



OFFICE OF STRUCTURES
STRUCTURAL DETAIL MANUAL

Chapter 00

**GENERAL
(GEN)**

GENERAL NOTES

SPECIFICATIONS: MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 20XX.

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2017

LOADING: HL-93 WITH PROVISIONS FOR FUTURE 2" WEARING SURFACE AND 15 LBS/SQ. FT. FOR USE OF STEEL BRIDGE DECK FORMS WHICH REMAIN IN PLACE.

HL-93

HL-93 WITH PROVISIONS FOR FUTURE 2" WEARING SURFACE AND 15 LBS/SQ. FT. FOR USE OF STEEL BRIDGE DECK FORMS WHICH REMAIN IN PLACE FOR STRINGERS NUMBER XX - XX.

LOAD RESTRICTIONS: THERE ARE RESTRICTIONS FOR PLACING EQUIPMENT AND MATERIALS ON EXISTING AND NEW STRUCTURE(S). REFER TO SECTION TC 6.14.

CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
 f'c = 3 000 psi FOR ELEMENTS USING MIX NO. 3
 f'c = 4 000 psi FOR ELEMENTS USING MIX NO. 6

ALL CONCRETE FOR ABUTMENT BACKWALLS, PARAPET AT ABUTMENT WING WALLS AND ENTIRE SUPERSTRUCTURE(S) SHALL BE MIX NO. 6 (4500 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15.01).

ALL CONCRETE FOR EXPANSION JOINT CROSS BEAM(S) AND TOP PORTION OF EXPANSION JOINT CROSS BEAM SUPPORT COLUMN(S) SHALL BE MIX NO. 6 (4500PSI).

ALL OTHER STRUCTURE CONCRETE EXCEPT PRESTRESSED CONCRETE SHALL BE MIX NO. 3 (3500 PSI).

ALL CONCRETE FOR SUPERSTRUCTURE OVERLAYS SHALL BE LATEX MODIFIED CONCRETE PER SECTION 426 (3500 PSI).

ALL CONCRETE FOR SUPERSTRUCTURE OVERLAY SHALL BE MIX NO. 8 CONCRETE (4000 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15.02).

ALL CONCRETE SHALL BE MIX NO. 3 (3500 PSI).

ALL CONCRETE IN THE TOP SLAB SHALL BE MIX NO. 6 (4500 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15.01). ALL OTHER CONCRETE SHALL BE MIX NO. 3 (3500 PSI).

ALL CONCRETE FOR PARAPETS AND MOMENT SLABS ON WALLS, AND RETAINING WALLS WITHIN 10 FT. OF THE PAVED ROADWAY SHALL BE MIX NO. 6 (4500 PSI) CONTAINING SYNTHETIC FIBERS (SEE SECTION 902.15.01).

ALL OTHER STRUCTURE SHALL BE MIX NO. 3 (3500 PSI).

PRESTRESSED CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE f'c = 7000 psi. WHILE THE MINIMUM COMPRESSIVE STRENGTH AT TRANSFER SHALL BE f'ci = 5950 psi.

ALL PRESTRESSED CONCRETE SHALL BE SELF-CONSOLIDATING WITH A 28-DAY COMPRESSIVE STRENGTH OF f'c = 8000 Psi.

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF fy = 60000 psi

ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.

REINFORCING STEEL SHALL BE EPOXY COATED WHEN NOTED WITH AN EP IN THE PLANS.

MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE 2" EXCEPT FOR THE FOLLOWING LOCATIONS:

LOCATION	CLEAR COVER
Bottom of bridge deck slabs.	1 IN.
Top of bridge deck slabs Bottom flange of prestressed concrete girders.	2 1/2 IN.
Top of piers. Bottom flange of prestressed concrete girders. Bottom and sides of all footings. Bottom of prestressed concrete slabs.	3 IN.

FOR TIES AND STIRRUPS, STANDARD ACBENDING TOLERANCES ARE MODIFIED TO PLUS (+) ZERO INCHES, MINUS (-) NORMAL ACBENDING TOLERANCES.

COLUMN SPIRALS SHALL BE COLD DRAWN STEEL WIRE CONFORMING TO A #2 OR GRADE 60 REINFORCING STEEL CONFORMING TO A #5. COLUMN SPIRALS SHALL NOT BE WELDED. COLUMN SPIRALS SHALL BE LAPPED 48 BAR OR WIRE DIAMETERS AT ALL SPLICES. SPIRALS SHALL BE EXTENDED FROM TOP OF FOOTING TO BOTTOM OF BOTTOM CAP OF REINFORCING STEEL IN CAP OF SUBSTRUCTURE MEMBER. ALL SPIRAL REINFORCING SHALL HAVE A MINIMUM OF 1/4 TURNS, FLAT, TOPS AND BOTTOM (AT FOOTING AND IN CAP).

GENERAL NOTE GUIDANCE/COMMENTARY

This note shall be modified to reflect the proper specification date which will be updated each July.

This note shall be used for all steel beam/girder or concrete girder bridges, modify as necessary when wearing surface is not included or for lighter weight stay in place forms.

This note shall be used for all prestressed concrete slab bridges.

This note shall be used for bridge widenings... indicate design loading for existing stringers, i.e. hs-20 with no provisions for a future 2" wearing surface or for use of steel bridge deck forms which remain in place for stringers numbered xx-xx.

This note shall be used for all normal weight concrete bridges.

This note shall be used for new bridges or major rehabilitations.

This note shall be used for all latex modified concrete overlays on bridge superstructures.

This note shall be used for all concrete overlays on prestressed concrete slab bridges.

This note shall be used for box culverts with 1'-6" of cover or greater.

This note shall be used for box culverts with less than 1'-6" of cover.

This note shall be used for retaining walls to be modified as needed for wall type. Plans should indicate the limits of the Mix 6 concrete portion of the walls. If the entire wall is included, remove 'within 10 ft if the paved roadway'.

Reinforcing in the following locations shall be epoxy coated in the details contained on the contract plans.

- o Entire superstructure (including parapets, curbs, and sidewalks)
- o Abutment backwalls
- o All bearing seat pads
- o Abutment seat seats
- o Expansion joint cross beams
- o Portions of the expansion joint cross beam support column(s).
- o Parapet portions of wing walls
- o Pier caps located under bridge deck roadway joints except for column steel extending into cap unless columns
- o Exposed face of abutment stems and piers that are less than 10 from the edge of paved surfaces, including shoulders
- o Prestressed concrete girders and slabs (except pretensioning steel)
- o Concrete overlay
- o Top mat of culverts with less than 1-6 of cover
- o Bars extending into top mat of box culverts with less than 1-6 of cover
- o For widenings and rehabilitation, all exposed uncoated bars extending into area with epoxy coated bars.

The chart shall be modified for the conditions in the structure.

This note shall be used for spiral reinforcing in pier columns.

*** FOR OFFICE USE ONLY ***

APPROVAL
<i>Sam Chappin</i> DIRECTOR OFFICE OF STRUCTURES
DATE: 12/18/2019
VERSION
1.02

STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION OFFICE OF STRUCTURES
GENERAL NOTES
DETAIL NO. GEN-101
SHEET <u>1</u> OF <u>2</u>

PRETENSIONING STEEL:	PRETENSIONING STEEL SHALL CONSIST OF 1/2" DIAMETER 7-WIRE BRIGHT LOW RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF M 203 GRADE 270. EACH STRAND SHALL BE PRESTENSIONED TO 31,000 lb (0.75 fpu), HAVE AN ULTIMATE STRENGTH OF 41,300 lb (fpu) AND A YIELD STRENGTH OF 37,200 lb (0.90 fpu).	This note shall be used when prestressed concrete is included.
STRUCTURAL STEEL:	NEW STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50, INCLUDING THE ADDITIONAL REQUIREMENTS FOR CHARPY V-NOTCH TESTING OF M 270, FOR PRIMARY LOAD CARRYING MEMBERS. REFER TO SECTION 909.01.	This note shall be used for new structural steel.
	EXISTING STRUCTURAL STEEL CONFORMS TO (List specification and grade if known i.e. A 709 GRADE 36)	This note shall be used and modified to indicate existing structural steel for deck replacements, etc.
	NEW STRUCTURAL STEEL SHALL CONFORM TO A 709, GRADE 50 FOR ALL NEW STRUCTURAL STEEL, INCLUDING THE ADDITIONAL REQUIREMENTS FOR CHARPY V-NOTCH TESTING OF M 270, FOR PRIMARY LOAD CARRYING MEMBERS. REFER TO SECTION 909.01. ALL EXISTING EXISTING STRUCTURAL STEEL CONFORMS TO XX (List specification and grade if known i.e. A 709 GRADE 36).	This note shall be used and modified to indicate new steel and existing structural steel for widenings rehabilitation etc.
CLEANING AND PAINTING:	REFER TO MD SPECIFICATION SECTION 435 (for new structural steel) or 436 (for existing structural steel).	Include this note when structural steel is to be cleaned and painted - talk to SIRE paint section for questions.
	THE COLOR FOR THE FINISH COAT SHALL MATCH AMS-STD-595A, COLOR NO. 24180 (DARK GREEN) OR 26231 (GREY) or 25183 (BLUE) or 20045 (BROWN) PAINT SYSTEM XX.	This note shall be included for structural steel and the final color system shall be approved by the paint committee.
TIMBER:	ALL TIMBER SHALL BE PRESSURE TREATED SOUTHERN YELLOW PINE SELECT STRUCTURAL OR BETTER.	
	UNLESS OTHERWISE NOTED, ALL TIMBER SHALL BE OF NOMINAL SIZE CROSS SECTION AS INDICATED ON THE PLANS WITH MINIMUM STRENGTH VALUES OF Fb = *** psi Fv = *** psi E = *** psi	
ROUND TIMBER PILES:	ALL TIMBER PILES SHALL BE PRESSURE TREATED WITH THE EXCEPTION OF PILES USED IN BURIED FOUNDATIONS.	
FRACTURE CRITICAL MEMBERS:	THIS STRUCTURE CONTAINS FRACTURE CRITICAL MEMBERS. SEE SHEET(S) XXX FOR IDENTIFICATION OF THESE MEMBERS. SEE SPECIAL PROVISIONS FOR REQUIREMENTS FOR THESE MEMBERS.	

THE FOLLOWING NOTES SHALL BE INCLUDED WITH THE GENERAL NOTES WHEN SIRE WORK IS INCLUDED IN THE CONTRACT.

SIRE WORK IS INCLUDED:

CONCRETE:	FOR SURFACE CONCRETE REPAIRS TO ADDRESS SPALLING, USE MIX NO. 5 (3,500 PSI) CONCRETE OR EQUAL, FOR MAJOR REPAIRS SUCH AS WING WALL AND HEADWALL REPLACEMENT, OR PEDESTAL REPLACEMENT USE MIX NO.6 (4,500 PSI) CONCRETE OR EQUAL).	Modify this concrete note to include the following concrete specifications for repairs.
WELDING:	ALL WELDING SHALL CONFORM TO SPECIFICATION SECTIONS 430.03.19 AND 430.03.20. ALL FIELD WELDING SHALL BE DONE BY THE SHIELDED METAL-ARC PROCESS. ALL REQUIREMENTS SHALL BE ADHERED TO EXCEPT THE REQUIREMENTS FOR RADIOGRAPHIC AND ULTRASONIC INSPECTION MAY BE WAIVED IF A VISUAL INSPECTION BY THE ENGINEER INDICATES THE WELDS ARE SATISFACTORY FOR THE PURPOSE INTENDED.	Use this note shown below only if we are waiving the ultrasonic or radiographic tests (typically for temporary welds to be removed before leaving the site). If some welding is temporary, state which welding operations do not require testing.
JACKING:	JACKING (MAY / MAY NOT) BE PERFORMED UNDER TRAFFIC. JACKS SHALL HAVE A MINIMUM SAFE CAPACITY OF XX TONS.	Use this note when jacking is included and modify for traffic condition.
PRESTRESSING BARS:	PRESTRESSING BARS SHALL BE 150-KSI, 3/4" DIAMETER BARS. LENGTH OF BARS SHALL BE DETERMINED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. ALL BARS SHALL BE DOUBLE NUTTED AT EACH END.	When repairs require abutment or pier face jacking, and where the substructure can be fully drilled and anchored on each face, use this note.
	THREADED BARS SHALL BE F1554 GR 55 HDG ALL THREAD RODS.	When repairs require abutment or pier face jacking using grouted rods, use this note.
MAINTENANCE OF TRAFFIC:	REFER TO DETOUR ON SHEET XX.	If a traffic control plan (tcp) such as a detour is required, simply state the following.
	USE MARYLAND STANDARD NO. MD-104.05-01.	If using a standard, include which traffic standard to be used, below is an example that shall be modified to fit the project.
	REFER TO TRAFFIC CONTROL PLAN ON SHEET XX. ALL MOT SHALL BE FIELD APPROVED BY DISTRICT TRAFFIC.	If using a modified traffic standard, say the following.
WORK REQUIRED: XX.		This should be the approved scope listed in the worklist or as approved by the sired division chief. The plan work required shall match the work required.

THE FOLLOWING NOTES SHALL BE INCLUDED ON THE GP&E, AS NECESSARY, BUT DO NOT HAVE TO BE LOCATED WITH THE GENERAL NOTES UNLESS SPACE ALLOWS

CONSTRUCTION NOTES:

EXISTING STRUCTURES:	ALL DIMENSIONS AFFECTED BY THE GEOMETRY AND/OR LOCATION OF THE STRUCTURE(S); EXISTING STRUCTURE(S) SHALL BE CHECKED IN THE FIELD BY THE CONTRACTOR BEFORE ANY MATERIAL IS ORDERED OR FABRICATED OR CONSTRUCTION BEGINS.
CULVERT/PIPE COVER:	NO CONSTRUCTION EQUIPMENT SHALL BE PERMITTED TO PASS OVER THE CULVERT/PIPE UNTIL A MINIMUM OF 3 FEET OF COMPACTED FILL HAS BEEN PLACED OVER THE CULVERT.

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