



**Summarized Minutes: Design Development Meeting #3: Systems**

**21 August 2013**

Location	Start	End	Prepared By	Company
Room 318, Capitol, St. Paul, MN	8:30 a.m.	5:00 p.m.	Michael Bjornberg	HGA

  

	Gordon Christofferson, RECS	A	Scott Miron, PMD	A	Tracy LaVere (LeVere Eng.)
	Wayne Waslaski, RECS	A	Gordon Specht, PMD	A	Barry Bridges, Sebasta Blomberg
	David Hart, MOCA	A	Susan Jones, CPMI	P	Natalie Buckman, Summit
A	Joe Stahlmann, MOCA	A	Ann Rest, Senate	P	Dan Picciano, Summit
A	David Albien, PMD	A	Brian Pease, MHS	A	Sarah Berseth, HGA
A	Stan Bielek, PMD	A	Natascha Wiener, MHS	A	Michael Bjornberg, HGA
A	Jim Aleckson, PMD	A	Bob Loversidge, SCA	P	Tim Carlson, HGA
A	David Dahlin, PMD	A	Curt Elliott, JED		Becky Greco, HGA
A	Ludger Dekarski, PMD	A	Rik Myhre, JED	P	Jeff Lee, HGA
A	Chris Guevin, PMD	A	Jim Rinner, JED	A	Kimberly Monson, HGA
	Craig Janke, PMD	A	Jim Magrew, Harris	A	Zach Poynter, HGA
	Anne Johnson, PMD	A	Rob Krueger, Gephart		Leigh Rolfshus, HGA
A	Jerry McDougle, PMD	A	Bryan Lundquist, Gephart		Deb Young, HGA
P	Yan Shagalov, HGA	P	Sean Cotton, HGA		

A – Full Attendance    P – Partial Attendance    Blank – Did Not Attend

These minutes will be held as part of the permanent records for this project unless amended in writing within seven (7) days. (Item number designations are “item” – “meeting origination number”).

Item No.	Discussion Item	Resp.	Target Date
<b>Introduction</b>			
001-003	Michael Bjornberg gave an overview of the agenda to discuss Mechanical, Electrical, Plumbing, Structural, Roof/Skylight, Fire Protection and Commissioning.	-	-
002-003	The meeting minutes for this session will be supplemented with a PowerPoint illustrating the systems.	Design Team	-
<b>Mechanical</b>			
003-003	Sarah Berseth (HGA) presented the current mechanical systems including; pumps, heat exchangers, radiant heat, chilled water, hot water, AHU’s, smoke exhaust and DDC controls.	-	-
004-003	Sarah presented the combined underfloor systems layout and then illustrated the difference from SD layout to current DD layout which illustrated the scope of reduction of underfloor ductwork and corresponding reduction in underpinning scope.	-	-
005-003	Sarah presented the assumed Phasing plan (acknowledging the retaining of operation of; senate media, senate duplicating and the rathskellar) for HVAC units utilizing the current planned use of modular units in a sequential replacement of units across the basement level.	-	-
006-003	The Design Team is considering using temporary units during construction or installing new permanent units to be used during construction. These options are still being considered for impact on budget and phasing. Considerations would also be	JED & Harris	9/18/13

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	when the permanent units become the owner's property and warranty start date for the permanent units. Temporary units may have a more basic control system, and JE Dunn would work with the State to adequately control the units.		
007-003	The perimeter heating (radiators) under windows/ exterior walls and the reheat coils at VAV boxes serving these same zones will be supplied with hot water at approximately 130 to 140 F. during design conditions in winter. Upon command for heating through the zone thermostat, both the fan powered VAV box fan will energize, the VAV box valve actuator will open for hot water flow and the perimeter radiator(s) in this same zone will be commanded to open the valve actuator for flow to provide heating when commanded. This dual interconnect will prevent VAV and radiators from "fighting" each other if they were to have had separate thermostats. In the summer, this same system will be in play to maintain space conditions and will also prevent the space(s) from "overcooling" when low occupant loads cannot maintain space temperatures when VAV's are at minimum position. The heating valves for these zones would energize just long enough to keep the space from dropping below setpoint. This will allow PMD to maintain good temperature/humidity control in summer without having the issue of overcooling and creating a new problem for the occupants. A little inefficient heating wise, but has to be done in order to operate properly at low occupant conditions and need for space temp/relative control. The offset is that the air handling systems do not need to increase speeds to full air volumes to maintain space temp/R.H. conditions so energy savings will be significantly improved on fan HP side of the equation	-	-
008-003	All risers for the perimeter heat system will be hidden. Exact piping routes are still being determined.	-	-
009-003	The system should have a connection to hook up a temporary chilled / hot water supply in the event district energy fails. This would just be Ts and valves in an area near where temporary equipment could be located.	-	-
010-003	It would be desirable for maintenance if the fan modules in the AHUs would be consistent so that they are interchangeable. This minimizes the amount of back stock needed. Each AHU may be unique in size, making this difficult, but it will be a goal the Design Team will keep in mind.	-	-
011-003	When one fan module malfunctions, an alert will be appear at the control center. Other fans in the unit will continue to operate. The life expectancy of the fans is approximately 30 to 40 years.	-	-
012-003	Additional discussion will be needed about filters. The State has had good experiences with a MERV8 filter, which may eliminate the need to have both pre- and final filters.	-	-
013-003	All fresh air intake will occur at the roof, which helps minimize some security concerns. There will be relief vents near the ground, and these will have dampers and grills to prevent intrusion.	-	-
014-003	For Smoke Evacuation mode, intake will occur through the doors. The pressure has been calculated and would not interfere with egress.	-	-
015-003	Consideration will be made for the large air intake plenums dropping down through the building. When the HVAC system is not taking in air, these can have frost and freezing concerns. Insulated dampers will help reduce this concern.	-	-
016-003	There was discussion about possibly using waste heat to reduce the temperature of hot water needed in the summer. The Design Team has considered this, but has not found any adequate exhaust heat opportunities.	-	-
017-003	The VAV boxes will be fan powered parallel units. The fans only turn on when the space needs heat. These will need to be accessed for maintenance. Each unit will have a filter.	-	-

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018-003	Plant management wants redundancy at the heat exchangers and the pumps. HGA will proceed with two heat exchangers sized for roughly 60% of the load for each system. This will give the Capitol some redundancy but will be cheaper than a 100% redundant system.	-	-
019-003	We presented two options for the hydronic piping in the capitol. One option locates the piping in relatively the same location as existing. This option will be extremely difficult with the phasing. The other option locates the piping underground. This option may or may not require more underpinning. This option is significantly easier with the phasing.	-	-
<b>Electrical</b>			
020-003	Zachary Poynter (HGA) provided a summary of the electrical systems as planned; including generator, current switchboard status, ATS, power monitoring, OCPD coordination, device locations, and power distribution.	-	-
021-003	Zach noted current deficiencies in the SWB EG-1 that will require either replacement (\$400k - \$465K) or requesting a variance. It was decided not to pursue a variance and update the switchboards as required.	-	-
022-003	The ATS shall be non-load break with by-pass.	-	-
023-003	Many tenant areas will need floor outlet boxes. The data and power locations need to be flexible as furniture locations will likely change frequently.	-	-
024-003	Senator Rest recommended 10 outlets per office. Items a Senator frequently has in their office include Computer, iPad/Phone, Coffee pot, Refrigerator, Microwave.	-	-
<b>Telecommunications</b>			
025-003	Jeff Lee (HGA) discussed a critical decision for the fiber runs. He noted that while this was not the meeting intended to discuss the overall telecom system, the fiber run options merited an early discussion.	-	-
026-003	For the main campus fiber that runs through the basement of the Capitol, the original SD layout assumed running a 36" wide cable tray through the south side of the building. Further discussion and coordination revealed this to be very difficult to implement. The design team is now considering two options: running a 36" wide cable tray along the north side of the basement, which could be very difficult to manage in the construction phasing of the existing systems and the replacement process, or running a distinct campus run underground under Aurora Avenue to bypass the Capitol building. Both options will continue to be evaluated for phasing concerns and cost.	-	-
027-003	A cable tray will be provided in the basement for cables serving the basement only. This will provide flexibility for future changes in low voltage service.	-	-
<b>Plumbing</b>			
028-003	Tracy LaVere (LV Engineering, LLC) presented the plumbing system progress including; domestic cold water, domestic hot water, sanitary, and storm.	-	-
029-003	Tracy noted that the current storm volume exceeds the existing piping capacity so there is a need for additional storm piping.	-	-
030-003	Tracy also noted that the existing building does not have overflow roof drains and will need to accommodate such in the new work. The overflow drains will combine inside the building and exit at the four corners to daylight.	-	-
031-003	Tracy also noted that there may be a desire to request a variance for combining condensate to sanitary versus storm, as currently required by the City of St Paul. (Minneapolis allows condensate to be combined into the sanitary system.)	-	-

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032-003	Update 9/3/13: Drain tile is required by MN Code to be installed under the underground ductwork. The drain tile will connect to the storm system.	-	-
	<b>Structural</b>		
033-003	HGA reviewed the geotechnical evaluation and testing that has occurred following Schematic Design. Tested soils consist of fine-grained sands and silts, and are generally dense. Recommended soil bearing pressure of 6000 psf appears consistent with the original foundation design. The geotechnical evaluation indicated that soil solidification methods would not likely be feasible for underpinning foundations.	-	-
034-003	HGA reviewed footing exploration. The exploration conducted with the geotechnical evaluation revealed foundation configurations generally in agreement with available existing documentation.	Info	
035-003	HGA reviewed soil solidification testing conducted by JED and Veit (specialty contractor). Two locations tested, and soil solidification was unsuccessful at both locations.	Info	
036-003	HGA discussed general methods for traditional concrete “crib” underpinning. Based on the geotechnical evaluation and subsequent solidification testing, this will be the method used to underpin existing foundations where required for underfloor ductwork and other utilities.	Info	
037-003	HGA presented the current status of the underfloor ductwork layout and illustrated the significant reduction relative to the Schematic Design layout.	Info	
038-003	Required concrete strength was discussed, as it relates to curing time between successive sections of underpinning. Generally, 75% of specified strength required before underpinning an adjacent section. This should be reached within 7 days for typical mixes. Susan Jones requested that any special requirements for early concrete strength be noted in drawings/specifications for accurate pricing. JED to coordinate concrete early strength requirements with HGA.	JED, Design Team	10/15/13
039-003	Additional soil testing may be conducted at specific underpinning locations with the potential to increase the allowable soil bearing pressure. This has the potential to locally reduce underpinning requirements. Susan Jones asked that any additional testing requirements be added to the testing specifications.	Design Team	10/15/13
040-003	JED noted that underfloor ductwork may need to be provided with some slope to handle potential condensation. Design team to verify what this slope will be.	Design Team	-
041-003	An elevator walkthrough is scheduled for 1:00 PM, Thursday August 22 to review existing Rotunda elevator pits and hoistways. (8/22/13: walkthrough was attended by Sean Cotton, Tim Velazco and Dave Albien).	Info	-
042-003	New elevator pits will require underpinning of adjacent foundations. Pit depths and locations should be coordinated with WP2 underpinning. Further information to be developed in conjunction with elevator consultant (VDA).	Design Team	-
043-003	JED requested allowable loading criteria for floors and roof to be provided for guidance on limits of construction activity loading.	Design Team	-
044-003	Concepts for removal of bearing walls at hearing rooms was illustrated. Number and locations of hearing rooms to be determined based on final space planning.	Info	-
045-003	Concept for removal of columns at caucus rooms was illustrated. It was confirmed that the column removal is in the project scope. Underpinning may be required for foundations adjacent to the removed columns to increase capacity. This will be coordinated with WP-2.	Design Team	10/15/13
046-003	The current caucus room column removal concept requires access from the House Chamber floor above. Sequencing and scheduling of this work will need to be verified. Alternate methods of column removal and reinforcing from below may be possible,	JED, Design Team	-

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	but could significantly infringe on above ceiling space in these areas.		
	<b>Roof / Skylight Systems</b>		
047-003	Tim Carlson (HGA) presented the roof plan and skylight condition.	Info	-
048-003	Tim presented the roofing system history and the proposed roofing replacement system. He noted that HGA and JE Dunn had met to discuss the roofing cost differential (HGA and MOCA had estimated the roof at \$2 million while JE Dunn had estimated it to be \$6 million.) the result is a roofing budget cost of just over \$4 million.	Info	-
049-003	There are portions of the roof that are a steeper slope than is recommended for the paver-protected membrane roof system. These areas are believed to originally have been the adhered tile system. This system is no longer used due to its inferior performance. The Design Team is proposing to utilize a metal roof system in these areas, but will also research options that may have an appearance closer to that of the adhered tile.	Design Team	-
	<b>Fire Protection</b>		
050-003	Dan Picciano and Natalie Buckman (Summit) presented the current approach for fire protection in the building including; pipe type sprinkler layout and spacing, recessed or exposed sprinkler heads (likely some of both), approaches in Zone 1 spaces, and the office spaces.	Info	-
051-003	Dan noted that sprinklers are not required in the rotunda and grand stairs due to the height of these spaces.	Info	-
052-003	Zoning: The Terrace Level is required to be split into three sprinkler zones (due to square footage). For the remaining levels (Ground through Third) zoning will be restricted by building geometry, available routing space and historic finishes. The upper levels will be provided with two to four sprinkler zones, fed from standpipes provided in each "quad". The attic is considered a non-combustible space and is not planned for sprinkler protection at this time.	Info	-
053-003	System Type: Wet systems will supply the majority of the Capitol sprinklers, to the greatest extent possible. Some areas will more than likely require to be fed from dry systems (i.e. Supreme Court, Chambers, etc.) where piping is routed in attic spaces above; however, further investigation into the structure and actual building temperature conditions in attic spaces is required. Vestibules will need to further be reviewed to verify if dry "barrel" type sprinklers can be fed from the wet systems (preferred) or if dry system piping is required. Per NFPA 13 requirements areas provided with wet systems need to be maintained to a minimum of 40 degrees and are allowed to protect 52,000 sf per zone. Dry systems will be restricted to a maximum of 750 gallons per system. Once areas required to be protected with dry systems are identified, further coordination will be needed to identify dry valve locations, etc. Dry valves will need to be located in spaces that are maintained above 40 degrees.	Design Team	-
054-003	Piping and Sprinklers: All sprinkler system piping will be specified as steel, no CPVC piping will be allowed. Due to the historic nature of the building various joining methods may be used (i.e. flanged, threaded, welded, grooved, etc.). Each area of the Capitol will be specified on a case by case basis (i.e. back of house areas, central corridors, chambers, etc.). Specialty fittings, such as flex drops, are not currently planned for the project due to specific fastening requirements and unique existing ceiling conditions. Many of the areas remaining as-is (i.e. central Rotunda, main corridors, etc.) will be fed with sidewall sprinklers. Where ceiling space allows, pendent sprinklers will be installed. Because of the complex geometry of the Capitol	Design Team	-

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	<p>ceilings, installing sprinklers within their listing is not possible within practical limitations. Sprinkler locations will be coordinated heavily with the architectural team, as well as approved through the AHJ. A combination of concealed sprinklers and semi-recessed sprinklers will be used throughout the building and will be chosen for each area on a case by case basis. Standard sprinkler finishes include brass, chrome, white and black. Additionally, concealed sprinklers escutcheons may be painted to match single paint colors. Sprinklers are planned throughout the building with the exception of the Rotunda ceiling and the skylights above the Grand Stairs. Ultimately the sprinkler type (semi-recessed, concealed, etc.), sprinkler orientation (pendent, sidewall, etc.), and finish (brass, chrome, custom, etc.) will be based on configurations that minimize the impact to historic elements of the building. Draft curtains with closely-spaced sprinklers are planned at several locations at the eastern and western stairs. The building is planned to be classified as “fully sprinklered” from a code perspective.</p>		
	<b>Commissioning</b>		
055-003	Barry Bridges presented a summary of the approach to commissioning on this project.	Info	-
056-003	<p><b>Summary:</b> A summary presentation of all above topics was given on August 22<sup>nd</sup>. These minutes and a summarized PowerPoint presentation will be prepared for posting on the Preservation Commission website.</p>	Design Team	-

cc: E-mailed to the following:

All Attendees	Gordon Christofferson, RECS	Michael Bjornberg, HGA
Wayne Waslaski, RECS	Melinda Shah, SCA	Becky Greco, HGA
Jim Rinner, JE Dunn	Paul Oberhaus, CPMI	Kimberly Monson, HGA
Paul Brown, MOCA	Susan Jones, CPMI	Joe Stahlmann, MOCA
Rik Myhre, JE Dunn	David Hart, MOCA	Bob Loversidge, SCA
Jeff Callinan, JE Dunn	David Slovikoski, JE Dunn	

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