I N T E R O F F I C E M E M O

TECHNICAL SERVICES
Bridge Engineering Section
Office Phone: (503) 986-4200
Fax Number: (503) 986-3407

DATE: August 2, 2016

TO: Alex Lim
Bridge Design Standards Engineer

FROM: Alex Lim
Bridge Design Standards Engineer
ODOT
Phone: 503-986-3402

SUBJECT: Proposed Revision to Bridge Design & Drafting Manual

RE: BDDM Section A3.91.7 – Miscellaneous Common Conversions

Problem Statement:

Modify class of concrete for bridge deck and end panel to encourage the use of 80ksi reinforcing, and use 1 ½" aggregate for bridge deck for long term durability. Modify/update all related sections. Also, correct errors in the conversions table.

Proposal:

Modify Section A3.91.7 as follows:

A3.91.7 Miscellaneous Common Conversions

	Inch-Pound	Metric
Dead Loads:		
Future Wearing Surface	25 psf	1.2 kN/m^2
Reinforced Concrete	150 pcf	23.6 kN/m^3
Soil	120 pcf	18.9 kN/m^3
Material Strengths:		
Concrete (f'c)	3300 psi	2~~5~~2.8 MPa, Equiv. to 25 MPa
	4000 psi	~~30~~27.6 MPa, Equiv. to 30 MPa
	4500 psi	3~~5~~1.0 MPa, Equiv. to 35 MPa
	5000 psi	3~~5~~4.5 MPa, Equiv. to 35 MPa
	5500 psi	~~40~~37.9 MPa, Equiv. to 40 MPa
	6000 psi	4~~5~~1.4 MPa, Equiv. to 45 MPa
	6500 psi	4~~5~~4.8 MPa, Equiv. to 45 MPa
	7000 psi	~~50~~48.3 MPa, Equiv. to 50 MPa
Reinforcing Steel:		
Grade 40	40 ksi	~~300~~275.8 MPa, Equiv. to 300 MPa
Grade 60	60 ksi	~~420~~ 413.7 MPa, Equiv. to 420 MPa
Grade 80	80 ksi	551.6 MPa, Equiv. to 550 MPa
Structural Steel:		
Grade 36	36 ksi	248.2 MPa, Equiv. to 250 MPa
Grade 50	50 ksi	344.7 MPa, Equiv. to 345 MPa
Grade 70	70 ksi	482.6 MPa, Equiv. to 480 MPa
Reinforcing Steel Clearances	1.0 in	25 mm
	1.5 in	40 mm
	2.0 in	50 mm
	2.5 in	65 mm
	3.0 in	75 mm
	4.0 in	100 mm
Aggregate sizes	1-1/2 in	37.5 mm
	1 in	25.4 mm
	3/4 in	19.0 mm
	3/8 in	9.5 mm
Deck Concrete	4500 psi	Equivalent to Class 30 (4350 psi)
End Panel Concrete	3300 or 4500 psi	Equivalent to Class 25 (3626 psi) or 30 (4350 psi)
Minor Structure Concrete	3000 psi	Class 20 (290~~0~~1 psi)

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Analysis / Research / Other Supporting Data:

☒ None
☐ Attached:

Bridge Engineering Section Response:

☐ Accepted for consideration as submitted ☐ Accepted for consideration as noted ☐ Proposal tabled, see Remarks ☐ Proposal not accepted, see Remarks		
Remarks:		
Craig Shike Bridge Design Standards Reviewer		Date
Alex Lim Digitally signed by Alex Lim DN: cn=Alex Lim, o=ODOT, ou=BDDM Standards Engineer, email=Alex.K.LIM@odot.state.or.us, c=US Date: 2016.09.29 10:04:11 -07'00'		
Alex Lim Bridge Design Standards Engineer		Date 9/29/2016

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