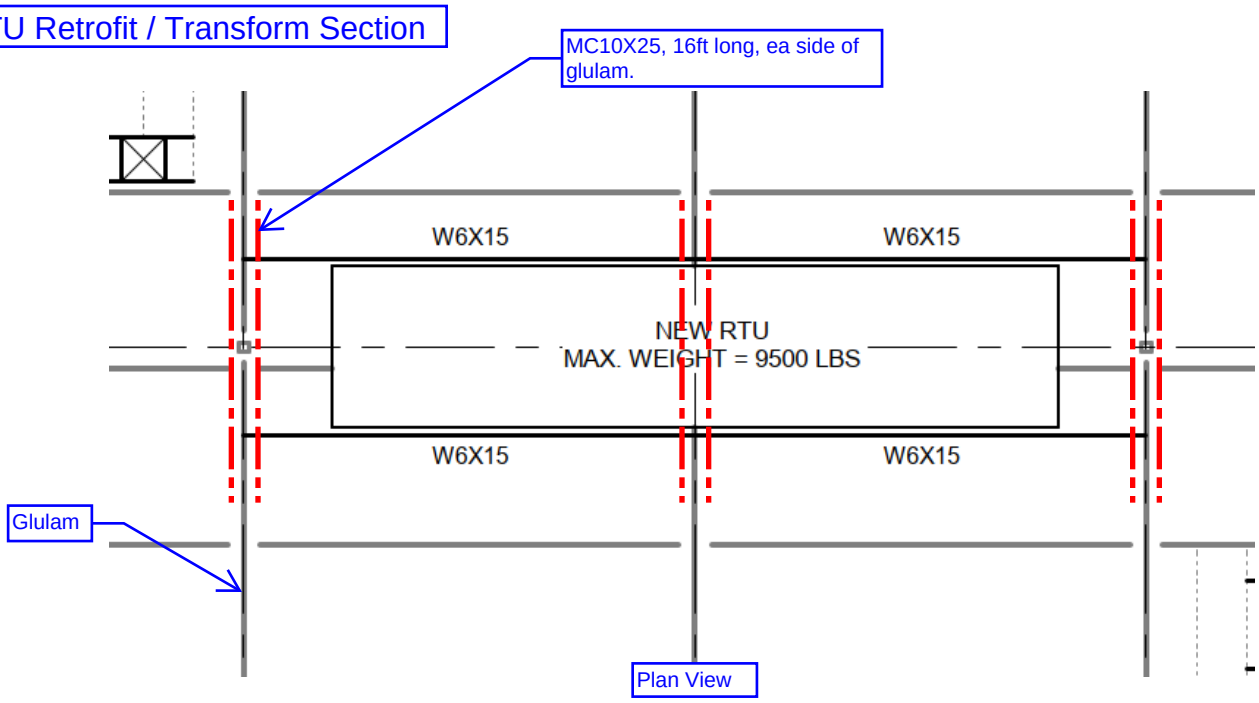
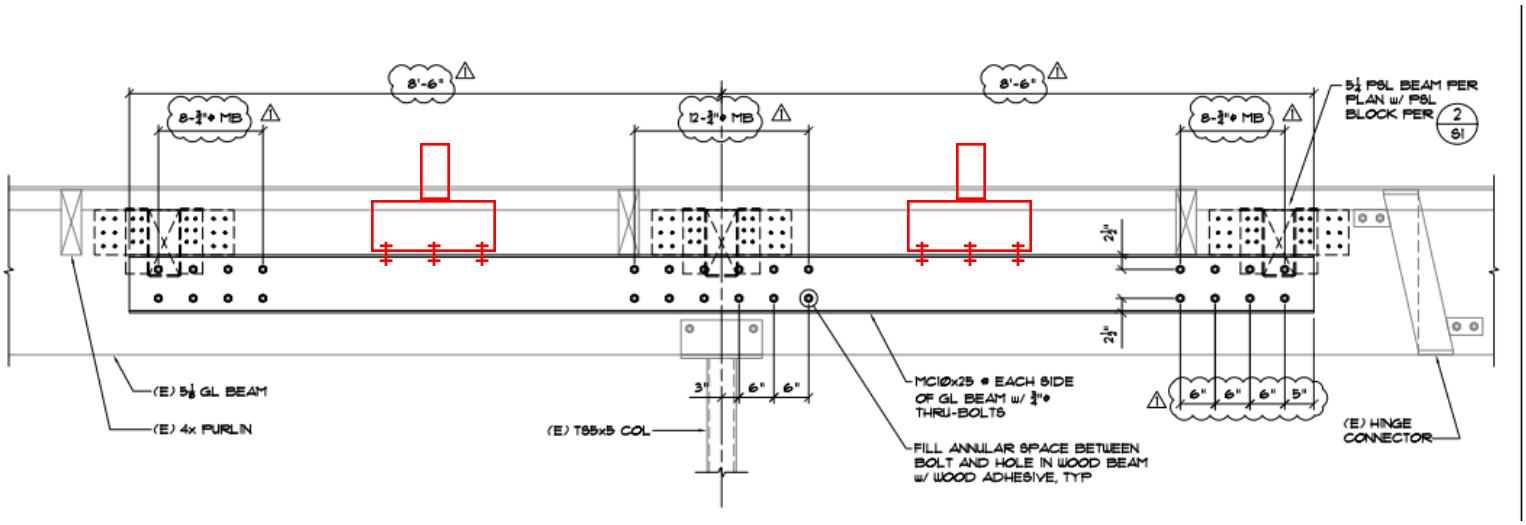
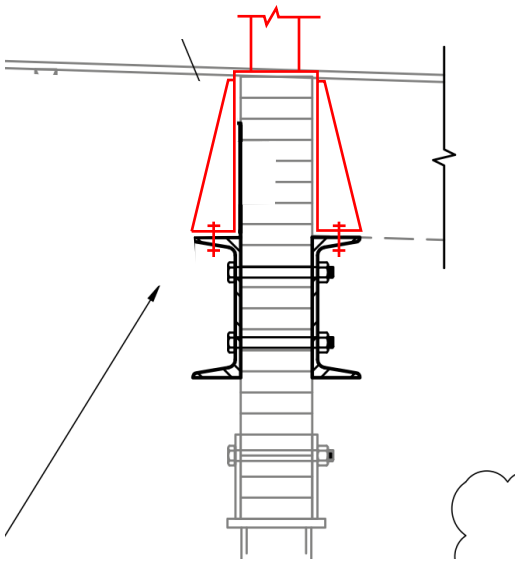
RTU Retrofit / Transform Section



Plan View



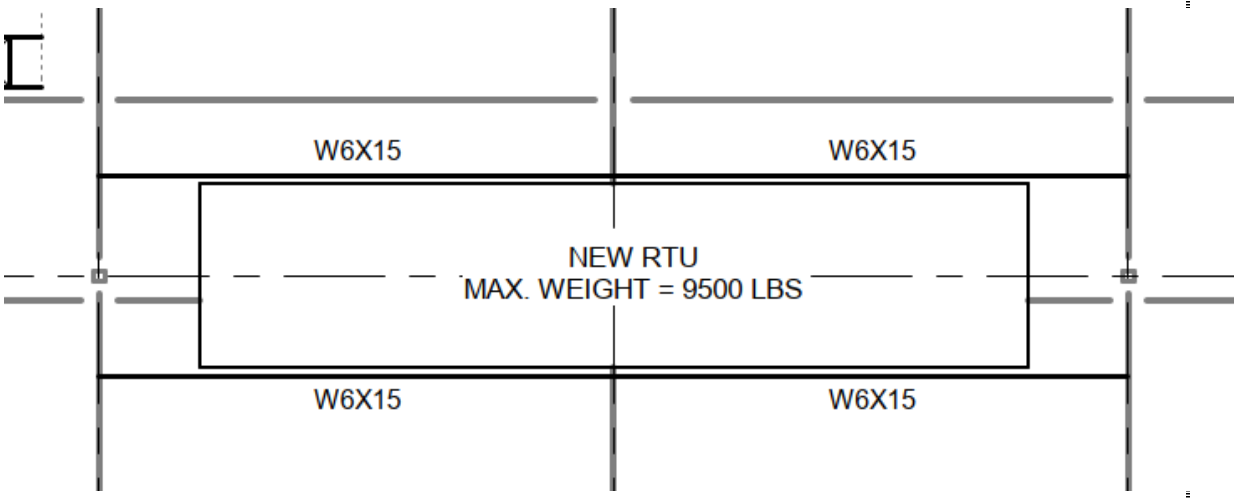
Glulam/MC10 Retrofit (ignore the PSL, not used in our situation)



Glulam/MC10 Retrofit section (w/ proposed rtu support attachment)

Retrofitted Glulam Beam Capacity

The majority of the existing glulam beams were retrofitted in 2005 to add an MC10x25 to each side of the glulam beams for 16' feet in the center. The glulam beams that weren't retrofitted in 2005 were retrofitted in the same manner in 2010. The combined section properties can be used to resist the negative moment at the column support



Modulus of Elasticity of Steel	E_s =	29000	ksi	
Modulus of Elasticity of Glulam Beam	E_w =	1800	ksi	
Ratio of Moduluii	n =	16.11		
Width of Glulam Beam	b_w =	5.125	in	
Equivalent Steel Width of Glulam Beam	$b_{w,s}$ =	0.318103	in	
Moment of Inertia of Transformed Section	$I_{xtr,s}$ =	835.60	in^4	ETABS Section Designer
Distrance of Centroid from Bottom	y =	14.25	in	
Section Modulus of Transformed Section	$S_{xtr,s}$ =	58.64	in^3	$I_{xtr,s}$ / y
Plastic Section Modulus of Transformed	$Z_{xtr,s}$ =	116.82	in^3	ETABS Section Designer
Yield Strength of Steel	f_y =	36	ksi	
Plastic Moment Capacity	M_p =	350.46	kip-ft	AISC360 (F2-1)
Ultimate Bending Capacity	ΦM_n =	315.41	kip-ft