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November 30, 1983
5211-83-167

Office of Nuclear Reactor Regulation
Attn: John F. Stolz, Chief
Operating Reactors Branch No. 4
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Sir:

Three Mile Island Nuclear Station, Unit 1 (TMI-1)
Operating License No. DPR-50
Docket No. 50-289
Request for Exemption From the Requirements of 10 CFR 50
Appendix R as They Relate to Fire Areas Versus Fire Zones

This letter is a request for an exemption to 10 CFR 50 Appendix R to the extent necessary, and transmits our detailed description of each of the fire zone boundaries at TMI-1. The information is being provided to the NRC as a result of our March 15, 1983 meeting in Bethesda, Maryland and Generic Letter 83-33 dated October 19, 1983.

This detailed zone boundary description serves as our basis for an exemption to Appendix R, pursuant to 10 CFR 50.12 as requested by Generic Letter 83-33, to accept our Fire Hazard Analysis which is based on fire areas and subdivisions of fire areas into fire zones. The fire zones have been utilized in our Fire Hazards Analysis in identifying non-compliance with Appendix R Section III.G by themselves, in the same manner as the identification of Appendix R non-compliances are identified in a fire area. The configuration of certain fire areas requires subdivisions into fire zones, and these subdivisions are based upon existing physical boundaries and existing or proposed fire protection and detection features. The characteristics of these fire zone boundaries represent an acceptable alternative to the strictly defined (GL 83-33) Appendix R configurations.

This submittal will permit the NRC staff to include this information in their safety evaluation report on Appendix R for TMI-1, thereby forming a basis for future inspections of the implementation of Appendix R at TMI-1.

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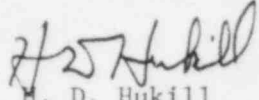
Mr. J. F. Stolz

-2-

5211-83-167

A check in the amount of \$4,000.00 for the Class III fee per 10 CFR 170.22 will be forwarded under separate cover.

Sincerely,


M. D. Hukill
Director, TMI-1

HDH:CJS:vjf

Enclosures

cc: J. Van Vliet
T. V. Wambach

DETAILED DESCRIPTION OF FIRE ZONE BOUNDARIES
OF THREE MILE ISLAND - UNIT 1

The following pages form new Section 1.3 of the Three Mile Island Nuclear Station - Unit 1 Fire Hazards Analysis Report and Appendix R Section III.G safe shutdown evaluation which was originally provided to the NRC Staff by GPU Nuclear Letter No. 5211-82-156 dated July 1, 1982.

1.3 Delineation of Fire Areas/Fire Zones

The purpose of this section is to provide the technical basis for clarification of TMI-1 exemption requests from the requirements of Appendix R to 10CFR50.

The updated TMI-1 Plant Fire Hazards Analysis, which was submitted with the Appendix R Section III,G Safe Shutdown Evaluation utilized an identical delineation of fire areas and fire zones as had initially been utilized in analyzing the effects a fire would have on the plant's capability to safely shutdown. The following are the definitions of a fire area and fire zone as provided in Branch Technical Position APCS 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants".

"Fire Area -

That portion of a building or plant that is separated from other areas by boundary fire barriers (walls, floors or roofs) with any opening or penetrations protected with seals or closures having a fire resistance rating equal to that of the barriers.

Fire Zones -

subdivisions of fire areas in which the fire suppression systems are designed to combat particular types of fires. The concept of fire zone aids in defining to the fire fighter the fire parameters and the actions which would be necessary."

Initially, the plant was analyzed based upon the guidelines established by Appendix A to BTP APCSB 9.5-1. The delineation of fire areas was established taking into consideration the location of redundant safety related components with respect to each other, existing building construction and the presence of in-situ fire hazards. For the purposes of analysis, certain fire areas were subdivided into fire zones taking into consideration the physical boundaries which exist between one fire zone and another within the same fire area. In the current fire area/zone arrangement, further support for the subdivision of fire areas into fire zones is obtained by the augmentation of the plant fire protection system which has been achieved due to the modifications which were made as a result of the NRC's safety evaluation report with respect to the initial plant fire hazards analysis; e.g., fire zone boundaries bounded by fixed suppression systems. It should be noted that Appendix R suggests evaluation of the plant on a fire area basis while Appendix A to BTP APCSB 9.5-1 did not specifically require fire area separation of safe shutdown components. By demonstrating via the plant fire hazards analysis that the zone arrangements will provide reasonable assurance that fires will not propagate from one side of the zone boundary

to the other due to passive and active features integral with the zone boundary as well as combustible loadings on either side of the zone boundary, one can demonstrate that fire zones within a fire area can be analyzed by themselves.

The specific fire zones under consideration which have been analyzed as a fire area are as follows:

<u>Item</u>	<u>Fire Zone</u>	<u>Location/Elevation</u>	<u>Plant FHA Section</u>
I 1.	AB-FZ-1	Aux. Bldg. (Heat Exchanger Vault)/271'	4.2.3.1
I 2.	AB-FZ-2	Aux. Bldg. (Make-Up Pump A Cubicle)/281'	4.2.3.2
I 3.	AB-FZ-2B	Aux. Bldg. (Make-Up Pump B Cubicle)/281'	4.2.3.2
I 4.	AB-FZ-2C	Aux. Bldg. (Make-Up Pump C Cubicle)/281'	4.2.3.2
I 5.	AB-FZ-3	Aux. Bldg. (Make-Up Valve Gallery)/281'	4.2.3.3
I 6.	AB-FZ-4	Aux. Bldg. (Penetration Area)/281'	4.2.3.4
I 7.	AB-FZ-5	Aux. Bldg. (General Area)/281'	4.2.3.5
I 8.	AB-FZ-6	Aux. Bldg. (Demineralizers & ESV-CC1A)/305'	4.2.3.6
I 9.	AB-FZ-6a	Aux. Bldg. (ESV-CC1B)/305'	4.2.3.6a
I 10.	AB-FZ-7	Aux. Bldg. (DHR & NSCCC Pumps)/305'	4.2.3.7
I 11.	AB-FZ-8	Aux. Bldg. (Waste Gas Decay Tanks)/305'	4.2.3.8
I 12.	AB-FZ-9	Aux. Bldg. (Rem. El. 305')	4.2.3.9
I 13.	FH-FZ-1	Fuel Hand. Bldg. (Basement)/281'	4.7.1
I 14.	FH-FZ-2	Fuel Hand. Bldg./El. 305'	4.7.2
I 15.	FH-FZ-3	Fuel Hand. Bldg./329' & 331'	4.7.3
I 16.	FH-FZ-4	Fuel Hand. Bldg./Fuel Pool Area	4.7.4

I 17.	FH-FZ-5	Fuel Hand. Bldg. (Control Bldg. Patio Area)/322' - 380'	4.7.5
I 18.	FH-FZ-6	Fuel Hand. Bldg. (Chiller Rm)/285'	4.7.6
I 19.	CB-FZ-5A	Control Bldg. (North H&V Equip. Area)/380'	4.4.15
I 20.	CB-FZ-5B	Control Bldg. (South H&V Equip. Area)/380'	4.4.16
II 1.	IB-FZ-1	Int. Bldg. (Valve Gallery & Penet. Rm)/295'	4.3.1
II 2.	IB-FZ-2	Int. Bldg. (Turb. Driven EFW Pump Room)/295'	4.3.2
II 3.	IB-FZ-3	Int. Bldg. (Mtr. Driven EFW Pump Room)/295'	4.3.3
II 4.	IB-FZ-4	Int. Bldg. (Rem. of El. 295')	4.3.4
II 5.	IB-FZ-5	Int. Bldg. (Corridor)/305'	4.3.5
II 6.	IB-FZ-6	Int. Bldg. (General Area)/322'	4.3.6
II 7.	IB-FZ-7	Int. Bldg. (General Area)/355'	4.3.7
II 8.	IB-FZ-8	Int. Bldg. (Alligator Pit)/279'-0"	4.3.8
III 1.	ISPH-FZ-1	Int. Screen & Pump Hse (IR SWGR Area)/308'	4.6.1
III 2.	ISPH-FZ-2	Int. Screen & Pump Hse (IT SWGR Area)/308'	4.6.2
III 3.	ISPH-FZ-3	Int. Screen & Pump Hse (Trash Rake & Screen Area)/308'	4.6.3
IV 1.	RB-FZ-1a	Reactor Building - El. 281'-0"	4.1.1
	RB-FZ-1b	Reactor Building - El. 281'-0"	4.1.2
	RB-FZ-1c	Reactor Building - El. 281'-0"	4.1.3
IV 2.	RB-FZ-1d	Reactor Building - D-Rings	4.1.6
	RB-FZ-1e	Reactor Building - D-Rings	4.1.7
IV 3.	RB-FZ-2	Reactor Building - El. 308'-0"	4.1.4
IV 4.	RB-FZ-3	Reactor Building - El. 346'-0"	4.1.5

I Auxiliary & Fuel Handling Buildings and Control Building
(H&V Equipment Rm).

The Auxiliary and Fuel Handling Buildings and Control Building H&V Equipment Rooms are classified as one fire area which has been subdivided into 20 fire zones for the purpose of analysis. Each fire zone is treated independently and analyzed as a fire area due to the construction feature of its boundaries and/or existing or proposed active fire detection and suppression systems installed on either or both sides of the zone boundary. The following is a brief description of the zone boundaries for each zone, the zones active fire protection features, and the combustible loadings on either side of the non fire rated zone boundaries.

1. AB-FZ-1 - Heat Exchanger Vault - E. 271'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The south and west walls, floor and ceiling are not adjacent to any other plant areas. The upper portion of the east wall is adjacent to fire zone AB-FZ-5. Penetrations through this wall are detailed on ATT.A SH.1. The remainder is not adjacent to any other plant area. A portion of the north wall is adjacent to fire zone AB-FZ-5 via a stairwell. A fire detection system will be installed over cable trays in this zone and will alarm in the control room. Combustible loadings on either side of the non fire rated zone boundary are:

a. AB-FZ-1 - 2400 Btu/ft (2 min)*

b. AB-FZ-5 - 20,062 Btu/ft (15 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations is sealed with grout to preclude a slow burning cable fire from propagating through the zone boundary although the seal is not fire rated.

The construction features of the zone boundaries, the combustible loading on either side of the boundary, the fire detection system which will be installed in the zone to alarm in the control room, plus the limited number of unsealed penetrations in the zone boundaries as shown in ATT.A provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

2. AB-FZ-2A - Make-up Pump A Cubicle - El. 281'

Three hour rated fire barriers are provided on the north, south and east walls as well as the ceiling. Note that one penetration

* The figures in parentheses adjacent to all combustible loadings represent a corresponding gauge with respect to anticipated fire severity in time when assuming total consumption of combustibles and comparing them to the ASTM-E-119 time temperature curve.

for reach rods for valve operators through the east wall are not fully sealed. The floor is not adjacent to any other plant area. The west boundary consists of reinforced concrete around the door section. The remainder of the wall is solid concrete block all sealed to a 3 hour fire rating. (Reference ATT.A SH.2.) The door and the frame are not labeled. The west boundary is adjacent to the fire zone AB-FZ-5. A fire detection system, which alarms in the control room, is provided for zone AB-FZ-2a. Combustible loadings on either side of the nonfire rated zone boundary are:

- a. AB-FZ-2a - $59,996 \text{ Btu/ft}^2$ (45 min)
- b. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)

Note that fire zone AB-FZ-5 is a large zone. The location adjacent to fire zone AB-FZ-2a is essentially devoid of combustibles.

The construction features of the zone boundary, the combustible loading on either side of the boundary, the fire detection system, which alarms in the control room, and the limited number of unsealed penetrations (note that one reach rod through the east wall is not fully sealed) provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

3. AB-FZ-2B - Make-up Pump B Cubicle - El. 281'

Three hour rated fire barriers are provided on the north, south and east walls as well as the ceiling. Note that one penetration for reach rods for valve operators through the east wall are not fully sealed. The floor is not adjacent to any other plant area. The west boundary consists of reinforced concrete around the door section. The remainder of the wall is solid concrete block all sealed to a 3 hour fire rating. (Ref. ATT.A SH.3.) The door and frame are not labeled. The west boundary is adjacent to fire zone AB-FZ-5. A fire detection system which alarms in the control room is provided in zone AB-FZ-2b. Combustible loadings on either side of the non fire rated zone boundary are:

- a. AB-FZ-2b - $16,663 \text{ Btu/ft}^2$ (13 min)
- b. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)

Note that fire zone AB-FZ-5 is a large zone. The location adjacent to fire zone AB-FZ-2b is essentially devoid of combustibles.

The construction features of the zone boundary, the combustible loading on either side of the boundary, the fire detection system which alarms in the control room, and the limited number of unsealed penetrations (note that reach rods through the east wall are not fully sealed) provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

4. AB-FZ-2c - Make-Up Pump C Cubicle - El. 281'

Three hour rated fire barriers are provided on the north, south and east walls as well as the ceiling. Note that two penetrations for reach rods for valve operators through the east wall are not fully sealed. The floor is not adjacent to any other plant area. The west boundary consists of reinforced concrete around the door section. The remainder of the wall is solid concrete block wall all sealed to a three hour fire rating. (Ref. ATT.A SH.37 for penetration details.) The door and frame are not labeled. The west boundary is adjacent to fire zone AB-FZ-5. A fire detection system which alarms in the control room is provided for zone AB-FZ-2c. Combustible loadings on either side of the non fire rated zone boundary are:

- a. AB-FZ-2c - $15,363 \text{ Btu/ft}^2$ (12 min)
- b. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)

Note that fire zone AB-FZ-5 is a large zone. The location adjacent to fire zone AB-FZ-2c is essentially devoid of combustibles.

The construction features of the zone boundary, the combustible loading on either side of the boundary, the fire detection system, the presence of only one unsealed penetration in the west boundary provides reasonable assurance that fire will not propagate from

one side of the boundary to the other. Note that reach rods through the east wall are not fully sealed.

5. AB-FZ-3 - Make-Up Valve Gallery - El. 281'

A three hour rated fire barrier is provided on the west wall. Note that four penetrations for reach rods for valve operators through the west wall are not fully sealed. The floor is not adjacent to any other plant area. The south wall is constructed of reinforced concrete and is adjacent to fire zone AB-FZ-5. (Ref. ATT.A SH.5 for penetration details.) The east wall is constructed of reinforced concrete and is adjacent to fire zone FH-FZ-1. (Ref. ATT.A. SK.6 & 7 for penetration details.) In addition, zone FH-FZ-1 is provided with an automatic wetpipe sprinkler system. The ceiling is constructed of reinforced concrete and is adjacent to fire zone AB-FZ-6. (Ref. ATT.A. SH.8 for penetration details.) The north boundary is adjacent to fire zone AB-FZ-4; there is no construction separating the zones. However, fire zone AB-FZ-4 is equipped with a fixed deluge water spray system and a fire detection system which alarms in the control room. A fire detection system which alarms in the control room is provided in fire zone AB-FZ-3. Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. AB-FZ-3 - 4581 Btu/ft^2 (4 min)
- b. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)

- c. FH-FZ-1 - 38,954 Btu/ft² (29 min)
- d. AB-FZ-6 - 30,404 Btu/ft² (23 min)
- e. AB-FZ-4 - 52,822 Btu/ft² (40 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations are sealed with grout or koawool to preclude a slow burning cable fire from propagating through the zone boundary although the seal is not fire rated. The ionization detection system will alarm in the control room for slow burning cable fires which could propagate through the north boundary which has no physical barrier. It is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside this zone.

The construction features of the zone boundaries coupled with fixed suppression, the fixed suppression system where no physical boundaries exist, fire detection which alarms in the control room, the limited number of unsealed penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

6. AB-FZ-4 - Penetration Area - El. 281'

A three hour rated fire barrier is provided on the south boundary where adjacent to the make-up pump cubicle and on the boundary adjacent to the Reactor Building. A portion of the south boundary adjacent to zone AB-FZ-3, the east boundary adjacent to zone FH-FZ-1, and the west boundary adjacent to zone AB-FZ-5 does not consist of wall construction; however, zone AB-FZ-4 is equipped with an ionization fire detection system and a fixed deluge water spray system. In addition, zone FH-FZ-1 on the east boundary is equipped with an automatic wetpipe sprinkler system. The floor of this zone over fire areas AB-FA-1 and AB-FA-2 is a three hour fire barrier with hatches to these areas consisting of steel plate; the remainder of the floor is not adjacent to any other plant area. The ceiling consists of reinforced concrete with an open stairwell adjacent to zone AB-FZ-6; the remainder of the ceiling consists of reinforced concrete adjacent to zone AB-FZ-7. (Ref. ATT.A. SH.9 for ceiling penetration details.) Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. AB-FZ-4 - $52,822 \text{ Btu/ft}^2$ (40 min)
- b. AB-FZ-3 - $4,581 \text{ Btu/ft}^2$ (4 min)
- c. FH-FZ-1 - $38,954 \text{ Btu/ft}^2$ (29 min)
- d. AB-FZ-6 - $30,404 \text{ Btu/ft}^2$ (23 min)
- e. AB-FZ-7 - $7,626 \text{ Btu/ft}^2$ (6 min)
- f. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, the ionization detection system will alert the control room. Cable fires are slow burning in nature. It is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside this zone.

The construction features of the zone boundaries coupled with an ionization detection system which alarms in the control room, the fixed suppression system in this zone where no physical boundaries exist, fixed suppression in an adjacent zone (FH-FZ-1) where no physical boundaries exist, and the combustible loadings on either side of the boundaries provide reasonable assurance that a fire will not propagate from one side of a boundary to the other.

7. AB-FZ-5 - General Area - El. 281'

A three hour rated fire barrier is provided on the south wall of this zone. The north boundary is not adjacent to any other plant area. The east boundary adjacent to the Fuel Handling Building (zone FH-FZ-1) is constructed of reinforced (note passage from the Auxiliary Building to the Fuel Handling Building is through an opening in this boundary); however, an automatic wetpipe sprinkler

system is located on the FH-FZ-1 side of this boundary. (Ref. ATT.A. SHS.10 & 11 for penetration details.) The boundary adjacent to zone AB-FZ-3 is reinforced concrete. (Ref. ATT.A. SH.5 for penetration details.) The south boundary of zone AB-FZ-2C is three hour fire rated. The east boundary of this zone adjacent to fire zones AB-FZ-2A, AB-FZ-2b and AB-FZ-2C is constructed of reinforced concrete around the door sections. The remainder of the boundary is solid concrete block. The doors and frames are not labeled. (Ref. ATT.A SH.10 for penetration details.) The portion of the east boundary adjacent to zone AB-FZ-4 does not consist of wall construction; however, this portion of the boundary is protected by fixed deluge water spray system. The west boundary of this zone consists of reinforced concrete, a portion of which is not adjacent to any other plant area and a portion of which is adjacent to zone AB-FZ-1. (Ref. ATT.A. SH.12 for penetration details.)

The floor of this zone is not adjacent to any other plant area except over fire areas AB-FA-1 and AB-FA-2 where the floor is a three hour rated fire barrier with hatches to these areas consisting of steel plate.

The ceiling of this zone consists of reinforced concrete and is adjacent to fire zones AB-FZ-6, AB-FZ-6A, AB-FZ-7, AB-FZ-8 and

AB-FZ-9. (Reference ATT.A. SH.13 for penetration details.) A fire detection system which alarms in the control room will be provided in the north end of this zone which is the only portion of this zone where safe shutdown circuits are routed.

Combustible loadings on either side of each non fire rated boundary are as follows:

- a. AB-FZ-5 - 20,062 Btu/ft² (15 min)
- b. FH-FZ-1 - 38,954 Btu/ft² (29 min)
- c. AB-FZ-3 - 4,581 Btu/ft² (4 min)
- d. AB-FZ-2a - 59,966 Btu/ft² (45 min)
- e. AB-FZ-2b - 16,663 Btu/ft² (13 min)
- f. AB-FZ-2c - 15,363 Btu/ft² (12 min)
- g. AB-FZ-4 - 52,822 Btu/ft² (40 min)
- h. AB-FZ-6 - 30,404 Btu/ft² (23 min)
- i. AB-FZ-6a - 51,448 Btu/ft² (39 min)
- j. AB-FZ-7 - 7,626 Btu/ft² (6 min)
- k. AB-FZ-8 - 0 Btu/ft² (0 min)
- l. AB-FZ-9 - 27,451 Btu/ft² (21 min)
- m. AB-FZ-1 - 2,400 Btu/ft² (2 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout or kaowool will preclude a slow burning cable fire from

propagating through the zone boundary, although the seal is not fire rated. Note that not all penetrations are sealed with grout or kaowool. Where no physical boundaries between zones exist, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to slow burning nature of a cable fire.

The construction features of the zone boundaries coupled with fixed suppression systems at zone boundaries with and without wall construction, the fire detection system which will alarm in the control room, the limited number of unsealed penetrations, and the combustible loadings on either side of the boundaries provide reasonable assurance that a fire will not propagate from one side of a boundary to the other.

8. AB-FZ-6 - Demineralizer and ESV-CC1A - El. 305'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The south boundary and portion of the ceiling are not adjacent to any other plant areas. The remainder of the ceiling adjacent to the chemical addition area is a three hour fire barrier. Most of the north boundary is adjacent to fire zone AB-FZ-7 with an open passage between the zones. The remainder of the north boundary is adjacent to the Reactor Building which is a

three hour rated fire barrier. (Ref. ATT.A. SH.14 for penetration details.) The east boundary is adjacent to the fuel handling building with two open passages between the zones. (Ref. ATT.A. SH.15 & 16 for penetration details.) The west boundary is adjacent to fire zone AB-FZ-9 with an open passage between the zones (Ref. ATT.A. SH.17 & 18 and GAI drawing E-422-023 for penetration details) and also adjacent to fire zone AB-FZ-6a with a one hour fire barrier to be added as part of the Appendix R modifications. The floor is adjacent to fire zones AB-FZ-5, AB-FZ-3 and AB-FZ-4. (Ref. ATT.A. SH.19 for penetration details.) A three hour rated fire barrier is provided on the floor where this zone is adjacent to fire zones AB-FZ-2a, AB-FZ-2b and AB-FZ-2c. An ionization detection system which alarms in the control room is provided in this zone over safety related switchgear. Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. AB-FZ-6 - $30,404 \text{ Btu/ft}^2$ (23 min)
- b. AB-FZ-7 - $7,626 \text{ Btu/ft}^2$ (6 min)
- c. AB-FZ-3 - $4,581 \text{ Btu/ft}^2$ (4 min)
- d. AB-FZ-4 - $52,822 \text{ Btu/ft}^2$ (40 min)
- e. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)
- f. FH-FZ-2 - $20,732 \text{ Btu/ft}^2$ (16 min)

Note: Reference is not made to zone FH-FZ-1 as the zone boundaries on the east wall are boundaries between reinforced concrete ventilating duct chases.

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout or koawool with ductseal will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to slow burning nature of a cable fire.

The construction features of the zone boundaries, the ionization detection system which alarms in the control room, and the combustible loading on either side of the boundary provides reasonable assurance that a fire will not propagate from one side of a boundary to another.

9. AB-FZ-6a - ES MCC B - El. 305'

Zone boundaries consist of reinforced concrete walls on the north, west, and south walls with an open passage between the south wall

and fire zone AB-FZ-9. The east boundary adjacent to zone AB-FZ-6 will be provided with a one hour fire barrier. The north wall is adjacent to zone AB-FZ-7. (Ref. ATT.A. SH.20 for penetration details.) The south and west walls are adjacent to fire zone AB-FZ-9 with an open passage to zone AB-FZ-1. (Ref. ATT.A. SH.21 & 22 for penetration details.) The floor is constructed of reinforced concrete and is adjacent to fire zone AB-FZ-5. (Ref. ATT.A. SH.23 for penetration details.) An ionization detection system which alarms in the control room is provided in this zone. The ceiling is constructed of reinforced concrete and is a three hour rated fire barrier. Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. AB-FZ-6a - $51,448 \text{ Btu/ft}^2$ (39 min)
- b. AB-FZ-7 - $7,626 \text{ Btu/ft}^2$ (6 min)
- c. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)
- d. AB-FZ-9 - $27,451 \text{ Btu/ft}^2$ (21 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout or koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone

prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries, the ionization detection system which alarms in the control room, the limited number of unsealed cable tray penetrations and the combustible loading on either side of the boundary provides reasonable assurance that a fire will not propagate from one side of a boundary to another.

10. AB-FZ-7 - DHR & NSC CC Pumps - El. 305'

Zone boundaries consist of reinforced concrete walls, floor and ceiling with an open passage in the south boundary between this zone and zone AB-FZ-6. The north boundary is not adjacent to any other plant area. The east boundary is adjacent to the Reactor Building which is a three hour rated fire barrier. The west boundary is adjacent to zone AB-FZ-9. (Ref. ATT.A. SH.24 for penetration details.) The south boundary is adjacent to zones AB-FZ-6, AB-FZ-6a, and AB-FZ-9. (Ref. ATT.A. SH.25 for penetration details.) The floor is adjacent to zones AB-FZ-4 and AB-FZ-5. (Ref. ATT.A. SH.26 for penetration details.) The ceiling is not adjacent to any other plant areas. An ionization detection system which provides separate alarms for each pump

cubicle in the control room is provided in this zone. Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. AB-FZ-7 - 7,626 Btu/ft² (6 min)
- b. AF-FZ-6 - 30,404 Btu/ft² (23 min)
- c. AB-FZ-6a - 51,448 Btu/ft² (39 min)
- d. AB-FZ-9 - 27,451 Btu/ft² (21 min)
- e. AB-FZ-4 - 52,822 Btu/ft² (40 min)
- f. AB-FZ-5 - 20,062 Btu/ft² (15 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with koawool will preclude a slow burning cable from propagating through the zone boundary, although the seals are not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries, the ionization detection system which alarms in the control room, the limited number of unsealed cable tray penetrations, and the combustible

loading on either side of the boundary provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

11. AB-FZ-8 - Waste Gas Decay Tanks - El. 305'

Zone boundaries consist of reinforced concrete walls, floor and ceiling with an open passage in the east boundary between this zone and zone AB-FZ-9. All boundaries are adjacent to zone AB-FZ-9. (Ref. ATT.A SHS.27-30 for penetration details.) The floor is adjacent to zone AB-FZ-5. Ref. ATT.A SH.61 and GAI drawing E-422-018 for penetration details. The ceiling adjacent to the chemical addition area is a three hour rated barrier. Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. AB-FZ-8 - 0 Btu/ft² (0 min)
- b. AB-FZ-9 - 27,451 Btu/ft² (21 min)
- c. AB-FZ-5 - 20,062 Btu/ft² (15 min)

The construction features of the zone boundaries, the limited number of penetrations and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

12. AB-FZ-9 - Rm. - El. 305'

Zone boundaries consist of reinforced concrete walls, floor and ceiling with an open passage in the north boundary between this zone and zone AB-FZ-6a and two open passages in the east boundary between this zone and zone AB-FZ-6. Also, an open passage exists between this zone and zone AB-FZ-8. A portion of the north boundary, the west boundary and the south boundary are not adjacent to any other plant area. The remainder of the north boundary is adjacent to fire zones AB-FZ-6a and AB-FZ-7 with an open passage to zone AB-FZ-6a. (Ref. ATT.A. SH.32 for penetration details.) The east boundary is adjacent to fire zone AB-FZ-6. (Ref. ATT.A. SH.33 for penetration details.) This zone completely surrounds zone AB-FZ-8 which is enclosed by reinforced concrete walls. (Ref. ATT.A. SHTS. 27-30 for penetration details.) The floor is adjacent to zone AB-FZ-5. (Ref ATT.A. SH.34 and 35 for penetration details.) A portion of the ceiling adjacent to the chemical addition area is a three hour fire rated barrier; the remainder of the ceiling is not adjacent to any other plant area.

The principal combustible in this zone is activated charcoal which is contained in the filtration units for the Reactor Building Purge Exhaust and Auxiliary and Fuel Handling Exhaust systems located in the fan equipment room portion of this zone. The units

are provided with thermal detectors which alarm in the control room and manually actuated deluge water spray systems. Cable insulation is minimal in this zone. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout or koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

Combustible loadings on either side of each non fire rated zone boundary as follows:

- a. AB-FZ-9 - 27,451 Btu/ft² (21 min)
- b. AB-FZ-8 - 0 Btu/ft² (0 min)
- c. AB-FZ-6a - 51,448 Btu/ft² (39 min)
- d. AB-FZ-6 - 30,404 Btu/ft² (23 min)
- e. AB-FZ-7 - 7,626 Btu/ft² (6 min)
- f. AB-FZ-5 - 20,062 Btu/ft² (15 min)

The construction features of the zone boundaries, fire detection and protection for charcoal filters, the limited number of penetrations, and the combustible loadings on either side of the

boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

13. FH-FZ-1 - Basement Elev. 281' - 0"

Zone boundaries consist of reinforced concrete walls, floor and ceiling. Most of the east boundary is not adjacent to any other plant area except for a three hour rated fire barrier where adjacent to zone IB-FZ-8, and a non fire rated boundary where adjacent to FH-FZ-6. A raceway which runs through the east wall to fire area CB-FA-1 in the east boundary of zone FH-FZ-1 is sealed to a three hour fire rating. The north boundary is adjacent to the Reactor Building which is a three hour fire rated barrier. The south and west boundary is a three hour rated fire barrier where adjacent to the Air Intake Tunnel (AIT-FA-1). The remainder of the west boundary is adjacent to fire zones AB-FZ-3, AB-FZ-4 and AB-FZ-5. (Ref. ATT.A. SH.36 for penetration details.) An open passage exists between this zone and zone AB-FZ-5 and the boundary between this zone and zone AB-FZ-4 does not consist of wall construction; however, this zone (FH-FZ-1) is equipped with an automatic wet pipe sprinkler system and zone AB-FZ-4 is equipped with a fixed deluge water spray system. The floor of this zone is not adjacent to any other plant area. The ceiling of this zone is adjacent to zone FH-FZ-2 and FH-FZ-4 (Ref. ATT.A. SHTS.37 & 38 for

penetration details). Note that FH-FZ-4 is the fuel pool. Its boundary is not fire rated, but due to the nature of this zone, combustible loadings (combustible loading is on the operating floor between FH-FZ-2 and FH-FZ-4) will not be compared to each other. An ionization detection system which alarms in the control room is provided in this zone. Combustible loadings on either side of each zone boundary are as follows:

- a. FH-FZ-1 - $38,954 \text{ Btu/ft}^2$ (29 min)
- b. AB-FZ-3 - $4,581 \text{ Btu/ft}^2$ (4 min)
- c. AB-FZ-4 - $52,822 \text{ Btu/ft}^2$ (40 min)
- d. AB-FZ-5 - $20,062 \text{ Btu/ft}^2$ (15 min)
- e. FH-FZ-2 - $20,732 \text{ Btu/ft}^2$ (16 min)
- f. FH-FZ-6 - $3,484 \text{ Btu/ft}^2$ (3 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations is sealed with grout or koawool to preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. It is reasonable to assume that a cable fire will not propagate through the east boundary adjacent to fire zone AB-FZ-4 where no physical boundary exists due to the slow burning characteristics of cable fires, and existing detection and suppression systems in this zone.

The construction features of the zone boundaries coupled with fixed suppression, the fixed suppression system where no physical boundaries exist, fire detection which alarms in the control room, the limited number of unsealed penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

14. FH-FZ-2 - Fuel Handling Building - Elev. 305'

Zone boundaries consist of concrete walls, floor and ceiling. The south boundary of this zone is three hour fire rated except on the operating floor which is common between TMI-1 and 2. The west boundary is adjacent to fire zone AB-FZ-6 with an open passage between the zones. (Ref. ATT.A. SH.39 for penetration details.) The remainder of the west boundary is not adjacent to any other plant area. The boundaries between FH-FZ-2 and FH-FZ-4 (fuel pool) are reinforced concrete (no penetrations) except on the operating floor where no boundaries exist. The boundaries between FH-FZ-2 and FH-FZ-3 are reinforced concrete. (Ref. ATT.A. SHTS. 49 & 50 for penetration details.) The boundaries of FH-FZ-2 in the control building patio (Hot Machine Shop) are three hour fire rated barriers except where adjacent to zone FH-FZ-4 (no penetrations). The north boundary for the Reactor and Turbine

Buildings is a three hour rated fire barrier. For the north boundary adjacent to the duct chase (FH-FZ-1) Ref. ATT.A. SH.40 for penetration details.

The floor of this zone is adjacent to zone FH-FZ-1 and FH-FZ-6. (Ref. ATT.A. SHTS.42 & 43 for penetration details.) The remainder is not adjacent to any other plant area. The ceiling of this zone is adjacent to zones FH-FZ-3 and FH-FZ-5. (Ref. ATT.A. SHTS.44-47 & 50 for penetration details.) Note that the control building patio portion of FH-FZ-2 is provided with an automatic wet pipe sprinkler system where adjacent to FH-FZ-4, FH-FZ-5 and FH-FZ-6. The remainder of the ceiling is not adjacent to any other plant area. Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. FH-FZ-2 - $20,732 \text{ Btu/ft}^2$ (16 min)
- b. AB-FZ-6 - $30,404 \text{ Btu/ft}^2$ (23 min)
- c. FH-FZ-4 - $2,149 \text{ Btu/ft}^2$ (2 min)
- d. FH-FZ-3 - $7,717 \text{ Btu/ft}^2$ (6 min)
- e. FH-FZ-5 - $93,398 \text{ Btu/ft}^2$ (70 min)
- f. FH-FZ-1 - $38,954 \text{ Btu/ft}^2$ (29 min)
- g. FH-FZ-6 - $3,484 \text{ Btu/ft}^2$ (3 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to

transient combustibles exposed cable in tray penetrations is sealed with grout or koswool to preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries coupled with fixed suppression, the limited number of unsealed penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

15. FH-FZ-3 - Fuel Handling Building - El. 329' & 331'

Zone boundaries consist of reinforced concrete walls and a combination of grating and reinforced concrete for floors and ceilings. The west boundary consists of a three hour rated fire barrier. The east boundary is adjacent to the fuel pool (no penetrations). The north boundary is adjacent to a ventilating duct chase (FH-FZ-1) and as such, combustible loadings between FH-FZ-3 and FH-FZ-1 will not be compared to each other. (Ref. ATT.A. SH.48 for penetration details.) A portion of the south boundary

is adjacent to zone FH-FZ-2; the remainder being adjacent to an elevator shaft which is part of zone FH-FZ-1 and as such, combustible loadings between FH-FZ-3 and FH-FZ-1 will not be compared. (Ref. ATT.A. SH.49 for penetration details.) The floor is adjacent to zone FH-FZ-2 (Ref. ATT.A. SH.50) and the ceiling is adjacent to zone FH-FZ-4. (Ref. ATT.A. SH.51 for penetration details.) Combustible loadings on either side of the non fire rated zone boundaries are as follows:

- a. FH-FZ-3 - $7,717 \text{ Btu/ft}^2$ (6 min)
- b. FH-FZ-2 - $20,732 \text{ Btu/ft}^2$ (16 min)
- c. FH-FZ-1 - $38,954 \text{ Btu/ft}^2$ (29 min)
- d. FH-FZ-4 - $2,149 \text{ Btu/ft}^2$ (2 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

16. FH-FZ-4 - Fuel Pool Area

Zone boundaries consist of reinforced concrete walls and ceiling except on the operating floor where no physical construction exists on the south boundary between this zone and zone FH-FZ-2; however, combustibles in FH-FZ-2 are concentrated on elevation 305, not on the operating floor. Boundary construction and combustible loading is only discussed on the operating floor as the area under below the operating floor for this zone is the fuel pool. A portion of the floor over zone FH-FZ-3 consists of reinforced concrete and grating. (Ref. ATT.A. SH.52 for penetration details.) A portion of the south boundary is adjacent to an elevator shaft (FH-FZ-1) and as such, combustible loading comparison between FH-FZ-4 and FH-FZ-1 will not be made. Most of the south boundary on the operating floor is a large high bay area open to the TM1-2 fuel handling building elevation 305' and 348'. The east boundary of this zone is adjacent to zone FH-FZ-5. (Ref. ATT.A. SH.53 for penetration details.) The west boundary of this zone is a three hour rated fire barrier. The ceiling is not adjacent to any other plant area. Combustible loadings on either side of the non fire rated zone boundaries are as follows:

- a. FH-FZ-4 - $2,149 \text{ Btu/ft}^2$ (2 min)
- b. FH-FZ-3 - $7,717 \text{ Btu/ft}^2$ (6 min)
- c. FH-FZ-5 - $93,398 \text{ Btu/ft}^2$ (70 min)

- d. FH-FZ-2 - 20,732 Btu/ft² (16 min)
- e. TMI-2 operating floor - 19,744 Btu/ft² (15 min)

The principal combustibles in this zone are cable insulation and lube oil in negligible quantities. Should ignition of cable occur either electrically or due to transient combustibles, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

17. FH-FZ-5 - Control Building Patio Area - Elev. 322' to 380'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north and south boundaries are three hour fire rated barriers. The west boundary is adjacent to fire zones FH-FZ-2 and FH-FZ-4. (Ref. ATT.A. SH.54 for penetration details.) The east boundary is a three hour rated fire barrier except on elevation 380' where adjacent to zones CB-FZ-5a and CB-FZ-5b. (Ref. ATT.A. SH.55 for penetration details.) However, combustibles in FH-FZ-5

are not concentrated on elevation 380'. The floor is adjacent to zone FH-FZ-2, however, FH-FZ-2 is provided with an automatic wet pipe sprinkler system where adjacent to FH-FZ-5. (Ref. ATT.A. SH.56 for penetration details.) The ceiling is not adjacent to any other plant areas. Combustible loadings on either side of non fire rated zone boundaries are:

- a. FH-FZ-5 - 93,398 Btu/ft² (70 min)
- b. FH-FZ-2 - 20,732 Btu/ft² (16 min)
- c. FH-FZ-4 - 2,149 Btu/ft² (2 min)
- d. CB-FZ-5a - 15,280 Btu/ft² (12 min)
- e. CB-FZ-5b - 14,680 Btu/ft² (11 min)

Note that combustibles here are charcoal only protected by deluge water spray systems.

The principal combustible in this zone is cable insulation. Two trays between this zone and zone CB-FZ-5a are unsealed, however, the main concentration of combustibles is not in this area of this zone. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone

prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries coupled with fixed suppression and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

18. FH-FZ-6 - Chiller Room - El. 285'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The east boundary is a three hour rated fire barrier. The north and south boundaries are not adjacent to any other plant areas. The west boundary is adjacent to fire zone FH-FZ-1 which is provided with an automatic wet pipe sprinkler system. The floor is not adjacent to any other plant areas. The ceiling is adjacent to zone FH-FZ-2 which is provided with an automatic wet pipe sprinkler system. (Ref. ATT.A. SH.57 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. FH-FZ-6 - $3,484 \text{ Btu/ft}^2$ (3 min)
- b. FH-FZ-2 - $20,732 \text{ Btu/ft}^2$ (16 min)
- c. FH-FZ-1 - $38,954 \text{ Btu/ft}^2$ (29 min)

The principal combustible in this zone is lube oil contained in the machinery. Construction features of the zone boundaries coupled with fixed suppression and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of a boundary to the other.

19. CB-FZ-5a - North H & V Equipment Room - El. 380'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north, south and east boundaries as well as the floor are three hour rated fire barriers. The ceiling is not adjacent to any other plant area. The west boundary is adjacent to fire zone FH-FZ-5; however, combustibles in fire zone FH-FZ-5 are not concentrated on elevation 380'. A major portion of the west boundary consists of reinforced concrete. The remainder consists of an unrated sheet metal wall with an unlabelled door. (Ref. ATT.A. SH.58 for penetration details.) Combustible loadings on either side of the non fire rated zone boundaries are as follows:

- a. CB-FZ-5a - $15,280 \text{ Btu/ft}^2$ (12 min)
- b. FH-FZ-5 - $93,398 \text{ Btu/ft}^2$ (70 min)

Combustibles are not concentrated on elevation 380'.

The principal combustible in this zone is activated charcoal which is contained in the Control Building Emergency Air Filtration unit. The unit is provided with thermal detectors which alarm in the control room and manually activate deluge water spray system protecting the charcoal. Activation is achieved from a control panel in fire area CB-FA-4b (control room). Cable insulation exists within this zone. Should ignition of cable occur either electrically or due to transient combustibles, where cable penetrations are not sealed in the sheet metal wall, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

The construction features of the zone boundaries, fire detection and protection for charcoal filters, the limited number of penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

20. CB-FZ-5b - South H & V Equipment Room - El. 380'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north and east boundaries as well as the floor are three hour fire barriers. The south boundary and ceiling are not

adjacent to any other plant area. The west boundary is adjacent to fire zone FH-FZ-5; however, combustibles in fire zone FH-FZ-5 are not concentrated on elevation 380'. A major portion of the west boundary consists of reinforced concrete. The remainder consists of a sheet metal wall with an unlabeled door. (Ref. ATT.A SH.59 for penetration details.) Combustible loadings on either side of the non fire rated zone boundaries are as follows:

- a. CB-FZ-5b - $14,680 \text{ Btu/ft}^2$ (11 min)
- b. FH-FZ-5 - $93,398 \text{ Btu/ft}^2$ (70 min)

Combustibles are not concentrated on elevation 380'.

The principal combustible in this zone is activated charcoal which is contained in the Control Building Emergency Air Filtration Unit. The unit is provided with thermal detectors which alarm in the control room and a manually actuated deluge water spray system protecting the charcoal. Activation is achieved from a control panel in fire area CB-FA-4b (control room). Cable insulation exists within this zone. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in penetrations sealed with koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated.

The construction features of the zone boundaries, fire detection and protection for charcoal filters, the limited number of penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

The above discussion which describes the features, both passive and active, which are used to delineate the zone boundaries of the Auxiliary and Fuel Handling Building including the Control Building H & V Equipment Rooms adequately demonstrates the capability for the limiting of fire within the boundaries of each zone. As such, this legitimizes the TMI-1 plant fire hazards analysis concept to evaluate each zone by itself. We therefore maintain that the safety evaluation in Section 3.0 which identifies noncompliances with Section III G of Appendix R to 10CFR50 based upon this concept is valid.

II Intermediate Building

The Intermediate Building is classified as one fire area which has been subdivided into 8 zones for the purpose of analysis. Each fire zone is treated independently and analyzed as a fire area due to the construction features of its boundaries and/or existing active fire detection systems installed on either or both sides of the zone boundary. The

following is a brief description of the zone boundaries for each zone, the zones active fire protection features, and the combustible loadings on either side of the nonfire rated zone boundaries:

1. IB-FZ-1 - Valve Gallery and Penetration Room - El. 295'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north and west boundaries are adjacent to fire zone IB-FZ-4 on elevation 295' with an open passage between the zones and adjacent to fire zone IB-FZ-5 on elevation 305' with an "A" label door provided between the zones on elevation 305'. (Ref. ATT.A. SHTS.60 and 61 for penetration details.) The south boundary is a three hour rated barrier. The east boundary is adjacent to fire zone IB-FZ-2. (Ref. ATT.A. SH.62 for penetration details.) A portion of the floor is adjacent to fire zone IB-FZ-8 (Ref. ATT.A. SH.63 for penetration details). The remainder of the floor is not adjacent to any other plant area. The ceiling is adjacent to fire zone IB-FZ-6. (Ref. ATT.A. SH.64 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- b. IB-FZ-1 - 8,925 Btu/ft² (7 min)
- c. IB-FZ-4 - 9 Btu/ft² (0 min)
- d. IB-FZ-5 - 549 Btu/ft² (1 min)

e. IB-FZ-6 - 4,487 Btu/ft² (4 min)

f. IB-FZ-8 - 0 Btu/ft² (0 min)

The principal combustible in this zone is cable insulation.

Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

Construction features of the zone boundaries, the fire detection system which alarms in the control room, the limited number of unsealed tray penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

2. IB-FZ-2 - Turbine Driven EFW Pump Room - El. 295'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary is adjacent to fire zone IB-FZ-4 on elevation 295' with an open passage between the zones, and adjacent to fire zone IB-FZ-5 on elevation 305' with an "A" label door

provided between the zones on elevation 305'-0". (Ref. ATT.A. SH.65 for penetration details.) The south boundary is a three hour rated fire barrier. The east boundary is adjacent to fire zone IB-FZ-3. (Ref. ATT.A. SH.66 for penetration details.) The west boundary is adjacent to fire zone IB-FZ-1. (Ref. ATT.A. SH.67 for penetration details.) A portion of the floor is adjacent to fire zone IB-FZ-8; the remainder of the floor is not adjacent to any other plant area. (Ref. ATT.A. SH.68 for penetration details.) The ceiling is adjacent to fire zone IB-FZ-6. (Ref. ATT.A. SH.69 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- b. IF-FZ-1 - 8,925 Btu/ft² (7 min)
- c. IB-FZ-3 - 5,659 Btu/ft² (5 min)
- d. IB-FZ-4 - 9 Btu/ft² (0 min)
- e. IB-FZ-5 - 549 Btu/ft² (1 min)
- f. IB-FZ-6 - 4,487 Btu/ft² (4 min)
- g. IB-FZ-8 - 0 Btu/ft² (0 min)

The principal combustibles in this zone are cable insulation and lube oil. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not

fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

Construction features of the zone boundaries, the fire detection system, which alarms in the control room, the limited number of unsealed tray penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurances that a fire will not propagate from one side of the boundary to the other.

3. IB-FZ-3 - Motor Driven EFW Pump Room - El. 295'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary is adjacent to fire zone IB-FZ-4 on elevation 295' with two open passages between the zones, and adjacent to fire zone IB-FZ-5 on elevation 305' with three "A" labelled doors provided between the zones on elevation 305'-0". (Ref. ATT.A. SH.70 and 71 for penetration details.) The south and east boundaries are three hour rated fire barriers. The west boundary is adjacent to fire zone IB-FZ-2. (Ref. ATT.A. SH.72 for penetration details.) A portion of the floor is adjacent to fire zone IB-FZ-8; the remainder of the floor is not adjacent to any other plant area. (Ref. ATT.A. SH.73 for penetration details.)

The ceiling is adjacent to fire zone IB-FZ-6. (Ref. ATT.A. SH.74, 75 and 76 for penetration details.) Combustible loadings on either side of each non fire rated zone boundary are as follows:

- a. IB-FZ-3 - 5,659 Btu/ft² (5 min)
- b. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- c. IB-FZ-4 - 9 Btu/ft² (0 min)
- d. IB-FZ-5 - 549 Btu/ft² (1 min)
- e. IB-FZ-6 - 4,487 Btu/ft² (4 min)
- f. IB-FZ-8 - 0 Btu/ft² (0 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated. Where cable tray penetrations are not sealed, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

Construction features of the zone boundaries, the fire detection system, which alarms in the control room, the limited number of unsealed tray penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

4. IB-FZ-4 - Remainder of El. 295'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The west boundary is not adjacent to any other plant area. A portion of the north boundary is adjacent to the Diesel Generator Building which is a three hour rated fire barrier. The remainder of the north boundary is not adjacent to any other plant areas. The east boundary adjacent to the Turbine Building and the south boundary adjacent to the Reactor Building are three hour rated fire barriers. The remaining east boundary is adjacent to fire zone IB-FZ-1. (Ref. ATT.A. SH.77 for penetration details.) The remaining south boundary is adjacent to fire zones IB-FZ-1, IB-FZ-2, and IB-FZ-3 with open passages to each zone. (Ref. ATT.A. SHTS.60, 65 and 70 for penetration details.) A portion of the floor is adjacent to fire zone IB-FZ-8; the remainder of the floor is not adjacent to any plant area. (Ref. ATT.A. SH.78 for penetration details.) The ceiling is adjacent to fire zone IB-FZ-5. (Ref. ATT.A. SH.79 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-4 - 9 Btu/ft² (0 min)
- b. IB-FZ-1 - 8,925 Btu/ft² (7 min)
- c. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- d. IB-FZ-3 - 5,659 Btu/ft² (5 min)

- e. IB-FZ-5 - 549 Btu/ft² (1 min)
- f. IB-FZ-8 - 0 Btu/ft² (0 min)

The principal combustible in this zone is cable insulation which is negligible. Should ignition of cable occur either electrically or due to transient combustibles, it is reasonable to assume that the fire brigade can reach the zone prior to a cable fire propagating outside the zone due to the slow burning nature of a cable fire.

Construction features of the zone boundaries, the limited number of unsealed tray penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

5. IB-FZ-5 - Corridor - El. 305'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary adjacent to the Diesel Generator Building and Service Building is a three hour fire rated barrier. The east boundary adjacent to the Turbine Building and the south boundary adjacent to the Reactor Building are three hour rated barriers. The remaining east boundary is adjacent to fire zone

IB-FZ-1. (Ref. ATT.A. SH.80 for penetration details.) The remaining south boundary is adjacent to fire zones IB-FZ-1, IB-FZ-2, and IB-FZ-3 with "A" labelled doors provided between zone IB-FZ-4 and those zones on Elevation 305'. (Ref. ATT.A. SHS.60, 65 and 70 for penetration details.) The west boundary is not adjacent to any other plant areas. The floor is adjacent to fire zone IB-FZ-4. (Ref. ATT.A. SH.81 for penetration details.) The ceiling is adjacent to fire zone IB-FZ-6. (Ref. ATT.A. SH.82 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-5 - 549 Btu/ft² (1 min)
- b. IB-FZ-1 - 8,925 Btu/ft² (7 min)
- c. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- d. IB-FZ-3 - 5,659 Btu/ft² (5 min)
- e. IB-FZ-4 - 9 Btu/ft² (0 min)
- f. IB-FZ-6 - 4,487 Btu/ft² (4 min)
- g. IB-FZ-8 - 0 Btu/ft² (0 min)

The combustibles in this zone are negligible. It is reasonable to assume that the fire brigade can reach the zone prior to cable fire propagating through an unsealed penetration due to the slow burning nature of a cable fire.

Construction features of the zone boundaries, the fire detection system, which alarms in the control room, the limited number of unsealed penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

6. IB-FZ-6 - El. 322'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north, south, and east boundaries are three hour rated fire barriers. The west boundary is not adjacent to any other plant area. The floor is adjacent to fire zones IB-FZ-1, IB-FZ-2, IB-FZ-3, and IB-FZ-5. (Ref. ATT.A. SH.83 for penetration details.) The ceiling is adjacent to fire zone IB-FZ-7. (Ref. ATT.A. SH.84 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-6 - $4,487 \text{ Btu/ft}^2$ (4 min)
- b. IB-FZ-1 - $8,925 \text{ Btu/ft}^2$ (7 min)
- c. IB-FZ-2 - $10,199 \text{ Btu/ft}^2$ (8 min)
- d. IB-FZ-3 - $5,659 \text{ Btu/ft}^2$ (5 min)
- e. IB-FZ-5 - 549 Btu/ft^2 (1 min)
- f. IB-FZ-7 - $2,650 \text{ Btu/ft}^2$ (2 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated.

Construction features of the zone boundaries, the limited number of penetrations, and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

7. IB-FZ-7 - El. 355'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The south and east boundaries are three hour rated fire barriers. The north and west boundaries and the ceiling are not adjacent to any other plant area. The floor is adjacent to fire zone IB-FZ-6. (Ref. ATT.A. SH.85, 86 and 87 for penetration details.) Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-7 - $2,650 \text{ Btu/ft}^2$ (2 min)
- b. IF-BZ-6 - $4,487 \text{ Btu/ft}^2$ (4 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated. It is reasonable to assume that the fire brigade can reach the zone prior to a fire propagating through an unsealed penetration.

Construction features of the zone boundaries and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

8. IB-FZ-8 - Alligator-Pit - El. 279' - 0"

Zone boundaries consist of reinforced concrete walls, floor and ceiling. Walls adjacent to the Reactor Building and Fuel Handling Building and ceiling adjacent to the Turbine Building are three hour rated fire barriers. The floor is not adjacent to any other plant area. The remainder of the ceiling is adjacent to fire zones IB-FZ-1, IB-FZ-2, IB-FZ-3 and IB-FZ-4. (Ref. ATT.A. SH.88 for penetration details.) The northwest boundary of this zone consists of a concrete wall which divides the Alligator Pit. The

area on the opposite side of this boundary is not analyzed as it is essentially empty. Combustible loadings on either side of each nonfire rated zone boundary are as follows:

- a. IB-FZ-8 - 0 Btu/ft² (0 min)
- b. IB-FZ-1 - 8,925 Btu/ft² (7 min)
- c. IB-FZ-2 - 10,199 Btu/ft² (8 min)
- d. IB-FZ-3 - 5,659 Btu/ft² (5 min)
- e. IB-FZ-4 - 9 Btu/ft² (0 min)

The combustibles in this zone are negligible.

Construction features of the zone boundaries and the combustible loadings on either side of the boundaries provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

* The above discussion which describes the features which are used to delineate the zone boundaries of the Intermediate Building adequately demonstrates the capability for the limiting of fire within the boundaries of each zone. As such, this legitimizes the TMI-1 plant fire hazards analysis concept to evaluate each zone by itself. We therefore maintain that the safety evaluation in Section 3.0 which identifies noncompliances with Section III G of Appendix R to 10CFR50 based upon this concept is valid.

III Intake Screen and Pump House

The Intake Screen and Pump House excluding the Diesel Fire Pump Room is classified as one fire area which has been subdivided into 3 zones for the purpose of analysis. Each fire zone is treated independently and analyzed as a fire area due to the construction features of its boundaries and/or existing and proposed active fire detection and suppression systems installed on either or both sides of the zone boundary. The following is a brief description of the zone boundaries for each zone, the zone's active fire protection features, and the combustible loadings on either side of the nonfire rated zone boundaries.

1. ISPH-FZ-1 - 1R SWGR Area - El. 308'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary will be upgraded to a three hour rated fire barrier with the exception of the bus duct internals. The east and south boundaries, and the ceiling are not adjacent to any other plant areas. The floor is adjacent to the intake pit, which has no combustible loading and is not analyzed. (Ref. ATT.A. SH.89 and 90 for penetration details.) The west boundary is adjacent to fire zone ISPH-FZ-3. Doorways are provided with "A" labelled doors. (Ref. ATT.A. SH.91 for penetration details.) Automatic wet pipe sprinklers are provided on both sides of the

boundary and a fire detection system which alarms in control room will be installed for this zone. Combustible loadings on either side of the non fire rated boundary are as follows:

- a. ISPH-FZ-1 - $15,854 \text{ Btu/ft}^2$ (12 min)
- b. ISPH-FZ-3 - 344 Btu/ft^2 (1 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated.

The construction features of the zone boundaries coupled with fixed suppression on both sides of the boundary, the fire detection system, which will alarm in the control room, the limited number of penetrations, and the combustible loadings on either side of the boundary provides reasonable assurance that a fire will not propagate from one side of the boundary to the other.

2. ISPH-FZ-2 - 1T SWGR Area - El. 308'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary is a three hour fire rated barrier

where adjacent to ISPH-FA-2; the remainder is not adjacent to any other plant area. The south boundary will be upgraded to a three hour rated fire barrier with the exception of the bus duct interval. The east boundary and the ceiling are not adjacent to any other plant areas. The floor is adjacent to the intake pit, which has no combustible loading and is not analyzed. (Ref. ATT.A. SH.92 and 93 for penetration details.) The west boundary is adjacent to fire zone ISPH-FZ-3 with two open passageways. (Ref. ATT.A. SH.94 and 95 for penetration details.) Automatic wet pipe sprinklers are provided on both sides of the boundary and a fire detection system which alarms in the control room will be installed in this zone. Combustible loadings on either side of the nonfire rated boundary are as follows:

- a. ISPH-FZ-2 - $16,020 \text{ Btu/ft}^2$ (12 min)
- b. ISPH-FZ-3 - 344 Btu/ft^2 (1 min)

The principal combustible in this zone is cable insulation. Should ignition of cable occur either electrically or due to transient combustibles, exposed cable in tray penetrations sealed with grout or koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seals are not fire rated.

The construction features of the zone boundary coupled with fixed suppression on both sides of the boundary, the fire detection

system, which will alarm in the control room, the limited number of penetrations, and the combustible loadings on either side of the boundary provide reasonable assurance that a fire will not propagate from one side of the boundary to the other.

3. ISPH-FZ-3 - Trash Rake and Screen Area - El. 308'

Zone boundaries consist of reinforced concrete walls, floor and ceiling. The north boundary is a three hour rated fire barrier where adjacent to ISPH-FA-2; the remainder is not adjacent to any other plant area. The south and west boundaries and the ceiling are not adjacent to any other plant area. The floor is adjacent to the intake pit, which has no combustible loading and is not analyzed. The east boundary is adjacent to fire zones ISPH-FZ-1 and ISPH-FZ-2 with "A" labelled doors provided where adjacent to fire zone ISPH-FZ-1. (Ref. ATT.A. SH.96 for penetration details.) Automatic wet pipe sprinklers are provided on both sides of each boundary. Combustible loadings on either side of the nonfire rate boundaries are as follows:

- a. ISPH-FZ-3 - 344 Btu/ft^2 (1 min)
- b. ISPH-FZ-1 - $15,854 \text{ Btu/ft}^2$ (12 min)
- c. ISPH-FZ-2 - $16,020 \text{ Btu/ft}^2$ (12 min)

The combustibles in this zone are negligible. Should ignition of cable occur either electrically or due to transient combustibles,

exposed cable in tray penetrations sealed with grout or koawool will preclude a slow burning cable fire from propagating through the zone boundary, although the seal is not fire rated.

The construction features of the zone boundary coupled with fixed suppression on both sides of the boundaries, a limited number of penetrations, and the combustible loadings on either side of the boundaries provide reasonable assurance that a fire will not propagate from one side of the boundary to the other.

- * The above discussion which describes the features both passive and active to delineate the zone boundaries of the Intake Screen and Pump House adequately demonstrates the capability for the limiting of fire within the boundaries of each zone. As such, this legitimizes the TMI-1 plant fire hazards analysis concept to evaluate each zone by itself. We therefore maintain that the safety evaluation in Section 3.0 which identifies noncompliances with Section III G of Appendix R to 10CFR50 based upon this concept to be valid.

IV Reactor Building

As with areas outside the Reactor Building, the updated fire hazards analysis for the TMI-1 Reactor Building, which was submitted with the

Appendix R Section III G Safe Shutdown Evaluation, utilized an identical delineation of fire zones as had initially been previously utilized under license Amendment 44 in analyzing the effects a fire would have on the plant's capability to safely shutdown. The delineation of fire zones, however, was not established considering the location of all safety related components with respect to each other. For the purposes of analysis, the Reactor Building, which is one fire area, was subdivided into fire zones taking into consideration the combustible loading in localized areas of the building. It is not possible to subdivide this building solely on the basis of physical boundaries combined with fixed fire suppression system prevalent in other fire zones in the plant as discussed in the justification for areas other than the Reactor Building.

Nevertheless, we maintain that the current delineation of fire zones is based upon sound technical judgment and is legitimate. It should be noted, however, that in identifying Appendix R Section III G non-compliances, the entire Reactor Building was considered one fire area. As a result, the legitimization of fire zones for the purposes of evaluating Appendix R noncompliances is not necessary. Any future modifications inside the Reactor Building will take this into consideration. However, as stated previously, we prefer to leave the current delineation of fire zones as is since they do represent points of reference for localized combustible loadings in the building. For the purpose of requesting specific exemptions from Appendix R Section IIIG

the current delineation of fire zones is also important since Section 1.2.1a of this report has requested an exemption from a requirement to install radiant energy heat shields between Reactor Building Emergency Cooling Units AH-E-1A, 1B and 1C in fire zone RB-FZ-1a. Considering the combustible loadings in each fire zone adjacent to fire zone RB-FZ-1a, we maintain that the exemption request based upon evaluating RB-FZ-1a by itself in this instance is valid.

1. Zones RB-FZ-1a, RB-FZ-1b and RB-FZ-1c - Elevation 281'
2. Zones RB-FZ-1d and RB-FZ-1e - D-Rings
3. Zone RB-FZ-2 - Elevation 308'
4. Zone RB-FZ-3 - Elevation 346'

To conclude, the Reactor Building was treated as one fire area for the purpose of evaluating Appendix R noncompliances. Noncompliances were not identified by evaluating each individual fire zone by itself with the exception of the Reactor Building Emergency Cooling units in Zone RB-FZ-1a. Note that modifications to eliminate Appendix R, Section IIIG noncompliances will remain listed on a zone by zone basis and the Fire Hazards Analysis will remain as is using the current delineation of fire zones. We therefore maintain that the safety evaluation conducted for the Reactor Building which identifies noncompliance with Section IIIG of Appendix R to 10CFR50 considering the Reactor Building as one fire area is acceptable.

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-1ELEVATION - 271'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 5'-0"REFERENCE DRAWINGS

E-422-013

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as AB-FZ-5	-	-	-	See AB-FZ-5 for Penetration details of this wall

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-1ELEVATION - 271'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Hallway Opening	8" x 8"	--	NONE	

ORIENTATION - West Wall

REFERENCE DRAWINGS

E-422-007

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit	3/4" ϕ	Same	Grouted	
Electrical Tray	10" x 1'-10" (2)	18" Tray	Sealed/Kaowool	
Door	3'-0" x 8'-0"	Same	Not Labeled	
Electrical Conduit	2-1/2" ϕ	Same	Grouted	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-2BCONSTRUCTION - Concrete BlockELEVATION - 281'-0"THICKNESS - 2'-0"ORIENTATION - West WallREFERENCE DRAWINGS

E-422-007

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit	3/4" ϕ	Same	Grouted	
Electrical Conduit	2" ϕ	Same	Grouted	
Electrical Conduit	3" ϕ	Same	Grouted	
Door	3'-0" x 8'-0"	Same	Not Labeled	
Blockout	10" x 2'-2"	None	Filled with Grout	- No Penetrating Service

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-2C**ELEVATION** - 281'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Concrete Block**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-422-007

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Tray	10" x 1'-0"	18" Tray	Sealed/Kaowool	
Door	3'-0" x 8'-0"	Same	Not Labeled	
Electrical Conduit	3/4" ϕ (6)	Same	Grouted	
Electrical Conduit	1-1/2" ϕ	Same	Grouted	
Electrical Conduit	2-1/2" ϕ	Same	Grouted	
Electrical Conduit	3" ϕ	Same:	Grouted	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-3ELEVATION - 281'-0"ORIENTATION - South WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-008

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Piping Blockout	2'-0" x 2'-0"	Unknown	Unknown	NOTE: Survey team could Not field verify the penetrating services through this Wall because of radiation levels.
Piping Blockout	2'-0" x 2'-6"	Unknown	Unknown	
HVAC Blockout	1'-7" x 2'-0"	Unknown	Unknown	
Core Drilled	6" ϕ (2)	Unknown	Unknown	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-3**ELEVATION** - 281'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-422-012

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Tray & Conduit	10" x 1'-10"	18" Tray 3/4" ϕ Conduit (2)	Grouted	
Electrical Tray & Conduit	10" x 1'-0"	6" Tray 1-3/4" ϕ Conduit	Grouted	
Electrical Tray	10" x 1'-10"	18" Tray	Grouted	
Blockout	1'-6" x 1'-10"	None	Grouted	
Piping	4" ϕ	2-1/2" ϕ	Kaowool	
Pipe	1-1/2" ϕ	Same	Embedded	
Sleeve	6" ϕ	None	Grouted	
Electrical Conduit & Tubing	6" ϕ	3/4" ϕ Conduit 1/2" ϕ Tube		
Sleeve	4" ϕ	None	Grouted	
Pipe	4" ϕ (3)	1" ϕ	Grouted	
Electrical Tray	10" x 10"	6" Tray	Grouted & Kaowool	
Electrical Tray	10" x 2'-2"	6" Tray (2)	Grouted & Kaowool	
Pipe & Electrical Conduit	1'-6" x 2'-10"	1/2" ϕ Conduit (3) 1" ϕ Pipe 2" ϕ Pipe 4" ϕ Pipe	Grouted	
Blockout	1'-6" x 2'-10"	None	Grouted	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-3ELEVATION - 281'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 5'-0"REFERENCE DRAWINGS

E-422-012

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	1'-6" x 2'-10"	1" ϕ (Cutoff) 4" ϕ	Grouted	
Electrical Tray	10" x 2'-10"	30" Tray	Grouted	
Electrical Tray	10" x 10	6" Tray	Kaowool	
Blockout	10" x 10"	None	Kaowool	
HVAC Duct	1'-7" x 2'-10"	1'-3" x 2'-6"	Grouted	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-3ELEVATION - 305'-0"ORIENTATION - CeilingCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeve	8"	Unknown	Unknown	Walk Down Team could not verify
Sleeve	4"	Unknown	Unknown	Walk Down Team could not verify
Sleeves	6" (3)	Unknown	Unknown	Walk Down Team could not verify
Blockout (Misc. Services)	2'-6" x 2'-6"	6" ϕ (2) Sleeves 3" ϕ Sleeve 2-1/2" ϕ Pipe 2-1/2" ϕ Pipe 1-1/2" ϕ Pipe 1/2" ϕ Conduit	Grouted Grouted Open Sealed Sealed Embedded	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-4**ELEVATION** - 305'-0"**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit & Tubing	10" x 1'-6"	2-1/2" ϕ Conduit 3/8" ϕ tubing (2)	Open	
Blockout (Misc Services)	10" x 2'-6"	8" ϕ Pipe w/ insulation 6" Tray 6" ϕ HVAC Duct	Open	
Electrical Conduit	4" ϕ	3" ϕ	Open	
Pipe	12" ϕ	8" ϕ	Open	
Electrical	3/4" ϕ	Same	Embedded	
HVAC Duct	22" ϕ	Same	Open	
Electrical Conduit	1-1/2" ϕ (2)	3/4" ϕ	Open	
Pipe	8" ϕ (3)	1-1/2" ϕ	Open	
Sleeves	4" ϕ (2)	None	Open	
Pipe	4" ϕ	1" ϕ (2)	Open	
Pipe	4" ϕ	1-1/2" ϕ	Open	
Grating with Conduit Penetrations	8'-10" x 4'-11"	3/4" Conduit (4)	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-5**ELEVATION** - 281'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0" & 2'-0"**REFERENCE DRAWINGS**

& Concrete Blockwall

E-422-007

ADJ to AB-FZ-2a, 2b, & 2C

E-422-012

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Column Line 6c to 7d	N/A	N/A	N/A	NOTE: The East Wall from Column Line 6c to 7d has no separation between AB-FZ-4 and AB-FZ-5
Column Line 7d to Between 8c & 9a Same as the Following Fire Zones: AB-FZ-2a AB-FZ-2b AB-FZ-2c	-	-	-	See AB-FZ-2a, 2b, & 2c for penetration details between Column Line 7d and between 8c & 9a
Column Line 9a to 11a (ADJ to FH-FZ-1)				
Pipe	1'-0" x 4'-0"	4" ϕ	Grouted	
Pipe	1'-0" x 1'-6"	2-1/2" ϕ	Grouted	
Electrical Conduit & Tubing	1'-6" x 3'-0"	3/4" ϕ Conduit (2) 1/2" ϕ Tubes (2)	Grouted	
Pipe	6" ϕ	1-1/2" ϕ	Grouted	
Electrical Conduit	4" ϕ	1-1/2" ϕ	Kaowool	
Pipe	1'-6" x 3'-0"	4" ϕ	Grouted	
Blockout	1'-6" x 3'-0"	None	Grouted	
Pipe	8" ϕ	3" ϕ	Grouted	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-5**ELEVATION** - 281'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete
& Concrete Blockwall**THICKNESS** - 5'-0" & 2'-0"**REFERENCE DRAWINGS**

ADJ to AB-FZ-2a, 2b, & 2C

E-422-007

E-422-012

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	2'-0" x 2'-6"	4" ϕ 3" ϕ 1-1/2" ϕ	Grouted	
Blockout	1'-6" x 3'-0"	None	Grouted	
Electrical Tray	1'-0" x 2'-5"	24" Tray	Open	
Electrical Tray	10" x 1'-10"	18" Tray	Kaowool	
Sleeves	8" ϕ (4)	None	Open	
Electrical Tray	10" x 2'-10"	24" Tray	Kaowool	
Pipe	8" ϕ	8" ϕ Pipe w/ insul.	Open	
Pipe	8" ϕ	2-1/2" ϕ	Open	
Pipe	8" ϕ	1" ϕ	Open	
Pipe	8" ϕ (3)	2" ϕ	Open	
Electrical Conduit	8" ϕ	3/4" ϕ	Open	
Pipe	8" ϕ	1-1/2" ϕ	Open	
Pipe	8" ϕ	2" ϕ	Open	
Pipe	8" ϕ	5" ϕ	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-5**ELEVATION** - 281'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-422-013

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated (Column Line) 10a to 11a	N/A	N/A	N/A	The West Wall from Column Line 10a to 11a was not evaluated since it is a 3 hr rated fire wall NOTE: The West Wall north of Column Line 6c is open to the pipe chase/tunnel
Column Line 6c to 10a				
Blockout	2'-8" x 3'-6"	None	Concrete	
HVAC Duct	2'-7" x 3'-5"	2'-0" x 3'-0"	Open	
Core Drill	6" ϕ	None	Grouted	
Electrical Tray & Conduit	1'-0" x 2'-10"	12" Trays (2) 3" ϕ Conduit 1-1/4" ϕ Conduit	Grouted	
Blockout	2'-8" x 3'-6"	None	Concrete	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-5ELEVATION - 305'-0"ORIENTATION - CeilingCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
-	-	-	-	See AB-FZ-7 for penetra- tion details of Ceiling of AB-FZ-5 that is adjacent to AB-FZ-7 (Floor)
-	-	-	-	See AB-FZ-6a for penetration details of Ceiling of AB-FZ-5 that is adjacent to AB-FZ-6a (Floor)
-	-	-	-	See AB-FZ-6 for penetra- tion details of ceiling of AB-FZ-5 that is adjacent to AB-FZ-6 (Floor)
-	-	-	-	See AB-FZ-8 for penetra- tion details of Ceiling of AB-FZ-5 that is adjacent to AB-FZ-8 (Floor)
-	-	-	-	See AB-FZ-9 for penetra- tion details of Ceiling of AB-FZ-5 that is adjacent to AB-FZ-9 (Floor)

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-6ELEVATION - 305'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as AB-FZ-7				<p>See AB-FZ-7 for wall penetration details</p> <p>NOTE: A portion of the East section of the North Wall adjacent to the Reactor Building was not evaluated since it is a 3 hr rated fire wall</p> <p>NOTE: East End of the North Wall is open to AB-FZ-7 therefore no separation exists between AB-FZ-6 and AB-FZ-7 for a portion of the North Wall</p>

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6**ELEVATION** - 305'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-113

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockout (Misc Services)	4'-8" x 12'-4"	3'-6" x 3'-6" HVAC Duct 4'-0" x 5'-0" HVAC Duct 24" Tray 8" ϕ HVAC Duct 6" ϕ Pipe (2) 3" ϕ Pipe (4) 2-1/2" ϕ Pipe (2) 1" ϕ Conduit (4) 1" ϕ Pipe (8) 2" Pipe	Open	
Electrical Tray	1'-0" x 1'-1"	6" Tray	Open	
Pipe	4" ϕ	2" ϕ	Open	
HVAC Duct	10" x 1'-2"	8" x 12" HVAC Duct	Open	
Blockout	6" x 2'-6"	Unknown	Open	Penetrating Service could not be varified by Walk Down Team
Pipe	8" ϕ	4" ϕ	Open	
Tubing	8" ϕ	1/2" ϕ Tube (3)	Open	
HVAC Duct	3'-11" x 4'-4"	3'-6" x 4'-0"	Open	
Pipe	4" ϕ	1" ϕ	Open	
Pipe	4" ϕ	2" ϕ	Open	
HVAC Duct	10" x 1'-2"	8" x 1'-0"	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6**ELEVATION** - 305'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-113

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Ducts	10" x 1'-2" (2)	8" x 1'-0"	Open	-
Pipes	8" ϕ (2)	2-1/2" ϕ	Open	
Pipe	4" ϕ	1-1/2" ϕ	Open	
Pipe	16" ϕ	12" ϕ	Open	
HVAC Duct	1'-0" x 1'-4"	8" x 12"	Open	
Electrical Conduit	11" x 1'-0"	2" ϕ 3/4" ϕ (3)	Open	
Blockout (HVAC Duct & Pipes)	1'-7" x 2'-9"	10" x 18" HVAC Duct 2" ϕ (3) 1-1/2" ϕ (2)	Open	
Electrical Tray & Conduit	2'-0" x 2'-1"	Trays (2) 3/4" ϕ (4)	Open	
Electrical Tray & Conduit	2'-1" x 3'-0"	24" Trays (2) 3/4" ϕ Conduit (4)	Grouted	
Blockout (Misc Service)	9'-0" x 10'-0"	1" ϕ Pipe 2" ϕ Pipe 3/4" ϕ Conduit (Vert.)	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6**ELEVATION** - 305'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0" & 2'-0"**REFERENCE DRAWINGS**

E-422-023

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated (Wall Between AB-FZ-6 & 6a)	N/A	N/A	N/A	The wall between AB-FZ-6 & 6a was not evaluated since at present (4/4/83) it does not exist.
Column Line 7d to 11d				
Blockout (Misc Services)	2'-6-1/2" x 8'-0"	3/4" ϕ Conduit (3) 1" ϕ Conduit (2) 3/8" ϕ Tubes (2) 3/8" ϕ Braided Coil Wire 1-1/4" ϕ Conduit (3) 2" ϕ Conduit (2) 3" ϕ Conduit (4) 3/4" ϕ Pipe 1-1/2" ϕ Pipe 2" ϕ Pipe	Open	
Pipe & Tube	8" ϕ	4" ϕ Pipe 3/8" ϕ Tube	Open	
Electrical Conduits	2" ϕ (8)	Same	Embedded with Caps	
HVAC Duct	3'-4" x 4'-4"	3'-0" x 4'-0" (2)	Open	
Pipe	1'-0" x 2'-6"	2" ϕ Pipe	Open	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-6ELEVATION - 305'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0" & 2'-0"REFERENCE DRAWINGS

E-422-023

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit & Pipe	1'-0" x 2'-6"	2-1/2" ϕ Pipe 1-1/2" ϕ Pipe (2) 3/4" ϕ Conduit (2)	Open	
Pipe	6" ϕ	1-1/2" ϕ	Grouted	
Electrical Conduit	11" x 1'-0"	3" ϕ 3/4" ϕ (4)	Open	
Blockout (Misc Services)	9'-0" x 10'-0"	3/4" ϕ Conduit (3) 1" ϕ Conduit (6) 1-1/2" ϕ Conduit (4) 2" ϕ Conduit (3) 2-1/2" ϕ Conduit (3) 3" ϕ Conduit (5) 2" ϕ Conduit (3) 1'-6" x 16" Box 2" x 2" Raceway	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6**ELEVATION** - 305'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as AB-FZ-3 & 4 (Ceiling)	-	-	-	See Ceiling of AB-FZ-3 & 4 for penetration details of AB-FZ-6 (Floor)
AB-FZ-6 Floor Adjacent to AB-FZ-5 (Ceiling)				
Pipe	8" ϕ	3" ϕ	Open	
Pipe	6" ϕ	1-1/2" ϕ	Open	
Sleeve	8" ϕ (2)	Unknown	Unknown	Could not be field verified by Walk Down Team due to radiation level
Sleeve	6" ϕ	Unknown	Unknown	
Blockout (Misc Services)	2'-0" x 5'-0"	6" Trays (2) 1" ϕ Pipe	Grouted	
Blockout (Misc Services)	2'-6" x 5'-6"	6" Tray 2'-0" Tray 30" Tray 3/4" ϕ Conduit 1" ϕ Conduit 1-1/2" ϕ Conduit 2" ϕ Conduit 3" ϕ Conduit 1-1/2" ϕ Pipe 2" ϕ Pipe	Grouted	
HVAC Duct	2'-5" x 3'-8"	2'-0" x 3'-6"	Open	

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as AB-FZ-7	-	-	-	See AB-FZ-7 for wall penetration details

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6a**ELEVATION** - 305'-0"**ORIENTATION** - South Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct	1'-2" x 1'-4"	10" x 12"	Open	
Electrical	11" x 1'-0"	3/4" ϕ (3) 1" ϕ (3)	Open	
Pipe	8" ϕ	4" ϕ	Open	
HVAC Duct	4'-1" x 4'-4"	3'-6" x 4'-0"	Open	
HVAC Duct	4'-4" x 5'-7"	4'-0" x 4'-6"	Open	
Doorway (Misc Services)	4'-6" x 8'-6"	3/4" ϕ Conduit (2) 1" ϕ Conduit (2) 1-1/2" ϕ Conduit 2" ϕ Conduit (3) 3" ϕ Conduit 3/4" ϕ Pipe 2" ϕ Pipe 1" ϕ Pipe 1/4" ϕ Tubes (8) 3/8" ϕ Tubes (2)	No Door	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6a**CONSTRUCTION** - Reinforced Concrete**ELEVATION** - 305'-0"**THICKNESS** - 3'-0"**ORIENTATION** - West Wall**REFERENCE DRAWINGS**

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct	5'-4" ϕ	5'-0" ϕ	Open	
Door win/(with Louvers)	3'-0-1/2" x 8'-0"	13-1/2" x 1'-6" (2)	Door (louvers open)	
Plywood Blockout 3/8" Thick (with Misc Services)	3'-0-1/2" x 1'-6"	1" ϕ Conduit (7) 2" ϕ Conduit (4) 3" ϕ Conduit (2) 3-1/4" ϕ Conduit (4) 3/4" ϕ Pipe (2) 1" ϕ Rubber Hose (2)	Open	
Pipe	8" ϕ	4" ϕ	Sealed with Duct Tape	
Electrical Conduit	2" ϕ	1" ϕ	Open	
Sleeves	2" ϕ (2)	None	Grouted	
Blockout	1'-0" x 1'-10"	None	Open	
Electrical Conduit	3/4" ϕ	3/4" ϕ	Embedded	
HVAC Duct	1'-2" x 1'-4"	10" x 12"	Sealed with Duct Tape	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-6a**ELEVATION** - 305'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	2" ϕ	Same	Embedded	
Tubing	4" ϕ	3/4" ϕ (4)	Open	
Blockout	1'-6" x 6'-0"	Same	Grouted	
Pipe	2" ϕ	None	Embedded	
Pipe	3" ϕ	1" ϕ	Open	
Tubing	6" ϕ	5/8" ϕ (3) 1/4" ϕ (8)	Open	
Electrical Conduit	2" (3)	Same	Embedded	
Electrical Conduit	1" (2)	Same	Embedded	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-7ELEVATION - 305'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct (with Louver)	2'-4" x 2'-4"	2'-0" x 2'-0"	Open	
Electrical Conduit	2'-0" x 2'-1"	3" ϕ (3) 1" ϕ (2) 1-1/2" ϕ	Open	
HVAC Ducts	2'-4" x 4'-4" (2)	2'-0" x 4'-0"	Open	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-7ELEVATION - 305'-0"ORIENTATION - South WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockout (HVAC Duct & Conduit)	4'-4" x 6'-1-1/2"	4" ϕ HVAC Duct 3/4" ϕ Conduit (2)	Open	
Electrical Conduit	1" ϕ	Same	Embedded	
Electrical	2" ϕ	1" ϕ	Open	
HVAC Duct	1'-7" x 4'-4"	15" x 4'-0"	Open	
Electrical Tray	11" x 2'-0"	18" Tray	Kaowool	
Pipe	18" ϕ	10" ϕ	Open	
Pipe	8" ϕ	4" ϕ	Open	
Electrical Tray	11" x 1'-6"	12" Tray	Kaowool	
Electrical Tray	11" x 1'-0"	6" Tray	Open	
Pipe	12" ϕ	8" ϕ	Open	
Electrical Tray	11" x 1'-0"	6" Tray	Kaowool	
Electrical	11" x 1'-0"	2" ϕ (2) 1-1/2" ϕ (4) 1" ϕ (2)	Open	NOTE: AB-FZ-7 is open to AB-FZ-6 at East End of South Wall

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-7**ELEVATION** - 305'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	12" ϕ	8" ϕ	Open	
Pipe	16" ϕ	12" ϕ	Open	
Pipe	24" ϕ	16" ϕ	Open	
Blockout (Misc Services)	10" x 3'-6"	2" ϕ Pipe 12" Tray 6" Tray 1" ϕ Conduit (2)	Grouted	
Pipe	2" ϕ	Same	Embedded	
Pipe	20" ϕ	16" ϕ	Open	
Pipe	4" ϕ	1" ϕ	Open	
Pipe	20" ϕ	16" ϕ	Open	
Pipe	1-1/2" ϕ	Same	Embedded	
Pipe	20" ϕ (2)	16" ϕ	Open	
Pipe	4" ϕ	1" ϕ	Open	
Pipe	6" ϕ	4" ϕ	Open	
Pipe	1-1/2" ϕ (3)	Same	Embedded	
Pipe	8" ϕ (2)	3" ϕ (2)	Open	
Pipe	6" ϕ	2" ϕ	Open	
Pipe	2" ϕ	Same	Embedded	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-8ELEVATION - 305'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-023

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeve	4" ϕ	None	Capped	
Pipes	4" ϕ (3)	2" ϕ (3)	Grout	
Pipe	6" ϕ	1" ϕ	Grout	
Electrical Conduit	2" ϕ	Same	Embedded Capped	
Pipe & Tubing	1'-0" x 2'-0"	2" ϕ Pipe 1/4" ϕ Tubes (3)	Grout	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-8**ELEVATION** - 305'-0"**ORIENTATION** - South Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-024

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct	1'-10" x 1'-10" (2)	1'-6" x 1'-6"	Open	

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-8**ELEVATION** - 305'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-000

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Doorway	2'-6" x 8'-0"	1-1/4" ϕ Conduit 3/8" Tubes (9)	Open (No Door)	
Electrical	1" ϕ (2)	Same	Embedded	
Sleeves (Conduits)	4" ϕ (2)	None	Plugged & Capped Both Sides	
HVAC Duct	1'-10" x 2'-4"	1'-6" x 2'-0"	Open	
Sleeves (Conduit)	4" ϕ (2)	None	No Plugs or Caps on West Side of East Wall	- East Side Could Not Be Confirmed By Walk Down Team

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-8ELEVATION - 305'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
None	N/A	N/A	N/A	There are no penetrating services through the West Wall of AB-FZ-8

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-8ELEVATION - 305'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-422-018

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	4" ϕ (3)	1" ϕ	Open	

BUILDING - Auxiliary BuildingFIRE ZONE - AB-FZ-9ELEVATION - 305'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 5'-0" & 3'-0"REFERENCE DRAWINGS

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSION	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Between Column Line N & M (Not Evaluated)	N/A	N/A	N/A	The North Wall between Column Lines N & M was not evaluated since it is exposed to the exterior
Between Column Line M & L Same as AB-FZ-7	-	-	-	The North Wall between Column Lines M & L is the same as the South Wall of AB-FZ-7 see AB-FZ-7 South Wall for penetrations
Between Column Line L & K Same as AB-FZ-6a	-	-	-	See South Wall of AB-FZ-6a for details of penetrations through the North Wall of AB-FZ-9 for between Column Lines L & K

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-9**ELEVATION** - 305'-0"**ORIENTATION** - East Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
North of Column Line 6c Not Evaluated	N/A	N/A	N/A	The East Wall North of Column Line 6c was not evaluated since it is exposed to the exterior
Between Column Lines 6c & 6d Same as AB-FZ-7	-	-	-	See AB-FZ-7 (West Wall) for details of penetrations of East Wall between Column Lines 6c and 6d
Between Column Lines 6d & 7d Same as AB-FZ-6a	-	-	-	See AB-FZ-6a (West Wall) for details of penetrations of East Wall between Column Lines 6d and 7d
Between Column Lines 7d and 11a Same as AB-FZ-6	-	-	-	See AB-FZ-6 (West Wall) for details of penetrations of East Wall between Column Lines 7d and 11a

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-9**ELEVATION** - 305'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Tray	10" x 1'-4"	12" Tray	Grouted	- Penetrations through Cover Plate are not sealed
Electrical Tray	10" x 10"	6" Tray	Grouted	
Pipe	8" ϕ (2)	4" ϕ	Open	
Blockout (Misc Service)	6'-0" x 6'-0"	3/8" ϕ Tube (2) 2'-0" ϕ HVAC Duct	1/4" Cover Plate	
Pipe	2" ϕ	Same	Embedded	
Blockout (Misc Services)	2'-0" x 2'-0"	3/8" ϕ Tubes (7) 1-1/2" ϕ Pipe 1/2" ϕ Conduit	Open	No Accessibility Due to Radiation Level - Walk Down Team Could Not Verify
Pipe	4" ϕ (2)	1" ϕ	Open	
Pipe	6" ϕ	2" ϕ	Open	
Pipe	1'-6" x 2'-0"	4" ϕ	Open	
Sleeve	4" ϕ	Unknown	Unknown	
Sleeve	6" ϕ	Unknown	Unknown	
Blockout	1'-0" x 2'-0"	Unknown	Unknown	
Sleeves	8" ϕ (2)	Unknown	Unknown	
HVAC Duct	2'-5" x 2'-8"	2'-0" x 3'-6"	Open	
Pipe	3" ϕ	2" ϕ	Open	
Pipe	8" ϕ	2-1/2" ϕ	Open	- (In Hatch Cover)

BUILDING - Auxiliary Building**FIRE ZONE** - AB-FZ-9**ELEVATION** - 305'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-422-018

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	6" ϕ	1-1/2" ϕ	Open	
Pipe & Tubes	6" ϕ	1" ϕ Pipe (2) 5/8" ϕ Tubes (3) 1/2" ϕ Tubes (8)	Open	
Electrical Tray	1'-0" x 1'-6"	12" Tray	Grouted	
Blockout (Conduit)	1'-0" x 1'-6"	1" ϕ 1-1/2" ϕ (3) 3" ϕ (4)	Open	
HVAC Duct	4'-1" x 4'-2"	3'-9" x 3'-9"	Open	
Pipe	1'-6" x 2'-0"	4" ϕ	Open	
Pipe	4" ϕ (2)	1" ϕ	Open	
Pipe	6" ϕ	2" ϕ	Open	
Blockout (Misc Services)	2'-0" x 2'-0"	3/8" ϕ Tubes (7) 1/2" ϕ Conduit 1-1/2" ϕ Pipe	Open	
Unknown Sleeves	8" ϕ (2)	None	Covered with Plastic Radiation Blanket	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-1**ELEVATION** - 271'-0" & 281'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-422-012

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as the Following Fire Zones: AB-FZ-3 AB-FZ-5	-	-	-	See AB-FZ-3 & AB-FZ-5 for details of services penetrating this wall NOTE: (There is no wall separating FH-FZ-1 and AB-FZ-4)

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-1**CONSTRUCTION** - Reinforced Concrete**ELEVATION** - 305'-0"
(Floor Elev.)
THICKNESS - 3'-0"**ORIENTATION** - Ceiling**REFERENCE DRAWINGS**

E-421-108

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	12" ϕ (4)	8" ϕ	Open	
Pipe	6" ϕ (2)	2-1/2" ϕ	Open	
HVAC Duct	1'-4" x 1'-5"	12" x 12"	Open	
Blockout	1'-2" x 1'-2"	Same	Sealed	
Pipe	16" ϕ	12" ϕ	Open	
HVAC Duct	2'-4" x 4'-4"	2'-0" x 4'-0"	Open	
Blockouts	1'-2" x 1'-2" (2)	Same	Sealed	
Pipe	8" ϕ (2)	4" ϕ	Open	
Electrical Tray & Conduit	10" x 5'-0"	3/4" ϕ Conduit 2'-0" Tray (2) 1" ϕ Conduit (5) 2" ϕ Conduit	Grouted	
Electrical Tray & Conduit	10" x 1'-4"	1" ϕ Conduit 12" Tray	Grouted	
Pipe	14" ϕ (2)	12" ϕ w/ insul	Open	
Sleeves	8" ϕ (2)	Same	Capped Cover Plate	
Cable	1'-0" x 2'-6" (2)	25% Cable Fill	Kaowool	
Cable	1'-0" x 2'-6" (2)	50% Cable Fill	Kaowool	
Cable	1'-0" x 1'-6"	50% Cable Fill	Kaowool	

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-1ELEVATION - 305'-0"
(Floor Elev.)ORIENTATION - CeilingCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-108

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Elevator Shaft	13'-8" x 9'-2"	Same	Elevator Doors Sealed	- Elevator Door Fire Rating Not Confirmed
Ventilating Chase w/Misc. Services	18'-0" x 19'-0"	5'-8" x 2'-0" Duct 5'-0" x 4'-2" Duct 3'-6" x 1'-8" Duct 3/4" ϕ Conduit (4) 1" ϕ Conduit (7) 4" ϕ Pipe 2" ϕ Conduit 4" ϕ Conduit 6" Tray 1" ϕ Pipes (3) 2" ϕ Pipe 3/4" ϕ Conduit (2) 2-1/2" ϕ Conduit (2) 1/2" ϕ Pipe 2-1/2" ϕ Pipe (2) 1-1/2" ϕ Conduit 2" ϕ Conduit P1000 Unistruts (8) 1-1/2" x 1-1/2" Angles (2)	Open	- Chase Above Elevations Sealed with Sheet Metal

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**ELEVATION** - 305'-0" - 331'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-421-113

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated (South of Column Line 11d)	N/A	N/A	N/A	The West Wall (South of Column Line 11a) was not evaluation since it is exposed to the outside
Column Line 7d to 11d See AB-FZ-6	-	-	-	See AB-FZ-6 for wall penetration details of the West Wall of FH-FZ-2
Column Line 6d to 7d Same as AB-FZ-6	-	-	-	See AB-FZ-6 for wall penetration details of West Wall of FH-FZ-2 between Column Lines 6d and 7d

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-2ELEVATION - 305'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 2'-0" & 3'-6"REFERENCE DRAWINGS

E-421-114

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (if ANY)	NOTES
Not Evaluated	N/A	N/A	N/A	The North Wall was not evaluated since it is a 3 hr rated fire wall
Adjacent to FH-FZ-1 (Chase)	14" ϕ	10" ϕ	Open	- North Wall adjacent to FH-FZ-1
HVAC Duct & Conduit	1'-2' x 1'-8"	1'-0" x 1'-6" HVAC Duct 2" ϕ Conduit	Open	
Electrical Tray & Conduit	11" x 1'-0"	6" Tray 2" ϕ Conduit		
Blockout (Misc Services)	2'-6" x 3'-2"	18" x 18" HVAC Duct 2" ϕ Pipe (2) 1-1/2" ϕ Conduit 3" ϕ Conduit 1-1/2" ϕ Pipe 1/2" Tubes (3)	Open	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**ELEVATION** - 305'-0" to
409'-0"**ORIENTATION** - South Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-421-113

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated 305'-0" to 348'-0"	N/A	N/A	N/A	The South Wall was not evaluated since it is a 3 hr rated fire wall from 305'-0" to 348'-0"
Not Evaluated 348'-0" to 409'-0"	N/A	N/A	N/A	The South Wall was not evaluated since it is exposed to the Unit 2, fuel pool and there are no penetrations
For FH-FZ-2 North of Column Line 7d				Adjacent to FH-FZ-4 (fuel pool area) no penetrations
Sleeve	6" ϕ	Unknown	Unknown	Verification could not be made by Walk Down Team
Blockout (HVAC)	5'-2" x 9'-6"	4'-0" x 2'-6" 4'-0" x 5'-0"	Open	
Pipe	6" ϕ (2)	4" Pipe	Open	
Sleeves	6" ϕ (3)	None	Open	
Pipes	8" ϕ (2)	4" ϕ	Open	
Blockout (Pipes)	2'-0" x 4'-6" 2-1/2" ϕ Sleeve 3" ϕ Sleeve 4" ϕ Sleeve 3" ϕ	3/4" ϕ Pipe 1" ϕ Pipe (2) 1" ϕ Pipe (2) 1/4" ϕ Pipe	Grouted	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**ELEVATION** - 305'-0" - 409'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-108

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as FH-FZ-1 (Ceiling)	-	-	-	See AB-FZ-1 (Ceiling) for penetration details
Blockout w/ Misc Services	6'-6" x 15'-6"	3/4" ϕ Conduit (10) 1-1/2" ϕ Conduit (7) 10" ϕ Pipe w/ insul 2" ϕ Pipe (5) 2-1/2" ϕ Conduit (2) 1" ϕ Conduit (6) 1-1/4" ϕ Conduit (2) 4" ϕ Conduit (4) 1-3/4" ϕ Conduit (1) 12" ϕ Pipe (1) 1/2" ϕ Pipe (1) 4" ϕ Pipe (2) 2" ϕ Conduit (3) 3" ϕ Conduit (2) 16" ϕ Air Duct 5'-0" x 2'-6" Air Duct	Open	For FH-FZ-2 adjacent to Control Building CB-FA-1 at El. 305'-0" see below

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-2ELEVATION - 305'-0" - 409'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-108

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockout w/Misc Services	4'-0" x 15'-6"	3/4" ϕ Conduit (2) 1" ϕ Conduit 3" ϕ Conduit (4) 1-1/4" ϕ Conduit 4" ϕ Pipe 1" ϕ Pipe	Open	Grating with 1/8" thick plate over opening (clean clothing barrel storage)
Electrical Conduit	5" ϕ	4" ϕ	Open	
Electrical Conduit	2" ϕ (3)	1-1/2" ϕ	Open	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**CONSTRUCTION** - Reinforced Concrete

322'-0" (Floor Elev.) & 329'-0" (Floor Elev.)
ELEVATION - 409'-0" (Floor Elev.)
THICKNESS - 5'-0" (409'-0")
 18" (322'-0")
 2'-0" (339'-0")

ORIENTATION - Ceiling**REFERENCE DRAWINGS**

E-421-209 (ADJ to
 CB-FA-1) Floor
 El. 322'-0"
 (PAGE 1 OF 4)

PENETRATIONS

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated	N/A	N/A	N/A	The Ceiling was not evaluated since it is exposed to the exterior See below for Ceiling penetrations in FH-FZ-2 adjacent to CB-FA-1 at floor El. 322'-0"
Electrical Conduit	3" ϕ	1-1/2" ϕ	Open	
Blockout w/Misc Service	1'-0" x 2'-0"	4" ϕ Pipe (3) 3" ϕ Conduit 1" ϕ Conduit (2) 3/4" ϕ Conduit (2) 1" ϕ Pipe (2)	Open	
Blockout (Conduit)	1'-6" x 9'-6"	2" ϕ Conduit 1-1/2" ϕ Conduit (2) 3/4" ϕ Conduit (3)		
Core Drill (Conduit)	5" ϕ	4" ϕ Conduit	Open	
Core Drill (Conduit)	1-1/2" ϕ	1" ϕ Conduit	Open	
HVAC Duct	3'-6" x 5'-5"	2'-0" x 5'-0"	Open	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**CONSTRUCTION** - Reinforced Concrete

322'-0" (Floor Elev.) & 329'-0" (Floor Elev.)

ELEVATION - 409'-0"

5'-0" (409'-0")

THICKNESS - 5'-0" (409'-0")

18" (322'-0")

2'-0" (339'-0")

ORIENTATION - Ceiling**REFERENCE DRAWINGS**

E-421-209 (ADJ to

CB-FA-1) Floor

El. 322'-0"

(PAGE 2 OF 4)

PENETRATIONS

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockout w/Misc Services	1'-6" x 2'-0"	10" ϕ Pipe w/insul (2) 2" ϕ Pipe 1-1/2" ϕ Conduit 1-1/4" ϕ Conduit (2) 1" ϕ Conduit (2) 3/4" ϕ Conduit (2)	Open	
Electrical Conduit	4" ϕ	Same	Embedded	
Electrical Conduit	2" ϕ	Same	Embedded	
Core Drill (Conduit)	4" ϕ	2-1/2" ϕ Conduit	Open	
Core Drill (Conduit)	2" ϕ	1" ϕ Conduit (3)	Open	
Electrical Conduit	1" ϕ	Same	Embedded	
Electrical Conduit	2-1/2" ϕ	Same	Embedded	
Core Drill (Conduit)	2-1/2" ϕ	1-1/2" ϕ Conduit	Open	
Blockout w/Misc Service	18" x 6'-6"	16" x 3'-6" Duct 30" Tray 1" ϕ Conduit	Grouted	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**CONSTRUCTION** - Reinforced Concrete

322'-0" (Floor Elev.) & 329'-0" (Floor Elev.)

ELEVATION - 409'-0"

(Floor Elev.)

THICKNESS - 5'-0" (409'-0")

18" (322'-0")

2'-0" (339'-0")

ORIENTATION - Ceiling**REFERENCE DRAWINGS**E-421-209 (ADJ to
CB-FA-1) Floor

El. 322'-0"

(PAGE 3 OF 4)

PENETRATIONS

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Core Drill (Conduit)	3" ϕ (5)	2" ϕ	Open	
Core Drill (Conduit)	4" ϕ (3)	3" ϕ	Open	
Core Drill (Conduit)	5" ϕ (2)	4" ϕ	Open	
Core Drill (Conduit)	4" ϕ	2-1/2" ϕ	Open	
Core Drill (Conduit)	3" ϕ (3)	1-1/2" ϕ	Grouted	
Core Drill (Conduit)	3" ϕ	2-1/2" ϕ	Open	
Core Drill (Conduit)	5" ϕ	3" ϕ	Open	
Core Drill (Conduit)	4" ϕ	3" ϕ	Sealed	
Core Drill (Conduit)	3" ϕ	2" ϕ	Open	
Core Drill (Conduit)	2" ϕ (2)	3/4" ϕ	Sealed	
Blockout w/Misc Services	1'-0" x 6'-6"	12" Tray 30" Tray 18" Tray 2" ϕ Conduit (3) 3/4" ϕ Conduit	Grouted Grouted Open Grouted Open	
HVAC Duct	3'-0" x 5'-0"	2'-9" x 4'-8"	Sealed with Sheet Metal	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-2**CONSTRUCTION** - Reinforced Concrete

322'-0" (Floor Elev.) & 329'-0" (Floor Elev.)

ELEVATION - 409'-0"

(Floor Elev.)

THICKNESS - 5'-0" (409'-0")

18" (322'-0")

2'-0" (329'-0")

ORIENTATION - Ceiling**REFERENCE DRAWINGS**

E-421-209 (ADJ to

CB-FA-1) Floor

El. 322'-0"

(PAGE 4 OF 4)

PENETRATIONS

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Core Drill (Conduit)	3" ϕ	1-1/2" ϕ Conduit	Sealed	
Core Drill (Conduit)	5" ϕ	3" ϕ Conduit	Sealed	
Blockout w/Misc Services	2'-0" x 11'-6"	30" Tray (2) 1" ϕ Conduit 3/4" ϕ Conduit (3)	Grouted	
HVAC Duct	7'-0" x 7'-0"	6'-6" x 6'-6"	Sealed with 1/16" Plate	
Core Drill (Conduit)	3" ϕ (2)	1-1/2" ϕ Conduit	Sealed	
Core Drill (Conduit)	5" ϕ	3" ϕ Conduit	Sealed	
Core Drill (Conduit)	3" ϕ	2" ϕ Conduit	Sealed	
				NOTE: For penetrations in ceiling of FB-FZ-2 at Floor El. 329'-0" adjacent to FB-FZ-3 - (see FB-FZ-3 Floor)

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-3ELEVATION - 329'-0" & 331'-0"ORIENTATION - North WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 5'-0"REFERENCE DRAWINGS

E-421-118

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves	6"φ	Unknown	Not Known	Penetrations through the North Wall could not be varified by the Walk-Down Team due to radiation levels.

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-3**ELEVATION** - 329'-0" & 331'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	14"φ	8"φ	Open	
Pipe	10"φ	4"φ	Open	
Blockout w/misc services	8'-6" x 11'-0"	12" trays (2) 2-1/2"φ conduit 1"φ conduit (6) 3/4"φ conduit 1"φ pipe 2-1/2"φ pipe 4"φ pipe	Open	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-3**ELEVATION** - 329'-0" & 331'-0"**ORIENTATION** - South Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-117

E-421-118

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Adjacent to Elevator Shaft FZ-FZ-1	5'-9" x 9'-0"	<u>Door</u> Same	1-1/2 Hr Labeled Fire Door	
Adjacent to FH-FZ-2	3'-5" x 7'-5 1/4"	<u>Door</u> Same	Door not Labeled	

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-3ELEVATION - 348'-0"ORIENTATION - CeilingCONSTRUCTION - Reinforced ConcreteTHICKNESS - 2'-0"REFERENCE DRAWINGS

E-421-117

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Embedments	4"φ (7)	Same	Caps	
Pipe	6"φ	1-1/2"φ	Open	
Electrical Conduit	2-1/2"φ (2)	Same	Embedded	
Electrical Conduit	2"φ (3)	Same	Embedded	
Electrical Conduit	1-1/2"φ (4)	Same	Embedded	
Electrical Conduit	3/4"φ	Same	Embedded	
Electrical Conduit	1"φ (2)	Same	Embedded	
Pipe	6"φ	1-1/2"φ pipe 3/4"φ pipe	Open	
Grating	12'-0" x 15'-0"	Same	Open	
Grating	13'-0" x 22'-0"	Same	Open	

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-4**ELEVATION** - 305'-0" & 348'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

E-421-117

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
At El. 348'-0" Same as Ceiling of FB-FZ-3	-	-	-	See FB-FZ-3 (Ceiling) for penetration details at operating floor El. 348'-0"
At El. 305'-0" (Bottom of Fuel Pool) No penetrations	None	None	N/A	No penetrations of bottom of Fuel Pool

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-4ELEVATION - 305'-0" to 400'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 5'-0"REFERENCE DRAWINGS

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves (at El. 322'-0")	(6) 5"φ	Same	Embedded (Open)	(At El. 322'-0" Fuel Pool Wall)
HVAC Duct	Not Known	3'-0" x 8'-0"	Not Known	At El. 380'-0" (could not confirm blackout dimensions and sealant).

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-5**ELEVATION** - 322'-0" to 400'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 5'-0"**REFERENCE DRAWINGS**

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves (at El. 322'-0")	(6) 5"φ	Same	Embedded (Open)	(at El. 322'-0") in Fuel Pool Wall (South End)
HVAC Duct (at 380'-0")	Not Known	3'-0" x 8'-0"	Not Known	El. 380'-0" Could not confirm blackout dimension & sealant

BUILDING - Fuel Handling BuildingFIRE ZONE - FH-FZ-5ELEVATION - 322'-0" to 400'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 2'-0"REFERENCE DRAWINGS

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated Below 380'-0"	N/A	N/A	N/A	The East Wall below El. 380'-0" was not evaluated since it is a 3 hr rated Fire Wall
Same as CB-FZ-5a & CB-FZ-5b				For East Wall at elevation 380'-0" see CB-FZ-5a & CB-FZ-5b for penetrations through the wall

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-5**ELEVATION** - 322'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-209

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as FB-FZ-2 Ceiling adjacent to CB-FZ-1	-	-	-	See FB-FZ-2 (Ceiling) adjacent to CB-FZ-1 for details of penetrations through floor at El. 322'-0"

BUILDING - Fuel Handling Building**FIRE ZONE** - FH-FZ-6**ELEVATION** - 305'-0"**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-108

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as FH-FZ-2 (Floor)	-	-	-	See FH-FZ-2 (Floor) for details of penetrations through the ceiling of this fire zone

BUILDING - Control BuildingFIRE ZONE - CB-FZ-5AELEVATION - 380'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-222

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct	2'-0" x 2'-0"	18" x 18"	Bisco	
Pipe	8" ϕ	3" ϕ	Open	
HVAC Duct	2'-2" x 1'-0"	Same	Bisco	
Sheet Metal Panel (with Door & Block-outs) & Conduit Penetrations	10'-0" x 15'-0" (2-1/4" Thick)	3'-0" x 7'-0" Door 24" x 24" Louvered Vent	Not Rated No Fire Damper	
		<u>Blockout</u> 6" Tray (2)	Open	NOTE: Metal Panel Not Fire Rated
		<u>Blockout</u> 1-1/2" ϕ Conduit (2) 2" ϕ Conduit 3" ϕ Conduit	Bisco	
		<u>Blockout</u> 2" ϕ Conduit 1-1/2" ϕ Conduit 1" ϕ Conduit 3/4" ϕ Conduit	Bisco	
		1-1/2" ϕ Conduit (2)	Open	

BUILDING - Control BuildingFIRE ZONE - CB-FZ-5BELEVATION - 380'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-222

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
HVAC Duct	2'-0" x 2'-0"	18" x 18"	Open	
Pipe	8" ϕ	3" ϕ	Kaowool	
Sheet Metal Panel (with Blockouts & Door) & Conduit Penetrations	10'-0" x 15'-0" (2-1/4" Thick)	3'-0" x 7'-0" 24" x 24" Louvered Vent 2" ϕ Conduit <u>Blockout</u> 6" Tray (2) 3/4" ϕ Conduit 3" ϕ Conduit 3/4" ϕ Conduit 1" ϕ Conduit 1-1/2" ϕ Conduit	Not Rated No Fire Damper Open Kaowool in Openings within Blockout	Blockout Grouted

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-1**ELEVATION** - 295'-0"**ORIENTATION** - North Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-305

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit	2'-0" x 1'-0"	3" ϕ	Open	
Doorway (295'-0")	3'-4-1/2" x 8'-0"	Same	Open	No Door Installed
Doorway (305'-0")	3'-4-1/2" x 7'-4-1/4"	Same	Door (3 Hr)	3 hr Labeled Door Installed
Blockout (Pipe & Conduit)	2'-6" x 3'-0"	18" ϕ Pipe 3" ϕ Conduit 1" ϕ Conduit 3/4" ϕ Conduit	Open	
Conduit	1'-0" x 2'-0"	3" ϕ 2" ϕ 1-1/2" ϕ	Open	
Pipe	1'-0" x 2'-0"	1" ϕ (2)	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-1**ELEVATION** - 295'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-305

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves (4)	3"	Same	Plugged	
Electrical Conduit	1'-0" x 2'-0"	1" ϕ (2)	Open	
Electrical Conduit	1'-0" x 2'-0"	1" ϕ 3/4" ϕ (2)	Open	
Electrical Conduit	3/4" ϕ	Same	Embedded	
Electrical Conduit	3/4" ϕ	Same	Embedded	
Electrical Conduit	1'-0" x 2'-0"	3/4" ϕ (2) 1-1/2" ϕ (3)	Open	
Pipe & Tubing	2'-0" x 2'-2"	1" ϕ (3) Pipe 3/8" ϕ (2) Tubing	Open	
Blockout Conduit	2'-0" x 3'-0"	Same	Open	
Electrical Conduit	2'-0" x 3'-0"	1-1/2" ϕ	Open	
Blockout	11" x 1'-0"	Same	Open	
Blockout	1'-0" x 3'-0"	Same	Open	
Electrical Tray & Conduit	11" x 1'-6"	1" ϕ Conduit 3" ϕ Conduit 6" Tray	Grouted	
Pipe & Electrical Conduit	2'-0" x 2'-0"	1" ϕ Conduit 1-1/2" ϕ Pipe	Open	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-1ELEVATION - 295'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-304

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as West Wall of IB-FZ-2	-	-	-	See West Wall of IB-FZ-2 for details of wall penetrations

ORIENTATION - Floor

REFERENCE DRAWINGS

E-421-302

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	10" ϕ	4" ϕ	Open	
Pipe	10" ϕ	4" ϕ	Open	
Electrical Conduit	3-1/2" ϕ	3-1/2" ϕ	Embedded	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-1ELEVATION - 322'-0"
(Floor Elev.)ORIENTATION - CeilingCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-3"REFERENCE DRAWINGS

E-421-309

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	12" ϕ	2" ϕ	Open	
Tubing	12" ϕ	1/4" ϕ (4)	Open	
Pipe	1'-6" x 3'-0"	2" ϕ (2) 1-1/2" ϕ (2)	Open	
Blockout	1'-0" x 1'-0"	Same	Open	
Electrical Conduit	8" ϕ	1-1/4" ϕ 2" ϕ	Open	
Pipe	8" ϕ	1" ϕ (2)	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-2**ELEVATION** - 295'-0"**ORIENTATION** - North Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-305

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Doorway (295'-0")	3"-4-1/2" x 8'-0"	Same	Open	No Door Installed
Doorway (305'-0")	5'-0" x 8'-0"	Same	3 Hr Labeled Door	
Pipe & Tubing	1'-0" x 2'-0"	1" ϕ Pipe 3/8" ϕ Tube (2)	Open	
Blockout	1'-0" x 2'-0"	Same	Open	
Electrical Conduit & Pipe	1'-0" x 1'-6"	1" ϕ Pipe 1" ϕ Conduit	Open	
Pipe	1'-6" x 2'-0"	6" ϕ	Open	
Pipe	2'-0" x 2'-0"	10" ϕ	Open	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-2ELEVATION - 295'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-304

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as West Wall of IB-FZ-3	N/A	N/A	N/A	See West Wall of IB-FZ-3 for details of wall penetrations

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-2**ELEVATION** - 295'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-304

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	2'-0" x 3'-0"	1" ϕ	Open	
Blockout	2'-0" x 3'-0"	Same	Open	
Electrical Tray & Conduit	11" x 1'-0"	6" Tray 1" ϕ Conduit	Grouted	
Blockout	1'-0" x 1'-6"	Same	Open	
Electrical Tray & Conduit	1'-6" x 2'-1"	6" Tray 1" ϕ Conduit 12" Tray	Grouted	
Electrical Tray & Conduit	2'-7" x 4'-0"	12" Tray 1" ϕ Conduit	Open	
Electrical Conduit	2" ϕ (2)	2" ϕ	Embedded	
Electrical Conduit	1-1/2" ϕ (4)	1-1/2" ϕ	Embedded	
Core Drilled Holes	1-1/4" ϕ (2)	1-1/4" ϕ	Concrete Plugged	
Door	3'-4-1/2" x 8'-0"	Same	No Label on Door	
Electrical Trays	1'-0" x 2'-1"	6" Tray (2)	Grouted	
Pipe	2'-0" x 2'-0"	1" ϕ 1-1/2" ϕ (2)	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-2**ELEVATION** - 322'-0"
(Floor Elev.)**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-3"**REFERENCE DRAWINGS**

E-421-309

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit	4" ϕ	1-1/2" ϕ	Embedded/ Capped Sleeve	
Sleeve	4" ϕ	Same	Embedded/ Capped Sleeve	
Pipe	12" ϕ	2-1/2" ϕ	Open	
Tubing	1'-0" x 1'-0"	3/8"	Open	
Pipe	2'-6" x 4'-6"	18" ϕ w/insulation 10" ϕ 3" ϕ	Open	
Pipe	16" ϕ	10"	Open	
Pipe	16" ϕ	10"	Open	
Pipe	18" ϕ	10"	Open	
Cable Tray	4'-2" x 1'-6"	6" Tray (2) 12" Tray	Grouted	
Pipe	4'-6" x 2'-6"	10" ϕ w/insulation 18" ϕ w/insulation	Open	
HVAC Duct	10" x 10"	6" ϕ	Open	Dwg Shows 8" Pipe Sleeve Instead of 10" x 10" Blockout
Pipe	18" ϕ	5" ϕ w/insulation	Open	
Pipe	10" x 10" ϕ	8" ϕ w/insulation	Open	Dwg Shows 8" Pipe Sleeve Instead of 10" x 10" Blockout
Pipe	16" ϕ	8" ϕ w/insulation	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-3**ELEVATION** - 295'-0"**ORIENTATION** - North Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-305

PENETRATIONS

(PAGE 1 OF 2)

FENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Tubing	1'-0" x 2'-0"	1/2" ϕ	Grouted	
Pipe	1'-0" x 2'-0"	2" ϕ	Grouted	
Blockout	1'-0" x 2'-0"	Same	Open	
Pipe	1'-0" x 2'-0"	1" ϕ 1-1/4" ϕ (3)	Open	
Conduit	2'-1" x 2'-4"	2" ϕ 3" ϕ (2)	Open	
Doorway (305'-0")	5'-0" x 8'-0"	Same	3 Hr Labeled Door	
Electrical Tray & Conduit	1'-2" x 2'-0"	1/2" ϕ (3) Conduit 1" ϕ Conduit 1-1/2" ϕ (2) Conduit 6" Tray	Open	
Doorway (295'-0")	3'-4-1/2" x 8'-0"	Same	Open	No Door Installed
Pipe	1'-0" x 2'-0"	2" ϕ	Open	
Doorway (295'-0")	3'-4-1/2" x 8'-0"	Same	Open	No Door Installed
Pipe	2'-0" x 2'-0"	10" ϕ	Open	
Doorway (305'-0")	5'-0" x 8'-0"	Same	3 Hr Labeled Door	
Electrical Conduit	1'-0" x 2'-0"	1" ϕ	Open	
Pipe	1'-0" x 2'-0"	1" ϕ	Open	
Doorway (305'-0")	3'-4-1/2" x 7'-4-1/2"	Same	3 Hr Labeled Door	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-3**ELEVATION** - 295'-0"**ORIENTATION** - North Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 2'-0"**REFERENCE DRAWINGS**

E-421-305

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockouts	1'-0" x 2'-0" (3)	Same	Open	
Electrical Conduit & Pipe	1'-0" x 2'-0"	1-1/2" ϕ Pipe (3) 1-1/2" ϕ Conduit (2)		
Blockout	1'-0" x 2'-0"	Same	Open	
Electrical Conduit & Pipe	1'-6" x 1'-0"	3" ϕ Conduit 4" ϕ Conduit 1" ϕ Conduit (2) 1-1/2" ϕ Conduit (3) 1/2" ϕ Conduit 2" ϕ Pipe	Open	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-3ELEVATION - 295'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-421-304

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	2'-0" x 2'-3"	6" ϕ	Open	
Pipe	2'-0" x 2'-3"	8" ϕ	Open	
Pipe	2'-0" x 2'-3"	2" ϕ 6" ϕ	Open	
Pipe	22" ϕ	15" ϕ	Open	
HVAC Duct	2'-6" x 2'-6"	26" Duct 28" Frame	No Fire Damper	
Pipe	8" x 9"	4" ϕ	Open	
Electrical Tray &	11" x 1'-0"	6" Tray 1-1/2" ϕ Conduit (2) 1" ϕ Conduit	Grouted	
Blockout	1'-0" x 1'-6"	Same	Open	
Electrical Trays	1'-6" x 2'-1"	6" Tray 12" Tray	Grouted	
Electrical Trays	3'-0" x 7'-4-1/2"	6" Tray (2) 12" Tray	Marinite Board & Kaowool	
Pipe	2'-0" x 2'-0"	8" ϕ w/insul. 2" ϕ (2)	Open	
Pipe	28" ϕ	19" ϕ	Open	
Electrical	1-1/2" ϕ (6) 2" ϕ (2)	1-1/2" ϕ 2" ϕ	Embedded	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-3ELEVATION - 295'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS 3'-3"REFERENCE DRAWINGS

E-421-302

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeve	8" ϕ	Same	Open	
Sleeve	8" ϕ	Same	Open	
Grating	5'-0" x 8'-6"	Same	Open	
Grating	5'-0" x 8'-6"	Same	Open	
Sleeve	8" ϕ	Same	Open	
Electrical Conduit	8" ϕ	1" ϕ	Open	
Electrical Conduit	8" ϕ	1" ϕ (2) 1-1/4" ϕ 2" ϕ	Open	
Pipe	12" ϕ	6" ϕ	Open	
Pipe	12" ϕ	6" ϕ	Open	
Electrical Conduit	8" ϕ	3/4" ϕ	Open	
Pipe	8" ϕ	1" ϕ	Open	
Pipe	8" ϕ	2" ϕ	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-3**CONSTRUCTION** - Reinforced Concrete**ELEVATION** - 322'-0"
(Floor Elev.)
THICKNESS - 3'-3"**ORIENTATION** - Ceiling
REFERENCE DRAWINGS

E-421-309

PENETRATIONS

(PAGE 1 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Tray	1'-0" x 2'-6"	6" Tray 12" Tray	Grouted	
Electrical Tray	1'-0" x 1'-6"	6" Tray (2)	Grouted	
Electrical Tray	1'-0" x 1'-0"	6" Tray	Grouted	
Electrical Conduits	3/4" ϕ (3)	Same	Embedded	
Sleeves	8" ϕ (2)	Same	Open	
Pipe	18" ϕ	15" ϕ w/insul.	Open	
Pipe	30" ϕ	27" ϕ w/insul.	Open	
Grating - (Misc. Penetrations)	4'-6" x 8'-0"	2-1/2" ϕ Pipe Support Rod 10" ϕ HVAC Duct 12" ϕ Pipe w/insul. 1/4" Tubing	Open	
Pipe	12" ϕ	2-1/2" ϕ	Open	
Blockout	1'-0" x 1'-0"	Same	Open	
Pipe	18" ϕ	15" ϕ Pipe w/insul.	Open	
Sleeve	6" ϕ	Same	Open	
Pipe	6" ϕ	1" ϕ	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-3**ELEVATION** - 322'-0"
(Floor Elev.)**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-3"**REFERENCE DRAWINGS**

E-421-309

PENETRATIONS

(PAGE 2 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Grating (With Conduit)	4'-6" x 7'-6"	1-1/2" ϕ Conduit	Open	
Electrical Conduits	3" x 5-1/2" (Oval)	1-1/2 ϕ (2)	Open	
Electrical Conduits	3/4" ϕ	Same	Embedded	
Sleeve	3/4" ϕ	Same	Plugged	
Pipe	16" x 22" (Oval)	15" Pipe w/insul.	Open	In Place of 18" Sleeve as shown on Dwg.
Electrical Conduit & Pipe	8" ϕ	6" x 3" Oval Insulation Over Pipe 1" ϕ Pipe 1-1/2" ϕ Conduit	Open	
Electrical Conduit	3" ϕ	2" ϕ	Open	
Electrical Conduit	3" ϕ	1-1/2" ϕ	Open	
Electrical Conduit	3" ϕ	3" ϕ	Open	
Electrical Conduit	1'-0" x 1'-0"	3" ϕ 1-1/4" ϕ (2)	Open	
Sleeve	12" ϕ	Same	Open	
Electrical Conduit	4" ϕ	Same	Embedded	
Electrical Conduit	1-1/4" ϕ	Same	Embedded	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-3**CONSTRUCTION** - Reinforced Concrete**ELEVATION** - 322'-0"
(Floor Elev.)
THICKNESS - 3'-3"**ORIENTATION** - Ceiling**REFERENCE DRAWINGS**

E-421-309

PENETRATIONS

(PAGE 3 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Conduit	1-1/4" ϕ	Same	Embedded	
Electrical Conduit	1/2" ϕ	Same	Embedded	
Electrical Conduit	1" ϕ	Same	Embedded	
Electrical Conduit	4" ϕ	Same	Embedded	
Electrical Conduit	2" ϕ	Same	Embedded	
Electrical Conduit	2" ϕ	Same	Embedded	
Electrical Conduit	1" ϕ	Same	Embedded	
Electrical Conduit	1" ϕ	Same	Embedded	
Electrical Conduit	1" ϕ	Same	Embedded	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-4ELEVATION - 295'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 2'-0"REFERENCE DRAWINGS

E-421-305

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as West Wall of IB-FZ-1	-	-	-	See West Wall of IB-FZ-1 for details of Wall Penetrations Note at Column Line H between 1 & 2, the East Wall is a 3 hr fire rated wall and was not evaluated

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-4ELEVATION - 295'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-3"REFERENCE DRAWINGS

E-421-302

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe & Electrical Raceway	8" ϕ	1" ϕ Pipe (2) 1" x 1-1/2" Elect. Raceway	Open	
Grating & Misc Conduit Penetrations	5'-0" x 8'-6"	3" ϕ Conduit 1-1/2" ϕ Conduit 1" ϕ Conduit	Open	
Electrical	8" ϕ	1" ϕ 3" ϕ	Open	
Pipe	1'-0" x 2'-0"	1" ϕ	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-4**ELEVATION** - 305'-0"
(Floor Elev.)**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 1'-1"**REFERENCE DRAWINGS**

E-421-303

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves	12" ϕ (2)	Same	Grouted	Sleeves Removed & Grouted
Equipment Drain	2" ϕ	Same	Embedded	
Pipe	8" ϕ	1-1/2" ϕ	Open	
Grating & Misc Penetrations	4'-6" x 8'-0"	1/2" ϕ Tubing (8) 3" ϕ Conduit 1-1/2" ϕ Conduit 1" ϕ Conduit	Open	
Electrical Conduit	8" ϕ	1" ϕ	Open	
Pipe	8" x 2'-0"	1" ϕ	Open	
Equipment Drain	2" ϕ	Same	Embedded	
Pipe	8" ϕ	4" ϕ	Open	
Pipe	30" ϕ	20" ϕ	Open	
Electrical Conduit	1" ϕ	Same	Embedded	
Embedded Sleeves	4-1/2" ϕ (2)	Same	Capped	
Sleeves	12" ϕ (2)	Same	Grouted	Sleeves Removed & Grouted
Electrical Conduit	1" ϕ	Same	Embedded	
Sleeve	1" ϕ	Same	Capped Embedded	
Stairs	5" x 0" x 13"-0"	Same	Open Stairwell	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-5ELEVATION - 305'-0"ORIENTATION - East WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 2'-0"REFERENCE DRAWINGS

E-421-305

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as West Wall of IB-FZ-1	-	-	-	See West Wall of IB-FZ-1 for details of wall penetrations

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-5ELEVATION - 305'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS - 1'-1"REFERENCE DRAWINGS

E-421-303

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as Ceiling of IB-FZ-4	-	-	-	See Ceiling of IB-FZ-4 for details of floor penetrations

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-5**ELEVATION** - 322'-0"
(Floor Elev.)**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-3"**REFERENCE DRAWINGS**

E-421-309

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Sleeves	10" ϕ (2)	Same	Open	
Sleeves	12" ϕ (2)	Same	Open	
Pipe	10" ϕ (3)	6" ϕ	Open	
Pipe & Tubing	8" x 2'-0"	1" ϕ Pipe 1/2" ϕ Tubing	Open	
Pipe	8" ϕ	1" ϕ (2)	Open	
Grating & Conduit Penetrations	5'-0" x 8'-6"	3" ϕ 1-1/2" ϕ 1" ϕ	Open	
Stairs	5'-0" x 13'-0"	Same	Open Stairwell	
Pipe	12" ϕ	2" ϕ	Open	
Tubing	12" ϕ	1/4" ϕ (4)	Open	
Electrical Conduit	4" ϕ	1-1/2" ϕ	Embedded	
Sleeve	4" ϕ	Same	<u>Embedded</u> Capped	
Electrical Conduit	3/4" ϕ	Same	Embedded	
Sleeve	3/4" ϕ	Same	<u>Embedded</u> Plugged	

BUILDING - Intermediate BuildingFIRE ZONE - IB-FZ-6ELEVATION - 322'-0"ORIENTATION - FloorCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-3"REFERENCE DRAWINGS

E-421-309

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as Ceiling of the Follow- ing Fire Zones: IB-FZ-1 IB-FZ-2 IB-FZ-3 IB-FZ-5	-	-	-	See Ceiling of the following fire zones for details of ceiling/floor penetrations: IB-FZ-1 IB-FZ-2 IB-FZ-3 IB-FZ-5

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-6**CONSTRUCTION** - Reinforced Concrete**ELEVATION** - 355'-0" & 347'-0"
(Floor Elev.)
THICKNESS - 3'-0" & 5'-0"**ORIENTATION** - Ceiling**REFERENCE DRAWINGS**

E-241-314

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Not Evaluated (For Ceiling El. 347'-0" which is exposed to the exterior)	N/A	N/A	N/A	Ceiling at El. 347'-0" was not evaluated since it is exposed to the exterior
For Ceiling at El. 355'-0" - same as Floor of IB-FZ-7	N/A	N/A	N/A	See IB-FZ-7 for Floor/ Ceiling penetration details for Floor elevation 355'-0"

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-7**ELEVATION** - 355'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-314

PENETRATIONS

(PAGE 1 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Blockout (Misc Equip- ment)	7'-3" x 5'-8-1/2"	Valve Operator 3/4" ϕ Conduit (3) 1" ϕ Support Rods (2) 1" ϕ Conduit 1-1/2" ϕ Conduit 1/2" ϕ Conduit 1" ϕ Pipe P1000 Unistrut (2)	Open	
Stairwell w/ Electrical Conduit & Pipe Penetrations	4'-0" x 21'-6"	Same 3/4" ϕ Conduit (2) 2-1/2" ϕ Pipe	Open	
Pipe	16" ϕ (2)	10" ϕ	Open	
Pipes	18" ϕ (5)	12" ϕ	Open	
HVAC Duct	3'-0" x 7'-0"	2'-0" x 4'-0"	Open	
Sleeve	8" ϕ	Same	Open	
Pipe	14" ϕ (2)	10" ϕ	Open	
Sleeve	12" ϕ	Same	Open	
Blockout (Misc Equip)	5'-6" x 6'-3"	Value Operator 1-1/2" ϕ Support Rod (2) 3/4" ϕ Conduit (3) 1" ϕ Conduit 1-1/2" ϕ Conduit 1/2" ϕ Conduit 1" ϕ Pipe P1000 Unistrut (2)	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-7**ELEVATION** - 355'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-314

PENETRATIONS

(PAGE 2 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	14" ϕ	10" ϕ	Open	
Pipes	18" ϕ (4)	12" ϕ	Open	
Sleeves	8" ϕ (2)	Same	Open	
Grating	6'-0" x 11'-0"	Same	Open	
Blockout (Misc Equip)	5'-6" x 7'-2-1/4"	Value Operator 1-1/2" ϕ Support Rod (2) 3/4" ϕ Conduit (3) 1" ϕ Conduit 1-1/2" ϕ Conduit 1/2" ϕ Conduit 1" ϕ Pipe P1000 Unistrut (2)	Open	
Pipes	18" ϕ (4)	12" ϕ	Open	
Sleeves	8" ϕ (2)	Same	Open	
Grating	6'-0" x 11'-0"	Same	Open	
Blockout (Misc Equip)	5'-6" x 6'-2"	Value Operator 1-1/2" ϕ Support Rod (2) 3/4" ϕ Conduit (3) 1" ϕ Conduit 1-1/2" ϕ Conduit 1/2" ϕ Conduit 1" ϕ Pipe P1000 Unistrut (2)	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-7**ELEVATION** - 355' 3"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-421-314

PENETRATIONS

(PAGE 3 OF 3)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Electrical Tray	1'-5" x 2'-6"	18" Tray	Grouted	
Sleeves	12" ϕ (2)	Same	14" Cover Plates	
Pipe	14" ϕ	10" ϕ	Open	
Pipe	18" ϕ (4)	12" ϕ	Open	
Sleeve	8" ϕ	Same	Open	

BUILDING - Intermediate Building**FIRE ZONE** - IB-FZ-8**ELEVATION** - 295'-0"
(Floor Elev.)**ORIENTATION** - Ceiling**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-3"**REFERENCE DRAWINGS**

N/A

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as Floor of the Follow- ing Fire Zones: IB-FZ-1 IB-FZ-2 IB-FZ-3 IB-FZ-4	-	-	-	See Floor Penetrations for the following fire zones: IB-FZ-1 IB-FZ-2 IB-FZ-3 IB-FZ-4

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-1**ELEVATION** - 308'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-426-101

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Ladder Access	3'-6" x 3'-0"	Same	Checkplate Steel Cover (Not in Place)	- Open to Pit Area Below
Cables	1'-4" x 8"	Misc. Cables	Open	
Cables	4'-6" x 6"	Misc. Cables	Open	
Pipe	2" ϕ	2" ϕ	Embedded	
Drains (Floor)	3" ϕ (4)	3" ϕ	Embedded	- Open to Pit Area Below
Pipe	3" ϕ	1" ϕ	5" Cover Plate	
Pipe	6" ϕ	6" ϕ	Embedded	
Pump Shaft	8" ϕ	8" ϕ	Embedded	
Pipe	10" ϕ (2)	10" ϕ	Embedded	
Pipe	12" ϕ (2)	12" ϕ	Embedded	
Pipe	6" ϕ (4)	6" ϕ	Embedded	
Pipe	8" ϕ	8" ϕ	Embedded	
Pipe	6" ϕ	6" ϕ	Embedded	
Pipe	21" ϕ	21" ϕ	Embedded	
Pipe	6" ϕ	6" ϕ	Embedded	
Pipes	18" ϕ (3)	18" ϕ	Embedded	
Pipe	12" ϕ	12" ϕ	Embedded	
Pump Shafts	18" ϕ (2)	18" ϕ	Embedded	
Pump Shafts	24" ϕ (2)	24" ϕ	Embedded	
Pump Shafts	21" ϕ (3)	21" ϕ	Embedded	
Drains (Funnel)	3" ϕ (7)	3" ϕ	Embedded	- Open to Pit Area Below

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-1**ELEVATION** - 308'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-426-101

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	12" ϕ	12" ϕ	Embedded	NOTE: In the Pit Area Below El. 308'-0" No Barrier Separates ISPA-FZ-1 & ISPA-FZ-2.
Sleeve (Empty)	3" ϕ (5)	3" ϕ	5" ϕ Cover Plate	
Pipe	3" ϕ (5)	2" ϕ	3" ϕ Cover Plate	
Pipe	3" ϕ (5)	1" ϕ	3" ϕ Cover Plate	
Sleeve (Empty)	3" ϕ	3" ϕ	3" ϕ Cover Plate	
Pipe	3" ϕ	2" ϕ	3" ϕ Cover Plate	

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-1**ELEVATION** - 308'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-423-103

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Roll-up Door	9'-0" x 12'-0"	Same	N/A	3 hr Roll-up Door with Fusible Link
Door	3'-0" x 7'-0"	Same	N/A	3 hr Labeled Fire Door
Electrical Conduit	1" ϕ	1" ϕ	Embedded	
Pipe	6" ϕ	1-1/2" ϕ	None	
Pipe	6" ϕ	3-1/2" ϕ	None	
Tubing (4)	6" ϕ	3/8" ϕ (4)	None	
Blockout (Empty)	2'-6" x 4'-0"	Same	None	
Electrical Tray	1'-0" x 2'-0"	(2) 6" trays	Grouted	
Electrical Conduit	8" ϕ	1-1/2" ϕ 1" ϕ	Open	
Pipe	8" ϕ	6" ϕ	Open	
HVAC Duct	2'-0" x 4'-6"	1'-9" x 4'-3"	Open	No Fire Damper
Blockout (Empty)	2'-0" x 4'-0"	Same	Open	

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-2**ELEVATION** - 308'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-426-101

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pump Shaft	8" ϕ	8" ϕ	Embedded	
Pipe	4" ϕ	4" ϕ	Embedded	
Drains (Floor)	3" ϕ (4)	3" ϕ	Embedded	- Open to Pit Area Below
Pipe	3" ϕ	1" ϕ	5" ϕ Cover Plate	
Pipe	8" ϕ (2)	8" ϕ	Embedded	
Pipe	12" ϕ	8" ϕ	12" ϕ Cover Plate	
Pipe	15" ϕ	10" ϕ	16" ϕ Cover Plate	
Ladder Access	3'-0" x 3'-0"	Same	Checkplate Steel Cover (Not in Place)	- Open to Pit Area Below
Pipes	30" ϕ (3)	30" ϕ	Embedded	
Pipes	18" ϕ (4)	18" ϕ	Embedded	
Pipes	21" ϕ (3)	21" ϕ	Embedded	
Pipes	12" ϕ (4)	12" ϕ	Embedded	
Pipes	6" ϕ (5)	6" ϕ	Embedded	
Pipes	8" ϕ	8" ϕ	Embedded	
Cables	1'-4" x 6"	Misc. Cables	Open	
Cables	4'-6" x 6"	Misc. Cables	Open	
Cables	3'-6" x 6"	Misc. Cables	Open	
Cables	1'-4" x 6"	Misc. Cables	Open	

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-2**ELEVATION** - 308'-0"**ORIENTATION** - Floor**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-426-101

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pump Shafts	26" ϕ (5)	26" ϕ	Embedded	- Open to Pit Area Below
Pump Shaft	16" ϕ	16" ϕ	Embedded	
Drains (Funnel)	3" ϕ	3" ϕ	Embedded	
Sleeve (Empty)	3" ϕ (5)	3" ϕ	5" ϕ Cover Plate	
Pipe	3" ϕ (5)	2" ϕ	3" ϕ Cover Plate	
Pipe	3" ϕ (5)	1" ϕ	3" ϕ Cover Plate	
Sleeve (Empty)	3" ϕ	3" ϕ	3" ϕ Cover Plate	
Pipe	3" ϕ	2" ϕ	3" ϕ Cover Plate	

BUILDING - Intake Screen and Pump House**FIRE ZONE** - ISPH-FZ-2**ELEVATION** - 308'-0"**ORIENTATION** - West Wall**CONSTRUCTION** - Reinforced Concrete**THICKNESS** - 3'-0"**REFERENCE DRAWINGS**

E-423-103

PENETRATIONS

(PAGE 1 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Door (2)	3'-0" x 7'-0"	Same	N/A	3 hr door frames installed however doors are not installed.
Tubing	8" ϕ	1/4" ϕ (2) 3/8" ϕ (2)	Open	
HVAC Duct	2'-0" x 4'-6"	1'-9" x 4'-3"	Open	
Sleeves	(4) 2" ϕ	Same	Concrete	
Electrical Tray & Conduit	1'-2" x 2'-1"	(2) 6" Trays 1-1/2" ϕ Conduit	Grouted	
Pipe	10" ϕ	6" ϕ	Open	
Blockout (Empty)	2'-6" x 4'-0"	Same	Open	
Blockout (Empty)	1'-0" x 1'-0"	Same	Open	
Pipe	6" ϕ	3-1/2" ϕ	Open	
Pipe	6" ϕ	(2) 1" ϕ	Open	
Tubing	6" ϕ	(4) 3/8" ϕ	Open	
Sleeves	(4) 2" ϕ	Same	Open	
Pipe	8"	6 ϕ	Open	
Blockout (Empty)	1'-0" x 6"	Same	Open	
Electrical Tray	1'-0" x 2'-0"	(2) 6" Trays	Kaowool	

BUILDING - Intake Screen and Pump HouseFIRE ZONE - ISPH-FZ-2ELEVATION - 308'-0"ORIENTATION - West WallCONSTRUCTION - Reinforced ConcreteTHICKNESS - 3'-0"REFERENCE DRAWINGS

E-423-103

PENETRATIONS

(PAGE 2 OF 2)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Pipe	8" ϕ	6" ϕ	Open	NOTE: In the Pit Area Below El. 308'-0" - No Barrier Separates ISPH-FZ-1 & ISPH-FZ-2
Electrical Conduit	4" ϕ	1-1/2" ϕ	Open	
Electrical Conduit	4" ϕ	1-1/2" ϕ	Open	

BUILDING - Intake Screen and Pump House

FIRE ZONE - ISPH-FZ-3

ELEVATION - 308'-0"

ORIENTATION - East Wall

CONSTRUCTION - Reinforced Concrete

THICKNESS - 3'-0"

REFERENCE DRAWINGS

E-423-103

PENETRATIONS

(PAGE 1 OF 1)

PENETRATING SERVICE	PENETRATION DIMENSIONS	PENETRATING SERVICE DIMENSIONS	PENETRATION SEALANT (IF ANY)	NOTES
Same as West Wall of ISPH- FZ-1 & ISPH- FZ-2	-	-	-	See West Wall of ISPH-FZ-1 & ISPH-FZ-2 for details of wall penetrations