

ABJ Ventures LLC d/b/a iSmash Special use permit and text amendment request

ABJ Ventures LLC is a partnership between Jamshed (Jim) Ali and his brother-in-law Bilal Chaudhry. We are planning on opening an iSmash franchise in Butterfield Square. This will require us to apply for a special use permit and a text amendment to the current code. We kindly and respectfully request the current code to be amended to include the following four activities: Rage/Smash rooms, Paint splatter rooms, axe throwing and a target shooting simulator.

An iSmash Rage Room franchise is a unique entertainment business model that offers customers a safe, controlled space to release stress and frustration by smashing objects such as glassware, electronics, and furniture. Designed as both a fun experience and a stress-relief activity, iSmash combines elements of recreation, therapy, and social engagement, attracting individuals, groups, and corporate team-building events.

There are three activities offered at iSmash facilities. Please note: We have permission from iSmash to offer a 4th activity at our store. Here are details for each of the four activities we plan to offer in Libertyville:

Smash rooms - At the heart of iSmash lies our signature Smash Room, a defining feature of our brand and a truly distinctive stress-relief experience. Guests are equipped with full safety gear before entering a purpose-built room stocked with a range of breakable items, including electronics and glassware. Within this controlled environment, participants can safely channel their energy and emotions through the satisfying act of destruction.

The Smash Room offers more than just exhilaration, it provides a therapeutic release where guests can unwind, recharge, and experience the liberating joy of letting go. Every session is carefully designed to ensure both safety and enjoyment, making the Smash Room a standout attraction and an essential part of the iSmash experience. We are planning on offering 4 rage rooms at our location.

Black light splatter painting rooms – The Black Light Splatter Painting experience at iSmash transforms artistic expression into a captivating visual adventure. Participants don protective gear and step into a specially designed, black-lit studio equipped with vibrant neon paints. Inside, guests are encouraged to freely express their creativity—splattering, flicking, and layering paint onto canvases or walls to produce luminous, one-of-a-kind works of art.

Combining creativity with an immersive atmosphere, this activity appeals to guests of all ages and skill levels. Whether enjoyed individually or as part of a group event, Black Light Splatter Painting at iSmash provides a distinctive and memorable experience that merges artistry, fun, and innovation in one glowing package. We will be offering 2 paint splatter rooms.

Axe throwing lanes – Axe Throwing at iSmash delivers an engaging blend of precision, excitement, and friendly competition. Under the guidance of our trained instructors, guests learn proper throwing techniques before stepping up to the lanes. Using custom-designed axes, participants aim for targets to test their accuracy and coordination in a safe, controlled environment.

This experience caters to both beginners and seasoned throwers, offering a balance of challenge and entertainment. Whether for a casual outing, corporate event, or private celebration, Axe Throwing at iSmash provides a high-energy activity that encourages focus, camaraderie, and fun. We will be offering 4 axe throwing lanes for both leisure and competition purposes.

Here are some links for iSmash:

<https://ismashusa.com/>

<https://www.franchising.com/video/mini-player.php?videoid=53661>

Target shooting & hunting simulator –Customers can test their marksmanship skills in our target shooting simulator room. We use specialized software, a video projector, motion sensors and replica electronic guns. No bullets or projectiles. We will offer various target shooting, hunting and skills training simulations and games for all ages. Here are links for the product we will be using:

<https://www.youtube.com/watch?v=afDB2ZNMnS8>

<https://www.sportsentertainmentspecialists.com/shooting/elite-sim-range>

<https://www.youtube.com/watch?v=JT-CHfZyRig>

Event and Party rooms – We will also be offering two party/event rooms for rent. These rooms can be used for birthday & holiday parties, corporate/company events or any special occasion.

We will not be serving food or alcohol at our location. We may install two vending machines. One for soft drinks and one for snacks.

Regards,

Jim Ali
Co-Owner
ABJ Ventures LLC

























STANDARDS FOR AMENDMENTS

- 16-14.5 **Standards for Amendments.** The wisdom of amending the text of this Code or the Zoning Map is a matter committed to the sound legislative discretion of the Board of Trustees and is not dictated by any set standard. However, in determining whether a proposed amendment should be granted or denied the Board of Trustees should be guided by the principle that its power to amend this Code is not an arbitrary one but one that may be exercised only when the public good demands or requires the amendment to be made. In considering whether that principle is satisfied in any particular case, the Board of Trustees should weigh, among other factors, the following factors:
- a. The consistency of the proposed amendment with the purposes of this Code. *The proposed amendment is consistent with the purposes of the Village Code in that it promotes the orderly development of commercial uses, encourages the adaptive reuse of existing buildings, and supports economic vitality without negatively impacting surrounding properties. The iSmash rage room is an indoor, controlled-use entertainment facility that aligns with the Code's objectives related to public safety, compatibility of uses, and enhancement of the local business environment.*
 - b. The existing uses and zoning classifications of properties in the vicinity of the subject property. *Properties in the vicinity of the subject property are predominantly zoned for commercial and mixed-use purposes and are developed with retail, service, office, and entertainment-oriented uses. The proposed use is compatible with these existing zoning classifications and complements nearby commercial activities by attracting customers without altering the overall character of the area.*
 - c. The trend of development in the vicinity of the subject property, including changes, if any, in such trend since the subject property was placed in its present zoning classification. *The trend of development in the area has been toward diversified commercial and service-oriented uses, including experiential businesses that encourage local visitation. Since the subject property was placed in its present zoning classification, development trends have emphasized reuse of existing commercial spaces rather than expansion of heavy-intensity uses. The proposed amendment is consistent with this trend and reflects evolving consumer demand for experiential entertainment.*
 - d. The extent to which the value of the subject property is diminished by its present zoning classification. *The subject property's value is limited under its current zoning classification due to constraints on the range of permitted uses. The inability to accommodate emerging entertainment concepts such as a rage room limits marketability and*

leasing potential, particularly in comparison to similar commercial properties that allow a broader range of indoor recreational uses.

- e. The extent to which such diminution in value is offset by an increase in the public health, safety and welfare. *Any potential diminution in property value under the present zoning is not offset by a corresponding increase in public health, safety, or welfare. The proposed use operates entirely indoors, incorporates strict safety protocols, supervised participation, sound mitigation measures, and controlled hours of operation. As such, the amendment supports public welfare by enabling safe recreational activity without introducing adverse impacts.*
- f. The extent, if any, to which the use and enjoyment of adjacent properties would be adversely affected by the proposed amendment. *The proposed amendment will not adversely affect the use and enjoyment of adjacent properties. iSmash operates as a scheduled, appointment-based indoor activity with limited occupancy. Noise is contained within insulated smash rooms, and there is no outdoor activity associated with the use. The operation is comparable in impact to other indoor commercial entertainment uses.*
- g. The extent, if any, to which the value of adjacent properties would be adversely affected by the proposed amendment. *The proposed amendment is not expected to adversely affect the value of adjacent properties. On the contrary, activation of currently underutilized commercial space with a well-managed, nationally recognized franchise may enhance overall area vitality, increase foot traffic to nearby businesses, and contribute positively to the commercial environment.*
- h. The extent, if any, to which the future orderly development of adjacent properties would be adversely affected by the proposed amendment. *Approval of the proposed amendment will not hinder the orderly future development of adjacent properties. The use does not impose unique infrastructure demands, environmental impacts, or land-use conflicts that would limit future development options. The amendment supports flexible commercial use while maintaining consistency with long-term planning objectives.*
- i. The suitability of the subject property for uses permitted or specially permitted under its zoning classification. *The subject property is well-suited for the proposed use due to its commercial location, existing building configuration, available parking, and separation from residential-only areas. While the property may technically accommodate other permitted uses under the current zoning, the proposed use represents a reasonable and appropriate utilization given market conditions and site characteristics.*
- j. The availability of adequate ingress to and egress from the subject property and the extent to which traffic conditions in the immediate vicinity of the subject property would be affected by the proposed

amendment. *Adequate ingress and egress are available via existing roadways and parking facilities. The proposed use generates minimal traffic impacts, as visits are typically scheduled, of limited duration, and occur throughout the day rather than during peak commuter hours. Traffic volumes are expected to be comparable to or less than traditional retail or service uses.*

- k. The availability of adequate utilities and essential public services to the subject property to accommodate the uses permitted or specially permitted under its present and proposed zoning classification. *The subject property is served by adequate utilities and essential public services, including water, sewer, electricity, and emergency services, sufficient to accommodate both the present and proposed zoning classifications. The proposed use does not require extraordinary public service support beyond what is already available.*
- l. The length of time, if any, that the subject property has been vacant, considered in the context of the pace of development in the vicinity of the subject property. *The subject property has experienced vacancy or underutilization consistent with broader market conditions affecting certain commercial spaces. The proposed amendment would facilitate productive reuse of the property in a manner consistent with the pace and pattern of development in the surrounding area.*
- m. The community need for the proposed amendment and for the uses and development it would allow. *There is a demonstrated community need for diversified indoor recreational and stress-relief activities that serve residents, employees, and visitors of the Village of Libertyville. The iSmash rage room provides a safe, structured outlet for stress management, team-building, and entertainment, meeting evolving community preferences while contributing to local economic development.*

STANDARDS FOR SPECIAL USE PERMITS

16 9.5 Standards for Special Use Permits.

- a. General Standards. No special use permit shall be recommended or granted pursuant to this Section 16-9 unless the applicant shall establish that:
- 1) Code and Plan Purposes. The proposed use and development will be in harmony with the general and specific purposes for which this Code was enacted and for which the regulations of the district in question were established and with the general purpose and intent of the Official Comprehensive Plan. *The proposed iSmash use is consistent with the purposes of the Village Code and the Comprehensive Plan. It is an indoor commercial entertainment use that supports economic development, reuse of existing commercial space, and a diverse mix of businesses without changing the character of the area.*
 - 2) Adverse Impact. The proposed use and development will not have a substantial adverse effect upon adjacent property, the character of the area, or the public health, safety, and general welfare. *The proposed use will not have a substantial adverse impact on adjacent properties, the character of the area, or public health and safety. All activities occur indoors, participation is supervised, and safety and noise-control measures are in place.*
 - 3) Interference with Surrounding Development. The proposed use and development will be constructed, arranged, and operated so as not to dominate the immediate vicinity or to interfere with the use and development of neighboring property in accordance with the applicable district regulations. *The iSmash facility will be designed and operated in a manner that does not dominate or interfere with surrounding development. The use is similar in intensity to other commercial and entertainment uses permitted in the area and complies with all applicable district regulations.*
 - 4) Adequate Public Facilities. The proposed use and development will be served adequately by essential public facilities and services such as streets, public utilities, drainage structures, police and fire protection, refuse disposal, parks, libraries, and schools, or the applicant will provide adequately for such services. *The subject property is adequately served by existing public facilities and services, including streets, utilities, police and fire protection, and refuse collection. No additional public infrastructure improvements are required for the proposed use.*
 - 5) Traffic Congestion. The proposed use and development will not cause undue traffic congestion nor draw significant amounts of traffic through local streets and will, when required by the Board of Trustees, incorporate appropriate vehicular trip reduction features such as, but

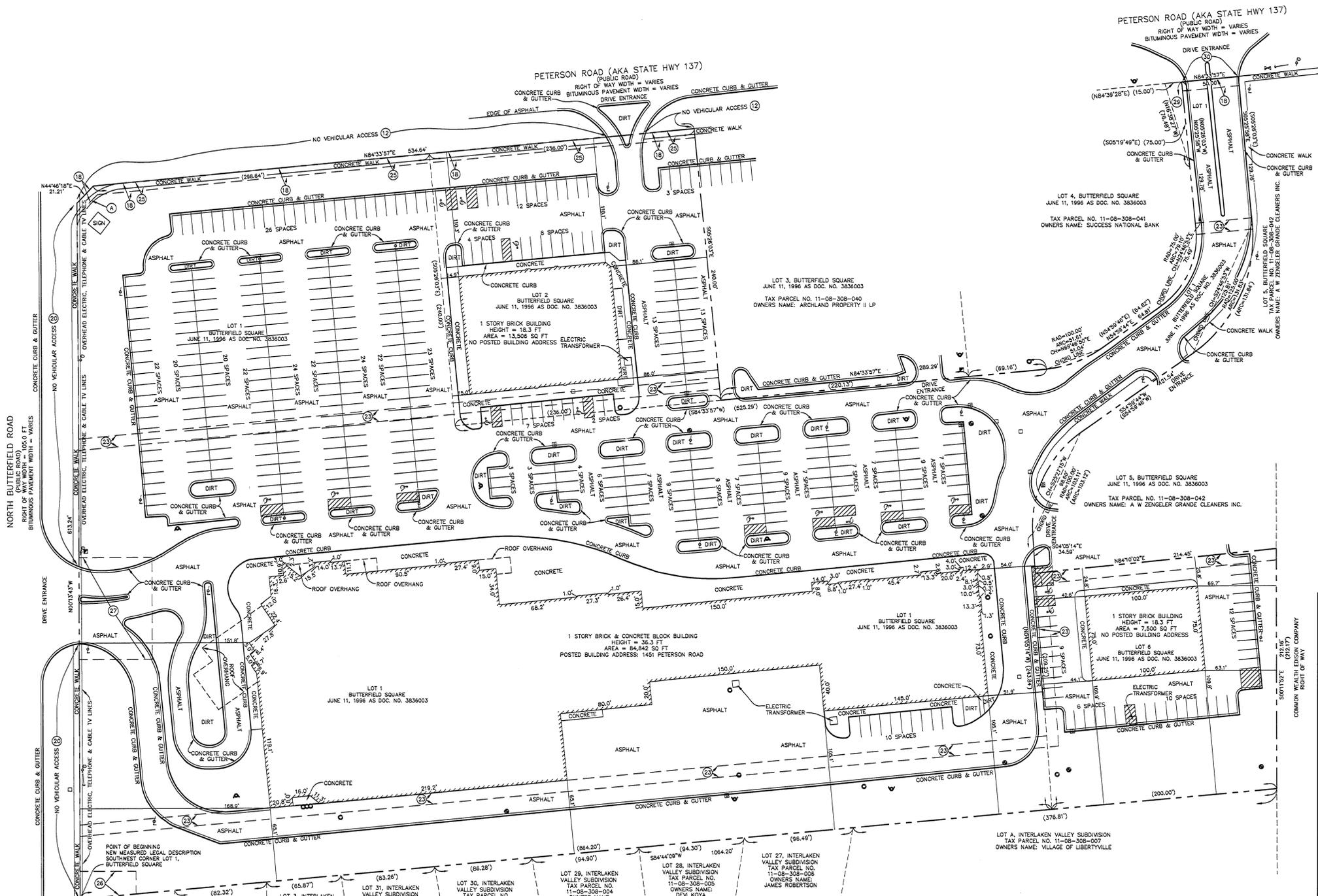
not limited to, pedestrian/bicycle linkages within and between land uses, the use of traffic mitigation plans, and the incorporation of elements to encourage and facilitate the use of public transportation. *The proposed use will not cause undue traffic congestion. Visits are typically scheduled, short in duration, and spread throughout the day, resulting in traffic levels comparable to other retail or service uses in the area. The site already provides adequate access and parking.*

- 6) Destruction of Significant Features. The proposed use and development will not result in the destruction, loss, or damage of any natural, scenic, or historic feature of significant importance. *The proposed use will not result in the destruction or damage of any natural, scenic, or historic features. No exterior site alterations affecting such features are proposed.*
- 7) Compliance with Standards. The proposed use and development complies with all additional standards imposed on it by the particular provision of this Code authorizing such use. *The proposed use complies with all applicable requirements and standards of the Village Code governing special permit uses, including operational, safety, and site-related regulations.*

- b. Special Standards for Specified Special Permit Uses. When the district regulations authorizing any special permit use in a particular district impose use limitations that must be met by such use in such district, a special permit use for that use in that district shall not be recommended or granted unless the applicant shall establish compliance with such special standards. *The proposed iSmash use complies with all special standards and limitations applicable to special permit uses within the zoning district. The operation will meet all conditions imposed by the Code and any additional conditions required by the Village.*

- c. Considerations. In determining whether the applicant's evidence establishes that the foregoing standards have been met, the Plan Commission and the Board of Trustees shall consider:
- 1) Public Benefit. Whether, and to what extent, the proposed use and development at the particular location requested is necessary or desirable to provide a service or a facility that is in the interest of the public convenience or that will contribute to the general welfare of the neighborhood or community. *The proposed use provides a public benefit by offering a safe, supervised indoor recreational and stress-relief activity for residents, workers, and visitors. It also supports local economic activity and fills vacant or underutilized commercial space.*
 - 2) Alternative Locations. Whether, and to what extent, such public goals can be met by the location of the proposed use and development at some other site or in some other area that may be more appropriate than the proposed site. *The proposed site is appropriate for this use due to its commercial zoning, existing building layout, and access to infrastructure. While other locations may exist, the subject property is well suited for the proposed use and does not create land-use conflicts.*
 - 3) Mitigation of Adverse Impacts. Whether, and to what extent, all steps possible have been taken to minimize any adverse effects of the proposed use and development on the immediate vicinity through building design, site design, landscaping, and screening. *All reasonable steps have been taken to minimize potential impacts. Noise is contained within enclosed rooms, operations are fully indoors, hours of operation are controlled, and the site design and existing building provide adequate separation from surrounding properties.*

SURVEYOR INFORMATION
Sarko Engineering Inc.
 ILLINOIS AND WISCONSIN
 Professional Land Surveyors
 847 Highway 40
 Mt. Hope, WI 53572
 Phone: (508) 832-6287
 Fax: (508) 832-6349
 E-mail: rsarko@mhct.net



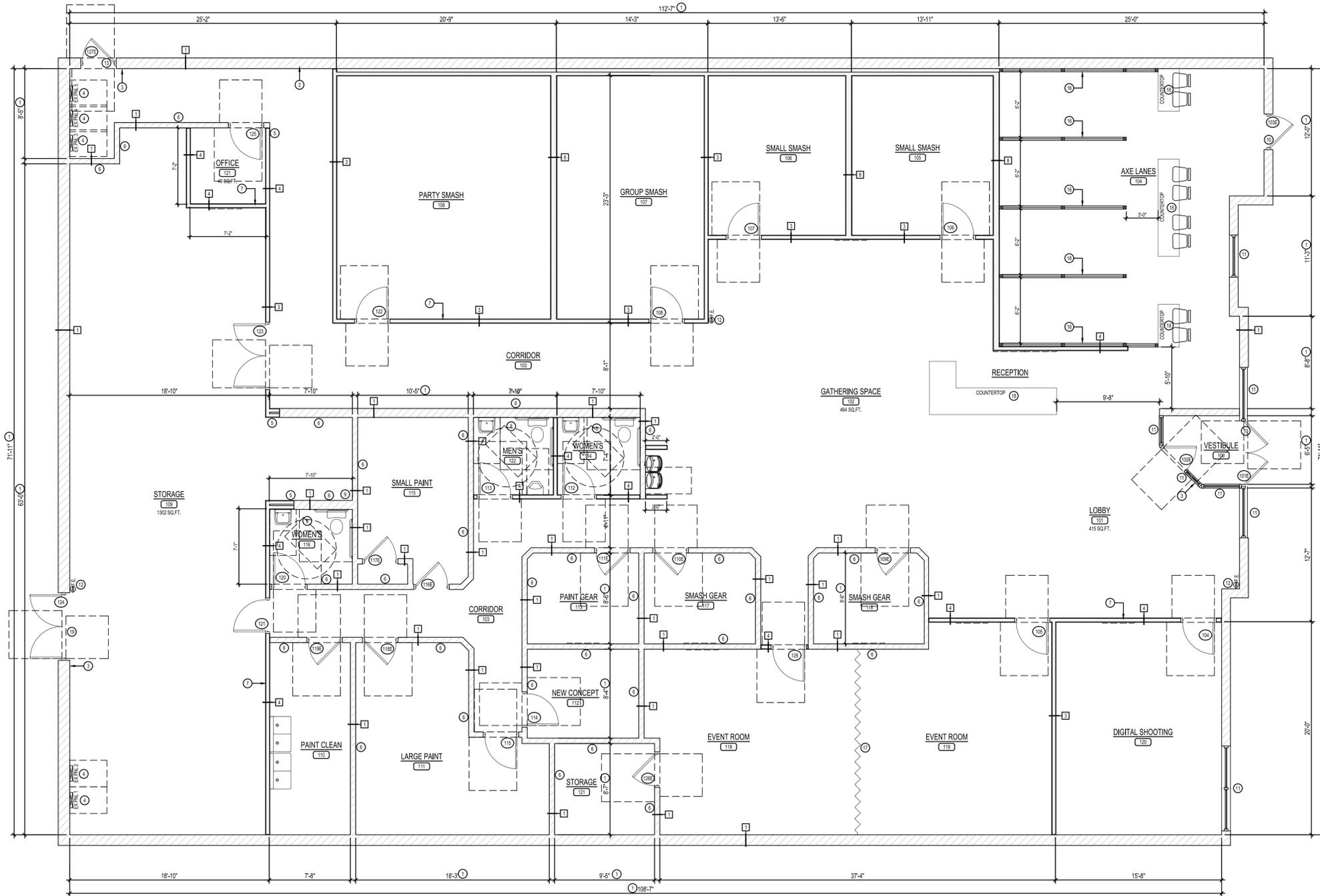
SCALE: 1" = 40'

SHEET 2 OF 2

PREPARED FOR:
SMITH-ROBERTS NATIONAL CORP.
 100 NE 5TH STREET
 OKLAHOMA CITY, OK 73104

PREPARED BY:
Sarko Engineering Inc.
 847 HIGHWAY 40, MT. HOPE, WI 53572
 PHONE: (508) 832-6287 FAX: (508) 832-6349
 EMAIL: RSARKO@MHCT.NET

DRWN BY: VPS	REVISION 1:
APPRD BY: RFS	11-14-2007
FIELD DATE: 10-18-07	COMMENTS
SCALE: 1"=40'	REVISION 2:
PROJECT ADDRESS: 1451 Peterson Road	
PROJECT LOCATION: Libertyville, IL	
PROJECT NAME: Centro Properties	
PROJECT NUMBER: 4851	



1 FLOOR PLAN
SCALE: 3/16" = 1'-0"

FLOOR PLAN KEYNOTE LEGEND (X)	
1	THIS IS AN EXISTING DIMENSION. THE CONTRACTOR SHALL CONFIRM THIS MEASUREMENT PRIOR TO COMMENCING CONSTRUCTION. IF THERE IS A DISCREPANCY THEY ARE TO NOTIFY THE ARCHITECT.
2	EXISTING 1 HR. FIRE BARRIER - ALL PENETRATIONS SHALL BE IN ACCORDANCE WITH UL DETAILS. THE CONTRACTOR SHALL PERMANENTLY LABEL THE CLIENT'S SIDE OF THE EXISTING DEMISING WALLS ABOVE THE CEILINGS W/ 2" HIGH LETTERS AND SPACED EVERY 8'-0". THE FOLLOWING WORDING IS RECOMMENDED "1 HOUR FIRE AND SMOKE BARRIER PROTECT ALL OPENINGS".
3	PROVIDE & INSTALL TACTILE EXIT SIGN PER CODE TO INDICATE "THIS DOOR SHALL REMAIN UNLOCKED DURING OCCUPIED HOURS"
4	EXISTING ELECTRICAL PANEL(S) SEE ELECTRICAL
5	CONTRACTOR SHALL ALIGN THE NEW WALL WITH THE EXISTING WALL
6	EXISTING INTERIOR WALL TO REMAIN. PATCH/REPAIR AS NEEDED
7	NEW INTERIOR PARTITION WALL. SEE A-1.1 FOR DETAILS
8	SEE A-3.0 & A-3.1 FOR RESTROOM FIXTURES & ACCESSORIES THE CONTRACTOR SHALL INSTALL FIRE RETARDANT TREATED BLOCKING AS REQUIRED PER THE MANUFACTURER'S RECOMMENDATIONS.
9	ELECTRIC TANK TYPE WATER HEATER (RHEEM OR EQUAL) MOUNTED ON STAND 80 GALLON STORAGE CAPACITY, 208V, SINGLE PHASE, (2) 6,000 WATT NON-SIMULTANEOUS ELEMENTS
10	EXISTING STOREFRONT DOOR W/ EITHER PUSH/PULL OR PANIC HARDWARE - DOORS TO REMAIN UNLOCKED DURING BUSINESS HOURS - CONTRACTOR TO VERIFY THAT THE DOOR & HARDWARE ARE IN GOOD WORKING ORDER
11	EXISTING ALUMINUM STOREFRONT SYSTEM SHALL REMAIN
12	TYPE ABC, 10 POUND (MIN) WALL MOUNTED FIRE EXTINGUISHER. ACCOMPANYING 3D SIGN TO BE MOUNTED @ 80" A.F.F. BOTH TO BE SUPPLIED & INSTALLED BY THE CONTRACTOR THE CONTRACTOR SHALL CONFIRM THE LOCATIONS WITH THE LOCAL FIRE MARSHAL PRIOR TO INSTALLATION
13	HOLLOW METAL EXTERIOR DOORS W/ PANIC HARDWARE
14	NEW SOLID CORE WOOD DOOR. SEE DOOR SCHEDULE FOR HARDWARE
15	COORDINATE STUD LAYOUT WITH INTEGRATED WALL PROTECTION PROVIDED BY OWNER. ADD BLOCKING IF REQUIRED
16	AXE THROWING LANE PARTITIONS. SEE BUILDING "BUILDING EXCITEMENT LANES" MANUAL FOR CONSTRUCTION. PROVIDED BY OWNER.
17	RETRACTABLE ROOM DIVIDER. CONTRACTOR TO INSTALL PER MANUFACTURER SPEC'S
18	MILLWORK CABINETRY AND COUNTERTOPS PROVIDED BY OTHERS. INSTALLED BY CONTRACTOR
19	NEW 7 5/8" x 7 5/8" PRECAST CONCRETE LINTEL. LINTEL TO BE REINFORCED WITH (3) #4 TOP AN BOTTOM. BEAR 8" MINIMUM ON EACH END.

FLOOR PLAN

A-1.0



1419 PETERSON RD. LIBERTYVILLE, IL 60048

ARCHITECT

GERALD P. NOE - ARCHITECT
399 LUCERNE DR.
SPARTANBURG, SC 29302
PH: (864) 583-2215
ATTN: KYLE HENRY
EMAIL: KYLE@GPNARCHITECTURE.COM

GENERAL NOTES

- THESE DRAWINGS ARE AN INSTRUMENT OF CONDITIONAL SERVICES. THE ARCHITECT TAKES NO RESPONSIBILITY FOR ACTUAL FIELD CONDITIONS AND CONSTRUCTION. THESE DRAWINGS ARE TO CONVEY DESIGN INTENTIONS AND CODE COMPLIANCE ONLY. ACTUAL LOCATIONS AND DIMENSIONS TO BE FIELD VERIFIED.
- ALL CONSTRUCTION MATERIAL AND INSTALLATION OF MECHANICAL, ELECTRICAL, & PLUMBING SHALL BE IN STRICT ACCORDANCE WITH ALL LOCAL CODES & ORDINANCES.
- ALL CONSTRUCTION MATERIAL AND INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH 2024 IBC AND THE ICC A117.1-2009.
- COORDINATION OF ALL TRADES IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND IS ESSENTIAL TO THE COMPLETION OF THE PROJECT.
- BY EXECUTING THE CONTRACT, THE CONTRACTOR REPRESENTS THAT HE HAS VISITED THE SITE, FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND CORRELATED HIS OBSERVATIONS WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS.
- NO CHANGE ORDERS WILL BE ISSUED FOR CHANGES REQUIRED IN THE WORK DUE TO AN INCOMPLETE FIELD VISIT BY THE CONTRACTOR PRIOR TO BIDDING.
- NO CHANGE ORDERS WILL BE ISSUED FOR CHANGES REQUIRED IN THE WORK AFTER CONSTRUCTION HAS COMMENCED UNLESS SPECIFICALLY AUTHORIZED BY AN OWNER'S REPRESENTATIVE.
- AN ERROR OR OMISSION IN THESE DOCUMENTS RESULTING IN A CHANGE ORDER FOR ADDITIONAL COST AND / OR TIME SHALL NOT BE CONSIDERED A HARDSHIP OR DAMAGE TO THE OWNER TO THE EXTENT THAT THE ADDITIONAL COST AND TIME WOULD HAVE INCREASED THE BASE BID PRICE AND / OR TIME HAD THERE BEEN NO ERROR OR OMISSION IN THE DOCUMENTS AT THE TIME BIDS WERE RECEIVED. THE OWNER ACKNOWLEDGES THAT THE WORK ASSOCIATED WITH THE ERROR OR OMISSION, HAD IT BEEN INCLUDED IN THE BASE BID, WOULD HAVE AFFECTED THE TIME AND COST OF THE ORIGINAL BASE BID PRICE. THE OWNER IS NOT ENTITLED TO BENEFIT FROM FREE OR REDUCED COST OR TIME FOR WORK THAT WOULD HAVE OTHERWISE INCREASED THE CONTRACT TIME AND OR COST OF THE BASE BID HAD NO ERROR OR OMISSION BEEN IN THE BID DOCUMENTS.
- THE CONTRACTOR WILL NOT SUBSTITUTE ITEMS WHICH THEY BELIEVE TO BE EQUAL OR BETTER THAN ITEMS SPECIFIED ON THESE DRAWINGS WITHOUT PRIOR NOTICE. ITEMS WHICH, WHEN SUBSTITUTED, REQUIRE APPROVAL OF THE BUILDING OFFICIAL WILL BE SUBMITTED TO THE BUILDING OFFICIAL, THE TENANT, & THE ARCHITECT.
- THE CONTRACTOR IS RESPONSIBLE FOR ADEQUATE BRACING, STRUCTURAL, & NON-STRUCTURAL MEMBERS DURING CONSTRUCTION.
- ALL FRAMED WALLS SHALL BE CONSTRUCTED WITH ANCHORS, TOP AND BOTTOM OF EACH STUD, PER CODE.
- ALL WORK SHALL BE ERECTED AND INSTALLED PLUMB, LEVEL, SQUARE AND TRUE, AND IN PROPER ALIGNMENT.
- ANY ITEM SCHEDULED TO BE REUSED MUST BE REFURBISHED & MAINTAINED TO A "LIKE NEW" CONDITION. **NO EXCEPTIONS.**
- ALL FLOOR PENETRATIONS MUST BE SEALED WITH A 2 HOUR RATING.
- ALL PENETRATIONS INTO OR THROUGH FIRE WALLS, FIRE BARRIERS, SMOKE BARRIER WALLS, & FIRE PENETRATIONS SHALL COMPLY WITH SECTION 712 OF ILLINOIS BUILDING CODE.
- GENERAL CONTRACTOR SHALL REFER TO FIREHOUSE SUBS DESIGN MANUAL PRIOR TO BIDDING.

GENERAL CONSTRUCTION NOTES

- GENERAL CONTRACTOR TO VERIFY ALL DIMENSIONS AT THE JOB SITE AND REPORT ANY DISCREPANCIES TO THE ARCHITECT. THE G.C. IS RESPONSIBLE FOR PROPER FIT AND INSTALLATION OF ALL WORK SHOWN ON THESE DRAWINGS. THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ANY FABRICATION OF INSTALLATION TECHNIQUES PROVIDED BY THE G.C. OR ANY OF HIS SUBCONTRACTORS.
- G.C. TO SECURE AND PAY FOR ALL PERMITS, TEMPORARY UTILITIES AND CARRY LIABILITY INSURANCE AS REQUIRED.**
- ALL DIMENSIONS ARE TO THE FACE OF BLOCK, STUD OR CENTERLINE, UNLESS NOTED OTHERWISE.
- ALL INTERIOR STUD WALLS TO BE METAL STUDS AT 16" O.C. WITH GYPSUM BOARD AT EACH FACE AS DETAILED, UNLESS NOTED OTHERWISE.
- ALL FLOOR FINISHES TO BE LEVEL AND FLUSH AT INTERSECTIONS, UNLESS OTHERWISE NOTED.
- CEILING SUSPENSION SYSTEM TO BE SECURED TO STRUCTURAL MEMBERS OR ADDITIONAL SUPPORTS ABOVE.
- G.C. TO PROVIDE COMPLETE SHOP DRAWINGS FOR ALL NECESSARY WORK AS SPECIFIED FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.

PROJECT INFORMATION

1451 PETERSON RD.
LIBERTYVILLE, IL 60048

TOTAL GROSS SQUARE FOOTAGE..... 8,276 SF
DESIGN OCCUPANT LOAD..... 168
(SEE G-2.0)

SCOPE OF WORK

REMODEL CONSISTING OF THE CONSTRUCTION OF A iSMASH WITHIN AN EXISTING BUILDING TO INCLUDE ALL ELECTRICAL, PLUMBING AND MECHANICAL MODIFICATIONS, INTERIOR PARTITIONS AND EQUIPMENT.

GOVERNING CODES

BUILDING CODE..... 2018 INTERNATIONAL BUILDING CODE
PLUMBING CODE..... 2014 ILLINOIS PLUMBING CODE
MECHANICAL CODE..... 2018 INTERNATIONAL MECHANICAL CODE
ELECTRICAL CODE..... 2017 NATIONAL ELECTRIC CODE
ENERGY CODE..... 2021 INTERNATIONAL ENERGY CONSERVATION CODE
ACCESSIBILITY CODE..... 2018 ILLINOIS ACCESSIBILITY CODE
FIRE CODE..... 2018 INTERNATIONAL FIRE CODE

BUILDING DATA

NAME OF PROJECT: iSMASH
ADDRESS: 1451 PETERSON RD.
LIBERTYVILLE, IL 60048

THIS PROJECT WAS DESIGNED UNDER:
2024 ILLINOIS BUILDING CODE
PROPOSED USE: A3
CODE ENFORCEMENT JURISDICTION:
GROSS AREA TENANT SPACE: 8,276 S.F.
CONSTRUCTION TYPE: IIB SPRINKLERED NFPA 13 (EXISTING)
OCCUPANCY CLASSIFICATION: A3 - LEVEL 2 ALTERATION
OCCUPANT LOAD: 168 PERSONS (SEE LIFE SAFETY PLAN ON G-2)
EGRESS WIDTH REQUIRED: 168 PERSONS x .2' = 33.6' (MIN. 36' REQUIRED)
EGRESS DOORS PROVIDED: 2
(1) 6'-0" x 7'-0" STOREFRONT DOORS
(1) 3'-0" x 7'-0" METAL DOOR
PLUMBING FIXTURES REQUIRED / PROVIDED:
PLUMBING FIXTURES REQUIRED / PROVIDED PER 2902.2 (2024 ILLINOIS BUILDING CODE):
REQUIRED: MENS: 1 TOILET, 1 URINAL, 1 LAVATORY/ WOMENS: 2 TOILETS, 2 LAVATORIES
1 - MOP BASIN, 1- HIGH/LOW DRINKING FOUNTAIN
PROVIDED: MENS: 1 TOILET, 1 URINAL, 1 LAVATORY/ WOMENS: 2 TOILETS, 2 LAVATORIES
1 - MOP BASIN, 1- HIGH/LOW DRINKING FOUNTAIN
MAXIMUM TRAVEL DISTANCE: 250'-0"
PROVIDE FIRE EXTINGUISHERS IN ACCORDANCE WITH N.F.P.A. 10

DEFERRED SUBMITTAL:

- FIRE SPRINKLER SYSTEM MODIFICATIONS

SHEET INDEX

	COVER PAGES
G-01.0	COVER SHEET / SHEET INDEX / PROJECT INFO.
G-02.0	LIFE SAFETY & ACCESSIBILITY PLAN
G-02.1	KEY PLAN & ACCESSIBLE ROUTE LOCATION
G-03.0	ACCESSIBILITY DETAILS
G-03.1	ACCESSIBILITY DETAILS
ARCHITECTURAL	
A-01.0	DIMENSIONED FLOOR PLAN
A-01.1	WALL TYPES & DOOR SCHEDULE
A-01.2	FINISH SCHEDULE & RESTROOM ELEVATIONS
A-02.0	REFLECTED CEILING PLAN AND SCHEDULE
A-02.1	ASTM E580 CEILING DETAILS
A-02.2	ASTM E580 CEILING DETAILS
A-03.0	CAL GREEN
A-03.1	CAL GREEN
A-04.0	ACCESSIBILITY NOTES
A-04.1	ACCESSIBILITY NOTES
A-04.2	ACCESSIBILITY DETAILS
A-04.3	ACCESSIBILITY DETAILS
PLUMBING (by NY ENGINEERING)	
P-0.1	PLUMBING NOTES, SYMBOLS, ABBREVIATIONS & SPECIFICATIONS
P-0.2	PLUMBING SPECIFICATIONS
P-1.0	PLUMBING WATER & GAS FLOOR PLAN
P-1.1	PLUMBING SANITARY FLOOR PLAN
P-2.0	PLUMBING DETAILS
P-3.0	PLUMBING SCHEDULE AND RISER DIAGRAMS
MECHANICAL (by NY ENGINEERING)	
M-0.1	MECHANICAL SYMBOLS, ABBREVIATIONS & NOTES
M-0.2	MECHANICAL SPECIFICATIONS
M-1.0	MECHANICAL FLOOR PLAN
M-1.1	MECHANICAL ROOF PLAN
M-2.0	MECHANICAL DETAILS
M-2.1	MECHANICAL DETAILS & SCHEDULE
ELECTRICAL (by NY ENGINEERING)	
E-0.1	ELECTRICAL SYMBOL LIST, ABBREVIATION AND GENERAL NOTES
E-0.2	ELECTRICAL SPECIFICATIONS (1 OF 2)
E-0.3	ELECTRICAL SPECIFICATIONS (2 OF 2)
E-1.0	LIGHTING FLOOR PLAN
E-2.0	POWER FLOOR
E-2.1	ROOF POWER PLAN
E-3.0	ELECTRICAL DETAILS
E-4.0	ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES
E-4.1	ELECTRICAL PANEL SCHEDULES

VICINITY MAP



ARCHITECTURAL SYMBOLS:

	DETAIL TAG DETAIL NUMBER ON SHEET SHEET NUMBER		ROOM IDENTIFICATION DOOR TAG
	ELEVATION TAG DETAIL NUMBER ON SHEET SHEET NUMBER		WALL TYPE TAG
	INDICATES SECTION IS SIMILAR		REVISION TRIANGLE
	INDICATES SECTION IS MIRRORRED		CENTERLINE
	INDICATES SECTION IS TYPICAL		FINISH TAG
	HEIGHT A.F.F.		



STATE OF ILLINOIS LIC. # : 001-020830

**GERALD P. NOE
ARCHITECT**

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.
COPYRIGHT 2025
ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

COVER SHEET

PROJECT NUMBER 25-088

DATE 09-05-2025

SHEET NO.

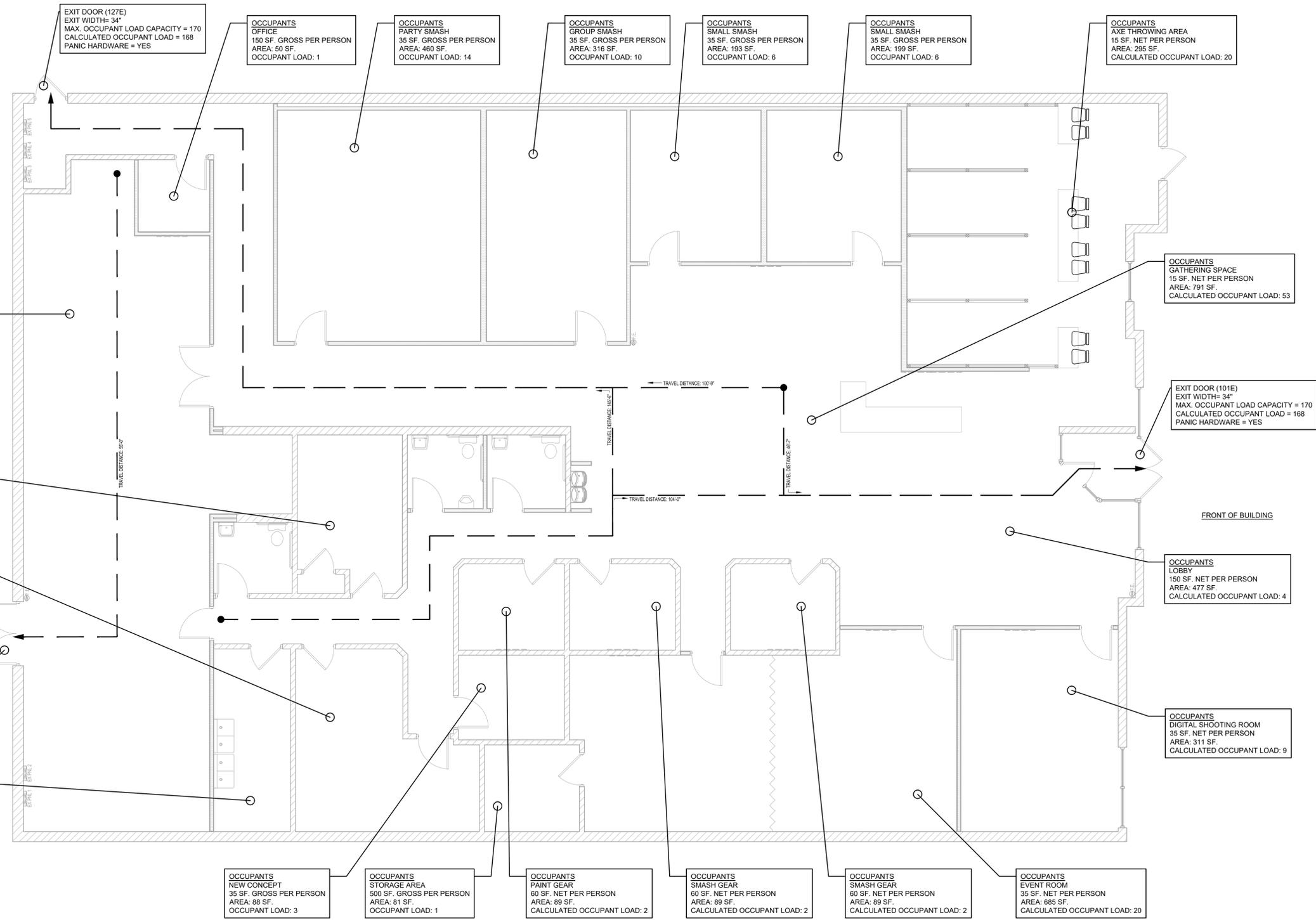
G-1.0

SHEET 1 OF 4

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

LIFE SAFETY & ADA NOTES

- CONTRACTOR TO FIELD VERIFY THE PRESENCE OF A DUCT SMOKE DETECTOR & THAT IT IS IN COMPLIANCE WITH 2018 NCMC (MECHANICAL) SECTION 606.
- REQUIRED 'PRELIMINARY SMOKE / LIFE SAFETY SYSTEM TEST. G.C. TO COORDINATE EXECUTION WITH HVAC SUB-CONTRACTOR PRIOR TO CONTACTING AND SCHEDULING FINAL SMOKE TEST WITH THE CITY.
- FIRE EXTINGUISHERS SHALL BE PER NFPA 10, SECTION 3-2.1, AND SHALL BE CONFIRMED WITH THE LOCAL FIRE MARSHAL.
- ALL EXIT WAYS SHALL BE KEPT FREE AND CLEAR FOR EXITING AND ENTERING PURPOSES.
- SEE ELECTRICAL DRAWINGS FOR EMERGENCY LIGHT & EXIT SIGN LOCATIONS AND SPECIFICATIONS.
- PROJECT HAS A FULL ACCESSIBLE MAIN ENTRY AT GROUND LEVEL.
- THE PROVIDED ACCESSIBILITY ROUTE OF 36" TO ALL PRIMARY FUNCTIONS OF THE FACILITY SHALL BE MAINTAINED THROUGHOUT THE PUBLIC AREAS OF THE STORE, EXCEPT FOR SEGMENTS 24" LONG, 48" APART, WHERE THE ACCESSIBLE ROUTE MAY BE REDUCED TO 32".
- AT LEAST 5 PERCENT OF THE SEATING, BUT NOT LESS THAN ONE SEAT, SHALL BE ACCESSIBLE.
- MAX. HEIGHT FOR ALL ACCESSIBLE COUNTERS SHALL BE 34" A.F.F.



OCCUPANTS STORAGE AREA
500 SF. GROSS PER PERSON
AREA: 595 SF.
OCCUPANT LOAD: 2

OCCUPANTS SMALL PAINT
35 SF. NET PER PERSON
AREA: 150 SF.
CALCULATED OCCUPANT LOAD: 6

OCCUPANTS LARGE PAINT
35 SF. NET PER PERSON
AREA: 207 SF.
CALCULATED OCCUPANT LOAD: 6

EXIT DOOR (124)
EXIT WIDTH= 34"
MAX. OCCUPANT LOAD CAPACITY = 170
CALCULATED OCCUPANT LOAD = 2
PANIC HARDWARE = NO

OCCUPANTS PAINT CLEAN-UP
500 SF. NET PER PERSON
AREA: 65 SF.
CALCULATED OCCUPANT LOAD: 1

OCCUPANTS NEW CONCEPT
35 SF. GROSS PER PERSON
AREA: 88 SF.
OCCUPANT LOAD: 3

OCCUPANTS STORAGE AREA
500 SF. GROSS PER PERSON
AREA: 81 SF.
OCCUPANT LOAD: 1

OCCUPANTS PAINT GEAR
60 SF. NET PER PERSON
AREA: 89 SF.
CALCULATED OCCUPANT LOAD: 2

OCCUPANTS SMASH GEAR
60 SF. NET PER PERSON
AREA: 89 SF.
CALCULATED OCCUPANT LOAD: 2

OCCUPANTS SMASH GEAR
60 SF. NET PER PERSON
AREA: 89 SF.
CALCULATED OCCUPANT LOAD: 2

OCCUPANTS EVENT ROOM
35 SF. NET PER PERSON
AREA: 685 SF.
CALCULATED OCCUPANT LOAD: 20

1 LIFE SAFETY & ACCESSIBILITY PLAN
SCALE: N.T.S.

WALL TYPE LEGEND	
	EXISTING WALL / PARTITION TO REMAIN
	TENANT SEPARATION WALL (1-HOUR RATING)
	TENANT SEPARATION WALL (2-HOUR RATING)
	NEW INTERIOR PARTITION
	HEADER / WALL ABOVE
	EXISTING GLASS, N.I.C.
	ALUMINUM TUBE RAIL

(1) TYPE ABC FIRE EXTINGUISHERS MIN. (WITHIN 75' OF TRAVEL)
MOUNT EXTINGUISHER AT 48" AFF TO OPERATING MECHANISM.
EXTINGUISHER TO BE 5 LB OR MIN REQUIRED BY FIRE MARSHAL.
MIN. RATING OF A PORTABLE F.E. IS 3A40BC. FINAL NUMBER AND LOCATION TO BE APPROVED BY FIRE MARSHAL.
G.C. TO PROVIDE FIRE EXTINGUISHERS.

CONTRACTOR REQUIREMENTS

- GENERAL CONTRACTOR AND ALL SUB-CONTRACTORS SHALL COMPLY WITH THE LANDLORD "EXHIBIT C". CONTRACTOR SHALL OBTAIN COPY EMAIL FROM FRANCHISES OWNER.
- ALL CONTRACTORS TO REFERENCE FHS DESIGN MANUAL, PRIOR TO BIDDING.

ROOFING CONTRACTOR (REQUIRED)

GENERAL CONTRACTOR SHALL COORDINATE ROOFING AND FLASHING WITH :

GC TO INCLUDE ALL CHARGES ASSOCIATED WITH THIS PROJECT IN THEIR BID.

FIRE ALARM CONTRACTOR (RECOMMEND)

GC TO INCLUDE ALL CHARGES ASSOCIATED WITH THIS PROJECT IN THEIR BID.



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.
COPYRIGHT 2025
ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:
LIFE SAFETY PLAN

PROJECT NUMBER 25-088

DATE 09-05-2025

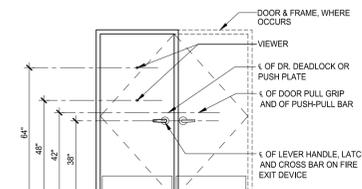
SHEET NO.

G-2.0

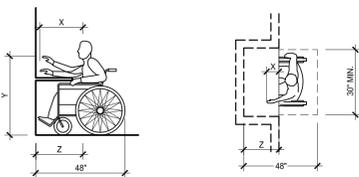
SHEET 4 OF 4

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

CONTRACTOR SHALL ONLY UTILIZE APPLICABLE TYPICAL ACCESSIBILITY DETAILS & NOTES



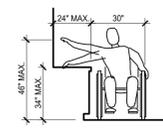
30 GENERAL DOOR REQUIREMENTS
SCALE: 1/8"=1'-0"



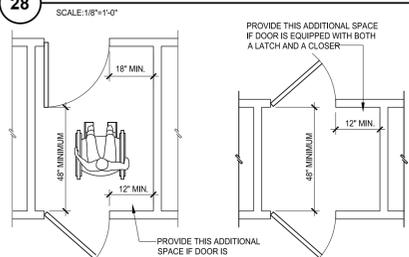
25 WALKS & SIDEWALKS
SCALE: 1/8"=1'-0"

NOTES:
1. X SHALL BE < 25 INCHES. Z SHALL BE > X.
2. WHEN X < 20 INCHES, THEN Y SHALL BE 48 INCHES MAXIMUM.
3. WHEN X IS 20 TO 25 INCHES, THEN Y SHALL BE 44 INCHES MAXIMUM.

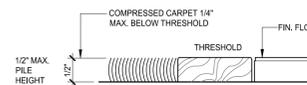
D MAXIMUM FORWARD REACH OVER AN OBSTRUCTION



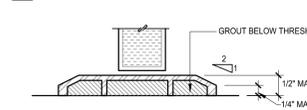
A REACH REQUIREMENTS
SCALE: 1/8"=1'-0"



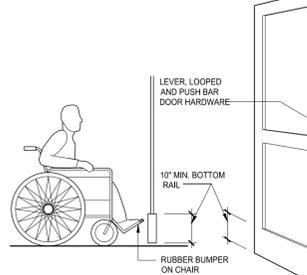
E VESTIBULES / TWO DOORS IN SERIES



D TRANSITION BETWEEN FLOOR FINISHES

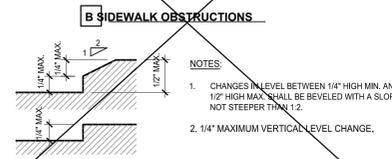


C THRESHOLD



B DOOR HARDWARE & MOUNTING HEIGHTS

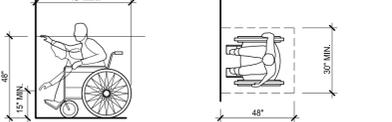
26 GENERAL DOOR REQUIREMENTS
SCALE: 1/8"=1'-0"



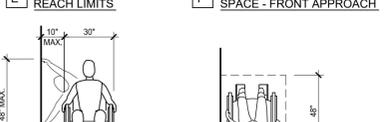
A LEVEL CHANGES

NOTES:
1. CHANGES IN LEVEL BETWEEN 1/4" HIGH MIN. AND 1/2" HIGH MAX. SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1:2.
2. 1/4" MAXIMUM VERTICAL LEVEL CHANGE.

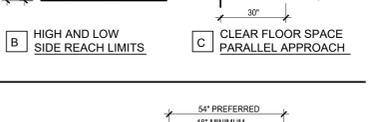
B SIDEWALK OBSTRUCTIONS



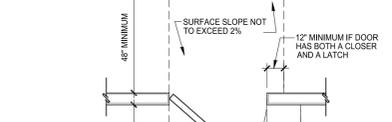
E HIGH FORWARD REACH LIMITS



F CLEAR FLOOR SPACE - FRONT APPROACH



B HIGH AND LOW SIDE REACH LIMITS

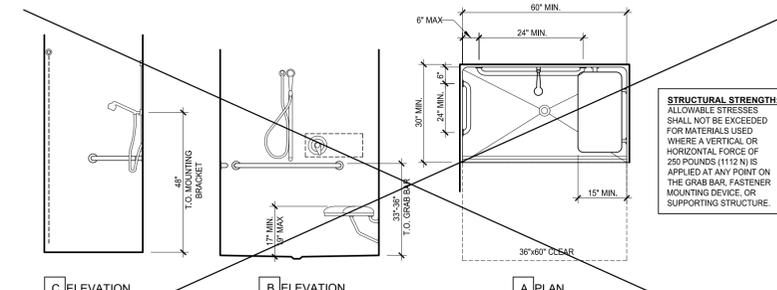


C CLEAR FLOOR SPACE PARALLEL APPROACH



A TYPICAL DOOR LANDING CLEARANCES

THRESHOLD
A. FLOOR(S) OR LANDING(S) ARE NOT MORE THAN 1/2" LOWER THAN THE TOP OF THE THRESHOLD OF THE DOORWAY.
B. CHANGE IN LEVEL BETWEEN 1/4" AND 1/2" IS BEVELED AT A MAXIMUM GRADIENT OF 1:2.
C. RECESSED DOOR MATS ARE ADEQUATELY ANCHORED TO PREVENT INTERFERENCE WITH OF 1:2.
D. CARPET AND CARPET TILES ARE SECURELY ATTACHED AND HAVE LEVEL LOOP, TEXTURED LOOP, LEVEL-CUT PILE OR LEVEL-CUT/NO-CUT PILE WITH PILE NOT EXCEEDING 1/2" IN HEIGHT.
E. EXPOSED EDGES OF CARPET ARE FASTENED TO FLOOR SURFACES AND HAVE TRIM ALONG ALONG THE ENTIRE LENGTH OF THE EXPOSED EDGE.
DOOR TYPE:
A. REQUIRED EXIT DOORWAY(S) ARE OF A SIZE TO PERMIT INSTALLATION OF A DOOR A MINIMUM 3' IN WIDTH, 6'-8" IN HEIGHT.
B. EXIT DOOR IS CAPABLE OF OPENING A MINIMUM OF 90 DEGREES.
C. THE CLEAR WIDTH OF THE DOORWAY IS 32" MINIMUM.
D. DOUBLE DOORS/AUTOMATIC DOORS - AT LEAST ONE DOOR MUST COMPLY WITH ITEM B AND C ABOVE.
E. BOTTOM 10" OF DOOR (EXCEPT SLIDING DOORS) HAS A SMOOTH, UNINTERRUPTED SURFACE THAT ALLOWS DOOR TO BE OPENED BY A WHEELCHAIR FOOTREST WITHOUT CREATING A TRAP OR HAZARDOUS CONDITION.
F. EFFORT TO OPERATE DOOR IS WITHIN PRESSURE ALLOWED. INTERIOR AND EXTERIOR DOORS - 5 POUNDS MAXIMUM PRESSURE TO OPERATE. FIRE DOORS - 15 POUNDS MAXIMUM PRESSURE TO OPERATE.
G. TWO DOORS A SERIES PROVIDE A MINIMUM OF 48" CLEAR SPACE FROM ANY DOOR IN ANY POSITION.
HARDWARE:
A. HANDLES, PULL LATCHES, LOCKS AND OTHER OPERATING DEVICES ON ACCESSIBLE DOORS SHALL HAVE A SHAPE THAT IS EASY TO GRASP WITH ONE HAND AND DOES NOT REQUIRE TIGHT GRASPING, TIGHT PINCHING OR TWISTING OF THE WRIST TO OPERATE.
B. LATCHING AND LOCKING DOORS THAT ARE HAND OPERATED AND WHICH ARE IN A PATH OF TRAVEL ARE OPERABLE BY LEVER TYPE, PANIC BARS, PUSH-PULL ACTIVATION BARS, U-SHAPED HANDLES OR OTHER HARDWARE DESIGNED TO PROVIDE PASSAGE. LOCKED EXIT DOORS SHALL OPERATE AS ABOVE IN EGRESS DIRECTION.
C. 11B-404.2.7 OPENING HARDWARE IS CENTERED BETWEEN 34" AND 44" ABOVE FINISH FLOOR.
D. 11B-404.2.8.1 - DOOR CLOSERS AND GATE CLOSERS, IF PRESENT, SHALL BE ADJUSTED SO THAT FROM AN OPENING POSITION OF 90°, THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12° FROM THE LATCH IS 5 SECONDS MINIMUM.
11B-404.2.8.2 - DOOR AND GATE SPRING HINGES, IF PRESENT, SHALL BE ADJUSTED SO THAT FROM THE OPEN POSITION OF 70°, THE DOOR OR GATE SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MINIMUM.

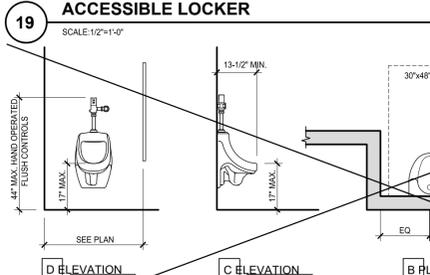


20 ACCESSIBLE SHOWER PLAN & ELEVATIONS
SCALE: 1/2"=1'-0"

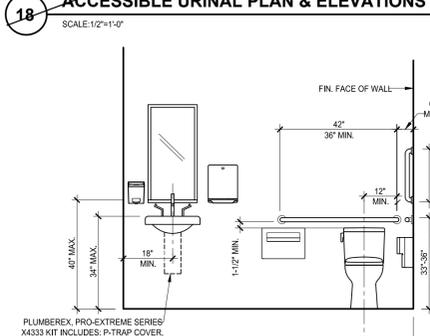
STRUCTURAL STRENGTH:
ALLOWABLE STRESSES SHALL NOT BE EXCEEDED FOR MATERIALS USED WHERE A VERTICAL OR HORIZONTAL FORCE OF 250 POUNDS (1112 N) IS APPLIED AT ANY POINT ON THE GRAB BAR, FASTENER MOUNTING DEVICE, OR SUPPORTING STRUCTURE.



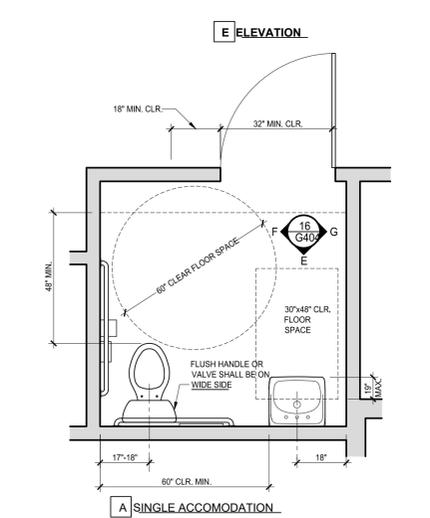
19 ACCESSIBLE LOCKER
SCALE: 1/2"=1'-0"



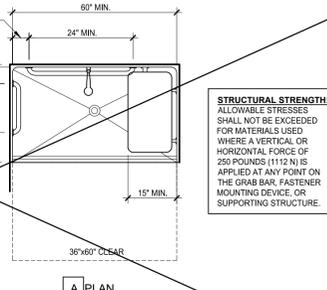
18 ACCESSIBLE URINAL PLAN & ELEVATIONS
SCALE: 1/2"=1'-0"



16 ACCESSIBLE TOILET PLAN & ELEVATIONS
SCALE: 1/2"=1'-0"



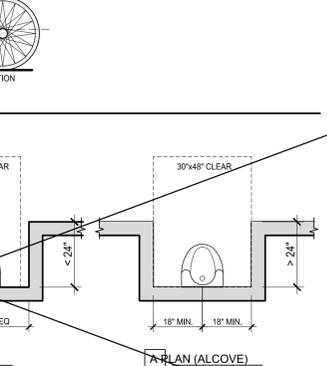
10 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



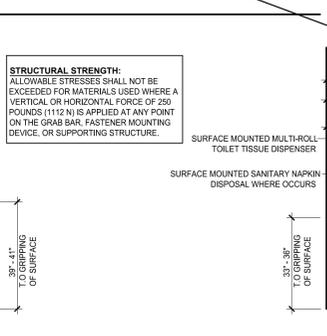
10 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



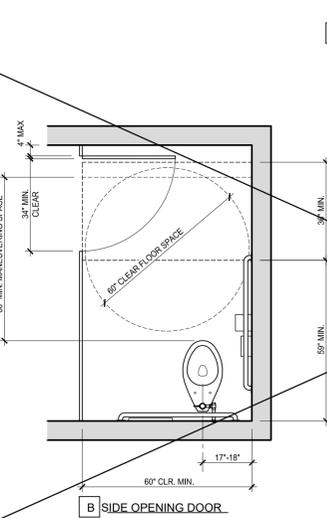
8 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



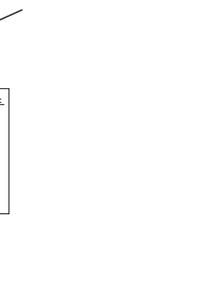
10 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



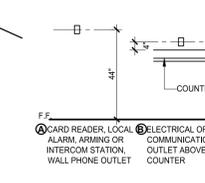
8 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



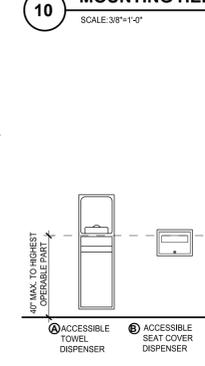
16 ACCESSIBLE TOILET PLAN & ELEVATIONS
SCALE: 1/2"=1'-0"



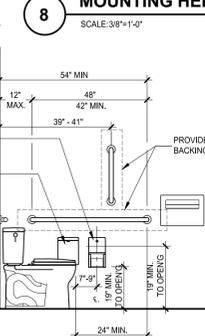
10 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



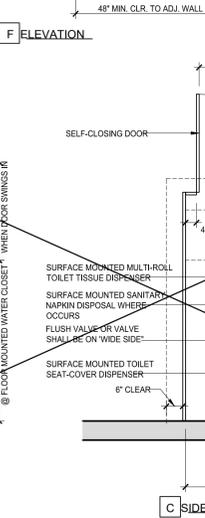
8 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"



10 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"

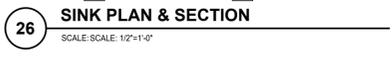
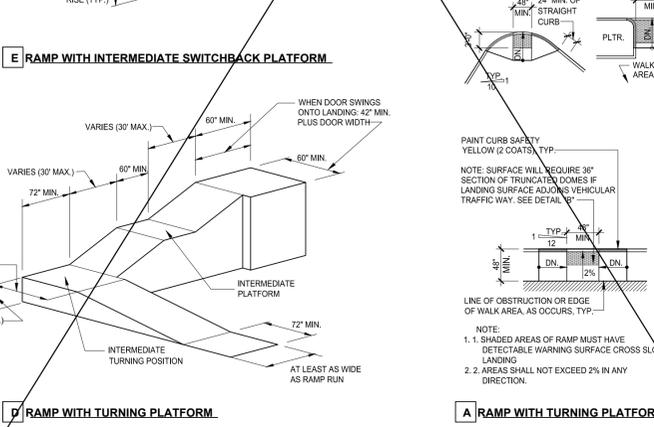
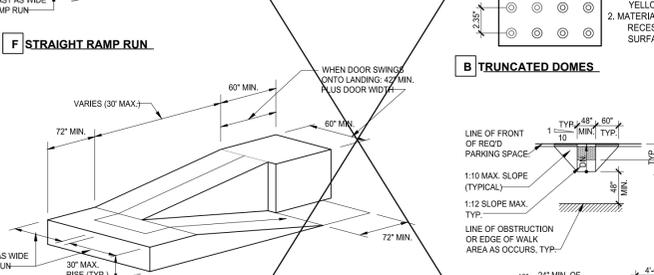
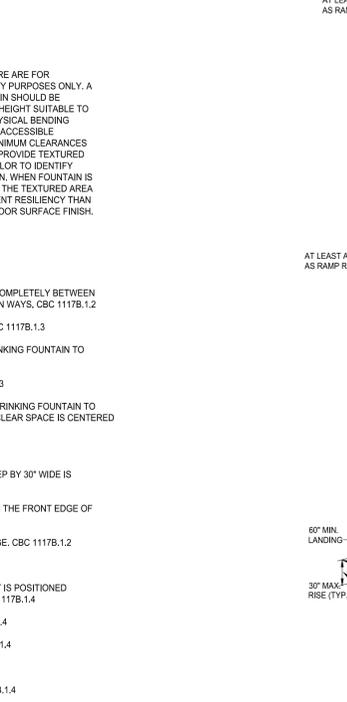
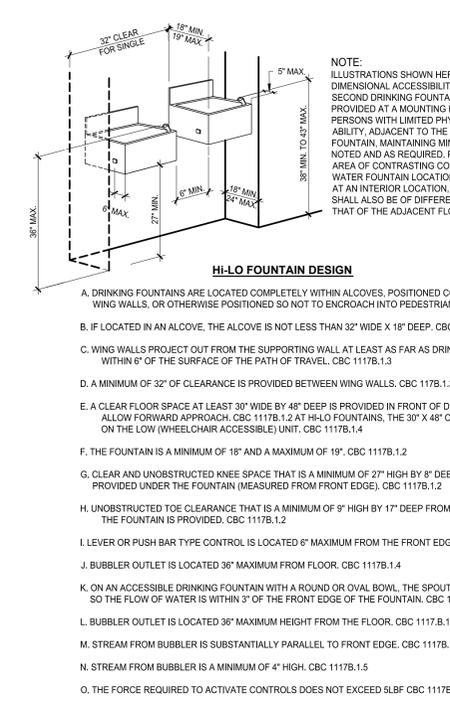
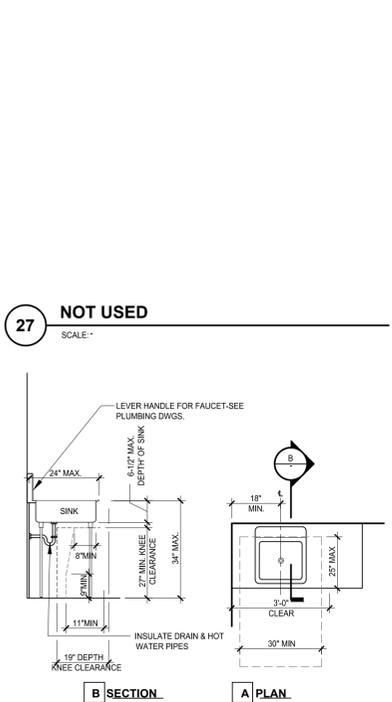
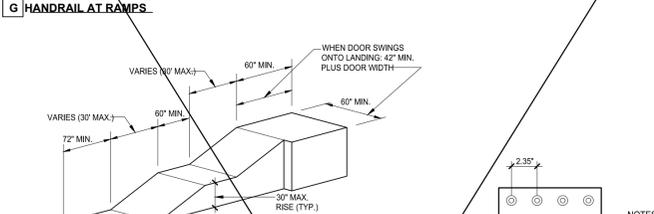
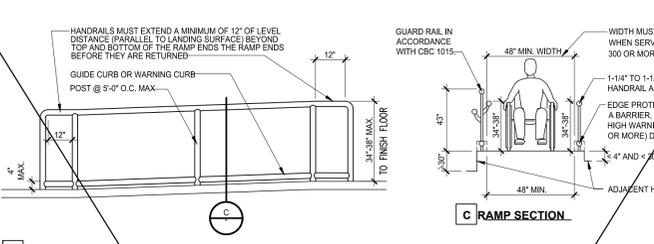
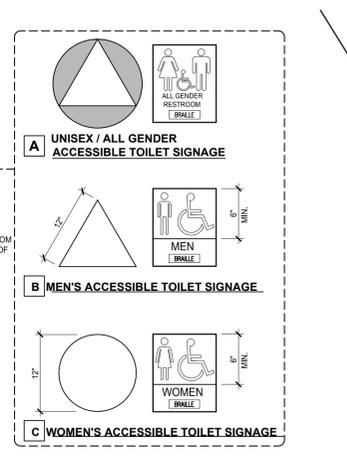
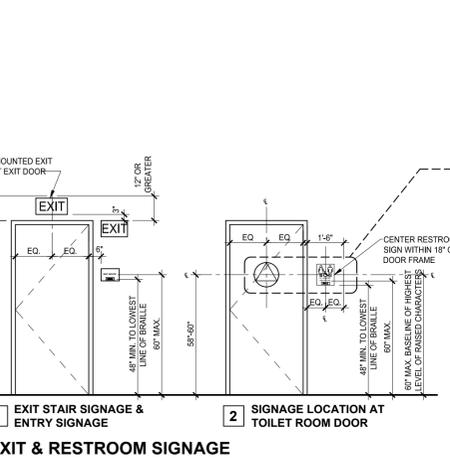
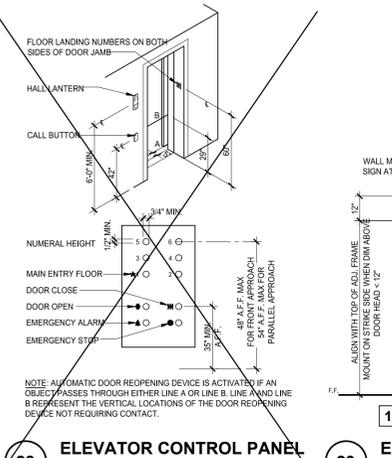
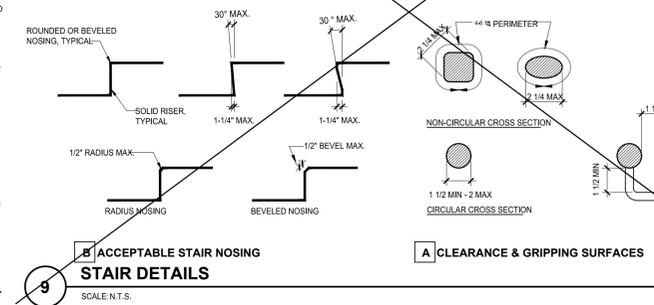
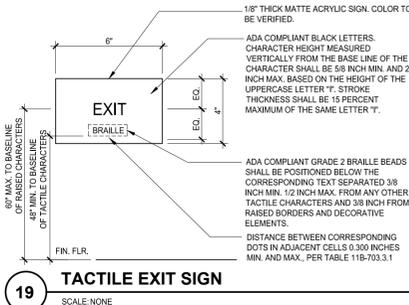
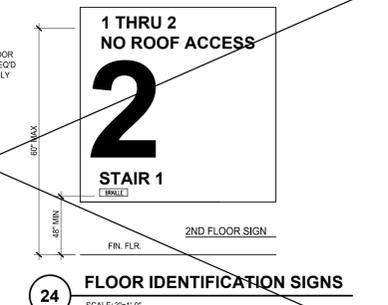
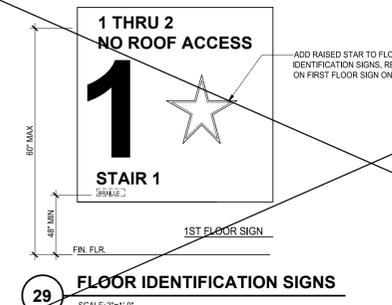
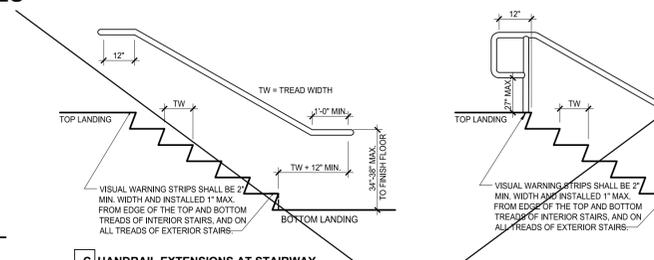
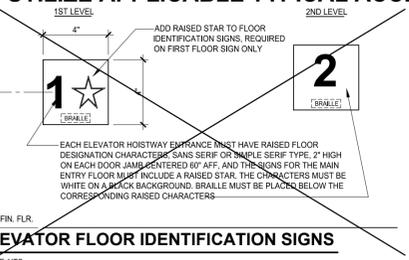
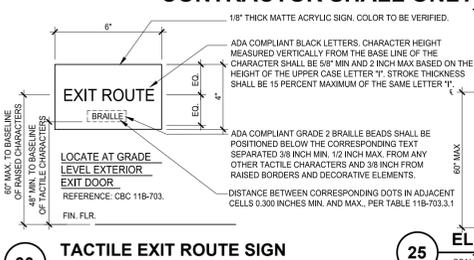


8 MOUNTING HEIGHTS
SCALE: 3/8"=1'-0"

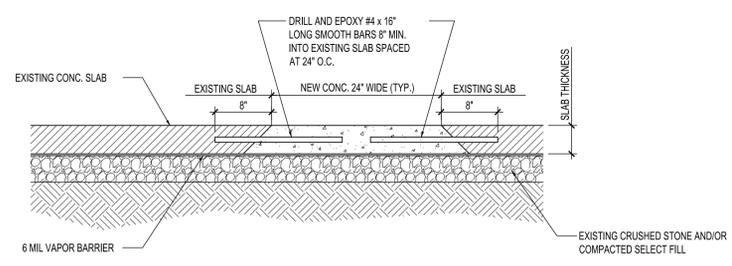
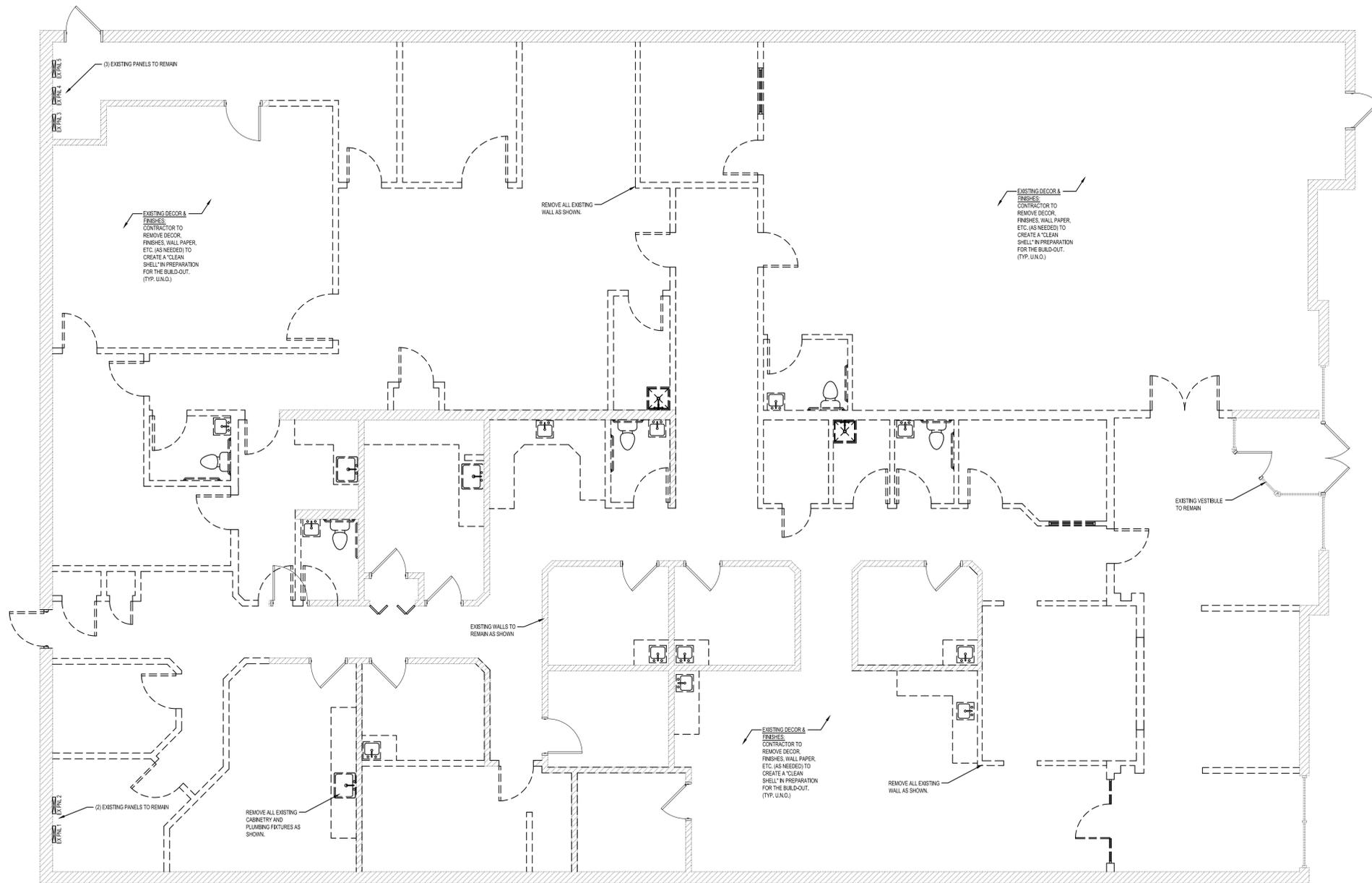


16 ACCESSIBLE TOILET PLAN & ELEVATIONS
SCALE: 1/2"=1'-0"

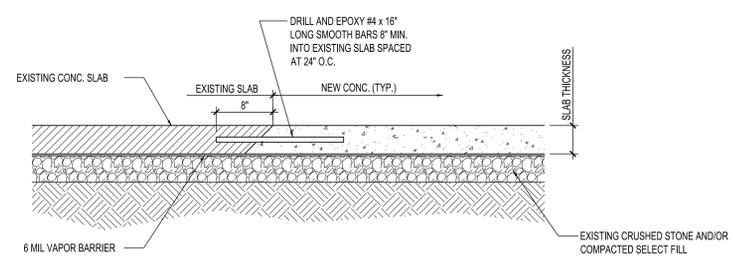
CONTRACTOR SHALL ONLY UTILIZE APPLICABLE TYPICAL ACCESSIBILITY DETAILS & NOTES



- GENERAL DEMOLITION NOTES:**
1. CONTRACTOR TO VERIFY ALL PLUMBING REQUIREMENTS BASED ON NEW EQUIPMENT PROVIDED. IDENTIFY EXTENT OF SLAB REMOVAL PRIOR TO CUTTING. INSTALL NEW PLUMBING FIXTURES TO COMPLY WITH ALL APPLICABLE LOCAL AND STATE CODES.
 2. CUTTING OF EXISTING CONSTRUCTION FOR THE INSTALLATION OF ALL NEW WORK BY ALL TRADES, AND SUBSEQUENT PATCHED THEREOF, SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR, WHETHER THE WORK IS DONE BY HIS OWN FORCES OR NOT. CUTTING SHALL BE TO A STRAIGHT LINE. UNWORKMANLIKE CUTTING, DAMAGE RESULTING FROM AND UNACCEPTABLE PATCHING SHALL REPAIRED AND/OR REPLACED TO AN ACCEPTABLE CONDITION APPROVED BY THE OWNER.
 3. PATCHING MATERIAL SHALL MATCH EXISTING ADJACENT MATERIALS AND CLOSELY AS POSSIBLE IN COLOR, PATTERNS AND/OR TEXTURE.
 4. ALL SALVAGE MATERIALS REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER U.N.O. ALL NON-SALVAGED CONSTRUCTION MATERIALS AND DEBRIS FROM DEMOLITION WORK SHALL BE REMOVED FROM THE SITE AS WORK PROGRESSES.
 5. PROTECT ALL EXISTING FINISHES, WALLS, FIXTURES, AND DEVICES TO REMAIN.
 6. THE CONTRACTOR SHALL COORDINATE THE SEQUENCE OF WORK WITH THE OWNER. THE SCHEDULE SHALL BE REVISED AT THE WEEKLY JOB SITE MEETINGS.
 7. CONTRACTOR TO PATCH EXISTING FINISHES TO ORIGINAL CONDITION AND TO TOUCHUP FINISHES AS REQUIRED PRIOR TO INSTALLATION.
 8. ALL EXISTING ELECTRICAL OUTLETS, SWITCHES, JUNCTION BOXES, CLEAN-OUTS, PLUMBING ACCESS SHALL REMAIN ACCESSIBLE.



2 TYP. SLAB "TRENCH" REPLACEMENT DETAIL (WHERE APPLICABLE)
SCALE: 1" = 1'-0"



3 TYP. SLAB "TIE-IN" DETAIL - (WHERE APPLICABLE)
SCALE: 1" = 1'-0"

1 DEMO PLAN
SCALE: 3/16" = 1'-0"



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.
COPYRIGHT 2025
ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

DEMO PLAN

PROJECT NUMBER 25-088

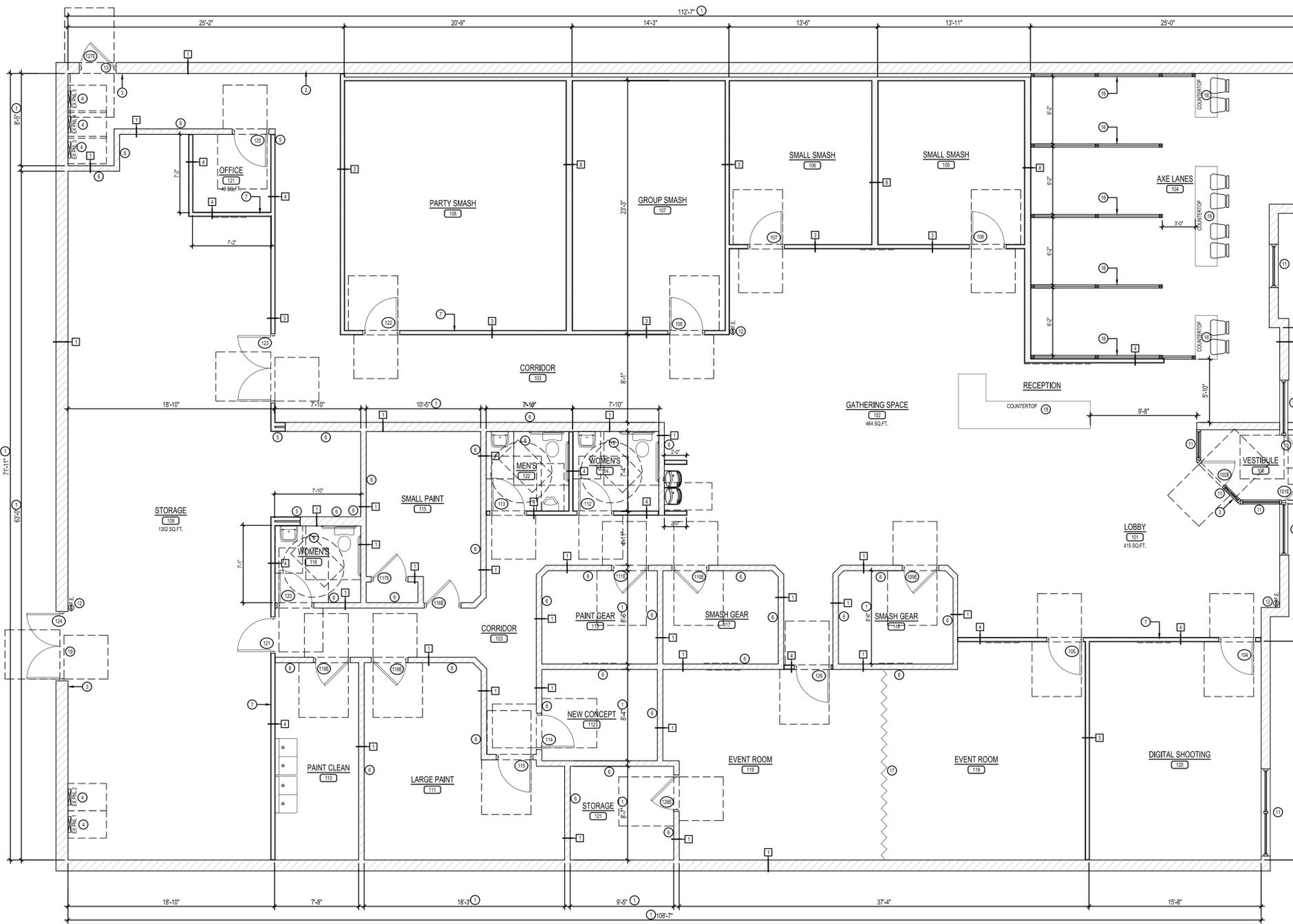
DATE 09-05-2025

SHEET NO.

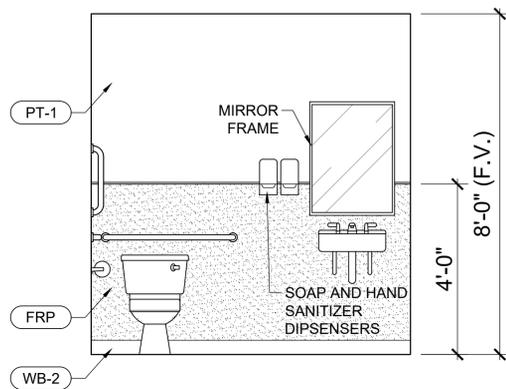
DM-1

SHEET 1 OF 1

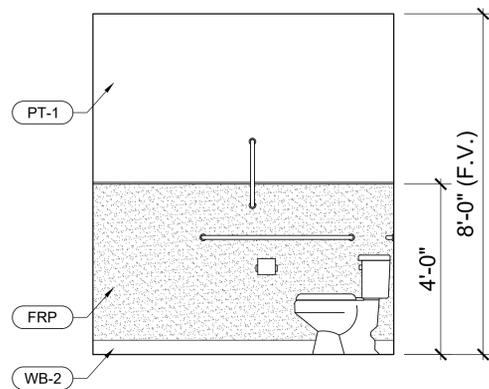
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION, AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



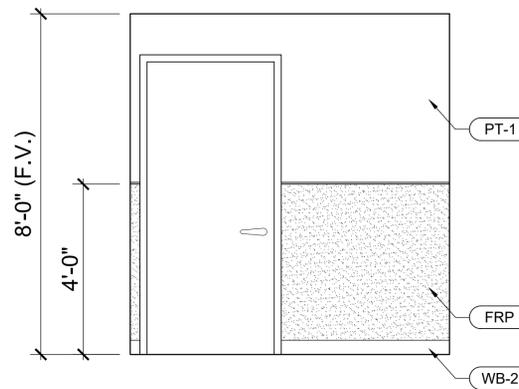
1 FLOOR PLAN
SCALE: 3/16" = 1'-0"



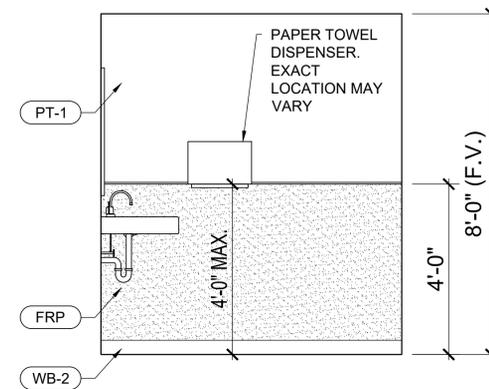
1 RESTROOM ELEVATION
SCALE: 1/4" = 1'-0"



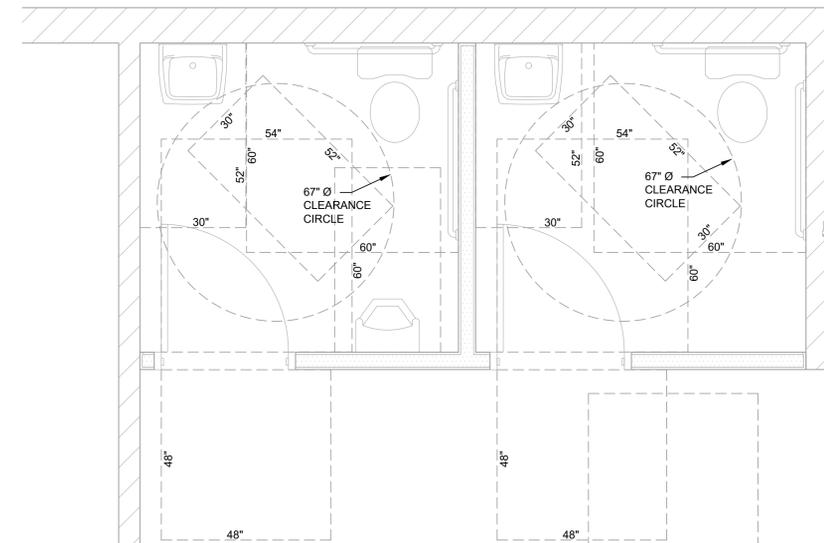
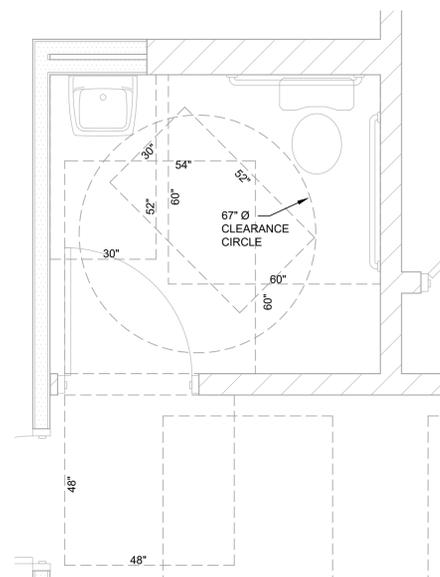
2 RESTROOM ELEVATION
SCALE: 1/4" = 1'-0"



3 RESTROOM ELEVATION
SCALE: 1/4" = 1'-0"



4 RESTROOM ELEVATION
SCALE: 1/4" = 1'-0"



5 ENLARGED RESTROOM PLAN
SCALE: 1/2" = 1'-0"



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

ENLARGED RESTROOM PLAN & ELEVATIONS

PROJECT NUMBER 25-088

DATE 09-05-2025

SHEET NO.

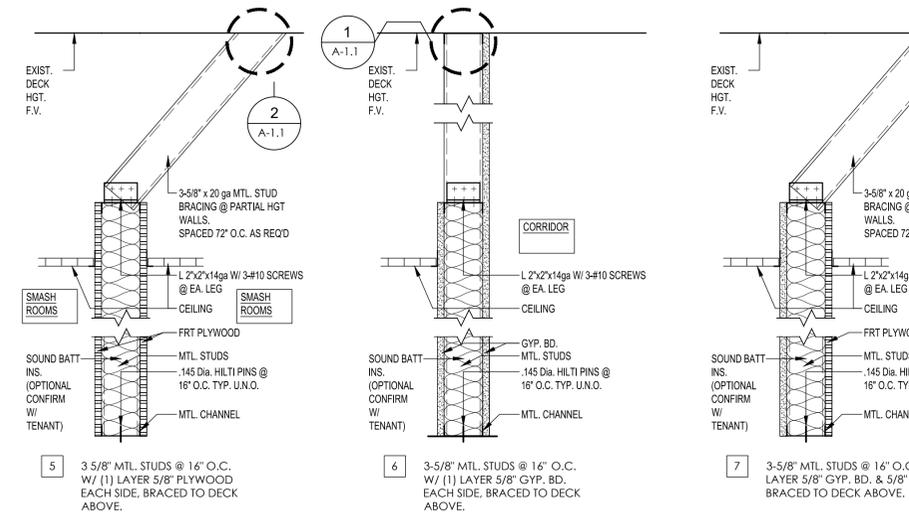
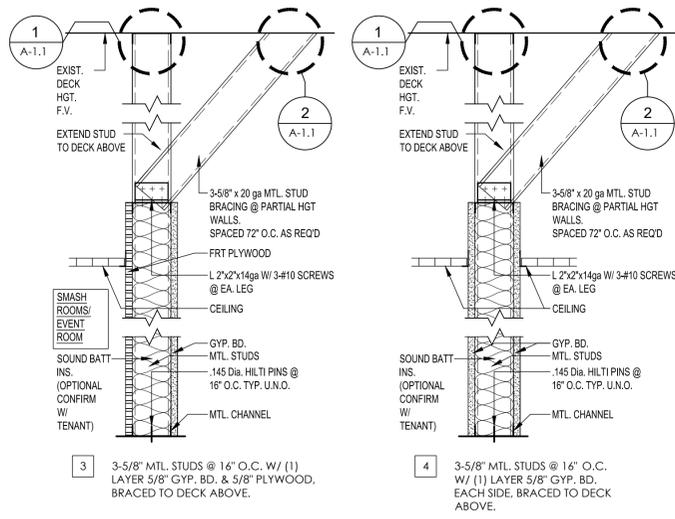
A-1.2

SHEET 3 OF 16

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

WALL TYPES

- NOTES:
 1. VERIFY EXTG. CONDITIONS IN FIELD.
 2. G.C. TO MAINTAIN FIRE RATING THROUGHOUT.
 3. G.C. TO INSTALL BLOCKING AS REQUIRED FOR NECESSARY EQUIPMENT/ACCESSORIES. COORDINATE LOCATIONS WITH PLANS.
 4. SEE ATTACHMENT DETAILS ON A-04.7 FOR STUD BRACING INFO.
 5. PROVIDE CONTINUOUS WALL BRIDGING AT 60" O.C. VERTICALLY.
 6. REFER TO ROOM FINISH SCHEDULE FOR ALL FINISH SELECTIONS, CEILING TYPE & HEIGHTS, & TYPES, SIZES, & LOCATIONS.



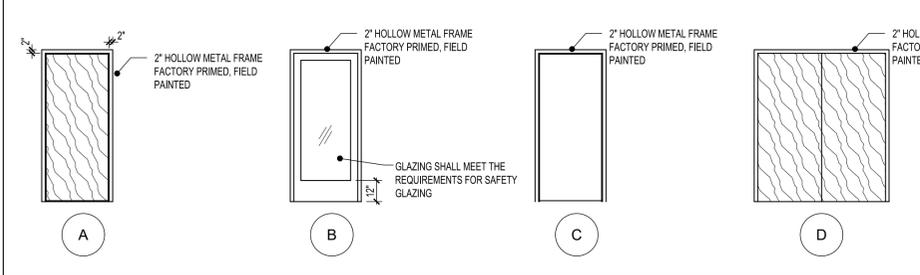
- 1 EXISTING WALL TO REMAIN
 2 ADD 1 LAYER OF 5/8\"/>

DOOR SCHEDULE

DOOR #	ROOM	STYLE	DIM.	DOOR			FRAME		HARDWARE	NOTES
				THICKNESS	MTRL.	FINISH	MATERIAL	FINISH		
101	(E) STOREFRONT DOOR	B	(2)3'-0\"/>							

LEGEND
 E= EXISTING HC=HOLLOW CORE DOOR SC=SOLID CORE DOOR HM=HOLLOW METAL CW=COMPOSITE WOOD LAM=LAMINATE
 SS=STAINLESS STEEL MANUF.=MANUFACTURER

DOOR STYLE (FRAME & ELEVATIONS)



- NOTES
 1. EXISTING TO REMAIN
 2. ALL EXTERIOR DOORS (INCLUDING EXISTING) SHALL BE SELF CLOSING AND RODENT PROOF. IF A CLOSER DOES NOT EXIST G.C. IS TO PROVIDE AND INSTALL ONE.
 3. PER 1008.1.9.: DOOR *101* SHALL HAVE LOCKING DEVICE THAT IS READILY DISTINGUISHABLE AS LOCKED, AND PROVIDED WITH A KEY THAT CANNOT BE REMOVED FROM THE EGRESS SIDE. DOORS SHALL BE READILY DISTINGUISHABLE AS LOCKED WITH A SIGN STATING: *THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED*. THE USE OF THE KEY-OPERATED LOCKING DEVICE IS REVOCABLE BY THE BUILDING OFFICIAL FOR VIOLATIONS OF SECTION 1008.1.9.3.
 4. DOOR TO MEET ADA DOOR OPENING PRESSURE GUIDELINES. MAX 5 LBS (INTERIOR) & 10-15 LBS. (EXTERIOR)
 5. PROVIDE NYLON WASHER / GROMMETS AT DOOR HANDLES TO PREVENT METAL ON METAL CONTACT.

- GENERAL NOTES
 a. DOOR HARDWARE SHALL HAVE LEVER-OPERATED OR PUSH TYPE MECHANISM.
 b. DOORS IN EXITS SHALL NOT BE SUBJECT TO THE USE OF A KEY FOR OPERATION FROM THE INSIDE OF THE SPACE
 c. ALL GLASS IN DOORS SHALL BE TEMPERED (T)
 d. TRIM THE BOTTOM OF DOORS TO CLEAR THE TOP OF ALL FINISHED FLOORS, AS APPLICABLE 1/4\"/>

DOOR HARDWARE

HARDWARE SET #1	HARDWARE SET #2	HARDWARE SET #3	HARDWARE SET #4	HARDWARE SET #5	HARDWARE SET #6
3 HINGES	3 HINGES	3 HINGES	3 HINGES	3 HINGES	EXISTING TO REMAIN TO BE RE-USED
1 CLOSER	1 CLOSER	1 CLOSER	2 CLOSER	1 CLOSER	
1 PRIVACY LOCKSET	1 PASSAGE SET	1 OFFICE LOCKSET	2 PANIC HARDWARE	1 PUSH/PULL	
1 SILENCER	1 SILENCER	3 SILENCER	6 MUTES	3 MUTES	
1 WALL STOP	1 WALL STOP	1 WALL STOP	2 SS KICK PLATE 34x12	1 WALL STOP	
			2 WALL STOP		

- NOTES:
 1. ALL DOOR HARDWARE SHALL BE COMMERCIAL GRADE (GRADE 1 - HEAVY DUTY)
 2. *EXIT DEVICE* = ADA COMPLIANT PANIC DEVICE. VON DUPRIN SERIES 9899 (OR APPROVED EQUAL).
 3. ALL HARDWARE SHALL BE SATIN ALUMINUM ANODIZED FINISH

FINISH LEGEND

FLOOR FINISH

FF-1
 MANUFACTURER: EAGLE
 MATERIAL: SEALED AND POLISHED LEVEL 3 POLISH
 COLOR: LIGHT GRAY
 INSTALLATION: GRIND TO A SMOOTH FLAT SURFACE PER THE MANUFACTURER'S REQUIREMENTS

WALL FINISHES

FRP
 MANUFACTURER: MARLITE
 SPECIFICATION: S100G
 COLOR: WHITE
 TEXTURE: SMOOTH
 NOTE: INSTALL WITH PVC TRIM AT 4'-0" A.F.F.
 LOCATION: RESTROOMS

PAINT

PT-1
 MANUFACTURER: BEHR
 COLOR: PLATINUM - PPU26-11
 FINISH: EGGSHELL
 LOCATION: ALL WALLS

WALL BASE

WB-1
 MANUFACTURER: ROPPE
 SERIES: 700 SERIES, 4" COVE
 COLOR: DARK GRAY
 LOCATION: ALL WALLS (EXCEPT RESTROOMS)

WB-2

MANUFACTURER: SCHLUTER
 SERIES: AHKA W/ 3/8" COVE
 COLOR: DARK GRAY
 LOCATION: RESTROOMS

CEILING TYPES

CL-1
 EXPOSED METAL DECK: OPEN TO UNDERSIDE OF EXISTING ROOF DECK. CONTRACTOR TO CLEAN THE EXISTING STRUCTURE, TRUSSES, BEAMS, DUCTWORK, PIPING, CONDUITS, ETC.

CL-2

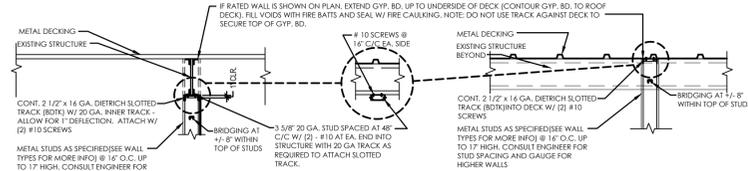
EXISTING ACT GRID AND TILE: EXISTING GRIN AND TILE TO REMAIN. CONTRACTOR TO REPLACE ANY MISSING OR DAMAGED TILE AND/OR GRID

CL-3

MATCH EXISTING: MATCH EXISTING TILE AND GRID AND INSTALL AT SAME HEIGHT.

CL-4

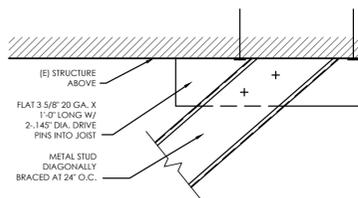
NEW LAY-IN CEILING: SUSPENDED T BAR GRID ARMSTRONG PRELUDE XL 15/16" 24x24 EXPOSED T SYSTEM WITH ARMSTRONG FINE FISSURED SQUARE LAY-IN 15/16" TILES #1729



(PARALLEL AT EXISTING STRUCTURE)

(AT METAL DECK)

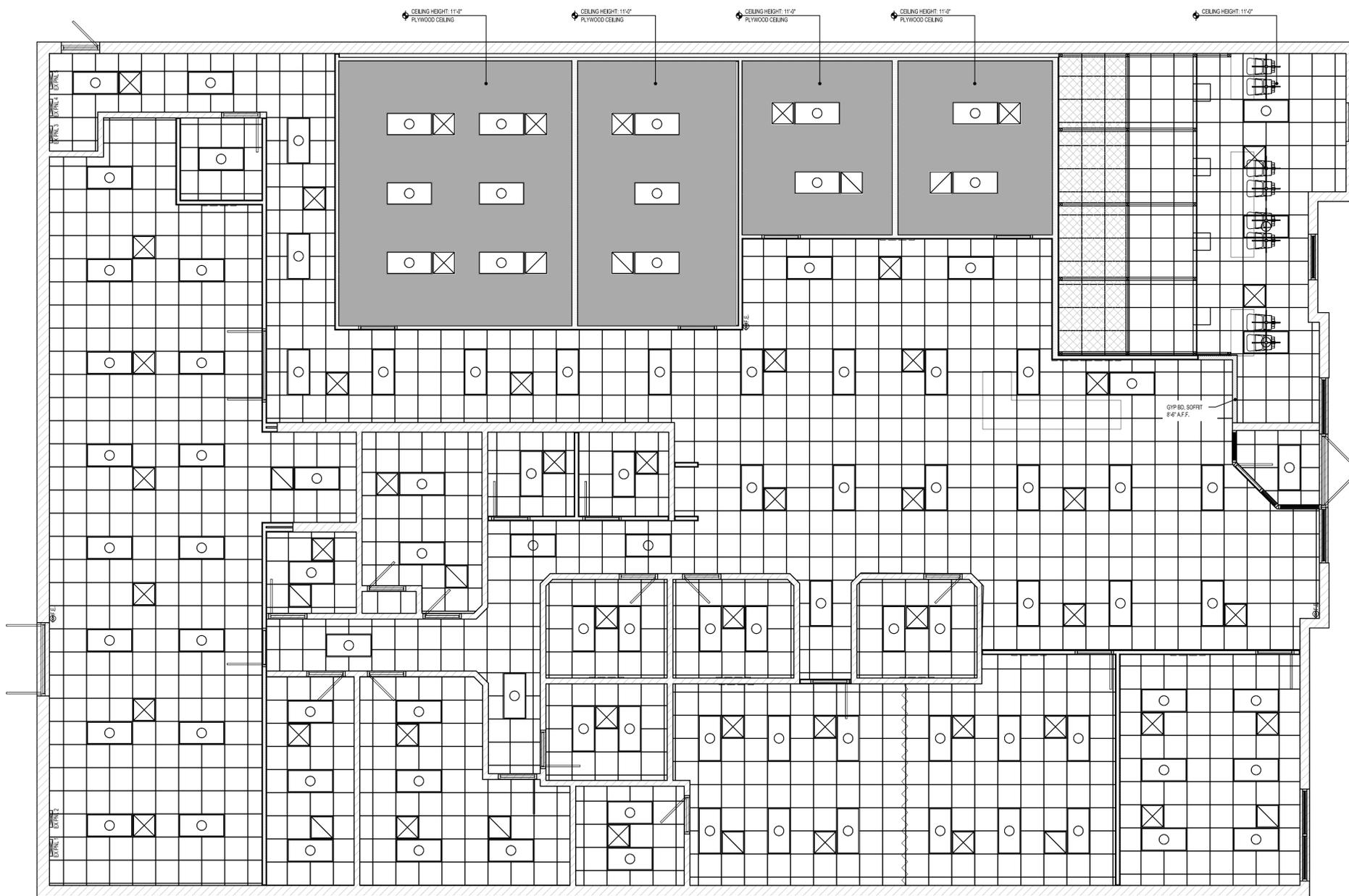
1 WALL BRACING DETAIL
 SCALE: 3/4" = 1'-0"



ATTACHMENT SCHEDULE	
MATERIAL OF BUILDING	ATTACHMENTS & SPACING
CONCRETE SLAB	2 HELIX HD-F MAX. 3/4" EMBEDMENT O.C.
METAL DECK	2 #12-14 X 1" HWY TRAXX/2 @ 16"
METAL DECK W/ CONCRETE	1-3/4" X 3/16" DIA. TAPCON (2) ANCH SUBDRILLED HOLES @ 24" O.C.
METAL DECK W/ LIGHTWEIGHT FILL (POLYURTH. GYPSUM)	2 #12-14 X 1" HWY TRAXX/2 IN SUB-D HOLES @ 16" O.C.

2 ATTACHMENT DETAIL
 SCALE: NTS

ROOM NUMBER	TITLE	FLOOR	BASE	WALL				CEILING	REMARKS
				NORTH	SOUTH	EAST	WEST		
100	VESTIBULE	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
101	LOBBY	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
102	GATHERING SPACE	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
103	CORRIDOR	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
104	AXE LANES	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
105	SMALL SMASH	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
106	SMALL SMASH	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
107	GROUP SMASH	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
108	PARTY SMASH	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
109	STORAGE	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
110	PAINT CLEAN	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
111	LARGE PAINT	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
112	NEW CONCEPT	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
113	SMALL GEAR	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
114	RESTROOM	FF-1	WB-2	PT-1/FRP	PT-1/FRP	PT-1/FRP	PT-1/FRP	CL-4	
115	SMALL PAINT	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
116	RESTROOM	FF-1	WB-2	PT-1/FRP	PT-1/FRP	PT-1/FRP	PT-1/FRP	CL-4	
117	SMASH GEAR	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
118	SMASH GEAR	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
119	EVENT ROOM	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
120	EVENT ROOM	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
121	DIGITAL SHOOTING	FF-1	WB-1	PT-1	PT-1	PT-1	PT-1	CL-4	
122	RESTROOM	FF-1	WB-2	PT-1/FRP	PT-1/FRP	PT-1/FRP	PT-1/FRP	CL-4	



- RCP GENERAL NOTES:**
1. ALL ELECTRIC FOR SIGNAGE / DISPLAYS TO BE PROVIDED BY THE CONTRACTOR.
 2. COORDINATE ALL LIGHTING WITH THE ELECTRICAL DRAWINGS.
 3. ALL LAY-IN LIGHT FIXTURES TO HAVE SEISMIC SUPPORTS AS REQUIRED.
 4. ALL EMERGENCY LIGHTING TO BE INSTALLED AT LOCATIONS INDICATED ON ELECTRICAL DRAWINGS.
 5. PROVIDE / INSTALL SOUND ATTENUATION INSULATION ABOVE ALL CEILINGS IN RESTROOMS.
 6. SEE ELECTRICAL FOR LIGHT FIXTURE SCHEDULE.
 7. SEE NATIONAL ACCOUNT VENDOR LISTING FOR LIGHTING VENDOR CONTACT INFORMATION.
 8. GENERAL CONTRACTOR TO CONFIRM HEIGHTS AND COORDINATE WITH EXISTING CONDITIONS. NOTIFY OWNER AND ARCHITECT IF SPECIFIED HEIGHT CANNOT BE ACHIEVED.
 9. CEILING HEIGHTS ARE TO FINISHES SURFACE. GYPSUM BOARD OR CEILING TILE, AS APPLICABLE.
 10. GYPSUM SOFFIT TO HAVE A SMOOTH FINISH UNLESS NOTED OTHERWISE.
 11. RELOCATE ANY LIGHTING, FIRE ALARM OR SMOKE DETECTORS, AND HVAC GRILLES THAT CONFLICT WITH THE LOCATION OF NEW WALLS.
 12. REFERENCE MECHANICAL AND ELECTRICAL SHEETS FOR ADDITIONAL INFORMATION AND COORDINATION OF SYSTEMS NOT SHOWN ON THIS PLAN.

ALL CEILING HEIGHTS ARE TO REMAIN AT EXISTING HEIGHT OF 8'-9" A.F.F. (SITE VERIFY) UNLESS NOTED OTHERWISE.

REFLECTED CEILING LEGEND			
	2x2' GRID & TILE - MATCH EXISTING		EXISTING CEILING MOUNTED TRACK LIGHTING - REFER TO ELECTRICAL DRAWINGS
	EXISTING 2x2' GRID AND TILE		PENDANT LIGHT - REFER TO ELECTRICAL DRAWINGS
	2x2 (4-WAY) SUPPLY AIR GRILL SEE PLAN FOR FIXTURE DETAILS		2x4 FIXTURE LAY-IN FIXTURE (V/F)
	2x2 RETURN AIR GRILL SEE PLAN FOR FIXTURE DETAILS		LED HIGH BAY LIGHT-REFER TO ELECTRICAL DRAWINGS
	SPRINKLER HEAD LOCATIONS		CEILING MOUNTED FIRE ALARM W/ STROBE
	EXHAUST FAN		CEILING MOUNTED SMOKE DETECTOR
	WALL OR CEILING MOUNTED EXIT SIGN W/ EMERGENCY LIGHTS. REFER TO ELECTRICAL DRAWINGS		WALL OR CEILING MOUNTED EXIT SIGN. REFER TO ELECTRICAL DRAWINGS
	WALL OR CEILING MOUNTED EMERGENCY LIGHT		

E= EXISTING R= RELOCATED N= NEW P= PRELIMINARY

1 CEILING PLAN
SCALE: 3/16" = 1'-0"

09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

REFLECTED CEILING PLAN

PROJECT NUMBER 25-088

DATE 09-05-2025

SHEET NO.

A-2.0

SHEET 2 OF 12

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



Designation: E 580/E 580M - 09a

Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions¹

This standard is issued under the fixed designation E 580/E 580M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice covers the installation of suspended systems for acoustical tile and lay-in panels and their additional requirements for two groups of buildings that are constructed to resist the effects of earthquake motions as defined by ASCE 7 and the International Building Code. These groupings are for Seismic Design Category C and Seismic Design Categories D, E and F.

1.2 The authority having jurisdiction shall determine the applicability of this practice.

1.3 Specification C 635 and Practice C 636 cover suspension systems and their installation without special regard to seismic lateral restraint needs. They remain applicable and shall be followed when this practice is specified.

1.4 This practice is not intended to stifle research and development of new products or methods. This practice is not intended to prevent the installation of any material or prohibit any design or method of construction not prescribed in this practice, provided that any such alternative has been substantiated by verifiable engineering data or full-scale dynamic testing that is acceptable to the authority having jurisdiction.

1.5 Ceiling areas of 1000 ft² [92.9 m²] or less shall be exempt from the lateral force bracing requirements of 5.2.8.

1.6 Ceilings constructed of gypsum board which is screw or nail attached to suspended members that support a ceiling on one level extending from wall to wall shall be exempt from the requirements of this practice.

1.7 Free floating ceilings (those not attached directly to any structural walls) supported by chains or cables from the structure are not required to satisfy the seismic force requirements provided they meet the following requirements:

1.7.1 The design load for such items shall equal 1.4 times the vertical operating weight.

1.7.2 Seismic interaction effects shall be considered in accordance with 5.7.

1.7.3 The connection to the structure shall allow a 360° range of motion in the horizontal plane.

1.8 The values stated in either inch-pound or SI units are to be regarded as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems result in nonconformance with the specification.

1.9 This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Referenced Documents

2.1 *ASTM Standards*:²
C 635 Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
C 636 Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels

2.2 *Other Standards*:
ASCE 7 Minimum Design Loads for Buildings and Other Structures³
CISCA Recommendations for Direct-Hung Acoustical Tile and Lay-in Ceilings, Seismic Zones 0-2⁴
CISCA Guidelines for Seismic Restraint for Direct Hung Suspended Ceiling Assemblies, Seismic Zones 3 & 4⁵
International Building Code⁶

2.3 For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society of Civil Engineers (ASCE), 1801 Alexander Bell Drive, Reston, VA 20191 or www.pubs.asce.org.

⁴ Available from Ceiling & Interior Systems Construction Association (CISCA), 1500 Lincoln Hwy, Suite 202, St. Charles, IL 60174.

⁵ Available from International Code Council (ICC), 4051 West Flossmoor Road, Country Club Hills, IL 60478-5795.

⁶ Available from National Fire Prevention Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

¹ This practice is under the jurisdiction of ASTM Committee E33 on Building and Environmental Acoustics and is the direct responsibility of Subcommittee E33.04 on Application of Acoustical Materials and Systems.

Current edition approved Aug. 15, 2009. Published August 2009. Originally approved in 1976. Last previous edition approved in 2009 as E 580 - 09¹.

Copyright © ASTM International, 100 Barr Harbor Dr., P.O. Box C-700 West Conshohocken, Pennsylvania 19428-2989, United States

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

E 580/E 580M - 09a

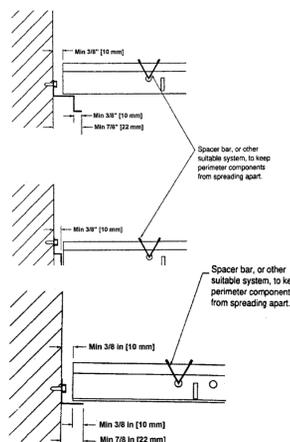


FIG. 2 Category C Treatment of Cross Runners and Main Runners at Terminal Ends When Using Reveal (Shadow) Edge Wall Closures

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

E 580/E 580M - 09a

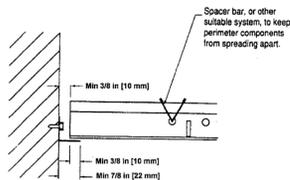


FIG. 1 Category C Treatment of Cross Runners, Main Runners, and Wall Closures at Terminal Ends

NFPA 70 National Electric Code⁶

3. Significance and Use

3.1 This practice is a prescriptive set of installation methods to be used for suspended ceilings and is often used in lieu of designing a separate lateral restraint system. The authority having jurisdiction shall determine the applicability of this practice to local code requirements.

3.2 This practice covers installation of suspended ceiling systems and related components in areas that require resistance to the effects of earthquake motions as defined by ASCE 7 and the International Building Code.

3.3 The practice is broken into two main sections. The first section covers areas with light to moderate earthquake potential (Seismic Design Category C) while the second deals with severe earthquake potential (Seismic Design Category D, E & F).

3.4 This practice includes requirements from multiple sources including previous versions of this practice, CISCA Seismic Recommendations for Direct-Hung Acoustical Tile and Lay-in Ceilings, Seismic Zones 0-2 and CISCA Guidelines for Seismic Restraint for Direct Hung Suspended Ceiling Assemblies, Seismic Zones 3 & 4, suspended ceiling requirements from the International Building Code and ASCE 7. The purpose is to combine the requirements from these sources into a single comprehensive document.

4. Seismic Design Category C

Note 1—This section is intended to provide an unrestrained (free-floating) ceiling system that will accommodate the movement of the structure during a seismic event.

4.1 Suspension System Components:

4.1.1 The recommendations in this section are for ceilings systems with an average weight over the entire ceiling of 2.5 lb/ft² [12 N/m²] or less. This average weight includes suspension members, panels or tiles, light fixtures, supported flexible

sprinkler drops and air terminals. (See 4.4 and 4.5 for details on lights and mechanical services.) Ceilings with an average weight over the entire ceiling greater than 2.5 lb/ft² [12 N/m²] shall be installed as specified in Section 5 taking into account the design lateral forces appropriate for Category C. Other deviations or variations shall be substantiated by verifiable engineering data or full-scale dynamic testing.

4.1.2 The main runners and cross runners of the ceiling system and their splices, intersection connectors, and expansion devices shall be designed and constructed to carry a mean ultimate test load of not less than 60 lb [27 kg] in tension and in compression. Allow for a 5° misalignment of the connection in each direction. Instead of a 5° misalignment, the load can be applied with a 1-in. [25-mm] eccentricity on a sample not more than 24 in. [600 mm] long on each side of the splice.

4.1.3 Evaluation of test results shall be made on the mean values resulting from tests on a minimum of three identical specimens. If the deviation of any individual test result exceeds $\pm 10\%$ from the mean value, three additional samples shall be tested. After the required testing on the six specimens is complete, drop the high and low test values and use the remaining four test results to obtain the mean test value average. If one of the remaining test results still exceeds the $\pm 10\%$ mean value, the lowest individual test value recorded from the six test will be used as the reported test result.

4.2 Suspension System Application:

4.2.1 Unless perimeter members meet the structural load carrying requirements and have been approved as a structural part of the system, wall angles or channels shall be considered as aesthetic closers and shall have no structural value assessed to themselves or their method of attachment to the walls.

4.2.2 All perimeter closure angles or channels shall provide a support ledge of $\frac{3}{8}$ in. [22 mm] or greater unless the perimeter ends of each cross runner and main runner shall be independently supported as specified in 4.2.1.

4.2.3 When a perimeter closure angle that provides less than $\frac{3}{8}$ in. [22 mm] has been approved for use, the perimeter ends of each cross runner and main runner shall be independently

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

E 580/E 580M - 09a

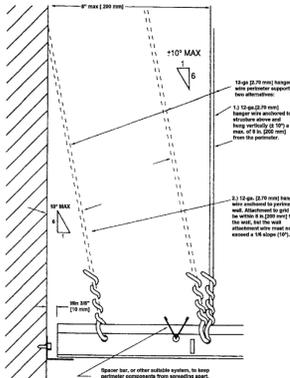


FIG. 3 Category C Treatment of Cross Runners and Main Runners at Terminal Ends When Support Ledge of Perimeter Closure is Less Than Minimum $\frac{3}{8}$ in. [22 mm]

splice or intersection. The connectors at splices and intersections shall be the mechanical interlocking type.

5.1.3 Evaluation of test results shall be made on the mean values resulting from tests on a minimum of three identical specimens. If the deviation of any individual test result exceeds $\pm 10\%$ from the mean value, three additional samples shall be tested. After the required testing on the six specimens is complete, drop the high and low test values and use the remaining four test results to obtain the mean test value average. If one of the remaining test results still exceeds the $\pm 10\%$ mean value, the lowest individual test value recorded from the six test will be used as the reported test result.

5.2 Suspension System Application:

5.2.1 Unless perimeter members are a structural part of the approved system and meet the structural load carrying requirements, wall angles or channels shall be considered as aesthetic closers and shall have no structural value assessed to themselves or their method of attachment to the walls.

5.2.2 The perimeter support angle shall supply a support ledge of not less than 2 in. [50 mm].

5.2.3 Main runner and/or cross runner ends shall be attached to the perimeter on two adjacent walls. A clearance of $\frac{3}{4}$ in. [18 mm] shall be maintained between the main runner and cross runner ends and the perimeter members on the two opposite walls (see Fig. 4, C-C). On the walls where the terminal end runners are not fixed to the perimeter supporting closure, allow for $\frac{3}{4}$ in. [18 mm] axial movement.

5.2.4 Terminal ends of main runners and cross members shall be tied together or have some other approved means to prevent their spreading. Stabilizer bars, cross tees or other means to prevent spreading shall occur within 8 in. [200 mm] of each wall.

5.2.5 Direct concealed suspended ceiling systems shall have positively connected stabilizer bars or mechanically connected cross runners at a maximum spacing of 60 in. [1500 mm] perpendicular to the main runners. Stabilization shall occur within 24 in. [600 mm] of each wall.

5.2.6 The terminal end of each cross runner and main runner shall be supported independently, a maximum of 8 in. [200 mm] from each wall or ceiling discontinuity with No. 12-gauge [2.70 mm] wire or approved wall support. See Fig. 4.

5.2.7 Suspension Wire Application:

5.2.7.1 Suspension wires of galvanized, soft-annealed, mild steel wire shall not be smaller than No. 12 gauge [2.70 mm] spaced at 4 ft [1200 mm] on center along each main runner unless calculations justifying the increased spacing or alternate materials are provided.

5.2.7.2 Each vertical wire shall be attached to the ceiling suspension member and to the support above such that the wire loops shall be tightly wrapped and sharply bent to prevent any vertical movement or rotation of the member within the loops. The wire must be wrapped around itself a minimum of three

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

E 580/E 580M - 09a

supported within 8 in. [200 mm] from each wall or ceiling discontinuity (see Fig. 3).

4.2.4 The terminal ends of suspension members shall have a minimum of $\frac{3}{8}$ -in. [9.5-mm] clearance from the wall as shown in Fig. 1. Reveal (shadow) edge wall closures with these clearances are shown in Fig. 2.

4.2.5 Terminal ends of main runners and cross members shall be tied together to prevent their spreading or have some other approved means to prevent their spreading. Stabilizer bars, cross tees or other means to prevent spreading shall occur within 8 in. [200 mm] of each wall.

4.2.6 Permanent runner end attachment (i.e., pop rivets) for grid alignment purposes shall not be permitted.

4.2.7 All ceiling penetrations (columns, sprinklers, etc.) and independently supported fixtures or services shall have a minimum of 0.375-in. [9.5-mm] clearance on all sides by using suitable escutcheons or perimeter closure details.

4.3 Suspension Wire Application:
4.3.1 Suspension wires that are a minimum of No. 12 gauge [2.70 mm] galvanized, soft-annealed, mild steel wire shall be spaced at 4 ft [1200 mm] on center along each main runner, unless engineering calculations justifying increased spacing are provided.

4.3.2 Each vertical wire shall be attached to the ceiling suspension member and to the support above such that the wire loops shall be tightly wrapped and sharply bent to prevent any vertical movement or rotation of the member within the loops. The wire must be wrapped around itself a minimum of three full turns (360° each) within a 3-in. length. Connection devices to the supporting construction shall be capable of carrying not less than a 100-lb (45-kg) allowable load.

4.3.3 Suspension wires shall not hang more than one in six out of plumb unless countersloping wires are provided.

4.3.4 Wires shall not attach to or bend around interfering material or equipment. A trapeze or equivalent device shall be used where obstructions preclude direct suspension. Trapeze suspensions shall be sized to resist the dead load and lateral forces appropriate for Category C.

4.4 Light Fixture Application:
4.4.1 All lighting fixtures shall be positively attached to the suspended ceiling system by mechanical means as specified in the National Electrical Code unless independently supported. The attachment device shall have the capacity of supporting 100% of the lighting fixture weight acting in any direction. A minimum of two attachment devices are required for each fixture.

4.4.2 Surface-mounted lighting fixtures shall be attached to the ceiling system with a positive clamping device that completely surround the supporting members. Safety wires shall be attached between the clamping device and the adjacent ceiling hanger or to the structure above. In no case shall the fixture exceed the design carrying capacity of the supporting members.

4.4.3 Lighting fixtures weighing less than 10 lb [5 kg] shall have one No. 12-gauge [2.70 mm] safety wire connected from the fixture housing (not the detachable end plates) to the structure above. It is not necessary for these safety wires to be

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

E 580/E 580M - 09a

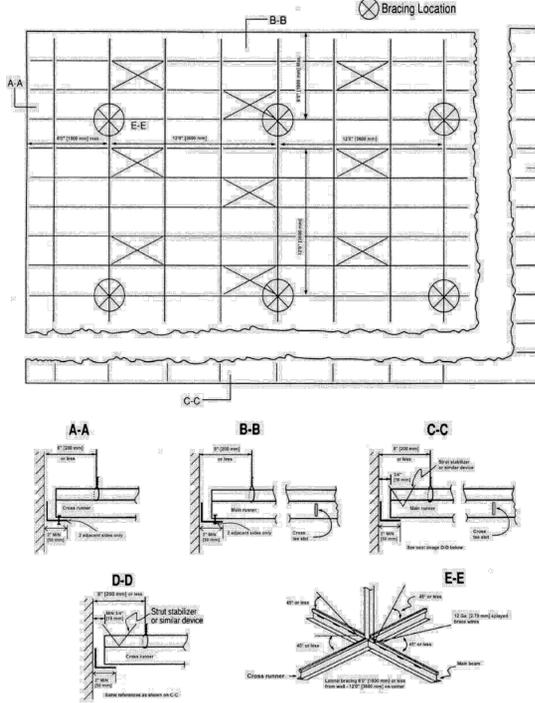


FIG. 4 Categories D, E & F Treatments

full turns (360° each) within a 3-in. [75-mm] length. Connection devices to the supporting construction shall be capable of carrying not less than a 100-lb [45-kg] allowable load.

5.2.7.3 Suspension wires shall not hang more than one in six out of plumb unless countersloping wires are provided.

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.

taut. Supplementary hanger wires of cross tees supporting light fixtures shall not be required.

4.4.4 Lighting fixtures weighing less than 56 lb [25 kg] shall have, in addition to the requirements outlined in 5.4.1, two No. 12-gauge [2.70 mm] hanger wires connected from the fixture housing to the structure above that act as safety wires. It is not necessary for these safety wires to be taut.

4.4.5 Lighting fixtures weighing 56 lb [25 kg] or more shall be supported directly from the structure above by approved hangers.

4.4.6 Pendant-hung lighting fixtures shall be supported directly from the structure above using no less than No. 9-gauge [3.80 mm] wire or an approved alternate support. The ceiling suspension system shall not provide any direct support.

4.4.7 Rigid conduit is not permitted for attachment of the fixtures.

4.5 Services within the Ceiling:
4.5.1 Flexible sprinkler hose fittings, ceiling mounted air terminals or other services weighing less than 20 lb [9 kg] shall be positively attached to the ceiling suspension main runners or cross runners that have the same carrying capacity as the main runners.

4.5.2 Flexible sprinkler hose fittings, air terminals or other services weighing more than 20 lb [9 kg] but less than 56 lb [25 kg] shall have, in addition to the requirements in 4.5.1, two No. 12-gauge [2.70 mm] hanger wires connected from the terminal or service to the ceiling system hangers or to the structure above that act as safety wires. It is not necessary for these wires to be taut.

4.5.3 Flexible sprinkler hose fittings, air terminals or other services weighing more than 56 lb [25 kg] shall be supported directly from the structure above by approved hangers.

4.6 Partition Application to Suspended Ceilings:
4.6.1 The ceiling system shall not provide lateral support for walls or partitions. Walls or partitions shall only be attached to the ceiling suspension provided they allow the ceiling membrane to move laterally to accommodate the required clearance as specified in 4.2.4.

5. Seismic Design Category D, E & F

Note 2—The objective of this section is to provide a restrained ceiling through either connection to the perimeter wall, or through bracing either rigid or non-rigid. The key to good seismic performance of this type of ceiling is that the width of the closure angle around the perimeter are adequate to accommodate ceiling motion and that penetrations, such as columns and piping, have adequate clearance to avoid concentrating restraining loads on the ceiling system.

5.1 Suspension System Components:

5.1.1 Only heavy-duty main tees as defined in Specification C 635 shall be used.

5.1.2 The main runners and cross runners of the ceiling system and their splices, intersection connectors, and expansion devices shall be designed and constructed to carry a mean ultimate test load of not less than 180 lb [80 kg] in compression and in tension. The tensile test shall allow for a 5° offset of the connection in any direction. Instead of a 5° misalignment, the load can be applied with a 1-in. [25-mm] eccentricity on a sample not more than 24 in. [600 mm] long on each side of the

Copyright by ASTM Int'l (all rights reserved); Fri May 21 16:04:01 EDT 2010
Downloaded/printed by
Farrell Vandersee (Dryco+Systems+Inc.) pursuant to License Agreement. No further reproductions authorized.



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO. DATE DESCRIPTION BY

PROJECT NAME:

ISMAASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

ASTM E580
CEILING DETAILS

PROJECT NUMBER 25-088

DATE 09-05-2025

SHEET NO.

A-2.1

SHEET 3 OF 12

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS, AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

5.2.8 Lateral Force Bracing:
 5.2.8.1 Lateral force bracing is required for all ceiling areas greater than 1000 ft² [92.9 m²].
 5.2.8.2 Horizontal restraints shall be effected by four No. 12-gauge [2.70 mm] wires secured to the main runner within 2 in. [50 mm] of the cross runner intersection and splayed 90° from each other at an angle not exceeding 45° from the plane of the ceiling. A strut fastened to the main runner at the location of the bracing wires shall be extended to and fastened to the structural members supporting the roof or floor above. The strut shall be adequate to resist the vertical component induced by the bracing wires. These horizontal restraint points shall be placed 12 in. [360 mm] on center in both directions with the first point within 6 ft [1800 mm] from each wall. Attachment of the restraint wires to the structure above and to the main runner shall be adequate for the load imposed. See Fig. 4.
 5.2.8.3 Lateral force bracing members shall be spaced a minimum of 6 in. [150 mm] from all horizontal piping or duct work that is not provided with bracing restraints for horizontal forces. Bracing wire shall be attached to the grid and to the structure in such a manner that they can support a load of not less than 200 lb [90 kg] or two times the actual design load, whichever is greater.
 5.2.8.4 Rigid braces that have been designed to limit relative lateral deflections at the point of attachment of the ceiling grid to less than 0.25 in. [6 mm] are permitted to be used in the place of diagonal splay wires.
 5.2.8.5 Except where rigid bracing is used or substantiating design calculations have shown that lateral deflections are limited to less than 0.25 in. [6 mm], sprinkler heads and other penetrations shall have a 2-in. [50-mm] oversize ring, sleeve or adapter through the ceiling tile to allow for free movement of at least 1 in. [25 mm] in all horizontal directions. Alternatively, a flexible sprinkler hose fitting that can accommodate 1 in. [25 mm] of ceiling movement shall be permitted to be used without the oversized ring, sleeve or adapter.
 5.2.8.6 Changes in ceiling plane elevation shall have independent positive bracing.
 5.2.8.7 Cable trays & electrical conduits shall be supported and braced independently of the ceiling.
 5.2.8.8 Integral Ceiling/Sprinkler Construction—As an alternate to providing the large clearances specified in 5.2.8.4, it is acceptable for the sprinkler system and the ceiling system grid to be designed and constructed so that they are tied together as an integral unit. Such a design shall be performed by a registered engineer and shall consider the mass and flexibility of all elements involved, including the ceiling system, sprinkler system, light fixtures and mechanical (HVAC) appurtenances.
 5.2.9 Seismic Separation Joint:
 5.2.9.1 All continuous ceiling areas exceeding 2500 ft² [232 m²], shall have a seismic separation joint, bulkhead braced to the structure or full height partition that breaks the ceiling into areas of no more than 2500 ft² [232 m²] and having a ratio of the long to short dimension less than or equal to 4. Each area shall be capable of allowing ± 3/4 in. [18 mm] axial movement. Areas surrounded by bulkheads or full height partitions shall be provided with closure angles in accordance with 5.2.2. Each

area with a seismic separation joint, bulkhead or full height partition shall have horizontal bracing or restraints in accordance with 5.2.8.2.
 5.3 Light Fixture Application:
 5.3.1 All lighting fixtures shall be positively attached to the suspended ceiling system by mechanical means as specified in the National Electrical Code, unless independently supported. The attachment device shall have the capacity of 100 % of the lighting fixture weight acting in any direction. A minimum of two attachment devices are required for each fixture.
 5.3.2 Surface-mounted lighting fixtures shall be attached to the ceiling suspension system with positive clamping devices that completely surround the supporting members. Safety wires shall be attached between the clamping device and the adjacent ceiling hanger or to the structure above. In no case shall the fixture exceed the design carrying capacity of the supporting members.
 5.3.3 When the load carrying capability of cross tees supporting light fixtures is less than 16 lbs/ft (241.7 N/m), supplemental hanger wires shall be required. Supplemental hanger wires shall be installed as shown in Fig. 5.
 5.3.4 Lighting fixtures weighing less than 10 lb [5 kg] shall have one, No. 12 gauge [2.70 mm] safety wire connected from the fixture housing to the structure above. It is not necessary for these safety wires to be taut.
 5.3.5 Lighting fixtures weighing greater than 10 lb [5 kg] but less than 56 lb [25 kg] shall have, in addition to the requirements outlined in 5.3.4, two No. 12-gauge [2.70 mm] hanger wires connected from the fixture housing (not the detachable end plates) to the structure above that act as safety wires. It is not necessary for these safety wires to be taut.
 5.3.6 Lighting fixtures weighing 56 lb [25 kg] or more shall be supported directly from the structure above by approved hangers.
 5.3.7 Pendant-hung lighting fixtures shall be supported directly from the structure above using no less than No. 9-gauge [3.70 mm] wire or an approved alternate support. The ceiling suspension system shall not provide any direct support.
 5.3.8 Rigid conduit shall not be used for attachment of the fixtures.
 5.4 Services within the Ceiling:
 5.4.1 Flexible sprinkler hose fittings, ceiling-mounted air terminals or other services weighing less than 20 lb [9 kg] shall be positively attached to the ceiling suspension main runners or to cross runners that have the same carrying capacity as the main runners.
 5.4.2 Flexible sprinkler hose fittings, air terminals or other services weighing more than 20 lb [9 kg] but less than 56 lb [25 kg] shall have, in addition to the requirements in 5.4.1, two No. 12-gauge [2.70 mm] hanger wires connected from the terminal or service to the ceiling system hangers or to the structure above that act as safety wires. It is not necessary for these wires to be taut.
 5.4.3 Flexible sprinkler hose fittings, air terminals or other services weighing more than 56 lb [25 kg] shall be supported directly from the structure above by approved hangers.
 5.5 Partition Application to Suspended Ceilings:
 5.5.1 Partitions that are tied to the ceiling and all partitions greater than 6 ft (1.8 m) in height shall be laterally braced to the building structure. Such bracing shall be independent of any ceiling splay bracing. Bracing shall be spaced to limit horizontal deflection at the partition head to be compatible with ceiling deflection requirements as determined for suspended ceilings.
 5.5.2 Ceiling Penetrations:
 5.5.1 All ceiling penetrations (columns, etc.) and independently supported fixtures or services shall be considered as perimeter closures that also must allow the required clearances by using suitable closure detail.
 5.5.3 Consequential Damage/Seismic Interaction Effects:
 5.5.1 The functional and physical interrelationship of architectural components (ceilings), their supports, and their effect on each other shall be considered so that the failure of an

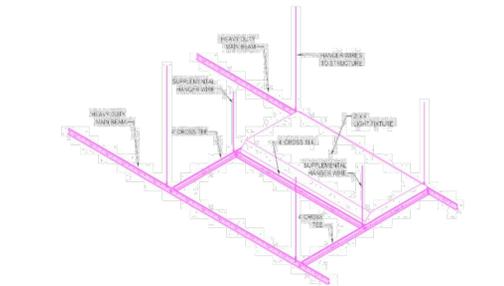


FIG. 5 Supplemental Hanger Wires at Light Fixtures

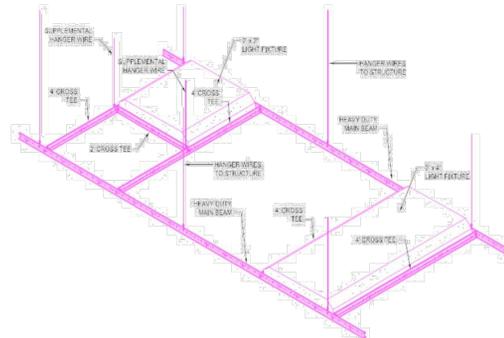


FIG. 5 Supplemental Hanger Wires at Light Fixtures (continued)

5.5.1 Partitions that are tied to the ceiling and all partitions greater than 6 ft (1.8 m) in height shall be laterally braced to the building structure. Such bracing shall be independent of any ceiling splay bracing. Bracing shall be spaced to limit horizontal deflection at the partition head to be compatible with ceiling deflection requirements as determined for suspended ceilings.
 5.5.2 Ceiling Penetrations:
 5.5.1 All ceiling penetrations (columns, etc.) and independently supported fixtures or services shall be considered as perimeter closures that also must allow the required clearances by using suitable closure detail.
 5.5.3 Consequential Damage/Seismic Interaction Effects:
 5.5.1 The functional and physical interrelationship of architectural components (ceilings), their supports, and their effect on each other shall be considered so that the failure of an

essential or non-essential ceiling, mechanical or electrical component shall not cause the failure of an essential ceiling, mechanical or electrical component. This shall be the responsibility of the design professional.
 Note 3—An essential component is a component that must function and be operable immediately after a seismic event.
 6. Substantiation
 6.1 Each ceiling system manufacturer shall furnish tension and compression force capabilities of main runner splices, cross runner connections, and expansion devices. The manufacturer shall also furnish load capabilities of the suspension system components.
 6.2 All load testing shall be conducted or witnessed by an approved independent testing agency.
 6.3 All seismic ceiling designs not conforming to this standard shall be by a licensed engineer and shall be approved by the authority having jurisdiction.

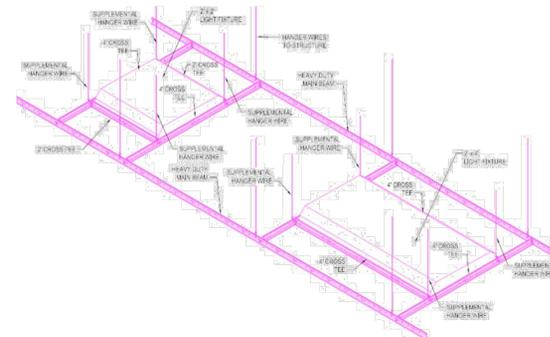


FIG. 5 Supplemental Hanger Wires at Light Fixtures (continued)

essential or non-essential ceiling, mechanical or electrical component shall not cause the failure of an essential ceiling, mechanical or electrical component. This shall be the responsibility of the design professional.
 Note 3—An essential component is a component that must function and be operable immediately after a seismic event.
 6. Substantiation
 6.1 Each ceiling system manufacturer shall furnish tension and compression force capabilities of main runner splices, cross runner connections, and expansion devices. The manufacturer shall also furnish load capabilities of the suspension system components.
 6.2 All load testing shall be conducted or witnessed by an approved independent testing agency.
 6.3 All seismic ceiling designs not conforming to this standard shall be by a licensed engineer and shall be approved by the authority having jurisdiction.

7. Drawings and Specifications
 7.1 The drawings shall clearly identify all systems and shall define or show all supporting details, lighting fixture attachment, lateral force bracing, partition bracing, etc. When this standard is referenced in a drawing, this standard shall be considered part of the requirements of the drawing to the prescribed extent of such reference. Where differences occur between provisions of this standard and referenced codes, the provisions of the code shall apply. Deviations or variation shall be shown or defined in detail.
 8. Keywords
 8.1 ceiling suspension; earthquake; seismic; seismic restraint; suspended ceiling

APPENDIX

(Nonmandatory Information)

XI. COMMENTARY

XI.1 Recommendations in previous versions of this practice were based in part on testing done in the 1980's. This, coupled with general observations from the earthquake prone areas in California have led to the original practice.
 XI.2 Actual earthquake experience (most notably Northridge and Loma Prieta earthquakes) has shown that three main things are critical for good performance of ceiling systems during earthquakes which are:
 XI.2.1 Independent safety wires on light fixtures to prevent dropout.
 XI.2.2 Minimum strength requirements for splices and cross-runner/main runner intersections, and
 XI.2.3 Spreader bars and independent support of suspension member terminal ends at wall closures which prevent panel dropout if the perimeter suspension terminal end slips off of the closure support ledge.
 XI.3 These observations have led to the requirement for safety wires on light fixtures and minimum connection

strengths in Practice E 580/E 580M. This also led to the requirement for 2-in. [50 mm] perimeter support ledger and the requirement for independent support of terminal ends of suspension members.
 XI.4 Advent of International Building Code has raised the awareness of seismic installation requirements in areas within the United States where these requirements traditionally were not a concern.
 XI.5 The introduction of non-traditional ceiling made of wood and metal, as well as ceilings that do not use traditional tee bar suspension systems, has led to a need for an expansion of the prescriptive installation requirements. There has been also a general concern over the interaction of the ceiling system with HVAC components, lights and sprinklers. This coupled with the coming of next generation of performance based seismic codes has led to new interest in clear and concise requirements for installation of ceiling systems. The result is this current rewrite of this practice.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19380-2959, United States. Individual rights (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9882 (phone), 610-832-9882 (fax), or service@astm.org (e-mail) or through the ASTM website (www.astm.org).



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
 SPARTANBURG, SC 29302
 P: 864.583.2215 F: 864.583.2265
 mail@gpnarcht.com

CHECKED BY: DKH
 DRAWN BY: LS & GKS

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT. IT SHALL BE RETURNED TO THE ARCHITECT UPON DEMAND.

COPYRIGHT 2025
 ALL RIGHTS RESERVED



09-05-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:



1451 PETERSON ROAD
 LIBERTYVILLE, IL 60048

SHEET TITLE:

ASTM E580
 CEILING DETAILS

PROJECT NUMBER 25-088

DATE 09-05-2025

SHEET NO.

A-2.2

SHEET 3 OF 12

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS, AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

PLUMBING SYMBOL LIST

— SAN —	SANITARY SEWER (ABOVE FLOOR)
— SAN —	SANITARY SEWER (UNDERGROUND)
— EX.SAN —	EXISTING SANITARY SEWER (UNDERGROUND)
— GW —	GREASE WASTE (UNDERGROUND)
— FW —	FILTER WATER PIPING
— V —	VENT PIPING
— G —	GAS PIPING
— CW —	COLD WATER PIPING
— HW —	HOT WATER PIPING
— EX.CW —	EXISTING COLD WATER PIPING
— EX.G —	EXISTING GAS WATER PIPING
— HWR —	HOT WATER RETURN PIPING
— P-TRAP —	P-TRAP
— PIPE UP —	PIPE UP
— PIPE DROP —	PIPE DROP
— CLEANOUT —	CLEANOUT
— PLUGGED OUTLET/CLEANOUT —	PLUGGED OUTLET/CLEANOUT
— SHUT-OFF VALVE —	SHUT-OFF VALVE
— POINT OF CONNECTION —	POINT OF CONNECTION
— ANGLE VALVE —	ANGLE VALVE
— RECIRCULATION PUMP —	RECIRCULATION PUMP
— BALANCING VALVE —	BALANCING VALVE
— GAS SHOT OFF VALVE —	GAS SHOT OFF VALVE
— EXPANSION TANK —	EXPANSION TANK

PLUMBING ABBREVIATIONS

CO	CLEANOUT
CW	COLD WATER
HW	HOT WATER
HWR	HOT WATER RETURN
SAN	SANITARY
V	VENT
LAV	LAVATORY
WC	WATER CLOSET
MS	MOP SINK
TYP.	TYPICAL
DN	DOWN
FD	FLOOR DRAIN
N.I.C.	NOT IN SCOPE
GW	GREASE WASTE
ET	EXPANSION TANK
RCP	RECIRCULATING PUMP
G	GAS

PLUMBING DRAWING LIST

P-0.1	PLUMBING NOTES, SYMBOLS, ABBREVIATIONS & SPECIFICATIONS
P-0.2	PLUMBING SPECIFICATIONS
P-1.0	PLUMBING WATER & GAS FLOOR PLAN
P-1.1	PLUMBING SANITARY FLOOR PLAN
P-2.0	PLUMBING DETAILS
P-3.0	PLUMBING SCHEDULE & RISER DIAGRAMS

BUILDING DEPARTMENT PLUMBING NOTES

- ALL PLUMBING SYSTEMS (SANITARY WASTE, VENT, WATER) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE.
- INSTALLATION OF UNDERGROUND PIPING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.1320.
- PROTECTION OF PIPING AND PLUMBING SYSTEM COMPONENTS AS PER 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.1130.
- TRENCHING, EXCAVATION AND BACKFILL AS PER 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.210.
- RODENT PROOFING AS PER 2014 ILLINOIS STATE PLUMBING CODE 890.1170.
- MATERIALS USED IN PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.210.
- DEEP SEAL TRAPS FOR FLOOR DRAINS SHALL BE PROVIDED AS PER 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.1370, AND CLEAN-OUTS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 890.420.
- VERTICAL AND HORIZONTAL PIPING SHALL BE SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SECTION 890.920 & 890.930.
- WATER SUPPLY SYSTEMS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SUBPART I WATER SUPPLY AND DISTRIBUTION.
- THE SANITARY DRAINAGE SYSTEM SHALL BE SIZED AND INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SUBPART J DRAINAGE SYSTEM.
- VENT PIPING FOR THE SANITARY DRAINAGE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS STATE PLUMBING CODE SUBPART K DRAINAGE SYSTEM.
- INSPECTION AND TESTING OF PLUMBING SYSTEMS SHALL BE IN ACCORDANCE WITH 2014 ILLINOIS STATE PLUMBING CODE, SECTION 890.1910, 890.1920 & 890.1930.

APPLICABLE CODES

- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL MECHANICAL CODE
- 2014 ILLINOIS PLUMBING CODE
- 2018 INTERNATIONAL FUEL GAS CODE
- 2018 INTERNATIONAL FIRE CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2021 INTERNATIONAL ENERGY CONSERVATION CODE.

PLUMBING SPECIFICATIONS

- BASIC PLUMBING REQUIREMENTS, MATERIALS AND METHODS
 - SCOPE
 - PROVIDE ALL MATERIAL, TOOLS, SUPERVISION AND LABOR INCLUDING ALL MISCELLANEOUS AND INCIDENTAL ITEMS REQUIRED FOR COMPLETE AND OPERABLE PLUMBING INSTALLATIONS AS SHOWN OR DESCRIBED ON THE DRAWINGS AND IN THESE SPECIFICATIONS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AND NEW CONDITIONS AND MATERIALS WITHIN THE CONSTRUCTION AREA. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED TO THE OWNER'S SATISFACTION.
 - OBTAIN ALL PERMITS, PAY ALL PERMIT FEES AND SCHEDULE ALL REQUIRED INSPECTIONS. COPIES OF ALL PERMITS AND INSPECTION CERTIFICATES SHALL BE FORWARDED TO THE OWNER FOR RECORD.
 - THE GENERAL CONDITIONS OF THE CONTRACT AND ALL DIVISION 1 REQUIREMENTS APPLY TO THE WORK OF THIS SECTION.
 - THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING BID TO DETERMINE CONDITIONS AND THE EXTENT OF THE WORK. BY COMMENCING WORK, THE CONTRACTOR ACKNOWLEDGES HIS CONFIRMATION OF ALL CONDITIONS AS ACCEPTABLE WITH REFERENCE TO HIS CONTRACT, SCOPE OF WORK AND BID PRICE SUCH THAT NO ADDITIONAL COMPENSATION SHALL BE FORTHCOMING FOR UNFORESEEN EXISTING CONDITIONS.
 - IN ALL AREAS SUBJECT TO FREEZING CONDITIONS, THE CONTRACTOR SHALL PROVIDE FREEZE PROTECTION FOR ALL DOMESTIC WATER PIPING INSTALLED UNDER HIS CONTRACT.
 - ALL ELECTRICAL REQUIREMENTS SHALL BE COORDINATED WITH THE CONTRACTOR FOR ELECTRICAL WORK. THIS CONTRACTOR IS RESPONSIBLE FOR ALL LOW VOLTAGE WIRING FOR EQUIPMENT INSTALLED UNDER HIS CONTRACT. THE CONTRACTOR FOR ELECTRICAL WORK IS RESPONSIBLE FOR LINE VOLTAGE POWER WIRING ONLY.
 - COLOR AND FINISH SELECTIONS FOR ALL MATERIALS, INCLUDING PAINTING OF PIPING, SHALL BE AS DIRECTED AND/OR APPROVED BY THE ARCHITECT.
 - MINOR DETAILS NOT SHOWN OR SPECIFIED, BUT NECESSARY FOR THE PROPER AND ACCEPTABLE CONSTRUCTION, INSTALLATION OR OPERATION OF ANY PART OF THE WORK AS DETERMINED BY THE ENGINEER SHALL BE INCLUDED AS IF SPECIFIED OR INDICATED ON THE DRAWINGS.
 - THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIREMENTS FOR THE INSTALLATION, CONNECTION, EXTENSION OR MODIFICATION TO ALL UTILITY SERVICES WITH RESPECTIVE PROVIDERS INCLUDING PAYMENT OF ALL ASSOCIATED FEES.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL PAINTING ASSOCIATED WITH CUTTING AND PATCHING. ALL PAINTING IN AREAS WITH COMPLETE FINISH RENOVATIONS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR.

- 1.02 SUBMITTALS
 - SUBMITTAL REQUIREMENTS SHALL BE COORDINATED WITH THE ARCHITECT AND AUTHORITIES HAVING JURISDICTION, UNLESS OTHERWISE DIRECTED, CONTRACTOR SHALL PROVIDE SUBMITTALS AS LISTED BELOW.

1. PIPE AND FITTINGS
2. VALVES
3. HANGERS AND SUPPORTS
4. PLUMBING PIPING LAYOUT
5. TESTS
6. PLUMBING FIXTURES
7. WATER HEATERS & ACCESSORIES
8. MIXING VALVES
9. ALL SCHEDULED PLUMBING EQUIPMENT
10. SUBMITTALS FROM SUPPLIERS OR MANUFACTURERS WHICH DO NOT BEAR THE STAMP OF THE SUBMITTING CONTRACTOR INDICATING THAT THE CONTRACTOR HAS REVIEWED THE SUBMITTAL FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS WILL BE RETURNED REJECTED.
11. THE ENGINEER'S REVIEW OF SUBMITTALS IS A COURTESY WHICH DOES NOT RELIEVE THE CONTRACTOR FROM CONFORMING WITH THE CONSTRUCTION DOCUMENTS, REGARDLESS OF THE ACTION INDICATED BY THE SHOP DRAWINGS STAMP.

12. REVIEW OF SHOP DRAWINGS BY THE ENGINEER SHALL BE LIMITED TO THE INITIAL REVIEW, AND A SECOND REVIEW OF ANY REQUIRED RESUBMITTED DATA. IF THE ENGINEER IS REQUIRED TO REVIEW SHOP DRAWINGS FOR A THIRD (OR MORE) SUBMISSION OF THE SAME ITEM, THE CONTRACTOR SHALL BE LIABLE FOR COMPENSATING THE ENGINEER FOR THESE SUBSEQUENT REVIEWS AS PER THE ENGINEER'S CURRENT HOURLY RATE SCHEDULE.

13. SUBMIT PROOF OF APPROVAL AND/OR CONFIRMATION OF SATISFACTORY TEST RESULTS TO THE OWNER AND THE ARCHITECT.

14. SUBMIT TO THE OWNER'S MAINTENANCE PERSONNEL OPERATION AND MAINTENANCE DATA FOR ALL SYSTEM COMPONENTS, SERVICING REQUIREMENTS, INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY AND CONTACT INFORMATION FOR SERVICE/SUPPLY COMPANY.

15. FOR ALL BELOW GRADE PIPING WHERE ACTUAL INSTALLATION DEVIATES FROM CONSTRUCTION DRAWINGS, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS INDICATING BELOW GRADE PIPE LOCATIONS DIMENSIONED TO NEAREST COLUMN LINES.

16. RECORD AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE OWNER/TENANT AFTER COMPLETION OF THE WORK SHOWING ANY ALTERATIONS, ADDITIONS AND/OR DELETIONS TO THE SYSTEM(S) INSTALLED.

- 1.03 SUBSTITUTIONS

- ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURERS' EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

- THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

1.05 DEFINITIONS

- FURNISH TO PURCHASE, PROCURE, ACQUIRE AND DELIVER, COMPLETE WITH RELATED ACCESSORIES.
 - INSTALL: TO ERRECT, MOUNT AND CONNECT, COMPLETE WITH RELATED ACCESSORIES.
 - PROVIDE: TO FURNISH AND INSTALL.
 - PLUMBING CONTRACTOR, THE CONTRACTOR, THIS CONTRACTOR: THE CONTRACTOR FOR PLUMBING WORK WHICH IS SPECIFIED HEREIN AND SHOWN ON THESE DRAWINGS.
- 1.06 DRAWINGS
 - THE DRAWINGS ARE DIAGRAMMATIC AND ARE INTENDED TO ILLUSTRATE THE GENERAL ARRANGEMENT AND ROUTING OF PIPING AND GENERAL LOCATIONS OF EQUIPMENT. PRECISE LOCATIONS OF EQUIPMENT, RISERS AND STACKS, AND ROUTING AND ELEVATION OF ALL PIPING SYSTEMS SHALL BE COORDINATED IN THE FIELD WITH THE ARCHITECT, ARCHITECTURAL DRAWINGS, THE WORK OF OTHER TRADES, EXISTING AND NEW BUILDING CONDITIONS AND/OR THE PREFERENCES OF THE OWNER/TENANT AS CONSTRUCTION PROCEEDS. ALL PIPING SHALL BE INSTALLED CONCEALED IN FINISHED SPACES, UNLESS NOTED OTHERWISE.
 - PROVIDE ALL NECESSARY INCIDENTAL MATERIALS AND ACCESSORIES REQUIRED TO MAKE THE WORK COMPLETE IN ALL RESPECTS, EVEN IF NOT PARTICULARLY SHOWN OR SPECIFIED.
 - REFER TO PLUMBING EQUIPMENT/FIXTURE SCHEDULE ON THE DRAWINGS FOR ALL FIXTURE AND EQUIPMENT SPECIFICATIONS.
 - REFER TO FIXTURE CONNECTION SIZE SCHEDULE FOR ALL FIXTURE ROUGHING SIZE REQUIREMENTS.
 - VERIFY ALL INDICATED CONDITIONS BEFORE STARTING WORK AND REPORT ANY DISCREPANCIES. THE DRAWINGS REFLECT CONDITIONS WHICH CAN BE REASONABLY INTERPRETED FROM THE EXISTING VISIBLE CONDITIONS OR FROM DRAWINGS AND INFORMATION FURNISHED BY THE OWNER.
 - LOCATE ALL FIXTURES AND EQUIPMENT AS PER THE FINAL ARCHITECTURAL DRAWINGS.

- 1.07 PRODUCTS
 - SANITARY AND VENT PIPING:
 - ABOVE GRADE AND UNDERGROUND PIPING AND FITTING SHALL BE POLYVINYL CHLORIDE(PVC) AS PER ASTM F891 AND ASTM D2665 RESPECTIVELY STANDARDS ON TABLE P-702.1 AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
 - SLOPE OF DRAINAGE SYSTEM SHALL BE 1/8" PER FOOT OF RUN FOR PIPE OVER 3" (I.D.) AND 1/4" PER FOOT OF RUN FOR PIPE 3" AND SMALLER (I.D.). VENT PIPING SHALL BE PITCHED TO DRAIN.
 - PVC OR OTHER COMBUSTIBLE PLASTIC PIPING SHALL NOT BE INSTALLED IN CEILING PLENUM SPACES.

- DOMESTIC WATER PIPING:
 - ABOVE GRADE WATER PIPING SHALL BE TYPE 'L' HARD-DRAWN COPPER TUBE.
 - FITTINGS IN DOMESTIC WATER PIPING SHALL BE COPPER OR COPPER ALLOY
 - JOINTS SHALL BE MADE WITH LEAD-FREE SOLDER.
 - THE ENTIRE DOMESTIC WATER DISTRIBUTION SYSTEM SHALL BE INSULATED INCLUDING ALL VALVES, FITTINGS, ETC.
 - COMPLY WITH NSF 61 FOR MATERIALS FOR WATER-SERVICE PIPING AND SPECIALTIES FOR DOMESTIC WATER.
 - AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.4, PIPING FROM A WATER HEATER TO THE TERMINATION OF HEATED WATER FIXTURE SUPPLY PIPE SHALL BE INSULATED IN ACCORDANCE WITH TABLE C403.11.3 OF MINIMUM PIPE INSULATION THICKNESS.

MINIMUM PIPE INSULATION THICKNESS						
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)			
	CONDUCTIVITY BTU IN./ (H.FT2.F)	MEAN RATING TEMPERATURE, °F	<1	1 to <1½	1½ to <4	4 to ≥8
141-200	0.25-0.29	125	1.5	1.5	2	2
105-140	0.21-0.28	100	1.0	1.0	1.5	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0	1.0

- HOT WATER SYSTEM PIPING IS DESIGNED AS PER MAXIMUM ALLOWED PIPE LENGTH METHOD AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.5.1 THE HOT WATER VOLUME FROM THE NEAREST SOURCE OF HEATED WATER TO THE TERMINATION OF THE FIXTURE SUPPLY PIPE SHALL BE AS PER MAXIMUM PIPING LENGTH TABLE.

NOMINAL PIPE SIZE (INCHES)	MAXIMUM PIPING LENGTH (FEET)	
	PUBLIC LAV	OTHER FIXTURES
½"	2'	43'
¾"	0.5'	21'
1"	0.5'	13'
1¼"	0.5'	8'
1½"	0.5'	6'
2" OR LARGER	0.5'	4'

- AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.6.1, AUTOMATIC CONTROLS SHALL BE INSTALLED THAT LIMITS THE OPERATION OF A RECIRCULATING PUMP AND THE SYSTEM RETURN PIPE SHALL BE A DEDICATED RETURN PIPE OR A COLD WATER SUPPLY PIPE.
- AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
 - THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
 - THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

- AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE C404.7, PUMPS SHALL HAVE CONTROLS THAT COMPLY WITH BOTH OF THE FOLLOWING:
 - THE CONTROL SHALL START THE PUMP UPON RECEIVING A SIGNAL FROM THE ACTION OF A USER OF A FIXTURE OR APPLIANCE, SENSING THE PRESENCE OF A USER OF A FIXTURE OR SENSING THE FLOW OF HOT OR TEMPERED WATER TO A FIXTURE FITTING OR APPLIANCE.
 - THE CONTROL SHALL LIMIT THE TEMPERATURE OF THE WATER ENTERING THE COLD-WATER PIPING TO 104°F (40°C).

- ALL EQUIPMENT SHALL BE PRODUCTS OF THE SPECIFIED MANUFACTURER OR MANUFACTURERS. ALL BIDS SHALL BE BASED ON THE SPECIFIED MANUFACTURER OR MANUFACTURERS' EQUIPMENT. FOR SUBSTITUTIONS OF OTHER MANUFACTURER'S EQUIPMENT TO BE CONSIDERED, THE SUBSTITUTION MUST BE INDICATED PRIOR TO BIDDING WITH THE REASON FOR THE PROPOSED SUBSTITUTION IDENTIFIED, AND THE PROPOSED CREDIT TO THE OWNER INDICATED. THE ENGINEER SHALL DETERMINE THE ACCEPTABILITY OF ANY PROPOSED SUBSTITUTIONS.

- THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR COORDINATING THE WORK OF OTHER TRADES WHICH MAY BE AFFECTED BY SUBSTITUTIONS, INCLUDING ALL RELATED COSTS.

C. HANGERS AND SUPPORTS:

- HANGERS SHALL BE STANDARD STEEL, MALLEABLE OR WROUGHT IRON, AS MANUFACTURED BY GRINNELL OR APPROVED EQUAL, SUITABLE FOR THE TYPE OF CONSTRUCTION. PIPING SHALL NOT BE HUNG FROM OTHER PIPE.
- SECTIONS OF INDIVIDUAL PIPE RUNS SHALL BE SUPPORTED BY CLEVIS HANGERS.
- ALL EQUIPMENT SHALL BE PROVIDED WITH APPROVED SUPPORTS.
- PROVIDE SEISMIC RESTRAINTS IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND STANDARDS AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
- SUPPORTS SHALL BE PROVIDED IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPING MANUFACTURER.

D. VALVES:

- PROVIDE GATE VALVES, BUTTERFLY OR BALL VALVES FOR SHUT-OFF DUTY ON MAIN AND BRANCH SUPPLY LINES. FOR ALL PIPE RUNS 2" AND SMALLER, PROVIDE BALL FOR ALL PIPE RUNS LARGER THAN 2" AND SMALLER THAN 4", PROVIDE GATE VALVES. PIPING 4" AND LARGER, PROVIDE BUTTERFLY VALVES FOR SHUT-OFF DUTY.
- ALL FIXTURES WITH THE EXCEPTION O FLUSHMETER-EQUIPPED WATER CLOSETS AND URINALS SHALL HAVE STOP VALVES TO CONTROL SUPPLY TO THE FIXTURE. WHERE SUPPLIES ARE EXPOSED PROVIDE CHROME-PLATED STOPS WITH CHROME-PLATED ESCUTCHEONS ON PIPING PENETRATIONS.
- ALL PLUMBING FIXTURES AND EQUIPMENT TO HAVE SHUT-OFF VALVES ON SUPPLY LINES.
- ALL BRANCH LINES TO HAVE SHUT-OFF VALVES.
- ALL VALVES SHALL BE ACCESSIBLE.PROVIDE ACCESS DOORS WHERE REQUIRED FOR VALVE ACCESS.
- PROVIDE GLOBE VALVES FOR THROTTLING/BALANCING OF THE HOT WATER CIRCULATING SYSTEM.

- INSTALL PIPING TO CONSERVE BUILDING SPACE. DO NOT INTERFERE WITH USE OF BUILDING SPACE AND THE WORK OF OTHER TRADES. ALL PIPING RUN IN CEILING SHALL BE INSTALLED TIGHT TO THE STRUCTURE ABOVE.
- INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS OR CONNECTED EQUIPMENT. PROVIDE PIPE ANCHORS AND EXPANSION JOINTS OR LOOPS IN ALL HOT WATER AND HOT WATER CIRCULATING MAIN SUPPLY PIPING AND SEGMENTS OF SUCH PIPE THAT EXCEED 30'-0" IN LENGTH.
- IN ALL AREAS WITH FINISHED SURFACES, SYSTEM PIPING AND COMPONENTS SHALL BE CONCEALED ABOVE OR WITHIN FINISHED SURFACES.

- REDUCTIONS IN PIPE SIZES SHALL BE MADE WITH ONE-PIECE REDUCING FITTINGS. BUSHINGS ARE NOT ACCEPTABLE. USE FLANGED FITTINGS AT THE BASE OF RISERS.
- VENT PENETRATIONS THROUGH THE ROOF SHALL BE FLASHED.

- IF WATER PRESSURE EXCEEDS 80 PSI, A WATER PRESSURE REDUCING VALVE SHALL BE INSTALLED IN WATER PIPING AT CONNECTION TO MAIN.
- PIPE BACKFLOW PREVENTER DRAINS TO FLOOR DRAIN OR OTHER APPROVED INDIRECT WASTE SOURCE.

- PROVIDE ACCESS DOORS/PANELS FOR SERVICE AND ACCESS TO ALL VALVES AND OTHER SYSTEM COMPONENTS ENCLOSED IN WALLS AND CEILINGS. ACCESS DOORS SHALL BE FURNISHED BY THIS CONTRACTOR, INSTALLED BY THE GENERAL CONTRACTOR.

- ALL FIXTURES REQUIRING VACUUM BREAKERS SHALL BE EQUIPPED WITH INTEGRAL VACUUM BREAKERS.

- ANY PENETRATIONS THROUGH FIRE RATED PARTITIONS, FLOORS, OR CEILINGS SHALL BE STEEL SLEEVED AND SEALED WITH 3M BRAND UL RATED FIRE BARRIER CAULK OR APPROVED EQUAL.

- WHEN THE WATER PIPING SYSTEM IS COMPLETE, THOROUGHLY FLUSH ALL DIRT, SEDIMENT, SOLDER, ETC., OUT OF THE SYSTEM, REMOVING ALL STRAINERS, VALVE STEM SEATS, ETC., REQUIRED TO ACCOMPLISH THE FLUSHING.
- AT ALL INDIRECT WASTE DRAINS, MAINTAIN AIR GAP AS REQUIRED BY CODE.
- INSTALL SLEEVES FOR ALL PIPES WHICH PASS THROUGH WALLS, FLOORS, AND CEILINGS, WHERE PIPES ARE TO BE INSULATED. THE SLEEVE SHALL BE LARGE ENOUGH TO ACCOMMODATE INSULATION. SLEEVES SHALL BE FLUSH WITH FINISHED SURFACES AT BOTH ENDS. ON FINISHED SURFACES IN EXPOSED AREAS PROVIDE ESCUTCHEONS COMPATIBLE WITH FINISH.

2. INSTALLATION

2.01 GENERAL

- ALL WORK WHICH REQUIRES DISRUPTION OF THE ROOFING SHALL BE DONE BY A CONTRACTOR CERTIFIED BY THE ROOFING MANUFACTURER AS REQUIRED TO MAINTAIN ANY EXISTING ROOF WARRANTIES.
- EXTERIOR INSTALLATIONS TO BE WEATHER PROOF IN ALL RESPECT.
- EXTERIOR MATERIALS AND EQUIPMENT SHALL BE PAINTED TO PREVENT CORROSION, COLOR PER ARCHITECT.
- COORDINATE THE PLUMBING WORK WITH ALL OTHER AFFECTED WORK AND THE CONSTRUCTION SCHEDULE.
- REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN AND FERROUS END PIPE.
- REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
- PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES AND UNIONS.

- COORDINATION WITH THE WORK OF OTHER TRADES IS REQUIRED. PROVIDE OFFSETS IN PIPING SYSTEMS OR MINOR DEVIATIONS TO THE INDICATED PIPE ROUTING IN ORDER TO COORDINATE THE PLUMBING WORK WITH THE WORK OF ALL OTHER TRADES AND THE GENERAL BUILDING CONDITIONS.

I. NO DOMESTIC WATER PIPING SHALL BE INSTALLED IN UNHEATED SPACES.

- PRIOR TO DISCONNECTING AND CONNECTING NEW WORK TO EXISTING SYSTEMS, THE PLUMBING CONTRACTOR SHALL NOTIFY THE PROPERTY MANAGER AND OFFER A PROPOSED SCHEDULE OF WORK. ESB WILL AUTHORIZE CONNECTIONS AND COORDINATE NECESSARY SHUT DOWNS AND DRAIN DOWNS AS REQUIRED. SHUT DOWNS AND DRAIN DOWNS MAY BE PERFORMED BY THE PLUMBING CONTRACTOR ONLY AFTER RECEIVING ESB AUTHORIZATION, AND SHOULD BE PERFORMED UNDER SUPERVISION OF ESB PERSONNEL. THREE (3) DAYS ADVANCE NOTICE TO THE PROPERTY MANAGER IS REQUIRED.

- THE PLUMBING CONTRACTOR IS ADVISED THAT DUE TO THE NATURE OF THE OPERATIONS AND TENANT REQUIREMENTS, CONNECTIONS TO EXISTING SYSTEMS MAY HAVE TO BE MADE AFTER REGULAR WORKING HOURS. THE PROPERTY MANAGER WILL ADVISE THE PLUMBING CONTRACTOR OF THE TIME CONSTRAINTS UPON RECEIPT AND APPROVAL OF THE PLUMBING CONTRACTOR'S REQUEST FOR SHUT DOWN AND CONNECTION TO EXISTING SYSTEMS.

- WHEN CONNECTING TO EXISTING STACKS AND RISERS, PROVISION IS TO BE MADE FOR FUTURE CONNECTIONS BY PROVIDING CAPPED AND VALVED OUTLETS ON DOMESTIC WATER RISERS AND PLUGGED OUTLETS ON THE SANITARY AND VENT STACKS.

2.02 ABOVE GRADE

- INSTALL PLUMBING PIPING IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING COMPLIES WITH REQUIREMENTS AND SERVES INTENDED PURPOSES.

- ROUTE PIPING IN AN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT. SLOPE PIPING AND ARRANGE SYSTEMS TO DRAIN. IN DOMESTIC WATER SYSTEMS, PROVIDE DRAIN VALVES AT MAIN SHUT-OFF VALVES AND ALL LOW POINTS IN PIPING.

- USE EXISTING CONNECTIONS AT MAINS WHERE AVAILABLE FOR NEW BRANCH PIPING. LOCATE ALL RISERS AND PIPING BEFORE CONSTRUCTION COMMENCES AND TAKE CARE NOT TO DAMAGE SAME. ANY DAMAGE OCCURRING TO THE EXISTING PIPING WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

3. TESTING

- AT THE COMPLETION OF THE PLUMBING WORK, COMPLETELY TEST THE ENTIRE INSTALLATION OF ALL SYSTEMS FOR PROPER OPERATION AND COMPLIANCE WITH APPLICABLE CODES AND LOCAL REQUIREMENTS. CORRECT ALL DEFICIENCIES FOUND.

- TESTING OF THE INSTALLED SYSTEMS SHALL BE MADE BY THE CONTRACTOR IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER.

- THE CONTRACTOR SHALL NOT COVER UP OR PERMANENTLY CONCEAL PIPING, DEVICES OR ANY PORTION OF NEWLY CONSTRUCTED PLUMBING SYSTEM(S) UNTIL SUCH SYSTEM, OR PORTION OF THE SYSTEM, HAS BEEN TESTED IN THE PRESENCE OF A REPRESENTATIVE OF THE OWNER AND INSPECTED BY THE LOCAL INSPECTOR AND APPROVED IN WRITING. EXCEPT PIPING PASSING THROUGH FLOORS, WALLS, PARTITIONS, OR BEAMS, FOR DISTANCES EQUAL TO THE THICKNESS OF SUCH FLOOR, WALL, PARTITION OR BEAM.

- THIS CONTRACTOR SHALL NOTIFY THE VARIOUS DEPARTMENTS, BUREAUS AND INDIVIDUALS AT LEAST TWO WEEKS IN ADVANCE OF THE TIME THAT THE TESTS ARE TO BE CONDUCTED.

- ALL DEFECTIVE PARTS SHALL BE REPLACED OR CORRECTED BY THIS CONTRACTOR AND AN EXTRA TEST OR TESTS SHALL BE MADE UNTIL THE OPERATION IS SATISFACTORY. ALL ARRANGEMENTS AND EXPENSES NECESSARY TO CONDUCT ALL TESTS REQUIRED BY THESE SPECIFICATIONS AND THE VARIOUS AGENCIES HAVING JURISDICTION OVER THE WORK INSTALLED UNDER THIS CONTRACT SHALL BE MADE BY THIS CONTRACTOR. NO EXTRA COMPENSATION WILL BE ALLOWED FOR THESE TESTS, THE COST THEREOF BEING INCLUDED IN THE LUMP SUM BID FOR THIS CONTRACT.

- WHERE ANY EVIDENCE OF STOPPAGE IS FOUND IN PIPING OR EQUIPMENT, THIS CONTRACTOR SHALL DISCONNECT, CLEAN, REPAIR AND RECONNECT ALL OBSTRUCTED PIPING OR EQUIPMENT AND SHALL ALSO PAY FOR ALL NECESSARY CUTTING AND REPAIRS TO ADJOINING WORK.

- ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY CLEANED INSIDE AND OUT, OF DIRT, CUTTINGS, OILS AND OTHER FOREIGN SUBSTANCES AND SHALL BE LEFT CLEAN.

- ALL REQUIRED TESTS SHALL BE WITNESSED BY LOCAL AUTHORITIES AND THE OWNER'S REPRESENTATIVE.

- EQUIPMENT WILL BE FACTORY TESTED.

- CONTRACTOR SHALL IDENTIFY TO THE OWNER'S REPRESENTATIVE ANY LEAKS OR DAMAGE THAT OCCURS AS A RESULT OF SYSTEM TESTING. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS TO LIMIT ANY POTENTIAL DAMAGE. CORRECTIVE ACTION REQUIRED AS A RESULT OF TESTING SHALL BE PERFORMED IMMEDIATELY AND AT THE CONTRACTOR'S EXPENSE.

- REPORT IN WRITING TO AUTHORITIES HAVING JURISDICTION, THE ARCHITECT AND THE OWNER THE RESULTS OF ALL TESTING.

- TESTING REQUIREMENTS
 - TEST ALL DOMESTIC WATER PIPING HYDROSTATICALLY TO 125 PSIG.
 - HYDROSTATIC TEST PRESSURES SHALL REMAIN CONSTANT WITH NO VARIATION FOR 120 MINUTES.
 - TESTS SHALL BE WITNESSED BY THE BUILDING ENGINEER.
 - THE PLUMBING CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL DAMAGE DUE TO TEST FAILURES AND LEAKAGE IN THE TEST AREA AND ADJACENT TENANT OR ESB SPACES.

- REFILL ENTIRE POTABLE HOT AND COLD WATER SUPPLY SYSTEM WITH CHLORINE SOLUTION (HTH OLIN CHEMICAL CORP.) AT A STRENGTH TO MEET STANDARDS OF THE DEPARTMENT OF HEALTH, AND FOR A PERIOD OF RETENTION AS STIPULATED.

- THOROUGHLY FLUSH PIPING SYSTEM WITH FRESH WATER IMMEDIATELY PRIOR TO FINAL ACCEPTANCE.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED



382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**PLUMBING
SPECIFICATIONS**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

P-0.2

SHEET 2 OF 6

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

4. WARRANTY
A. EQUIPMENT, MATERIALS AND WORKMANSHIP FURNISHED UNDER THIS CONTRACT SHALL BE GUARANTEED BY THE CONTRACTOR FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE OF THE WORK BY THE OWNER. THE CONTRACTOR SHALL KEEP THE WORK IN GOOD REPAIR FOR ONE YEAR AFTER THE DATE OF FINAL APPROVAL. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, PROMPTLY CORRECT AND REPAIR ANY AND ALL BREAKS, FAILURES OR WEAR DUE TO FAULTY MATERIALS, WORKMANSHIP OR EQUIPMENT. ALL SETTLEMENTS OF SURFACES THAT MAY OCCUR WITHIN THAT PERIOD SHALL ALSO BE PROMPTLY REPAIRED.

B. GAS STORAGE WATER HEATER

1. TANKS SHALL 50 GALLON CAPACITY AND SHALL HAVE 150 PSI WORKING PRESSURE AND BE EQUIPPED WITH EXTRUDED HIGH DENSITY ANODE.
2. ALL INTERNAL SURFACES OF THE HEATER EXPOSED TO WATER SHALL BE GLASS-LINED WITH AN ALKALINE BORO SILICATE COMPOSITION THAT HAS BEEN FUSED-TO-STEEL BY FIRING AT A TEMPERATURE RANGE OF 1400°F TO 1600°F.
3. ELECTRIC HEATING ELEMENTS SHALL BE LOW WATT DENSITY GOLDENROD 1" SCREW-IN TYPE.
4. EACH ELEMENT SHALL BE CONTROLLED BY AN INDIVIDUALLY MOUNTED THERMOSTAT AND HIGH TEMPERATURE CUT-OFF SWITCH. ALL INTERNAL CIRCUITS SHALL BE FUSED. THE OUTER JACKET SHALL BE OF BAKED ENAMEL FINISH AND SHALL BE PROVIDED WITH FULL SIZE CONTROL COMPARTMENT FOR PERFORMANCE OF SERVICE AND MAINTENANCE THROUGH HINGED FRONT PANEL AND SHALL ENCLOSE THE TANK WITH FOAM INSULATION. ELECTRICAL JUNCTION BOX WITH HEAVY DUTY TERMINAL BLOCK SHALL BE PROVIDED. THE DRAIN VALVE SHALL BE LOCATED IN THE FRONT FOR EASE OF SERVICING.

C. HOT WATER RE-CIRCULATING PUMP

1. IN-LINE PUMP: SINGLE STAGE VOLUTE TYPE PUMP SHALL BE MADE OF CAST IRON OR FORGED LEAD-FREE BRONZE IMPELLER.
2. THE PUMP SHALL HAVE A GROUND AND POLISHED STEEL SHAFT WITH A HARDENED INTEGRAL THRUST COLLAR. THE SHAFT SHALL BE SUPPORTED BY TWO HORIZONTAL SLEEVE BEARINGS DESIGNED TO CIRCULATE OIL. THE PUMPS ARE TO BE EQUIPPED WITH A MECHANICAL SEAL WITH CARBON SEAL FACE ROTATING AGAINST CERAMIC SEAT. THE MOTOR SHALL BE NON-OVERLOADING AT ANY POINT ON PUMP CURVE.
3. DIRECT CONNECT PUMP TO ELECTRIC MOTOR WITH FLEXIBLE COUPLING. THE MOTOR SHALL BE OF THE DRIP-PROOF, SLEEVE-BEARING, QUIET OPERATING, RUBBER-MOUNTED CONSTRUCTION. EQUIPMENT MOTOR WITH BUILT-IN THERMAL OVERLOAD PROTECTION.
4. INSTALL IN-LINE CIRCULATING PUMPS BETWEEN PIPE FLANGES IN PIPING SYSTEMS. INSTALL OVERHEAD PIPE SUPPORTS, BOTH SIDES OF IN-LINE PUMPS, INSTALLED IN HORIZONTAL PIPING RUNS.

GAS PIPING NOTES:

1. GAS PIPING SHALL BE INSTALLED IN ACCORDANCE WITH THE 2018 INTERNATIONAL FUEL GAS CODE.
2. GAS PIPING SHALL BE TESTED IN ACCORDANCE WITH THE PROCEDURES SCRIBED IN NFPA NO 54. ANY OTHER TEST AS REQUIRED BY THE LOCAL GAS INSPECTION DEPARTMENT OR GAS COMPANY SHALL ALSO BE PERFORMED.
3. MINIMUM GAS PIPING SIZING SHALL BE 3/4".
4. GAS PIPING COLOR/LABELS:

EXTERIOR:

- A LABEL ALL GAS PIPING "GAS/PRESSURE ON PIPE AT 5'-0" CENTERS.
- B. COLOR ON ROOF PAINT WITH TWO COATS OF YELLOW ENAMEL, ON VERTICAL WALLS PAINT TO MATCH WALL COLOR.

INTERIOR:

- A LABEL ALL GAS PIPING "GAS/PRESSURE", SPACING AND COLOR PER ANSI/ASME A13.1 CODE REQUIREMENTS.

5. GAS PIPING SUPPORTS:

EXTERIOR:
A. PIPING ROUTED ON ROOF SHALL BE STRAPPED TO MANUFACTURED SUPPORTS "QUICK-BLOCK" OR EQUAL. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.

INTERIOR:
A. PIPING TO BE SUPPORTED BY CLEVIS HANGERS W/ THREADED ROD OR UNI-STRUT SYSTEM. GAS SUPPORTS SPACED PER NFPA 54 7.2.5.2.

6. GAS VALVES SHALL BE ANSI/CSA APPROVED, 125 PSI RATED, 2 PIECE, FULL PORT, BALL VALVES W/BRASS BODY AND BALL. PROVIDE W/ LEVER HANDLE.

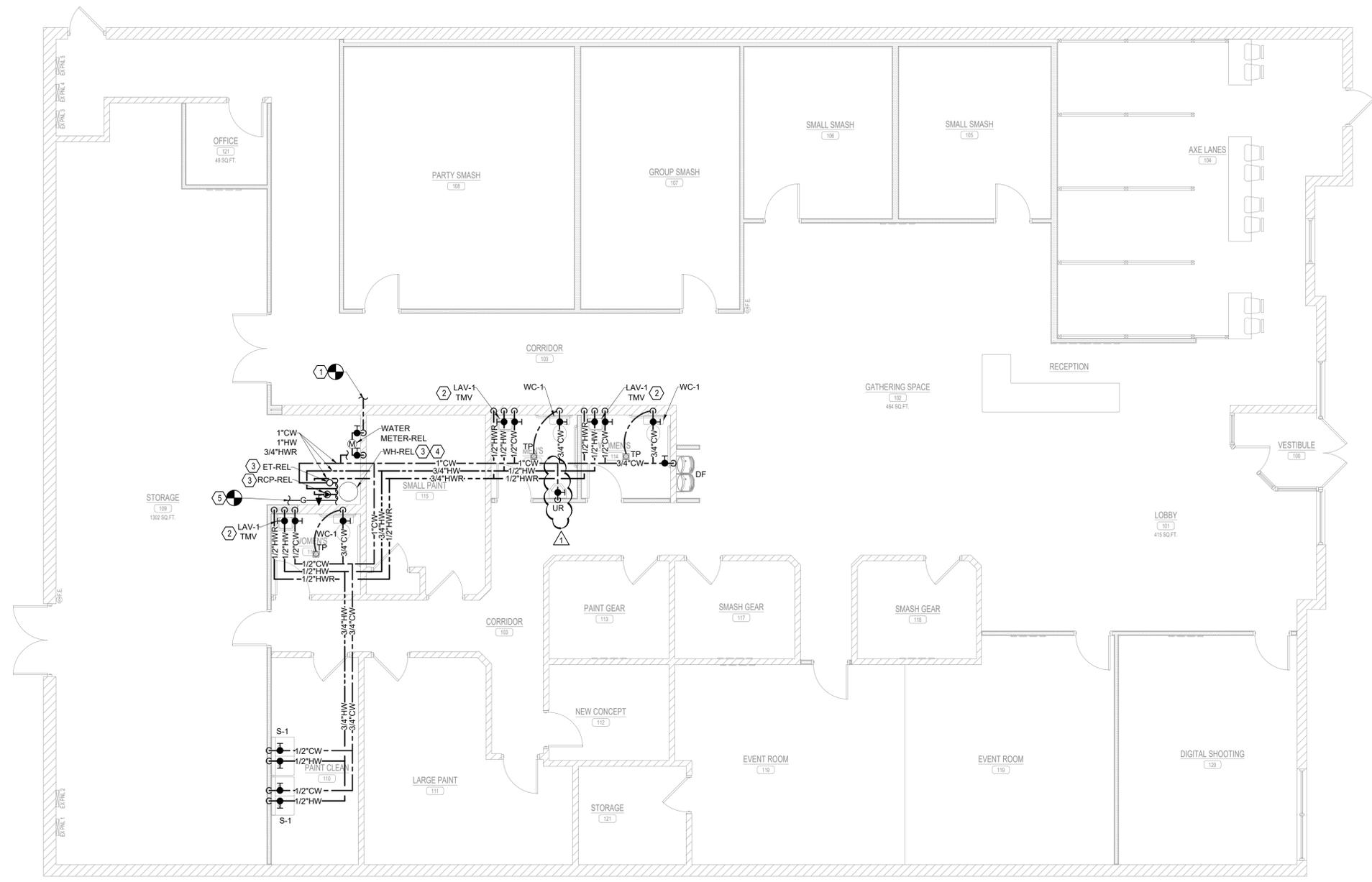
7. PROVIDE UNIONS, FLANGES OR COUPLINGS AT CONNECTION TO ALL VALVES AND EQUIPMENT. DO NOT USE DIRECT WELDED OR THREADED CONNECTIONS TO VALVES, EQUIPMENT OR OTHER APPARATUS.

8. PROVIDE NON-CONDUCTING DIELECTRIC UNIONS WHENEVER CONNECTING DISSIMILAR METALS.

9. PROVIDE DIRT LEG, GAS VALVE AND GAS REGULATOR AT EACH PIECE OF EQUIPMENT INSTALLED IN ACCESSIBLE LOCATION WITH-IN 36" OF EQUIPMENT. USE VENT-LESS REGULATORS INDOORS WHEN POSSIBLE. ROUTE VENTED REGULATOR VENTS TO EXTERIOR.

- WATER GENERAL NOTES:**
1. CW/HW/HWR PIPING TO BE PROVIDED WITH INSULATION AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE.
 2. PROVIDE BRANCH PRV IF PRESSURE EXCEEDS 80 PSI.
 3. PROVIDE ACCESS PANELS FOR WATER HAMMER ARRESTOR & SHUT-OFF VALVES AS REQUIRED.
 4. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
 5. RPZ VALVES SHALL BE APPROVED BY A RPZ CERTIFIED CONTRACTOR AND THIS APPROVAL/CERTIFICATION SHALL BE SUBMITTED TO THE VILLAGE OF LIBERTYVILLE PLUMBING INSPECTOR PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY (IPC 890.1130(b)).

- WATER AND GAS KEY NOTES: (#)**
1. EXTEND AND CONNECT NEW 1" CW PIPING TO THE EXISTING COLD WATER LINE IN SPACE WITH EXISTING RELOCATED WATER METER. CONTRACTOR TO FIELD VERIFY THE SIZE, ROUTING AND LOCATION OF EXISTING CW LINE.
 2. PROVIDE A TEMPERATURE MIXING VALVE FOR LAVATORY. SET TEMPERATURE TO A MAXIMUM OF 110°F.
 3. CONTRACTOR TO RELOCATE RECIRCULATION PUMP, EXPANSION TANK AND WATER HEATER AS SHOWN ON PLAN.
 4. CONTRACTOR TO MAKE SURE THAT ADEQUATE INLET PRESSURE PROVIDED FOR GAS FIRED WH-REL.
 5. EXTEND AND CONNECT NEW 3/4" GAS LINE TO THE EXISTING GAS PIPING IN SPACE. CONTRACTOR TO VERIFY IN FIELD THE EXACT LOCATION OF EXISTING GAS PIPING AND PRESSURE AVAILABLE.



1 WATER AND GAS FLOOR PLAN
SCALE: 3/16"=1'-0"



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

PLUMBING WATER & GAS FLOOR PLAN

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

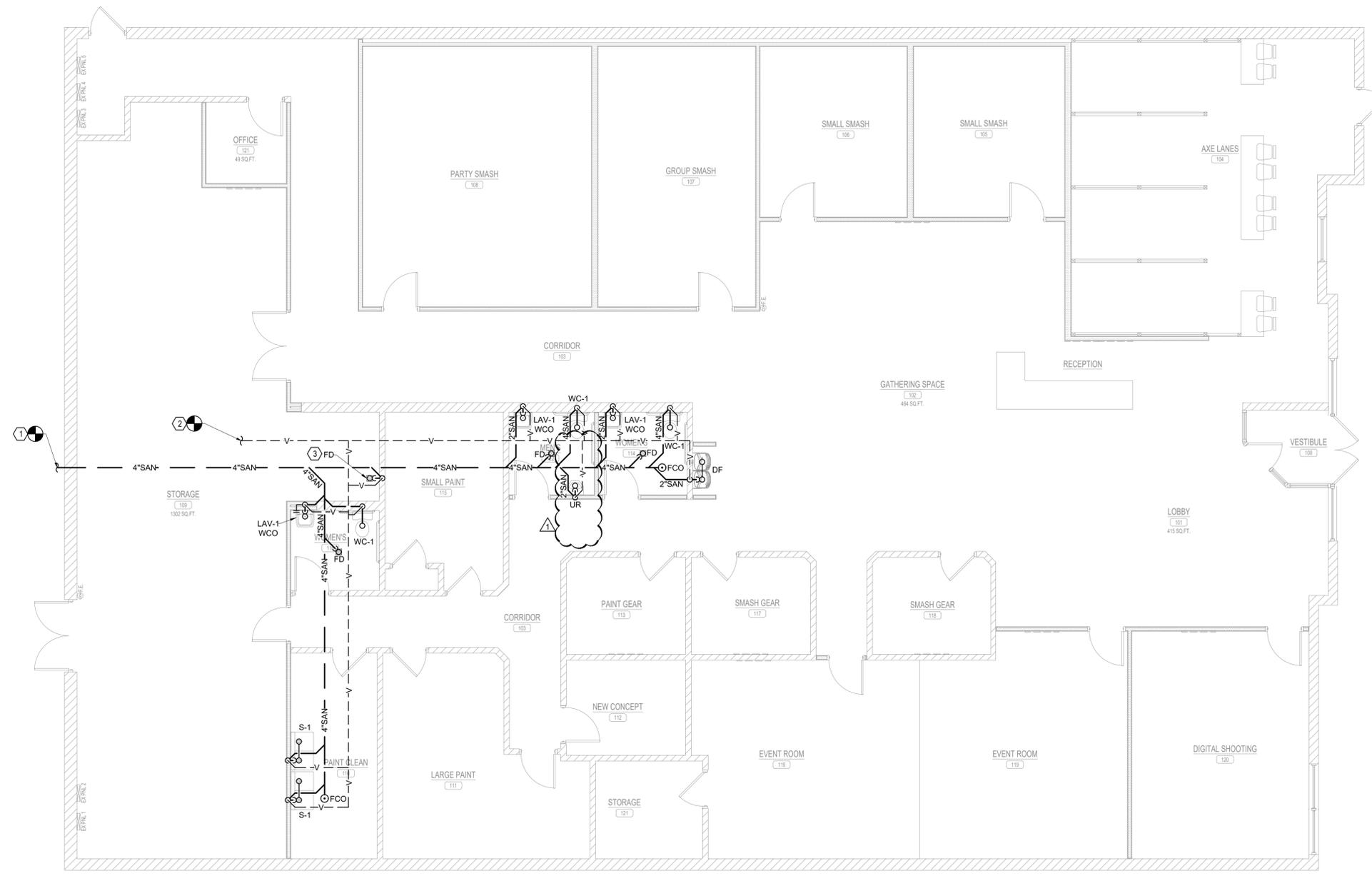
P-1.0

SHEET 3 OF 6

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

- SANITARY GENERAL NOTES:**
1. CONTRACTOR TO FIELD VERIFY FEASIBILITY OF SLAB PENETRATION AS PER STRUCTURAL REQUIREMENT.
 2. REFER RISER DIAGRAMS FOR ALL PIPE SIZES.
 3. THE VENT SHALL RISE 6 INCHES VERTICALLY ABOVE THE FLOOD RIM LEVEL OF THE FIXTURE BEING VENTED BEFORE OFFSETTING HORIZONTALLY OR VERTICALLY DOWNWARD BEFORE CONNECTING TO THE OUTSIDE VENT TERMINAL.

- SANITARY AND VENT KEY NOTES: (#)**
1. CONNECT NEW 4" SANITARY WASTE PIPING TO EXISTING SANITARY PIPE IN AREA. CONTRACTOR TO FIELD VERIFY EXACT SIZE, ROUTING, FLOW DIRECTION AND INVERT OF EXISTING PIPE ON SITE.
 2. CONNECT NEW 3" VENT PIPING TO EXISTING VENT PIPE IN SPACE. CONTRACTOR TO FIELD VERIFY EXACT SIZE AND LOCATION OF EXISTING PIPE ON SITE.
 3. ROUTE INDIRECT DRAIN FROM RELOCATED WATER HEATER(WH-REL) TO FLOOR DRAIN WITH APPROVED AIR GAP.



1 SANITARY FLOOR PLAN
SCALE: 3/16"=1'-0"



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

PLUMBING SANITARY FLOOR PLAN

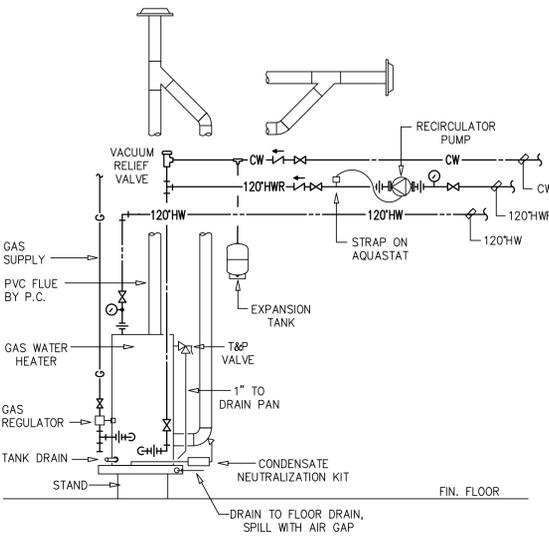
PROJECT NUMBER 25-088

DATE 07-16-2025

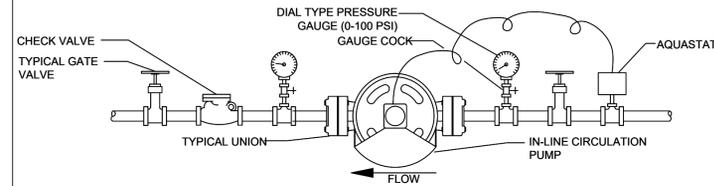
SHEET NO.

P-1.1

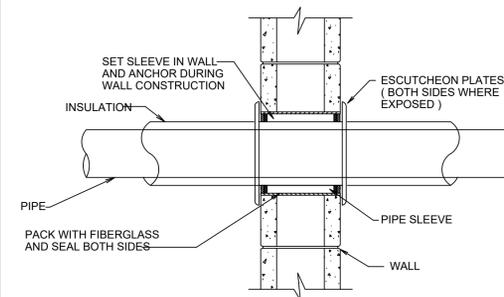
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



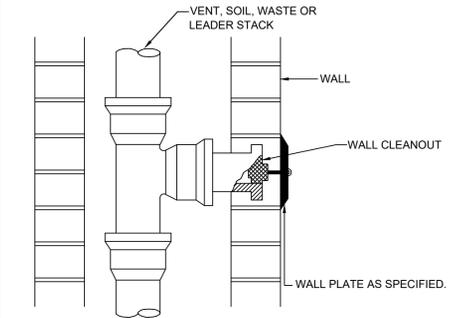
1 WATER HEATER DETAIL
SCALE: N.T.S.



2 INLINE RETICULATING PUMP DETAIL
SCALE: N.T.S.



3 PIPE SLEEVE THRU WALL SECTION
SCALE: N.T.S.



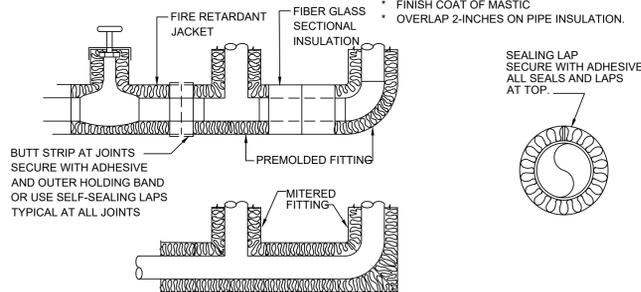
4 WALL CLEANOUT DETAIL
SCALE: N.T.S.

CONCEALED VALVES AND FITTINGS

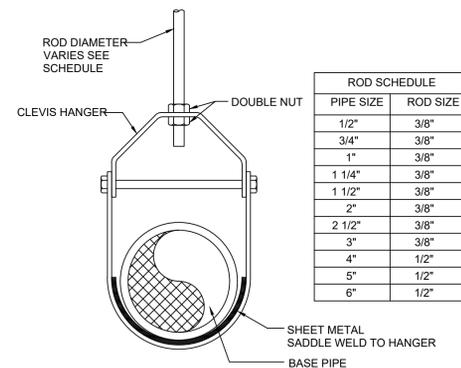
- WRAP WITH 1-INCH THICK, 1-POUND DENSITY TO REQUIRED PIPE INSULATION THICKNESS
- SECURE WITH WIRE OR TAPE.
- VAPOR SEAL COLD WATER, CHILLED WATER AND STORM WATER PIPING.

CONCEALED VALVES AND FITTINGS

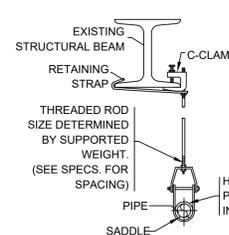
- PREMOLDED FIBER GLASS OR RADIAL MITERED PIPE INSULATION
- SKIM COAT OF INSULATION CEMENT
- COAT OF MASTIC
- WRAP WITH FIBER GLASS REINFORCING CLOTH.
- FINISH COAT OF MASTIC
- OVERLAP 2-INCHES ON PIPE INSULATION.



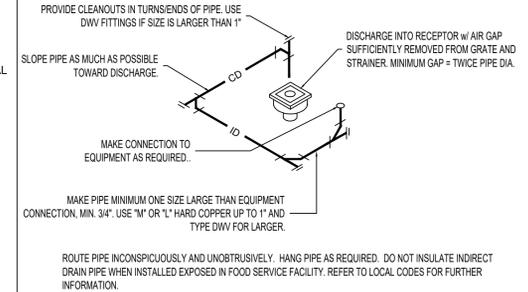
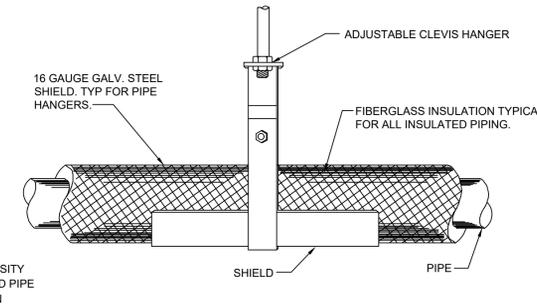
5 INSULATION FOR EXPOSED AND CONCEALED LOCATIONS
SCALE: N.T.S.



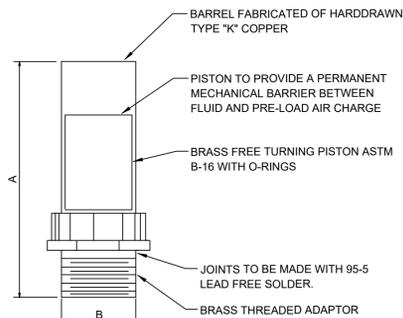
ROD SCHEDULE	
PIPE SIZE	ROD SIZE
1/2"	3/8"
3/4"	3/8"
1"	3/8"
1 1/4"	3/8"
1 1/2"	3/8"
2"	3/8"
2 1/2"	3/8"
3"	3/8"
4"	1/2"
5"	1/2"
6"	1/2"



6 HANGER DETAIL
SCALE: N.T.S.



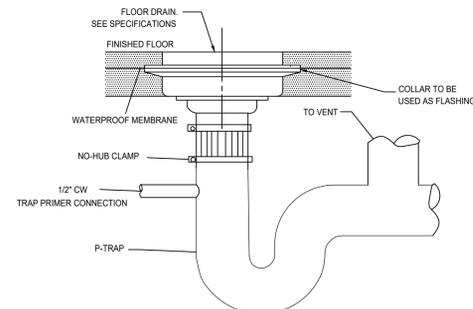
7 INDIRECT WASTE DETAIL
SCALE: N.T.S.



PIPE SIZE	P.D.I. SYMBOL	FIXTURE UNIT RATINGS	A SIZE	B SIZE
1/2"	A	1 - 11	5"	1/2"
3/4"	B	12 - 32	5"	3/4"
1"	C	33 - 60	7"	1"
1-1/4"	D	61 - 113	7"	1-1/4"
1-1/2"	E	114 - 154	9"	1-1/2"
2"	F	155 - 330	9"	2"

NOTE: LOCATE ONE FOR EACH BANK OF FLUSHOMETER
FIXTURES AT LAST FIXTURE PROVIDE A STAINLESS STEEL
ACCESS DOOR FOR EACH SUFFICIENT IN SIZE TO ALLOW
REPLACEMENT OF ARRESTOR AT A FUTURE DATE.

8 WATER HAMMER ARRESTOR DETAIL
SCALE: N.T.S.



9 FLOOR DRAIN DETAIL
SCALE: N.T.S.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

ISMAASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

PLUMBING DETAILS

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

P-2.0

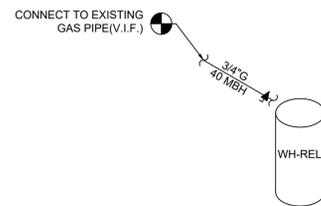
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

PLUMBING FIXTURE SCHEDULE							
TAG	FIXTURE TYPE	HW	CW	VENT	WASTE	DESCRIPTION	REMARK
WC-1	BARRIER - FREE WATER CLOSET TANK - TYPE	--	3/4"	2"	4"	WATER CLOSET SHALL BE EQUAL TO PROFLO MODEL #PF1603PAWH, WHITE, VITREOUS CHINA, ELONGATED BOWL AND PRESSURE ASSIST TANK PROFLO MODEL #PF1612PAWH, 1.0 GPF, FLOOR MOUNTED, BOTTOM OUTLET, 4" ROUGH-IN. SEAT SHALL BE AN ANTIMICROBIAL PLASTIC OPEN-FRONT SEAT	FIXTURE RIM TO FINISHED FLOOR MOUNTING HEIGHT SHALL BE 17".
LAV-1	BARRIER - FREE LAVATORY WALL HUNG	1/2"	1/2"	1-1/2"	2"	LAVATORY SHALL BE EQUAL TO PROFLO MODEL #PF5518WH, VITREOUS CHINA, WALL HUNG, THREE HOLE PUNCH, 4" CENTERS, CONCEALED WALL HANGER. PROVIDE FAUCET EQUAL TO AMERICAN STANDARD MODEL # 2275.503 CENTERSET FAUCET WITH LEVER HANDLES, 0.5 GPM AERATOR. PROVIDE LAVATORY COMPLETE WITH GRID DRAIN, PREWRAPPED INSULATED, CAST BRASS, OFFSET TAILPIECE AND P-TRAP WITH CLEANOUT (EQUAL TO MCGUIRE #PW2150WC) AND CHROME PLATED SUPPLIES (EQUAL TO MCGUIRE #175).	--
S-1	SINK	1/2"	1/2"	2"	3"	--	--
FCO	FLOOR CLEANOUT	--	--	--	--	FLOOR CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1400-VP. CLEANOUT.	PROVIDE TRAP PRIMER CONNECTION AS REQUIRED
WCO	WALL CLEANOUT	--	--	--	--	WALL CLEANOUT SHALL BE EQUAL TO ZURN MODEL #ZS-1468, ACCESS COVER AND PLUG.	GAS/WATER TIGHT ABS PLUG
TP	TRAP PRIMER	--	--	--	--	FLOOR CLEANOUT SHALL BE EQUAL TO ZURN MODEL #Z1021 WATER SAVER, P TRAP PRIMER.	--
FD	FLOOR DRAIN	--	--	2"	3"	ZURN ZN415-6BZ1-NL CAST IRON BODY AND CLAMPING COLLAR, ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER. USE PUSH-ON JOINT OF OUTLET SIZE AS SHOWN ON PLANS	--
DF	DRINKING FOUNTAIN	1/2"	--	1-1/2"	2"	--	--
UR	URINAL	--	3/4"	2"	2"	--	--

EXISTING GAS STORAGE WATER HEATER SCHEDULE								
TAG	UNIT TOTAL	STORAGE GALLONS	RECOVERY @ 90°F RISE	EWT DEG. F	LWT DEG. F	BTU/HR	MANUFACTURER & MODEL NO.	REMARKS
WH-REL	1	50	42 GPH	51	140	40	BRADFORD WHITE MI5036FBN	DIMENSIONS - 20"D X 59.62"H

GAS PIPE SIZING	
TABLE - 2018 INTERNATIONAL FUEL GAS CODE (IFGC), SECTION 402 (IFGC) PIPE SIZING, TABLE 402.2(2) SCHEDULE 40 METALLIC PIPE.	
INLET PRESSURE : LESS THAN 2.0 PSI	
PRESSURE DROP : 0.5 IN. W.C.	
FITTINGS FACTOR : 40%	
TOTAL EQUIVALENT LENGTH : 30 FT	
PIPE SIZE (INCHES)	CAPACITY (MBH)
1/2"	95
3/4"	199

GAS LOAD REQUIREMENTS				
TAG	DESCRIPTION	QTY	INPUT MBH	TOTAL CFH
WH-REL	WATER HEATING	1	40	40
TOTAL				40



3 GAS RISER DIAGRAM
N.T.S.

PLUMBING PIPE MATERIAL SCHEDULE		
PIPING SYSTEM	ABBREVIATION	PIPING MATERIAL
SANITARY DRAINAGE & VENT (ABOVE GRADE)	SAN OR V	SCH.40 PVC / CAST IRON / COPPER
SANITARY DRAINAGE & VENT (BELOW GRADE)	SAN OR V	SCH.40 PVC / CAST IRON / COPPER
POTABLE WATER (ABOVE GRADE)	CW, HW OR HWR	TYPE L HARD-DRAWN COPPER PIPE AND FITTINGS (CPVC PIPING AND FITTINGS OR PEX PIPING AND FITTINGS ALLOWED IF AHJ AND LANDLORD PERMITS).
POTABLE WATER - 2" & SMALLER (BELOW GRADE)	CW, HW OR HWR	TYPE K SOFT ANNEALED COPPER

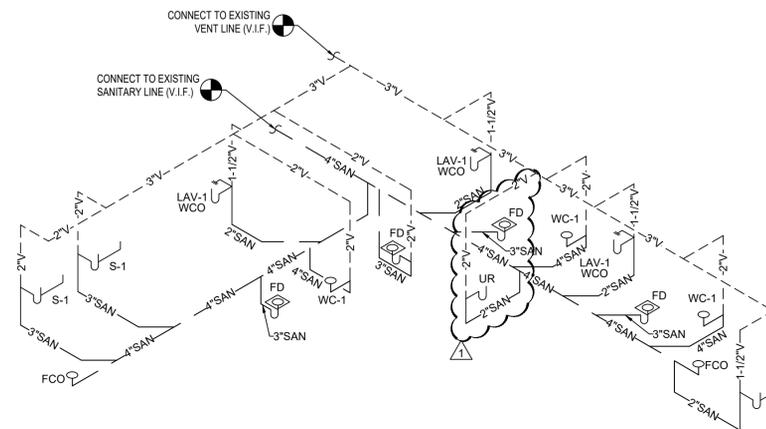
*ALL PLUMBING SYSTEMS (SANITARY, WASTE, VENT, GAS, WATER DISTRIBUTION PIPING SYSTEMS) AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED, OPERATED AND MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF 2014 ILLINOIS PLUMBING CODE. PVC ONLY WHERE ALLOWABLE PER LOCAL AHJ. PVC SHALL NOT BE USED WHERE EXPOSED IN RETURN AIR PLENUM, OR WHERE WATER TEMPS EXCEED 140°F

THERMOSTATIC MIXING VALVE SCHEDULE							
TAG	DESCRIPTION	MAXIMUM GPM	MINIMUM GPM	PRESSURE LOSS	SELECTION BASED ON	REMARKS/OPTIONS	
					MANUFACTURER	MODEL NUMBER	
TMV	THERMOSTATIC MIXING VALVE	3.5	0.25	5	LEONARD	270-LF	NOTE 1, A

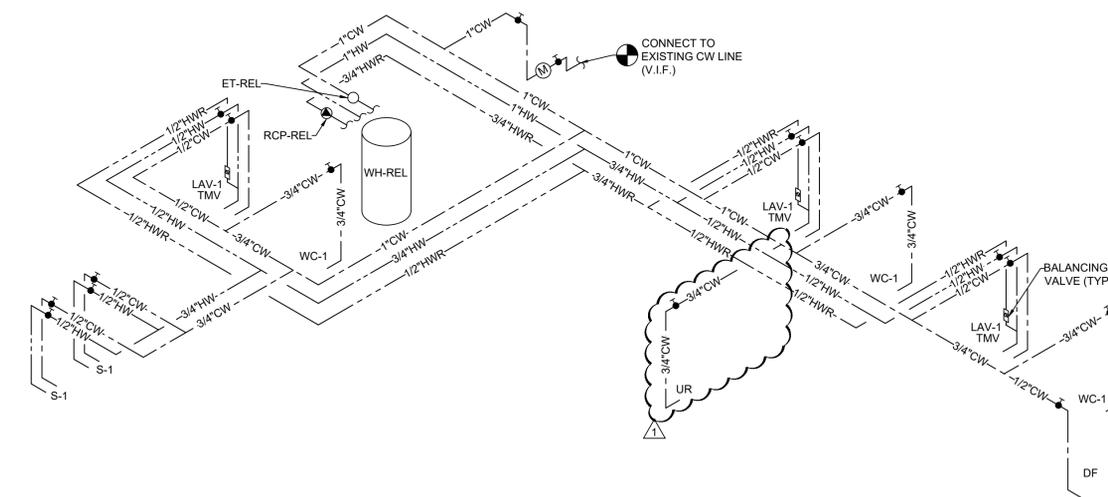
OPTIONS (ALL UNITS)
 . LEAD FREE NSF APPROVED
 . PROVIDE T-STAT ON TEMPERED LINE

ADDITIONAL OPTIONS (UNITS AS NOTED)
 A: ASSE 1070 APPROVED, SET @110°F, 1/2" INLET, 1/2" OUTLET, MOUNT BELOW FIXTURE.

NOTES:
 1. INSTALL MIXING VALVE PER MANUFACTURERS REQUIREMENTS, PROVIDE ALL PIPING AND VALVES PER O&M MANUAL.



1 SANITARY AND VENT RISER DIAGRAM
N.T.S.



2 WATER RISER DIAGRAM
N.T.S.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

PLUMBING SCHEDULE
AND RISER DIAGRAMS

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

P-3.0

SHEET 6 OF 6

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

MECHANICAL SYMBOLS LIST

	ROOF TOP UNIT
	CEILING MOUNTED FAN
	AIR CONDITIONING
	AIR COOLED CONDENSING UNIT

AIR DEVICES

	SUPPLY DIFFUSER
	RETURN/EXHAUST DIFFUSER
	ROUND SUPPLY DIFFUSER
	SIDEWALL/DUCT MOUNTED GRILLE-RETURN

DUCT ACCESSORIES

	VOLUME DAMPER W/ ACCESS DOOR
	BACKDRAFT DAMPER

CONTROLS AND SENSORS

	THERMOSTAT
	TEMPERATURE SENSOR
	DUCT SMOKE DETECTOR
	REMOTE TEST STATION

DUCTWORK

	RECTANGULAR DUCT (WIDTH X DEPTH)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT
	ROUND DUCT CROSS SECTION
	SUPPLY AIR RECTANGULAR DUCT GOING UP/DOWN
	RETURN AIR RECTANGULAR DUCT GOING UP/DOWN

APPLICABLE CODES

- A. 2018 INTERNATIONAL BUILDING CODE
- B. 2018 INTERNATIONAL MECHANICAL CODE
- C. 2018 INTERNATIONAL FIRE CODE
- D. 2021 INTERNATIONAL CONSERVATION ENERGY CODE.

MECHANICAL DRAWING LIST

M-0.1	MECHANICAL SYMBOL, ABBREVIATION & NOTES
M-0.2	MECHANICAL SPECIFICATIONS
M-1.0	MECHANICAL FLOOR PLAN
M-1.1	MECHANICAL ROOF PLAN
M-2.0	MECHANICAL DETAILS (1 OF 2)
M-2.1	MECHANICAL DETAILS (2 OF 2)
M-3.0	MECHANICAL SCHEDULE

MECHANICAL ABBREVIATIONS

AC	AIR CONDITIONING
ACCU	AIR COOLED CONDENSING UNIT
AFF	ABOVE FINISHED FLOOR
AL	ACOUSTIC LINING
BD	GRAVITY DAMPER
CD	CONDENSATE DRAIN
CDR	CEILING DIFFUSER RETURN
CDS	CEILING DIFFUSER SUPPLY
CFM	CUBIC FEET OF AIR PER MINUTE
DN	DOWN
E	EXISTING
EER	ENERGY EFFICIENCY RATIO
EF	EXHAUST FAN
FC	FLEXIBLE CONNECTION
FD/AD	FIRE DAMPER W/ACCESS DOOR
FD	FIRE DAMPER W/FUSIBLE LINK
FSD	FIRE SMOKE DAMPER
IEER	INTEGRATED ENERGY EFFICIENCY RATIO
MD	MOTORIZED DAMPER
N	NEW
RA	RETURN AIR
RAD	RETURN AIR DUCT
RTU	ROOF TOP UNIT
SA	SUPPLY AIR
SAD	SUPPLY AIR DUCT
SEER	SEASONAL ENERGY EFFICIENCY RATIO
TEF	TOILET EXHAUST FAN
VD	VOLUME CONTROL DAMPER

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS. THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS' COST. BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES. THE PLANS AND SPECIFICATIONS NOT WITHSTANDING THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

BUILDING DEPARTMENT NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE SECTIONS OF IBC 2018 AND ALL RULES AND REGULATIONS OF THE DEPARTMENT OF BUILDINGS TO DATE.
- THE LICENSED PROFESSIONAL ENGINEER, ARCHITECT OR OTHER PERSON HAVING NOT LESS THAN FIVE (5) YEARS EXPERIENCE SUPERVISING THE INSTALLATION OF SUCH MECHANICAL SYSTEMS AND CONDUCTING SUCH TESTS WILL FILE DOCUMENTATION AND REPORTS OF TESTS THAT THE SYSTEM COMPLIES WITH THE CONSTRUCTION DOCUMENTS AND APPLICABLE LAWS.
 - SMOKE DETECTOR SHALL MEET UL268A.
 - TESTS OF MECHANICAL SYSTEMS SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SECTIONS OF THE 2018 IMC:
 - A. VENTILATION SYSTEM MC 403.3.1.1
 - THE FOLLOWING WORK ITEMS, COMPONENTS, MATERIALS, CAPACITIES, ETC. SHALL COMPLY WITH THE REFERENCED CODE OR STANDARD:
 - A. DUCT CONSTRUCTION AND INSTALLATION- 2018 INTERNATIONAL MECHANICAL CODE, 603
 - B. STANDARDS OF HEATING 2018 INTERNATIONAL MECHANICAL CODE - 309.1
 - C. AIR INTAKES, EXHAUSTS AND RELIEF - 2018 INTERNATIONAL MECHANICAL CODE 401.5
 - D. AIR FILTERS - 2018 INTERNATIONAL MECHANICAL CODE 605
 - E. MANUAL AND AUTOMATIC FIRE AND SMOKE CONTROLS FOR AIR DISTRIBUTION SYSTEMS -2018 INTERNATIONAL MECHANICAL CODE - 606
 - MINIMUM TEMPERATURE TO BE MAINTAINED IN OCCUPIED SPACES DURING HEATING SEASON: 68 DEG. FAHRENHEIT.
 - VENTILATION FOR ALL AREA SHALL COMPLY WITH 2018 INTERNATIONAL MECHANICAL CODE 401.
 - A STATEMENT SHALL BE FILED BY THE OWNER OR TENANT IN POSSESSION THAT THE VENTILATION SYSTEM WILL BE KEPT IN CONTINUOUS OPERATION AT ALL TIMES DURING THE NORMAL OCCUPANCY OF THE STRUCTURE AS REQUIRED BY 2018 INTERNATIONAL MECHANICAL CODE 403.
 - REFER TO ARCHITECTURAL DRAWINGS FOR REQUIRED FIRE-RATED WALL AND SMOKE WALL CONSTRUCTION AND LOCATION.
 - THESE PLANS ARE APPROVED ONLY FOR THE WORK INDICATED ON THE APPLICATION SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.
 - ALL HEATING AND COOLING LOADS CALCULATED PER ASHRAE/ACCA 183.
 - VENTILATION SYSTEMS SHALL BE BALANCED TO MAINTAIN THE MINIMUM VENTILATION AIRFLOW RATE AS SHOWN IN VENTILATION REQUIREMENT TABLE. THIS SYSTEM SHALL BE BALANCED BY APPROVED CONTRACTOR. CONTRACTOR TO SUBMIT THE AIR BALANCE REPORT TO INSPECTOR OF RESPECTIVE BUILDING DEPARTMENT PRIOR TO FINAL INSPECTION.
 - MECHANICAL SYSTEM COMMISSIONING SHALL BE DONE AS PER 2021 INTERNATIONAL ENERGY CONSERVATION CODE SECTION C408 IF TOTAL INSTALLED MECHANICAL EQUIPMENT CAPACITY IS MORE THEN 480,000 BTU/H COOLING CAPACITY AND 600,000 BTU/H HEATING CAPACITY.

THERMOSTATIC CONTROL NOTES

- C403.4.1 THERMOSTATIC CONTROLS**
THE SUPPLY OF HEATING AND COOLING ENERGY TO EACH ZONE SHALL BE CONTROLLED BY INDIVIDUAL THERMOSTATIC CONTROLS CAPABLE OF RESPONDING TO TEMPERATURE WITHIN THE ZONE. WHERE HUMIDIFICATION OR DEHUMIDIFICATION OR BOTH IS PROVIDED, NOT FEWER THAN ONE HUMIDITY CONTROL DEVICE SHALL BE PROVIDED FOR EACH HUMIDITY CONTROL SYSTEM.
- C403.4.1.2 DEADBAND**
WHERE USED TO CONTROL BOTH HEATING AND COOLING ZONE THERMOSTATIC CONTROLS SHALL BE CONFIGURED TO PROVIDE A TEMPERATURE RANGE OR DEADBAND OF NOT LESS THAN 5°F WITHIN WHICH THE SUPPLY OF HEATING AND COOLING ENERGY TO THE ZONE IS SHUT OFF OR REDUCED TO A MINIMUM.
- C403.4.1.3 SETPOINT OVERLAP RESTRICTION**
WHERE A ZONE HAS A SEPARATE HEATING AND A SEPARATE COOLING THERMOSTATIC CONTROL LOCATED WITHIN THE ZONE A LIMIT SWITCH, MECHANICAL STOP OR DIRECT DIGITAL CONTROL SYSTEM WITH SOFTWARE PROGRAMMING SHALL BE CONFIGURED TO PREVENT THE HEATING SETPOINT FROM EXCEEDING THE COOLING SETPOINT AND TO MAINTAIN A DEADBAND IN ACCORDANCE WITH SECTION C403.4.1.2.
- C403.4.2.1 THERMOSTATIC SETBACK**
THERMOSTATIC SETBACK CONTROLS SHALL BE CONFIGURED TO SET BACK OR TEMPORARILY OPERATE THE SYSTEM TO MAINTAIN ZONE TEMPERATURES DOWN TO 55°F (13°C) OR UP TO 85°F (29°C).
- C403.4.2.2 AUTOMATIC SETBACK AND SHUTDOWN**
AUTOMATIC TIME CLOCK OR PROGRAMMABLE CONTROLS SHALL BE CAPABLE OF STARTING AND STOPPING THE SYSTEM FOR SEVEN DIFFERENT DAILY SCHEDULES PER WEEK AND RETAINING THEIR PROGRAMMING AND TIME SETTING DURING A LOSS OF POWER FOR NOT FEWER THAN 10 HOURS. ADDITIONALLY, THE CONTROLS SHALL HAVE A MANUAL OVERRIDE THAT ALLOWS TEMPORARY OPERATION OF THE SYSTEM FOR UP TO 2 HOURS; A MANUALLY OPERATED TIMER CONFIGURED TO OPERATE THE SYSTEM FOR UP TO 2 HOURS; OR AN OCCUPANCY SENSOR.
- C403.4.2.3 AUTOMATIC START**
AUTOMATIC START CONTROL SHALL BE PROVIDED FOR EACH HVAC SYSTEM. THE CONTROL SHALL BE CONFIGURED TO AUTOMATICALLY ADJUST THE DAILY START TIME OF THE HVAC SYSTEM IN ORDER TO BRING EACH SPACE TO DESIRED OCCUPIED TEMPERATURE IMMEDIATELY PRIOR TO SCHEDULED OCCUPANCY.

GENERAL NOTES

- CONTRACTOR SHALL SURVEY THE AREA OF THIS WORK BEFORE SUBMITTING A BID AND SHALL BE RESPONSIBLE FOR NOTIFYING THE ARCHITECT OF ANY CONDITIONS WHICH WOULD PREVENT THE INSTALLATION OF THE WORK AS SHOWN ON DRAWINGS.
 - ALL APPLICABLE CODES, LAWS AND REGULATIONS GOVERNING OR RELATING TO ANY PORTION OF THIS WORK ARE HEREBY INCORPORATED INTO AND MADE A PART OF THESE SPECIFICATIONS, AND THEIR PROVISIONS SHALL BE CARRIED OUT BY THE CONTRACTOR WHO SHALL INFORM THE OWNER, PRIOR TO SUBMITTING A PROPOSAL, OF ANY WORK OR MATERIALS WHICH VIOLATE ANY OF THE ABOVE LAWS AND REGULATIONS. ANY WORK DONE BY THE CONTRACTOR CAUSING SUCH VIOLATION SHALL BE CORRECTED BY THE CONTRACTOR.
 - BEFORE PROCEEDING WITH ANY WORK IN OCCUPIED OR USED AREAS, THE CONTRACTOR SHALL APPLY TO OWNER FOR PERMISSION TO ENTER SUCH AREAS. THE CONTRACTOR IS OBLIGED TO PERFORM HIS WORK ONLY AT THE TIMES DESIGNATED BY OWNER. THERE WILL BE NO ADDITIONAL COMPENSATION FOR THE WORK PERFORMED AFTER HOURS OR ON OFF-DAYS WITHOUT PRIOR WRITTEN APPROVAL.
 - THE WORK IN THE BUILDING SHALL BE DONE WHEN AND AS DIRECTED, AND IN A MANNER SATISFACTORY TO THE OWNER. THE WORK SHALL BE PERFORMED SO AS TO CAUSE THE LEAST POSSIBLE INCONVENIENCE AND DISTURBANCE TO THE PRESENT OCCUPANTS.
 - THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK IN OVERTIME AND THE ADDITIONAL COST TO BE CHARGED THEREFOR SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.
 - CONTRACTOR SHALL ASCERTAIN THE APPROPRIATE METHOD FOR BRINGING THE UNITS INTO AND THROUGH THE BUILDING TO POSITION UNIT IN LOCATION SHOWN ON THE PLANS. WHERE NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH RESTRICTIVE SPACES. COORDINATE WITH BUILDING OWNER APPROPRIATE TIMES OF DAY SUCH EQUIPMENT MAY BE MOVED THROUGH ALL AREAS.
 - DUCTWORK AND PIPING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL MAKE ALLOWANCE IN PRICING FOR ROUTING OF DUCTWORK AND PIPING TO AVOID OBSTRUCTIONS. EXACT LOCATIONS ARE SUBJECT TO APPROVAL OF ARCHITECT. COORDINATION WITH THE OTHER TRADES IS REQUIRED.
 - SUPPORT ALL DUCTWORK AND PIPING FROM BUILDING STRUCTURE AND/OR FRAMING IN AN APPROVED MANNER. WHERE OVERHEAD CONSTRUCTION DOES NOT PERMIT FASTENING OR SUPPORTS FOR EQUIPMENT, FURNISH ADDITIONAL FRAMING. INSERTS SHALL BE STEEL, SLOTTED TYPE AND FACTORY PAINTED. SINGLE ROD SHALL BE SIMILAR TO GRINNELL FIG. 281. MULTI-ROD SHALL BE SIMILAR TO FEE & MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS. MAXIMUM LOADING INCLUDING PIPES, DUCTWORK CONTENTS AND COVERING SHALL NOT EXCEED 75% OF RATED INSERT CAPABILITY. WHEN SUPPORTING FROM BUILDING USE BEAM CLAMPS IN APPROVED MANNER.
 - PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THIS BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF PIPES, DUCTS, LOUVERS, CONDUIT, AND EQUIPMENT. PROVIDE EQUIPMENT CURBS AND DUNNAGE STEEL AS REQUIRED.
 - SEAL OPENINGS AROUND DUCTS AND PIPING THROUGH PARTITIONS, WALLS AND FLOORS (NOT IN SHAFTS) WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL (FIBERGLASS INSULATION IS NOT ACCEPTABLE).
 - WHERE PENETRATIONS THROUGH FIRE RATED WALLS ARE NOT FIRE PROOFED THIS CONTRACTOR SHALL BE RESPONSIBLE TO SEAL SAME TO MAINTAIN THE RATED INTEGRITY.
 - INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTENANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
 - ACCESS DOORS ARE REQUIRED FOR ALL BUILDING SERVICE VALVES THAT RUN THROUGH THE SPACES AND ACCESS TO THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL. COORDINATE ALL LOCATIONS OF ACCESS DOORS WITH THE ARCHITECT.
 - REMOVABLE ACCESS TILE AND/OR ACCESS DOOR ARE REQUIRED IN HUNG CEILINGS, SHAFTS AND WALLS FOR ALL VOLUME AND FIRE DAMPERS, AUTOMATIC DAMPERS AND ALL OTHER MECHANICAL DEVICES AND DEVICES. HVAC CONTRACTOR TO FURNISH ACCESS LOCATION REQUIREMENTS TO GENERAL CONTRACTOR. ACCESS TILE IDENTIFICATION: PROVIDE BUTTONS, TABS, AND MARKERS TO IDENTIFY LOCATION OF CONCEALED VALVES, DAMPERS AND EQUIPMENT.
 - THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR, ROOFS AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.
 - MATERIALS AND WORKMANSHIP, UNLESS OTHERWISE NOTED, SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
 - ALL EQUIPMENT SHALL BE PROVIDED WITH ONE YEAR WARRANTY PARTS AND LABOR AND FIVE YEARS ON COMPRESSORS. WARRANTY PERIOD BEGINS UPON PROJECT ACCEPTANCE
 - ALL MATERIAL AND EQUIPMENT TO BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS WORK WITH ITS COMPLETION AND FINAL ACCEPTANCE AND SHALL REPLACE ANY OF THE SAME WHICH MAY BE DAMAGED, LOST, OR STOLEN WITHOUT ADDITIONAL COST TO THE OWNER.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FAILURE OF ANY DUCTWORK SYSTEM OR EQUIPMENT TO FUNCTION PROPERLY UPON COMPLETION OF HIS WORK UPON SAID SYSTEM OR EQUIPMENT.
 - SUBMIT SHOP DRAWING OF ALL WORK WHICH MUST BE APPROVED BY THE ARCHITECT AND ENGINEER BEFORE WORK COMMENCES.
 - INSURANCE: IN ACCORDANCE WITH BUILDING REQUIREMENTS THE CONTRACTOR SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.
 - THE FINAL ACCEPTANCE WILL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, BALANCED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATES OF INSPECTION AND APPROVAL.
 - SPECIFICATIONS ARE OF SIMPLIFIED FORM AND INCLUDE INCOMPLETE SENTENCES, WORDS OR PHRASES SUCH AS "THE CONTRACTOR SHALL," "SHALL BE," "FURNISH," "PROVIDE," "A," "THE," AND "ALL" HAVE BEEN OMITTED FOR BREVITY.
 - WHERE A CONFLICT EXISTS BETWEEN THE DRAWINGS, THE SPECIFICATIONS OR ANY OTHER CONSTRUCTION DOCUMENT, THE ONE WITH THE MOST STRINGENT REQUIREMENT(S) SHALL APPLY.
- DEFINITIONS:**
- "PROVIDE": TO SUPPLY, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
 - "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
 - "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE AND DELIVER COMPLETE WITH RELATED ACCESSORIES.

GENERAL HVAC NOTES

- PROVIDE ALL MATERIAL AND EQUIPMENT AND PERFORM ALL LABOR REQUIRED TO INSTALL COMPLETE AND OPERABLE MECHANICAL SYSTEMS AS INDICATED ON THE DRAWINGS, AS SPECIFIED AND AS REQUIRED BY CODE.
- CONTRACT DOCUMENT DRAWINGS FOR MECHANICAL WORK (HVAC, PLUMBING, AND FIRE PROTECTION) ARE DIAGRAMMATIC AND ARE INTENDED TO CONVEY SCOPE AND GENERAL ARRANGEMENT ONLY.
- THE LOCATIONS OF ALL ITEMS SHOWN ON THE DRAWINGS OR CALLED FOR IN THE SPECIFICATIONS THAT ARE NOT FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. THE EXACT LOCATIONS NECESSARY TO SECURE THE BEST CONDITIONS AND RESULTS MUST BE DETERMINED BY THE PROJECT SITE CONDITIONS AND SHALL HAVE THE APPROVAL OF THE ENGINEER BEFORE BEING INSTALLED. DO NOT SCALE DRAWINGS.
- WHEN MECHANICAL WORK (HVAC, PLUMBING, SHEET METAL, FIRE PROTECTION, ETC.) IS SUBCONTRACTED, IT SHALL BE THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO COORDINATE SUBCONTRACTORS AND THE ASSOCIATED CONTRACTS. WHEN DISCREPANCIES ARISE PERTAINING TO WHICH CONTRACTOR PROVIDES A PARTICULAR ITEM OF THE MECHANICAL CONTRACT OR WHICH CONTRACTOR PROVIDES FINAL CONNECTIONS FOR A PARTICULAR ITEM OF THE MECHANICAL CONTRACT, IT SHALL BE BROUGHT TO THE ATTENTION OF THE MECHANICAL CONTRACTOR, WHOSE DECISION SHALL BE FINAL.
- COORDINATE CONSTRUCTION OF ALL MECHANICAL WORK WITH ARCHITECTURAL, STRUCTURAL, CIVIL, ELECTRICAL WORK, ETC., SHOWN ON OTHER CONTRACT DOCUMENT DRAWINGS.
- INSTALL ALL MECHANICAL EQUIPMENT AND APPURTENANCES IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, CONTRACT DOCUMENTS, AND APPLICABLE CODES AND REGULATIONS.
- WHERE TWO OR MORE ITEMS OF THE SAME TYPE OF EQUIPMENT ARE REQUIRED, THE PRODUCT OF ONE MANUFACTURER SHALL BE USED.
- COORDINATE ALL EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS, COORDINATE AND PROVIDE ALL DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE ALL DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
- ALL CONTROL WIRE AND CONDUIT SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE AND ELECTRICAL DIVISION OF THE SPECIFICATION.
- PROVIDE VIBRATION ISOLATION FOR ALL MECHANICAL EQUIPMENT TO PREVENT TRANSMISSION OF VIBRATION TO BUILDING STRUCTURE.
- LOCATE ALL TEMPERATURE, PRESSURE, AND FLOW MEASURING DEVICES IN ACCESSIBLE LOCATIONS WITH THE STRAIGHT SECTION OF PIPE OR DUCT UP, AND DOWNSTREAM AS RECOMMENDED BY THE MANUFACTURER FOR GOOD ACCURACY.
- WHERE BEAMS ARE INDICATED TO BE PENETRATED WITH DUCTWORK OR PIPING, COORDINATE DUCTWORK AND PIPING LAYOUT WITH BEAM OPENING SIZE AND OPENING LOCATIONS. COORDINATION SHALL BE DONE PRIOR TO THE FABRICATION OF DUCTWORK, CUTTING OF PIPING, OR FABRICATION OF BEAMS.
- ALL MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION AND AS SHOWN IN THE DETAILS FOR PIPING, DUCTWORK, AND EQUIPMENT (UNLESS OTHERWISE NOTED) SHALL BE FURNISHED AND INSTALLED BY THE MECHANICAL CONTRACTOR.
- PROVIDE ACCESS PANELS FOR INSTALLATION IN WALLS AND CEILINGS, WHERE REQUIRED, TO SERVICE DAMPERS, VALVES, SMOKE DETECTORS, AND OTHER CONCEALED MECHANICAL EQUIPMENT. ACCESS PANELS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR FOR INSTALLATION. ACCESS PANELS SHALL HAVE THE EQUAL RATED CAPACITY (1HR, 2HR, ETC.) AS WALL.
- MECHANICAL EQUIPMENT, DUCTWORK, AND PIPING SHALL NOT BE SUPPORTED FROM A METAL DECK.
- ALL EQUIPMENT, PIPING, DUCTWORK, ETC., SHALL BE SUPPORTED AS DETAILED, SPECIFIED AND REQUIRED TO PROVIDE A VIBRATION-FREE INSTALLATION.
- ALL DUCTWORK, PIPING, AND EQUIPMENT SUPPORTED FROM STRUCTURAL STEEL SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR. ALL ATTACHMENTS TO STEEL BAR JOISTS, TRUSSES, OR JOIST GIRDERS SHALL BE AT PANEL POINTS. PROVIDE BEAM CLAMPS MEETING MSS STANDARDS. WELDING TO STRUCTURAL MEMBERS SHALL NOT BE PERMITTED. THE USE OF C-CLAMPS SHALL NOT BE PERMITTED.
- ALL ROOF-MOUNTED EQUIPMENT CURBS/STEEL RAILS FOR EQUIPMENT PROVIDED BY THE MECHANICAL CONTRACTOR SHALL BE FURNISHED BY THE MECHANICAL CONTRACTOR AND INSTALLED BY THE GENERAL CONTRACTOR.
- LOCATIONS AND SIZES OF ALL FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH ALL OTHER TRADES INVOLVED.
- ALL OPENINGS IN FIRE WALLS DUE TO DUCTWORK, PIPING, CONDUIT, ETC., SHALL BE FIRE STOPPED WITH A PRODUCT SIMILAR TO 3M OR APPROVED EQUAL.
- ALL AIR CONDITIONING CONDENSATE DRAIN LINES FROM EACH AIR HANDLING UNIT SHALL BE PIPED FULL SIZE OF THE UNIT DRAIN OUTLET, WITH "P" TRAP, AND PIPED TO THE NEAREST DRAIN. SEE THE DETAILS SHOWN IN THE DRAWINGS OR THE CONTRACT SPECIFICATIONS FOR THE DEPTH OF THE AIR CONDITIONING CONDENSATE TRAP.
- REFER TO TYPICAL DETAILS FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION.

SCOPE OF WORK

SCOPE OF WORK

- THE WORK UNDER CONTRACT INCLUDES ALL LABOR, MATERIALS AND APPLIANCES NECESSARY FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR SAFE OPERATION OF THE SYSTEMS AS DESCRIBED IN THE SPECIFICATIONS, FLOOR PLAN(S) DESIGN, DETAIL DRAWINGS, NOTES, RFIS, ETC. FOR THIS PROJECT. WORK SHALL BE INSTALLED IN A NEAT, WORKMANLIKE MANNER.
- THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH THE DEPARTMENT HAVING JURISDICTION, OBTAIN PERMITS OR LICENSES NECESSARY TO CARRY OUT THIS WORK AND PAY ALL FEES THEREFOR. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.
- THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES, BY OWNER, INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDE THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED IN REPAIRING AND REPLACING WORK OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED



382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**MECHANICAL
SYMBOL,
ABBREVIATION
& NOTES**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

M-0.1

SPECIFICATIONS

SECTION 0001 - NOTICE TO BIDDERS

- 1.1 BIDDERS REPRESENTATIONS
- A. THE BIDDER BY MAKING A BID REPRESENTS THAT:
 - B. THE BIDDER HAS READ AND UNDERSTANDS THE BIDDING DOCUMENTS, TO THE EXTENT THAT SUCH DOCUMENTATION RELATES TO THE WORK FOR WHICH THE BID IS SUBMITTED, AND FOR OTHER PORTIONS OF THE PROJECT, IF ANY, BEING BID CONCURRENTLY OR PRESENTLY UNDER CONSTRUCTION.
 - C. THE BID IS MADE IN COMPLIANCE WITH THE BIDDING DOCUMENTS.
 - D. THE SPECIFICATIONS AND DRAWINGS ARE INTENDED TO SERVE JOINTLY AS A BASIS FOR THE BIDDER TO SUBMIT A CONTRACT PRICE FOR THE MATERIAL AND LABOR.
 - E. SHOULD CONFLICTS OR DISCREPANCIES OCCUR WITHIN THE BIDDING DOCUMENTS, THE ITEM OR ITEMS IN DISPUTE THAT REPRESENT THE GREATER COST SHALL PREVAIL IN THE FINAL BID.
 - F. THE BID IS BASED UPON THE MATERIALS, EQUIPMENT AND SYSTEMS REQUIRED BY THE BIDDING DOCUMENTS WITHOUT EXCEPTION.
- 1.2 EXISTING CONDITIONS AND COORDINATION
- A. THE BIDDER HAS VISITED THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED, AND HAS CORRELATED THE BIDDER'S OBSERVATIONS WITH THE REQUIREMENTS OF THE PROPOSED BIDDING DOCUMENTS.
- B. THE BIDDER SHALL PROPOSE COORDINATION OF WORK SUCH THAT CONFLICTS WITH OTHER TRADES AND SPACE ALLOCATIONS ARE AVOIDED.
- 1.3 RESPONSIBILITIES
- A. THE BIDDER UNDERSTANDS THAT ANY CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE TIMELY COMPLETION AND ACCEPTANCE OF THEIR WORK AND THAT ANY ITEMS DAMAGED, LOST, OR STOLEN DURING TIME OF CONSTRUCTION SHALL BE REPAIRED OR REPLACED WITHOUT ANY ADDITIONAL COST TO THE OWNER.
- B. THE BIDDER UNDERSTANDS THAT ANY PROPOSED WORK IN OCCUPIED TENANT SPACES SHALL BE PERFORMED DURING TIMES OF NON-TENANT OCCUPANCY OR AS SCHEDULED OR DIRECTED BY THE BUILDING MANAGER.
- C. THE BIDDER UNDERSTANDS THAT ANY PROPOSED SHUTDOWN OF EXISTING SYSTEMS DURING CONSTRUCTION SHALL BE PRE-ARRANGED WITH THE BUILDING MANAGER AND THAT SUCH SHUTDOWNS ARE TO BE KEPT TO A MINIMUM.

END OF SECTION 0001

SECTION 0101 - QUALITY OF WORK

- 1.1 WORKMANSHIP
 - A. ALL WORK SHALL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE.
 - B. ALL DEFECTS WHICH DEVELOP OR ARE DISCOVERED WITHIN THIS PERIOD SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT OR BUILDING MANAGER AT NO ADDITIONAL COST TO THE OWNER.
 - C. UPON COMPLETION OF THE WORK THE CONTRACTOR SHALL REMOVE FROM THE SITE, ALL TOOLS, DEMOLISHED APPLIANCES AND ANY SURPLUS MATERIAL.
 - 1.2 CODE COMPLIANCE
 - A. ALL WORK SHALL MEET ALL STATE AND LOCAL CODES HAVING JURISDICTION.
- END OF SECTION 0101

SECTION 0102 -REQUIRED DOCUMENTS

- 1.1 SHOP DRAWINGS
- A. A SET OF PRINTS FOR ANY MECHANICAL WORK INCLUDING BUT NOT LIMITED TO, DUCTWORK AND PIPING LAYOUT SHALL BE SUBMITTED FOR APPROVAL TO THE ENGINEER PRIOR TO CONSTRUCTION OR PURCHASE OF MATERIALS.
- 1.2 SUBMITTALS
- A. EQUIPMENT SUBMITTALS OF ALL PROPOSED MECHANICAL AND ANCILLARY EQUIPMENT INCLUDING ALL ACCESSORIES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. ALL PERTINENT MODELS, SIZES, ACCESSORIES, AND CHOICES SHALL BE CHECKED, PRINTED, OR OTHERWISE INDICATED ON THE SUBMITTALS.
- 1.3 RECORD DRAWINGS
- A. UPON COMPLETION OF THE WORK, A RECORD DRAWING SHALL BE SUBMITTED TO THE OWNER DEPICTING ALL SUBSEQUENT CHANGES, ADDITIONS AND OR CORRECTIONS TO THE CONTRACT DRAWINGS AND OR CONTRACT SCOPE MADE DURING CONSTRUCTION. THIS DRAWING SHALL REPRESENT A COMPLETE RECORD OF THE WORK INSTALLED.
- 1.4 EQUIPMENT OPERATING INSTRUCTIONS
- A. ON COMPLETION AND ACCEPTANCE OF WORK, THIS CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS, EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.
- B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER AND BOUND IN THREE-RING BINDERS WITH CLEAR ACETATE COVERS. THE CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE ELECTRONIC COPY TO THE ENGINEER.
- C. THE INSTRUCTION BOOKLET SHALL BE ORGANIZED IN SECTIONS, WITH ONE SECTION PER SYSTEM. THE COVER OF THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND PHONE NUMBER OF THE PROJECT, ARCHITECT, ENGINEER, MECHANICAL CONTRACTOR AND SUBCONTRACTORS.

END OF SECTION 0102

SECTION 078413-PENETRATION FIRE-STOPPING

- 1.1 QUALITY ASSURANCE
 - A. INSTALLER QUALIFICATIONS: AN FM GLOBAL-APPROVED FIRE - STOP CONTRACTOR OR A UL-QUALIFIED FIRE-STOP CONTRACTOR.
 - B. FIRE-TEST-RESPONSE CHARACTERISTICS: UL, INTERTEK ETL SEMKO OR FM GLOBAL.
 - 1.2 PENETRATION FIRE STOPPING
 - A. PENETRATIONS IN FIRE-RESISTANCE-RATED WALLS: F-RATINGS PER ASTM E 814 OR UL 1479.
 - B. PENETRATIONS IN HORIZONTAL ASSEMBLIES: F- AND T-RATINGS PER ASTM E 814 OR UL 1479.
 - C. PENETRATIONS IN SMOKE BARRIERS: L-RATINGS PER UL 1479.
 - D. W-RATINGS: PER UL 1479.
 - 1.3 INSTALLATION
 - A. IDENTIFICATION: PREPRINTED METAL OR PLASTIC LABELS.
 - 1.5 FIELD QUALITY CONTROL
 - A. INSPECTION OF INSTALLED FIRE-STOPPING: BY OWNER-ENGAGED AGENCY ACCORDING TO ASTM E 2174.
 - 1.5 THROUGH-PENETRATION FIRESTOP SYSTEM SCHEDULE:
 - A. WHERE UL-CLASSIFIED SYSTEMS ARE INDICATED, THEY REFER TO SYSTEM NUMBERS IN UL'S "FIRE RESISTANCE DIRECTORY" UNDER PRODUCT CATEGORY XHEZ.
 - B. FOR THE FOLLOWING SYSTEMS: METALLIC AND NON-METALLIC PIPES, CONDUIT, OR TUBING, ELECTRICAL CABLES, CABLE TRAYS WITH ELECTRIC CABLES, MISCELLANEOUS ELECTRICAL PENETRANTS, INSULATED PIPES, GROUPINGS OF PENETRATES, USE ONE OR MORE OF THE FOLLOWING MATERIALS:
 - a. LATEX SEALANT
 - b. SILICONE SEALANT
 - c. MORTAR
 - d. SILICONE FOAM
 - e. PILLOWS/BAGS
 - f. INTUMESCENT WRAP STRIPS
 - 1.6 MANUFACTURERS
 - A. HILTI CONSTRUCTION CHEMICAL, INC
 - B. 3M FIRE PROTECTION PRODUCTS
- END OF SECTION 078413

SECTION 230529 - HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT

- 1.1 PERFORMANCE REQUIREMENTS
 - A. DELEGATED DESIGN: DESIGN TRAPEZE PIPE HANGERS AND EQUIPMENT SUPPORTS, INCLUDING COMPREHENSIVE ENGINEERING ANALYSIS BY A QUALIFIED PROFESSIONAL ENGINEER, USING PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED.
 - B. STRUCTURAL PERFORMANCE: HANGERS AND SUPPORTS FOR HVAC PIPING AND EQUIPMENT SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS INDICATED ACCORDING TO ASCE/SEI 7.
 1. DESIGN SUPPORTS FOR MULTIPLE PIPES CAPABLE OF SUPPORTING COMBINED WEIGHT OF SUPPORTED SYSTEMS, SYSTEM CONTENTS, AND TEST WATER.
 2. DESIGN EQUIPMENT SUPPORTS CAPABLE OF SUPPORTING COMBINED OPERATING WEIGHT OF SUPPORTED EQUIPMENT AND CONNECTED SYSTEMS AND
 3. DESIGN SEISMIC-RESTRAINT HANGERS AND SUPPORTS FOR PIPING AND EQUIPMENT AND OBTAIN APPROVAL FROM AUTHORITIES HAVING JURISDICTION.
 - 1.2 SUBMITTALS
 - A. SHOP DRAWINGS: SIGNED AND SEALED BY A PROFESSIONAL ENGINEER
 - 1.3 QUALITY ASSURANCE
 - A. AWS D1.1/D1.1M, "STRUCTURAL WELDING CODE - STEEL"
 - 1.4 COMPONENTS
 - A. METAL PIPE HANGERS AND SUPPORTS: CARBON OR STAINLESS STEEL
 - B. FIBERGLASS PIPE HANGERS: -CLEVIS, CENTURY COMPOSITES, COOPER B-LINE
 - D. METAL FRAMING SYSTEMS: MFMA MANUFACTURER
 - E. FIBERGLASS STRUT SYSTEMS: COOPER B-LINE
 - F. THERMAL-HANGER SHIELD INSERTS:
 - G. FASTENER SYSTEMS: POWDER-ACTUATED FASTENERS OR MECHANICAL-EXPANSION ANCHORS
 - H. PIPE STANDS: COMPACT, LOW TYPE, SINGLE PIPE, HIGH TYPE, SINGLE PIPE, HIGH TYPE, MULTIPLE PIPES, CURB-MOUNTED TYP EQUIPMENT SUPPORTS.
- END OF SECTION 230529

SECTION 230548 - VIBRATION CONTROLS FOR PIPING AND HVAC EQUIPMENT

PART 1 - GENERAL

- 1.1 PERFORMANCE REQUIREMENTS
- A. SEISMIC-RESTRAINT LOADING:
 1. SITE CLASS AS DEFINED IN THE IBC: A, B
 2. ASSIGNED SEISMIC USE GROUP OR BUILDING CATEGORY AS DEFINED IN THE IBC: III, IIII
- a. COMPONENT IMPORTANCE FACTOR: 1.0
- b. COMPONENT RESPONSE MODIFICATION FACTOR: 2.5
- c. COMPONENT AMPLIFICATION FACTOR: 2.5.
3. DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (0.2 SECOND) 18%
4. DESIGN SPECTRAL RESPONSE ACCELERATION AT 1-SECOND PERIOD: 8%
- 1.2 COMPONENTS
- A. VIBRATION ISOLATORS:
 1. ISOLATOR PADS: NEOPRENE, RUBBER, HERMETICALLY AND/OR SEALED COMPRESSED FIBERGLASS
 2. MOUNTS: DOUBLE-DEFLECTION TYPE
 3. RESTRAINED MOUNTS: ALL DIRECTIONAL MOUNTINGS WITH SEISMIC RESTRAINT; CAST-DUCTILE-IRON HOUSING.
 4. SPRING ISOLATORS: FREESTANDING, Laterally STABLE, OPEN-SPRING TYPE.
 5. RESTRAINED SPRING ISOLATORS: FREESTANDING, STEEL, OPEN-SPRING TYPE WITH SEISMIC RESTRAINT.
 6. HOUSED SPRING MOUNTS: DUCTILE-IRON OR STEEL HOUSING, WITH INTEGRAL, VERTICALLY ADJUSTABLE SEISMIC SNUBBERS.
 7. ELASTOMERIC HANGERS: DOUBLE-DEFLECTION TYPE.
 8. SPRING HANGERS: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION.
 9. SPRING HANGERS WITH VERTICAL-LIMIT STOP: COMBINATION COIL-SPRING AND ELASTOMERIC-INSERT HANGERS WITH SPRING AND INSERT IN COMPRESSION AND WITH VERTICAL-LIMIT STOP.
 10. PIPE RISER RESILIENT SUPPORT: ALL-DIRECTIONAL, ACOUSTICAL PIPE ANCHOR.
 11. RESILIENT PIPE GUIDES.
 12. AIR-MOUNTING SYSTEMS:
 1. AIR MOUNTS: FREESTANDING, SINGLE OR MULTIPLE, COMPRESSED-AIR BELLOWES.
 2. RESTRAINED AIR MOUNTS: HOUSED COMPRESSED-AIR BELLOWES.
 3. RESTRAINED VIBRATION ISOLATION ROOF-CURB RAILS: FACTORY-ASSEMBLED, FULLY ENCLOSED, INSULATED, AIR- AND WATERTIGHT CURB RAIL, WITH SPRING ISOLATORS MOUNTED ON ELASTOMERIC ISOLATION PADS, AND SNUBBER BUSHINGS.
 - D. VIBRATION ISOLATION EQUIPMENT BASES:
 1. STEEL BASE: FACTORY- FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS.
 2. INERTIA BASE: FACTORY- FABRICATED, WELDED, STRUCTURAL-STEEL BASES AND RAILS READY FOR FIELD-APPLIED, CAST-IN-PLACE CONCRETE
 - 1.3 FIELD QUALITY CONTROL
 - A. TESTING: BY EITHER OWNER-ENGAGED AGENCY, CONTRACTOR-ENGAGED AGENCY, OR CONTRACTOR.

PART-2 PRODUCTS

- 1.4 VIBRATION ISOLATORS & SEISMIC-RESTRAINT DEVICES
- A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
 1. ACE MOUNTINGS CO., INC.
 2. AMBER/BOOTH COMPANY, INC.
 3. CALIFORNIA DYNAMICS CORPORATION.
 4. COOPER B-LINE, INC.; A DIVISION OF COOPER INDUSTRIES.
 5. HILTI, INC.
 6. ISOLATION TECHNOLOGY, INC.
 7. KINETICS NOISE CONTROL.
- END OF SECTION 230548

SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

- 1.1 SUMMARY
- A. TESTING, ADJUSTING, AND BALANCING FOR THE FOLLOWING:
 1. MOTORS.
 2. CONDENSING UNITS.
 3. AIR SYSTEM: CONSTANT VOLUME
- 1.2 QUALITY ASSURANCE
- A. THE CONTRACTOR SHALL PROCURE THE SERVICES OF A TESTING, ADJUSTING AND BALANCING (TAB) SPECIALIST WHO SPECIALIZES IN HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS. THE TAB AGENT SHALL HAVE THE FOLLOWING QUALIFICATIONS: AABC, NEBB OR TABB CERTIFIED.
- 1.3 EXECUTION
- A. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL EXISTING AIR AND HYDRONIC SYSTEMS THAT ARE TO REMAIN OR TO BE INCORPORATED INTO NEW WORK PRIOR TO THE STARTING OF WORK IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
- C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE GAUGES AND/OR STIFFENERS TO BE USED OR, WHERE SMACNA STANDARDS REQUIRE INTERPRETATION, THE FOLLOWING MINIMUM METAL GAUGES AND BRACING SHALL BE USED:

- B. THE TAB SPECIALIST SHALL PERFORM FLOW MEASUREMENTS OF ALL NEW AIR AND HYDRONIC SYSTEMS AS LISTED ABOVE IN THE PROJECT SCOPE. A REPORT OF THESE MEASUREMENTS, INDICATING ANY AND ALL DEFICIENCIES SHALL BE SUBMITTED FOR OWNER REVIEW.
 - C. THE REPORT SHALL INDICATE A SCHEMATIC DIAGRAM INDICATING LOCATIONS OF ALL EQUIPMENT TESTED AND MEASUREMENT LOCATIONS.
 - D. PRIOR TO FINAL INSPECTION OF THE WORK, THE TAB SPECIALIST SHALL BALANCE ALL SYSTEMS AS INDICATED ABOVE TO THE REQUIREMENTS OF THE DESIGN.
 - E. THE CONTRACTOR SHALL HAVE FURNISH AND INSTALL ALL ADDITIONAL BALANCING EQUIPMENT, PRESSURE TAPS, GAUGES AND OTHER EQUIPMENT AS REQUIRED FOR A PROPERLY BALANCED SYSTEM AT NO ADDITIONAL COST TO THE OWNER, SUCH ADDITIONAL EQUIPMENT SHALL ADHERE IN STRICT ACCORDANCE WITH THE RESPECTIVE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.
 - F. THE CONTRACTOR SHALL HAVE THE TESTING AND BALANCING SPECIALIST COORDINATE ALL WORK OF THIS SECTION WITH THE BUILDING MANAGER. BALANCING WORK SHALL NOT CONFLICT WITH OTHER WORK SO AS TO MAINTAIN COMPLETION WITHIN THE SPECIFIED TIME.
 - G. ALL INSTRUMENTS USED FOR TAB SHALL BE MAINTAINED IN GOOD WORKING CONDITION AND ACCURATELY CALIBRATED.
 - H. TOLERANCES: PLUS OR MINUS 5 PERCENT OF DESIGN VALUES.
 - I. INSPECTIONS: RANDOM CHECKS BY OWNER OR ARCHITECT TO VERIFY FINAL TESTING, ADJUSTING, AND BALANCING REPORT.
 - J. ADDITIONAL TESTS: RANDOM TESTS WITHIN 90 DAYS OF COMPLETING TAB TO VERIFY BALANCE CONDITIONS AND SEASONAL TESTS.
- END OF SECTION 230593

SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

- 1.1 PRODUCTS
 - A. DIFFUSERS, REGISTERS AND GRILLES SHALL BE FURNISHED AND INSTALLED FOR CAPACITIES AND IN LOCATIONS INDICATED ON DRAWINGS. ALL REGISTERS AND DIFFUSERS SHALL BE PRIME COATED STEEL OR EXTRUDED ALUMINUM FINISHED UNLESS OTHERWISE NOTED IN BAKED WHITE ENAMEL.
 1. MANUFACTURERS: TITUS
 2. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCT BY ONE OF THE FOLLOWING:
 - a. HART & COOLEY INC.
 - b. KRUEGER.
 - c. METALAIRE, INC.
 - d. RUSKIN - C. ALL DIFFUSERS SHALL HAVE CONTROLLING/EQUALIZING GRID AND OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
 - D. ALL DUCTED RETURN REGISTERS SHALL HAVE AN OPPOSED BLADE DAMPER UNLESS OTHERWISE NOTED.
- END OF SECTION 233713

SECTION 233113 - METAL DUCTS

- 1.1 CONSTRUCTION
- A. EACH DUCT SYSTEM SHALL BE CONSTRUCTED FOR THE SPECIFIC SMACNA DUCT PRESSURE CLASSIFICATIONS SHOWN ON THE CONTRACT DRAWINGS, WHERE NO PRESSURE CLASSES ARE SPECIFIED BY THE DESIGNER, THE SMACNA 1 INCH WG PRESSURE, SEAL CLASS "A".
- B. ALL DUCTWORK SHALL BE CONSTRUCTED TO SMACNA 1" WG DESIGN AND NOT LESS THAN THE FOLLOWING STANDARDS:
 1. CONSTRUCT SO THAT ALL INTERIOR SURFACES ARE SMOOTH, USE SLIP AND DRIVE OR FLANGED AND BOLTED CONSTRUCTION WHEN FABRICATING RECTANGULAR DUCTWORK. USE SPIRAL LOCK SEAM CONSTRUCTION WHEN FABRICATING ROUND SPIRAL DUCTWORK. SHEET METAL SCREWS MAY BE USED ON DUCT HANGERS, TRANSVERSE JOINTS AND OTHER SMACNA APPROVED LOCATIONS IF THE SCREW DOES NOT EXTEND MORE THAN 1/2 INCH INTO THE DUCT.
 2. SHEET STEEL SHALL COMPLY WITH ASTM A653 STANDARD SPECIFICATION FOR STEEL SHEET METAL, ZINC COATED (GALVANIZED) OR ZINC IRON ALLOY-COATED (GALVANNEALD) BY HOT DIP PROCESS, AND A924 STANDARD SPECIFICATION FOR GENERAL REQUIREMENT FOR SHEET METALLIC-COATED BY HOT DIP PROCESS. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES ALL 90° ELBOWS.
 3. USE ELBOWS AND TEES WITH A CENTER LINE RADIUS TO WIDTH OR DIAMETER RATIO OF 1.5 WHEREVER SPACE PERMITS. WHEN A SHORTER RADIUS MUST BE USED DUE TO LIMITED SPACE, INSTALL SINGLE WALL SHEET METAL SPLITTER VANES IN ACCORDANCE WITH SMACNA PUBLICATIONS, TYPE RE 3. WHERE SPACE WILL NOT ALLOW AND THE C VALUE OF THE RADIUS ELBOW, AS GIVEN IN SMACNA PUBLICATIONS, EXCEEDS 0.31, USE RECTANGULAR ELBOWS WITH TURNING VANES AS SPECIFIED IN SECTION 23 33 00. SQUARE THROAT-RADIUS HEE ELBOWS WILL NOT BE ACCEPTABLE. STRAIGHT TAPS OR BULLHEAD TEES ARE NOT ACCEPTABLE.
 4. WHERE RECTANGULAR ELBOWS ARE USED, PROVIDE TURNING VANES IN ACCORDANCE WITH SECTION 23 33 00.
 5. PROVIDE EXPANDED TAKE-OFFS OR 45 DEGREE ENTRY FITTINGS FOR BRANCH DUCT CONNECTIONS WITH BRANCH DUCTWORK AIRFLOW VELOCITIES GREATER THAN 700 FPM. SQUARE EDGE 90-DEGREE TAKE-OFF FITTINGS OR TRIGHT TAPS WILL NOT BE ACCEPTED.
 6. BUTTON PUNCH SNAP-LOCK CONSTRUCTION WILL NOT BE ACCEPTED ON ALUMINUM DUCTWORK.
- C. WHERE LATEST EDITION OF SMACNA DOES NOT CLEARLY STATE

- D. MATERIAL:
 - 1) TYPE D-1: MINIMUM 1-LB DENSITY FIBERGLASS BLANKET, MAXIMUM 0.28 K-FACTOR AT 75 ADEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FOIL-SKRIM-KRAFT FACING SIMILAR TO MANVILLE MICROLITE.
 - 2) TYPE D-2: 3 LB. FIBERGLASS BOARD. THE MAXIMUM K FACTOR SHALL BE 0.23 AT 75 DEG F MEAN TEMPERATURE WITH A MINIMUM DENSITY OF 3 LB. THE INSULATION SHALL BE PROVIDED WITH A FACTORY-APPLIED ALL PURPOSE OR ALL SERVICE FACING. THE INSULATION SHALL BE EQUAL TO MANVILLE TYPE 814 SPIN-GLAS AP.
 - 3) TYPE D-3: MINIMUM 6 LB FIBERGLASS BOARD. MAXIMUM 0.22 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY APPLIED ALL PURPOSE OR ALL SERVICE FACING. SIMILAR TO MANVILLE 817 SPIN-GLAS AP
- E. FINISH:
 - 1) TYPE F-1: FITTING COVER, MOLDED WHITE PVC JACKET, UL CLASS 1, MAXIMUM PERMEANCE 0.05 SIMILAR TO MANVILLE ZESTRON.
 - 2) TYPE F-2: WHITE VAPOR BARRIER COATING WITH 10X10 OR 20X20 MESH WHITE GLASS, POLYESTER OR NYLON CLOTH REINFORCING MEMBRANE, MINIMUM 31 MIL DRY FILM THICKNESS, SIMILAR TO FOSTER TITE-FIT, UL LABEL.
 - 3) TYPE F-4: ALUMINUM JACKETING WITH MINIMUM 0.016 IN. WALL THICKNESS AND LONGITUDINAL JOINTS WITH LOCK SEAMS.
 - 4) TYPE F-6: WHITE FINISHING AND INSULATING CEMENT APPLIED OVER HEXAGONAL WIRE MESH. CEMENT SIMILAR TO KEENE SUPERSLACK.
- F. INSTALLATION:
 - a. FIBERGLASS BLANKET: 2 IN. LAP STRIPS AT ALL SEAMS. SECURE BOTTOM OF ALL DUCTS OVER 24 IN. WIDE WITH MIN 2 ROWS OF WELD PINS 12 IN. ON CENTER. SECURE ALL SEAMS WITH FOIL VAPOR BARRIER TAPE AND VAPORSEAL ADHESIVE.
 - b. FIBERGLASS BOARD - SEAL JOINTS AND BREAKS IN FACING WITH 3 IN. WIDE TAPE TO MATCH FACING AND ADHERE WITH VAPOR SEAL ADHESIVE. APPLY 5 IN. WIDE TAPE AT CORNERS, WELD PINS ON TOP, SIDES AND BOTTOM.
 - G. ACOUSTICAL TREATMENT

- 1.3 DUCT CLEANING
- A. CLEAN EXISTING DUCT SYSTEM(S) BEFORE TESTING, ADJUSTING, AND BALANCING.
- B. CLEAN THE FOLLOWING ITEMS:
 1. AIR OUTLETS AND INLETS.
 2. SUPPLY, RETURN, AND EXHAUST FANS.
 3. AIR-HANDLING UNITS.
 4. COILS AND RELATED COMPONENTS.
 5. RETURN-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
 6. SUPPLY-AIR DUCTS, DAMPERS, ACTUATORS, AND TURNING VANES.
 7. DEDICATED EXHAUST AND VENTILATION COMPONENTS AND MAKEUP AIR SYSTEMS.

- 1.4 DUCT SCHEDULE
- A. ALL DUCTS SHALL BE GALVANIZED STEEL EXCEPT AS FOLLOWS:
 1. MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.

END OF SECTION 233113

SECTION 230713 - INSULATION

INSULATION - GENERAL REQUIREMENTS

- A. ALL INSULATION MATERIALS, INCLUDING JACKETS, FACING, ADHESIVE, COATINGS, AND ACCESSORIES ARE TO BE FIRE HAZARD RATED AND LISTED BY UNDERWRITERS LABORATORIES, INC. USING STEINER TUNNEL TEST METHOD FOR FIRE HAZARD CLASSIFICATION OF BUILDING MATERIALS, STANDARD UL 723 (ASTM E-84), (ASA A2.5-1963). FLAMESPREAD: MAXIMUM 25. FUEL CONTRIBUTED AND SMOKE DEVELOPED: MAXIMUM 50. FLAMEPROOFING TREATMENTS SUBJECT TO DETERIORATION FROM MOISTURE OR HUMIDITY ARE NOT ACCEPTABLE.
- B. DEFINITIONS:
 - 1) EXPOSED: INDOOR DUCTS, PIPING OR EQUIPMENT LOCATED IN MECHANICAL EQUIPMENT ROOMS AND IN AREAS WHICH WILL BE VISIBLE WITHOUT REMOVING CEILINGS OR OPENING ACCESS PANELS.
 - 2) CONCEALED: INDOOR DUCTS, PIPING OR EQUIPMENT WHICH IS NOT EXPOSED.
 - 3) OUTDOOR: DUCTS, PIPING OR EQUIPMENT WHICH IS EXPOSED TO THE WEATHER.

DUCTWORK INSULATION

- A. INSULATE ALL DUCTWORK IN ACCORDANCE WITH INSULATION SCHEDULE EXCEPT AS OTHERWISE NOTED.

INSULATION SCHEDULE - DUCTWORK					
SERVICE	LOCATION	R-VALUE	TYPE	FINISH	
SUPPLY/RETURN	CONCEALED	R-6	D-1	VAPORSEAL	
SUPPLY/RETURN	EXPOSED	R-12	D-1	VAPORSEAL	
INTAKE	ALL	R-12	D-1	VAPORSEAL	
SUPPLY	EXTERIOR	R-12	D-1	VAPORSEAL	

- B. REINSULATE ALL DUCTWORK AND PIPING WHICH IS EXISTING TO REMAIN AND WAS DAMAGED DURING CONSTRUCTION OR SHOWN OR REQUIRED TO BE RELOCATED. INSULATE WITH SAME MATERIAL AND THICKNESS.
- C. NON-INSULATED DUCTWORK:
 - 1) WHERE SOUND LINING IS OF MINIMUM THICKNESS SPECIFIED FOR INSULATION.
 - 2) AIR CONDITIONING RETURN AIR DUCTWORK EXPOSED IN AIR CONDITIONED SPACES AND INSTALLED IN HUNG CEILINGS WHERE SPACE IMMEDIATELY ABOVE AND BELOW ARE BOTH AIR CONDITIONED MATERIAL.

MINIMUM PIPE INSULATION THICKNESS					
FLUID OPERATING TEMPERATURE RANGE AND USAGE (°F)	INSULATION CONDUCTIVITY		NOMINAL PIPE OR TUBE SIZE (INCHES)		
	CONDUCTIVITY BTU/IN./ (H.FT2°F)	MEAN RATING TEMPERATURE °F	<1 1/8	>1 1/8 <4	4 to <8
141-200	0.25-0.29	125	1.5	1.5	2
105-140	0.21-0.28	100	1.0	1.0	1.5
40-60	0.21-0.27	75	0.5	0.5	1.0

- 1.1 MOIST ENVIRONMENT DUCT MATERIAL: ALUMINUM.
- A. PIPING, VALVES AND FITTINGS TO BE INSULATED:
 - 1) PROTECTIVE COVERINGS SHALL BE INSTALLED ON AREAS OF INSULATION THAT ARE EXPOSED TO WEATHER OR SUBJECT TO MECHANICAL DAMAGE.
- THE PROTECTIVE COVERING SHALL BE:
 - a. ARMA-CHEK SILVER™ MULTI-LAYER LAMINATE OF ALUMINUM, COATED WITH A UV PROTECTIVE FILM AND BACKED WITH A FLEXIBLE PVC FILM. THE MATERIAL SHOULD BE ADHERED WITH ARMAFLEX 520 ADHESIVE OR EQUIVALENT, AND ALL JOINS AND SEAMS SECURED WITH "ARMA-CHEK SILVER TAPE". INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS.
 - OR
 - b. HIGH DENSITY RUBBER CLADDING OF THE "ARMA-CHEK R" TYPE BONDED USING AN APPROPRIATE FULL CONTACT ADHESIVE WITH A MINIMUM 50 MM OVERLAP AT ALL BUTT JOINTS AND LONGITUDINAL SEAMS. A WEATHER-PROOF MASTIC SEALANT SHALL BE APPLIED OVER ALL SEAMS AND JOINTS. ALL MATERIAL SHALL BE OVERLAPPED AND STAGGERED IN SUCH A WAY AS TO ENSURE A WATERSHED IS ALWAYS PROVIDED. INSTALLATION SHALL BE IN ALL CASES TO THE MANUFACTURER'S RECOMMENDATIONS. ALL EXCESS ADHESIVE VISIBLE ON THE SURFACE OF THE COMPLETED ASSEMBLY SHALL BE REMOVED USING AN APPROPRIATE CLEANING MATERIAL.
 - OR
 - c. METAL CLADDING, COMPRISED OF COATED SHEET METAL WITH ALL EXTERNAL JOINTS AND FIXING MADE WEATHER-PROOF WITH SILICONE SEALANT.
- C. MATERIAL:
 - 1) TYPE P-1: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS, MAXIMUM 0.24 K-FACTOR AT 75 DEG F MEAN TEMPERATURE WITH FACTORY-APPLIED FIRE-RETARDANT FOIL-SKRIM-KRAFT FACING. ALL SERVICE JACKET. SIMILAR TO OWENS-CORNING 650 ASJ.
 - 2) TYPE P-3: MINIMUM 4 LB DENSITY MOLDED FIBERGLASS FITTINGS, MAXIMUM 0.23 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO EPOLux HAMFAB MOLDED FITTINGS.
 - 3) TYPE P-4: MINIMUM 1 LB DENSITY FIBERGLASS FITTING INSERTS, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE SIMILAR TO MANVILLE HI-LO TEMP INSULATION INSERTS.
 - 4) TYPE P-6: MINIMUM 6 LB MOLDED FOAMED PLASTIC, MAXIMUM 0.27 K-FACTOR AT 75 DEG F MEAN TEMPERATURE. MAXIMUM 0.17 PERMEANCE. SIMILAR TO ARMSTRONG ARMAFLEX II.



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

MECHANICAL
SPECIFICATIONS

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

M-0.2

SHEET 2 OF 7

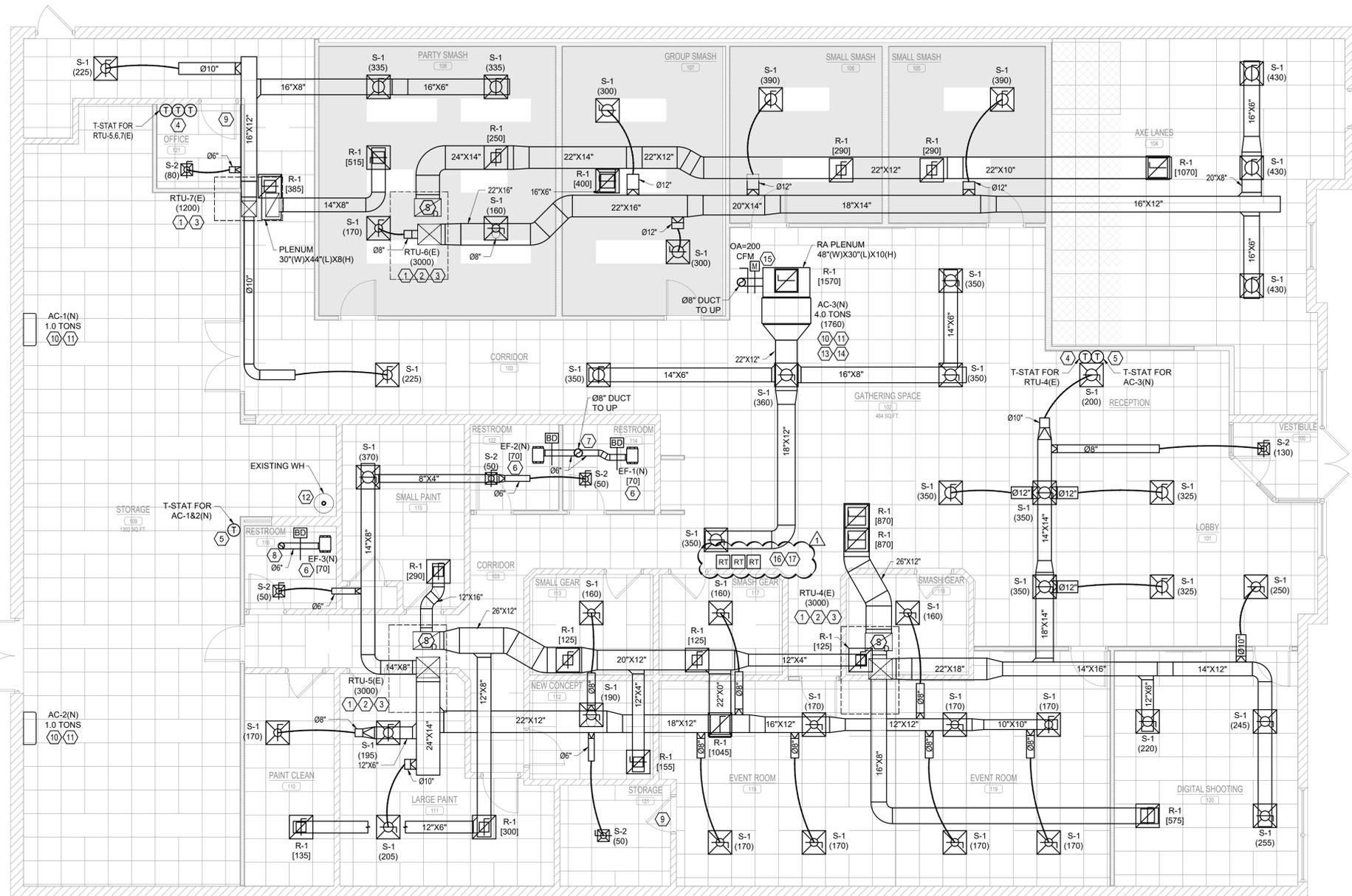
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

GENERAL NOTES:

- A. ALL WORK SHALL COMPLY WITH ALL LOCAL AND STATE CODES AND AUTHORITIES HAVING JURISDICTION.
- B. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL REQUIRED PERMITS AND ARRANGE ALL REQUIRED INSPECTIONS.
- C. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS AND TRADES.
- D. THESE DRAWINGS, AS PREPARED, ARE DIAGRAMMATIC BUT SHALL BE FOLLOWED AS CLOSELY AS CONSTRUCTION OF THE PROJECT AND THE WORK OF THE TRADES WILL PERMIT. EQUIPMENT LOCATIONS INDICATED ARE APPROXIMATE. COORDINATE EXACT LOCATIONS AND REQUIRED CLEARANCES WITH EQUIPMENT SUPPLIER AND ALL TRADES PRIOR TO INSTALLATION.
- E. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL THE EQUIPMENT INDICATED WITHIN THE MECHANICAL DRAWINGS UNLESS OTHERWISE NOTED. ALL EQUIPMENT SHALL BE UL LISTED. VERIFY LOCATION AND DIMENSIONS IN THE FIELD PRIOR TO FABRICATION AND / OR INSTALLATION.
- F. EACH UNIT GENERATING CONDENSATE SHALL BE PROVIDED WITH A CONDENSATE DRAIN WITH EXTERNAL, 4" DEEP P-TRAP. EXTEND DRAIN TO A ROOF MOUNTED SPLASH PAD OR AN ACCEPTABLE LOCATION REQUIRED BY CODE.
- G. DUCT SIZES SHOWN ON DRAWINGS ARE CLEAR INSIDE DIMENSION.
- H. ALL DUCTWORK SHALL BE FABRICATED, INSTALLED, SEALED, AND INSULATED PER THE LATEST ISSUE OF SMACNA LOW-VELOCITY DUCT MANUAL.
- I. ALL FLEX DUCT SHALL BE TESTED IN ACCORDANCE WITH UL 181. AND DUCT SHALL BE LISTED AND LABELED AS CLASS 1. MAXIMUM LENGTH TO BE 14'-0".
- J. THE CONTRACTOR SHALL COORDINATE DIFFUSER LOCATIONS ON SITE WITH THE MOST RECENT REFLECTED CEILING PLAN.
- K. THE CONTRACTOR IS TO MAKE ALL LOW-VOLTAGE WIRING CONNECTIONS FOR ALL HVAC EQUIPMENT INCLUDING TEMPERATURE CONTROLS, ROOF TOP UNITS, SMOKE DETECTORS AND CONTACTOR PANEL.
- L. PROVIDE AND INSTALL SMOKE DUCT DETECTORS IN EACH AIR CONDITIONING UNIT SUPPLY DUCT GREATER THAN 2000 CFM. CONTRACTOR SHALL PROVIDE INTERCONNECTION AND WIRE TO THE FIRE ALARM CONTROL PANEL IF REQUIRED. DUCT DETECTORS SHALL HAVE REMOTE TEST STATIONS LOCATED IN THE OFFICE NEAR THE RESPECTIVE THERMOSTATS. VERIFY CODE REQUIREMENTS FOR DUCT DETECTORS IN BOTH THE SUPPLY AND RETURN AIR STREAMS.
- M. THE ENTIRE INSTALLATION SHALL BE GUARANTEED FREE OF DEFECTS AND CONTRACTOR SHALL REPAIR AND / OR REPLACE ANY DEFECTIVE MATERIALS OR EQUIPMENT AT NO COST TO THE OWNER FOR A MINIMUM PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE BY ARCHITECT OR ENGINEER.
- N. ALL WORK SHALL BE SUBJECT TO THE ACCEPTANCE AND APPROVAL OF THE ARCHITECT AND OWNER. THE ARCHITECT SHALL BE NOTIFIED OF ANY AND ALL DISCREPANCIES BETWEEN FIELD CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH THAT PORTION OF THE WORK. FAILURE OF PROPER NOTIFICATION DOES NOT RELIEVE THE CONTRACTOR. THE CONTRACTOR SHALL CORRECT ANY AND ALL WORK ARISING FROM SUCH FAILURE TO COORDINATE DISCREPANCIES TO THE SATISFACTION OF THE ARCHITECT WITHOUT ADDITIONAL COST TO THE OWNER.
- O. THE CONTRACTOR SHALL, UPON COMPLETION OF PROJECT, PERFORM A COMPLETE TEST AND BALANCE OF ALL EQUIPMENT. PROVIDE A WRITTEN REPORT TO THE ARCHITECT. ALL CAPACITIES MUST BE SET TO WITHIN ±10% OF AMOUNTS INDICATED ON THE FLOOR PLAN AND SCHEDULES.
- P. PROVIDE FIRE OR FIRE-SMOKE DAMPER WHEREVER DUCTS ARE CROSSING FIRE/SMOKE RATED WALLS/BARRIERS. COORDINATE WITH ARCHITECTURAL DRAWING FOR FIRE RATING OF THE WALLS.
- Q. PROVIDE VOLUME DAMPER IN ACCESSIBLE CEILING AND PROVIDE CORD OPERATED DAMPER IN INACCESSIBLE CEILING.
- R. FLEXIBLE CONNECTION SHALL BE INSTALLED BETWEEN EQUIPMENT AND CONNECTING DUCTWORK.
- S. PROVIDE INTERNAL INSULATION FOR ALL EXPOSED DUCTWORK AND EXTERNAL FOR ALL DUCTWORK IN CONCEALED AREAS.

KEYED NOTES:

1. EXTEND FULL SIZE SUPPLY AND RETURN DUCTWORK FROM ROOFTOP UNIT TO SPACE. EXTEND AS SHOWN. CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND SIZE. ACOUSTICALLY LINE THE FIRST 10'-0" OF BOTH SUPPLY AND RETURN MAIN DUCTS.
2. EXISTING SMOKE DETECTOR TO REMAIN AND REUSED. IF NOT FOUND OR NOT REUSABLE, PROVIDE SMOKE DETECTOR AND SENSING TUBE TO SHUT DOWN CORRESPONDING UNIT UNDER ALARM CONDITIONS. ALL WIRING SHALL BE IN CONDUIT PER NRC. SMOKE DETECTOR SHALL BE SYSTEM SENSOR MODEL DH100ACDCLP. LOCATE SMOKE DETECTOR DOWNSTREAM OF RETURN AIR TAP CONNECTIONS.
3. RELOCATE THE EXISTING TEMPERATURE SENSOR MOUNTED IN THE RETURN DUCT AND WIRE BACK TO THE THERMOSTAT. COORDINATE WITH THE ARCHITECT AND/OR OWNER.
4. RELOCATE THE EXISTING THERMOSTAT AT SHOWN LOCATION. IF NOT REUSABLE, PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT COMBINED WITH REMOTE TEMP SENSOR. MOUNT THE THERMOSTAT ON THE WALL AT 48" A.F.F. AND THE REMOTE TEMPERATURE SENSOR AT 68" A.F.F. COORDINATE THE EXACT LOCATIONS WITH THE ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER FOR THE THERMOSTAT.
5. PROVIDE NEW 7-DAY PROGRAMMABLE THERMOSTAT COMBINED WITH. MOUNT ON WALL AT 48" A.F.F. COORDINATE EXACT LOCATION WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. PROVIDE LOCKABLE COVER.
6. CEILING MOUNTED EXHAUST FAN. FAN SHALL BE SUSPENDED FROM STRUCTURE ABOVE. VERIFY EXACT LOCATION OF STRUCTURAL MEMBERS PRIOR TO INSTALLATION.
7. Ø8" TOILET EXHAUST DUCT UP TO ROOF.
8. Ø6" TOILET EXHAUST DUCT UP TO ROOF.
9. PROVIDE 1" DOOR UNDERCUT.
10. CONNECT 3/4" CD FROM AC TO NEAREST PLUMBING DRAIN WITH AIR GAP FITTING. INSTALL CONDENSATE DRAIN WITH 1/8TH INCH VERTICAL IN 12 UNITS HORIZONTAL (1% SLOPE) TOWARD SINK. PROVIDE CONDENSATE PUMP ASIF REQUIRED.
11. INSTALL REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNIT AS PER MANUFACTURERS RECOMMENDATIONS. PROVIDE INSULATION TO REF PIPING AS PER ENERGY CONSERVATION CODE. COORDINATE WITH BASE BUILDING ENGINEER FOR PIPE ROUTING AND RISER LOCATION. NOTIFY THE ENGINEER OF ANY DISCREPANCY BEFORE COMMENCING BID.
12. CONTRACTOR SHALL REUSE THE EXISTING WATER HEATER VENT. IF NOT REUSABLE, PROVIDE A NEW VENT TO THE ROOF AND TERMINATE AS PER MANUFACTURER RECOMMENDATION. ROUTE PIPING WITH MINIMAL AMOUNT OF BEND AND LENGTH AS REQUIRED BY RESPECTIVE UNIT MANUFACTURERS'S REQUIREMENT.
13. PROVIDE REMOTE TEMP SENSOR MOUNTED IN RETURN DUCT AND WIRE BACK TO T-STAT.
14. PROVIDE AN AUXILIARY DRAIN PAN WITH WATER LEAKAGE SENSOR IN ORDER TO SHUT-OFF THE UNIT IN CASE OF WATER LEAKAGE. THE PAN SHALL HAVE A DEPTH OF NOT LESS THAN 1.5 INCHES. SHALL BE NOT LESS THAN 3 INCHES LARGER THAN THE UNIT, OR THE COIL DIMENSIONS IN WIDTH AND LENGTH AND SHALL BE CONSTRUCTED OF CORROSION-RESISTANT MATERIAL. METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0236 INCH (NO. 24 GAGE) FOR GALVANIZED SHEET METAL PANS. NON-METALLIC PANS SHALL HAVE A THICKNESS OF NOT LESS THAN 0.0625 INCH.
15. INTERLOCK MD WITH RESPECTIVE UNITS.
16. PROVIDE COMBINATION AUDIO/VISUAL ALARM AND REMOTE TEST STATION (SYSTEM SENSOR RTS). MOUNT 54" ABOVE FINISHED FLOOR AND PROVIDE LABEL NAMEPLATE WITH 1/2 HEIGHT LETTERING (BLACK ON WHITE) FOR WHICH UNIT IT MONITORS. INSTALLATION SHALL MEET CRITERIA AS PRESCRIBED IN NFPA 90A AND NFPA 72.
17. CTs WILL BE FURNISHED BY THE EMS CONTRACTOR FOR INSTALLATION BY THE ELECTRICAL CONTRACTOR. FINAL CONNECTIONS TO THE EMS SYSTEM SHALL BE COMPLETED BY THE EMS CONTRACTOR.



1 MECHANICAL FLOOR PLAN
SCALE: 3/16"=1'-0"

CONTRACTOR NOTE:
IF THE DUCT DETECTOR IS TRIPPED THAT AN AUDIO/VISUAL ALARM IS TRIGGERED, AND IF THE DUCT DETECTOR IS TIED TO AN EXISTING FIRE ALARM SYSTEM THAT THE MECHANICAL CONTRACTOR IS TO COORDINATE WITH THE ALARM CONTRACTOR FOR THE TIE-IN.

GP | N

STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:
ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:
MECHANICAL FLOOR PLAN

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.
M-1.0

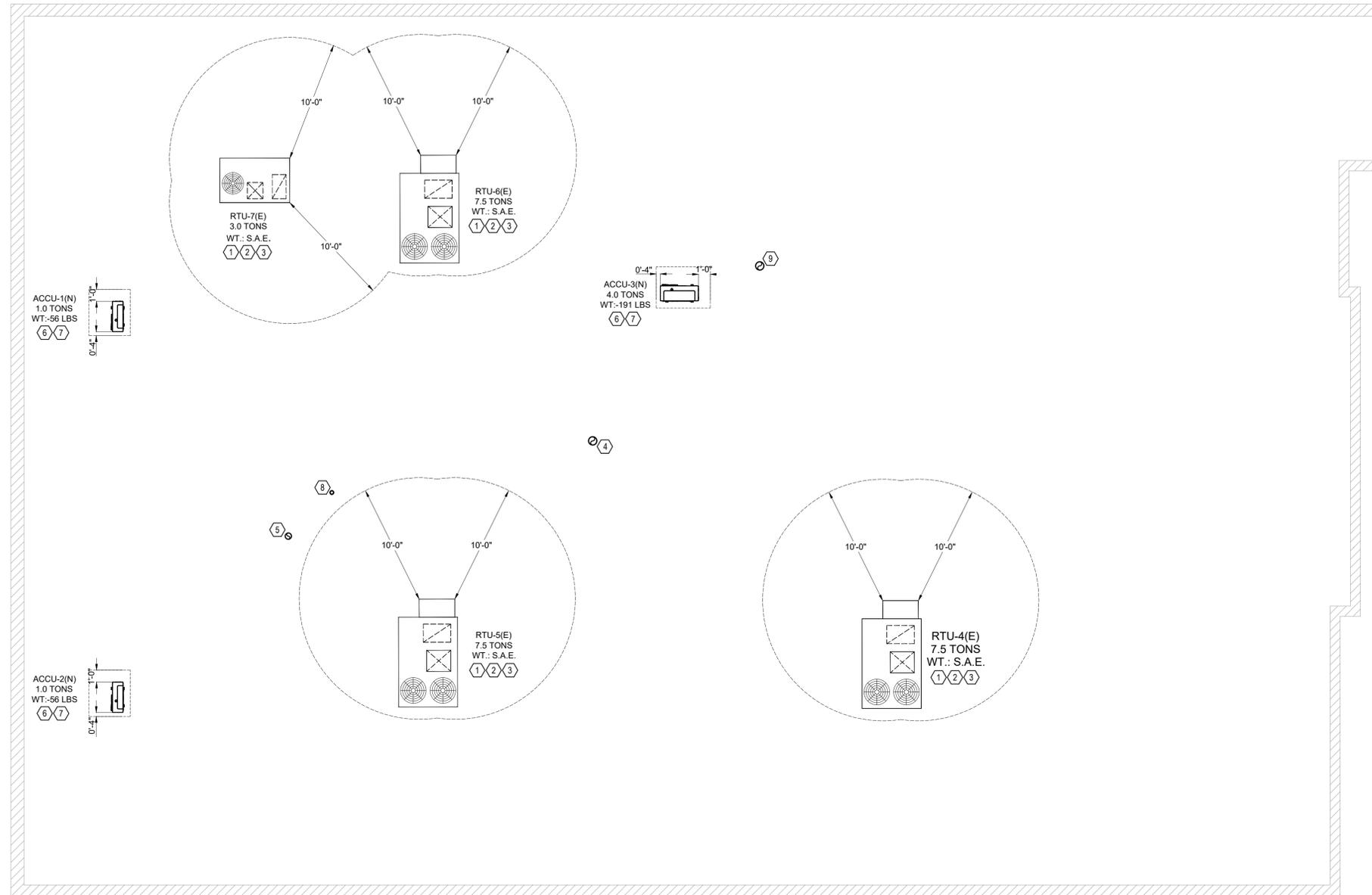
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

MECHANICAL GENERAL NOTES:

- A. COORDINATE LOCATIONS AND SIZES OF ROOF OPENINGS WITH OWNER AND LL ROOFING CONTRACTOR. PROVIDE NEW OPENING IF REQUIRED AND CLOSE USED OPENINGS.
- B. EQUIPMENT SIZES, DIMENSIONS AND REQUIRED CONNECTIONS SHALL BE VERIFIED WITH THE ACTUAL EQUIPMENT SELECTED VENDOR DRAWINGS AND SITE BEFORE FABRICATION OF DUCTWORK, PIPING ETC.
- C. CONTRACTOR SHALL COORDINATE ALL ELECTRICAL REQUIREMENTS FOR ALL HVAC BASED ON ACTUAL EQUIPMENT SELECTED PRIOR TO INSTALLATION.
- D. CONTRACTOR SHALL COORDINATE EQUIPMENT WEIGHTS AND SUPPORTS BASED ON ACTUAL EQUIPMENT SELECTED.
- E. COORDINATE ALL EQUIPMENT WITH STRUCTURAL DRAWING.
- F. MAINTAIN ALL CODE AND MANUFACTURERS RECOMMENDED CLEARANCE AROUND ALL ROOF EQUIPMENT.
- G. ALL ROOF PENETRATION AND MEMBRANE ROOF REPAIRS ARE TO BE ACCOMPLISHED BY THE LANDLORD'S ROOFING CONTRACTOR FOR WARRANTY PURPOSES.
- H. ROOF REPAIR UNIT PRICES SHOULD BE SUBMITTED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
- I. CONTRACTOR SHALL ENSURE THAT ALL NEW ROOFTOP MOUNTED EQUIPMENT IS INSTALLED WITHIN ANY EXISTING REINFORCED STRUCTURAL AREAS OR ZONE THAT ARE DESIGNATED FOR FUTURE MECHANICAL EQUIPMENT. COORDINATE WITH ALL EXISTING STRUCTURAL CONDITIONS PRIOR TO BEGINNING ANY WORK. GENERAL CONTRACTOR NEEDS TO COORDINATE WITH STRUCTURAL ENGINEER/ARCHITECT FOR ADDITIONAL BRACING OR SUPPORTS FOR NEW UNITS.
- J. CONTRACTOR TO COORDINATE WITH STRUCTURAL ENGINEER AND ADD BLOCKING TO ENSURE PROPER LOAD DISTRIBUTION ON EXISTING TRUSSES.

KEYED NOTES:

- 1. EXISTING MECHANICAL ROOFTOP UNIT TO REMAIN ALONG WITH ALL ACCESSORIES. CLEAN AND REFURBISH TO LIKE NEW CONDITION. REPAIR/REPLACE ANY ACCESSORIES AS REQUIRED TO PROVIDE FULLY FUNCTIONING. VERIFY PRIOR TO BID. SET OUTSIDE AIR AS INDICATED ON ROOFTOP UNIT SCHEDULES. MECHANICAL CONTRACTOR SHALL SCRIBE INTO UNIT POSITION OF OUTSIDE AIR DAMPER AND LABEL OUTSIDE AIR VOLUME AND PERCENT OF OUTSIDE AIR.
- 2. CONDENSATE DRAIN TO BE REMAIN AS IT IS FOR EXISTING RTU. CONTRACTOR TO FLUSH THE EXISTING DRAIN. CONTRACTOR TO CLEAN/REPAIR/REPLACE DRAIN IF FOUND DAMAGED.
- 3. CONTRACTOR TO FIELD VERIFY EXACT LOCATION OF EXISTING RTU.
- 4. 08" EXHAUST AIR DUCT FROM FIRST FLOOR TERMINATE WITH GOOSENECK AND BIRD SCREEN. MAINTAIN MINIMUM 10'-0" DISTANCE FROM ANY OUTSIDE AIR INTAKE SOURCE.
- 5. 06" EXHAUST AIR DUCT FROM FIRST FLOOR TERMINATE WITH GOOSENECK AND BIRD SCREEN. MAINTAIN MINIMUM 10'-0" DISTANCE FROM ANY OUTSIDE AIR INTAKE SOURCE.
- 6. CONTRACTOR TO INSTALL OAF AS PER MANUFACTURER RECOMMENDATION. PROVIDE ADDITIONAL SUPPORT AS REQUIRED.
- 7. CONTRACTOR TO INSTALL OUTDOOR UNIT ON ROOF SETBACK. CONTRACTOR TO FIELD VERIFY EXACT LOCATION ON SITE. INSTALL AS PER MANUFACTURER RECOMMENDATION. PROVIDE MANUFACTURER RECOMMENDED ACCESSORIES. CONTRACTOR TO PROVIDE ADDITIONAL STRUCTURAL SUPPORT AS/IF REQUIRED. COORDINATE FINAL LOCATION WITH ARCHITECT / OWNER.
- 8. VENT FROM GAS FIRED EQUIPMENT TO ROOF. TERMINATE AS PER MANUFACTURER RECOMMENDATION. MAINTAIN MINIMUM 10' DISTANCE FROM MECHANICAL AIR INTAKE.
- 9. 08" OUTSIDE AIR DUCT FROM FIRST FLOOR TERMINATE WITH GOOSENECK AND BIRD SCREEN. MAINTAIN MINIMUM 10'-0" DISTANCE FROM ANY EXHAUST SOURCE.



1 MECHANICAL ROOF PLAN
SCALE: 3/16"=1'-0"



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:

ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**MECHANICAL
ROOF PLAN**

PROJECT NUMBER 25-088

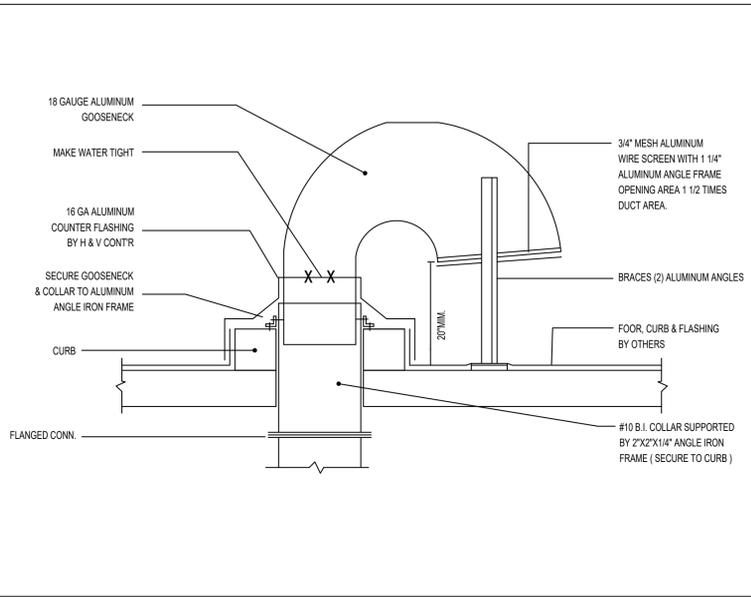
DATE 07-16-2025

SHEET NO.

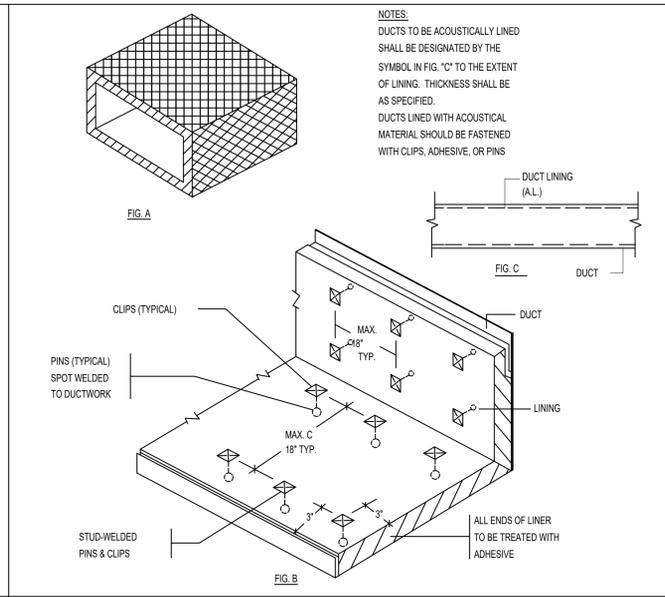
M-1.1

SHEET 4 OF 7

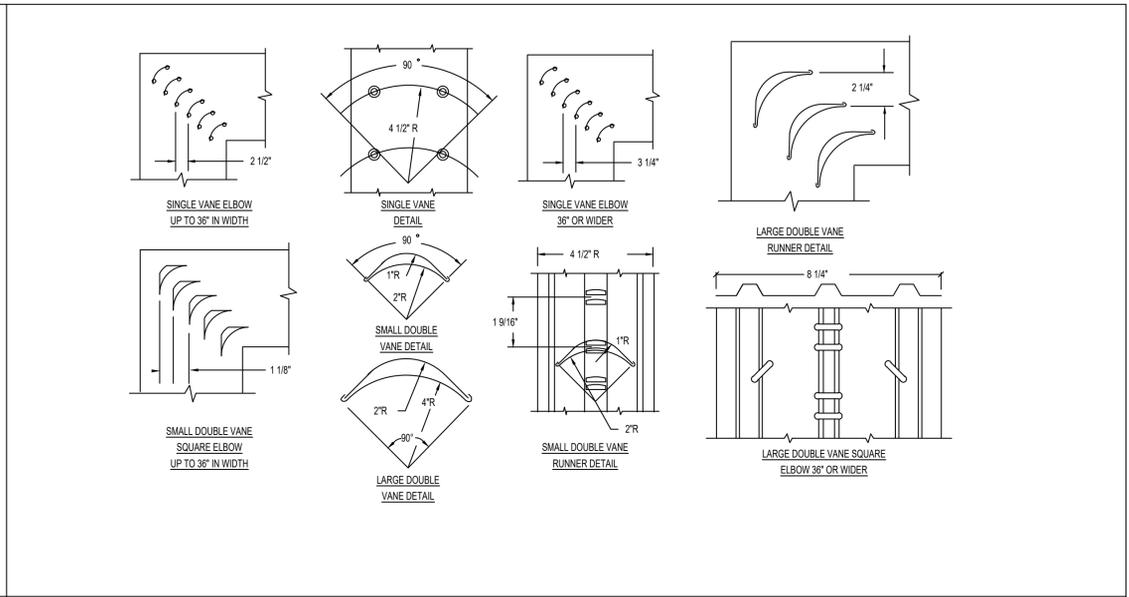
THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



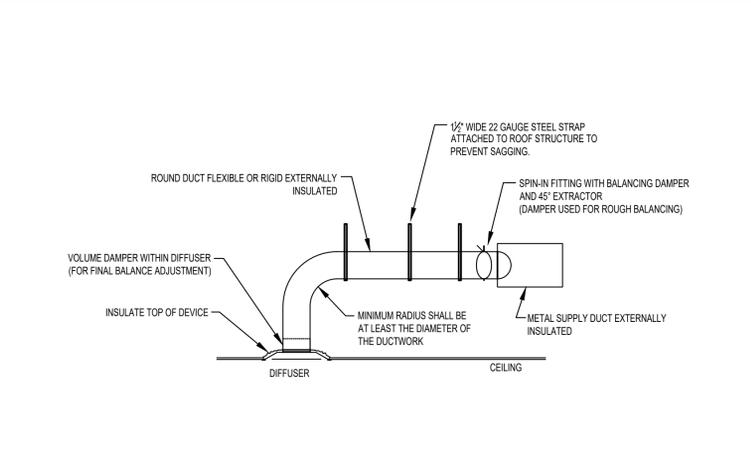
1 TYPICAL GOOSENECK DETAIL
SCALE: N.T.S.



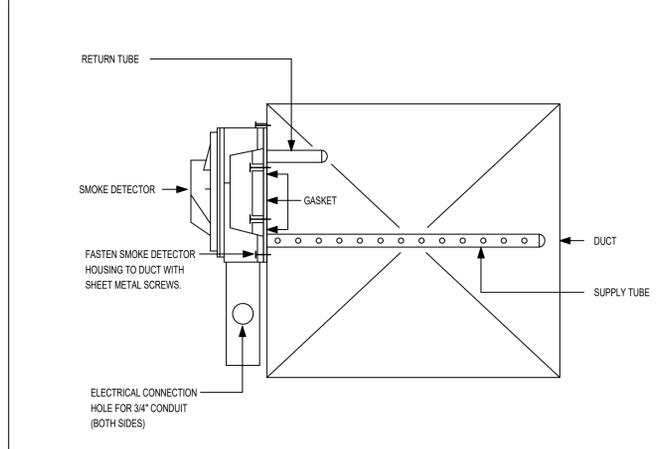
2 ACOUSTIC LINING DETAIL
SCALE: N.T.S.



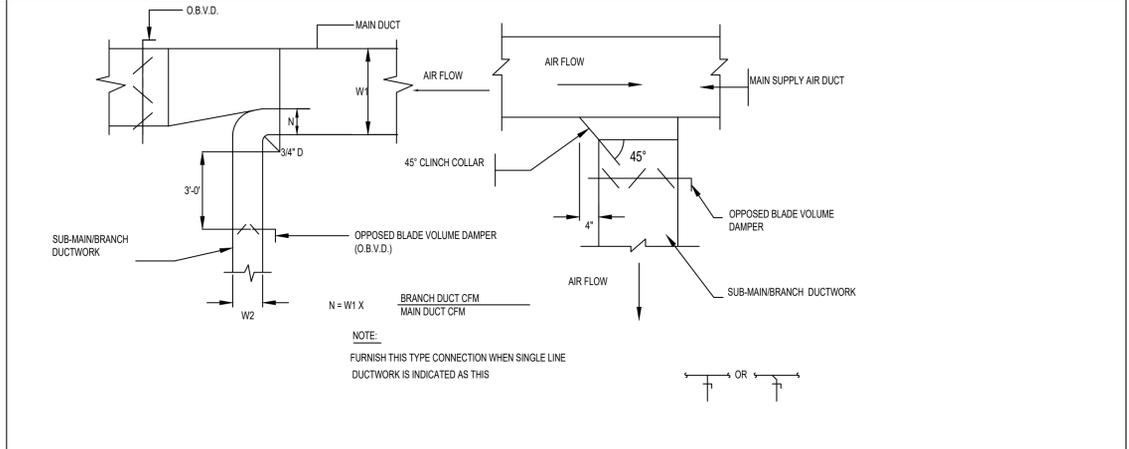
3 LOW VELOCITY DUCTWORK ELBOW
SCALE: N.T.S.



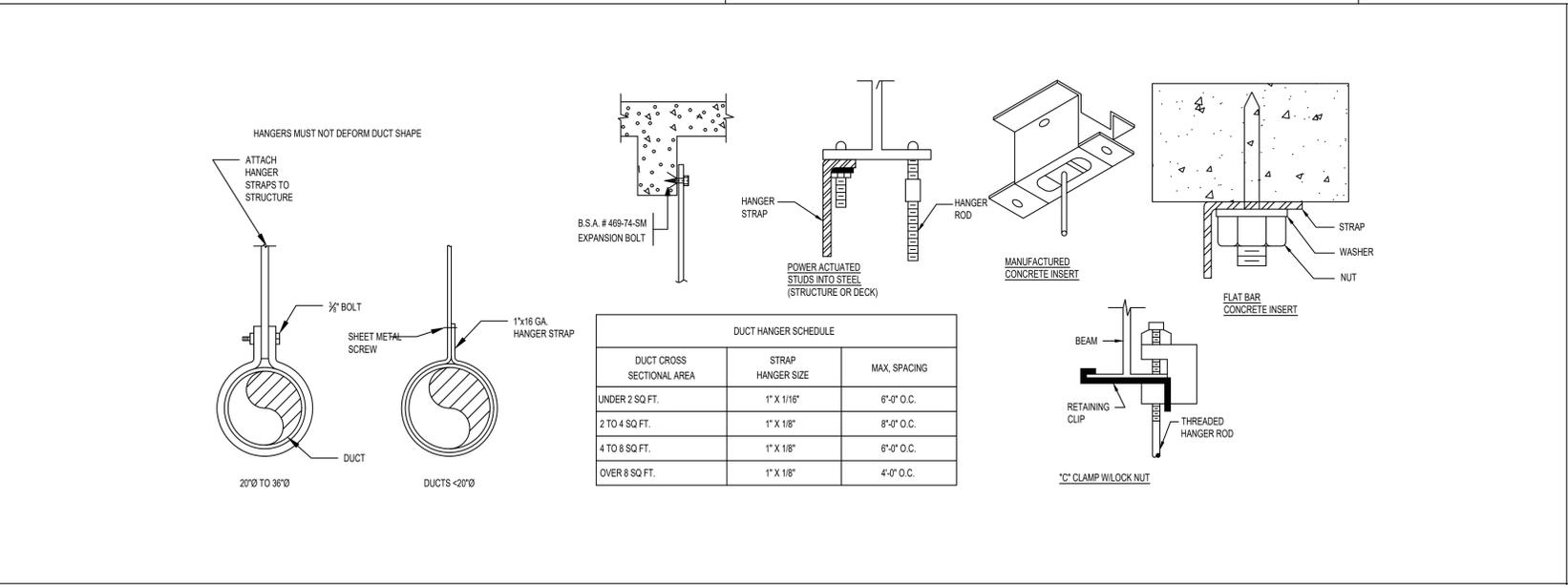
4 DIFFUSER CONNECTION DETAILS
SCALE: N.T.S.



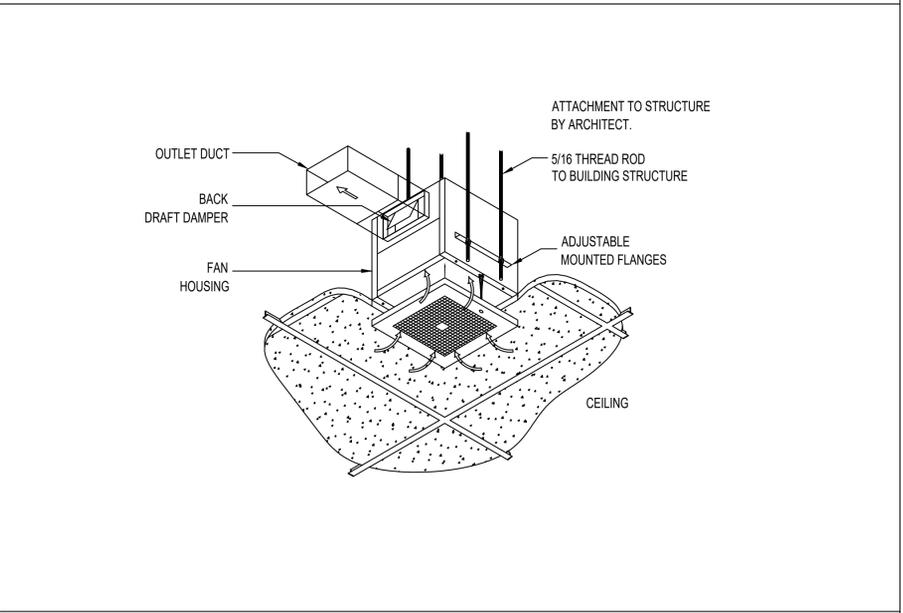
5 SMOKE DETECTOR DETAIL
SCALE: N.T.S.



6 SUPPLY DUCT MAIN BRANCH TAP-OFF DETAILS
SCALE: N.T.S.



7 TYPICAL DUCT HANGING DETAIL
SCALE: N.T.S.



8 CEILING MOUNTED FAN DETAIL
SCALE: N.T.S.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:
ISMAASH
INTERIOR ALTERATION

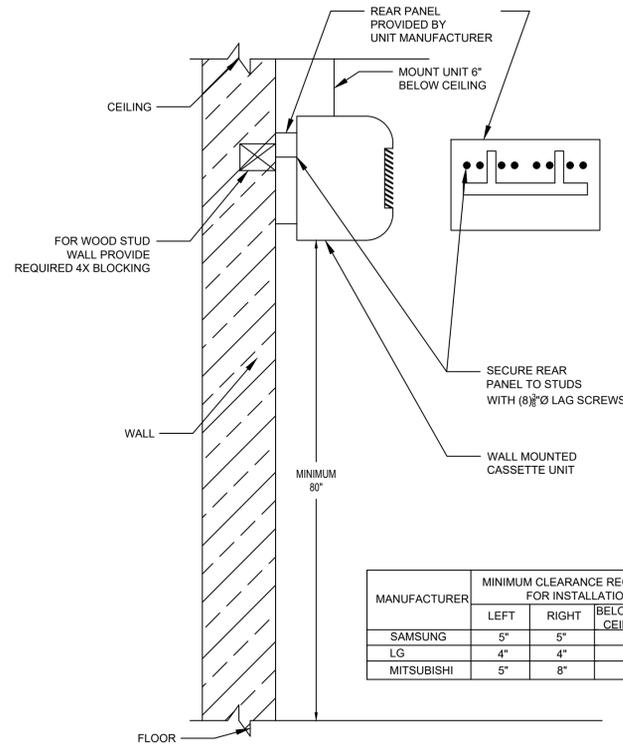
1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:
MECHANICAL DETAILS (1 OF 2)

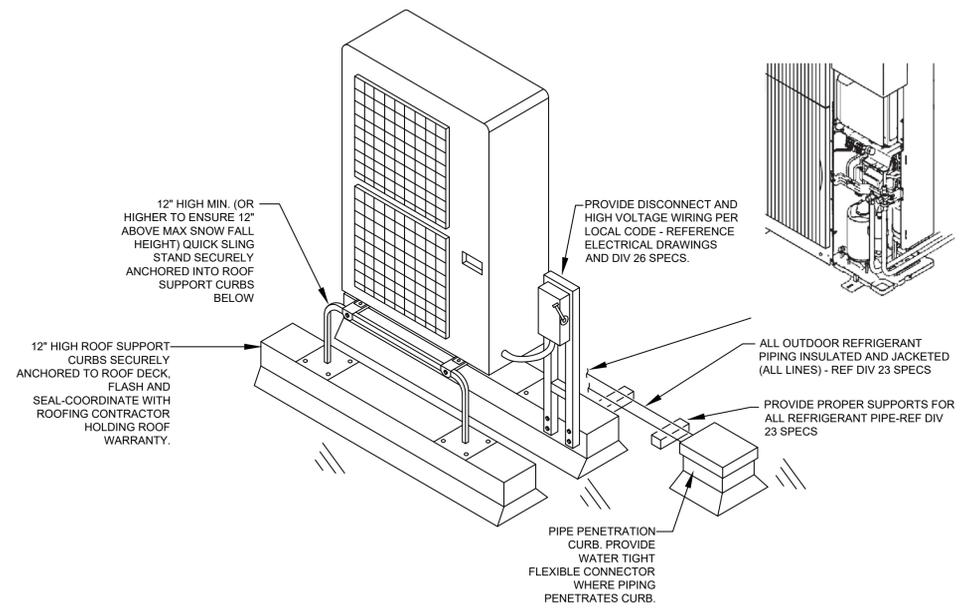
PROJECT NUMBER 25-088
DATE 07-16-2025
SHEET NO.

M-2.0

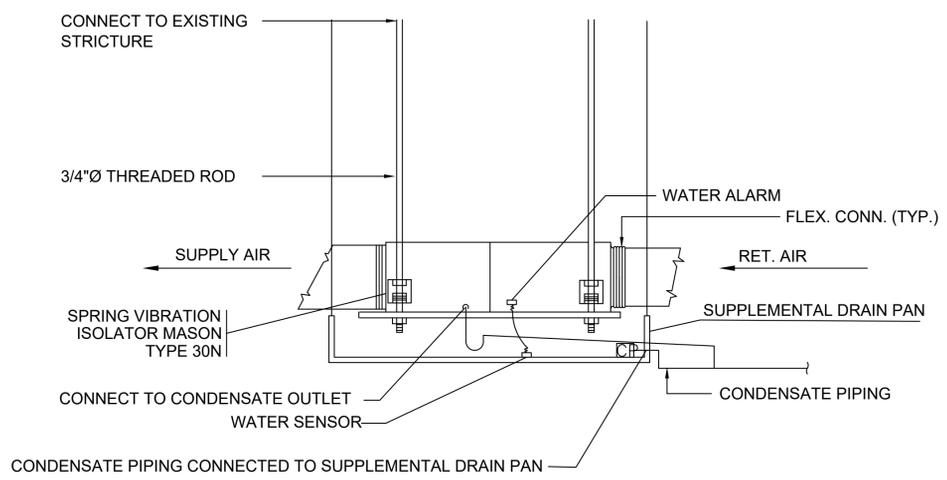
SHEET 5 OF 7



1 TYP WALL MOUNTED AC UNIT DETAIL
SCALE: N.T.S.



2 OUTDOOR UNIT INSTALLATION DETAILS
SCALE: N.T.S.



3 TYPICAL AC UNIT INSTALLATION DETAIL
SCALE: N.T.S.



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED



382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**MECHANICAL
DETAILS
(2 OF 2)**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

M-2.1

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE ARCHITECT

399 LUCERNE DRIVE SPARTANBURG, SC 29302 P: 864.583.2215 F: 864.583.2265 mail@gpnarcht.com

CHECKED BY: DKH DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025 ALL RIGHTS RESERVED



382 NE 191st Street Suite 49674 MIAMI, FL 33179 (786)-788-0295 ny-engineers.com



08-29-2025

REVISIONS:

Table with columns: NO., DATE, DESCRIPTION, BY

PROJECT NAME:



1451 PETERSON ROAD LIBERTYVILLE, IL 60048

SHEET TITLE:

MECHANICAL SCHEDULE

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

M-3.0

SHEET 7 OF 7

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

ROOF TOP UNIT SCHEDULE

Table with columns: UNIT ID, MANUFACTURER, MODEL, AREA SERVED, NOMINAL TONS, SUPPLY FAN DATA, HEATING DATA, COOLING DATA, ELECTRICAL DATA, EER, IEER, THERMAL EFFICIENCY, OPERATING WEIGHT (LBS)

NOTES FOR EXISTING RTU :-

- 1 EXISTING RTUs WITH ALL ACCESSORIES TO REMAIN SAME AND TO BE REUSED.
2 S.A.E. : SAME AS EXISTING. V.I.F.: VERIFY IN FIELD
3 CONTRACTOR TO FIELD VERIFY IF ALL RTUs ARE WORKING AT THEIR 100% RATED CAPACITY. INFORM TO DESIGN ENGINEER IF ANY DISCREPANCIES ARE FOUND IN PERFORMANCE PRIOR TO CONSTRUCTION.
4 CONTRACTOR TO FIELD VERIFY EXACT LOCATION AND CONFIGURATION OF UNIT ON SITE.
5 IF REQUIRED, PROVIDE NEW THERMOSTAT AND TEMPERATURE SENSOR COMPATIBLE WITH EXISTING RTU. CO-ORDINATE FINAL LOCATION OF T-SENSOR WITH ARCHITECT/OWNER.
6 CONTRACTOR TO BALANCE OUTSIDE AIR & RETURN AIR DAMPER ON EXISTING RTU TO MATCH VALUES MENTIONED IN ABOVE TABLES.
7 REPLACE FILTERS, IF REQUIRED.
8 CONTRACTOR SHALL VERIFY EXACT ELECTRICAL CONNECTIONS, WIRE SIZES, BREAKER, DISCONNECT ETC. PRIOR TO ORDERING AND BID.

HEAT PUMP (INDOOR UNIT) SCHEDULE

Table with columns: UNIT TAG, MANUFACTURER, AREA SERVED, TYPE, CAP. (TON), COOLING MBH, HEATING MBH, OUTDOOR CFM, TOTAL CFM, ELECTRICAL DATA, DIMENSIONS (HXWXD) (IN.), PIPE SIZE (INCH), WEIGHT (LBS.), MODEL NO.

NOTES FOR INDOOR UNITS

- 1 REFRIGERANT R32 SHALL BE PROVIDED.
2 PROVIDE MOUNTING BRACKETS AND ALL ASSOCIATED ACCESSORIES.
3 ALL REFRIGERANT PIPING TO BE SIZED PER MANUFACTURERS RECOMMENDATIONS.
4 CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
5 PROVIDE DRAIN PUMP FOR WALL MOUNTED UNIT, IF REQUIRED.
6 CEILING MOUNTED UNIT TO BE PROVIDED WITH THE APPROPRIATE FBM FILTER BOXES.
7 INDOOR UNIT ACCESS PANEL FIELD-PROVIDED.
8 AC-3(N) UNIT TO BE INCLUDED SECONDARY DRAIN PANS AS WELL AS WATER BUG SENSORS TO SHUT DOWN THE CORRESPONDING EQUIPMENT AND NOTIFY IN EVENT OF A WATER LEAKAGE.
9 AC-3(N) UNIT TO BE INSTALLED WITH VIBRATION ISOLATION (RESILIENTLY SUPPORTED) TO MINIMIZE SOUND AND VIBRATION INTO THE SPACE.

AIR COOLED CONDENSING UNIT SCHEDULE

Table with columns: UNIT ID, MANUFACTURER, MODEL NO., LOCATION, INDOOR UNIT SERVED, CAP. (TON), COOLING MBH, HEATING MBH, ELECTRICAL DATA, PIPE SIZE (INCH), DIMENSIONS (HXWXD) (IN.), WEIGHT (LBS), EER2/SEER2, HSPF2

NOTES:-

- 1 UNIT SHALL HAVE TEN YEAR EXTENDED WARRANTY FOR COMPRESSORS/PARTS.
2 PROVIDE LOW AMBIENT CONTROL FOR CONDENSING UNIT OPERATION DOWN TO -4°F.
3 PROVIDE COMPRESSOR CYCLE PROTECTOR.
4 STEEL RAILS SUPPORT TO BE PROVIDED BY MECHANICAL CONTACTOR.
5 CONTRACTOR SHALL PROVIDE A LONG LINE SET FOR REFRIGERANT PIPING IN THE EVENT THAT TOTAL REFRIGERANT LENGTH EXCEEDS THE MANUFACTURER'S STANDARD RECOMMENDED LENGTH.
6 OUTDOOR REFRIGERANT LINESETS TO BE WRAPPED IN UV RESISTANT, FIRE RATED, AND ANTI MICROBIAL INSULATION PROTECTION BASED ON AIREX-FLEX GUARD OR EQUAL.
7 OUTDOOR HEAT PUMPS TO BE LOCATED WITH PROPER CLEARANCES AND MUST PREVENT RE-CIRCULATION OF AIR. COORDINATE WITH MANUFACTURER AND ARCHITECT.
8 REFRIGERANT R32 SHALL BE PROVIDED.
9 CONTRACTOR SHALL ALL CONTROL AND POWER WIRING FROM OUTDOOR UNIT TO INDOOR UNIT, WIRE SHALL BE SIZED AS PER MANUFACTURER RECOMMENDATIONS.

VENTILATION CALCULATION

Table with columns: ROOM NAME, AREA (SQ.FT.), NUMBER OF PEOPLE/1000sq.ft AS PER 2018 IMC, NUMBER OF PEOPLE AS PER 2018 IMC, NUMBER OF ARCH., FINAL PEOPLE NO., MIN OUTSIDE AIR AS PER 2018 IMC, REQ. OA (CFM), PROVIDED OA (CFM), EXHAUST AIRFLOW RATE (CFM/SQ.FT), TOTAL EXHAUST (CFM), PROVIDED EXHAUST (CFM)

FAN SCHEDULE

Table with columns: UNIT ID, MANUFACTURER, MODEL, CFM, E.S.P. (IN. W.G.), ELECTRICAL DATA, WEIGHT (LBS)

NOTES / ACCESSORIES:

- 1 PROVIDE GRAVITY BACKDRAFT DAMPER.
2 FANS SHALL BE INTERLOCKED WITH RTU-5(E).
3 INSTALL AS PER MANUFACTURER RECOMMENDATION.

AIR TERMINAL SCHEDULE

Table with columns: TAG, TYPE, DIMENSION(IN), NECK SIZE(IN), MODEL NO., MAX NC dBA

NOTES FOR DIFFUSERS

- 1. ALL GRILLES : CONTRACTOR SHALL COORDINATE WITH LATEST ARCHITECTURAL REFLECTED CEILING PLANS PLANS TO ENSURE PROPER AIR DEVICE BORDER SELECTION.
2. COORDINATE COLOR/FINISH WITH ARCHITECT.

FOR ROUND DIFFUSER NECK SIZE

FOR SQUARE DIFFUSER NECK SIZE

Table with columns: Round Diffuser Neck Size, Square Diffuser Neck Size

AIR BALANCE

Table with columns: UNIT, AREA SERVED, SUPPLY AIR (CFM), OUTSIDE AIR (CFM), RETURN AIR (CFM), EXHAUST AIR(CFM)

NOTES:

- 1 CONTRACTOR TO ADJUST MOTORIZED DAMPER ON OUTSIDE AIR TAP TO PROVIDE OUTSIDE AIR AS MENTIONED IN ABOVE TABLE.

SWITCHES AND CONTROLS

	20A SPST SWITCH U.O.N. "a" DENOTES SWITCH'S TAG
	WALL OCCUPANCY SENSOR SWITCH
	THREE WAY SWITCH
	MANUAL OVERRIDE SWITCH

WIRING SYSTEMS

	EXISTING
	NEW

ANNOTATION

+24"	INDICATES MOUNTING HEIGHT CENTER LINE TO FINISHED FLOOR.
	KEYED NOTE REFERENCE
	DETAIL REFERENCE: DETAIL NUMBER INDICATED ON TOP; DRAWING NUMBER INDICATED ON BOTTOM

POWER DISTRIBUTION

	DISTRIBUTION PANELBOARD, SURFACE OR FLUSH MOUNTED.
---	--

ELECTRICAL DRAWING LIST

E-0.1	ELECTRICAL SYMBOL LIST, ABBREVIATIONS AND GENERAL NOTES
E-0.2	ELECTRICAL SPECIFICATIONS (1 OF 2)
E-0.3	ELECTRICAL SPECIFICATIONS (2 OF 2)
E-1.0	LIGHTING FLOOR PLAN
E-2.0	POWER FLOOR PLAN
E-2.1	ROOF POWER PLAN
E-3.0	ELECTRICAL DETAILS
E-4.0	ELECTRICAL RISER DIAGRAM AND PANEL SCHEDULES

POWER AND TELECOMMUNICATION

	JUNCTION BOX
	DUPLEX RECEPTACLE, +18" AFF OR AS NOTED.
	QUAD RECEPTACLE
	TYPICAL DATA/COMM OUTLET DOUBLE GANG OUTLET BOX WITH SINGLE GANG MUD RING. ROUTE 3/4 INCH CONDUIT TO ABOVE CEILING SPACE. PROVIDE PULL STRING. COMMUNICATIONS CONTRACTOR TO PROVIDE FACE PLATE, WIRING, AND FINAL CONNECTIONS.

MOTORS AND CONTROLS

	MOTOR AS NOTED WITH LIQUID TIGHT FLEXIBLE CONNECTION WITH JUNCTION BOX AND MOTOR SWITCH.
	30A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
	60A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
	100A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
	200A NON FUSED DISCONNECT SWITCH, POLES AS NOTED.
	MANUAL MOTOR SWITCH

APPLICABLE CODES

A.	2018 INTERNATIONAL BUILDING CODE
B.	2018 INTERNATIONAL MECHANICAL CODE
C.	2014 ILLINOIS PLUMBING CODE
D.	2018 INTERNATIONAL FIRE CODE
E.	2017 NATIONAL ELECTRICAL CODE
F.	2021 INTERNATIONAL ENERGY CONSERVATION CODE.

ELECTRICAL ABBREVIATIONS

A	AMPERES	EA	EACH
A/C, AC	AIR CONDITIONING UNIT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR
AF	AMPERE FRAME/AMP FUSE	EF	EXHAUST FAN
AFF	ABOVE FINISHED FLOOR	EM	EMERGENCY
AS	AMP SWITCH	EMT	ELECTRICAL METALLIC TUBING
AIC	AMPS INTERRUPTING CAPACITY	EQUIP	EQUIPMENT
AUTO	AUTOMATIC	ER	EXISTING TO BE RELOCATED
AWG	AMERICAN WIRE GAUGE	ETR	EXISTING TO REMAIN
C	CONDUIT	EWf	ELECTRIFIED WORKSTATION FURNITURE
C/B,CB	CIRCUIT BREAKER	EWH	ELECTRIC WATER HEATER
CKT	CIRCUIT	FA	FIRE ALARM
CLG	CEILING	FBO	FURNISHED BY OTHERS, INSTALLED & WIRED BY EC
COMM	COMMUNICATION	FDR	FEEDER
CT	CURRENT TRANSFORMER	FIBO	FURNISHED & INSTALLED BY OTHERS, WIRED BY EC
CU	COPPER	FIXT	FIXTURE
°C	DEGREE CELSIUS	FL	FLOOR
°F	DEGREE FAHRENHEIT	FLUOR	FLUORESCENT
DIA	DIAMETER	G	GROUND
DISC	DISCONNECT	GFI	GROUND FAULT INTERRUPTER
DN	DOWN	GP	GENERAL PURPOSE
DWG	DRAWING	HC	HUNG CEILING
JB	JUNCTION BOX	HP	HORSEPOWER
KCMIL	ONE THOUSAND CIRCULAR MILS	HWH	HOW WATER HEATER
KV	KILOVOLT	HZ	HERTZ
KVA	KILOVOLT-AMPERES	IC	INTERRUPTING CAPACITY
KW	KILOWATTS	PP	POWER PANEL
LP	LIGHTING PANEL	PVC	POLYVINYL CHLORIDE
LTG	LIGHTING	PWR	POWER
MAX	MAXIMUM	R	REMOVE
MC	MOTOR CONTROLLER	RE	RELOCATED EXISTING
MCB	MAIN CIRCUIT BREAKER	REC	RECEPTACLE
MER	MECHANICAL EQUIPMENT ROOM	RR	REMOVE & RELOCATE
MIN	MINIMUM	SECT	SECTION
MLO	MAIN LUGS ONLY	SPDT	SINGLE POLE DOUBLE THROW
MTD	MOUNTED	SPST	SINGLE POLE SINGLE THROW
N	NEUTRAL	SPEC	SPECIFICATION
NE	NEW DEVICE TO REPLACE EXISTING	SW	SWITCH
NIC	NOT IN CONTRACT	SWBD	SWITCHBOARD
NL	NIGHT LIGHT	SYM	SYMMETRICAL
NTS	NOT TO SCALE	SYS	SYSTEMS
OC	ON CENTER	TELE	TELEPHONE
P	POLES	TEMP	TEMPERATURE
PB	PULLBOX	TXF	TOILET EXHAUST FAN
PC	PERSONAL COMPUTER	TYP	TYPICAL
Ø	PHASE	UON	UNLESS OTHERWISE NOTED
PNL	PANEL	V	VOLT/VOLTAGE
W	WATT	VA	VOLT AMPERE
W	WIRE	VFD	VARIABLE FREQUENCY DRIVE
WH	WALL HEATER	WP	WEATHER PROOF
E	EXISTING	XFMR	TRANSFORMER
TC	TIME CLOCK	IG	ISOLATED GROUND
VIF	VERIFY IN FIELD	TR	TAMPER RESISTANCE
TS	TIME SWITCH		

GENERAL NOTES

(APPLY TO ALL "E" DRAWINGS)

- ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2017, THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION (AHJ), AND ALL APPLICABLE LOCAL CODES, LAWS, AND REGULATIONS.
- CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
- CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS, TEST REPORTS, AND CERTIFICATIONS FOR TEMPORARY AND FINAL CERTIFICATE OF OCCUPANCY.
- FIRE STOP ALL PENETRATIONS OF FIRE RATED CONSTRUCTION IN A CODE APPROVED MANNER IN ORDER TO MAINTAIN FIRE RATING. ALL PENETRATIONS SHALL BE SLEEVED AND SEALED WATERTIGHT.
- SECURE ALL SUPPORTS TO BUILDING STRUCTURE UTILIZING TOGGLE BOLTS (HOLLOW MASONRY), EXPANSION SHIELDS OR INSERTS (CONCRETE AND BRICK), MACHINE SCREWS (METAL), BEAM CLAMPS (FRAMEWORK), WOOD SCREWS (WOOD) OR FAN THRU STRAPS (METAL DECK), NAILS, RAWL PLUGS AND WOOD PLUGS ARE NOT PERMITTED, WHERE REQUIRED BY STRUCTURE, PROVIDE THRU BOLTS AND FISH PLATES. SUPPORT HORIZONTAL RUNS OF METALLIC RACEWAYS NOT MORE THAN 10 FT APART. SUPPORT RACEWAY RISERS AT EACH FLOOR LEVEL. RUN EXPOSED RACEWAYS PARALLEL WITH OR AT RIGHT ANGLES TO WALLS.
- LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS. RACEWAYS OVER 10 FT LONG IN WHICH WIRING IS NOT INSTALLED: FURNISH FISH WIRE.
- VERIFY LOCATIONS OF OUTLETS AND SWITCHES IN FINISHED ROOMS WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISH. IN CENTERING OUTLETS AND LOCATING BOXES AND OUTLETS. ALLOW FOR OVERHEAD PIPES, DUCTS AND MECHANICAL EQUIPMENT. EQUIPMENT, VARIATIONS IN FIREPROOFING AND PLASTERING, WINDOW AND DOOR TRIM, PANELING, HUNG CEILINGS AND THE LIKE. CORRECT ANY INACCURACY RESULTING FROM FAILURE TO DO SO WITHOUT EXPENSE TO OWNER.
- CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- ALL UNUSED MATERIALS AND DEBRIS SHALL BE LEGALLY REMOVED AND DISPOSED OF AWAY FROM THE PREMISES ON A DAILY BASIS.
- CONTRACTOR SHALL PATCH, PAINT, AND RESTORE EXISTING SURFACES DAMAGED DURING THE COURSE OF THIS CONSTRUCTION TO PRE-EXISTING CONDITIONS OR BETTER.
- MINIMUM SIZE OF CONDUIT SHALL BE 3/4", AND TYPE SHALL BE ELECTRICAL METALLIC TUBING (EMT), UNLESS OTHERWISE NOTED. PROVIDE NYLON DRAG LINE AND CONDUIT CAP FOR ALL EMPTY CONDUITS.
- CONNECT CONDUIT TO MOTOR CONDUIT TERMINAL BOXES WITH FLEXIBLE CONDUIT (MINIMUM 18 IN. LENGTH AND 50% SLACK). DO NOT TERMINATE IN OR FASTEN RACEWAYS TO MOTOR FOUNDATION.
- PULL AND JUNCTION BOXES WHERE INDICATED ON THE DRAWINGS, SHALL BE CONSIDERED SHOWN AT THEIR APPROXIMATE LOCATION. THE CONTRACTOR SHALL LOCATE THEM AS FIELD CONDITIONS DICTATE. ADDITIONAL PULL AND JUNCTION BOXES NOT SHOWN ON DRAWINGS SHALL BE PROVIDED WHERE REQUIRED BY APPLICABLE CODE PROVISIONS OR WHERE CALLED FOR BY FIELD CONDITIONS. PULL AND JUNCTION BOXES SHALL BE SURFACE TYPE IN UNFINISHED AREAS AND INSTALLED CONCEALED IN FINISHED AREAS, AND ALL COVERS TO PULL & JUNCTION BOXES SHALL BE READILY ACCESSIBLE.
- SUPPORT PANEL, JUNCTION AND PULLBOXES INDEPENDENTLY TO BUILDING STRUCTURE WITH NO WEIGHT BEARING ON RACEWAYS.
- FOR EXACT LOCATION AND MOUNTING HEIGHT OF LIGHTING FIXTURES AND SWITCH/RECEPTACLE OUTLETS, REFER TO ARCHITECTURAL REFLECTED CEILING AND POWER PLANS.
- ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAIN/TIGHT INSTALLATION. ALL BUILDING EXTERIOR MOUNTED RECEPTACLES SHALL BE GFCI RATED AND MOUNTED IN WEATHERPROOF ENCLOSURE.
- ALL ACCESS PANEL LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.
- ELECTRICAL CONTRACTOR SHALL COORDINATE THE LOCATION AND INSTALLATION OF NEW WORK WITH THE GENERAL CONTRACTOR AND OTHER ASSOCIATED TRADES IN A TIMELY MANNER. THE CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL DIMENSIONS AND CONDITIONS PRIOR TO CONSTRUCTION. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL, DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- ALL CONDUITS AND EQUIPMENT TO BE CONCEALED IN FINISHED SPACES UNLESS OTHERWISE NOTED. CONDUITS SHALL BE ENCASED IN THE CONCRETE FLOOR SLAB.
- ALL EQUIPMENT AND MATERIALS INSTALLED IN PLENUM CEILINGS SHALL BE APPROVED FOR THAT APPLICATION.
- OUTLET BOXES AND JUNCTION BOXES ON OPPOSITE SIDES OF FIRE-RATED WALLS SHALL BE SEPARATED BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES, UNLESS FIRE-RATED BOXES OR PUTTY PADS ARE UTILIZED.
- COORDINATE ALL FLOOR PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS. CONFIRM PENETRATION LOCATIONS WITH THE ENGINEER AND OWNER BEFORE INSTALLATION.
- COORDINATE THE MOUNTING HEIGHT AND LOCATION OF RACEWAYS, COMMUNICATIONS OUTLETS, AND RECEPTACLES WITH THE ARCHITECTURAL CASEWORK DRAWINGS AND DETAILS. COORDINATE LOCATIONS OF LIGHT FIXTURES, SWITCHES, AND RELATED DEVICES WITH THE ARCHITECTURAL DRAWINGS AND DETAILS.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOACTIONS OF ALL LUMINARIES AND SWITCHES, AND FOR ALL FINISHED CEILING HEIGHTS.
- REFER TO ARCHITECTURAL PLANS FOR FINAL LOCATIONS OF ALL ELECTRICAL DEVICES, AND FOR FINAL CEILING AND WALL HEIGHTS AND LAYOUTS.
- LIGHTING FIXTURES PROVIDED WITH EMERGENCY BATTERY PACKS AND INDICATED WITH SWITCH CONTROL SHALL BE WIRED WITH BATTERY CHARGING/SENSING CIRCUIT WIRED AHEAD OF SWITCH CONTROL.
- NUMBER(S) SHOWN AT RECEPTACLES, JUNCTION BOXES AND EQUIPMENT INDICATES CIRCUIT NUMBERS IN PANELBOARD. PROVIDE WIRE AND CONDUIT TO INTERCONNECT EQUIPMENT AND DEVICES WITH SAME CIRCUIT NUMBERS AND RUN TO PANELBOARD.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:

ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**ELECTRICAL
SYMBOL LIST,
ABBREVIATION
AND GENERAL
NOTES**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

E-0.1

SHEET 1 OF 8

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

ELECTRICAL SPECIFICATION

1. GENERAL:

A. THE "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION," AIA DOCUMENT, LATEST EDITION, AND THESE SPECIFICATIONS AS APPLICABLE ARE PART OF THIS CONTRACT.

B. DRAWING ARE DIAGRAMMATIC AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. CONDUIT ROUTING IS SHOWN DIAGRAMMATICALLY AND DOES NOT SHOW ALL OFFSETS, DROPS AND RISES OF RUNS. THE CONTRACTOR SHALL AS LOW AS HIS PRICE FOR ROUTING OF CONDUIT TO AVOID OBSTRUCTIONS. COORDINATION WITH EXISTING SERVICES, INCLUDING THOSE OF OTHER TRADES, IS REQUIRED, MAINTAIN HEADROOM AND SPACE CONDITIONS.

C. BIDDERS, BEFORE SUBMITTING PROPOSALS, SHALL VISIT AND CAREFULLY EXAMINE THE AREA AFFECTED BY THIS WORK TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT, OR MATERIALS, REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

D. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATION, MAINTANANCE AND REPAIR. MINOR DEVIATIONS FROM DRAWING MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.

E. REMOVAL AND RELOCATION OF CERTAIN EXISTING WORK MAY BE NECESSARY FOR THE PERFORMANCE OF THE GENERAL WORK. ALL EXISTING CONDITIONS CANNOT BE COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE AND INCLUDE ALL CHANGES AND CHARGES IN MAKING UP THE WORK PROPOSAL.

F. CONNECTIONS TO EXISTING WORK: INSTALL NEW WORK AND CONNECT TO EXISTING WORK WITH MINIMUM INTERFERENCE TO EXISTING FACILITIES. TEMPORARY SHUTDOWNS OF EXISTING SERVICES SHALL BE PERFORMED AT NO ADDITIONAL CHARGES. AT TIMES NOT TO INTERFERE WITH NORMAL OPERATION OF EXISTING FACILITIES AND ONLY WITH WRITTEN CONSENT OF OWNER, ALARM AND EMERGENCY SYSTEMS SHALL NOT BE INTERRUPTED. MAINTAIN CONTINUOUS OPERATION OF EXISTING FACILITIES AS REQUIRED WITH NECESSARY TEMPORARY CONNECTIONS BETWEEN NEW AND EXISTING WORK. CONNECT NEW WORK TO EXISTING WORK IN NEAT AND ACCEPTABLE MANNER. RESTORE EXISTING DISTURBED WORK TO ORIGINAL CONDITION, INCLUDING MAINTENANCE OF WIRING CONTINUITY AS REQUIRED.

G. DISCONNECT, REMOVE AND/OR RELOCATE EXISTING MATERIAL, EQUIPMENT AND OTHER WORK AS NOTED OR REQUIRED FOR PROPER INSTALLATION OF NEW WORK.

H. THE CONTRACTOR SHALL KEEP ALL EQUIPMENT AND MATERIALS, AND ALL PARTS OF THE BUILDING EXTERIOR SPACES AND ADJACENT STREETS, SIDEWALKS AND PAVEMENTS, FREE FROM MATERIAL AND DEBRIS RESULTING FROM THE EXECUTION OF THIS WORK. EXCESS MATERIALS WILL NOT BE PERMITTED TO ACCUMULATE EITHER ON THE INTERIOR OR THE EXTERIOR.

I. SEAL OPENINGS THROUGH PARTITIONS, WALLS AND FLOORS WITH MINERAL WOOL OR OTHER NONCOMBUSTIBLE MATERIAL, UNLESS OTHERWISE NOTED.

J. PROVIDE ALL NECESSARY FLASHING AND COUNTER FLASHING TO MAINTAIN THE WATERPROOFING INTEGRITY OF THE BUILDING AS REQUIRED BY THE INSTALLATION OR REMOVAL OF CONDUIT AND EQUIPMENT, PROVIDE EQUIPMENT CURBS AS REQUIRED.

K. ALL EXISTING MATERIAL, EQUIPMENT AND CONSTRUCTION DEBRIS TO BE REMOVED UNDER THIS CONTRACT SHALL BECOME THE PROPERTY OF THE CONTRACTOR WITH THE EXCEPTION OF SPECIFIC EQUIPMENT ND APPARATUS REQUESTED BY THE BUILDING REPRESENTATIVE, ARCHITECT OR AS NOTED TO BE RELOCATED ON THE DRAWINGS. REMOVED EQUIPMENT SHALL BE PROPERLY DISPOSED OF BY THIS CONTRACTOR.

L. THE CONTRACTOR'S PROPOSAL FOR ALL WORK SHALL BE PREDICATED ON THE PERFORMANCE OF THE WORK DURING REGULAR WORKING HOURS. WHEN SO DIRECTED, HOWEVER, THE CONTRACTOR SHALL INSTALL WORK DURING OVERTIME HOURS AND THE ADDITIONAL COST TO BE CHARGED THEREFORE SHALL BE ONLY THE "PREMIUM" PORTION OF THE WAGES PAID.

M. UNLESS OTHERWISE SPECIFICALLY NOTED OR SPECIFIED, INCLUDE ALL CUTTING AND PATCHING OF EXISTING FLOORS, WALLS, PARTITIONS AND OTHER MATERIALS IN THE EXISTING BUILDING. THE CONTRACTOR SHALL RESTORE THESE AREAS TO ORIGINAL CONDITION.

N. ALL MATERIAL AND EQUIPMENT SHALL BE NEW UNLESS OTHERWISE NOTED AND SHALL BE IN ACCORDANCE WITH BUILDING STANDARDS.

O. INSURANCE: PROVIDE IN ACCORDANCE WITH OWNER/BUILDING REQUIREMENTS AND SHALL INCLUDE A HOLD HARMLESS CLAUSE FOR OWNER AND ENGINEER.

P. THE FINAL ACCEPTANCE SHALL BE MADE AFTER THE CONTRACTOR HAS ADJUSTED HIS EQUIPMENT, TESTED THE VARIOUS SYSTEMS, DEMONSTRATED THAT IT FULFILLS THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AND HAS FURNISHED ALL THE REQUIRED CERTIFICATED OF INSPECTION AND APPROVAL.

2. 2. GENERAL PROVISIONS FOR ELECTRICAL WORK:

A. DEFINITIONS:

- "PROVIDE": TO FURNISH, INSTALL AND CONNECT UP COMPLETE AND READY FOR SAFE AND REGULAR OPERATION THE PARTICULAR WORK REFERRED TO UNLESS SPECIFICALLY OTHERWISE NOTED.
- "INSTALL": TO ERECT, MOUNT AND CONNECT COMPLETE WITH RELATED ACCESSORIES.
- "FURNISH" OR "SUPPLY": TO PURCHASE, PROCURE, ACQUIRE, AND DELIVER COMPLETE WITH RELATED ACCESSORIES.
- "WORK": LABOR, MATERIALS, EQUIPMENT, APPARATUS, CONTROLS, ACCESSORIES AND OTHER ITEMS REQUIRED FOR PROPER AND COMPLETE INSTALLATION.
- "WIRING": RACEWAY, FITTINGS, WIRE, BOXES, AND RELATED ITEMS.
- "CONCEALED": EMBEDDED IN MASONRY OR OTHER CONSTRUCTION, INSTALLED IN FURRED SPACES, WITHIN DOUBLE PARTITIONS OR IN GROUND CEILINGS, IN TRENCHES, IN CRAWL SPACES, OR IN ENCLOSURES
- "EXPOSED": NOT INSTALLED UNDERGROUND OR "CONCEALED" AS DEFINED ABOVE.

8) "SIMILAR" OR "EQUAL": EQUAL IN MATERIALS, WEIGHT, SIZE, DESIGN AND EFFICIENCY OF SPECIFIED PRODUCT.

B. TEMPORARY LIGHT AND POWER: PROVIDE TEMPORARY LIGHT AND POWER SYSTEMS AT EARLIEST POSSIBLE DATE WITHIN THE CONSTRUCTION AREAS FOR THE REQUIREMENTS OF ALL TRADES AS HEREIN DESCRIBED. EXTEND SYSTEMS TO NEW CONSTRUCTION AS SOON AS PHYSICALLY POSSIBLE, MAINTAIN SYSTEM DURING WORKING OWNER. PROVIDE ALL REQUIRED MAINTENANCE, INCLUDING LAMPS AND SOCKETS.

C. QUALITY ASSURANCE

1) QUALITY OF MATERIALS: ALL EQUIPMENT SHALL BE NEW SPECIFICATION GRADE, FREE FROM DEFECTS AND LISTED BY APPROVED TESTING AGENCY AND BEARING THEIR LABEL MATERIALS AND EQUIPMENT OF SIMILAR APPLICATION SHALL BE OF SAME MANUFACTURER, EXCEPT AS NOTED.

2) GUARANTEE: ALL MATERIALS AND WORKMANSHIP SHALL BE GUARANTEED AS DEFINED IN PARAGRAPH 2.C.

3) CURRENT CHARACTERISTICS:

a. DISTRIBUTION: 120/208 VOLT, 3 PHASE, 4 WIRE, 60 HERTZ WITH GROUNDED NEUTRAL.

4) HEIGHTS OF OUTLETS:

a. FROM FINISHED FLOOR TO CENTERLINE OF OUTLETS FOR:

- RECEPTACLES AND TELEPHONES: 1 FT-6 IN.
- WALL SWITCHES: 4 FT-0 IN.
- WALL FIXTURES: 7 FT-0 IN.
- MOTOR CONTROLLERS: 5 FT-0 IN.
- CLOCKS: 7 FT 6 IN

b. EXCEPTIONS: AT JUNCTION OF DIFFERENT WALL FINISH MATERIALS, ON MOLDING OR BREAK IN WALL SURFACE, IN VIOLATION OF CODE, OR AS NOTED OR DIRECTED.

D. PRODUCT DELIVERY, STORAGE AND HANDLING

1) MOVING OF EQUIPMENT: WHERE NECESSARY, SHIP IN CARTED SECTIONS OF SIZE TO PERMIT PASSING THROUGH AVAILABLE SPACES.

2) ACCESSIBILITY: FOR OPERATION, MAINTENANCE AND REPAIR, MINOR DEVIATIONS SHALL BE PERMITTED. CHANGES OF MAGNITUDE OR INVOLVING EXTRA COST ARE NOT PERMISSIBLE WITHOUT REVIEW. GROUP CONCEALED ELECTRICAL EQUIPMENT REQUIRING ACCESS WITH EQUIPMENT FREELY ACCESSIBLE THROUGH ACCESS DOORS.

E. MATERIALS

1) NAMEPLATES: PROVIDE BLACK LAMICOID SHEET WITH 3/4 IN. WHITE LETTERING, FASTENED WITH EPOXY CEMENT FOR EACH DISCONNECT SWITCH, CIRCUIT BREAKER, PANEL, CABINET, TRANSFORMER, ENCLOSURE, MOTOR CONTROLLER AND THE LIKE. NAMEPLATES SHALL DESCRIBE THE NAME AND NUMBER OF EACH COMPONENT.

2) CABLE TAGS: TAG EACH CONDUCTOR PASSING THROUGH SPLICE OR PULLBOX WITH A WHITE LINEN TAG, INDICATING POINT OF ORIGIN AND TERMINATION OF THE CIRCUIT.

3) INSERTS AND SUPPORTS:

a. INSERTS: STEEL, SLOTTED TYPE, FACTORY PAINTED.

- SINGLE ROD: SIMILAR TO GRINNELL FIG. 281.

- MULTI-ROD: SIMILAR TO FEE AND MASON SERIES 9000 WITH END CAPS AND CLOSURE STRIPS.

- CLIP FORM NAILS FLUSH WITH INSERTS.

- MAXIMUM LOADING 75 PERCENT OF RATING.

b. SUPPORTS FROM BUILDING CONSTRUCTION: INSERTS, BEAM CLAMPS, STEEL FISHPLATES (IN CONCRETE FILL ONLY), CANTILEVER BRACKETS OR OTHER MEANS. SUBMIT FOR REVIEW.

c. GROUPED LINES AND SERVICES: TRAPEZE HANGERS OF BOLTED ANGLES OR CHANNELS.

d. WHERE BUILDING CONSTRUCTION IS INADEQUATE: PROVIDE ADDITIONAL FRAMING. SUBMIT FOR REVIEW.

F. PAINT SHALL BE THE BEST GRADE FOR ITS PURPOSE. DELIVER IN ORIGINAL SEALED CONTAINERS AND APPLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. COLORS SHALL BE AS SELECTED BY ARCHITECT OR ENGINEER. UTILIZE GALVANIZED IRON PRIMER ON PANEL AND PULL BOXES, AFTER FABRICATION. UTILIZE HOT DIPPED GALVANIZED OR DIPPED IN ZINC BASED PRIMER FOR: OUTLET BOXES, JUNCTION BOXES, CONDUIT HANGERS, RODS, INSERTS AND SUPPORTS. ZINC BASED PRIMER WITH FINISH TO MATCH BRUSH AND CLEAN WORK PRIOR TO CONCEALING, PAINTING AND ACCEPTANCE. PAINTED EXPOSED WORK SOILED OR DAMAGED, CLEAN AND REPAIR TO MATCH ADJOINING WORK BEFORE FINAL ACCEPTANCE. REMOVE DEBRIS FROM INSIDE AND OUTSIDE OF MATERIAL AND EQUIPMENT.

G. FINAL LOCATIONS AND MOUNTING ORIENTATIONS OF ALL SWITCHES, RECEPTACLES AND LIGHT FIXTURES SHALL BE VERIFIED WITH ARCHITECT.

H. ALL ACCESS DOOR LOCATIONS SHALL BE REVIEWED BY ARCHITECT PRIOR TO INSTALLATION.

3. SCOPE OF WORK:

A. SCOPE OF WORK SHALL CONSIST OF PROVIDING ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, AND FEES NECESSARY FOR A COMPLETE AND SAFE INSTALLATION, IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2017 (WITH LOCAL ADOPTIONS), ALL APPLICABLE INDUSTRY STANDARDS, NATIONAL AND LOCAL CODES, AND THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION, AS INDICATED ON THE DRAWINGS AND HEREIN SPECIFIED.

B. ALL DRAWINGS, PLANS, DETAILS, SPECIFICATIONS AND SPECIFICATION ADDENDA ARE MADE PART OF THIS CONTRACT AND SHALL APPLY TO ALL WORK UNDER THE CONTRACT UNLESS OTHERWISE AMENDED, MODIFIED, SUPPLIED OR SPECIFIED HEREIN.

C. THE CONTRACTOR SHALL FURNISH A WRITTEN GUARANTEE TO REPLACE OR REPAIR PROMPTLY AND ASSUME RESPONSIBILITY FOR ALL EXPENSES INCURRED FOR ANY WORKMANSHIP AND EQUIPMENT IN WHICH DEFECTS DEVELOP WITHIN ONE YEAR FROM THE DATE OF FINAL CERTIFICATE FOR PAYMENT AND/OR FROM DATE OR ACTUAL USE OF EQUIPMENT OR OCCUPANCY OF SPACES BY OWNER INCLUDED UNDER THE VARIOUS PARTS OF THE WORK, WHICHEVER, DATE IS EARLIER. THIS WORK SHALL BE DONE AS DIRECTED BY THE OWNER. THIS GUARANTEE SHALL ALSO PROVIDED THAT WHERE DEFECTS OCCUR, THE CONTRACTOR WILL ASSUME RESPONSIBILITY OF OTHER TRADES AFFECTED BY DEFECTS, REPAIRS OR

REPLACEMENTS IN EQUIPMENT SUPPLIED BY THE CONTRACTOR.

D. THE CONTRACTOR SHALL GIVE NECESSARY NOTICE, FILE DRAWINGS AND SPECIFICATIONS WITH ALL DEPARTMENTS HAVING JURISDICTION, WORK AND PAY ALL FEES THEREFORE. THE CONTRACTOR SHALL ARRANGE FOR INSPECTION AND TESTS OF ANY OR ALL PARTS OF THE WORK IF SO REQUIRED BY AUTHORITIES AND PAY ALL CHARGES FOR SAME. THE CONTRACTOR SHALL PAY ALL COSTS FOR, AND FURNISH TO THE OWNER BEFORE FINAL BILLING, ALL CERTIFICATES NECESSARY AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH ALL REGULATIONS WHERE THEY APPLY TO THIS WORK.

E. CONTRACTOR SHALL PERFORM ALL CONTROLLED INSPECTIONS IN ACCORDANCE WITH THE BUILDING CODE. SECURE ALL REQUIRED PERMITS AND APPROVALS AND TRANSMIT SAME TO OWNER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FEES.

F. AREAS WITH NO ELECTRICAL WORK SHALL REMAIN AS IS. CONTRACTOR SHALL MAINTAIN CONTINUITY OF ALL ELECTRICAL SYSTEMS TO ALL AREAS NOT COVERED BY THIS RENOVATION AND SHALL PROVIDE 48 HOUR NOTICE TO LANDLORD OF ANY PLANNED POWER INTERRUPTIONS OR SIGNAL SYSTEM OUTAGES.

4. SHOP DRAWINGS

A. PRIOR TO THE INSTALLATION OF ANY WORK AND PROCUREMENT OF EQUIPMENT, CONTRACTOR SHALL PROVIDE COMPLETE SETS OF COORDINATED SHOP DRAWINGS OF ALL NEW AND EXISTING EQUIPMENT, INDICATING CAPACITY, DIMENSIONS AND SEQUENCE OF OPERATION FOR WRITTEN APPROVAL BY THE ARCHITECT AND ENGINEER.

B. INDICATE ON EACH SHOP DRAWINGS SUBMITTED:

- PROJECT NAME AND LOCATION
- NAME OF ARCHITECT AND ENGINEER
- ITEM IDENTIFICATION
- APPROVAL STAMP OF PRIME CONTRACTOR

C. SUBMISSIONS:

1) SUBMISSIONS 11 IN. X 17 IN. OR SMALLER: IF THE SUBMISSION IS A CATALOG CUT, THEN THE CONTRACTOR SHALL SUBMIT ONE ORIGINAL AND TWO COPIES, OTHERWISE, HE SHALL SUBMIT THREE COPIES. THE ARCHITECT WILL FORWARD THE ORIGINAL AND ONE COPY (TWO COPIES WHEN NO ORIGINAL IS RECEIVED) TO THE ENGINEER. ALL CATALOG CUTS SHALL BE COMPLETE.

2) SUBMISSIONS LARGER THAN 11 IN. X 17 IN.: SUBMIT TWO PRINTS AND ONE PAPER SEPIA TO THE ARCHITECT. THE ARCHITECT WILL FORWARD ONE PRINT AND THE PAPER SEPIA TO THE ENGINEER.

D. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:

- SAFETY/DISCONNECT SWITCHES
- FUSES
- CIRCUIT BREAKERS
- PANELBOARDS/LOADCENTER (INCLUDING DIMENSIONS, SCHEDULES, AND CATALOG CUTS).
- RACEWAYS
- WIRE AND CABLE
- WALL SWITCHES
- INSERTION RECEPTACLES
- MOMENTARY CONTACT SWITCHES
- TIME SWITCHES
- LIGHTING FIXTURES.
- TRANSFORMER.

E. ASSIST AND PROVIDE ALL NECESSARY INFORMATION, DIAGRAMS, SKETCHES, ETC. TO THE HVAC CONTRACTOR, FOR THE PREPARATION OF COORDINATED SHOP DRAWINGS INDICATING ROUTING OF FEEDERS, CONTROL CONDUITS, RECESSED FIXTURES AND ADJACENT NEARBY PIPING AND DUCTWORK WHERE APPLICABLE, CERTIFIED BY ALL TRADES THAT COORDINATION HAS BEEN ESTABLISHED. SUBMIT FOUR (4) BOOKBOUND OPERATING AND SERVICE MANUALS WHICH SHALL INCLUDE COPIES OF ALL SHOP DRAWING. PROVIDE SHOP DRAWINGS FOR PANELS, FIXTURES, WIRING DEVICES, CONDUIT, CABLE, DISCONNECT SWITCH, RELAYS, CONTRACTORS, AND OTHER SYSTEMS AS DIRECTED BY THE ENGINEER.

5. AS-BUILT DRAWINGS AND EQUIPMENT OPERATIONAL INSTRUCTIONS

A. UPON COMPLETION AND ACCEPTANCE OF WORK, CONTRACTOR SHALL FURNISH WRITTEN INSTRUCTIONS AND EQUIPMENT MANUALS AND DEMONSTRATE TO THE OWNER THE PROPER OPERATION AND MAINTENANCE OF ALL EQUIPMENT AND APPARATUS FURNISHED UNDER THIS CONTRACT.

B. THESE INSTRUCTIONS SHALL BE TYPED ON 8-1/2 IN. X 11 IN. PAPER A BOUND IN THREE RING BINDERS WITH CLEAR ACETATE COVERS. CONTRACTOR SHALL GIVE THREE COPIES OF THE INSTRUCTIONS TO THE OWNER AND ONE COPY TO THE ENGINEER.

C. THE INSTRUCTION BOOKLET SHALL BEAR THE NAME, ADDRESS AND TELEPHONE NUMBER OF THE PROJECT, ARCHITECT AND ENGINEER.

D. REPRODUCIBLE "AS-BUILT" DRAWINGS SHALL BE PROVIDED INDICATING THE AS INSTALLED CONDITIONS OF THE WORK. "AS-BUILT" DRAWINGS SHALL BE PROVIDED TO THE ARCHITECT AFTER COMPLETION OF THE INSTALLATION.

6. LOW-VOLTAGE DISTRIBUTION EQUIPMENT:

A. PROVIDE COMPLETE EQUIPMENT INCLUDING: SWITCHES, FUSES, CIRCUIT BREAKERS, PANELS AND TRANSFORMERS.

B. ALL EQUIPMENT SHALL CONFORM TO NEMA, ANSI AND IEEE STANDARDS.

C. DISCONNECT SWITCHES SHALL BE FUSED OR NONFUSED AS NOTED. VOLTAGE SHALL BE AS REQUIRED. SWITCHES SHALL BE HEAVY DUTY, EXCEPT AS NOTED, AND HORSEPOWER RATED FOR MOTOR LOADS. TOGGLE TYPE SWITCHES SHALL BE NONFUSED, LOAD BREAK, HAVING MAXIMUM RATINGS OF 20 AMP AT 600 VOLTS AND 30 AMP AT 240 VOLTS. TWO-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 6908F. THREE-POLE SWITCHES SHALL BE SIMILAR TO HART AND HEGEMAN NO. 7810F. KNIFE-BLADE TYPE SWITCHES SHALL BE LOAD BREAK, QUICK-MAKE- QUICK-BREAK, UL CLASS R UP TO 600 AMP. MAXIMUM RATING EXCEPT AS NOTED SHALL BE 800 AMP. ARC QUENCHERS SHALL BE PROVIDED. SWITCHES SHALL BE SIMILAR TO GENERAL ELECTRIC QMR, ALL SWITCH ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED.

7. FUSES:

A. CIRCUITS 0 TO 600 AMPERES SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP/SP (250V) /LPS-RK (AMP/SP (600V) OR LPI (AMP/SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

B. MOTOR CIRCUITS - ALL INDIVIDUAL MOTOR CIRCUITS WITH FULLLOAD AMPERE RATINGS (FLA) OF 480 AMPERES OR LESS SHALL BE PROTECTED BY FUSES SIMILAR TO CURRENT LIMITING BUSSMANN LOW-PEAK DUAL-ELEMENT TIME-DELAY LPN-RK (AMP/SP (250V) /LPS-RK (AMP/SP (600V) OR LPI (AMP) SP (600V) (UL CLASS RK1 OR CLASS J), AND BE LISTED BY UL WITH AN INTERRUPTING RATING OF 300,000 AMPERES RMS SYMMETRICAL.

C. ALL FUSES SHALL BE PROVIDED BY SAME MANUFACTURER.

D. PROVIDE 1 SPACE MATCHING FUSE FOR EACH SET OF 3.

E. CIRCUIT BREAKERS: MOLDED CASE BREAKERS SHALL BE THERMAL-MAGNETIC, QUICK-MAKE-QUICK-BREAK, BOLT-ON TYPE, MANUALLY OPERATED WITH INSULATED TRIP-FREE HANDLE. MULTI-POLE TYPE BREAKERS SHALL CONTAIN INTERNAL TRIP BAR. TERMINALS SHALL BE SUITABLE FOR COPPER OR ALUMINUM CABLE. FURNISH AUXILIARY DEVICES WHERE REQUIRED FOR SHUNT-TRIPPING, OPEN AND CLOSE MOTOR OPERATOR AND ALARM INDICATION. ENCLOSURES SHALL BE DEAD FRONT, NEMA TYPE 1, EXCEPT AS NOTED. FRAMES, IC AND INTERCHANGEABLE TRIPS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:

- 120 VOLTS, 100-AMP FRAME: 10,000 AMPS, 1 POLE.
- 120/240 VOLTS, 225-AMP FRAME: 22,000 AMPS MINIMUM.

8. DISTRIBUTION PANELBOARDS, CIRCUIT BREAKER TYPE:

A. THREE PHASE, 4 OR 5 WIRE, COPPER BUS BARS, WITH 2, 3, OR 4 WIRE BRANCHES AS NOTED. CAPACITY OF PANEL AND CIRCUITS, AS NOTED BELOW. PANELBOARD TO HAVE GROUND BUS SAME SIZE AS PHASE BUSES.

B. CABINETS: CODE GAUGE GALVANIZED SHEET STEEL PRIMED AND PAINTED WITH TRIM AND DOOR, TYPE AS NOTED, LAP AND RIVET CORNERS OR FORM AS APPROVED.

C. TRIM: ONE PIECE FULL FINISH PRIMED AND PAINTED SHEET STEEL. TRIM SHALL BE MOUNTED WITH A CONTINUOUS PIANO HINGE CONFIGURED IN SUCH A MANNER THAT IT SHALL BE POSSIBLE TO GAIN FULL ACCESS TO CIRCUIT BREAKERS AND WIRING GUTTERS WITHOUT REMOVING THE TRIM. PROVIDE A MULTI-PIN CYLINDER LOCK (YALE, CORBIN OR EQUAL) TO LATCH THE TRIM. KEYS SHALL BE MILLED.

D. HARDWARE: MULTI-PIN, CYLINDER LOCKS WITH MILLED KEYS. ALL PANELS SHALL BE KEYPED ALIKE. DOOR OVER 48" HIGH SHALL BE EQUIPPED WITH A CHROME PLATED VAULT HANDLE, BUILT-IN LOCK AND 3-POINT CATCH FASTENING DOOR AT TOP, BOTTOM AND CENTER.

E. HINGES: CONCEALED, CONTINUOUS PIANO HINGE AS DESCRIBED ABOVE.

F. DIRECTORY HOLDER: MEAL FRAME WITH NONBREAKABLE TRANSPARENT COVER AND DIRECTORY CARD. ENTRIES TO BE TYPEWRITTEN BY ELECTRICAL CONTRACTOR. PROVIDE AN ENGRAVED LAMINATED NAMEPLATE ADJACENT TO EACH BRANCH BREAKER. MOUNT WITH SELF TAPPING MACHINE SCREWS.

G. FURNISH MULTI-CABLE LUGS WHERE REQUIRED. DOUBLE LUGGING NOT PERMITTED. SECURE LUGS TO BUS BY STUD BOLTS.

H. PANELBOARD CONSTRUCTION FOR BOLTED TYPE BREAKERS, MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, RMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. INDIVIDUAL CIRCUIT BREAKERS SHALL HAVE MINIMUM 100A FRAME, TRIPS SIZED AS SHOW ON THE PLANS.

I. MINIMUM GUTTER SPACES: PANELS WITH 225 AMPERE MAINS, 5-3/4" MINIMUM, 400 AMPERES AND OVER, MINIMUM GUTTERS 8". FOR PANELS WITH THROUGH FEEDERS, INCREASE GUTTER WIDTH BY 2" MINIMUM AND PROVIDE A SHEET STEEL BARRIER BETWEEN THE PANEL GUTTER AND THE THROUGH FEEDER PORTION OF THE BACK BOX. BRANCH CIRCUIT BREAKERS SHALL BE MECHANICALLY INTERLOCKED WHEN SHOWN ON DRAWINGS.

J. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANE TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

9. DISTRIBUTION PANELBOARDS, SWITCH AND FUSE:

A. THREE PHASE, 3 OR 4 WIRE WITH COPPER BUS BARS. ALL THROUGH BUS SHALL BE INSULATED.

B. NEMA CLASS 1 CONSTRUCTION TO ACCOMMODATE FUSIBLE, INDIVIDUALLY ENCLOSED SWITCHES, FRONT REMOVABLE, SWITCH AND DOOR INTERLOCKS, COVERS TO BE PAD-LOCKABLE.

C. PANELBOARD SHALL BE CONSTRUCTED OF CODE-GAUGE STEEL, GRAY FINISH OVER RUST INHIBITOR, FOR SURFACE MOUNTING. BOX AND PANEL FRAME SHALL BE FLANGED AND REINFORCED FOR RIGID SUPPORT OF INTERIOR AND ACCURATE ALIGNMENT OF INTERIOR WITH FRONT. TRIMS TO BE FASTENED TO BACK BOX WITH SCREWS.

D. ALL BRANCH SWITCHES SHALL HAVE INDIVIDUAL ENGRAVED LAMICOID NAMEPLATES (BLACK WITH WHITE CORE).

E. DISTRIBUTION PANELBOARD CONSTRUCTION MINIMUM SHORT CIRCUIT RATING 25,000 AMPERES, REMS SYMMETRICAL FOR ALL 120/208V APPLICATIONS. APPLICATIONS.

F. DISCONNECTS

1) DISCONNECT SWITCHES SHALL CONFORM TO NEMA AND UL STANDARDS, AND SHALL BE HORSEPOWER RATED.

2) SWITCHING MECHANISM SHALL BE QUICK-MAKE, QUICK-BREAK, SINGLE THROW WITH EXTERNAL OPERATING HANDLE MECHANICALLY INTERLOCKED WITH ENCLOSURE COVER TO PROVIDE ACCESS TO INTERIOR WHEN DISCONNECT IS IN OFF POSITION ONLY. PROVIDE MEANS TO LOCK OPERATING HANDLE IN THE OPEN AND CLOSED POSITION. DESIGNATE ON THE ENCLOSURE THE OPEN AND CLOSED POSITION OF THE OPERATING HANDLE.

3) SWITCHES SHALL BE OF THE DOUBLE STATIONARY CONTACT TYPE.

4) SWITCHES SHALL BE EQUIPPED WITH REJECTION TYPE FUSE HOLDERS, FUSIBLE AS SHOWN ON THE DRAWINGS; PROVIDE COMPLETE WITH FUSES AS SCHEDULED.



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**ELECTRICAL
SPECIFICATIONS
(1 OF 2)**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

E-0.2

SHEET 2 OF 8

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

ELECTRICAL SPECIFICATION (CONT.)

D. INSTALLATION

- 1) DISTRIBUTION PANELBOARD SHALL BE MOUNTED TO STRUCTURAL STEEL CHANNEL (KINDORF) WHICH SHALL BE BOLTED TO THE WALL USING EXPANSION ANCHORS FOR LARGE PANELS.

H. IDENTIFICATION

- 1) PROVIDE NAMEPLATE AT EACH SWITCH IDENTIFYING THE LOAD SERVED.
- 2) NAMEPLATES SHALL BE MOUNTED ON THE FRONT COVER SECURED WITH SELF-TAPPING SCREWS OR NUTS AND BOLTS. NAMEPLATES SHALL BE LAMINATED PHENOLIC, BLACK WITH A MINIMUM OF 1/4" HIGH WHITE LETTERING.

- I. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARDS SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

- J. POWER PANELBOARDS SHALL BE SIMILAR TO GENERAL ELECTRIC TYPE "OMRY" AS MANUFACTURED BY ATLAS SWITCH COMPANY, ELECTRIC SWITCHBOARD COMPANY OR APPROVED EQUAL.

- K. PANELBOARD SHALL HAVE MAIN CIRCUIT BREAKER OR MAIN LUGS AS INDICATED ON THE DRAWINGS. QUANTITY, POLES AND TRIP RATINGS OF BRANCH CIRCUIT BREAKERS TO BE AS INDICATED ON DRAWINGS.

- L. PANELBOARD SHALL HAVE ENGRAVED WHITE CORE, BLACK LAMACOID NAMEPLATE SCREWED ONTO PANEL TRIM WITH DESIGNATION LISTED (PANELBOARD NAME, VOLTAGE, RATING OR MAINS IN AMPS).

M. MATERIALS

- 1) RACEWAYS:

- a. RIGID STEEL CONDUIT: FULL-WEIGHT PIPE, GALVANIZED, THREADED.
- b. ELECTROMETALLIC TUBING (EMT): THIN WALL PIPE, GALVANIZED, THREADLESS.
- c. FLEXIBLE STEEL CONDUIT: CONTINUOUS SINGLE STRIP, GALVANIZED.
- d. WIREWAYS: WIRE SHALL BE AS NOTED. MINIMUM NO. 16 GAUGE STEEL WITH GROUND CONTINUITY. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.
- e. SURFACE METAL RACEWAY: SIZE AS NOTED. BASE 0.04 IN., COVER 0.25 IN. MATERIAL SHALL BE STEEL. FINISH SHALL BE BAKED ENAMEL. COVERS SHALL BE SCREW-ON.

- 2) FITTINGS AND ACCESSORIES:

- a. RIGID STEEL: NONSPLIT, THREADED, STEEL OR MALLEABLE IRON, ZINC DIE CAST NOT PERMITTED.
- b. ELECTROMETALLIC TUBING: COMPRESSION TYPE, GALVANIZED RIGID STEEL ELBOWS, 2 IN. OR LARGER.
- c. FLEXIBLE METALLIC CONDUIT: ANGLE WEDGE TYPE WITH INSULATED THROAT.
- d. BUSHINGS: METALLIC INSULATED TYPE.

- 3) BOXES:

- a. OUTLET BOXES: EXCEPT AS OTHERWISE REQUIRED BY CONSTRUCTION, DEVICES OR WIRING, BOXES SHALL BE STAMPED STEEL, 4 IN. SQUARE OR OCTAGON FOR FIXTURES. BOXES ABOVE CEILING SHALL BE 1-1/2 IN. DEEP. BOXES IN CEILING OR SLAB SHALL BE 3 IN. DEEP. BOXES IN WALL FOR FIXTURES SHALL BE 2-3/4 IN. DEEP. BOXES IN WALL FOR RECEPTACLES AND SWITCHES SHALL BE 1-1/2 IN. DEEP. FURNISH WITH RAISED COVERS AND FIXTURE STUDS WHERE REQUIRED. WITHOUT FIXTURE OR DEVICE. FURNISH BLANK COVER, OFFSET BACK-TO-BACK OUTLETS WITH MINIMUM 6 IN. SEPARATION.
- b. JUNCTION AND PULL BOXES: GALVANIZED SHEET STEEL WITH SCREW-ON COVERS, EXCEPT AS NOTED. FURNISH WITH INSULATED SUPPORTS FOR CABLES. LOCATIONS SHALL BE AS NOTED OR REQUIRED AND ACCESSIBLE. PROVIDE BARRIERS IN NEW AND RENOVATED BOXES BETWEEN 120/208 VOLT AND 265/460 VOLT WIRING AND BETWEEN EMERGENCY AND NORMAL WIRING. FLOOR BOXES SHALL BE SUITABLE FOR CONDUIT AND DEVICES NOTED. RAISED OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH ABOVE FLOOR FITTING. TELEPHONE: BUSHED HOLE. POWER: DUPLEX RECEPTACLE OR OTHER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY. FLUSH OUTLETS SHALL BE HUBBELL #B2414 SERIES WITH FLUSH FLOOR FITTING FOR TELEPHONE AND FLUSH DUAL FLAP COVER WITH DUPLEX RECEPTACLE FOR POWER AS NOTED. INCREASE SIZE TO SUIT AS NECESSARY.

- N. PROVIDE RACEWAYS ONLY AS HEREIN SPECIFIED. EXCEPT AS NOTED, RACEWAYS SHALL BE RUN CONCEALED, EXCEPT AS NOTED.

PROVIDE RACEWAY SUPPORT UTILIZING CEILING TRAPEZE, STRAP HANGERS, OR WALL BRACKETS. PROVIDE U-BOLTS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND CONNECTED TO ACCEPTABLE SUPPORTS. PROVIDE RISER CLAMPS AT EACH FLOOR LEVEL OF RISER RACEWAYS AND RESTING ON SLAB. FOR THROUGH-THE-FLOOR SYSTEMS, UTILIZE AN ASSEMBLY SIMILAR TO HUBBELL FIRE RATED POKE-THROUGH-FLOOR BOX SYSTEM. FOR ABOVE FLOOR FITTINGS TELEPHONE SHALL BE BUSHED HOLE AND POWER SHALL BE DUPLEX RECEPTACLE OR OTHER AS NOTED. PROVIDE SEPARATION BARRIER BETWEEN POWER AND TELEPHONE COMPARTMENTS. PROVIDE JUNCTION BOX ON UNDERSIDE OF FLOOR. PACK FITTING TO RESTORE FIRE RATING OF FLOOR.

SECURE ALL RACEWAYS TO SUPPORTS WITH PIPE STRAPS OR U-BOLTS. SPACING OF SUPPORTS SHALL BE A MINIMUM OF 10 FT ON CENTER FOR METALLIC RACEWAY AND AS REQUIRED FOR NONMETALLIC RACEWAY. SPACING SHALL BE 5 FT ON CENTER FOR WIREWAYS AND PER CODE AND AS NOTED FOR OTHERS. MOUNT SUPPORTS TO STRUCTURE MASONRY WITH TOGGLE BOLTS ON HOLLOW MASONRY, EXPANSION SHIELDS OR INSERTS IN CONCRETE AND BRICK, MACHINE SCREWS ON METAL, BEAM CLAMPS ON FRAMEWORK, WOOD SCREWS ON WOOD, AND PAN THROUGH STRAPS IN METAL DECK. NAILS, RAWL PLUGS OR WOOD PLUGS SHALL NOT BE PERMITTED. WHERE REQUIRED BY STRUCTURE, FURNISH THROUGH BOLTS AND FISHPLATES.

EXPOSED RACEWAYS SHALL BE RUN PARALLEL WITH OR AT RIGHT ANGLES TO WALLS. PROVIDE CLEARANCE WITH WATER, STEAM OR OTHER PIPING (MINIMUM 3 IN. SEPARATION FROM STEAM AND HOT WATER PIPES, EXCEPT 1 IN. FROM PIPE COVER AT CROSSINGS AND 18 IN. FOR PARALLEL RUNS). FOR HUNG CEILING OUTLETS, RUN IN HUNG CEILING AND CONNECT TO CEILING SUPPORT CHANNELS. IN MASONRY AND POURED CONCRETE, RUN VERTICALLY ONLY.

EMPTY RACEWAYS OVER 10 FT LONG: PROVIDE FISH OR PULL WIRE.

GALVANIZED OR NYLON ROPE.

RIGID STEEL CONDUIT SHALL BE PERMITTED FOR FEEDERS AND BRANCH CIRCUITS. PAINT MALE THREADS OF FIELD-THREADED CONDUIT WITH GRAPHITE-BASE PIPE COMPOUND AND BUTT CONDUIT ENDS. TOUCH UP MARRED SURFACES AND FIELD-CUT THREADS. CR-COLD GALVANIZED. EMT SHALL BE PERMITTED FOR BRANCH CIRCUITS ONLY, IN DRY LOCATIONS, DRY WALLS, HUNG CEILINGS, HOLLOW BLOCK WALLS AND FURRED SPACES. EMT SHALL NOT BE PERMITTED IN RAISED FLOORS. FLEXIBLE STEEL CONDUIT SHALL BE UTILIZED FOR SHORT CONNECTIONS WHERE RIGID CONDUIT IS IMPRACTICAL. FROM OUTLET BOX TO RECESSED LIGHTING FIXTURE: PROVIDE MINIMUM 4 FT AND MAXIMUM 6 FT LENGTHS. FOR FINAL CONNECTION TO MOTOR TERMINAL BOX, TRANSFORMER AND OTHER VIBRATING EQUIPMENT: PROVIDE WITH POLYVINYL SHEATHING AND GROUND CONDUCTOR. MINIMUM LENGTH: 18 IN. WITH SLACK. CONNECT GROUND CONDUCTOR TO ENCLOSURE OR RACEWAY AT EACH END. FOR EXPANSION JOINT CROSSINGS, CROSS AT RIGHT ANGLES AND ANCHOR ENDS.

CUT CONDUIT ENDS SQUARE. REAM SMOOTH. PAINT MALE THREADS OF FIELD THREADED RACEWAYS WITH GRAPHITE BASE PIPE COMPOUND. DRAW UP TIGHT WITH RACEWAY COUPLING.

ALL COUPLINGS SHALL BE COMPRESSION TYPE. NO SET SCREW FITTINGS.

EXPANSION FITTINGS SHALL BE INSTALLED AT RIGHT ANGLES WITH CLIP JOINT CENTERED IN EXPANSION JOINT. PROVIDE A LENGTH OF RUN IN ACCORDANCE MANUFACTURER'S RECOMMENDATIONS. PRESET FITTINGS SHALL ALLOW FOR TEMPERATURE VARIATION.

RACEWAYS PASSING THROUGH FIRE-RATED CONSTRUCTION: SEAL OPENING WITH FIRE SEALANT.

- O. PROVIDE CABLE SUPPORTS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE 2017. CABLE SUPPORTS SHALL UTILIZE A ONE-PIECE PLUG WITH POZI-GRIP WEDGING PLUG AS MANUFACTURED BY OZ-GEDNEY. TYPE SF SHALL BE USED FOR ARMORED CABLE.

INSTALL CABLE SUPPORTS AT THE TOP OF A VERTICAL RISE AND PROVIDE INTERMEDIATE ADDITIONAL SUPPORTS AS REQUIRED TO LIMIT SUPPORTED CONDUCTOR LENGTHS TO NOT GREATER THAN THOSE SPECIFIED IN TABLE 300.19(A).

- P. ERECT WALL AND SWITCH OUTLETS IN ADVANCE OF FURRING AND FIREPROOFING. OUTLET BOXES SHALL BE SET SQUARE AND TRUE WITH BUILDING FINISH. SECURE TO BUILDING STRUCTURE BY ADJUSTABLE STRAP IRON OR GROUT IN WITH MASONRY. VERIFY OUTLET LOCATIONS IN FINISHED SPACES WITH ARCHITECTURAL DRAWINGS OF INTERIOR DETAILS AND FINISHES. PROVIDE BARRIER BETWEEN SWITCHES CONNECTED TO DIFFERENT PHASES FOR VOLTAGES EXCEEDING 150 VOLTS TO GROUND.

- Q. PANEL, JUNCTION AND PULL BOXES SHALL BE LOCATED CLEAR OF OTHER TRADES. CONCEAL JUNCTION AND PULL BOXES IN FINISHED WHERE NECESSARY. REROUTE RACEWAYS OR MAKE OTHER ARRANGEMENTS FOR CONCEALMENT. BOXES SHALL BE ACCESSIBLE. SUPPORT BOXES FROM BUILDING STRUCTURE, INDEPENDENT OF CONDUIT. PROVIDE FLOOR-TO-CEILING CHANNELS FOR MOUNTING ON DRYWALL AND LIGHTWEIGHT CONSTRUCTION. OUTLET BOXES FOR FIXTURES RECESSED IN HUNG CEILINGS SHALL BE ACCESSIBLE THROUGH OPENING CREATED BY REMOVAL OF FIXTURE. SECURE TO BLACK IRON SUPPORT. MOTOR TERMINAL BOXES: COORDINATE WITH MOTOR BRANCH CIRCUIT CONDUIT AND WIRING; ADD BOX VOLUME WHERE REQUIRED.

- R. FIRE SEALANTS: PROVIDE FOR RACEWAYS AND WIRE PASSING THROUGH FLOOR SLOTS, SLEEVES OR OPENINGS IN FIRE-PARTITIONS ROOMS.

- S. PERFORM CONTINUITY TESTS OF RESISTANCE OF FEEDER CONDUITS FROM SERVICE TO POINT OF FINAL DISTRIBUTION USING 1 CONDUCTOR RETURN. MAXIMUM RESISTANCE SHALL BE 25 OHMS.

10. WIRE AND CABLE:

- A. PROVIDE WIRE AND CABLE COMPLETE WITH ACCESSORIES. SIZE REFERENCE SHALL BE AWG EXCEPT AS NOTED.

- B. CONDUCTORS SHALL BE COPPER, ASTM STANDARD SOLID (NO. 10 AND SMALLER) OR STRANDED (NO. 8 AND LARGER). GENERAL USE CABLING SHALL BE NO. 12 MINIMUM. AT 120 VOLTS AND OVER 100 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM. AT 265 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 10 MINIMUM.

- C. CONTROL AND ALARM CABLING, EXCEPT AS NOTED, SHALL BE NO. 14 MINIMUM. AT 120 VOLTS AND OVER 200 FT CIRCUIT LENGTH PROVIDE NO. 12 MINIMUM. OTHER VOLTAGES AND PHASES: ADJUST CABLE SIZING AS REQUIRED TO MAINTAIN VOLTAGE DROP. INCREASE RACEWAY SIZES FOR LARGER WIRE AS REQUIRED.

- D. INSULATION SHALL BE RUBBER AND THERMOPLASTIC MEETING ASTM AND PCEA STANDARDS. TYPE THW OR THHW SHALL BE UTILIZED FOR FEEDERS AND BRANCH CIRCUITS EXCEPT AS NOTED. TYPE SFF-2 SHALL BE UTILIZED FOR BRANCH CIRCUITS LOCATED IN WIRING CHANNELS OF CONTINUOUS FLUORESCENT FIXTURES AND IN AMBIENT TEMPERATURES OVER 90 DEG C. FOR UNGROUNDED ISOLATED BRANCH CIRCUITS PROVIDE CROSS-LINKED POLYETHYLENE INSULATION (TYPE XHHW).

- E. ARMORED CABLE (BX) SHALL BE UTILIZED FOR BRANCH CIRCUITS IN DRY HOLLOW LOCATIONS, HUNG CEILINGS, AND BLOCK WALLS. WHEN USED IN LIEU OF WIRING IN CONDUIT, STATE IN PROPOSAL THAT PRICE IS BASED UPON THE USE OF HOSPITAL GRADE "BX".

- F. COLOR CODING SHALL BE AS FOLLOWS:

120/208 VOLT SYSTEM:	277/480 VOLT SYSTEM:
BLACK FOR A PHASE	BROWN FOR A PHASE
RED FOR B PHASE	ORANGE FOR C PHASE
BLUE FOR C PHASE	YELLOW FOR C PHASE

- 1) NEUTRAL WIRE SHALL UTILIZE WHITE OUTER COVERING THROUGHOUT. EQUIPMENT GROUND WIRE SHALL UTILIZE GREEN OUTER COVERING THROUGHOUT.

- G. WHERE COLOR-CODED CABLE IS NOT AVAILABLE, CERTIFY IN WRITING AND REQUEST PERMISSION TO OVERLAP CONDUCTORS WITH 6 IN. OF COLOR TAPING IN ACCESSIBLE LOCATIONS.

- H. TERMINATIONS, SPLICES AND TAPS UNDER 600 VOLTS: COPPER CONDUCTORS NO. 10 AND SMALLER SHALL UTILIZE COMPRESSION-TYPE OF TWIST-ON SPRING-LOADED CONNECTORS AND CLEAR NYLON-INSULATED COVERING. COPPER CONDUCTORS NO. 8 AND LARGER SHALL UTILIZE MECHANICAL BOLTED PRESSURE OR HYDRAULIC COMPRESSION TYPE USING MANUFACTURER'S RECOMMENDED TOOLING. CABLE LUGS AND CONNECTORS SHALL UTILIZE COMPRESSION TYPE OF SAME METAL AS CONDUCTOR. PROVIDE TO MATCH CABLE, WITH MARKING INDICATING SIZE AND TYPE. COPPER LUG CONNECTIONS TO BUS BARS: USE ANTISEIZE COMPOUND ON TANG.

- I. NOT MORE THAN 3 LIGHTING OR CONVENIENCE OUTLET CIRCUITS SHALL BE INSTALLED IN ONE CONDUIT UNLESS OTHERWISE INDICATED. PULL NO THERMOPLASTIC WIRES AT TEMPERATURES LOWER THAN 32 DEG F. PROVIDE SEPARATE RACEWAYS FOR CONDUCTORS OF 120/208 AND 265/480 VOLT SYSTEMS, EXCEPT 480 VOLT MOTOR BRANCH CIRCUIT WIRING AND RELATED 120 VOLT CONTROL WIRING. THERMOPLASTIC WIRES SHALL NOT BE INSTALLED IN COMPUTER AREA RAISED FLOORS.

- J. LEAVE WIRES WITH SUFFICIENT SLACK TO PERMIT MAKING FINAL CONNECTIONS.

- K. PERFORM CONTINUITY AND INSULATION TESTS. MEGGER TEST 100 PERCENT OF FEEDERS, 10 PERCENT OF BRANCH CIRCUITS AND ALL MOTOR BRANCH CIRCUITS OVER 25 HP.

PERFORM TESTS PRIOR TO CONNECTING EQUIPMENT AND IN PRESENCE OF AUTHORIZED REPRESENTATIVES. SUBMIT WRITTEN REPORT OF RESULTS. CORRECT OR REPLACE CABLE TESTING BELOW MANUFACTURER'S STANDARDS.

11. WIRING DEVICES:

- A. WIRING DEVICES SHALL BE SPECIFICATION GRADE UNLESS OTHERWISE SPECIFIED. ALL DEVICES SHALL BE FLUSH MOUNTED, UNLESS OTHERWISE NOTED. PROVIDE COMPLETE MATERIAL AND ACCESSORIES AS NOTED.

- B. LOCAL WALL SWITCHES SHALL BE ROCKER TYPE, QUIET OPERATING, RATED 20 AMP, 120/277 VOLT, AC, SIMILAR TO LEVITON DECORA SERIES A5621 (SINGLE POLE), A5623 (3-WAY) AND A5624 (4-WAY).

- C. STRAIGHT BLADE RECEPTACLES SHALL BE RESIDENTIAL GRADE DUPLEX CONVENIENCE 125 VOLTS, 2 POLE, 3 WIRE, U GROUND SLOT, DECORA SERIES BY LEVITON. GROUNDED, EXCEPT AS NOTED.

- 1) SINGLE GANG, RECESSED, DUPLEX RECEPTACLE: TAMPER RESISTANT, 2-POLE, 3-WIRE GROUNDING, 15A, 125V, NEMA 5-20R, LEVITON 689 SERIES (COLOR AS SPECIFIED BY ARCHITECT).

- 2) USB CHARGER/ DUPLEX TAMPER-RESISTANT RECEPTACLE: TAMPER RESISTANT.

- D. DEVICE PLATES: SEE ARCHITECT FOR TYPE. FOR RECEPTACLES WITH OTHER THAN 120 VOLT, INSCRIBED VOLTAGE AVAILABLE.

- E. COLORS: COORDINATE COLORS WITH ARCHITECT.

- F. MOUNTING ORIENTATION OF RECEPTACLES (HORIZONTAL OR VERTICAL): COORDINATE WITH ARCHITECT.

12. LIGHTING FIXTURES:

- A. FIXTURES TO BE AS SPECIFIED BY ARCHITECT AND SHALL BE COMPLETELY FACTORY ASSEMBLED, WIRED AND EQUIPPED WITH ALL NECESSARY SOCKETS, BALLASTS, SUPPORTING HARDWARE AND ACCESSORIES. REFER TO DRAWINGS FOR INDIVIDUAL FIXTURE DESCRIPTIONS.

- B. FIXTURE CATALOG NUMBERS USED TO ILLUSTRATE EQUIPMENT TYPE DO NOT NECESSARILY DENOTE REQUIRED MOUNTING EQUIPMENT OR ACCESSORIES. PROVIDE ACCESSORIES TO SUIT.

- C. BALLAST: CLASS P, HIGH POWER FACTOR, LOWEST AVAILABLE NEMA RATED NOISE LEVEL, E11 AND C8M APPROVED. ENERGY SAVING TYPE. TRIGGER START FOR 24-INCH LAMPS AND RAPID START FOR 48-INCH. TWO LAMP BALLASTS; NO THREE LAMP BALLASTS. BALLASTS SHALL BE ADVANCE MAGNETEK, UNIVERSAL OR EQUAL.

- D. LED DRIVERS SHALL BE ELECTRONIC TYPE, LABELED AS COMPLIANT WITH RADIO FREQUENCY INTERFERENCE (RFI) REQUIREMENTS OF FCC TITLE 47, PART 15 AND COMPLY WITH NEMA SSL 1 "ELECTRONIC DRIVERS SHALL HAVE A SOUND RATING OF "A", HAVE A MINIMUM EFFICIENCY OF 85% AND BE RATED FOR A THD OF LESS THAN 20% AT ALL INPUT VOLTAGES.

- E. DIMMABLE LED DRIVERS SHALL BE CAPABLE OF DIMMING WITHOUT LED STROBING OR FLICKER ACROSS THEIR FULL DIMMING RANGE. PROVIDE TYPE OF LED DRIVER AS PER LIGHTING FIXTURE SCHEDULE. DIMMABLE LED DRIVERS SHALL BE 0-10V WHERE NOT INDICATED.

- F. CONTINUOUS ROW, TWO LAMP STRIP FIXTURES SHALL BE STAGGERED TYPE.

- G. EXIT SIGNS SHALL BE PRECISION DIE-CAST ALUMINUM HOUSING WITH LASER-FORMED ACRYLIC LEGEND. EXIT SIGNS SHALL COMPLY WITH UL 924 AND BE LOCAL AHJ APPROVED. AC POWERED WITH PREMIUM LONG-LIFE NICKEL CADMIUM BATTERY WITH STANDARD UL LISTED 3-HOUR RUN TIME OR AS REQUIRED. PROVIDE WITH INTEGRAL AUTOMATIC CHARGER IN A SELF CONTAINED POWER PACK. LED INDICATOR WITH PUSH TO TEST SWITCH.

13. TELEPHONE CONDUIT SYSTEM:

- A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

- B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF TELEPHONE COMPANY.

- C. OUTLETS SHALL BE:

- 1) WALL: 4 IN. SQUARE WITH BUSHED COVER PLATE.

- D. PROVIDE FISHWIRES, IN RACEWAYS OVER 10 FT LONG.

- E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM OUTLET BOX TO BUSHED END THRU WALL 6" BELOW THE PLASTER CEILING.

- F. FACE RACEWAYS IN ROOMS SHALL HUBBELL HBL500, HBL750 OR HBL2000 SERIES OR AS ACCEPTABLE.

14. PANELBOARDS:

- A. PANELBOARDS SHALL BE OF THE DEAD FRONT TYPE MANUFACTURED IN CODE GAUGE AND SIZE BOXES FOR MOUNTING AS INDICATED ON PLANS COMPLETE WITH TRIM, DOORS AND LOCKS. ALL LOCKS SHALL BE KEYS ALIKE.

- B. CIRCUIT BREAKERS SHALL BE OF THE BOLT-ON THERMAL MAGNETIC MOLDED CASE TYPE, AND SHALL HAVE THE TRIP RATINGS AND NUMBER OF POLES SHOWN IN SCHEDULES ON THE CONTRACT DRAWINGS. FOR BLANK (SPACE) COMPARTMENTS, PROVIDE FULL RATED BUS. MINIMUM GUTTER SPACES SHALL BE 5-3/4" SIDES, TOP AND BOTTOM. INCREASE FOR THROUGH FEEDERS. PROVIDE 25% COPPER GROUND BUS AND 100% COPPER NEUTRAL BUS AND INCREASE NEUTRAL BUS INDICATED.

- C. LOCKING TABS SHALL BE PROVIDED ON ALL CIRCUIT BREAKERS SERVING EMERGENCY LIGHTING, FIRE ALARM SYSTEM, SECURITY SYSTEMS AND OTHER EMERGENCY OR CRITICAL EQUIPMENT AND AS NOTED ON THE CONTRACT DRAWINGS. A TOTAL OF 5 SPARE LOCKING TABS SHALL BE FURNISHED TO THE OWNER.

- D. BUSES SHALL BE HARD DRAWN COPPER OF 98 PERCENT CONDUCTIVITY AND SHALL HAVE CROSS SECTIONAL AREAS LARGE ENOUGH TO LIMIT THE TEMPERATURE RISE, WHEN CARRYING FULL LOAD, TO 35 DEGREES C. ABOVE AN AMBIENT INSIDE THE ENCLOSURE OF 55 DEGREES C. AS DEFINED IN IEEE STANDARD RULES. MAIN BUS CAPACITY SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS.

- E. ENCLOSURES SHALL BE SURFACE OR FLUSH AS INDICATED. TRIMS SHALL BE SECURED TO PANEL WITH MACHINE SCREWS. COVERS SHALL BE HINGED DOOR-IN-DOOR CONSTRUCTION WITH CYLINDER LOCKS AND CATCHES. LOCKS MUST BE COMPATIBLE WITH BUILDING STANDARD KEY SYSTEM AND WHEN NONE EXISTS, THEY SHALL BE SIMILAR TO A YALE NO. 911 KEY.

- F. DISTRIBUTION AND SUB-DISTRIBUTION PANELBOARD SHALL BE A MINIMUM OF 30" WIDE AND 10" DEEP.

- G. ALL STANDARD PANELBOARDS SHALL BE A MINIMUM OF 20" WIDE AND 5 3/4" DEEP.

- H. FURNISH ALL PANELBOARDS WITH FEED-THRU LUGS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.

- I. ALL NEW PANELBOARDS SHALL BE PROVIDED WITH AN ENGRAVED WHITE CORE LAMACOID NAMEPLATE, WITH 3/4 IN. WHITE LETTERING ON A BLACK BACKGROUND, WITH DESIGNATION LISTED (PANELBOARD NAME), FASTENED WITH EPOXY CEMENT OR OVAL HEAD CHROME PLATED MACHINE SCREWS.

- J. THE CIRCUIT DIRECTORY SHALL BE TYPEWRITTEN AND PROVIDED INSIDE EACH PANEL DOOR TO INDICATE EQUIPMENT AND/OR AREA SERVED. DIRECTORY HOLDER SHALL BE METAL FRAME WITH CLEAR PLASTIC, TRANSPARENT COVER. THE TYPEWRITTEN LIST INDICATING CIRCUIT NUMBERS, OUTLETS SUPPLIED AND THEIR LOCATIONS SHALL BE PROVIDED.

- K. TIE-BARS SHALL NOT BE USED TO CREATE MULTI-POLE CIRCUITS. MAXIMUM 42 CIRCUITS ALLOWED.

- L. ONLY ONE WIRE SHALL BE INSTALLED UNDER EACH CIRCUIT BREAKER LUG.

- M. SHORT CIRCUIT RATING OF PANELBOARDS SHALL NOT BE LESS THAN AS INDICATED ON THE CONTRACT DRAWINGS OR SPECIFIED HEREIN. WHERE NOT INDICATED OR SPECIFIED THE MINIMUM SHORT CIRCUIT RATING SHALL BE EQUAL TO THE INTERRUPTING CAPACITY OF THE LOWEST RATED CIRCUIT BREAKER IN THE PANELBOARD, BUT IN NO CASE LESS THAN 10,000 AMPERES R.M.S. SYMMETRICAL FOR 208Y/120 VOLT SYSTEM AND 14,000 AMPERES R.M.S. SYMMETRICAL FOR 480Y/277 VOLT SYSTEM. SERIES RATED PANELBOARDS SHALL BE USED TO ACHIEVE REQUIRED SHORT CIRCUIT RATINGS.

- N. FOR ALL EXISTING PANELBOARDS, CONTRACTOR SHALL PROVIDE NEW CIRCUIT BREAKERS TO REPLACE EXISTING AS REQUIRED AS INDICATED ON DRAWINGS.

15. INTERCOM CONDUIT SYSTEM:

- A. PROVIDE COMPLETE SYSTEM OF: RACEWAYS AND ACCESSORIES, OUTLET BOXES, SLEEVES AND FISHWIRES.

- B. EQUIPMENT SHALL CONFORM TO REQUIREMENTS OF INTERCOM MANUFACTURER.

- C. OUTLETS SHALL BE:

- 1) WALL: 4 IN. SQUARE WITH SINGLE GANG COVER PLATE.

- D. PROVIDE FISH WIRES, IN RACEWAYS OVER 10 FT LONG.

- E. CONDUIT SHALL BE 3/4 IN. MINIMUM. FURNISH EMPTY CONDUIT FROM EACH APARTMENT TO MAIN INTERCOM CONTROLLER AT ENTRANCE.



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
-----	------	-------------	----

PROJECT NAME:

ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**ELECTRICAL
SPECIFICATIONS
(2 OF 2)**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

E-0.3

SHEET 3 OF 8

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

LIGHTING PLAN GENERAL NOTES:

- ELECTRICAL CONTRACTOR SHALL WIRE ALL EMERGENCY EGRESS FIXTURES AND EXIT SIGNS UN-SWITCHED TO THE LIGHTING CIRCUIT IN THE ROOM WHERE THE EGRESS FIXTURE IS LOCATED. CONTRACTOR IS ADVISED THAT ADJUSTMENTS TO EMERGENCY AND EXIT LIGHT FIXTURE LOCATIONS AND QUANTITIES MAY BE REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ) UPON FINAL INSPECTION.
- ALL EXTERIOR LIGHTS AND SIGNS SHALL BE CONTROLLED VIA PHOTOCELL AND/OR TIME CLOCK. THE ELECTRICAL CONTRACTOR (E.C.) SHALL PROVIDE ALL LIGHTING CONTROLS IN COMPLIANCE WITH THE 2021 INTERNATIONAL ENERGY CONSERVATION CODE AND THE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).
- REFER TO DWG. E-0.1 FOR ELECTRICAL GENERAL NOTES, SYMBOL LIST, ABBREVIATIONS AND E-0.2 AND E-0.3 FOR ADDITIONAL SPECIFICATIONS.
- FINAL CONDUIT/CABLE ROUTING SHALL BE DETERMINED IN-FIELD, AND PRIOR TO THE COMMENCEMENT OF WORK, COORDINATED WITH OTHER TRADE CONTRACTORS AND THE TENANT.
- ALL LIGHT FIXTURES SHALL MEET THE SEISMIC REQUIREMENTS OF ASCE 7.
- ALL LAY-IN LIGHT FIXTURES (RECESSED IN CEILING) SHALL HAVE 12 GAUGE WIRE HANGERS PLACED ON TWO DIAGONAL CORNERS ATTACHED TO THE BUILDING STRUCTURE OR HURRICANE CLIPS FOR SEISMIC RESTRAINT.
- ALL SWITCHES QUANTITIES, LOCATION AND MOUNTING DETAILS SHALL BE COORDINATED WITH ARCHITECT/OWNER IN THE FIELD.
- COORDINATE WITH OWNER/ARCHITECT FOR FINISH COLOR OF SWITCHES AND COVER PLATES PRIOR TO INSTALLING.
- COORDINATE INSTALLATION OF LIGHT FIXTURES WITH ALL MECHANICAL DUCT WORK AND ACCESSORIES. ELECTRICAL CONTRACTOR TO ENSURE NO CONFLICTS PRIOR TO INSTALLATION OF LIGHT FIXTURES. COORDINATE WITH MECHANICAL CONTRACTOR AND OWNER PRIOR TO INSTALLING.

LIGHTING PLAN KEYED NOTES:

- WIRE ALL EXIT LIGHT TO THE DEDICATED CIRCUIT(B-12) WITHOUT ANY CONTROLS & SWITCHING FOR CONTINUOUS OPERATION.
- E.C. SHALL CO-ORDINATE LOCATION & MAKE / MODEL OF TIME CLOCK & LIGHTING CONTRACTORS WITH ARCHITECT / OWNER IN FIELD. SEE DETAIL-2 THIS SHEET FOR ADDITIONAL INFORMATION.
- PROVIDED LIGHTING CONTROL SWITCH BANK. SEE SWITCH BANK DETAIL BELOW. ELECTRICAL CONTRACTOR TO VERIFY SWITCH BANK LOCATION WITH ARCHITECT/OWNER AND ALSO CHECK IF IT FIT WITHIN SPECIFIED AREA AND STACK MULTIPLE SWITCH BANKS AT THIS LOCATION IF A SINGLE SWITCH BANK WILL NOT FIT WITHIN THE SPECIFIED REGION. E.C. SHALL PROVIDE LABELS FOR THE SWITCHES CONTROLLING ZONES & EQUIPMENTS.
- E.C. TO COORDINATE EXACT MAKE/MODEL OF WALL/CEILING MOUNTED OCCUPANCY SENSOR WITH ARCHITECT/OWNER IN COORDINATION WITH EQUIPMENT MANUFACTURER IN FIELD. BASE BID ACCORDINGLY.
- EXTERIOR SIGNS CONTROLLED VIA PHOTOCELL. E.C. SHALL COORDINATE EXACT MAKE/MODEL OF PHOTOCELL WITH EQUIPMENT MANUFACTURER. BASE BID ACCORDINGLY.
- LIGHT IN THIS AREA SHALL NOT BE CONTROLLED BY ANY AUTOMATIC MEANS AND SHALL BE COMPLIED AS PER NEC 110.26(D).
- SWITCH FOR THROWING LINE PROJECTORS. E.C SHALL COORDINATE EXACT LOCATION, RATING AND MOUNTING DETAILS WITH ARCHITECT/OWNER. BASE BID ACCORDINGLY.
- PROVIDE EMERGENCY EGRESS LIGHTING OUTSIDE OF EACH EXIT DOOR IN ACCORDANCE WITH LMC 6-282, ART. 700.16. FOR GLASS DOORS, LIGHT MAY BE LOCATED INSIDE AND SHALL SHINE THROUGH THE GLASS TO ILLUMINATE THE EXIT PATH. LIGHTING SHALL OPERATE DURING EMERGENCY POWER CONDITIONS. VERIFY FIELD CONDITIONS PRIOR TO INSTALLATION.

LIGHTING FIXTURES SCHEDULE:

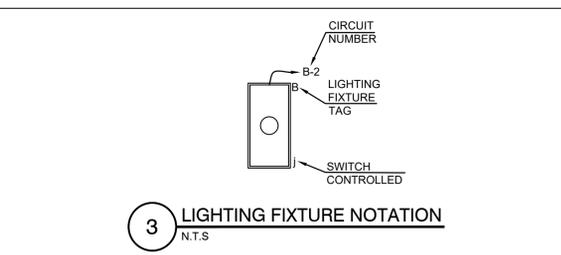
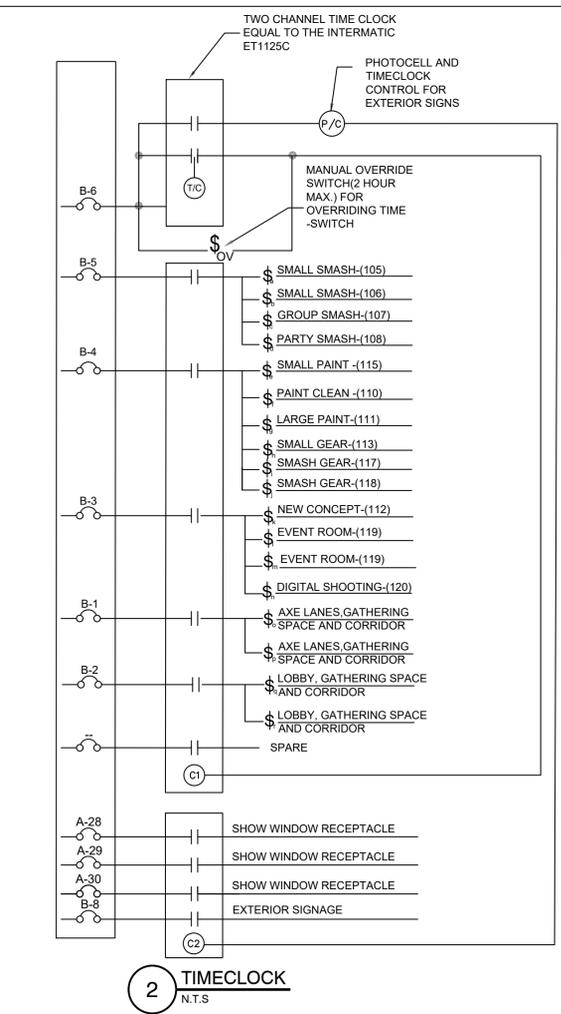
FIXTURE TAG	DESCRIPTION	LAMP	MANUFACTURER PART #	KELVIN	VOLTAGE	WATTAGE	MOUNTING
B	2" X 4" RECESSED SURFACE MOUNTED LED RECESSED PANELS SETTING IN 4" HOLES (SAME AS FIXTURE ABOVE BUT WITH BATTERY BACKUP (EMERGENCY LIGHT))	LED	CURRENT LIGHTING CATALOG W8724-A-LSCS-ED0	3500/4000/5000	120	45	RECESSED MOUNTED
IR	RECESSED SURFACE MOUNTED LED RECESSED PANELS SETTING IN 4" HOLES (SAME AS FIXTURE ABOVE BUT WITH BATTERY BACKUP (EMERGENCY LIGHT))	LED	CURRENT LIGHTING CATALOG W8724-A-LSCS-ED0	3500/4000/5000	120	45	RECESSED MOUNTED
IR	RECESSED SURFACE MOUNTED LED RECESSED PANELS SETTING IN 4" HOLES (SAME AS FIXTURE ABOVE BUT WITH BATTERY BACKUP (EMERGENCY LIGHT))	LED	COMPASS LIGHTING CATALOG WCR08	120	3		SURFACE MOUNT PER MANUFACTURER
EX1	THERMOPLASTIC LED EXIT SIGN COMBIO WITH HEADS, AND HIGH OUTPUT BATTERY TO FEED EXIT DISCHARGE LIGHT 1" ABOVE	LED	COMPASS LIGHTING CATALOG WCR08		120	4.06	SURFACE MOUNT PER MANUFACTURER
EX2	THERMOPLASTIC LED EXIT SIGN WITH BATTERY BACKUP	LED	COMPASS LIGHTING CATALOG KCERS		120	3.5	UNIVERSAL MOUNT TO WALL OR CEILING
EX3	DUAL-SIDED THERMOPLASTIC LED EXIT SIGN WITH BATTERY BACKUP	LED	COMPASS LIGHTING CATALOG KCERS		120	3.5	UNIVERSAL MOUNT TO WALL OR CEILING

NOTES:

- COORDINATE LED COLOR TEMPERATURE WITH ARCHITECT/OWNER PRIOR TO PURCHASING AND INSTALLING.
- COORDINATE FINISHES WITH ARCHITECT/OWNER PRIOR TO PURCHASING AND INSTALLING.
- COORDINATE MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO PURCHASING AND INSTALLING.
- LIGHTING FIXTURES MANUFACTURER SHALL BE PROVIDED AS SPECIFIED, UNLESS PRE-APPROVED DURING BIDDING BY THE ARCHITECT/ENGINEER.
- BATTERY PACKS FOR ALL EXIT AND EMERGENCY LIGHT FIXTURES SHALL BE CAPABLE OF PROVIDING EMERGENCY POWER TO THE FIXTURES FOR A MINIMUM OF 90 MINUTES.
- ALL LIGHT FIXTURES MAY NOT BE USED.

OCCUPANCY SENSOR NOTES:

- ALL SENSOR LOCATIONS ARE APPROXIMATE. REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS PRIOR TO INSTALLATION.
- ULTRASONIC CEILING MOUNTED SENSORS REQUIRE THAT THEY WILL BE NO CLOSER THAN 6 FEET TO AIR SUPPLY/RETURN REGISTERS.
- ONE POWER PACK IS REQUIRED FOR EACH CIRCUIT CONTROLLED.



- SWITCH FOR BLACK LIGHTS
- SWITCH FOR FANS
- SWITCH FOR AXE THROWING PROJECTORS



1 LIGHTING FLOOR PLAN
SCALE: 3/16"=1'-0"

GP N

STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com

PROFESSIONAL ENGINEER
LICENSED
MICHAEL D. TOBIAS
062.071542
OF ILLINOIS

08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:
ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

LIGHTING FLOOR PLAN

PROJECT NUMBER 25-088

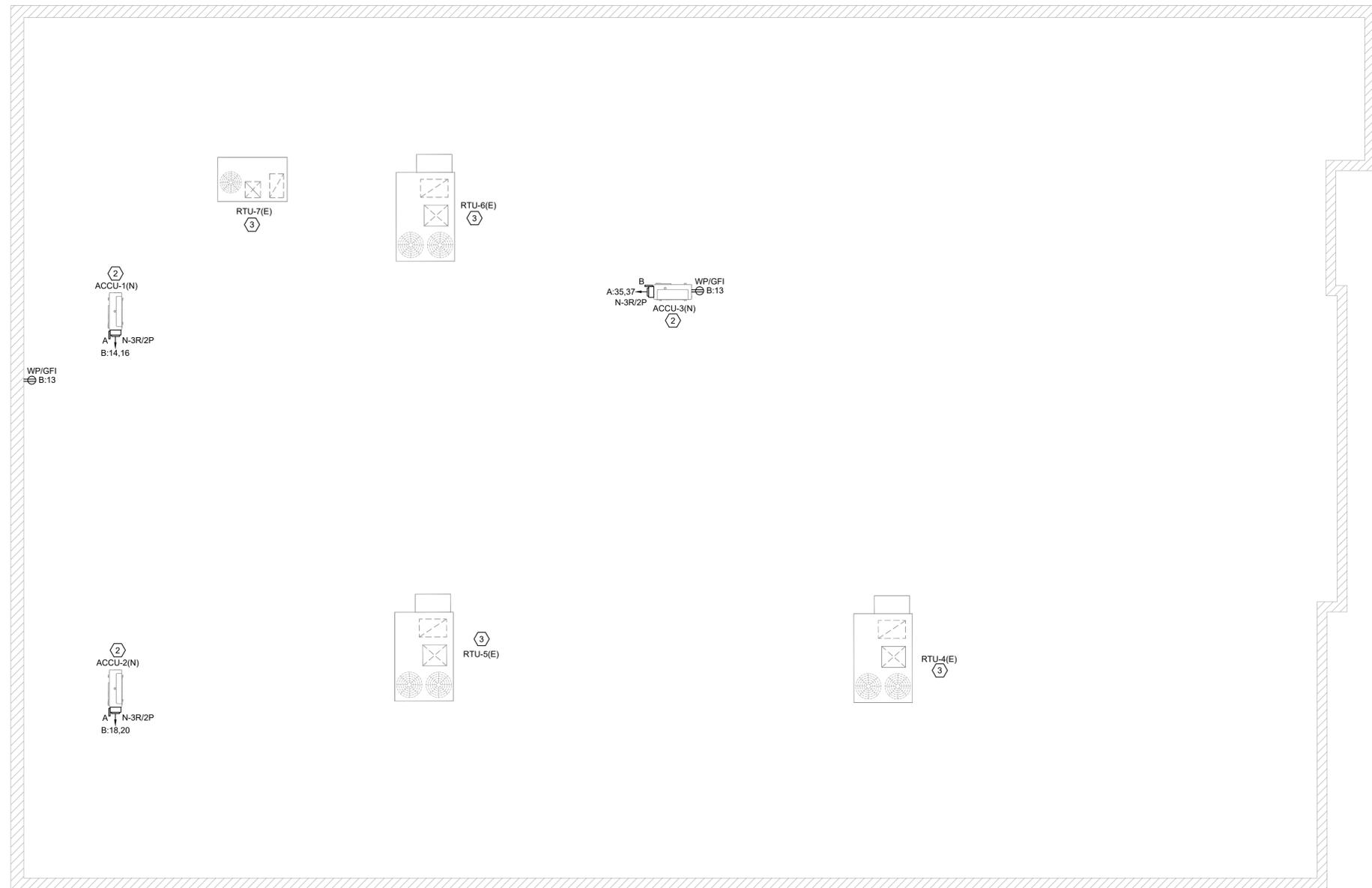
DATE 07-16-2025

SHEET NO.

E-1.0

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS.

- ROOF POWER PLAN KEYED NOTES:**
- EXISTING DISCONNECT & CIRCUIT OF ALL EXISTING RTUs SHALL REMAIN AS IT IS. E.C. SHALL VERIFY EXACT LOCATION AND OPERABLE CONDITION OF EXISTING DISCONNECT & EXISTING CIRCUIT INCLUDING WIRE/CONDUIT/ BREAKER IN FIELD FOR EXISTING MECHANICAL EQUIPMENTS. REPLACE WITH NEW IF FOUND INOPERABLE. BASE BID ACCORDINGLY.
 - E.C SHALL COORDINATE THE POWER REQUIREMENT FOR NEW MECHANICAL UNIT WITH MECHANICAL CONTRACTOR AND EQUIPMENT MANUFACTURER PRIOR TO ROUGH-IN AND PROVIDE AS REQUIRED. COORDINATE LOCATION OF POWER SUPPLY WITH MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.



1 ROOF POWER PLAN
SCALE: 3/16"=1'-0"

GP | N

STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

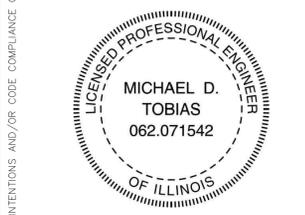
CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:

ISMASH
INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

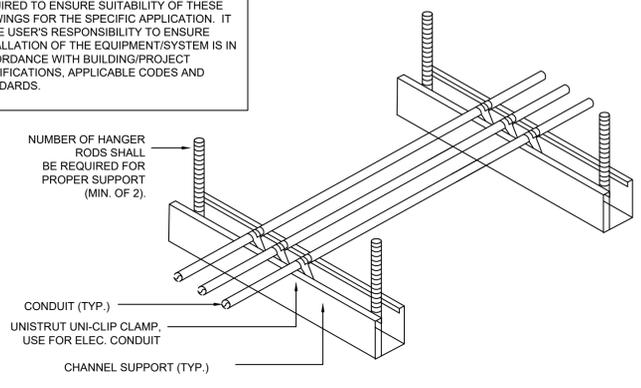
ROOF POWER PLAN

PROJECT NUMBER 25-088
DATE 07-16-2025
SHEET NO.

E-2.1

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

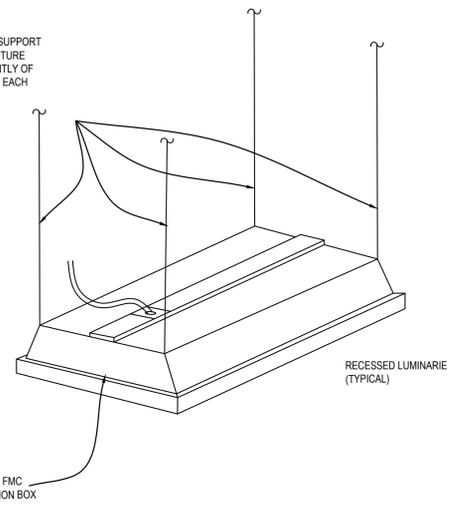
NOTE:
THIS INFORMATION MAY NOT CONTAIN ALL
DETAILS REQUIRED FOR CONSTRUCTION.
APPROPRIATE MODIFICATION MAY BE
REQUIRED TO ENSURE SUITABILITY OF THESE
DRAWINGS FOR THE SPECIFIC APPLICATION. IT
IS THE USER'S RESPONSIBILITY TO ENSURE
INSTALLATION OF THE EQUIPMENT/SYSTEM IS IN
ACCORDANCE WITH BUILDING/PROJECT
SPECIFICATIONS, APPLICABLE CODES AND
STANDARDS.



- NOTES:
1. ALL CONDUIT MAY BE COMBINED ON SAME SUPPORT CHANNEL WHERE PRACTICAL.
 2. SUPPORT CHANNEL LENGTH SHALL NOT BE DETERMINED UNTIL ALL PIPING, CONDUIT, ETC. TO BE SUPPORTED IS COORDINATED.
 3. SUPPORT CHANNEL SPACING SHALL BE NO MORE THAN 10'-0".
 4. UNISTRUT AND CONDUIT INSTALLATION MAY BE REVERSED.

1 CONDUIT SUPPORT DETAIL
NTS

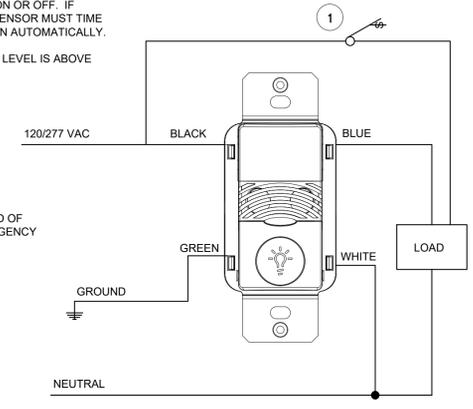
PROVIDE 12 GAUGE GALVANIZED SUPPORT WIRE FROM LUMINAIRE TO STRUCTURE ABOVE TO SUPPORT INDEPENDENTLY OF ABOVE CEILING SYSTEM (TYPICAL EACH CORNER)



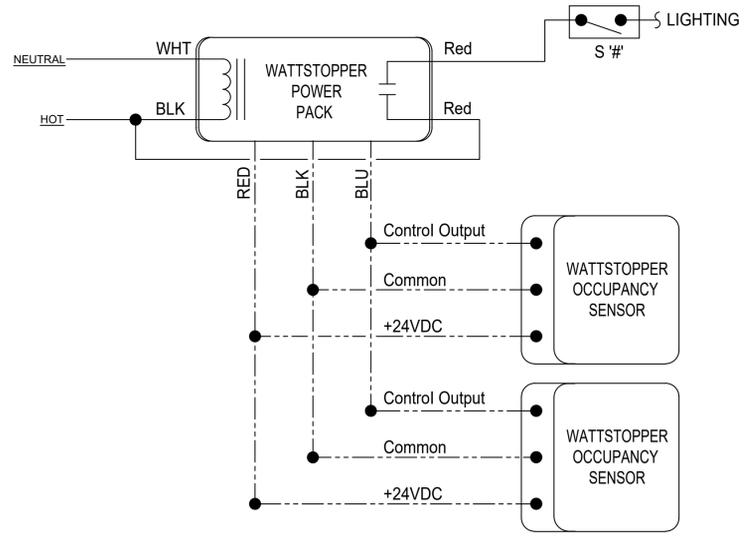
2 LIGHTING MOUNTING DETAIL
NTS

- MANUAL MODE OPERATION:
1. PUSHBUTTON PRESS IS REQUIRED TO TURN LOAD ON.
 2. LOAD TURNS OFF WHEN SENSOR TIMES OUT OR BY PRESSING PUSH BUTTON.
 3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.
- AUTOMATIC MODE OPERATION:
1. WHEN SENSOR ACTIVATES LOAD TURNS ON.
 2. PUSHBUTTON CAN BE USED TO TURN LOAD ON OR OFF. IF PUSHBUTTON IS USED TO TURN LOAD OFF, SENSOR MUST TIME OUT FIRST, BEFORE LOAD CAN TURN BACK ON AUTOMATICALLY.
 3. IF DAYLIGHT SENSOR IS ENABLED AND LIGHT LEVEL IS ABOVE SETPOINT, LOAD WILL NOT TURN ON.

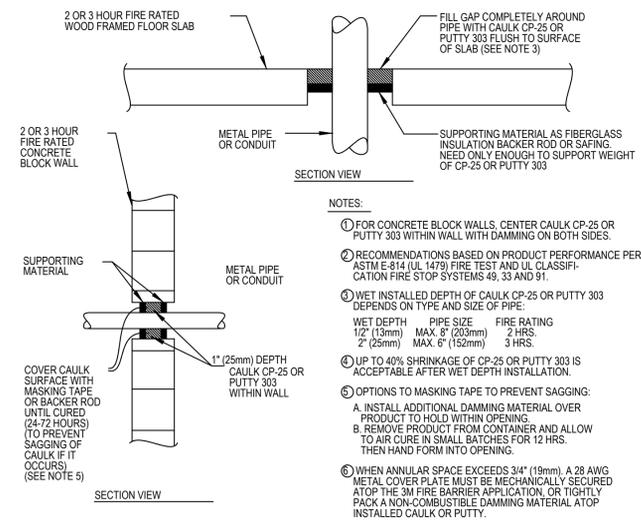
- 1 PROVIDE SENSING CONDUCTOR TAPPED AHEAD OF ANY SWITCHES WHERE SWITCH SERVES EMERGENCY FIXTURES.
- ON (UP) = MANUAL ON
OFF (DOWN) = AUTO ON



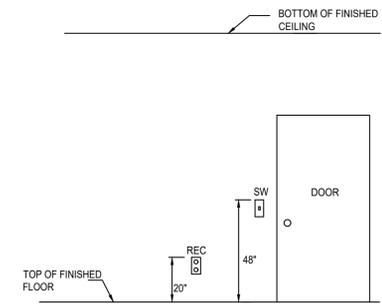
3 WALL SWITCH SENSOR
NTS



4 OCCUPANCY SENSOR DETAIL
NTS



5 FIRE STOP DETAILS
NTS



6 TYPICAL DEVICE MOUNTING HEIGHT
NTS



STATE OF ILLINOIS LIC. # : 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

ELECTRICAL
DETAILS

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

E-3.0

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

PANEL: 2 DESIGNATED AS "A"(EXISTING)													MOUNTING: RECESSED	
208Y/120		VOLTS, 3 PHASE,			4 WIRE			PANEL LOCATION: STORAGE ROOM(109)						
MAIN CB: 200A		MLO: NA			BUS: EXISTING MIN.			FED FROM: EXISTING SERVICE						
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1			H	4.80		9.61				4.80	H			2
3	3P-50	AC(EX)	H	4.80	EXISTING		9.61			4.80	H	AC(EX)	3P-50	4
5			H	4.80				9.61		4.80	H			6
7	20	RECEPTACLES-OFFICE	R	0.36	2#12, #12G, 3/4"C	0.90			2#12, #12G, 3/4"C	0.54	R	RECEPTACLES-CORRIDOR_119	20	8
9	20	RECEPTACLES-STORAGE_109	R	0.54	2#12, #12G, 3/4"C		1.26		2#12, #12G, 3/4"C	0.72	R	RECEPTACLES-CORRIDOR_119 & PAINT CLEAN	20	10
11	20	RECEPTACLES-RESTROOM_114,116 & 122	R	0.54	2#12, #12G, 3/4"C			1.26	2#12, #12G, 3/4"C	0.72	R	RECEPTACLES-LARGE PAINT_111	20	12
13	20	RECEPTACLES-SMALL PAINT_115	R	0.54	2#12, #12G, 3/4"C	0.90			2#12, #12G, 3/4"C	0.36	R	RECEPTACLES-NEW CONCEPT_112	20	14
15	20	RECEPTACLES-STORAGE_121 & EVENT ROOM_119	R	0.54	2#12, #12G, 3/4"C		0.90		2#12, #12G, 3/4"C	0.54	R	RECEPTACLES-SMALL GEAR_113, SMASH GEAR_117,118	20	16
17	20	RECEPTACLES-LOBBY	R	0.36	2#12, #12G, 3/4"C			0.90	2#12, #12G, 3/4"C	0.54	R	RECEPTACLES-CORRIDOR_119	20	18
19	20	RECEPTACLES-DIGITAL SHOOTING	R	0.18	2#12, #12G, 3/4"C	0.43			2#12, #12G, 3/4"C	0.25	R	FAN RECEPTACLES-SMALL SMASH-(105&106), PARTY SMASH-(108), GROUP SMASH-(107)	20	20
21	20	RECEPTACLES-GROUP SMASH_107 & PARTY SMASH_106	R	0.36	2#12, #12G, 3/4"C		0.72		2#12, #12G, 3/4"C	0.36	R	RECEPTACLES-SMALL SMASH_105 & 106	20	22
23	20	RECEPTACLES-TVS	R	1.08	2#12, #12G, 3/4"C			1.80	2#12, #12G, 3/4"C	0.72	R	RECEPTACLES-RECEPTION DESK	20	24
25	20	RECEPTACLES-TVS	R	1.08	2#12, #12G, 3/4"C	1.44			2#12, #12G, 3/4"C	0.36	R	RECEPTACLES-AXE LANES	20	26
27	20	RECEPTACLES-AXE LANES	R	0.36	2#12, #12G, 3/4"C		0.96		2#12, #12G, 3/4"C	0.60	L	SHOW WINDOW RECEPTACLE	20	28
29	20	SHOW WINDOW RECEPTACLE	L	0.60	2#12, #12G, 3/4"C			1.20	2#12, #12G, 3/4"C	0.60	L	SHOW WINDOW RECEPTACLE	20	30
31	20	THROWING LANE PROJECTORS	E	0.78	2#12, #12G, 3/4"C	1.56			2#12, #12G, 3/4"C	0.78	E	THROWING LANE COMPUTERS	20	32
33	20	RECEPTACLE-OFFICE	R	0.18	2#12, #12G, 3/4"C		0.18					SPARE	20	34
35			H	3.33				3.33				SPARE	20	36
37	2P-40	ACCU-3(N)	H	3.33	2#8, #10G, 3/4"C							SPARE	20	38
39		SPACE						0.00				SPARE	20	40
41		SPACE						0.00				SPACE	20	42
3P-125A				O	5.63			5.63						
EXISTING PANEL B				O	3.19	EXISTING			3.19					
				O	2.96				2.96					
TOTAL CONNECTED LOAD (KVA)						23.79	16.82	21.05						

PANEL: 1 DESIGNATED AS "B"(EXISTING)													MOUNTING: RECESSED	
208Y/120		VOLTS, 3 PHASE,			4 WIRE			PANEL LOCATION: STORAGE ROOM(109)						
MAIN CB: NA		MLO: 150A			BUS: EXISTING MIN.			FED FROM: EXISTING PANEL A						
CKT NO.	TRIP AMPS	DESCRIPTION OF LOAD	LOAD TYPE	LOAD (KVA)	MINIMUM BRANCH CIRCUIT	PER PHASE (KVA)			MINIMUM BRANCH CIRCUIT	LOAD (KVA)	LOAD TYPE	DESCRIPTION OF LOAD	TRIP AMPS	CKT NO.
						A	B	C						
1	20	LIGHTING-GATHERING SPACE CORRIDOR	L	0.86	2#12, #12G, 3/4"C	1.49			2#12, #12G, 3/4"C	0.63	L	LIGHTING-GATHERING SPACE CORRIDOR	20	2
3	20*	LIGHTING-DIGITAL SHOOTING,EVENT ROOM,STORAGE_121 AND NEW CONCEPT	L	1.00	2#12, #12G, 3/4"C		1.90		2#12, #12G, 3/4"C	0.90	E	LIGHTING-SMASH GEAR_117,118,SMALL GEAR_113,RESTROOMS,SMALL PAINT,LARGE PAINT AND PAINT CLEAN	20	4
5	20	LIGHTING-SMALL SMASH_105,106,GROUP SMASH,PARTY SMASH,OFFICE AND STORAGE_109	L	1.30	2#12, #12G, 3/4"C			1.60	2#12, #12G, 3/4"C	0.30	O	TIME CLOCK	20	6
7	20	ELECTRIC WATER FOUNTAIN	E	0.50	2#12, #12G, 3/4"C	1.70			2#12, #12G, 3/4"C	1.20	L	EXTERIOR SIGNAGE	20*	8
9	20	RCP-REL	M	0.10	2#12, #12G, 3/4"C		0.25		2#12, #12G, 3/4"C	0.15	O	WH-REL	20*	10
11	20	EF-1(N),EF-2(N) AND EF-3(N)	M	0.12	2#12, #12G, 3/4"C		0.22		2#12, #12G, 3/4"C	0.10	L	EXIT LIGHT	20*	12
13	20	ROOF RECEPTACLE	R	0.36	2#12, #12G, 3/4"C	1.40			2#12, #12G, 3/4"C	1.04	H	ACCU-1(N)	2P-15*	14
15		SPACE					1.04			1.04	H			16
17	20	MOTORIZED DAMPER	M	0.10	2#12, #12G, 3/4"C			1.14	2#12, #12G, 3/4"C	1.04	H	ACCU-2(N)	2P-15*	18
19		SPACE					1.04			1.04	H			20
21		SPACE						0.00				SPACE		22
23		SPACE						0.00				SPACE		24
TOTAL CONNECTED LOAD (KVA)						5.63	3.19	2.96						

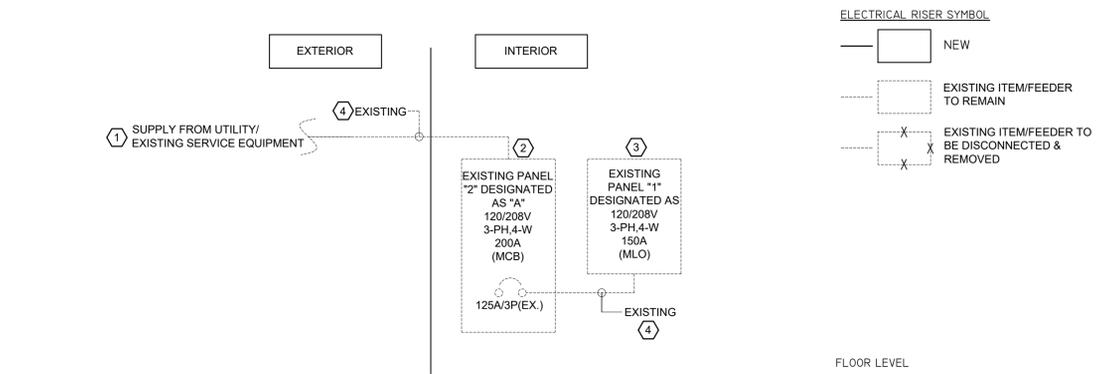
PANEL SCHEDULE GENERAL NOTES:

- E.C. SHALL COORDINATE EXACT POWER AND ELECTRICAL OUTLET/DISCONNECT REQUIREMENT FOR MECHANICAL/PLUMBING EQUIPMENT WITH EQUIPMENT MANUFACTURER IN COORDINATION WITH ARCHITECT/OWNER IN THE FIELD PRIOR TO ROUGH-IN. BASE BID ACCORDINGLY.
- CONTRACTOR SHALL COORDINATE WITH ARCHITECT/OWNER/RLV CONSULTANT FOR POWER AND ELECTRICAL REQUIREMENTS FOR THE LOW VOLTAGE AND SECURITY SYSTEM IN FIELD AND ACCORDINGLY PROVIDE THE ELECTRICAL CONNECTIONS/CIRCUITS FROM SPARE CIRCUITS FOR LOW VOLTAGE SYSTEM PER REQUIREMENTS. BASE BID ACCORDINGLY.

ELECTRICAL PANEL SCHEDULE ABBREVIATIONS:

(E) EXISTING
(N) NEW
MLO MAIN LUG ONLY
L LIGHTING
R RECEPTACLE
H HVAC
M MOTOR
E EQUIPMENT
O OTHER
* NEW BREAKER

1 ELECTRICAL PANEL SCHEDULE
NTS



RISER DIAGRAM KEYED NOTES:

- EXISTING ELECTRICAL SERVICE FROM THE UTILITY COMPANY/EXISTING SERVICE EQUIPMENT SHALL REMAIN AS IT IS. E.C. SHALL COORDINATE WITH LANDLORD/UTILITY COMPANY FOR EXACT POWER DISTRIBUTION. INFORM THE ENGINEER ON RECORD FOR ANY DISCREPANCIES PRIOR TO COMMENCING ANY WORK. PROVIDE PERMANENT ENGRAVED SIGN AT SERVICE EQUIPMENT INDICATING ALL ADDITIONAL SOURCES OF POWER SUPPLYING OTHER PARTS OF THE BUILDING AS REQUIRED BY NEC 230.2(E).
- EXISTING 200A(MCB), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "A"(NAME TO BE CONFIRMED ON FIELD) TO REMAIN. E.C. SHALL VERIFY THE EXACT RATING, SIZE, OPERABLE CONDITION, LOCATION AND CONNECTION OF EXISTING ELECTRICAL PANEL "A" IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND PRIOR TO BID. BASE BID ACCORDINGLY.
- EXISTING 150A(MLO), 120/208V, 3-PHASE, 4-WIRE ELECTRICAL PANEL "B"(NAME TO BE CONFIRMED ON FIELD) TO REMAIN. E.C. SHALL VERIFY THE EXACT RATING, SIZE, OPERABLE CONDITION, LOCATION AND CONNECTION OF EXISTING ELECTRICAL PANEL "B" IN FIELD. INFORM ENGINEER FOR ANY DISCREPANCY FOUND PRIOR TO BID. BASE BID ACCORDINGLY.
- E.C. SHALL VERIFY OPERABLE CONDITION OF EXISTING FEEDER IN FIELD, REPLACE WITH NEW WITH THE SAME TYPE IF FOUND INOPERABLE. BASE BID ACCORDINGLY.

RISER DIAGRAM GENERAL NOTES:

- ABOVE RISER DIAGRAM IS FOR REFERENCE PURPOSE ONLY. E.C. TO VERIFY EXACT POWER DISTRIBUTION & OPERABLE CONDITION OF EXISTING DEVICES/EQUIPMENTS IN FIELD AND INFORM ENGINEER FOR ANY DISCREPANCY. VERIFY SCOPE OF WORK WITH OWNER/LANDLORD PRIOR TO BID.
- E.C. SHALL VERIFY THE INCOMING SERVICE AMPERAGE, VOLTAGE, NUMBER OF PHASES, WIRE SIZE AND DISTRIBUTION IN FIELD.
- E.C. TO COORDINATE FAULT CURRENT (ISC) RATING WITH UTILITY COMPANY AND AHJ PRIOR TO COMMENCING ANY WORK.
- SWITCHBOARD COMPONENTS, INCLUDING OVERCURRENT PROTECTIVE DEVICES SHALL BE FULLY RATED FOR THE AVAILABLE FAULT CURRENT SHOWN.
- PROVIDE ARC FLASH AND SHOCK HAZARD WARNING IDENTIFICATION PER NEC ARTICLE 110.16
- THE FEEDER LENGTHS SHOWN IN THE INPUT DATA IS FOR CALCULATIONS ONLY. IT IS NOT THE INTENT TO USE THESE ENTERED LENGTHS FOR USAGE OF ACTUAL FIELD FEEDER LENGTH MEASUREMENTS.

2 ELECTRICAL RISER DIAGRAM
N.T.S



STATE OF ILLINOIS LIC. #: 001-020830

GERALD P. NOE
ARCHITECT

399 LUCERNE DRIVE
SPARTANBURG, SC 29302
P: 864.583.2215 F: 864.583.2265
mail@gpnarcht.com

CHECKED BY: DKH
DRAWN BY: NYE

THIS DRAWING IS AN INSTRUMENT OF SERVICE AND SOLE PROPERTY OF THE ARCHITECT, AND SHALL NOT BE USED IN ANY WAY, WHATSOEVER, WITHOUT THE WRITTEN PERMISSION OF THE NY ENGINEERS. IT SHALL BE RETURNED TO THE NY ENGINEERS UPON DEMAND.

COPYRIGHT 2025
ALL RIGHTS RESERVED

NY ENGINEERS

382 NE 191st Street Suite 49674
MIAMI, FL 33179
(786)-788-0295
ny-engineers.com



08-29-2025

REVISIONS:

NO.	DATE	DESCRIPTION	BY
01	10-01-2025	PLAN REVIEW COMMENTS	NYE

PROJECT NAME:



INTERIOR ALTERATION

1451 PETERSON ROAD
LIBERTYVILLE, IL 60048

SHEET TITLE:

**ELECTRICAL RISER
DIAGRAM AND
PANEL
SCHEDULES**

PROJECT NUMBER 25-088

DATE 07-16-2025

SHEET NO.

E-4.0

SHEET 8 OF 8

THE ARCHITECT SHALL NOT BE RESPONSIBLE FOR ACTUAL CONDITIONS, CONSTRUCTION AND/OR USE THEREOF. THIS DRAWING IS TO CONVEY DESIGN INTENTIONS AND/OR CODE COMPLIANCE ONLY. USE OF THESE DRAWINGS IMPLIES AGREEMENT WITH THESE CONDITIONS. THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS.

VIA Email: cody.plum@thomassign.com

July 9, 2025

iSmash
1451 Peterson Road
Suite 145
Libertyville, IL 60048

Re: iSmash - Sign Review

Dear Cody:

We have received and reviewed the exterior sign drawing prepared by Thomas Sign & Awning, Co, Inc. submitted on 6/25/25 for iSmash at Butterfield Square. The signage as drawn is acceptable **subject to City approval**. Please see attached with specific mention to the following:

MOUNTING OF SIGNS:

All fasteners will be of non-corrosive material such as aluminium, stainless, or cadmium plated so as not to stain the fascia. All holes and transfers will be fully filled and covered with silicone caulk to aid in rust prevention and prevent water penetration through the fascia. The proper number and size of fasteners are to be used to support each mounted sign. Care is to be taken during installation to minimize damage to the fascia and other adjustment material and surfaces.

SPECIFIC PROHIBITIONS

- No animated, flashing or audible signs shall be permitted.
- No exposed lamps or tubing shall be permitted.
- All conduit, cabinets, conductors, transformers and other equipment shall be concealed.
- Painted lettering shall not be permitted.
- Any damage to the sign band or roof deck caused by the installation or removal of Tenant's sign shall be repaired by Tenant at Tenant's sole cost and expense.

MISCELLANEOUS

Brixmor Property Group requires all construction to be in compliance with any laws, ordinances, or regulations of any public authorities having jurisdiction. Approval of any construction drawings and/or plans by or on behalf of Landlord shall create no responsibility on the part of Landlord for the completeness, design, sufficiency or compliance with all laws, ordinances, regulations, rules and requirements of governmental entities having jurisdiction.

If the following submittals have not already been delivered to Brixmor Property Group, please do so immediately and prior to the start of work:

- Sign Permit
- Installation Schedule
- Certificate of Insurance

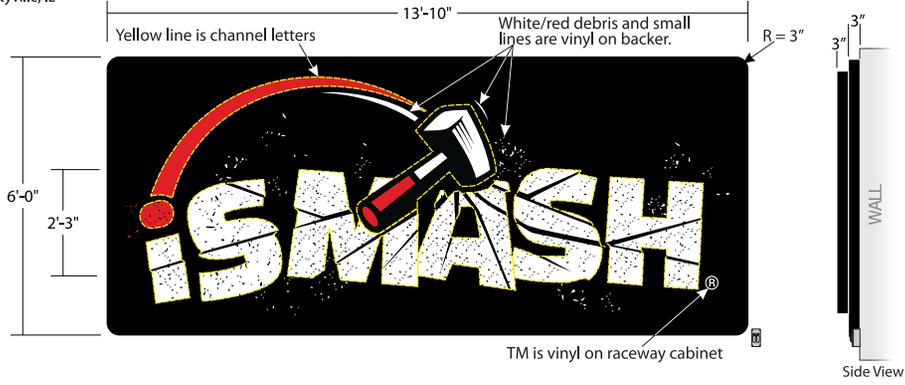
If you have any questions, please do not hesitate to call me at **262-323-6917**

Respectfully,

Nicole Robson
BRE Retail Residual Owner 4 LLC
Nicole Robson
Property Manager

Encl

iSmash
Libertyville, IL



A LED Illuminated (Face Lit, Trimless) Channel Letters on Raceway Cabinet QTY: 1 Square Feet: 83.7
Scale: 3/8"=1'-0"

Scope of Work:

- Face Lit Trimless Channel letters.
- 3" deep returns prefinished black.
- 0.177" #7328 white acrylic face with digitally printed vinyl graphics / first surface.
- Letters mounted flush to raceway cabinet.
- Internally illuminated using energy efficient white LEDs and remote power supplies.

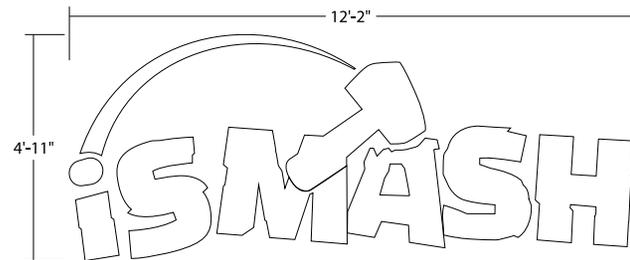
Raceway Cabinet:

- 3" deep aluminum raceway cabinet, returns painted black / satin finish.
- Vinyl graphics on raceway cabinet for white/red debris, "TM", small lines.

• SURVEY REQUIRED



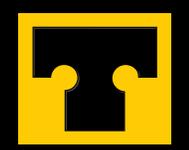
Color Reference



Channel Letters Layout

Scale: 3/8"=1'-0"

Quality Signs Manufactured and Serviced



THOMAS

SIGN & AWNING CO INC
4590 118TH Avenue North
Clearwater, Florida 33762

800-526-3325

Local: 727-573-7757
Fax: 727-573-0328

www.thomassign.com

CUSTOMER

iSmash

Installation Address:
1451 Peterson Road
Suite 145
Libertyville, IL 60048

Drwg. # 114252 PID # 107517

Sales Associate: Project Team:

RW	CP
Designer:	Date:
JMS	06/25/25

Revisions:
R1 JMS 07.01.25 revise backer to raceway cabinet



Night View

NTS



Existing Condition

NTS



Proposed Condition

SCALE: 1/8"=1'-0"



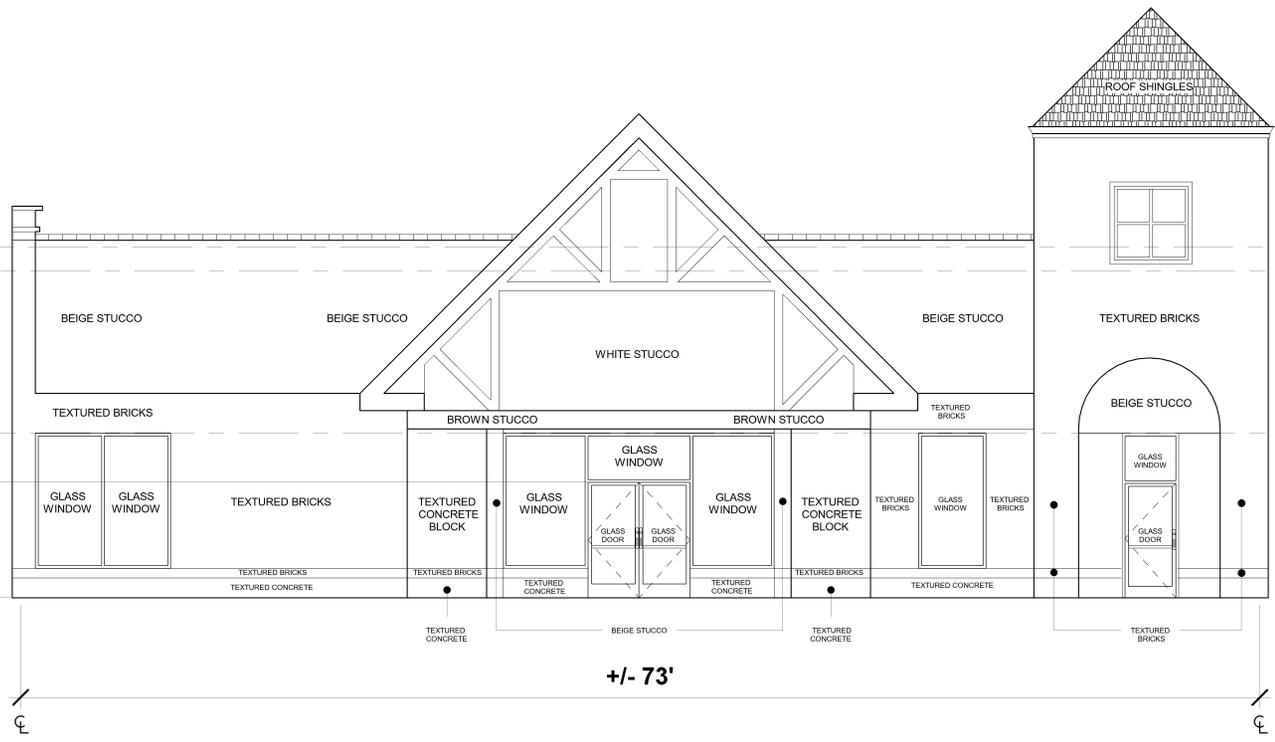
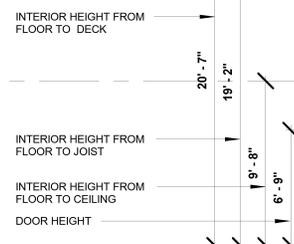
3M™ MCS™ Warranty

Approval:

- Approved
DATE:
- Approved as noted
DATE:
- Revise & Re-Submit
DATE:

The designs, concepts, drawings and specifications provided are the exclusive property of Thomas Sign & Awning Company and may not be reproduced in any way, shape or fashion without the express written permission of Thomas Sign & Awning Company.

-  Deck Line
 20' - 7"
-  Joist Line
 19' - 2"
-  Ceiling Line
 9' - 8"
-  Ground Floor Line
 0' - 0"



ABJ Ventures – Sign Approval Request

ABJ Ventures LLC is requesting approval to install one sign at their new franchised business, iSmash. Our business will be located in the Butterfield Square Shopping Center.

Our address is: 1419 Peterson Road, Libertyville, IL 60048.

Our sign is the iSmash logo. It is to be installed directly above our store entrance.



Sign Details:

LED Illuminated

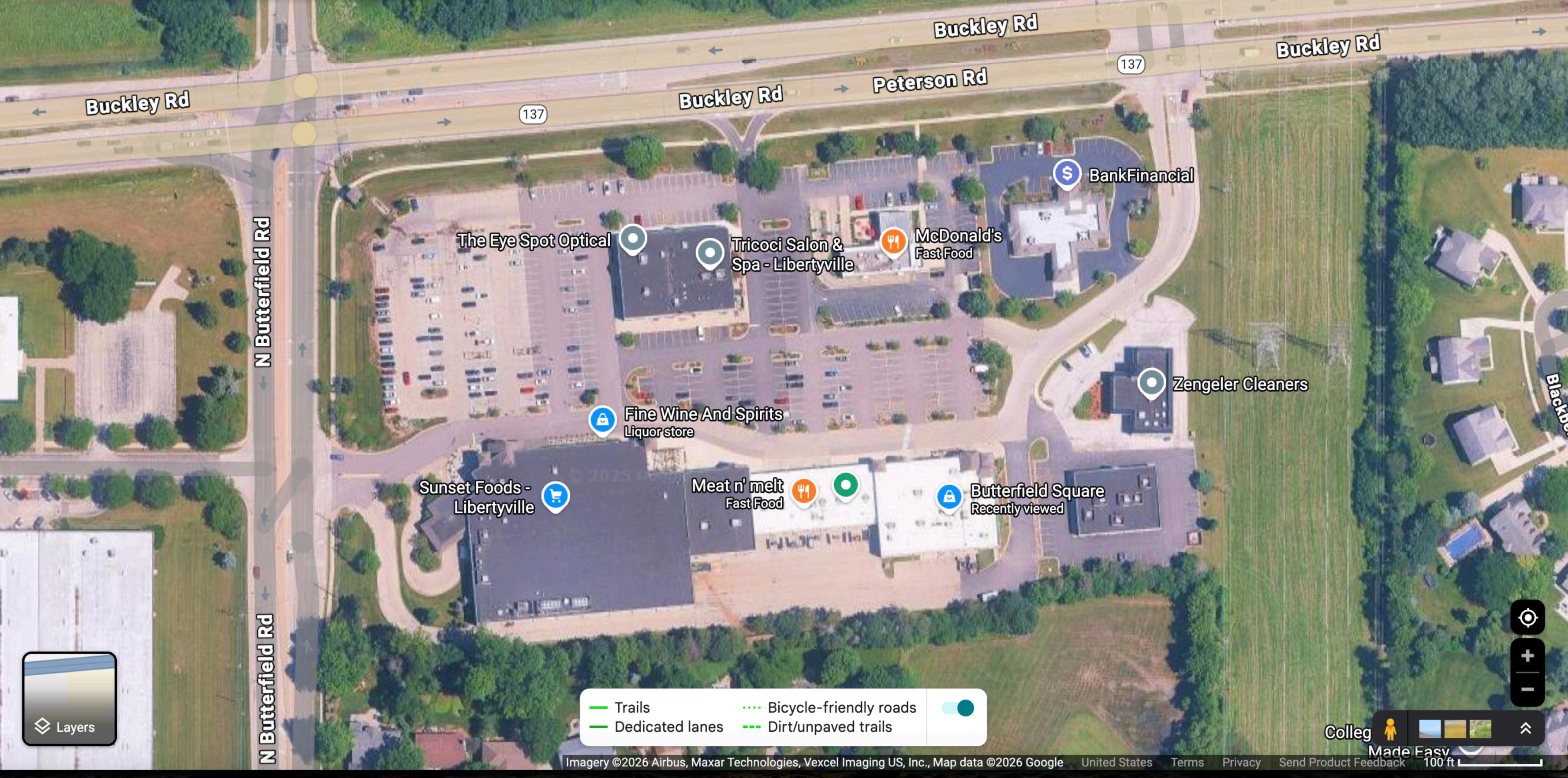
Channel letters on raceway cabinet

Please see our sign proposal for full details and specifications. Our landlord, Brixmor Property Group, has reviewed and approved our sign proposal. Their approval letter is included in our sign proposal.

Thank you in advance for your time and consideration.

Jim Ali

ABJ Ventures LLC

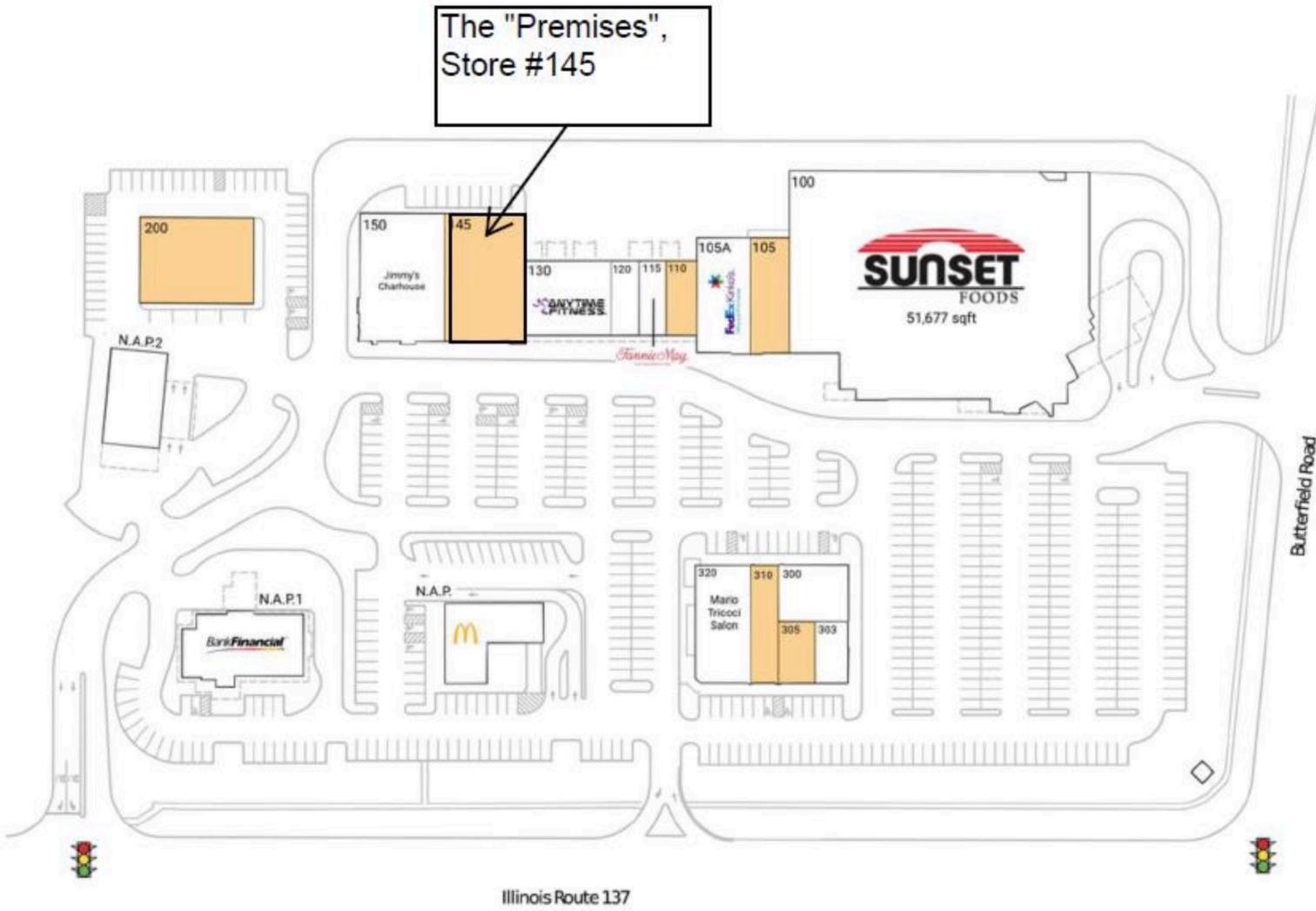


Layers

- Trails
- Dedicated lanes
- Bicycle-friendly roads
- Dirt/unpaved trails

Navigation controls: Home, Zoom In (+), Zoom Out (-), and a compass icon.

Colleg, Made Easy, and other utility icons.



NOT TO SCALE