

## ADDENDUM 4

DATE: September 14, 2017  
PROJECT: SPH MEP Upgrades  
RFP NO: 744-R1726  
OWNER: The University of Texas Health Science Center at Houston  
TO: Prospective Proposers

This Addendum forms part of and modifies Proposal Documents dated, June 30, 2017, with amendments and additions noted below.

**Bid deadline has been extended:**  
**RFP due date: September 26<sup>th</sup>, 2017 at 2PM**  
**HSP due date: September 27<sup>th</sup>, 2017 at 2PM.**

**Alternate 5 (Chilled water heat exchange equipment installation) has been removed from the bid. When submitting pricing, please write "N/A" on the pricing line for this Alternate.**

Asbestos containing materials requirements – UTHSC will provide abatement of any asbestos containing materials. We will coordinate the abatement with the winning contractor based on their construction schedule.

Regarding taking equipment across the Lobby floor at Two:  
Proper precautions should be taken when moving heavy equipment on the second floor not to damage existing finishes. Weight should be spread across the floor with a minimum of 3/16" metal plate.

Regarding possible hand-digging outside the TECO pit/garden:  
Due to the amount of utilities in the courtyard area, it is highly suggested that a method of excavation be used to help prevent damage to existing lines. It will be the responsibility of the general contractor to complete this excavation with no damage to the utilities in the area.

**The following questions were submitted prior to the Question Deadline:**

**NOTE:** Power sources for welding are not available from the facility's electrical power system. Contractor must provide power source independent of the facility.

1. I've been reading over the Request for Proposal and some of the other documentation and some places I see it referencing asbestos abatement but in other areas not. Can you please tell me if this project will involve asbestos abatement or has all the asbestos material already been removed?  
The project is currently being tested for asbestos and if any asbestos is found, it will be abated by UTHSC using our currently contracted abatement company

2. Will there be any structured cabling for bid?  
There will be no structured cabling on this project.

3. Does your front ends cover the question of tree protection?  
Tree protection will be the responsibility of the general contractor. No certified arborist will be required, however, sufficient protection should be installed to prevent physical damage to the trees during any outside work.

4. Are there any locations in the building that contain vibration-sensitive equipment?

The University has identified several locations where there is vibration sensitive equipment and will coordinate the on-going work with the labs and the awarded bidder.

5. Specification 23 73 23 Section 2.1 does not list York Custom as an acceptable manufacturer. Please confirm that York Custom is an acceptable manufacturer.

We would not take exception to York Custom being added as an acceptable manufacturer under Section 237323 paragraph 2.1 provided that the following conditions are met:

1. Compliance with the requirements of Paragraph 2.3.D. if the first sentence is modified to allow for structural stainless steel in addition to structural aluminum. The request to provide a carbon steel perimeter base channel is not acceptable.
2. Receipt of an updated specification compliance statement based on Section 237323 revised 7/28/17 under addendum #1.

Should you receive these items prior to project deadlines, and without exception by UTHSC, we would make the necessary revisions to the specification via addenda to allow for the technical variances requested by York.

6. All mechanical schedules on M002 have schedule notes but there is no association of the notes to individual units. Manufacturers have no way of knowing which note applies to which AHU or AHU component. Please clarify which schedule notes apply to which AHU or AHU component.

Please reference schedule sheets revised 7/28/2017 Addendum #1. Schedule entries are now referenced to schedule notes.

7. M002 Air Handling Unit Schedule Note 2 calls to provide 300 Series Stainless steel liner or coat interior with corrosion resistant coating. Specification Section 23 73 23 2.3.A calls for an interior liner that shall be 0.032 smooth aluminum with mill applied, industrial grade, and high solids polyurethane paint. Please clarify which specification to adhere to.

Please reference sheet M002 and section 237323 both revised 7/28/2017 Addendum #1. Stainless liner or coating requirement of note 2 has been deleted. Interior aluminum liner thickness has been revised.

8. Specification 23 73 23 Section 2.4 C states plenum fans shall be provided with a safety cage around the wheel or the unit shall be provided with a fan shut down door switch. Section 2.9 A requires fan shutdown door switch. Please confirm which safety measure is to be provided.

Please reference section 237323 revised 7/28/2017 Addendum #1. The safety switch is retained and the safety cage requirement is deleted. Please note revised fan inlet protection requirement.

9. Specification 23 73 23 Section 2.4 E states that the fans shall be extruded aluminum fan wheel with air foil blades and that steel construction is NOT acceptable. Section 2.4 I contradicts this by stating all fan wheel and housings shall be hot dipped galvanized steel or coated with zincilate. This contradiction also exists in Notes 4&5 on the Fan schedule on M002. Please clarify what construction specification should be followed.

Please reference section 237323 revised 7/28/2017 Addendum #1 and disregard notes 4 & 5 on sheet M002. Coatings are not required for aluminum fan wheels.

10. Specification 23 73 23 Section 2.6.A states all fans shall be direct drive. The Fan schedule on drawing M002 lists three fans as housed; SF-BH, SF-11, and SF-OA1. Housed fans are belt driven, so they conflict with the spec verbiage. Please confirm if manufacturers are to follow the spec or the fan schedule.

Please reference section 237323 revised 7/28/2017 Addendum #1. Provide belt drives for housed fans per the fan schedule.

11. Specification 23 73 23 section 2.4-D requires minimum class 3 fans. Fan schedule on M002 shows fan class ranging from class 1 to class 3. Please clarify which needs to be adhered to.

Please reference sheet M002 revised 7/28/2017 Addendum #1. Provide class III fans.

12. Fan Schedule Note 2 on M002 states to have HOA motor starter in a NEMA 1 enclosure. Note 3 in the same schedule states the fans shall have VFD. Please confirm which note applies to which AHU. **Please reference sheet M002 revised 7/28/2017 Addendum #1. Provide VSD for all supply fans scheduled.**

13. Specification 23 73 23 2.6 B states variable frequency drives supplied should be tested at the AHU factory with the motor provided, and balanced per Specification Section 23 29 23 2.04C. The Variable frequency drives appear to be wall mounted and will likely be provided by a trade other than the AHU manufacturer. Please confirm that testing and balancing in the field by owner contracted Balancing firm is acceptable.

**Please reference section 237323 revised 7/28/2017 Addendum #1. The requirement for factory VFD testing under paragraph 2.6 has been deleted. Please note revised paragraph 3.2.D regarding field vibration testing.**

14. Specification 23 41 00 Section 2.1 does not list Koch as an acceptable filter manufacturer. Koch Air filters are in compliance with Specification 23 41 00. Please confirm that Koch air filters are an acceptable filter manufacturer.

**Koch filters are acceptable as a substitute air filter manufacturer.**

15. Specification 23 73 23 Section 3.2 A.&B. defines factory testing of Unit Casing Leakage, casing deflection, and Airflow. Please confirm that (1) unit only will be factory tested for Casing Leakage, deflection, and airflow.

**Please reference section 237323 revised 7/28/2017 Addendum #1. Please note revised paragraph 3.2.C regarding field casing leakage testing for all units. Requirements for factory leakage testing have been deleted.**

16. Specification 23 73 23 Section 3.2 C.&D. defines field testing of Unit Casing Leakage and fan/motor vibration. Please confirm that (1) unit only will be field tested for Casing Leakage and fan/motor vibration.

**Please reference section 237323 revised 7/28/2017 Addendum #1. Please note revised paragraphs 3.2.C & D. All units are required to be field tested.**

17. RFI AHUs 23 73 23

2.3.A AHU coating – Spec. with a 1000 Hr salt spray resistant coating for an all aluminum indoor unit? Also since these are field built units the paint will easily damage during assembly.

**REFERENCE 237323 REVISED 7/28/2017 ADDENDUM #1. COATING IS REQUIRED FOR UNIT CASING EXTERIOR.**

18. OPFC AHUs in the past have R12 insulation specified. Is R-20 foam insulation acceptable for an indoor AHU ? Floors only have R -14 spec. which are as critical to condensation as the cabinet walls?

**REFERENCE 237323 REVISED 7/28/2017 ADDENDUM #1. 4" POLYISOCYANURATE R-25 REQUIRED FOR CASING WALLS. R-14 CLOSED CELL RIGID INSULATION REQUIRED FOR DRAIN PANS.**

19. 2.3.C The spec calls for the maximum unit width 72 in . Drain pans 72 in – 8 in cab. = 64 in which will require 2 drain pans sloped left and right. Does the scope include 2 floor drains per unit, left hand and right hand?

**REFERENCE DRAWING SHEETS M505 THRU M508 DRAIN PAN INSTALLATIONS ARE DIMENSIONED ON THE AHU CONFIGURATION DRAWINGS.**

20. 2.9.A Who provides the fan door switch interlock wiring to the VFD ?

**THE CONTRACTOR IS RESPONSIBLE FOR ALL OF THE WORK CONTAINED WITHIN THE CONTRACT DOCUMENTS. THE ENGINEER DOES NOT DICTATE THE CONTRACTOR'S MEANS & METHODS FOR ALLOCATING THE WORK.**

21. 3.2.B.1 Requires SMACNA Class 5 performance but 3.2.C requires 1.5% leakage at rated flow? Which test should be used?

PLEASE REFERENCE SECTION 237323 REVISED 7/28/2017 ADDENDUM #1. THE MAXIMUM ALLOWABLE LEAKAGE FOR FIELD TESTING IS 1.5% AT 8" STATIC PRESSURE.

22. RFI Coils 23 82 16

2.2.C All cooling and heating coils are spec with "copper fins" The heat pipes are exposed to the same conditions and should require copper fins ?

COPPER IS AN ACCEPTABLE MATERIAL FOR THE HEAT PIPE FINS.

23. RFI-0001 Question: Drawing E002 & E007 Call for demo and installation of new 5kV cable to feed the School of Nursing Building. No feeder schedule, load calculations and or location of the SON mV switchgear is reflected on the drawings. Please provide this information for accurate pricing

Reconnect existing feeder.

24. RFI-0002 Question: No fire alarm drawings were issued with the Bid Documents, no panel/circuit designations and locations of new/existing FSDs are reflected to price this scope of work. Please provide a complete FSD schedule, location of each, panel and circuit designation to allow for accurate pricing of this missing scope of work

FA is deferred submittals. Only FDs are added, no new FSDs. Existing FSDs, if any, are covered under their existing circuits being re-fed by new panels.

25. RFI-0003 Question: Drawing E002 & E007 do not reflect the correct conditions of the 5kV MV Switchgear in the TECO Pit. Correct conditions reflect (2) 4" RGS conduits feeding the L2 Central Plant mV XFMRs and Switchgear. Please provide the following information for accurate pricing: Feeder schedule, Total Load Calculations

Feeders are not being replaced. Disconnect and re-terminate existing.

26. RFI-0004 Question: Drawings E114 Reflects an existing transformer in the TECO Pit. Per site walk, this transformer appears to be abandoned, seeing as there are multiple open, exposed conduit knock outs in the transformer. Also, there is a Meter can and panel adjacent to this transformer. Please clarify if the transformer, meter can and panel are abandoned and require to be demoed from the pit.

Coordinate for CPE to remove.

27. RFI-0005 Question: Drawing E114 Clearly calls for a new manhole to be installed in the mV feeders from the TECO Pit to the Stainless Junction box at the base of SPH bld. No dimensions, accessories, bracing, racks, grounding or sump pump power is provided for this new manhole. Please provide all required information, including sump pump power, controls and location of controller if applicable.

This falls under contractor means and methods. There is no sump pump in electrical manhole.

- 1) RFI-0006 Question: The bid drawings make no reference to temporary power requirements, durations, preferred vendor, size of generators required for full load of blds, location of temporary generators, fuel consumption, type of fuel (Diesel or Natural Gas) and location of Above ground temp fuel tanks. Please provide the following critical information needed for General and Electrical Contractors to price  
Full building loads (kVA at 4160V) at SPH, SON and Central Plant.(All 3 buildings are fed from the TECO Pit mV Switchgear)  
Size of each Generator to maintain 120% of building loads for each buildings  
Location for staging temporary generators and temporary fuel tanks  
Sequence of Operations and Method of Procedures for implementation of temporary generator and fueling systems  
Duration of rental, based on Sequence of Operations activities required for temporary generators (Not provided)  
Preferred vendor for temporary generator rental  
Average fuel consumption per generator/hour/building/day/overall duration  
Temporary Fuel Oil controls/system for these units while in operations.

This falls under contractor means and methods. Match utility transformer for total load.

Clarification response:

- 1) Length of time for the generator for the switch over –6 weeks
- 2) Size of generator required - 1-750KW for SON and 2-750KW for SPH
- 3) What size are the wires feeding from centerpoint and the gear in this area?
  - a. Sheet E007 shows information for both feeders to SPH. To repeat: each is #500kcmil Cu with 5 kV, MV-105, EPR, 133% insulation in 5" schedule-80 PVC underground and 5" RMC above-ground.
  - b. Feeder from CPE transformer to the 5 kV lineup in the TECO pit is (2 sets) #500kcmil Cu with 5 kV, MV-105, EPR, 133% insulation in 6" schedule-80 PVC conduit installed underground.
  - c. Conduits from CPE switch to CPE transformer are 6" schedule-80 PVC installed underground.

28. RFI-0007 Question: During the Walkthru on 7/28/2017, it was stated that UTHealth was working on the T&C package with the energy provider CNP. Based on preliminary T&C package, can the owner provide a timeline and duration of activities by CNP. These dates and durations will dictate to the GC and EC when the structural steel grating needs to be installed, when the temporary power provisions will need to be performed, when the new outdoor substation needs to be placed and any requirements of the electrical contractor in the raising of the existing services (transformer and switch of CNP)

The Owner is actively coordinating this information with CNP, however, it is not known how long it will take CNP to complete their work at this time. This will be closely coordinated with the winning contractor to alleviate as much down time as possible.

29. RFI-0008 Question: During the Walkthru on 7/28/2017, it was noticed that on several floors the existing HDP panels currently installed were tied directly to the buss risers, with no provisions to remove the backcans, and install the new cans without the need for multiple extended outages. On these applications when time is of the essence to demo the old equipment, install and energize the new equipment in constricted working space, can the existing can remain and furnish all new interiors and covers. The existing can will be repainted in place.

The existing can will be repainted in place.

30. The Lab room B05 appears to have Explosion proof conduit and boxes in that room. Please confirm if there are any intrinsically safe requirements for this lab space.

No explosion proof construction is required for this particular room.

31. The Schedules shown on M004 show all valves to have a "C" coating which would typically be for highly corrosive air streams, which is not what I would expect for Supply and General exhaust applications. Most Fume Hood require a "B" coating, so please confirm what is required.

PROVIDE AIR VALVES FOR MAKE-UP AND GENERAL EXHAUST DUTY WITH TYPE "B" COATING IN LIEU OF SCHEDULED COATING. PROVIDE AIR VALVES FOR HOOD EXHAUST DUTY WITH TYPE "C" COATING.

32. It appears that SAV-B-1 is ducted in series with VAV-BH-1-4 shown on M200, which will not work. Can you confirm if this is accurate?

REFERENCE SHEET M200 REVISED 7/28/2017 ADDENDUM #1. THE CONFIGURATION HAS BEEN CHANGED TO FEED SAV-B-1 DIRECTLY FROM THE MAIN SUPPLY DUCT AND A REHEAT COIL HAS BEEN ADDED DOWNSTREAM OF THE AIR VALVE. VAV-BH-1-4 IS RETAINED ON A SEPARATE SUPPLY BRANCH.

33. Please confirm that there is NO required Upgrade or new lab control work shown for the 8<sup>th</sup>, 9<sup>th</sup>, or 10<sup>th</sup> floor

REFERENCE DRAING SHEETS REVISED 7/28/2017 ADDENDUM #1. THERE ARE NO LABS ON THE 8<sup>TH</sup> THRU THE 10<sup>TH</sup> FLOORS.

34. Air Handling Unit Schedule Omissions for floors 8-10

There is no AHU detail provided for AHU-11-1. Please provide a detail drawing for AHU-11-1.  
**Detail will be added to a drawing sheet via addenda.**

35. Air Handling Unit Schedule on Drawing M-002 depicts that AHU-8E through AHU-10W are not to be supplied with a preheat coil and OA filter. However, the AHU detail drawings on M-510 and M-509 show preheat coils and OA filters supplied with the air handling units. Please confirm if preheat coil and OA filters are to be provided for AHU-8E through AHU-10W.

**Yes, preheat coils and OA filters were omitted from the schedule sheet and will be updated via addenda.**

36. Per RFI question #2, if AHU-8E through AHU-10W require preheat coils and OA filters please provide the performance data. The preheat coil and precooling coil schedule does not provide performance data for these coils.

**Performance data will be included in updated schedules via addenda**

37. AHU Installation Detail drawings M506 through M511 show outward swing on the fan section doors. The direct drive plenum fans create positive pressure in the plenum which could create a safety hazard. Please confirm that the door swing should be inward.

**Provide positive pressure module sections with inward access door swings in lieu of outward access door swings. Drawing sheets affected will be updated via addenda.**

38. Please provide a specification for the fan coil units scheduled on drawing M003

**A fan coil specification will be issued via addenda.**

39. 2.3.D Can we substitute structural 304 stainless steel base for aluminum ?

**Yes, we will modify Section 237323 via addenda to allow for structural aluminum or stainless steel perimeter support channels.**

40. Attached is a prior approval request for Maxi Therm heat exchangers. Let me know if you have any questions.

**We would not take exception to the Maxi-Therm heat exchangers. Assuming there is no exception on UTHSC part, we will issue revised heat exchanger specifications via addenda to allow this vendor and make provisions for the specific technical provisions in their compliance statement.**

41. The drawings state "replace water softener tank with same size tanks" and it gives little specific information other than that. Please provide make and model number of the existing system.

WATER SOFTENER SCHEDULE													
TAG	TYPE	FLOW CAPACITIES				RESIN CAPACITIES		RESIN TANK			BRINE TANK		NOTES
		NOMINAL	PRES DROP	PEAK	BACKWASH	EXCHANGE	VOLUME	CONNECTION	ASME M.W.P.	VOLUME	VOLUME	SALT	
		(GPM)	(psid)	(GPM)	(GPM)	(GRAINS)	(FT^3)	(NPS)	(PSIG)	(GAL)	(GAL)	(LBS)	
WS-1	DUPLEX	300	15	450	55	1,000,000	40	4" Flanged	100	550	600	2,000	ALL

NOTES:

1. PROVIDE SOFTENER WITH MANUFACTURER'S DIGITAL PROGRAMMABLE CONTROLLER AND BACKLIT LCD DISPLAY IN NEMA 12 ENCLOSURE.
2. PROVIDE FULLY FUNCTIONAL SKID MOUNTED UNITS COMPLETE WITH MANUFACTURER INSTALLED PIPING, VALVES, WIRING, AND ACCESSORIES.
3. PROVIDE MANUFACTURER PRE-WIRED UNITS WITH SINGLE POINT 120 VAC ELECTRICAL CONNECTION.
4. PROVIDE RESIN TANKS FABRICATED, TESTED, AND LABELED IN COMPLIANCE WITH ASME STANDARDS.
5. PROVIDE RESIN TANKS AND ALL POTABLE WATER EXPOSED INTERNALS WITH NSF APPROVED MATERIALS OR LININGS.

42. Specification 23 09 23 Section 2.6.5 list approved manufacturers as Belimo F or K series, or Promotion/ Schischek Inc. D4/D5.S Series. Please confirm JCI is an acceptable manufacturer.  
**JCI actuators are acceptable provided that they are NOT equipped with spring returns.**

43. Drawing M701 OAHU flow diagram shows 2 cooling coils and no hot water coil. The dual duct AHU listed for floors 3 through 7 show two cooling coils and no hot water coil in the filter box area. Please confirm if the control diagram is accurate. If the diagram is not accurate then please provide the correct controls diagram.

**The OAHU flow diagram will be modified to show a preheat and cooling coil configuration by addenda. M701 revised 7/28/17 addenda #1 updated the dual duct AHU for floors 3 to 10 to indicate heating and cooling coils as intended. Sheet M701 will be updated by addenda to properly reference these diagrams.**

44. Drawing M701 dual duct AHU for floors 3rd through the 7th, shows a filter at the OA louver intake, but does not show a damper. M704 shows a point count for an OA damper. Please confirm if the filter is to be a filter or OA damper.

**M701 revised 7/28/17 addenda #1 updated the dual duct AHU for floors 3 to 10 to indicate the dampers and air filters in the intended configurations.**

45. Drawing M702 dual duct AHU control diagram is displayed as a single duct unit. Please confirm whether this unit is single duct.

**M702 revised 7/28/17 addenda #1 updated dual duct AHUs as intended. The title block for AHU-BH-1 will be updated by addenda to identify the AHU as a VAV system.**

46. Drawing M704 point lists shows point counts for the penthouse AHUs; however, there is no accompanying controls diagram for the penthouse AHUs. Please provide the controls diagram(s) for the penthouse AHUs.

**See Detail 2 on M704 dated 7/28/17 addenda #1 which added the requested control diagram**

47. Drawing M702 controls diagram shows there to be four dampers. Drawing M704 only has one point accounted for the dampers. Please confirm that there are 3 additional point that need to be added to the points list.

**See updated points list on M705 revised 7/28/17 addenda #1 which added dedicated control points for each independent damper.**

48. There is no controls diagram supplied for the chilled water system; however, M704 shows points listed for chilled water flow meters and water temps. Please provide the chilled water system diagram.

**See updated points list on M705 revised 7/28/17 addenda #1 which deleted point references to the existing CHW system.**

49. Drawing M002 and M410 show that preheat and precooling coils are to be in AHU-8E, 8W, 9E, 9W, 10E, 10W. However, Drawing M002 schedule does not show and provide data for these coils. Please confirm that these coils are being provided and the associated point count.

**Precooling coils were added to M002 revised 7/28/17 addenda #1. M002 will be revised by addenda to schedule the preheating coils.**

50. Drawing M002 AHU and coil schedule for AHU-11-1 states that a preheat coil exists. Drawing M704 does not account for the points for a preheat coil for AHU-11-1. Please confirm if there is a preheat coil for this unit and its point count.

**The penthouse does not require heating. Drawing sheet M002 will be revised by addenda to remove the reference to the preheat coil. The points schedule on M705 revised 7/28/17 addenda #1 was updated to remove the heating coil points from the penthouse AHU.**

51. Alternate units AHU-8E, 8W, 9E, 9W, 10E, and 10W do not have controls diagrams or points associated with them. Please confirm the sequence of operations and points count for these units.

A control diagram for the alternate was added to M701 revised 7/28/17 addenda #1. A points schedule for the alternate will be added by addenda.

52. There are no controls diagrams for the air handling units on the 8th through 10th floor. Please provide the controls diagrams for these units.

M701 revised 7/28/17 addenda #1 includes a controls diagram for the base AHUs on floors 8 to 10.

53. Drawing M701 shows a relief fan and associated control damper for air handling units on the 3rd through 7th floors (currently assuming 8th through 10th as well). Drawings M406, M408, and M410 do not show a relief fan or damper on the floors plans. M002 does not have a schedule for the relief fans. Please confirm if relief fans are being provided, and please provide the schedule performance, controls diagram, and associated points.

Relief fans are not required. M701 revised 7/28/17 addenda #1 deleted the fan.

54. Specification 01 23 00, 3.1 (alternate 2) lists a deductive alternate to refurbish the distribution switchgear in the TECO pit. Please confirm if there is any controls scope of work associated with the refurbishment of the switchgear.

There is no intent for BAS monitoring of any of the equipment in the TECO pit.

55. Specification 01 23 00, 3.1 (alternate 5) lists a conversion of directly coupled to indirectly coupled chilled water loop for the new plate and frame heat exchangers. Please confirm if there is any controls scope of work associated with the conversion of the chilled water system.

The scope currently does not include this CHW heat exchanger, therefore there is no controls scope associated with it.

56. Specification 23 09 23 Section 2.10 lists approved manufacturers of carbon dioxide sensors of Veris CDLS or CWLS. Please confirm that Johnson Controls is an acceptable carbon dioxide sensor manufacturer.

JCI wall mounted carbon dioxide sensors are acceptable.

57. Specification 23 09 23 Section 2.10 lists approved manufacturers for current switches as Veris Hawkeye H908 or equal. Please confirm that Johnson Controls is an acceptable current switch manufacturer.

JCI current switches are acceptable provided they are provided with adjustable current trip settings.

58. The Fan Schedule Drawing M003 lists five fans being added; EF-ION, EF-PI, and lab fans. However, there are no controls diagrams to accompany them. Please provide controls diagrams and the associated points for these fans.

M703, M704 and M705, all revised 7/28/17 addenda #1 added controls diagrams and associated points for the scheduled exhaust fans.

59. Drawing M401, Note 17, states to provide a new thermostat for the new FCU. Please confirm if the new thermostat is provided by the mechanical contractor for stand-alone operation or if it is to be provided by the controls contractor for tie in to the BAS.

All scheduled FCU's are intended to be controlled via the BAS system. Control drawings and points lists will be updated to include the FCU controls by addenda.

60. Drawing M703 shows the steam HX as having two DO solenoids. Please confirm if the design intend was 1/3 or 2/3 control using control valves. If solenoids are to be provided as design, please confirm the party responsible for furnishing and installing the solenoids.

The design intends to provide steam regulator valves with mechanical temperature pilots. The solenoid pilot override valves were removed from M703 on 7/28/17 by addenda #1. The steam regulator valve CVs for each HX are engineered to operate in series tandem for staged temperature regulation to enhance individual HX turndown by manual setpoint offset at the mechanical regulator (not a BAS function). The documents do not dictate subcontracting responsibilities which are the prime contractor's means and methods, however, these mechanical regulators are normally not part of the BAS scope.



61. Drawing MEP100 show 2 motorized dampers for the lab exhaust fans. Please confirm if these dampers are integral to the lab controls or if they are the responsibility of the BAS.  
These dampers are not specified or scheduled to be provided integral with any specific equipment package. The documents do not dictate subcontracting responsibilities which are the prime contractor's means and methods, however, these dampers would normally be provided under the BAS scope.

62. Specification 23 09 23 does not make mention of any metering controls or integrations. However, Specification 23 06 20 talks about metering for the hot water, chilled water, and steam systems. Please confirm if there are controls specifications associated with metering these systems.  
Existing CHW Cooling and Steam Heating utility metering is already in place at the facility and is not included in the scope of this work. Field devices are indicated on M703 revised 7/28/17 addenda #1 for the new HW heating system to provide heating demand sub-metering via the BAS.

63. Specification 23 06 20 Section 2.9, Hydronic Specialties for Building Main Hot Water, Chilled Water and Steam Integrating Meters, states "to furnish and install complete transit time Controlotron Metering Systems." The specification continues to state that the "building EMS shall be programmed and capable of M&V protocol as required by LEED." Please confirm if these meters exist, and if they are applicable to this project. If the meters exist, then please provide the BAS scope for these meters.  
Disregard the requirements of Section 230620 paragraph 2.9 which will be deleted by addenda. These are UT Systems boilerplate items that are not applicable to this project.

64. Specification 23 06 20 Section 2.10, Steam Integrating Meters, states "to furnish and install as per detail on drawings in the condensate return system." The specification continues to state that the "building EMS shall be programmed and capable of M&V protocol as required by LEED." There is no indication of this being provided in the mechanical plans or the control diagram. Please confirm if these steam meters exist, and if they are applicable to this project. If the meters exist, then please provide the BAS scope for these meters.  
Disregard the requirements of Section 230620 paragraph 2.10 which will be deleted by addenda. These are UT Systems boilerplate items that are not applicable to this project.

65. Specification 23 06 20 Section 2.12 Air Handling Unit Water Flow Measuring and Balancing System, states "to furnish and install a complete Barco Venturi Flow Metering System as manufactured by Aeroquip Corporation." These are not shown in the drawing nor the controls specification. Please confirm if these are to be provided, and by whom. Also, please confirm if there is scope of work associated with the BAS for these AHU meters.  
Disregard the requirements of Section 230620 paragraph 2.12 which will be deleted by addenda. These are UT Systems boilerplate items that are not applicable to this project.

66. Specification 23 09 23 Section 1.2.B states "Installation of all line voltage power wiring including 120V power to each terminal unit and DDC panel by Division 26." Specification 23 09 23 3.2 states "Division 26 shall provide 120 volt power to all DDC Controllers specified in paragraph 2.3 of this Section." However, the electrical drawings do not show power being brought to the VAV boxes. Please confirm that DIV 26 is providing 120V to the VAV boxes.  
Please reference Section 230923 revised 7/28/17 addenda #1, paragraph 1.1.C. Please note that any power required by the BAS in excess of that shown in the contract documents shall be provided as part of the scope of this work at no additional cost to the owner.

67. Specification 23 09 22 Section 2.6 list approved manufacturers for control valves as Valve Solutions and Belimo. Please confirm that Johnson Controls is an acceptable control valve manufacturer.  
JCI control valves are acceptable.

68. Specification 23 09 23 Section 2.6 states that modulating globe valve types are to be used for control of the hot and chilled water systems. Please confirm that Johnson Controls characterized ball valves are acceptable for the hot and chilled water systems.

Characterized ball valves are acceptable for modulating control valve applications provided they are not pressure-independent type.

69. Specification 23 09 23 Section 2.10 lists approved manufacturers as BAPI model ZPS series with display or approved equal for air and filter pressure sensors. Please confirm that Johnson Controls is an acceptable air and filter sensor manufacturer.

JCI filter pressure sensors are acceptable.

70. Specification 23 09 23 Section 2.10 lists approved manufacturers as Rosemount Series 1151 or equal for water differential pressure sensors. Please confirm that Johnson Controls is an acceptable water differential pressure sensor manufacturer.

JCI differential pressure sensors are acceptable.

71. Specification 23 09 23 Section 2.10 lists approved manufacturers as Powers Static Pressure Air Flow Switches Series SW 141 or equal for differential pressure switches on fans and filter banks, and Penn P74 for differential pressure switched on pumps. Johnson Controls manufacturers all three of these types of pressure switches. Please confirm that Johnson Controls is acceptable.

JCI static pressure switches are acceptable.

72. Specification 23 09 23 Section 2.10 lists approved manufacturers as Precon or Veris for temperature sensors. Please confirm that Johnson Controls is an acceptable temperature sensor manufacturer.

JCI standard platinum RTD temperature sensors are acceptable.

73. Drawings M003, M406, M408, and M410 all show freeze protection pumps on the hot deck coils. However, there are no controls diagrams or points associated with the freeze protection pumps. Please confirm the controls sequence of operations for the freeze protection pumps and the associated points.

BAS controls requirements will be added to the documents via addenda.

74. Drawing M003 shows condensate pumps for steam heat exchangers. However, nothing is shown in the controls diagrams. Please confirm the controls sequence of operations for the steam heat exchangers and the associated points.

Reference M703 and M705, both revised 7/28/17 addenda #1 for heat exchanger BAS control requirements. Steam condensate units are intended to operate via integrated local control provided with the units.

75. Specification 23 09 23 Section 1.2.C states there is related BAS scope of work listed in specification sections 23 36 00 Air Terminal Units Controls, and specification sections 23 09 93 Control Sequence – HVAC on Drawings. Specification 23 09 93 does not exist. Sequence of operations only exist for the hot water system on drawing M703. Please provide the sequence of operation for all HVAC systems and other MEP related systems that are to be associated with the EMS.

The scope includes provision of new terminal unit controllers and field devices for scheduled terminal units. Disregard the reference to section 230993 and refer to the drawings instead for sequences of operation. Existing HVAC system which are not included in the scope of this work should retain their existing control sequence within the existing JCI BAS system.

76. Specifications for Fan Coils Units are not included. Please provide.

A Fan coil specification will be included by addenda.

77. There is no steam pressure reducing station scheduled. Please provide a schedule for this. Please advise valve sizes, inlet pressure, outlet pressure and capacities for each valve.

The steam pressure regulator schedule was inadvertently left out of the package and will be included by addenda.

78. Note mentions replacing existing medium pressure relief valve. Please advise size of new relief valve, relieving capacity and set pressure.

The steam pressure relief valve schedule was inadvertently left out of the package and will be included by addenda

79. Connect to existing vent line with new relief valve? If not what size vent should we run? What should we terminate vent line with?

Reference 7 on M804 revised 7/28/17 addenda #1 for relief valve installation details. Size the vent line not less than the pressure relief valve outlet size. Terminate the vent line with a standard steam head. A steam head installation detail will be included by addenda.

80. Request prior approval on a Cougar Systems condensate return units. See attached data sheets. Cougar Systems has many installations in similar projects and a reputable supplier and manufacturer.

Cougar Systems condensate return units are acceptable and will be included in an updated specification by addenda.

81. Request prior approval on Nexus coil kits. See attached data sheets. Coil Kits are industry standard and accepted universally. Spec does not mention. Please advise.

Nexus coil kits are acceptable provided that an additional isolation valve is provided at the branch return line per construction document coil piping details. Memory stop balancing valves are acceptable for throttling duty but are not acceptable for shut-off duty.

82. Request prior approval on JCI, Miller Picking, Ventrol AHU's. Please advise.

JCI York Custom AHU's are acceptable. Ventrol AHU's are acceptable. Both will be listed in specification by addenda. Miller Picking AHU's are not acceptable as we were unable to evaluate the product pending receipt of a specification compliance statement and list of local reference projects (previously requested for substitution).

83. Section 23 73 23 – 2.3.A, Exterior panels are to be textured painted aluminum. Will a powder coated exterior (that is equal to or exceeds the 1,000 salt spray rating) be acceptable?

The proposed powder coating is acceptable and will be incorporated into the specification by addenda.

84. Section 23 73 23 – 2.4, discusses housed fans. FanWall (multiple direct-driven fans in an array) would allow for a shorter foot-print and ease the installation process (fan cubes are all less than 36" wide and ideal for retrofit applications) for the installing mechanical contractors. The FanWall fans would be sized so that the total connect BHP is less than or equal to the total BHP currently scheduled. The FanWall fan arrays would be provided with a factory built motor over-load panel to protect each individual fan motor. A single VFD per fan array (with a single point power connection) may still be used as currently scheduled and the VFD horsepower would not exceed that currently scheduled. Additionally, FanWall Technology was/is designed for clean room and computer chip manufacturing applications and therefore meets the fan application class BV-5 (as currently specified in this project). Will FanWall be an approved application given the nature of the air handling unit specifications?

The AHU specification will be revised by addenda to allow for a factory engineered fan wall array in lieu of single plenum fans. The contractor must assume responsibility for providing all engineering, materials, and labor required for this option at no additional cost to the owner and shall be subject to technical review by the engineer of record. Fan wall array total motor HP must not exceed scheduled value and individual fan motors must be factory pre-wired and provided with individual electrical disconnect switches and motor overload protection for use with a single variable speed drive.

85. Section 23 82 16 – 2.2.A, states that wrap-around heat pipe coils shall be manufactured by Colmac or an approved equal. Nortek Air Solutions typically uses Innergytech and they comply with the specifications in full. Will Innergytech be an approved manufacturer for wrap-around heat pipe coils?

Innergytech is acceptable and will be listed in the specification by addenda.

86. Section 23 73 23 – 3.2.C & D, states that field leakage and deflection as well as fan/motor vibration testing is to be performed by the manufacturer once the unit is set in place. Will each unit require testing or only a single unit selected by the owner? Please advise so that we may include the appropriate cost for

the field testing requirements. Also, can you please confirm that no *factory* leakage, deflection or fan/motor vibration testing is required to be conducted (or witnessed) at the prior to the unit shipping (this would incur additional costs to fully construct and caulk the unit for testing and then be disassembled prior to shipment)?

Please updated test requirements in 237323 revised 7/28/17 addenda #1. Each AHU greater than 12,000 cfm capacity is identified for testing. There is no intent to factory test any field erected air handling unit and the requirements for such have been removed from the specification. Requirements for deflection testing have been removed.

87. AHU fans as scheduled cannot be broken down into small enough pieces to get into the building with its current door, window, or elevator openings. Should a "Fan Array" or "Fan Wall" type fan be scheduled instead? Please clarify.

The design intends for AHU sections to be removed and replaced through the existing exterior wall louvers on the southwest face of the building for floors 3 through 10. Installation of an exterior construction lift or other means and methods of hoisting will be required. The design intends for air handler sections at the second floor to be removed and replaced through the window opening at the northeast wall of the elevator lobby.

88. AHU coils as scheduled cannot necessarily be broken down into small enough pieces to get into the building with its currently noted door, window, or elevator openings. Should coils be split into smaller sections than scheduled? Please clarify.

Please reference response to previous question.

89. AHU coils are listed as single manufacturer. Please provide more than one manufacturer.

Section 238216 Air Coils lists no specific pre-approved coil manufacturers for hydronic applications. Preapproval is not required for coil manufacturers. For heat pipe wrap-around coil applications under the same specification there is no requirement for preapproval of other manufacturers providing technically equal products to the manufacturer specified. A second manufacturer requested under separate question in this document will be added by addenda.

90. Leakage testing is addressed as if units are to be built in the factory and commissioned at once. Project has field built AHU's and multiple commissioning test times. Please clarify how to provide. Please reference 237323 revised 7/28/17 addenda #1. . There is no intent to factory test any field erected air handling unit and the requirements for such have been removed from the specification.

91. Specification 23 06 20-5-2.9 & 2.10:

- Building Main Hot Water, Chilled Water, Steam and Steam Condensate Integrating Meters. These are best supplied and integrated by the BAS contractor. Please advise who shall provide.

The utility meter requirements in 230620 are boilerplate UT Systems spec items that are not applicable to this project. These requirements will be deleted from 230620 by addenda.

92. Drawing M003 – Pump Schedules:

- Freeze protection pump schedule head and GPM values do not agree with plan notes.

Select freeze protection pumps with flow rates to match the coil schedule. The pump schedule will be updated by addenda to correct this.

Drawing M406 Notes 30 & 31 require 20' TDH for OAPH-P-3W & -3E, schedule requires 15'. Disregard pump head requirement shown in the note. The note will be revised by addenda. Select pumps for the scheduled head values.

Schedule has notes 1-5. Actual Notes below are 1-3. Please clarify.

Notes 1 to 3 apply to HWP-1 and HWP-2 and do not apply to any of the freeze protection pumps. Note 4 will be added to provide freeze protection pumps with HOA starters. The schedule will be updated by addenda.

Same plan shows OAPH-OA1-P which are not on the pump schedule.

Pump OAPH-OA1-P will be added to the schedule by addenda and sized for the scheduled coil flow at 15 ft head similar to the other freeze protection pumps.

Plan note says GPM's to match coil flow. Pumps scheduled for 20 GPM, pre-heat coil GPM's run from 7.2 to 28.8 GPM

Assuming this question applies to sheet M408, note 30 will be revised by addenda to remove the contradictory 20 ft head requirement.

Drawing M410 shows pumps OAPH-8AEP/-9AEP/-10AEP & OAPH-8AWP/-9AWP/-10AWP. Schedule only has OAPH-P-8/-P-9/-P-10.

The pump schedule and drawing will be updated by addenda to add these pumps.

Need pump schedule for alternate AHU scheme.

The alternate pump will be added to the schedule by addenda.

93. Drawing M102:

Mixing box C-10 noted to be relocated, but not shown on M202. Please advise location.

The relocated mixing box is shown on M202 revised 7/28/17 addenda #1 but was erroneously tagged as "E12" instead of keyed note 2. The tag and key note will be corrected by addenda to read "Reinstall relocated mixing box".

94. Drawing M104:

Note 5 notes existing Terminal Unit to be relocated, but not shown on M205. Please advise location.

Note 5 should not have appeared on M202. M202 revised 7/28/17 addenda #1 and possibly other sheets did not plot correctly. These plots will be corrected and reissued by addenda.

95. Drawing M203:

Note 3 about air valves references 3/M703 which is for hot water system. Please correct.

The note on M203 revised 7/28/17 addenda #1 was corrected to reference 2/M703.

Note 5 requires new sash position sensor & controls on existing fume hoods and references 4/M703. That detail does not note these items are required, rather it gives a sequence of operation for hoods. Additionally not every hood shown on floor plan has a note 5 next to it (typical note). Please clarify.

It is the intent to install new variable volume hood controls at every existing hood. Key notes on floor plans will be updated by addenda to indicate the existing hood locations. Detail 4/M703 will be revised by addenda to more clearly indicate the required scope of work.

Note 6 identifies new room pressure monitors and panels and references 3/M703 which is for the hot water system (typical note). Please clarify.

This is a typo, and appears incorrectly on sheets M203 through M207. Note 6 should reference detail 1/M703. Sheets M203 through M207 will be revised by addenda to correct this typo.

Note 8 is on drawings, but no referenced keyed note to go with. Please clarify.

Note 8 should have been tagged note 5 on the floor plan. Floor plans will be updated by addenda to correctly identify all existing lab hoods with note 5.

96. Drawing M211:

Note 2 requires a new steam relief valve. Steam RV not scheduled. Please clarify.

A PRV valve schedule will be added by addenda.

97. Drawing M301:

Control of temperature off temporary AHU's is via a 2" manual globe valve and of control of air volume is via manual adjustment of VFD. Who will determine occupant comfort levels? Please advise.

Occupant comfort levels are controlled by pressure independent, dual duct terminal units which function very well within the facility and are monitored by a knowledgeable BAS technician. Assume that the contractor will adjust the temporary AHU's in cooperation with the facility BAS technician. Frequent adjustment of the coil water flow rates is not likely necessary unless there is substantial change in outside air conditions as the coil leaving air temperatures can be allowed to float since the temperature will be bounded by the approach temperature of the coils. Frequent adjustment of the VFD's is also not likely since the terminal units are pressure independent allowing for the duct static pressure to float within reason. If requested, the engineer of record will help the successful contractor select available fan curves for the temporary units to help minimize the need for fan speed adjustments. Please note that the contractor will be responsible for temporary AHU changeover from cooling to heating and vice-versa as required to deal with seasonal changes – particularly as cold fronts move through the area during heating season.

98. Drawing M401:

4" medium pressure steam supplying domestic water heaters shown to connect to 4" steam condensate line. Please clarify.

4" medium pressure steam to domestic water heaters is intended to connect to the existing medium pressure steam pipe immediately adjacent to the new 4" condensate line. The connection will be key noted by addenda to clarify this.

Steam regulator schedule requires a 2" and a 4" steam valve for HX-1/-2. Section B-B shows 2-2" branch lines. Please clarify.

The branch line pipe sizes are shown correctly and in detail on M603 revised 7/28/17 addenda 1. The section M401 will be revised to correct this discrepancy.

FCU-B-1 does not have chilled water connected to it. Please provide piping on drawing if required.

Chilled water piping to FCU-B-1 will be added by addenda.

New air separator not scheduled. Please provide.

Sheet M003 will be revised to correctly identify the new hot water air separator.

Note 5 identifies new HW pumps and refers to 6/M801 which is for piping of horizontal coils. Reference should be 7/M801. Please clarify.

Yes, the reference should be 7/M801 and will be corrected by addenda.

Note 6 describes new 2-1/2" condensate return but is tied to 10" hot water supply/return piping. Please clarify.

Key note 6 was placed on the floor plan incorrectly and will be revised by addenda.

Note 9 describes heat exchangers and references 1/M801 which is for an expansion tank. Should reference be M603? Please clarify.

Key note 9 will be updated by addenda. Reference M603 and 6/M803 for heat exchanger installation.

Cannot find Note 10 on floor plans

The floor plans will be updated to indicate key note 10 with indicates the new 8" medium pressure steam branch to the new heat exchangers.

99. Drawing M411:

M411 does not show freeze protection pumps in HW piping to OAHU-8/-9/-10's pre-heat coils. Please clarify.

Key note 13 was intended to indicate the freeze protection pumps and will be revised by addenda to indicate this correctly.

100. Will this project be an OCIP?

No

101. There appears to be missing sheets listed on the index as well as sheets in the drawings not listed in the index? Will an updated index be provided?

Will be corrected in the "For Construction Set"

102. There appears to be asbestos pipe insulation in the mechanical rooms. Has an asbestos survey been completed? If asbestos is found, who will be responsible for its removal?

Asbestos is currently being tested by UTHSC. The abatement of any found asbestos containing items will be completed by Owner.

103. Can a site plan / map be provided that shows the Owner's preferred locations for craning, deliveries, site storage (if any), loading and unloading?

We do not want to limit possible suggestions and will coordinate the crane lifts with both the School of Nursing and the School of Public Health accordingly.

104. Can multiple floors from level 3 and up be renovation at the same time?

Yes so long as temporary AHU's are provided.

105. Will the contractor have full control of the freight elevators during construction?

No, we will have to coordinate use with the building.

106. Is the Owner or Contractor responsible for coordinating with the Nursing school building for the switchgear shut down?

Owner will be responsible for coordinating.

107. Will vacant offices inside the building be available for contractor use during construction? If not, will a contractor's job trailer be allowed onsite?

An office will be made available, however, the contractor may not be capable of staying in this office for the entire duration of the project.

108. Can level 2 lobby and corridor floors support the weight of the heaviest switchgear piece with the weight of steel plates and all required manpower and equipment?

The structural engineer has reviewed this and verified that a steel plate of

109. Is the intent is to utilize the existing louvers on the upper floors for demo and bring new equipment back onto the floors? Will the 3<sup>rd</sup> floor roof support the weight on equipment even if broken down into pieces?

Will portions of the front parking lot be secured for contractor use in order to crane equipment off the 3<sup>rd</sup> floor roof?

The intent is to get the equipment in the building with the least disruption possible. If we are capable of fitting the AHU's in the service elevator, we can take them up in that. Yes the roof will support it, however, the existing roof must be protected from damage. Crane lifts should be planned on the weekend to avoid the public as much as possible.

110. Can the paved parking area closest to the Teco pit be used for a crane.

Yes

111. On proposed floor plan drawings E201, E212 and E213, it is indicating for (6) 3" conduits to feed panels "HMA", "HMB", "BHDP" and "ATS-BA". According to the one-lines on E007 and E008, it appears it needs to be a quantity of (8) 3" conduits. Is this a correct assumption for the feeder counts?

Yes, (8) conduits is correct.

112. On the proposed one line drawings, E007 and E008, it indicates for 1 set of (3 #500 & 1 #1/0 5kv cable in a 5" conduit) is to be installed from the new 5kv outdoor switchgear to each of the new 5kv indoor

switchboards "A" and switchboard "B". On drawing E213, it shows that there is to be (2) two sets of 5kv cables in a 5" conduits run to a j-box in the ceiling. Are two (2) of these conduits spares and does the 5kv cables in the second set of conduits run all the way back to the outside 5kv switchgear?

(1 set) + 1 spare per each of two circuits from TECO pit to bottom of building, but the spares stop there while (1 set) per each of two circuits (totaling two pipes) run up the building and to the substation gear.

113. On sheet E007 there is a feeder B to the Nursing Building out of the new 5kv outdoor switchgear. Is this a new feeder or are we to reinstall the existing feeder?

Reterminate the existing feeder, leaving excess as slack in pull section. FYI - next addendum will include an alternate for relocating the gear, resulting in re-pulling that feeder.

114. On drawing E212 there is an ADD Alternate for Switchboard "BS". I didn't see anywhere on the proposal form for this item to be listed. Can you please advise what alternate number this pricing needs go under?

Alt. #3

115. Would it be possible to either install our new underground 5kv feeder from the existing manhole shown on drawing E114 Site Plan or at least intercept the existing underground 5kv feeder outside of the existing manhole?

Re-use of the manhole is acceptable, if it is sufficient. However, the cables need to be one new length with no splices.

116. On drawing E011 the bus duct feeders indicated are to be (2) 400A with 400A bus plug breaker style. The feeders feeding the bus plugs coming out of Panel 2ELDPC are sized to be 400A. However on drawing E015 the same two bus duct feeders indicate to be 600A. What size bus duct is required?

They are 400 A.

117. There isn't any location shown for the two Emergency Bus Duct risers for the "\_ELA" panels. Can you indicate on where you would like for them to be installed?

Directly west of the existing three busways.

118. On the site drawing E114, it shows that the new underground conduits are to terminate in one 36"W x 24"L x 48"H on the face of the column. The drawings E200, E202 and E213 indicates that there are two (2) 30" x 30" x 12" j-boxes mounted on the side of the column. Can you clarify on which j-box installation you would prefer?

The box on the site plan (36x24x48) is on grade, the two on the second floor plan are at Level 2 ceiling height to allow a pull point into the concrete-encased conduits in the building. The upper boxes are allowed for pulling convenience. If you believe you can turn in without them they can be omitted and still maintain the 360° bend limit.

119. Drawing E200 shows AHU-BE with the panel/circuit designations as new work, the panel schedule for BHDP (drawing E035) conflicts with the one-line (drawing E008) for the HP rating, conduit and wire size for the unit. Which drawing has the correct circuit information, the one-line (E008) or the panel schedule (E035)?

In the case of conflict between AHU motor sizes shown on the one line diagram(s) and panel schedules, the panel schedule is correct.

120. There are also discrepancies on the unit designations for the AHUs. Drawing E200 shows AHU's BE, BW & BW-2 with panel/circuit designations. Drawing E035 panel schedule for BHDP has units listed as AHU-BE, AHU-BH and AHU-BW. Drawing E008 shows AHU-BE and AHU-BH1 only. Please correct unit designations on all listed drawings

Panel schedule is correct.

121. Drawing E212 shows FCU-B (units 1-3) with the panel and circuit designations to be a 480v 3phase load, as does the panel schedule HMB (drawing E035) but the mechanical schedule (drawing M003)



shows FCU's to be single phase 277v load. Please clarify which voltage is correct.

All FCUs shall be 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.

122. Drawing E212 shows sump pumps 1 & 2 with panel and circuit designations (HME 1, 3, 5 & 2, 4, 6) the panel schedule (drawing E035) shows "spare" for circuits 1, 3, 5. Circuits 2, 4, 6 show sump pump P-2B and circuits 8, 10, 12 for sump pump P-2A. Please clarify that sump pumps on drawing E212 are P-2A and P-2B and correct circuit location for panel HME (drawing E035).

"Sewage pumps P-1A & P1B" is P-1, and "Sump Pumps 1 & 2" is P-2. Confirmed each duplex pump takes one common input circuit.

123. Drawing E212 shows CWP-1's VFD as new but the demo drawing E003 shows VFD to be existing. Please clarify what is new and what is existing to remain.

VFDs are new to replace the existing VFDs being removed.

124. Drawing E212 shows CWP-2 and CWP-3's VFDs' as new but the demo drawing E002 shows the VFDs' to be existing. Please clarify what is new and what is existing to remain.

VFDs are new to replace the existing VFDs being removed.

125. Drawing E212 shows CWP-2 fed with circuits 14, 16, 18 which conflicts with the panel schedule for HMA (drawing E035). It shows CWP-2 fed with circuits 8, 10, 12; please correct.

Will correct.

126. Drawing E212 shows CWP-3 fed with circuits 8, 10, 12 which conflicts with the panel schedule for HMA (drawing E035). It shows CWP-3 fed with circuits 14, 16, 18; please correct.

Will correct.

127. Drawing E212 shows HWP-1 & HWP-2 and new VFD's for each but there aren't any panel or circuit designations. Is the panel schedule for HMB (drawing E035) circuit information, wire and conduit for HWP-1 & HWP-2 correct?

Yes

128. Drawing E212 shows COND RETURN UNIT's 1 & 2 to be "new work" but there aren't any panel or circuit designations. Drawing E003 one-line shows COND RETURN UNIT 1 & 2 to be existing. CRU-1 shows to demo the conduit and wire only, CRU-2 shows to be existing but the MCCB they are fed from shows to be demoed. Please clarify what is new and what is existing to remain and provide circuit and panel designations.

HMB-14/16/18 and HMB-20/22/24. 30AT/3P each with #10.

129. Drawing E212 doesn't show any circuit or panel designations for the domestic water booster pumps. The panel schedule for HME (drawing E035) shows the pumps with conduit and wire size. Please verify circuit designations for these pumps. The panel schedule for HME (drawing E035) shows these pumps to have a combination starter but the floor plan (drawing E212 shows a VFD. Please clarify.

HME-14/16/18. However, should be 50AT/3P with #8 wire.

130. Drawing E202 show AHU -1W, 1SW, 2W, 2E, 1E, 1SE with panel/circuit designations as new work but drawing E007 shows conduit, wire and VFD's to be existing, demo drawing E002 shows conduit, wire and VFD's as "to be demo"; please clarify if it will be new conduit & wire? Or is the one-line drawing correct and the AHU's will be fed with existing conduit & wire?

They are to be new circuits, wire, conduit, and VFDs.

131. Drawing E203 shows AHU - 3E, 3W and OAHU-1 with the panel and circuit designations but the information on the panel schedule (drawing E035) conflicts with the information on the one-line (drawing E009) for HP rating (for sizing VFD's), conduit and wire size. Please clarify which drawing has the correct load information, the panel schedule or the one-line.

Panel schedule is correct.

132. Drawing E203 shows VAV-3-1 to be fed from panel 3LC but the panel schedule on drawing E023 doesn't show any circuit information. Please provide circuit information. Typical of floors 3-10.  
**No power to VAVs.**

133. Drawing E204 shows AHU 4E & 4W with the panel and circuit designations but the information on the panel schedule (drawing E035) conflicts with information on one-line (drawing E009) for HP rating, conduit and wire size. Please clarify which drawing has the correct information, the panel schedule or the one-line.  
**Panel schedule is correct.**

134. Drawing E035 shows the panel schedule 4HDP for FC4Ws' (4 units total) to have a #0 combo starter. Drawing E009 one-line shows there to be a #00 snap-switch/starter. Which drawing is showing the correct information?  
**Either can be used and is acceptable.**

135. Drawing M003 shows FC4W units to have a voltage rating 277v single phase. Drawing E204 shows FC4W to 480v 3phase. Which drawing is showing the correct information?  
**All FCUs shall be 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.**

136. Drawing E004 shows the FC5Ws' (3 units total), conduit and wire to be demoed. Drawing E009 shows these units with new conduit and wire only, and to use existing VFD and FC5W. Please clarify what is new and what is existing to remain.  
**All FCUs get brand new circuits, complete with conduits, wire, and combo starters.**

137. Drawing E205 shows FC5W (3 units total) as new work with new combo starters, which conflicts with information in the question above. Please verify whether the FC5Ws' will use VFD's or combo starters.  
**Combo starters.**

138. Drawing E004 shows AHU -5W, 5E, VFD's, conduit and wire to all be demoed. Drawing E009 shows new conduit & wire only with existing VFD and unit. Please clarify what is new and what is existing to remain.  
**New VFDs on all AHUs.**

139. Drawing E205 shows the VFD's for AHU 5W and 5E in two different locations (in one location the VFD's appear to be wall mounted and the other location shows to be mounted on unistrut. Which location is correct?  
**Exact location is arbitrary. Field coordinate with mechanical contractor.**

140. Drawing E035 panel schedule for 5HDP lists AHU 5E and 5W as being 40HP with three #6AWG and a #10AWG ground. Drawing E009 shows AHU 5E and 5W as being 25HP. Which drawing has the correct information?  
**Panel schedule is correct.**

141. Drawing E009 shows the VFDs for AHU's 5W and 5E to be existing, the floor plan (drawing E205) shows the VFD's to be new. Please clarify what is new and what is existing to remain.  
**Panel schedule is correct.**

142. Drawing E206 shows AHU's 6E & 6W with the panel and circuit designations but the panel schedule for 6HDP (drawing E035) conflicts with information on the one-line (drawing E009) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.  
**Panel schedule is correct.**

143. Drawing E207 shows AHU's 7E & 7W with the panel and circuit designations but the panel schedule for 7HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.  
**Panel schedule is correct.**

144. Drawing E208 shows AHU's 8E & 8W with the panel and circuit designations but the panel schedule for 8HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

**Panel schedule is correct.**

145. Drawing E209 shows AHU's 9E & 9W with the panel and circuit designations but the panel schedule for 9HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

**Panel schedule is correct.**

146. Drawing E210 shows AHU's 9E & 9W with the panel and circuit designations but the panel schedule for 9HDP (drawing E035) conflicts with the information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

**Panel schedule is correct.**

147. Drawing E002 shows AHU-11, combo starter, conduit and wire to be demoed. Drawing E007 shows AHU-11, conduit and wire to be existing. Drawing E211 shows "new" AHU-11 with the panel and circuit designations and a VFD. Please clarify what is new and what is existing to remain.

**All AHUs are new, together with circuits.**

148. Drawing E002 shows EF-10N and a combo starter to be existing, only conduit and wire is to be demoed. Drawing E007 shows EF-10N, combo starter, conduit and wire to be existing. Drawing E211 shows a new combo starter. Drawing E035 panel schedule for PHDP shows new unit EF-10N. Please clarify what is new work and what is existing to remain.

**New.**

149. Drawing M003 shows EF-10N to only be 208v single phase and drawing E211 shows to be 480v 3phase. Which drawing has the correct information?

**Both are 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.**

150. Drawing E211 shows EF-P1 to be 480v 3phase as does panel schedule (drawing E035) but drawing M003 shows the unit to be only 208v single phase. Which drawing has the correct information?

**Both are 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.**

151. Drawing "A-160" indicates that there are eight (8) new 4ft strip fixtures located in the new electric room on the second floor. Do you have the fixture type and the circuiting/switching information?

**Addendum 2.**

152. Drawing "E008A" shows that there are two "HMB" panels being fed out of switchboard BS. Is one of them supposed to be panel "HMA"?

**Yes.**

153. Drawing "E007" shows that the existing, relocated PFCC is being fed from the Main Switchboard A. On drawing "E007A", this portion of work is missing. Can you please clarify on what is required for this scope of work?

**It will require an additional 300 AT breaker with 4#350 kcmil/THHN in 3"C.**

154. Will there be any other renovation work going on during this renovation scope of work in the building?

**Yes potentially. Currently projects that are being priced will be completed prior to start of this work. Any new projects are unknown at this time, but plan for renovations during this project.**

155. The addendum #1 makes note of a "Other Project" on the plumbing sheets. Will this work be a part of this bid? Will this work be complete prior to this work?

This project is currently being awarded and will be near completion by the time this project actually starts construction.

156. Drawing A-160 - Please clarify if ceiling in Room W 216A, W 216B and adjacent corridor is new or existing.

See updated sheet A-160 on Addendum 01. The intent is to remove existing ceiling grids, tiles, light fixtures and all ceiling components along the corridor as necessary for all above ceiling MEP work. GC shall reinstall existing ceiling tiles, grids, light fixtures and all ceiling components to their original locations after all above ceiling MEP work. GC shall replace with new of any ceiling grids, tiles, light fixtures and ceiling components if damaged from the demolition.

157. Please clarify all ceiling heights and structure/deck heights for all rooms.

See updated sheet A-160 on Addendum 01. There is no ceiling in the electrical room. All reinstalled ceiling along the corridor shall match with adjacent existing ceiling height.

158. A-540 - Finish schedule does not list any specified manufacturers, patterns, color or notes for the finish types. Please provide.

All new finishes are to match existing adjacent finish.

159. Room Finish Type Schedule does not list any description for Finish Type Mark F7. Please provide.

All new finishes are to match existing adjacent finish.

160. M200 and M drawings - Several notes refer to "XXXXX" for details. Example being Keyed Note 13 and 15 on M-200. Please provide detail note.

"XXXXX" keyed notes were updated by revised sheets dated 07/28/2018 addenda #1.

161. M211 - EF-P1 on M211 is marked is dashed as an existing EF on the roof but Fan Schedule on M003 lists EF-P1. Please confirm if this is new or existing.

EF-P1 is a new fan installation. M211, MEP-100, and M802 will be revised by addenda to clarify the required scope of work for this fan.

162. M400 - Note 1 calls to remove condensate return unit and provide new condensate unit in phased sequence. Please clarify the phasing for this work.

Note 1 will be revised by addenda to require installation and startup of the new condensate return units prior to decommissioning and removal of the existing units.

163. M411 - Alternates listed on the drawings such as M411 do not clarify the alternate # but rather just refer to work as "alternate" please clarify the alternate work listed on the drawings as it is associated with the alternates listed in Specification 012300

The alternates will be clarified drawing revisions issued by addenda.

164. 11000 - Spec 011000, Part 1, 1.01.D lists the project consists of the construction and alteration of an existing conference room into an electrical room. Please confirm this does not pertain to this job.

Renovating existing conference rooms to an Electrical Room is pertaining to this project.

165. E114 - Drawing E114 states that no cranes or other equipment to be placed in garden or planting areas during construction. Please clarify where cranes are allowed to be placed.

Cranes will be allowed in the area outside the garden and the loading dock area. They will also be allowed in the parking areas. Please anticipate completing most lifts on the weekends.

166. Indoor substation on E114 has a (D) next to the name but is not dashed as other equipment to be demolished. Please confirm this is to be demolished.

Demolish

167. E212 - Please clarify which alternate "Add Alternate: Re-Route HW piping away from required equipment working clearances and dedicated electrical space for this switchboard" pertains to.

### Alt #3

168. E213 - Main Electrical Room Note 4 states that elevator cannot be used to transport equipment into Electrical Room on 2nd floor. Please clarify if we cannot use any elevator and must use stairs etc or if we cannot use a specific elevator.

Second story windows at lobby, as discussed during pre-bid.

169. P201 - Key note 1 calls for replacement of hallway eyewash and emergency showers. Please clarify count and locations of these fixtures.

The fixture counts will be clarified on revised drawings issued by addenda.

170. P202 - Keynote 2 states that work on CW HW and HWR cannot begin until after the ADA project is completed. Please clarify the timeline for this project

This project is starting on September 1, 2017 and should be complete by January of 2018.

171. A-114 - Please clarify what Alternate Page A-114 is referring to as it is unclear.

See Addendum 1

172. A-113/A-114 - Please clarify if doors in rooms W 216A and W 216B are new or existing for both the Base Bid and Alternate. If new, please provide Door Hardware for door type A00.

See Addendum 1

173. 1/A-540 - Please provide the full Finish Material Schedule.

All new finishes are to match existing adjacent finish.

174. A-110M - Please clarify existing C2 partition heights for Levels 3,4,6, and 7 where partition is to be extended to structure.

Partition are to extended to the underside of slab. See detail 13/A-520M

175. Please clarify the extent of site restoration required at the pit for electrical work.

The site should be returned to its existing conditions.

176. Are there any drawings available that show the existing utilities in the area where the new ductbank and manhole are going?

These can be obtained for the winning contractor however, may not be accurate.

177. Spec section 23-31-00-6 - The flex duct spec is conflicting. Low pressure flex for UT is typically flexmaster type 5- M or equal. The type shown on 2.6 Low pressure is aluminum insulated duct, typical of what you would see in an operating room. Can you verify standard flex duct is acceptable. This similar instance came up on a UTMB project and the 5-M was acceptable. It looks like a cut and paste error. Please Clarify.

Section 233106 will be updated by addenda to the latest available standard UT ductwork specification.

This update includes new changes to UT standards for flex duct.

178. MEP100 - Note 1 and 4 is not shown for reference...we assume this is a new fan and all roof exhaust is to be 316 stainless steel? Please Clarify.

MEP100 will be revised to properly indicate the demolition of existing utility fan set and associated 7th floor exhaust ductwork. The new replacement laboratory exhaust fan system is scheduled on M003 revised 7/28/17 addenda #1 and specified in section 233416 paragraph 2.3. Laboratory exhaust ductwork is specified as 316 welded stainless steel per section 233100 to be reissued by addenda.

179. M200 - There are some return air sound boots shown on top of grilles in a corridor designated B1, there is also a not #13 referring to new air valve and associated ductwork. This looks to be a typo as I do not see VAV associated with the grilles in that location. Are we to assume the VAVs shown in that corridor to be replaced? Please Clarify.

Keyed note 13 next to return air grilles in the corridor was a typo and will be deleted. Return air boots shown on the ceiling grilles in the corridor will be deleted on updated drawing sheet to be issued by addenda. The existing dual duct terminal units shown in the corridor on M200 revised 7/28/17 addenda #1 are to remain in place.

180. Spec section 23-31-00 - We assume outside air duct from louvers to unit will be 316 stainless steel. Please Clarify

Specification 233100 will be reissued by addenda to reflect new UT standards. The untreated OA duct is indicated as 316 stainless steel in the updated specification.

181. M401 - M301 referenced for the continuation of 10" HWS/HWR piping is not included in plans. The 10" piping can be found on M200. Confirm this is the correct route

Yes, continuation of 10" hot water line is on sheet M200. Refer to revised drawing M401

182. M401/M202 - New 2" Chilled Water Supply and Return piping for new FCUs per Note #13 continuation not shown. Is the continuation shown on M202? Please Confirm

New chilled water lines shown on sheet M401 are connected to 6" and 8" main lines located in the basement. 2" Chilled water line shown on Sheet M202 is not tied to 2" line shown on M401. Refer to revised sheet M401

183. M404/M501 - There is an elevation view referencing A-A M501 and B-B M501. The referenced detail is showing basement units, not the units shown on M404, which is second floor. We assume the duct configuration shown on M404 is the correct configuration and the elevation details on M501 will be disregarded. Please confirm.

Elevations for units shown on M404 are shown on sheet M502

184. M404/M201 - Notes 2 and 3 on M404 reference the ductwork shown to Penetrate the floor and connect to existing ductwork on the first floor. Existing ductwork for first floor is not shown, M201 is the only first floor plan and the 10"HHW piping is the only scope shown. Please confirm where the tie points will be. Please confirm

All ductwork penetrations through the mechanical room floor are existing and connection to existing can be made just above the floor. Sheet M502 dated 7/28/17 was added by addenda #1 to show sections through this area which better depict the floor penetrations.

185. 01.3.00 - Please clarify if progress photos taken by project team members is acceptable in lieu of professional progress photos.

Yes

186. Please confirm contractor will be allowed to bill for stored materials, such as Air Handling Units, so long as they are in a bonded warehouse.

Yes and with inspections of UTHSC.

187. Please identify a lay down area on site.

No lay down area will be allowed. The site is tight and we cannot accommodate excess material simply sitting in the area.

188. Please confirm GC is responsible for permits, such as those listed in 024100 for demo, sidewalk, road closure.

Yes

189. UT safety spec 013523 is not included in the specifications. Please provide.

Attached

190. Please confirm this is not a ROCIP project.

This is not a ROCIP

191. Please clarify which permits will be required as this is a state institution.

No City of Houston permits will be required for MEP systems. Sidewalk and road closures may be required.

192. Please clarify if the roads and sidewalks controlled by the institution or the city?

Bertner and Pressler are both controlled by TMC. We will have to coordinate with them for shutdowns.

193. E012 and E020 - On drawing E012, panel BLF is shown to be removed. On E020, panel BLF is shown to remain. Please clarify

Panel BLF is to remain.

194. E114 - The location where the ductbank is to transition up the wall has an existing water pipe on it. Could be a sprinkler pipe. Is there an alternate location we can route the electrical conduits, or is this water pipe to be relocated?

Relocate the existing water pipe as required for installation of the new duct bank.

195. Please clarify if the temporary AHU will need to be recommissioned at every floor.

The intent of the question is not understood. There is no formal commissioning requirement for the temporary AHUs. It is intended that that temporary AHUs be setup, tied into the existing ductwork, and placed into operation prior to demolition of the existing AHUs each time the temporary AHUs are moved to a new floor.

196. Please clarify the process of turnover for AHU at every floor.

Each AHU will be required to be commissioned prior to turn over.

197. Please clarify required working hours.

Explained in the Special Conditions document (Appendix 7 to the bid documents posted on website). Noisy work is to be completed after hours.

198. Please clarify if xray/scan of the floors is required.

If required to complete your work.

199. Please clarify the existing lobby ceiling type.

The existing elevator lobby ceiling type is lay-in.

200. Please clarify if there is any lab vibration sensitive equipment that we will be required to work around the hours of.

Yes, equipment has been identified and we will coordinate with those labs when work is scheduled in their specific areas.

201. E114, Site Power Plan, shows a transformer and a disconnect mounted on unistrut to the plan west of the existing/new switchgear. This transformer/disconnect do not appear in the demo or reno one-line diagrams. S1.01, does not show a foundation detail or "blockout" in the steel for this transformer.

a. Are the transformer and disconnect associated with this project?

b. Does the transformer remain in place, get raised to the platform height, or demo? It appears to be dead.

Remove the transformer.

202. Detail 8/S2.01 shows the attachment detail for the steel beams. This is located where the steel/concrete stairs go down into the pit. Should it be assumed that the steel/concrete stairs should be demoed?

Yes, the existing stairs are to be demo'd after no longer needed.

203. Detail 13/S2.01 says to provide painted steel guardrails however note 10 says all steel members shall be hot dip galvanized. Please clarify.

Disregard Painted Guardrail note at 13/S2.01. Note 10 will be used. ALL STEEL MEMBERS ARE TO BE HOT DIP GALVANIZED.

204. Will 3rd party concrete and steel/welding inspections be provided by UTHSC?  
Yes.

205. Please provide existing fire and life safety drawings for all floors of the building showing wall ratings? This is applicable to knowing which penetrations will need to be fire caulked for conduit/pipe runs throughout the building.  
Attached

206. Note 3/A-103 says to refer to MEP drawings for utility relocations in the chases. During the pre-bid walkthrough, it was noted that utilities such as glass pipe, natural gas, and electrical panels (2BA1 & 2BA6) are located in these chases. None of these are shown on the electrical or plumbing demo or renovation drawings or where there are to be relocated to given that this will be part of the new electrical room. Please provide plumbing and electrical demo and renovation drawings for both base bid and alternate sized electrical room layouts.  
All utilities that have been capped at the floor will be taken to the underside of the floor and capped. The penetration will be required to be filled in with grout/concrete.

207. It was mentioned in pre-bid walkthrough that the area between the Centerpoint vault/pit and the SPH building would need to be hand-dug due numerous utilities underground. Is it acceptable to hydro excavate this area?  
Yes

208. Please confirm testing and balancing will be by the Owner.  
Yes, TAB by Owner

209. Please confirm any data and security will be provided by the Owner.  
Only data cabling incidental to fire alarm or control system(s) is included.

210. Regarding the roof:  
a. Is the existing roof under any existing warranty?  
b. If so, who is the manufacturer of the roof system?  
c. Is there are preferred roofing contractor that UTHSC utilizes at this building? If so, please provide name of company and contact info.  
Last roof project was completed by Brazos Roofing 2 years ago. No preferred roofing vendor.

211. There is a note on M211 that states to provide a new 48 x 60 louver, refer to architectural. There is nothing shown on the architectural. Please provide specifications for the louver and section cuts of exterior wall/louver jamb details. Is this louver motorized? If so, nothing is shown on electrical drawings. The louver is not motorized, however, a motorized damper is shown on detail 1/M702 issued 7/28/17 addenda #1. It is assumed that the damper actuator will be low voltage type with power provided under Section 230923.

212. For AHU 11-1 on M111, does the housekeeping pad need to be removed and re-poured for the new AHU or can the existing pad be increased in size to accommodate new AHU 11-1 on M211?  
M111 & M211 will be revised by addenda to retain and modify existing pad as required to accommodate new AHU.

213. Heating hot water is shown to AHU 11-1 and the expansion tank on the riser diagram but not on the penthouse floor plan M211.  
Sheet M211 will be revised by addenda to delete HW piping to AHU 11-1. HW piping to the expansion tank is indicated on M211 revised 7/28/17 addenda #1.



214. Regarding the exhaust fans on MEP100:

a. Note 3 points to 4 “hashed’ exhaust fans on the west side of the roof. Note 3 says to demo and provide new EF-10N however EF-10N is a stairwell exhaust fan located on the north side of the roof. Please confirm the other note 3’s are in error and those exhaust fans are to remain. Please Clarify.

b. Why is EF-PI not shown on MEP100?

c. EF-9E and EF-9W are shown on MEP100. Please confirm these are existing to remain.

a. Note 2 was removed from MEP100 revision 7/28/17 Addendum #1.

b. MEP100 will be revised by addenda to indicate EF-P1. c. EF-9W and EF-9E are existing to remain.

215. Regarding the 7th Floor Lab Exhaust (M107 & M207):

a. There is extensive duct demo and renovation in this area. Will the occupants be moved out of this lab for an extended period of time to perform this work?

b. Will the ceiling tile and grid in this area be salvaged and re-installed or will new ceiling need to be provided? It would be helpful to provide architectural demo/reno reflected ceiling plans in this area.

c. Will the level 7 area walls need to be painted upon completion with the drywall patching needed for all the differential pressure monitors rough-in/installations?

d. The exhaust riser for EF-7-1 & EF-7-2 appears to run through open offices on levels 8 and 9 but no ductwork riser is shown on M208 or M209. Will drywall furring be required around the ductwork or will it need to be a fire rated enclosure?

a. We will look at relocating the tenants in this area for a minimal amount of time. B. Arch response goes here. C Arch response goes here. D. Sheets M208, M209, M210 will be updated by addenda to show exhaust duct riser. Drywall furring required.

216. What is the approximate slab thickness of each floor?

Per the existing as-built drawings, metal deck is called out as 3"-QL99-18 with 3 inches of concrete topping.

217. What is the approximate finish floor to underside of deck height of each floor?

Per the existing as-built drawings, finished floor to finished floor is 14 feet. Field verify as needed.

218. It seems like the keyed notes from the demo drawings (M103-M110) are the exact opposite from the keyed notes on the renovation drawings (M405-M410) with regards to the sound attenuators and the fire smoke dampers. For example: On M103, notes 6 & 7 say existing sound attenuators to remain and to remove existing fire/smoke dampers. On M407, note 10 states to retain existing fire dampers in place and M408 note 7 says to remove existing sound attenuators. Please clarify for all floors as applicable.

The keyed notes were revised on Addenda #1 and will be further revised by additional addenda. In general, existing fire/smoke dampers are to be replaced with new fire dampers. Existing sound attenuators are to be demolished and not replaced.

219. Note #27/E001 says the electrical contractor is responsible for the mechanical conduit stub-ups. Electrical contractors typically only do stub-ups for fire alarm, data, and security and the controls contractor is responsible for their own conduit rough-in. Please confirm.

The note requires the controls vendor to use the project electrical contractor for their rough-ins, as opposed to a third-party subcontractor to prevent conflicts between two separate ECs.

220. E113 detail 2 shows panels 2BB2 and 2BB7 as being demoed however E012 shows these panels as existing to remain. Please clarify.

These are part of the laboratory panel replacement alternate, where base bid is existing to remain.

221. E114 shows the main feeders going up the outside wall and then into the building. The precast concrete is only for the feeders inside the building, correct?

Correct.

222. E200 shows 3 AHUs (AHU-BE, AHU-BW, & AHU-BW-2) however one line drawings, E008, only shows 2 and name them (AHU-BE and AHU-BHI). Panel schedule on E035 for BHDP shows 3 AHUs (AHU-BE, AHU-BW, and AHU-BH). Please clarify.

Panel schedule is correct.

223. Drawings E212 does not provide feeder information for HWP-1, HWP-2 or the condensate return units. Please advise.

Added in Addendum 2.

224. Panel schedules on E035 for panel 3HDP say to use 3#6 & 1#10 in 1" conduit for AHU-3W and AHU-3E. One line diagram E009 says 3#8 & 1#10 in ¾" conduit. Also unit OAHU-1 on E035 says 3#6 & 1#10 in 1" conduit and one line diagram E009 says 3#4 & 1#8 in ¾" conduit. There are other examples of this where the panel schedules are in contradiction with the one line diagrams.

Panel schedule is correct.

225. Panel 3LA on drawing E203 is not shown. Is it in the same spot as its existing location shown on E103?

Same spot.

226. E203 shows (2)-225amp breakers but one line on E009 shows 400AT bus plug. This is common on other bus ducts being re-fed on other floors. Please clarify.

(2) 225 AT on the secondaries of the 75 kVA xfmr's feeding \*LA\*/LB, and (2) 400 AT on the secondaries of the 112.5 kVA xfmr's feeding busways.

227. Please provide reflected ceiling plans shown quantities of light fixtures to be replaced.

Counts per floor were provided in Addendum 1

228. E205 shows (2) VFDs for each air handler. Is this an error? Only (1) VFD is shown for each AHU on other typical floors.

Drafting artifacts. Only one on the wall, just like the other floors.

229. Where is the emergency bus duct shown on one line E011 to be located? It is not shown on the electrical floor plans. Is there a particular path that is to be followed or is it being left to the electrical contractor to come up with a plan?

Immediately west of the existing normal bus ducts.

230. Drawing E202 shows conduits from panels MDP4 And MDP5 from pull box to new Switch Gear and on drawing E213A shows conduits for panels MDP4 and MDP5 being routed in a different area. Are these conduits supposed to go from the panel to the main switch gear with no splices? The add alternate prints E007A & E008A show no change. Also the note says to run (5) 3" conduits when on the one line for panel MDP4 asks for 4" conduits. Please clarify.

Intercept the existing in the second floor janitor's closet with a junction box. Owner's electrician has requested splicing them in lieu of re-pulling a single length. MDP4 is 800A with (3) sets of #350 in 3"C, and MDP5 is 600A with (2) sets of #350 in 3"C.

231. Print E007A Was panel HMA left out by accident or is it not part of the alternate? Or is it one of the 2 panels on E008A both labeled HMB coming out of switchboard BS?

The left HMB on E008A is really HMA.

232. On all of the one line print some of the feeders are missing the type of conduit to use. Some say rigid, some say EMT, and some do not specify. Please clarify.

Where not explicitly called on the drawings, use Part 3 of 26 05 33 to determine the minimum type.

233. Drawing E114, are we supplying and installing the manhole that is bolded over the existing duct bank or just the one for the new duct bank? What is the size of the manhole? Did not see a detail.

New man hole. Details are added in Addendum #2.

233. Drawing E114, are we supplying and installing the manhole that is bolded over the existing duct bank or just the one for the new duct bank? What is the size of the manhole? Did not see a detail.

New man hole. Details are added in Addendum #2.

234. E014 and E100 show panel BELB to be demoed. E020 says panel BELB is existing panelboard to remain. Please clarify.

It will be replaced with like.

235. M602 shows the heating hot water risers to be 8" and transitions down to 4" as it goes up the building. M404-M410 shows a 10" HHW riser throughout the building. Please clarify.

Hot water riser is 10" all the way to the top. Sheet M602 will be updated by addenda

236. No mechanical demo/reno drawings are provided for the 1st floor. Can these drawings be provided that show where the 10" HHW risers and the outside air duct from Level 2 to basement are located?

Scope of work for first floor shown on Sheet M201.

237. M403 (2nd Floor Demo) shows one of the existing chilled water risers in a different location than on the renovation drawings M404. Is this just a mistake on the drawing or does the riser need to be relocated on the 2nd floor?

Chilled water riser location will be updated on revised sheet M403 as part of addendum

238. With regard to expansion fittings in conduit/bus, are there any building expansion joints? If so, please indicate on a drawing.

No expansion joints in the building.

239. Drawing E114, will the feeders to the nursing building need to be replaced due to the new switch gear being raised? If they need to be replaced where do they go to in the building?

Reterminate the existing feeder, leaving excess as slack in pull section. FYI - next addendum will include an alternate for relocating the gear, resulting in re-pulling that feeder.

240. Drawing E011, the new feeder bus for the emergency panels says it is 400 amp but on print E015 note 1 it says it is 600amp and a catalog number. Which one is it 400 or 600amp? Or is it 600 amp busway with a 400 amp bus plug?

400 A

241. Drawing E008 does not show panel BLF coming off of Panel 1LDP however it is shown on E013. Please clarify. Also, E012 shows panel BLF to demo but drawing E020 says it's existing to remain.

It is existing to remain, but it will be re-fed by 1LDP.

242. Drawing E011 (Emergency One Line) does not show panels ELDP, BELA and BELB however they are shown being fed from HMA on the Emergency Riser Diagram E015. Please clarify.

Panel HME is replacing existing MCCE. Panels are to be replaced in place and fed from panel HME.

243. How deep does the retaining wall go down below grade of the floor in the Centerpoint pit? Assume this will need to be core drilled for the new duct bank?

Core drilling will be necessary

244. Drawing E213, main electrical room note #1 says to order "triplex" transformers with a maximum weight of 3,600 per piece and max dimensions of 45"W x 67"H x 28"D. In discussions with the application/order engineer for Square D/Schneider Electric, he stated the triplex transformer would weigh 25,000lbs making a rough section weight of 8,300lbs and each component dimensions would be 48"W x 90"H x 60"D for an overall footprint of 144"W x 90"H x 60"D. The weights are going to be well above the maximum floor loading. Will shoring on the first floor and possibly down to the basement be required along the rigging path? The first floor ceiling appears to be plaster/drywall and setting all that up will be longer than a weekend duration not to mention the patching. Please advise. Also, please advise on the overall dimensions/footprint of the triplex transformers. If you were to go to a standard 2000kVA transformer, it would be approximately 11,000lbs with a dimension of 96"W x 100"H x 60"D.

The transformers are to be standard dry-type, not cast-coil. This should bring the dimensions and weights down to basis-of-design.

245. Please confirm medium voltage transformers are to have aluminum windings per 23 12 16, 2.5, D, 1

Confirmed. This was intentional due to mass.

246. Does the existing busduct from substations A & B to main SWGR A & B need to be demoed or abandoned in place?

Abandoned in place. However, in certain areas the busduct is required to be cut to provide adequate space for mechanical equipment. Coordinate with mechanical contractor.

247. Drawing E202A shows the busduct as an alternate with a note explaining what they are feeding. The note says to feed panel BEHDP with the busduct, but this panel was removed in the demolition phase. Is the panel that is to be fed from this busduct actually 1HDP? Please clarify.

Busduct is intended to feed 1HDP

248. Specification section 23 00 00, 1.45, A states to paint all equipment, piping, conduit, ductwork, grilles, insulation, etc . furnished and installed in exposed areas under Divisions 23 & 26. Does this requirement apply to this project?

The only possible exposed conduit will be on the exterior of the building. A paint color will be picked for this conduit to closely resemble the surrounding area.

249. Specification 22 05 00, 3.5, A states painting of plumbing systems, equipment and components is specified in Division 09 Sections. Specification 09 91 23 does not mention anything about painting of plumbing systems. Is this required? If so, please provide colors and schedule of colors for different pipes similar the schedule provided in specification section 23 00 00.

Plumbing pipe painting will not be required.

250. Are there any existing building expansion joints that would necessitate expansion fittings in conduits/busway?

No expansion joints in the building.

251. Alternate No. 4 is for raising the Centerpoint Energy outdoor gear. Please confirm that if the base bid is accepted/Alternate #2 not accepted (raising UT's outdoor switchgear), that Alternate No. 4 will also be accepted. I can't see that Centerpoint would allow a steel platform to be installed around their equipment which would block access doors. If this is not the case, I would think alternate steel drawings would be necessary deleted the steel around the Centerpoint equipment if the base bid was accepted and Alternate 4 was not accepted. Please advise.

Concur.

252. Will Alternate No. 7 (LED Fixtures) need to be performed entirely after hours or do you foresee allowing a contractor to be working in occupied spaces changing out fixtures one at time? If response varies based on use of space, please explain while floors/wings can be done during normal hours and which ones would need to be afterhours/weekends.

All areas should be done after hours.

253. Note 4/M104 states to remove portion of ductwork to accommodate new supply air valve but it appears to be located at an exhaust grill and no new supply air valves are shown in these locations on M204. Please clarify.

Note 4 on M104 will be updated by addenda

254. Where the new ductbank is support turn up the side of the building, there is some plumbing/irrigation right in front of the column. Does this need to be moved/relocated and where to? Are the GCs supposed to carry landscaping and irrigation for the excavation of the ductbank? See below photo.

Conduits need to be located so that we do not affect this water line.

255. For the addendum #1 drawings, it's a little confusing about the intent of the size of the electrical room on level 2. Add #1 drawing A-113 was issued which typically means the previous A-113 was superceded. Well, the original A-113 was for the smaller sized electrical room for the base bid but the Add #1 A-113 is showing the larger sized electrical room that relates to Alternate #3. A-114 was the alternate/larger sized electrical room. Same goes for A-160 (RCP). Please clarify.

The larger electrical room shown in Addendum 1 / A-113 is correct for all applications. If the base-bid, smaller sized electrical equipment is used, the electrical room will have additional room in it.

256. Drawing M203 shows a keyed note 8 but there is not a keyed note 8. Please provide.

Keynote was deleted and will be reflected on M203 by addenda

257. Will the data subcontractor be carried by the Owner?

Yes.

258. Will the Owner have a commissioning agent/subcontractor or will all commissioning be by the GC/subs.?

Commissioning will be by GC with coordination from the Owner.

259. Note 12/M406 states to provide crossover ramp with stainless steel framing, Ref to structural. No details for this ramp/stair are provided on the structural drawings. Does this rest on the roof or tie-into roof/structure? Please provide details.

Requirements for the crossover ramp will be clarified by addenda

260. Note 34/M406 says to cut roof for 48" x 48" relief hood. Detail 6/M804 shows steel angles on underside of deck. Please provide structural details and steel sizes of these members.

Detail 6/M804 will be revised by addenda to clarify the structural requirements.

261. Note 26/M406 says "Not Used" but there is a note 26 on the drawing near the outside air intake of AHU-3W. Please clarify.

Keynote 26 will be deleted from the plan on sheet M406 by addenda.

262. No fire alarm specification sections were issued and no fire alarm is shown on the electrical drawings. Will the new electrical room on level 2 require strobes and smoke/heat detectors? No duct detectors are shown on the controls schematics. Please advise.

Addendum 2 will show the devices. These and associated wiring are to match existing and be compatible with the existing FACP.

263. Nothing is shown for the electrical or fire alarm for the demo of the existing fire/smoke dampers at each floors mechanical room. The mechanical renovation drawings show a new fire damper. Please confirm these new dampers are only fire dampers and not fire/smoke dampers. Reference note 11/M406 & M408.

Added duct-mounted detectors on Electrical drawings in Addendum 2. Control Point & Field Device Schedule on M705 has the hard-wire interface shown for Smoke Detector; 2 per unit interlock to VSD & FACP.

264. Regarding Alternate No. 8 for the demand ventilation controls using automated electronic people counter devices at selected classrooms, I do not see anything in the drawings identifying this. How many/where are the classrooms. What are the specifications for the automated electronic people counter devices. What is the sequence of operations for this alternate?

Further details will be provided by addenda.

265. On drawing E212, please provide circuiting information for all equipment. Nothing is shown for DDC panel, HWP-1, HWP-2, associated VFDs, CRU-1, CRU-2, etc.

Added in Addendum 2.

266. Regarding the work in the Centerpoint pit:

a. Please have Centerpoint provide an estimated duration of their work activities to kill power, extend conduit to new elevation, re-pull feeders, and energize. It is critical to understand their durations so temporary power can be properly accounted for. Or, please provide an estimated duration for all GCs/ECs to carry for temporary generator power.

b. During this work/outage, it is estimated to take between 2-6 weeks for all activities in the vault to be performed which include the structural steel (can't be done prior to centerpoint because it would block access doors to their gear and is not safe to work around while live), raise SPH switchgear, sawcut pit floor to finish underground feeders/ductbank, and set pre-cast pads for equipment to sit on. Please provide size(s) of temporary generators needed to power the entire building during this outage.

c. E002 indicates a "Feeder B" to School of Nursing which could also require the need for additional generators to power School of Nursing during this outage. By the label "B", is there an "A" feeder to feeds a double ended substation in the School of Nursing meaning that by cutting this feed, that building could still function? Is the feeder B to School of Nursing in a separate ductbank and if so, where is that manhole. In general, if this is the only feed to School of Nursing, more information/drawings about that building are needed.

d. Drawings E002 & E007 do not reflect the current conditions of the 5kV outdoor switchgear in the TECO pit. It was noticed that two (2) 4" conduits come out of an added section of the switchgear and go into the Central Plant. What do these feed and will temporary power also be required for these systems during the outage.

a. Owner is coordinating with CPE.

b. Three (3) 750 kW

c. and d. SON is fed through the service building, where its substation transformer is located. The existing feed to that building is (2 sets) #2/0 Cu/MV-90. Addendum #2 will introduce an alternate to relocate this gear. Under base-bid (same location), the existing feeder will be re-terminated to the new gear; under said alternate, the feeder will be replaced with (2 sets) #2/0 Cu/5kV MV-105/EPR/133% in the same conduit and extended to the new location.

267. Regarding the existing pneumatic controls and air compressor, is it known what general systems are served by this? (i.e. equipment, dampers, controls, etc.)

Typically these serve the controls system in the building.

268. Does the existing 8" medium pressure steam that feeds the existing steam riser/AHUs have the capacity to serve the new heat exchangers and heating hot water riser at the same time as the existing AHUs are still active? The HHW riser will have to be active before any AHU swap outs can start occurring.

The capacity should be adequate as steam heating coil demands will be removed as they are replaced by HW coils, i.e. no net increase in overall steam demand is expected.

269. Have pre-reads for air balancing been performed and are those results available?

No they have not been

270. Would it be possible to take over one office on the 2nd floor permanently and transform it to an electrical closet where the main feeders for outside enter and put a service disconnect there instead of at the gear to eliminate encasing conduits in concrete in the ceiling?

Given the current layout of the offices in the area, this will not work at this time.

271. The AHU replacements cannot even start until electrical gear on level 2 is energized and all building loads are swapped over. The new heating hot water pumps and heat exchanger are scheduled to install in the same location as the existing main switchboards. Is there another location the HHW pumps and heat exchanger can be located to shorten the schedule?

No. This idea was previously explored extensively during design development.

272. The new main distribution panels on each floor that get replaced are in the same location as the existing. This and associated equipment is something that can be changed out over a weekend. If space

permits, optimally new panels would be installed adjacent to existing so a lot of pre-work can be done before actual floor outage/swap over. Are user groups prepared for weeklong outages of a floor at a time if space does not permit installing new distribution panel in a separate location?

Outages will be coordinated with the end users.

273. Regarding Alternate #2:

a. If Alternate #2 is accepted and we are to refurbish the outdoor switchgear, if the refurbishment/testing can occur over a weekend, would temporary generators/power be required for this outage?

b. For item 6 of the alternate, if it is found through testing that components not meeting tolerances need to be replaced, please confirm that any replacement components, outages/temporary power that may be required to change out bad components would be a change order to the project. This cannot be verified prior to bidding.

c. If the existing gear remains, how do you envision the new feeders/ductbank to the 2nd floor electrical room tying into the existing outdoor switchgear? (i.e. overhead/side cutout in switchgear, running on top of pit slab, coring through pit wall and then proceeding to underground ductbank?)

d. If the base bid is accepted and new outdoor switchgear is replaced, how is the new feeders/ductbank to the 2nd floor to be installed? Can it be overhead/side cutout in gear, as mentioned above, or would it be required to sawcut the TECO pit slab to install the bottom fed ductbank after the existing gear is removed but before the new gear is set? Both questions "c" and "d" could contribute to the amount of time the building(s) are on temporary generator power.

A. No, temp generators would not be required. B. Yes, it would be a change order. C. Coring through the pit wall. D. We would prefer them to be in the ground and run to the TECO pit. We do not wish to saw cut the TECO pit so over head and run under the grating/encased in concrete would suffice.

274. It was mentioned in the pre-bid that information on the pavers would be provided in the area of the ductbank. Please provide.

Attached

275. Will all outage research/investigation will be performed by UTHSC personnel?

Yes outages will be researched by UTHSC personnel

276. Are the existing Phoenix Air Valves pneumatic or electrically actuated?

Existing air valves are comprised of a mixture of both electronic and pneumatic type.

277. E212 states to re-route HW piping away from required equipment working clearances. Nothing is shown for this alternate on the plumbing or mechanical drawings. Please indicate on appropriate drawing.

It will be included in alternate 3.

278. A-111 issued with Addendum #1 added keyed notes to the drawings however notes 1 & 2 do not appear in the print area of the drawing. Please clarify.

Be sure the latest A-111 is distributed to contractor (see attached A-111)

279. The room finish schedule on A-540 does not provide any information of types/manufactures or finishes (i.e. plam, paint, flooring, rubber base, etc.). Please provide.

All new finishes to match adjacent existing finishes.

280. M300 shows the added temporary mechanical room for the temporary AHUs. Does the temporary wall need to go to deck? Do the walls need to be rated?

The temporary wall is intended as a temporary construction partition. There is no mechanical reason that the walls need to go to deck, however, UTHSC safety officer will need to confirm that no fire rating is required.

281. The temporary partitions for the temporary mechanical room encompass one passenger elevator as well as the freight elevator and break room. Please confirm this will be allowed. If the orientation

changes, please ensure there is still adequate space to install the temporary AHUs, piping, duct connections, etc.

We will coordinate the installation of temporary partitions. Please include the current walls as shown on the documents.

282. Since an MEP Roof Demo drawing was not provided, it is assumed that this shaded exhaust fan in the below picture is to be removed to make room for new EF-7-1 and EF-7-2? Will the new exhaust fans utilize the existing duct/roof opening or does it need to be infilled and relocated or re-sized?  
MEP100 will be updated by addenda to indicate the demolition of the existing utility exhaust fan set and associated ductwork. The design intends to reuse the existing roof duct penetration for the installation of replacement ductwork.

283. Note 3/M205 states to retrofit existing air valve with new controls. Reference 3/M703. Detail 3/M703 does not depict this scope of work. Please provide.  
The retrofit scope will be clarified by addenda.

284. Note 6/M205 states to provide differential pressure sensor and room control monitoring panel. Reference 3/M703. Detail 3/M703 does not depict this scope of work. Please provide.  
Keyed note 6 on sheet M205 will be is updated by addenda.

285. In general, the documents to not address painting of rooms. Work in some areas will be more intrusive than in others, such as level 7 where most ceilings will be removed. Are we to re-paint the walls in areas such as these? It would prudent if the Owner carried or stipulated an allowance for all GCs to carry for touch-up painting.  
Yes, all existing finishes that will be demolished for any of the project scope shall be reinstalled to match it's original finish.

286. Regarding the pump schedule on M003:  
a. Pump schedule head and GPM values do not match plan notes. Notes 30 & 31/M406 require 20' head for OAPH-P-3W & 3E, schedule requires 15'.  
b. OAPHOA1P is shown on M406 but this does not appear on the schedule.  
c. Plan notes say GPM's to match coil flow. Pumps schedule for 20 GPM, pre-heat coil GPM's run from 7.2 to 28.8 GPM.  
d. M410 shows pumps OAPH-8AEP/-9AEP/-10AEP & OAPH-8AWP/-9AWP/-10AWP. Schedule only has OAPH-P-8/-P-9/-P-10.  
e. Need pump schedule for alternate AHUs.  
f. Note 4 is listed on pump schedule for HWP-1 and HWP-2 but no note 4 is on the schedule.  
g. Note 5 is listed on all other pumps but no note 5 is on the schedule.  
These pump comments will be addressed by revised schedule to be issued as addenda.

287. Note 5 on M203 (and other M drawings) states to retrofit existing fume hoods with new sash position sensor and new controls and references 4/M703. That detail does not note these items are required, rather it gives a sequence of operation for hoods. Additionally, not every hood shown on the floor plans has a note 5 next. Is that correct?  
Floor plans and Detail 4 on Sheet M703 will be are updated by addenda to clarify scope.

288. Note 8/M204 points to chilled water piping and reference note 10/M801. 10/M801 references piping of a stacked coil.  
New details were added for fan coil chilled water coil . Sheet M211 and M801 will be updated accordingly by addenda

289. Note 2/M211 requires a new steam relief valve however no steam relief valve is scheduled.  
The steam relief valve schedule will be added to M003 under addenda.

290. The steam regulator schedule on M003 requires a 2" and 4" steam valve however Section B-B on M401 shows two (2) 2" branch lines. Please clarify.



M401 will be updated to show one 4" and one 2" line by addenda.

291. Note 8/M401 is on floor plans but keyed note says not used.

M401 will be revised to correct this by addenda

292. There is no schedule for the replacement of the water softener. Please provide the following:

- a. Make & model
- b. Inlet/outlet pipe size
- c. Flow rate of system
- d. Resin tank material (steel or fiberglass)
- e. Resin tank volume capacity – cubic feet of resin per tank?
- f. Resin tank softening capacity – grains of hardness removal per regeneration cycle per tank.
- g. System function type – alternating or progressive flow?
- h. Communication requirements, if any, with Building Automation System

Previously provided.

293. Specification 26 05 33, 3.1, B, 3, requires rigid steel conduit or IMC in mechanical rooms. There is a ton of existing EMT being utilized in the mechanical rooms. Please clarify which is required in the mechanical rooms. In addition to cost if Rigid is utilized, it can cause outage durations to be longer.

New feeders as indicated on the one line diagram and specifications, including conduits.

294. Alternate #3 is asking to replace the existing power factor correction capacitor with an equal to the existing. Please provide specifications and the size needed for this piece of equipment.

The existing is automatic with a total capacity of 200 kVAR.

295. Drawing "A-160" indicates that there are eight (8) new 4ft strip fixtures located in the new electric room on the second floor. Do you have the fixture type and the circuiting/switching information?

Will be answered in electrical Addenda 2

296. Drawing "E007" shows that the existing, relocated PFCC is being fed from the Main Switchboard A. On drawing "E007A", this portion of work is missing. Can you please clarify on what is required for this scope of work?

It will require an additional 300 AT breaker with 4#350 kcmil/THHN in 3"C.

297. After the walkthrough, it was learned that a majority of the tile in the lobby area on levels 2-10 was to be removed and replaced as needed for mechanical work. The tile in this area was in pretty rough shape. See below picture for reference. The majority of this tile is discolored and in disrepair, and unable to be removed and replaced. This is also a very brittle tile, as we discovered when a sample tile was removed in the breakroom and was immediately broken by one of the visiting trades while being handled. UT mentioned that we should be able to utilize tile from the conference room (which is being demolished) to replace and repair tiles in the Lobby. I have some concerns with our ability to successfully remove and replace tile from the conference room with as brittle as the tile appears to be as well as the quantity needed. This is apparently a discontinued tile. Should we figure replacing all ceiling tile and grid in the lobby areas? Please advise.

Design team agree with contractor's assessment of replacing all ceiling tile and grid in the lobby areas. Owner to provide final decision.

298. Please confirm abatement is by the Owner.

Yes

299. So that it can be properly accounted for in our schedules, please indicate a duration per floor/mechanical room that should be included for Owner abatement activities.

5 days

300. Can we tie into existing spare electrical circuits for saw-cutting, coring, and welding machines or will temporary power need to be provided for those?

Temporary power is required. This was clarified at pre-bid.

301. On proposed floor plan drawings E201, E212 and E213, it is indicating for (6) 3" conduits to feed panels "HMA", "HMB", "BHDP" and "ATS-BA". According to the one-lines on E007 and E008, it appears it needs to be a quantity of (8) 3" conduits. Is this a correct assumption for the feeder counts?  
Yes, (8) conduits is correct.

302. On the proposed one line drawings, E007 and E008, it indicates for 1 set of (3 #500 & 1 #1/0 5kv cable in a 5" conduit) is to be installed from the new 5kv outdoor switchgear to each of the new 5kv indoor switchboards "A" and switchboard "B". On drawing E213, it shows that there is to be (2) two sets of 5kv cables in a 5" conduits run to a j-box in the ceiling. Are two (2) of these conduits spares and does the 5kv cables in the second set of conduits run all the way back to the outside 5kv switchgear?  
(1 set) + 1 spare per each of two circuits from TECO pit to bottom of building, but the spares stop there while (1 set) per each of two circuits (totaling two pipes) run up the building and to the substation gear.

303. On sheet E007 there is a feeder B to the Nursing Building out of the new 5kv outdoor switchgear. Is this a new feeder or are we to reinstall the existing feeder?  
Reterminate the existing feeder, leaving excess as slack in pull section. FYI - next addendum will include an alternate for relocating the gear, resulting in re-pulling that feeder.

304. On drawing E212 there is an ADD Alternate for Switchboard "BS". I didn't see anywhere on the proposal form for this item to be listed. Can you please advise what alternate number this pricing needs go under?  
Alternate #3

205. Would it be possible to either install our new underground 5kv feeder from the existing manhole shown on drawing E114 Site Plan or at least intercept the existing underground 5kv feeder outside of the existing manhole?  
Re-use of the manhole is acceptable, if it is sufficient. However, the cables need to be one new length with no splices.

306. On drawing E011 the bus duct feeders indicated are to be (2) 400A with 400A bus plug breaker style. The feeders feeding the bus plugs coming out of Panel 2ELDPC are sized to be 400A. However on drawing E015 the same two bus duct feeders indicate to be 600A. What size bus duct is required?  
They are 400 A.

307. I noticed that there isn't any location shown for the two Emergency Bus Duct risers for the "\_ELA" panels. Can you indicate on drawings where you would like for them to be installed?  
Directly west of the existing three busways.

308. On the site drawing E114, it shows that the new underground conduits are to terminate in one 36"W x 24"L x 48"H on the face of the column. The drawings E200, E202 and E213 indicates that there are two (2) 30" x 30" x 12" j-boxes mounted on the side of the column. Can you clarify on which j-box installation you would prefer?  
The box on the site plan (36x24x48) is on grade, the two on the second floor plan are at Level 2 ceiling height to allow a pull point into the concrete-encased conduits in the building. The upper boxes are allowed for pulling convenience. If you believe you can turn in without them they can be omitted and still maintain the 360° bend limit.

309. Basement Level:

a. Drawing E200 shows AHU-BE with the panel/circuit designations as new work, the panel schedule for BHDP (drawing E035) conflicts with the one-line (drawing E008) for the HP rating, conduit and wire size for the unit. Which drawing has the correct circuit information, the oneline (E008) or the panel schedule (E035)?

b. There are also discrepancies on the unit designations for the AHUs. Drawing E200 shows AHU's

BE, BW & BW-2 with panel/circuit designations. Drawing E035 panel schedule for BHDP has units listed as AHU-BE, AHU-BH and AHU-BW. Drawing E008 shows AHU-BE and AHU-BH1 only. Please correct unit designations on all listed drawings.

c. Drawing E212 shows FCU-B (units 1-3) with the panel and circuit designations to be a 480v 3phase load, as does the panel schedule HMB (drawing E035) but the mechanical schedule (drawing M003) shows FCU's to be single phase 277v load. Please clarify which voltage is correct.

d. Drawing E212 shows sump pumps 1 & 2 with panel and circuit designations (HME 1, 3, 5 & 2, 4, 6) the panel schedule (drawing E035) shows "spare" for circuits 1, 3, 5. Circuits 2, 4, 6 show sump pump P-2B and circuits 8, 10, 12 for sump pump P-2A. Please clarify that sump pumps on drawing E212 are P-2A and P-2B and correct circuit location for panel HME (drawing E035).

e. Drawing E212 shows CWP-1's VFD as new but the demo drawing E003 shows VFD to be existing. Please clarify what is new and what is existing to remain.

f. Drawing E212 shows CWP-2 and CWP-3's VFDs' as new but the demo drawing E002 shows the VFDs' to be existing. Please clarify what is new and what is existing to remain.

g. Drawing E212 shows CWP-2 fed with circuits 14, 16, 18 which conflicts with the panel schedule for HMA (drawing E035). It shows CWP-2 fed with circuits 8, 10, 12; please correct.

h. Drawing E212 shows CWP-3 fed with circuits 8, 10, 12 which conflicts with the panel schedule for HMA (drawing E035). It shows CWP-3 fed with circuits 14, 16, 18; please correct.

i. Drawing E212 shows HWP-1 & HWP-2 and new VFD's for each but there aren't any panel or circuit designations. Is the panel schedule for HMB (drawing E035) circuit information, wire and conduit for HWP-1 & HWP-2 correct?

j. Drawing E212 shows COND RETURN UNIT's 1 & 2 to be "new work" but there aren't any panel or circuit designations. Drawing E003 one-line shows COND RETURN UNIT 1 & 2 to be existing. CRU-1 shows to demo the conduit and wire only, CRU-2 shows to be existing but the MCCB they are fed from shows to be demoed. Please clarify what is new and what is existing to remain and provide circuit and panel designations.

k. Drawing E212 doesn't show any circuit or panel designations for the domestic water booster pumps. The panel schedule for HME (drawing E035) shows the pumps with conduit and wire size. Please verify circuit designations for these pumps. The panel schedule for HME (drawing E035) shows these pumps to have a combination starter but the floor plan (drawing E212 shows a VFD. Please clarify.

a. In the case of conflict between AHU motor sizes shown on the one line diagram(s) and panel schedules, the panel schedule is correct.

b. Panel schedule is correct.

c. All FCUs shall be 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.

d. "Sewage pumps P-1A & P1B" is P-1, and "Sump Pumps 1 & 2" is P-2. Confirmed each duplex pump takes one common input circuit.

e. VFDs are new to replace the existing VFDs being removed.

f. VFDs are new to replace the existing VFDs being removed.

g. Will correct.

h. Will correct.

i. Yes.

j. HMB-14/16/18 and HMB-20/22/24. 30AT/3P each with #10.

k. HME-14/16/18. However, should be 50AT/3P with #8 wire.

310. Level 2:

a. Drawing E202 show AHU -1W, 1SW, 2W, 2E, 1E, 1SE with panel/circuit designations as new work but drawing E007 shows conduit, wire and VFD's to be existing, demo drawing E002 shows conduit, wire and VFD's as "to be demo"; please clarify if it will be new conduit & wire? Or is the one-line drawing correct and the AHU's will be fed with existing conduit & wire?

a. They are to be new circuits, wire, conduit, and VFDs.

311. Level 3:

a. Drawing E203 shows AHU - 3E, 3W and OAHU-1 with the panel and circuit designations but the information on the panel schedule (drawing E035) conflicts with the information on the one-line (drawing E009) for HP rating (for sizing VFD's), conduit and wire size. Please clarify which drawing has the correct load information, the panel schedule or the one-line.

b. Drawing E203 shows VAV-3-1 to be fed from panel 3LC but the panel schedule on drawing E023 doesn't show any circuit information. Please provide circuit information. Typical of floors 3-10.

a. Panel schedule is correct.

b. No power to VAVs.

312. Level 4:

a. Drawing E204 shows AHU 4E & 4W with the panel and circuit designations but the information on the panel schedule (drawing E035) conflicts with information on one-line (drawing E009) for HP rating, conduit and wire size. Please clarify which drawing has the correct information, the panel schedule or the one-line.

b. Drawing E035 shows the panel schedule 4HDP for FC4Ws' (4 units total) to have a #0 combo starter. Drawing E009 one-line shows there to be a #00 snap-switch/starter. Which drawing is showing the correct information?

c. Drawing M003 shows FC4W units to have a voltage rating 277v single phase. Drawing E204 shows FC4W to 480v 3phase. Which drawing is showing the correct information?

a. Panel schedule is correct.

b. Don't care which.

c. All FCUs shall be 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.

313. Level 5:

a. Drawing E004 shows the FC5Ws' (3 units total), conduit and wire to be demoed. Drawing E009 shows these units with new conduit and wire only, and to use existing VFD and FC5W. Please clarify what is new and what is existing to remain.

b. Drawing E205 shows FC5W (3 units total) as new work with new combo starters, which conflicts with information in the question above. Please verify whether the FC5Ws' will use VFD's or combo starters.

c. Drawing E004 shows AHU -5W, 5E, VFD's, conduit and wire to all be demoed. Drawing E009 shows new conduit & wire only with existing VFD and unit. Please clarify what is new and what is existing to remain.

d. Drawing E205 shows the VFD's for AHU 5W and 5E in two different locations (in one location the VFD's appear to be wall mounted and the other location shows to be mounted on unistrut. Which location is correct?

e. Drawing E035 panel schedule for 5HDP lists AHU 5E and 5W as being 40HP with three #6AWG and a #10AWG ground. Drawing E009 shows AHU 5E and 5W as being 25HP. Which drawing has the correct information?

f. Drawing E009 shows the VFDs for AHU's 5W and 5E to be existing, the floor plan (drawing E205) shows the VFD's to be new. Please clarify what is new and what is existing to remain.

a. All FCUs get brand new circuits, complete with conduits, wire, and combo starters.

b. Combo starters.

c. New VFDs on all AHUs.

d. Exact location is arbitrary. Field coordinate with mechanical contractor.

e. Panel schedule is correct.

f. Panel schedule is correct.

314. Level 6:

Drawing E206 shows AHU's 6E & 6W with the panel and circuit designations but the panel schedule for 6HDP (drawing E035) conflicts with information on the one-line (drawing E009) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

Panel schedule is correct.

315. Level 7:

Drawing E207 shows AHU's 7E & 7W with the panel and circuit designations but the panel schedule for 7HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

Panel schedule is correct.

316. Level 8:

a. Drawing E208 shows AHU's 8E & 8W with the panel and circuit designations but the panel schedule for 8HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

**Panel schedule is correct.**

317. Level 9:

a. Drawing E209 shows AHU's 9E & 9W with the panel and circuit designations but the panel schedule for 9HDP (drawing E035) conflicts with information on the one-line (drawing E010) for HP rating, conduit and wire size. Please clarify which information is correct, the panel schedule or the one-line.

**Panel schedule is correct.**

318. Level 11:

a. Drawing E002 shows AHU-11, combo starter, conduit and wire to be demoed. Drawing E007 shows AHU-11, conduit and wire to be existing. Drawing E211 shows "new" AHU-11 with the panel and circuit designations and a VFD. Please clarify what is new and what is existing to remain.

b. Drawing E002 shows EF-10N and a combo starter to be existing, only conduit and wire is to be demoed. Drawing E007 shows EF-10N, combo starter, conduit and wire to be existing. Drawing E211 shows a new combo starter. Drawing E035 panel schedule for PHDP shows new unit EF-10N. Please clarify what is new work and what is existing to remain.

c. Drawing M003 shows EF-10N to only be 208v single phase and drawing E211 shows to be 480v 3phase. Which drawing has the correct information?

d. Drawing E211 shows EF-P1 to be 480v 3phase as does panel schedule (drawing E035) but drawing M003 shows the unit to be only 208v single phase. Which drawing has the correct information?

**a. All AHUs are new, together with circuits.**

**b. New.**

**c. Both are 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.**

**d. Both are 480V/3P. We will coordinate with Mechanical to get this corrected on their schedules.**

319. At the first job site walk-thru it was mentioned that a temporary AHU is to be furnished and used on each floor during the replacement of the existing AHUs. Who is to provide the necessary power and how much power is required? Where will this power be coming from?

**Required power will come from the adjacent mechanical room.**

**END OF ADDENDUM 3**

## SECTION 01 35 23 – PROJECT SAFETY REQUIREMENTS

### PART 1 – GENERAL

#### 1.1 OVERVIEW

The Owner’s objective is an injury and incident-free Project, with a focus on safety that shall not be compromised to achieve any other business objective. The Contractor shall structure an effective and systematic safety management approach that emphasizes continuous improvement.

#### 1.2 GENERAL REQUIREMENTS

The Owner recognizes that the Contractor and Subcontractors may have existing safety management programs with established safety policies, processes, procedures, and work practices. The Owner will support these where they prove to be effective and meet the intent and purpose of this Section. Upon request by the Owner, the Contractor and/or Subcontractors (of any tier) shall promptly produce and provide copies of any required documents related to Project safety. Where opportunities for improvement are identified, Contractor and Subcontractors shall work collaboratively with OFPC toward making appropriate revisions to progress toward an injury and incident free workplace.

#### 1.3 DEFINITIONS

- 1.3.1 The term “Owner’s Safety Representative” (OSR) as used throughout the Contract documents shall refer to any construction safety professional who is acting on behalf of the Owner. This will include, but may not be limited to the OFPC Safety Analyst, and all Risk Control Consultants associated with Owner Controlled Insurance for the Project.
- 1.3.2 The term “Project Safety Coordinator” (PSC) as used throughout the Contract documents shall refer to the Contractor’s construction safety professional who is acting on behalf of the Contractor and who shall be responsible for safety training, inspections, incident investigations, record keeping, reporting, incident response, and claims management, and shall serve as the technical advisor to the Contractor’s project staff for all safety issues.
- 1.3.3 The term “Project Safety Assistant(s)” (PSA) as used throughout the Contract documents shall refer to any Contractor’s construction safety professional who is acting on behalf of the Contractor and who shall perform safety related tasks as delegated by the PSC.
- 1.3.4 The term “Subcontractor’s Safety Representative” (SSR) as used throughout the Contract documents shall refer to a person employed by the Subcontractor of any tier who is designated to be the “competent” safety representative and possesses the proper credentials for the position. All Tiered subcontractors shall provide at least one SSR per shift.
- 1.3.5 The term “qualified” as used throughout this Section shall match the definition within the OSHA construction safety standards (Title 29 CFR, Part 1926). *Qualified means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his*

*ability to solve or resolve problems relating to the subject matter, the work, or the Project.*

- 1.3.6 The term “competent” as used throughout this Section shall match the definition within the OSHA construction safety standards (Title 29 CFR, Part 1926). *Competent person means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them. In addition to the OSHA standard, this person must be trained and knowledgeable in the construction and/or operation of specific equipment or a specific work method and show proper documentation to support such training. Basic awareness training will not be acceptable for this position.*
- 1.3.7 The term “Construction Area” as used throughout this Section shall refer to the portion of the Owner’s property that is released to the Contractor’s control and is designated by the Contractor as the space where actual construction efforts will be undertaken to execute the Work.
- 1.3.8 The term “Administration Area” as used throughout this Section shall refer to the portion of the Owner’s property that is released to the Contractor’s control and is designated by the Contractor as the space where support efforts will be undertaken to provide administrative needs for the Work. If the Project has Project office trailers within the confines of the Owner’s property, that space and the parking area around it may be designated as an Administration Area.
- 1.3.9 The term “worker” as used throughout this Section shall refer to any person who has successfully completed the Project safety orientation.
- 1.3.10 The term “visitor” as used throughout this Section shall refer to any person who has not successfully completed the Project safety orientation. Visitors shall not be allowed access to the “construction areas” unless they are escorted by a member of the Contractor’s Project management staff or OFPC.
- 1.3.11 The term “Owner’s Designated Representative” (ODR) as used throughout the Contract documents shall refer to the individual assigned by the Owner to act on behalf, and to undertake certain activities as specifically outlined in the Contract. The ODR is the only party authorized to direct changes to the scope, cost, or time to the contract.
- 1.4 PURPOSE
- 1.4.1 The Contractor shall bear overall responsibility for all aspects of safety at the Project.
- 1.4.2 The Contractor shall, at all times, provide adequate resources, equipment, training, and documentation to:
- 1.4.2.1 Assure compliance with the requirements of this Section and all Federal, State, and local statutes, standards, and regulations.

1.4.2.2 Assure a safe work environment at the Project.

1.4.2.3 Instill a culture for safe behavior in all supervisors and workers.

1.4.2.4 Ensure a universal understanding that safety and health issues take precedence over all other considerations at the Project.

1.4.3 In any circumstance where this Section differs from, or conflicts with any statutory requirement, the more stringent shall apply.

1.4.4 The Owner reserves the right to have any manager, supervisor or worker removed from the Project for disregarding Project safety requirements. Removal of Project Superintendent, PSC, PSA or SSR may result in work stoppage that will remain in effect pending approval of a suitable replacement. Contractor shall not be allowed any consideration for time nor monetary compensation for said stoppage.

1.4.5 The Owner reserves the right to deduct from the Contract any safety related expenses that the Owner incurs as a result of the Contractor's, or any Subcontractor's, failure to comply with the requirements of this Section.

1.4.6 The Owner will deny requests for time extensions and/or monetary considerations whenever the Owner intercedes on behalf of safety compliance as a result of Contractor failure to act as required by Contract.

## 1.5 RELATED DOCUMENTS

In addition to specific references indicated herein, the Contractor's attention is also directed, but not limited, to the following Publications and documents:

1.5.1 Current edition of Uniform General and Supplementary Conditions for The University of Texas System Building Construction Contracts (UGSGC);

1.5.2 Owner's Special Conditions;

1.5.3 Current edition of OSHA Safety Standards for the Construction Industry, CFR Title 29, Part 1926.

## **PART 2 – PRODUCT**

### 2.1 PROJECT SAFETY COORDINATOR (PSC)

2.1.1 One (1) PSC shall be provided by the Contractor and shall be assigned full time and dedicated to the Project from the commencement of construction until at least Substantial Completion.

2.1.2 Overall career experience must include at least seven (7) years in building construction safety.



2.1.3 Primary experience of the proposed PSC during six (6) of the recent seven (7) years of work history must have been solely dedicated to building construction safety with at least five (5) years of construction safety management experience. The PSC must have practical knowledge, working experience, and documented continuing education in areas such as fall protection, scaffolds, excavation, confined space, crane/equipment operations, electrical, incident investigation, and other such safety/health related training. OSHA 10/30 hour Construction Outreach or OSHA 510 certificates will not be acceptable for this training requirement. The PSC shall possess a certificate of completion for the OSHA 500 or 502 (Train the Trainer in Occupational Safety and Health for Construction Industry). The certificate must be dated within four (4) years of the executed Contract. The PSC must show evidence of specialized training for Emergency First Aid, Cardio Pulmonary Resuscitation (CPR), and Automatic External Defibrillator (AED) current to within two (2) years. Formal submittal of proof must be provided prior to acceptance and before any portion of the Work will be allowed to commence. Any candidate proposed that does not meet these minimum qualifications will not be accepted.

## 2.2 PROJECT SAFETY ASSISTANT (PSA)

2.2.1 Each PSA shall be assigned full time and dedicated to the Project and shall have no additional duties other than safety.

2.2.2 The initial one (1) PSA shall be provided by the Contractor and shall be assigned full time and dedicated to the Project until at least Substantial Completion. ODR concurrence required prior to release. The initial PSA must be assigned full time and present on the project at the time that the average daily population reaches twenty-five (25) persons.

2.2.3 A second PSA shall be provided by the Contractor when the average daily population at the Project rises to one hundred and fifty (150) persons. Additional PSAs shall be provided by the Contractor when the average daily population increases by another increment of one hundred and fifty (150) persons. The additional PSAs shall remain on the Project until the average daily population falls below the number that required them to be added.

2.2.4 Primary experience of any proposed PSA, during the recent six (6) years of work history must include at least five (5) years that have been dedicated solely to building construction safety. The PSA must have practical knowledge, working experience, and documented continuing education in areas such as fall protection, scaffolding, excavations, confined spaces, crane/equipment operations, electrical, incident investigation, and other such safety/health related training. An OSHA 10/30 Construction Outreach or OSHA 510 certification will not be acceptable for this training requirement. The PSA shall possess a certificate of completion for the OSHA 510 (Occupational Safety and Health Standards for the Construction Industry) in addition to the continuing education requirements previously noted. The certificate must be dated within four (4) years of the executed Contract. The PSA must show evidence of specialized training for Emergency First Aid, Cardio Pulmonary Resuscitation (CPR) and

Automatic External Defibrillator (AED) current to within two (2) years. Formal submittal of proof must be provided prior to acceptance. Any candidate proposed that does not meet these minimum qualifications will not be accepted.

2.2.5 The ultimate number of PSA(s) at the Project shall be dictated by the value for construction services (Construction Cost Limit) as follows:

2.2.5.1 For up to and including Ten Million Dollars (\$10,000,000), only the PSC shall be required.

2.2.5.2 For projects of Ten Million Dollars (\$10,000,000) up to and including Thirty Million Dollars (\$30,000,000), the PSC and the initial PSA will be required. For projects over Thirty Million Dollars (\$30,000,000) up to and including One Hundred Eighty Million Dollars (\$180,000,000), the PSC, initial PSA and an additional PSA will be required. For projects over One Hundred Eighty Million Dollars (\$180,000,000), the PSC, initial PSA, and two (2) additional PSAs will be required. Based on scope of work and/or anticipated hazard(s), additional PSA(s) may be required. Any additional PSA(s) beyond those noted above shall be determined and negotiated by the ODR prior to GMP.

2.2.5.3 For Contracts that involve multiple Phases, Stages, and Change Orders, the value for construction services shall accumulate as additional packages of Work are added to the overall Contract. If there are significant population gaps between the head count at the start of a new GMP and the declining count of the previous one, the ODR will decide if the new GMP shall relax only the demand for additional PSAs.

## 2.3 PSC AND PSA (PSC/A)

2.3.1 The qualifications and previous work experience of the initial PSC/A shall be submitted with the RFP. Based on final Contractor selection for the project, additional information for the PSC/A may be required prior to written acceptance for the position. Any PSC/A additions or changes after the acceptance date must be formally submitted for consideration to the ODR. In the case of the PSC, work shall not be allowed to commence prior to written acceptance by the ODR. In the case of the PSAs, each must be assigned to the project on or before the worker count reaches the numbers indicated in section 2.2.3. Any cost related to the Contractor's failure to meet this requirement will not be reimbursed by the Owner and additional time extension of the Project schedule will not be allowed.

2.3.2 For two (2) years of military service that cites safety training or an Associate's Degree in a field of study that contains significant safety training, two (2) years of required experience will be credited for the requirements listed above. For four (4) years of military service that cites safety training or a Bachelor's (Undergraduate) Degree in a safety related field, four (4) years of required experience will be credited for the requirements listed above. Military experience and/or degree will only receive credit once. A professional certification in a safety related field (CSP, OHST, CHST, etc.) may receive credit for up to four (4) years of experience in addition to the years noted above. The Owner reserves the right to determine year(s) of credit based on recognition of

certification, requirements to receive certification, and continuing education requirements to maintain certification.

- 2.3.3 The PSC and/or at least one PSA must be on the project at any time that workers are present.

## 2.4 SUBCONTRACTOR'S SAFETY REPRESENTATIVE (SSR)

- 2.4.1 Each tiered Subcontractor shall declare one (1) or more employees to be its designated SSR. The SSR shall be dedicated to the Project for on-site safety services.
- 2.4.2 The SSR may have collateral duties, but must be on the Project site when any part of the applicable Subcontractor's Work is being performed. The Contractor shall formally approve each SSR.
- 2.4.3 Each first-tier Subcontractor SSR shall possess a certificate of completion for the OSHA 30 hour Outreach Training in the Construction Industry. Remaining tiered Subcontractor SSRs shall possess at least a certificate for the OSHA 10 hour Outreach Training in the Construction Industry. The certificate must be dated within four (4) years of the executed Subcontract. Only a sub-tiered contractor that will have no more than three (3) workers on the project during their scope of work may petition to be excluded from this requirement. Any exception shall be by written approval of the ODR.

## 2.5 CONTRACTOR PROJECT SAFETY MANAGEMENT PLAN (PSMP)

- 2.5.1 The Contractor shall develop, implement, and furnish adequate resources for the PSMP.
- 2.5.2 The objectives and intent of the PSMP shall include, but not be limited to:
  - 2.5.2.1 Anticipating, plan, control and coordinate Work to eliminate hazards, minimize risks, and aggressively manage losses involving injuries or property damages;
  - 2.5.2.2 Ensuring education and training for best safety practices by all workers and holding supervisors accountable for safety performance;
  - 2.5.2.3 Documenting and recording preventative measures, establishing inspection, notification, and investigation requirements, and measuring results of performance;
  - 2.5.2.4 Providing protection for adjacent property and safety for the public.
- 2.5.3 The Contractor shall submit a complete draft of the PSMP to the Owner for review and written acceptance prior to the issuance of NTP for construction services. The Contractor shall incorporate Owner comments into a final draft and shall resubmit the amended version to the ODR within thirty (30) calendar days following the return date of Owner comments to the initial draft.
- 2.5.4 Beginning with the Notice to Proceed for Construction Services, the Contractor shall formally evaluate and update the PSMP and its supporting documentation at least semi-annually to assure effectiveness and continuous improvement. The Contractor shall

submit an evaluation report to the ODR no later than fifteen (15) calendar days after completion of the evaluation.

2.5.5 The PSMP shall address the inclusion of the OFPC SafetyNet Program for electronic collection of safety observations. The terms of this Owner directed Program shall not be replaced by any existing process including any existing version of the SafetyNet Program used by the Contractor. Within fifteen (15) calendar days of the issue of the NTP, the Contractor shall make available a means to record field observations. This can be done by computer or a minimum of two (2) hand held PDA devices and a PC docking station.

## 2.6 PERSONAL PROTECTIVE EQUIPMENT (PPE)

2.6.1 PPE shall be required for all workers in construction areas. The following items shall be furnished, inspected, and maintained by the employer.

2.6.2 Hard Hats shall be ANSI stamped (Z89.1-1997, Type I, Class E, G and C).

2.6.3 Eye Protection (Safety Glasses) shall be ANSI stamped Z87. If a worker wears prescription glasses (plastic lens only) that are not marked Z87, the employer shall furnish goggles or safety glasses that are designed to fit over another pair of glasses.

2.6.4 Vests shall be reflective traffic vests and shall be worn outside of all upper body clothing.

2.6.5 Contractor shall purchase and maintain an appropriate inventory of types and sizes to be able to furnish a hard hat, pair of safety glasses and vest for up to ten (10) Owner representatives who may visit the Project.

2.6.6 Hand Protection, Hearing Protection, Respiratory Protection, Fall Arrest Equipment, and other PPE shall all be furnished as required to comply with this Section and OSHA Standards.

## 2.7 MEDICAL EQUIPMENT

2.7.1 The Contractor shall purchase and maintain at least one (1) First Aid Kit on the Project site as per ANSI Z308.1 and it must be accessible whenever work is ongoing.

2.7.2 The Contractor shall purchase and maintain at least one Automatic External Defibrillator (AED) unit on the project site. The unit shall be located in Contractor project site office with appropriate signage and must be accessible whenever work is ongoing.

2.7.3 A minimum of two (2) Contractor employees, with current certifications for CPR/Emergency First Aid and for use of the AED, shall be at the Project whenever Work is being performed.

## 2.8 WORKER TRAINING

Prior to commencement of the Work, employers shall submit lists to the PSC that identify Supervisors, Competent Persons, Equipment Operators, Crane Operators, Riggers and Emergency Responders. In addition to lists, employers shall include copies of all training

certificates or formal documentation to support the declared positions and qualifications. Operations that require one of the abovementioned classifications may not commence until said documentation is at the project site.

- 2.8.1 For the overall authority at the Project and for all operations that require a Competent Person, the PSC shall maintain in a Project file from each employer, a transmittal that names each person declared to be competent for each operation. For operations that require independent certification, copies of the certificates shall be attached.
- 2.8.2 For every brand and model of crane and motor driven equipment (earth moving, lift platforms, suspended stages, material handling, etc.) brought onto the Project, the using company shall transmit to the PSC a list of employees who are trained and authorized to operate the equipment. Copies of all available training and/or certification documents shall be attached. Industrial Trucks (forklifts) and Cranes shall only be operated by persons who possess documentation of certification from a training program that carries nationally recognized accreditation. Individuals who possess required credentials shall demonstrate capability for witness by the PSC/A. The PSC/A shall issue cards and insignia as detailed herein to authorize on-site operations of all specified equipment.
- 2.8.3 For every position that is required to assist crane and motor driven equipment operations (flaggers, signal persons, riggers, spotters, etc.), the using company shall transmit to the PSC a list of employees who are trained and authorized to perform these functions. Rigging shall only be performed by persons who possess documentation of completion from a training program that carries recognized accreditation.
- 2.8.4 All workers shall be trained to perform their specific task(s). Employers shall provide formal documentation to support training provided.
- 2.8.5 Acceptable documentation for all training claimed shall contain organization, name, and title of the trainer(s), date of training, material covered with time spent on each topic, and evaluation process used to determine worker understanding of training. Owner reserves the right to determine acceptability of training being claimed.

## 2.9 PROJECT SAFETY SIGNS AND POSTERS

- 2.9.1 The Contractor shall post a pair of safety regulation signs at every point of entry to the Project: one in English and one in Spanish. Font shall be black in color and sized in each language to completely fill the surface of a white-coated four foot (4') vertical by eight foot (8') horizontal sheet of 3/4 inch plywood and shall contain only the following text:

**ALL VISITORS, DELIVERY PERSONS, AND NEW WORKERS MUST REPORT TO THE PROJECT OFFICE BEFORE ENTERING ANY CONSTRUCTION AREA.**

**ALL PERSONS ENTERING ANY CONSTRUCTION AREA MUST WEAR STURDY WORK SHOES, PROPER CLOTHING, A HARD HAT AND SAFETY GLASSES AT ALL TIMES  
– NO EXCEPTIONS ARE ALLOWED DURING WORK HOURS.**

**POSSESSION OF WEAPONS, ALCOHOLIC BEVERAGES, CONTROLLED SUBSTANCES, OR DRUG PARAPHERNALIA WILL RESULT IN IMMEDIATE REMOVAL FROM THIS PROPERTY.**

**EXCEPT WHERE DESIGNATED (BY POSTED SIGNS AND AVAILABLE RECEPTACLES),**

**USE OF ANY TOBACCO PRODUCT IS PROHIBITED ON THIS PROJECT**

**THE MAXIMUM SPEED LIMIT FOR ALL VEHICLES ON THE PROJECT SITE IS NINE (9) MPH  
– LOWER SPEED MAY BE REQUIRED BY POSTED SIGNS IN SOME AREAS.  
ONLY AUTHORIZED VEHICLES ARE ALLOWED ENTRY INTO CONSTRUCTION AREAS.**

2.9.2 The Contractor shall post a notice sign at the Project office in English and Spanish. Font shall be black in color on a white coated board and size of letters shall be at least three inches (3”) in height, and shall contain at least the following text:

**VISITORS, DELIVERY PERSONS AND NEW WORKERS MUST CHECK-IN HERE FIRST.**

**COPIES OF MATERIAL SAFETY DATA SHEETS (MSDS) FOR MATERIALS THAT WILL BE USED OR STORED ON SITE MUST BE DELIVERED BY ALL SUBCONTRACTORS TO THIS LOCATION AND SHALL BE AVAILABLE TO ANY REQUESTOR.**

2.9.3 The Contractor shall also post the following in locations that may easily be viewed by workers:

2.9.3.1 Color Codes for Quarterly Equipment Safety Inspections:

- 2.9.3.1.1 1st Quarter = White (January 01– March 31)
- 2.9.3.1.2 2nd Quarter = Green (April 01 – June 30)
- 2.9.3.1.3 3rd Quarter = Red (July 01– September 30)
- 2.9.3.1.4 4th Quarter = Orange (October 01 – December 31)

2.9.3.2 Emergency contacts list, including phone numbers

2.9.3.3 Hazard Rating Guide (HMIS and/or NFPA)

2.9.3.4 Project Insurance Provider for Worker’s Compensation Coverage

2.9.3.5 Others as required by Federal and/or State regulation

## 2.10 PROJECT SAFETY FILE DOCUMENTS

Contractor shall create and maintain files for Owner review. The following files shall be established in one location on the Project and shall be made accessible to Owner agents during working hours. Additional files shall be created as directed by ODR.

- 2.10.1 Project Safety Management Plan (PSMP)
- 2.10.2 Project Safety Management Plan Semi-Annual Evaluations
- 2.10.3 Project Safety Orientation Checklists
- 2.10.4 Project Access Log
- 2.10.5 Project First Aid Log
- 2.10.6 Project Incident Notification, Investigation, and Evaluation reports
- 2.10.7 All Qualified Person Certifications and/or Training Documentation
- 2.10.8 Project Competent Persons lists

- 2.10.9 Project Equipment and Crane Operators lists
- 2.10.10 Job Hazard/Safety Analysis (from each Subcontractor per operation)
- 2.10.11 Project Weekly Safety (“Tool Box”) Meeting
- 2.10.12 Project Weekly Subcontractor Safety Representative Meeting Minutes
- 2.10.13 Contractor Monthly Safety Report
- 2.10.14 Project Quarterly (Portable) Equipment Inspection reports
- 2.10.15 Project Annual (Large) Equipment Inspection reports
- 2.10.16 Project Permits (for specialty operations)
- 2.10.17 Project Safety Infraction records

## **PART 3 – EXECUTION**

### **3.1 POSITIONS, ROLES AND REQUIREMENTS FOR PROJECT SAFETY**

#### **3.1.1 Contractor’s Project Superintendent**

Project Superintendent shall have overall responsibility for all aspects of Project safety and shall support the PSC/A when actions are required to maintain a safe work environment at the Project.

#### **3.1.2 Project Safety Coordinator (PSC)**

3.1.2.1 PSC shall report directly to an executive officer of the Contractor and shall not report through the Contractor’s Project management team.

3.1.2.2 If removal of the PSC is initiated by the Contractor, the existing PSC shall remain in position until a replacement candidate has been proposed to and accepted by the ODR in writing and is assigned to the Project. If the PSC leaves before the proposal and acceptance procedure is concluded, the Contractor shall temporarily install either a Safety Director (Regional or Corporate) or a professional construction safety consultant as the PSC until a suitable replacement is accepted in writing by the ODR. Any temporary replacement must meet the qualification levels, perform the duties, and be present full time on the Project as required of the PSC in order for Work to proceed. A permanent replacement shall be accomplished within thirty (30) calendar days.

#### **3.1.3 Project Safety Assistant (PSA)**

3.1.3.1 PSA shall report to PSC.

3.1.3.2 If PSA leaves the Project, acceptable (in writing by the ODR) replacement shall be accomplished within thirty (30) calendar days.

#### **3.1.4 Both PSC and PSA (PSC/A)**

3.1.4.1 The PSC/A shall have the authority to direct Contractor and Subcontractor personnel to correct any safety violations.

- 3.1.4.2 The PSC/A shall have the authority to stop operations that involve any level of risk.
- 3.1.4.3 The PSC/A shall be fluent in English and shall have immediate access to the necessary resources to communicate verbally with all workers at the Project.

### 3.1.5 Subcontractor Safety Representative (SSR)

- 3.1.5.1 SSR name, emergency contact information, and documentation of qualifications shall be submitted to and accepted by the Contractor prior to the commencement of any work activities by the Subcontractor. The SSR shall have the authority to direct actions, stop work and enforce discipline for safety issues.
- 3.1.5.2 The SSR shall submit a written Job Hazard/Safety Analysis (JH/SA) daily and as work conditions change for each of the risk exposures associated with the employer's portion of the Work. Each submittal shall be reviewed and accepted by the Contractor prior to commencement of the work operation that will create the exposure. Documentation of attendees and subject material covered must be provided by the SSR.
- 3.1.5.3 The SSR shall attend the Project Weekly Subcontractor Safety Representatives Meeting when the company is actively performing work at the Project.
- 3.1.5.4 The SSR should accompany any injured worker that requires medical attention at a facility outside the Project. The SSR shall be responsible for notification to the PSC of any incident including near-misses, and shall complete all the documents required to manage any insurance claims. The SSR shall participate in incident investigations that involve the employer's portion of the Work.
- 3.1.5.5 Each SSR may be required to accompany the PSC/A during portions of each safety inspection that involves the Subcontractor's part of the Work.
- 3.1.5.6 The SSR shall either conduct and/or make arrangements for all training, equipment and materials that workers need to perform their duties safely.

### 3.1.6 Work Crew Supervisor, Equipment Operator, Competent Person, Qualified Person Medical Responder

- 3.1.6.1 Supervisors, Operators, Competent Persons, and Medical Responders for each of the positions held, shall be recognized by the employer through formal submittal to the Contractor. Documentation shall be maintained in the Project safety file.
- 3.1.6.2 Designations of certifications and qualifications for special roles shall be clearly displayed on hard hats and/or photo identification badges.

### 3.1.7 Tradesman, Worker, and Laborer



- 3.1.7.1 All persons assigned to perform any portion of the Work at the Project shall attend a Project safety orientation to become acquainted with potential hazards, and the general safety rules that must be observed. No person shall be allowed to perform any Work at the Project until the PSC/A declares a successful completion of the Project safety orientation and issues a photo identification badge.
- 3.1.7.2 A signed copy of the Project safety orientation checklist shall indicate attendance. The PSC must be able to demonstrate effectiveness of the orientation and worker understanding of the material presented.

### 3.2 PROJECT SAFETY MANAGEMENT PLAN (PSMP)

- 3.2.1 Safety Mission and Policy Statement. Contractor's Safety Mission Statement shall include a commitment to create and maintain a work environment that will eliminate or minimize all risk exposures for all workers at the Project. The Safety Policy Statement shall include acknowledgement that the Contractor is accountable for providing and controlling a safe environment for all workers and members of the public. An original signature and date to endorse and assure commitment by a Corporate Executive or Business Owner shall be affixed to this element of the PSMP. The PLAN shall include the following as a minimum:
  - 3.2.2 Safety Roles and Responsibilities. This element shall outline and describe roles, responsibilities, and authority of each member of the Project staff for involvement in site safety, security, incident command, and incident claims management. The Contractor's Project organization chart shall indicate the reporting line for the PSC. The PSC role shall include authority to direct actions of Subcontractors and to stop work operation whenever any worker is exposed to a risk that cannot be reduced or eliminated.
  - 3.2.3 Safety Enforcement. This element shall include Contractor's disciplinary procedure for its own employees and for those of all Subcontractors. It shall include a description of the levels of severity and frequency (repetition) that will result in Contractor intervention and provide details of the retraining and/or disciplinary steps that will ensue from the possible combinations of unsafe behaviors. It shall also include discipline for supervisors who tolerate risk.
  - 3.2.4 Safety Recognition and Incentive. This element shall include a description of how those workers who demonstrate exemplary safety behavior and those supervisors who manage, enforce, educate and promote safety will be recognized and commended. Any celebration that will occur as part of this element shall not be minimized with achievement of Project milestones that are associated with production, schedule, quality or budget.
  - 3.2.5 Safety Hazards. This element shall include a narrative that recognizes existing site conditions, foreseeable changes to existing conditions, local climate, Owner and public interface, environmental impact and remediation issues, skill and experience levels of available work force, utility interruptions, water supply sources, power supply sources, Owner facility provisions, sanitation requirements, parking, material storage areas, and

proximity to students and public walkways and roadways. It shall contain a completed copy of the Anticipated Project Hazards Checklist (EXHIBIT A). It shall also be expanded throughout the duration of Work to include Subcontractor plans for elimination or minimization of risk. These plans shall be described by use of Job Hazard/Safety Analysis. Each JH/SA shall identify the work steps required to complete an activity, assess the hazards associated with each step, and offer a plan to eliminate or minimize the identified risks for each step. A copy of each accepted JH/SA shall be posted into this element as an explanatory amendment. JH/SA forms shall be reviewed by supervisors with the work crew at least daily and immediately prior to performance of the work that the form addresses. All portions of this element shall be in accord and cooperation with existing procedures for the campus Environmental Safety and Health department, the campus Security department, and local municipal Fire and Rescue.

- 3.2.5.1 Hazard Communication (“HazCom”). Insert the elements required by OSHA. The PSC/A shall maintain a Hazardous Materials Inventory List with individual MSDS for each and every hazardous substance brought onto the Project site. In addition to the product label of contents, all containers with at least five (5) gallons of fluid capacity or twenty (20) pounds of chemical content shall include either HMIS or NFPA hazards warning labels (except drinking water and fire extinguishers). All products with HMIS/NFPA number ratings greater than zero or one in any of the three categories (health, flammability, or reactivity) shall be considered as hazardous.
- 3.2.5.2 Environmental (Sensory) Hazards. Insert actions to measure worker exposures and to control hazards that exist beyond OSHA permissible exposure limits (i.e. dust, fumes, noise, chemicals, and extreme temperatures). Also, include control and remediation plans for incidents that result in a spill or discharge of a potentially hazardous or toxic substance (fluid or gas).
- 3.2.5.3 Roadway and Traffic Hazards. Insert actions to be taken at times when public roadways or sidewalks are affected by construction activities. Signs, devices, and procedures shall be identified where public passage is to be closed or altered. Procedures and training for flaggers shall be required and shall be in compliance with all applicable Texas Department of Transportation regulations for road safety; specifically the Texas Manual on Uniform Traffic Control Devices (TMUTCD) shall be referenced.

### 3.2.6 Fire Prevention and Control

- 3.2.6.1 Insert arrangements and equipment necessary to provide adequate protection during all phases of construction. All portions of this element shall be developed to be in accord and cooperation with existing procedures for the campus Environmental Safety and Health department, the campus Security department, and local municipal Fire and Rescue.
- 3.2.6.2 Burning, Welding, Flame Operations. Insert the process for issuance of a “Hot-Work” permit (EXHIBIT B). Permits forms shall be issued by PSC, unless campus

Environmental Health and Safety department desires to be involved. Permit form shall be completed by SSR and returned to PSC/A for acceptance prior to start of operation. s. All permits shall expire at the end of the shift. Permits shall identify fire watcher(s) and require pre-operation and post-operation inspections.

- 3.2.7 Emergency Response. Describe each type and level of emergency that may reasonably be expected to occur on the Project. Insert response or rescue plan for each kind of potential emergency. ). This element shall address first aid, off-site medical care, property damage, rescue, project alarm signals, wind, flood, lightning strikes, and evacuation, threat of violence, protests or deliberately disruptive events. NOTE: Campus Spokesperson shall be the only person authorized to communicate with the media. This element shall include a drawing or sketch of the site (maintained for “as built” conditions) to indicate gates, emergency vehicle roadways, lay down areas, crane set up positions, exterior hoists, etc. All portions of this element shall be developed to be in accord and cooperation with existing procedures for the campus Environmental Safety and Health department, the campus Security department, and local municipal Fire and Rescue.
- 3.2.7.1 Incident Notification. Insert the list of personnel with phone, email, position and company information who may be contacted. The ODR and others as directed shall be included in the incident notification process. Depending on potential severity of the incident, notification may be in written and/or verbal form as directed. Incident notification flow shall be as indicated in EXHIBIT K. Indicate specific positions within the campus staff that may be contacted and/or involved in the notification and control process; i.e. site control and utility management. Campus Public Relations officer shall be the only person authorized to release live or pre-recorded video or written statements to the media. Contractor shall cooperate with campus PR officer and coordinate media arrangements as directed.
- 3.2.7.2 Site Security. Insert actions and control measures to prevent intrusion during work and non-work hours. Describe intended controls for perimeter security, gate security, pedestrian crosswalks, protection at public paths through and alongside construction areas, warning signage, etc. Identify special work that may not be performed during regular hours, and will require special precautions. Include descriptive detail for some method of gathering names and probable locations of workers who have not been cleared for safe departure during any type of emergency. Identify the position(s) of all who will possess this information and be prepared to convey critical details quickly to any outside emergency response command that might arrive at the Project.
- 3.2.8 Project Trenching, Tunneling and Excavation. Insert soil boring reports, soil classification analysis, site sketch and any other information that may support, explain or clarify the intent of this element. In addition to UGSGC, this element must be stamped and sealed by a Registered Professional Engineer recognized in the State of Texas in the field of Civil or Soils Engineering.
- 3.2.9 Drug and Alcohol Impairment. The Contractor, for itself and all Subcontractors, shall have a robust drug and alcohol screening and intervention plan. Insert details of Contractor policy for screening both direct employees and Subcontractor employees for

the presence of controlled substances, prescription pharmaceuticals, and alcohol. Describe all of the types of testing and confirmation that the Contractor requires and the tolerance thresholds for each substance. This element shall include, as a minimum, a detailed explanation of the following situations and mandatory testing events:

- 3.2.9.1 Pre-employment – Test results conducted within two weeks preceding issuance of badge for Project access.
  - 3.2.9.2 Post-incident
  - 3.2.9.3 Random selection
  - 3.2.10 Concrete (for slip-form, crane bucket, pump truck, cast-in-place)
  - 3.2.11 Confined Space Entry (Permit Required and Restricted Entry)
  - 3.2.12 Crane Operations (for set-up/use requirements and limitations)
  - 3.2.13 Demolition (Mechanical and/or Explosive Blasting)
  - 3.2.14 Electrical Power Service (address power supply and use during construction)
  - 3.2.15 Fall Prevention and Protection (from elevations and at same level)
  - 3.2.16 Hand and Power Tools
  - 3.2.17 High Voltage (“Proximity Work”)
  - 3.2.18 Ladders and Stairs
  - 3.2.19 Lock-out, Tag-out (Energy Isolation for sudden release of any kind of energy)
  - 3.2.20 Respiratory Protection
  - 3.2.21 Safety Inspection
- 3.3 PERSONAL PROTECTIVE EQUIPMENT (PPE)

The following PPE requirements shall apply to all workers in construction areas. Contractor may declare specific lunch break areas within construction areas to be exempt from PPE requirements. Markings for these spaces shall be clearly defined and signage shall be legible and prominently posted in language that all workers can read.

- 3.3.1 Hard Hats shall be worn 100% of the time in construction areas, with the brim forward (or as allowed by the manufacturer). “Cowboy” style hard hats shall not be allowed (even if ANSI stamped). Hard hats with noticeable wear or damage shall be replaced. Each hard hat shall be examined by the PSC/A during the Project Safety Orientation to confirm acceptable condition. The PSC shall identify all equipment operators. The PSC

shall place a colored sticker on the hard hat that represents the type of equipment that can be operated. Green will represent Personnel Handling. Blue will represent Material Handling. Brown will represent Earth Work.

- 3.3.2 Eye Protection (Safety Glasses) shall be worn 100% of the time in construction areas. Additional eye and face protection shall be provided by employers for any employee when work operations create an exposure to airborne particles, chips, sparks, radiation, etc.
- 3.3.3 High visibility vests or high visibility upper body clothing shall be worn when the worker's primary work activities are subject to vehicle traffic and/or heavy equipment movement in the construction area. Primary work activities such as traffic control, excavations, rigging from ground level, exterior work at ground level or sub-ground level, earth moving operations will adhere to this requirement. All other activities can be considered by the Contractor with concurrence by the ODR on a case by case basis.
- 3.3.4 Hearing Conservation and Protection shall meet or exceed OSHA requirements. Except for suppression of sound energy level, no devices or equipment shall be placed in or over the ears. Portable radios, cell phones or any other electronic devices used for any reason except work related communications and emergency assistance are prohibited in construction areas.
- 3.3.5 Hand Protection that is designed to counter the exposure shall be furnished to all workers who must handle materials or equipment with sharp edges, slick surfaces, chemically reactive components or extreme temperatures.
- 3.3.6 Respiratory Protection shall meet or exceed OSHA requirements.
- 3.3.7 Foot Protection (Work Shoes) must have soles with a resistance to punctures, uppers that cover the entire foot and ankle and offer resistance to scrapes and cuts. Sandals, open-toed shoes, dress loafers, high-heels, and all athletic style shoes (including those with ANSI markings) are prohibited. Additional protection shall be provided when work operations create impact exposures.
- 3.3.8 Other OSHA required PPE shall be furnished as appropriate for specific tasks.
- 3.3.9 Other clothing:
  - 3.3.9.1 Shirts shall not have noticeable holes and shall be free of profane, inflammatory, sexually explicit or discriminatory messages. Sleeve length shall cover the ball of the shoulder and shirt length shall reach waist of pants.
  - 3.3.9.2 Pants shall be full length. Holes must not be large enough to catch on snag points or offer measurable amounts of exposed skin.

### 3.4 PROJECT SAFETY MEETINGS AND TRAINING

#### 3.4.1 Project Initial (Safety Kick-Off) Meeting

3.4.1.1 At any time within, but no later than fifteen (15) calendar days after the issue of the Notice to Proceed with Construction Services, the Contractor shall arrange suitable accommodations for the meeting. The OFPC PM or RCM will schedule and chair the meeting. Minimum attendance shall include the OFPC PM/RCM, Construction Inspector(s), OSR, Contractor's PM, Superintendent, and PSC/A. The Contractor's safety director, additional representatives for the Owner, the Institution, the A/E, the Contractor and local regulatory entities may also attend.

3.4.1.2 The Contractor shall confirm the schedule availability for all required attendees at least fourteen (14) calendar days prior to the meeting date.

### 3.4.2 Initial Meeting with Subcontractors for acknowledgment of Safety Requirements

3.4.2.1 At any time after the date of intent to award each first tier Subcontract, but prior to commencement of any Work, the Contractor shall arrange and chair a meeting with Subcontractor to explain safety requirements. Minimum attendance shall include the OFPC Construction Inspector(s), Contractor's PM, Superintendent, PSC/A, and SSR. Other interested parties for OFPC, campus and Contractor may also attend. Any lower-tier Subcontractors that have been awarded part of the Work are encouraged to attend.

3.4.2.2 In addition to all of the pertinent safety regulations that apply to the portion of the Work that the Subcontractor will perform, the Contractor shall clearly state the expectation that safety management of its workers and Sub-tier workers shall be the Subcontractor's responsibility and that failure to adequately manage safety could result in a demand for the removal and replacement of supervisors. The roster of attendees shall indicate distribution to the ODR and the Subcontractor.

### 3.4.3 Project Safety Orientation Training

3.4.3.1 The PSC/A shall present training to every person who is to be allowed into the construction area(s) without an escort. This duty shall not be delegated. Unless the PSC/A is bi-lingual, a translator shall be present when there are workers in attendance who do not speak English. Workers and their immediate supervisors shall be required to attend a repetition of the orientation whenever observed behavior indicates a lack of understanding or repeated non-compliance.

3.4.3.2 The PSC shall review the Safety Orientation Checklist (EXHIBIT D) and incorporate each applicable topic within the training presentation. The PSC shall develop and administer a process to ensure and demonstrate worker understanding.

3.4.3.3 The PSC shall furnish a photo-identification badge to each person who satisfactorily completes the Project Safety Orientation. The badge will indicate the worker's name, company, job title, project name, and OFPC project number. The badge must be visible at all times that the worker is on the Project and be located above the waist using clip or arm band. Lanyards are prohibited. Failure to maintain the badge will be grounds for removal from the Project. The PSC shall place on the hard hat, a

colored decal that indicates that the worker is an equipment operator. Worker qualifications for the specific equipment that can be operated will be identified on the back of the worker's photo identification badge.

3.4.3.4 The PSC shall confirm employer insurance requirements prior to start of orientation. PSC shall confirm document credentials for operators and SSR prior to start of orientation. The PSC shall maintain a site access log to document each successful orientation and any reorientations. The log shall include the person's identity and Project critical information (name, employer, badge number, equipment operator, medical responder and/or supervisor status).

#### 3.4.4 Daily Job Hazard / Safety Analysis Training

3.4.4.1 Prior to start of Work for each shift, the immediate supervisor shall conduct a brief meeting with all members of the work crew to explain how the work steps for the shift are to be accomplished. Explanation shall include a discussion of all the work activities that will be performed in the vicinity as well as the work that the crew is expected to accomplish. Explanation shall address all of the recognized risks associated with the task and the measures to be installed or actions to be taken to eliminate or minimize the exposures. Actions to be taken in the event of an emergency shall also be included and documented.

3.4.4.2 A sign in sheet shall be produced to document the training. It shall contain names and initials of all attendees, name of supervisor, statement of task(s), and any special safety measures or actions that are required to assure elimination or minimization of risk. A copy of the JH/SA shall be reviewed and endorsed by the PSC/A prior to work activities and copies of any completed permits shall be clipped to the document. The supervisor's/workers' signatures on the JH/SA shall be understood to also mean a thorough communication of all anticipated hazards and controls has been provided to all workers. A copy of the JH/SA will be posted in the immediate work area until the daily activities are complete. JH/SA shall be modified as work activities change and warrant additional review and training throughout the shift.

3.4.4.3 All Project Management team members (OFPC, Contractor and Subcontractor) are encouraged to attend these JH/SA meetings as frequently as possible to reinforce the Project safety culture.

#### 3.4.5 Project Weekly Subcontractor Safety Representatives Meeting

3.4.5.1 The PSC shall chair a weekly meeting with all SSR(s) to ensure that all are aware of the existing hazards and exposures that should be addressed with each crew. A written agenda (EXHIBIT E), attendance roster, and meeting minutes shall be prepared and maintained at the Project site by the PSC. A copy of these documents shall be submitted to the ODR.

3.4.5.2 This meeting shall be exclusively reserved for safety and loss control issues. Attendance shall be required of all SSR(s) when the employer is actively conducting work operations at the Project. All Project Management team members (OFPC,

Contractor and Subcontractor) are encouraged to attend these weekly meetings as frequently as possible to reinforce the Project safety culture.

#### 3.4.6 Project Weekly Site Safety (“Tool Box Talk”) Meeting

- 3.4.6.1 All workers on the project site, including site Project Management team members, shall attend a weekly safety Tool Box Talk, which shall be presented in English and all other languages that are natively spoken at the Project. The PSC/A may deliver each talk to the entire Project population or each SSR may deliver individual meetings to a specific trade and/or group. The PSC/A shall periodically participate and review individual meetings to ensure effectiveness. The PSC/A shall collect and maintain copies of all sign-in sheets for every meeting.
- 3.4.6.2 Meetings shall address appropriate topics for the near-future work operations and current site conditions. In addition, the PSC/A shall select at least one (1) of the elements within the PSMP to be a mandatory topic each week, and shall select every element at least once during the course of the Project.

#### 3.4.7 Safety Lessons Learned and Best Practices

Contractor shall work with OFPC to use Lessons Learned to capture significant safety experiences and best practices over the course of the work. Contractor will work with OFPC to facilitate Lessons Learned at Substantial Completion and will work with Subcontractors to actively participate in Lessons Learned. Contractor shall develop and distribute any reports that detail findings to OFPC as requested.

### 3.5 SAFETY INSPECTIONS

#### 3.5.1 Daily SafetyNet(formerly DBO2) Inspections

- 3.5.1.1 Site safety inspections shall be entered into SafetyNet. OSR(s), OFPC RCM, CI, Contractor Superintendent and PSC/A shall all be recognized users of the Owner’s SafetyNet Program. Other persons may also be added to the user list.
- 3.5.1.2 User participation shall include recording of all observations and conditions at the Project (via the Program’s menu-driven checklist). Additionally, the Contractor shall review on-line reports and respond prudently.
- 3.5.1.3 Each deficient safety observation shall be corrected or controlled immediately. The PSC shall be responsible for reviewing and ensuring proper closure of all unresolved (“open issues”) observations. ODR (including the OFPC CI) shall concur prior to closure.
- 3.5.1.4 OFPC will conduct initial training for Contractor understanding and use of the SafetyNet Program. All subsequent training for follow-on Subcontractors shall be accomplished by the Contractor.
- 3.5.1.5 At a minimum, a daily SafetyNet inspection shall be conducted by each PSC/A on site during the shift. The daily inspection may only record a group of observations within a single work operation, but the accumulated inspections conducted by the



Contractor throughout each work week shall reflect a comprehensive report of all operations at the Project.

3.5.1.6 When the OSR conducts an inspection, the PSC/A shall be available to join in during the walk around. The other OFPC users may also require the PSC/A to join in during inspections.

3.5.1.7 When the PSC/A conducts an inspection, at least one SSR shall join in for the portion of the inspection that addresses the Subcontractor's portion of the Work.

### 3.5.2 Quarterly (documented) Inspection of all tools, rigging, and portable equipment

3.5.2.1 The PSC shall facilitate a documented safety inspection each quarter. Each employer shall produce and submit a document (EXHIBIT F) that addresses all tools, rigging, and portable equipment within the company's inventory on the Project site. Documents shall be maintained by the PSC.

3.5.2.2 This inspection shall include, but not be limited to, the following: Fall Arrest Equipment, Rigging, Manufactured Ladders, Power Tools, Cords, Welding Leads, Hoses, First Aid Kit, AED, Air and Sound Meters, and Ground Fault Circuit Interrupter devices. Personally owned hand tools are exempt from this inspection procedure, but daily examinations of all portable items prior to start of work shift as prescribed by OSHA standards are not relaxed.

3.5.2.3 For every item that "passes" the quarterly inspection, remove the previous quarter's color coding and affix the current quarter's color coding. Every item removed from service shall be repaired, replaced, destroyed or immediately removed from the Project. The inspection report shall reflect such actions. Inspection reports shall be completed and submitted to the PSC prior to use of any new equipment on the Project site and re-inspections before the first calendar day of the beginning of each quarter of the year. Quarterly re-inspections may begin and color coding may be changed anytime during the final one-week period of the previous quarter.

### 3.5.3 Initial and Annual Inspection of all Cranes and Motor Driven Equipment

3.5.3.1 The Contractor shall facilitate safety inspections and written certifications for all hoists, cranes, mobile equipment, motorized scissors and aerial lift platforms, motorized stage platforms, generators, and compressors on the Project.

3.5.3.2 The Contractor shall ensure that all equipment inspections are consistent with the manufacturer's requirements. An initial inspection and certification of proper condition shall be transmitted to PSC before a piece of equipment is allowed to commence operations at the Project.

3.5.3.3 The Contractor shall select the month that occurs approximately six (6) months after the commencement of construction, and announce this as the month for annual re-inspections and re-certifications of all motor driven units of equipment and cranes

that remain in use at the Project. Any equipment that leaves the Project will require re-certification before it shall be allowed to resume operation at the Project.

#### 3.5.4 Inspections by Regulatory Agencies

The PSC/A shall notify the ODR immediately of the arrival at the Project site by an representative of a Regulatory Agency (OSHA Compliance Officer, TCEQ representative, Law Enforcement Officer, etc.), and provide the Owner with a copy of any published findings or citations (OSHA Safety Orders, EPA Site Deficiencies, etc.) issued to any employer and shall ensure that statutory posting requirements are met.

### 3.6 CONTRACTOR RECORDS, INVESTIGATIONS AND REPORTS

#### 3.6.1 Mobile Equipment and Crane Operator Records

Each employer shall submit to the PSC/A, for each operator, a record of training that identifies the trainer and the details that were addressed and successfully demonstrated during training. The minimum amount of detail shall include the following assurances:

- 3.6.1.1 Pre-start up inspection, travel path issues, and location/set up procedure;
- 3.6.1.2 Start up, operation, intended use, and shut down (normal and emergency);
- 3.6.1.3 Equipment Operations Manual, Limit Chart(s), Motor Plate information, equipment capacities and limitations, alarm features, safety stops, seat belts, roll over protection and preventive maintenance;
- 3.6.1.4 PPE, fall protection, environmental, and any other related risks or exposures.

#### 3.6.2 Contractor Monthly Safety Report

- 3.6.2.1 The PSC/A shall enter the following project information directly into SafetyNet; total man hours by month, all OSHA recordable and days away from work incidents including descriptions and relevant fields, near misses and first aid rendered. Data shall be entered into SafetyNet s by the 10th of the month following the reporting period.
- 3.6.2.2 This information is vital to the Owner's safety benchmarking efforts. Failure to submit the information in a timely manner may result in ODR withholding a portion of the Contractor application for payment, and shall disqualify the Contractor from consideration for safety recognition for the month of failure to submit.

#### 3.6.3 Incident Notification, Investigation and Reporting Procedure

- 3.6.3.1 During the orientation, the PSC shall instruct all workers to immediately report to their supervisor every incident, even if there is no obvious injury or property damage. Supervisors shall immediately notify the PSC/A. PSC shall immediately notify the ODR of any incident. All Near Miss incidents, First Aid injuries, High Severity

Safety Inspection Observations, and other such incidents as directed by the Owner shall be entered into SafetyNet/DBO2 by the PSC. All incidents shall be investigated. Contractor and involved Subcontractors shall discover all obtainable and measurable information and reach conclusions that cite both the contributing factors and the root cause(s). Contractor shall lead the efforts and follow a structured incident investigation program (Root Cause Analyst or equivalent). Contractor and involved Subcontractors shall tailor the magnitude and depth of the investigation effort to correspond to the potential, rather than the actual, outcome of the incident and shall include qualified senior management, line management, and safety consultants as the circumstances warrant. The ODR reserves the right to participate in incident investigations. Contractor shall prepare and submit reports that will allow OFPC and Subcontractors to understand findings and planned changes to the PSMP. At the time of any injury incident, workers and supervisors shall be provided a copy of (EXHIBITS G & H) that explain the rights, duties, and expectations for those who are involved in the incident.

### 3.6.3.2 Incident Responsibilities for Workers and Supervisors

3.6.3.2.1 Contractor shall cover the information in the Worker Responsibilities (EXHIBIT G) document during the orientation and keep copies to hand out to any worker who appears to have sustained an occupational injury.

3.6.3.2.2 Contractor shall cover the information in the Supervisor Responsibilities (EXHIBIT H) document during the orientation and keep copies to hand out to any supervisor who informs PSC/A that an worker injury has occurred.

### 3.6.3.3 Incident Investigation Report

3.6.3.3.1 Contractor shall prepare a written investigation report for each incident that involves injury, damage, near miss, high severity safety deficiency or other occurrences as directed by the Owner.

3.6.3.3.2 Contractor shall develop a Root Cause Analysis report (EXHIBIT J) that summarizes the incident, identifies the underlying contributing factor(s) determines which process element failed to control the incident, determine which process element(s) will be improved or implemented, and the time needed to take corrective action(s).

Contractor shall conduct and submit incident investigation report that supports the Root Cause Analysis in the manner and time as directed by the ODR.

### 3.6.4 Contractor Final Safety Report

3.6.4.1 Contractor shall work with Subcontractors to prepare a Final Safety Report and shall forward to OFPC no later than thirty (30) calendar days after Substantial Completion.

3.6.4.2 Report shall include at least the following items:

- 3.6.4.2.1 Summary of the PSMP with description of improvement initiatives undertaken during the course of the Project
  - 3.6.4.2.2 Evaluation of the effectiveness of the PSMP, including summary results of assessments performed
  - 3.6.4.2.3 Project safety performance results (leading and trailing indicator measures)
  - 3.6.4.2.4 Project safety lessons learned and best practices
  - 3.6.4.2.5 Summary of Project incidents
  - 3.6.4.2.6 Evaluation of Contractor and all Subcontractor overall safety performance
- 3.6.5 Contractor shall provide Ad Hoc reports as requested by the ODR. This may include work force histograms, training documents, safety trending reports, etc.

### 3.7 CONSTRUCTION OPERATIONS

The following requirements are either in addition to or in the absence of Federal and State regulations. Where conflicts exist, the most stringent directives shall apply.

#### 3.7.1 CRANES

- 3.7.1.1 Tower cranes (including affiliated transformers and power supply equipment) shall be surrounded by at least a sixteen-foot (16') high, 5/8-inch plywood enclosure with a lock-controlled entrance.
- 3.7.1.2 Operators of cranes shall possess certification from a nationally accredited training organization.
- 3.7.1.3 Every crane and piece of hoisting equipment shall be equipped with an anti-two blocking sensor above each lifting block.
- 3.7.1.4 Unless the crane is equipped with sensors that inform the operator of the weight of the load on the hook and the current wind speed, these measurements shall be determined by other means before commencement of each lift.
- 3.7.1.5 When outriggers are used on cranes, they shall be fully extended. Float pads shall be landed onto leveled and properly designed and sized slabs or cribbing. Where steel plate is used for cribbing, welded or bolted cleats shall be attached to upper surface to prevent float pads from moving horizontally.

For cranes of up to and including 35-ton capacities, wooden cribbing shall be a minimum of four inches (4") in thickness. For cranes over 35-ton capacities and up to 150-ton capacities, cribbing shall be a minimum of eight inches (8") in thickness. For all cranes up to 150-ton capacity, the minimum size of the surface ("footprint") of the cribbing assembly shall be determined by the following formula: the capacity of

the crane (in tons) divided by 5 equals the minimum square footage required. Properly sized circular crib pads are acceptable. Side dimensions for rectangular crib pads shall be equal to each other or differ by no more than one foot. For cranes larger than 150-ton capacities, a qualified person shall design the cribbing. "Sandwich" units of cribbing are allowed as long as the plywood on bottom and on top is at least one inch in thickness.

- 3.7.1.6 For "Pick and Move" operations, the pick shall be made directly in front of the crane with the boom as near vertical as possible. Move at walking speed with a "spotter" in front of the load and another behind the crane. Guy wire cables that secure the load to the body (to prevent lateral force loading of the boom) of the crane shall be required if the grade slope is more than three (3) degrees or the terrain is uneven. Only rubber-tired cranes shall be allowed to perform this operation without a "critical lift" plan and the load must be under fifty percent (50%) of the "on rubber" chart limit.
- 3.7.1.7 Critical Lifts shall include, but not be limited to: (1) Tandem Lifts, (2) Lifts greater than seventy-five (75%) percent of Load Chart, (3) Crane Suspended Personnel Hoists, (4) Non-Conventional Outrigger placements and (5) "Blind" picks and/or placements. All of these events shall require submittal of custom designed plans by qualified persons.
- 3.7.1.8 Multiple lift operations ("Christmas Treeing") shall not be permitted.
- 3.7.1.9 All crane operators on rigs rated for more than five (5) tons of capacity shall submit to a physical examination prior to conducting any work on the Project and, if still on the Project, at least every twenty-four (24) months thereafter. The physician's written declaration of fitness shall be submitted to and maintained by the PSC/A in Project files.
- 3.7.1.10 Only the designated rigger and/or signal persons shall issue lift instructions to the operator. The only exception shall be an emergency stop signal, which may be delivered by anyone on the Project who knows how to alert the operator.
- 3.7.1.11 All loads lifted more than six feet (6') above ground elevation shall have a tag line attached that is long enough to allow control of load spin without placing any part of the body directly below the load. When "shake out" hooks are used, the load must never be elevated above five feet (5') over the surrounding surface and workers must stay at least five feet (5') horizontally away from the suspended load.
- 3.7.1.12 For any load that may be elevated and moved directly above workers, a means for worker notification must be in place. The crane operator may perform this notification by horn if the load can be seen at all times. If the crane operator will lose sight of the load at any time, notification must be made by a designated individual who can maintain sight of the load. Notification must be accomplished by some means that attracts the attention of all workers.

### 3.7.2 DEMOLITION

- 3.7.2.1 Maintain clearly marked and well-illuminated egress paths at all times.
- 3.7.2.2 Maintain barricades and signage that isolates impacted areas to prevent entry by other trades and members of the public.
- 3.7.2.3 Removal of materials and trash from elevated locations must be controlled. Materials, scraps or waste shall never be allowed to free-fall from a height greater than ten feet (10'). Items that may be caught by wind and carried horizontally shall never be allowed to drop freely for any distance. When items are allowed to be dropped freely, a person shall be stationed at the landing elevation at a safe distance to warn others away from the operation, and the landing area shall be surrounded by warning tape placed at least six feet (6') outside of the expected landing area. Wall openings that may be located vertically between the material drop point and the expected landing area shall be securely covered and marked from inside. Anything that is to move downward at a distance greater than ten feet (10') or is capable of sailing horizontally shall be contained within a chute or controlled by hoist.
- 3.7.2.4 Unless the Contract documents clearly call for it, the use of explosives for demolition is prohibited.

### 3.7.3 ELECTRICAL POWER

- 3.7.3.1 Ground Fault Circuit Interruption (GFCI) shall be the primary protection from exposure to electrical current for all workers on the Project. Only exit lighting and medium-high (greater than 240) voltage service will not be GFCI protected.
- 3.7.3.2 All strings of temporary lights shall be fully lamped and guarded regardless of height, and shall be continuously maintained. Adequate and consistent levels of illumination for the work operations in each area must be maintained at all times
- 3.7.3.3 All receptacles and switches shall have trim plates installed before they are energized.
- 3.7.3.4 All power distribution panels shall have full covers installed before primary power is brought into the panel. When energized panels are located in open areas, covers shall be locked except when an electrician is present. When panels are located inside separate rooms or closets, automatic closers and automatically locking hardware shall be installed on doors as soon as equipment is energized, and only authorized persons shall be provided a key. Doors shall not be wedged to stay open. Warning signs shall be placed in conspicuous locations.
  - 1.
- 3.7.3.5 The employer shall implement and document an overall safety program that directs activities appropriate for the electrical hazards, voltage, energy level, and circuit conditions anticipated.

### 3.7.4 EXCAVATIONS

- 3.7.4.1 In addition to UGSGC requirements, every excavation shall require a preliminary meeting with the ODR to determine historical knowledge of existing utilities. Where applicable, a phone call for utility "locates" shall be completed seventy-two (72) hours in advance. "Potholing" and/or hand digging shall be required within three (3) horizontal feet of "located" centerlines, and in areas where knowledge is lacking.
- 3.7.4.2 The "toe" of spoil piles that are less than four feet (4') in height shall be at least two feet (2') from the edge of any excavation. Spoil piles greater than four feet (4') in height shall add one foot (1') of distance from the excavation for every additional foot in height. Spoils shall be managed to prevent airborne dust.
- 3.7.4.3 Trench excavations should be backfilled at the end of each shift.
  - 3.7.4.3.1 When an excavation cannot be backfilled in the same day as it is created, a highly visible barricade shall be erected at a minimum distance of six feet (6') from all approachable edges. All portable means of access shall be removed at the end of each workday.
  - 3.7.4.3.2 Earth ramps that are to be used for walking access shall not exceed twenty percent (20%) in grade slope. Steeper slopes shall be gate controlled for equipment only, and alternate access shall be added for pedestrian traffic.

### 3.7.5 FALL PROTECTION AND PREVENTION

- 3.7.5.1 Any walking/working surface that is equal to or greater than six feet (6') above surrounding areas shall present an unacceptable fall exposure unless it has all edges (side and ends) protected by an attached guardrail system, fall arrest netting, or is blocked off by an adjacent wall. An adjacent wall shall be continuous, structurally sound, and at least thirty-nine (39) vertical inches above the walking/working surface, and within eight (8) horizontal inches from the open edge.
- 3.7.5.2 Any employer that will create a fall exposure equal to or greater than six feet (6') shall submit a detailed plan and/or set of drawings in advance of the operation to indicate how the exposure shall be addressed. The Contractor shall require the plan to contain either "engineered" or conventional fall protection measures for each and every exposure that involves vertical distances equal to or greater than six feet (6'). Any precautionary measure that would allow greater risk than that afforded by a guardrail system, fall restraint equipment, fall arrest equipment, or fall capture netting shall be prohibited. The use of a "Monitor" is expressly prohibited. The recognized exemptions/exceptions are as follows:
  - 3.7.5.2.1 Allow work from portable step ladders as long as a "three point" contact is maintained, the ladder is secured from movement, the worker's center of gravity remains between the rails and in front of the feet, and the worker's waist does not extend above the top of the ladder. The height of the worker's feet is limited to twelve feet (12') for this exemption/exception.

- 3.7.5.2.2 Allow work from an extension or straight ladder if the ladder is secured from movement, “three point” contact is maintained, the worker’s center of gravity remains between the rails and in front of the feet, and the worker’s waist does not extend above the top of the ladder.
- 3.7.5.2.3 Work may be performed without fall arrest measures while standing on an elevated walking/working surface only if maintaining a distance of at least six (6) horizontal feet from the edge. The unprotected edge shall be clearly identified by posted signage and a warning line erected continuously at a six-foot (6’) setback distance. When work is to be performed from a ladder placed near the warning line and the ladder can fall toward the leading edge, the safe distance from an unprotected edge shall increase one foot (1’) horizontally for each vertical foot that a worker climbs above the surrounding surface. This requirement shall also apply to a ladder that is being placed beside a protected edge. Any leading edge (“controlled access”) zone work shall require fall capture arrangements prior to entry.
- 3.7.5.3 Covers placed over pier holes, and roof or floor openings shall be physically secured and clearly marked with warning message "HOLE COVER - DO NOT REMOVE." Any cover that is too small for legible wording shall be bright orange or red.
- 3.7.5.4 Job built ramps and bridges shall be surfaced with an abrasive (non-skid) material. Ramps shall comply with ADA slope requirements.
- 3.7.5.5 Equipment and work operations of any description shall not be permitted to be performed directly above a worker unless adequate overhead protection is provided prior to commencement of the operation.

### 3.7.6 FIRE PROTECTION

- 3.7.6.1 All floors that have combustible materials present shall be accessible from ground level by a usable stair system (temporary or permanent). For structures greater than three (3) stories in height, fire sprinkler standpipes shall be completed and charged to within two (2) stories, or thirty (30) vertical feet of all floors containing combustible materials. Siamese connection shall be installed at every level to provide access for fire hoses. All fire extinguishers that are not task-specific shall be adequate in number and description to comply with OSHA declared limits for egress points, floor area and travel distances. They shall be situated in highly visible locations mounted at a height to facilitate ease of inspection and retrieval for use.
- 3.7.6.2 All fire extinguishers that are task specific shall be inspected and furnished in advance by the employer that will be conducting the work that requires such fire fighting provisions. The fire extinguisher shall be situated within sight of and less than twenty-five feet (25’) from the perimeter of the task operation. All work that includes burning or welding of any type shall be defined as “hot work” and shall require the presence of a fire extinguisher, at least one fire watcher, and a Hot Work Permit. Refer to WELDING AND BURNING for additional details.



### 3.7.7 HOUSEKEEPING

The PSC/A shall ensure that the Contractor and all Subcontractors “effectively” clean the Project site continuously throughout each workday. "Effective clean-up" shall adequately address all of the following housekeeping issues:

- 3.7.7.1 All construction waste, trash, and debris shall be placed in designated receptacles. Glass bottles shall not be permitted on the Project site.
- 3.7.7.2 Stack (or restack) all whole and scrap materials in locations that shall not obstruct a clear pathway nor create a risk for toppling onto a person passing through the area.
- 3.7.7.3 Place all hoses, cords, cables and wires in locations that prevent them from being damaged by equipment, sharp edges or pinch points and from creating tripping hazards.
- 3.7.7.4 Secure and effectively cover all materials on roofs or elevated levels that may be displaced by wind.
- 3.7.7.5 Restore all signs, barricades, fire extinguishers, guardrails, gates, etc. to proper locations and sound condition.
- 3.7.7.6 Properly store and secure all flammable and combustible liquids and gases.
- 3.7.7.7 Collect and place all cut-off or waste pieces of rolling stock, as they are created, into waste or scrap containers.
- 3.7.7.8 Live rounds that have been ejected from powder-actuated tools shall be immediately placed in designated containers and properly disposed of as recommended by the manufacturer.
- 3.7.7.9 All puncture and impalement exposures shall be covered or eliminated as soon as they are created. As per ANSI specification, effective covers shall be designed to prevent impalement of a 250-pound body being dropped from a fall of four feet (4’).

### 3.7.8 LADDERS

- 3.7.8.1 Every elevated platform (slab, deck or work surface) shall have at least two (2) remote means of access/egress when the platform is populated by more than three (3) persons. As the population rises above twenty-five (25), additional means of independent access/egress shall be required. A double-cleated ladder may only serve as one (1) independent means of access/egress.
- 3.7.8.2 At the end of each workday, ground access to elevated levels shall be eliminated. This shall be accomplished by removal and storage of all portable and job-built ladders, or installation of a lockable shield that prevents use of the lower rungs.
- 3.7.8.3 Portable aluminum ladders shall be prohibited.

- 3.7.8.4 Extension ladders, straight ladders and job-built ladders shall be secured from movement at the top and the bottom.
- 3.7.8.5 Physical barricade offsets that force at least one change in walking path direction shall be constructed within a six-foot (6') radius around the upper access points for any ladder's step off landing area.
- 3.7.8.6 All elevated landings shall include a rope hoist (manual or motorized) near the ladder's upper-most access point.
- 3.7.8.7 Manufactured portable (step and extension) ladders shall display ANSI heavy-duty rating (Class I-A) and be inspected daily for condition and set up. Legible labels must be maintained on all ladders.

### 3.7.9 MEDICAL ASSISTANCE AND SCREENING

- 3.7.9.1 The PSC/A shall maintain a First Aid Log for all treatment administered on the Project (including any that might later escalate). Each SSR shall report and record details daily.
- 3.7.9.2 PSC/A and SSR shall transport or accompany any injured worker for initial off-site medical treatment.
- 3.7.9.3 Drug and Alcohol Screening shall be mandatory for every supervisor and/or worker who sustains or contributes to any incident that involves injury beyond first aid or property damage. If impairment or poor judgment appears to be involved in a first aid event, PSC shall direct injured employee to be screened for probable cause.
- 3.7.9.4 Minimum requirements for chemical screening shall at least match the threshold limits for a NIDA 5-panel protocol and for alcohol screening shall at least match the Texas DOT vehicle operator's limit for blood alcohol content. Only negative results are acceptable for employment on the Project.
- 3.7.9.5 Screening shall be initiated as soon as possible, but not later than two (2) hours after the incident occurrence. Any worker's refusal to submit to screening shall be treated in the same manner as a "positive" finding. Any worker who withholds notification of an incident for longer than one (1) hour after the alleged event shall be evaluated by the PSC/A and if declared to be negligent shall be permanently removed from the Project.

### 3.7.10 PETROLEUM-BASED FUEL OPERATED EQUIPMENT

- 3.7.10.1 Where possible, equipment operator cabs shall be locked during non-working hours. Only equipment operators and direct supervisors shall have access to keys.
- 3.7.10.2 No combustion engine equipment shall be operated in enclosed spaces unless the exhaust is piped to outside air, and "fresh" air is brought into the space to replace the

amount being consumed. The PSC shall be responsible for monitoring air quality at the Project. This includes generators and compressors as well as mobile equipment.

3.7.10.3 For hose and termination fittings on air compressors, "whip checks" shall be used at all connection points. Emergency automatic shut off valves shall be installed on every discharge fitting of all air compressors that are capable of producing air pressure greater than thirty (30) pounds per square inch.

### 3.7.11 PUBLIC PROTECTION

3.7.11.1 The project boundary perimeter shall be secured from public intrusion by fencing and locked gates.

3.7.11.2 "Attractive nuisance" items such as tower cranes, tall ladders, fire escapes, large excavations, etc. shall require additional and separate security measures.

3.7.11.3 Contractor shall challenge any visitor or member of the public who attempts to enter a construction area without an authorized escort.

3.7.11.4 All visitors to the project must abide by all project safety requirements. Visitors must read and sign the Visitor's General Waiver and Release prior to entry to the construction area(s). (Exhibit C)

3.7.11.5 Contractor shall be authorized to contact campus police to remove anyone who refuses to abide by Contractor directive to leave the construction area. The ODR shall be notified immediately should this occur.

### 3.7.12 SANITARY FACILITIES

3.7.12.1 The Contractor shall provide at least one (1) toilet facility per twelve (12) workers (separate count per gender) at the Project site; and shall pump, clean and re-supply at least once per week to maintain sanitary conditions. When average temperatures during daylight hours exceed 85 degrees, pump outs shall occur at least twice per week. When female workers are present at the site, toilets designed and designated for their exclusive use shall be clearly marked. Toilets located in project management office trailers and used by office support staff shall not be considered to meet this requirement unless by written consent of the ODR.

3.7.12.2 On all projects that are four (4) stories in height or greater, sanitary facilities shall be furnished on ground level and every third level (maximum 45 vertical feet).

3.7.12.3 The use of any Owner facility is strictly prohibited unless by written consent of the ODR.

### 3.7.13 SCAFFOLDING

3.7.13.1 Each ground-supported scaffold shall bear a shift inspection tag (initialed by the competent person for each company that requires use of the scaffold) to indicate the

status of the scaffold (green tag means completely safe and red tag means specific precautions required, or not safe/do not use). For suspended scaffold, inspection tags shall also be placed on the outrigger as well as the work platform. The PSC/A shall purchase and control a universal system to be used by all employers at the Project site. Training and documentation shall be required for all workers on the Project who will climb onto any kind of scaffolding. Contractor shall furnish tags, and ensure that all applicable workers understand the procedure. This requirement shall apply to all scaffolds.

3.7.13.2 Mudsills and surrounding areas at the base of ground-supported scaffolds shall be maintained in a well-dressed and level condition. Scaffold foot plates (or casters) shall be installed on the legs of all ground level frame sections and shall be visible for inspection at all times. Diagonal braces shall be included in every scaffold section as is practically possible. Every work level shall be fully planked and kick-off protection shall be included along open sides and ends. Overhead protection shall be constructed where walk-through passages are allowed. Mudsills shall be at least 2"x12" in one-foot lengths with foot place centered and nailed in two corners.

3.7.13.3 Brakes on rolling scaffolds shall be secure at all times, except when the scaffold is being moved. Workers shall not be allowed on the platform when a scaffold is being moved.

2.

3.7.13.4 Workers in any type of arial lift including manlift or scissor lift shall be provided with a means to be secured to the lift so that movement is limited to the floor of the lift. No worker shall be allowed to stand on the toe board or rail of the lift.

### 3.7.14 STAIRS

3.7.14.1 Properly designed and built stair and landing units shall be placed at access doors for every Project office and storage trailer prior to use. Per ANSI requirements, the landing outside each door of any office trailer shall be no greater than one quarter inch (1/4") below the threshold and the unobstructed (standing) area outside the swing radius shall be no less than twenty-two inches (22"). Fire & Life safety code (NFPA) and ADA requirements shall also be satisfied as they apply. Ramps or connecting decks may be installed to satisfy this requirement.

3.7.14.2 For incomplete permanent stair sections, at least the bottom four (4) risers and upper entry points for each floor shall be physically blocked and marked "INCOMPLETE – DO NOT USE." Until a complete section is made acceptable for general use, the barricades and signs for that section shall be maintained.

### 3.7.15 PROJECT SERVICE WATER

3.7.15.1 Potable Water: Potable water shall comply with city and community health requirements.

3.7.15.2 Non-potable Water: Water storage containers, hose bibs and faucets shall be posted in English and Spanish "DANGER – DO NOT DRINK."

### 3.7.16 WELDING AND BURNING

- 3.7.16.1 Splices, taps, welds and/or burning operations that may produce sparks, slag or hot scraps shall require “Hot-Work” or “Burn” Permits (daily or per shift). “Burn Permit” forms shall be furnished by the Contractor and issued by the PSC. The SSR shall submit completed permit form in advance of the Work to the PSC for acceptance. One copy of the accepted permit form shall be posted by the SSR in the vicinity of the operation. At the conclusion of the work and successful completion of the smolder/re-kindle watch, a copy of the expended permit shall be signed off and returned to and filed by the PSC. If the campus Environmental Health and Safety group wishes to be involved in the process (provision of permit and/or pre-inspection of the permit space), Contractor shall accommodate these wishes, however, if campus permit exceeds more than one day, Contractor will also issue work specific permit daily. No matter who furnishes the permit form, Contractor shall ensure that all Hot Work will be provided with at least a fire watcher(s), fire extinguisher(s), and smolder watch. If the work produces intense light, permit shall also contain requirement for screens to protect others from flash burns. For open space operations that will not be moved, (on-site fabrication shops), a permit may be issued for a week.
- 3.7.16.2 Oxygen and fuel gas cylinders shall not be stored together, including on bottle carts. At the end of any cutting operation and/or any shift, bottles must be removed from carts and taken to OSHA prescribed storage arrangements. Hoses and gauges shall be removed and caps restored onto cylinders.
- 3.7.16.3 Anti-flashback arrestors shall be installed at the pressure regulator gauges of all Oxy-Acetylene cutting rigs, even if the torch is equipped with a built-in arrestor.
- 3.7.16.4 Fire watchers shall be posted at every operation that produces sparks, flames or sufficient heat to create an ignition or to fall onto another person. Watchers shall be trained in the use of extinguishers, shall keep other people from entering exposure areas, and shall not be assigned other duties until the rekindling possibility ("smolder watch") is over. When sparks, slag, or fire may fall to a different level, a separate watcher shall monitor each level directly below the work (including exterior locations).
- 3.7.16.5 Heater boxes for welding electrodes shall have a manufacturer's label that certifies the purpose of the unit. Job-built heaters shall be prohibited.
- 3.7.16.6 The unused stubs of welding electrodes (“rod butts”) shall be collected and placed in proper disposal containers (i.e. metal bucket with sand or water) as soon as each one is expended. Whenever operation is idle, electrode shall be removed from stinger.
- 3.7.16.7 Welding operations shall not be allowed to present an opportunity for flash burn exposures to the eyes of any workers in the vicinity. All welding operations shall provide appropriate screening measures, erected in advance to contain the high energy light.

### 3.8 REQUEST FOR SAFETY VARIANCE

If the Project conditions present a situation that will not allow compliance with any portion of this Section, the Contractor shall submit a Request for Safety Variance (EXHIBIT I) to the ODR. The Request for Safety Variance must provide sufficient detail(s) regarding the action(s) to be taken that will provide a measure of safety that is equal to or exceeds the stated requirement. Until the variance is approved and signed by the ODR, compliance with this Section is required.

EXHIBIT Attachments:

- EXHIBIT A Anticipated Construction Project Hazards – Checklist submittal
- EXHIBIT B Hot Work Burning/Welding Permit – Project file document
- EXHIBIT C Visitor’s General Waiver and Release – Contractor submittal
- EXHIBIT D Project Safety Orientation Checklist – Project file document
- EXHIBIT E Subcontractor Safety Representatives Weekly Meeting Agenda - Template
- EXHIBIT F Quarterly Equipment Inspection Report – Project file document
- EXHIBIT G Worker Guide for Reporting Injury - Handout
- EXHIBIT H Supervisor Guide for Management of Worker Injury - Handout
- EXHIBIT I Request for Safety Variance – Contractor submittal
- EXHIBIT J Root Cause Analysis
- EXHIBIT K Incident Notification Flow Chart

END OF SECTION 01 35 23

**EXHIBIT A****CONTRACTOR SUBMITTAL TO OWNER – CHECKLIST****The University of Texas System – Construction Project Safety****ANTICIPATED CONSTRUCTION PROJECT HAZARDS**

CIP (Owner's Project) #		Project Name	Date
No	Yes	Issue	Timing for appearances & ID for Subcontractor JH/SA's
<b>General Health Exposures</b>			
		Noise, Illumination, Lasers and X-ray	
		Dusts, Mists, Vapors, Gases	
		Chemical exposures	
		Proximity to public and/or traffic	
		Existing geography/ extreme weather	
<b>Electrical Exposures</b>			
		Overhead power lines in area	
		High Voltage (≧ 600 volts)	
		Hot taps and/or Double fed circuits	
<b>Excavations</b>			
		Tunnels and/or Jack and Bore	
		Maximum estimated trench depth	
		Maximum estimated pier sizes	
		Existing underground services	
		Proximity to streets or buildings	
<b>Elevated Fall Exposures</b>			
		Excavations and piers	
		Structural erection (steel/precast)	
		Building exterior	
		Stairwell/ Chase/Elevator Shaft	
		Roof (note steep or low slope)	



<b>Cranes/ Hoists/ Derricks</b>		
		Pier Drilling/ Pile Driving
		Exterior Hoists (Elevators)
		Mobile Cranes (track and rubber tire)
		Tower Cranes
		Critical lifts
<b>Tools and Equipment</b>		
		Powder Actuated
		Pneumatics or High Torque power tools
		Generators and Compressors
<b>Motor-Driven Equipment</b>		
		Earth moving equipment
		Lift Platforms (articulating and/or scissor)
		Industrial trucks (fork lifts)
		Bulk fuel storage area
<b>Demolition</b>		
		Structural, Explosive or Mechanical
		Jackhammers and power cutting
<b>Scaffolding</b>		
		Ground supported (static and/or motorized)
		Suspended
<b>Welding and Burning</b>		
		Types and Locations
<b>Confined Space</b>		
		Permit required and/or not required

**The University of Texas System – Construction Project Safety**

**HOT WORK (BURNING/WELDING) PERMIT  
(ONE COPY MUST BE POSTED IN THE VICINITY OF THE WORK)**

CIP Number		Request Date:	
UT Campus / Institution			
Project Name			
Requesting Company			
Responsible Supervisor			
Work Location			
General Description of Work Tasks			
Date(s) Required		to	

Permit Duration (check one):  **One Week (Static Operation)**  **One Shift (Transitory Operation)**

<b>ISSUES AND/OR PREVENTION MEASURES</b>	<b>DESCRIPTION</b>
Dedicated Fire Extinguisher(s)	
Special Suppression Equipment	
Fire Blankets/Equipment Shielding	
Flash Burn (Eye Safety) Screening	
Fire Watch Position(s)	
Existing Sprinklers Disabled	
<b>OTHER CONSIDERATIONS:</b>	

**NOTES:**

1. STATIC OPERATIONS (i.e. fabrication shop areas) may use a weekly permit. **All others must be daily.**
2. Unless a specific task requires a **LONGER** time period, fire watch positions must also conduct a smolder-rekindle watch for at least THIRTY (30) MINUTES after the burning/welding operation is completed.
3. If the work moves from one area to another during a single shift, the permit must accompany the move and all task areas must be identified on the permit.
4. After the work is completed, the permit must be initialed by the RESPONSIBLE SUPERVISOR (below) and a copy must then be forwarded to the Prime (Controlling) Contractor within one (1) work day.

If unexpected events during the work led to modified plan, place initials in appropriate box:  NO  YES  
If **YES**, describe the unexpected events and the subsequent actions.




**Visitor’s General Waiver and Release  
The University of Texas System (Owner)**

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_ Location: \_\_\_\_\_

General Contractor: \_\_\_\_\_

OFPC Resident Construction Manager: \_\_\_\_\_

Project Safety Coordinator \_\_\_\_\_

On behalf of The University of Texas (Owner) and the General Contractor, we welcome you to the project. Construction projects can be dangerous and hazardous to employees and visitors alike. Upon entering the site, you must exercise extra care to adhere to safety protocols and instructions from knowledgeable construction professionals.

Initials \_\_\_\_\_ I acknowledge that I will observe and follow all safety procedures, including any warning signs or safety instructions posted on or about the premises. In addition, I acknowledge that proper safety vests, hard hats and safety glasses have been provided to me for my visit. I am wearing closed toed shoes that the Project Safety Coordinator has acknowledged will be appropriate for my visitation.

Initials \_\_\_\_\_ I hereby waive, release and hold harmless, as well as forever discharge, The University of Texas System, the General Contractor and all subcontractors, their agents and employees from all claims which I, or my heirs, executors or administrators shall or may have, because of bodily injury or death to me or damage to my property resulting from any act or omission of the Released Parties. I AM NOT AGREEING, HOWEVER, TO RELEASE THE RELEASED PARTIES FROM GROSS NEGLIGENCE.

Initials: \_\_\_\_\_ I hereby agree to indemnify, defend and hold harmless the Released Parties for any bodily injury, death or damage to other persons or property caused by my acts or omissions while visiting the project.

Initials: \_\_\_\_\_ I, the undersigned, acknowledge that I (1) have requested permission from the Owner and General Contractor to visit the Project Site; 2) have executed this Waiver and Release as a condition of and in consideration for being permitted by Owner and General Contractor to visit the project Site; and 3) agree to exercise extreme care while on the Project Site and to comply with all safety rules and requirements of the Owner and General Contractor.


Date: \_\_\_\_\_ Visitor Signature: \_\_\_\_\_

Number in Visiting Party: \_\_\_\_\_ Group Affiliation: \_\_\_\_\_

Project Safety Coordinator Signature: \_\_\_\_\_

**EXHIBIT D****CONTRACTOR CHECKLIST – TRAINING DOCUMENT****The University of Texas System – Construction Project Safety****PROJECT SAFETY ORIENTATION**

Owner's Project #	Date of Safety Orientation Training:
Project Name	
Trainer's Name:	
Contractor/Employer's Company Name:	

**INSTRUCTIONS:** Place a  mark in the box to the right of each topic as it is discussed.

1-	Review General Purpose of Rules		7-	Daily Issues	
	a.	Do NOT work alone – stay in contact		a	Housekeeping
2-	Personal Protective Equipment (PPE)		ITEM	Slippery surfaces and Trip hazards	
	Purpose, use, storage and care of:		ITEM	Visual obstructions to emergency equipment	
	a	Safety Helmets (Hard Hats)	ITEM	Blocked Exit paths	
	b	Basic Eye Protection	ITEM	Emergency Roadways	
	c	Additional Eye/Face Protection	ITEM	Trash = Vermin/Fire hazards	
	d	Feet/Hands/Clothing Protection	ITEM	Puncture/Impalement hazards	
	e	Respiratory Protection	ITEM	Unstable Stacks of materials	
	f	Hearing Protection		b	Manual Lifting
	g	Fall Protection		c	Ladders and Stairs
	h	Special Protection issues		d	Scaffolding (frame and suspended)
3-	Hazard Communication (aka Right to Know)			e	Tools and Portable equipment
	a	General Plan		f	GFCI/Electrical power
	b	Major Chemical hazards on-site:		g	Surface and ground conditions
	NAME			h	Overhead exposures
	NAME		8-	Motorized Equipment Operations	
	NAME			a	Mobile equipment (uses and alarms)
	NAME			b	Crane and Rigging Operations
	c	Hazard Labels		c	Lift platform equipment
	d	Material Safety Data Sheet (MSDS)		d	Hoists/ Exterior Elevators
	e	Location of MSDS		e	Company/ Personal Vehicles
	f	Safe Task Training requirements	9-	Special Operations (with and w/out permit)	
4-	Emergency Equipment (location and use)			a	Excavations
	a	First Aid Station and AED		b	Concrete pour and place
	b	Fire Extinguisher		c	Steel and Precast erection
	c	Eye Wash/Shower Stations		d	Decking and roofing
5-	Emergency Procedures			e	Lock/Tag out of Energized Systems
	a	Medical/ Injury incident		f	Hot work and Burn Permits
	b	Fire incident		g	Scaffold erection/dismantle and use
	c	Weather/ Evacuate		h	Critical shutdown
	d	Violence, Protest, Spill, Explosion	10-	Miscellaneous Issues	
6-	Incident Notification/Reporting			a	Parking, Smoking, Harassment
	a	Tell Supervisor Immediately		b	Signs, Barricades, Handrails
	b	Help –OR- stay out of the way		c	Traffic, Pedestrians, Neighbors
	c	Give a statement of facts		d	Drugs and Alcohol
	d	Assist investigation		e	Meetings, Badges, Incentives
	e	Report Unsafe acts and conditions		f	Enforcement

**I understand that this training is designed to help me make safe decisions and act to reduce risks.**

Employee Name (print)

Employee Signature

**The University of Texas System – Construction Project Safety****SAFETY REPRESENTATIVES WEEKLY MEETING AGENDA**

- Sign in and introduction of any new Subcontractor Safety Representatives
- Read minutes from last meeting and vote final adjustments before filing into record

Past (Old Business):

1. Discuss investigations (findings and conclusions) from recent past incidents.
  2. If the Project has a safety committee, have someone from the committee report the safety conditions and behaviors noted in the past week.
  3. Review safety issues/conditions identified during Project Safety Coordinator's weekly safety inspection or third party inspection.
  4. Discuss any pending claims (worker injury or general liability). Review claims handling procedures.
  5. Discuss trends identified regarding claims or safety performance.
- 

Present (Current and New Business):

6. Review the activities for the week ahead. Identify particular safety concerns and issues. Develop actions to control identified hazards.
7. Review any MSDS for potential exposure warnings that pertain to upcoming operations.
8. Review specific PSMP elements and/or requirements.
9. Safety suggestions
10. Open forum for general Q and A
11. Announcements
  - Subcontracts that are concluding – need final look at their areas
  - Upcoming safety recognition events
  - Upcoming training opportunities
  - Upcoming professional safety seminars or workshops
  - Names of workers who are not permitted to return to Project
  - Time and date of next meeting
  - Next week's mandatory topic for the Weekly Tool Box talk

**The University of Texas System – Construction Project Safety**

**QUARTERLY EQUIPMENT INSPECTION REPORT**

<b>Quarterly Color Codes:</b>	(1 <sup>st</sup> ) White	(2 <sup>nd</sup> ) Green	(3 <sup>rd</sup> ) Red	(4 <sup>th</sup> ) Orange
Project Number	Date of Report			
Project Name				
Contractor				
Employer Name				
Inspector’s Name				

- INSTRUCTIONS:**
1. Use one line to identify each type of portable equipment on Project.
  2. Use a “check” mark to indicate pertinent categories for each line item.
  3. Use an “N/A” mark to indicate non-applicable categories for each line item.
  4. Use “Qty” column to indicate total number for each item inspected.
  5. Use “Comments” area to describe items removed for repair and/or discarded.
  6. Complete this process within final fourteen (14) days of each quarter.
  7. Items that enter or return to Project during quarter must first be re-inspected.

Portable Equipment Items	Qty	Inspection Categories							
		Insulation intact and cords undamaged	Clean, no electrical shorts, good polarity	Labels in place and legible	All parts present and undamaged	No excessive wear or corrosion	No deformity or sign of excessive strain	Safety feature(s) intact and working	Warning alarms operating properly

**Comments:**

---



---



---



---

I certify that all of the portable items on this Project at the beginning of this quarter have been inspected and certified or removed from service.

Signature of Inspector

Date of Report

Distribution:

Employer’s Project file

Contractor’s Project file

**The University of Texas System – Construction Project Safety****WORKER GUIDE FOR REPORTING INJURY**

- ❖ **WORKERS MUST IMMEDIATELY REPORT** all injuries (no matter how minor) to a supervisor.
- ❖ The supervisor will report the incident to the Contractor and take care of all paperwork.
- ❖ The Contractor will drive the injured employee to the clinic to guarantee safe transport and to secure swift and complete medical attention.
- ❖ The doctor may prescribe written “orders” for medical restrictions. The supervisor must then assign temporary duties that fit the restrictions (“Light Duty”). This guarantees the worker a full paycheck while the injury heals.
- ❖ The Contractor will drive the injured worker back to the Project and make arrangements with the employer to get the worker and personal vehicle home by a safe method.
- ❖ Injured employees must follow the doctor’s “orders” and comply with work restrictions – **at home and at work**. Employers must allow reasonable times for visits to the doctor and to therapy sessions. Normally, sessions can be scheduled during non-work hours.
- ❖ The insurance company may contact the injured employee to discover how the doctor and the employer are planning to treat the injury and the recovery. Injured workers should share any personal details that might help the agent understand the situation. If anything needs to be changed in order to help the recovery process, the agent will contact the proper people to make it happen.
- ❖ The insurance company will pay the medical bills for injuries on this Project. Workers should never pay any medical bills for an injury that is related to work. If there are any questions, talk to a supervisor and/or the Project Safety Coordinator for the Contractor.

**SPECIAL WARNING TO USERS AND ABUSERS** (of alcohol and other controlled substances):

No matter where a worker receives medical care, the treatment will include a drug and alcohol test. Workers who are injured as a result of impairment from alcohol or non-prescribed drugs will lose the guarantee that all medical treatment will be covered by insurance. Also, they will not be allowed to return to work on any UT System Project.

**The University of Texas System – Construction Project Safety****SUPERVISOR GUIDE FOR MANAGEMENT OF WORKER INJURY**

1. Workers must **IMMEDIATELY REPORT** all injuries (no matter how minor they appear at the time of the incident) to a supervisor (foreman, general foreman, superintendent, etc.).
2. The supervisor must **IMMEDIATELY REPORT** any injury to the Contractor’s Project Superintendent or Safety Coordinator. Improper and/or late reporting of injuries will result in Owner directed recovery charges as described in the Contract.
3. The supervisor must then escort the injured employee to the Contractor’s Project office (**except when the injury requires an ambulance or emergency response**).
4. The Contractor’s Safety Coordinator shall retrieve 5 documents from the Project Safety Files as follows:
  - a. The form (Authorization for Medical Treatment) that guarantees quickest medical response at the clinic
  - b. A map that shows the best route to the clinic
  - c. A copy of the Return to Work Policy from the employer of the injured worker
  - d. A “First Report of Injury” form to furnish the insurance company with the necessary information to start a claim and pay medical bills
  - e. A “Bona Fide Offer of Employment” form to guarantee suitable employment for medically restricted workers
5. The Contractor will drive the injured employee to the clinic to guarantee safe transport and present the “Authorization to Treat” form to obtain swift response. This form will also notify the clinic that a test for drugs and alcohol is required. If the injured worker is transported elsewhere, the Contractor shall also notify the insurer. The supervisor shall also be at the clinic to respond to questions from the physician.
6. After the doctor has completed the examination and all required medical care, the Contractor and the worker shall meet with the doctor to accomplish three objectives:
  - a. Review the injury and discover the need for any additional medical assistance.
  - b. Discuss suitable Return to Work positions to accommodate any medical restrictions.
  - c. Present the worker with a “Bona Fide Offer of Employment” form to guarantee continuing employment and to guarantee work tasks that will not exceed prescribed medical restrictions.
7. The Contractor shall then drive the worker back to the Project and the supervisor shall make suitable arrangements to get the worker and personal vehicle home at the end of the day. If the doctor has written a prescription that contains orders for medical restrictions, the worker must be assigned to (“Light Duty”) tasks that meet the restrictions. This presents a “win-win” for all involved as follows:
  - a. The injured worker will continue to draw his/her full paycheck.
  - b. The employer will be able to keep its insurance rating as competitive as possible.
  - c. The insurance provider will be able to keep the costs of medical claims as low as possible.
8. The supervisor must promote three issues to quickly and completely restore health:
  - a. Maintain awareness of medical restrictions, and assign work tasks that do not violate the restrictions.
  - b. When contacted by the insurance agent, be candid and share any information that may expedite the physical recovery of the injured worker.
  - c. Allow reasonable times for physical therapy (or other medical treatment) and maintain contact with worker.
9. **Zurich** is the insurance company that will pay the medical bills. The Contractor’s Project Safety Coordinator will have the contact information to file the required insurance claim.

**SPECIAL NOTE:** No matter where the worker receives medical treatment, a drug and alcohol test **MUST** occur at the Project assigned clinic. Employers must not allow workers with confirmed drug or alcohol impairment to return to employment on any UT System Project unless the drug is prescribed by a physician and the work assignment can be safely performed.



**The University of Texas System – Construction Project Safety**

**REQUEST FOR VARIANCE**

Date of Request:

From: *(insert name of Contractor and name of person signing on behalf of company)*

To: Office of Facilities Planning and Construction – *(insert name of OFPC RCM)*

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

We respectfully request a variance from the Contract, Section # 01 35 23 (Project Safety Requirements). We understand that no alteration of safety procedures is to be allowed until formal acceptance is executed by OFPC.

We believe that the following regulation(s) is/are either not practicable or not the best practice for the Project at this time.

*(Insert verbiage that describes the specified regulation.)*

*(Insert description of how and why the existing conditions make the existing regulation less than the safest method for accomplishing the work – convenience is not an acceptable reason.)*

*(Insert the proposed method in sufficient detail to allow a reader to visualize the better plan.)*

Very truly yours,

\_\_\_\_\_  
*Signature*

\_\_\_\_\_  
*Position*

On behalf of the Board of Regents of The University of Texas System, Contractor's request is:

ACCEPTED

DENIED

\_\_\_\_\_  
*Print name*

\_\_\_\_\_  
*Signature*

Request reviewed by OFPC Regional Program Manager and no objections to the request are made at this time.

\_\_\_\_\_  
*Printed Name*  
OFPC Resident Construction Manager

\_\_\_\_\_  
*Signature*

Cc: OFPC Safety Analyst - Austin

**ROOT CAUSE  
ANALYSIS**

Project Name: \_\_\_\_\_

Project Number: \_\_\_\_\_

Date of Incident: \_\_\_\_\_ Name of Incident: \_\_\_\_\_  
(Employee injured if applicable)

**Use in case of:** 1) Injury, 2) Level “A” Safety Deficiency, 3) Property Damage, or 4) Other Incidents as directed by the Owner

**The objective is to identify all underlying contributing factors in order to reduce potential for recurrence of the same type of incident. To accomplish this remember:**

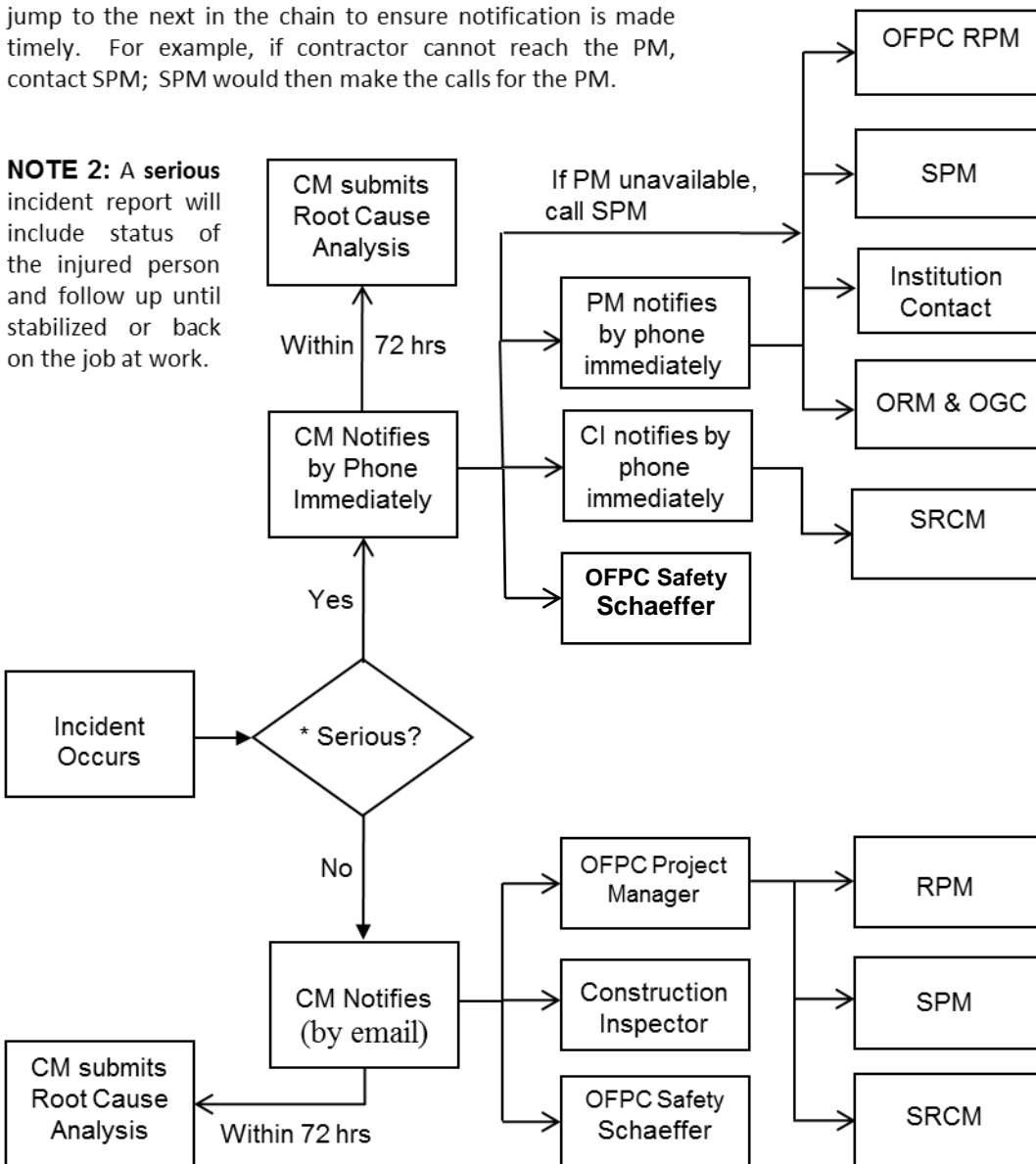
Worker’s actions made sense to that person at the time (circumstances & perceptions)  
Understand the thought process behind the decisions that were made at the time  
Look beyond the individuals involved to uncover systemic contributing risk factors  
Break the blame cycle (culture must value honest reporting - learning organization)  
Find error precursors & flawed or missing defenses or processes that led to incident

**The Root Cause Analysis investigation should thoroughly address these questions:**

1. Was the incident controlled and limited so that all workers and the project was made safe post - incident? What was done?
2. Explain what happened (facts and circumstances) that resulted in the incident.
3. Are there other work areas or tasks where this type of incident could occur again?
4. If worker’s actions contributed to the incident, why did the worker feel this was the best course of action at the time?
5. What processes were in place to prevent the incident? Identify processes that failed.
6. Is there any other information that should be known that is relevant to this incident?
7. What processes could have been implemented or improved that might have prevented this incident?
8. What processes will be improved or implemented to reduce risk of recurrence? When will these new processes be in place?

**NOTE:** if calling to report a **serious** incident and someone in the calling chain is unavailable, leave a message, but then jump to the next in the chain to ensure notification is made timely. For example, if contractor cannot reach the PM, contact SPM; SPM would then make the calls for the PM.

**NOTE 2:** A **serious** incident report will include status of the injured person and follow up until stabilized or back on the job at work.



**\* An incident is considered serious if any of the following occur:**

- EMS/Ambulance responds
- hospitalization is involved
- Life threatening or potentially life threatening
- Involves more than one employee injured

## REVISION LOG

The following is provided for convenience to the Owner, Architect/Engineer and Contractor to track changes between annual document issuances and is not to be considered by any party to be contractual or 100% complete.

Date	Paragraph Revised
02/01/08	Correct numbering in section 3.8
06/01/08	Include SafetyNet Program in section 2.4
04/01/09	Reissue date of substantially revised document. (not posted to eManual)
04/26/10	Reissue date of substantially revised document. Notable changes include: <ul style="list-style-type: none"> <li>• increased experience level and qualifications of the Project Safety Coordinator (PSC) and Project Safety Assistant(s) (PSA)</li> <li>• modified the number of PSAs required on a Project and their start and conclusion of service days</li> <li>• increased credit for formal education, continuing education, and certification for PSCs and PSAs</li> <li>• modified OSHA 10/30 hour training requirements</li> <li>• modified hard hat sticker process for equipment operators</li> <li>• modified safety vest requirement</li> <li>• modified height requirement for ladder use without fall protection</li> <li>• removed other exemptions for fall protection</li> <li>• added visitor waiver and release requirement and document</li> <li>• other cosmetic changes with no impact to content or intent of specifications.</li> </ul>
3/24/11	Inclusion of criminal background check requirement and associated forms
5/17/11	Removal of criminal background check requirement and associated forms
9/1/12	Clarifications to align with SafetyNet data gathering and Exhibit title revisions

## Gravel Containment Porous Pavement

### Grasspave<sup>2</sup> Flexible Plastic Porous Pavement

Gravelpave<sup>2</sup> porous pavement allows you to park, drive, walk, or ride on a beautiful decorative gravel surface. Gravelpave<sup>2</sup> consists of a geotextile fabric injection molded to the ring and grid structure. Gravelpave<sup>2</sup> comes in 4 standard colors to match your aggregate fill. Gravelpave<sup>2</sup> also requires a base course.

Gravelpave<sup>2</sup> is a structure to provide heavy load bearing support and true containment of gravel to create a porous surface with unlimited traffic volume and/or duration time for parking. The system can be used for storage and filtration of rainwater. For example, a cross-section with an 12" deep base course (at 20% void space) and the one inch of Gravelpave<sup>2</sup> (at 35%) would store 2.75" of rain. Although bacteria concentrations are lower than with Grasspave<sup>2</sup>, polluted runoff and vehicle drippings are consumed prior to reaching the water table.

### CSI 32 12 43

Gravelpave<sup>2</sup> is listed in the Construction Specifiers Master Spec Format in Section 32 12 43. You may also place it in the 1995 Master Format Version in section 02795.

### Base Course

Base thickness is determined by matching bearing capacity of existing soils with design loads. For instance, a golf cart path on sand soils may not need base course, while a fire lane over silt or expansive clay may need 12" of gravel over geogrid. Base must be determined by Engineer, or by site testing.

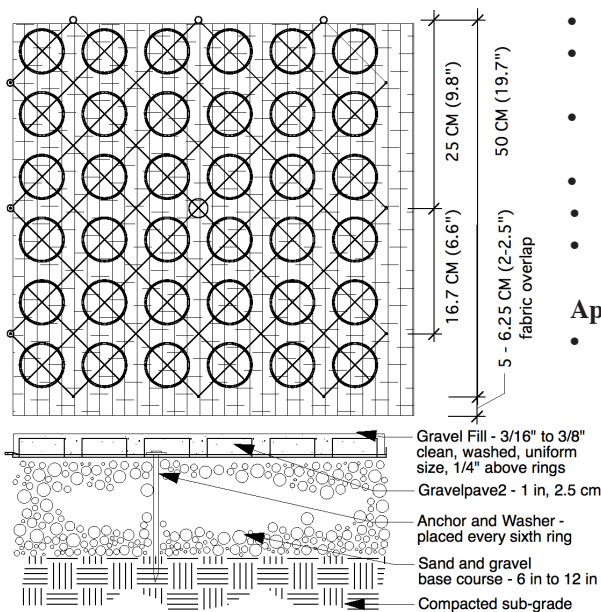
### Fill Material

Choose your gravel fill, from local sources, to match the color of the Gravelpave<sup>2</sup> mats, availability, and to meet the following criteria:

- Clean/Washed
- Sharp, hard and angular
- 3/16" to 3/8" uniform

### Colors

Gravelpave<sup>2</sup> is available in 4 standard colors: Tan, Black, Gray, and Terra Cotta Non-woven geotextile fabric backing may vary depending on the supplier. Custom colors available for an additional price.



### Benefits

- Pervious Load Bearing Surface
- Stormwater Pollution Filtration and Treatment
- Heat Energy Reflection Reduction, "Cool" Surface
- Tree Growth within Parking Areas
- 5,721 psi Compressive Strength
- Large Rolls for Easy Installation

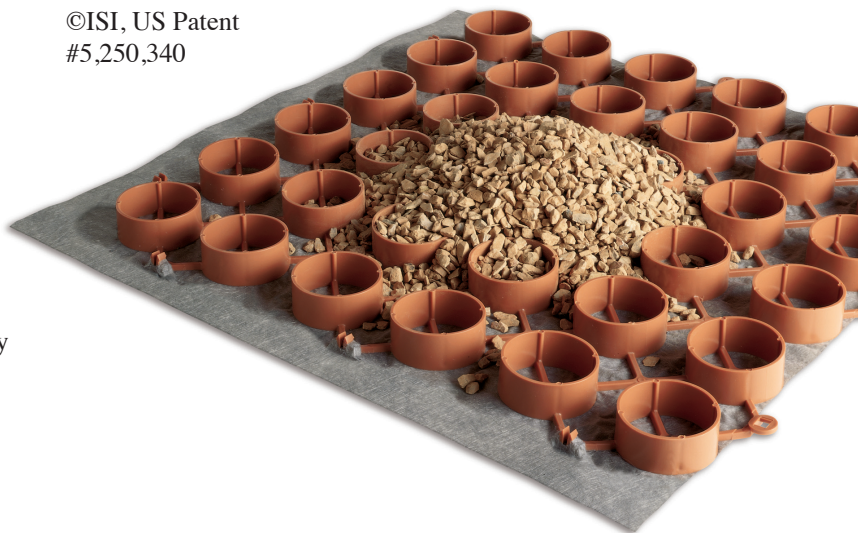
### Applications

- All Parking Aisles and Bays
  - Handicap Parking Spaces
  - Automobile and Truck Storage Yards
- All Service and Access Drives
- Loading Dock Areas
- Trails for Multiple Uses
- Boat Ramps
- Outdoor Bulk Storage Areas
- Infiltration Basins
- High-Use Pedestrian Areas

### Specifications

- Unit Size – 20" x 20" x 1" (50 x 50 x 2.5cm)
- Unit Weight – 18oz (510 grams)
- Strength – 15,940 psi (109,906 kPa)
- Connector Pull Apart Strength (Tensile) - 458 lbf/in
- Color – Black
- Resin – 100% recycled HDPE
- Shipped in Rolls (431 sq ft standard, other roll sizes available)

Invisible Structures, Inc.  
 1600 Jackson Street, Suite 310  
 www.invisiblestructures.com  
 Golden CO, 80401  
 800-233-1510  
 Fax: 800-233-1522  
 ©ISI, US Patent  
 #5,250,340



Invisible Structures, Inc.  
1600 Jackson St., Suite 310  
Golden, CO 80401  
Toll Free 800-233-1510  
Phone 303-233-8383  
Fax 303-233-8282  
E-Mail [sales@invisiblestructures.com](mailto:sales@invisiblestructures.com)  
Website [www.invisiblestructures.com](http://www.invisiblestructures.com)

November 2016

## Gravelpave2 Product Specification (CSI Format)

Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) Format, including *MasterFormat* (1995 Edition), *SectionFormat*, and *PageFormat*, contained in the *CSI Manual of Practice*.

The section must be carefully reviewed and edited by the Engineer to meet the requirements of the project and local building code. Coordinate with other specification sections and the drawings.

Delete all "Specifier Notes" when editing this section.

### SECTION 32 12 43 POROUS FLEXIBLE PAVING (Formerly 02795 Porous Paving)

Notes: This section covers Gravelpave2 Porous Pavement System from Invisible Structures. The system provides vehicular and heavy load support over gravel areas while protecting the area from rutting and erosion while remaining porous. The major components of the complete system are the Gravelpave2 units, an engineered base course, anchor pins, and gravel fill material.

Consult Invisible Structures, Inc. for assistance in editing this section for the specific application.

#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Porous pavement system.

##### 1.2 RELATED SECTIONS

- A. Section [31 20 00 – Earth Moving] [\_\_ \_\_ - \_\_\_\_\_].
- B. Section [33 46 00 – Subdrainage] [\_\_ \_\_ - \_\_\_\_\_].
- C. Section [32 10 00 – Bases, Ballasts, and Paving] [\_\_ \_\_ - \_\_\_\_\_].

Notes: Edit the following list as required for the project. List other sections with work directly related to the porous pavement system.

- D. Section [32 30 00 - Site Improvements] [\_\_ \_\_ - \_\_\_\_\_].
- E. Section [32 90 00 Planting] [\_\_ \_\_ - \_\_\_\_\_].

##### 1.3 REFERENCES

- A. ASTM F 1951-08 Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.

- B. ASTM D 638-10 Standard Test Method for Tensile Properties of Plastics
- C. ASTM C 33 Standard Specification for Concrete Aggregates

#### **1.4 SYSTEM DESCRIPTION**

- A. The Gravelpave2 porous pavement system provides vehicular and pedestrian load support for gravel areas and reduces erosion and rutting.
- B. Major Components of the Complete System
  - 1. Gravelpave2 units, assembled in rolls.
  - 2. Engineered sand and gravel base course.
  - 3. Anchor pins and washers.
  - 4. Gravel fill aggregate.
  - 5. (Optional) Binder. Consultation suggested with Invisible Structures, Inc.
- C. The Gravelpave2 gravel paving units, gravel fill, and base course work together to support imposed loading.
- D. The Gravelpave2 paving units contain and restrict gravel fill from lateral and vertical movement.

#### **1.5 SUBMITTALS**

- A. Submit under provisions of Section 01 30 00.
- B. Shop Drawings: Submit design detail showing proper cross-section.
- C. Samples: Submit manufacturer's sample of Gravelpave2 10" x 10" section of Gravelpave2 material.
- D. Installation Instructions: Manufacturer's printed installation instructions. Include methods for maintaining installed products.
- E. Certificates:
  - 1. Manufacturer signed certificate stating the product is made in the USA.
  - 2. Submit Material Certificates for base course and gravel fill materials
  - 3. Product certificates signed by the manufacturer certifying material compliance of polyethylene used to make Gravelpave2 units.
  - 4. ISO Certificate certifying manufacturer's quality management system is currently registered to ISO 9001:2008 quality standards.
- F. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
  - 1. List of proposed materials with recycled content. Indicate post-consumer recycled content and pre-consumer recycled content for each product having recycled content.
  - 2. Product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content.
  - 3. Description of Gravelpave2 in stormwater design to limit the disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, reducing or eliminating pollution from stormwater runoff and eliminating contaminants.
  - 4. Designing elements for Gravelpave2 to limit the disruption and pollution of natural water flows by managing stormwater runoff.
  - 5. Documenting the use of Gravelpave2 to reduce heat islands to minimize the impact on microclimates and human and wildlife habitats.
- G. Substitutions: No material will be considered as an equivalent to the Gravelpave2 unit specified herein unless it meets all areas of this specification without exception. Manufacturers seeking to supply what they represent as equivalent material must submit records, data, independent test results, samples, certifications, and documentation deemed necessary by the Specifier to prove equivalency.
- H. Manufacturer's Material Certification: Product manufacturers shall provide certification of compliance with

all applicable testing procedures and related specifications upon written request. Request for certification shall be submitted by the purchasing agency no later than the date of order placement.

- I. Product manufacturers shall also have a minimum of 30 years' experience producing products for porous pavement systems.
- J. Manufacturer Quality Certification: ISO Certification certifying manufacturer's quality management system for its Gravelpave2 system is currently registered to ISO 9001:2008 quality standards. Any alternate materials submitted shall provide a certification that their porous pavement system manufacturing process is part of an ISO program and a certification will be required specifically stating that their testing facility is certified and in accordance with ISO.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect Gravelpave2 units/rolls from damage during delivery and store rolls upright, under tarp, to protect from sunlight, when time for delivery to installation exceeds one week.
- C. Store anchor pins and washers in a secure location protected from theft or damage.
- D. Handling: Protect materials during handling and installation to prevent damage.

## 1.7 MAINTENANCE SERVICE

Notes: Once the gravel fill in in place, the cell wall structure will have minimal visibility when proper care practices are followed.

- A. Installer responsible for maintenance of Gravelpave2 system until site work is complete. See *Gravelpave2 Maintenance Guide* from Invisible Structures.
- B. System to be maintained by \_\_\_\_\_, after \_\_\_\_\_ (completion date or other date).

## 1.8 Project Conditions

- A. Maintain environmental conditions within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
- B. Do not begin installation of porous pavements until all hard surface paving adjacent to porous pavement areas, including concrete walks and asphalt paving, is completed.
- C. Install Gravelpave2 units when ambient air temperatures is at least 55 degrees F (13 degrees C).
- D. In cold weather, do not use frozen materials or materials mixed or coated with ice or frost, and do not build on frozen base or wet, saturated or muddy subgrade.
- E. Protect partially completed paving against damage from other construction traffic when work is in progress.
- F. DO NOT DRIVE, PARK ON, or use Gravelpave2 system until system has been properly anchored and fully filled with gravel aggregate fill. Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.

## 1.9 LIMITED WARRANTY

- A. Invisible Structures, Inc. (ISI) warrants to its purchasers that all products furnished by ISI will be free from defects in material and/or workmanship.
- B. This warranty shall be extended for a period of five (5) years following the date of shipment by ISI.
- C. Providing a written claim is presented to ISI within the warranty period and after inspection by ISI showing the materials have failed under this warranty, all defective materials shall be refurbished under this warranty, at no charge, excluding re-installation costs. This in lieu of all other warranties expressed or implied and is the sole warranty extended by ISI.
- D. Our liability under this warranty is limited to the refurbishing of materials and does not include any



responsibility for incidental, consequential, or other damages of any nature.

## **PART 2 PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Acceptable Manufacturer: Invisible Structures, Inc., which is located at: 1600 Jackson St. Suite 310 ; Golden, CO 80401; Toll Free Tel: 800-233-1510; Tel: 303-233-8383; Email: [request info \(sales@invisiblestructures.com\)](mailto:requestinfo@invisiblestructures.com); Web: [www.invisiblestructures.com](http://www.invisiblestructures.com).
- B. Substitutions: Not permitted.

### **2.2 GRAVELPAVE2**

- A. Composition:
  - 1. Manufactured in the USA.
  - 2. High density polyethylene (HDPE): 100 percent recycled materials.
  - 3. Geotextile fabric backing injection molded to the grid system.
  - 4. Color: black, terra cotta, gray, or tan. Custom colors may be available – Contact the manufacturer.
  - 5. Color Uniformity: Uniform color throughout all unit rolls.
  - 6. Carbon Black for ultraviolet light stabilization.
  - 7. Anchor pins and washers, provided by manufacturer with Gravelpave2.
- B. Performance Properties:
  - 1. Maximum Loading Capability: 15,940 psi (2.29 million psf, 109,906 kPa) when filled with gravel.
  - 2. Wheelchair Access testing for ADA Compliance: Passing ASTM F 1951-08.
  - 3. Tensile strength, pull-apart testing: 458 lbf/in from ASTM D638 Modified.
  - 4. System Permeability (Gravelpave2, sand, base course): 2.63 to 38.55 inches of water per hour.
  - 5. Effective Imperviousness (E.I.): 10%.
- C. Dimensions (individual units are assembled and distributed into rolls):
  - 1. Roll area: From 108 sq ft (10 sq m) to 538 sq ft (50 sq m), in 108 sq ft (10 sq m) increments
  - 2. Roll Widths: From 3.3 ft (1 m) to 8.2 ft (2.5 m), in 1.6 ft (0.5 m) increments.
  - 3. Roll Lengths: From 32.8 ft (10m) to 65.6 ft (20 m), in 3.3 ft (1 m) increments.
  - 4. Roll Weights: From 41 lbs (19kg) to 205 lbs (93kg), in 41 lbs (19 kg) increments.
  - 5. Unit Nominal Width by Length: 20 inches by 20 inches (0.5 m by 0.5 m) or 40 inches by 40 inches (1 m by 1 m).
  - 6. Nominal Depth: 1 inch (2.5 cm) – for rolls and individual units.
  - 7. Unit Weight: 19 oz (535 g) or 5 lbs. (2.27 kg).
  - 8. Volume Solid: 8 percent.

### **2.3 SYSTEM MATERIALS**

Notes: All measurements are subject to manufacturing tolerances, unless otherwise specified.

- A. Base Course: Sandy gravel material from local sources commonly used for road base construction (recycled materials such as crushed concrete or crushed asphalt are NOT acceptable).
  - 1. Conforming to the following sieve analysis and requirements:
    - a. 100 percent passing sieve size 1 inch (25 mm).
    - b. 90-100 percent passing sieve size 3/4 inch (19 mm).
    - c. 70-80 percent passing sieve size 3/8 inch (9 mm).
    - d. 55-70 percent passing sieve size #4.
    - e. 45-55 percent passing sieve size #10.
    - f. 25-35 percent passing sieve size #40.

- g. 3-8 percent passing sieve size #200.
  - 2. Material may be either "pit run" or "crusher run." Avoid using clay based crusher run/pit run. Crusher run material will generally require coarse, well-draining sand conforming to AASHTO M6 or ASTM C 33 to be added to mixture (20 to 30 percent by volume) to ensure long-term porosity.
  - 3. Alternative materials such as crushed shell, limerock, or crushed lava may be used for base course use, provided they are mixed with sharp sand (20 to 30 percent) to ensure long-term porosity, and are brought to proper compaction. Without added sand, crushed shell and limerock set up like concrete and become impervious.
  - 4. Alternative size and/or composition of base course materials should be submitted to Invisible Structures, Inc. (Manufacturer) for approval.
- B. Gravel Fill: Obtain clean, washed, fine decorative gravel, must be sharp and angular (not rounded) stone, granite hardness, to fill the 25 mm (1") high rings and spaces between the rings, not to be overfilled more than 1/4" (6 mm). Maximum Size of stone should be: 3/16" to 3/8" (5 mm to 10 mm) and uniform in size - not graded.
  - C. Anchors: Typical anchors shall be 8" long nails with "fender" type washers 7 x 30 mm od (5/16" id x 1.25") od, all galvanized metal or similar corrosion resistant coating. Supplied anchors may vary in size and type based on source and availability.
  - D. (Optional) Binder: Portland cement, polymer binders, or tree resin binders may be added for additional aggregate stabilization. Contact the manufacturer. ATTENTION: Binders will reduce porosity –and some will even eliminate porosity – in the Gravelpave2 system.

## **PART 3 EXECUTION**

### **3.1 INSPECTION**

- A. Examine subgrade and base course installed conditions. Do not start porous paving installation until unsatisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradients.
- B. For fire lane installations: prior to installing base course, obtain approval of local fire authorities of sub-base.

Notes: For Fire lanes and emergency access, It is recommended that Fire Department inspectors be scheduled to inspect installation of Gravelpave2 during preparation of the subbase, installation of the base course, and installation of Gravelpave2 units. Most small projects can accommodate these inspections all on the same day. Verify with Fire Department if certificates of inspection are required.

- C. Start of installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Architect for resolution.

### **3.2 PREPARATION**

Notes: Ensure that subbase materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally, excavation into undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextiles, geogrids, and/or compaction (not to exceed 90%). Ensure that grading and soil porosity of the subbase will provide adequate subsurface drainage

- A. Subgrade Preparation:
  - 1. Prepare subgrade as specified in Section 32 10 00. Verify subgrade in accordance with porous paving system manufacturer's instructions.
  - 2. Proper subgrade preparation will enable the Gravelpave2 rolls/units to connect properly and remain level and stationary after installation.
  - 3. Excavate area allowing for unit thickness, the engineered base depth (where required), and 0.5 inch (1.25 cm) for 0.25 inch (6mm) gravel overfill and slight recession to contain gravel.
  - 4. Provide adequate drainage from excavated area if area has potential to collect water, when

working with in-place soils that have poor permeability.

5. Ensure in-place soil is relatively dry and free from standing water.
  6. Uniformly grade base.
  7. Level and clear base of large objects, such as rocks and pieces of wood.
- B. Base Preparation:
1. Install Base as specified in Section 32 10 00. Verify engineered base (if required) is installed in accordance with porous paving system manufacturer's instructions.
  2. Coordinate base installation and preparation with subdrains specified in Section 33 46 00.
  3. If required, place a geotextile separation layer between the natural ground and the 'engineered base'.
  4. If required, install the specified sub-drain and outlet according to construction drawings.
  5. Place engineered base in lifts not to exceed 6 inches (150 mm), compacting each lift separately to 95 percent Modified Proctor.
  6. Leave 1 inch (2.5 cm) of depth below final grade for porous paver unit and sand fill and 0.5 inch (1.25 cm) for overfill of gravel aggregate.

Notes: Delete requirement for on-site manufacturer's field representative if not required
---

### **3.3 ON-SITE MANUFACTURER'S FIELD REPRESENTATIVE**

- A. A qualified Manufacturer's field representative shall be available for a pre-construction meeting via phone or in person and will provide installation videos, design details, installation instructions, and the technical specifications.
- B. The time for on-site observation shall be indicated in the Contract Documents and included in the base bid price.

### **3.4 GRAVELPAVE2 INSTALLATION**

- A. Install the Gravelpave2 units by placing units with rings facing up/fabric below, and using small male/female connectors provided along each edge to maintain proper spacing and interlock the units. Cutting can be performed with pruning shears and knife, or portable power saw. Units shall be anchored to the base course, using anchors described above, as required to secure units in place from movement by traffic, at an average rate of 6 pins per square meter (high speed, heavy vehicles, fast turning movement will require additional anchors). Tops of rings shall be flush with the surface of adjacent hard surfaced pavements.
- B. Smooth the fabric overlaps from one roll or unit to the adjacent unit. Take care to make sure there are no gaps in the fabric exposing base course.
- C. Install gravel into rings after the units are anchored by "backdumping" directly from a dump truck, or from buckets mounted on tractors, with a minimum depth of 6", then exit the site by driving forward over rings already filled. Sharp turning of vehicles on bare rings must be avoided. The gravel is then spread laterally from the pile using power brooms, blades, flat bottomed shovels and/or wide "asphalt rakes" to fill the rings. A stiff bristled broom should be used for final "finishing". The gravel should be "compacted", if necessary, by using a vibrating plate or small roller, with the finish grade no less than the top of rings and no more than 6 mm (0.25") above top of rings.
- D. (Optional) If a binder for fill stone is desired (due to traffic speed, concentrated water flow, or other reason), use one of the following methods:
  1. Portland cement: Mixed dry at 10% by weight with fill stone,. Place into rings after thoroughly wetting the base, then lightly mist the surface after fill and compaction. Then, cover with a water resistant tarp, or plastic sheeting material for a minimum period of 3 days, or until the mixture has bonded.
  2. Polymer Resin Binder or Tree Resin Binder: Please contact Invisible Structures, Inc. and Resin Manufacturer for installation.

### **3.7 PROTECTION**

- A. Prohibit traffic on the Gravelpave2 system until installation is completed. Any traffic on the unfilled or un-anchored Gravelpave2 system is a safety risk and subject to irreparable damage to the product.

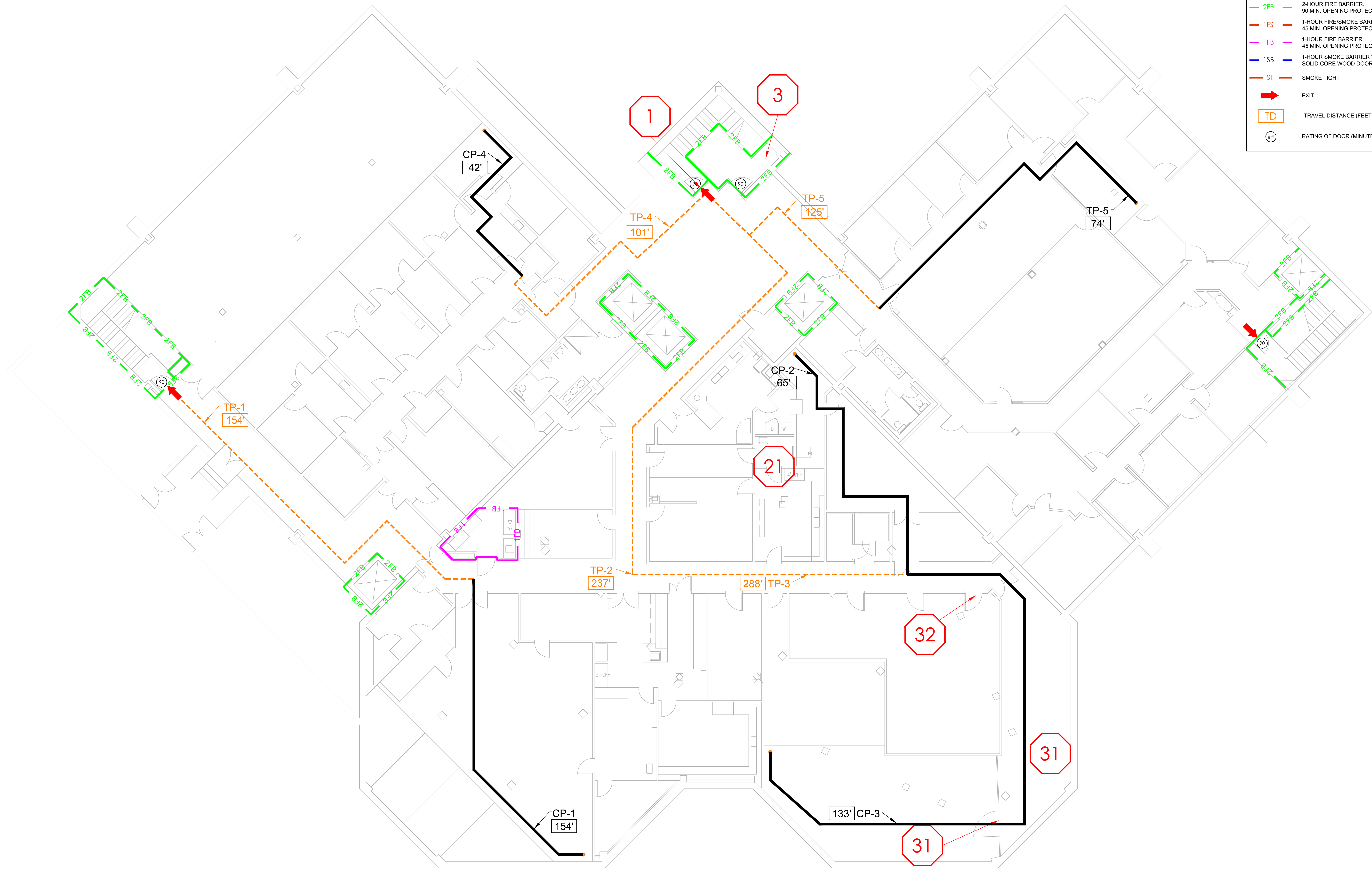
### **3.8 FIELD QUALITY CONTROL**

- A. Remove and replace segments of Gravelpave2 units where three or more adjacent rings are broken or damaged, reinstalling as specified, so no evidence of replacement is apparent.
- B. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

### **3.9 MAINTENANCE**

- A. Keep area free of and remove organic material such as soil runoff, tree leaves, fruit, and other vegetation debris.
- B. Broom or rake gravel smooth to no more than 6mm (0.25") above the rings.
- C. Refill areas with gravel aggregate where walls of the rings are more than 3mm (0.125") exposed.
- D. When snow removal is required, keep a metal edged plow blade a minimum of 17mm (0.75") above the gravel surface during plowing operations to avoid causing damage to the Gravelpave2 units, or
  - 1. Use a plow blade with a flexible rubber edge, or
  - 2. Use a plow blade with skids on the lower outside corners set so the plow blade does not come in contact with the units.

**END OF SECTION**



FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
R#	RATING OF DOOR (MINUTES)

**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

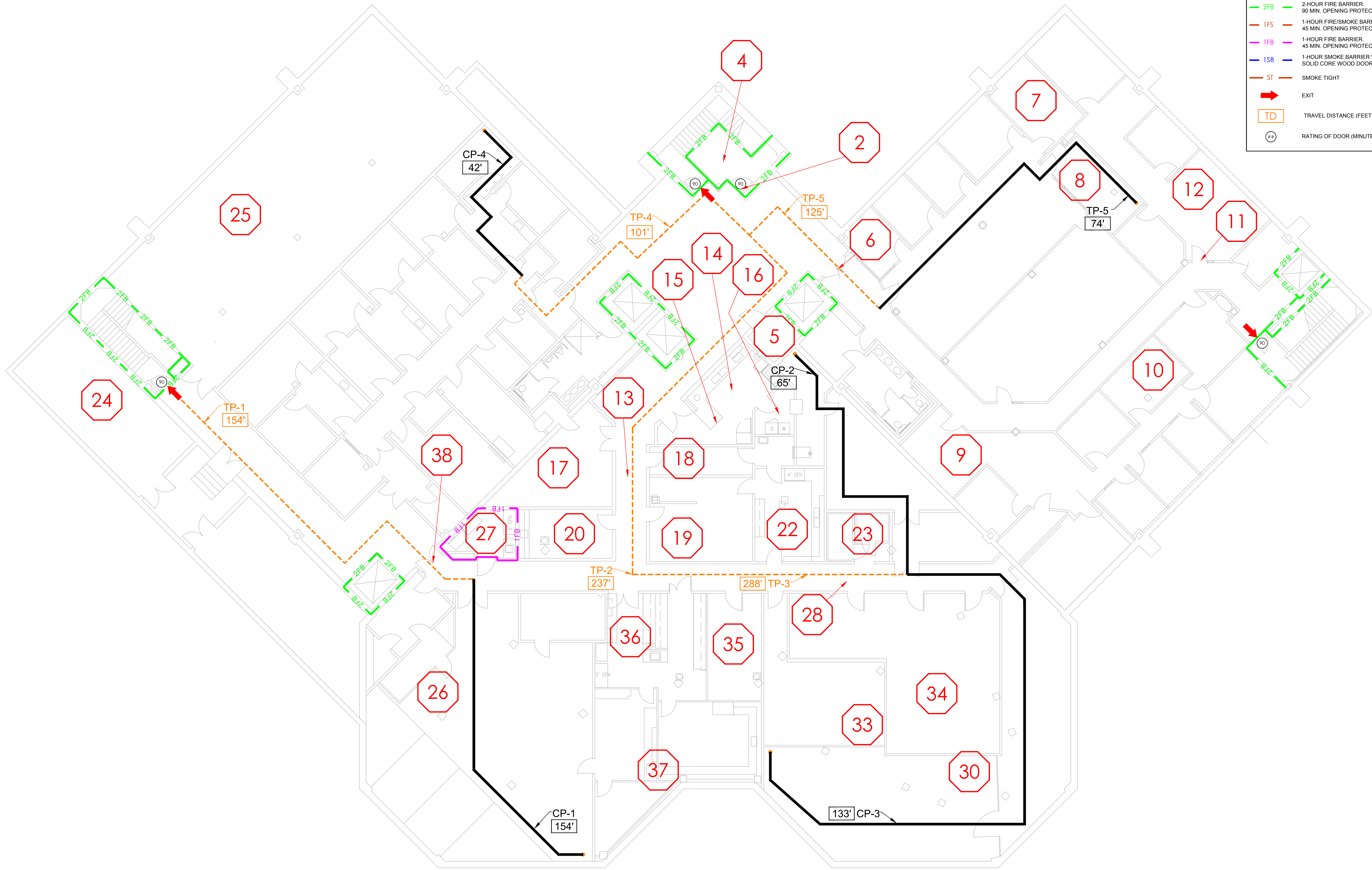
**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

**BASEMENT**

**LIFE SAFETY**  
**FE-200**

1 REUEL A. STALLONES BUILDING - BASEMENT  
 SCALE: 1/8" = 1'-0"



**RJA**  
 ROLF JENSEN & ASSOCIATES, INC.  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

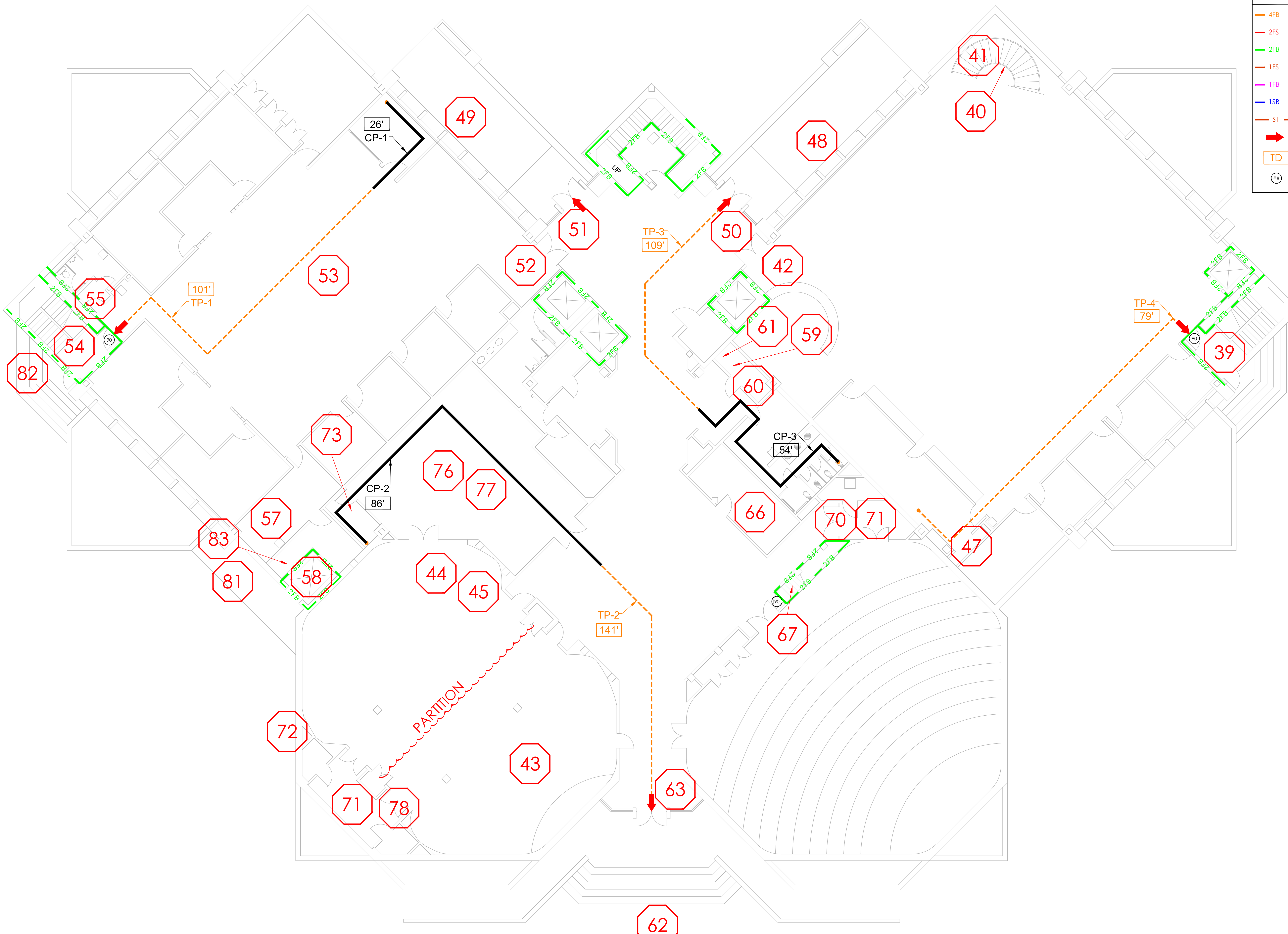
ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

BASEMENT

**LIFE SAFETY**  
**FE-200**

1 REUEL A. STALLONES BUILDING - BASEMENT  
 FE-200 SCALE: 1/8" = 1'-0"



FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)

**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77060  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

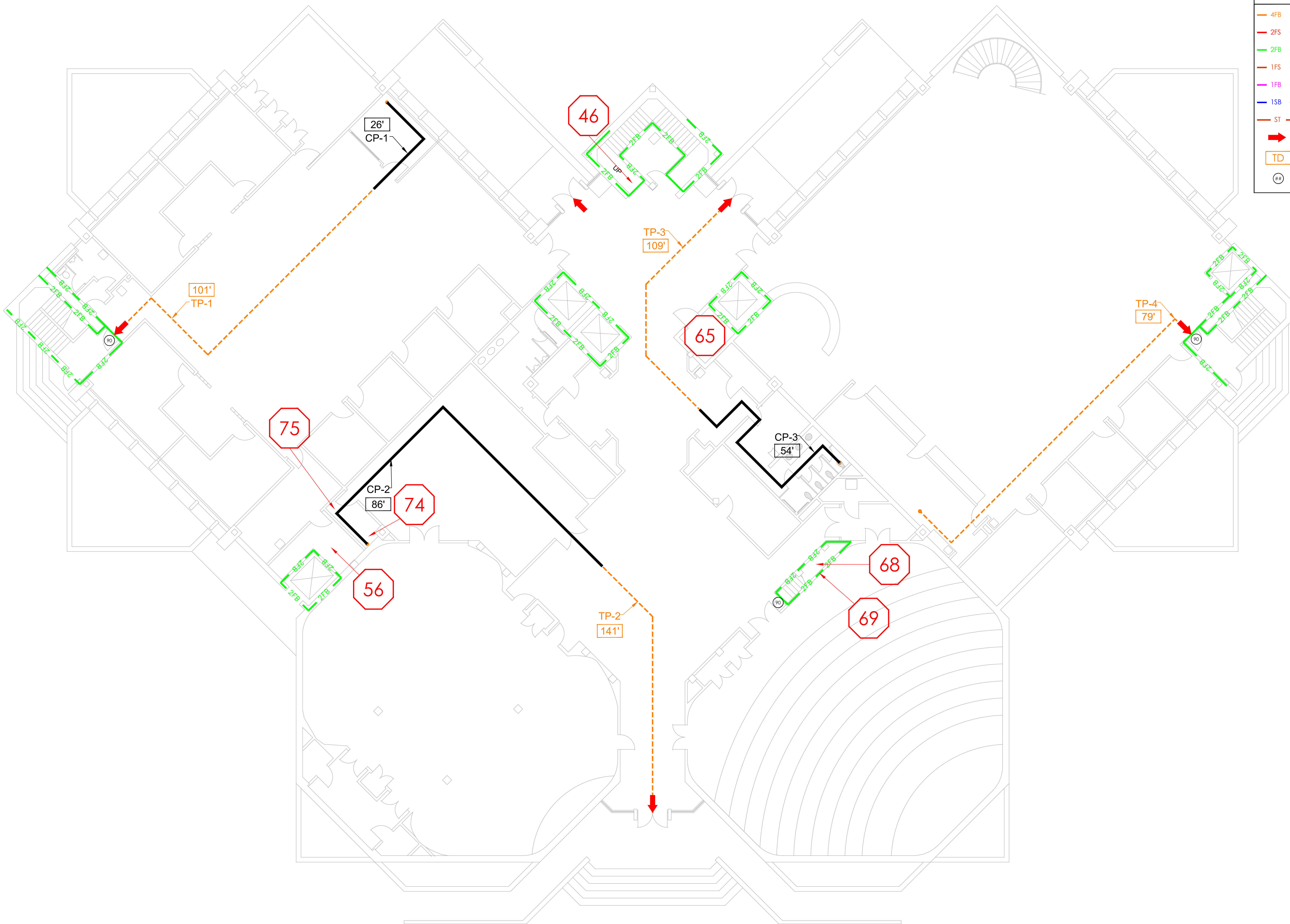
**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM  
 ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL ONE  
**LIFE SAFETY**  
**FE-201**

1 REUEL A. STALLONES BUILDING - LEVEL ONE  
 FE-201 SCALE: 1/8" = 1'-0"

PROJECT NAME: U.T. HEALTH SCIENCE CENTER REUEL A. STALLONES BUILDING  
 7000 FANNIN ST HOUSTON, TEXAS 77030  
 © 2012 ROLF JENSEN & ASSOCIATES, INC. ALL RIGHTS RESERVED.  
 THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.  
 ROLF JENSEN & ASSOCIATES, INC. (RJA) SHALL NOT BE RESPONSIBLE FOR THE CONSEQUENCES OF INTENTIONAL OR UNINTENTIONAL MODIFICATIONS OF THESE DRAWINGS OR THE ELECTRONIC FILES EITHER BY OTHERS OR DURING THE PROCESS OF FILE OR MEDIA TRANSFER. ANY USE, ALTERATION OR REPRODUCTION OF THESE DRAWINGS IN WHOLE OR IN PART BY ANY MEANS IS STRICTLY PROHIBITED, UNLESS SPECIFIC WRITTEN PERMISSION IS OBTAINED FROM RJA.



FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
EXIT	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓜ	RATING OF DOOR (MINUTES)

**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

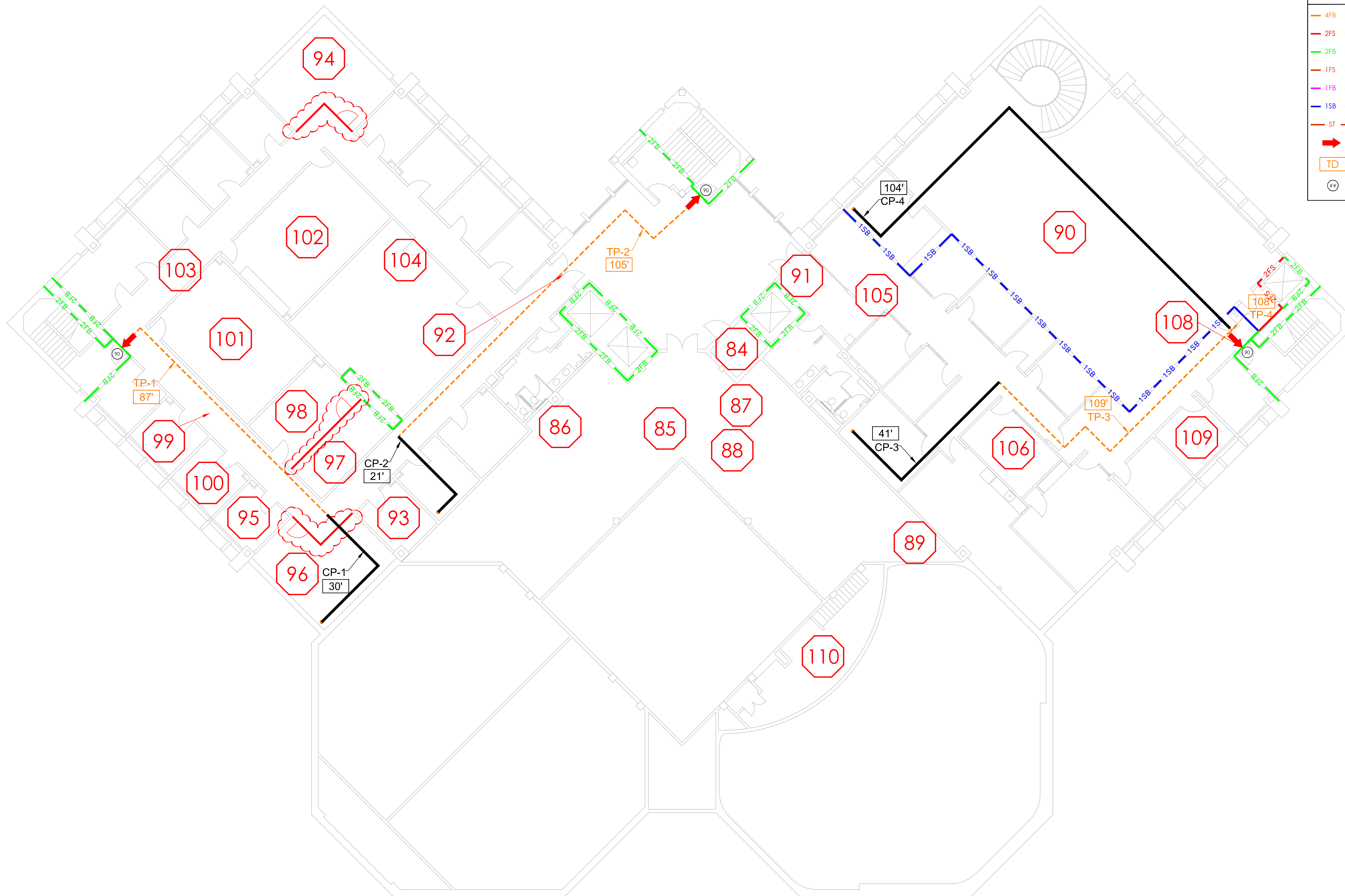
**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL ONE  
**LIFE SAFETY**  
**FE-201**

1 REUEL A. STALLONES BUILDING - LEVEL ONE  
 FE-201 SCALE: 1/8" = 1'-0"





FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
EXIT	EXIT
TD	TRAVEL DISTANCE (FEET)
R	RATING OF DOOR (MINUTES)

**RJA**  
 ROLF JENSEN & ASSOCIATES, INC.  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110, HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

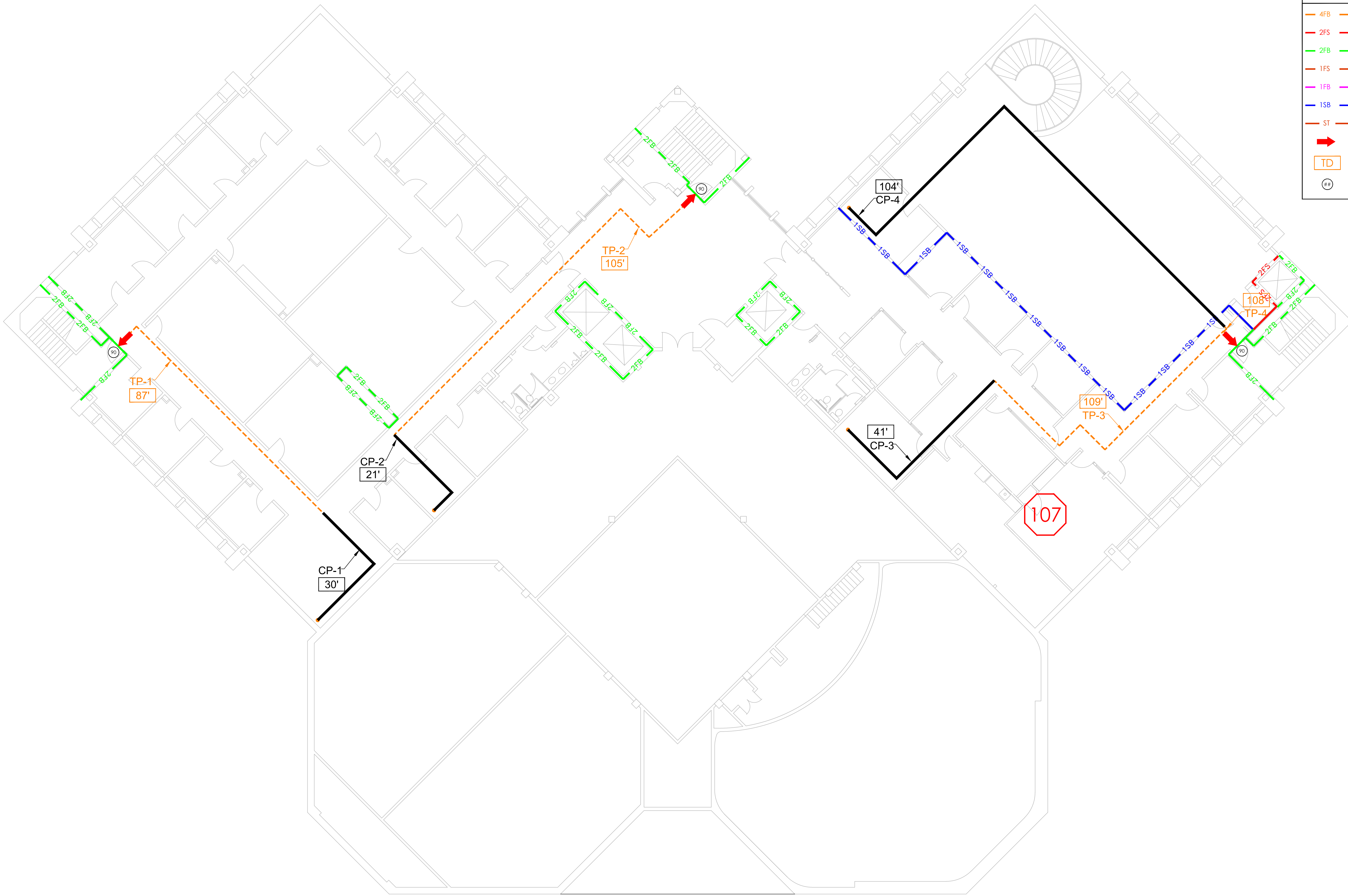
THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

1 RUELE A. STALLONES BUILDING - LEVEL TWO  
 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL TWO  
**LIFE SAFETY**  
**FE-202**



FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
R#	RATING OF DOOR (MINUTES)

**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM




**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

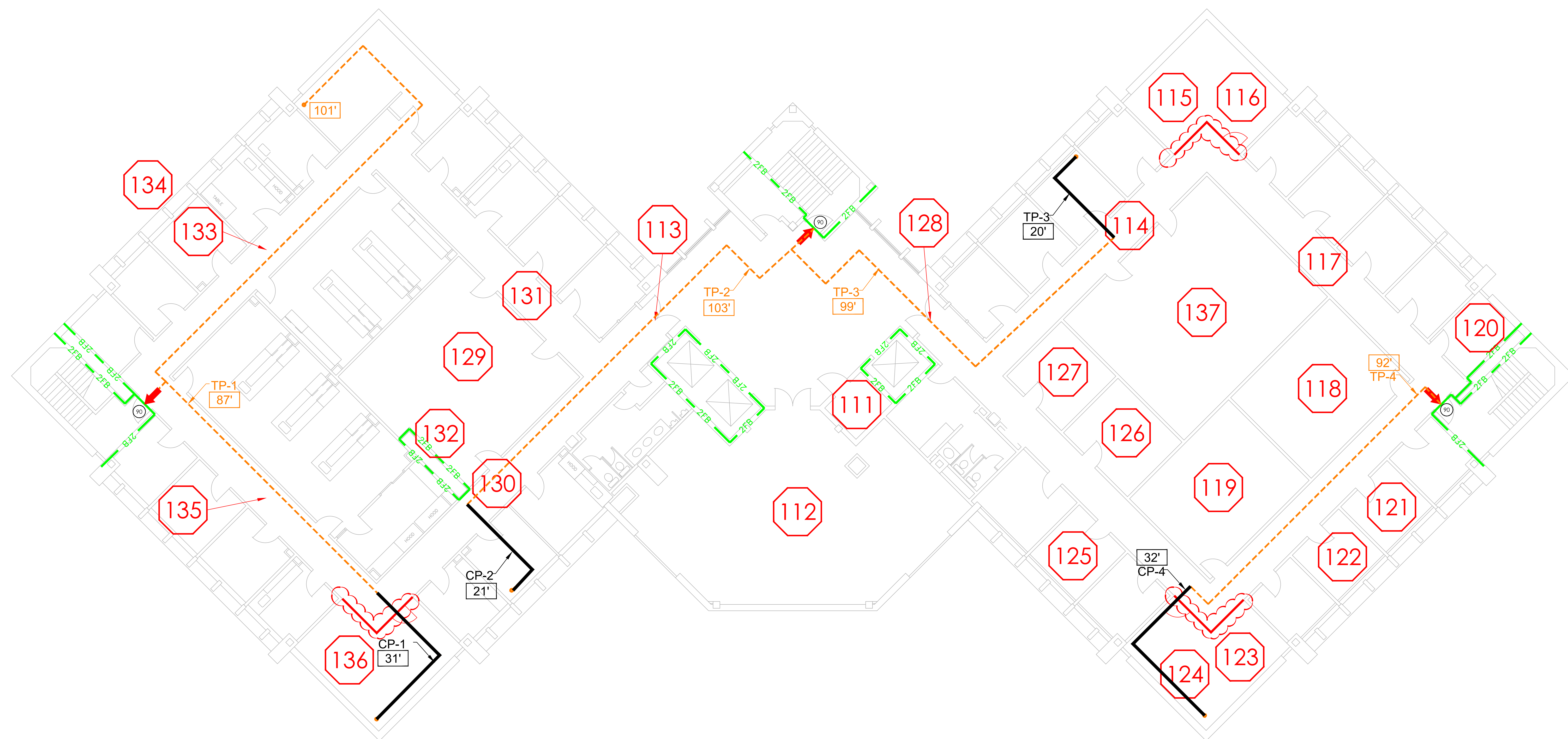
**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

LEVEL TWO

**LIFE SAFETY**  
**FE-202**

1 RUELE A. STALLONES BUILDING - LEVEL TWO  
 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R/R RATING OF DOOR (MINUTES)



THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM









**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

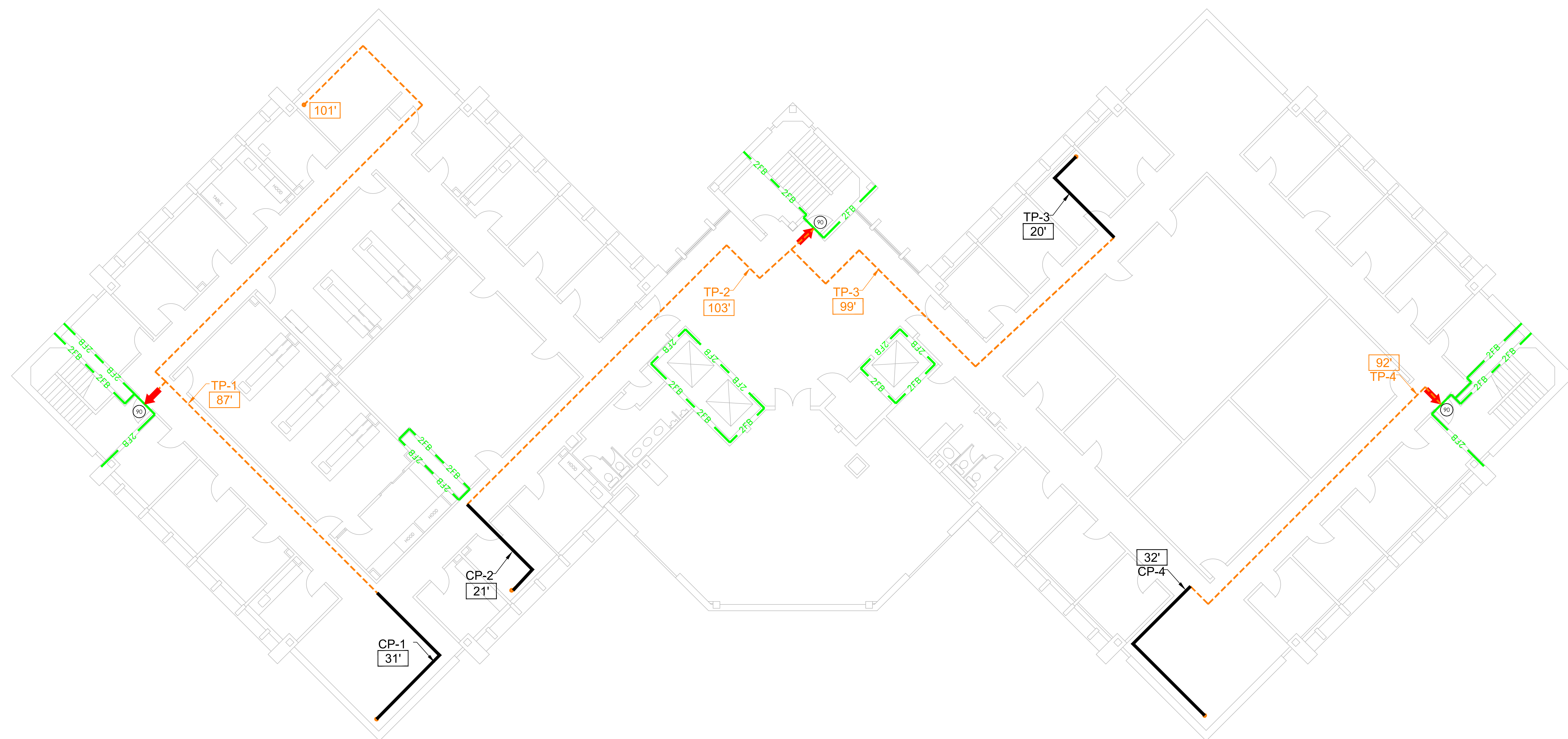
**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

LEVEL THREE

**LIFE SAFETY**  
**FE-203**

1 REUEL A. STALLONES BUILDING - LEVEL THREE  
 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R# RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.




THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

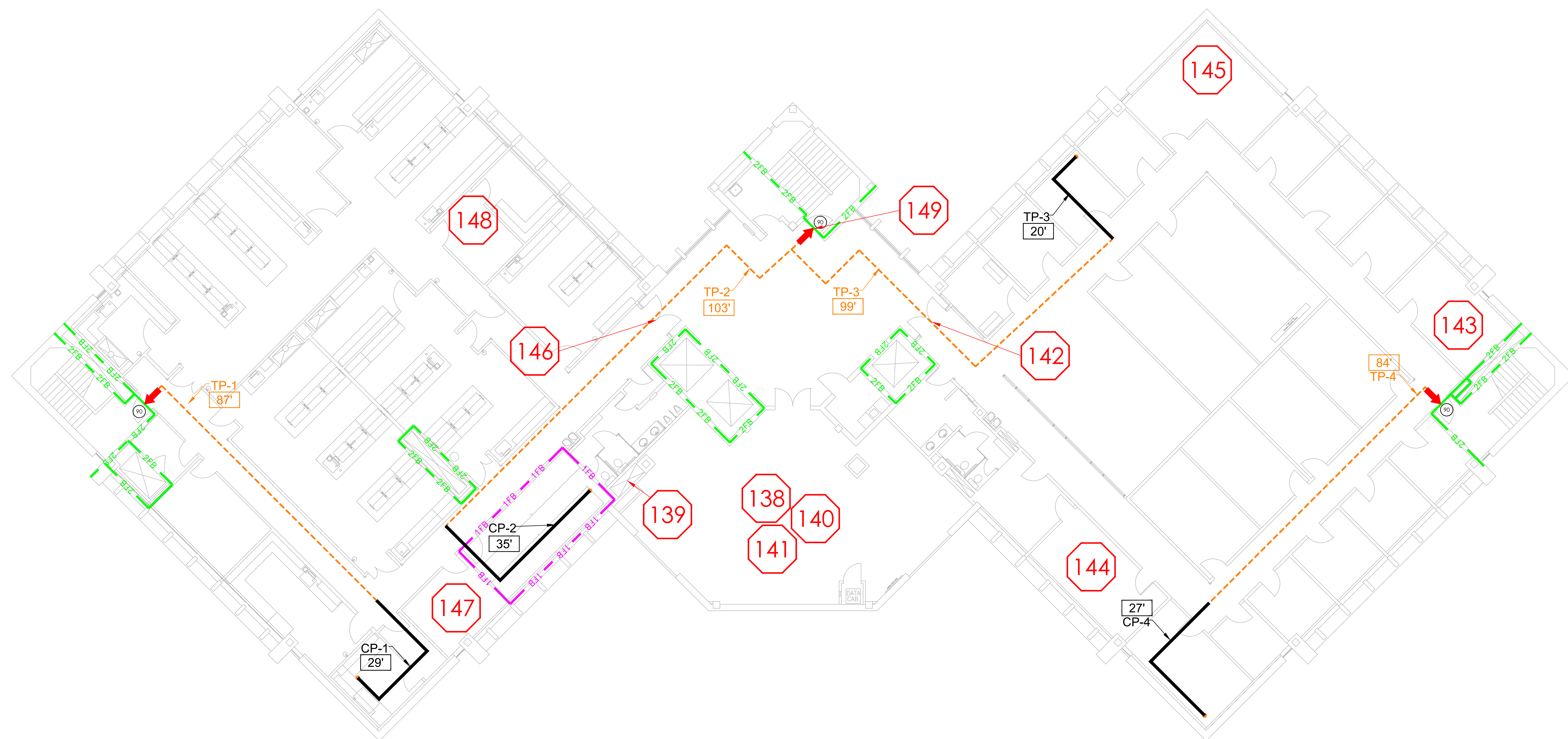
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL THREE  
**LIFE SAFETY**  
**FE-203**

1 REUEL A. STALLONES BUILDING - LEVEL THREE  
 FE-203 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R/R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

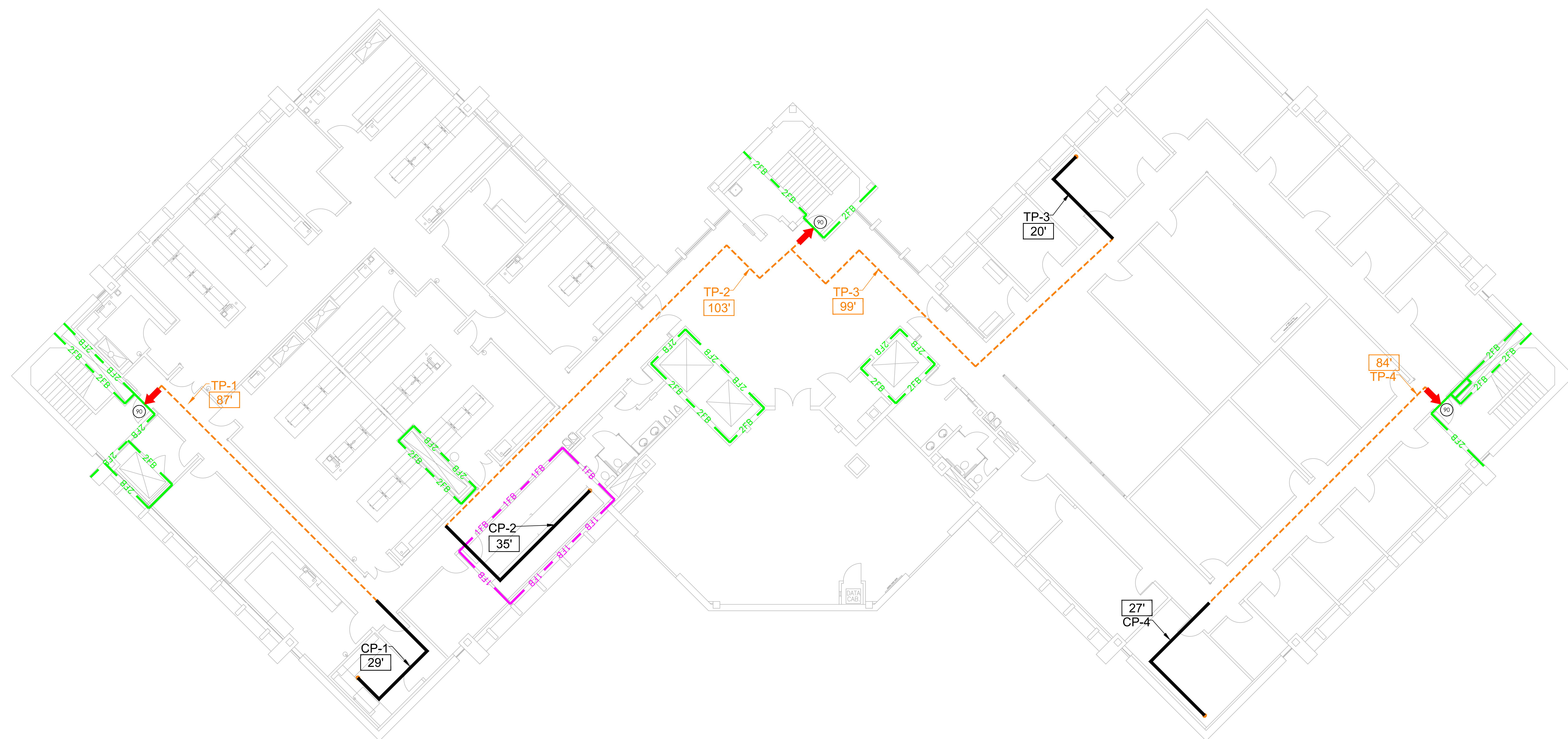
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL FOUR  
**LIFE SAFETY**  
**FE-204**

1 REUEL A. STALLONES BUILDING - LEVEL FOUR  
 FE-204 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.











THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

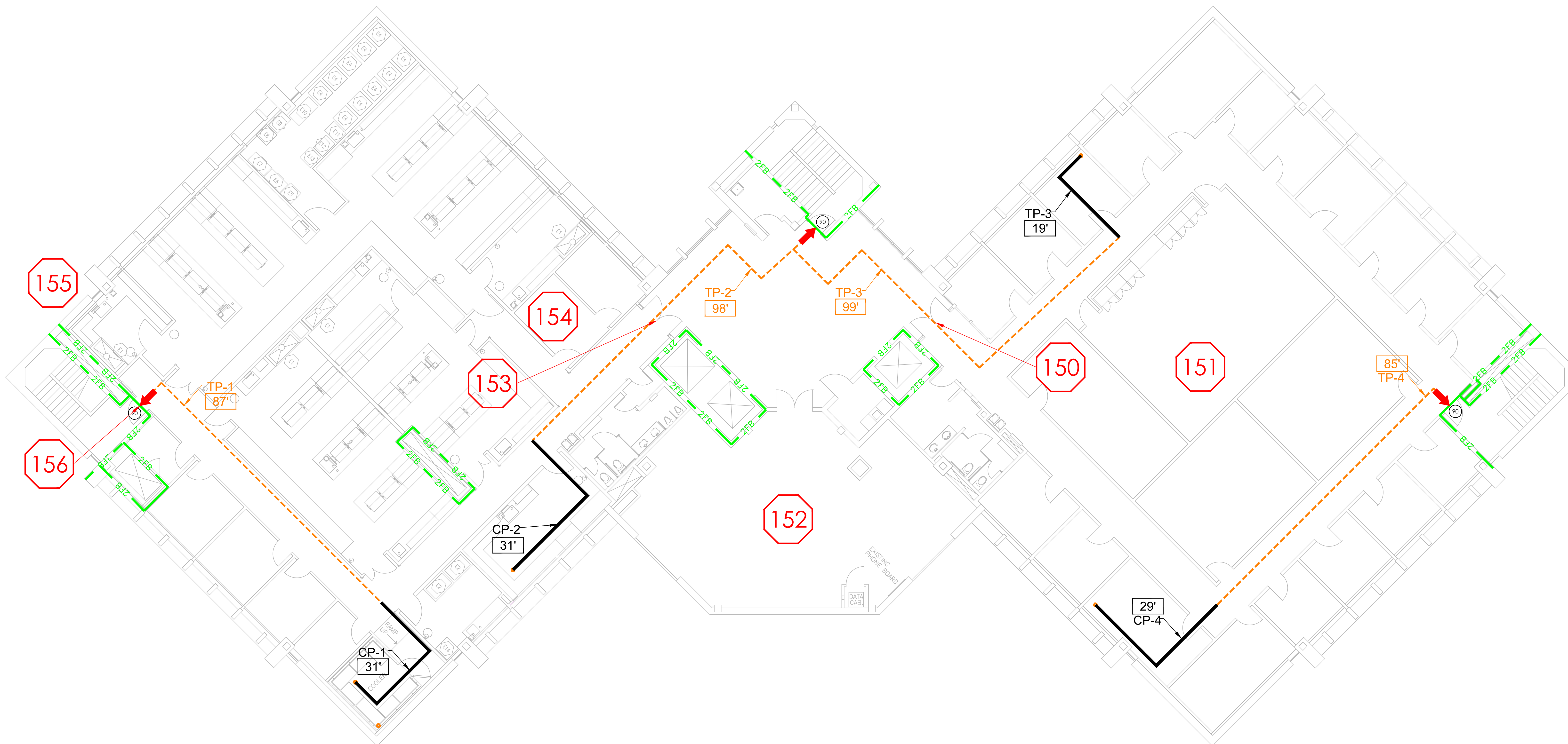
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084





**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL FOUR  
**LIFE SAFETY**  
**FE-204**

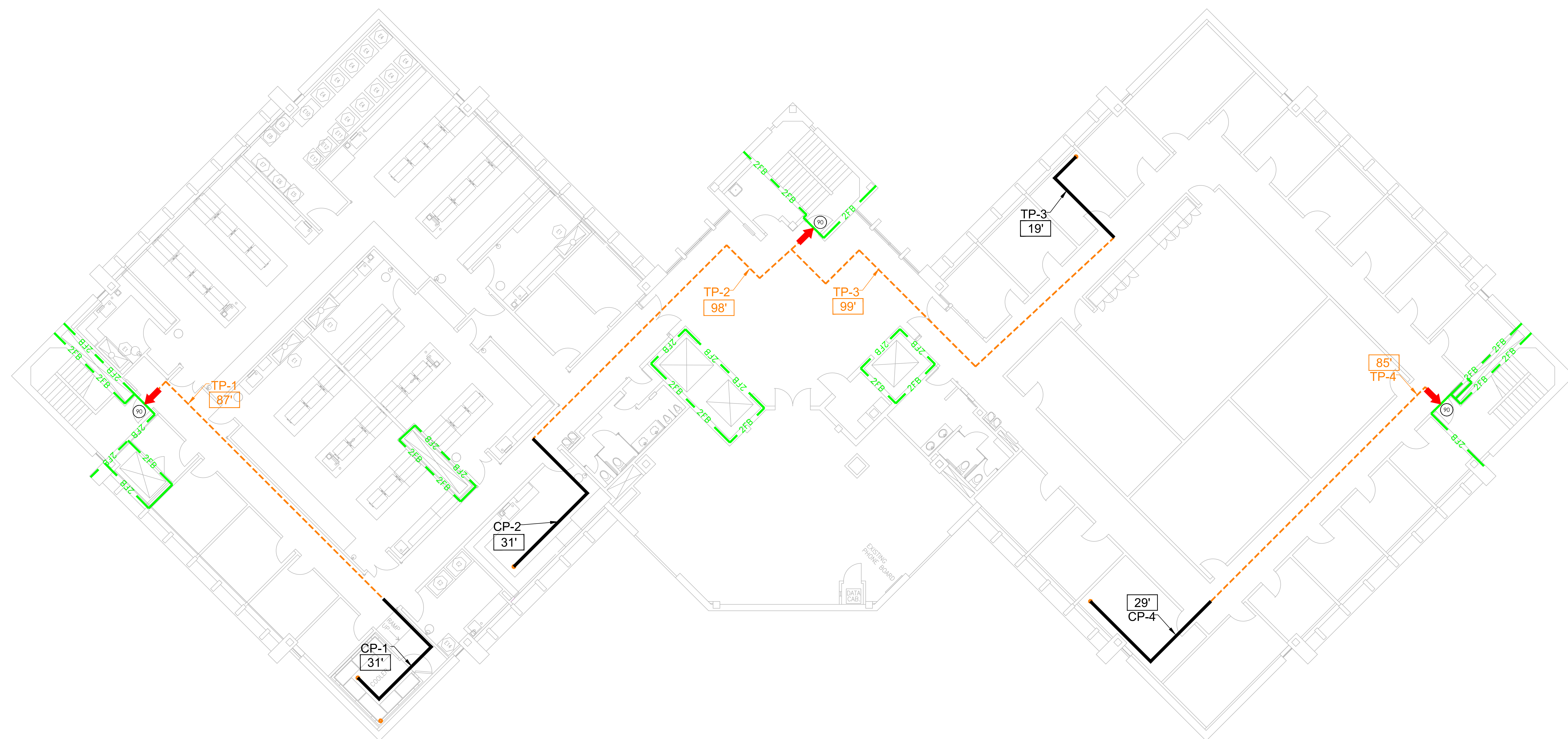
1 REUEL A. STALLONES BUILDING - LEVEL FOUR  
 FE-204 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R/R RATING OF DOOR (MINUTES)



1 REUEL A. STALLONES BUILDING - LEVEL FIVE  
 FE-205 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 1100  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.





DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

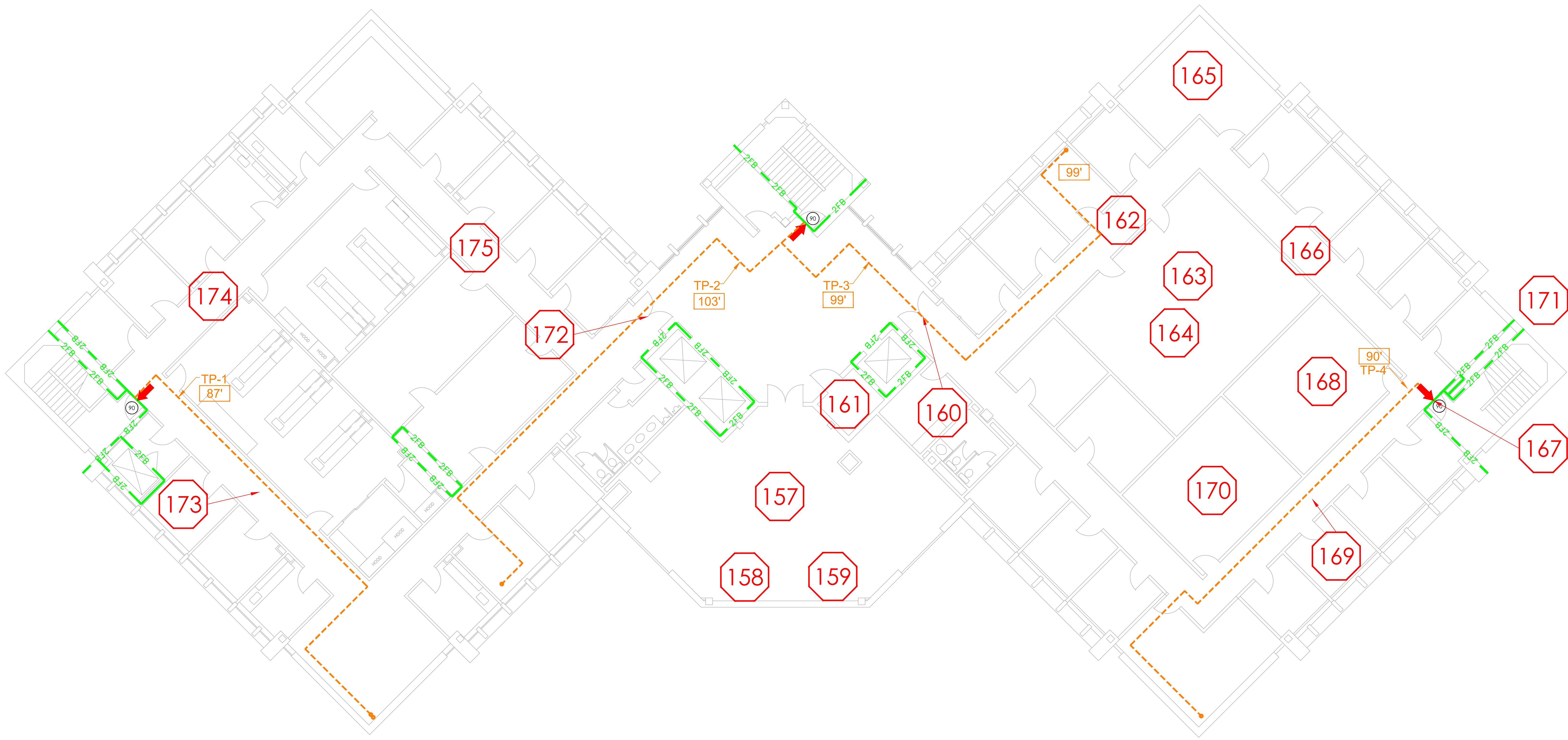
ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL FIVE  
 FE-205 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL FIVE  
**LIFE SAFETY**  
**FE-205**



FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.





THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

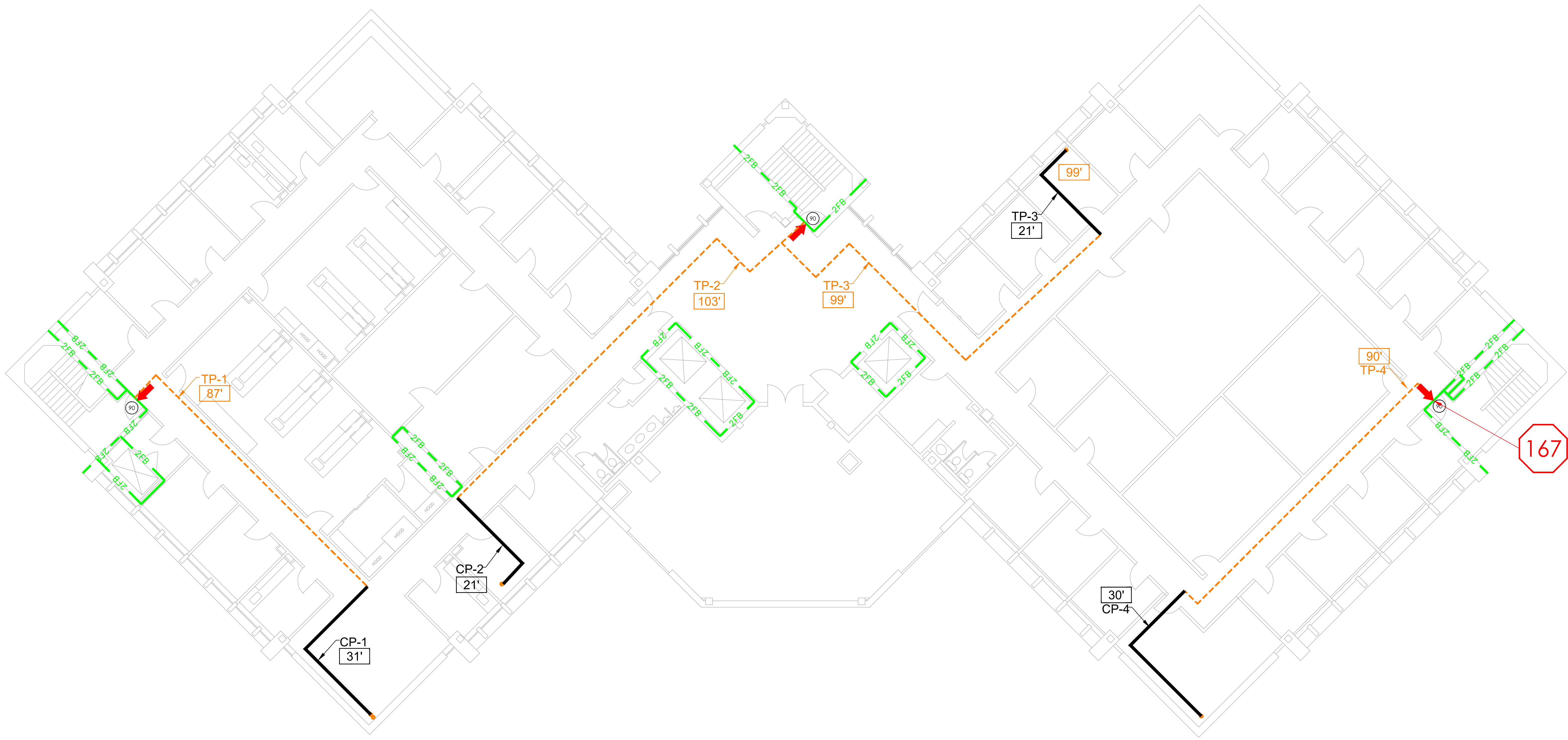
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL SIX  
 FE-206 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL SIX  
**LIFE SAFETY**  
**FE-206**

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R# RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

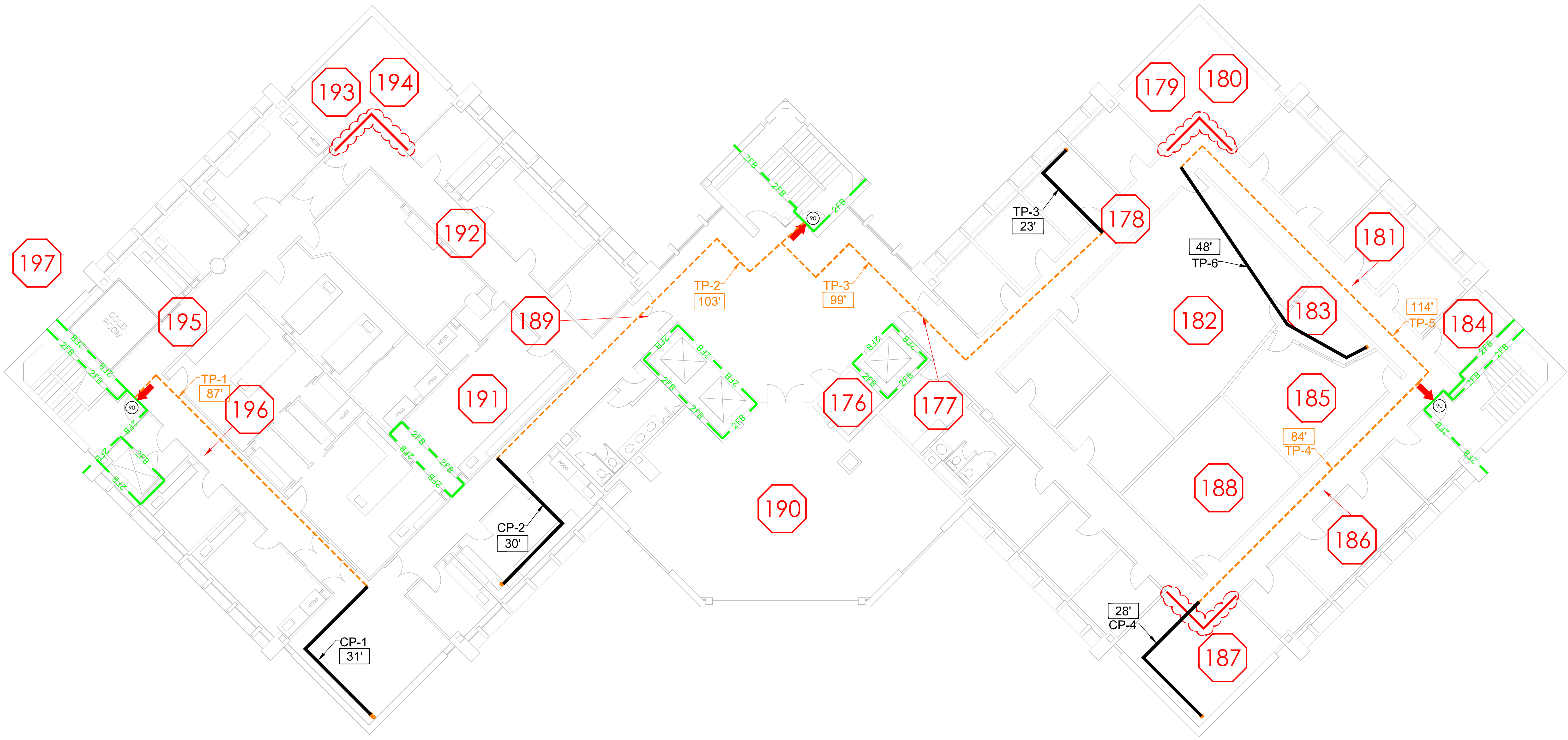
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL SIX  
**LIFE SAFETY**  
**FE-206**

1 REUEL A. STALLONES BUILDING - LEVEL SIX  
 FE-206 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 1100, HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.







THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

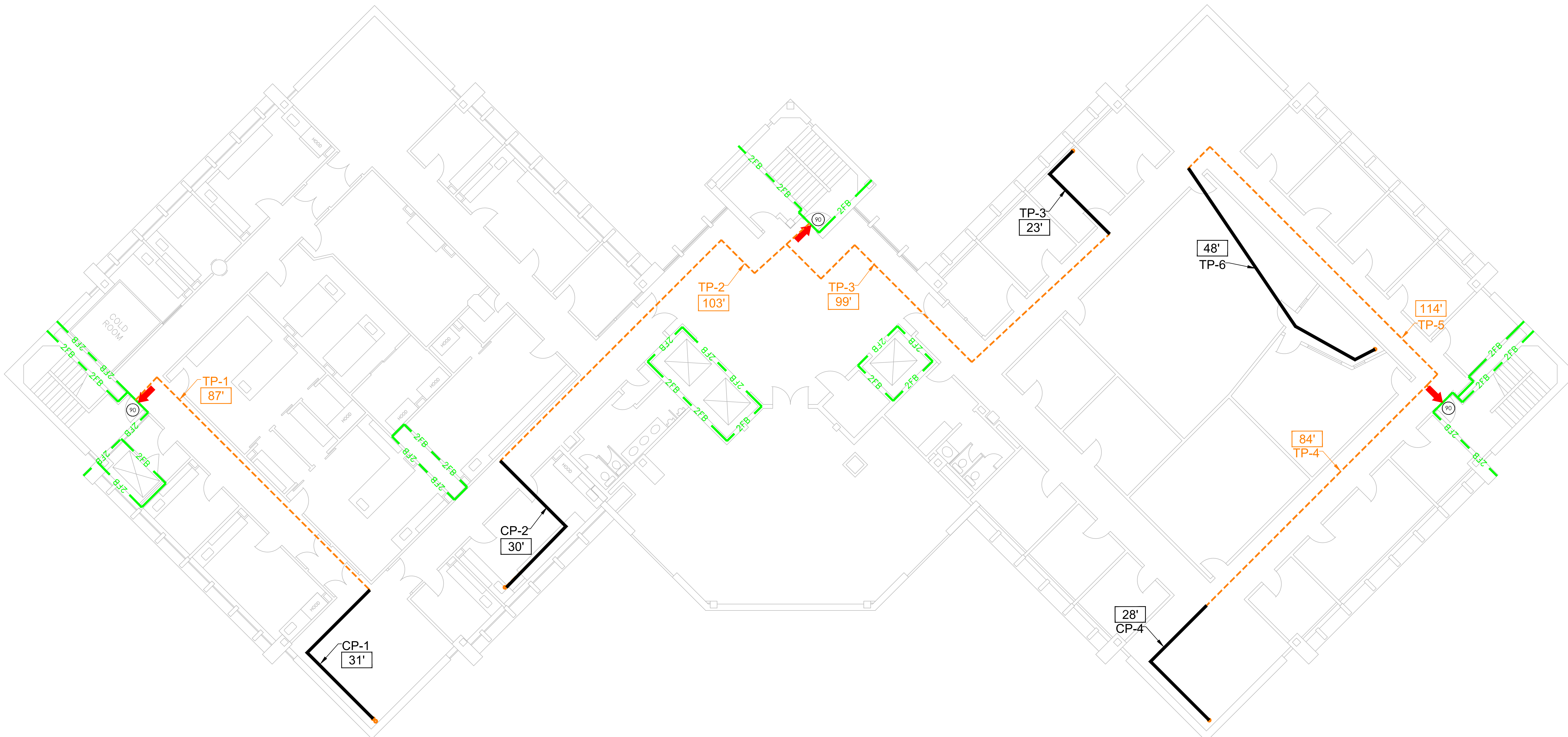
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL SEVEN  
 FE-207 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL SEVEN  
**LIFE SAFETY**  
**FE-207**

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R/R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

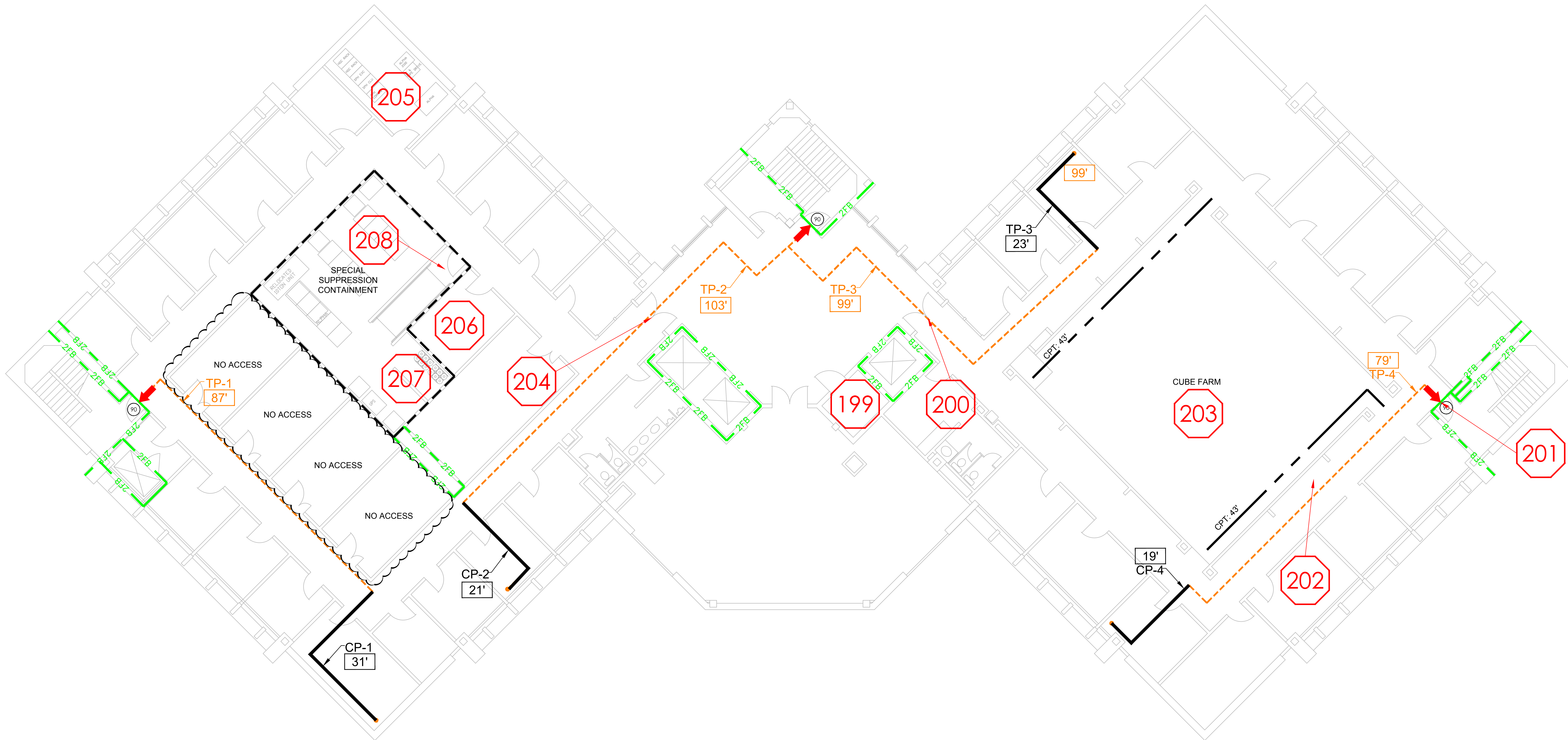
**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

LEVEL SEVEN

**LIFE SAFETY**  
**FE-207**

1 REUEL A. STALLONES BUILDING - LEVEL SEVEN  
 FE-207 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
⊕	RATING OF DOOR (MINUTES)



**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC. ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

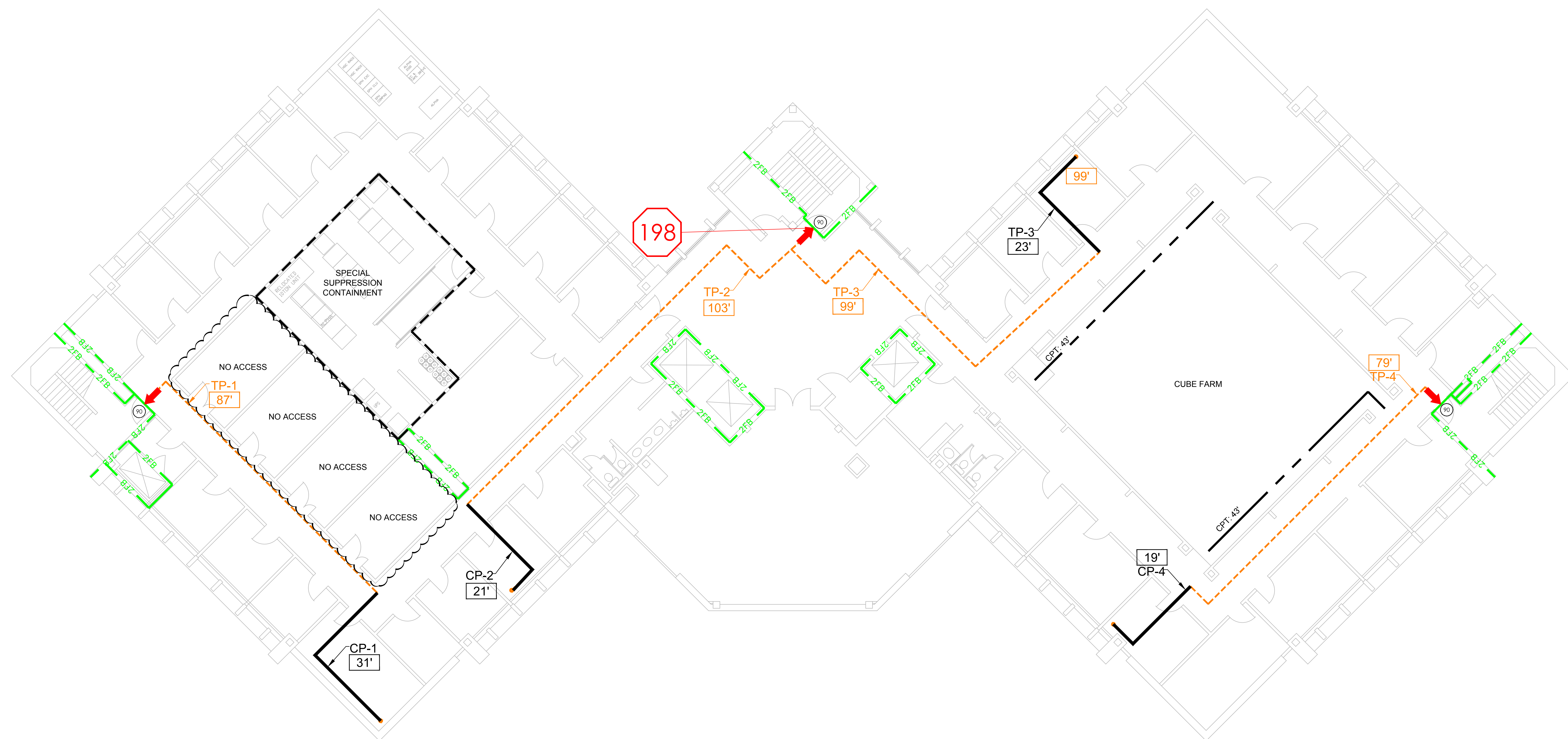
**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

1 REUEL A. STALLONES BUILDING - LEVEL EIGHT  
 FE-208 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL EIGHT  
**LIFE SAFETY**  
**FE-208**

FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

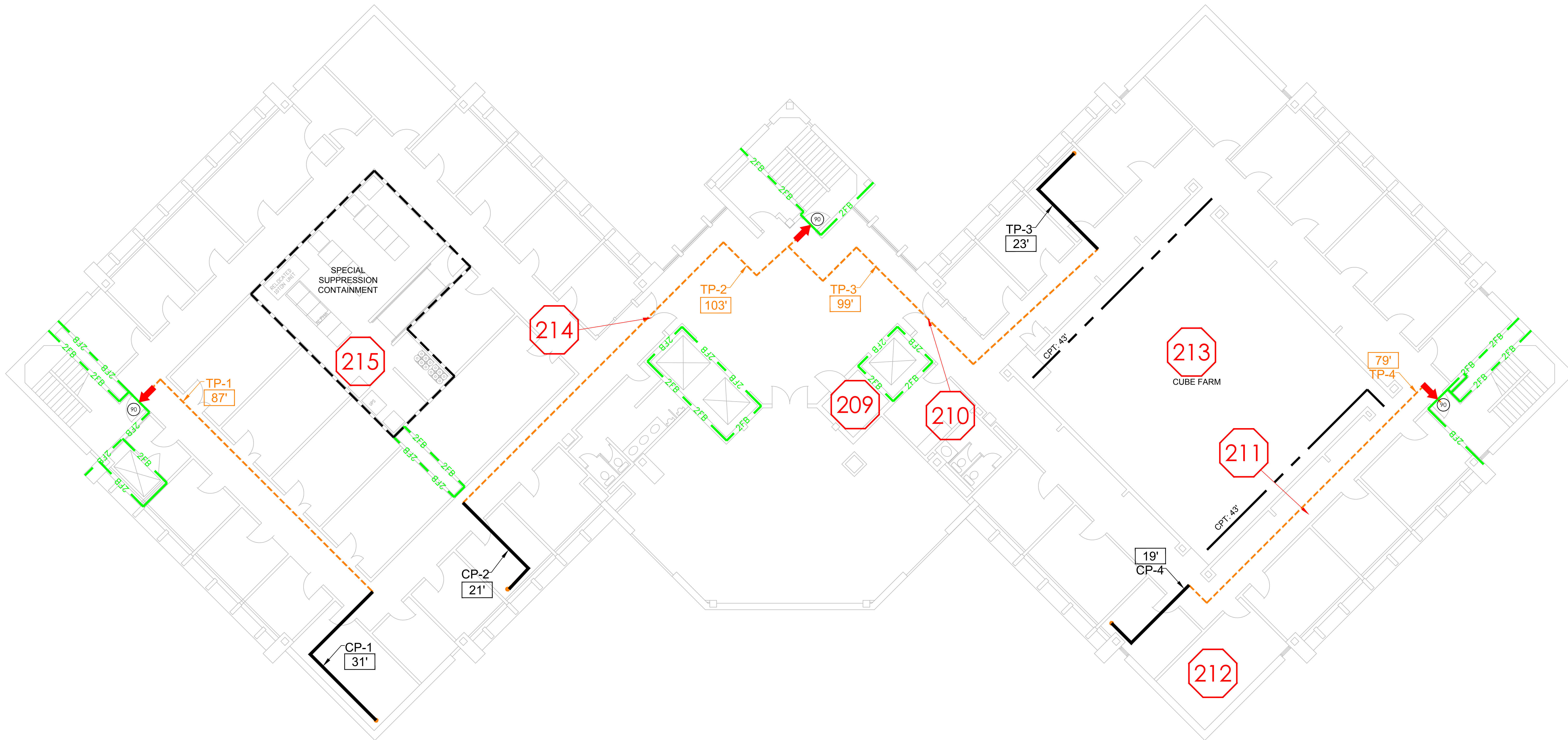
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL EIGHT  
 FE-208 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL EIGHT  
**LIFE SAFETY**  
**FE-208**

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

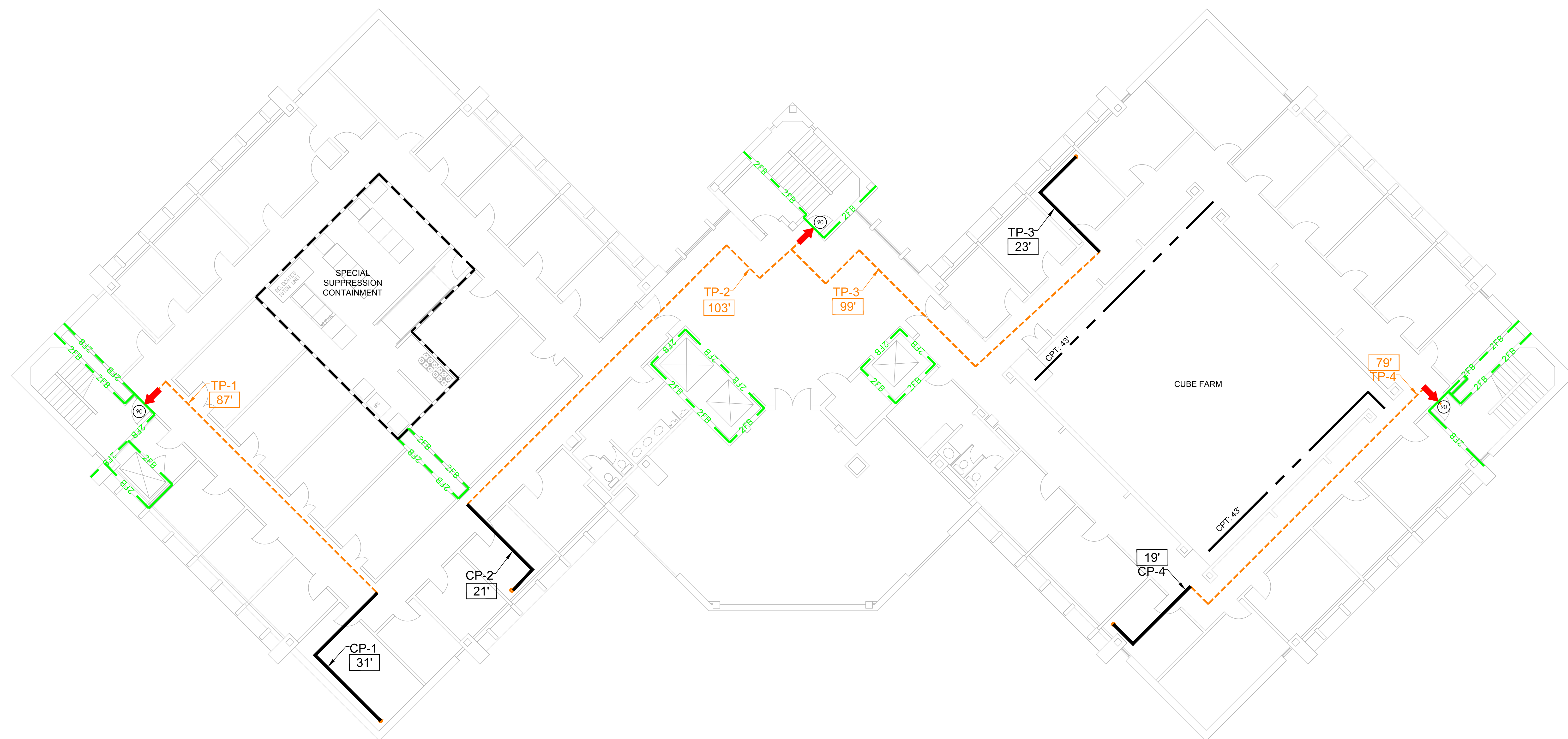
**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL NINE  
**LIFE SAFETY**  
**FE-209**

1 REUEL A. STALLONES BUILDING - LEVEL NINE  
 FE-209 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

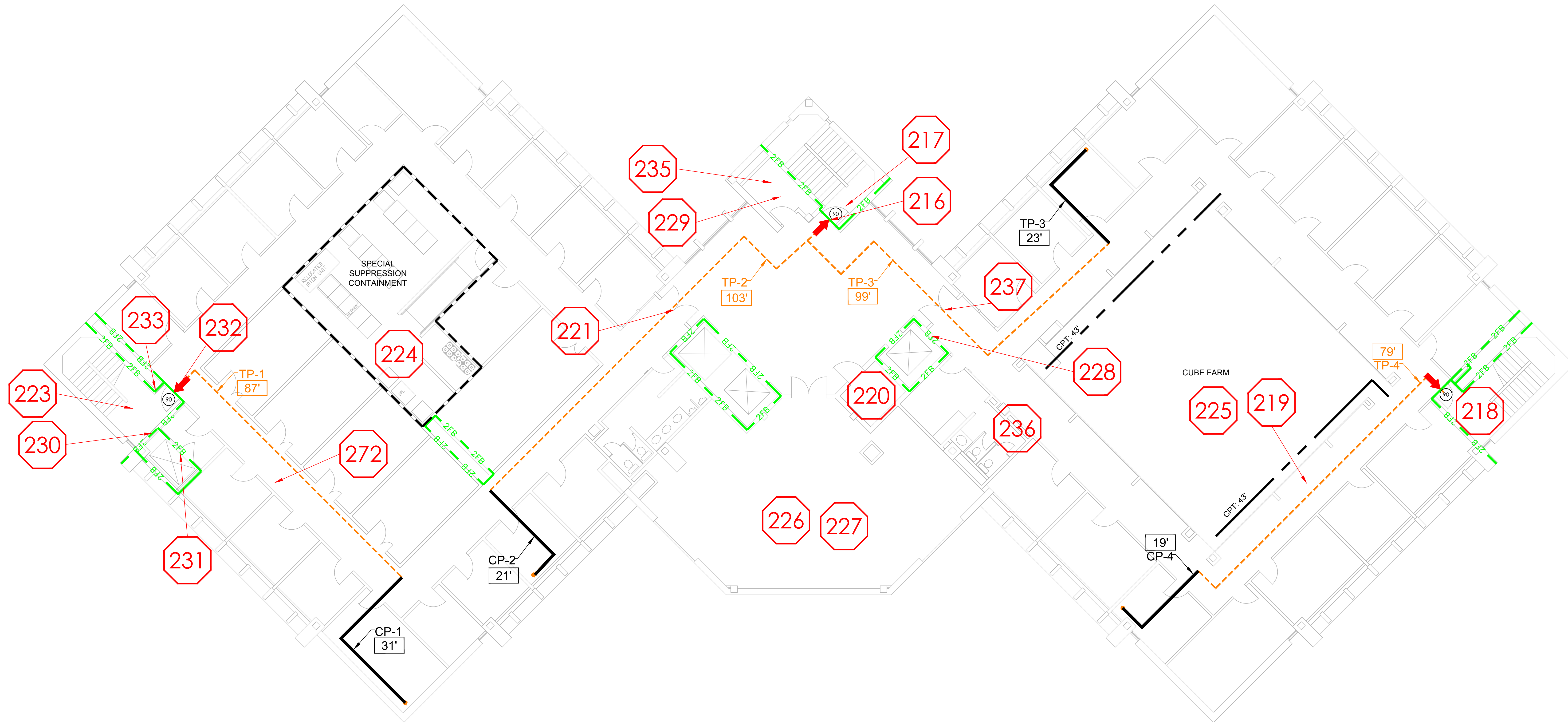
ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL NINE  
 FE-209 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL NINE  
**LIFE SAFETY**  
**FE-209**



FIRE WALL LEGEND	
	4-FB 4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
	2-FS 2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
	2-FB 2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
	1-FS 1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-FB 1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
	1-SB 1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
	ST SMOKE TIGHT
	EXIT
	TD TRAVEL DISTANCE (FEET)
	R RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**

7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

**DESIGNED BY:** NRM  
**DRAWN BY:** KJK  
**CHECKED BY:** NRM

**ISSUED FOR:**  
**ISSUE DATE:** JULY 13, 2012  
**PROJECT NUMBER:** H56084

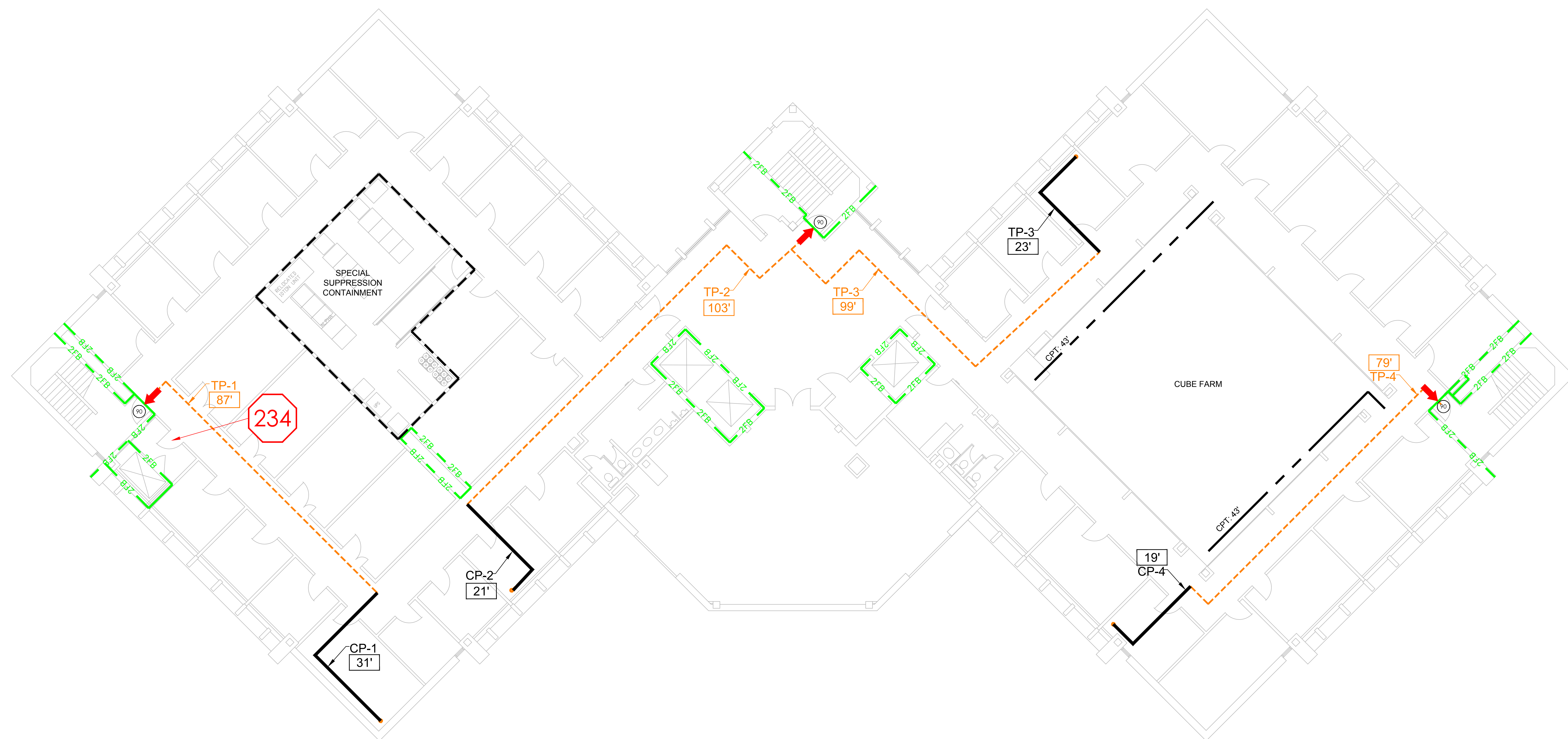
**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**

LEVEL TEN

**LIFE SAFETY**  
**FE-210**

1 REUEL A. STALLONES BUILDING - LEVEL TEN  
 SCALE: 1/8" = 1'-0"

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENTS. CONTRACTOR SHALL VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

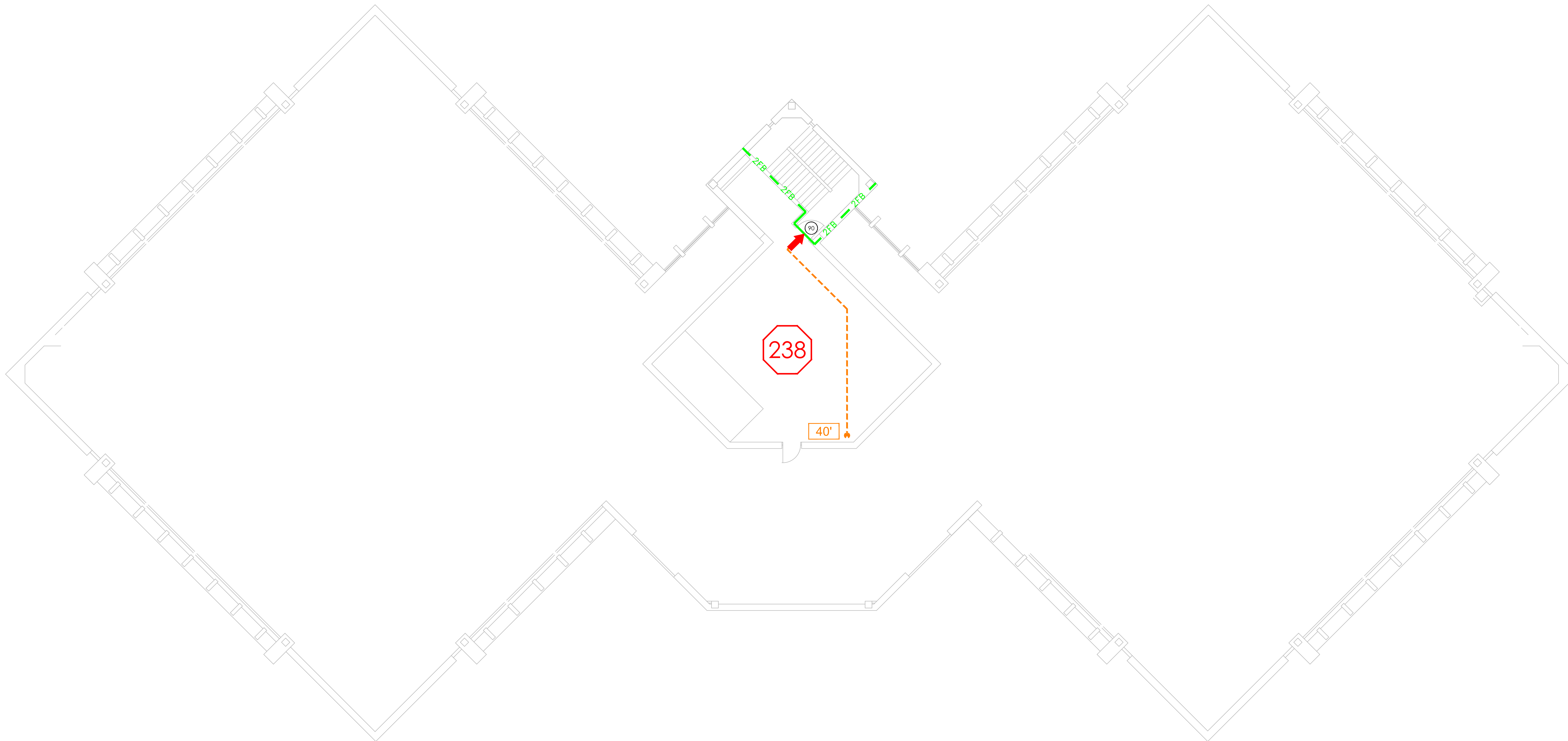
DESIGNED BY: NRM  
 DRAWN BY: KJK  
 CHECKED BY: NRM

ISSUED FOR:  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL TEN  
 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL TEN  
**LIFE SAFETY**  
**FE-210**

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
Ⓢ	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY, NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

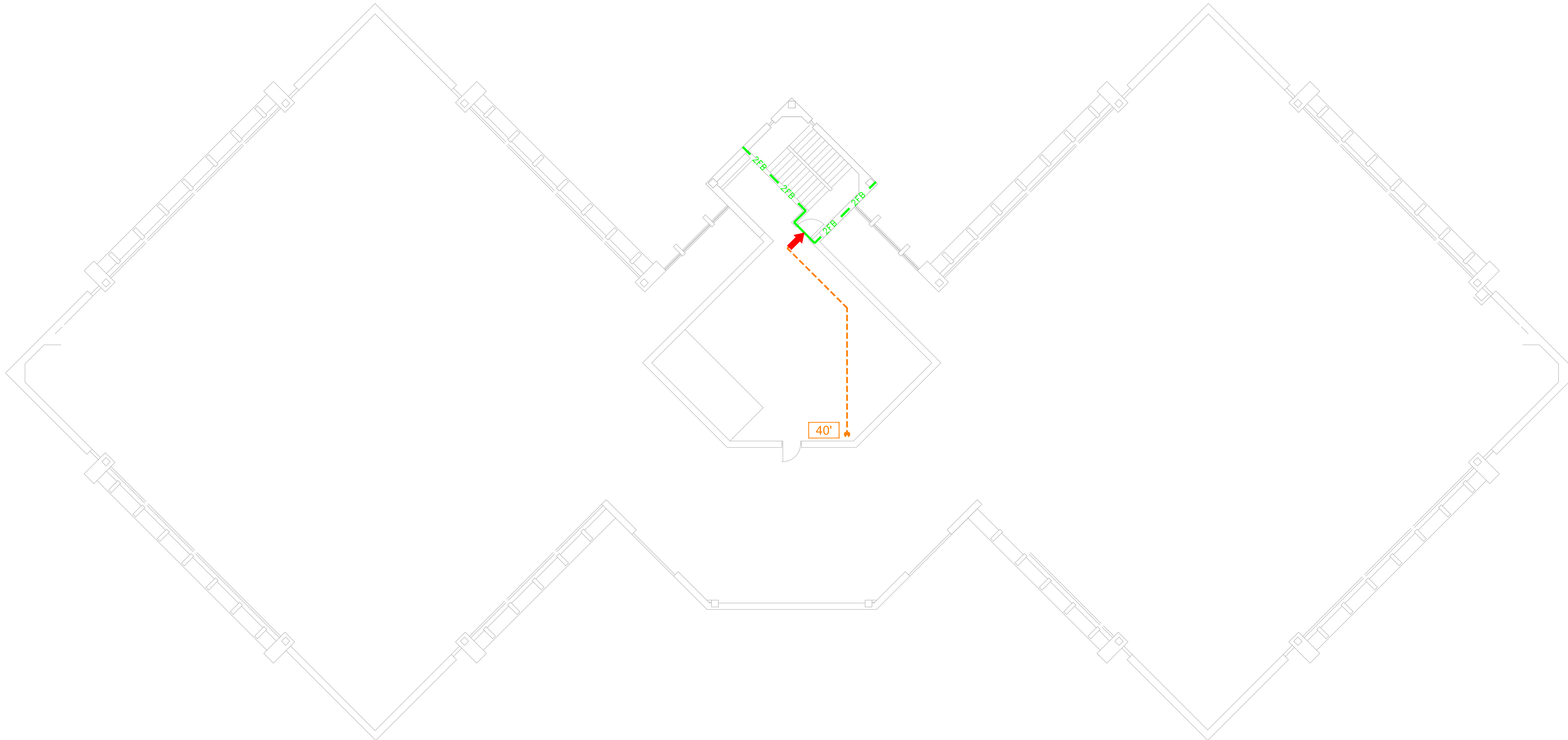
DESIGNED BY: \_\_\_\_\_ NRM  
 DRAWN BY: \_\_\_\_\_ KJK  
 CHECKED BY: \_\_\_\_\_ NRM

ISSUED FOR: \_\_\_\_\_  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL ELEVEN  
 FE-211 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL ELEVEN  
**LIFE SAFETY**  
**FE-211**

FIRE WALL LEGEND	
4FB	4-HOUR FIRE/SMOKE BARRIER, 3-HOUR OPENING PROTECTIVE.
2FS	2-HOUR FIRE/SMOKE BARRIER, 90 MIN. OPENING PROTECTIVE.
2FB	2-HOUR FIRE BARRIER, 90 MIN. OPENING PROTECTIVE.
1FS	1-HOUR FIRE/SMOKE BARRIER, 45 MIN. OPENING PROTECTIVE.
1FB	1-HOUR FIRE BARRIER, 45 MIN. OPENING PROTECTIVE.
1SB	1-HOUR SMOKE BARRIER WALL, SOLID CORE WOOD DOOR.
ST	SMOKE TIGHT
➔	EXIT
TD	TRAVEL DISTANCE (FEET)
⊕	RATING OF DOOR (MINUTES)



**RJA**  
**ROLF JENSEN & ASSOCIATES, INC.**  
 FIRE PROTECTION CONSULTANTS  
 8827 W. SAM HOUSTON PKWY., NORTH  
 SUITE 110  
 HOUSTON, TX 77040  
 +1 281 440 7100  
 FAX: +1 281 440 7101  
 WWW.RJAINC.COM

**PROJECT NAME:**  
**U.T. HEALTH SCIENCE CENTER**  
**REUEL A. STALLONES BUILDING**  
 .....  
 7000 FANNIN ST  
 HOUSTON, TEXAS 77030

© 2012 ROLF JENSEN & ASSOCIATES, INC.  
 ALL RIGHTS RESERVED.

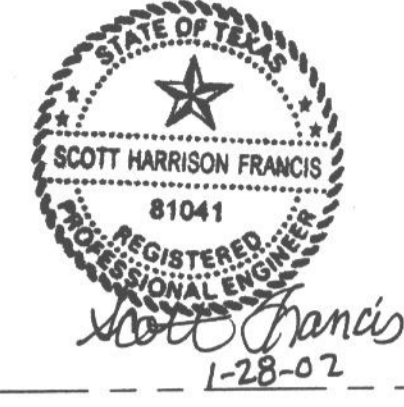
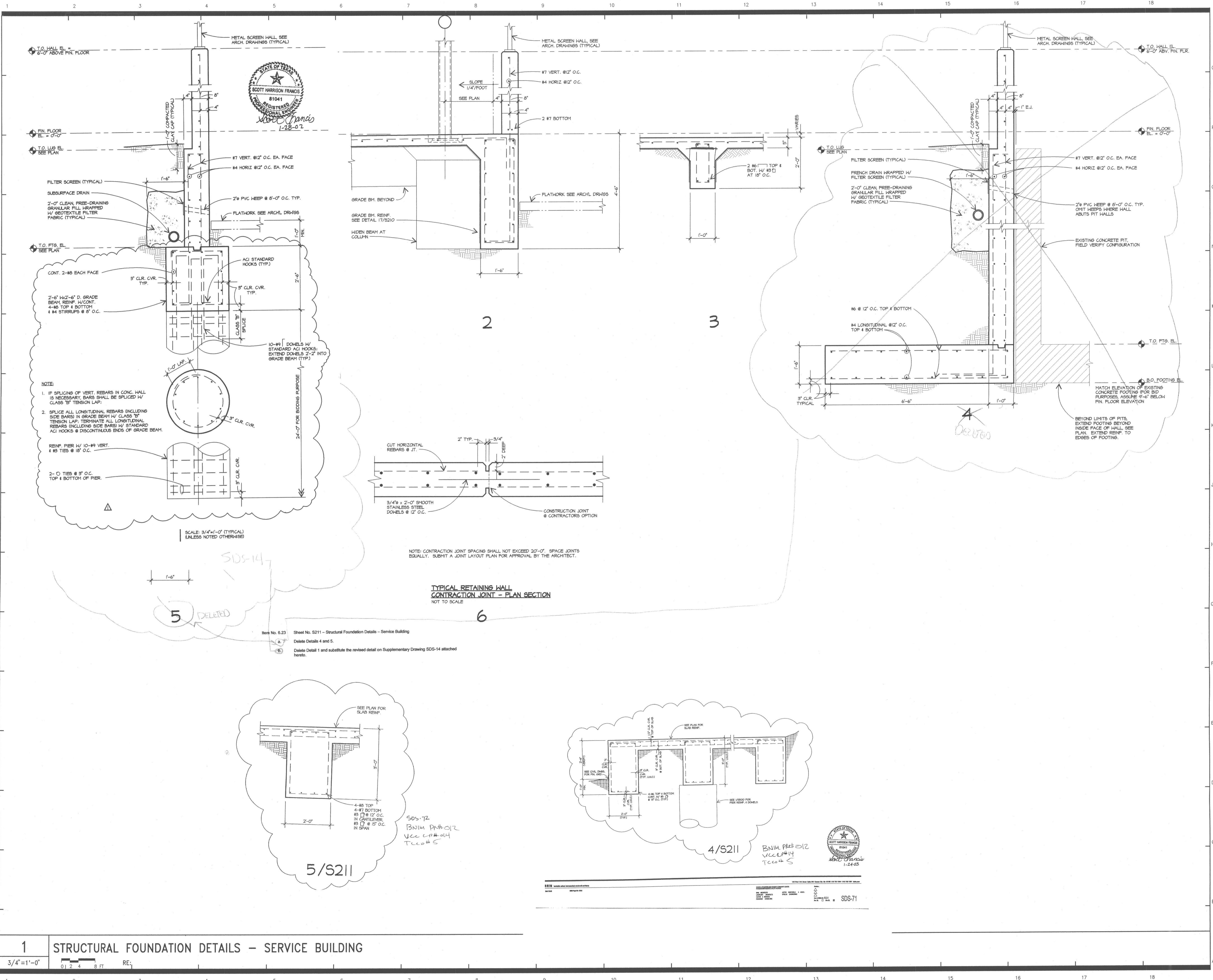
THESE CONCEPT DRAWINGS ARE FOR INFORMATION ONLY TO SHOW POTENTIAL SYSTEM ARRANGEMENT. CONTRACTOR SHALL FIELD VERIFY ALL INFORMATION CONTAINED ON THESE DRAWINGS AND IS RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF THE SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS.

DESIGNED BY: \_\_\_\_\_ NRM  
 DRAWN BY: \_\_\_\_\_ KJK  
 CHECKED BY: \_\_\_\_\_ NRM

ISSUED FOR: \_\_\_\_\_  
 ISSUE DATE: JULY 13, 2012  
 PROJECT NUMBER: H56084

1 REUEL A. STALLONES BUILDING - LEVEL ELEVEN  
 FE-211 SCALE: 1/8" = 1'-0"

**SHEET TITLE:**  
**LIFE SAFETY**  
**FIREWALL**  
**LAYOUT**  
 LEVEL ELEVEN  
**LIFE SAFETY**  
**FE-211**



**B N I M**  
 boribelle nelson immaschuh mcswain architects

**SCHOOL OF NURSING  
 AND STUDENT  
 COMMUNITY CENTER**  
 UNIVERSITY OF TEXAS  
 HEALTH SCIENCES CENTER AT HOUSTON

**ARCHITECT**  
 BNM ARCHITECTS  
 106 West 14th St., Suite 200  
 Kansas City, MO 64105  
 816 783 1500 F  
 816 783 1501 F

**ASSOCIATE ARCHITECT**  
 LANGRISH ARCHITECTS  
 311 Third Street, Suite 200  
 San Antonio, TX 78205  
 210 227 2338 F  
 210 224 4619 F

**MECHANICAL ENGINEER**  
 CARTER & BRIDGES, INC.  
 55 W. 14th St., Suite 800  
 Houston, TX 77002-2833  
 713 888 1000 F  
 713 889 8000 F

**STRUCTURAL ENGINEER**  
 JASTON GUANZELLA & ASSOC.  
 1608 West 9th Street, Suite 100  
 Austin, TX 78703  
 512 474 8084 F  
 512 474 8191 F

**ELECTRICAL ENGINEER**  
 PERLSON CONSULTING  
 12122 Parkrock Way  
 Houston, TX 77065  
 281 807 5733 F  
 281 807 0589 F

Copyright © 2001 BNM Architects  
**19 DECEMBER 2001** BNM Project No. **00032**  
 Proj. Architect ODFC Project No. **701-967**  
 JSH Stage 2b SHF

*RECORD AS-BUILT*

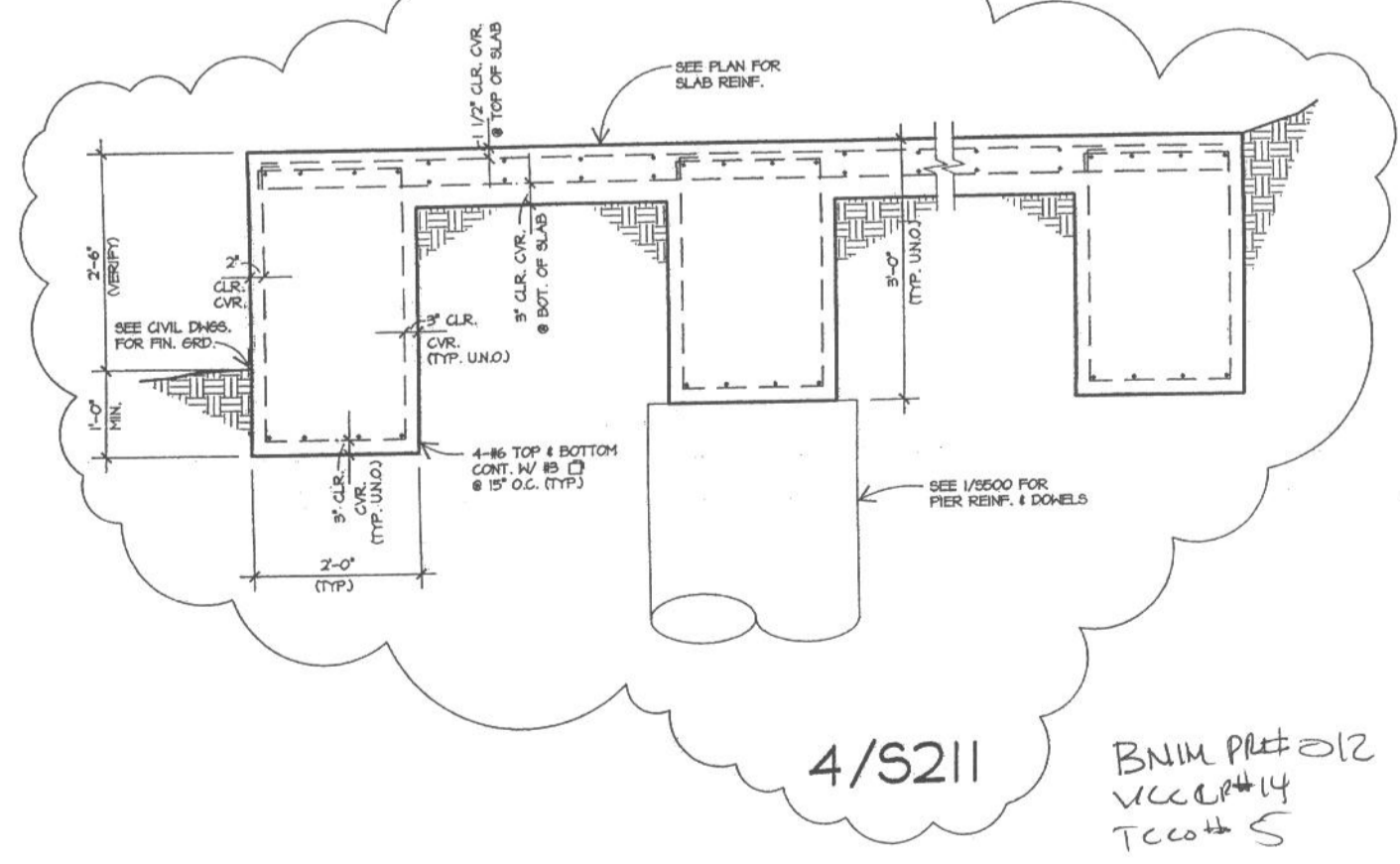
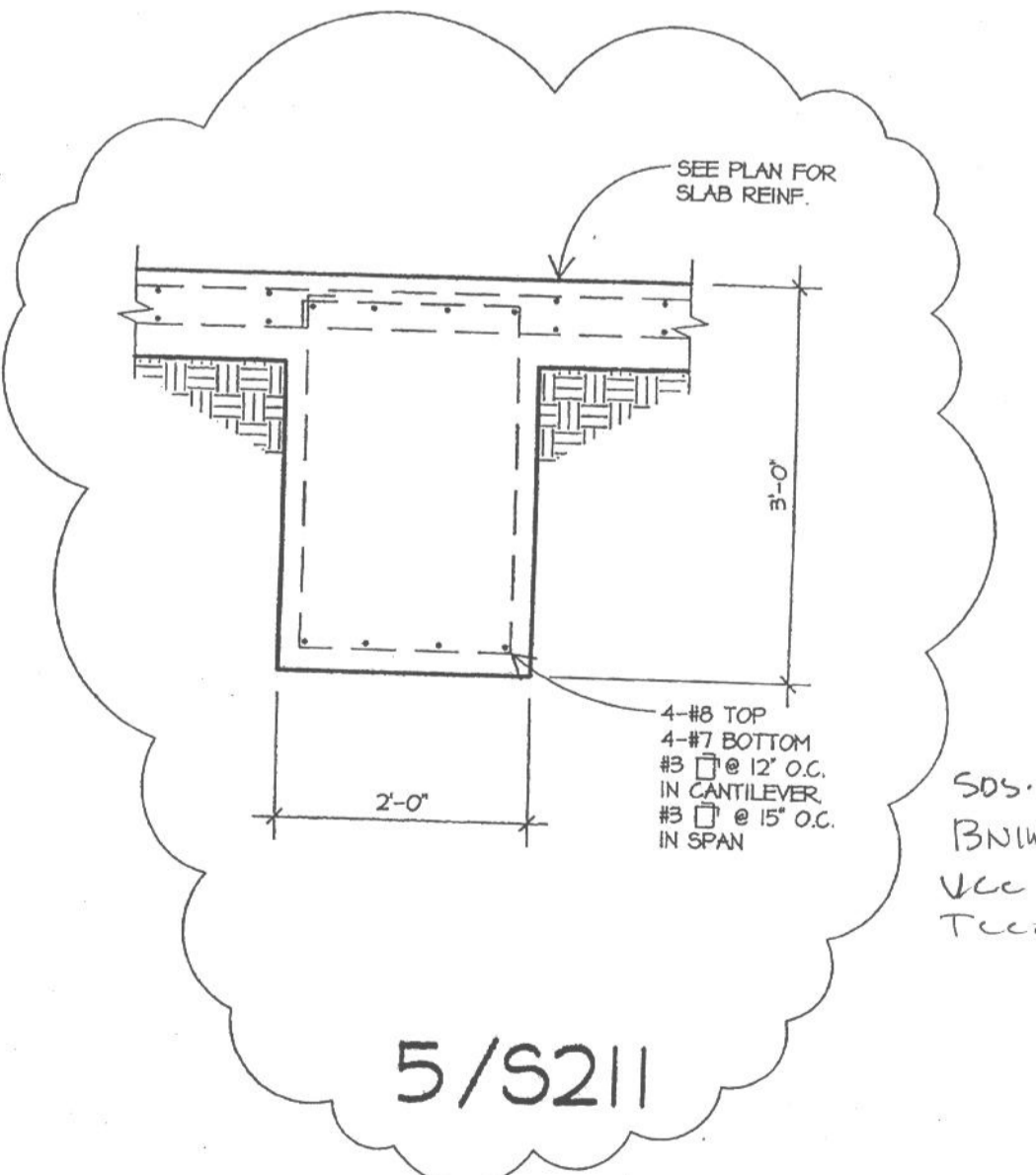
**FOUNDATION/FRAME/  
 SITE UTILITY PACKAGE  
 CONSTRUCTION DOCUMENT  
 SET**  
**STRUCTURAL  
 FOUNDATION DETAILS  
 - SERVICE BUILDING**  
**S211**

FILE INFO: 76793211.DWG Date: 12/20/01 16:24

**1 STRUCTURAL FOUNDATION DETAILS - SERVICE BUILDING**

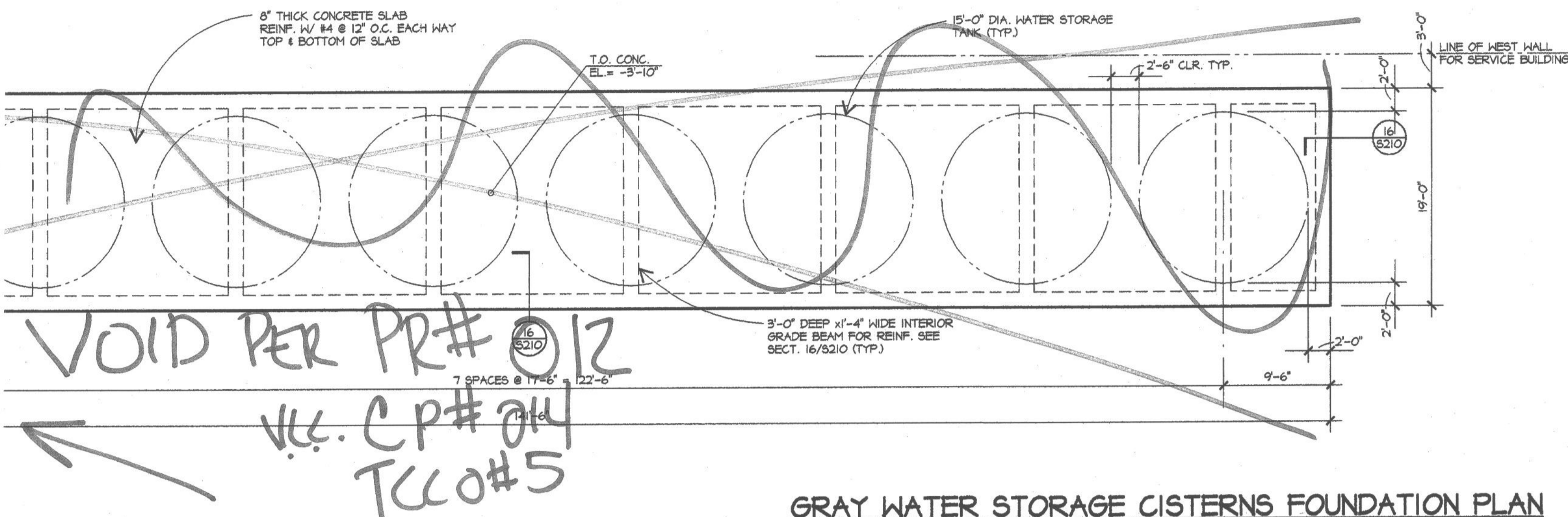
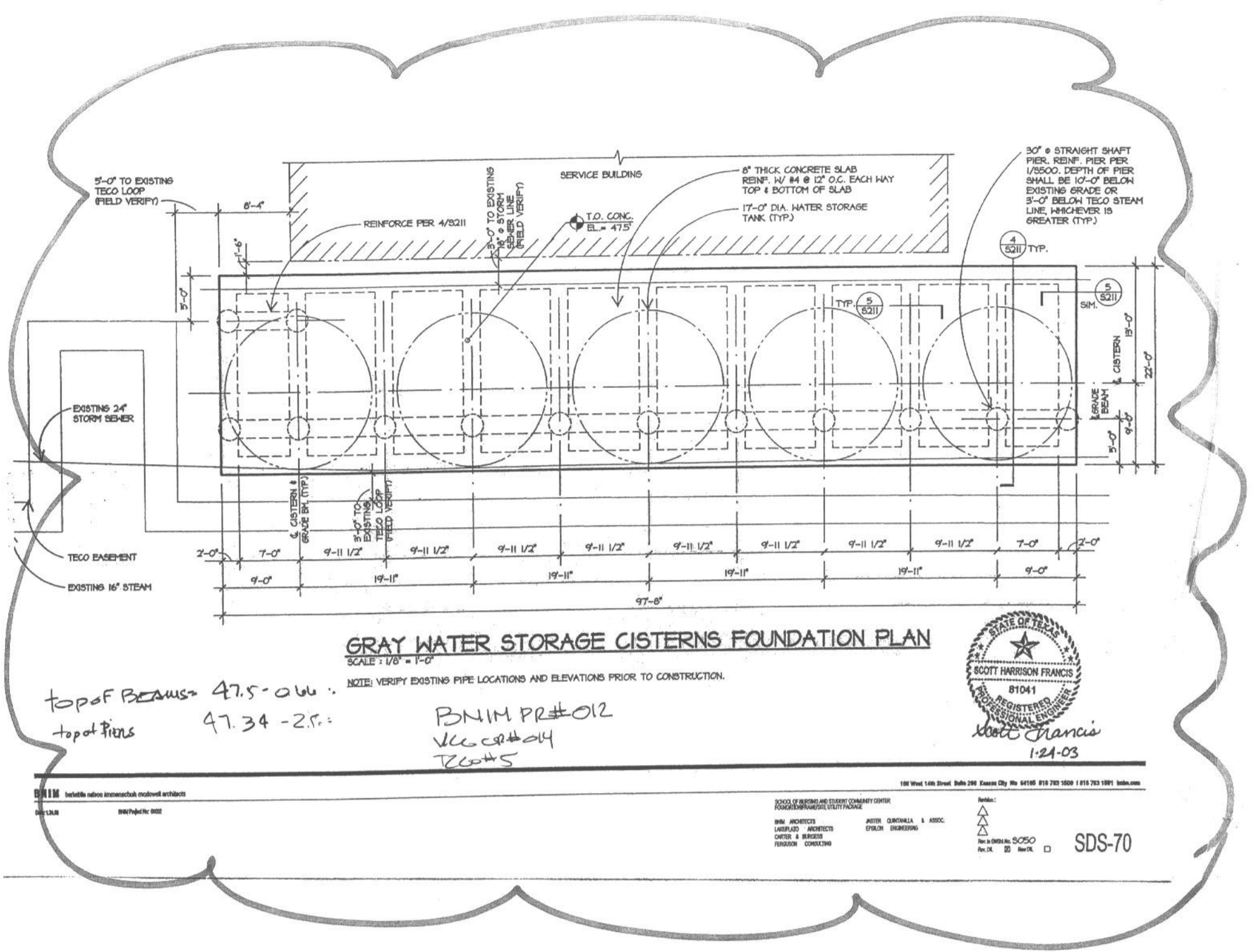
3/4" = 1'-0" 0 1 2 4 8 FT RE:

Item No. 6.23 Sheet No. S211 - Structural Foundation Details - Service Building  
 a. Delete Details 4 and 5.  
 b. Delete Detail 1 and substitute the revised detail on Supplementary Drawing SDS-14 attached hereto.



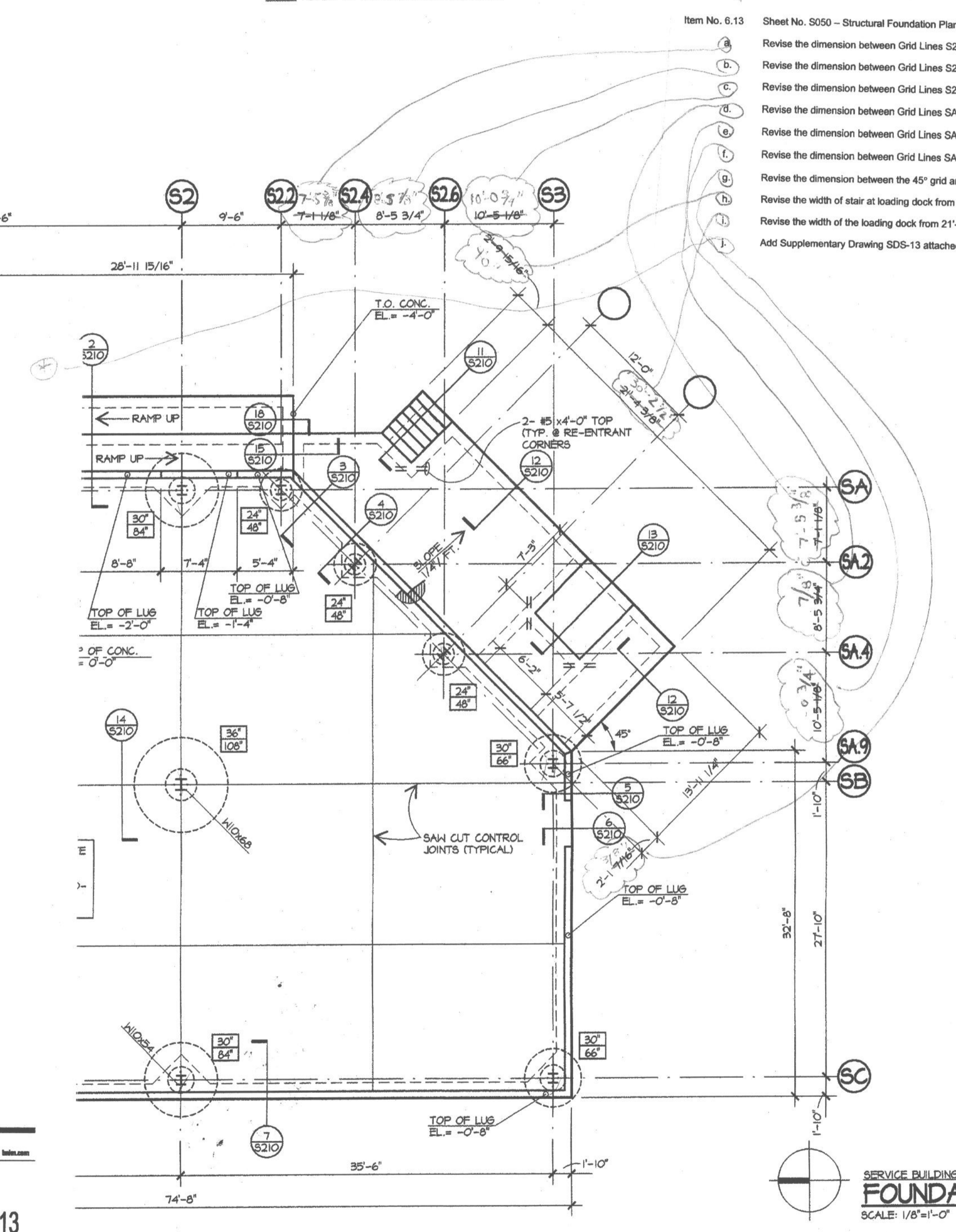
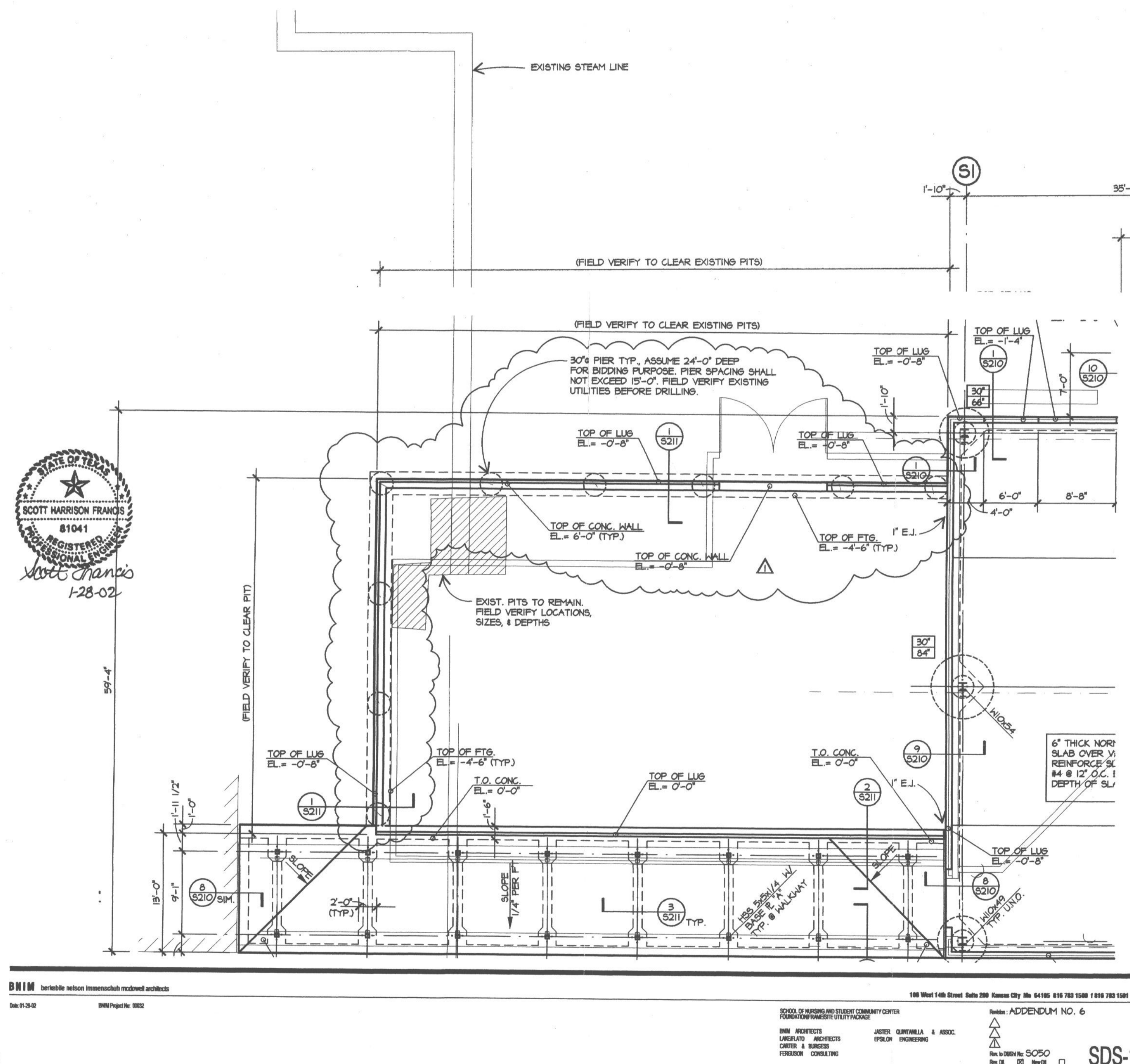
BNM Proj # 012  
 VCC 12/14  
 Tcc 12/5

SDS-71



**GRAY WATER STORAGE CISTERNS FOUNDATION PLAN**  
SCALE: 1/8" = 1'-0"

NOTE: REFER TO SITE PLAN FOR LOCATION.



- Item No. 6.13
- (a) Revise the dimension between Grid Lines S2.2 and S2.4 from 7'-1 1/8" to 7'-5 3/8".
  - (b) Revise the dimension between Grid Lines S2.4 and S2.6 from 8'-5 3/4" to 8'-5 7/8".
  - (c) Revise the dimension between Grid Lines S2.6 and S3 from 10'-5 1/8" to 10'-0 3/4".
  - (d) Revise the dimension between Grid Lines SA and SA.2 from 7'-1 1/8" to 7'-5 3/8".
  - (e) Revise the dimension between Grid Lines SA.2 and SA.4 from 8'-5 3/4" to 8'-5 7/8".
  - (f) Revise the dimension between Grid Lines SA.4 and SA.9 from 10'-5 1/8" to 10'-0 3/4".
  - (g) Revise the dimension between the 45° grid and the 45° building face from 2'-1 7/16" to 2'-1 3/8".
  - (h) Revise the width of stair at loading dock from 2'-9 15/16" to 4'-0".
  - (i) Revise the width of the loading dock from 2'-4 3/8" to 3'-2 1/2".
- Add Supplementary Drawing SDS-13 attached hereto.

**SERVICE BUILDING FOUNDATION PLAN**  
SCALE: 1/8" = 1'-0"

- PLAN NOTE:
1. BASE PLATES UNDER ALL COLUMNS AT SERVICE BUILDING SHALL BE TYPE 'C' UNLESS NOTED OTHERWISE.
  2. PIER CALLOUT LEGEND:  

⊘	PIER SHAFT DIAMETER
⊘	UNDERSEAM DIAMETER
  3. FOR BIDDING PURPOSES, SERVICE BUILDING LEVEL THAT SHALL CONSIST OF 3620 SF. OF 3 1/2" NORMAL WEIGHT CONCRETE OVER 2VL30 COMPOSITE METAL DECK (1 5/8" TOTAL THICKNESS). SLAB SHALL BE REINFORCED W/ 6/8 @ 12" x 12" W.H.P. AT MID-DEPTH.
  4. REFER TO SPECIFICATIONS FOR SUBGRADE PREPARATION BELOW SLAB ON GRADE AND CISTERN FOUNDATION.
  5. Provide concrete for steel framed stair, consisting of 28, 11 inch by 4 feet by 1-1/2 inch thick treads and one 11 feet by 4 feet by 1-1/2 inch thick landing.

**BNIM**  
Benebile Nelson Immenschuh Macgowan Architects



**SCHOOL OF NURSING AND STUDENT COMMUNITY CENTER**  
UNIVERSITY OF TEXAS  
HEALTH SCIENCES CENTER AT HOUSTON

ARCHITECT: BNIM ARCHITECTS  
150 West 14th St., Suite 200  
Kansas City, MO 64105  
816 785 1820 P  
816 785 1821 F

METHELLE ENGINEER  
CARTER & BURGESS, INC.  
68 West 27th Ave., Suite 800  
Houston, TX 77002-8830  
713 869 1900 P  
713 869 5521 F

CIVIL ENGINEER  
BIRCH ENGINEERING  
2860 Gray Park, Suite 300  
Houston, TX 77058  
281 807 8733 P  
713 789 7388 F

ASSOCIATE ARCHITECT  
LANDSCAPE ARCHITECTS  
311 Third Street, Suite 200  
San Antonio, TX 78205  
210 297 3338 P  
210 294 8811 F

STRUCTURAL ENGINEER  
JASTER, GUNTER & ASSOC.  
1800 West 8th Street, Suite 100  
Austin, TX 78703  
512 474 8048 P  
512 474 8776 F

ELECTRICAL ENGINEER  
FETTERSON CONSULTING  
12122 Radcookey  
Houston, TX 77066  
281 807 8733 P  
281 891 5885 F

19 DECEMBER 2001 BNIM Project No. 00032  
Proj. Architect OFPC Project No. 701-987  
JF Stage 2a  
JF SF

**RECORD AS-BUILT**

**FOUNDATION/FRAME/SITE UTILITY PACKAGE CONSTRUCTION DOCUMENT SET**

**STRUCTURAL FOUNDATION PLANS-SERVICE BUILDING**

**S050**