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Memo Report

From: W. Mark Cummings, P.E.

To: Michael Johannang, AIA; WBRC Architects and Engineers

Subject: Independent Fire Protection Review for Cumberland County Civic Center Renovations

A review has been completed of the updated sets of fire protection construction documents (CD), which have been developed to support renovation efforts at the Cumberland County Civic Center in Portland, ME. The documents reviewed included both the fire protection demolition and design drawings (updated 4/12/13), along with the design specifications (updated 4/2/13) for the various fire protection and life safety related systems and the Building Code Report (dated 4/16/13).

In general, the majority of the comments/questions regarding the various specifications have been addressed. However, a number of questions remain regarding the drawing set; primarily pertaining to the Life Safety and Fire Alarm/Notification systems drawings. The prior review, detailed in the 6th of March memo, did not include any review of the Fire Sprinkler System drawings, since these provided no details on the actual system layout, nor was a detailed review of the Fire Detection/Alarm System drawings performed due to the numerous items/issues that were readily noted as needing attention.

Fire Protection Related Drawings

Although both the Life Safety Plans and the Fire Alarm system drawings have been updated, some questions and areas of concern still exist.

Life Safety Plans

Some of the fire barrier requirements are still not properly depicted on the Life Safety (LS) Plans. For example, no fire rated barrier is shown for the Fire Pump Room; albeit other drawings properly indicate that the pump room will be isolated by walls having a 1-hour fire resistance rating. Is the elevator pit for elevator in the Mechanical Level open to the Elevator Machinery Room? If so, the machinery room needs to be isolated from the rest of the building with barriers having the same fire resistance rating as the elevator shaft (at least 1-hour, since this connects only three floors); otherwise, will simply need to ensure that any penetrations between these two areas are provided with proper penetration seal materials. Also, the store room adjacent to the elevator machinery room indicates the need for a 1-hour fire barrier. Is this meant to include the bounding walls of the store room or simply for the ceiling above? This should be better clarified, since the room itself would not require such a fire rating.

The occupant load calculations for the home team locker room and its associated spaces/areas, including office areas, do not appear to accurately reflect the load factors that should be applied within all the various spaces. Also, the stair located on the west end of the Event Level that leads up to the Concourse Level, does not appear to be provided with intermediate railings. These stairs appear to be much wider than the 5-foot (60 inch) maximum that would be allowed without the need to install additional handrails. [Note: An 88 inch maximum distance between handrails is allowed for "existing" buildings.] The current plan for the design of these stairs should be reviewed to determine if an additional handrail(s) is needed.

The path of egress from the Commissary area should be revised to properly reflect the actual path of travel to be used. Currently the path indicated depicts travel "through" a wall(s). Although the maximum travel distance will not be problematic, the path shown on the LS Plans should still reflect the code-required path of travel.

The location of the Fire Command Center should be identified on the LS Plans.

Fire Alarm System Drawings

A detailed review of the Fire Alarm system drawings indicates that a number of questions and concerns still exist. Specifically, this includes the many heat detectors that are installed throughout the various spaces within the facility. These devices are unnecessary, given that this facility is fully protected by automatic sprinkler systems, and will represent not only a notable capital cost, but also a significant life cycle cost to the City of Portland. The inclusion of these devices, along with a number of smoke detectors that are not required (such as in corridors of office areas in NW mezzanine), should be verified with the client to ensure they understand and agree with this approach. These devices will provide very little benefit to the overall life safety and fire protection of this facility.

It is recommended that the plans for locating notification devices be reviewed. Specifically, this involves areas that do not require the installation of visual devices, but must still comply with the audibility requirements. Given the locations of the planned notification devices as depicted on the drawings, consideration should be given to the addition of speakers within some of the other non-public spaces that are either relatively large or located such that the sound from the closest speakers may be insufficient to achieve code compliance. It is unknown if any prior sound measurements have been taken to establish “ambient” noise levels throughout the facility, but if not, a contingency plan should be developed to provide an allowance for additional speakers to be provided in areas that may demonstrate insufficient audibility levels during preliminary system testing. Currently, the system specifications do not require the installing contractor to perform such an evaluation prior to the installation of the system to verify device locations.

Based on this recent review, questions regarding the code compliance of the locations of notification devices exist for several areas, including; the Staging and Marshaling and First Aid areas at the west and east ends, respectively, of the Event Level, along with the general plan for notification within the Seating Bowl area. The specific floor to ceiling height within the Bowl area is not specifically depicted on the drawings, but it is believed that this exceeds the 30-foot maximum that is outlined in NFPA 72 for ceiling mounted devices. The only notification devices for the Bowl area are shown on the “Catwalk Level” plan. It is believed that the current plan for notification in the Bowl area would not be considered code compliant; especially as it pertains to the numbers and locations of devices that are installed to support this area.

Although notes exist on drawings identifying the beam type smoke detectors, these devices should also be identified within the legend for the drawings.

Fire Protection Related Design Documents

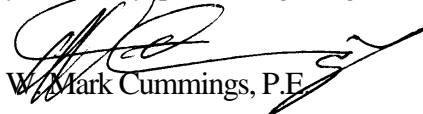
This review of the updated fire protection and life safety related documents also included the Building Code and Smoke Control Reports. Although one outstanding question remains, regarding the required egress time from the east (non-smoke protected) portion of the Seating Bowl, through the vomitory to the actual Main Concourse Level, all other questions have been addressed regarding this document.

As stated in the Building Code Report, the overall egress plan for this building includes the use of smoke protected seating. As outlined in NFPA 101, use of this approach also includes the need to develop a “Life Safety Evaluation” [ref. 12.4.2.2]. There is a significant amount of information that is required to be provided in this document that is not included in the other design documents. Although this document may not be required for permitting purposes, it will be a required deliverable since the smoke protected seating approach is being used.

As outlined in the Building Code Report, the need exists for an RF Engineer to evaluate the ability for use of 2-way radio communications throughout the building; including if the need exists for amplifiers. If this evaluation has not yet been performed, this too will be required prior to submittal of the permitting documents for the fire alarm system.

Summary

None of the comments or questions outlined above should have any impact on the actual construction aspects of the building. As such, I see no impediments to the building permit process. The majority of the comments above affects the fire alarm system and would need to be addressed prior to submission of the permit for that system. Please let me know if you have any questions regarding the above.


W. Mark Cummings, P.E.