

Revision 7 Design Review
Sardar Girls High School
Roof Structure drawings dated December 11, 2009
WO-A-0066

Response Legend
A - Agree
D - Disagree
O - out of scope
AE - Agree with exception

Comment #	Reviewer	Reference	Comment	Response Code	Response	Back-Check
STRUCTURAL COMMENTS - Roof Structure						
S1	FRS	Dwgs General	Mechanical/Electrical/Plumbing drawings not provided for interdisciplinary review. Can not verify roof structure elevations, slopes and extents or conflicts.			
S2	FRS	Dwgs General	Except for roof trusses at Roof Lanterns, roof framing terminates within limits of the roof parapets by 500mm. Roofing specification says "Project sheets 50 mm into gutters". How is runoff managed?			
S3	FRS	Dwgs General	Roof "attic" ventilation and building structure ventilation not indicated. Roof closure details not provided.			
S4	FRS	Dwgs General	Painting schedule not provided, all structural steel roof members should be coated.			
S5	FRS	Dwgs General	Structural general notes with design loadings and assumptions, and calculated load coefficients not provided.			
S6	FRS	Dwgs General	Some text, section and detail marks very hard to read on half size prints. Suggest enhancing image scale for clarity.			
S7	FRS	Dwg SC141 General Arrangement	No truss geometry and details are provided for main building trusses.			
S8	FRS	Dwg SC141 General Arrangement	Do all roof beam posts clear features on the concrete roof deck (i.e. access point openings, curbs and utilities)?			
S9	FRS	Dwg SC142 General Arrangement	No truss geometry or details are provided for main building trusses.			
S10	FRS	Dwg SC142 General Arrangement	Show all grid dimensions.			
S11	FRS	SC 143 Details of Roof Beams	RB 3 and RB5 elevation text is "clipped".			

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S12	FRS	SC 144 Roof Members	Show all grid dimensions. Show fastener type, size and schedule for attachment of standing seam metal roof as required by design. Note for plank fastener says "30" nail" - I assumed 3" was intended.			
S13	FRS	Dwg SC145 Details of Roof Beams	Unreadable dimensions RB8. Is RB6 ridge dimension "1295" to top of beam flange?			
S14	FRS	Dwg SC145/145a/149	Revision Note 2 indicates that main beam sections (W6x16) are replaced by (IPE 180). Have dimensions for column posts be adjusted to account for deeper section depth, holding the top surface of roof elevations constant?			
S15	FRS	Dwg SC149 Column Elevations	Unreadable bolt text on column plates.			
S16	FRS	Dwg SC149 Section 6-6	Does not allow expansion of topmost 24 GA roof panel since it is shown directly against a standing seam. Hold end back sufficient distance for expansion. Is the flexible membrane able to stretch enough without tearing? It is wrapped up over the left side seam.			
S17	FRS	Dwg SC149 Section 7-7	Should have sealant at joint between ridge cap plate and ribbed panels.			
S18	FRS	Dwg SC149 Section 8-8	Not enough depth in 100mm deep concrete cap plate to have standard bends in hoop bars. Appears to be a cap over masonry, an embedded dowel in the masonry or other means to transfer horizontal loads into the structure below must be incorporated.			
S19	FRS	Dwg SC149 Typ Steel Bars Elevation	The 250x250 reinforced concrete posts shown with sloped top appear to have an embedded, bent steel plate assembly for beam connection at an angle - but no details are provided on plate size and thickness or the weld. Show clear concrete cover. Typical industry alternative to the concrete post would be tubular steel with a welded, sloped cap plate.			
S20	FRS	Dwg SC150 & SC153	Drawings are identical other than the column lines.			

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STRUCTURAL COMMENTS - Roof Structure						
S21	FRS	Dwg SC150	Detail C indicates 10mm rubber packing. Please clarify.			
S22	FRS	Dwg SC151 & SC154	Drawings are identical other than the column lines.			
S23	FRS	Dwg SC148/152/153/154	Indicate anchor bolt embedment and reveal depth.			
S24	FRS	Dwg SC148/149/150/151/152/153/154/155	Indicate weld types and sizes on each individual detail.			
S25	FRS	Calculations General	An incomplete set of calculations was provided for review. The following was provided: -Roof Beam (RB1 is representative) analysis and design. -Roof Truss analysis and design. The following was not provided: - Beam & Truss connection design (by observation the welded steel connections appear adequate). -Beam and truss anchorage. -Concrete Beam posts (appears adequate). -Purlin tube design. -Roof sheathing planks.			
S26	FRS	Calculations General	Analysis and design for Roof Beam RB1 is provided for the old section (W6x16) not the revised section (IPE180) which is a somewhat weaker section. Revised calculations are suggested.			
S27	FRS	Calculations General	The revised purlin (160x100x10) is viewed to be a nonstandard section. Reviewer did not find published section properties, but expects they are very similar to the former (154x100x12.7)			
S28	FRS	Calculations General	Have loads for supported mechanical equipment (vent fans and frames, etc. been accounted for in the roof design?			
S29	FRS	Calculations General	What wind and seismic design coefficients were used in the roof design?			

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S30	FRS	Calculations Grade 6 Frame Analysis Results Sheet 27	Results provided are for RB1 indicating a 127x76x13 section for axial loading only. Roof beams are subjected to combined axial and flexural stresses. Section size reported is different than revised IPE 180 section, the analysis should be for the revised section properties.			
S31	FRS	Calculations Truss 7 Analysis Results Sheets 65-68	Truss deflection diagrams indicate there are no posts at nodes 2, 4, 8 & 10. Truss detail drawings show vertical posts at each node which influence the truss stiffness and therefore the member loads and deflections.			
S32	FRS	Calculations Truss 7 Design Results Sheet 75	Group BRACIN reports Group Mass = 0.0 kg. Ensure that all necessary groups are assigned a mass.			
S33	FRS	Specifications Roofing 4.2.2.5	Indicates roof mounted ventilators to be provided. Suggest that a typical structural framing detail around roof openings include waterproofing details on the roof structural drawings.			
S34	FRS	Specifications Roofing 4.2.3.2	Ridges and eaves indicates "Project sheets 50 mm into gutters. This appears to conflict with the main building roof beam elevations, where the roof terminates 500mm within parapet.			
S35	FRS	Specifications Roofing 4.2.3.2	Curved corrugated sheet and K Span roofing indicated, but not shown on drawings.			
S36	FRS	Specifications 4.2.3.6	Roof mounted equipment access. Where is this and any roof mounted equipment? Do not see any special framing support for roof equipment.			
S37	FRS	Project Schedules (rev2) 3.9	Light timberwork schedule TW2 indicates Russian Khar wood or equivalent. Reviewer did not find material properties on this wood. A similar name encountered in a search was "Khair (acacia catechu)". Lumber roof sheathing calculations not provided (30mm timber plank).			