

2020 Spec Book Division 7

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Spec Book Review – Major Themes

- Incorporate
 - Errata
 - FUSP's?
 - PASP's?
- What has caused issues?
- What can be improved upon, clarified?
- What is not in line with current practice?

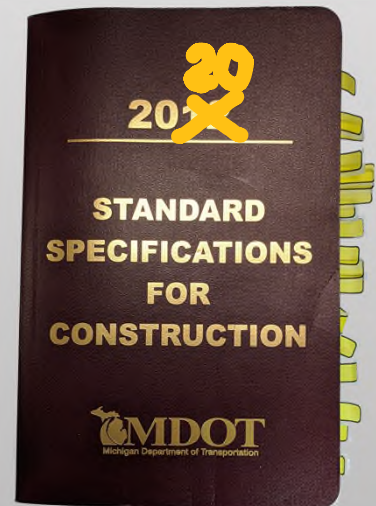
Division 7 Sections

- 701 Portland Cement Concrete for Structures
- 702 Mortar and Grout
- 703 Mortar and Concrete Patching, Repair, and Resurfacing Mixtures
- 704 Steel Sheet Piling and Cofferdams
- 705 Foundation Piling
- 706 Structural Concrete Construction
- 707 Structural Steel Construction
- 708 Prestressed Concrete
- 709 Timber Structures
- 710 Waterproofing & Protective Covers
- 711 Bridge Railings
- 712 Bridge Rehabilitation – Concrete
- 713 Bridge Rehabilitation – Steel
- 714 Temporary Structures and Approaches
- 715 Cleaning and Coating Existing Structural Steel
- 716 Shop Cleaning and Coating Structural Steel
- 717 Downspouts and Drains
- 718 Drilled Shafts



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Frequently Used Special Provisions

- **705A** PILE SPLICING
- **706A** REINFORCEMENT, STAINLESS STEEL
- **706C** HIGH PERF PCC BRIDGE DECK (GRADE DM)
- **706E** HIGH PERF PCC PAVEMENT, BRIDGE APPROACH, REINFORCED (GRADE DM or P1M)
- **711C** HIGH PERF PCC TEXTURED AESTHETIC BRIDGE RAILING (GRADE DM)
- **706G** HIGH PERF PCC BRIDGE SUBSTRUCTURE (GRADE S2M)
- **711D** HIGH PERF PCC BRIDGE RAILING (GRADE DM)
- **707B** FRACTURE CRITICAL MEMBERS
- **707F** STRUCTURAL STEEL CONSTRUCTION REVISIONS
- **708A** STRAND DEBONDING
- **708B** PRESTRESSED CONCRETE BULB-TEE BEAM
- **711A** BRIDGE BARRIER RAILING, MODIFIED
- **711B** TEXTURED CONCRETE AESTHETIC BRIDGE RAILING
- **711E** BRIDGE RAILING REVISIONS
- **714A** TEMPORARY STRUCTURES AND APPROACHES REVISIONS
- **716A** SHOP CLEANING AND COATING STRUCTURAL STEEL REVISIONS

Previously Approved/Template Special Provisions

12RC704(A005)

MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
CONSTRUCTION DAM AND BYPASS PUMPING

C&T:TWK

1 of 2

C&T:APPR:DMG:DBP:08-02-11

a. Description. This work consists of designing, installing, maintaining, and removing construction dams (including dewatering) and bypass pumping to work in a dry condition and to maintain water flows. This work must be in accordance with sections 208 and 704 of the Standard Specifications for Construction, MDEQ Permit, as directed by the Engineer and this special provision.

b. Materials. Steel sheet piling must be of the continuous interlocking type, either new or used in good condition. Temporary steel sheet piling must have a minimum nominal section modulus of 23.4 inches cubed per foot of wall. Cold rolled sheet piling will be permitted for all

Use of Notes

- St
- A
- C

NOTES:

JOINT TYPES

EXPRESS FOR EACH JOINT TYPE ACROSS THE DECK. JOINT TYPES LISTED ON THE PLANS, THE CONTRACTOR SHALL USE THE JOINT TYPES AND THE DEVICES LISTED BELOW.

DEVICE	MANUFACTURER
WABO STRIP SEAL - TYPE M	WATSON-BOWMAN & ACME, INC.
WABO STRIP SEAL - TYPE A	WATSON-BOWMAN & ACME, INC.
STEELEX-SSA2	D.S. BROWN
STEELEX-SSC	D.S. BROWN
DNFLEX 40 SS	STRUCTURAL RUBBER PRODUCTS CO.
DNFLEX 40 SSA	STRUCTURAL RUBBER PRODUCTS CO.

THE WORKING JOINT TYPE SELECTED SHALL BE SUITABLE TO ACCOMMODATE THE TOTAL MOVEMENT SHOWN ON THE PLAN.

COMPLETE WORKING DRAWINGS OF ALL JOINT FABRICATION OF THE EXPANSION JOINT DEVICE SHALL BE SUBMITTED TO THE REVIEW ENGINEER, WITH STANDARD SPECIFICATION 104.07. EQUIPMENT IS WAIVED FOR THE JOINT DEVICES FOR WHICH A SET OF STANDARD INSTALLATION DETAILS HAS BEEN APPROVED. STANDARD INSTALLATION DETAILS CAN BE OBTAINED FROM THE DESIGN DIVISION.

FABRICATION AND INSTALLATION

PREPARE SHIPPING BOLTS PRIOR TO PLACEMENT OF CONCRETE.

THE EXPANSION JOINT SHALL BE SHOP FABRICATED TO CONFORM TO THE CONTIGUOUS BRIDGE DECK, BARRIERS, ETC. IT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS SUBJECT TO NOTES HEREIN AND THE APPROVAL OF THE ENGINEER.

TIE DECK REINFORCING STEEL TO STEEL FRAME ANCHORS TO MAXIMUM EXTENT PRACTICABLE WITHOUT DAMAGING GALVANIZED OR EPoxy COATINGS.

THE TOP OF THE EXPANSION JOINT DEVICE SHALL BE SET $1/2" - 3/4"$ BELOW THE CONCRETE SLAB (PAVEMENT).

THE STEEL ANCHORAGE FOR STRIP SEAL GLANDS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SUBSECTION 103C.17 OF THE STANDARD SPECIFICATIONS.

THE AREA OF THE STEEL ANCHORAGE AND SEALING GLAND WHICH WILL BE IN CONTACT WITH A GRUNT, OR LUBRICANT-ADHESIVE SHALL BE CLEANED WITH TOLUENE OR AN APPROVED SOLVENT.

IN THE EVENT THAT SPLICING IS REQUIRED OF THE SEALING GLAND, IT SHALL BE SPLICED BY AN APPROVED METHOD (SUCH AS COLD VULCANIZATION) THROUGH REPRESENTATIVE OF THE MANUFACTURER.

DETAILS AT CURBS OR BARRIERS

THE DETAILS ON THIS SHEET SHOW AN APPROVED MEANS OF TERMINATING THE EXPANSION JOINT DEVICE AT CURBS OR BARRIERS. VARIATIONS OR ALTERNATIVE SCHEMES WILL BE CONSIDERED AND MAY BE USED IF APPROVED BY THE ENGINEER.

MATERIALS

THE EXPANSION JOINT AND THE MATERIALS AND LABOR REQUIRED FOR PROPER INSTALLATION OF THE EXPANSION JOINT AND THE MATERIALS AND LABOR REQUIRED FOR CURBS, SIDEWALKS, OR BARRIERS IS INCLUDED IN THE PAYMENT FOR THIS EXPANSION JOINT DEVICE.

SIDEWALK SECTIONS

STEEL FOR COVER PLATE SHALL BE A45010 M270, GRADE 36. MEET THE REQUIREMENTS OF ASTM A786 AND GALVANIZED (ASTM A123).

USE ASTM A 593 TYPE 3041 STAINLESS STEEL $3/4"$ OR $1/2"$ DIAMETER FLATHEAD ANCHORING SCREWS WITH $3/4"$ OR $1/2"$ DIAMETER INSERTS OR FLUSH TYPE ANCHORING ANCHORS WITH A MINIMUM ALLOWABLE TENSILE WORKING TENSION AND CAPACITY OF 1200 POUNDS.

CAST CURBS AND SIDEWALKS WITH $3/4"$ SLIDING PLATES IN PLACE TO INSURE THAT INSERTS AND SCREWS ARE ALIGNED PROPERLY. APPLY BOND BREAKER TO SLIDING PLATES PRIOR TO INSTALLATION.

FORM CONCRETE RECESS AREA IN SIDEWALK AND GRIND TO PROVIDE SMOOTH SURFACE. TOOL OR GRIND CONCRETE SURFACES TO $1/2"$ RADIUS. APPLY ONE COAT OF EPOXY RESIN ADHESIVE TO ALL SLIDING PLATE TO MOVE FREELY WITHOUT FRICTION. ADHESIVE SHALL BE APPLIED SO THAT NO ADHESIVE COMES IN CONTACT WITH ANY PART OF THE EXPANSION JOINT DEVICE OR GLAND. REMOVE ANY FOREIGN PARTICLES FROM THE SURFACE PRIOR TO INSTALLING PLATES.

INSTALL PLATES SO THAT THE SCREWS AND INSERTS ARE SET ON THE HIGH SIDE OF THE ADDITIONAL SIDEWALK GRADE.

THE PRICE OF ALL MATERIALS AND LABOR REQUIRED FOR PROPER INSTALLATION OF THE COVER PLATE IS INCLUDED IN THE PAYMENT FOR THE EXPANSION JOINT DEVICE COVER PLATE.

TOTAL TRAVEL	PLATE WIDTH	Y	Z
$< 1"$	10"	3 $3/4"$	5 $3/4"$
$1" - 2"$	11"	3 $3/4"$	6 $3/4"$
$2" - 3"$	12"	3 $3/4"$	7 $3/4"$
$> 3"$	13"	3 $3/4"$	8 $3/4"$

TOTAL TRAVEL	PLATE WIDTH	Y	Z
$< 3 1/2"$	8"	2 $1/2"$	5"
$3 1/2" - 5 1/2"$	10"	2 $1/2"$	5"
$> 5 1/2"$	12"	2 $1/2"$	5"

* SEE TABLE FOR MINIMUM TOTAL TRAVEL ALONG CENTERLINE OF BRIDGE

STRUCTURE NUMBER	ANGLE OF CROSSING TO NEAREST 10°	LOCATION OF JOINT	MIN. TOT. TRAVEL ALONG CENTERLINE OF BRIDGE *	REQUIRED LENGTH OF EXPANSION JOINT DEVICE

QUANTITY		UNIT	AMOUNT
Expansion Joint Device	Ft		
Expansion Joint Device, Cover Plate	Ft		

EXPANSION JOINT DETAILS
EJ3AB (02-10-2016)

MDOT
Michigan Department of Transportation

NO SCALE

DATE: _____ CS: _____
DESIGN UNIT: _____ JN: _____
TSC: _____

FILE: _____

DRAWING SHEET
SECT 2



Notable Changes

Notable Changes – 704 Sheet Pile/Cofferdams

- Permanent Sheet Pile Installations – Division 9 material requirements
- Cofferdams
 - 6' and greater - PE required
 - Tremie – must design to tremie water height
- Field Welding – AWS D1.1



Notable Changes – 705 Foundation Piling

- Definitions
- Test Pile/Ordering
- Redrive/Restrike



Section 705. FOUNDATION PILING

705.01. Description. This work consists of providing and driving timber piles, cast-in-place concrete piles, and steel piles. The following definitions apply to this work:

Absolute Refusal. The nominal pile driving resistance value of 100 percent of the nominal pile driving resistance shown on the plans.

CIP. In this section, the abbreviation for cast-in-place.

Design Pile Length. The pile length shown on the plans.

Design Pile Tip Elevation. The pile tip elevation if the design pile length is shown on the plans.

Dynamic Formula. Empirical formula to estimate Nominal Pile Driving Resistance during pile driving. The FHWA H-piles formula is specified.

Dynamic Testing. High strain dynamic testing during pile driving to estimate Nominal Pile Driving Resistance using instrumentation and signal-matching computer software.

Estimated Pile Length. The length shown on the plans used as a guide for estimating the work and ordering test piles if the nominal pile driving resistance is shown on the plans.

Estimated Pile Tip Elevation. The elevation shown on the plans, estimated for piles to develop the nominal pile driving resistance.

Manufacturer. The company that manufactures the pile driving equipment including hammers and appurtenances.

Minimum Pile Length. The length between pile cutoff elevation and minimum pile penetration elevation shown on the plans.

Minimum Pile Penetration Elevation. The elevation shown on the plans that the bottom of piles must be driven to, or below.

Nominal Pile Driving Resistance. Nominal pile driving resistance measured during pile driving with the dynamic formula or dynamic testing methods in kips, as shown on the plans.

Ordered Pile Length. The length determined from test pile results. For timber piles, the Engineer will determine the ordered length. For cast-in-place concrete piles and steel piles, the Contractor will determine the ordered length.

Practical Refusal. A nominal pile driving resistance value of 110 percent of the nominal pile driving resistance shown on the plans.

Prebor Elevation. The elevation designated for stopping preboring, as shown on the plans.

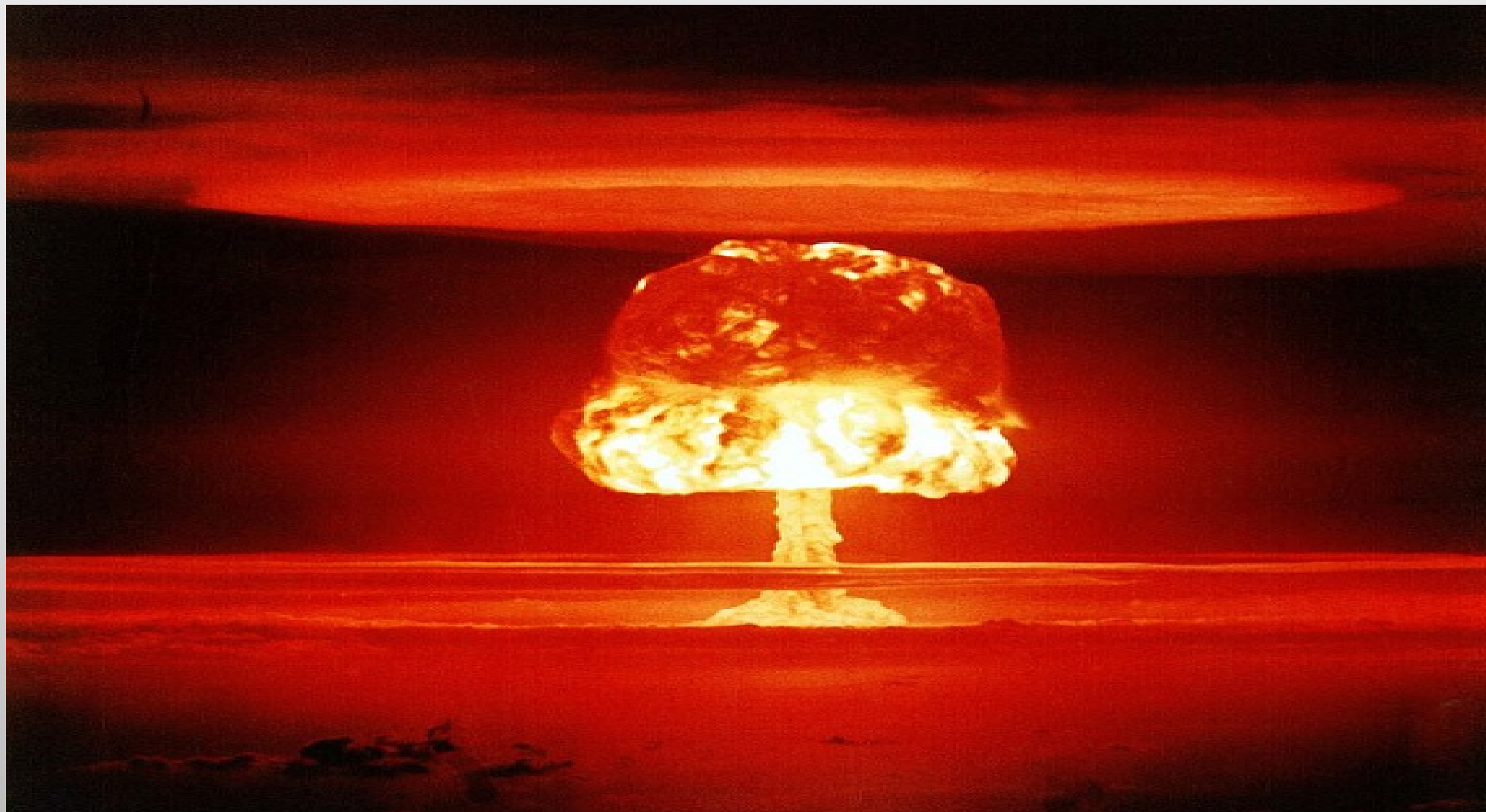
Production Piles. Piles other than test piles.

Notable Changes – 706 Structural Concrete

- Conc Spec'd by Strength (e.g. 3500)
- High Performance conc (e.g. 3500HP)
- Expansion Joints – most notes incorporated
- Falsework/forms – no welding to bridge!
- SIP Forms – must have Styrofoam
- No interruption of deck wet cure – period
- Other concrete –3 days and 70%
- Night pours – end 1 hour before sunrise
- Pour sequence changes require 7-day notice



Notable Changes – 707 & 708



Notable Changes – 707 – Structural Steel

- Expanded applicability beyond bridge elements
- Consistency with 708
- Incorporated errata, FUSP, NSBA
- Re-ordered to follow typical fab process
- Fracture critical requirements incorporated

Notable Changes – 708 – Prestressed

- Expanded applicability beyond bridge elements
- Consistency with 707
- Incorporated errata, FUSP, PCI
- Tighter tolerance on strand tensioning
- Revised specimen curing and testing

Notable Changes – 711 Bridge Railings

- Barrier replacement incorporated
- Anchor bolts for lights – install only
- Reworked pay items - consistent

Notable Changes – 712 Bridge Rehab - Concrete

- Deck demo equipment size limited for steel beams
- If contractor damages – PE for fix
- Overlay changes
 - No heavy equipment on hydro'd deck
 - Scarify 1" from steel (must locate)
 - Must expose top reinf over 75% of test area
 - No interruption of wet cure
 - Pour at night

Notable Changes – 713 Bridge Rehab - Steel

- PE for pin plate damage
- Heat straightening spec incorporated (mostly)
- Temp support includes lateral bracing
- Prohibited pin & hanger damage when measuring



Notable Changes – 713 Bridge Rehab - Steel

- Minor change to incorporate FUSP
- Major overhaul forthcoming

Notable Changes – 715/716 Clean & Coat Steel

- Field – need 1' overlap of enclosure between stages
- Stenciling – inside of fascia
- 716 Shop Painting – deleted repeated info

Notable Changes – 718 Drilled Shafts

- We will now pay for reinforcement!

Construction Manual

- False Decking
- Welding Requirements
- Field Measurements Reporting
- Hydrodemolition Calibration and Equipment
- Cofferdam Elevations and Dewatering Requirements
- And Many, Many, Many More



Special Provisions



Division 7 Final Notes

- **Retained FUSP's being updated**
- **Construction Wiki Update – Fall 2020**
- **PASP's must be re-approved**
- **Minimize Non-standard notes**
- **Conc Curing = Additional Time**