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Robertson Sherwood Architects PC
132 E Broadway Suite 540
Eugene OR 97401
Attn: Dave Guidagni

RE: UO Student Recreation Center
SD Code Summary & Fire Safety Design Narrative
New Construction - 117,000 SF, Esslinger Remodel 15,000 SF
3 Levels of New Construction.

Dear Dave,

This SD Code Analysis and FSDN is created for the purpose of presenting current assumptions, a proposed code path, design nuances and fire safety components for the project. This document at this point is a DRAFT document.

The project scope work is 90% new construction and 10% remodel in Esslinger Hall.

The role of an FPE is to be highly interactive with all stakeholders as a means of facilitating one or more code compliance strategies. This document is intended to be a "one stop resource library" of fire protection information for informed and expedited decision making.

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1. Building/Project OVERVIEW

The use is college recreation facilities. Occupancy to be largely A-3 (predominate occupancy classification).

The new facility to lie south of the existing Student Rec Center and east of Esslinger Hall. Tennis courts currently occupy much of the space to be utilized are to be demolished.

New work is to add on to the existing Student Recreation Center with matching construction (Type I B). The existing SRC facility is Type II FR (UBC) which translate to Type I B (OSSC) or better.

Site review of existing construction verifies a 4 HR FIRE WALL located at the east side of Esslinger. Existing Esslinger is Type III N or better construction

The FIRE WALL (boundary with Esslinger) is currently rated as 4 HR. Per OSSC Table 706.4 this wall rating (separating differing construction types) is sufficient per current code (3 HR required). The existing portion of the wall will retain it's 4 HR rating on drawings. The portion of the wall to be extended will be constructed to 3 HR. NOTE: Opening protectives for 3 HR and 4 HR are the same (3 HR - Table 715.4).

Existing facilities are fully fire sprinkled. New project work will be fire sprinkled throughout. Some sprinkler "zone" adjustments will be required for flow alarm consistency.

Esslinger Hall and the Student Rec Center received a fire alarm upgrade in 1988 utilizing an Edwards Systems Technology (EST) system installed by Landis & Gyr.

Dates and specific(s) of the fire sprinkler installations within Esslinger are unknown at this time. Sprinklers are not likely to be quick response (QR). There is not a code requirement to change out existing sprinklers to QR at this time however new work is required to be QR - which creates "interface" difficulties.

There are no known exiting or code compliance issue with the existing facilities.

2. Proposed Code Path OVERVIEW:

The project has a funding delay. The year of code of compliance may be the 2013 OSSC. This document is based on 2010 OSSC. "Code Path" requirements rarely change between code cycles.

The proposed code path basics are:

Type of Construction:	I B
Fire Sprinkled per 903.3.1.1	Yes
Predominate Occupancy	A- 3
Bldg Maximum Height	180 FT (160 FT + 20 FT)
Bldg Maximum Stories	Unlimited
Chapter 5 Design Option:	Non Separated Uses: Occupancies A- 3, A- 4, B.
Incidental / Accessory Uses:	None Proposed (not an issue with this code path).
Interior Fire Walls:	Existing FW to be retained and extended.
Interior Fire Barriers:	There will be no Occupancy Separation FB's. Overall there will very few FB's in this work.

Interior Fire Partitions:	Corridors Non Rated (Table 1018.1)
Shafts:	Shafts: 1- 2 HR, most will be 2 HR due to penetrating 2 HR floor construction. Excellent opportunity to use Section 716.6.1 (floor line FD option).
Shaft Opening Protection:	Fire Damper Required unless Exc # 1 (22 inch sub duct).
Shaft Opening Protection:	Smoke Damper Required.
Manual Fire Alarm System:	Required - with Voice Evacuation Notification
Engineered Smoke Control:	Required for 3 levels open to each other. Not Required for 2 levels open to each other after fire alarm initiated floor separation (horizontal fire shutters).
Area Smoke Detection:	Undetermined quantity of area coverage at this time. Will be required for ESC Section 909 (3 levels open to each other).
Exiting:	Two - Four remote vertical exits required.

OSSC Section 1016.1 Exception # 3 and # 4 permits unenclosed stairway opportunities.

OSSC Section 708.2 (7) permits two stories open to each other without SHAFTS or ENGINEERED SMOKE CONTROL.

The code path proposed at this time is 100% prescriptive for new work and existing non conforming status retained for non work areas. There are no Alternative Materials or Methods (AMM) design strategies proposed at this time.

Design Options:

- A. 3 floors open to each other - Atrium Concept mandates OSSC Section 909 Engineered Smoke Control.
- B. Use auto closing fire alarm activated fire shutters to “separate” off 3rd level of common atmosphere. 2 floors open to each other does not require OSSC Section 909 Engineered Smoke Control.
- C. 2 floors and a mezzanine level. Design to conform to “mezzanine” criteria. A mezzanine can be 50% of below floor area (505 Exception for Type I or II construction with voice evacuation fire alarm).

At present the best opportunity appears to be to close off the lower level from upper two levels with horizontal fire shutters (Option B).

3. Building Code Criteria

The following analysis is provided to assist the owner, architect, building and fire code analyst to understand the code path and fire systems (passive, active, alarm) chosen for this facility.

Land Coverage Compliance

Site Acreage	University Campus
Building Footprint	xx,xxx SF
Perc of Land Cover	Not Applicable

Chapter 3: Intermingled A-3, A-4, B occupancies.

Proposed design code path is NON SEPARATED USES - Section 508.3.3. Differing Occupancies (R-1, A-3) per this code path require no occupancy separations.

In Unlimited Area (UA) building all permitted occupancies are unrestricted in size (area) which makes the concept of “occupancy separations” moot.

Chapter 4: Special Detailed Occupancy Requirements:

Design Options are not settled - Atrium requirements may apply.

Chapter 5 Area, Height and Stories Analysis

Maximum Allowable Single Floor Area/Maximum Allowable Building Area:

Single Floor or Whole Building “area” accrual calculations are not relevant in a UA building.

Single Floor or Whole Building “side yards/frontage” accrual calculations are not relevant in a UA building.

Single Floor or Whole Bbuilding “sprinkler system” accrual calculations are not relevant in a UA building.

Proposed design code path is NON SEPARATED USES - Section 508.3.3. Differing Occupancies (R-1, A-3). There are no occupancy separations for permitted uses.

In Unlimited Area (UA) buildings ALL permitted occupancies are unlimited in area which makes the concept of “occupancy separations” moot.

Other Criteria

Assembly Occupancy Maximum story location (any floor).
Business Occupancy Maximum story location (any floor).

Section 508 - Table 508.2.5: Sprinkler option is used in lieu of 1 HR Fire Barriers.

Section 508.2. Accessory Occupancies - Not Relevant for a UA building.

Special Treatment Areas:

None. (Normally used for special permissions to avoid Assembly uses in non assembly buildings per Section 303.1)

Chapter 6:

Table 601: This building uses the standard Chapter 6 approach using Type I B construction:

1.	Structural Frame:	2 HR Integrity Protection.
2.	Exterior Bearing Walls	2 HR Integrity Protection.
3.	Interior Bearing Walls	2 HR Integrity Protection.
4.	Interior Non Bearing Walls	0 HR Integrity Protection.
5.	Floor/Clg Construction	2 HR Integrity Protection.
6.	Clg/Roof Construction	1* HR Integrity Protection.

* Footnote b applies for areas of the building where ALL PORTIONS of roof structural steel is above 20 FT above the floor or a fuel load location - roof can be non rated. Columns from floor to roof must be 1 HR rated.

Table 602:

1.	Exterior Walls: 0 - 30 FT to PL:	Opening Protection Required.
2.	Exterior Walls: 5 to 30 FT to PL:	1 HR FRR Integrity Protection.
3.	Exterior Walls: + 30 FT to PL:	0 HR FRR Integrity Protection.

Chapter 7:

Definition: FRR = Fire Resistance Rated

Section 705: Exterior Walls Wall Ratings and Opening Protection - See Chapter 6.

Section 706: Fire Walls: FIRE WALL Minimum 3 HR Separation required between Esslinger Hall and Student Red Center (new and existing) due to differing Type of Construction. Wall Stability Requirements apply (independent collapse Section 706.2.

Section 706: Fire Walls:	NOTE: This is not a PARTY WALL (no openings allowed in PARTY WALLS).
Section 707: Fire Barriers	1- 2 HR fire barriers required for vertical shafts, exit enclosures, elevator equipment room(s), few high hazard rooms.
Section 708: Shaft Enclosures	1- 2 HR shafts. Shafts normally requiring 1 HR for 3 floor connection in this case are required to be 2 HR (shaft penetrates 2 HR floor system). 1 ½ HR Fire Smoke Dampers (FSD's) required at openings except where design utilizes one of the exceptions. Example: sub ducting for continuous exhaust duct openings (Exc # 2).
Section 708: Unenclosed Stairs:	Unenclosed Central Stair to utilize section 708.2 Exception 2.1 - 2X opening size permitted, close spaced sprinklers, 18 inch draft curtain surrounding opening.
Section 708: Elevator Shafts	Elevator openings to have 1 ½ HR auto closing fire door with smoke rating OR area of shaft/elevator lobby to be 2 HR enclosure – 2 HR supported.
Section 708.14: Elev Lobbies	Not Required - Exception # 4.
Section 709: Fire Partitions	None Required.
Section 709: Fire Part's Egress	Corridors - 0 HR FRR - Table 1018.1 Sprinkled. Doors - No rating, auto closers not required. Construct as a "smoke partition".
Section 710 Smoke Barriers	No smoke barriers
Section 711 Smoke Partitions	No smoke partitions - sprinkled corridors effectively are constructed as smoke partitions.
Section 712 Horiz Assemblies	Floor/Ceilings to be 2 HR throughout.
Section 713 Penetrations	Comply with fire stop systems at FRR membranes.
Section 714 FR Joint Systems	Comply with fire stop systems at FRR membranes.
Section 715 Opening Protectives	Fire Doors, Smoke and Draft Control Doors at Fire Rated membranes. Corridors are not "fire or smoke" rated membranes in this building. Shafts Required - unless Exception used.

Section 716 Duct & AT Openings: FSD's at shaft openings unless Exception is implemented.
FD's required at horizontal membrane openings.
Some exceptions may be applied - unknown at this time.

Section 717 Concealed Spaces: Non combustible concealed spaces - sprinklers or draft stops, fire blocking not required.

Sections 718 – 721: No Specific Comments.

Chapter 8:

Assembly A-3 Spaces:	Interior Finish Minimum Class C Sprinkled per 903.3.1.1.
Assembly A-3 Egress:	Interior Finish Minimum Class B Sprinkled per 903.3.1.1.
Occupancy B Spaces:	Interior Finish Minimum Class C Sprinkled per 903.3.1.1.
Occupancy B Egress:	Interior Finish Minimum Class C Sprinkled per 903.3.1.1.

Chapter 9:

Section 901, 902: No Comment

Section 903 Fire Sprinklers: 903.3.1.1 (NFPA 13) system required by Chapter 9.
Building IS ELIGIBLE for ALL sprinkler "exceptions".
Existing Areas - extent of QR sprinklers is unknown.
All wet systems proposed. At this time there is not specific known need for dry or antifreeze systems . IT rooms may require pre- action specialty systems.

Sprinkler(s) required in elevator hoist way pits/elevator machine rooms (prescriptive).

Existing sprinklers assumed to be adequate (no deficiency).

Existing 6" UG Service expected to remain adequate for currently sprinkled areas.

New 6" fire service for new construction areas.

Sprinkler FDC location to be confirmed.

Backflow Prevention to be confirmed.

Expected Fire Flow Static: 65 PSI +/-.

Section 903 Fire Area	FIRE AREA Compartmentation Not Required due to sprinklers.
Section 904 Auto Exting	No Class I cooking hoods/surfaces.
Section 905 Standpipes	Not required (30 FT Rule).
Section 906 Portable Fire Exting.	May be deleted (QR, “A”, B”). University decides.
Section 907 Occupant Notification	907.2.21 Occupant Notification (voice evac) required due to over 1,000 Occupant Load.
Section 907 Manual Pull Stations	One Manual Pull Box - provided per FD direction.
Section 907 Automatic Detection	Non Atrium Condition - Detection for elevator recall, minor other purposes, HVAC shutdown, FSD’s, etc.
Section 907 Automatic Detection	3 Level Open to Each Other Atrium Condition - Detection Throughout all open areas per fire modeling.
Section 908 Emergency Alarm	Not Required.
Section 909 Eng Smoke Control	Required for 3 levels open to each other condition. “Level” can be closed off with horizontal fire shutters on fire alarm with appropriate auto detection.
Section 910 Passive Smoke Vents	Not Required..
Section 911 Fire Command Ctr	3 Level Atrium Condition - Not Required.
Section 911 Fire Command Ctr	2 Level Atrium Condition - Required.
Section 912 Fire Dept Conn	FDC’s to be coordinated with Fire Department.
Section 913 Fire Pumps	Not expected to be required.
Section 914 Shaft Marking	Required (signage for emergency responders).
Section 915 Radio Coverage	Section 510 - Over 50,000 SF - Radio Coverage Requirement to be worked out with Fire Dept - NEW REQUIREMENT.
Chapter 10:	Design Approach: Prescriptive Compliance to be provided. Vertical exit enclosures (VEE’s) to be 1 - 2 HR. Section 1016.1 Exc # 3 and # 4 for unenclosed stairs to be

utilized. Section 708.2 Except 2.1 to be used for stairway opening protective concept wherever possible.

Travel Distance Maximum (A) is 250 FT.
Exiting Concept is not complete at this time.

Section 1025 Horizontal Exit Upper Gym/Patio concept has been proposed to City.

Oregon Fire Code (OFC) Compliance - Fire Safety Design Narrative Topics:

Building code analysis, fire code analysis, occupancy information, automatic sprinklers, fixed suppression systems, fire alarm systems, electronic detection, sequence of operations, passive components, compartmentation/ FS dampers, smoke control systems, hazardous materials, fire department response, site conditions, water supplies/ site fire flow, site fire hydrants, FDC's, fire fighter risk conditions, fire department access/fire control efficiency, exposing buildings, unusual fire or smoke spread issues, unusual human isolation issues, interior finish ratings, coordination with security, egress compliance and egress efficiency.

FIRE AREA COMPARTMENTATION	Not Required.
DRAFT STOPPING	Not Required.
FIRE SMOKE DAMPERS	Required for SHAFTS or use Exceptions
SECTION 707 SHAFTS	2 HR Required (2 HR Floor Systems) or use Exceptions.
FIRE DEPARTMENT RESPONSE	<p>The Eugene Fire Department is responsible for fire suppression and emergency medical response. The department has numerous stations with the closest being at 17th and Agate, ½ mile away. The fire department is a modern paid staff fire department.</p> <p>Early FD notification is expected via building alarm signal from the sprinkler flow switch, detection or manual pull station.</p>
SITE CONDITIONS	There are no unusual terrain conditions
SITE FIRE FLOW	<p>Expected to be Adequate (Required is 1,500 GPM), Available is 2,500 - 3,000 GPM.</p> <p>The highest sprinkler GPM demand is about 300 GPM (attic) at 40 PSI.</p>

The water supply does not significantly change in flow capacity or pressure seasonally. The water supply is considered “year around reliable”.

Fire hydrants along North and West streets are public hydrants. Fire hydrants along East and South sides are private fire hydrants (backflow prevention is in place).

SITE FIRE HYDRANTS

Civil Engineer reports 3 plus hydrants in vicinity. One hydrant (south end) to be relocated..

FIRE SPRINKLER FDC

Existing at NW corner of Esslinger to remain.

New FDC at SE to be provided along fire lane.

FIRE FIGHTER RISK CONDITIONS

No unusual conditions discernable. No fast spreading fire contents are expected (aerosols, flammable liquids). All flammables expected to be within MEQ limits. No propane or compressed gas containers. Limited combustibile concealed spaces. Good Access from 4 sides.

EXPOSING STRUCTURES

Esslinger Hall is not considered an exposing structure due to the FIRE WALL. All other sides have 20 + FT separation.

FPE FIRE RISK ASSESSMENT ISSUES

There are no apparent unusual human isolation situations.

FIRE CODE SUMMARY

There are no special risk hazards expected per OFC detailed occupancy chapters. Issues of open flame devices are handled by university policy.

The building is eligible for all “sprinkler” exceptions, trade-ups, extensions, etc, listed in the OSSC/OSFC/OSMC.

In the Interest of Fire Safety Excellence,

CREIGHTON ENGINEERING INC.



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UO Projects Stud Rec Ctr SD Code Summary FSDN 1.wpd