12/6/11

Kris Anderson Anderson Const. Co

Re: Wallowa Memorial Hospital MOB. Enterprise Or.

Mr. Anderson

I have addressed and reviewed the Drawings/Documents. Comments/revisions have been recorded on the resubmitted documents and below.

#### Comments from Interface Engineering (11/14/11)

<u>Drawings:</u>

5.) No method of lateral and vertical branch line restraints (including, but not limited to end of branch line restraints) has been provided per NFPA 13-2007 section 9.3.6 and 9.3.6.3 and Table 9.3.6.4. Please provide.

#### Branchline restraint notes have been added to drawings.

6.) Longitudinal & lateral sway bracing locations for the wet sprinkler system as required by are not shown on drawings. Please provide per sway brace calculations.

### Details and notes have been added to drawings.

11.) No air compressor is shown for the dry pipe system. Please Provide 11/14/2011: Provided. Piping is not shown to automatically drain, as required by specification 211300.2.06.B. Please provide automatic drain.

#### Automatic drain has been provided in riser notes, Part # FD-1.

13.) Fire department connection is not shown to have a ball drip valve for drainage. Please provide, with drain to sewer or daylight.

# A 90° Drain elbow with 1/2" Viking ball valve to drain to floor drain or daylight as noted on riser detail.

14.) Length of ½" thru bolt fastening longitudinal and lateral sway bracing is not provided. Please provide. Identify structural members on drawings showing that the member to which the fastener will be attached is thick enough to hold the entire required length of the thru bolt identified in sway brace calculations.

### 1/2" x 7" Machine Bolt shall be used on GLB

### 1/2" x 3" Machine Bolt shall be used on 2x6 Trusses.(Attic Only)

15.) Hanger detail #1 shows a 2" and a 2.5" Sammy Sidewinder in a 2x6 truss member. A 2x6 truss is actually 1.625" wide. The 2" and 2.5" Sidewinder will just have the excess length extending out the back which will not provide the intended support. Please utilize a hanger that will fit within the structural member it is attached to.

# Notes have been added to hanger details #8 and #9 regarding main hangers verses line hangers.

18.) No inspector's test connection is shown at the most remote end of dry system. Please provide

### Inspector's Test has been added to dry system to drain to exterior near gridline intersection 5 & G.

19.) No Dry system auxiliary drains are provided. Please provide. Drum/Auxiliary Drains have been added next to Vestibule and at insp test location.

#### Hydraulic Calculations:

2.) Roof pitch exceeds 2 in 12. Design areas are not increased for dry systems and sloped roofs per NFPA 13. Please revise.

### Design areas provided per product listing, design areas are not required to be increased with the special application sprinklers. No Changes

5.) 11/14/2011: Hydraulic calculations utilize interior diameters for two different types of  $2\frac{1}{2}$ " pipe (ID= 2.469" and ID=2.635") No cut sheet has been provided for pipe with an interior diameter of 2.469". How will installer know that the pipe segment represented by the Lower Wet Calcs nodes 91 to 52 and pipe segment from nodes 44 to 45 require pipe with an interior diameter of 2.469" whereas all the other  $2\frac{1}{2}$ " pipe can be schedule 10? Please coordinate hydraulic calculations pipe interior diameters with the pipe interior diameters actually intended to be used on the project and make all pipe types and sizes obvious on the drawings.

## The pipe with ID=2.469" was intended for the $2\frac{1}{2}$ " Schedule 40 main drain. This piping should be non-flowing. New calculations have been provided.

6.) 11/14/2011: Attic Dry Calcs utilize Tyco BB1, TY4180 sprinklers, which, per cut sheet, require a minimum of 22.6 psi when flowing a minimum of 38 gpm. Hydraulic calc nodes 201, 202, 203 and 204 provide the 38 gpm, but do not provide the full 22.6 psi. Attic Dry Calcs also utilize Tyco SD1 TY3183 sprinklers, which, per cut sheet, require a minimum of 39 psi when flowing a minimum of 35 gpm. Hydraulic calc nodes 205, 206 and 207 do not provide the minimum pressure and flow. Please revise calcs, per NFPA 13-2007 section 22.4.4.6.1, to provide the minimum pressure required per product listing. Revise pipe sizing and sway bracing as required by revised calcs.

### a.) Tyco BB1 (TY4180): The k-factor was set at 8.1 and has been adjusted to the appropriate k-factor of 8.0. Issue has been resolved.

b.) Tyco SD1 (TY3183): The product cut sheets call for 25gpm @ 20psi for the allowable roof span of 10ft. or greater up to 30ft. In this application we are covering less than 30ft.

7.) No hydraulic calcs have been received for areas protected by Tyco BB1 TY3180 sprinklers (shown along approx. gridline 2.7 between C and F). Per cut sheet submitted, these sprinklers require a minimum of 46 psi at a flow of 38 GPM. No other calculations provided show the system is capable of providing this high pressure and flow. Please perform additional hydraulic calculations for this area, which may be the most hydraulically demanding, per NFPA 13-2007 section 22.4.4.6.1 and NFPA 13-2007 section A.22.4.4.6 and specification 210000.1.04.L.1.d to provide the minimum pressure required per product listing. Revise pipe sizing and sway bracing as required by revised calcs.

The TY3180 have been replaced in design with TY4180, 8.0k-factor heads since the system was not able to provide this high of pressure and flow wih the smaller orifice sprinkler. Calculations have also been provided for this area.

#### Sway Brace Calculations:

3.) Building Code chapter 16 calcs determining force factor used in NFPA 13 calcs are/are not provided per specification 210000.

11/14/2011: Calcs use a force factor of 0.40 Cp. This meets code minimum but does not meet requirements of specifications 210000.3.02.B.1 which requires a minimum of 0.50. No Exceptions Taken if acceptable to Owner.

# Expectations are that the minimum assigned Cp for an area of moderate expected Earthquake risk would be acceptable. If not, additional Bracing will be added.

4.) Pipe type included in calculations matches/ does not match pipes shown on plans. 11/14/2011: Hydraulic calculations use interior diameters for Schedule 40 pipe in diameters up to 2" (in most instances- see comments under hydraulic calcs, above) but sway brace calcs use Schedule 10 for all pipe sizes. This may not accurately represent the pipe type installed and may result in an inadequately braced system. Please revise sway brace calcs to use the pipe type which correlates with hydraulic calcs, drawings and submittal cut sheets. Revise sway brace locations, details and components if revised calcs require closer spacing.

#### Hydraulic Calculations have utilized sch. 40 piping in place of Sch. 10 lines. This adds an additional safety cushion in our calcs. However, hydraulic calcs have been modified and resubmitted.

5.) Bracing details shown on plans do/do not match components and configuration used in calculations

11/14/2011: lateral and longitudinal calculations call for "Dual Through-Bolts - Figure 906. However, these are not shown on drawing details. How will installer know that the Tolco figure 906 with two ½" through-bolts will need to be used if details do not show them? Please revise details and installation to match sway brace requirements.

### Details have been modified, clouded and resubmitted.

### Materials:

12.) Couplings:

a.) Rigid: Anvil Star fig 7400 Rigidlite couplings. Use Gruvlock Xtreme lubricant for dry pipe system.

Notes have been added to dry pipe system notes.

b.) Flexible: Anvil Star fig 7000 lightweight flexible coupling. Use Gruvlok Xtreme lubricant for dry pipe system.

### Notes have been added to dry pipe system notes.

20. Dry Systems:

a.) Air Compressor: General Oilless tank mounted. No Model number provided. Please provide proper size for dry system capacity volume. Please provide automatic drain. **Notes have been added to riser detail.** 

Please feel free to contact me with any questions regarding this letter.

Professional Regards,

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