PROPOSAL AND SPECIFICATIONS

FOR

Bridge Rehabilitation

Longbridge Road Pedestrian Structures over Pentwater River

PENTWATER TOWNSHIP

April 21, 2026

OCEANA COUNTY ROAD COMMISSION

Office (231) 873-4226 | **P.O. Box 112** | **Shop (231) 873-3717**
FAX (231) 873-7123 | **Hart, Michigan 49420**
www.oceanacrc.org (website)
clerk@oceanacrc.org (email address)

PROPOSAL AND BID

Date: _____

Board of County Road Commissioners of Oceana County
3501 W Polk Rd, Hart, MI 49420

Sirs and Madam:

The undersigned has examined the plans, specifications, and location of the work described herein and is fully informed as to the nature of the work and the conditions relating to its performance and understands that the quantities shown in the estimate are approximate only and are subject to either increase or decrease; and hereby proposes to furnish all necessary machinery, tools, apparatus and other means of doing the work, do all the work, furnish all the materials except as otherwise specified herein, and, for the unit prices named in the accompanying unit price schedule, to complete work in strict accordance with the plans and specifications therefore.

The undersigned further proposes to do such extra work as may be ordered by you, prices for that are not included in the itemized bid, compensation therefore to be made on the basis agreed upon before such extra work is begun.

The undersigned agrees to complete all items of work on or before August 31, 2026. The schedule for liquidated damages is located in the general specifications.

The contractor shall submit a progress schedule subject to approval of the Engineer prior to the award of the contract.

The undersigned encloses a certified check, cashier's check, or Bid Bond, representing 5% of the bid, in the amount of $_____, payable to the Oceana County Road Commission as a guarantee of good faith. If the contract is awarded to the undersigned, and the undersigned fails to furnish satisfactory bonds to the Road Commission within fifteen (15) days after being given notice of award, said check will be forfeited to the Oceana County Road Commission as liquidated damage.

THE CONTRACT

The Contract Documents consist of the bid documents, this Agreement, Conditions of the Contract (General Supplementary, Special and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negation, representations or agreements, either written or oral. If anything in the other Contract Documents is inconsistent with this Agreement, this Agreement will govern.

PROJECT: Bridge rehabilitation work including removal and reinstallation of steel grid deck, replacement of beam splice plates, replacement of bearing beams, installation of steel bracing, and steel cleaning and coating on Longbridge Road pedestrian structures over Pentwater River, Pentwater Township, Oceana County.

ITEMIZED UNIT PRICE SCHEDULE

ITEM OF WORK	QUANTITY	UNIT	UNIT PRICE	TOTAL
Mobilization, Max $34,100	1	LSUM		
Pavt Mrkg, Waterborne, 4 inch, Yellow	642	Ft		
Channelizing Device, 42 inch, Fluorescent, Furn	25	Ea		
Channelizing Device, 42 inch, Fluorescent, Oper	25	Ea		
Minor Traf Devices	1	LSUM		
Pavt Mrkg, Longit, 6 inch or Less Width, Rem	642	Ft		
Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, White, Temp	642	Ft		
Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch, Stop Bar	30	Ft		
PTS, Temp, Furn	1	Ea		
PTS, Temp, Oper	1	Ea		
Sign, Type B, Temp, Prismatic, Furn	231	Sft		
Sign, Type B, Temp, Prismatic, Oper	231	Sft		
Sign, Type B, Temp, Prismatic, Furn	16	Sft		
Sign, Type B, Temp, Prismatic, Oper	16	Sft		
Structures, Rem Portions	1	LSUM		
False Decking	1,625	Sft		
Bolt, Adhesive Anchored, 5/8 inch	16	Ea		
Beam Plate, Seal Perimeter	114	Ft		
Structural Steel, Retrofit, Furn, Fab, and Erect	1,736	Lb		
Temporary Support	12	Ea		
Steel Grate Decking, Salv and Reinstall	1	LSUM		
Protective Shield, Utility Pipe	240	Ft		
Steel Structure, Cleaning, Type 4	1	LSUM		
Steel Structure, Coating, Type 4	1	LSUM		

TOTAL: $ _____

The undersigned bidder agrees that the following is a complete and accurate list of all sub-contractors to be utilized if awarded this contract and any change from this list will be permitted only with the consent of the Board of County Road Commissioners of Oceana County.
List name of each sub-contractor and brief description of work to be done.

_____

_____

_____

_____

_____

_____

I hereby state that all of the information I have provided is true, accurate and complete. I hereby state that I have the authority to submit this bid, which will become a binding contract if accepted by the Board of County Road Commissioners of Oceana County. I hereby state that I have not communicated with nor otherwise colluded with any other bidder, nor have I made any agreement with nor offered or accepted anything of value from an official or employee of the Board of County Road Commissioners of Oceana County that would tend to destroy or hinder free competition.

In case the bidder is a co-partnership, each member must sign this proposal.

In case the bidder is a Corporation, this proposal must be executed by its duly authorized officials in accordance with its articles of incorporation and a certified copy of such articles must be attached hereto.

I hereby state that I have read, understand and agree to be bound by all the terms of this bid document.

SIGNATURE: _____ NAME: _____
(Type or Print)

TITLE: _____ DATE: _____

FIRM NAME: _____ PHONE: _____

ADDRESS: _____
(Street Address) (City) (State) (Zip)

FOR COUNTY USE ONLY – DO NOT WRITE BELOW

ACCEPTED BY: BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF OCEANA, MICHIGAN

_____
William Myers, Chairman

_____
Lloyd Gowell, Vice-Chairman

_____
Denis Koch, Member

_____
Andrew Heykoop, Member

_____
Jason LaFever, Member

_____
Date

STANDARD SPECIFICATIONS

The work covered by the plans and specifications will be done in accordance with the 2020 Michigan Department of Transportation Standard Specifications for Construction, except as qualified in supplemental specifications and special conditions of the Oceana County Road Commission or as agreed to in writing at the time of the award of the contract. Nothing herein will be construed to create any obligation or duty on the part of the Board of County Road Commissioners of Oceana County, including obligations or duties which may be expressed or implied in the Standard Specifications for Construction of the Michigan Department of Transportation, unless specifically set forth in the contract documents.

Section 102 of the Standard Specifications is removed in its entirety.

The quantity for all pay items will not exceed more than 5% of the plan quantity unless the contractor has received a written work order from the Oceana County Road Commission. Amounts in excess of the plan quantity will not be considered for payment unless the increase was directed by the Engineer or an error in calculations is proven.

RESPONSIBILITIES OF CONTRACTOR

A. Responsibility for and Supervision of Construction: Unless otherwise stated herein, Contractor will be solely responsible for all construction under this Contract, including the methods, techniques, sequences, procedures, and means, and for coordination of all work. Contractor will supervise and direct the work to the best of Contractor's ability, and give it all attention necessary for such proper supervision and direction. Contractor will notify the Road Commission of any anticipated pay item overruns or extras as soon as possible to allow for approval or design changes.

B. Discipline and Employment: Contractor will maintain at all times strict discipline among Contractor's employees, and Contractor agrees not to employ for work on the project any person unfit for work or without sufficient skill to perform the job for which he or she was employed. Neither the Contractor nor his/her Subcontractors shall discriminate against any employee or applicant for employment, to be employed in the performance of this Contract, with respect his/her hire, tenure, terms, conditions or privileges of employment, of any matter directly or indirectly related to employment because of his/her race, color, religion, national origin, or ancestry. Breach of this covenant may be regarded as a material breach of this Contract.

C. Furnishing of Labor, Materials, etc: Unless otherwise stated herein, Contractor will provide and pay for all labor, materials, and equipment, including tools, construction equipment, and machinery, utilities, including water, transportation, and all other facilities and services necessary for the proper completion of work on the project in accordance with the Contract Documents.

D. Payment of Taxes: Contractor will pay all taxes required by law in connection with work on the project in accordance with this agreement including sales, use, and similar taxes.

E. Licenses and Permits: Contractor will abide by all previously acquired permits included in this agreement and will secure all licenses and additional permits necessary for proper completion of the work, paying the fees for such licenses and permits.

F. Compliance with Laws and Regulations: Contractor will comply with all laws and ordinances, and the rules, regulations or orders of all public authorities relating to the performance of the work under and pursuant to this Agreement including, but not limited to, the Occupational Safety and Health Act of 1970, the Michigan Occupational Safety and Health Act, and the rules and regulations of the Michigan Construction Safety Commission.

G. Responsibility for Negligence of Employees and Subcontractors: Contractor assumes full responsibility for acts, negligence or omissions of all of Contractor's employees on the project, for those of Contractor's subcontractors and their employees, and for those of all other persons doing work under a contract with Contractor.

H. Responsibility for Safety: Unless otherwise stated herein, at Contractor's expense, Contractor will take all necessary precautions (including, without limitation, the furnishing of traffic control, barricades, traffic control devices, flaggers, warning lights, signs, warning signs, safety channels, channelization devices, guards, fences, walks, flags, cables and lights) for the safety of, and the prevention of injury, loss and damage to, persons and property (including, without limitation, in the term persons, members of the public, employees, Contractor's subcontractors and their respective employees, other contractors, their subcontractors and respective employees) on, about or adjacent to the location where the work is being performed, and will comply with all applicable provisions of safety rules, ordinances, codes, regulations, and orders of duly-constituted public authorities including, but not limited to, the Michigan Manual on Uniform Traffic Control Devices.

I. Responsibility of Subcontractors: The Contractor will require any subcontractor hired by the Contractor for the purpose of performing any of the work described by the Contract documents to be bound by all of the terms and conditions of the Contract documents and to perform the work in accordance with the Contract documents. Each and every condition of the Contract documents, including without limitation, the RESPONSIBILITIES OF THE CONTRACTOR, will be made a condition of each subcontract entered into by the Contractor in conjunction with the performance of the work.

INDEMNIFICATION

To the fullest extent permitted by law, the Contractor will indemnify, defend, and hold harmless the Board of County Road Commissioners of Oceana County and the Pentwater Township Board, their officers, employees, representatives and agents from and against any and all claims, damages, demands, payments, suits, actions, recoveries, judgments, losses and expenses, including attorney fees, interest, and court costs, which are made, brought or recovered against the Board of County Road Commissioners of Oceana County or the Pentwater Township Board,

arising out of or resulting from performance of the Contractor's work under this Contract, provided that such claims, damages, losses, demands, payments, suits, actions, recoveries, judgments and/or expenses are attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including loss of use resulting therefrom, but only if caused in whole or in part, by the act, omissions, fault, negligence or breach of the conditions of this Contract by negligent acts or omissions of the Contractor, the Contractor's sub-subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. The Contractor will not, however, be obligated to indemnify the Board of County Road Commissioners of Oceana County or the Pentwater Township Board, for any damage or injuries caused by or resulting from the sole negligence of the Board of County Road Commissioners of Oceana County or the Pentwater Township Board. Such obligation will not be construed to negate, abridge or otherwise reduce other rights or obligations of indemnity which would otherwise exist as a party or person described in this paragraph.

In claims against any person or entity indemnified under this Agreement by an employee of the Contractor, the Contractor's sub-subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this paragraph will not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or the Contractor's subcontractors under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

INSURANCE

A. Contractor's Insurance: Prior to start of the Contractor's work, the Contractor will procure for the Contractor's work and maintain in force until the completion of the work, workers' compensation insurance, employer's liability insurance, comprehensive general liability insurance and all insurance required of the contract under the contract documents.

   The Board of County Road Commissioners of Oceana County and the Pentwater Township Board will be named as additional insured on each of these policies except for worker's compensation.

   The insurance will include contractual liability insurance covering the Contractor's obligations under its agreement of indemnification as set forth herein.

B. Minimum Limits of Liability: The Contractor's comprehensive general and automobile liability insurance as required herein, will be written with limits of liability not less than the following:

   a. Comprehensive general liability including completed operations

      (1) $500,000 each occurrence

b. Property damage

(1) $500,000 each occurrence

C. Number of Policies: Comprehensive general liability insurance and other liability insurance may be arranged under a single policy for the full limit required or by combination of underlying policies with the balance provided by an excess or umbrella liability policy.

D. Cancellation, Renewal or Modification: The Contractor will maintain in effect all insurance coverage required under this Agreement at the Contractor's sole expense and with insurance companies acceptable to the Board of County Road Commissioners of Oceana County.

All insurance policies will contain a provision that the coverage afforded thereunder will not be cancelled or not renewed nor restrictive modifications added at any time after a certificate of insurance required under agreement has been issued and before the work; as defined herein, has been completed, until at least thirty (30) days prior thereto written notice has been given to the Board of County Road Commissioners of Oceana County unless otherwise specifically required in the Contract Documents.

Certificates of insurance or certified copies of policies acceptable to the Board of County Road Commissioners of Oceana County will be filed with the Board of County Road Commissioners of Oceana County prior to the commencement of the Contractor's work.

In the event that the Contractor fails to obtain or maintain any insurance coverage required under this Agreement, the Board of County Road Commissioners of Oceana County may:

1. Purchase such coverage and charge the expense thereof to the Contractor, and

2. Withhold from any payment due or to become due to the Contractor an amount sufficient to protect the Board of County Road Commissioners of Oceana County and the Pentwater Township Board from such claims, damages, demands, payments, suits, actions, recoveries, judgments, losses and expenses, including attorney fees, interest and court costs, and

3. Terminate this agreement.

Nothing contained in this Agreement, nor the Board of County Road Commissioners of Oceana County's compliance therewith, will relieve the Contractor from its obligations under the Contract to purchase and maintain required insurance or to indemnify the Board of County Road Commissioners of Oceana County and the Pentwater Township Board.

PROGRESS CLAUSE

The Road Commission anticipates that construction can begin no earlier than June 1, 2026, or on the date agreed upon with the Engineer. The successful bidder will be required to submit a Progress Schedule, giving an outline of his proposed order of work and to indicate the dates for completion of the work. This outline, when approved by the Road Commission, will become a part of the contract.

The Contractor will prosecute the work in the order given in the Progress Schedule, with force and equipment adequate to complete the sections within the time limit therein fixed for completion. In case of failure to proceed with the work as rapidly as is provided in the Progress Schedule, or if it appears at any time that such work is not being prosecuted in such a manner as to insure its completion within the time specified, the Road Commission will have the right to require the contractor to furnish and place in operation such additional force and equipment as the Road Commission will deem necessary to bring the work up to the Progress Schedule; and in case of the Contractor's neglect to do so, the Road Commission may place such working force and equipment on the work and charge the Contractor the cost of the labor and such rental and depreciation rates for the plan and equipment as in its judgment is reasonable, and for such time as the plant and equipment are in service.

COORDINATION CLAUSE

Cooperate and coordinate construction with other contractors, utility companies, and public agencies in accordance with subsection 104.08 of the Standard Specifications for Construction.

PROGRESS PAYMENTS

Road Conductor software will be used to track contract items and to make payments. See the Special Provision for Contract Management.

FINAL PAYMENT

Final payment will not be made until the contractor will have filed with the Board of County Road Commissioners the consent of the Surety of the payment of the final estimate and satisfactory evidence by affidavit or otherwise that all his indebtedness by reason of the contract has been fully paid or satisfactorily secured. In case such evidence is not furnished, the Road Commission may retain out of any amount due said contractor sums sufficient to cover all lienable claims unpaid.

CONTRACT BONDS

The Successful Bidder will furnish satisfactory performance and lien bonds, each in the amount of not less than one hundred (100) percent of the total contract price. Such bonds will meet the regulations of the Road Commission and the requirements specified in the laws of Michigan.

MDOT PREQUALIFICATION

Contractors bidding on this work must be pre-qualified by the Michigan Department of Transportation in the following classifications, or use prequalified subcontractors:

Fb Structural Steel
N4 Bridge Painting

NOTICE OF AUTHORIZATION

Permit Number: WRP048468 v.1 **Date Issued: April 3, 2026**
Site Name: 64 - Longbridge Road over Pentwater River **Expiration Date: April 3, 2031**

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

☒ Part 31, Floodplain Regulatory Authority of the Water Resources Protection.

☒ Part 301, Inland Lakes and Streams..

Authorized Activity:

Perform structural maintenance and repairs, including replacing splice plates on the beams, replacing bearing beams at the abutments, adding bracing along the top of the beams, and cleaning and coating the entire structure. All of the structural repair work will be above the floodplain elevation, but the blasting and painting will extend below the floodplain elevation of approximately 582.3-feet NAVD88. No work is allowed in adjacent wetlands. All work shall be performed according to the attached plans and permit conditions.

Waterbody: Pentwater River

To be conducted at property located in: Oceana County, Pentwater Township
Town 16N, Range 18W, Section 24

Permittee:
Oceana County Road Commission
Mark Timmer
3501 West Polk Road
P.O. Box 112
Hart, Michigan 49420

Benjamin Johnson
Transportation Review Unit
Water Resources Division
616-295-2787

This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.
Please refer to the above permit number with any questions or concerns.

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:

Oceana County Road Commission
Mark Timmer
3501 West Polk Road
P.O. Box 112
Hart, Michigan 49420

Permit No: **WRP048468 v.1**
Submission No.: **HQM-09WN-E2J49**
Site Name: **64 - Longbridge Road over Pentwater River**
Issued: **4/03/2026**
Revised:
Expires: **4/03/2031**

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- ☒ **Part 301, Inland Lakes and Streams**
- ☐ **Part 303, Wetlands Protection**
- ☐ **Part 315, Dam Safety**
- ☐ **Part 323, Shorelands Protection and Management**
- ☐ **Part 325, Great Lakes Submerged Lands**
- ☐ **Part 353, Sand Dunes Protection and Management**
- ☒ **Part 31, Water Resources Protection (Floodplain Regulatory Authority)**

EGLE certifies that the activities authorized under this permit are in compliance with the State Coastal Zone Management Program and certifies without conditions under the Federal Clean Water Act, Section 401 that the discharge from the activities authorized under this permit will comply with Michigan's water quality requirements in Part 31, Water Resources Protection, of the NREPA and associated administrative rules, where applicable.

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

Authorized Activity:

Perform structural maintenance and repairs, including replacing splice plates on the beams, replacing bearing beams at the abutments, adding bracing along the top of the beams, and cleaning and coating the entire structure. All of the structural repair work will be above the floodplain elevation, but the blasting and painting will extend below the floodplain elevation of approximately 582.3-feet NAVD88. No work is allowed in adjacent wetlands. All work shall be performed according to the attached plans and permit conditions.

Waterbody Affected: Pentwater River
Property Location: Oceana County, Pentwater Township, Town 16N, Range 18W, Section 24

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.

B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.

C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.

D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.

E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.

F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.

G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.

H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.

I. Permittee shall notify EGLE within one (1) week after the completion of the activity authorized by this permit by completing and forwarding the attached preaddressed postcard to the office addressed thereon.

J. This permit shall not be assigned or transferred without the written approval of EGLE.

K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.

L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).

M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.

N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.

O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.

P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.

Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.

R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

1. Authority granted by this permit does not waive compliance requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA. Any discharge of sediment into waters of the state and/or off the road right-of-way is a violation of this permit. A violation of these parts subjects the permittee to potential fines and penalties.

2. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.
3. The permittee is responsible for acquiring all necessary easements or rights-of-way before commencing any work authorized by this permit. All construction operations relating to or part of this project shall be confined to the existing right-of-way limits or other acquired easements.
4. Temporary soil erosion and sedimentation control measures shall be installed before or upon commencement of the earth change and shall be maintained daily. Temporary soil erosion and sedimentation control measures shall be maintained until permanent soil erosion and sedimentation control measures are in place and the area is stabilized. Permanent soil erosion and sedimentation control measures for all slopes, channels, ditches, or any disturbed area shall be installed within five (5) calendar days after final grading or the final earth change has been completed.
5. All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.
6. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20 for the Upper Peninsula, October 1 for the Lower Peninsula north of US-10, and October 10 for the Lower Peninsula south of US-10
7. This permit placard shall be kept posted at the work site, in a prominent location at all times for the duration of the project, or until permit expiration.
8. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by the EGLE, will be for a five (5) year period beginning at the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.
9. No fill, excess soil, or other material shall be placed in the 100-year floodplain, or any wetland or surface water area not specifically authorized by this permit, its plans, and specifications.
10. During removal or repair of the existing structures, every precaution shall be taken to prevent debris from entering any watercourse. Any debris reaching the watercourse during the removal and/or reconstruction of the structure shall be immediately retrieved from the water. All material shall be disposed of in an acceptable manner consistent with local, state, and federal regulations.
11. If the project, or any portion of the project, is stopped and lies incomplete for any length of time other than that encountered in a normal work week, every precaution shall be taken to protect the incomplete work from erosion, including the placement of temporary gravel bag riprap, temporary seed and mulch, or other acceptable temporary protection.

12. Any alterations to the existing road grade elevations other than that shown on the plans will require prior approval from the Water Resources Division (WRD).

Issued By: 

Benjamin Johnson
Transportation Review unit
Water Resources Division
616-295-2787

THIS PERMIT MUST BE SIGNED BY THE PERMITTEE TO BE VALID.

I hereby assure that I have read, am familiar with, and agree to adhere to the terms and conditions of this permit.

_____ _____

Permittee Signature Date

cc: Pentwater Township Clerk
Oceana County
Oceana County Drain Commissioner
Lynn Cavazos, Pentwater Township Supervisor
Robert Lothschutz, Scott Civil Engineering

INDEX OF SHEETS

OCEANA COUNTY ROAD COMMISSION

IN CO-OPERATION WITH

PENTWATER TOWNSHIP

PLAN OF PROPOSED

PEDESTRIAN BRIDGE REHABILITATION

LONGBRIDGE ROAD OVER PENTWATER RIVER

SECTION 24, PENTWATER TOWNSHIP, T16N, R18W

FOR THE PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 174 OF 2013, THE CONTRACTOR SHALL CONTACT MISS DIG SYSTEM, INC. BY PHONE AT 811 OR 800-482-7171 OR VIA THE WEB AT EITHER ELOCATE.MISSDIG.ORG FOR SINGLE ADDRESS OR RTE.MISSDIG.ORG, A MINIMUM OF 3 BUSINESS DAYS PRIOR TO EXCAVATING, EXCLUDING WEEKENDS AND HOLIDAYS. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

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

UTILITIES

GAS – DTE
LARRY BOURKE
609 BJORNSON RD
BIG RAPIDS, MI 49307
PHONE: 231-349-2364
lawrence.bourke@dteenergy.com

TELEPHONE – FRONTIER
CHRIS STANTON
303 S. MAIN ST,
MT. PLEASANT, MI 48858
PHONE: 989-560-9149
christopher.stanton1@ftr.com

CABLE – SPECTRUM
ZACHARY VANSICKLE
590 S PERE MARQUETTE HWY
LUDINGTON, MI 49431
PHONE: 616-460-1003
zachary.vansickle@charter.com

GENERAL NOTES

EXCEPT WHERE OTHERWISE INDICATED ON THESE PLANS, OR IN THE PROPOSAL AND SUPPLEMENTAL SPECIFICATIONS CONTAINED HEREIN, ALL MATERIALS AND WORKMANSHIP SHALL BE ACCORDING TO THE MICHIGAN DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION.

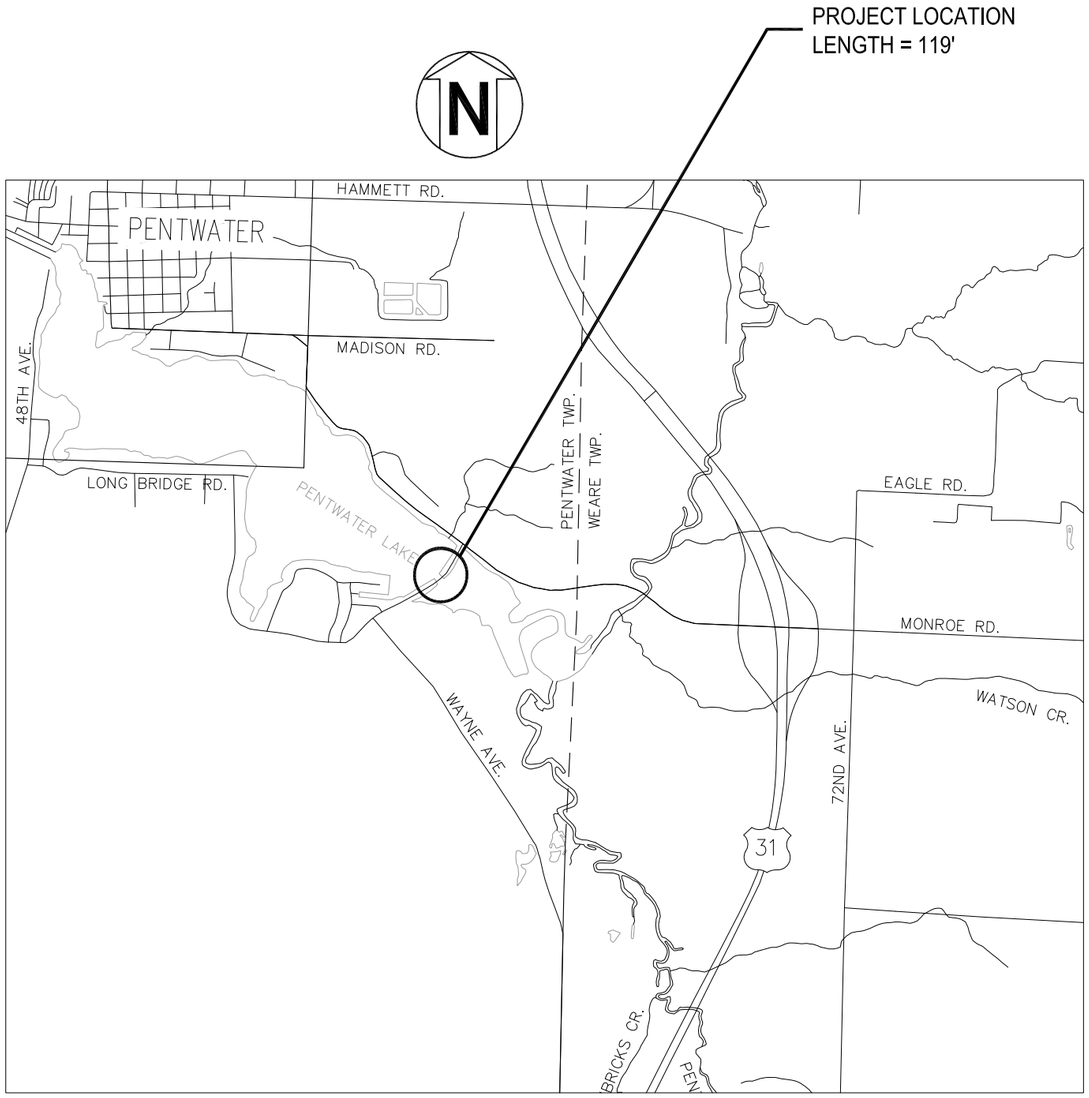
THE DESIGN OF THE STRUCTURAL MEMBERS IS BASED ON MATERIAL OF THE FOLLOWING STRESSES:

STRUCTURAL STEEL:
AASHTO M270
GRADE 36 Fy = 36,000 psi

THE DESIGN OF THE STRUCTURE REHABILITATION IS BASED ON THE CURRENT AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS WITH A PEDESTRIAN LOADING OF 25 PSF. LIVE LOAD DEFLECTION DOES NOT EXCEED 1/360 OF SPAN LENGTH.

OLD PLANS DO NOT EXIST FOR THIS STRUCTURE.

THE BRIDGE PAINT MAY CONTAIN LEAD.



THE REGULATED WASTE ACTIVITY IDENTIFICATION NUMBERS FOR THIS PROJECT ARE AS FOLLOWS:

CONTROL SECTION NUMBER
64000 MIK952958580

CONTRACT FOR: PEDESTRIAN BRIDGE REHABILITATION

OCEANA COUNTY ROAD COMMISSION

MARK TIMMER - MANAGING DIRECTOR DATE

PENTWATER TOWNSHIP

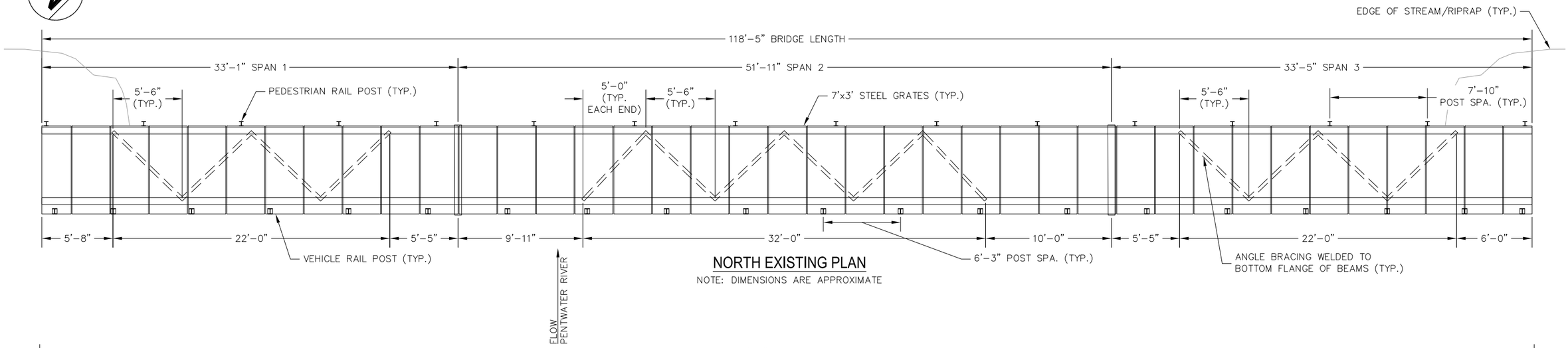
LYNNE CAVAZOS - SUPERVISOR DATE

SCECO
SCOTT CIVIL ENGINEERING COMPANY
1345 MONROE AVENUE, SUITE 136
GRAND RAPIDS, MICHIGAN 49505

PREPARED UNDER THE SUPERVISION OF:

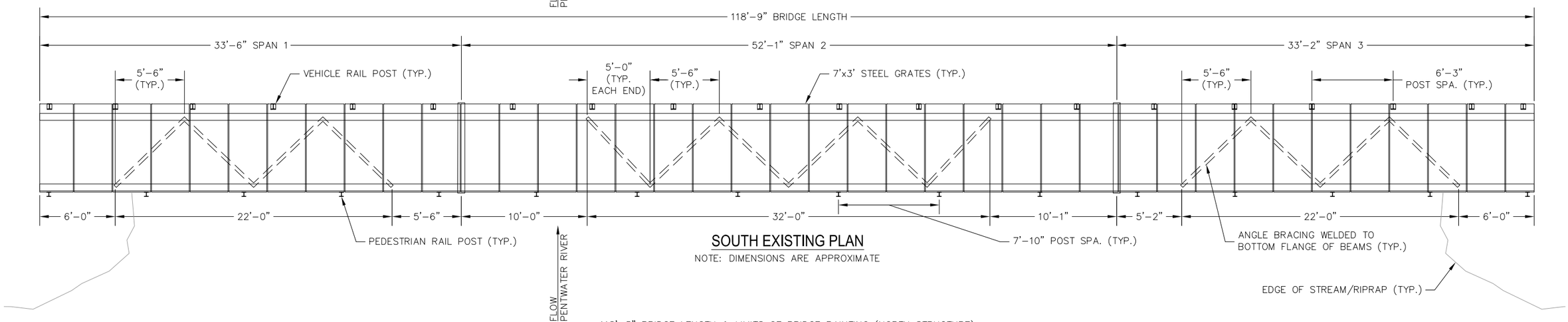
ROBERT W. LOTHSCHUTZ, P.E. DATE
REGISTERED PROFESSIONAL ENGINEER NO. 60004

LONGBRIDGE ROAD OVER PENTWATER RIVER



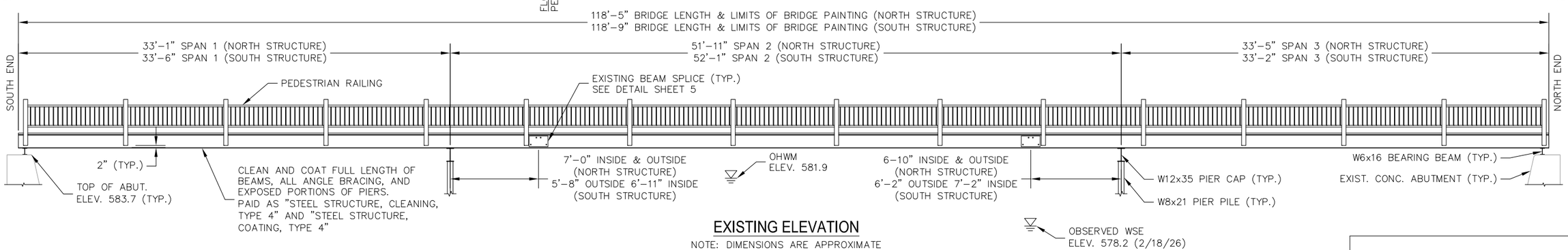
NORTH EXISTING PLAN

NOTE: DIMENSIONS ARE APPROXIMATE



SOUTH EXISTING PLAN

NOTE: DIMENSIONS ARE APPROXIMATE



EXISTING ELEVATION

NOTE: DIMENSIONS ARE APPROXIMATE
VEHICLE RAILING NOT SHOWN

EXISTING PLAN AND ELEVATION

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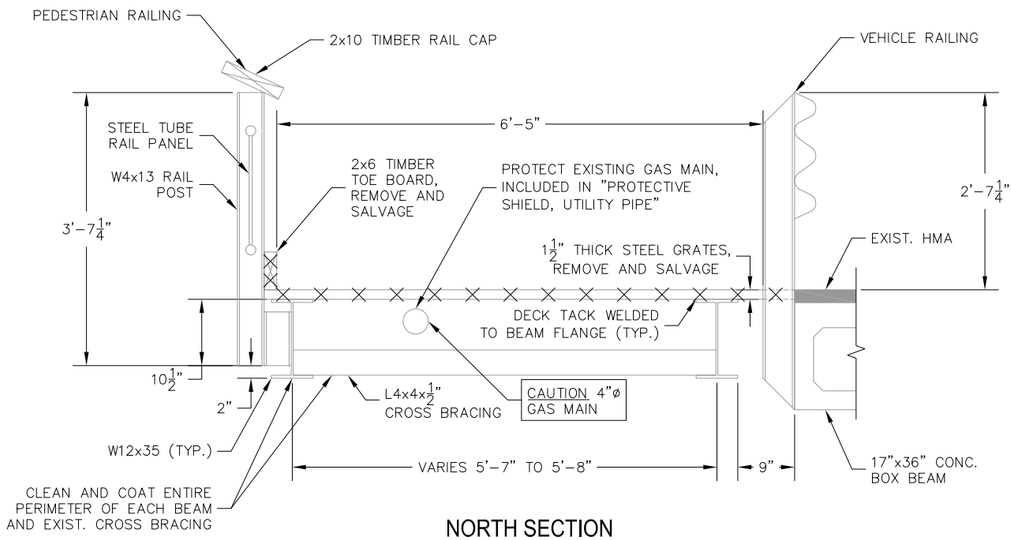
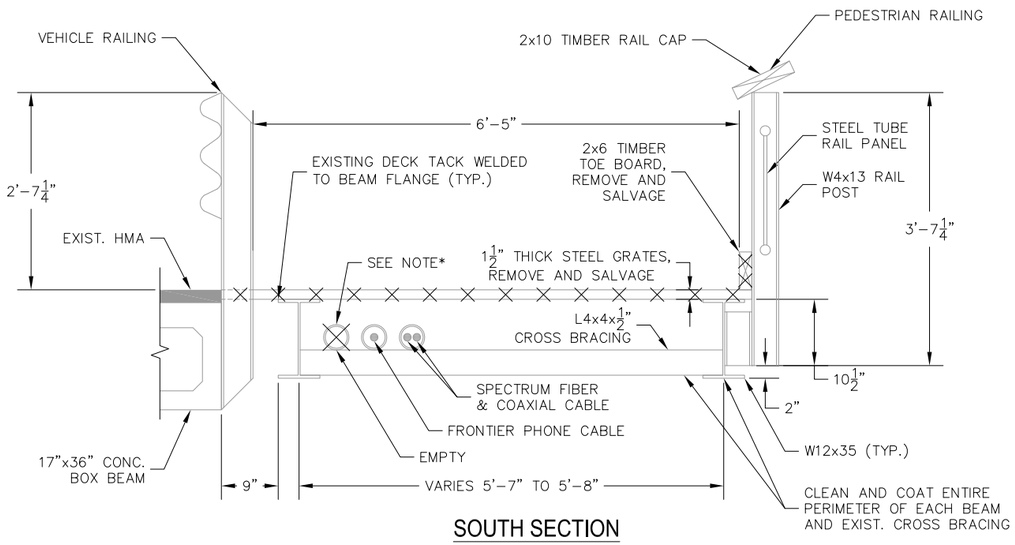


NORTH SECTION



SOUTH SECTION

*NOTE: REMOVE EMPTY CONDUIT, PAYMENT INCLUDED IN OTHER ITEMS. PROTECT EXISTING CONDUITS, INCLUDED IN "PROTECTIVE SHIELD, UTILITY PIPE".

GENERAL NOTES:

WATER LEVEL IS SUBJECT TO CHANGE. MAKE A DETERMINATION OF WATER LEVELS THAT MAY EXIST DURING CONSTRUCTION.

IMPLEMENT MEASURES TO PREVENT DEBRIS FROM FALLING FROM THE STRUCTURE. IF DEBRIS FALLS INTO THE WATERWAY, REMOVE IT WITHIN 24 HOURS. SINCE DISTURBANCE OF THE WATERWAY BOTTOM MAY BE AS HARMFUL AS THE DEBRIS ITSELF, THE PREVENTIVE MEASURES MUST BE EFFECTIVE.

"FALSE DECKING" INCLUDES THE AREA BETWEEN THE FACE OF EACH ABUTMENT AND THE OUTSIDE OF THE STEEL GRID DECK, THE ESTIMATED AREA IS 1625 SFT.

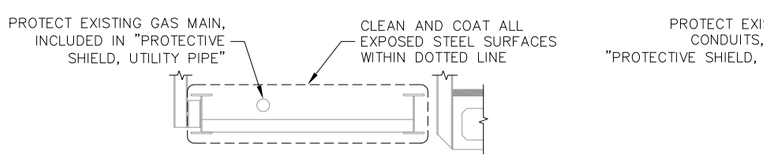
THIS BRIDGE IS COATED WITH LEAD BASED PAINT.

THE ENGINEER WILL INSPECT THE STRUCTURAL STEEL PARTS THAT HAVE BEEN BLAST CLEANED FOR EVIDENCE OF CRACKS OR LOSS OF SECTION DUE TO CORROSION OF MORE THAN 25 PERCENT.

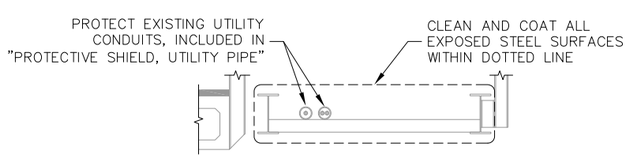
THE ESTIMATED AREA OF STRUCTURAL STEEL TO BE COATED IS 2700 SQUARE FEET (INCLUDES FULL LENGTH OF EACH BEAM, ALL CROSS BRACING, BEARING BEAMS, AND PIERS ABOVE THE WATER SURFACE).

USE LIGHT GRAY URETHANE PROTECTIVE COAT, AMS-STD-595 COLOR NUMBER 16440.

PROTECT PORTIONS OF THE STRUCTURE, INCLUDING RAILINGS, CONC. BEAMS, PIERS, ABUTMENTS, SLOPE PROTECTION, AND HIGHWAY APPURTENANCES FROM SPATTER AND OVERSPRAY OF COATING MATERIAL. INCLUDED IN THE BID ITEM "STEEL STRUCTURE, COATING, TYPE 4".

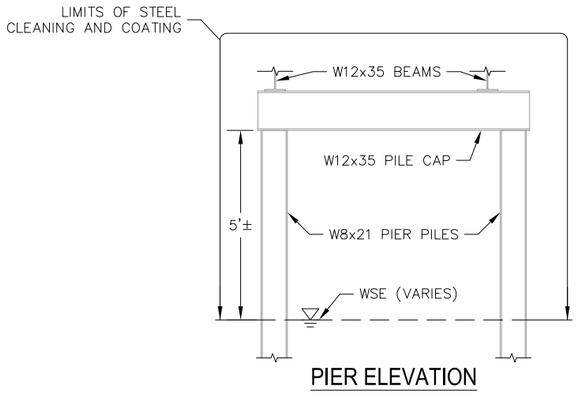


NORTH STRUCTURE



SOUTH STRUCTURE

LIMITS OF STEEL CLEANING AND COATING



PIER ELEVATION

TRAFFIC CONTROL AND MISCELLANEOUS QUANTITIES			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
1100001	Mobilization, Max	LSUM	1
8110232	Pavt Mrkg, Waterborne, 4 inch, Yellow	Ft	642
8120035	Channelizing Device, 42 inch, Fluorescent, Furn	Ea	25
8120036	Channelizing Device, 42 inch, Fluorescent, Oper	Ea	25
8120170	Minor Traf Devices	LSUM	1
8120210	Pavt Mrkg, Longit, 6 inch or Less Width, Rem	Ft	642
8120245	Pavt Mrkg, Wet Reflective, Type R, Tape, 4 inch, White, Temp	Ft	642
8120265	Pavt Mrkg, Wet Reflective, Type R, Tape, 24 inch, Stop Bar	Ft	30
8120272	PTS, Temp, Furn	Ea	1
8120273	PTS, Temp, Oper	Ea	1
8120350	Sign, Type B, Temp, Prismatic, Furn	Sft	215
8120351	Sign, Type B, Temp, Prismatic, Oper	Sft	215

STRUCTURE QUANTITIES			
PAY ITEM NO.	ITEM OF WORK	UNIT	TOTAL
2040061	Structures, Rem Portions	LSUM	1
7060060	False Decking	Sft	1625
7120041	Bolt, Adhesive Anchored, 5/8 inch	Ea	8
7130010	Beam Plate, Seal Perimeter	Ft	114
7130071	Structural Steel, Retrofit, Furn, Fab, and Erect	Lb	1458
7137050	Temporary Support	Ea	10
7137051	Steel Grate Decking, Salv and Reinstall	LSUM	1
7150025	Protective Shield, Utility Pipe	Ft	240
7150045	Steel Structure, Cleaning, Type 4	LSUM	1
7150046	Steel Structure, Coating, Type 4	LSUM	1

BRIDGE SECTIONS

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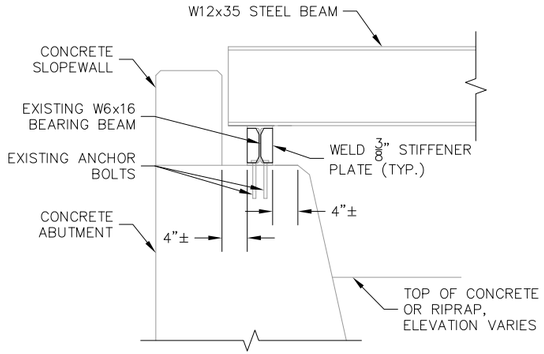
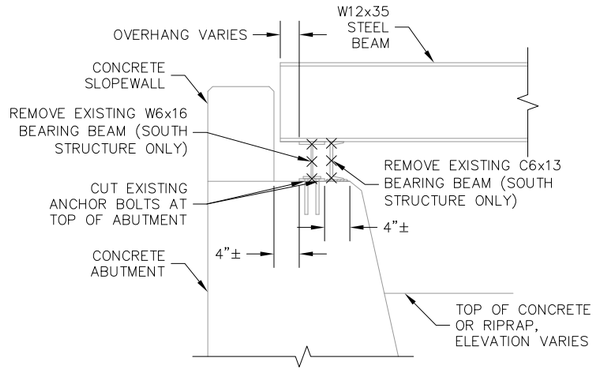
DRAWN	CR	CHECKED	NNM	DATE	3/24/26

SHEET 3 OF 6



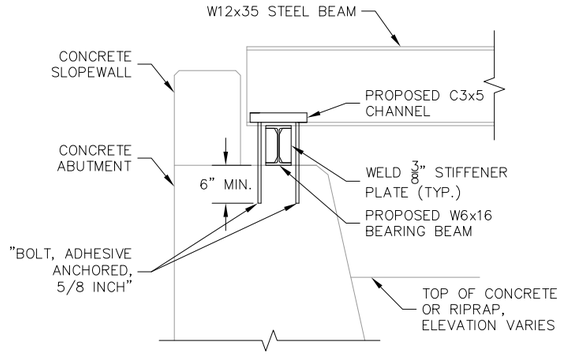
PROPOSED NW & NE BEARING SECTION

SCALE: 1" = 1'



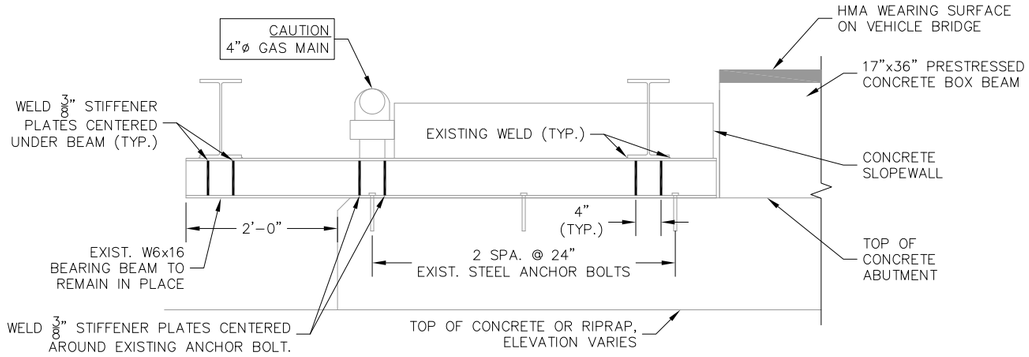
EXISTING SW & SE BEARING SECTION

SCALE: 1" = 1'



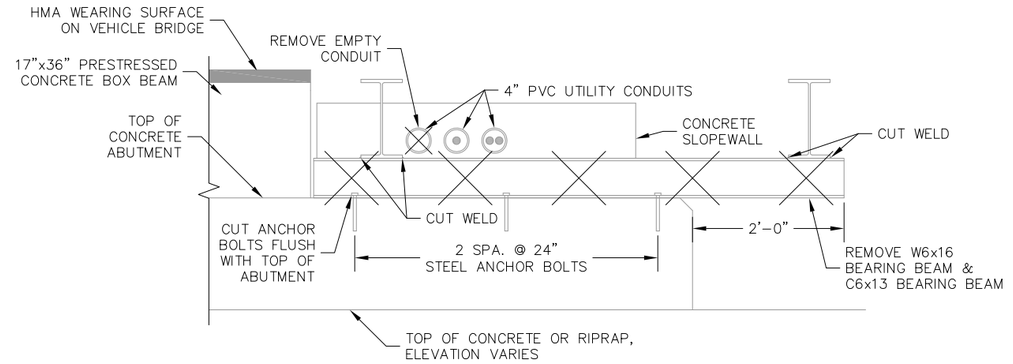
PROPOSED SW & SE BEARING SECTION

SCALE: 1" = 1'



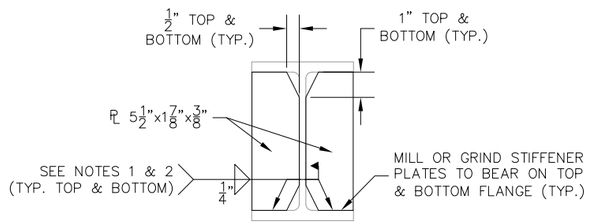
EXISTING AND PROPOSED NW & NE BEARING ELEVATION

SCALE: 1" = 1'



EXISTING SW & SE BEARING ELEVATION

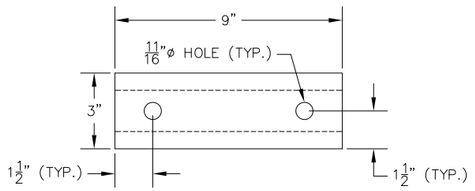
SCALE: 1" = 1'



STIFFENER PLATE DETAIL

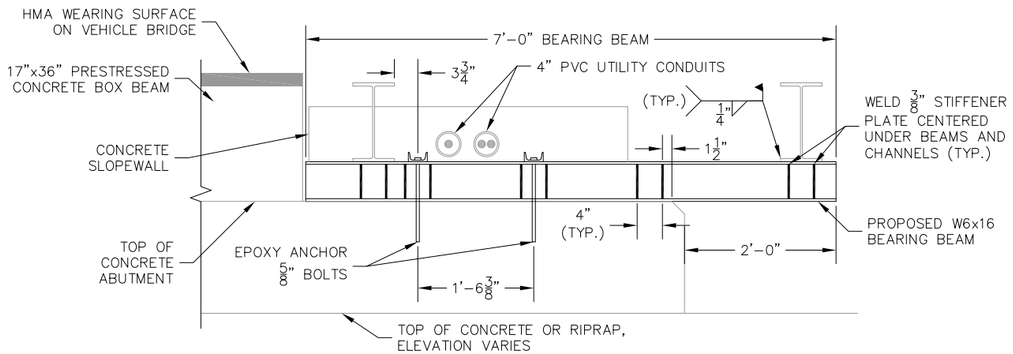
SCALE: 1" = 3"

NOTE 1: STOP WELD 1/4" SHORT OF CORNER CLIPS
NOTE 2: WRAP WELD AROUND OUTSIDE EDGE
64 PLATES REQUIRED



C3x5 CHANNEL DETAIL

SCALE: 1" = 3"
4 REQUIRED



PROPOSED SW & SE BEARING ELEVATION

SCALE: 1" = 1'

BEARING DETAILS

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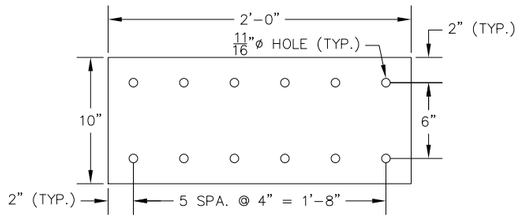
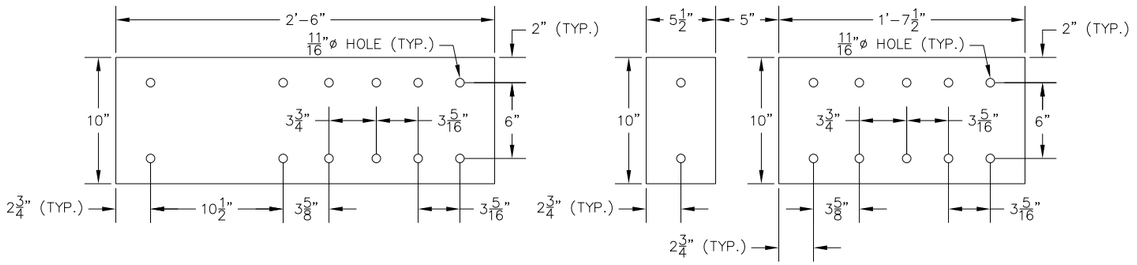


SPLICE PLATE DETAIL "1"

SCALE: 1" = 6"
3/8" THICK PLATE
SEE LOCATION TABLE
4 REQUIRED



INSIDE PLATE DETAIL

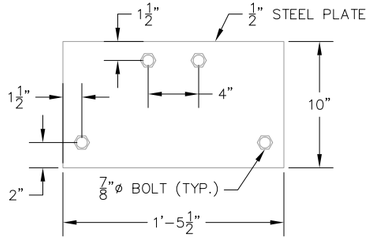
1 REQUIRED

OUTSIDE PLATE DETAIL

1 REQUIRED

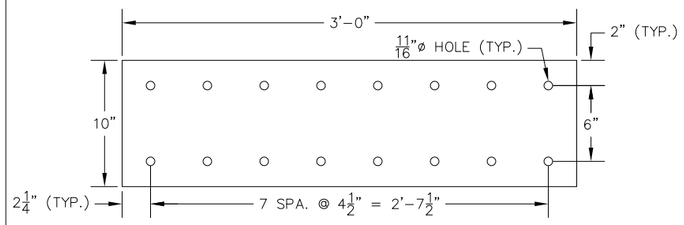
SPLICE PLATE DETAIL "2"

SCALE: 1" = 6"
3/8" THICK PLATE
SEE LOCATION TABLE



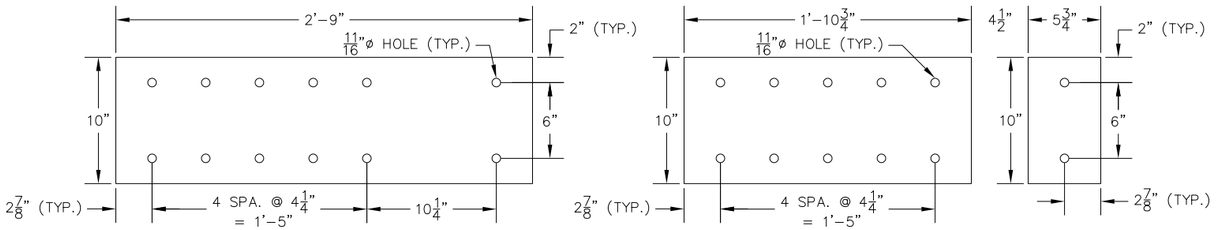
EXISTING SPLICE DETAIL

REMOVE ALL EXISTING SPLICE PLATES AND BOLTS WITHOUT DAMAGING BEAMS.
INCLUDED IN "STRUCTURES, REM PORTIONS"



SPLICE PLATE DETAIL "3"

SCALE: 1" = 6"
3/8" THICK PLATE
SEE LOCATION TABLE
8 REQUIRED



INSIDE PLATE DETAIL

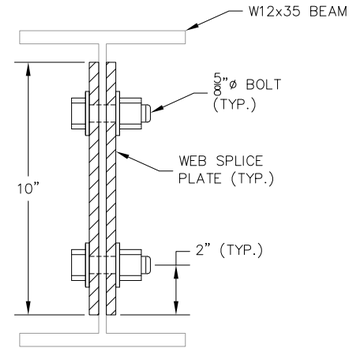
1 REQUIRED

OUTSIDE PLATE DETAIL

1 REQUIRED

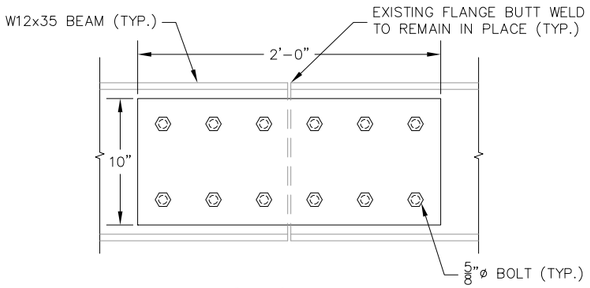
SPLICE PLATE DETAIL "4"

SCALE: 1" = 6"
3/8" THICK PLATE
SEE LOCATION TABLE



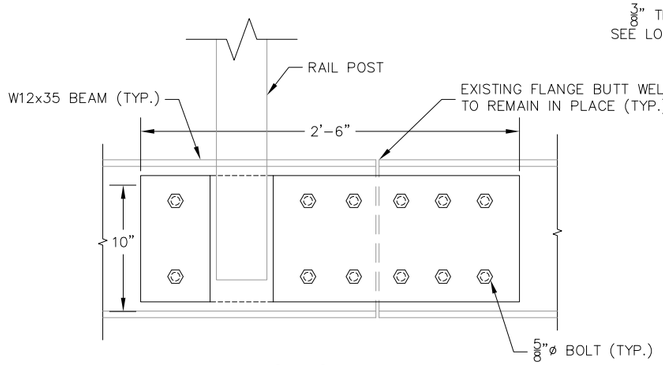
BEAM SPLICE SECTION

SCALE: 1" = 3"
ON FASCIA BEAMS, INSTALL BOLTS WITH HEAD FACING OUT



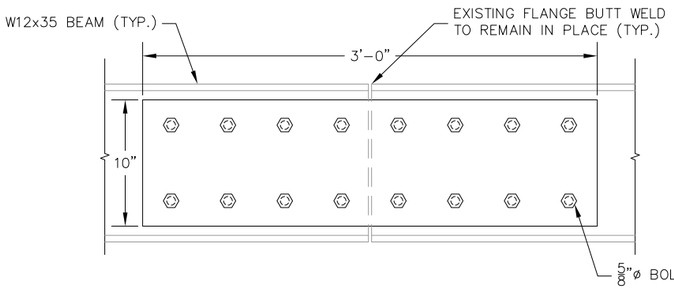
BEAM SPLICE DETAIL "1"

SCALE: 1" = 6"



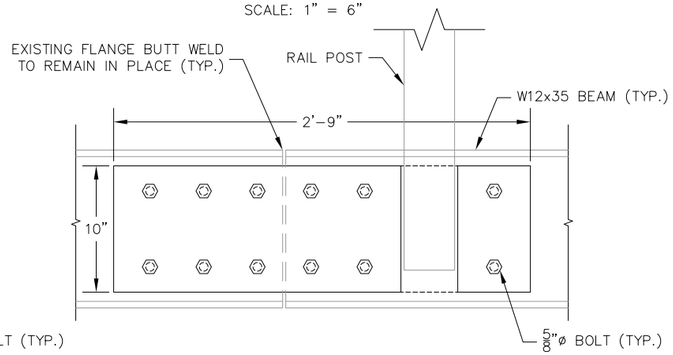
BEAM SPLICE DETAIL "2"

SCALE: 1" = 6"



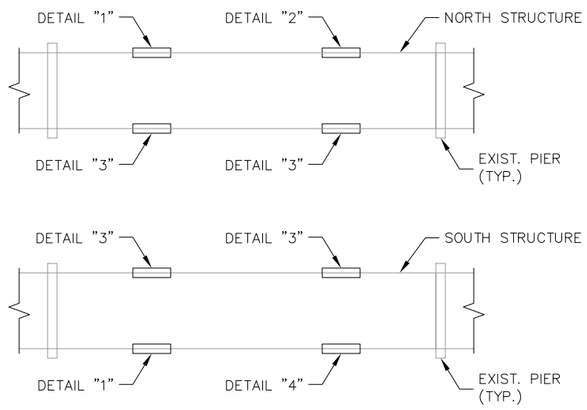
BEAM SPLICE DETAIL "3"

SCALE: 1" = 6"



BEAM SPLICE DETAIL "4"

SCALE: 1" = 6"



BEAM SPLICE LOCATIONS

NOT TO SCALE

NOTES:

TEMPORARILY SUPPORT STRUCTURE DURING REMOVAL OF EXISTING SPLICE PLATES AND INSTALLATION OF PROPOSED SPLICE PLATES, PAID AS "TEMPORARY SUPPORT".

SEAL PERIMETER OF SPLICE PLATES AFTER INSTALLATION, PAID AS "BEAM PLATE, SEAL PERIMETER".

SPLICE DETAILS

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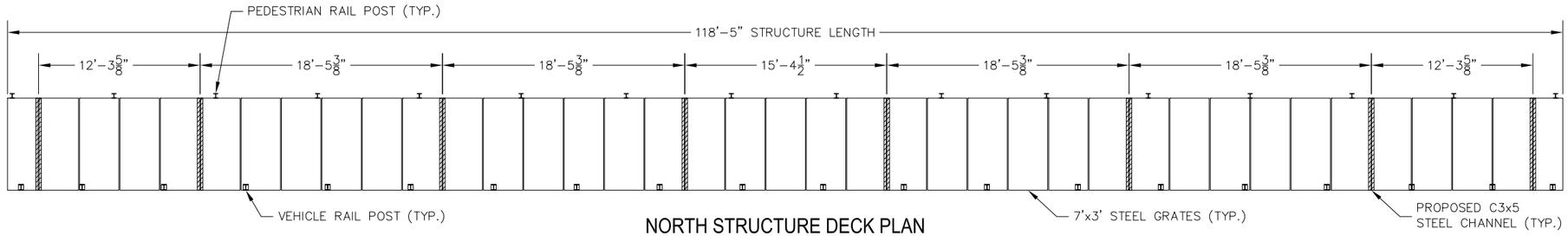
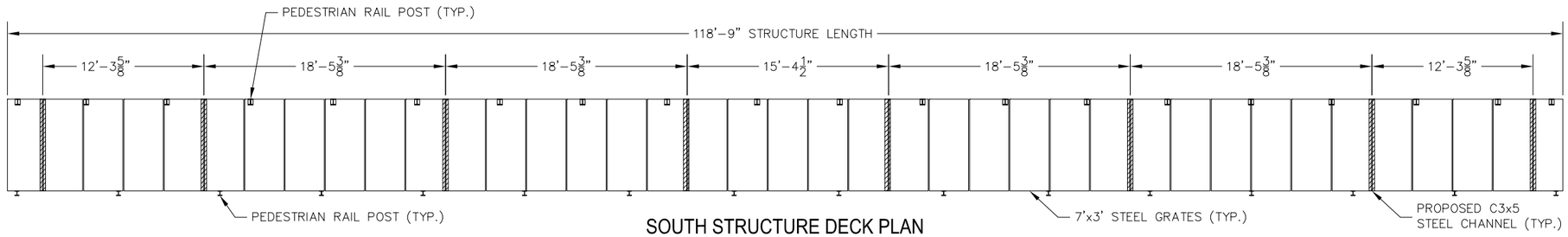
5
6



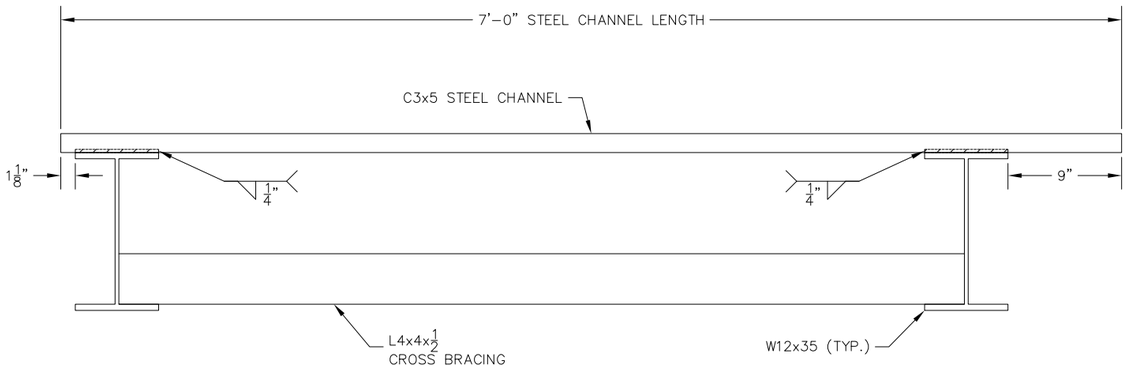
NORTH STRUCTURE DECK PLAN

SCALE: 1" = 5'
NOTE: DIMENSIONS ARE APPROXIMATE. ADJUST LOCATION
OF TOP FLANGE BRACES AS DIRECTED BY THE ENGINEER



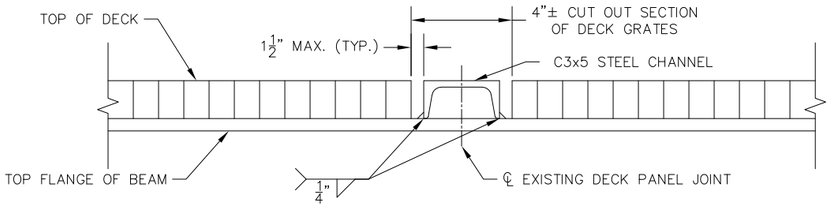
SOUTH STRUCTURE DECK PLAN

SCALE: 1" = 5'
NOTE: DIMENSIONS ARE APPROXIMATE. ADJUST LOCATION
OF TOP FLANGE BRACES AS DIRECTED BY THE ENGINEER



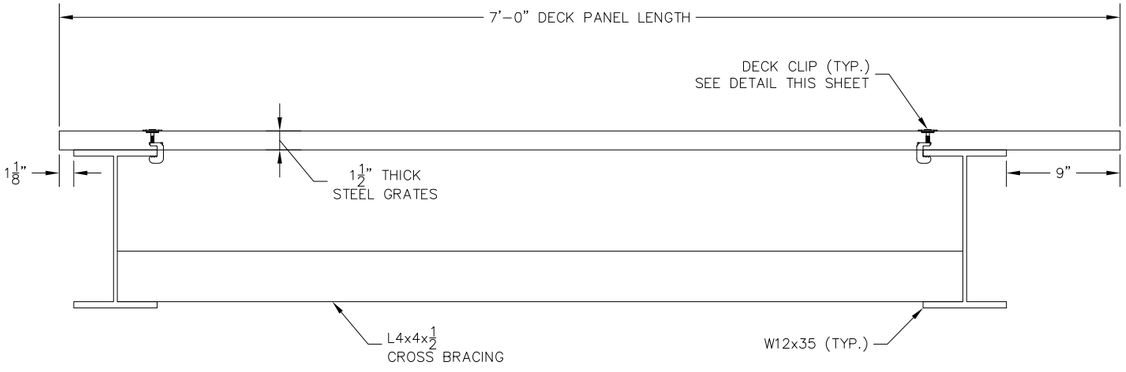
TOP FLANGE BRACE ELEVATION

SCALE: 1" = 6"



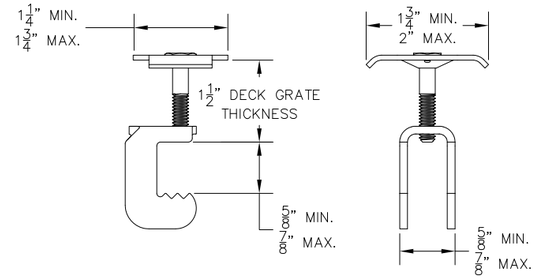
TOP FLANGE BRACE DETAIL

SCALE: 1" = 3"
NOTE: INSTALL TOP FLANGE BRACES AT EXISTING DECK PANEL JOINTS.
CUT OFF THE EDGE OF ADJACENT PANELS TO FIT.
DO NOT LEAVE ANY PROTRUDING BARS ALONG CUT EDGE.



DECK ATTACHMENT SECTION

SCALE: 1" = 6"
NOTE: INSTALL (4) CLIPS PER GRATE PANEL.
LOCATE CLIPS WITHIN 6" OF PANEL EDGE



DECK CLIP DETAILS

312 REQUIRED

NOTES:

LABEL OR TAG EXISTING DECK PANELS PRIOR TO REMOVAL AND REINSTALL DECK PANELS IN THE SAME LOCATION. REMOVE LABELS/TAGS AFTER REINSTALLING PANELS. REPAIR ANY DAMAGE CAUSED BY REMOVAL OR REINSTALLATION AS DIRECTED BY THE ENGINEER, INCLUDED IN "STEEL GRATE DECKING, SALV AND REINSTALL".

DECK DETAILS

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GRAND RAPIDS, MICHIGAN

DRAWN	CR	CHECKED	NNM	DATE	3/24/26

6

OCEANA COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
MAINTAINING TRAFFIC

a. Description. This special provision consists of requirements and restrictions to maintain traffic on Longbridge Road, Pentwater Township, Oceana County.

b. General. Maintain traffic throughout the project in accordance with the standard specifications, typicals, and supplemental specifications in the contract and as described on the plans for this project.

c. Construction Influence Area (CIA). The CIA includes the right-of-way of the following roadways, within the approximate limits described below:

1. On Longbridge Road from approximately 2500 feet south of project P.O.B. to Monroe Road.

2. On Monroe Road approximately 1500 feet east and west of Longbridge Road.

d. Traffic Restrictions. Maintain traffic in accordance with the Maintaining Traffic Typicals contained herein, except as noted below. Changes or adjustments to the Maintaining Traffic Typicals may be necessary to fit field conditions, subject to approval of the Engineer or as determined by the Engineer.

1. Utilize the following Maintaining Traffic Typicals:

   A. 100-GEN-KEY

   B. 101-GEN-SPACING-CHARTS

   C. 102-GEN-NOTES

   D. 103-GEN-SIGN

   E. 121-TS-SINGLE-SIGN

   F. 122-NFW-SHL-(R)

   G. WZD-100-A

   F. WZD-125-E

2. Weekend work is not allowed unless approved by the Engineer.

3. Do not perform work, deliver material, or close lanes (other than approved closures) during the holiday periods as defined in Table 1.

Table 1: 2026 Holiday Periods

Holiday	Start Date and Time	End Date and Time
Memorial Day	3:00 p.m. Fri, May 22, 2026	6:00 a.m. Tue, May 26, 2026
Independence Day	3:00 p.m. Thu, Jul 2, 2026	6:00 a.m. Mon, July 6, 2026
Labor Day	3:00 p.m. Fri, Sep 4, 2026	6:00 a.m. Tue, Sep 8, 2026

e. Traffic General.

1. Do not close lanes when work can be accomplished with a shoulder closure. Do not occupy any part of the active traffic lane with personnel or equipment when utilizing a shoulder closure. Place lane closures and traffic regulation operations as directed by the Engineer.

2. Prior to opening any lanes/shoulders, remove all accumulated debris that has collected within the closed lane/shoulder, or as directed by the Engineer.

3. Install 25 mph speed limit signs when a lane closure is in place.

4. Protect the work area at the end of each day. Close all open access points on the project to traffic with Type III barricades or other devices approved by the Engineer.

5. The Engineer will be responsible for notifying emergency services, transit agencies, law enforcement and schools prior to any lane closures. In addition, the Contractor will be responsible for working with and complying with any coordination that is necessary with emergency services, transit agencies, law enforcement and schools. All costs associated with these coordination efforts will be considered included in the pay item “Minor Traf Devices”.

6. Once work is initiated that includes any lane restrictions, that work must be continued daily until completed. A lack of work activity for more than 7 days will require the removal of lane closures at no expense to the Road Commission.

f. Temporary Traffic Signals.

1. When work cannot be performed within a shoulder closure, maintain two-way traffic at all times on Longbridge Road using temporary traffic signals. Place the signs, signals, and channelizing taper at locations approved by the Engineer for adequate visibility by oncoming traffic. Utilize 42-inch channelizing devices instead of temporary concrete barrier.

g. Traffic Control Devices. Ensure all traffic control devices are in accordance with the *MMUTCD* and must meet the “acceptable” criteria as defined in the *ATSSA* publication entitled “*Quality Guidelines for Temporary Traffic Control Devices and Features*” at the time of initial deployment and after each major stage change.

1. During non-working periods, place applicable advance signs and channelizing devices at specific locations, as directed by the Engineer, at no additional cost to the Road Commission.

2. Notify the Engineer 24 hours in advance of when traffic control devices are being delivered to the project site, to allow for initial inspection of devices to take place.

3. Remove from the project site all traffic control devices no longer needed for a particular operation and equipment for construction within 14 calendar days of reopening the shoulder/lane/roadway.

4. Channelizing Devices.

A. Ensure all devices have sufficient ballast to prevent moving or tipping. If moving or tipping occurs, place additional ballast, as directed by the Engineer, at no additional cost to the Road Commission. No more than two ballasts are allowed on each channelizing device.

B. Do not use caution tape on channelizing devices for traffic control and/or pedestrian traffic control on this project.

5. Temporary Signs.

A. Fabricate, install, and remove temporary sign overlays on existing signs with the pay item for Sign, Type B, Temp, Prismatic, Furn. Attach the overlay in accordance with subsection 812.03.D.2 of the Standard Specifications for Construction.

B. Place temporary signs on Monroe Road as needed to allow for sufficient sign spacing on Longbridge Road, as directed by the Engineer. Install “On Longbridge” plaque on any signs placed on Monroe Road. A miscellaneous quantity of special fabrication signage is included for this purpose.

h. Measurement and Payment. Payment will be in accordance with the standard specifications unless otherwise specified. No additional payment will be made for the following activities:

1. Transporting traffic control items from site to site.

2. Providing sufficient vehicles and staff to make changes as-needed on site during work.

3. Providing sufficient vehicles and staff to remove closures from the roadway.

121-TS-SINGLE-SIGN

Sign	Message	Qty.	inch x inch	Sft.
G20-2	END ROAD WORK	2	48 x 24	16.0
R2-1(35)	SPEED LIMIT	2	48 x 60	20.0
R5-18c	WORK ZONE BEGINS	2	48 x 48	32.0
R10-6b	STOP HERE ON RED	2	36 x 54	27.0
W13-1P(25)	ADVISORY SPEED PLAQUE	2	24 x 24	8.0
W20-1	ROAD WORK AHEAD	3	48 x 48	48.0
W20-4	ONE LANE ROAD AHEAD	3	48 x 48	48.0
W3-3	SIGNAL AHEAD	2	48 x 48	32.0

Total Sign, Type B, Temp, Prismatic 231.0 Sft

122-NFW-SHL-(R)

Sign	Message	Qty.	inch x inch	Sft.
W21-5bR	RIGHT SHOULDER CLOSED AHEAD	1	48 x 48	16.0

Total Sign, Type B, Temp, Prismatic 16.0 Sft

MISCELLANEOUS

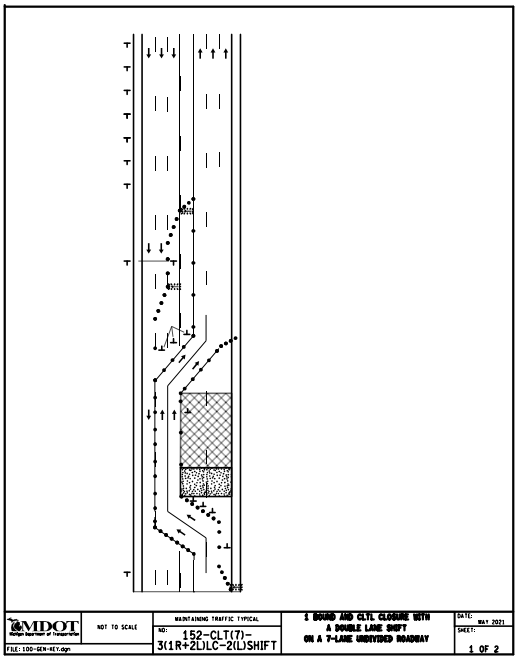
Sign	Message	Qty.	inch x inch	Sft.
S.F. #1	ON LONGBRIDGE	4	48 x 12	16.0

Total Sign, Type B, Temp, Prismatic, Spec 16.0 Sft

TYPICAL NUMBER KEY

CODES

AB = ARROW BOARD AW = ADVANCE WARNING C = CLOSURE CLT = CENTER LEFT TURN LANE CROSS = CROSSOVER CruSha = CRUSH AND SHAPE EM = EARLY MERGE EnR = ENTRANCE RAMP ExR = EXIT RAMP FW = FREEWAY GEN = GENERAL INFORMATION GORE = FREEWAY GORE AREA IN = INSIDE INT = INTERSECTION L = LANE (L) = LEFT LC = LANE CLOSURE LD = LONG DURATION	LO = LANE OPEN O = OUTSIDE (LANE CLOSURE) OUT = OUTSIDE OF SHOULDER MID = MIDDLE OF INTERSECTION OR ROAD NFW = NON-FREEWAY PARK = PARKING LANE PCMS = PORTABLE CHANGEABLE MESSAGE SIGN (R) = RIGHT ROLL = ROLLING ROADBLOCK RUM = RUMBLE STRIP SD = SHORT DURATION SHL = SHOULDER CLOSURE SIGN = SIGN SP = SPECIAL SPEED = SPEED STA = STOPPED TRAFFIC ADVISORY TR = TRAFFIC REGULATOR TS = TEMPORARY SIGNAL ZIP = ZIPPER MERGE



100 - GENERAL NOTES 110 - TRAFFIC REGULATORS 120 - NON-FREEWAY 130 - CENTER LEFT TURN (CLT) LANES 140 - PARKING LANES 150 - CLT 7 LANE SECTIONS 160 - SIGNAL WORK 200 - FREEWAY CLOSURES 210 - FREEWAY LANE SHIFTS 220 - FREEWAY ENTRANCE RAMPS 230 - FREEWAY EXIT RAMPS 300 - ADVANCE WARNINGS 310 - CROSSOVER CLOSURE 320 - CRUSH AND SHAPE 340 - MERGE SYSTEMS 350 - GORE LOCATIONS 360 - ROLLING ROADBLOCK 4000 - MAINTENANCE 5000 - SURVEY

EXAMPLE TYPICAL

CODE: 152-CTL(7)-3(1R+2L)LC-2(L)SHIFT

152 - TYPICAL NUMBER
CTL(7) = CENTER LEFT TURN LANE, 7 LANES TOTAL.
3(1R+2L)LC = 3 LANES CLOSED, (1 RIGHT LANE AND 2 LEFT LANES).
2(L)SHIFT = 2 LANES SHIFTED TO THE LEFT.

NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TYPICAL NUMBERING KEY	DATE: DECEMBER 2021
		NO: 100-GEN-KEY		SHEET: 1 OF 1
FILE: 100-GEN-KEY.dgn				

DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED,* MPH (PRIOR TO WORK AREA)											
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

MINIMUM MERGING TAPER LENGTH, "L" (FEET)

OFFSET (FEET)	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

$"L" = \frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = W X S WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

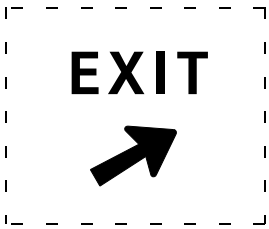
TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
2 TO 1 LANE ROAD TAPER	100' - MAXIMUM
DOWNSTREAM TAPERS	
(USE IS RECOMMENDED)	100' (PER LANE)

MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)		NIGHTTIME 42" DEVICE SPACING (FT)	
	TAPER	TANGENT	TAPER	TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET

SIGN OUTLINE KEY

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.



SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT

NOT TO SCALE

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 2

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 4,410 POUND IMPACT VEHICLE WEIGHT.

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 3

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 10,000 POUND IMPACT VEHICLE WEIGHT.

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

GENERAL NOTES

G1: SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING:
D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
L = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
ROLL AHEAD DISTANCE

G2: DISTANCE BETWEEN SIGNS, "D", THE VALUES FOR WHICH ARE SHOWN IN TYPICAL GEN-KEY ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

G3: ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE (MASH) TL-3 AS WELL AS THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.

G5: ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXCEPTION WILL BE MADE FOR TRAFFIC PATTERNS FOR WORK LESS THAN THREE DAYS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

SIGN NOTES

S1: ALL NON-APPLICABLE SIGNING WITHIN THE CIA MUST BE MODIFIED TO FIT CONDITIONS, COVERED, OR REMOVED. FOR GUIDANCE SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, SECTIONS 6.01.09 AND 6.01.10.

S2: R5-18b SIGNS ARE ONLY REQUIRED ON FREEWAY PROJECTS WITH A DURATION OF 15 DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 90 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-18b SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.

S3: R5-18c IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.

S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS.

S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE ROADWAY SUCH THAT NO SPEED LIMIT SIGNS ARE MORE THAN 2 MILES APART. WHEN REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.

S6: FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN STANDARDS.

S7: PLACE ADDITIONAL R8-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.

S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.

S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY OF THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.

S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.

S11: THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS:
SHIFTS 4FT OR LESS, PLACE ONE W1-6(R)(L)
SHIFTS 5FT TO 12FT, PLACE TWO W1-6(R)(L)
SHIFTS MORE THAN 12FT, PLACE THREE OR MORE W1-6(R)(L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.

S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE S5 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

TRAFFIC REGULATOR NOTES

TR1: TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATOR'S INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.

TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TR3: PROVIDE EITHER A STOP/SLOW AFAD OR A RED/YELLOW LENS AFAD, MEETING THE REQUIREMENTS OF THE MMUTCD

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

TCD1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.

TCD2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.

TCD3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.

TCD4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.

TCD5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-53, AND R-126) WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.

TCD6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.

TCD7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

TCD8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (W24-1) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.

TCD9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.

TCD10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECCOMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

RMP1: WHEN CONDITIONS ALLOW, E5-1 SIGNS MUST BE REMOVED OR COVERED AND CHANELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERGE IN A FREE MANNER

RMP2: STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL. WHEN CONDITIONS WARRANT, R1-1 SIGNS MAY BE USED IN PLACE OF R1-2 SIGNS. WHEN R-1 SIGNS ARE USED, W3-1 SIGNS MUST BE USED IN PLACE OF W3-2 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND/OR YIELD CONDITIONS.

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.

SIG2: SIGNAL IS IN OPERATION.

SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.

SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.

SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.

SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

MAINTENANCE AND SURVEYING NOTES

MS1: WHENEVER STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLES SHOULD MAINTAIN THE RECOMENDED DISTANCE FROM THE WORK AREA AND PROCEEED AT THE SAME SPEED. THE SHADOW VEHICLE SHOULD SLOW DOWN AND TRAVEL AT A FARTHER DISTANCE TO PROVIDE ADEQUATE SIGHT DISTANCE IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES.

MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.

MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.

MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.

MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.

MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.

SIGN NUMBER KEY

E5-1f
48" x 48"
60" x 48"

E5-2
48" x 36"

E5-2a
48" x 36"

E5-3
48" x 36"

E13-1P
VAR x 24"

E13-1aP
36" x 24"

G20-1
60" x 24"

G20-2
48" x 24"

G20-4
36" x 18"


I-6a
18" x 18"
24" x 24"
30" x 30"

M1-1
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-1
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-2
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-2
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-3
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-3
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-4
18" x 18"
24" x 24"
36" x 36"
48" x 48"

M1-4
22.5" x 18"
30" x 24"
45" x 36"
60" x 48"

M1-5
18" x 18"
24" x 24"
30" x 30"
36" x 36"

M1-5a
18" x 18"
24" x 24"

M1-6
18" x 18"
24" x 24"
36" X 36"

M1-6
22.5" x 18"
30" x 24"
45" x 36"

M3-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M3-4
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-1
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-1a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-2
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-3
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-4
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-5
12" X 6"
18" x 9"
24" X 12"
30" X 15"
36" X 18"

M4-6
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-7
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-7a
12" x 6"
18" x 9"
24" x 12"
30" x 15"
36" x 18"

M4-8
12" x 6"
18" x 9"
24" x 12"
30" x 15"

M4-8a
24" x 18"

M4-8b
24" x 12"

M4-9L
30" x 24"
48" x 36"
60" x 48"

M4-9R
30" x 24"
48" x 36"
60" x 48"

M4-9j
30" x 24"
48" x 36"
60" x 48"

M4-9kL
30" x 24"
48" x 36"
60" x 48"

M4-9kR
30" x 30"
48" x 42"
60" x 54"

M4-9mL
30" x 30"
48" x 42"
60" x 54"

M4-9mR
30" x 30"
48" x 42"
60" x 54"


M4-9dL
12" x 18"


M4-9dR
12" x 18"


M4-9e
12" x 18"

M4-9f
12" x 18"


M4-9gL
12" x 18"


M4-9gR
12" x 18"


M4-9h
12" x 24"

M4-9i
12" x 18"

M4-10L
48" x 18"

M4-10R
48" x 18"

M4-11a
12" X 6"
18" x 9"
24" X 12"
30" X 15"
36" X 18"


M5-1L
12" x 9"
21" x 15"
30" x 21"


M5-1R
12" x 9"
21" x 15"
30" x 21"


M5-2L
12" x 9"
21" x 15"
30" x 21"


M5-2R
12" x 9"
21" x 15"
30" x 21"


M5-3
12" x 9"
21" x 15"
30" x 21"


M6-1L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-1R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-2L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-2R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-3
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-4
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-5
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-6L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-6R
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-7L
12" x 9"
18" x 12"
21" x 15"
30" x 21"


M6-7R
12" x 9"
18" x 12"
21" x 15"
30" x 21"

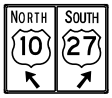
SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	MAINTAINING TRAFFIC TYPICAL	STANDARD HIGHWAY SIGNS	DATE: 10/17/24
NO SCALE	CODE: 103-GEN-SIGN		SHEET: 1 OF 5

SIGN NUMBER KEY

M8-1gL
36" x 66"

M8-1gR
36" x 66"

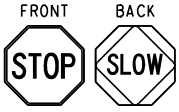


M8-2d
60" x 48"


OM-3L
12" x 36"
24" x 48"
36" x 72"


OM-3R
12" x 36"
24" x 48"
36" x 72"

R1-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



R1-1a
18" x 18"
24" x 24"

R1-2
18"
24"
30"
36"
48"
60"

R1-2aP
24" x 18"
36" x 30"
48" x 36"

R2-1
18" x 24"
24" x 30"
30" x 36"
36" x 48"
48" x 60"

R2-1a
48" x 60"


R3-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"


R3-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

R3-3
24" x 24"
36" x 36"
48" x 48"


R3-4
24" x 24"
30" x 30"
36" x 36"
48" x 48"

R3-5L
30" x 36"
36" x 48"

R3-5R
30" x 36"
36" x 48"

R3-5a
30" x 36"
36" x 48"

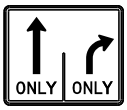

R3-6L
30" x 36"
42" x 48"


R3-6R
30" x 36"
42" x 48"

R3-7L
30" x 30"
36" x 36"

R3-7R
30" x 30"
36" x 36"

R3-8c
36" x 30"



R3-8d
36" x 30"

R4-1
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R4-2
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R4-7
12" x 18"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R4-8
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R4-9
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R5-1
30" x 30"
36" x 36"
48" x 48"

R5-1a
30" x 18"
36" x 24"
42" x 30"

R5-18b
48" x 60"

R5-18c
48" x 48"

R5-18d
78" x 12"

R5-18e
72" x 12"

R5-18f
48" x 60"

R5-18g
30" x 42"

R5-18h
48" x 60"

R6-1L
36" x 12"
54" x 18"

R6-1R
36" x 12"
54" x 18"

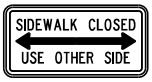
R6-2L
12" x 16"
18" x 24"
24" x 30"
36" x 48"
48" x 60"

R6-2R
12" x 16"
18" x 24"
24" x 30"
36" x 48"
48" x 60"


R8-3
12" x 12"
18" x 18"
24" x 24"
36" x 36"
48" x 48"

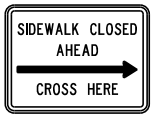
R9-8
36" x 18"

R9-9
24" x 12"
30" x 18"



R9-10
24" x 12"
48" x 24"

R9-11L
24" x 12"
48" x 36"



R9-11R
24" x 12"
48" x 36"

R9-11aL
24" x 12"
48" x 24"

R9-11aR
24" x 12"
48" x 24"

R10-6b
36" x 54"

R11-2
48" x 30"

R11-2a
48" x 30"

R11-2b
48" x 30"

R11-2c
60" x 30"

R11-3a
60" x 30"

R11-3b
60" x 30"

R11-4
60" x 30"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

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NO SCALE	CODE: 103-GEN-SIGN		SHEET: 2 OF 5

SIGN NUMBER KEY

W1-1L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-1R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-2bL
36" x 36"
48" x 48"

W1-2bR
36" x 36"
48" x 48"

W1-3L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-3R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4L
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4R
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4bL
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4bR
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4cL
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W1-4cR
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W24-1L
30" x 30"
36" x 36"
48" x 48"

W24-1cP
24" x 18"
30" x 24"

W24-1R
30" x 30"
36" x 36"
48" x 48"

W24-1aL
30" x 30"
36" x 36"
48" x 48"

W24-1aR
30" x 30"
36" x 36"
48" x 48"

W24-1bL
30" x 30"
36" x 36"
48" x 48"

W24-1bR
30" x 30"
36" x 36"
48" x 48"

W1-6L
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"

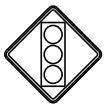
W1-6R
24" x 12"
36" x 18"
48" x 24"
60" x 30"
96" x 48"

W1-8L
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"

W1-8R
12" x 18"
18" x 24"
24" x 30"
30" x 36"
36" x 48"

W3-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W3-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"



W3-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W3-4
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W3-4b
30" x 30"
36" x 36"
48" x 48"

W3-5
36" x 36"
48" x 48"

W3-5a
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W3-5b
30" x 30"
36" x 36"
48" x 48"

W4-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-2L
30" x 30"
36" x 36"
48" x 48"

W4-2R
30" x 30"
36" x 36"
48" x 48"

W4-3L
30" x 30"
36" x 36"
48" x 48"

W4-3R
30" x 30"
36" x 36"
48" x 48"

W4-5L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-5R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-5P
18" x 24"
24" x 30"

W4-6L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-6R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W4-7L
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W4-7R
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W5-1
30" x 30"
36" x 36"
48" x 48"

W5-2
18" x 18"
30" x 30"
36" x 36"
48" x 48"

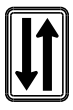
W5-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W5-4
30" x 30"
36" x 36"
48" x 48"

W6-1
30" x 30"
36" x 36"
48" x 48"

W6-2
30" x 30"
36" x 36"
48" x 48"

W6-3
30" x 30"
36" x 36"
48" x 48"



W6-4
12" x 18"

W7-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W7-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-1
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	MAINTAINING TRAFFIC TYPICAL	STANDARD HIGHWAY SIGNS	DATE: 10/17/24
NO SCALE	CODE: 103-GEN-SIGN		SHEET: 3 OF 5

SIGN NUMBER KEY

W8-2
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-3
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W8-4
18" x 18"
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-5P
24" x 18"
30" x 24"
36" x 30"

W8-7
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-8
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-9
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-11
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-12
30" x 30"
36" x 36"
48" x 48"

W8-14
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-15
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-15P
24" x 18"
30" x 24"
36" x 30"

W8-17L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-17R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-17P
24" x 18"
30" x 24"
36" x 30"

W8-18
24" x 24"
36" x 36"
48" x 48"

W8-23
24" x 24"
36" x 36"
48" x 48"

W8-24
30" x 30"
36" x 36"
48" x 48"

W8-25
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W8-26
36" x 36"
48" x 48"

W9-1L
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W9-1R
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W9-2L
30" x 30"
36" x 36"
48" x 48"

W9-2R
30" x 30"
36" x 36"
48" x 48"

W9-3C
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3L
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3R
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3a
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W9-3b
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W11-10
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W11-10a
24" x 24"
30" x 30"
36" x 36"
48" x 48"

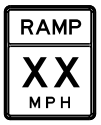
W11-24
36" x 36"
48" x 48"

W12-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W12-2
18" x 18"
30" x 30"
36" x 36"
48" x 48"

W13-1P
18" x 18"
24" x 24"
30" x 30"

W13-2
24" x 30"
36" x 48"
48" x 60"



W13-3
24" x 30"
36" x 48"
48" x 60"

W13-4P
24" x 24"
36" x 36"

W13-6
24" x 42"
36" x 60"
48" x 84"

W13-6a
24" x 42"
36" x 60"
48" x 84"

W13-7
24" x 42"
36" x 60"
48" x 84"

W13-7a
24" x 42"
36" x 60"
48" x 84"

W14-3
36" x 24"
40" x 30"
48" x 36"
64" x 48"

W16-2P
18" x 12"
24" x 18"
30" x 24"

W16-4aP
18" x 12"
24" x 18"
30" x 24"
36" x 30"

W16-12P
24" x 18"

W16-13P
24" x 18"
30" x 24"

W20-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1a
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1b
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1c
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-1d
24" x 24"
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W20-2
30" x 30"
36" x 36"
48" x 48"

W20-3
30" x 30"
36" x 36"
48" x 48"

W20-3a
30" x 30"
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	MAINTAINING TRAFFIC TYPICAL	STANDARD HIGHWAY SIGNS	DATE: 10/17/24
NO SCALE	CODE: 103-GEN-SIGN		SHEET: 4 OF 5

SIGN NUMBER KEY

W20-3b
30" x 30"
36" x 36"
48" x 48"

W20-4
30" x 30"
36" x 36"
48" x 48"

W20-4c
36" x 36"
48" x 48"

W20-5C
30" x 30"
36" x 36"
48" x 48"

W20-5L
30" x 30"
36" x 36"
48" x 48"

W20-5L1
30" x 30"
36" x 36"
48" x 48"

W20-5L2
30" x 30"
36" x 36"
48" x 48"

W20-5R
30" x 30"
36" x 36"
48" x 48"

W20-5R1
30" x 30"
36" x 36"
48" x 48"

W20-5R2
30" x 30"
36" x 36"
48" x 48"

W20-5aL2
30" x 30"
36" x 36"
48" x 48"

W20-5aL3
30" x 30"
36" x 36"
48" x 48"

W20-5aR2
30" x 30"
36" x 36"
48" x 48"

W20-5aR3
30" x 30"
36" x 36"
48" x 48"

W20-7a
30" x 30"
36" x 36"
48" x 48"

W20-8
24" x 18"

W20-9
54" x 48"

W20-10
48" x 24"
66" x 30"

W20-11
12" x 18"

W20-12P
VARIABLE x 12"

W20-13P
VARIABLE x 12"

W20-14L
36" x 36"
48" x 48"

W20-14R
36" x 36"
48" x 48"

W20-14aP
36" x 12"
48" x 12"

W20-14bP
36" x 12"
48" x 12"

W20-15
36" x 36"
48" x 48"

W20-16
36" x 36"
48" x 48"

W20-17
36" x 36"
48" x 48"

W20-18
48" x 54"

W20-18a
48" x 54"

W21-1
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-2
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-3
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-4
36" x 18"

W21-5
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-5aL
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5aR
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5bL
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-5bR
30" x 30"
36" x 36"
48" x 48"
60" x 60"

W21-6
24" x 24"
30" x 30"
36" x 36"
48" x 48"

W21-7
30" x 30"
36" x 36"
48" x 48"

W21-8
30" x 30"
36" x 36"
48" x 48"

W22-1
30" x 30"
36" x 36"
48" x 48"

W22-2
42" x 36"

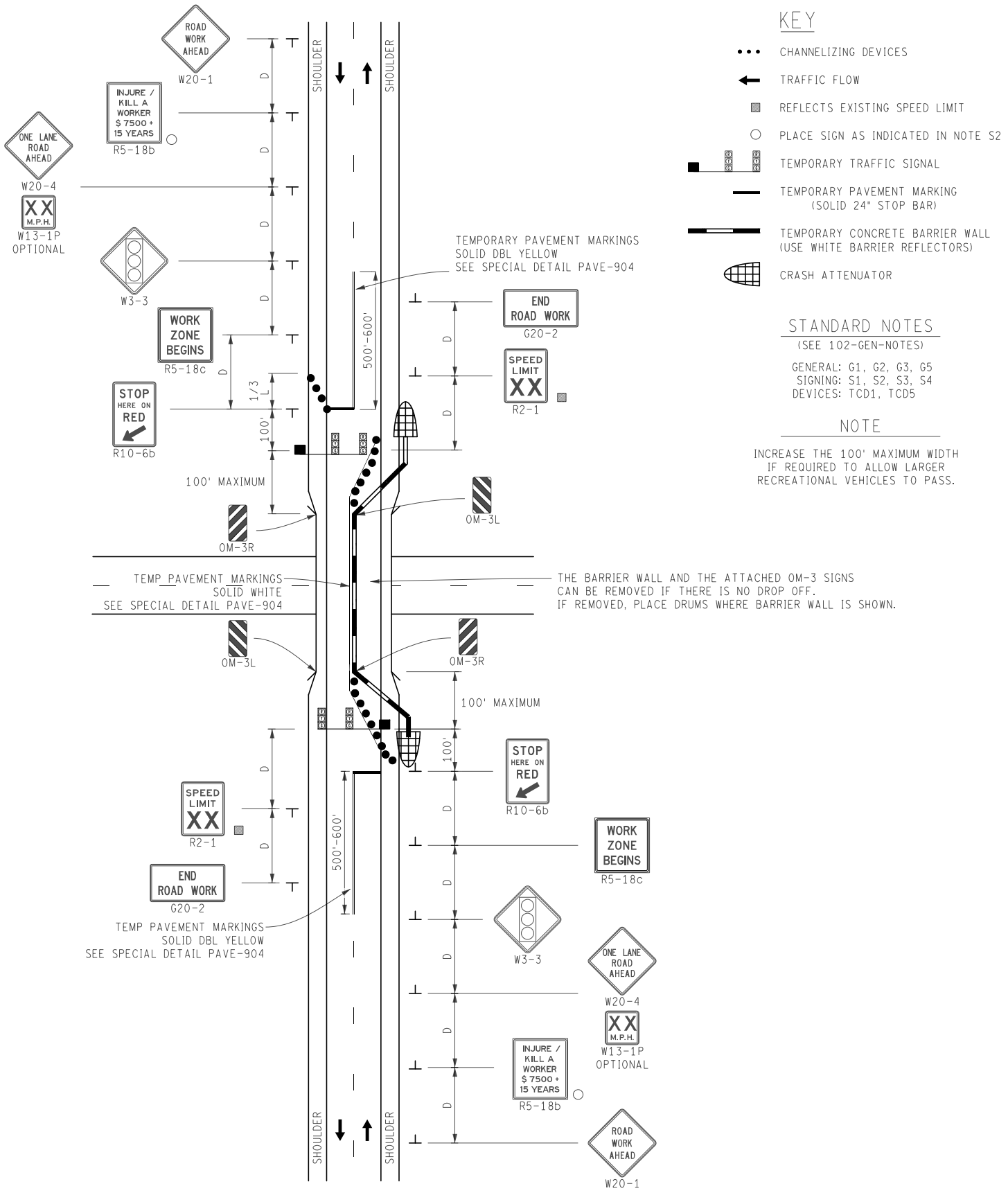
W22-3
36" x 30"
42" x 36"

W23-1
48" x 24"

W23-2
36" x 36"
48" x 48"

SEE MDOT SHS 13-WORK ZONE FOR SIGN DETAILS

MDOT Michigan Department of Transportation	MAINTAINING TRAFFIC TYPICAL	STANDARD HIGHWAY SIGNS	DATE: 10/17/24
NO SCALE	CODE: 103-GEN-SIGN		SHEET: 5 OF 5



STANDARD NOTES

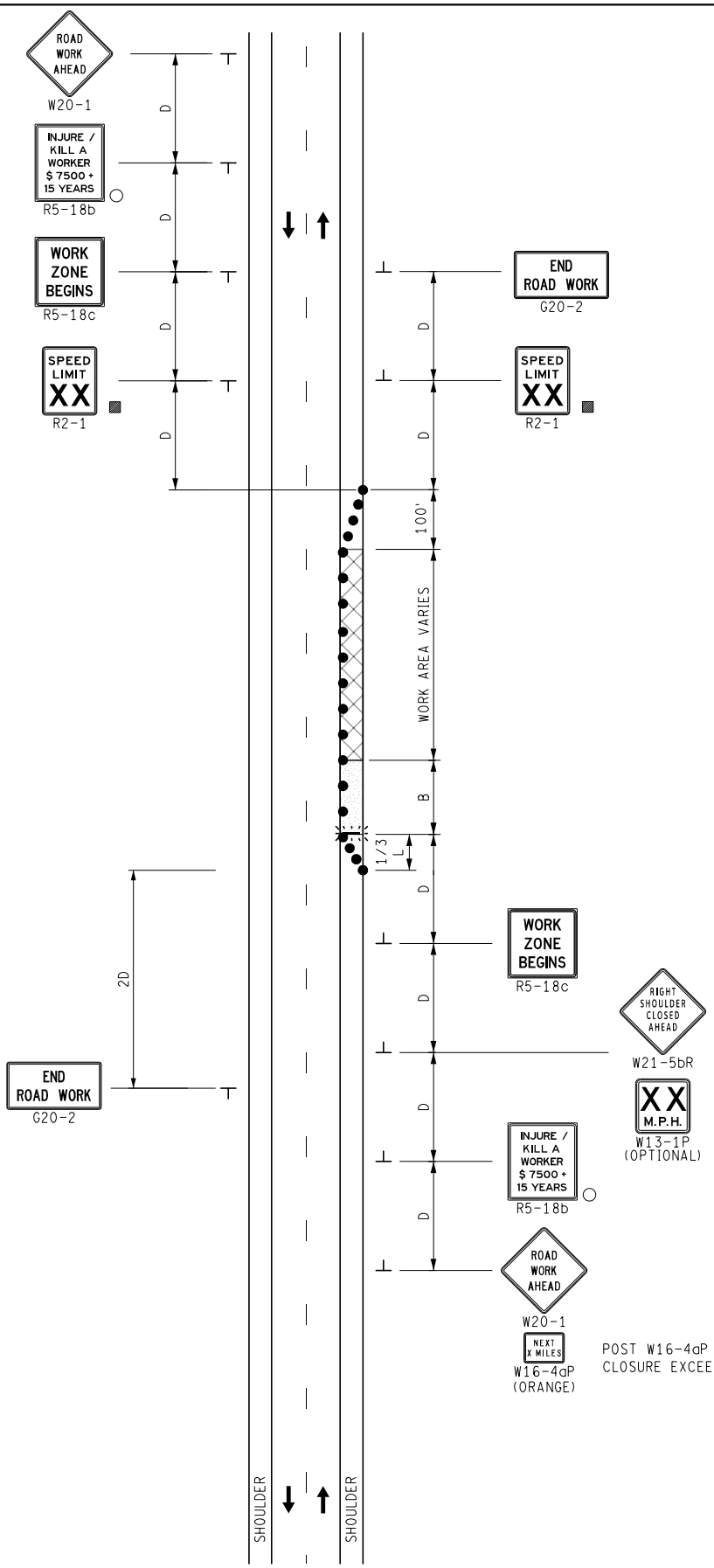
(SEE 102-GEN-NOTES)

GENERAL: G1, G2, G3, G5
SIGNING: S1, S2, S3, S4
DEVICES: TCD1, TCD5

NOTE

INCREASE THE 100' MAXIMUM WIDTH IF REQUIRED TO ALLOW LARGER RECREATIONAL VEHICLES TO PASS.

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	TEMPORARY TRAFFIC SIGNAL WITH SINGLE SIGNING ON A 2-LANE UNDIVIDED ROADWAY	DATE: DECEMBER 2021
FILE: 121-TS-SINGLE-SIGN.dgn		NO: 121-TS-SINGLE-SIGN		SHEET: 1 OF 1



KEY

- CHANNELIZING DEVICES
- LIGHTED ARROW PANEL (CAUTION MODE)
- TRAFFIC FLOW
- REFLECTS EXISTING SPEED LIMIT
- PLACE SIGN AS INDICATED IN NOTE S2

STANDARD NOTES

(SEE 102-GEN-NOTES)

GENERAL: G1, G2, G3, G4
SIGNING: S1, S2, S3, S5
DEVICES: TCD1, TCD2, TCD6, TCD7

POST W16-4aP WHEN SHOULDER CLOSURE EXCEEDS 1 MILE IN LENGTH

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL	SHOULDER CLOSURE ON A 2-LANE, UNDIVIDED ROADWAY	DATE: MAY 2021
		NO: 122-NFW-SHL-(R)		SHEET: 1 OF 1
FILE: 122-NFW-SHL-(R).dgn				

SIGN MATERIAL SELECTION TABLE

	SIGN MATERIAL TYPE		
SIGN SIZE	TYPE I	TYPE II	TYPE III
≤ 36" X 36"		X	X
>36" X 36" ≤ 96" TO WIDE		X	
> 96" WIDE TO 144" WIDE	X	X	
> 144" WIDE	X		

TYPE I ALUMINUM EXTRUSION
TYPE II PLYWOOD
TYPE III ALUMINUM SHEET

ROUNDING OF CORNERS IS NOT REQUIRED FOR TYPE I OR II SIGNS.
VERTICAL JOINTS ARE NOT PERMITTED.
HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE NOT PERMITTED.

POST SIZE REQUIREMENTS TABLE

	POST TYPE		
SIGN AREA (ft^2)	U-CHANNEL STEEL	SQUARE TUBULAR STEEL	WOOD
≤9	1 - 3 lb/ft*	1 - 2" 12 or 14 GA*	N/A
9 ≤ 20	2 - 3 lb/ft	2 - 2" 12 or 14 GA	1 - 4" X 6"*
> 20 ≤ 30	N/A	N/A	2 - 4" X 6"
> 30 ≤ 60	N/A	N/A	2 - 6" X 8"
> 60 ≤ 84	N/A	N/A	3 - 6" X 8"

*SIGNS 4 FEET AND GREATER IN WIDTH REQUIRE 2 POSTS.
SIGNS GREATER THAN 8 FEET IN WIDTH REQUIRE 2 OR 3 WOOD POSTS DEPENDING ON AREA OF SIGN.
A MAXIMUM OF 2 POSTS WITHIN A 7' PATH IS PERMITTED.

MDOT Michigan Department of Transportation

PREPARED BY DESIGN DIVISION

DRAWN BY: CON/ECH

CHECKED BY: AUG

DEPARTMENT DIRECTOR
Kirk T. Steudle

APPROVED BY: _____
DIRECTOR, BUREAU OF FIELD SERVICES

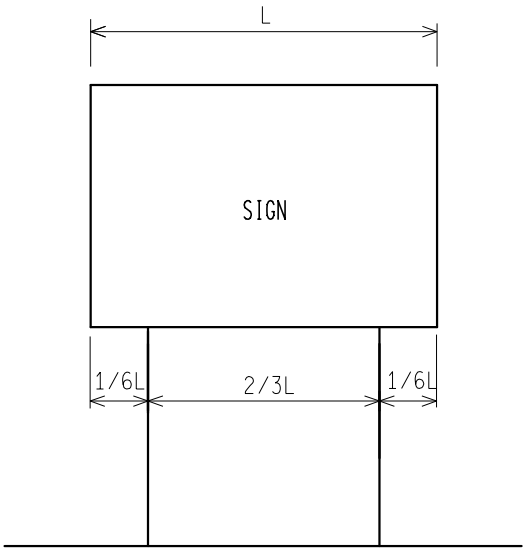
APPROVED BY: _____
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR

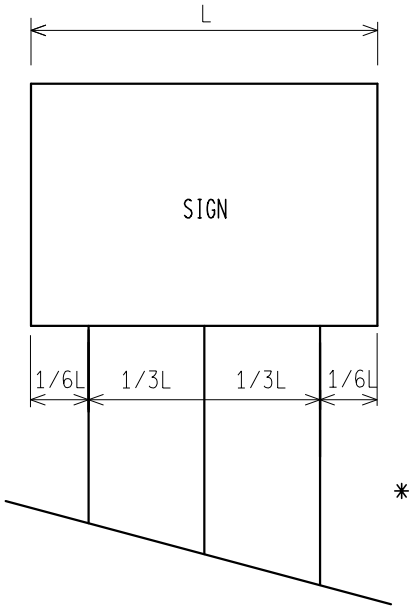
GROUND DRIVEN SIGN SUPPORTS FOR TEMP SIGNS

F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 1 OF 11

2 POST SIGN SUPPORT SPACING

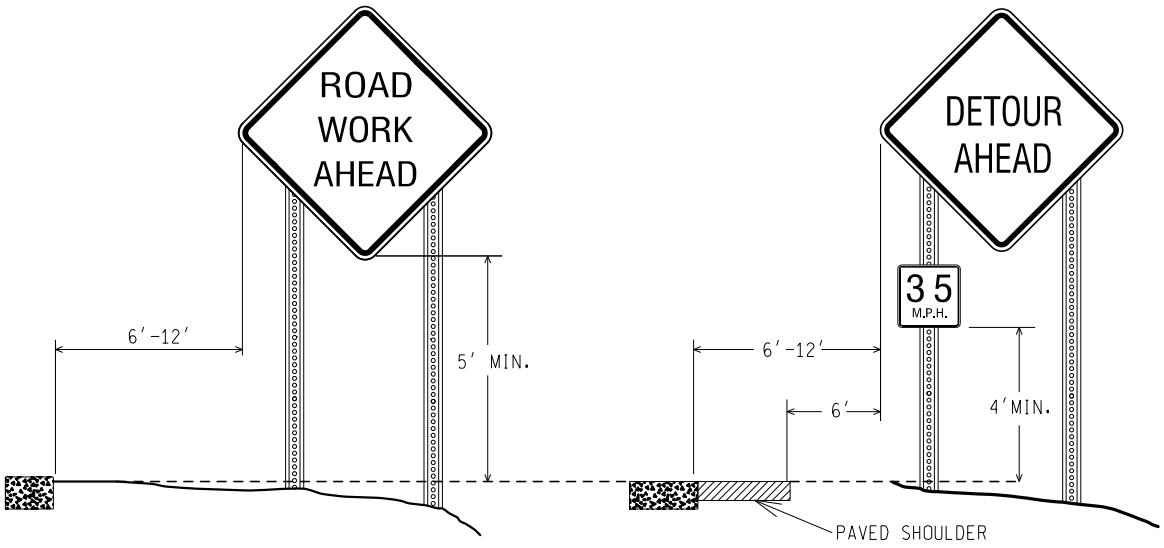


3 POST SIGN SUPPORT SPACING



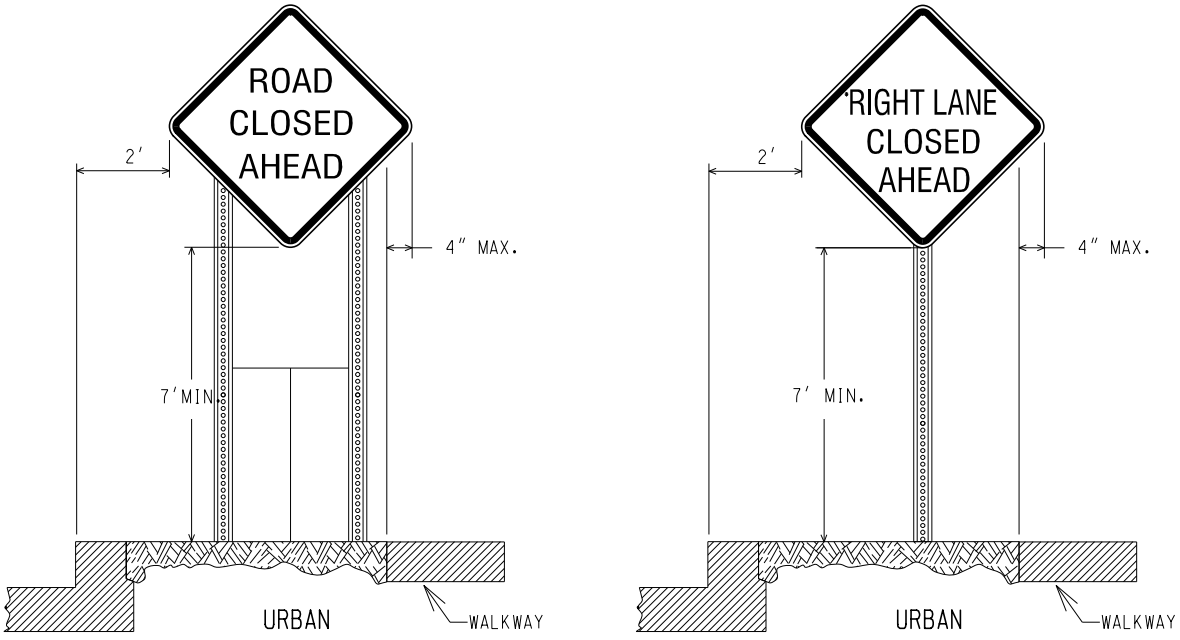
* FOR ALL 11' AND 12' LONG SIGNS ON 3 WOOD SUPPORTS, SPREAD POSTS SO AS TO HAVE A 8' MIN. TO 9' MAX. DISTANCE BETWEEN OUTSIDE POSTS.

NOT TO SCALE



RURAL

RURAL WITH ADVISORY
SPEED PLATE



(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

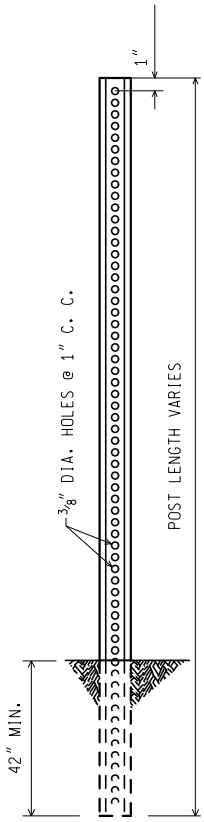
(CURBED AREAS OR WHERE
WALKWAYS ARE PRESENT)

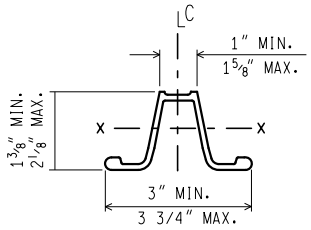
BOTTOM HEIGHT AND OFFSET

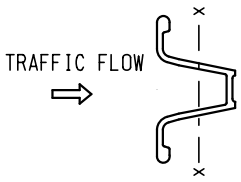
NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 3 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.







WEIGHT = 3 lbs/ft
SECT. MOD. X.-X. = 0.31 CUBIC INCHES MIN.

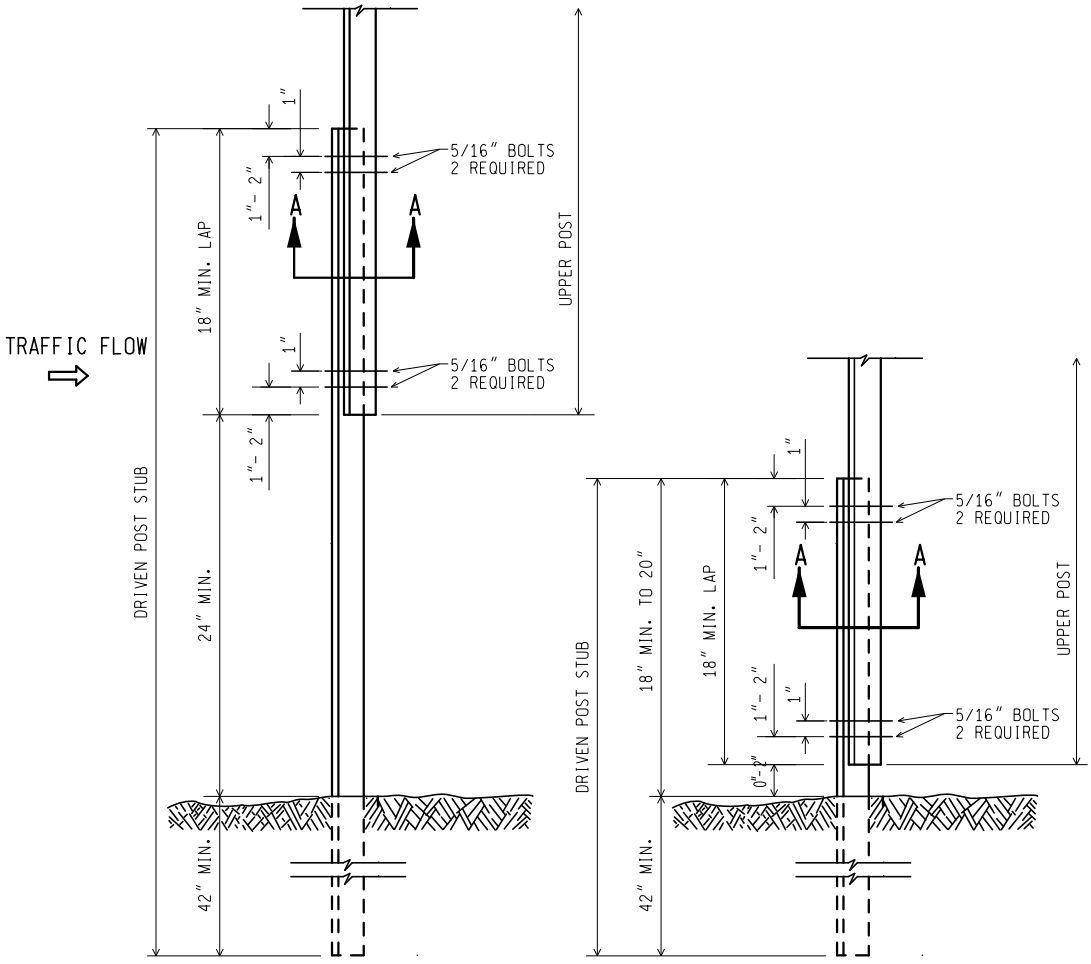
3 lb. U - CHANNEL STEEL POST
(NO SPLICE)

MOUNT SIGN ON OPEN FACE OF
U - CHANNEL STEEL POST

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 4 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



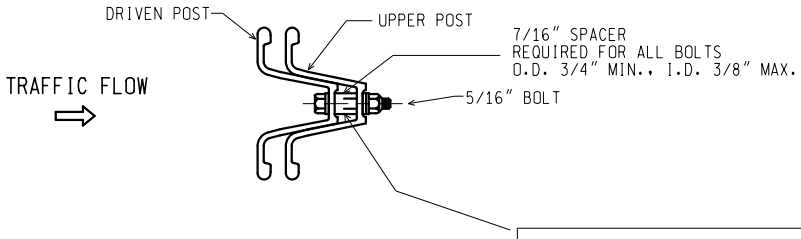
UPPER SPLICE

LOWER SPLICE

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

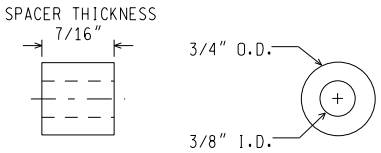
MOUNT SIGN ON OPEN FACE OF
UPPER U - CHANNEL STEEL POST

NOT TO SCALE



SECTION A-A

SPACER DETAIL



NOTES:

1. THE SPACER THICKNESS SHALL BE 1/16" LESS THAN THE GAP BETWEEN THE POST WHEN POSITIONED IN THE UNBOLTED CONFIGURATION.

2. THE EXTERIOR BOLT (CLOSEST TO LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN A PREPUNCHED HOLE 1" to 2" FROM THE END OF THE LAP.

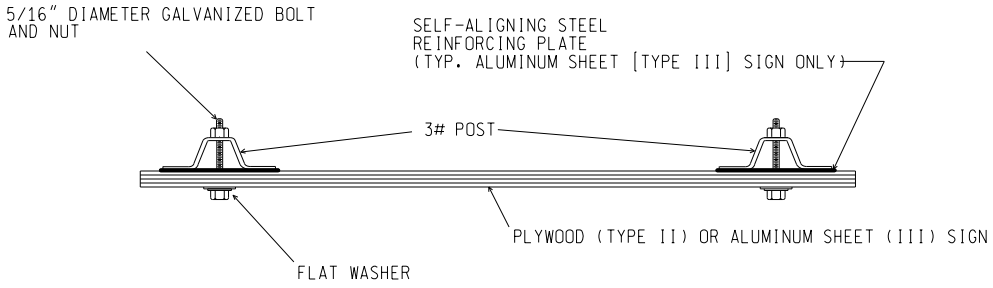
3. THE INTERIOR BOLT (FARTHEST FROM LAP), SPACER, WASHER, AND NUT SHALL BE INSTALLED IN THE NEXT PREPUNCHED HOLE.

4. THE DRIVEN POST SHALL ALWAYS BE MOUNTED IN FRONT OF THE UPPER POST WITH RESPECT TO THE ADJACENT ONCOMING TRAFFIC, REGARDLESS OF THE DIRECTION THE SIGN IS FACING.

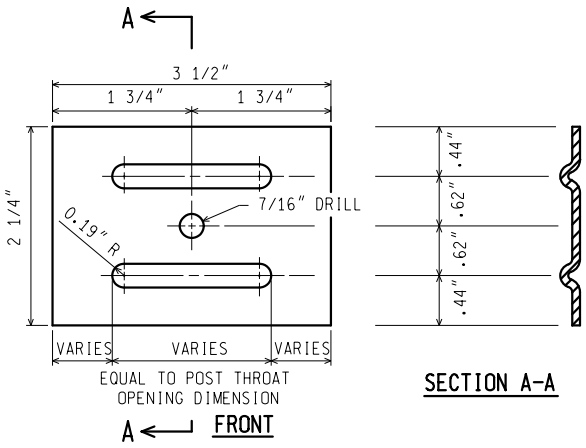
5. THE SPLICE LAP SHALL BE FASTENED BY FOUR-5/16" DIA. GALVANIZED A449 BOLTS (SAE J429 GRADE 5) OR GALVANIZED A325 BOLTS.

3 lb. U - CHANNEL STEEL POST
(WITH SPLICE)

NOT TO SCALE



SIGN TO 3 lb. POST CONNECTION



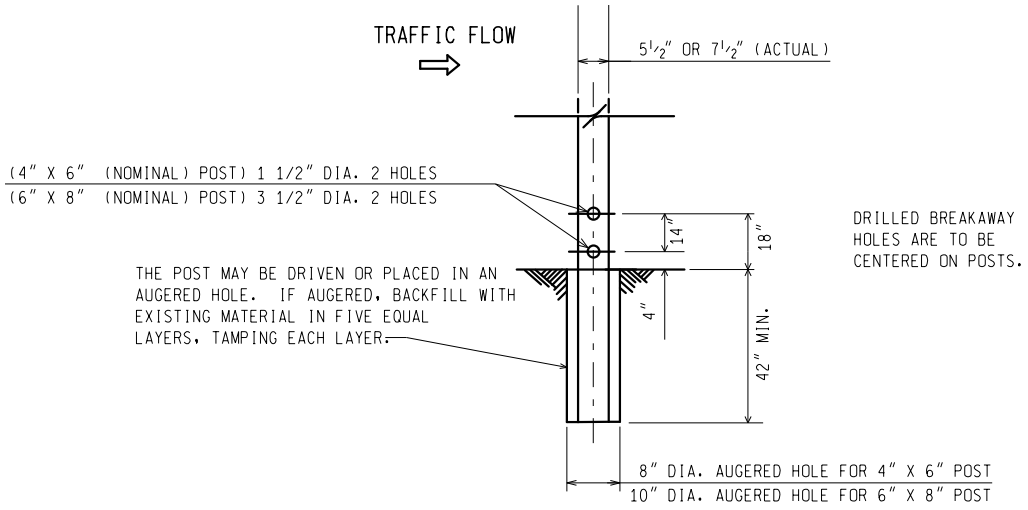
NOTES: (FOR STEEL SIGN REINF' PLATE)

1. MATERIAL: 12 GAUGE CARBON STEEL.
2. TOLERANCE ON ALL DIMENSIONS ± 0.0625"
3. FINISH-AFTER STAMPING AND PUNCHING, GALVANIZE ACCORDING TO CURRENT SPECIFICATIONS FOR ZINC (HOT GALVANIZE) COATINGS ON PRODUCTS FABRICATED FROM PLATES OR STRIPS

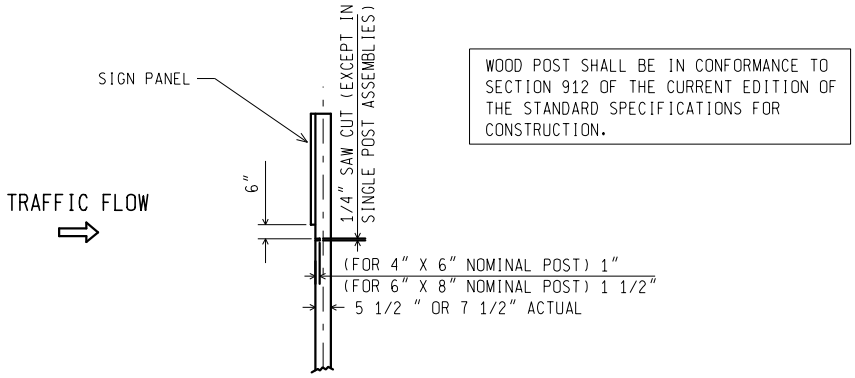
STEEL SIGN REINFORCING PLATE
REQUIRED FOR TYPE III SIGNS ONLY

3 lb. U - CHANNEL STEEL POST SIGN CONNECTION

NOT TO SCALE



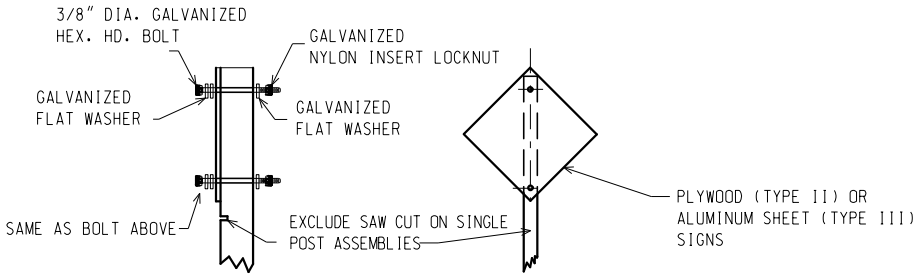
WOOD POST BREAKAWAY HOLES/ DIRECT EMBEDMENT DETAILS



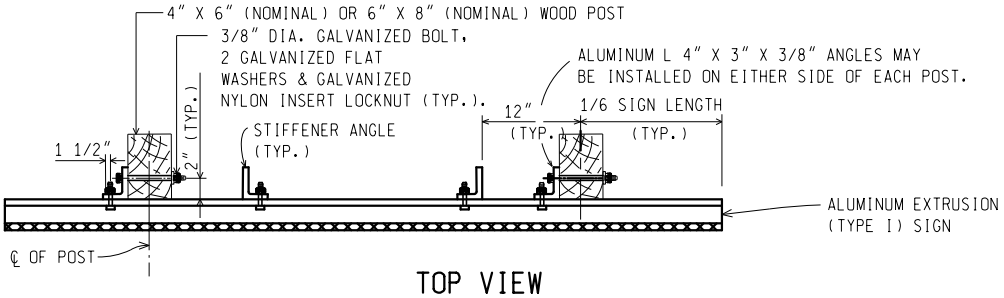
SAW CUT DETAIL (MULTIPLE POST INSTALLATIONS)

WOOD POST DETAILS

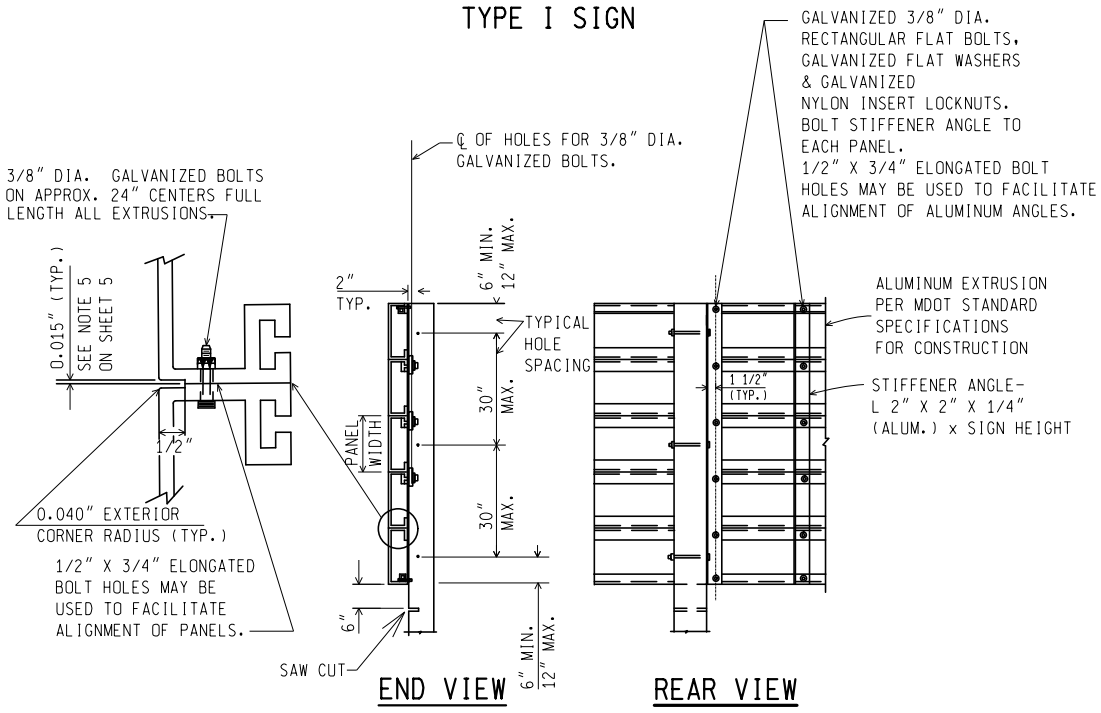
NOT TO SCALE



TYPE II AND TYPE III SIGNS



TOP VIEW
TYPE I SIGN



END VIEW

REAR VIEW

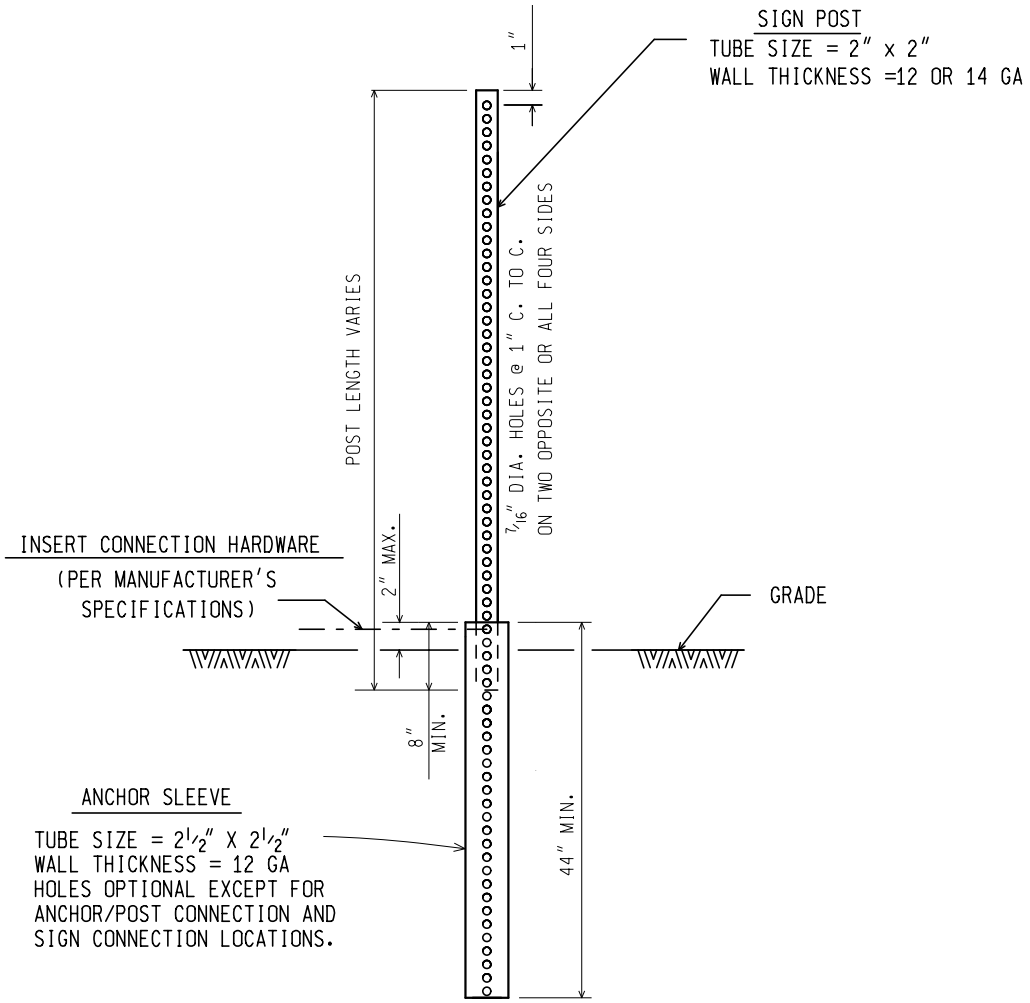
TYPE I SIGN - ERECTION DETAILS

WOOD POST CONNECTIONS

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 9 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.



SQUARE TUBULAR STEEL POST

NOT TO SCALE

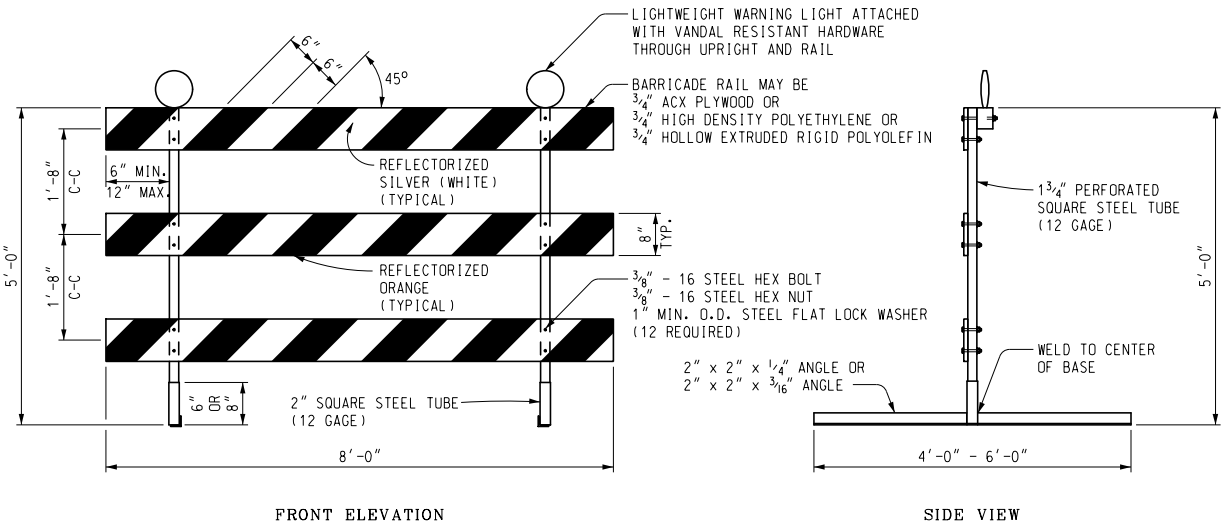
MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN	F.H.W.A. APPROVAL	11/2/2017 PLAN DATE	WZD-100-A	SHEET 10 OF 11

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

GENERAL NOTES:

1. A MAXIMUM OF TWO POSTS WITHIN A 7 FOOT PATH IS PERMITTED.
2. ALL SIGN POSTS SHALL COMPLY WITH NCHRP 350.
3. ALL POSTS SHALL BE EMBEDDED A MINIMUM OF 42".
4. BRACING OF POST IS NOT PERMITTED.
5. SIGN SHALL BE LEVEL, AND UPRIGHT FOR THE DURATION OF INSTALLATION.
6. ERECT POSTS SO THE SIGN FACE AND SUPPORTS DO NOT VARY FROM PLUMB BY MORE THAN 3/16" IN 3'. PROVIDE A CENTER-TO-CENTER DISTANCE BETWEEN POSTS WITHIN 2 PERCENT OF PLAN DISTANCE.
7. NO MORE THAN ONE SPLICE PER POST, AS SHOWN, WILL BE PERMITTED.
8. POST TYPES SHALL NOT BE MIXED WITHIN A SIGN SUPPORT INSTALLATION.
9. NO VERTICAL JOINTS ARE PERMITTED IN SIGN. NO HORIZONTIAL JOINTS THROUGH SIGN LEGEND OR SYMBOLS ARE PERMITTED IN SIGN
10. REMOVE SIGN POSTS AND/OR POST STUBS IN THEIR ENTIRETY WHEN NO LONGER REQUIRED.
11. ALL LABOR, MATERIALS, AND EQUIPMENT, INCLUDING TEMPORARY SUPPORTS REQUIRED TO INSTALL, MAINTAIN, RELOCATE, AND/OR REMOVE THE TEMPORARY SIGN, INCLUDING SUPPORTS, ARE CONSIDERED TO BE INCLUDED IN THE COST OF THE TEMPORARY SIGN.
12. SAW CUTS IN WOOD POSTS ARE TO BE PARALLEL TO THE BOTTOM OF THE SIGN.
13. POSTS SHALL NOT EXTEND MORE THAN 4" ABOVE TOP OF SIGN.
14. TEMPORARY WOOD SUPPORTS DO NOT REQUIRE PRESERVATIVE TREATMENT.

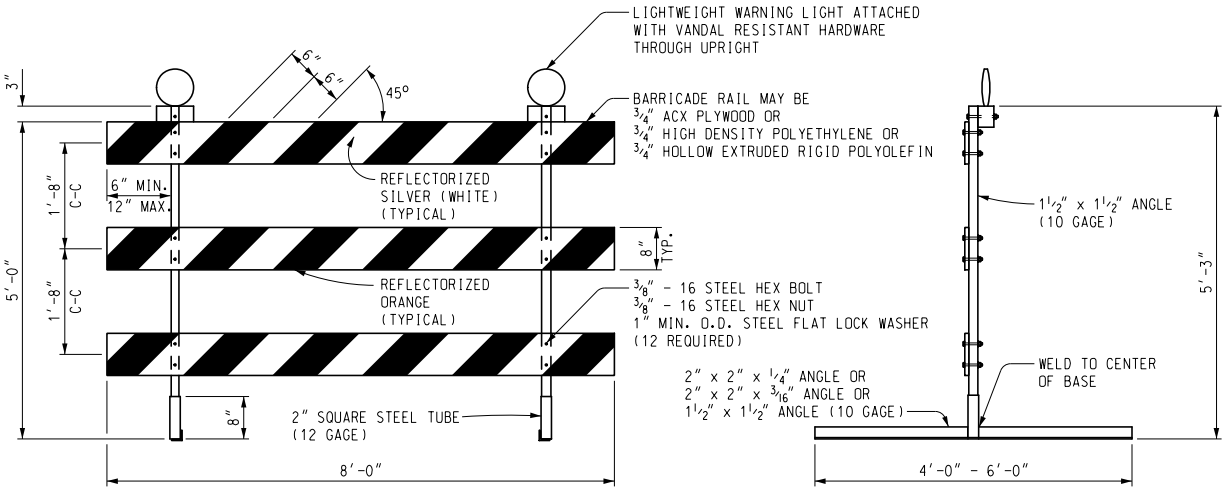
NOT TO SCALE



FRONT ELEVATION

SIDE VIEW

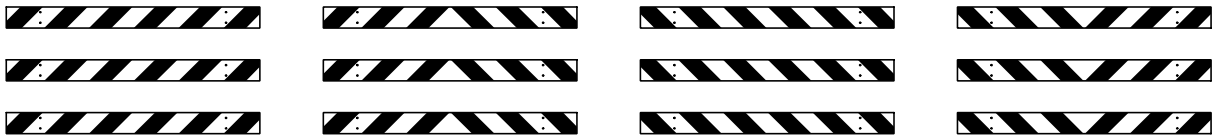
PERFORATED SQUARE STEEL TUBE OPTION



FRONT ELEVATION

SIDE VIEW

ANGLE IRON OPTION



LEFT DIRECTIONAL

BI-DIRECTIONAL

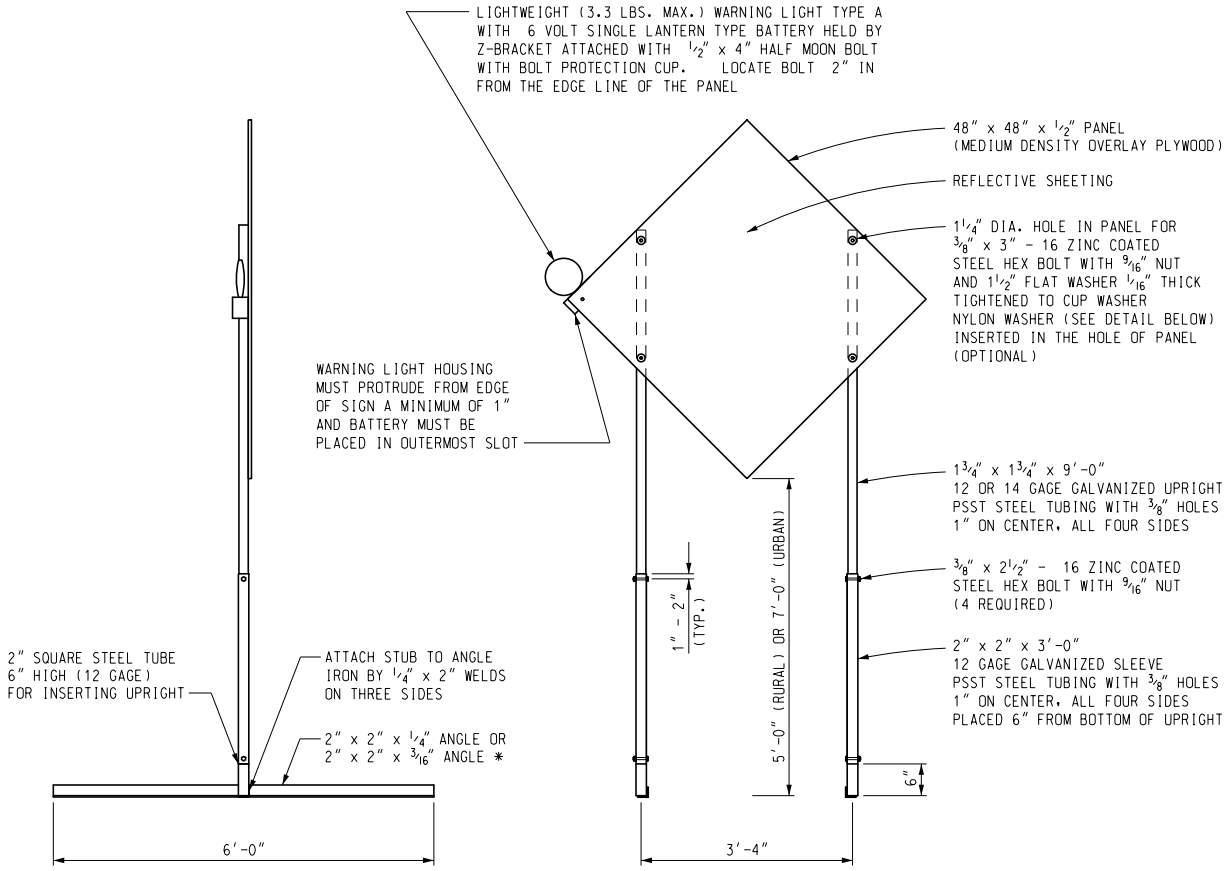
RIGHT DIRECTIONAL

CLOSURES

BARRICADE RAIL SHEETING OPTIONS
TYPE III BARRICADES

Other Type III Barricades meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

MDOT Michigan Department of Transportation PREPARED BY OPERATIONS FIELD SERVICES DRAWN BY: ECH CHECKED BY: MWB	DEPARTMENT DIRECTOR Paul C. Ajegba APPROVED BY: _____ DIRECTOR, BUREAU OF FIELD SERVICES APPROVED BY: (SPECIAL DETAIL) DIRECTOR, BUREAU OF HIGHWAY DEVELOPMENT	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL FOR Temporary Traffic Control Devices	
		F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 1 OF 3



SIDE VIEW

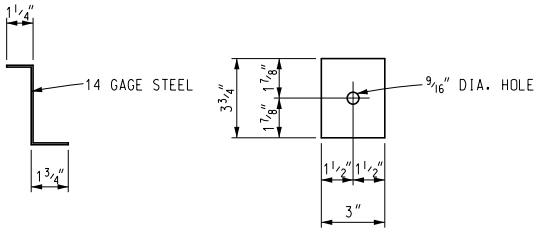
FRONT ELEVATION

TEMPORARY SIGN SUPPORT

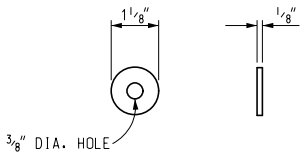
(WARNING LIGHT PLACED ON SIDE CLOSEST TO TRAFFIC)

* SIGN STAND IS BALLASTED WITH FOUR OR MORE 35 LB SANDBAGS. A MINIMUM OF ONE ON EACH END.

UPRIGHTS SHALL NOT EXTEND ABOVE THE SIGN PANEL.



Z-BRACKET DETAIL



OPTIONAL NYLON WASHER

Other temporary sign supports meeting current NCHRP crash worthy criteria can be found on the FHWA Safety website at http://safety.fhwa.dot.gov/roadway_dept/road_hardware/wzd.htm

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL	SPECIAL DETAIL F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 2 OF 3

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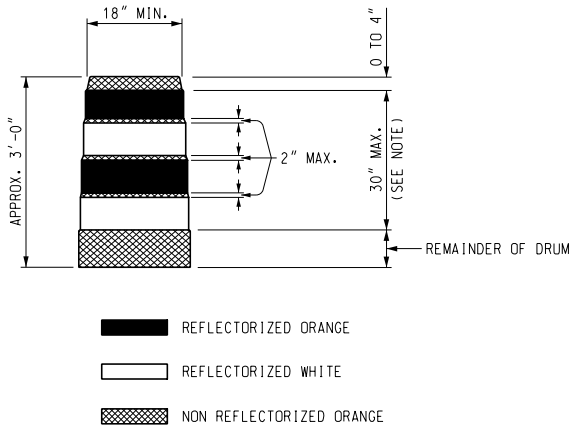

NOTE:
DRUMS SHALL HAVE AT LEAST 4 HORIZONTAL REFLECTORIZED STRIPES (2 ORANGE AND 2 WHITE) OF 6" UNIFORM WIDTH, ALTERNATING IN COLOR WITH THE TOPMOST REFLECTORIZED STRIPE BEING ORANGE. NON REFLECTORIZED SPACES BETWEEN THE HORIZONTAL REFLECTORIZED ORANGE AND WHITE STRIPES SHALL BE ORANGE IN COLOR AND EQUAL IN WIDTH.

PLASTIC DRUM

NOTES:

2" PERFORATED SQUARE STEEL TUBES MAY BE USED TO FABRICATE THE HORIZONTAL BASE OF THE TYPE III BARICADE.

WARNING LIGHTS SHALL BE PLACED ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION AND ALL OTHER PROVISIONS IN THE CONTRACT ON TYPE III BARRICADES.

SEE ROAD STANDARD PLANS R-113-SERIES FOR TEMPORARY CROSSOVERS FOR DIVIDED ROADWAY, AND R-126-SERIES FOR TYPICAL LOCATION AND SPACING OF PLASTIC DRUMS FOR PLACEMENT OF TEMORARY CONCRETE BARRIER.

SIGNS, BARRICADES, AND PLASTIC DRUMS SHALL BE FACED WITH PRESSURE-SENSITIVE REFLECTIVE SHEETING ACCORDING TO THE CURRENT STANDARD SPECIFICATIONS FOR CONSTRUCTION.

SANDBAGS SHALL BE USED WHEN SUPPLEMENTAL WEIGHTS ARE REQUIRED TO ACHIEVE STABILITY OF THE BARRICADE. THE SANDBAGS SHALL BE PLACED SO THEY WILL NOT COVER OR OBSTRUCT ANY REFLECTIVE PORTION OF THE TRAFFIC CONTROL DEVICE.

NOT TO SCALE

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF FIELD SERVICES SPECIAL DETAIL	(SPECIAL DETAIL) F.H.W.A. APPROVAL	6/16/22 PLAN DATE	WZD-125-E	SHEET 3 OF 3

NOTE: THE ORIGINAL SIGNED COPY IS KEPT ON FILE AT THE MICHIGAN DEPARTMENT OF TRANSPORTATION.

OCEANA COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
CONSTRUCTION MANAGEMENT

a. Description. This work consists of complying with the Oceana County Road Commission's (OCRC) construction management processes. The OCRC will manage this contract using the Road Conductor software. No paper documents, faxes, or other methods/media are permitted for change order approvals except as allowed by this special provision or specifically approved by the Engineer.

b. Terminology. Replace the following terms in all of the contract:

- Inspector's Daily Report (IDR) replaced with Daily Work Report (DWR)
- Contract Modification replaced with Change Order
- Construction Pay Estimate Report replaced with Pay Estimate for Contractor

The new terms have the same definition as the term being replaced.

c. Contractor Access to Road Conductor. Road Conductor access is available to all contractors associated with the project based on Road Conductor license fees. User accounts and access is granted by Road Conductor. The road conductor is a web based access portal at the following website:

https://roadconductor.com/purchase/

d. Roles and Contract Authority. Roles restrict what data each user can view and the actions they can perform in the system. Roles will be assigned by OCRC. Read only and change order approver roles are available to the Contractor. The change order approval role requires written authorization from an authorized officer of the company.

Contract authority grants the user the ability to use one of the user's roles on a specific contract. Contract authority will be granted by the Engineer at the request of the Contractor. Provide the Engineer with a list of users and the user role for this contract at the time of the preconstruction meeting.

Notify the Engineer within 24 hours of any user access changes for this contract.

e. Technical Issue Resolution. Upon discovery of a Road Conductor issue the Contractor must immediately notify the Engineer and submit a notice to the e-mail resource at:

info@roadconductor.com.

f. Change Order Approvals. Ensure electronic review/approval of change orders are accomplished through Road Conductor. When a change order is ready for approval, the user with authority to approve is notified by e-mail. Submit the approval decision by accessing Road Conductor, reviewing the change order, and recording the approval decision within the system.

g. Data/File Retention. The electronic data and files stored within Road Conductor are part of the official project documentation and will be retained per the current documentation retention schedule.

h. Measurement and Payment. The work included in this special provision will not be paid for separately and is considered to be included in other pay items of work in the contract.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
STRUCTURAL STEEL AND ALUMINUM CONSTRUCTION

STR:MJF 1 of 5 APPR:SCK:REL:07-31-23
FHWA:APPR:09-01-23

a. Description. This special provision specifies the AWS Code year and associated revisions to the Code to be used for the project.

b. ***AASHTO/AWS D1.5M/D1.5:2020, Bridge Welding Code*** (hereafter called *AWS D1.5*). Fabrication of bridge main and secondary members specified in subsection 707.01.A of the Standard Specifications or other contract documents must be performed in accordance with *AWS D1.5* as modified herein:

4.8.8: Add the following sentence to the end of the existing paragraph:

An exception to this is for the case of a sole plate welded to the bottom flange of a beam or girder or a cross frame member welded to a connection plate or another cross frame member. In this case the welds must be continuous as shown on the contract drawings with corners ground to eliminate notches greater than 0.01 inch. Provide a smooth transition from the weld metal and base metal after grinding.

5.1.3: Change "...when the ambient temperature is lower than -20°C [0°F]..." to read "...when the ambient temperature is lower than 5 °C [40 °F]...".

5.2.1: Add the following sentence to the end of the paragraph:

All edges whether welded or not must be conditioned by very shallow grinding to remove the hardened layer left by resolidification.

5.2.3: Delete the existing paragraph in its entirety and replace with the following sentence:

Scale and Rust. All mill scale and rust must be removed from the surfaces to be welded within 25 mm [1 in] of the weld.

5.13.3: Delete the existing paragraph in its entirety and replace with the following sentence:

Steel backing on welds must be removed and the joint must be finished smooth, unless otherwise directed by the Engineer.

5.13.6: Delete the word “copper” from the first sentence in the first paragraph and delete the second paragraph in its entirety.

6.1.4.1: Add the following sentence to the existing paragraph:

A filler metal log sheet must be available at all times for the Engineer to review.

6.2: Add the following sentence as a new paragraph:

Cooling welds using compressed air or water is not permitted.

6.2.2: Add the following sentence:

For AASHTO M270 Grade 36, 50, 50W, and HPS 50W, the maximum preheat and interpass temperature must be 345 °C [650 °F] for all thicknesses.

6.2.5: Delete the word “-20°C [0°F]” in this subclause and replace with 5 °C [40 °F].

Table 7.11: In the table under "1. Test on Plate" in the “Type of Weld” column, delete the “Fillet Option No. 2” and accompanying referenced Figure 7.22.

7.13: Delete the subclause in its entirety.

7.14: Delete the subclause in its entirety.

7.23.1.5: Delete the existing paragraph in its entirety and replace with the following paragraph:

Plug Weld Qualification Tests for Plug Welds Only. The joint must consist of a hole diameter the same size as that used in production in a plate the same thickness as that being welded. Backing must be of the same thickness and material as that to be used in production. In addition, Ultrasonic Testing (UT) inspection is required for plug weld qualification and must meet the requirements shown in Table 8.4. Conduct macroetch test according to subclause 7.27.6.2.

7.23.2.4(2)(b): Delete this subclause and accompanying referenced Figure 7.27.

7.27.1: In this subclause add the following requirements for visual inspection to the existing paragraph:

Discontinuities must not exceed 1/8 inch measured in any direction on the surface. Summation of all discontinuities exceeding 1/32 inch must not exceed 3/8 inch.

7.27.6.1: In this subclause add the following requirements to the existing requirements:

(7) Discontinuities must not exceed 1/8 inch measured in any direction on the surface.

(8) Summation of all discontinuities exceeding 1/32 inch must not exceed 3/8 inch.

8.3.1: Add the following sentence to the existing paragraph:

All WPSs are required to be approved by the Engineer prior to welding.

8.5.8: Add the following at the end of the existing paragraph:

Inspection and NDT records must contain at least the content and information shown in the sample forms of Annex N.

8.6.5: Add the following at the end of the existing paragraph:

Similarly, if such testing should disclose any deficiencies which require repair work, all costs associated with the original NDT and in addition to subsequent NDT for the repairs must be paid for by the Contractor.

8.7.7: Add the following at the end of the existing paragraph:

PT inspection must be performed at the ends of all CJP (butt, corner, and T) weld terminations for main members.

8.7.8: Remove reference to the prod method.

8.7.10: Delete the existing paragraph in its entirety and replace with the following sentence:

Phased-array UT (PAUT) in accordance with the current MDOT PAUT Program document may be substituted for RT of complete joint penetration groove welds in butt joints.

8.19.8: Remove reference to Table 8.5.

8.20.1: Add the following at the end of the existing paragraph:

All discontinuities found by UT must be recorded on the NDT report.

8.26.2.1: In the first sentence, change "For welds subject to tensile stress under any condition of loading..." to read "For all welds under any condition of loading...".

8.26.2.2: Delete the subclause in its entirety.

8.26.3.1(1): Change "Welds subject to tensile stress under any condition of loading..." to read "Welds under any condition of loading...".

8.26.3.1(2): Delete this subclause in its entirety.

8.26.3.3: Change “Table 8.5” to “Table 8.4”.

8.26.3.3(2): Delete this subclause in its entirety.

12.6.4.1: Add the following to the paragraph:

Electrodes for SMAW must be E7018, E8018, E9018, E10018, and E11018.

12.16.5.1: Add the following sentence to the existing paragraph:

Inspection and NDT records must contain at least the content and information shown in the sample forms of Annex N.

12.18: Add this subclause to the code:

The Contractor must provide documentation of all visual and NDT for timely review and confirmation by the Engineer prior to the weldment being covered.

Table 12.3: Delete Note a.

c. ***AWS D1.1/D1.1M:2020, Structural Welding Code - Steel*** (hereafter called *AWS D1.1*). Fabrication of structural steel elements specified in subsection 707.03.D.10.b of the Standard Specifications or other contract documents must be performed in accordance *AWS D1.1* as modified herein.

Tubular fracture critical members must follow clause 12 of AWS D1.5 and specific provisions stipulated in the *AASHTO LRFD Guide Specification for Design of Pedestrian Bridges*.

5.7.3: Delete this subclause in its entirety and eliminate all references within *AWS D1.1* to alternate methods for establishing minimum preheat and interpass temperatures.

5.8.1.1: Delete the existing subclause in its entirety and replace with the following paragraph:

The progression for all passes in the vertical position must be upward including repairs.

6.2.1.3: Delete the existing subclause in its entirety and replace with the following paragraph:

Charpy impact tests and all weld metal tensile tests are required for all groove weld procedure test plates. Additional plate lengths are required for these tests. This requirement is for all steels greater than ½ inch in thickness, used for structural supports for highway signs, luminaires, and traffic signals, that are main load carrying tension members. Specimens tested for impact values must have a minimum value of 20 ft-lb at -20 °C [0 °F]. All weld tensile specimens must have values not less than those shown in Table 5.1 with elongation in 2-inch gage length not less than 22 percent.

Table 6.11: In the table under the Type of Test Weld column, delete the Fillet Option 2 and accompanying referenced Figure 6.22.

6.22.3: Delete this subclause in its entirety and replace with subclause 7.23.1.5 of *AWS D1.5*.

6.22.2.1: Delete this subclause in its entirety and replace with subclause 7.23.1.5 of *AWS D1.5*.

6.23.2.2(3)(c): Change "...in excess of 1/4 in [6 mm] total..." to read "...in excess of 1/8 inch [3 mm] total...".

7.11.2(1): In this subclause change "...when the ambient temperature is lower than 0°F [-20°C]..." to read "...when the ambient temperature is lower than 40 °F [5 °C]...".

7.25: Add the following sentences to the end of the existing paragraph:

Written weld repair procedures must be approved by the Engineer prior to any weld repairs.

8.1: Delete this subclause in its entirety and replace with subclause 8.1 of *AWS D1.5*.

8.3.3: Add the following sentence to the end of the existing paragraph:

Approved weld procedures must be posted where work and welding are being performed.

8.5.4: Add the following sentence to the end of the existing paragraph:

Inspection and NDT records must contain at least the content and information shown in the sample forms of Annex J.

8.6.5: Delete this subclause in its entirety and replace with subclause 8.6.5 of *AWS D1.5*.

8.12.2.1: In the title of this subclause, change "Cyclically Loaded Nontubular Connections in Tension" to read "Cyclically Loaded Nontubular Connections".

8.12.2.2 & Figure 8.3: Delete this subclause in its entirety and referenced Figure 8.3. See subclause 8.12.2.1 as modified herein.

8.13.2(1): Change "Welds subject to tensile stress under any condition of loading..." to read "All welds under any condition of loading...".

8.13.2(2) & Table 8.2: Delete this subclause in its entirety and referenced Table 8.2. See subclause 8.13.2(1) as modified herein.

8.19.2: In the third sentence of the paragraph, replace the word “painted” with the word “coated”.

8.25.3: Replace the word “paint” with “coating”.

10.14.4.1(3)(f): Change "exceed 1/4 in [6 mm]" to read "exceed 1/8 inch [3 mm]".

d. ***AWS D1.2/D1.2M:2014, Structural Welding Code – Aluminum*** (hereafter referred to as *AWS D1.2*). Fabrication of structural aluminum must be performed in accordance with *AWS D1.2*.

3.5.3: Delete this subsection in its entirety.

3.11: Delete this subsection in its entirety.

3.21.6.3: Delete this subsection in its entirety and replace with the sentence:

RT must not be used in lieu of the bend test for qualification testing of welders or welding operators.

5.6.5: Delete this subsection in its entirety and replace it with subclause 8.6.5 of *AWS D1.5*.

OCEANA COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
STEEL GRATE DECKING, SALV AND REINSTALL

OCRC:SCECO:RWL 1 of 1 March 23, 2026

a. Description. This work consists of removing, salvaging, and reinstalling the existing galvanized steel grate decking on the bridge, including furnishing and installing mechanical fasteners. Work also includes removing, salvaging, and reinstalling the wood toe boards along the bottom of the railing.

b. Materials. Furnish galvanized steel mechanical fasteners with tamper-resistant bolts in accordance with the size shown on the plans. Fasteners are to be a “C-clip” style unless otherwise approved by the Engineer. The top of the fastener or bolt shall not project more than 1/4 inch above the top of the deck grates.

c. Construction. Complete all work in accordance with section 713 of the Standard Specifications for Construction, except as modified herein.

Tag or label each deck panel and toe board to identify the location on the bridge. Remove and salvage bolts attaching toe boards to rail posts. Do not cut boards; remove boards from structure and stack boards onsite during construction. Remove the steel grate decking by cutting the existing welds, taking care not to damage decking, beams, or other components attached to the structure. Grind residual weld material from the top flange of the beams, taking care not to remove any beam section. Stack deck panels onsite during construction. The Contractor may propose an alternate location to store the deck panels for approval by the Engineer.

After structure work is complete including cleaning and coating, reinstall deck panels in the original location. Cut off edges of panels adjacent to top flange channel braces to fit. Grind sharp corners or edges and apply a zinc-rich coating to all cut surfaces in accordance with subsection 716.03.E of the Standard Specifications for Construction. Install and tighten mechanical fasteners in accordance with the manufacturer’s specifications and as shown on the plans. Reinstall railing toe boards in the original location.

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

Pay Item	**Pay Unit**
Steel Grate Decking, Salv and Reinstall	Lump Sum

Steel Grate Decking, Salv and Reinstall includes removing, salvaging, and reinstalling the wood toe boards along the bottom of the railing.

OCEANA COUNTY ROAD COMMISSION

SPECIAL PROVISION
FOR
TEMPORARY SUPPORT

OCRC:SCECO:RWL 1 of 1 April 2, 2026

a. Description. This work consists of temporarily supporting the steel pedestrian structure during replacement of beam splices and bearing beams in accordance with section 713 of the Standard Specifications for Construction, as directed by the Engineer and as described herein.

b. Materials. None specified.

c. Construction. Design a temporary support system and submit working drawings and calculations to the Engineer for approval a minimum of 14 calendar days prior to beginning work. A Professional Engineer licensed in the State of Michigan must seal the design. The direction of forces applied to the beams by the temporary support system shall be vertical only; do not introduce horizontal forces to the structure. The adjacent vehicle bridge may be used as support, but do not drill into or damage the existing concrete box beams.

Temporarily support existing utilities as directed by the Engineer. Avoid damaging utilities or conduits during erection and removal of temporary supports.

Conduct all work in accordance with section 713 of the Standard Specifications for Construction except as modified on the plans and herein. Repair any damage to existing structural components, utilities, and the adjacent vehicle bridge caused by the contractor's operations as directed by the Engineer at no additional cost to the contract.

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:

Pay Item	**Pay Unit**
Temporary Support	Each

Temporary Support includes designing, furnishing, placing, and removing temporary supports for the steel beams. **Temporary Support** will be paid once for each beam splice and each bearing beam replacement.

Temporary support of existing utilities will not be paid separately but is included in payment for temporary support of the steel beams.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
CLEANING AND COATING EXISTING STRUCTURAL STEEL

STR:JAB 1 of 16 APPR:REL:SCK:11-20-25
FHWA:APPR:11-20-25

Delete section 715, on pages 7-160 through 7-175 of the Standard Specifications for Construction in its entirety and replace with the following:

715.01. Description

This work consists of cleaning and coating metal surfaces of existing steel structures and containing, storing, and disposing of spent material. Spent material includes paint chips, abrasive particles, dust, and debris resulting from cleaning operations. Metal surfaces of existing steel structures include downspouts, sign supports, and brackets but do not include railings, chain link fencing, utility conduits, and associated brackets and hangers.

A. Definitions

Feathering. Feathering is the process of tapering or blending-in an existing intact coating in preparation of applying a new touch-up, repair, rework, and/or tie in coating. This industry common practice is intended to ensure good adhesion of the new coating to the existing coating, and to provide a seamless aesthetic transition. Feathering is defined as tapering the edges of tightly adhering existing coating for 2 to 3 inches into the newly prepared bare metal surface or underlying coating.

Stripe Coat. As outlined and defined in the SSPC/AMPP standard SSPC Guide 11 (Protecting Edges, Crevices, and Irregular Steel Surfaces by Stripe Coating), typical stripe coat application calls for a 2 inch wide stripe on and over either side of an edge and a 1 inch wide stripe over and to each side of a weld. stripe coat is an additional layer of coating applied to specific areas such as welds, outside corners, flange edges, boltheads and threads, nuts, crevices, and all other edges to provide the added barrier protection.

715.02. Materials

Provide materials in accordance with the following sections:

Sealant for Perimeter of Beam Plates 713
Bridge Coating System 915

Use a Department-approved low dusting abrasive or steel grit or a combination for blast cleaning that produces a uniform sharp angular surface profile of 2.0 to 3.5 mils measured using extra coarse replica tape. Select a low dusting abrasive from the Qualified Products List. Any steel grit that produces a sharp angular surface profile of 2.0 to 3.5 mils and is free of dust, oil, grease, corrosion, non-magnetic matter, and other

contaminants is allowed. Supply a technical data sheet for the selected abrasive and/or steel grit to be utilized.

When steel grit is used as a recyclable abrasive, it must be cleaned to the requirements of SSPC-AB 2, *Cleanliness of Recycled Ferrous Metallic Abrasives*. When recycling an abrasive from the Qualified Products List, it must be cleaned to the requirements of SSPC-AB 1, *Mineral and Slag Abrasives*. Do not reuse abrasive unless the abrasive is specifically designed for that purpose.

Use an organic or alternative zinc-rich primer to coat internal surfaces of slip-critical bolted connections only. Use a primer from the same manufacturer that supplied the coating system for the remainder of the structure and that meets Class B (0.5 or greater) slip coefficient requirements of the Research Council on Structural Connections' *Specification for Structural Joints Using High-Strength Bolts*. Before coating, submit the Slip-Coefficient and Creep Resistance Test Certificate to the Engineer. The test certificate must be from an independent laboratory identifying that the primer meets Class B slip coefficient. The test certification must identify the minimum cure time, maximum allowed dry film thickness (DFT), maximum allowed thinner requirements, and any other necessary application parameters. Use the same primer on both connecting faying surfaces. Select materials from the Qualified Products List.

Use primer for stripe coating that is the same material as the chosen paint system primer with a color that contrasts to the primer and the intermediate coat. Obtain approval from the Engineer for the color contrast. Do not thin the stripe coating material.

Use a tie coat to promote adhesion over galvanized surfaces if recommended by the coating manufacturer. Apply the tie coat using a method and thickness recommended by the coating manufacturer.

For galvanized surfaces to receive additional coatings, repair damaged galvanized surfaces with a zinc-rich primer from the same manufacturer as the coating system and that meets ASTM A780/A780M.

Select the sealant for perimeter of beam plates from the Qualified Products List. Provide sealant in caulking tubes.

When potable water is required, it must be in accordance with section 911.

No partial mixing of paint units or field tinting will be permitted.

715.03. Construction

Do not field coat from October 1 to May 1 in Superior and North Regions or from October 15 to April 15 in the remaining regions unless otherwise approved by the Engineer. Comply with temperature restrictions specified in section 915.

Refer to SSPC *Painting Manual*, Volumes 1 and 2, for definitions of cleaning criteria and other coating terms.

Provide and erect scaffolding to allow inspection of steel before and after coating. Erect scaffolding to prevent damage to the structure and comply with MIOSHA requirements. If

requested by the Engineer, submit all calculations and documentation for pre-engineered systems, and shop drawings and calculations stamped by a Licensed Engineer in the State of Michigan for all other systems.

Obtain the Engineer's approval for rubber rollers or other protective devices used on scaffold fasteners. Do not use metal rollers, clamps, or other fasteners that may mar or damage the steel or coating.

Provide an experienced Quality Control (QC) Inspector on the project to conduct all testing and inspections required to verify and document the quality of all aspects of the work. The inspector must have a minimum AMPP Bridge Coatings Inspector Level 2 Coating qualification. Additionally, the inspector must have a minimum of 5 years of experience on similar bridge-type projects. The Quality Control Inspector must not participate in coating production activities or have other duties outside the scope of performing QC activities (ex. Project Manager, Superintendent, Foreman, Competent Person, Painter, Laborer etc.) if the project has more than one containment or ongoing operations. Submit, for the Engineer's approval, the Quality Control Inspector's resume, including ability, experience, and education.

Provide all QC records to the Engineer within 24 hours.

Difficult access does not relieve the Contractor from utilizing specialized equipment for properly cleaning, abrasive blasting, hand or power tool cleaning, painting, and inspecting these areas.

A. **Protection of Work and Environment during Cleaning Operations**

1. **Training Program.** Provide a documented training program covering the handling and storage of hazardous waste. Provide a copy of the program to the Engineer before beginning cleaning operations and keep a copy at the project site.

2. **Worker Training.** Train every employee involved in cleaning the steel structure (i.e., generating waste) and in cleanup, handling, and storage of spent material. Provide training in the management of hazardous waste as required by the Resource Conservation and Recovery Act 42 USC 6901 et seq. and 40 CFR 265.16. Keep training records available at the project site.

3. **Hazardous Waste Contingency Plan.** Develop a contingency plan for generating, handling, and storing hazardous waste in accordance with 40 CFR Part 265, Subparts C and D. Address containment and cleanup of accidental spills or releases to the environment. The plan must list an emergency coordinator and a telephone number that can be used to reach the emergency coordinator 24 hours a day, 7 days a week.

   Submit a copy of the contingency plan to the Engineer and keep a copy at the project site.

4. **Labeling of Spent Material Containers.** Provide and place the required labeling for hazardous waste storage containers. Label containers before using for hazardous waste storage, and list the date waste is first placed into each container. Make the labels visible without moving containers. The Engineer will provide the

Environmental Protection Agency (EPA) generator number required by the NREPA, Part 111, Hazardous Waste Management, MCL 324.11101 et seq. and Rule R299.9306 (1), (b) and (c).

5. **Weekly Inspection Log.** If temporarily storing hazardous waste on the project, maintain an inspection log of the storage area and containers. Keep the log on-site and update weekly to document inspection and security of the storage area and containers in accordance with 40 CFR 265.174.

6. **On-Site Records.** Keep the following records on-site and available until blast cleaning is completed and spent material is removed from the job:

   a. Hazardous waste training program;

   b. Worker training records;

   c. Hazardous waste contingency plan;

   d. Weekly inspection log;

   e. Waste characterization reports; and

   f. Waste disposal manifests.

   Keep the records near the hazardous waste storage area in a conspicuous location and make available for inspection and review.

   On-site records may be placed in a clearly marked, closed container next to the stored hazardous waste.

7. **Storage in Gondolas, Roll-off Boxes, or Barrels.** Store spent material, hazardous or nonhazardous, at the bridge site, secured and protected from weather, accidental spills, and vandalism. Locate the storage containers on a gradually sloped, free draining area not immediately next to a traffic lane, water course, or direct drainage ditch or structure. Do not place storage containers in standing water. The Engineer will review proposed storage areas before cleaning operations begin.

   Keep waste containers closed and covered except during addition or removal of spent material. Label each container as hazardous or nonhazardous material storage and include the accumulation start date, as required.

   Follow the hazardous waste contingency plan and immediately clean up spent material that spills onto the ground while depositing into storage containers.

   a. **Gondolas or Roll-off Boxes.** Cover each gondola or roll-off box with a cover integral to the gondola or box and a continuous, water-repellent tarpaulin. Use support ribs or other means to prevent water from ponding on the tarpaulin.

   b. **Barrels.** Seal barrels storing hazardous waste with bolt-locking rims. Elevate barrels on pallets and arrange in single or double rows, allowing access for

inspection and viewing of the labels. Bind the rows of barrels together with rope, cable, or binding straps to prevent tipping over. Cover rows of barrels with waterproof tarpaulins, held in place in accordance with 40 CFR 264.175(c) and 40 CFR 265, Subpart I; NREPA, Part 111, Hazardous Waste Management, MCL 324.11101 et seq. and Rule R299.9306 (1), (e) and (f).

8. **Disposal of Spent Material.** Notify the Engineer of the intent to sample. Sampling must be conducted by a AMPP Competent Person and witnessed by the Engineer. Take separate samples of spent material collected and stored in waste containers, dust collected from bag house filters, and shower water. Prepare a chain of custody form for each sample. Ship samples, with their chain of custody forms, in a tamper-proof container or bag sealed and witnessed by the Engineer, to a National Environmental Laboratory Accreditation Program accredited laboratory for testing according to the EPA, Toxicity Characteristic Leaching Procedure.

   Use test results to characterize the spent material, bag house dust, and shower water for disposal.

   Return the chain of custody form with the test results to the Engineer. The Engineer may sample and test spent material, bag house dust, and shower water during the project.

   Dispose of spent material and bag house dust characterized as hazardous waste at a licensed hazardous waste disposal facility. Dispose of spent material and bag house dust, characterized as nonhazardous waste at an approved Type II landfill in accordance with NREPA, Part 115, Solid Waste Management, MCL 324.11501 et seq.

   Dispose of shower water characterized as a hazardous waste at a licensed hazardous waste disposal facility. Dispose of shower water characterized as nonhazardous as a liquid industrial waste at an approved licensed liquid industrial waste disposal facility in accordance with NREPA, Part 121, Liquid Industrial By-Products, MCL 324.12101 et seq.

   Provide copies of waste manifests and disposal receipts to the Engineer.

   Dispose of spent material within 90 days from the date the spent material is first placed in the container.

   The Department may remove and dispose of hazardous and nonhazardous waste and back-charge the Contractor for the work if the Contractor is untimely in removing waste in accordance with 40 CFR 262 and NREPA, Part 111, Hazardous Waste Management, MCL 324.11101 et seq. and Rule R299.9306.

B. **Containment Requirements**

1. **General Requirements.** Clean steel structures using total enclosure. Protect pedestrians, vehicles and other traffic on or under the structure, and workers in accordance with subsection 104.07.B. Include a barrier system that protects against the following:

a. Direct, or indirect blasting of vehicles, water vessels, and pedestrians;

b. Abrasive material and debris falling on the traveled portions of the pavement or into waterways; and

c. Abrasive material and debris spreading into areas where it may create a traffic hazard.

The Contractor is responsible for damage to vehicles, persons, property, and the environment in accordance with subsection 107.07.

Provide total containment of portions of the bridge during cleaning and vacuuming. Contain spent material resulting from cleaning operations. Use tarpaulins or other Department-approved material to enclose portions of the structure undergoing cleaning. Use tarpaulins made of an airtight material, and secure tightly and continuously at the seams. Do not use burlap or open web materials. Extend the enclosure from the bottom of the deck to ground level or to the level of a solid work platform, and fasten to prevent lifting or opening by the wind. Clamp seams and laps on tarpaulins or sheeting together along the length of the seams or laps to prevent material or dust from escaping the enclosed area. Protect the steel from binding chains or other connection devices with softeners approved by the Engineer.

For work completed in multiple enclosure set-ups for a single element, overlap enclosures at least 1 foot between successive stages.

Provide artificial white lighting in the enclosure to illuminate active work surfaces to at least 50 foot-candles during surface preparation and coating application and at least 200 foot-candles during inspection. All lighting provided must be explosion-proof and compliant with all other pertinent safety standards.

Design the required enclosure and provide air flow and dust filtering equipment. The Engineer will evaluate the performance of the design on its ability to prevent the visible release of spent material and provide ventilation to ensure worker safety.

Maintain negative pressure inside the enclosure to prevent spent material from leaving the enclosure during cleaning. Maintain air flow through the enclosure to provide visibility and a safe working environment for blasting operators. Provide limited air intake openings in the enclosure during the operation of air-moving equipment. Filter air exhausted from the enclosure through a portable truck-mounted filtering system or dust collectors. Clean filters or dust collectors before delivery to the project and before removal from the project. Obtain the required state and local air quality and noise ordinance permits for operating air-filtering equipment at the bridge site. Do not discharge dust from the filter exhaust, dust collectors, or vacuum truck.

Place ground cloths under the enclosed area and extend at least 10 feet beyond the enclosure edges but not into open traffic lanes. Provide ground cloths with sealed seams or laps. Collect spent material that settles on ground cloths from work platforms and enclosures.

If protective devices do not serve the intended purpose, suspend work until corrected. If the Engineer determines that threatening weather conditions may cause a release of spent material into the surrounding environment, the Engineer will shut down cleaning operations and require immediate cleanup of spent material in the enclosure.

Prevent the release of spent material from the tarpaulins and other components of the containment enclosure during relocation or removal. Mechanically clean or vacuum the dust-contaminated portions before moving. Protect workers from exposure to lead-bearing dust during moving or removal work.

2. **Bridges Over Waterways.** For cleaning bridges over waterways, provide the following measures in addition to the requirements of subsection 715.03.B.1:

   a. Provide a stable barge in the water directly under the area enclosed for cleaning. Size and secure the barge to provide freeboard and stability to preclude the possibility of capsizing or sinking. Evenly distribute equipment and material loads on the barge. Extend containment enclosures to the level of the barge and secure to prevent release of spent material into the waterway. Cover the surface of the barge with ground cloths to allow collection of spent material.

   b. If it is impractical to use a barge, erect a temporary work platform under containment enclosures to collect spent material. Extend containment enclosures to the level of the temporary platform and secure to prevent release of spent material. Before installation, submit working drawings for the proposed work platform in writing to the Engineer for review.

   c. Stretch a floating boom across the waterway 200 feet from the bridge on the downstream and downwind side of the bridge. Collect, store, and dispose of spent material that accumulates at the booms as specified for other waste generated by cleaning operations.

3. **Cleanup and Storage of Spent Material.** Clean spent material in the containment enclosure at the end of each work day. Clean spent material on areas to be coated and adjacent to work areas prior to coating. Clean ground cloths. Immediately clean spent material released outside the enclosure in accordance with the hazardous waste contingency plan.

   Place spent material in storage containers.

C. **Cleaning Structures.** Shield and protect utility pipes, conduits, and other items attached to the structure not requiring cleaning and coating. Notify affected utility companies at least 48 hours before beginning blast-cleaning operations. Shield or mask freshly coated surfaces, railings, galvanized fencing, appurtenances, and adjacent concrete not requiring cleaning and coating. Wire brush coated steel surfaces damaged by blasting or, if visibly rusted, re-clean to a near-white or bare metal condition. Vacuum and re-prime wire-brushed or blast-cleaned surfaces.

Do not blast clean or coat stainless steel pins. Protect stainless steel pins throughout cleaning and coating operations.

Prior to commencing the work, inspect all surfaces to verify the suitability of the surface to be prepared and to receive paint. Report to the Engineer, in writing, any condition that may affect proper surface preparation, coating application, or overall performance of the coating system. Do not proceed with work until these conditions have been corrected. Commencing work indicates acceptance of existing conditions and responsibility for the performance of the applied coating.

Remove and dispose of loose concrete from the bottom of deck slabs, fascia, concrete diaphragms, and beam perimeters at dependent backwalls. If possible, remove concrete with handheld, non-power tools.

Remove foreign matter (other than grease and oil) by one or a combination of the following: abrade, scrape, or brush with stiff fiber or wire brushes. Cleaning with solutions of appropriate cleaners is permitted with Engineer approval and provided the solution cleaning is followed by a potable water rinse. Remove all visible oil, grease, drawing and cutting compounds, and other soluble contaminants from steel surfaces in accordance with SSPC-SP 1, *Solvent Cleaning*.

To ensure compliance with contract requirements for surface profile and cleanliness, on the first day of abrasive blasting operations, blast the structure for no more than 15 minutes, blow down the prepared surface, and perform three surface profile tape tests in the presence of the Engineer. If the average surface profile does not fall within specification, adjust means and methods (grit size, pressure, standoff distance, nozzle angle, etc.). Perform additional 15-minute maximum blasting, cleaning, and testing until the surface profile is within specifications, at which time the contractor will be allowed to proceed with full production blast cleaning. Rework any area that does not meet specifications until it meets the requirements of the contract. This approach applies to all painted steel substrates except for galvanized steel.

If after a minimum of three 15-minute test blasts the blasting process cannot produce the specified surface profile, blast a test panel to demonstrate that the proposed blasting process produces a sharp angular surface profile of 2.0 to 3.5 mils. Supply a non-blasted, non-corroded piece of similar grade steel at least 1 foot by 1 foot by ¼ inch for the test panel. Blast clean test panel using the same abrasives, pressures, and equipment to be used on the structure. Obtain the Engineer’s approval for the resulting profile before continuing.

Clean surfaces to SSPC-SP 10, *Near White Blast Cleaning,* or SSPC-SP 11 Level 1, *Power Tool Cleaning to Bare Metal*. Remove fins, tears, slivers, and burred or sharp edges that are present on steel members or that appear during blast cleaning in accordance with SSPC-SP 11 Level 1. Provide a uniform sharp angular profile of 2.0 to 3.5 mils to the area.

Scaling hammers may be used to remove heavy scale on existing structures. Do not use chipping hammers.

Do not abrasive blast when the steel is less than 5 °F above the dew point temperature. Perform final blast cleaning operations when the steel temperature is above 40 °F and below 85% relative humidity.

After completion of surface preparation, and prior to applying coatings, verify that

surface chlorides are remediated to a level of no greater than 7 µg/cm². Use the cell methods of SSPC Guide 15 to collect the samples and analyze them with Kitagawa tubes or QuanTab strips. Test the same samples for the presence of ferrous ions to confirm that these salts are remediated to a level not greater than 10 µg/cm².

Conduct chloride and ferrous ion tests, in the presence of the Engineer, in corroded areas or as directed by the Engineer. Perform a minimum of 3 tests per bridge span. If unacceptable levels of soluble salt remain, re-clean the affected areas by re-blasting, or other Engineer approved methods, until acceptable results are achieved. The costs for additional testing will be the responsibility of the Contractor.

Remove existing slag, flux, mill scale and weld spatter/splatter prior to application of any paint. Any sharp edges or projections require a minimum of 1/8 inch rounded or satisfactory condition suitable for painting as determined by the Engineer. Remediate any areas that cannot receive the specified anchor pattern due to flame cutting or shearing during fabrication by grinding prior to blasting as determined by the Engineer.

The Engineer will use the visual standard in accordance with SSPC-VIS 1, *Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning;* SSPC-SP 10; or SSPC-VIS 3*, Guide and Reference Photographs for Steel Surfaces Prepared by Hand and Power Tool Cleaning*; SSPC-SP 11 Level 1 that corresponds to the initial rust condition to determine acceptable steel cleanliness.

Verify that the compressed air used during the blast cleaning, double blowing, and coating operations is free of oil and moisture contamination in accordance with ASTM D4285. Use an absorbent or nonabsorbent white collector positioned within 24 inches of the air-discharge point, centered in the air stream. Allow air to discharge onto the collector for a minimum of 1 minute. Visually examine the collector for the presence of oil and/or water. Conduct the test at least one time per shift for each compressor system in operation in the presence of the Engineer. If air contamination is evident, make adjustments to achieve clean, dry air. Examine the work performed since the last acceptable test for evidence of defects or contamination due to contaminated compressed air. Contaminated work must be repaired at no additional cost to the Department.

Provide a uniform sharp angular surface profile from 2.0 to 3.5 mils, measured on the structural steel using extra coarse replica tape.

Remove abrasive and coating residue from steel surfaces with a commercial-grade vacuum cleaner equipped with a brush-type cleaning tool or by double blowing with partial vacuuming. If using the double blowing method, vacuum the top surfaces of structural steel, including flanges, longitudinal stiffeners, splice plates, and hangers after completing double blowing. Maintain the steel dust free and apply the prime coat as soon as possible after the blasted surface has been cleaned and before degradation and/or contamination has occurred and within 8 hours of cleaning.

Cleaned and prepared surfaces must be inspected by the Engineer prior to painting.

When the Contractor’s blasting process produces a surface profile outside the specified profile range, blast a test panel to demonstrate that the proposed blasting process produces a uniform sharp angular surface profile of 2.0 to 3.5 mils. Supply a

non-blasted, non-corroded piece of similar grade steel at least 1 foot by 1 foot by ¼ inch for the test panel. Blast clean test panel using the same abrasives, pressures, and equipment to be used on the structure.

In difficult areas where accessibility proves impractical, or the specified surface profile is not obtainable, consideration may be given for acceptance of non-conforming profile depth by the Engineer. Provide written request to the Engineer requesting any deviations and provide a new primer formulation from a product technical expert. If these conditions are accepted, additional primer may be applied, ensuring the minimum dry film thickness of the coating above the profile peaks is maintained. No additional compensation will be provided for the additional primer.

D. **Coating Structural Steel**

1. **Applying the Coating.** After the Engineer approves cleaned surfaces, spray apply the coatings using the manufacturer's recommended nozzles and pressures. Use wet film thickness gauges in accordance with ASTM D4414 to monitor the thickness of each coat at the time of application. Provide a DFT of 4.0 to 8.0 mils for primer coat, 2.0 to 3.0 mils for the stripe coat, 3.5 to 7.0 mils for intermediate coat, and at least 2.0 mils for the top coat. Apply the intermediate and top coats to provide complete coverage with uniform color and appearance. If the DFT exceeds the maximum, sand the areas to below the maximum thickness and clean before applying subsequent coats.

   If a second pass is needed to achieve the required DFT of any coat, apply the second pass in accordance with manufacturer's recommendations.

   Ensure that all coating DFT are measured in accordance with SSPC-PA 2, *Procedure for Determining Conformance to Dry Coating Thickness Requirements,* Level 2.

   Apply the stripe coat after the prime coat has cured a minimum of 4 hours, but prior to applying the intermediate coat. Apply stripe coat to edges of plates and structural members, welds, lattice bars, rivets, angles, bearings, corners, crevices, bolts, nuts, rivets, or other areas as required by the Engineer to assure sufficient film build prior to the application of the intermediate coat. The stripe coat may be applied by spray if it is immediately and thoroughly worked into these areas by brush, or applied by methods approved by the Engineer.

   Extend the striping at least 1 inch in each direction from the surfaces to be stripe coated. Apply the stripe coat to ensure complete and uniform coverage, and to build up the thickness of the coating on the irregular surfaces. Apply the intermediate coat after the prime coat has cured for a minimum of 24 hours and the stripe coat has cured for a minimum of 4 hours.

   Ensure a stripe coat is not applied to any slip critical surfaces.

   Apply coatings in conditions in accordance with subsection 915.04, except apply coatings when the relative humidity is below 85%.

   Use a Type 2 electronic gauge per SSPC-PA 2, *Procedure for Determining*

Conformance to Dry Coating Thickness Requirements, to measure the DFT. Calibrate the gauge with a plastic shim with the same thickness as the minimum DFT, placed on a smooth section of newly cleaned steel. Recoat areas with less than the required minimum primer DFT.

Protect wet coating against damage from dust and other deleterious material. Schedule blast cleaning and coating to minimize the amount of dust and other contaminants that may fall on to newly applied wet coatings.

Clean accumulated dirt from previously coated surfaces and achieve approval from the Engineer before applying subsequent coats. If the Engineer determines that the surface is unfit for further coating after initial cleaning, clean the surface with a commercial detergent, rinse with potable water, and allow to dry for at least 24 hours before continuing.

If coating applications result in runs, bubbles, or sags, apply coating using multiple passes of the spray gun and allow several minutes between each pass.

Brush out runs and sags immediately, or remove and recoat the surface. Repair bubbles, pinholes, craters, and other defects by sanding the area and applying coating.

Remove all dry spray by sanding.

Correct coating that the Engineer determines unsatisfactory. Coating performed prior to Engineer approval of cleaned surfaces is subject to rejection.

Apply sealant along the perimeter of beam plates in accordance with subsection 713.03.F.

Clean galvanized components, including nuts, bolts, and washers, to an SSPC-SP 1 condition. Prepare the galvanized surface according to the coating manufacturer's recommendation and coat with intermediate and top coats. Apply the tie coat using a method and thickness recommended by the coating manufacturer.

2. **Coating Faying Surfaces and Connections.** Faying surfaces consist of surfaces internal to a connection that bears on adjacent surfaces.

   Coat new connections and disassembled connections in existing structures. Apply the prime coat the same way and to the same thickness as on the adjacent structural steel. Mask faying surfaces during subsequent coating operations.

   Coat slip critical connections in accordance with section 716.

   Perform final vacuuming of the connection immediately before assembly. If vacuuming does not remove accumulated dust and dirt or the Engineer determines that the surface is unfit for bolting, clean the surface. Scrub the surface with a mild detergent solution, rinse with potable water, and allow it to dry before assembling connections. After assembling the connection, blast clean and coat exposed areas of the connection. Clean and coat immediately after erection or when blast cleaning

and coating the remainder of the structure.

3. **Cure Times for Coatings.** Cure coatings for the minimum cure times specified in subsection 915.04.A. Follow the manufacturer's recommended maximum cure time, except do not allow more than 15 calendar days between coat applications. If the maximum time between coats is exceeded, blast clean newly coated surfaces and recoat at no additional cost to the Department.

4. **Protection of Work and Environment During Coating Operations.** Protect portions of the structure, including superstructure, substructure, slope protection, and highway appurtenances, from spatter and overspray of coating material. Shield utility pipes, conduits, and other items attached to the structure not requiring coating.

   Protect pedestrian, vehicular, water vessels, and other traffic in accordance with subsection 104.07.B.

   If protective devices do not serve the intended purpose, the Engineer may suspend work, with no extension of time, until the Contractor makes corrections.
   When environmental conditions during coating application, or the drying/curing cycle, are subject to change outside of allowable ranges steps must be taken to verify proper conditions are maintained. Coatings applied, and/or drying/curing, outside of recommended temperature and relative humidity ranges must be removed and replaced at no cost to the Department. When changing environmental conditions are anticipated data loggers such as Defelsko DPM L Dew Point Meter Logger or equal are to be used and a printed log of conditions must be presented to the Engineer within 24 hours.

5. **Stenciling Requirement.** When coating is complete, stencil the structure number and MDOT ID, completion date (month and year), and coating type onto the structure. On structures fabricated from ASTM A588/A588M steel, stencil "A 588" just above the completion date. For partial painting projects, stencil the letter "P" before the coating type (e.g., 8/20-P4). See Figure 715-1 for an example.

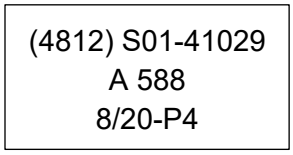

Figure 715-1: Stencil Example

   Use black urethane spray paint and 4-inch numbers for stenciling. Use a product compatible with the coating system.

   Stencil the characters on the inside of each fascia beam at the approaching end of the structure. Place markings at least 10 feet above ground or fill slope elevations and at least 10 feet from abutments.

   If not completely coating the fascia beam, stencil the designation on the inside of each fascia beam on the approaching traffic side in the lower right corner of the newly painted section. Place markings completely within the partial coating limits at

least 3 inches above the bottom flange and with the stenciling ending within 3 inches of the right edge of the newly painted area.

If these locations are inconsistent with the newly painted areas of the structure, the Engineer will designate the stencil location.

6. Solvents

   a. **Solvent Reuse Determination Procedures.** Prepare a written Solvent Reuse Determination Procedures that complies with NREPA, Part 111, Hazardous Waste Management, MCL 324.11101 et seq. and Rule R299.9202. Provide a copy of this procedure to the Engineer before performing field coating.

      In the Solvent Reuse Determination Procedures, include the methods for determining whether the solvent is reusable, applications for use of reusable solvent, and a statement of effectiveness of the reusable solvent in each application cited.

      Include in the Solvent Reuse Determination Procedures documentation a certification of an agreement to:

      i. Maintain records regarding solvent reuse on a “Bridge Painting Solvent Tracking Log”;

      ii. Handle the solvent in a manner consistent with the product status as either waste or reusable solvent;

      iii. Reuse solvent within 1 year of the initial use; and

      iv. Reclaim only solvent after reusing it.

   b. **General.** During performance of the work and before leaving the bridge site, determine whether solvents for cleaning and coating equipment are reusable or considered waste. Make the determination and document in accordance with Solvent Reuse Determination Procedures and the applicable federal, state, and local laws and regulations. Provide a copy of the written determination documentation to the Engineer before removing solvents from the project. Dispose of non-reusable waste solvent associated with the project.

      Manage, label, contain, store, and ship solvent determined reusable in accordance with the applicable federal, state, and local laws and regulations. Provide certification (shipping paper) for reusable solvent transported from the bridge site. Manage, label, contain, store, ship, and dispose of solvent characterized as waste in accordance with the following:

      i. NREPA, Part 111, Hazardous Waste Management, MCL 324.11101 et seq.

      ii. Subtitle C of the federal Resource Conversation and Recovery Act of 1976, as amended (RCRA);

      iii. NREPA, Part 121, Liquid Industrial By-Products, MCL 324.12101 et seq.; and

iv. The administrative rules or regulations promulgated pursuant to these acts and other applicable federal, state, and local laws and regulations.

E. **Removal and Replacement of End Diaphragms.** Before beginning the removal and replacement of end diaphragms, divert traffic on the bridge from the affected bay until shoring placement is complete. Place shoring to support the concrete deck during diaphragm removal. Disconnect each end diaphragm from connecting plates or angles by removing existing bolts or rivets.

Clean and coat the diaphragm along with any portions of the structure that would be inaccessible with the diaphragm in place prior to re-erection of end diaphragms. For faying surfaces, apply the prime coat and allow to cure in accordance with the requirements of the zinc primer's Slip-Coefficient and Creep Resistance Test Certificate for slip critical connections at 75 °F or higher. Mask faying surfaces and the top of the diaphragm top flange. Apply the intermediate coat.

After the intermediate coat is dry to the touch, coat the top of the diaphragm top flange with epoxy grout. Immediately bolt the diaphragm in place in accordance with subsection 707.03.E.6.

Clean the galvanized nuts, bolts, and washers to SSPC-SP 1 condition and apply a tie coat. Apply the tie coat by a method and coating thickness recommended by the coating manufacturer. Coat bolts, nuts, and washers, and missed areas with an intermediate coat.

Apply the top coat to the area, including behind the reinstalled diaphragms.

F. **Cleaning, Coating, and Installing New Hanger Assemblies.** Select a coating system from the Qualified Products List meeting the required cure time. Use the same coating system for the joint area as for the remainder of the bridge.

Do not blast clean or coat stainless steel pins. Protect stainless steel pins throughout cleaning and coating operations.

If the dry film exceeds the maximum required thickness, sand to below the maximum thickness and clean before applying subsequent coats. If the maximum time between coats is exceeded, blast clean and recoat newly coated surfaces at no additional cost to the Department.

Modify girder end cleaning and coating procedures as follows for areas within 3 feet of each side of the centerline of the pin holes:

1. Enclose joint areas in accordance with subsection 715.03.B except that negative pressure in the containment is not required. Containment may be removed during coating and curing if the temperature is at least 50 °F.

2. Blast clean joint areas to a white metal finish, in accordance with SSPC-SP 5 *White Metal Blast Cleaning* (see SSPC-VIS 1, *Visual Standards*), with a uniform sharp angular surface profile of 2.0 to 3.5 mils.

3. Enclose and heat joint areas as acceptable to the Engineer to maintain steel and air temperatures at 50 °F or higher. If the ambient air temperature is at least 50 °F during coating application and curing, enclosing the joint area is not required. If enclosure is required, apply three coats before removing the enclosure. Apply coating when the relative humidity is below 85%.

4. Spray on prime coat and cure at 50 °F or higher for at least 12 hours. Provide a DFT of 4.0 to 6.0 mils.

5. Mask pin holes before applying the intermediate coat. Spray on the epoxy intermediate coat and allow it to cure at 50 °F or higher for at least 12 hours. Provide a DFT of the intermediate coat between 3.5 and 6.0 mils.

6. After the intermediate coat cures for at least 1 hour and is dry to the touch, install the new pins and link plates. Continue curing the epoxy intermediate coat at 50 °F or higher for at least 12 hours.

7. Spray the urethane top coat over assembled joint areas when the temperature is at 40 °F or higher. Apply the final coat as soon as possible after the epoxy intermediate coat cures but no later than after 15 days. Coat the areas behind assembled link plates with urethane top coat to the extent possible. Provide complete coverage and a uniform appearance with the top coat application.

8. If cleaning and coating the remainder of the girder after the joint area, box in or cover the joint area including the new pins and link plates before blast cleaning and prime coating girders. Remove the box or covering before top coating the girders.

9. If the remainder of the girder is cleaned and coated before the joint area, prevent damage to the girder coating during the blast cleaning and coating of the 6-foot joint area. Protect painted girder as approved by the Engineer.

G. **Touch-Up, Repair, Rework, Tie-Ins.** Prepare area by solvent cleaning in accordance with SSPC-SP 1, *Solvent Cleaning* prior to cleaning. If bare steel is exposed, clean and prepare the area to SSPC-SP 11 Level 1, *Power Tool Cleaning to Bare Metal*. If the bare steel is not exposed, clean and prepare the area in accordance with SSPC-SP 2, *Hand Tool Cleaning*. Ensure each coat (prime, stripe, intermediate, top) is feathered 2 to 3 inches to furnish a smooth, tapered transition into the intact coating. This work will include areas requiring touch-up after containment and staging (beam clamps, rigging, cables, sheeting, mechanical damage, etc.) have been removed. Ensure application of complete coating system is applied. Submit the method of repair for approval by the Engineer.

   Repair areas of extensive damage (areas of damage greater than 1 square foot) exposing bare metal by abrasive blast cleaning as directed by the Engineer. When employing abrasive blast cleaning, use extreme care to avoid damage to the surrounding coating due to over blast. Feather into the existing coating as described herein.

   All areas requiring repair must be restored to the original specified conditions.

   In areas where the new coatings are required to “tie-in” with existing coatings, feather

the new coatings into the existing coatings as described herein.

715.04. Measurement and Payment

Pay Item	Pay Unit
Steel Structure, Cleaning, Type 4 (Structure Identification)	Lump Sum
Steel Structure, Cleaning, Partial, Type 4 (Structure Identification)	Lump Sum
Steel Structure, Coating Type 4 (Structure Identification)	Lump Sum
Steel Structure, Coating, Partial, Type 4 (Structure Identification)	Lump Sum
End Diaphragm, Rem and Replace	Each
Protective Shield, Utility Pipe	Foot

A. **Steel Structure, Cleaning.** The unit prices for **Steel Structure, Cleaning, Type 4** and **Steel Structure, Cleaning, Partial, Type 4** include the cost of protecting the work and environment during blast cleaning; removing loose concrete; providing barges or temporary platforms, enclosures; and handling, storing, testing, transporting, and disposing of spent material, bag house dust, and shower water regardless of hazardous or nonhazardous. The Department will not make additional compensation for suspension of work by the Engineer. Payment also includes all costs associated with chloride and ferrous ion testing and mitigation, and costs associated with providing documentation, calculations, and shop drawings for scaffolding and work platforms.

B. **Steel Structure, Coating.** The unit prices for **Steel Structure, Coating, Type 4** and **Steel Structure, Coating, Partial, Type 4** include the cost of coating faying surfaces. Payment also includes all costs associated with stripe coating.

The unit prices for coating pay items include the cost of management, characterization, and disposal of waste solvent.

C. **Stenciling.** The cost of stenciling is included in the unit price for related structure cleaning and coating pay items.

D. **End Diaphragm, Rem and Replace.** The unit price for **End Diaphragm, Rem and Replace** includes the cost of shoring the structure while the slab remains unsupported, cleaning and prime coating faying surfaces, providing galvanized high strength bolts, and providing and applying epoxy grout to the diaphragm flange.

The unit prices for **Steel Structure, Cleaning, Type 4** and **Steel Structure, Coating, Type 4** or **Steel Structure, Cleaning, Partial, Type 4** and **Steel Structure, Coating, Partial, Type 4** include the cost of cleaning and coating diaphragms.

Payment also includes all costs associated with stripe coating.

E **Protective Shield, Utility Pipe.** If pipes or conduits are clustered in groups of at least two, the Engineer will measure the length of the cluster. The unit price for **Protective Shield, Utility Pipe** includes the cost of shielding the utility pipe or conduit during blast cleaning and painting operations or if required, cleaning and coating existing utility conduits, including brackets and hangers.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
TEMPORARY PORTABLE TRAFFIC SIGNALS

Delete the first seven paragraphs of subsection 812.03.D.16, beginning on page 8-96 of the Standard Specifications for Construction and replace with the following:

16. **Temporary Portable Traffic Signal (PTS).** Provide the temporary portable traffic signal (PTS) as shown on the plans. Each PTS consists of one trailer-mounted, solar-powered PTS with battery backup.

    Provide, install, program, and activate the signal at the initial location. Provide hardwire or radio communication. Operate, inspect, maintain, clean, relocate, reactivate, reprogram, and remove the PTS from the project.

    Check the PTS for required operation at 12-hour intervals when in use on the project. If a PTS failure occurs, provide traffic regulators to control traffic until the PTS is operational. If the PTS fails a second time within 30 calendar days of the first failure, remove the PTS from the project and provide traffic regulators in accordance with section 812 of the Standard Specifications for Construction until the replacement PTS is installed, activated, and operating as required.

    The Contractor is responsible for repairing or replacing the PTS.

    PTS trailers must be located on the shoulder, outside the travel lane. After positioning the trailer, rest the tires on the ground with wheel chocks or elevate the trailer, with the bottom of the tires above the ground. Delineate the trailer using three plastic drums or 42-inch channelizing devices.

    When work operations are suspended and traffic lanes are to be opened for less than 72 hours, the temporary signal may remain in place in yellow-flash mode. Remove the temporary signal from the roadway if the temporary signal will be non-functional for longer than 72 hours.

    If existing guardrail prevents a trailer from sitting completely on the shoulder, place the PTS trailer in accordance with the following:

Delete the following pay items from the list in subsection 812.04, on page 8-111 of the Standard Specifications for Construction.

PTS System, Temp, Furn .....Each
PTS System, Temp, Oper.....Each

Add the following pay items to the list in subsection 812.04, on page 8-111 of the Standard

Specifications for Construction.

PTS, Temp, Furn.....Each
PTS, Temp, Oper .....Each

Delete subsection 812.04.R, on page 8-122 of the Standard Specifications for Construction, in its entirety and replace with the following:

R. **Portable Traffic Signal (PTS)**. The Department will not make additional payments for traffic regulating, signing, arrow boards, or lighting systems for traffic regulator stations operated at night due to a temporary PTS failure.

1. **Furnish PTS**. The unit price for **PTS, Temp, Furn** includes the cost of the following:

a. Providing, installing, programming, and activating a temporary PTS in the initial required location;

b. One trailer-mounted, solar-powered PTS with battery backup;

c. Radio-linked communications with hardwire capabilities and conflict monitoring; and

2. **Operate PTS**. The unit price for **PTS, Temp, Oper** includes the cost of the following:

a. Operating;

b. Inspecting and maintaining;

c. Delineating with conspicuity tape;

d. Relocating, reactivating, and reprogramming;

e. Removing the PTS from the project;

The Department will pay separately for the cost of any guardrail work required to place and delineate each PTS trailer, if needed.

Delete section 922.10, beginning on pages 9-222 of the Standard Specifications for Construction, in its entirety and replace it with the following:

922.10. Temporary Portable Traffic Signal

Material for a temporary portable traffic signal (PTS) must meet the requirements of section 918 and section 921, the ITE *LED Circular Signal Supplement*, and the MMUTCD.

A. **Trailer.** PTS trailer must be self-contained and meet the following requirements:

1. Consist of a vertical upright and horizontal mast arm to accommodate two 12-inch overhead traffic signal heads, mounted at the same height, and capable of providing at least 16 feet of clearance;

2. Allow at least one signal head on the horizontal mast to be placed over the traffic lane;

3. Conform to the wind load requirements specified by AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals* with all equipment mounted without the need for additional ballast;

4. Allow for transporting two signal trailers with one vehicle;

5. Have adequate structural integrity to allow for lifting and placing the PTS trailer, as required.

6. Conform to the Michigan Vehicle Code;

7. Be equipped with four stabilizing and leveling jacks, one on each corner of the trailer; and

8. Be delineated with a 2- by 36-inch strip, or an equivalent area, of reflectorized red and white conspicuity tape, installed on each of the four sides of the trailer. Locate the strips at each corner of the trailer.

B. **Traffic Signal Heads/Display Requirements**. The PTS must meet the following requirements:

1. Conform to the physical display and operational requirements of conventional traffic signals, as specified in Part IV of the MMUTCD, ITE *LED Circular Signal Supplement*, and NEMA TS-5 standards;

2. Be equipped with two overhead, 12-inch, LED traffic signal heads with visors that extend beyond the signal head at least 10 inches;

3. Be equipped with traffic signal heads that can accommodate back plates and that rotate horizontally 180 degrees; and

4. Provide traffic signal head clearance height of at least 16 feet, measured from the bottom of the green signal housing or signal back plate, whichever is lower, to the road surface.

C. **Power Requirements.** Each PTS trailer must be equipped with batteries capable of operating the traffic signal system for at least 21 days at 72°F without charging. Provide a charging system that includes at least 450 watts of solar collection capability, an onboard battery charger for use with a 110-volt power source, and an onboard monitoring system capable of regulating and providing a visual display of the battery voltage and solar input.

The PTS must be fully operable if connected to a 110-volt power source.

D. **PTS Operational Requirements.** The PTS must have an operating system that includes a conflict monitoring system that conforms to NEMA TS-5 standards and is capable of operating in a fixed-time, traffic-actuated, or manual control mode. The fixed-time mode operation option must be capable of providing at least five automatic traffic signal timing changes in a 24-hour period. The traffic-actuation mode option must allow minimum and maximum green time programming to extend the green times in predetermined programmable segments.

In addition, the PTS must be able to communicate with other PTSs and meet the following requirements:

1. Control at least seven traffic phases and include programmable green times from 3 seconds to 250 seconds and red times from 1 second to 250 seconds in 1-second increments;

2. Facilitate standby modes of red, red flash, and yellow flash;

3. Capable of interfacing with a remote monitoring system that reports signal location, battery voltage, and system default. Ensure that the monitoring system in accordance with section 922 is not limited to cellular phone coverage areas and remains operational regardless of location;

4. Can accommodate a pre-emption system with optical activation that provides a priority green phase in the direction of equipped approaching emergency vehicles;

5. Allows for connect and control of the PTS by a standard NEMA-type controller;

6. Be equipped with diagnostic capabilities in the event of a system failure and can identify the failure to expedite return to full operational mode; and

7. Has an integrated mechanism capable of recording system malfunctions and providing a printout of this record that must be kept with the PTS, including the following:

    a. Date and time of system failure;

    b. Service and maintenance performed;

    c. Description of the equipment serviced and why the service was performed;

    d. Repairs made to the unit; and

    e. Past operational history of the unit.

E. **Actuation Requirements.** PTS must have traffic-actuation capabilities that include microwave motion sensors, video detection, and in-pavement loops. The PTS must be capable of operating with a motion and true-presence actuation system.

F. **Communication Requirements.** Equip the PTS to communicate via hardwire connection or wireless radio link communication. If using the hardwire communication,

do not obstruct vehicular and pedestrian traffic or intrude into the work area while deploying the communication cable. If using the radio link communication option, ensure that the radio system conforms to FCC requirements and applicable state and local requirements.

G. **Default Requirements.** Program the PTS to revert to a red, red flash, or yellow flash mode upon system failure. Set the default setting to red flash or a preprogrammed operating mode to ensure safety in the work zone. Upon failure, ensure that the PTS can notify Contractor personnel via the remote monitoring system.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
MISCELLANEOUS METAL PRODUCTS REVISIONS

STR:REL 1 of 2 APPR:MJF:MLO:08-12-25
FHWA:APPR:08-12-25

Delete subsection 908.14, on page 9-63 of the Standard Specifications for Construction, in its entirety and replace with the following:

A. **General.** Provide the Engineer with a Mill Test Report (MTR) from the manufacturer's records that indicate the chemical composition and physical properties of the anchor bolt material meets ASTM F1554 for the grade specified in the contract in addition to the following:

1. Heat number;
2. Yield strength;
3. Tensile strength;
4. Elongation;
5. Reduction of area;
6. Charpy V-notch (when applicable); and
7. Furnace lot numbers for heat treatment (when applicable).

Order additional bolts to replace those used for Department testing. Each anchor bolt must be provided with two washers and two nuts unless otherwise required in the contract.

Provide bolts, nuts, and washers in the size and shape shown on the plans and hot-dip galvanized in accordance with ASTM F2329/F2329M. Galvanize the exposed threaded end of anchor bolts a minimum of 20 inches.

Nuts must meet the requirements of ASTM A563/A563M, Grade DH, or ASTM A194/A914M, Grade 2H. Lubricate nuts in accordance with ASTM A563/A563M, supplementary requirement S1 and S2. Re-tap nuts after galvanizing in accordance with ASTM A563/A563M. Provide flat, circular washers meeting the requirements of ASTM F436/F436M.

B. **Anchor Bolts for Traffic Sign Support Structures (Cantilever, Truss, and Dynamic Message Sign), CCTV Pole, Tower Lighting Unit, Light Standards, and Traffic Signal Mast Pole and Mast Arm.** Steel anchor bolts must meet the requirements of subsection 908.14.A and meet ASTM F1554 Grade 55 with supplemental requirements

S1, S3 and S4.

Bolt threads must conform to Class 2A, Unified Coarse Thread Series of ASME B1.1 before coating. After coating, the pitch and major diameter must not exceed the dimensions specified in ASTM F1554 for allowable zinc build up and corresponding between thread dimensions.

Nut threads must conform to Class 2B, Unified Coarse Thread Series of ASME B1.1 before zinc coating. Zinc coated nuts must be overtapped with the diametral allowance for the thread series listed in ASTM A563/A563M.

C. **Anchor Bolts for Traffic Signal Strain Poles.** Steel anchor bolts must meet the requirements of subsection 908.14.A and meet ASTM F1554 Grade 105 with supplemental requirements S3 and S4.

Bolt threads must conform to Class 2A, Unified Coarse Thread Series of ASME B1.1 before coating. After coating, the pitch and major diameter must not exceed the dimensions specified in ASTM F1554 for allowable zinc build up and corresponding between thread dimensions.

Nut threads must conform to Class 2B, Unified Coarse Thread Series of ASME B1.1 before zinc coating. Zinc coated nuts must be overtapped with the diametral allowance for the thread series listed in ASTM A563/A563M.

D. **Anchor Bolts for Other Purposes.** Steel anchor bolts must meet the requirements of subsection 908.14.A and meet ASTM F1554 Grade 36 (Grade 55 supplemental S1 may be substituted at the supplier’s discretion).

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
WET REFLECTIVE PAVEMENT MARKINGS

PMK:MKB 1 of 1 APPR:MWB:DBP:11-09-23
FHWA:APPR:11-20-23

Delete subsection 920.02.C on page 9-170 of the Standard Specifications for Construction in its entirety and replace it with the following:

C. **General Requirements for Wet Reflective Optics.** For surface applications or retracing over existing pavement markings select wet reflective optics from the Qualified Products List or a Department-approved alternative that meets or exceeds the retroreflectivity requirements specified in Table 920-3. When installing wet reflective pavement markings in a new recess, select wet reflective optics from one of the below products.

3M, Connected Roads All Weather Elements Series 50/51
3M, Reflective Elements Series All Weather 50/51

Prior to application, submit certification from the wet reflective optics manufacturer that when applied according to the manufacturer's application recommendations, the wet reflective optics meet the requirements in Table 920-3.

Table 920-3:
General Wet Reflective Requirements: Average Initial Retroreflectivity at 30-meter Geometry in mcd/lux/m2

Test Method	Color	
	White	Yellow
Dry (*ASTM E1710*) for cold plastic, polyurea, waterborne, regular dry, and sprayable thermoplastic	700	500
Dry (*ASTM E1710*) for all other materials	550	350
Wet Recovery for all materials (*ASTM E2177*)	300	225
Wet Continuous for all materials (*ASTM E2832*)	250	200

Initial retroreflectivity is defined as readings taken no earlier than 7 days and no later than 30 days after material placement.

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
PAVEMENT MARKING SHELF LIFE

PMK:MKB 1 of 1 APPR:GJD:KK:04-05-24
FHWA:APPR:04-08-24

Delete the fourth paragraph of section 920.01 on page 9-168 of the Standard Specifications for Construction, in its entirety and replace it with the following:

Use both liquid and solid applied pavement marking materials within the shelf life directed by the manufacturer. Provide certification that liquid and solid applied pavement marking materials have been stored per the manufacturer's requirements. Materials not in compliance will be rejected and removed at the Contractor's expense.

NOTICE TO BIDDERS

UTILITY COORDINATION

OCRC:SCECO:RWL 1 of 1 March 5, 2026

For the protection of underground utilities and in conformance with public act 174 of 2013, the contractor shall contact Miss Dig System, Inc. by phone at 811 or 800-482-7171 or via the web at onecall.missdig811.org, a minimum of 3 business days prior to excavating, excluding weekends and holidays. All "Miss Dig" participating members will thus be routinely notified. This does not relieve the contractor of the responsibility of notifying utility owners who may not be a part of the "Miss Dig" alert system.

The contractor shall cooperate and coordinate construction activities with the owners of utilities as stated in Section 104.08 of the Michigan Department of Transportation (MDOT) 2020 Standard Specifications for Construction. In addition, for the protection of underground utilities, the contractor shall follow the requirements in Section 107.12 of the MDOT 2020 Standard Specifications for Construction. Contractor delay claims, resulting from a utility, will be determined based upon Section 108.09 of the MDOT 2020 Standard Specifications for Construction.

Public Utilities

The following Public Utilities have facilities located within the Right-of-Way:

Gas – DTE
Larry Bourke
609 Bjornson Rd
Big Rapids, MI 49307
231-349-2364
lawrence.bourke@dteenergy.com

Phone – Frontier
Chris Stanton
303 S Main St.
Mt. Pleasant, MI 48858
Phone: 989-560-9149
christopher.stanton1@ftr.com

Cable – Spectrum
Zachary VanSickle
590 S Pere Marquette Hwy
Ludington, MI 49431
616-460-1003
zachary.vansickle@charter.com

A 4-inch diameter 60 psi gas main is located on the north pedestrian structure and is supported by steel pedestals welded to the existing bearing beams and cross bracing angles. Protect the gas main during construction in accordance with subsections 707.03.C and 707.03.D.4 of the Standard Specifications for Construction.

(3) 4-inch diameter PVC conduits are located on the south pedestrian structure and are supported on the cross bracing angles. Two of the conduits contain Frontier and Spectrum telecommunications cables, and the third conduit is empty. The empty conduit is to be removed by the contractor. Protect conduits remaining on the structure during construction in accordance with subsections 707.03.C and 707.03.D.4 of the Standard Specifications for Construction. Conduits may be moved or supported by other means as long as no damage occurs to the conduits or cables.