposal), cable enclosure boxes, etc. shall be relocated by the utility company at no cost to the Contractor.

9.13.02 Fence Relocations

Existing fences shown or not shown on the construction plans shall be relocated in accordance with the current MDOT Standard Specifications for Construction Section 808 "Fencing". Unless otherwise specified, the cost of relocating fences shall be included in the cost of pathway grading and restoration.

9.13.03 Landscape Relocation

Existing shrubs, seedlings, bushes, landscaped mounds, decorative stone, shredded bark, etc. at the proposed pathway location shown or not shown on the Plans shall be relocated and transplanted by the Contractor, unless specified otherwise by the adjoining property owner.

The Contractor shall take care to transplant shrubs and bushes to guarantee their continued growth. If the transplanted material dies within the Contractor's warranty period, the Contractor shall replace the dead material with a similar type nursery stock in vigorous growing condition. Landscaping that cannot be transplanted shall be replaced with a similar type nursery stock in a vigorous growing condition.

Unless otherwise specified, the cost of landscaping relocation and replacement shall be included in the cost for pathway grading and restoration.

9.13.04 Sprinkler System Relocations

Existing sprinkler systems shown or not shown on the Plans shall be relocated as directed by the Owner's Engineer or the adjoining property owner. Sprinkler systems shall be tested for leakage after relocation is complete. Unless otherwise specified the cost of relocating sprinkler systems shall be included in the cost for pathway grading and restoration.

9.14 ADJUSTMENTS OF EXISTING UTILITY VALVES, ETC.

All existing valves for water mains, including valves for water services, gas company valves, manhole and catch basin castings, etc. shall be adjusted to meet the pathway elevations. Adjustments of sanitary sewer castings and water valve boxes shall be coordinated with the Township. If there is a damaged casting, the Township may replace the casting. Riser rings for manholes and valve boxes will not be allowed. Unless otherwise specified, the cost for this Work shall be considered part of the major items of Work.

9.15 MAIL BOXES

The Contractor shall temporarily relocate and maintain mail boxes interfering with the pathway location so that mail service is not interrupted, either temporarily or permanently. Mail boxes shall be replaced in a condition and location equal to that prior to construction or as required by the U.S. Postal Service. All mail boxes shall be replaced with a turn out of six (6) inches of MDOT 23A gravel, which shall be included in the cost of pathway grading and restoration.

9.16 DRIVEWAYS/HARD SURFACE PARKING AREAS

Unless otherwise noted on the construction Plans or as directed by the Owner's Engineer, all existing driveways/hard surface parking areas shall be saved. Where driveways/hard surface parking areas are to be removed, a clean sawcut smooth joint the full depth of the material shall be made. Bond coat or joint material shall be applied if necessary. Unless otherwise specified, cost of sawcut/removal and appurtenances shall be considered part of the major Work items.

9.17 GRAVEL DRIVEWAYS

The proposal includes a quantity for gravel driveways. This item is for replacing gravel in driveways that are disturbed during construction. If there is no proposal item, the work shall be included as part of the grading and restoration pay items.

9.18 DITCH/SWALE CONSTRUCTION

All ditch/swale construction, as required to maintain existing drainage patterns, shall be considered part of the major items of Work, unless otherwise specified.

9.19 EXCESS EXCAVATION

Excess excavation shall be the property of the Contractor and shall be disposed of by the Contractor.

9.20 TREATED LUMBER/CONCRETE BLOCK RETAINING WALL

Treated lumber/concrete block retaining walls shall be constructed in accordance with the details as shown on the construction Plans.

9.21 TREATED LUMBER FENCE

Treated lumber fence shall be constructed in accordance with the details as shown in the construction Plans or as provided in these specifications. This is a pay item as listed in the proposal, unless otherwise specified.

9.22 PEDESTRIAN STRIPING

Where indicated on the construction Plans, existing paved streets and parking areas shall be striped with a six (6) inch wide white, fifteen (15) mil minimum thickness of paint. Paints must be in accordance with MDOT Standard Specifications for Construction section 811 "Permanent Pavement Markings" and approved by the Township prior to placement. Unless otherwise specified, pedestrian striping is a pay item measured per lineal foot of stripe. The Contractor is responsible for placing temporary signage during the placement of pedestrian striping as indicated in these specifications.

9.23 EXISTING PATHWAYS, CROSSINGS/REPLACEMENT/SAFETY

Where existing pathways are disturbed/removed they shall be replaced as soon as possible. The Contractor shall place barricades and warning signs to alert the pathway users.

9.24 MATERIAL TESTING

The Township reserves the right to sample and test any of the materials required for the proposed construction, either before or after delivery to the Project and to reject any material represented by any sample which fails to comply with the minimum requirements specified.

The Contractor shall furnish all materials reasonably required for sampling testing and analysis necessary for the testing of materials as required by these specifications.

The cost of the above described testing shall be paid by the Township. If any material fails to meet the specified requirements, all material represented by the sample shall be rejected unless the Contractor can demonstrate through additional tests, at the Contractor's own expense, that the remainder of the material is satisfactory.

As a minimum requirement, the following shall be submitted to the Owner's Engineer by the Contractor (at no additional cost to the Township):

- A. Pipe: certified test reports for strength from the manufacturer;
- B. Hot mix asphalt (HMA) materials:
 - 1) master mix design, and
 - 2) slips from the plant as to the type of mix; and
- C. Concrete material slips from the plant as to the type of mix.

9.25 LAWN AND YARD RESTORATION

After construction is complete all disturbed lawn areas, including adjacent cut and fill areas as required to blend into the existing yards, shall be repaired using a maximum of 1 on 4 backslope, four (4) inches of topsoil, grass seed in accordance with the MDOT seeding selection guide, fertilizer, and mulch. Lawn restoration shall be in accordance with Section 816 of the MDOT Standard Construction Specifications.

All disturbed areas, including adjacent cut and fill areas as required to blend into the existing yards, which are not lawns shall be repaired using a maximum of 1 on 3 backslope, two (2) inches of topsoil, a Roadside Seed mix, fertilizer, and mulch.

When approved by the Township, the existing topsoil may be salvaged and reused.

Restored areas shall be repaired and reseeded as often as necessary in order to produce a close stand of weed free grass to the edges of the sidewalk. The cost of lawn and yard restoration is to be included in the price bid for pathway grading and restoration.

9.26 SURFACE RESTORATION

All areas disturbed by construction operations shall be restored to their original condition as determined by the Owner's Engineer. The Owner's Engineer will use information from plans and photographs, or video footage when available.

All streets, pathways, and other improved surfaces disturbed by construction operations shall be replaced to uniform lines and grades established by the Owner's Engineer.

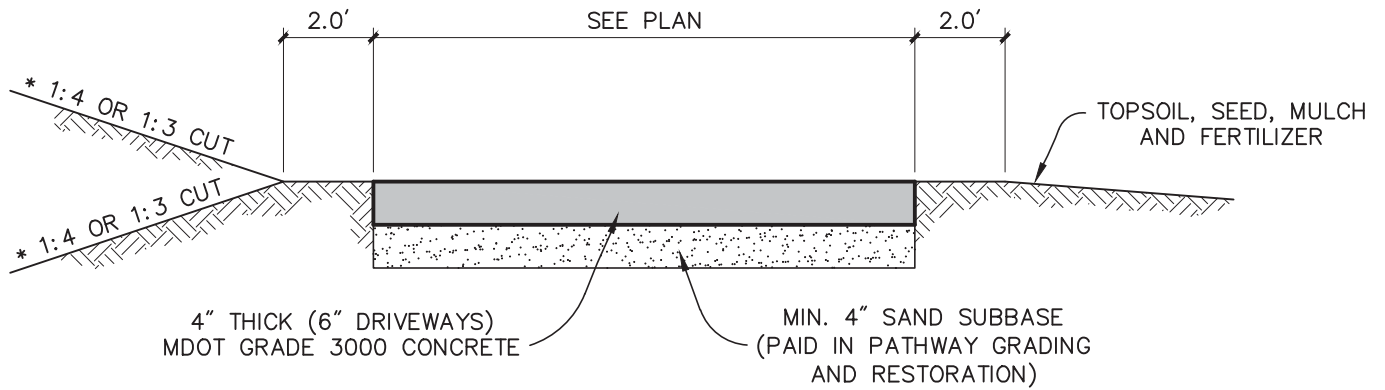
Restoration shall follow the construction in a timely fashion so as to minimize inconvenience to the adjacent property owners and the general public. The manner in which this restoration is done by the Contractor will be a determining factor in the approval by the Owner's Engineer of staking requests and partial payment requests.

All work necessary to return the areas of construction operations to their original condition, other than the items listed in the proposal, shall be considered incidental to the major items of Work, and no specific payment will be made therefore.

9.27

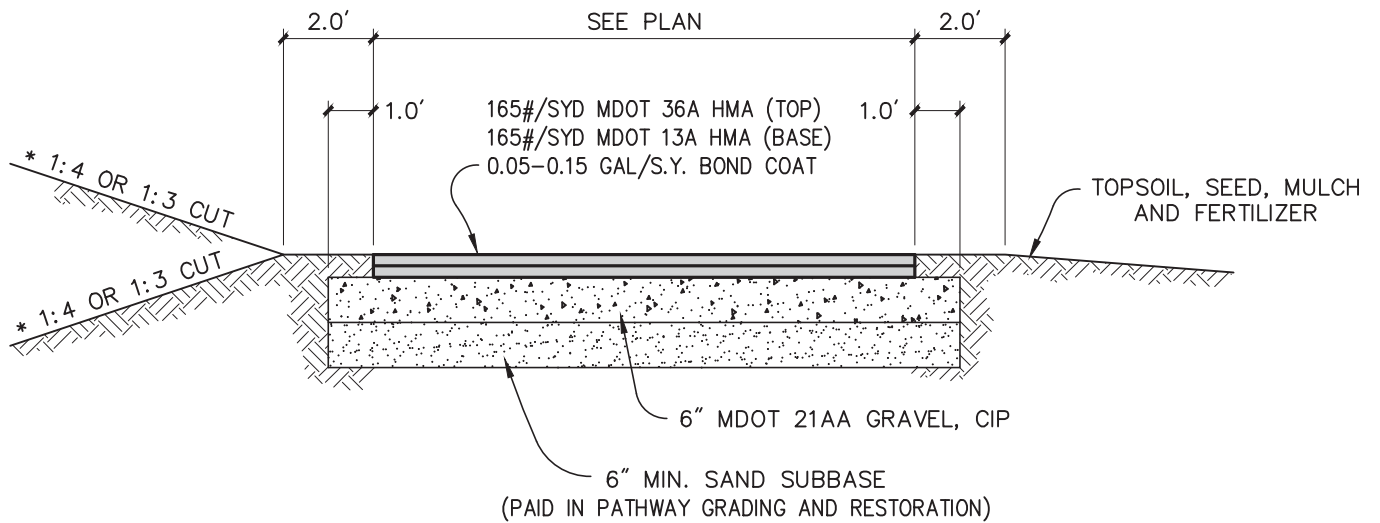
PROTECTION OF WORK

The Contractor shall protect the Work until it is accepted by the Township. Any part of the completed Work that is damaged prior to acceptance by the Township shall be replaced at the Contractor's expense.



CONCRETE PATHWAY DETAIL

SCALE : NONE



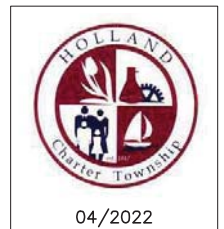
BITUMINOUS PATHWAY DETAIL

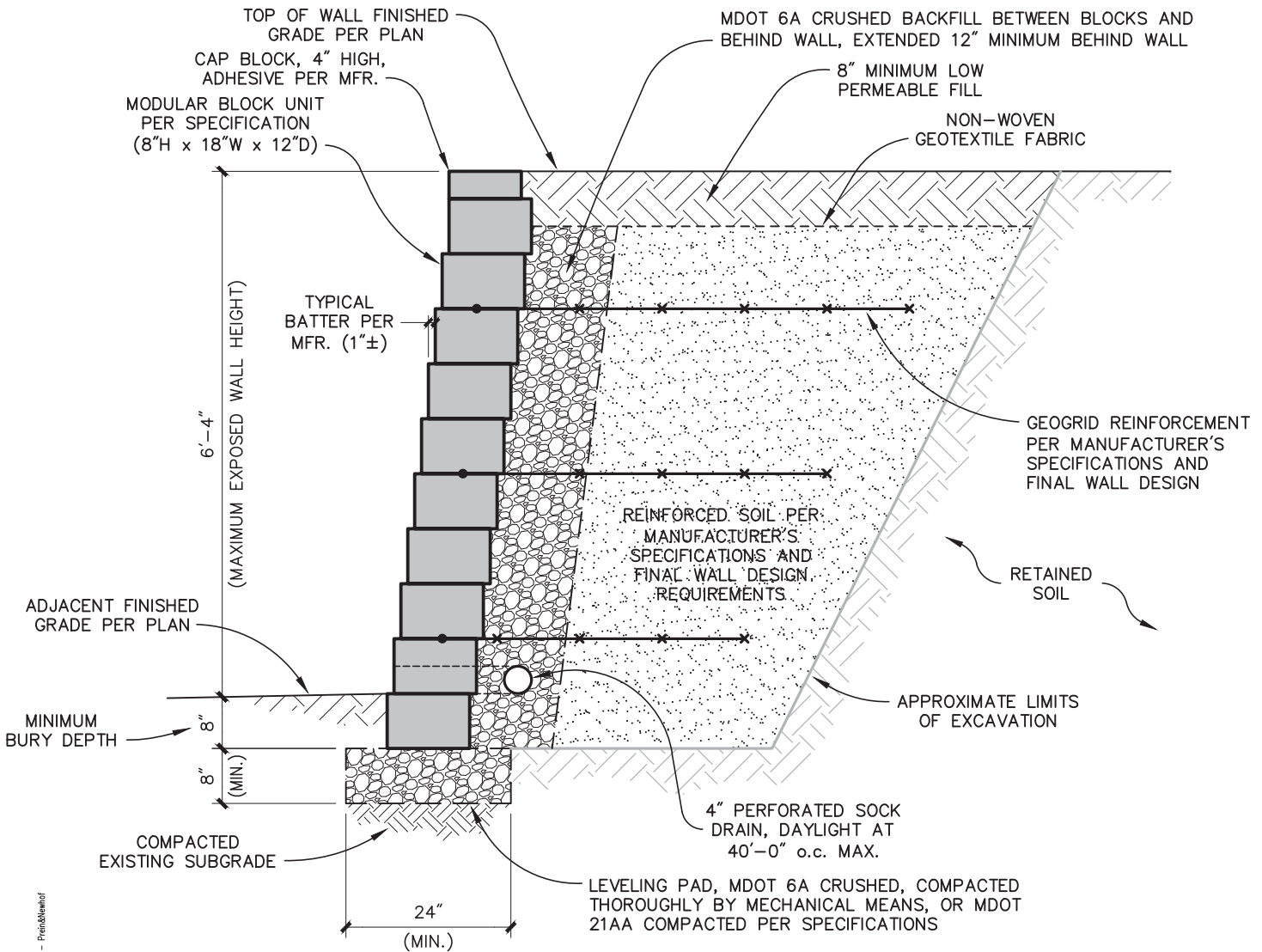
SCALE : NONE

NON-MOTORIZED MULTIUSE PATHWAY DETAILS

NOTE

* - CUT OR FILL TO 1:4 SLOPES IN YARD AREAS AND 1:3 SLOPES IN NON-YARD AREAS.





MODULAR BLOCK RETAINING WALL

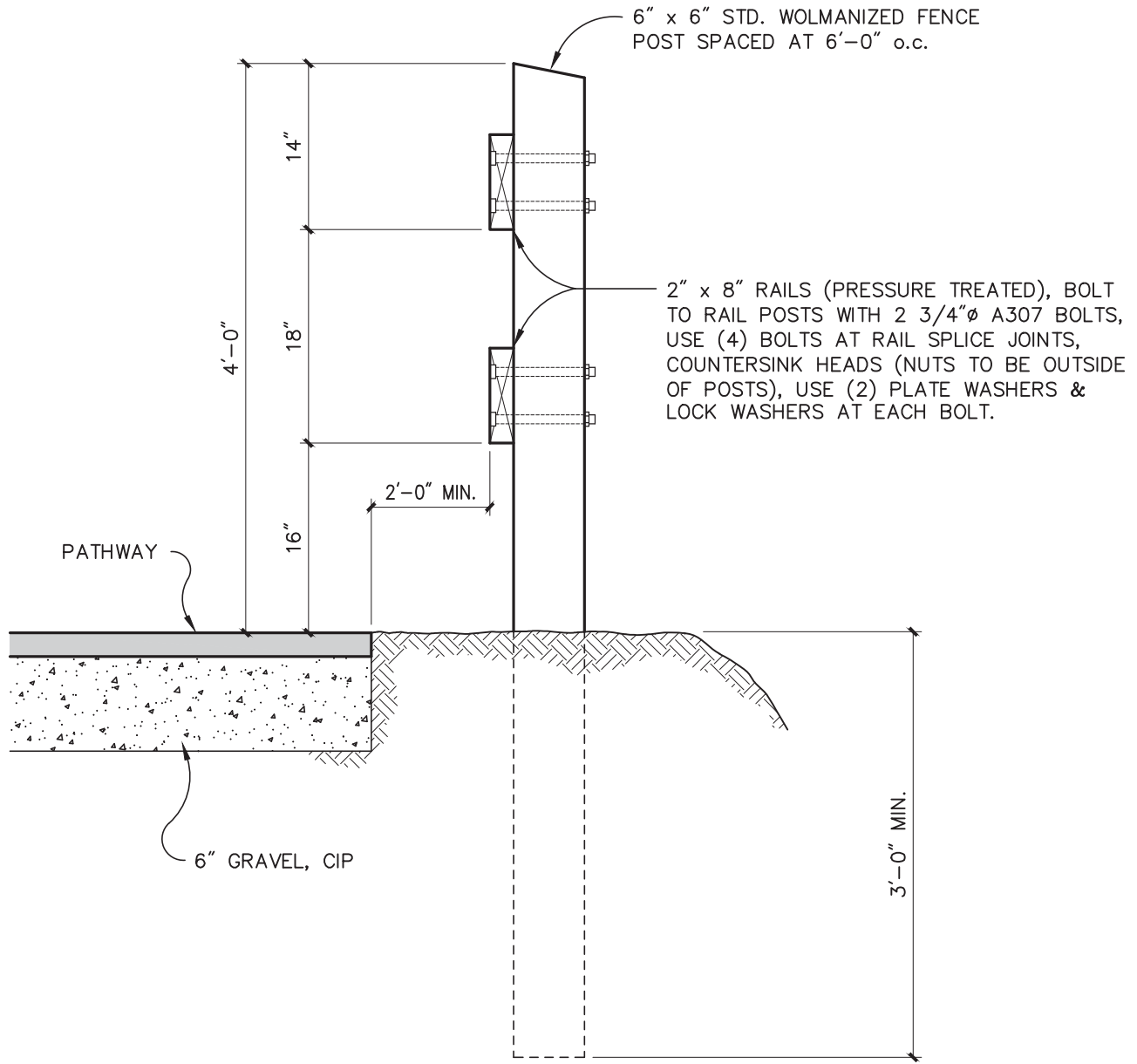
SCALE : 1/2" = 1'-0"

NOTES

1. CONTRACTOR SHALL SUBMIT CONSTRUCTION DRAWINGS AND DESIGN CALCULATIONS FOR THE RETAINING WALL SYSTEM PREPARED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MICHIGAN THAT BEAR HIS OR HER SIGNATURE AND SEAL. THE CONTRACTOR SHALL SUBMIT THE CONSTRUCTION DRAWINGS AND DESIGN CALCULATIONS TO THE ENGINEER FOR APPROVAL PRIOR TO BEGINNING CONSTRUCTION.
2. SEE PLANS FOR WALL LOCATIONS, LENGTHS, AND HEIGHTS.
3. INSTALL FENCE/RAILING BEHIND WALL WHERE SHOWN ON PLAN. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION BEHIND WALL.
4. LIMIT STEPS IN BASE AND TOP OF WALL TO EIGHT (8) INCHES. SPACE STEPS PER MANUFACTURER'S RECOMMENDATIONS.
5. WALL DESIGN SHALL INCLUDE TOP AND BOTTOM OF WALL FINISHED GRADE CONDITIONS INCLUDING SURCHARGE OR SLOPING SOIL WHERE OCCURS.



04/2022

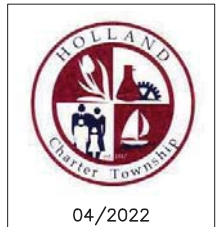


TREATED LUMBER FENCE

SCALE : NONE

NOTES

1. LUMBER SHALL BE #2 GRADE MINIMUM, TREATED PER AMERICAN WOOD PROTECTION ASSOCIATION (AWPA) STANDARD U1 WITH WATERBORNE PRESERVATIVES NOT CONTAINING CHROMIUM OR ARSENIC. RAILS SHALL BE TREATED TO UC3B MINIMUM, POSTS SHALL BE TREATED TO UC4A MINIMUM. IF CUT AFTER TREATMENT, COAT SURFACES TO COMPLY WITH AWPA M4.
2. ATTACHMENT HARDWARE AND BOLTS SHALL BE GALVANIZED.
3. IF FINISHED GRADE BEYOND FENCE HAS MORE SLOPE OR LESS LEVEL GROUND, POST EMBEDMENT SHALL BE 6'-0" MINIMUM.
4. COORDINATE POST PLACEMENT WITH GEOGRID MANUFACTURER'S RECOMMENDATIONS IF NEAR PROPOSED GEOGRID.



04/2022