LFD and LRFD Prestressed Beams

			AASHTO Code	Requirement AASHTO	Requirement KDOT	
Strand Type & Properties						
Seven Wire Low Relaxation Strands (Dia)	1/2"			X	X	
Tensile Strength (F_{pu}) (ksi)	270 ksi		5.4.4.1-1	X		
Yield Strength (F_{py}) (ksi)	$0.90 f_{pu}$ = 243 ksi		5.4.4.1-1	X		
Modulus of Elasticity (ksi)	28,500 ksi		5.4.4.2	X		
Strand Area (in^2)	0.153 in^2				X	
Mass/Wt per unit length (lbs/ft)	0.521 lbs/ft					
Transfer Length (in)	60 d_s = 30"		5.11.4.1	X		
Strand Type & Properties						
Seven Wire Low Relaxation Strands (Dia) K4 or K6 Only	0.6"			X	X	
Mass/Wt per unit length (lbs/ft)	0.732 lbs/ft					
Strand Area (in^2)	0.215 in^2				X	
Transfer Length (in)	60 d_s = 36"		5.11.4.1	X		
LFD Rating Stress Limits	**(ksi)**	**(psi)**				
Initial Allowable Compression	$0.60 \cdot f'_{ci}$		9.15.1	X		
Initial Allowable Tension	$0.0948 \cdot SQRT(f'_{ci}) \le 0.20$ ksi	$3 \cdot SQRT(f'_{ci}) \le 200$ psi	9.15.1	X	X	
Final Allowable Compression	$0.60 \cdot f'_c$		9.15.2	X		
Final Allowable Tension (Note Below)	Zero- Inv or $0.19 \cdot SQRT(f'_c)$- Oper	Zero- Inv or $6 \cdot SQRT(f'_c)$- Oper	9.15.2	X	X	
Final Allowable DL Compression	$0.40 \cdot f'_c$		9.15.2	X		
Final Allowable Slab Compression	$0.60 \cdot f'_c$		9.15.2	X		
Final Allowable Compression	$0.40 \cdot f'_c$		9.15.2	X		
(LL+1/2(Pe+DL))						

If rating an LRFD designed bridge verify the Inventory rating factor for the HS design truck is 1.10 or greater
=====> Visit the Factors Tab of the Member Alt. for each member and set the ASD Factor for P/S Concrete Tension for Inventory to ZERO <======
The Operating rating factor should be greater than 1.0 for the HET load rating truck using a single lane (S/7) and full impact.

			AASHTO Code	Requirement AASHTO	Requirement KDOT	
LRFD Design Stress Limits	**(ksi)**	**(psi)**				
Initial Allowable Compression	$0.60 \cdot f'_{ci}$		5.9.4.1.1	X		
Initial Allowable Tension (With As proportioned as per Fig. C5.9.4.1.2-1)	$0.24 \cdot SQRT(f'_{ci})$	$7.5 \cdot SQRT(f'_{ci})$	5.9.4.1.2	X	X	
Final Allowable Compression	$0.60 \cdot f'_c$		5.9.4.2.1	X		
Final Allowable Tension	$0.0948 \cdot SQRT(f'_c)$	$3 \cdot SQRT(f'_c)$	5.9.4.2.2	X	X	
Final Allowable DL Compression	$0.45 \cdot f'_c$		5.9.4.2.1	X		
Final Allowable Compression	$0.40 \cdot f'_c$		5.9.4.2.1	X		
(LL+1/2(Pe+DL))						
Slab Interface						
Interface Type	Intentionally Roughened				X	
Interface Width	Top Flange Width		5.8.4.1	X		
Cohesion (ksi)	0.28 ksi		5.8.4.3	X	X	
Friction Factor	1		5.8.4.3	X	X	
K1	0.3		5.8.4.3	X	X	
K2	1.8 ksi		5.8.4.3	X	X	
P/S Properties						
Initial Loss - Elastic Shortening			5.9.5.2.3	X		
Long Term Loss Method (AASHTO, Lump Sum or PCI)	AASHTO - Approximate Method		5.9.5.3	X	X	Modified PCI
Jacking Stress Ratio (low relaxation)	0.75		5.9.3	X	X	Set on plans
P/S Transfer Stress Ratio (low relaxation)	Leave it Blank			X		
Transfer Time (18 hrs = 0.75 days)	18				X	
Age at Deck Placement (days)	50				X	
Final Age (days)	27375			X		
Loss Data - AASHTO - Percent DL	0%			X		
Loss Data, "Lump Sum" (ksi)						
Final Loss	Not used					
Composite Loss	Not used					
Continuous Loss	Not used					
Loss Data "PCI" (ksi)						
Ultimate Creep Loss					X	see Bridge Design Manual
Maturity Coefficent	0.75				X	Use 28 days, 0.75
Ultimate Shrinkage Loss					X	see Bridge Design Manual
Shrinkage/Time						
Beam Curing Method, Moist or Steam	Steam (assumed)				X	
Slab Curing Method, Moist or Steam	Moist				X	
Deck Drying Time	14 Days				X	
Time						
Curing Time (18 hrs = 0.75 Days)	0.75				X	
Time Continous (Days)	28				X	
Time Composite (Days)	50				X	Camber Calcs
Service Life (years)	75			X		
Time of Analysis (years)	75				X	
LRFD Shear Computation Method						
General or Simplified	General		5.8.3.4.2	X	X	
	Maybe Simplified		5.8.3.4.3	X		
Miscellaneous						
Humidity	65%				X	
Sustained Modular Ratio	2		5.7.1	X		