GARDENIA, LLC 1228 HULL STREET, RICHMOND, VA 23224

FOR PERMIT / CONSTRUCTION JAN 21, 2019



project location

CLIENT

P.O. BOX 14144

RICHMOND, VIRGINIA 23225

# project building data

VIRGINIA UNIFORM STATEWIDE BUILDING CODE 2012 (VUSBC 2012) EFFECTIVE 14 JULY 2014

VIRGINIA REHABILITATION CODE 2012, WORK AREA COMPLIANCE METHOD. WORK IS CLASSIFIED AS LEVEL 2 ALTERATIONS, UNDER CHAPTERS 5, 8, & 12(HISTORIC BUILDINGS). MIXED USE - A-2 ASSEMBLY 1 STORY (1 ALLOWED) 1,692 SF (6,000 ALLOWED)

PHIL BROCK

3412 W LEIGH ST, STE 200

RICHMOND, VA 23230

(P) 804.690.3512

R-2 RESIDENTIAL 1 STORY (2 ALLOWED) 2,571 SF (7,000 ALLOWED) VB - NONCOMBUSTIBLE CONSTRUCTION - UNPROTECTED

STRUCTURAL

CRAIG SWIFT, PE

(P) 434.260.8181

SPRINGPOINT STRUCTURAL

113 4TH STREET NE, STE 100

CHARLOTTESVILLE, VA 22902

A FULLY AUTOMATED FIRE SUPPRESSION SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH VUSBC CHAPTER 9. CONTRACTOR WILL CONDUCT WORK AS DESIGN/BUILD.

CONCRETE MASONRY (CMU)

FIRE RESISTANCE RATINGS FOR BUILDING ELEMENTS (PER VUSBC TABLE 601): INCLUDING COLUMNS, GIRDERS, TRUSSES BEARING WALLS **EXTERIOR** INTERIOR

INCLUDING SUPPORTING BEAMS AND JOISTS ROOF CONSTRUCTION

INCLUDING SUPORTING BEAMS AND JOISTS

HISTORIC

BRYAN TOWNES

(P) 804-814-8368

CLAREMONT PRESERVATION CONULTING, LLC

WALLS SEPARATING DWELLING UNITS AND WALLS SEPARATING UNITS FROM OTHER OCCUPANCIES CONTIGUOUS TO THEM SHALL BE CONSTRUCTED AS FIRE PATITIONS IN ACORDANCE WITH SECTION 708. 708.3 FIRE PARTITIONS SHALL HAVE A FIRE-RESISTANCE RATING OF NOT LESS THAN 1 HOUR. EXCEPTIONS: 1. CORRIDOR WALLS PERMITED TO HAVE A 1/2 HOUR FIRE-RESISTANCE RATING BY TABLE 1018. 2. DWELLING UNIT AND SLEEPING UNIT SEPARATIONS IN BUILDINGS OF TYPE IIB, IIIB, AND VB CONSTRUCTION SHALL HAVE FIRE-RESISTANCE RATINGS OF NOT LESS THAN 1/2 HOUR IN BUILDINGS EQUIPPED THROUGHOUT WITH AN AUTOMATIC SPRINKLER SYSTEM IN ACCORDANCE WITH SECTION 903.3.1.1.

tables

PLUMBING FIXTURE CALCULATIONS (MIN REQ)

# **HAZARDOUS MATERIALS**

AN ASBESTOS INSPECTION WAS PERFORMED AND ACM WAS FOUND GENERALLY IN THE AREAS INDICATED. THE ASBESTOS INSPECTION REPORT IS AVAILABLE UPON REQUEST. ACM SHALL BE REMOVED BY A LICENSED ASBESTOS CONTRACTOR USING APPROVED PROCEDURES AS SPECIFIED. NEW NON ASBESTOS-CONTAINING MATERIAL SHALL BE LABELED ACCORDINGLY. THE ASBESTOS ABATEMENT CONTRACTOR SHALL MARK UP THE AREAS WHERE ASBESTOS WAS ABATED, AREAS WHERE ASBESTOS WAS ENCAPSULATED, AND AREAS WHERE ACM EXIST BUT WERE LEFT IN PLACE. THE GENERAL CONTRACTOR SHALL REVIEW AND CERTIFY THE LOCATIONS WHERE ACM WAS ABATED, AREAS WHERE ACM WAS ENCAPSULATED AND AREAS WHERE ACM WAS LEFT IN PLACE AS MARKED ON THE RECORD DRAWINGS AND WILL

PROVIDE THE DRAWINGS TO THE ARCHITECT. AN INSPECTION TO IDENTIFY LEAD CONTAINING OR COATED BUILDING COMPONENTS HAS BEEN CONDUCTED AND CAN BE FOUND IN THE PROJECT SPECIFICATIONS. THIS REPORT IS PROVIDED FOR THE CONTRACTOR'S USE AND MAY NOT BE ALL INCLUSIVE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH ALL VIRGINIA OCCUPATIONAL SAFETY AND HEALTH (VOSH) REGULATIONS AS THEY PERTAIN TO EMPLOYEE EXPOSURES TO LEAD. ALL LEAD AND LEAD-COATED BUILDING COMPONENTS

OTHER

SHALL BE RECYCLED TO THE EXTENT POSSIBLE.

LAVATORY DRINKING

WC FEMALE | SERVICE SINK | MALE/FEMALE | FOUNTAIN

# abbreviations

ADJ ADJUSTABLE

FPSF FIRE PROOFING SPRAY FOAM

GC GENERAL CONTRACTOR

FHC FINISH HOSE CABINET

FINISH(ED)

FACE OF

GALV GALVANIZED

GPDW GYPSUM DRYWALL HORIZ HORIZONTAL HT HEIGHT HW HARDWARE INSUL INSULATION

GA GAUGE

GL GLASS

INT INTERIOR JT JOINT MAX MAXIMUM MECH MECHANICAL MFR MANUFACTURER MIN MINIMUM MISC MISCELLANEOUS

ACP	ACOUSTICAL CEILING PANEL	MO	MASONRY OPENING
ADA	AMERICANS WITH DISABILITIES ACT	MTL	METAL
ADJ	ADJUSTABLE	NIC	NOT IN CONTRACT
AFF	ABOVE FINISHED FLOOR	NOM	NOMINAL
ALUM	ALUMINUM	NTS	NOT TO SCALE
ARCH	ARCHITECT(URAL)	ОС	ON CENTER
BLDG	BUILDING	OD	OUTSIDE DIAMETER
BOD	BASIS OF DESIGN	ОН	OPPOSITE HAND
BOS	BOTTOM OF STEEL	OPNG	OPENING
BYD	BEYOND	OPP	OPPOSITE / OPPOSING
CIP	CAST IN PLACE	OS	OVERFLOW SCUPPER
CJ	CONTROL JOINT	OVHD	OVERHEAD
CL	CENTER LINE	PERF	PERFORATED
CLG	CEILING	PL	PLATE
CLR	CLEAR(ANCE)	PLAM	PLASTIC LAMINATE
CMU	CONCRETE MASONRY UNITS	PLUMB	PLUMBING
COL	COLUMN	PNT	PAINT(ED)
CONC	CONCRETE	PR	PAIR
CONT	CONTINUOUS	PT	PRESSURE TREATED
CORR	CORRIDOR	PTN	PARTITION
CPT	CARPET	RB	RESILIENT BASE
CT	CERAMIC TILE	RD	ROOF DRAIN
DET	DETAIL	REF	REFERENCE
DIM	DIMENSION	REQD	REQUIRED
DN	DOM/2	REQT	REQUIREMENT(S)
DR	DOOR	RES	RESILIENT
DS	DOWNSPOUT	RO	ROUGH OPENING
DWG	DRAWING	SCHED	SCHEDULE
EA	EACH	SCWD	SOLID CORE WOOD DOOR
EJ	EXPANSION JOINT	SECT	SECTION
ELEC	ELECTRICAL	SF	SQUARE FEET
ELEV	ELEVATION	SQ	SQUARE
ELEV	ELEVATOR	SST	STAINLESS STEEL
EO	EDGE OF	STD	STANDARD
EOD	EMERGENCY OVERFLOR DRAIN	STL	STEEL
EQ	EQUAL	STRUCT	STRUCTURAL
EQUIP	EQUIPMENT	SUSP	SUSPENDED
EXIST	EXISTING	SYM	SYMMETRICAL
EXT	EXTERIOR	T	TREAD
FA	FIRE ALARM	THRU	THROUGH
FD	FLOOR DRAIN	TOC	TOP OF CURB
FEC	FIRE EXTINGUISHER CABINET	TOS	TOP OF STEEL
FF	FINISHED FLOOR	TPTN	TOILET PARTITION
FFE	FINISH FLOOR ELEVATION	TYP	TYPICAL
ELIC	EINIICH HOSE CARINIET	LINIO	LINILESS NICHED OTHERWISE

UNO UNLESS NOTED OTHERWISE VCT VINYL COMPOSITION TILE

WWF WELDED WIRE FABRIC

VERT VERTICAL

WD WOOD

SHEET INDEX

SMBW PLLC 111 VIRGINIA ST. STE RICHMOND, VA 23219

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smbw

DRAWING TITLE - COVERSHEET CS1.01 COVERSHEET . . . . CS1.02 SPECIFICATIONS CS1.03 | SPECIFICATIONS COVER SHEET EXISTING CONDITIONS & DEMO • • LAYOUT AND UTILITIES • • • C4 GRADING PLAN 4 - ARCHITECTURAL FRONT END A0.01 LIFE SAFETY PLAN A0.02 CONSTRUCTION ASSEMBLIE S - ARCHITECTURAL DEMOLITION • • D1.01 DEMO PLAN & RCP D1.02 DEMO ROOF PLAN D4.01 DEMO ELEVATIONS • • D4.02 EXISTING CONDITIONS - EXTERIOR D4.03 EXISTING CONDITIONS - INTERIOR A1.01 FLOOR PLAN & RCP A2.01 ENLARGED PLANS & INTERIOR ELEV. • • • • • A3.01 ROOF PLAN AND DETAILS A3.02 ROOF DETAILS . . . . A4.01 BUILDING ELEVATIONS A4.02 BUILDING SECTIONS • • A6.01 DETAILS • • A7.01 GLAZING SCHEDULE AND DETAILS • • A8.01 DOOR SCHEDULE A9.01 FINISH PLAN & SCHEDULE A9.02 MILLWORK DETAILS • • • • • • 8 - STRUCTURAL ST.01 FRAMING PLAN 9 - MECHANICAL M0.01 LEGEND, NOTES, & ABBREVIATIONS M0.02 SHEET SPECIFICATION M0.03 MECHANICAL, LOADS, EQUIPMENT, & ZONING • • • • M1.11 LEVEL 1 - HVAC PLAN M5.01 FIRE PENETRATION DETAILS M5.11 DETAILS & DIAGRAMS E0.01 LEGEND, NOTES, & ABBREVIATIONS • • E0.11 SHEET SPECIFICATION 1.11 LEVEL 1 - POWER & LIGHTING PLAN E1.21 LEVEL 1 - EGRESS PLAN E5.01 FIRE PENETRATION DETAILS 5.11 DETAILS & DIAGRAMS • • E6.01 PANELBOARD SCHEDULES • • • P0.01 LEGEND, NOTES, & ABBREVIATIONS • • • • P1.11 LEVEL 1 - SANITARY & DOMESTIC WATER PLAN P5.01 FIRE PENETRATION DETAILS P5.02 FIRE PENETRATION DETAILS P5.11 DETAILS & DIAGRAMS • •

# symbols & material legends

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	N	NORTH ARROW  TRUE NORTH  PROJECT NORTH	WA#	EXTERIOR WALL ASSEMBLY	2A A101	EXTERIOR ELEVATION  —— DETAIL NUMBER  —— SHEET NUMBER
	8 A	COLUMN REFERENCE GRID	X	INTERIOR PARTITION TYPE	SIM A101	SECTION  DETAIL NUMBER  SHEET NUMBER
	MATCHLINE SEE 02/A2.03	MATCHLINE	ROOM NAME	ROOM TAG ROOM NAME ROOM NUMBER	2A 2B A101 3B	INTERIOR ELEVATION  DETAIL NUMBER SHEET NUMBER
	<b>◆</b> X X	LEVEL, CONTROL POINT, OR DATUM	(123A)	DOOR NUMBER	1A A101	ENLARGED PLAN/ SECTION/CALLOUT  DETAIL NUMBER  SHEET NUMBER
		REVISION CLOUD	⟨x⟩	WINDOW TYPE		ALIGN
	⟨x⟩	KEYED NOTE	[X] FIN—	FINISH TAG  FINISH MATERIAL  FINISH LOCATION BASE, CEILING, FLOOR, TRIM, WALL	#"	STEP ELEVATION CHANGE

ARCHITECT/INTERIORS

TAYLOR CLARK, AIA

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111 VIRGINIA STREET, SUITE 111

RICHMOND, VIRGINIA 23219

CONCRETE		SOUND ATTENUATION BATTS	2012 VUSBC TABLE 290	02.1
PRECAST CONCRETE		GYPSUM DRYWALL		
BRICK		PLASTER OR SAND		
			A2 ASSEMBLY	
STONE		PLYWOOD	REQUIRED	
STEEL		FRAMING LUMBER	PROVIDED	
ALUMINUM		FINISH WOOD	R2 RESIDENTIAL	
ALUMINUM		finish wood	REQUIRED	1 P
POROUS FILL		CERAMIC TILE	PROVIDED	
SOIL		ACOUSTICAL PANELS	NOTE: * 1 PER 50 FOR **1 PER 80 FOR	
RIGID INSULA	ΠΟΝ ΔΑΔΑΔΑΔΑΔΑ	LIGHTWEIGHT CONC. TOPPING	(2) UNISEX TOILE	

\*\*1 PER 80 FOR ALL EXCEEDING 80 (2) UNISEX TOILETS COUNTED IN A2 ASSEMBLY FIXTURE CALCULATIONS ABOVE

 
 1 PER DWELLING
 1 PER DWELLING
 N/A
 1 PER DWELLING
 N/A
 1 KITCHEN SINK / 1 LAUNDRY PER 20

 1
 1
 - 1
 - 1 / 1
 E: \* 1 PER 50 FOR ALL EXCEEDING 50

Lic. No. 12549 1228 HULL STREET, RICHMOND, VA 23224

PERMIT SET - NOT FOR CONSTRUCTION As indicated Checked By

Construction Set 4/22/2019

COVERSHEET

Apply for, obtain, and pay for permits, fees and licenses required to perform the work. On-Site Work Hours: Limit work in the existing building to normal business working hours, Monday through Friday, unless otherwise indicated. D. Intent: Drawings and specifications are intended to provide the basis for Proper completion of the work

suitable for the intended use of the owner. Anything not expressly set forth but which is reasonably implied or Necessary for proper performance of the project shall be included. E. Specification and Drawing Notes use imperative mood and streamlined language. The words "shall," "shall be," or "shall comply with," depending on the context, indicate requirements that are to be performed by Contractor unless specifically stated otherwise.

F. Contractor shall be responsible for the protection of all existing and new conditions and materials within the proposed construction area. Any damage caused by the contractor or during the execution of the work is the responsibility of the contractor and shall be repaired or replaced to the owner's satisfaction at contractor's

### PROJECT MANAGEMENT AND COORDINATION

A. Coordination: Coordinate construction operations to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations that depend on each other for proper installation, connection, and

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation. 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair. 3. Make adequate provisions to accommodate items scheduled for later installation.

B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other | characteristics that are based on the product named. Comply with definition of "Comparable Products" for construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities

include, but are not limited to, the following: 1. Preparation of Contractor's construction schedule.

2. Preparation of the schedule of values.

3. Installation and removal of temporary facilities and controls. 4. Delivery and processing of submittals.

5. Progress (OAC) meetings.

6. Preinstallation conferences. 7. Project closeout activities.

8. Startup and adjustment of systems.

REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI. 1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.

2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors. B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation,

1. Drawing number and detail references, as appropriate.

2. Field dimensions and conditions, as appropriate. 3. Contractor's suggested resolution.

4. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log biweekly.

A. Preconstruction Photographs: Before commencement of the work, take photographs of Project site, including existing items to remain during construction, from different vantage points, as directed by Architect. 1. Take a minimum of 20 photographs to show existing conditions before starting the Work.

B. Periodic Construction Photographs: Take 20 photographs monthly coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken. C. Final Completion Construction Photographs: Take 20 photographs after date of Substantial Completion for

2. Take additional photographs as required to record preexisting damage within the work area.

submission as Project Record Documents.

sequential activity.

A. Prepare and submit product data, shop drawings, and samples submittals for all products indicated on drawings, on the Finish Legend, and as indicated. Prepare submittals as PDF package and transmit to Architect by sending via email. Include PDF transmittal form. Include information in email subject line as requested by B. Coordinate preparation and processing of submittals with performance of construction activities. Coordinate

each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require

C. Substitutions: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed. Requests received after that time may be considered or rejected at discretion of Architect. Substitutions shall be consistent with the Contract Documents, produce indicated results, and be coordinated with other portions of the Work. Revise or adjust affected work as necessary to integrate work of the approved substitutions. D. Contractor's Review: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect

E. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp.

Include name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents. F. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review. G. Processing Time: Allow 15 days for initial review and 10 days for resubmittal review. No extension of the

Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals. H. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

# **DELEGATED-DESIGN SERVICES**

A. Performance and Design Criteria: Where professional design or engineering services are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance B. Delegated-Design Services: Shop Drawings shall be signed and sealed by the Professional Engineer licensed in the Commonwealth of Virginia responsible for the design. C. Indicate that products and systems comply with performance and design criteria in the Contract Documents.

Include list of codes, loads, and other factors used in performing these services.

A. Approved: When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract. B. Directed: A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

C. Indicated: Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

D. Furnish: Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar E. Install: Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

F. Provide: Furnish and install, complete and ready for the intended use. G. Project Site: Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built. H. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named, including make or model number or other designation. In addition, product's attributes and characteristics establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of

evaluating comparable products. I. Comparable Product: Product that is demonstrated and approved by Architect through submittal process to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

A. If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding. B. Coordinate sequence of activities to accommodate required quality-assurance and quality-control services

with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection. Schedule and request all required tests, inspections, and similar activities. C. On completion of testing, inspection, and similar services, repair damaged construction and restore substrates and finishes. Comply with the Contract Document requirements for cutting and patching in Section "Execution." D. Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference. Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

# INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference. B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise

C. Each entity engaged in construction on Project should be familiar with industry standards applicable to its

# **TEMPORARY FACILITIES AND CONTROLS**

A. Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction. B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and

maintenance of fixtures and facilities. . Project Signs: Provide Project identification signs, and provide other signs as indicated and as required to inform public and individuals seeking entrance to Project. D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using

materials approved by authorities having jurisdiction. E. Site Enclosure Fence: Before demolition operations begin, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate demolition operations. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

F. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition

according to requirements of authorities having jurisdiction. 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in

methods and procedures. Post warnings and information. 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

### PRODUCT REQUIREMENTS

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions. B. Manufacturer's Warranty: Written warranty furnished by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.

Provide products that comply with the Contract Documents, are undamaged and, unless otherwise

indicated, are new at time of installation. 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect. 2. If available, and unless custom products or nonstandard options are specified, provide standard products

of types that have been produced and used successfully in similar situations on other projects. . Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents. 4. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products. Basis-of-Design Product: Where a product is indicated on Drawings, provide the indicated product or a

consideration of an unnamed product. E. Provide a product that complies with requirements and where applicable, matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

comparable product by another manufacturer. Drawings indicate sizes, profiles, dimensions, and other

A. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations. 1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections

before equipment and fixture installation. 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or

Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated. 1. Make vertical work plumb and make horizontal work level. 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement

3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated. Install products at the time and under conditions that will ensure the best possible results. F. Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Where mounting heights are not indicated, mount components at heights directed by Architect. 2. Allow for building movement, including thermal expansion and contraction. 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be

embedded in concrete or masonry. Deliver such items to Project site in time for installation. Repair, or remove and replace, defective or non-conforming Work. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition. Complete repair and replacement operations before requesting inspection for determination of Substantial Completion.

### CUTTING AND PATCHING

A. Match: To blend with adjacent construction and manifest no apparent difference in material type, species, cut, form, detail, color, grain, texture, or finish; as approved by Architect. Comply with requirements for and limitations on cutting and patching of construction elements. . When cutting and patching structural elements, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-

carrying capacity or increase deflection. 2. Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life 3. Do not cut and patch other construction elements or components in a manner that could change their

load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. 4. Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's

unsatisfactory manner. 5. Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

aesthetic qualities. Remove and replace construction that has been cut and patched in a visually

Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest easible time, and complete without delay. 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition. Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including

excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review roposed procedures with original Installer; comply with original Installer's written recommendations. 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. Cut or drill from the exposed or finished side into concealed surfaces. 3. Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. 4. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with nstallation requirements specified in other Sections, where applicable. 1. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing. 2. Where walls or partitions that are removed extend one finished area into another, patch and repair floor

Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of

and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance. 3. Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform

4. Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.

# A. Complete repair and restoration operations, before requesting inspection for determination of Substantial

refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

B. Repair, or remove and replace, defective construction. Repairing includes replacing defective parts,

CLOSEOUT PROCEDURES . Prepare and submit a list of items to be completed and corrected (Contractor's punch list). Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of

B. Complete final cleaning requirements touch up paint, and otherwise repair and restore marred exposed On receipt of request for inspection to determine Substantial Completion, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items dentified by Architect, that must be completed or corrected before certificate will be issued.

Before requesting final inspection for determining final completion, complete the following: 1. Submit a final Application for Payment. 2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list). Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Submit evidence of final, continuing insurance coverage complying with insurance requirements. Inspection: On receipt of request for final inspection to determine acceptance, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued. Submit written warranties guaranteeing all workmanship and materials for a period of one year from the date

maximum term offered by the manufacturer but in no case less than one year. All defects discovered during the warranty period shall be repaired to the owner's satisfaction, at the contractor's expense with no additional cost to the owner. G. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit

of substantial completion. Materials and equipment carrying a manufacturer's warranty shall be covered by the

to condition expected in an average commercial building cleaning and maintenance program. Comply with nanufacturer's written instructions. 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. b. Remove debris and surface dust from limited access spaces, including plenums, shafts, and similar

c. Sweep concrete floors broom clean in unoccupied spaces. d. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain. e. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water

f. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, g. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. h. Leave Project clean and ready for occupancy.

PROJECT WARRANTIES

A. Submit written warranties guaranteeing all workmanship and materials for a period of one year from the date of substantial completion. Materials and equipment carrying a manufacturer's warranty shall be covered by the maximum term offered by the manufacturer but in no case less than one year. All defects discovered during the surfaces. warranty period shall be repaired to the owner's satisfaction, at the contractor's expense with no additional cost

to the owner. submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

A. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit

to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions. B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project: 1. Clean exposed hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition.

2. Remove debris and surface dust from limited access spaces, including plenums, shafts, and similar 3. Sweep concrete floors broom clean in unoccupied spaces.

4. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain. 5. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water

6. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, 7. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.

A. Protecting individuals and property, for environmental protection, for dust control and, for noise control. Indicate proposed locations and construction of barriers. Detail special measures proposed to protect adjacent buildings to remain including means of egress from those buildings. B. Buildings immediately adjacent to demolition area will be occupied. Conduct building demolition so

operations of occupied buildings will not be disrupted. Provide not less than 72 hours' notice of activities that will affect operations of adjacent occupied buildings. C. It is not expected that hazardous materials will be encountered in the Work. Hazardous materials will be removed by Owner before start of the Work. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner. Hazardous materials will be removed by Owner under a separate contract.

D. Comply with ANSI/ASSE A10.6 and NFPA 241. Also comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction. E. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations. F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations. Maintain fire-protection facilities in service during selective demolition

G. Maintain exits from adjacent buildings. Maintain access to existing walkways, exits, and other facilities used by occupants of adjacent buildings. Protect adjacent walkways, loading docks, building entries, and other building facilities during demolition operations. H. Temporary Shoring: Design, provide and maintain interior and exterior shoring, bracing, or structural support to

preserve stability and prevent unexpected movement or collapse of construction being demolished. Use methods required to complete the Work within limitations of governing regulations and as follows: 1. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations. Maintain fire watch during and for at least 2 hours after flame-cutting operations.

4. Locate building and selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing. Demolish and remove existing construction only to the extent required by new construction and as indicated. 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished

Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete. HISTORIC REMOVAL AND DISMANTLING

Maintain adequate ventilation when using cutting torches.

A. Removal and Dismantling Historic Treatment Program: Prepare a written, detailed description of materials, including protection of surrounding and substrate materials and Project site. B. Dismantle: To disassemble or detach a historic item from a surface, or a nonhistoric item from a historic surface, using gentle methods and equipment to prevent damage to historic items and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

Temporary Protection of Historic Materials: 1. Protect existing historic materials with temporary protections and construction. Do not remove existing materials unless otherwise indicated. 2. Do not attach temporary protection to historic surfaces except as indicated as part of the historic treatment program and approved by Architect. . Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures

and equipment according to the historic treatment program to ensure that such water does not create a hazard

or adversely affect other building areas or materials. E. Anchorages: . Remove anchorages associated with removed items. Dismantle anchorages associated with dismantled items. 3. In nonhistoric surfaces, patch holes created by anchorage removal or dismantling according to the

4. In historic surfaces, patch or repair holes created by anchorage removal or dismantling according to historic treatment procedures.

requirements for new work.

MISCELLANEOUS ROUGH CARPENTRY A. Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including blocking, nailers, and rooftop equipment bases and support curbs.

B. Wood-Preservative-Treated Materials: Treat items indicated on Drawings, and the following: 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing. 2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or

3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or

concrete walls, or are less than 18 inchesabove the ground in crawlspaces or unexcavated areas. 4. Wood floor plates that are installed over concrete slabs-on-grade. Fire-Retardant-Treated Materials: Treat items indicated on Drawings, and the following: 1. Framing for raised platforms.

2. Concealed blocking. 3. Roof framing and blocking. 4. Plywood backing panels.

D. Plywood Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, in thickness indicated or, if not indicated, not less than 1/2-inch nominal thickness. E. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated. F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

SHEATHING A. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated. B. Coordinate wall, parapet, and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed C. Apply sheathing tape to joints between sheathing panels and at items penetrating sheathing. Apply at

### INTERIOR ARCHITECTURAL WOODWORK A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" custom

upstanding flashing to overlap both flashing and sheathing.

grade requirements for construction, finishes, installation, and other requirements. . Type of Construction: Frameless. C. Door and Drawer-Front Style: Flush overlay, reveal Dimension: 1/2 inch.

D. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of E. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued Wood for Exposed Surfaces (Type designated as WD): As indicated on the Finish Legend.

 Cut: Quarter cut/quarter sawn. 2. Grain Direction: Vertically for drawer fronts, doors, and fixed panels. 3. Matching of Veneer Leaves: Book match.

4. Veneer Matching within Panel Face: Running match.

G. Plastic-laminate for Exposed Surfaces (Type designated as PL): As indicated on the Finish Legend 1. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS. 2. Pattern Direction: Vertically for drawer fronts, doors, and fixed panels. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate NEMA LD 3, Grade BKL. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced

quality standard unless otherwise indicated. 1. MDF: ANSI A208.2, Grade 130. 2. Particleboard: ANSI A208.1, Grade M-2-Exterior Glue.

4. Architectural cabinets and millwork.

Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1. 4. Thermoset Decorative Panels: Particleboard or MDF finished with thermally fused, melamineimpregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 135 degrees of opening, self-closing. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with cabinet surface. 1. For shop-finished items, use filler matching finish of items being installed.

1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts. 2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated. 3. Maintain veneer sequence matching of cabinets with transparent finish.

Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inchesusing concealed shims.

4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c.

or hanging strips. METAL FABRICATIONS A. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of

metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the

Steel framing and supports for countertops. 2. Steel tube reinforcement for low partitions. 3. Steel framing and supports for applications where framing and supports are not specified in other

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects. Temperature Change: 120 deg F, ambient; 180 deg F, material

D. Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes. B. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond | E. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. F. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of

> approximately 1/32 inchForm bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work. Form exposed work with accurate angles and surfaces and straight edges. G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous H. Install metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

> Fit exposed connections accurately together to form hairline joints. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field J. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are

required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

### BITUMINOUS DAMPPROOFING K. Cold-Applied, Emulsified-Asphalt Dampproofing:

from contact with insulation.

1. Concrete Foundations and Parged Masonry Foundation Walls: Two brush or spray coats. 2. Unparged Masonry Foundation Walls: Primer and two brush or spray coats.

Unexposed Faces of Concrete Retaining Walls: One brush or spray coat. 4. Unexposed Faces of Masonry Retaining Walls: Primer and one brush or spray coat.

### THERMAL INSULATION

A. Extruded Polystyrene Board, R-10, Type X: ASTM C578, Type X, 15-psiminimum compressive strength; unfaced; maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84. B. Glass-Fiber Blanket, R-15 wall and R-38 attic, Kraft Faced: ASTM C665, Type II (nonreflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier). C. Insulation for Miscellaneous Voids: 1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-

developed indexes of 5, per ASTM E84. 2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with

insulation. Remove projections that interfere with placement. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value. F. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive or press into tacky dampproofing according to manufacturer's written instructions. If not otherwise

indicated, extend insulation a minimum of 24 inches below exterior grade line.

G. Blanket Insulation: Install in cavities formed by framing members according to the following requirements: 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends. 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members. 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected

4. For wood-framed construction, install blankets according to ASTM C1320. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to maintain continuity of vapor retarder once finish material is installed over it. 5. Vapor-Retarder-Faced Blankets: Tape joints and ruptures in vapor-retarder facings, and seal each continuous area of insulation to ensure airtight installation. a. Exterior Walls: Set units with facing placed toward interior of construction.

b. Interior Walls: Set units with facing placed toward areas of high humidity. H. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials: 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

J. U-Factor Alternative for thermal envelope assembly requirements: 1. Table C402.1.2 Requirement for Zone 4 shall be satisfied. 2. WA-1 Wall Assembly Thickness R-value WA-2 Wall Assembly Thickness R-value Outside air Outside air Metal shingle siding 1/2" 0 Brick 3 5/8" Air space 1.0 R-Sheathing 3.6 Stud cavity R-Sheathing 3 1/2" 5/8'' .5625 Stud cavity Gypsum board .5625 Gypsum board 5/8" <u>Interior air</u> 20.0125 Total R-value <u>Interior air</u> 21.4525 0.049969 Total R-value U-value for assembly 0.046615 U-value for assembly

### A. ZALMAG STEEL Wall Tiles:

1. Description: Individual wall tiles with 4-sided interlocking design, self-aligning tab, and concealed nailing strip with 2 holes. 2. Material: ZALMAG® STEEL.

a. Base Material: ASTM A1046/A1046M, with corrosion-resistant coating. b. Coating consists of Zinc, Aluminum, Magnesium and Silicon. 3. Size: 15 inches by 9-5/8 inches; Exposure: 14-1/2 inches by 8-5/16 inches +/- 1/16 inch.

4. b. Accent Tiles: [\_\_\_]./sq. ft. 5. c. TS Tiles: [\_\_\_\_] lbs./sq. ft. 6. Style: Flat Tile

same color as TPO sheet.

at end of workday.

Resistance Classification.

acceptable to roofing system manufacturer.

7. Finish: Natural Trim and Flashing: Same material, finish, and gauge as ZALMAG® wall tiles except where otherwise noted; See Section Sheet Metal Trim and Flashing for additional fabrication requirements. 1. False Starter: 1-3/4 by 120 inches; 22 [24]-gage

2. Inside Corners: 6-1/8 by 6-1/8 by 120 inches; 22 [24]-gage 3. 1-Piece Outside Corners: 120 inches long; 22 [24]-gage 4. 3-Piece Outside Corners: 120 inches long; 22 [24]-gage; consist of 2 J-channels and 1 Outside Corner Cap (2 by 2 inches).

5. J-Channels: 3-3/8 by 1/2 by 120 inches; 22 [24]-gage 6. Head Flashing: 1-1/2 by 1-3/4 by 120 inches; 22 [24]-gage Underlayment: ASTM D 226/D 226M, No. 30 asphalt-saturated felt. D. Fasteners: Galvanized steel, ring-shank roofing nails.

1. Minimum Length: 3d (1-1/4 inches) . Install steel wall tiles, trim and flashing in accordance with manufacturer's instructions. Pull tiles from several boxes during installation process to ensure random finish variation. F. Prevent dissimilar metals and corrosive nonmetallic materials from coming into direct contact with ZALMAG steel materials. Do not allow water to flow from dissimilar metals to ZALMAG steel materials.

THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING A. Manufacturer Qualifications: A qualified manufacturer that is UL listed or listed in FM Approvals' RoofNav for roofing system identical to that used for this Project. B. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within warranty period of 20 years from date of Substantial Completion. C. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, TPO sheet. Thickness: 60 mils, nominal.

Exposed Face Color: White. D. Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with 1. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 milsthick, minimum, of

2. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer. 3. Bonding Adhesive: Manufacturer's standard. 4. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors. 5. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-

resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and

6. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces. Thickness: 1-inch. Tapered Insulation: Provide factory-tapered insulation boards, match roof insulation material.

G. Slope: Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings. H. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inchthick and acceptable to roofing system manufacturer. Color: Contrasting with roof membrane. I. Install roofing system according to roofing system manufacturer's written instructions, FM Approvals' RoofNav

assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29. J. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing. K. Coordinate installation and transition of roofing system component serving as an air barrier with air barrier over | E. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified wall and parapet sheathing. L. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed

M. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation. N. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows. 1. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping Make joints between adjacent insulation boards not more than 1/4 inchin width.

3. At internal roof drains, slope insulation to create a square drain sump with each side equal to the

4. Fill gaps exceeding 1/4 inchwith insulation. 5. Cut and fit insulation within 1/4 inchof nailers, projections, and penetrations. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to wood decks. . Fasten insulation according to requirements in FM Approvals' RoofNav for specified Windstorm

diameter of the drain bowl plus 24 inches. Trim insulation so that water flow is unrestricted.

2. Fasten insulation to resist specified uplift pressure at corners, perimeter, and field of roof. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation. 1. Staggered end joints within each layer not less than 24 inches in adjacent rows. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping

> 3. Make joints between adjacent insulation boards not more than 1/4 inchin width. 4. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches. Trim insulation so that water flow is unrestricted. 5. Fill gaps exceeding 1/4 inchwith insulation. 6. Cut and fit insulation within 1/4 inchof nailers, projections, and penetrations.

assembly requirements and FM Global Property Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification. Set each layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.

7. Adhere each layer of insulation to substrate using adhesive according to FM Approvals' RoofNav

Q. Adhere roof membrane, sheet flashings and preformed flashing accessories according to roofing system manufacturer's written instructions. R. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by

manufacturer. Stagger end laps. S. Bonding Adhesive: Apply to substrate and underside of roof membrane sheet flashing at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof

T. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and

perimeter of roofing. Terminate and seal top of sheet flashings and mechanically anchor to substrate through U. Apply roof membrane with side laps shingled with slope of roof deck where possible. V. Seams: Clean seam areas, overlap roof membrane and firmly roll sheet flashings into the adhesive. Hot-air

weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation. 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings. 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas. 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

W. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with X. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing. Y. Flexible Walkways: Install flexible walkways at the following locations:

1. Perimeter of each rooftop unit. 2. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations. 3. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.

4. Top and bottom of each roof access ladder. 5. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit

6. Locations indicated on Drawings. 7. As required by roof membrane manufacturer's warranty requirements.

8. Provide 6-inch clearance between adjoining pads. 9. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

and nighttime-sky heat loss.

Fabrication Tolerances:

stainless Steel: 0.016 inch thick.

sealant concealed within joints.

### SHEET METAL FLASHING AND TRIM A. General: Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand

wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight. B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated. C. SPRI Wind Design Standard: Manufacture and install copings and roof edge flashings tested in accordance with ANSI/SPRI/FM 4435/ES-1 and capable of resisting design pressures as indicated on Drawings. D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces. . Fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible. 2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal. 3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate

fit before shop fabrication. 4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems. 5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles. 2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified. G. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl

2. Use lapped expansion joints only where indicated on Drawings. H. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant. I. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as Fabricate in minimum 96-inch-long sections.

3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal

as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the

4. Fabricate expansion joints, expansion-joint covers, and gutter accessories from same metal as gutters. 5. Fabricate from aluminum: 0.032 inch thick. C. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.

1. Fabricate from aluminum: 0.024 inch thick. .. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fabricate from aluminum: 0.032 inch thick. M. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions

aluminum: 0.032 inch thick N. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch-long, but not exceeding 12foot-long sections. Furnish with 6-inch-wide, joint cover plates. Shop fabricate interior and exterior corners. Fabricate from aluminum: 0.050 inch thick O. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates

of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated

and shape required, complete with outlet tubes, exterior flange trim, and built-in overflows. Fabricate from

holes for fasteners on interior leg. Miter corners fasten and seal watertight. Shop fabricate interior and exterior corners. Fabricate from aluminum: 0.050 inch thick. P. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from aluminum: 0.032 inch thick. Q. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-footlong, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from

### HOLLOW METAL DOORS AND FRAMES A. Interior Standard-Duty Doors and Frames: ANSI/SDI A250.8, Level 1; ANSI/SDI A250.4, Level C.

Doors:

b. Face: Uncoated steel sheet, minimum thickness of 0.032 inch. Frames: a. Materials: Uncoated steel sheet, minimum thickness of 0.042 inch. b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door

B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.. Doors: a. Thickness: 1-3/4 inches.

c. Edge Bevel: Bevel lock and hinge edges 1/8 inch in 2 inches.

d. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration. e. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.

b. Face: Metallic-coated steel sheet, minimum thickness of 0.042 inch, with minimum A40

a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch, with minimum A40 Borrowed Lites: Fabricate of uncoated steel sheet, minimum thickness of 0.042 inch. D. Hollow-Metal Frames: Comply with ANSI/SDI A250.11. Set frames accurately in position; plumbed, aligned,

braces without damage to completed Work. 1. Install frames with removable stops located on secure side of opening. 2. Fire-Rated Openings: Install frames according to NFPA 80. 3. Floor Anchors: Secure with postinstalled expansion anchors. 4. Solidly pack mineral-fiber insulation inside frames.

5. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:

and braced securely until permanent anchors are set. After wall construction is complete, remove temporary

perpendicular to frame head. b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.

a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb

d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor. below. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8. . Fire-Rated Doors: Install doors with clearances according to NFPA 80.

2. Smoke-Control Doors: Install doors according to NFPA 105.

a. 10-inch top- and bottom-rail blocking.

otherwise indicated on Drawings.

A. Fire-Rated Wood Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings and temperaturerise limits indicated on Drawings, based on testing at positive pressure in accordance with UL 10C. B. Solid-Core Interior Doors: 1. Performance Grade: ANSI/WDMA I.S. 1A Heavy Duty.

2. Faces: Any closed-grain hardwood of mill option. . Hollow-Core Interior Doors: 1. Performance Grade: ANSI/WDMA I.S. 1A Standard Duty. 2. Faces: Any closed-grain hardwood of mill option.

FLUSH WOOD DOORS

b. 2-1/2-inch midrail blocking. D. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as l indicated E. Install frames level, plumb, true, and straight. 1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.

3. Install smoke- and draft-control doors in accordance with NFPA 105. Job-Fitted Doors: 1. Align and fit doors in frames with uniform clearances and bevels as indicated below. Machine doors for hardware.

2. Install fire-rated doors and frames in accordance with NFPA 80.

3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining. 4. Clearances: a. Provide 1/8 inch at heads, jambs, and between pairs of doors. b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless

threshold unless otherwise indicated. d. Comply with NFPA 80 for fire-rated doors. 5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of

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F804.233.5345

WWW.SMBW.COM

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1228 HULL STREET. RICHMOND, VA 23224 PERMIT SET - NOT FOR CONSTRUCTION Checked By

LOUIS J. WOLF

Lic. No. 12549

21 JAN 2019

SPECIFICATIONS

Construction Set 4/22/2019

12/11/2018

2/22/2019

5. Interior Floor Installations, Wood Subfloor: TCNA F144; thinset mortar on cementitious backer units or

7. Bathtub/Shower Wall Installations, Wood or Metal Studs or Furring: TCNA B412; thinset mortar on

8. Shower Receptor and Wall Installations: TCNA B415; thinset mortar on waterproof membrane over

6. Interior Wall Installations, Wood or Metal Studs or Furring: TCNA W245 or TCNA W248; thinset mortar on

fiber-cement backer board.

glass-mat, water-resistant gypsum backer board.

cementitious backer units or fiber-cement backer board.

cementitious backer units or fiber-cement backer board.

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LIGHTHOUSE DINER
1228 HULL STREET, RICHMOND, VA 23224

SPECIFICATIONS

1228 HULL STREET,

Checked By

For Permit 1/21/2019
Construction Set 4/22/2019

RICHMOND, VA 23224

PERMIT SET - NOT FOR CONSTRUCTION

CS1.03

# 1228 HULL STREET (CONSTRUCTION SET)

1228 HULL STREET RICHMOND, VIRGINIA 23224

# SITE DATA:

- 1. PROPERTY ID: S0000084001
- 2. <u>ADDRESS:</u> 1228 HULL STREET RICHMOND, VA 23224
- 3. <u>ACREAGE:</u> 0.129 AC
- 4. ZONING: B-5 BUSINESS (CENTRAL BUSINESS)
- 5: <u>Proposed use:</u> mixed use (commercial/residential)
- 6. <u>Permits required:</u> building permit (b)

# 1"=2,000'

# SHEET INDEX:

- 1. COVER SHEET
- 2. EXISTING CONDITIONS & DEMO
- 3. LAYOUT & UTILITIES
- 4. GRADING PLAN

THESE PLANS PROPOSE LESS THAN 2,500 SF OF LAND DISTURBANCE.

# OWNER:

GARDINIA LLC PO BOX 14144 RICHMOND, VA 23225

# ENGINEER:

SILVERCORE
7110 FOREST AVE, SUITE 204
RICHMOND, VA 23226
PH. (804)282-6900
CONTACT: STEVE KING

# SURVEYOR:

NYFELER ASSOCIATES
619 W CARY ST
RICHMOND, VA 23220
PH. (804)277-4231
CONTACT: GEORGE NYFELER

# ARCHITECT:

SMBW

111 VIRGINIA STREET, SUITE 111

RICHMOND, VA 23219

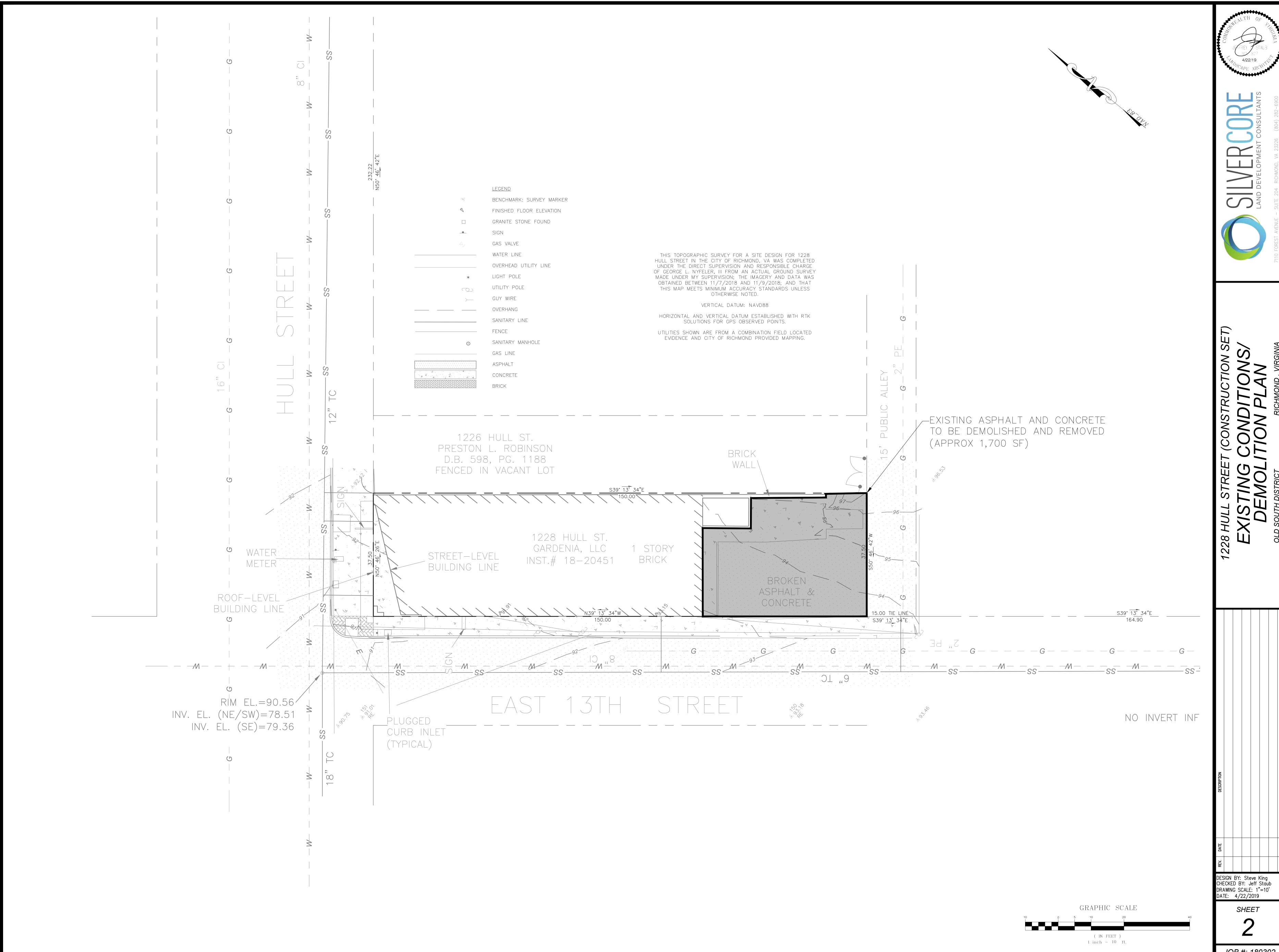
PH. (804) 233-5343

CONTACT: TAYLOR CLARK

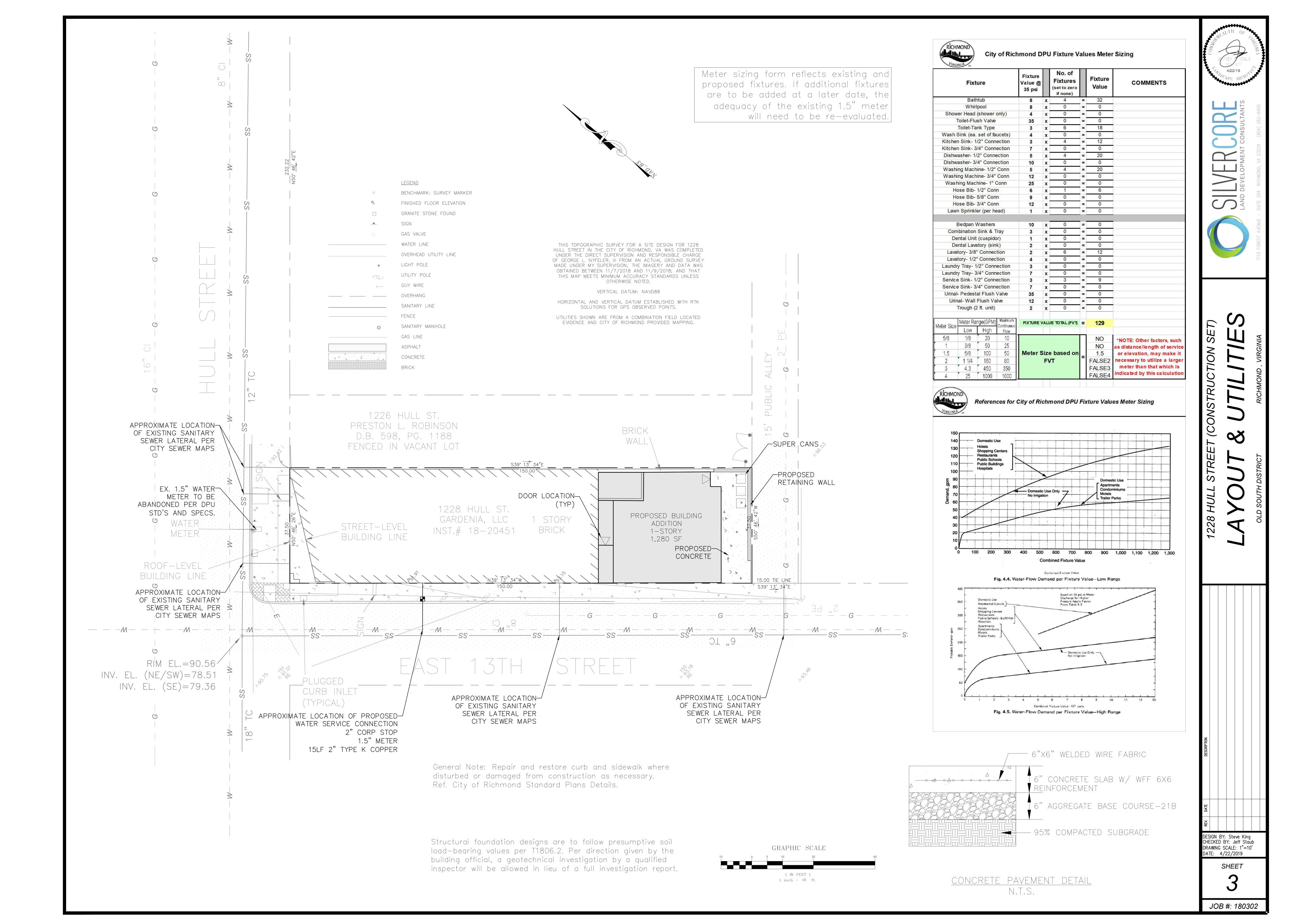
DESIGN BY: Steve King
CHECKED BY: Jeff Staub
DRAWING SCALE: N/A
DATE: 4/22/2019

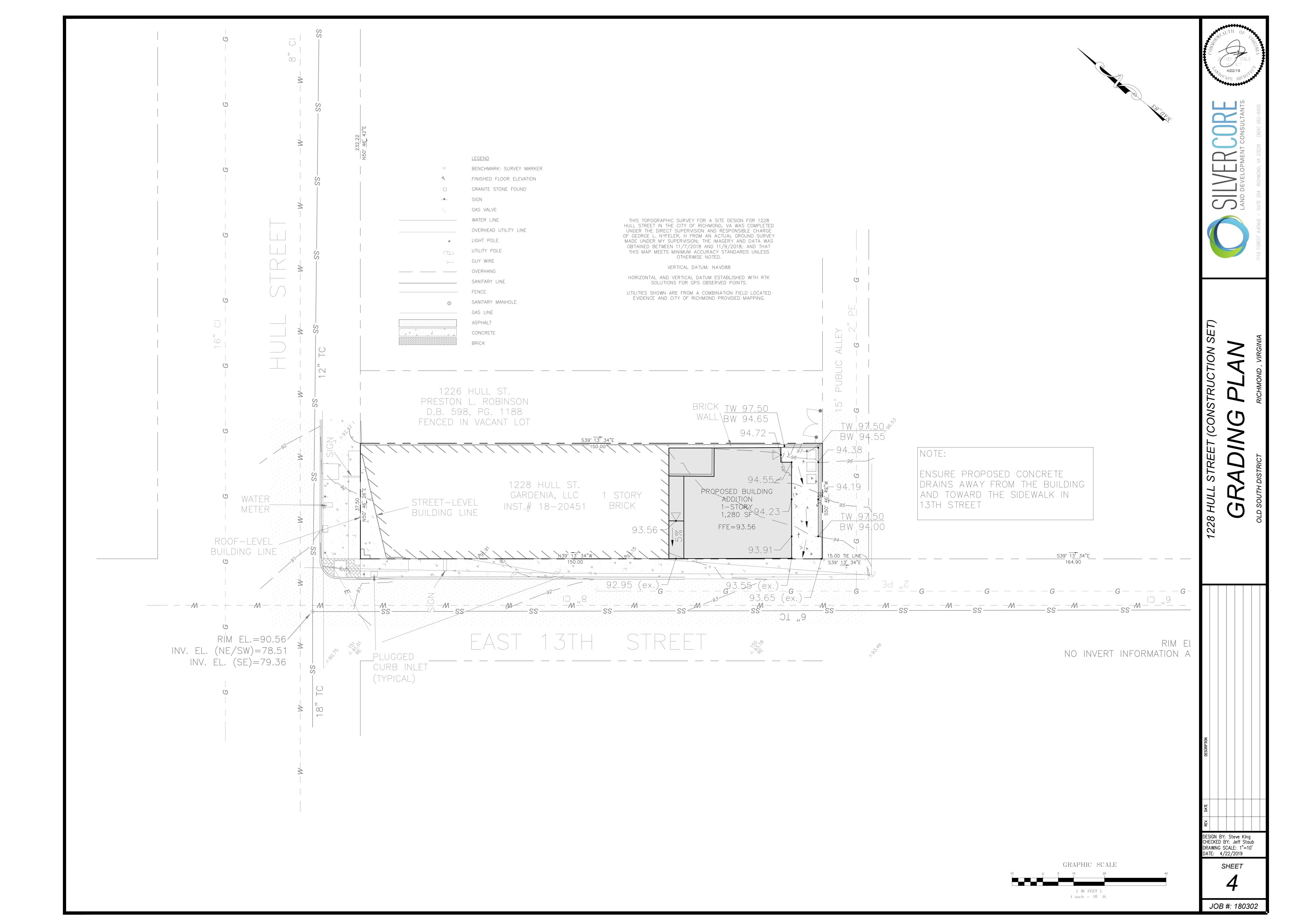
SHEET 1

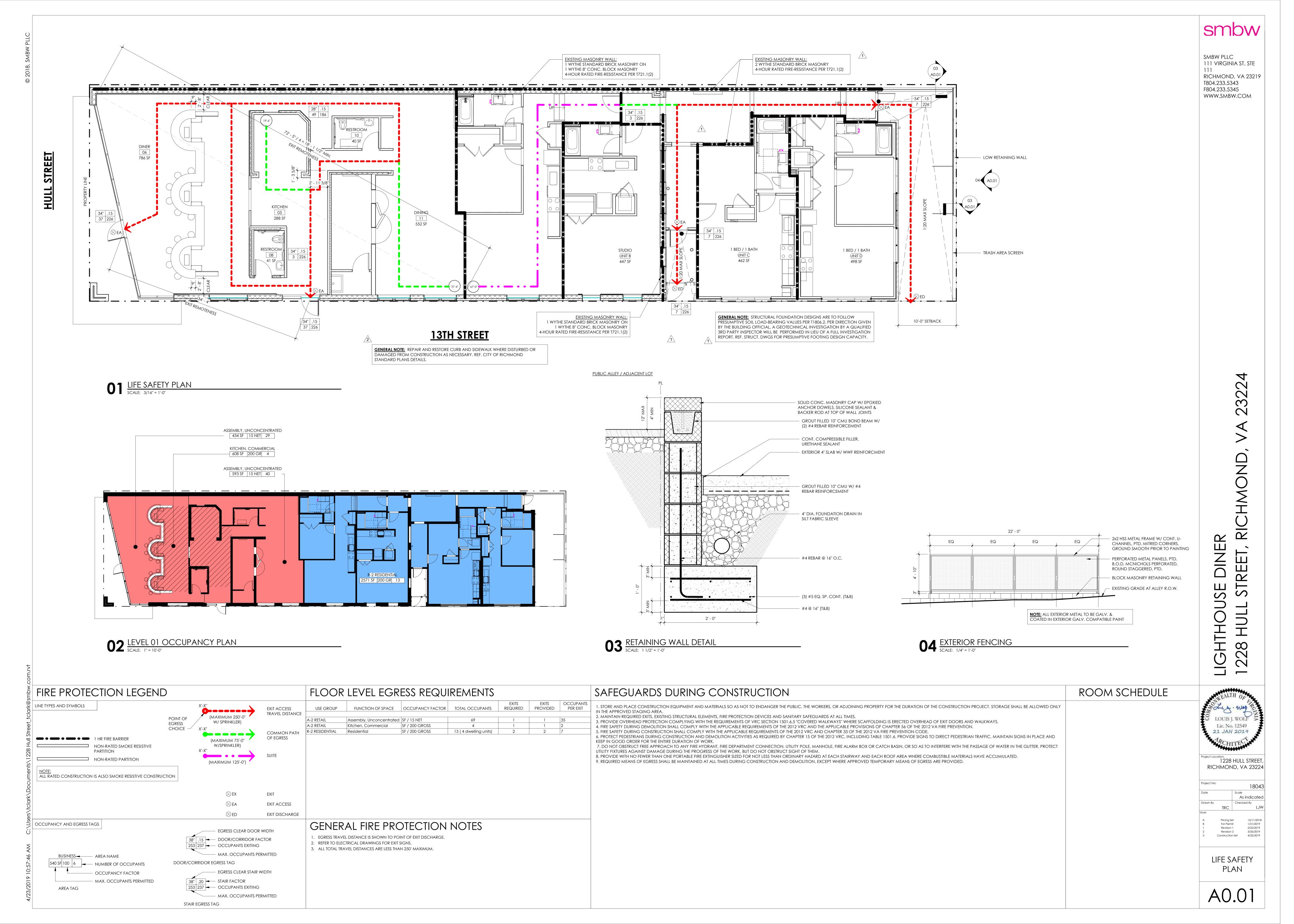
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RICHMOND, VA 23219

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LOUIS J. WOLF Lic. No. 12549 21 JAN 2019 Project Location: 1228 HULL STREET, RICHMOND, VA 23224

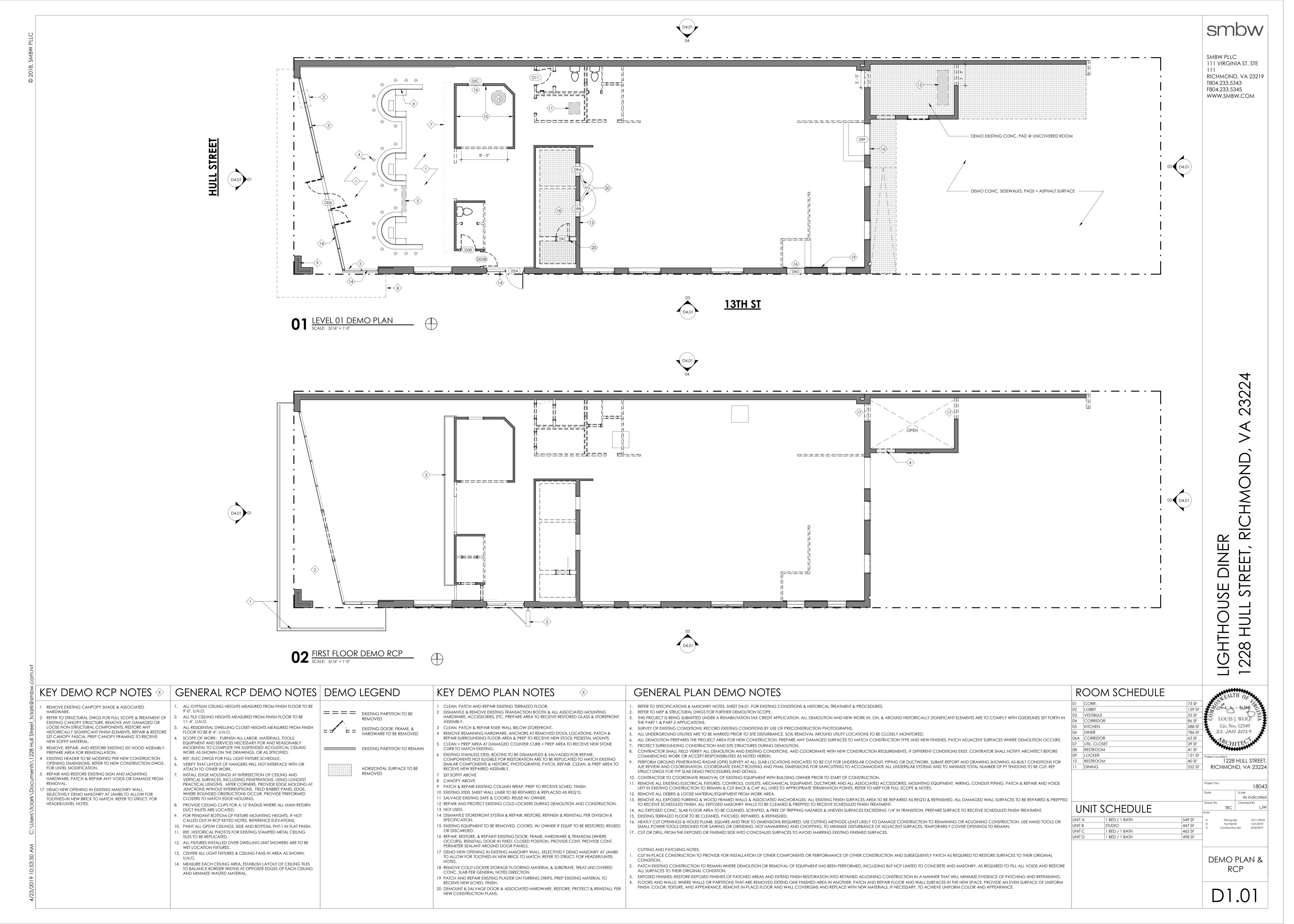
PERMIT SET - NOT FOR CONSTRUCTION

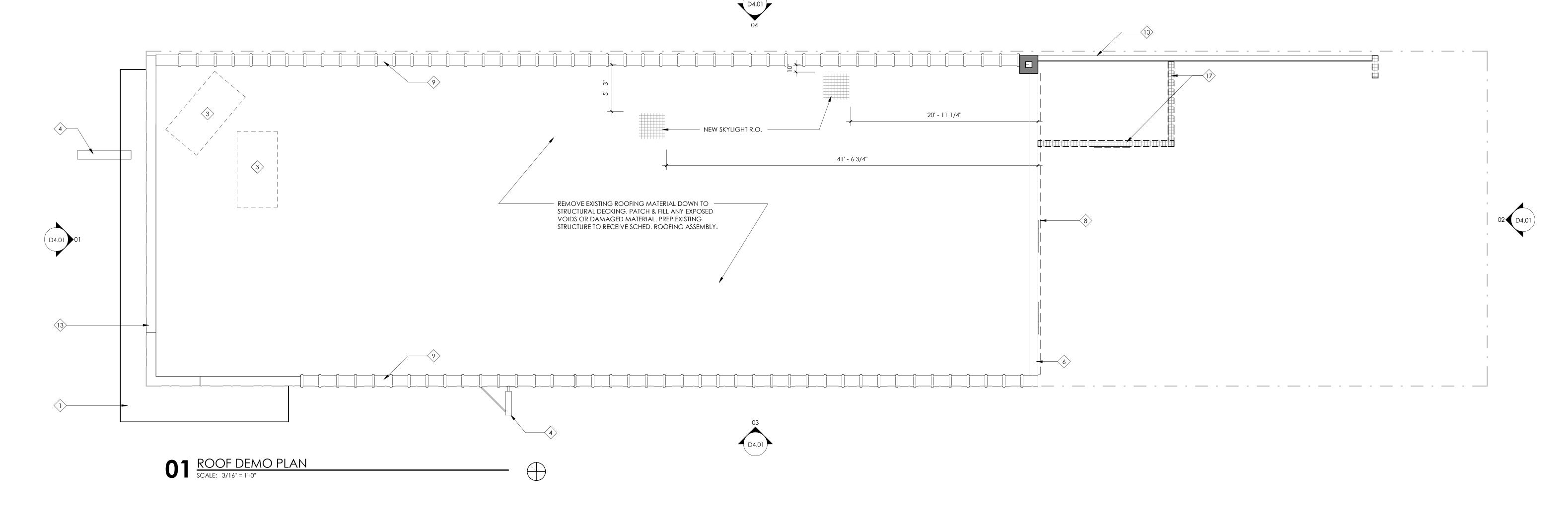
 
 Pricing Set
 12/11/2018

 For Permit
 1/21/2019

 Revision 1
 2/22/2019
 3 Construction Set 4/22/2019

CONSTRUCTION **ASSEMBLIES** 





# KEY DEMOLITION ROOF PLAN NOTES 🕸 | GENERAL PLAN DEMO NOTES

REPAIR & RESTOR EXIST. SST FASCIA. (CONTRACTOR OPTION: FASCIA MAY BE REMOVED AND RESTORED OFFSITE). CLEAN & PREP AREA TO RECEIVE REINSTALLED COMPONENTS. REFER TO

STRUCTURAL DWGS FOR FULL CANOPY STRUCTURE SCOPE & TREATMENT. 2 REMOVE EXIST. CANOPY SHADE & ASSOCIATED HARDWARE

3 REMOVE EXIST. ROOFTOP MECH. UNITS. REF. MEP DWGS FOR FULL MECH DEMO SCOPE. 4 REPAIR & RESTORE EXIST. SIGN & MOUNTING HARDWARE. PREP TO RECEIVE NEW SIGNAGE.

COORD. NEW SIGNAGE W/ OWNER. 5 REMOVE EXIST. TRANSACTION WINDOW ASSEMBLY, ASSOCIATED FRAMING & SURROUNDING PANELING. REPAIR ADJACENT STOREFRONT & CONSTRUCTION AS REQ'D. TO RECEIVE NEW, IN

KIND STOREFRONT ASSEMBLY. 6 REMOVE EXIST. METER. REFER ELEC DWGS FOR NEW METER LOCATION. 7 DISMANTLE EXISTING STOREFRONT FRAME & GLAZING. SALVAGE, REPAIR, AND RESTORE ANY

RESTORED & NEW STOREFRONT FRAMING COMPONENTS. REFER TO DIVISION 8 SPECIFICATION FOR FURTHER TREATMENT.

8 REMOVE EXISTING GUTTER & ASSOCIATED HARDWARE. CLEAN & PREP AREA TO RECEIVE NEW COMPONENTS.

9 EXISTING CLAY PARAPET COPING TILES TO BE REMOVED, SALVAGED, & REPAIRED WHERE POSSIBLE. REPAIR EXISTING PARAPET & PREP TO RECEIVE NEW ROOFING.

10 CUT BACK DAMAGED, DELAPIDATED PORTIONS OF MASONRY WALL. STABILIZE REMAINING PORTION OF WALL & PREP TO RECEIVE SCHED. ADJACENT CONSTRUCTION. 11 EXISTING VENT STACK TO BE INSPECTED FOR STRUCTURAL STABILITY. REPAIR AND STABILIZE AS

12 REMOVE EXIST. PARGING AND LATH COLUMN WRAP. REPAIR EXIST. COLUMN /BRICK MASONRY. REFER TO STRUCTURAL DWGS FOR FULL SCOPE AND TREATMENT. 13 REPAIR EXPOSED BRICK COURSING & PREP T.O WALL TO RECEIVE NEW ROOFING & ADJACENT NEW CONSTRUCITON.

14 REPAIR, RESTORE, & REFINISH EXISTING KNEE WALL BELOW STOREFRONT. 15 EXISTING OPENING HEADER TO BE MODIFIED PER NEW CONSTRUCTION OPENING DIMENSIONS.

REFER TO NEW CONSTRUCTION DWGS. FOR LINTEL MODIFICATION. 16 REMOVE EXIST. WINDOW. CLEAN & PREP OPENING TO RECEIVE NEW CONSTRUCTION. 17 DEMO TOP BRICK COURSES TO BE BELOW ELEVATION OF SCHED. NEW ROOF ASSEMBLY. SEE DEMO ELEVS & NEW CONSTRUCTION ROOF DWGS FOR SCOPE.

18 SELECTIVELY REMOVE BRICK AT OPENING TO ALLOW FOR TOOTHED-IN NEW BRICK TO MATCH

EXISTING AT JAMBS.

REFER TO SPECIFICATIONS & MASONRY NOTES, SHEET D4.01, FOR EXISTING CONDITIONS & HISTORICAL TREATMENT & PROCEDURES.

2. REFER TO MEP & STRUCTURAL DWGS FOR FURTHER DEMOLITION SCOPE. 3. THIS PROJECT IS BEING SUBMITTED UNDER A REHABILITATION TAX CREDIT APPLICATION. ALL DEMOLITION AND NEW WORK IN, ON, & AROUND HISTORICALLY SIGNIFICANT ELEMENTS ARE TO COMPLY WITH GUIDELINES SET FORTH IN THE PART 1 & PART 2 APPLICATIONS.

4. SURVEY OF EXISTING CONDITIONS: RECORD EXISTING CONDITIONS BY USE OF PRECONSTRUCTION PHOTOGRAPHS.

5. ALL UNDERGROUND UTILITIES ARE TO BE MARKED PRIOR TO SITE DISTURBANCE. SOIL REMOVAL AROUND UTILITY LOCATIONS TO BE CLOSELY MONITORED. 6. ALL DEMOLITION PREPARES THE PROJECT AREA FOR NEW CONSTRUCTION. PREPARE ANY DAMAGED SURFACES TO MATCH CONSTRUCTION TYPE AND NEW FINISHES. PATCH ADJACENT SURFACES WHERE DEMOLITION OCCURS.

8. CONTRACTOR SHALL FIELD VERIFY ALL DEMOLITION AND EXISTING CONDITIONS, AND COORDINATE WITH NEW CONSTRUCTION REQUIREMENTS. IF DIFFERENT CONDITIONS EXIST, CONTRATOR SHALL NOTIFY ARCHITECT BEFORE

9. PERFORM GROUND PENETRATING RADAR (GPR) SURVEY AT ALL SLAB LOCATIONS INDICATED TO BE CUT FOR UNDERSLAB CONDUIT, PIPING OR DUCTWORK. SUBMIT REPORT AND DRAWING SHOWING AS-BUILT CONDITIONS FOR A/E REVIEW AND COORDINATION. COORDINATE EXACT ROUTING AND FINAL DIMENSIONS FOR SAWCUTTING TO ACCOMMODATE ALL UNDERSLAB SYSTEMS AND TO MINIMIZE TOTAL NUMBER OF PT TENDONS TO BE CUT. REF STRUCT DWGS FOR TYP SLAB DEMO PROCEDURES AND DETAILS.

10. CONTRACTOR TO COORDINATE REMOVAL OF EXISTING EQUIPMENT WITH BUILDING OWNER PRIOR TO START OF CONSTRUCTION. 11. REMOVE ALL EXISTING ELECTRICAL FIXTURES, CONTROLS, OUTLETS, MECHANICAL EQUIPMENT, DUCTWORK AND ALL ASSOCIATED ACCESSORIES, MOUNTING EQUIPMENT, WIRING, CONDUIT PIPING. PATCH & REPAIR AND VOIDS LEFT IN EXISTING CONSTRUCTION TO REMAIN & CUT BACK & CAP ALL LINES TO APPROPRIATE TERMINATION POINTS. REFER TO MEP FOR FULL SCOPE & NOTES.

12. REMOVE ALL DEBRIS & LOOSE MATERIAL/EQUIPMENT FROM WORK AREA. 13. REMOVE ALL EXPOSED FURRING & WOOD FRAMED WALLS & ASSOCIATED ANCHORAGES. ALL EXISTING FINISH SURFACES AREA TO BE REPAIRED AS REQ'D & REFINISHED. ALL DAMAGED WALL SURFACES TO BE REPAIRED & PREPPED

TO RECEIVE SCHEDULED FINISH. ALL EXPOSED MASONRY WALLS TO BE CLEANED & PREPPED TO RECEIVE SCHEDULED FINISH TREATMENT. 14. ALL EXPOSED CONC. SLAB FLOOR AREA TO BE CLEANED, SCRAPED, & FREE OF TRIPPING HAZARDS & UNEVEN SURFACES EXCEEDING 1/4" IN TRANSITION. PREPARE SURFACE TO RECEIVE SCHEDULED FINISH TREATMENT.

15. EXISTING TERRAZZO FLOOR TO BE CLEANED, PATCHED, REPAIRED, & REFINISHED. 16. NEATLY CUT OPENINGS & HOLES PLUMB, SQUARE AND TRUE TO DIMENSIONS REQUIRED. USE CUTTING METHODS LEAST LIKELY TO DAMAGE CONSTRUCTION TO REMAINING OR ADJOINING CONSTRUCTION. USE HAND TOOLS OR SMALL POWER TOOLS DESIGNED FOR SAWING OR GRINDING, NOT HAMMERING AND CHOPPING, TO MINIMIZE DISTURBANCE OF ADJACENT SURFACES. TEMPORARILY COVER OPENINGS TO REMAIN. 17. CUT OR DRILL FROM THE EXPOSED OR FINISHED SIDE INTO CONCEALED SURFACES TO AVOID MARRING EXISTING FINISHED SURFACES.

**CUTTING AND PATCHING NOTES:** CUT IN-PLACE CONSTRUCTION TO PROVIDE FOR INSTALLATION OF OTHER COMPONENTS OR PERFORMANCE OF OTHER CONSTRUCTION AND SUBSEQUENTLY PATCH AS REQUIRED TO RESTORE SURFACES TO THEIR ORIGINAL PATCH EXISTING CONSTRUCTION TO REMAIN WHERE DEMOLITION OR REMOVAL OF EQUIPMENT HAS BEEN PERFORMED, INCLUDING BUT NOT LIMITED TO CONCRETE AND MASONRY, AS REQUIRED TO FILL ALL VOIDS AND RESTORE

ALL SURFACES TO THEIR ORIGINAL CONDITION. 3. EXPOSED FINISHES: RESTORE EXPOSED FINISHES OF PATCHED AREAS AND EXTEND FINISH RESTORATION INTO RETAINED ADJOINING CONSTRUCTION IN A MANNER THAT WILL MINIMIZE EVIDENCE OF PATCHING AND REFINISHING. 4. FLOORS AND WALLS: WHERE WALLS OR PARTITIONS THAT ARE REMOVED EXTEND ONE FINISHED AREA IN ANOTHER, PATCH AND REPAIR FLOOR AND WALL SURFACES IN THE NEW SPACE. PROVIDE AN EVEN SURFACE OF UNIFORM FINISH, COLOR, TEXTURE, AND APPEARANCE. REMOVE IN-PLACE FLOOR AND WALL COVERGINS AND REPLACE WITH NEW MATERIALS, IF NECESSARY, TO ACHIEVE UNIFORM COLOR AND APPEARANCE.

Lic. No. 12549 21 JAN 2019

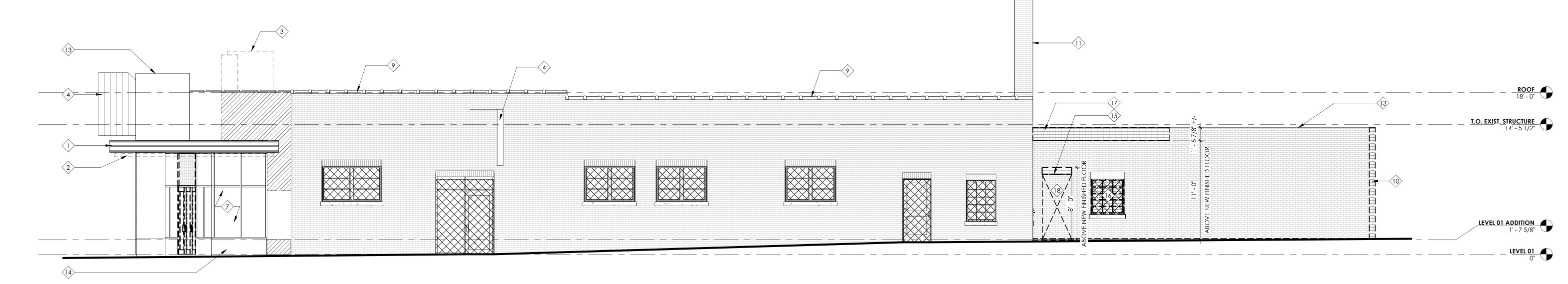
1228 HULL STREET, RICHMOND, VA 23224

18043 3/16" = 1'-0"

Pricing Set For Permit Construction Set 4/22/2019

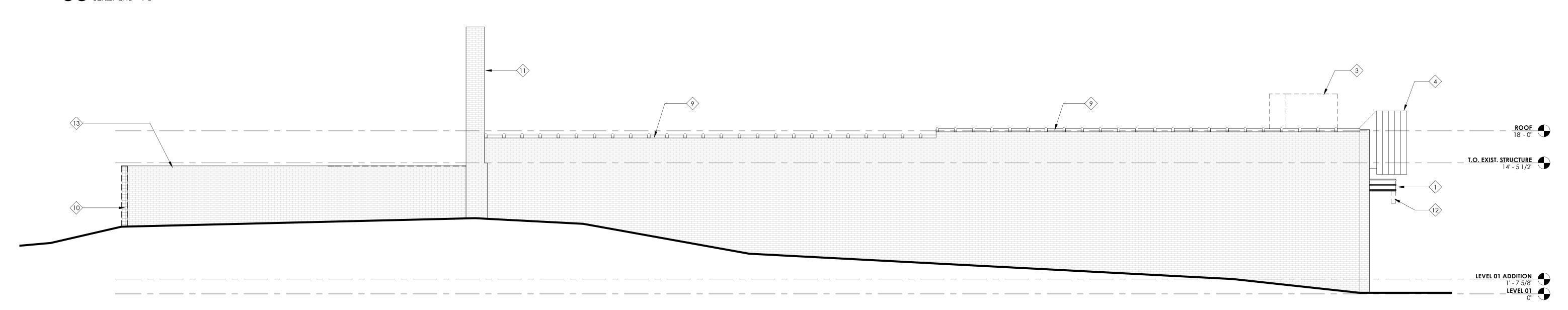
> DEMO ROOF PLAN

O2 SOUTH ELEVATION DEMO



03 WEST ELEVATION DEMO

01 NORTH ELEVATION DEMO



04 EAST ELEVATION DEMO
SCALE: 3/16" = 1'-0"

# DEMO ELEVATION KEY NOTES

- REPAIR & RESTOR EXIST. SST FASCIA. (CONTRACTOR OPTION: FASCIA MAY BE REMOVED AND RESTORED OFFSITE). CLEAN & PREP AREA TO RECEIVE REINSTALLED COMPONENTS. REFER TO STRUCTURAL DWGS FOR FULL CANOPY STRUCTURE SCOPE & TREATMENT.
- 2 REMOVE EXIST. CANOPY SHADE & ASSOCIATED HARDWARE 3 REMOVE EXIST. ROOFTOP MECH. UNITS. REF. MEP DWGS FOR FULL MECH DEMO SCOPE.
- 4 REPAIR & RESTORE EXIST. SIGN & MOUNTING HARDWARE, PREP TO RECEIVE NEW SIGNAGE. COORD. NEW SIGNAGE W/ OWNER. 5 REMOVE EXIST. TRANSACTION WINDOW ASSEMBLY, ASSOCIATED FRAMING & SURROUNDING PANELING. REPAIR ADJACENT STOREFRONT & CONSTRUCTION AS REQ'D. TO RECEIVE NEW, IN
- KIND STOREFRONT ASSEMBLY. 6 REMOVE EXIST. METER. REFER ELEC DWGS FOR NEW METER LOCATION. 7 DISMANTLE EXISTING STOREFRONT FRAME & GLAZING. SALVAGE, REPAIR, AND RESTORE ANY RESTORED & NEW STOREFRONT FRAMING COMPONENTS. REFER TO DIVISION 8 SPECIFICATION
- 8 REMOVE EXISTING GUTTER & ASSOCIATED HARDWARE, CLEAN & PREP AREA TO RECEIVE NEW
- 9 EXISTING CLAY PARAPET COPING TILES TO BE REMOVED, SALVAGED, & REPAIRED WHERE POSSIBLE. REPAIR EXISTING PARAPET & PREP TO RECEIVE NEW ROOFING.
- 10 CUT BACK DAMAGED, DELAPIDATED PORTIONS OF MASONRY WALL. STABILIZE REMAINING PORTION OF WALL & PREP TO RECEIVE SCHED. ADJACENT CONSTRUCTION. 11 EXISTING VENT STACK TO BE INSPECTED FOR STRUCTURAL STABILITY. REPAIR AND STABILIZE AS
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- NEW CONSTRUCITON. 14 REPAIR, RESTORE, & REFINISH EXISTING KNEE WALL BELOW STOREFRONT. 15 EXISTING OPENING HEADER TO BE MODIFIED PER NEW CONSTRUCTION OPENING DIMENSIONS. REFER TO NEW CONSTRUCTION DWGS. FOR LINTEL MODIFICATION.
- 16 REMOVE EXIST. WINDOW. CLEAN & PREP OPENING TO RECEIVE NEW CONSTRUCTION. 17 DEMO TOP BRICK COURSES TO BE BELOW ELEVATION OF SCHED, NEW ROOF ASSEMBLY, SEE DEMO ELEVS & NEW CONSTRUCTION ROOF DWGS FOR SCOPE. 18 SELECTIVELY REMOVE BRICK AT OPENING TO ALLOW FOR TOOTHED-IN NEW BRICK TO MATCH

EXISTING AT JAMBS.

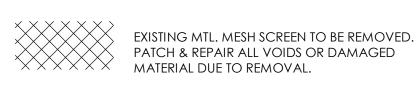
# DEMO ELEVATION GEN. NOTES DEMO ELEVATION LEGEND

- . REFER TO SPECIFICATIONS AND MASONRY NOTES FOR EXISTING CONDITIONS &
- HISTORICAL TREATMENT & PROCEDURES. 2. REFER TO MEP & STRUCTURAL DWGS FOR FURTHER DEMOLITION SCOPE. 3. THIS PROJECT IS BEING SUBMITTED UNDER A REHABILITATION TAX CREDIT APPLICATION. ALL DEMOLITION AND NEW WORK IN, ON, & AROUND HISTORICALLY SIGNIFICANT ELEMENTS ARE TO COMPLY WITH GUIDELINES SET FORTH IN THE PART 1 & PART 2 APPLICATIONS.
- 4. SURVEY OF EXISTING CONDITIONS: RECORD EXISTING CONDITIONS BY USE OF PRECONSTRUCTION PHOTOGRAPHS. 5. ALL DEMOLITION PREPARES THE PROJECT AREA FOR NEW CONSTRUCTION. PREPARE ANY DAMAGED SURFACES TO MATCH CONSTRUCTION TYPE AND NEW FINISHES. PATCH ADJACENT SURFACES WHERE DEMOLITION OCCURS. PROTECT SURROUNDING CONSTRUCTION AND SITE STRUCTURES DURING
- . CONTRACTOR SHALL FIELD VERIFY ALL DEMOLITION AND EXISTING CONDITIONS, AND COORDINATE WITH NEW CONSTRUCTION REQUIREMENTS. IF DIFFERENT CONDITIONS EXIST, CONTRATOR SHALL NOTIFY ARCHITECT BEFORE COMMENCING

WORK OR ACCEPT RESPONSIBILITIES AS NOTED HEREIN.

SALVAGE EXISTING TILE CLADDING MATERIAL. REMOVE DOWN TO MASONRY, SUBSTRATE. SCRAPE, CLEAN & PREP EXPOSED MATERIAL FOR SCHED.

EXISTING BRICK MASONRY. REF. MASONRY CLEANING, REPAIR, & REPOINTING NOTES AND DIV 4 SPECIFICATIONS FOR FULL TREATMENT.



EXISTING BRICK MASONRY TO BE REMOVED. REF. MASONRY NOTES FOR FULL TREATMENT.

# MASONRY CLEANING NOTES

# **SCOPE OF MASONRY CLEANING:**

1. CLEAN ALL EXISTING BRICK MASONRY AND PLASTER SURFACES USING LOW-PRESSURE SPRAY, HOT WATER, AND DETERGENT SOLUTION. 2. PERFORM ADDITIONAL CLEANING AS REQUIRED TO REMOVE MOLD, MILDEW, ALGAE, PAINT AND OTHER STAINS, IN AREAS THAT ARE NOTICEABLY DIFFERENT WHEN VIEWED FROM A DISTANCE OF 10 FEET, SO THAT CLEANED SURFACES BLEND SMOOTHLY INTO SURROUNDING AREAS.

### PREPARE MOCKUPS OF CLEANING, REPAIRS, AND REPOINTING ON EXISTING Surfaces to demonstrate aesthetic effects and to set quality standards for

MATERIALS AND EXECUTION. 2. REMOVE PLANT AND MOSS, AND SHRUB GROWTH FROM MASONRY SURFACES. CAREFULLY REMOVE BY CUTTING ROOTS AND ALLOWING REMAINING GROWTH TO DRY AS LONG AS POSSIBLE BEFORE REMOVAL. REMOVE LOOSE SOIL AND PLANT DEBRIS FROM OPEN MASONRY JOINTS TO WHATEVER DEPTH THEY OCCUR. 3. REMOVE EXTRANEOUS SUBSTANCES INCLUDING PAINT, CAULKING, ASPHALT, AND TAR. CAREFULLY REMOVE HEAVY ACCUMULATIONS OF RIGID MATERIALS FROM MASONRY SURFACE WITH SHARP CHISEL. DO NOT SCRATCH OR CHIP MASONRY

4. REMOVE LOOSE AND PEELING PAINT USING LOW-PRESSURE WATER SPRAY, SCRAPERS, STIFF BRUSHES, OR A COMBINATION OF THESE. ADJUST SPRAY PRESSURE AND VOLUME TO ENSURE THAT CLEANING METHODS DO NOT DAMAGE SURFACES, INCLUDING JOINTS. DO NOT SCRATCH OR CHIP MASONRY SURFACE. DO NOT USE WIRE 5. USE HOT WATER (140 TO 160 DEG F) AND LOW-PRESSURE SPRAY (100 TO 400 PSI; 4 TO 6 GPM) AND MEDIUM SOFT BRUSHES TO PERFORM ALL CLEANING. 6. PERFORM MASONRY CLEANING IN THE FOLLOWING SEQUENCE: DETERGENT CLEANER OVER ENTIRE BUILDING (BRICK AND PLASTER), THEN MOLD, MILDEW, AND ALGAE CLEANER AS REQUIRED, AND THEN NONACIDIC LIQUID CLEANER AS REQUIRED

TO REMOVE AND STUBBORN STAINING (MOLD, MILDEW, ALGAE, PAINT, GREASE, TAR,

# MASONRY GENERAL NOTES

EFFLORESCENCE, ETC.)

CLEAN ALL MASONRY SURFACES ASSUME 2 - 3% OF BRICK WALL TO REQUIRE BRICK REPLACEMENT 3. ASSUME 15 - 20% OF BRICK WALL TO BE REPOINTED

# MASONRY REPAIR NOTES

# REMOVE AND REPLACE FACE BRICKS THAT ARE DAMAGED, SPALLED, OR DETERIORATED. HARVEST

- EXISTING BRICKS IN GOOD CONDITION FROM CONCEALED AREAS BEHIND WOOD TRIM FOR ALL REPLACEMENT WORK EXPOSED TO VIEW. REMOVE AND REPLACE BACKUP MASONRY BRICKS WHERE FRACTURED OR UNSTABLE, OR DETERIORATED. REPLACE WITH COMMON BRICK OF SAME SIZE AND SIMILAR PHYSICAL
- PATCH EXISTING FACE BRICKS THAT ARE DAMAGED OR SPALLED BUT DO NOT WARRANT REPLACEMENT. PATCH HOLES, CHIPPED EDGES OR CORNERS MEASURING MORE THAN 3/4 INCH IN LEAST DIMENSION, AND AREAS OF DEEP DETERIORATION MEASURING MORE THAN 3/4 INCH IN LEAST DIMENSION AND MORE THAN 1/4 INCH DEEP.

- PREPARE MOCKUPS OF BRICK MASONRY REPAIR TO DEMONSTRATE AESTHETIC EFFECTS AND TO SET QUALITY STANDARDS FOR MATERIALS AND EXECUTION AND FOR FABRICATION AND INSTALLATION. CAREFULLY REMOVE BRICKS FROM JOINT TO JOINT, WITHOUT DAMAGING SURROUNDING
- REMOVE MORTAR, LOOSE PARTICLES, AND SOIL FROM BRICK BY CLEANING WITH HAND CHISELS,

MASONRY. REMOVE ENTIRE BRICK UNITS. PARTIAL BRICKS MAY BE REUSED WHERE CUT BRICKS ARE

- MEDIUM SOFT BRUSHES, AND WATER. REPLACE REMOVED DAMAGED BRICK WITH EXISTING HISTORIC BRICK IN GOOD CONDITION, TAKEN FROM CONCEALED AREAS, SUCH AS BEHIND WOOD TRIM.
- LAY REPLACEMENT BRICK WITH SETTING MORTAR AND WITH COMPLETELY FILLED BED, HEAD, AND COLLAR JOINTS. TOOL EXPOSED MORTAR JOINTS IN REPAIRED AREAS TO MATCH JOINTS OF SURROUNDING EXISTING BRICKWORK. WHERE REPOINTING WILL OCCUR ADJACENT TO BRICK REPAIRS, RAKE OUT MORTAR USED FOR

# LAYING BRICK BEFORE MORTAR SETS. POINT AT SAME TIME AS REPOINTING OF SURROUNDING

- PATCHING NOTES: REMOVE LOOSE MATERIAL FROM MASONRY SURFACE. CAREFULLY REMOVE ADDITIONAL MATERIAL SO PATCH DOES NOT HAVE FEATHERED EDGES BUT HAS SQUARE OR SLIGHTLY UNDERCUT EDGES ON AREA TO BE PATCHED AND IS AT LEAST 1/4 INCH THICK.
- COMBINE ONE OR MORE COLORS OF PATCHING COMPOUND, AS NEEDED, TO PRODUCE EXACT TROWEL OR SCRAPE SURFACE OF PATCH TO MATCH TEXTURE AND SURROUNDING SURFACE PLANE OR CONTOUR OF MASONRY UNIT.

MIX PATCHING COMPOUND IN INDIVIDUAL BATCHES TO MATCH EACH UNIT BEING PATCHED.

# MASONRY REPOINTING NOTES

### SCOPE OF MASONRY REPOINTING: RAKE OUT AND REPOINT JOINTS TO THE FOLLOWING EXTENT:

REMOVE MORTAR AND REPOINT.

- A. HOLES AND MISSING MORTAR. B. CRACKS THAT CAN BE PENETRATED 1/4 INCH OR MORE BY A KNIFE BLADE 0.027 INCH THICK.
- C. CRACKS 1/16 INCH OR MORE IN WIDTH AND OF ANY DEPTH. D. HOLLOW-SOUNDING JOINTS WHEN TAPPED BY METAL OBJECT.
- E. ERODED SURFACES 1/4 INCH OR MORE DEEP. F. DETERIORATION TO POINT THAT MORTAR CAN BE EASILY REMOVED BY HAND, WITHOUT TOOLS.
- G. NATURAL HYDRAULIC MORTAR OR ORIGINAL HISTORIC MORTAR, INCLUDING BUT NOT LIMITED TO PORTLAND-CEMENT MORTAR, MASONRY CEMENT, OR MORTAR CEMENT. H. DO NOT RAKE OUT AND REPOINT JOINTS WHERE NOT REQUIRED.

### REPOINTING TO BE PERFORMED IN ACCORDANCE WITH NPS PRESERVATION BRIEF #2 2. PREPARE MOCKUPS OF BRICK MASONRY REPOINTING TO DEMONSTRATE AESTHETIC EFFECTS AND TO SET QUALITY STANDARDS FOR MATERIALS AND EXECUTION.

3. REMOVE DOWNSPOUTS ADJACENT TO MASONRY AND REPLACE AFTER REPAIRS ARE COMPLETE.

- 4. RAKE OUT JOINTS: REMOVE MORTAR FROM JOINTS TO DEPTH OF 2 TIMES JOINT WIDTH, BUT NOT LESS THAN 1/2 INCH OR NOT LESS THAN THAT REQUIRED TO EXPOSE SOUND, UNWEATHERED MORTAR. DO NOT REMOVE UNSOUND MORTAR MORE THAN 2 INCHES DEEP. . REMOVE MORTAR FROM MASONRY SURFACES WITHIN RAKED-OUT JOINTS TO PROVIDE REVEALS WITH SQUARE BACKS AND TO EXPOSE MASONRY FOR CONTACT WITH POINTING MORTAR. BRUSH, VACUUM, OR FLUSH
- JOINTS TO REMOVE DIRT AND LOOSE DEBRIS. 6. DO NOT SPALL EDGES OF MASONRY UNITS OR WIDEN JOINTS. REPLACE OR PATCH DAMAGED MASONRY UNITS. 7. CUT OUT MORTAR BY HAND WITH CHISEL AND RESILIENT MALLET. DO NOT USE POWER-OPERATED GRINDERS. 8. APPLY POINTING MORTAR FIRST TO AREAS WHERE EXISTING MORTAR WAS REMOVED TO DEPTHS GREATER THAN

SURROUNDING AREAS. APPLY IN LAYERS NOT GREATER THAN 3/8 INCH UNTIL A UNIFORM DEPTH IS FORMED.

- FULLY COMPACT EACH LAYER THOROUGHLY AND ALLOW IT TO BECOME THUMBPRINT HARD BEFORE APPLYING . AFTER DEEP AREAS HAVE BEEN FILLED TO SAME DEPTH AS REMAINING JOINTS, POINT JOINTS BY PLACING MORTAR IN LAYERS NOT GREATER THAN 3/8 INCH. FULLY COMPACT EACH LAYER AND ALLOW IT TO BECOME THUMBPRINT HARD BEFORE APPLYING NEXT LAYER. WHERE EXISTING MASONRY UNITS HAVE WORN OR ROUNDED EDGES, SLIGHTLY RECESS FINISHED MORTAR SURFACE BELOW FACE OF MASONRY TO AVOID
- WIDENED JOINT FACES. TAKE CARE NOT TO SPREAD MORTAR BEYOND JOINT EDGES ONTO EXPOSED MASONRY SURFACES OR TO FEATHER EDGE THE MORTAR. 10. WHEN MORTAR IS THUMBPRINT HARD, TOOL JOINTS TO MATCH ORIGINAL APPEARANCE OF JOINTS AS DEMONSTRATED IN APPROVED MOCKUP. REMOVE EXCESS MORTAR FROM EDGE OF JOINT BY BRUSHING. . HAIRLINE CRACKING WITHIN THE MORTAR OR MORTAR SEPARATION AT EDGE OF A JOINT IS UNACCEPTABLE.

1228 HULL STREET, RICHMOND, VA 23224 18043 As indicated

Construction Set 4/22/2019

Lic. No. 12549

21 JAN 2019

**ELEVATIONS** 

DEMO





REPAIR & RESTORE EXISTING STOREFRONT & MTL CANOPY

CLEAN, REPAIR, & REPOINT EXTERIOR MASONRY

CLEAN EXISTING GRAFFITI PER NPS GUIDELINES

REMOVE EXISTING TILE CLADDING. CLEAN & REPAIR UNCOVERED MASONRY & PREP TO RELEIVE NEW MATERIAL. PROVIDE NEW TILES TO MATCH EXISTING OR PROVIDE ALL NEW TILES OF SIMILAR STYLE IF REPLCATED TILES ARE NOT AVAILABLE.

# HULL STREET CANOPY & STOREFRONT



5. REPAIR & PREP CANOPY FRAMING TO RECEIVE NEW MATERIAL.

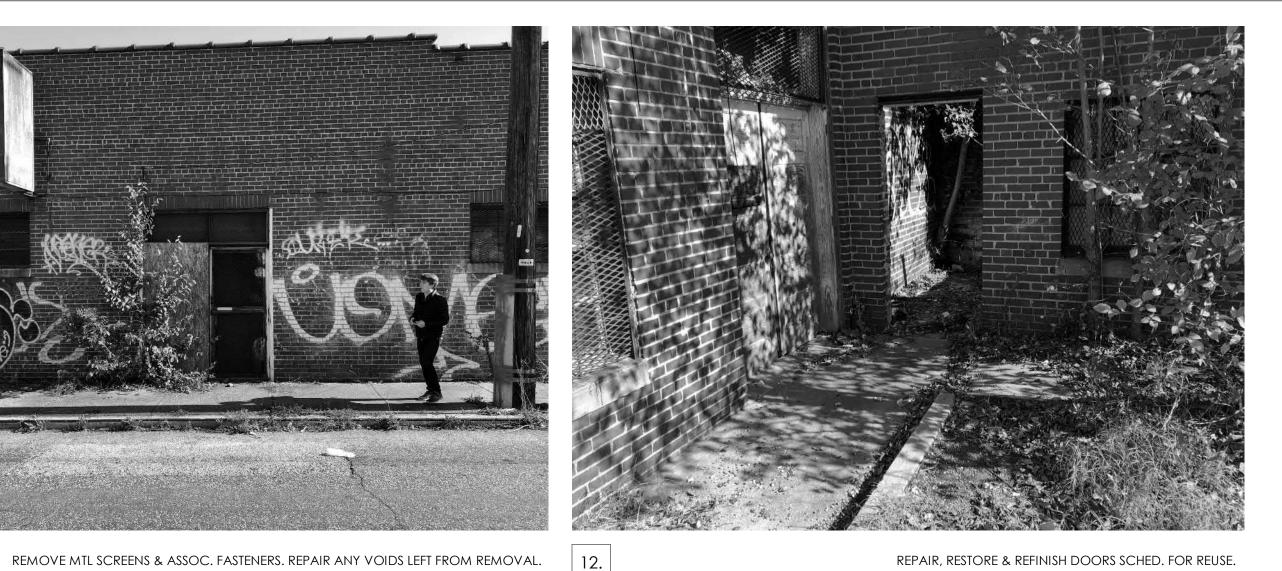






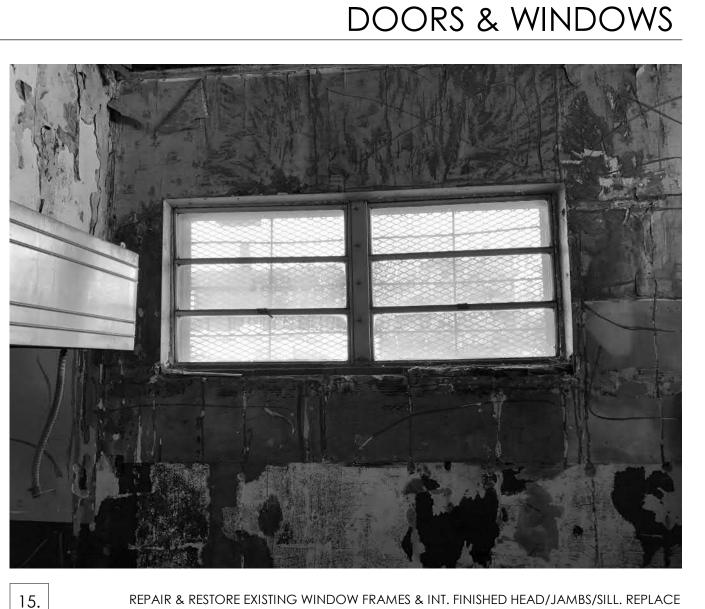




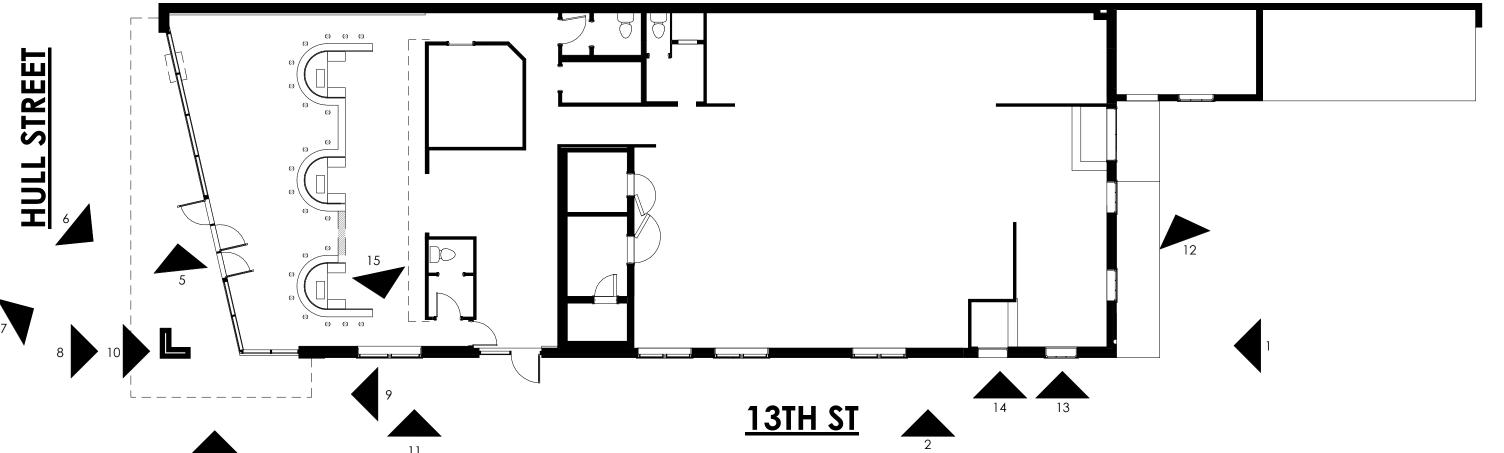








REPAIR & RESTORE EXISTING WINDOW FRAMES & INT. FINISHED HEAD/JAMBS/SILL. REPLACE COMPONENTS TO MATCH WHERE REQ'D.



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PERMIT SET - NOT FOR CONSTRUCTION

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EXISTING

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# smbw



HISTORIC STAMPED METAL CEILING TILE





SST COUNTERS / BOOTHS (HISTORIC)

# SST COUNTERS / BOOTHS (EXISTING)











WAREHOUSE

COLD STORAGE LOCKERS





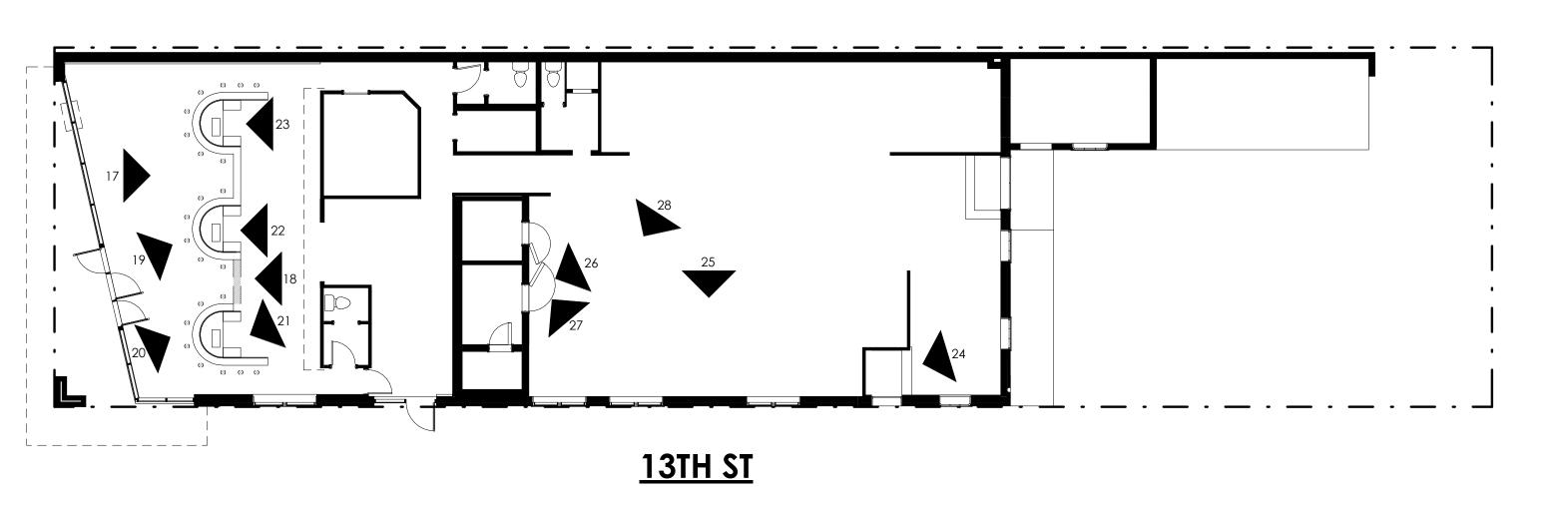






REPAIR & RESTORE EXISTING LOCKER WALLS.





D4.03

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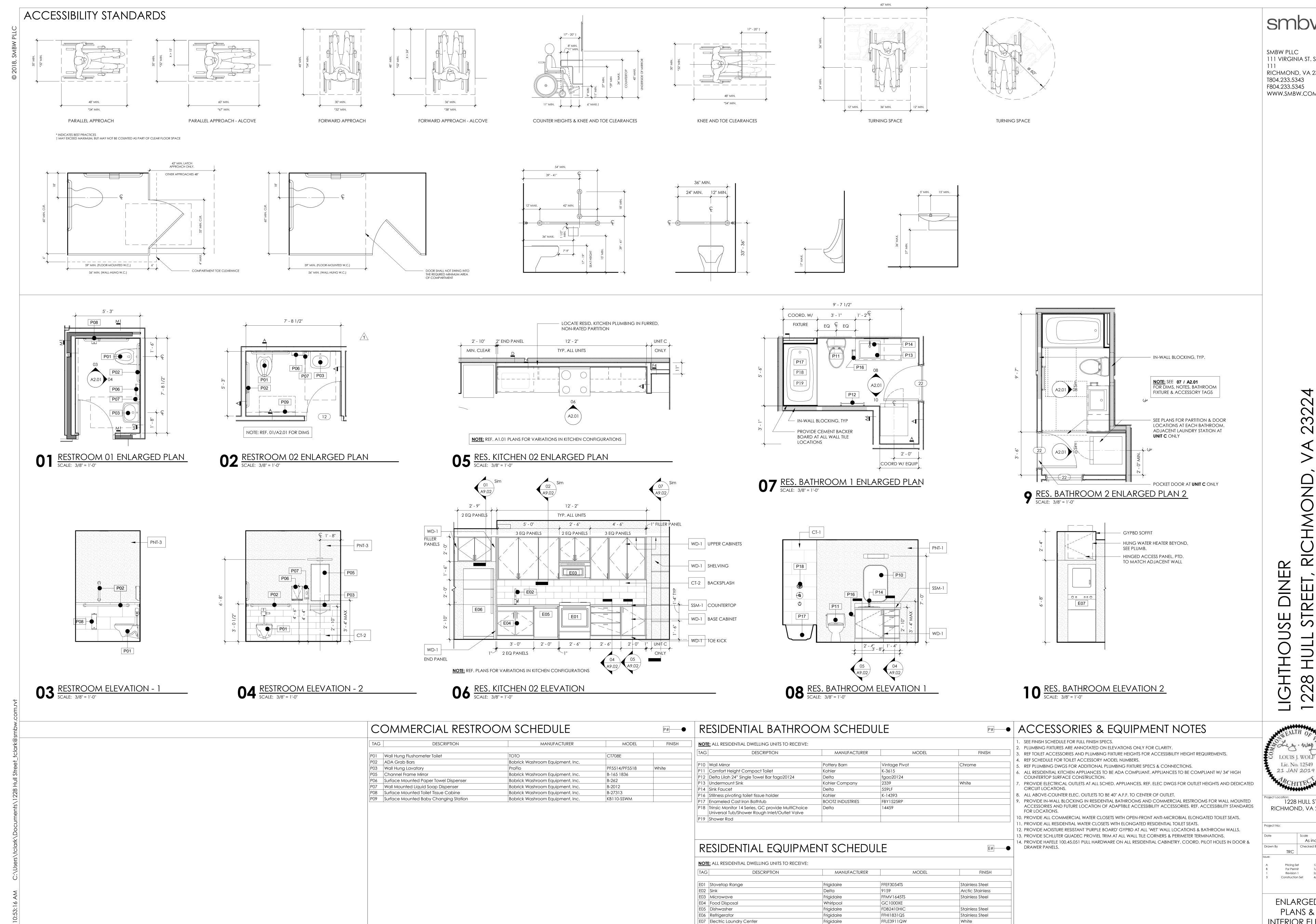
EXISTING

CONDITIONS -

INTERIOR

PERMIT SET - NOT FOR CONSTRUCTION





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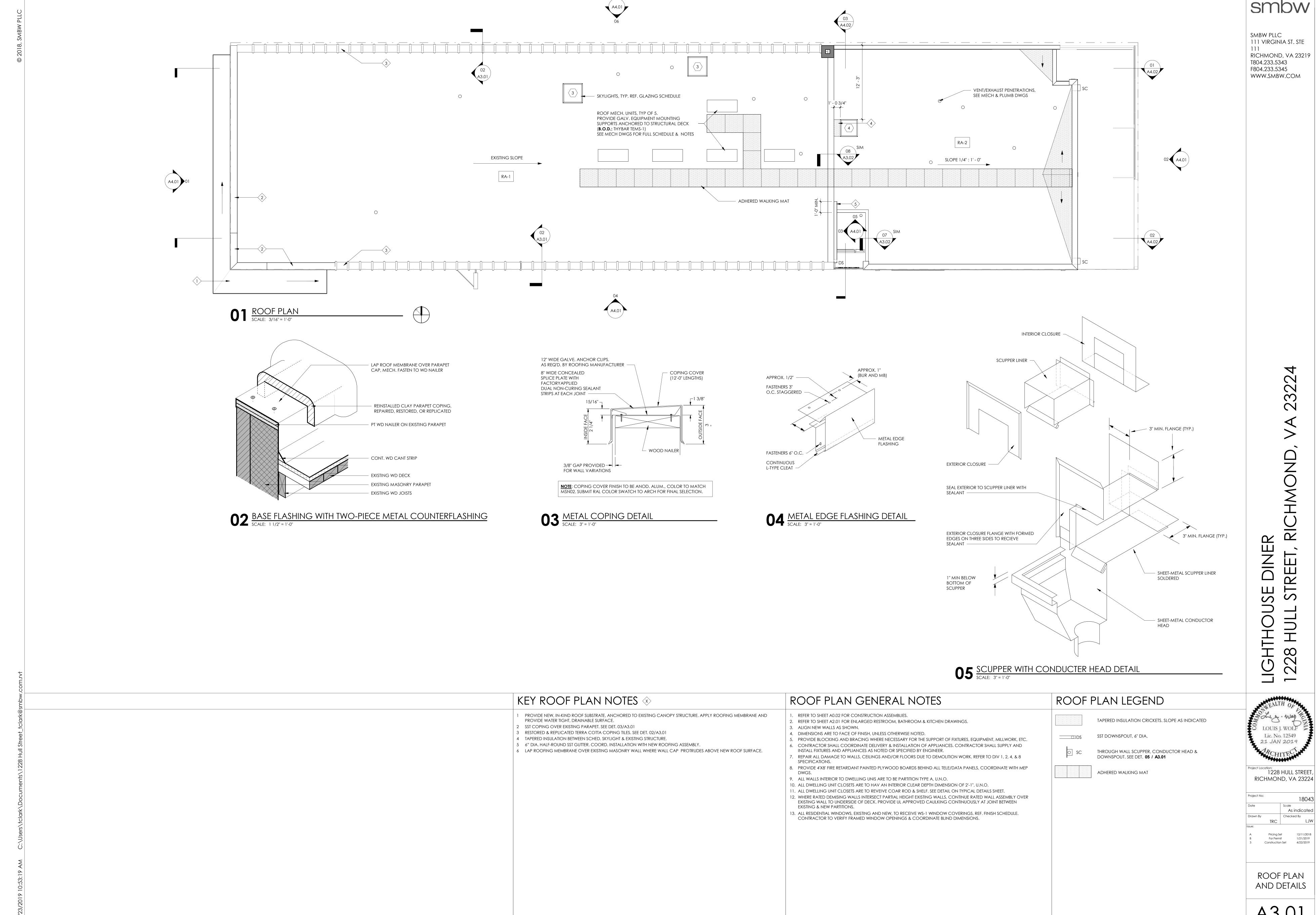
RICHMOND STREET, 228

Lic. No. 12549 21 JAN 2019

RICHMOND, VA 23224

18043 As indicated Checked By Pricing Set For Permit 1/21/2019 Revision 1 Construction Set 4/22/2019

**ENLARGED** PLANS & INTERIOR ELEV.

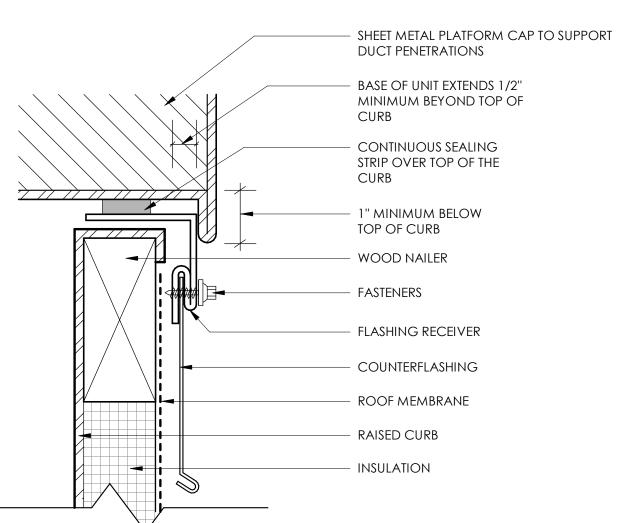


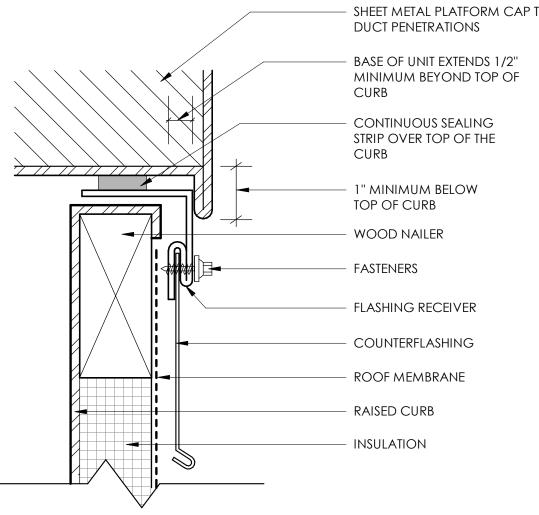
111 VIRGINIA ST. STE RICHMOND, VA 23219

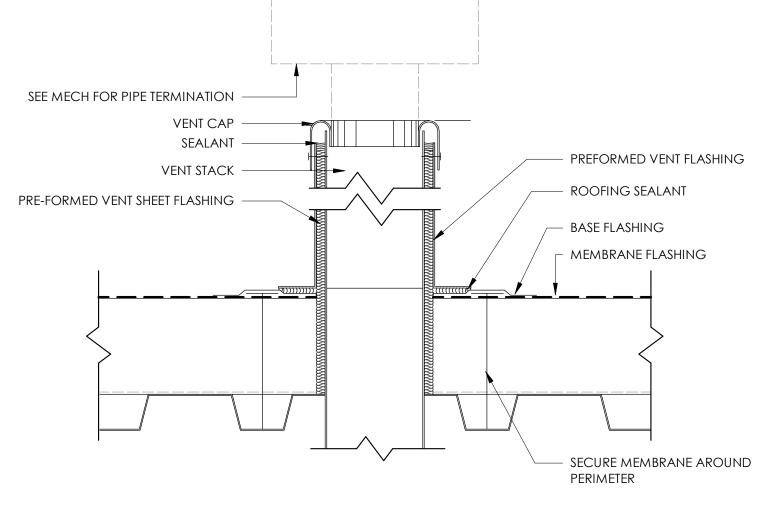
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05 RA2 - WA2 DETAIL (LOW)
SCALE: 3" = 1'-0"

OPTION B: CURB-BEARING LOCATION FOR TYPICAL -LOADING CONDITIONS

2X6 MIN PT WOOD NAILER

ATTACHED TO SUBSTRATE. OVERALL THICKNESS TO MATCH

INSULATION

**02** PLUMBING VENT
SCALE: 6" = 1'-0"

**07** RA2 - WA2 DETAIL (HIGH)

SCALE: 3" = 1'-0"

EXISTING WOOD DECK -

PLUMBING VENT STACK

- INSTALL SEALANT OR

SEALANT TAPE BETWEEN PIPE

BASE MEMBRANE ATTACHMENT

AS REQUIRED FOR SPECIFIC

AND PREMANUFACTURED

MEMBRANE FLASHING

— DRAWBAND

- SEALANT

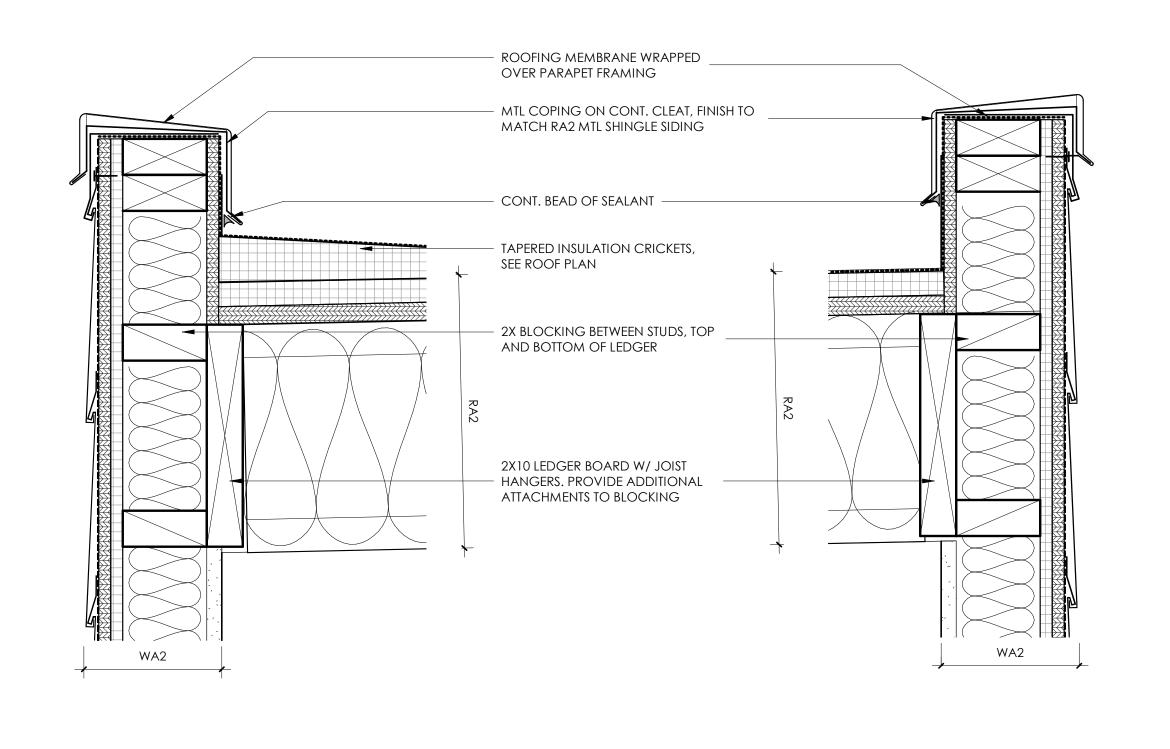
PREMANUFACTURED MEMBRANE FLASHING

- R1 OR R2 ASSEMBLY

03 BASE FLASHING AT PREFABRICATED METAL CURB

- LAP ROOFING MEMBRANE MIN. 8"

04 VENT FLASHING DETAIL
SCALE: 1 1/2" = 1'-0"



- ROOFTOP EQUIPMENT FRAME

- GASKETED FASTENER, MIN TWO FASTENERS PER SIDE

COUNTERFLASHING, REF 05/A3.03

CORNER FLASHING PIECE AT EACH

CORNER, SEAL ALL EXPOSED EDGES

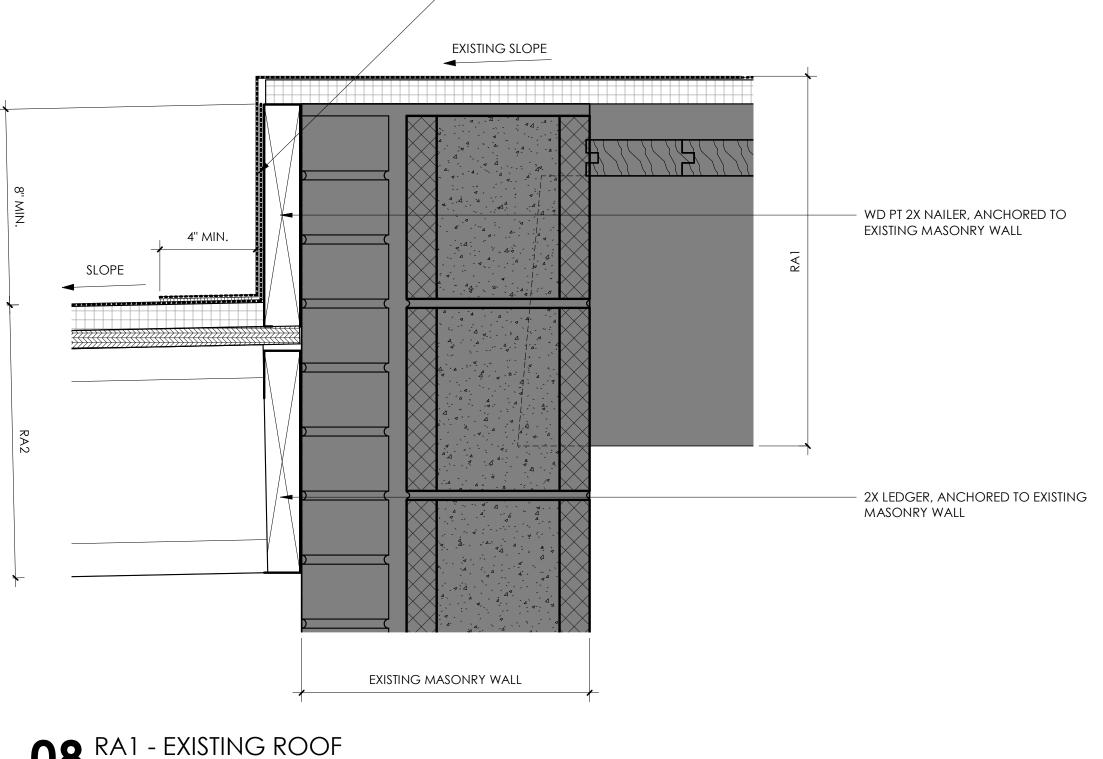
- ADHERED MEMBRANE FLASHING

REINFORCED MEMBRANE
 ATTACHMENT STRIP WITH SEAM
 PLATES AND FASTENERS

- PT 2X6 WOOD BLOCKING TO MATCH INSULATION THICKNESS

REMOVABLE SHEET METAL

- BONDING ADHESIVE



**08** RA1 - EXISTING ROOF

SCALE: 3" = 1'-0"

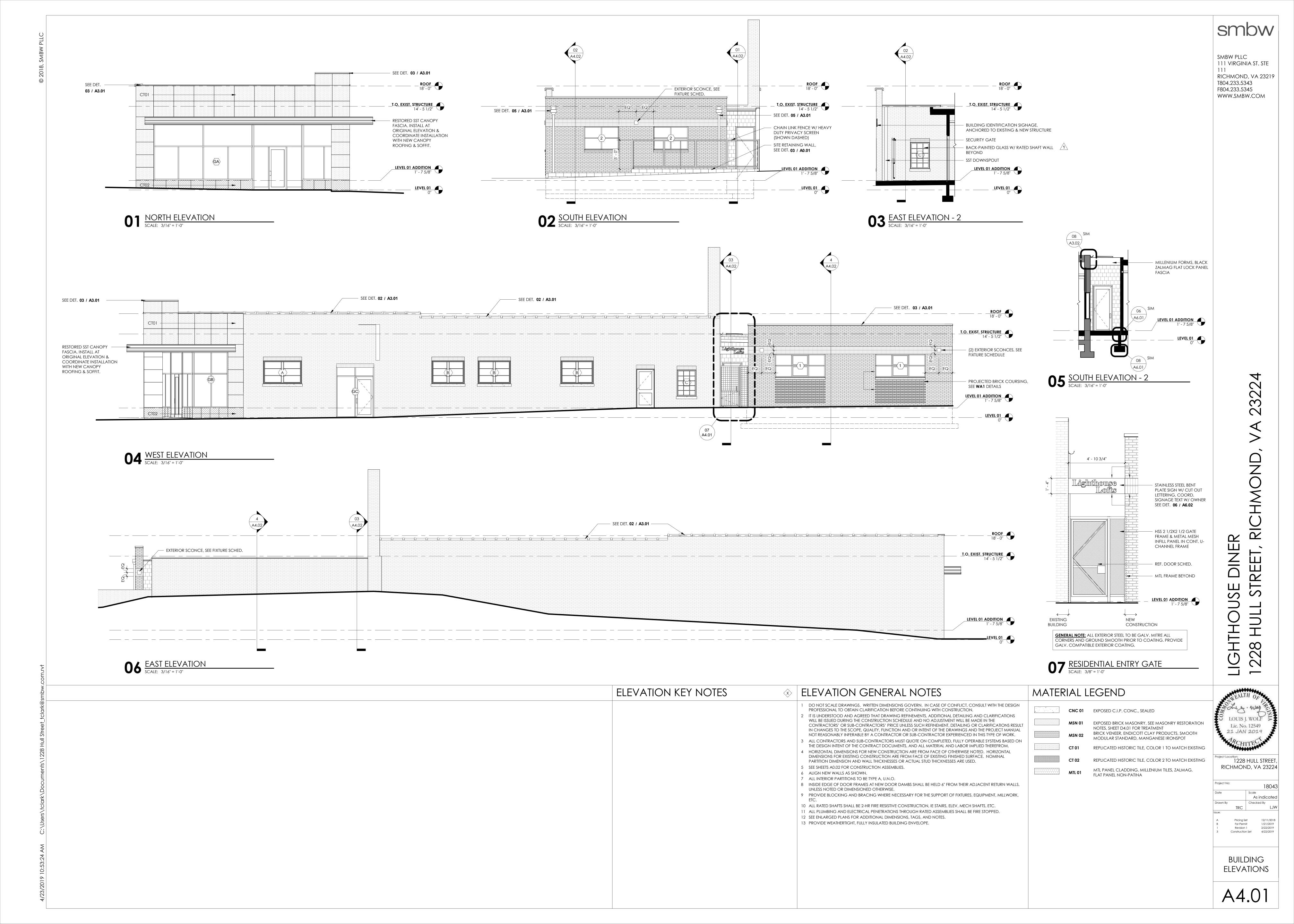
Project Location: 1228 HULL STREET, RICHMOND, VA 23224

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ROOF DETAILS

A3.02



**02** E-W SECTION 02 SCALE: 3/8" = 1'-0"



T.O. EXIST. STRUCTURE 14' - 5 1/2"

EXISTING CEILING

LEVEL 01

EXISTING CEILING

LEVEL 01 ADDITION 1' - 7 5/8"

OPEN TO BEYOND

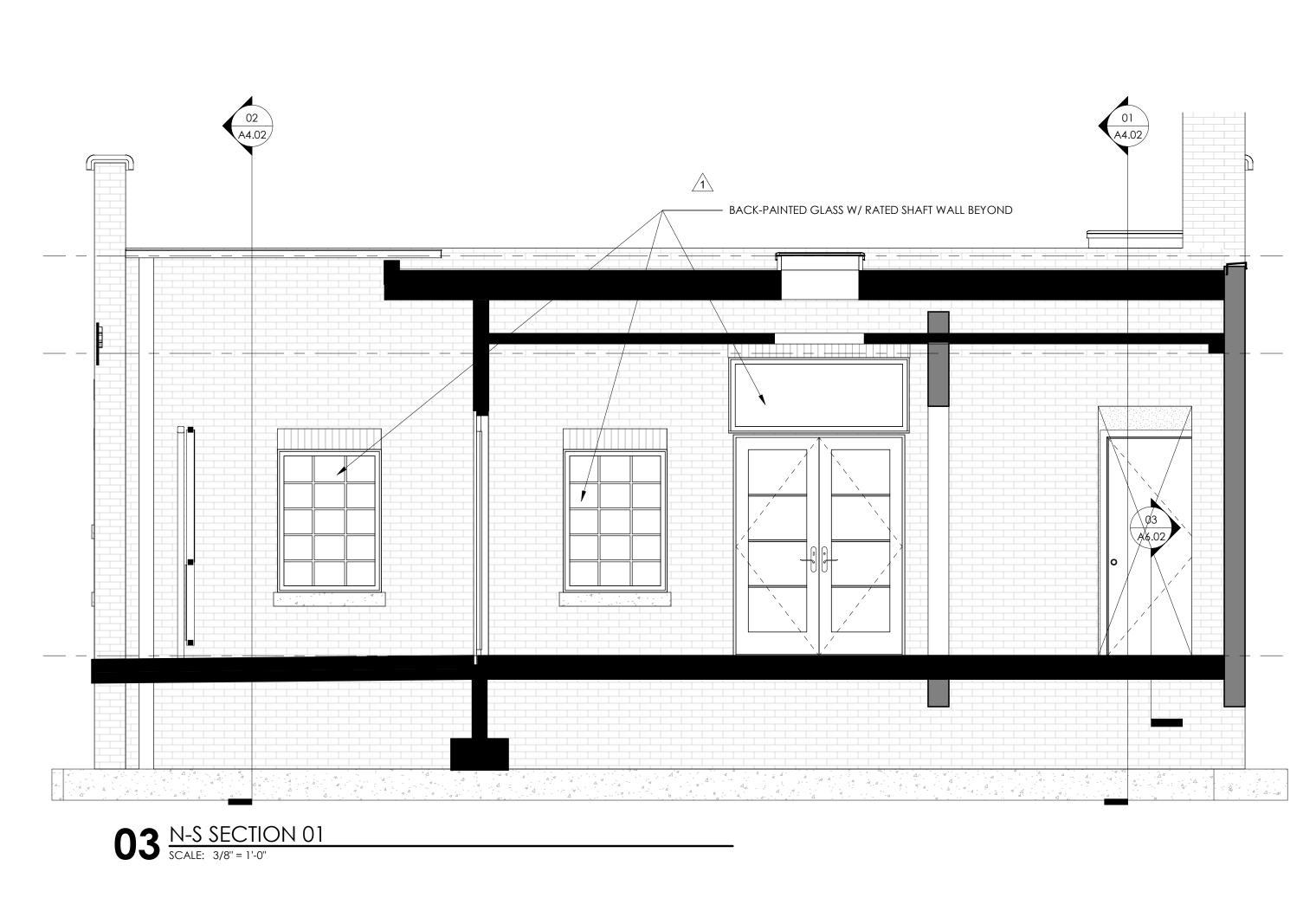
S TYPE PIN INFILL

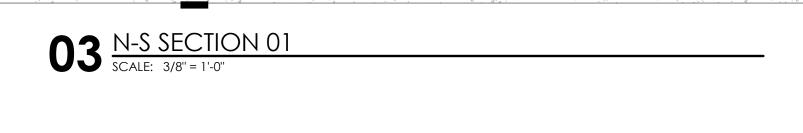


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1 Revision 1 2/22/2019
3 Construction Set 4/22/2019

> BUILDING SECTIONS

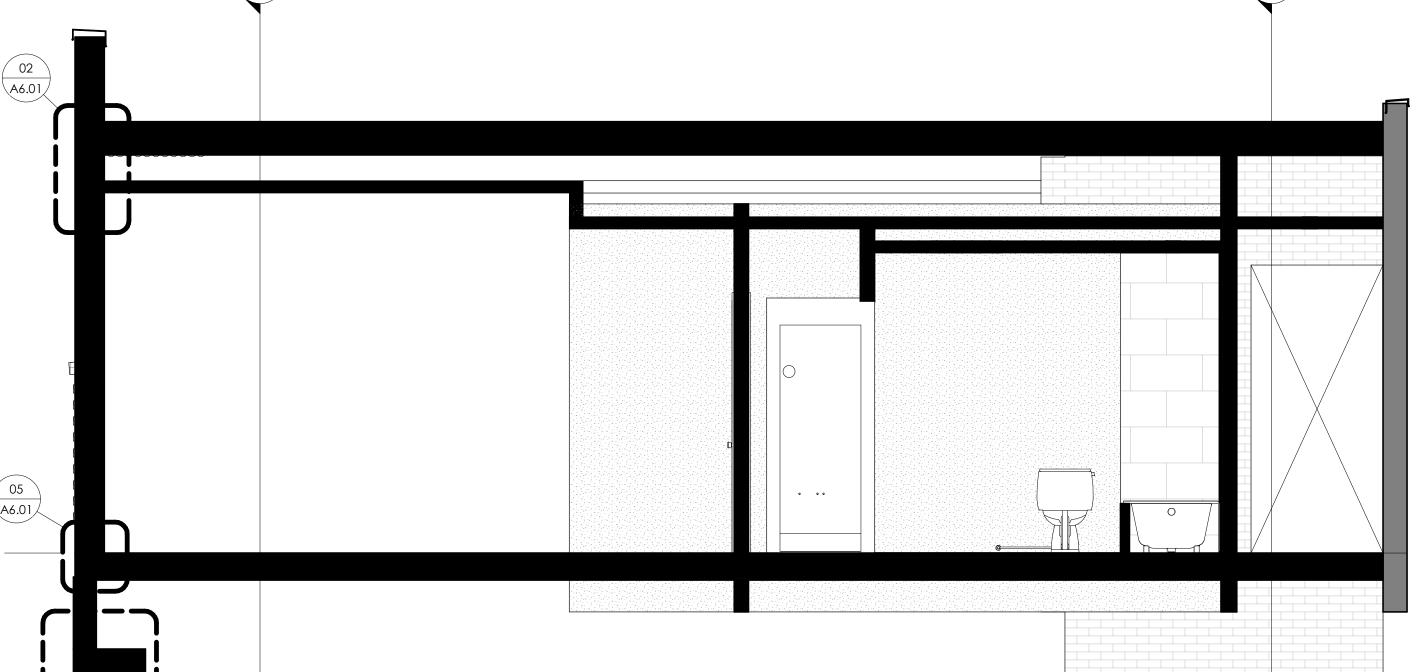
A4.02

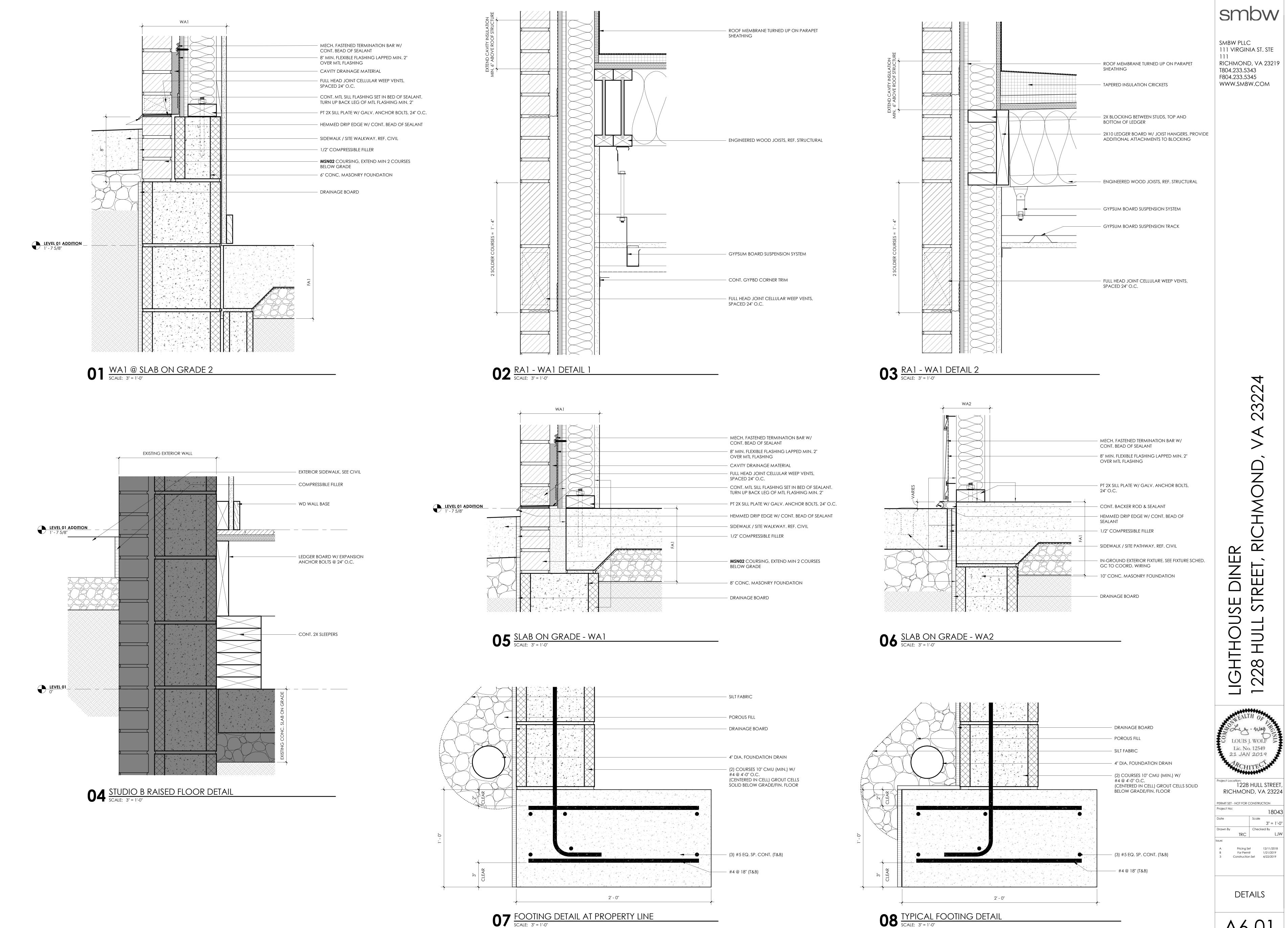




07 A6.01

4 WALL SECTION 01
SCALE: 3/8" = 1'-0"





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A6.01

EXISTING MASONRY WALL
 W/ REPAIRED, TOOTHED-IN
 BRICK JAMB

- CONT. CAULK JOINT

- ANCHOR JAMB FRAMING IN EXIST. MASONRY WALL

- SCHED. DOOR & FRAME

PROVIDE FT PLYWOOD BACKER AT ELEC. PANELS

MTL SHINGLE JAMB CLOSURE
 TRIM W/ CONT. BACKER ROD &

- CONT. CAULK JOINT AT DOOR FRAME

- MTL SHINGLE INSIDE

CORNER TRIM

SEALANT

RICHMOND, VA 23219

O1 HANDRAIL PLAN DETAIL

SCALE: 1 1/2" = 1'-0"

- MASONRY WALL

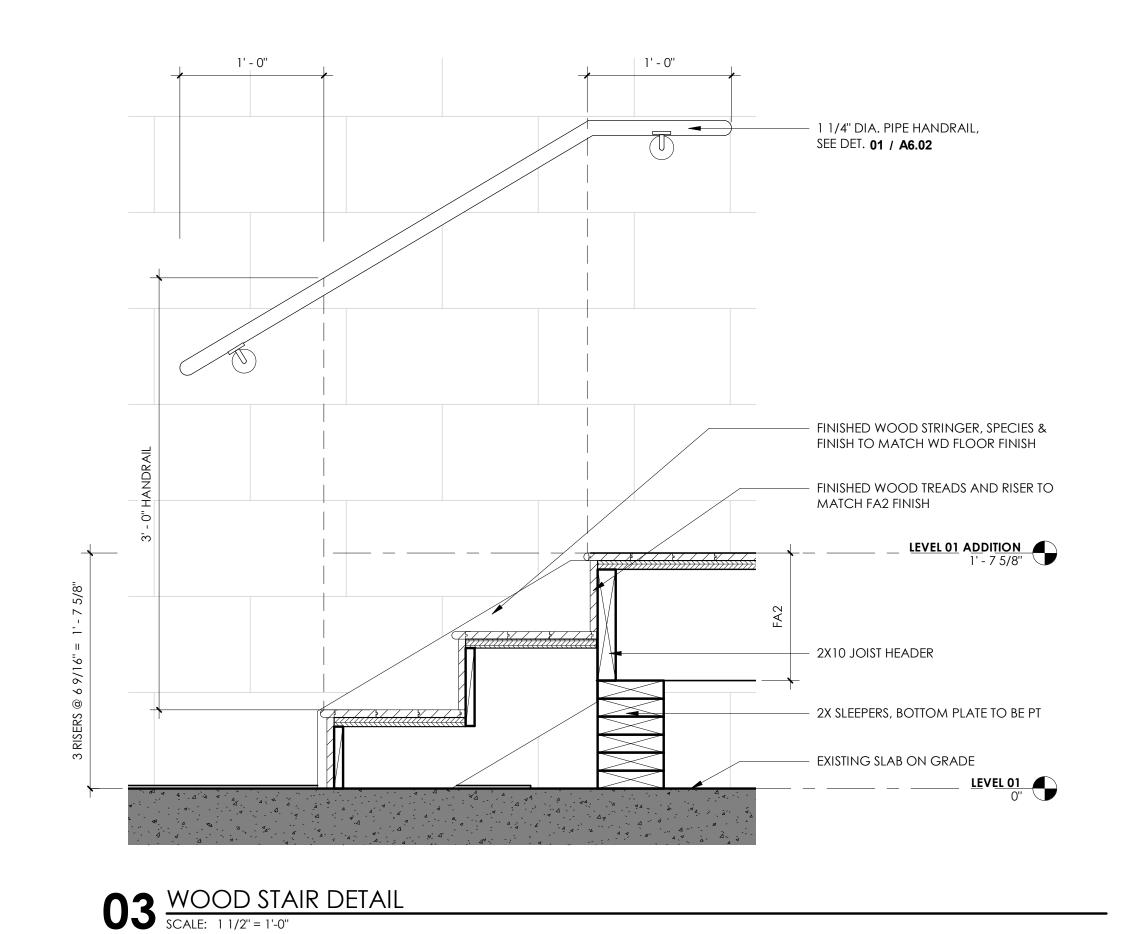
MITRED RETURNS

– 1 1/4" DIA. PIPE HANDRAIL W/

- MTL HANDRAIL BRACKET, ANCHORED TO MASONRY

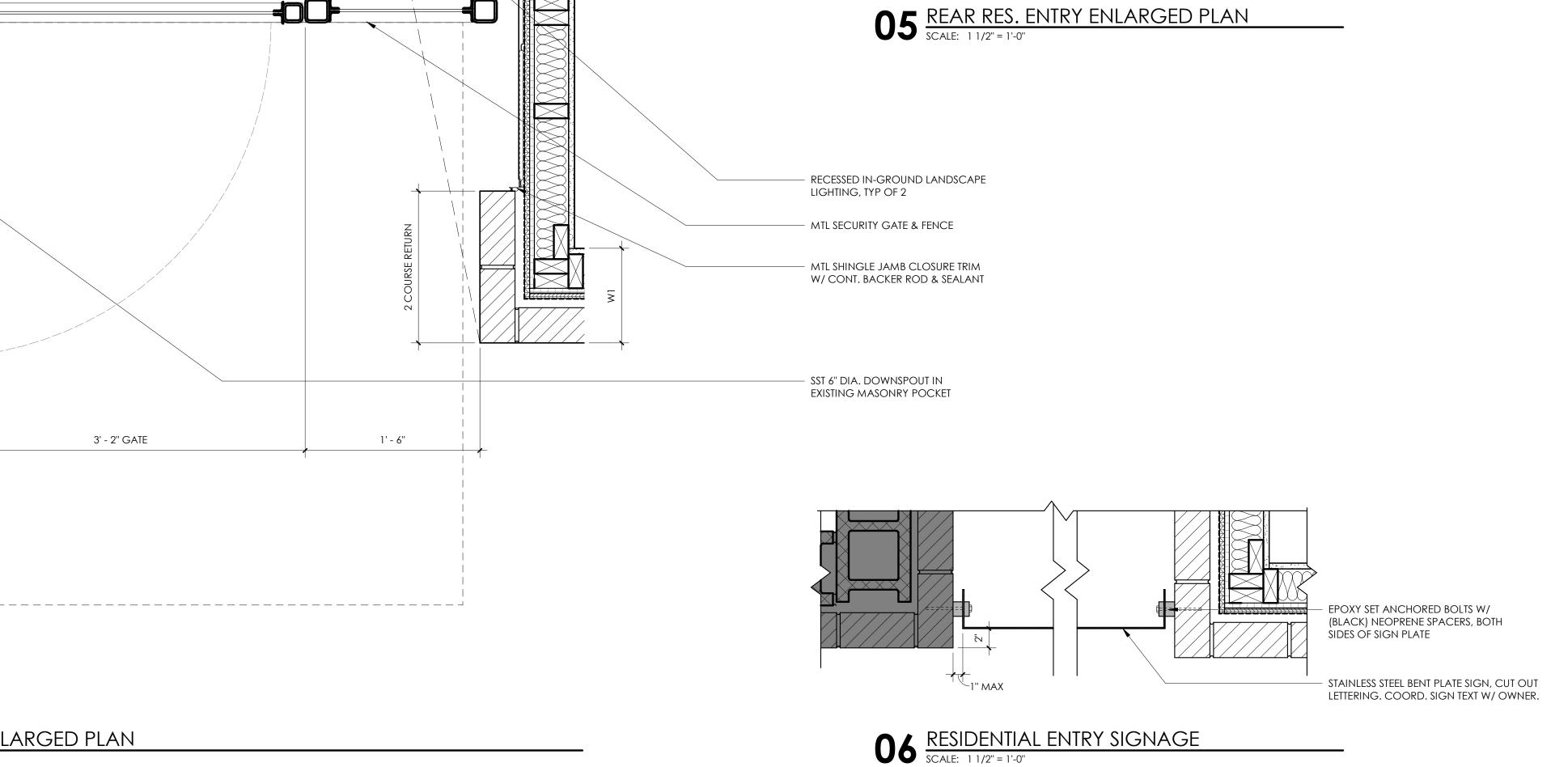
 1 1/4" DIA. PIPE HANDRAIL,
 SEE DET. 01 / A6.02 1" NOSING W/ 1/2" MAX DIA. EASED EDGE NOSING REBAR - 1/2" COMPRESSIBLE FILLER - #4 REBAR @ 12" O.C. - 1/2" COMPRESSIBLE FILLER

O2 CIP STAIR DETAIL
SCALE: 1 1/2" = 1'-0"



04 MAIN RES. ENTRY ENLARGED PLAN

SCALE: 1 1/2" = 1'-0"



- MTL SHINGLE INSIDE CORNER TRIM

- RATED WALL ASSEMBLY IN EXISTING MASONRY OPENING. PROVIDE CONT. FIRE-

CAULKING JT AROUND PERIMETER.

CAULK JOINT, BOTH SIDES

1' - 8''

3' - 0" /

5' - 2 3/4"

- MTL SHINGLE JAMB CLOSURE TRIM W/ CONT.

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RICHMOND

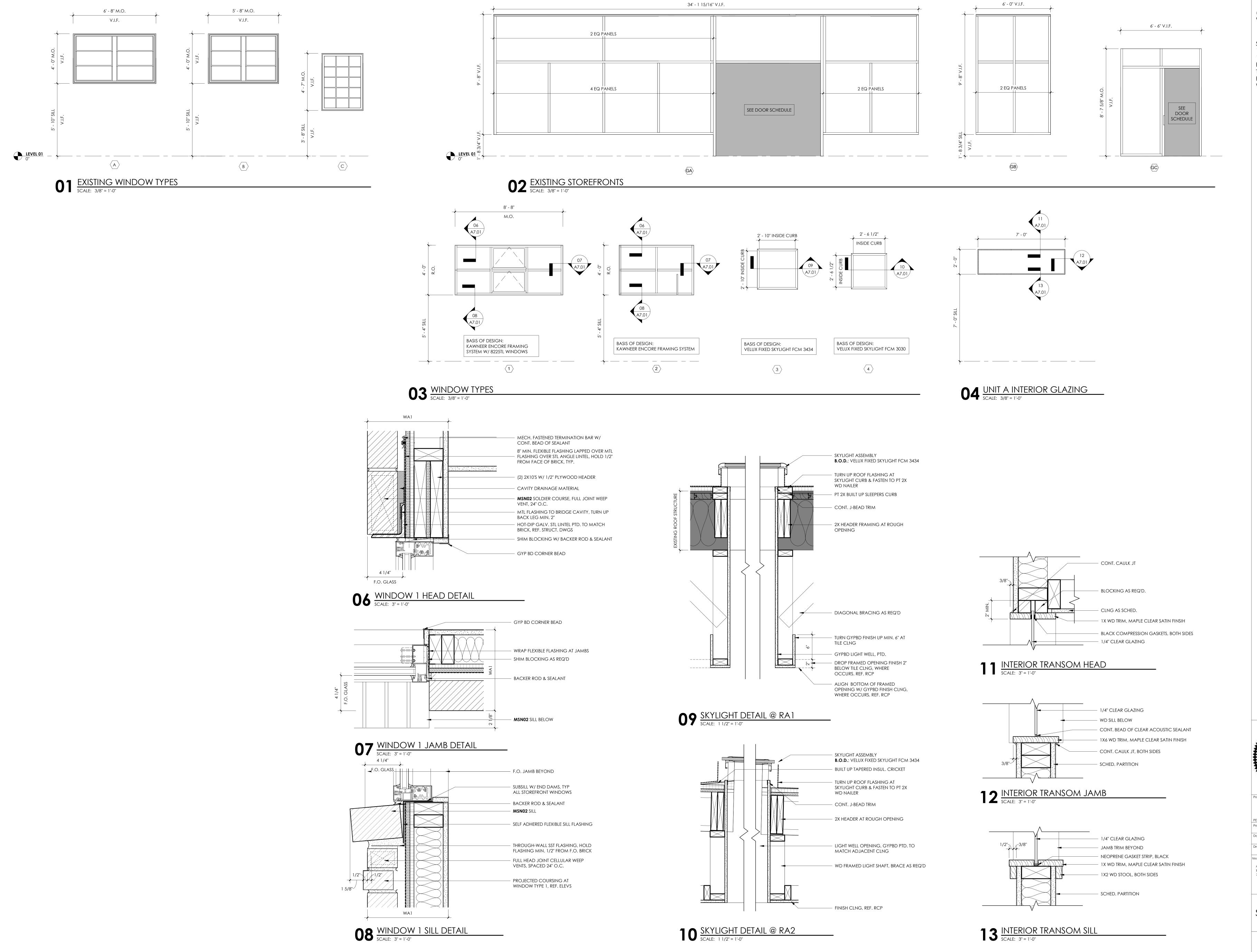
REET,

DINER

1 1/2" = 1'-0"

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DETAILS



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> 232 RICHMOND DINER REE 228

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GLAZING SCHEDULE AND DETAILS

A7.01

REPAIR, RESTORE & REFINISH DOOR, FRAME & HARDWARE. REPAIR, RESTORE & REFINISH DOOR, FRAME & HARDWARE. REPAIR, RESTORE & REFINISH DOOR, FRAME & HARDWARE. REPAIR, RESTORE, & REPAINT DOOR & FRAME. REINSTALL & FIX DOOR CLOSED IN PLACE. REMOVE DOOR PANELS. REPAIR, RESTORE, & REPAINT DOORS, FRAME & TRANSOM. INSTALL DOOR LEAVES FIXED TO WALL ADJACENT TO OPENING. PREP FRAME OPENING FOR SCHED. GLAZING. REPAIR & RESTORE DOOR & FRAME.

REMOVE (3) DOOR PANELS & MULLION JAMBS. PREP STORE FRONT FRAME TO RECEIVE NEW PANELS & HARDWARE REMOVE DOOR & FRAME. REPAIR, RESTORE, & REFINISH DOOR & FRAME. REINSTALL & FIX DOOR OPEN IN PLACE.

SCWD

WD-3

UNIT DOOR SCHEDULE HARDWARE FINISH TYPE FINISH NUMBER HEIGHT THICK TYPE MATERIAL MATERIAL REMARKS COORD. KEYING W/ OWNER. SCWD COORD. KEYING W/ OWNER. SCWD WD-3 SCWD 1 3/8" SCWD WD-3

			ļ	DOOR				FRAME		ASS	SEMBLY		HARD	WARE		
DOOR		SIZE														
NUMBER	WIDTH	HEIGHT	THICK	TYPE	MATERIAL	FINISH	TYPE	MATERIAL	FINISH	RATING	STC	SET	CR	CL	PH	REMARKS
	•		•	·	•				•	,		•				
)1A	3' - '2''	7' - 2"	2"	F	STL	PNT-1		НМ	PNT-1			8		•	•	EXTERIOR GATE. COORD. KEYING W/ OWNER.
)1B	3' - 0''	8' - 0''	1 3/4"	D	ALUM/GL		1	ALUM/GL	ANOD			1.1		•	•	
)3	3' - 0''	8' - 0''	1"	Α	STL	PNT-1	1	НМ	PNT-1			1.2		•	•	COORD. KEYING W/ OWNER.
06	3' - 0''	7' - 5 3/4"	1 3/4"	G	ALUM/GL		1	ALUM/GL	ANOD			6		•	•	NEW STOREFRONT DOOR IN EXISTING STOREFRO
		V.I.F.														SYSTEM. COORD. KEYING W/ OWNER.
07	2' - 10''	7' - 0''	1 3/4"	Α	WD	PNT-1	1	WD	PNT-1			3				COORD. KEYING W/ OWNER.
08	2' - 10''	7' - 0''	1 3/4"	Α	WD	PNT-1	1	НМ	PNT-1			3				
10	2' - 10''	7' - 0''	1 3/4"	Δ	WD	PNT-1	1	НМ	PNT-1			3				

### **GENERAL DOOR NOTES**

**EXISTING DOOR SCHEDULE** 

1. FIRE RATINGS GIVEN IN MINUTES 2. VISION GLAZING IN EGRESS STAIR SHAFT & EXIT PASSAGEWAY DOORS NOT TO EXCEED 100 SQ. IN. 3. COORDINATE HARDWARE WITH DOOR PROFILE, SIZE, & CONSTRUCTION 4. ALL INTERIOR WOOD DOORS TO BE SOLID CORE, PREFINISHED CLEAR SATIN ON WD VENEER.

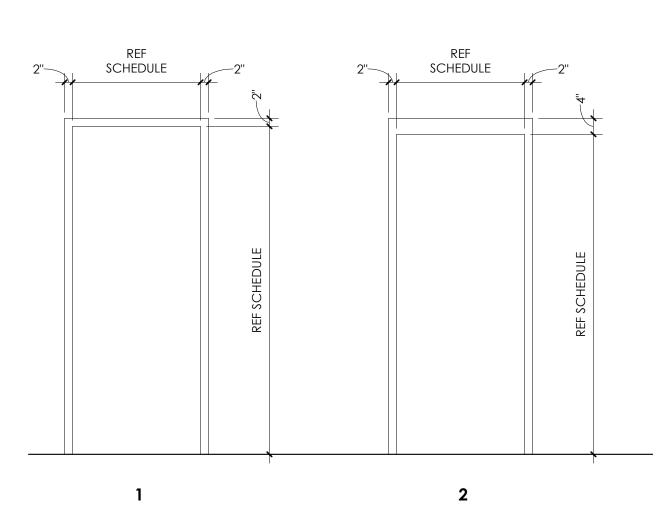
1 3/8"

**DOOR ABBREVIATIONS** ALUM ALUMINUM ANOD ANODIZED COILING DOOR DOOR FLUSH **FACTORY FINISH FIBERGLASS** GALVANIZED

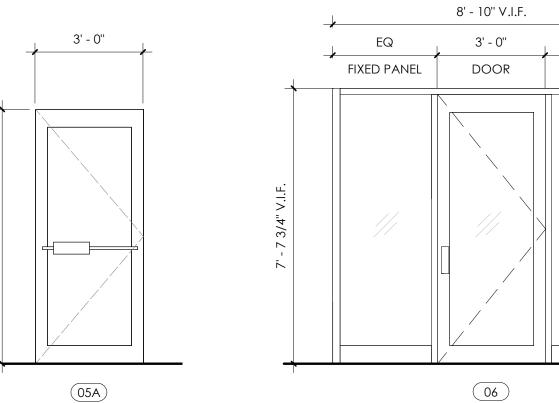
PAINT(ED) SOLID CORE WOOD SCWD SST STAINLESS STEEL STC SOUND TRANSMISSION CLASS STEEL ٧G VISION GLASS WD WOOD

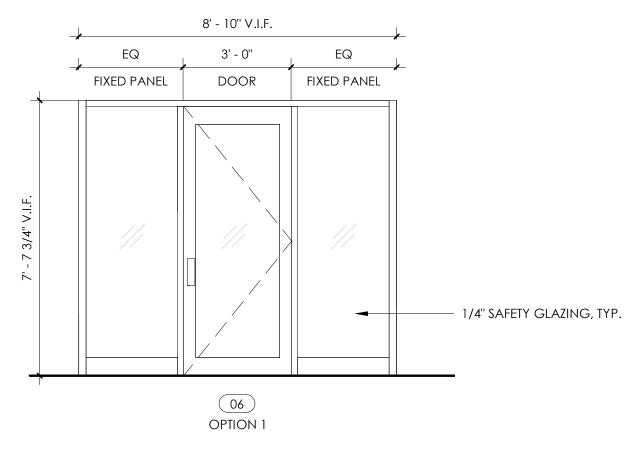
HOLLOW CORE WD HOLLOW METAL

SEE SCHEDULE SEE SCHEDULE SEE SCHEDULE SEE SCHEDULE SEE SCHEDULE ----- WIRE MESH INFILL PANELS MTL FRAME, PTD. AA



**NEW DOOR TYPES** FRAME TYPES





SET 7 STOREROOM SET

1 EA STOREROOM LOCK

1 EA SFIC EVEREST CORE

1 EA SURFACE CLOSER

SET 8 STOREROOM SET

1 EA PANIC HARDWARE

1 EA SFIC EVEREST CORE

1 EA SFIC RIM CYLINDER

1 EA MOUNTING PLATE BY GC

FOR INSTALLING PANIC

DEVICE B/O BALANCE OF

HARDWARE BY GATE MFR

QTY DESCRIPTION

1 EA GATE CLOSER

1 EA THRESHOLD

CATALOG NO.

80-037 EV29 R

SC81A DSHO

CATALOG NO.

80-037 EV29 R

PFGCS-3300-20

25-R-L-LAT

80-159

8655A

581H LAT

SR66

5BB1 4.5 X 4.5 NRP 619

finish mfr

619

GRY

FINISH

630

626

619

626

689

IVE

FAL

FAL

IVE

MFR

FAL

SCH

SCH

ZER

SCH

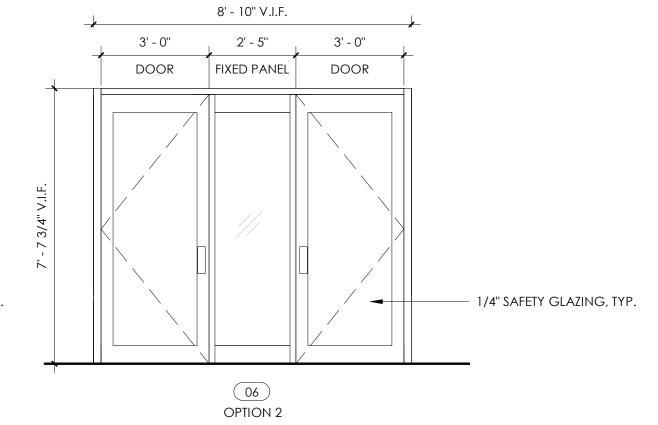
QTY DESCRIPTION

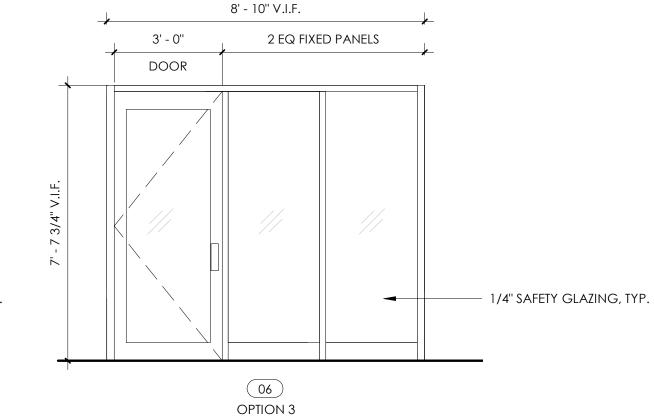
DOORS: 09G

3 EA HINGE

3 EA SILENCER

DOORS: 01A





# **EXISTING STOREFRONT DOORS**

HARDWARE SCHEDULE

DOORS: 01B

QTY DESCRIPTION

1 EA CONT. HINGE

1 EA SHOE SUPPORT

1 ea threshold

QTY DESCRIPTION

1 EA PANIC HARDWARE

1 EA SFIC EVEREST CORE

1 EA SFIC RIM CYLINDER

1 EA SURFACE CLOSER

1 EA GASKETING

1 EA DOOR SWEEP

1 EA THRESHOLD

SET 2 UNIT ENTRY

QTY DESCRIPTION

1 EA DOOR STOP

1 EA GASKETING

1 EA THRESHOLD

SET 3 PRIVACY SET DOORS: 08,10, 22 QTY DESCRIPTION

1 EA PRIVACY LOCK

1 EA DOOR STOP

SET 4 PASSAGE SET DOORS: 24, 27 QTY DESCRIPTION

1 EA PASSAGE SET

1 EA DOOR STOP

QTY DESCRIPTION

2 EA DOOR STOP

QTY DESCRIPTION

1 EA DOOR SWEEP

1 EA THRESHOLD

2 EA SILENCER

DOORS: 06

3 EA HINGE

2 EA ROLLER CATCH

2 EA SINGLE DUMMY TRIM

SET 6 COMMERCIAL ENTRY

1 EA ENTRY / OFFICE LOCK 1 EA SFIC EVEREST CORE 1 EA SURFACE CLOSER 1 EA GASKETING

SET 5 CLOSET SET (DOUBLE LEAF)

3 EA SILENCER

DOORS: 26

6 EA HINGE

3 EA HINGE

1 EA VIEWER

3 EA HINGE

1 EA ENTRANCE LOCK

1 EA SFIC EVEREST CORE

1 EA SURFACE CLOSER

DOORS: 21

3 EA HINGE

DOORS: 03

3 EA HINGE

1 EA PANIC HARDWARE

1 EA TOP RAIL DROP PLATE

1 EA BLADE STOP SPACER

SET 1.2 RESIDENTIAL COMMON ENTRY

1 EA SURFACE CLOSER

SET 1.1 RESIDENTIAL COMMON ENTRY

CATALOG NO.

24-R-L-BE-LAT

CATALOG NO.

5BB1 4.5 X 4.5

80-037 EV29 R

8144SBK PSA

CATALOG NO.

5BB1 4.5 X 4.5

H2101H LAT

SC81A REG

PA AS REQ

8144SBK PSA

CATALOG NO.

5PB1 4.5 X 4.5

CATALOG NO.

1011 3.5 X 3.5

CATALOG NO.

1011 3.5 X 3.5

335

SR66

J170 SOL

8144SBK PSA

39A

J10 SOL

63 /69

J40 SOL

63

63

8655A

U698

80-037 EV29 R

25-R-L-LAT

80-159

39A

8655A

SC71 SS

224HD

SC71 SS

SC70-30

SC70-61

8655A

WEATHERSTRIP BY DOOR/FRAME MANUFACTURER

SC70-18PA

finish mfr

finish mfr

finish mfr

IVE

FAL

FAL

FAL

FAL

FAL

ZER

IVE

FAL

SCH

SCH

FAL

ZER

ZER

ZER

IVE

FAL

SCH

FAL

IVE

ZER

ZER

IVE

SCH

IVE

IVE

SCH

IVE

MFR

IVE

IVE

SCH

IVE

IVE

ZER

IVE

finish mfr

finish mfr

628

630

689

689

689

630

630

626

619

689

619

619

626

689

646

B15

619

619

646

646

619

GRY

FINISH

646

619

619

646

GRY

(AS REQ'D BY WALL CONDITION)

DOOR # 05A: RESTORE EXISTING FRAME, GLAZING, AND HARDWARE. PROVIDE NEW LOCKING HARDWARE. DOOR # 06: NEW FRAMES TO BE INSET IN EXISTING, RESTORED STOREFRONT FRAME. FINISH TO MATCH EXISTING STOREFRONT. REUSE EXISTING, RESTORED CLOSER DEVICE IF POSSIBLE.

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RICHMOND, VA 23219

21 JAN 2019

Project Location: 1228 HULL STREET, RICHMOND, VA 23224

PERMIT SET - NOT FOR CONSTRUCTION Scale As indicated

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> DOOR SCHEDULE

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INTE	RIOR FINISH LEG	SEND				
FINISH NO.	MATERIAL	MANUFACTURER	STYLE NAME / NO.	COLOR NAME / NO.	SIZE	DESCRIPTION / REMARKS
						1
	CONCRETE	CAST-IN-PLACE	STAINED			
CONC-2	CONCRETE	(EXISTING)	SEALED			
CP-1	CEILING PANEL				2X2	MATCH EXISTING TIN CEILING
CT-1	PORCELAIN TILE	AMERICAN WONDER PORCELAIN	TOWNSCAPE	DARK GRAY TS03	12X24	UNIT BATHROOM FLOORS & SHOWER WALLS
CT-2	SUBWAY TILE	DALTILE	ANNAPOLIS	AP06 SAIL	6X16	UNIT BATHROOM WALLS & KITCHEN WALLS
CT-3	EXTERIOR TILE					EXTERIOR
MSN-01	EXISTING FACE BRICK					
MSN-02	FACE BRICK	ENDICOTT CLAY PRODUCTS	SMOOTH MODULAR	MANGANESE IRONSPOT	STANDARD	
MTL-01	METAL PANEL					
MTL-02	METAL COPING					
PNT-1	PAINT	SHERWIN WILLIAMS		SNOWBOUND / SW7004		WALL AND CEILING PAINT
PNT-2	PAINT	SHERWIN WILLIAMS		DOVETAIL / SW7018		RESID. BASE & TRIM PAINT
PNT-3	PAINT	SHERWIN WILLIAMS		GAUNTLET / SW7019		RESID. DOOR & FRAME PAINT
SSM-1	SOLID SURFACE	WOLF HOME PRODUCTS	SOLID SURFACE	CLOUDBANK		RESIDENTIAL UNITS
TZ-1	EXISTING / NEW TO MATCH TERRAZZO	BY CONTRACTOR				
WB-1	WOOD WALL BASE	BY CONTRACTOR	1X4 BASE TRIM	PNT-2		
WD-1	CABINETRY	WOLF HOME PRODUCTS	DARTMOUTH	GREY STAIN		
WD-2	WOOD FLOOR	ARMSTRONG FLOORING	HICKORY SOLID HARDWOOD	LIGHT BLACK	3 1/4" WIDE X 3/4" THICK	
WD-3	WOOD DOORS		WHITE MAPLE VENEER	CLEAR FINISH		
WS-1	WINDOW BLINDS	BALI HERITAGE	ALUMINUM BLINDS	GRAY HAZE 983	2"	

1 LEVEL 01 FINISH PLAN
SCALE: 3/16" = 1'-0"

# ROOM FINISH SCHEDULE

		FLOOR	BASE			WALLS			CEILING	
ROOM #	LOCATION	MATERIAL	MATERIAL	ALL	NORTH	EAST	SOUTH	WEST	MATERIAL	REMARKS
LEVEL 01		,	<b>,</b>	'		•	-			
01	CORR.	CONC-1	WB-1	PNT-1						
02	LOBBY	CONC-1	WB-1	PNT-1						
03	VESTIBULE	WD-2	WB-1	PNT-1						
04	CORRIDOR	CONC-1	WB-1	PNT-1						
05	KITCHEN	CONC-2	WB-1	PNT-1						
06	DINER	TZ-1	WB-1	PNT-1						EXIST EXPOSED MASONRY WALLS SHALL NOT RECEIVE ANY NEW FINISHES.
06A	CORRIDOR	CONC-2	WB-1	PNT-1						EXIST EXPOSED MASONRY WALLS SHALL NOT RECEIVE ANY NEW FINISHES.
07	UTIL. CLOSET	CONC-2	WB-1	PNT-1						
08	RESTROOM	CONC-2	WB-1	PNT-1						
09	LOCKER	CONC-2	WB-1	PNT-1						
10	RESTROOM	CONC-2	WB-1	PNT-1						
11	DINING	CONC-2	WB-1	PNT-1						

# UNIT FINISH SCHEDULE

# KEY FINISH NOTES 🗇

EXIST EXPOSED MASONRY WALLS SHALL BE CLEANED AND CLEARED OF ANY ACCESSORY MATERIALS, BUT SHALL NOT RECEIVE ANY NEW FINISHES.

# GENERAL FINISH NOTES

- ALL INTERIOR WALLS SHALL BE PAINTED PNT01 UNLESS OTHERWISE NOTED ON FINISH PLANS AND SCHEDULE. WALL SHALL BE EGGSHELL LATEX ENAMEL FINISH OR EQUAL AS APPROVED BY THE ARCHITECT.
- 2. ALL WALL ACCESS PANELS, VENTS, AND/OR OTHER METAL SURFACES SHALL BE PAINTED IN SEMI-GLOSS LATEX ENAMEL FINISH OR EQUAL, AS APPROVED BY THE ARCHITECT. COLOR(S) TO MATCH GROUND ON WHICH THEY OCCUR UNLESS OTHERWISE NOTED. B. HM DOOR FRAMES SHALL BE PAINTED IN SEMI-GLOSS LATEX ENAMEL FINISH OR EQUAL, AS APPROVED BY THE ARCHITECT. COLOR(S) TO MATCH GROUND ON WHICH THEY OCCUR UNLESS OTHERWISE NOTED.
- 4. DO NOT PAINT ALUM STOREFRONT SYSTEM. TAPE WINDOW SEALS WHEN PAINTING SURROUNDING WALLS.
- 5. ALL FREE-STANDING COLUMNS SHALL RECEIVE THE SAME FINISH AS THE WALLS WITHIN THE ROOM IN WHICH THE COLUMN
- OCCURS, UNLESS OTHERWISE NOTED. 6. REF INTERIOR ELEVATIONS FOR EXTENT OF FINISH MATERIALS AND JOINT LOCATIONS.
- 7. GC TO ORDER ATTIC STOCK (EST 3% OVERAGE) FOR ALL MODULAR FLOORING. 8. PROVIDE SCHLUTER QUADEC-K STYLE TRIM FOR ALL COMMERCIAL RESTROOM AND RESIDENTAIL KITCHEN & BATHROOM CERAMIC
- 9. PROVIDE TILE TRANSITION THRESHOLDS COMPLYING WITH ANSI A117.1 AT ALL RESIDENTIAL DWELLING BATHROOM DOORS. 10. ALL RESIDENTIAL BATHROOMS TO RECEIVE 4" HIGH CT-1 TILE WALL BASE WITH BEVELED/FINISHED EDGE AT ALL WALLS, INCLUDING
- 11. ALL COMMERCIAL BATHROOMS TO RECEIVE 3'-0" HIGH CT-2 TILE WALL W/ SCHLUTER TRIM AT TRANSITION EDGES. 12. ALL RESIDENTIAL UNITS TO HAVE SCHEDULED FLOOR FINISH EXTEND UNDERNEATH INSTALLED MILLWORK.
- 13. ALL EXISTING TERRAZZO WALL BASE IN EXISTING BUILDING IS TO BE RETAINED AND REPAIRED/RESTOREDD AS REQUIRED.

02	LOBBY	129 SF	3300
03	VESTIBULE	33 SF	\$0
04	CORRIDOR	86 SF	Zo ro
05	KITCHEN	288 SF	Li
06	DINER	786 SF	21
06A	CORRIDOR	63 SF	4.4
07	UTIL. CLOSET	29 SF	700
08	RESTROOM	41 SF	
09	LOCKER	121 SF	Project Location
10	RESTROOM	40 SF	
11	DINING	552 SF	RICH
		·	
			Project No:

ROOM SCHEDULE

01 CORR.

ASSESSED OF THE PARTY OF THE PA
Project Location:
1228 HULL STREET
RICHMOND, VA 23224

Lic. No. 12549

21 JAN 2019

			Date		Scale		
					3	3/16" = 1'-0"	
_	011501115		Drawn B	У	Checl	ked By	
5	(CHEDULE			TRC		LJW	
	OHEDOLL		Issue:				1
	1 BED / 1 BATH	549 SF	T A	Pricing Se	et	12/11/2018	
	STUDIO	447 SF	В	For Perm		1/21/2019	
	1 BED / 1 BATH	462 SF	3	Construction	n Set	4/22/2019	

FINISH PLAN & SCHEDULE

FACE OF WALL

— DRAWER FACE

- Provide Heavy Duty Extension Glides as Needed

BASE, REF ELEVS FOR FINISH

SOLID WOOD FRAME, TYP

— BACKSPLASH, REF ELEVS FOR

COUNTER, REF ELEVS FOR FINISH

2' - 0''

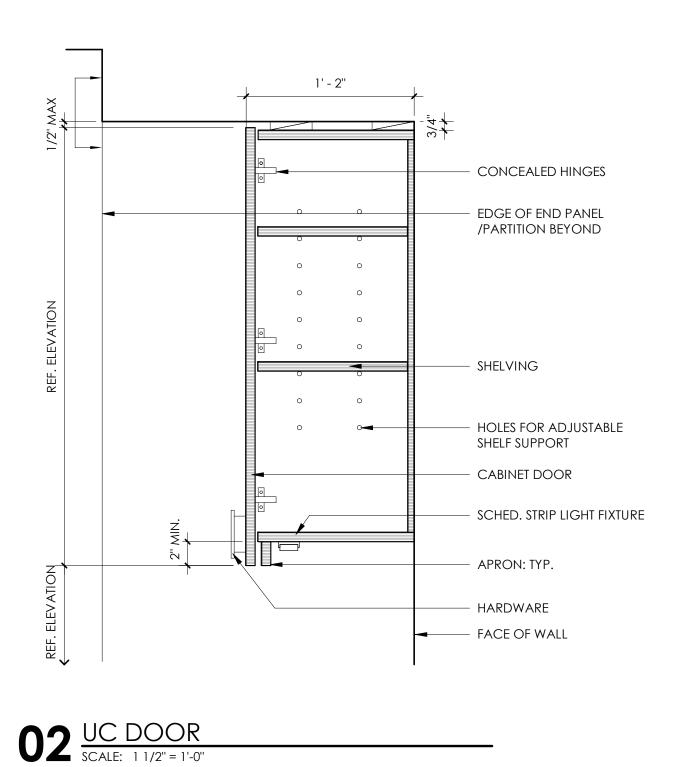
DRAWER

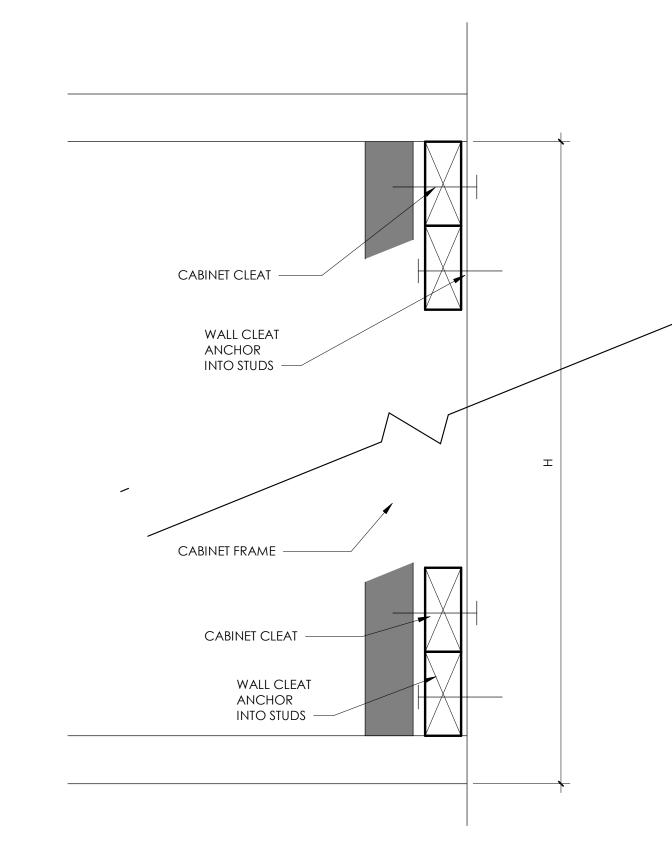
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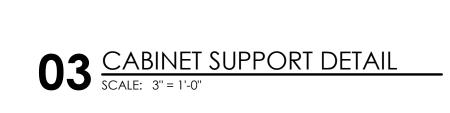
DRAWER

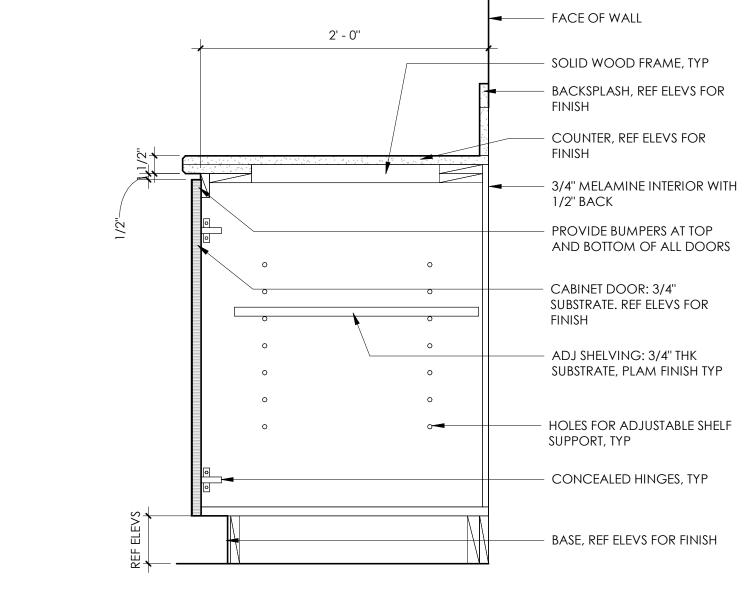
**O4** BC DRAWERS

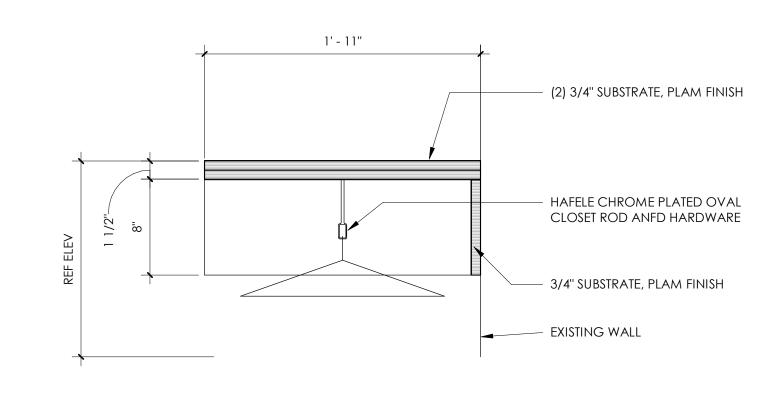
SCALE: 1 1/2" = 1'-0"

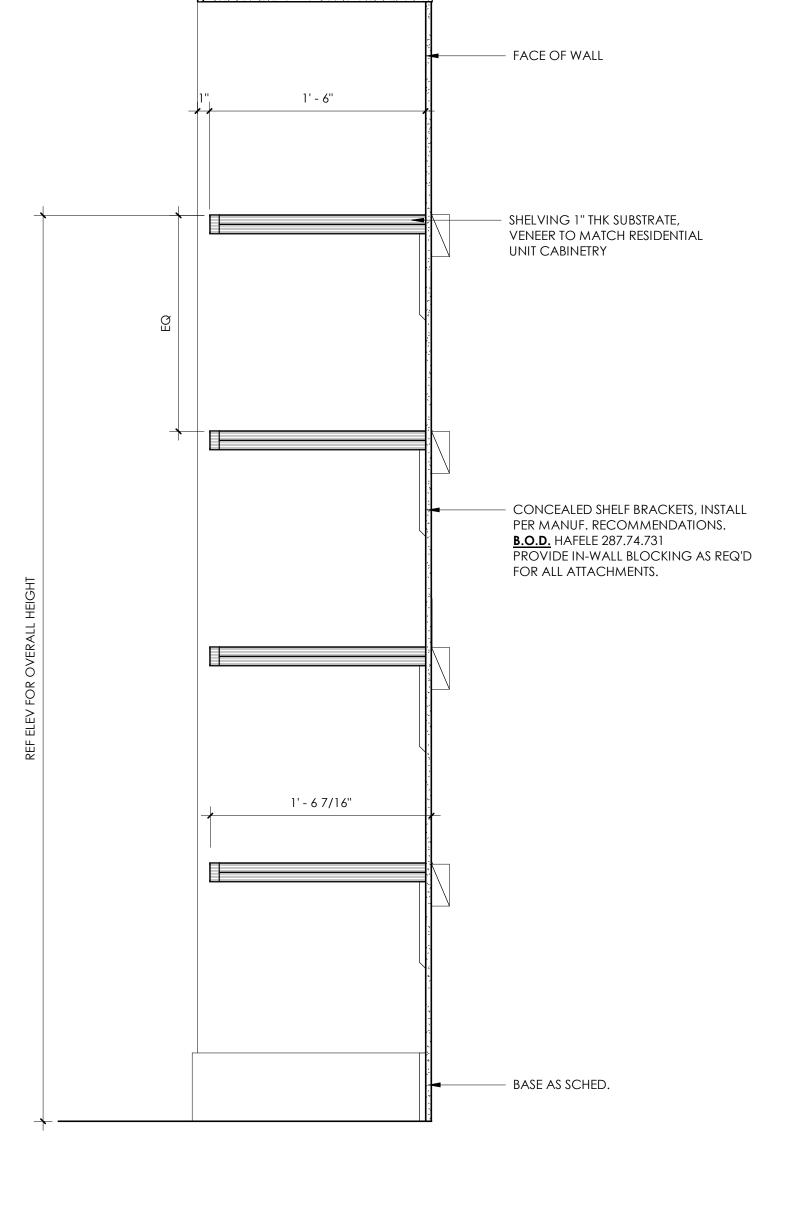












**05** BC DOOR SCALE: 1 1/2" = 1'-0"

06 CLOSET ROD

SCALE: 1 1/2" = 1'-0"

07 <u>CLOSET SHELVING</u>
SCALE: 1 1/2" = 1'-0"

228 LOUIS J. WOLF Lic. No. 12549 21 JAN 2019

2322

RICHMOND,

STREET,

DINER

SMBW PLLC 111 VIRGINIA ST. STE

RICHMOND, VA 23219

T804.233.5343 F804.233.5345

WWW.SMBW.COM

Project Location: 1228 HULL STREET, RICHMOND, VA 23224

PERMIT SET - NOT FOR CONSTRUCTION Scale As indicated

A Pricing Set 12/11/2018
B For Permit 1/21/2019
3 Construction Set 4/22/2019

MILLWORK DETAILS

A9.02

10" CMU RETAINING WALL, FULL GROUTED. PROVIDE #5 —

(2) 2x10 HEADER

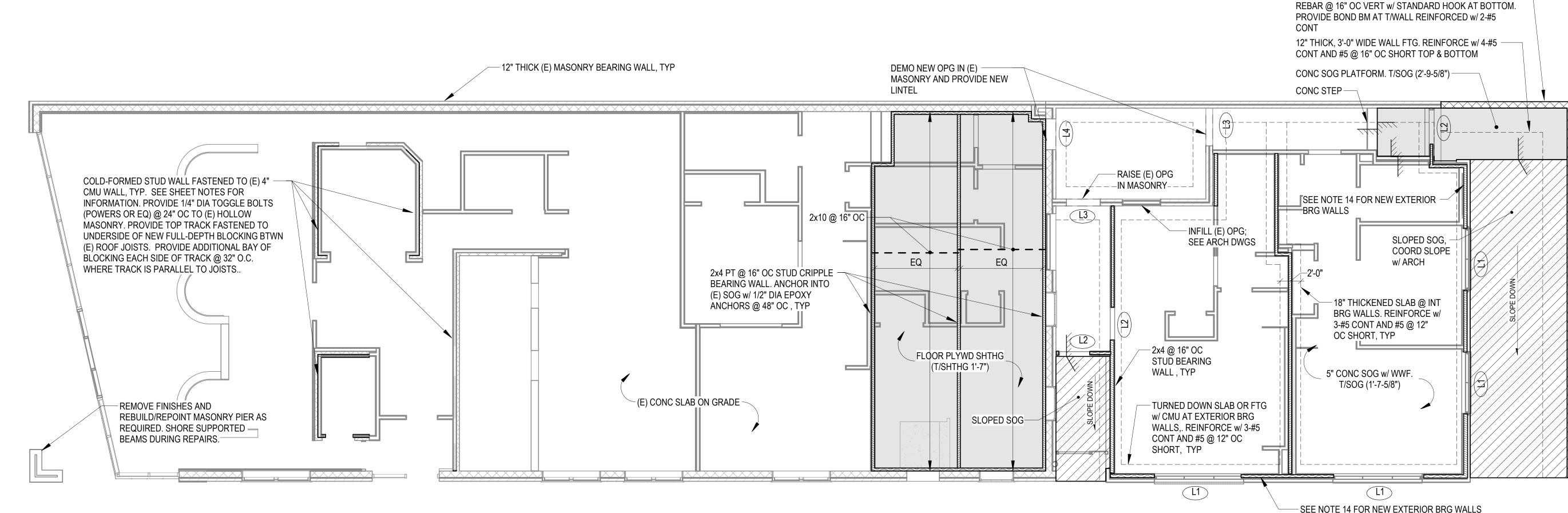
9-1/2" TJI 230 @ 16" OC

32 N RICHMOND Ш C

1228 HULL STREET, RICHMOND 23224

oject No: 184082 (SPRINGPOINT) Scale 3/16" = 1'-0" Checked By

FRAMING PLAN



13. L INDICATES LOAD BEARING LINTEL OR WD HEADER;

C. L3: 2L4x3-1/2x5/16 LLBB

B. L2: (2) 2x8 HEADER w/ (1) JACK STUD AT EA JAMB

D. L4: 4"x8" NOM PC LINTEL w/ 1-#4 T&B AND 6"x8" NOM PC LINTEL w/ 2-#4 T&B

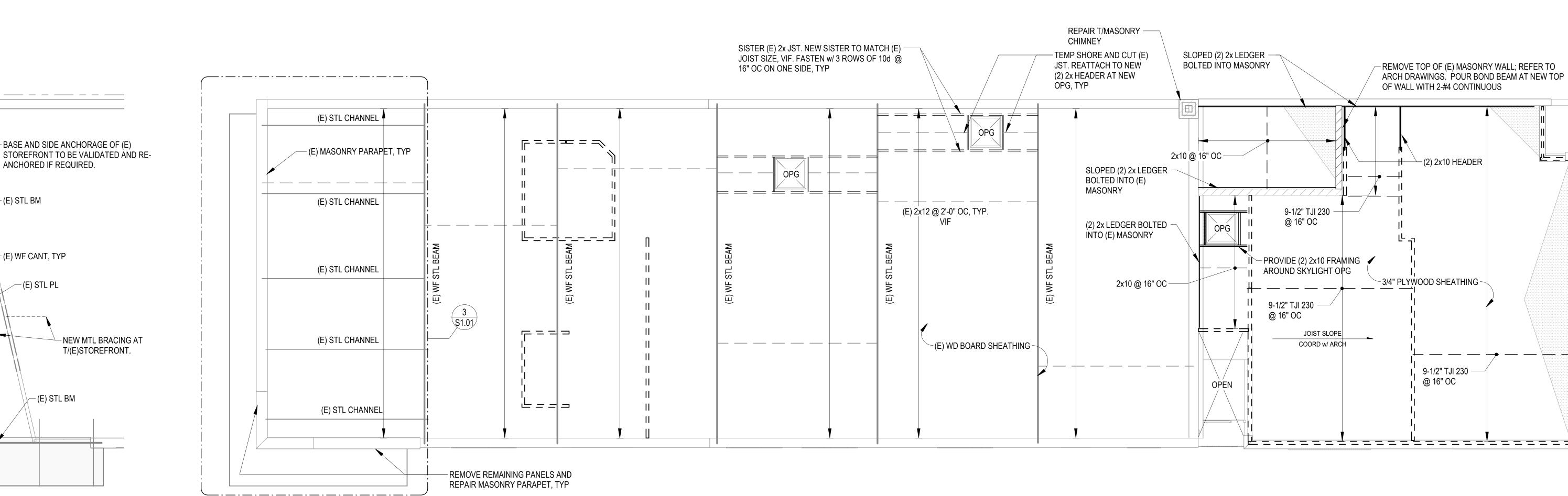
A. L1: L7x4x3/8 AND (2) 2x12 HEADER w/ (2) JACK STUDS AT EA JAMB. STEEL LINTEL TO BEAR 8" AT JAMB.

ALL NEW EXTERIOR WALLS TO HAVE CONTINUOUS PLYWOOD SHEATHING. PROVIDE 1/2" DIA ANCHORS @ 32" OC AND HOLDOWNS AT CORNERS.

COORDINATE SLOPE w/ ARCH. USE 5/8" MIN ANCHORS AND SCREEN TUBES (HILTI HY-270 OR SIMILAR) WHERE MASONRY IS HOLLOW.

15. ALL LEDGERS BOLTED TO MASONRY SHALL BE PT. PROVIDE 2 ROWS 1/2" DIA EPOXY ANCHORS @ 24" OC TOP AND BOTTOM (STAGGER ROWS), EMBED MIN 5". IF SLOPED,

LEVEL 01 FRAMING PLAN SCALE AT FULL SIZE 3/16" = 1'-0"



CANOPY FRAMING PLAN

SCALE AT FULL SIZE 3/16" = 1'-0"

1. CONTRACTOR TO PROVIDE PROBE LOCATIONS IN COORDINATION WITH STRUCTURAL. 2. CANOPY FRAMING REPAIR DETAILS PENDING FURTHER INVESTIGATION.

T/(E)STOREFRONT.

(E) STL BM

BASE AND SIDE ANCHORAGE OF (E)

ANCHORED IF REQUIRED.

−(E) STL BM

(E) WF CANT, TYP

1. T/(E) SOG AND REFERENCE ELEVATION IS 0'-00". ALL ELEVATIONS NOTED ON PLAN ARE (±X'-XX") FROM REFERENCE ELEVATION.

3. "WOOD I-JOIST" MEMBERS MANUFACTURED BY TRUSJOIST OR APPROVED EQUAL.

5. CONTRACTOR TO REPAIR ANY DETERIORATED (E) WD SHEATHING BOARDS IN KIND AND REPLACE ANY PREVIOUS PLYWOOD REPAIR WITH WD SHEATHING BOARDS TO MATCH ORIGINAL.

A. 2x10: SIMPSON STRONG-TIE LUS28 FACE MOUNT HANGER (FOR SLOPED USE LSU26 FACE MOUNT HANGER)

C. 2x12: SIMPSON STRONG-TIE LUS210 FACE MOUNT HANGER

E. 9-1/2" TJI 230: SIMPSON STRONG-TIE ITS2.37/9.5 FACE MOUNT HANGER OR ITS2.37/9.5 TOP MOUNT HANGER (FOR SLOPED USE LSSUI25 FACE MOUNT HANGER)

7. COLD-FORMED STUD WALLS SHALL BE 350S162-54 (3-1/2", 18 GAUGE) @ 16" OC AND G-60 GALVANIZED ACCORDING TO ASTM A1003. 8. FOOTINGS (INCLUDING THICKENED AND TURNED DOWN SLABS) SHALL BE 18" MIN BELOW ADJACENT GRADE AND ARE DESIGNED FOR 1,500 PSF BEARING PRESSURE; GEOTECHNICAL

9. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 PSI. AT 28 DAYS.

10. ALL CONCRETE MASONRY UNITS SHALL HAVE A COMPRESSIVE STRENGTH OF 2,000 PSI AT 28 DAYS.

A. DEAD LOAD = 20 PSF

B. ROOF LIVE LOAD = 30 PSF C. RESIDENTIAL LIVE LOAD = 40 PSF 12. ALL STEEL LINTELS SHALL BE GALVANIZED.

ROOF FRAMING PLAN

SCALE AT FULL SIZE 3/16" = 1'-0"

2. ALL STRUCTURAL FRAMING LUMBER SHALL BE SOUTHERN PINE, No. 2 OR BETTER.

4. CONTRACTOR TO REPAIR ANY DETERIORATED (E) JOISTS IN KIND.

6. JOIST HANGERS:

B. DOUBLE 2x10: SIMPSON STRONG-TIE LUS28-2 FACE MOUNT HANGER. (FOR SLOPED USE LSSU210-2 FACE MOUNT HANGER)

D. DOUBLE 2x12 SIMPSON STRONG-TIE LUS210-2 FACE MOUNT HANGER

INSPECTOR TO VERY COMPETENT SUBGRADE BEFORE FOOTINGS ARE PLACED.

11. DESIGN LOADS (IBC 2015)

# GENERAL MECHANICAL NOTES

- ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH VAMC.

  OUT DIMENSIONS SHOWN ARE INSIDE OF FAR.
- DUCT DIMENSIONS SHOWN ARE INSIDE CLEAR.
   LOCATIONS OF DUCTWORK AND FITTINGS MAY BE EXAGGERATED FOR CLARITY.
   COORDINATE EXACT LOCATION OF MECHANICAL WORK WITH STRUCTURE, LIGHTS
   AND OTHER OBSTRUCTIONS. ADJUST LOCATIONS AS REQUIRED.
- MECHANICAL LAYOUTS ARE SCHEMATIC. PROVIDE DROPS, RISERS AND OFFSETS WHERE REQUIRED.
   MECHANICAL WORK SHALL BE ABOVE CEILING UNLESS OTHERWISE NOTED.
- ALL DUCTWORK AND EQUIPMENT SHALL BE COVERED AND SEALED WITH MASTIC.
   ALL MECHANICAL WORK SHALL BE CONCEALED WITHIN WALLS, BELOW FLOORS OR ABOVE CEILINGS, UNLESS OTHERWISE NOTED.
- 8. COORDINATE EXACT LOCATION OF MECHANICAL WORK WITH STRUCTURE, LIGHTS
   AND OTHER OBSTRUCTIONS. ADJUST LOCATIONS AS REQUIRED.
   9. ALL CUTTING AND PATCHING OF BUILDING CONSTRUCTION SHALL BE DONE BY THE
- MECHANICAL CONTRACTOR.

  10. INSTALL FIRE DAMPERS AND ACCESS DOORS OR FLANGED DUCTS AT EVERY FIRE WALL PENETRATION.
- 11. CONTRACTOR SHALL SIZE REFRIGERANT PIPING PER MANUFACTURER'S RECOMMENDATIONS, UNLESS OTHERWISE NOTED.
- 12. UNDER NO CIRCUMSTANCES SHALL ANY STRUCTURAL MEMBER BE CUT OR PENETRATED WITHOUT THE WRITTEN PERMISSION OF THE ARCHITECT.
- 13. THE EQUIPMENT, DUCTWORK AND PIPING INSTALLED SHALL BE BLOWN OUT UNDER PRESSURE AND CLEANED OF FOREIGN MATTER, THROUGH TEMPORARY CONNECTIONS WHEN NECESSARY BEFORE THE SYSTEM IS PLACE IN SERVICE. THE SURFACES OF ALL NEW EQUIPMENT AND PIPING SHALL BE CLEAN UPON COMPLETION OF THE WORK. AIR FILTERS SHALL BE REPLACED IMMEDIATELY BEFORE BEING
- TURNED OVER TO THE OWNER FOR ACCEPTANCE.

  14. PREPLAN ALL WORK PRIOR TO PURCHASING, ORDERING, OR FABRICATING ANDY PART
- OF THE WORK DESCRIBED IN THESE DRAWINGS.

  15. IMMEDIATELY NOTIFY THE ENGINEER OF ANY CONFLICTS WITH EXISTING FIELD
- CONDITIONS OR THE WORK OF OTHER TRADES.

  16. RESOLVE ALL CONFLICT PRIOR TO INCURRING ANY MATERIAL OR LABOR EXPENSES.

  17. COMPLY WITH THE MANUFACTURER'S TECHNICAL INSTRUCTION WHEN INSTALLING MECHANICAL EQUIPMENT, DEVICES, DUCTWORK, GRILLES, REGISTERS, DIFFUSERS,
- AND OTHER MATERIALS.

  18. PROVIDE ALL APPURTENANCES NECESSARY TO PROPERTY INSTALL EQUIPMENT,
- DEVICES, DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, AND OTHER MATERIALS.

  19. VERIFY EACH GRILLE, REGISTER, AND DIFFUSER TO BE INSTALLED AGAINST THE ARCHITECT'S ROOM FINISHES AND RESOLVE ALL CONFLICTS BEFORE ORDERING.
- 20. LOCATE MECHANICAL EQUIPMENT, DEVICES, DUCTWORK, GRILLES, REGISTERS, DIFFUSERS, AND OTHER MATERIAL GENERALLY AS SHOWN ON THE PLANS; HOWEVER, COORDINATE LOCATIONS WITH ACTUAL FIELD CONDITIONS TO PRESERVE ALL CODE-REQUIRED AND MANUFACTURER-REQUESTED SERVICE CLEARANCE.
- 21. COORDINATE THE ROUTING OF ALL DUCTWORK AND PIPING WITH THE BUILDING
- STRUCTURE AND WITH THE WORK OF OTHER TRADES.

  22. BUILDING FRAMING CAVITIES SHALL NOT BE USED AS SUPPLY AIR DUCTS.
- 23. PROVIDE FLEXIBLE DUCTWORK OR FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AS SHOWN ON THE PLAN. FLEXIBLE DUCTWORK SHALL BE CLASS 0 OR 1 OF UNLIMITED LENGTH SIZED FOR AIRFLOW AND FRICTION LOSS. FLEXIBLE CONNECTORS ARE LIMITED TO 6' MAXIMUM LENGTH.
- 24. ALL DUCTWORK NOT LOCATED WITHIN A CONDITIONED SPACE SHALL BE INSULATED. FOR DUCTWORK LOCATED OUTSIDE OF THE BUILDING ENVELOPE, PROVIDE AT LEAST R-8 INSULATION IN ADDITION TO WEATHERPROOFING. FOR DUCTWORK LOCATED IN ATTICS, CRAWLSPACES, AND OTHER UNCONDITIONED SPACES, PROVIDE AT LEAST R-6 INSULATION.
- 25. PROVIDE AIR TURNING DEVICES AT EACH SUPPLY DUCT ELBOW AND BRANCH TAKE OFF. PROVIDE BALANCING AND SPLITTER DAMPERS AS SHOWN ON THE PLANS AND WHERE NECESSARY FOR SYSTEM BALANCING. ALL TURNING VANES SHALL BE DOUBLE-THICKNESS.
- 26. PROVIDE ALL LOW VOLTAGE (24V AND BELOW) MOTOR-OPERABLE DAMPERS, CONTROLS DEVICES, RELAYS, AND SENSORS NECESSARY FOR THE PROPER, EFFECTIVE, AND SAFE OPERATION OF EQUIPMENT AND SYSTEMS. LOW VOLTAGE (24V AND BELOW) CONTROLS WIRING SHALL INCLUDE, BUT NOT BE LIMITED TO, TRANSFORMERS, CABLING, WIRING, AND DISCONNECTING MEANS. COMPONENTS, WIRING, SIZING, OVERCURRENT PROTECTION, AND GROUNDING SHALL CONFORM TO THE NATIONAL ELECTRIC CODE.
- 27. COORDINATE GAS-FIRED EQUIPMENT CAPACITIES AND BURNER PRESSURE
  REQUIREMENTS WITH GAS UTILITY. PROVIDE VENT-LESS GAS REGULATORS AS
  NEEDED O LIMIT PRESSURE TO THE APPLIANCE REQUIREMENT. VENT 5 PSI AND
  GREATER REGULATORS TO THE EXTERIOR WITH APPROVED PIPING AND WATERTIGHT
  PENETRATIONS.
- 28. ALL OUTSIDE AIR INTAKES AND EXHAUST AIR DISCHARGES SHALL HAVE AUTOMATIC OR GRAVITY DAMPERS THAT CLOSE WHEN THE VENTILATION SYSTEM IS NOT OPERATING.
- 29. ALL OUTSIDE AIR INTAKE OR EXHAUST AIR DISCHARGE HOODS, CAPS, ETC. SHALL BE FULLY COMPATIBLE WITH THE WALL OR ROOF INSTALLATION. PROVIDE WATERTIGHT FLASHING AND SEALING AS NECESSARY TO SEAL TIGHT THE PENETRATIONS.
   30. BALANCE THE HVAC SYSTEM TO THE CFM QUANTITIES SHOWN ON THESE DRAWINGS.
- 31. UPON COMPLETION OF THE PROJECT AND ONCE THE BUILDING IS OCCUPIED, REBALANCE THE DIFFUSERS AS NECESSARY AND REPLACE HVAC UNIT FILTERS.
- 32. WHEN DIFFUSERS ARE LOCATED IN FIRE RATED CEILINGS, PROVIDE DIFFUSERS WITH INTEGRAL FIRE DAMPERS, LISTED AND IN ACCORDANCE WITH UL.
- 33. VIBRATION ISOLATION SHALL BE INSTALLED FOR EVERY PIECE OF MECHANICAL EQUIPMENT THAT INCLUDES A FAN OR MOTOR. ISOLATION SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

# CODE DATA

MEP SPECIFIC CODES AND STANDARDS
2012 INTERNATIONAL MECHANICAL CODE (IMC)
2012 INTERNATIONAL BUILDING CODE (IBC)
2012 INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VA USBC)

# **LEGEND**

dФ	ROUND DUCT, 'd' IS THE DIAMETER (IN INCHES)		SQUARE ONE - WAY SUPPLY AIR DIFFUSER
wXh	RECTANGULAR DUCT, 'w' IS THE WIDTH & 'h' IS THE HEIGHT (IN INCHES)		SQUARE TWO-WAY SUPPLY AIR DIFFUSER
######################################	FLEX ROUND DUCT		SQUARE THREE-WAY SUPPLY AIR DIFFUSER
	FLEX RECTANGULAR DUCT		SQUARE FOUR-WAY SUPPLY AIR DIFFUSER OR DUCT RISER
	TRANSITION		COLLADE DETUDNIAID COULLE OD DUCT DICED
7,7,7	DUCT ELBOW WITH TURNING VANES - RECTANGULAR		SQUARE RETURN AIR GRILLE OR DUCT RISER  SQUARE EXHAUST AIR GRILLE OR DUCT RISER
	DUOT EL DOW		
	DUCT ELBOW		SQUARE OUTDOOR / MAKE-UP AIR DUCT RISER
	STANDARD BEVELED BRANCH - RECTANGULAR		CONCENTRIC DIFFUSER-SUPPLY & RETURN TERMINAL
	STANDARD BEVELED BRANCH - ROUND		CIRCULAR SUPPLY DIFFUSER OR ROUND DUCT RISER
	BALANCING DAMPER		ROUND RETURN DUCT RISER
	BACKDRAFT DAMPER		ROUND EXHAUST DUCT RISER
	SMOKE / FIRE DAMPER		ROUND OUTDOOR / MAKE-UP AIR DUCT RISER
VAV	VARIABLE AIR VOLUME TERMINAL BOX		SIDEWALL SUPPLY DIFFUSER
RTU-1	MECHANICAL EQUIPMENT		SIDEWALL RETURN GRILLE
	UNIT HEATER, ARROW INDICATES THE DIRECTION OF AIR FLOW		LINEAR SLOT SUPPLY DIFFUSER
T	THERMOSTAT		POINT OF DEMOLITION
	GOOSENECK - EXHAUST VENT		POINT OF CONNECTION
	GOOSENECK - INTAKE VENT		EGRESS PATHWAY (FOR REFERENCE ONLY)
S2.2-200		#	PLAN NOTE. SEE PLAN NOTE SCHEDULE.
	CFM AT DIFFUSER / GRILLE TING OF DIFFUSER (MAX CFM / 100 CFM)	SD	SMOKE DETECTOR

MEC	<b>HANICAL DRAWING INDEX</b>
SHEET NUMBER	SHEET NAME
M0.01	LEGEND, NOTES, & ABBREVIATIONS
M0.02	SHEET SPECIFICATION
M0.03	MECHANICAL LOADS, EQUIPMENT AND ZONING
M0.04	LOADS
M1.11	LEVEL 1 & ROOF - HVAC PLAN
M5.01	FIRE PENETRATION DETAILS
M5.11	DETAILS & DIAGRAMS

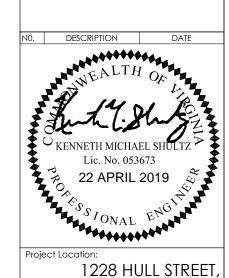


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PERMITZIP 3412 W. LEIGH ST RICHMOND, VA 23230 T833.896.9335 WWW.PERMITZIP.COM

LIGHTHOUSE DINER
1228 HULL STREET, RICHMOND, VA 232



Project No:

18.199

Date
22 APRIL 2019

RICHMOND, VA 23224

Scale
As indicated

LEGEND, NOTES, & ABBREVIATIONS

MO.01

### 23 05 53 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

- 1. EQUIPMENT LABELS MATERIAL AND THICKNESS: MULTILAYER, MULTICOLOR, PLASTIC LABELS FOR MECHANICAL ENGRAVING 1/8" THICK, AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE.
  - COLOR: WHITE LETTERS WITH BLACK BACKGROUND. ABLE TO WITHSTAND 160 DEG F. MINIMUM LETTER SIZE 1/2". PROVIDE WITH CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH
- EQUIPMENT LABEL CONTENT: INCLUDE EQUIPMENT'S DRAWING DESIGNATION OR UNIQUE EQUIPMENT NUMBER. DRAWING NUMBERS WHERE EQUIPMENT IS INDICATED (PLANS, DETAILS, AND SCHEDULES).
- 2. PIPE LABELS PREPRINTED, COLOR-CODED, WITH LETTERING INDICATING SERVICE, AND SHOWING FLOW DIRECTION ACCORDING TO ASME A13.1.
- PRINTED PLASTIC WITH CONTACT-TYPE, PERMANENT-ADHESIVE BACKING. MINIMUM LETTER SIZE 1/2".
- PIPE LABEL CONTENTS: INCLUDE IDENTIFICATION OF PIPING SERVICE; ALSO INCLUDE PIPE SIZE AND AN ARROW INDICATING FLOW DIRECTION.
- DUCT LABELS MULTILAYER, MULTICOLOR, PLASTIC LABELS FOR MECHANICAL ENGRAVING 1/8" THICK, AND HAVING PREDRILLED HOLES FOR ATTACHMENT HARDWARE
- ABLE TO WITHSTAND 160 DEG F. MINIMUM LETTER SIZE 1/2". PROVIDE WITH CONTACT-TYPE PERMANENT ADHESIVE, COMPATIBLE WITH LABEL AND WITH
- DUCT LABEL CONTENTS: INCLUDE IDENTIFICATION OF DUCT SERVICE; ALSO INCLUDE DUCT SIZE AND AN ARROW INDICATING FLOW DIRECTION.
- LOCATE LABELS NEAR POINTS WHERE DUCTS ENTER INTO AND EXIT FROM CONCEALED SPACES AND AT MAXIMUM INTERVALS OF 50 FEET IN EACH SPACE WHERE DUCTS ARE EXPOSED OR CONCEALED BY REMOVABLE CEILING
- LOCATE DUCT LABEL AT EACH DUCT ACCESS DOOR AS REQUIRED BY "AIR **DUCT ACCESSORIES"**
- WHEN DUCT IS IN EXPOSED AND ARCHITECTURAL AREAS, LABELING SHALL BE LOCATED IN SUCH A WAY AS TO NOT BE EASILY RECOGNIZABLE FROM THE GENERAL PUBLIC.

### 23 05 48 . 13 - VIBRATION CONTROLS FOR HVAC

- PROVIDE VIBRATION CONTROLS FOR ALL MECHANICAL EQUIPMENT. INSTALL PER MANUFACTURER RECOMMENDATIONS.
- COORDINATE THE LOCATION OF EMBEDDED CONNECTION HARDWARE WITH SUPPORTED EQUIPMENT ATTACHMENT AND MOUNTING POINTS AND WITH CONCRETE REINFORCEMENT AND FORMWORK.
- INSTALLATION OF VIBRATION ISOLATORS MUST NOT CAUSE ANY CHANGE OF POSITION OF EQUIPMENT, PIPING, OR DUCTWORK RESULTING IN STRESSES OR MISALIGNMENT.
  - AUTOMATIC TEMPERATURE CONTROL: ALL CONTROLS, CONTROL WIRING, INTERLOCKS, PROGRAMMABLE VICES SHALL BE IN CONFORMANCE WITH N.E.C., LOW AND LINE VOLTAGE AS APPLICABLE.
  - PROVIDE PROGRAMMABLE THERMOSTAT CONTROLS FOR PROPER AND SATISFACTORY SYSTEM OPERATION. ALL PORTIONS OF WALL-MOUNTED FHERMOSTATS SHALL BE NO HIGHER THAN 46" AFF. HEAT PUMPS HAVING A SUPPLEMENTAL ELECTRIC-RESISTANCE HEAT SHALL HAVE CONTROLS THAT, EXXCEPT DURING DEFROST CYCLES, PREVENT SUPPLEMENTAL HEAT OPERATION WHEN THE HEAT PUMP COMPRESSOR CAN MEET THE HEATING LOAD.

23 05 93 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

- 1. PERFORM TESTING AND BALANCING PROCEDURES ON EACH SYSTEM ACCORDING TO THE PROCEDURES CONTAINED IN SMACNA'S "HVAC SYSTEMS - TESTING, ADJUSTING. AND BALANCING" AND IN THIS SECTION.
- CUT INSULATION, DUCTS, PIPES, AND EQUIPMENT CABINETS FOR INSTALLATION OF TEST PROBES TO THE MINIMUM EXTENT NECESSARY FOR TAB PROCEDURES. AFTER TESTING AND BALANCING. PATCH PROBE HOLES IN DUCTS WITH SAME MATERIAL AND THICKNESS AS USED TO CONSTRUCT DUCTS.
- INSTALL AND JOIN NEW INSULATION THAT MATCHES REMOVED MATERIALS. RESTORE INSULATION, COVERINGS, VAPOR BARRIER, AND FINISH TO ORIGINAL
- MARK EQUIPMENT AND BALANCING DEVICES, INCLUDING DAMPER-CONTROL POSITIONS, VALVE POSITION INDICATORS, FAN-SPEED-CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, WITH PAINT OR OTHER SUITABLE, PERMANENT
- IDENTIFICATION MATERIAL TO SHOW FINAL SETTINGS. 4. TAKE AND REPORT TESTING AND BALANCING MEASUREMENTS IN INCH-POUND (IP
- GENERAL PROCEDURES FOR TESTING AND INSPECTION PREPARE TEST REPORTS FOR BOTH FANS AND OUTLETS. OBTAIN MANUFACTURER'S OUTLET FACTORS AND RECOMMENDED TESTING PROCEDURES. CROSS-CHECK THE SUMMATION OF REQUIRED OUTLET
- VOLUMES WITH REQUIRED FAN VOLUMES. PREPARE SCHEMATIC DIAGRAMS OF SYSTEMS' "AS-BUILT" DUCT LAYOUTS C. FOR VARIABLE-AIR-VOLUME SYSTEMS, DEVELOP A PLAN TO SIMULATE
- DETERMINE THE BEST LOCATIONS IN MAIN AND BRANCH DUCTS FOR
- ACCURATE DUCT-AIRFLOW MEASUREMENTS. CHECK AIRFLOW PATTERNS FROM THE OUTDOOR-AIR LOUVERS AND DAMPERS AND THE RETURN- AND EXHAUST-AIR DAMPERS THROUGH THE SUPPLY-FAN DISCHARGE AND MIXING DAMPERS.
- LOCATE START-STOP AND DISCONNECT SWITCHES, ELECTRICAL INTERLOCKS, AND MOTOR STARTERS.
- VERIFY THAT MOTOR STARTERS ARE EQUIPPED WITH PROPERLY SIZED THERMAL PROTECTION.
- CHECK DAMPERS FOR PROPER POSITION TO ACHIEVE DESIRED AIRFLOW PATH. CHECK FOR AIRFLOW BLOCKAGES.
- CHECK CONDENSATE DRAINS FOR PROPER CONNECTIONS AND FUNCTIONING. CHECK FOR PROPER SEALING OF AIR-HANDLING-UNIT COMPONENTS
- VERIFY THAT AIR DUCT SYSTEM IS SEALED. GENERAL PROCEDURES FOR AIR BALANCING A. ADJUST FANS TO DELIVER TOTAL INDICATED AIRFLOWS WITHIN THE MAXIMUM
- ALLOWABLE FAN SPEED LISTED BY FAN MANUFACTURER. MEASURE TOTAL AIRFLOW.
  - SET OUTSIDE-AIR, RETURN-AIR, AND RELIEF-AIR DAMPERS FOR PROPER POSITION THAT SIMULATES MINIMUM OUTDOOR-AIR CONDITIONS.
  - WHERE DUCT CONDITIONS ALLOW, MEASURE AIRFLOW BY PITOT-TUBE TRAVERSE. IF NECESSARY, PERFORM MULTIPLE PITOT-TUBE TRAVERSES TO OBTAIN TOTAL AIRFLOW.
  - WHERE DUCT CONDITIONS ARE NOT SUITABLE FOR PITOT-TUBE TRAVERSE MEASUREMENTS, A COIL TRAVERSE MAY BE ACCEPTABLE.
  - IF A RELIABLE PITOT-TUBE TRAVERSE OR COIL TRAVERSE IS NOT POSSIBLE, MEASURE AIRFLOW AT TERMINALS AND CALCULATE THE TOTAL AIRFLOW. MEASURE FAN STATIC PRESSURES AS FOLLOWS:
  - MEASURE STATIC PRESSURE DIRECTLY AT THE FAN OUTLET OR THROUGH THE FLEXIBLE CONNECTION.
  - MEASURE STATIC PRESSURE DIRECTLY AT THE FAN INLET OR THROUGH THE FLEXIBLE CONNECTION.
  - MEASURE STATIC PRESSURE ACROSS EACH COMPONENT THAT MAKES UP THE AIR-HANDLING SYSTEM.
  - REPORT ARTIFICIAL LOADING OF FILTERS AT THE TIME STATIC PRESSURES ARE MEASURED.
  - DO NOT MAKE FAN-SPEED ADJUSTMENTS THAT RESULT IN MOTOF OVERLOAD. CONSULT EQUIPMENT MANUFACTURERS ABOUT FAN-SPEED SAFETY FACTORS. MODULATE DAMPERS AND MEASURE FAN-MOTOR AMPERAGE TO ENSURE THAT NO OVERLOAD OCCURS, MEASURE AMPERAGE IN FULL-COOLING, FULL-HEATING, ECONOMIZER, AND ANY OTHER OPERATING MODE TO DETERMINE THE MAXIMUM REQUIRED BRAKE HORSEPOWER.
  - ADJUST VOLUME DAMPERS FOR MAIN DUCT, SUBMAIN DUCTS, AND MAJOR
  - BRANCH DUCTS TO INDICATED AIRFLOWS. MEASURE AIRFLOW OF SUBMAIN AND BRANCH DUCTS
  - ADJUST SUBMAIN AND BRANCH DUCT VOLUME DAMPERS FOR SPECIFIED
- RE-MEASURE EACH SUBMAIN AND BRANCH DUCT AFTER ALL HAVE BEEN ADJUST AIR INLETS AND OUTLETS FOR EACH SPACE TO INDICATED AIRFLOWS. a. SET AIRFLOW PATTERNS OF ADJUSTABLE OUTLETS FOR PROPER
- DISTRIBUTION WITHOUT DRAFTS
- MEASURE INLETS AND OUTLETS AIRFLOW. ADJUST EACH INLET AND OUTLET FOR SPECIFIED AIRFLOW.
- RE-MEASURE EACH INLET AND OUTLET AFTER THEY HAVE BEEN ADJUSTED.
- 7. PREPARE A WRITTEN REPORT WITH RESULTS OF TESTING AS IDENTIFIED IN THIS SECTION AND CERTIFYING THE VALIDITY AND ACCURACY OF THE FIELD DATA.

**23 31 13 - METAL DUCTS** 

- DUCT CONSTRUCTION, INCLUDING SHEET METAL THICKNESSES, SEAM AND JOINT CONSTRUCTION, REINFORCEMENTS, AND HANGERS AND SUPPORTS, SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" AND PERFORMANCE REQUIREMENTS AND DESIGN CRITERIA INDICATED IN "DUCT SCHEDULE" ARTICLE.
- STRUCTURAL PERFORMANCE: DUCT HANGERS AND SUPPORTS SHALL WITHSTAND THE EFFECTS OF GRAVITY LOADS AND STRESSES WITHIN LIMITS AND UNDER CONDITIONS DESCRIBED IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS -METAL AND FLEXIBLE".
- AIRSTREAM SURFACES: SURFACES IN CONTACT WITH THE AIRSTREAM SHALL COMPLY WITH REQUIREMENTS IN ASHRAE 62.1.
  - RECTANGULAR DUCTS AND FITTINGS GENERAL FABRICATION REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" BASED ON INDICATED STATIC-PRESSURE CLASS UNLESS OTHERWISE INDICATED.
- TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-1, "RECTANGULAR DUCT/TRANSVERSE JOINTS," FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
- LONGITUDINAL SEAMS: SELECT SEAM TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 2-2, "RECTANGULAR DUCT/LONGITUDINAL SEAMS," FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
- ELBOWS, TRANSITIONS, OFFSETS, BRANCH CONNECTIONS, AND OTHER DUCT CONSTRUCTION: SELECT TYPES AND FABRICATE ACCORDING TO SMACNA'S 'HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," CHAPTER 4, "FITTINGS AND OTHER CONSTRUCTION," FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
- ROUND DUCTS AND FITTINGS GENERAL FABRICATION REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE." CHAPTER 3. "ROUND. OVAL, AND FLEXIBLE DUCT," BASED ON INDICATED STATIC-PRESSURE CLASS
- UNLESS OTHERWISE INDICATED. TRANSVERSE JOINTS: SELECT JOINT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-1, "ROUND DUCT TRANSVERSE JOINTS," FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT
- CONSTRUCTION STANDARDS METAL AND FLEXIBLE." LONGITUDINAL SEAMS: SELECT SEAM TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-2, "ROUND DUCT LONGITUDINAL SEAMS." FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT
- CONSTRUCTION STANDARDS METAL AND FLEXIBLE." TEES AND LATERALS: SELECT TYPES AND FABRICATE ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE," FIGURE 3-5, "90 DEGREE TEES AND LATERALS," AND FIGURE 3-6, "CONICAL TEES," FOR STATIC-PRESSURE CLASS, APPLICABLE SEALING REQUIREMENTS, MATERIALS INVOLVED, DUCT-SUPPORT INTERVALS, AND OTHER PROVISIONS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE."
- SHEET METAL MATERIALS GENERAL MATERIAL REQUIREMENTS: COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" FOR ACCEPTABLE MATERIALS, MATERIAL THICKNESSES, AND DUCT CONSTRUCTION METHODS UNLESS OTHERWISE INDICATED. SHEET METAL MATERIALS SHALL BE FREE OF PITTING, SEAM MARKS, ROLLER MARKS, STAINS, DISCOLORATIONS, AND OTHER
- IMPERFECTIONS. GALVANIZED SHEET STEEL: COMPLY WITH ASTM A 653/A 653M. GALVANIZED COATING DESIGNATION: G90.
- FINISHES FOR SURFACES EXPOSED TO VIEW: MILL PHOSPHATIZED. LOW PRESSURE DUCTWORK DUCTS SHALL BE SEALED IN ACCORDANCE WITH 2012 IECC.
- ALL RETURN DUCTWORK SHALL BE LINED WITH 1" THICK 2LB/CU-FT DENSITY FIBERGLASS DUCT LINER TREATED WITH BIOCIDE. EXHAUST DUCTWORK SHALL NOT BE INSULATED.
- MEDIUM PRESSURE DUCTWORK ALL DUCTS SHALL BE SEALED IN ACCORDANCE WITH 2012 IECC. FIRST 20 FEET OF SUPPLY DUCTWORK SHALL BE LINED WITH 2" THICK 2LB/CU-FT DENSITY FIBERGLASS DUCT LINER TREATED WITH BIOCIDE
- THE REMAINDER OF THE MEDIUM PRESSURE DUCTWORK AND LOW PRESSURE DUCTWORK SHALL BE INSULATED WITH 1 1/2" DUCTWRAP. INSTALLATION
- INSTALL DUCT SYSTEMS AS INDICATED UNLESS DEVIATIONS TO LAYOUT ARE
- APPROVED ON SHOP DRAWINGS AND COORDINATION DRAWINGS. INSTALL DUCTS ACCORDING TO SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE" UNLESS OTHERWISE INDICATED.
- INSTALL ROUND DUCTS IN MAXIMUM PRACTICAL LENGTHS. INSTALL DUCTS WITH FEWEST POSSIBLE JOINTS.
- INSTALL FACTORY- OR SHOP-FABRICATED FITTINGS FOR CHANGES IN DIRECTION, SIZE, AND SHAPE AND FOR BRANCH CONNECTIONS. UNLESS OTHERWISE INDICATED, INSTALL DUCTS VERTICALLY AND
- HORIZONTALLY, AND PARALLEL AND PERPENDICULAR TO BUILDING LINES. INSTALL DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING.
- INSTALL DUCTS WITH A CLEARANCE OF 1 INCH (25 MM), PLUS ALLOWANCE FOR INSULATION THICKNESS. ROUTE DUCTS TO AVOID PASSING THROUGH TRANSFORMER VAULTS AND ELECTRICAL EQUIPMENT ROOMS AND ENCLOSURES
- WHERE DUCTS PASS THROUGH NON-FIRE-RATED INTERIOR PARTITIONS AND EXTERIOR WALLS AND ARE EXPOSED TO VIEW, COVER THE OPENING BETWEEN THE PARTITION AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME METAL THICKNESS AS THE DUCT. OVERLAP OPENINGS ON FOUR
- SIDES BY AT LEAST 1-1/2 INCHES (38 MM) WHERE DUCTS PASS THROUGH FIRE-RATED INTERIOR PARTITIONS AND EXTERIOR WALLS, INSTALL FIRE DAMPERS.
- PROTECT DUCT INTERIORS FROM MOISTURE, CONSTRUCTION DEBRIS AND DUST. AND OTHER FOREIGN MATERIALS. INSTALLATION OF EXPOSED DUCTWORK: PROTECT DUCTS EXPOSED IN FINISHED SPACES FROM BEING DENTED, SCRATCHED, OR DAMAGED. TRIM DUCT SEALANTS FLUSH WITH METAL. CREATE A SMOOTH AND UNIFORM EXPOSED BEAD. DO NOT USE TWO-PART TAPE SEALING SYSTEM. REPAIR OR

WITH THESE REQUIREMENTS.

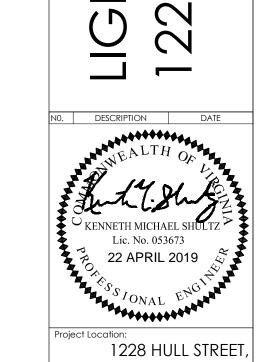
REPLACE DAMAGED SECTIONS AND FINISHED WORK THAT DOES NOT COMPLY

23 33 00 - AIR DUCT ACCESSORIES

- INSTALL DUCT ACCESSORIES ACCORDING TO APPLICABLE DETAILS IN SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE"
- INSTALL DUCT ACCESSORIES OF MATERIALS SUITED TO DUCT MATERIALS. INSTALL VOLUME DAMPERS AT POINTS ON SUPPLY, RETURN, AND EXHAUST SYSTEMS WHERE BRANCHES EXTEND FROM LARGER DUCTS. WHERE DAMPERS ARE INSTALLED IN DUCTS HAVING DUCT LINER, INSTALL DAMPERS WITH HAT CHANNELS OF SAME DEPTH AS LINER, AND TERMINATE LINER WITH NOSING AT HAT CHANNEL.
- INSTALL FIRE AND SMOKE DAMPERS ACCORDING TO UL LISTING. INSTALL TEST HOLES AT FAN INLETS AND OUTLETS AND ELSEWHERE AS INDICATED.
- INSTALL DUCT ACCESS DOORS ON SIDES OF DUCTS TO ALLOW FOR INSPECTING, ADJUSTING. AND MAINTAINING ACCESSORIES AND EQUIPMENT AT THE FOLLOWING LOCATIONS:
- ON BOTH SIDES OF DUCT COILS. UPSTREAM AND DOWNSTREAM FROM DUCT FILTERS
- AT OUTDOOR-AIR INTAKES AND MIXED-AIR PLENUMS
- AT DRAIN PANS AND SEALS. DOWNSTREAM FROM MANUAL VOLUME DAMPERS, CONTROL DAMPERS
- BACKDRAFT DAMPERS, AND EQUIPMENT. ADJACENT TO AND CLOSE ENOUGH TO FIRE OR SMOKE DAMPERS, TO RESET OR REINSTALL FUSIBLE LINKS. ACCESS DOORS FOR ACCESS TO FIRE OR SMOKE DAMPERS HAVING FUSIBLE LINKS SHALL BE PRESSURE RELIEF ACCESS DOORS AND SHALL BE OUTWARD OPERATION FOR ACCESS DOORS INSTALLED UPSTREAM FROM DAMPERS AND INWARD OPERATION FOR ACCESS DOORS
- G. ELSEWHERE AS INDICATED.

INSTALLED DOWNSTREAM FROM DAMPERS.

- INSTALL ACCESS DOORS WITH SWING AGAINST DUCT STATIC PRESSURE. ACCESS DOOR SIZES:
- ONE-HAND OR INSPECTION ACCESS: 8 BY 5 INCHES. TWO-HAND ACCESS: 12 BY 6 INCHES.
- HEAD AND HAND ACCESS: 18 BY 10 INCHES.
- HEAD AND SHOULDERS ACCESS: 21 BY 14 INCHES.
- BODY ACCESS: 25 BY 14 INCHES. BODY PLUS LADDER ACCESS: 25 BY 17 INCHES.
- LABEL ACCESS DOORS ACCORDING TO "IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT" TO INDICATE THE PURPOSE OF ACCESS DOOR.
- INSTALL FLEXIBLE CONNECTORS TO CONNECT DUCTS TO EQUIPMENT. 11. CONNECT TERMINAL UNITS TO SUPPLY DUCTS WITH MAXIMUM 12" LENGTHS OF FLEXIBLE DUCT. DO NOT USE FLEXIBLE DUCTS TO CHANGE DIRECTIONS OR IN EXPOSED AREAS.
- 12. CONNECT DIFFUSERS OR LIGHT TROFFER BOOTS TO DUCTS WITH MAXIMUM 6' LENGTHS OF FLEXIBLE DUCT CLAMPED OR STRAPPED IN PLACE. DO NOT USE FLEXIBLE DUCTS IN EXPOSED AREAS.
- 13. INSTALL DUCT TEST HOLES WHERE REQUIRED FOR TESTING AND BALANCING
- **PURPOSES** 14. TESTS AND INSPECTIONS:
- OPERATE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT
- INSPECT LOCATIONS OF ACCESS DOORS AND VERIFY THAT PURPOSE OF ACCESS DOOR CAN BE PERFORMED.
- OPERATE FIRE AND SMOKE DAMPERS TO VERIFY FULL RANGE OF MOVEMENT AND VERIFY THAT PROPER HEAT-RESPONSE DEVICE IS INSTALLED. INSPECT TURNING VANES FOR PROPER AND SECURE INSTALLATION.
- **23 81 26 SPLIT SYSTEMS** COMPLY WITH ASHRAE 15, 62.1, AND LATEST VERSION OF IECC 2012.
- ELECTRICAL COMPONENTS. DEVICES. AND ACCESSORIES: LISTED AND LABELED AS DEFINED IN NFPA 70, BY A QUALIFIED TESTING AGENCY, AND MARKED FOR INTENDED
- LOCATION AND APPLICATION. SPECIAL WARRANTY: MANUFACTURER'S STANDARD FORM IN WHICH MANUFACTURER AGREES TO REPAIR OR REPLACE COMPONENTS OF SPLIT-SYSTEM AIR-CONDITIONING UNITS THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD. WARRANTY PERIOD FOR COMPRESSOR, PARTS, AND LABOR SHALL BE A
- MINIMUM OF ONE YEAR FROM DATE OF SUBSTANTION COMPLETION. INSTALLATION
- INSTALL UNITS LEVEL AND PLUMB. INSTALL EVAPORATOR-FAN COMPONENTS USING MANUFACTURER'S STANDARD
- MOUNTING DEVICES SECURELY FASTENED TO BUILDING STRUCTURE. INSTALL ROOF-MOUNTED, COMPRESSOR-CONDENSER COMPONENTS ON EQUIPMENT SUPPORTS. ANCHOR UNITS TO SUPPORTS WITH REMOVABLE, CADMIUM-PLATED FASTENERS.
- EQUIPMENT MOUNTING: INSTALL GROUND-MOUNTED, COMPRESSOR-CONDENSER COMPONENTS
- ON CAST-IN-PLACE CONCRETE EQUIPMENT BASE(S). COMPLY WITH REQUIREMENTS FOR VIBRATION ISOLATION DEVICES SPECIFIED IN SECTION "VIBRATION CONTROLS FOR HVAC."
- INSTALL AND CONNECT PRECHARGED REFRIGERANT TUBING TO COMPONENT'S QUICK-CONNECT FITTINGS. INSTALL TUBING TO ALLOW ACCESS TO UNIT. CONNECTIONS
- A. PIPING INSTALLATION REQUIREMENTS SHALL BE PROVIDED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. WHEN PIPING IS SHOWN ON DRAWINGS, IT SHALL INDICATE ONLY GENERAL ARRANGEMENT OF PIPING.
- FITTINGS, AND SPECIALTIES. B. WHERE PIPING IS INSTALLED ADJACENT TO UNIT, ALLOW SPACE FOR SERVICE AND MAINTENANCE OF UNIT.
- DUCT CONNECTIONS: DUCT INSTALLATION REQUIREMENTS ARE SPECIFIED IN SECTION "METAL DUCTS." DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF DUCTS. CONNECT SUPPLY AND RETURN DUCTS TO SPLIT-SYSTEM AIR-CONDITIONING UNITS WITH FLEXIBLE DUCT CONNECTORS. FLEXIBLE DUCT
- CONNECTORS ARE SPECIFIED IN SECTION "AIR DUCT ACCESSORIES." FIELD QUALITY CONTROL MANUFACTURER'S FIELD SERVICE: ENGAGE A FACTORY-AUTHORIZED SERVICE REPRESENTATIVE TO INSPECT COMPONENTS, ASSEMBLIES, AND EQUIPMENT
  - INSTALLATIONS, INCLUDING CONNECTIONS, AND TO ASSIST IN TESTING. TESTS AND INSPECTIONS: LEAK TEST: AFTER INSTALLATION, CHARGE SYSTEM AND TEST FOR LEAKS. REPAIR LEAKS AND RETEST UNTIL NO LEAKS EXIST.
  - OPERATIONAL TEST: AFTER ELECTRICAL CIRCUITRY HAS BEEN ENERGIZED, START UNITS TO CONFIRM PROPER MOTOR ROTATION AND UNIT OPERATION.
  - TEST AND ADJUST CONTROLS AND SAFETIES. REPLACE DAMAGED AND MALFUNCTIONING CONTROLS AND EQUIPMENT. REMOVE AND REPLACE MALFUNCTIONING UNITS AND RETEST AS
- SPECIFIED ABOVE. PREPARE TEST AND INSPECTION REPORTS. TRAIN OWNER'S MAINTENANCE PERSONNEL TO ADJUST, OPERATE, AND MAINTAIN UNITS.



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22 APRIL 2019

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**SPECIFICATION** 

SHEET

232

RICHMOND,

STREET, I

DINER

# 1 LEVEL 1 - NEW WORK-HVAC ZONE MAPPING

Job: Date: Nov 05, 2018 By:

						<b>MECHA</b>	NICAL EQ	UIPMENT	TYPE SCH	<b>EDULE</b>											
					ESIGN CONDITIONS F	OR COOLING: II	R COOLING: INDOOR - 75F DB / 62F WB, OUTDOOR - 95F DB / 76F WB   DESIGN				ONS FOR HE	ATING: IND	OOR - 70F DE	-							
			COOLING CAPACITIES				HEATING CAPACITIES							ELECTRICAL					GN BASED ON		
		NIONAINIAI	RATED PERFORMANCE AT DESIGN CONDITIONS			RATED PERFORMANCE AT DESIGN CONDITIONS			DATED												
ID	DESCRIPTION	NOMINAL CLG (TONS)	SENSIBLE (BTU/H	) LATENT (BTU/H)	TOTAL (BTU/H)	NOMINAL HTG (BTU/H)	HEATING (BTU/H)	STRIP HEAT (BTU/H)	TOTAL (BTU/H)	RATED FAN CFM	RA SMOKE	ECONO	FLA	MCA	MOCP	VOLTS	PHASE	MAKE	MODEL	Count	COMMENTS
ICU-1	CEILING CASSETTE - INDOOR UNIT	1.5	12,620	5,680	18,300	18,000	12,000		12,000	420	No	No	0.15 A			208 V	1	CARRIER	40MBCQ183	1	
IDU-01	SPLIT HEAT PUMP-INDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540	810	No	No	0.83 A			208 V	1	CARRIER	40MBQB24D3	1	
IDU-02	SPLIT HEAT PUMP-INDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540	810	No	No	0.83 A			208 V	1	CARRIER	40MBQB24D3	1	
IDU-03	SPLIT HEAT PUMP-INDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540	810	No	No	0.83 A			208 V	1	CARRIER	40MBQB24D3	1	
IDU-04	SPLIT HEAT PUMP-INDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540	810	No	No	0.83 A		-	208 V	1	CARRIER	40MBQB24D3	1	
OCU-1	CEILING CASSETTE - OUTDOOR UNIT	1.5	12,620	5,680	18,300	18,000	12,000		12,000		No	No		18.0 A	25 A	208 V	1	CARRIER	38MAQB18R3	1	
ODU-01	SPLIT HEAT PUMP-OUTDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540		No	No	3.00 A	15.0 A	25 A	208 V	1	CARRIER	38MAQB243	1	
ODU-02	SPLIT HEAT PUMP-OUTDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540		No	No	3.00 A	15.0 A	25 A	208 V	1	CARRIER	38MAQB243	1	
ODU-03	SPLIT HEAT PUMP-OUTDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540		No	No	3.00 A	15.0 A	25 A	208 V	1	CARRIER	38MAQB243	1	
ODU-04	SPLIT HEAT PUMP-OUTDOOR UNIT	2	15,590	6,720	22,310	24,000	19,540		19,540		No	No	3.00 A	15.0 A	25 A	208 V	1	CARRIER	38MAQB243	1	
UH-2	5KW - ELECTRIC UNIT HEATER						17,100		17,100	400	No	No	19.28 A	24.1 A	35 A	208 V	1	TRANE	UHEC051A0C0	4	

UH 1

Calculating...

# ASHRAE/ACCA COMPLIANCE FORM FOR STANDARD 183

INLET

ID MAX CFM SIZE(IN.)

MECHANICAL AIR DEVICE SCHEDULE

SQUARE EXHAUSTGRILLE INTEGRATED WITH FAN, 6" ROUND NECK (SIZING CLASS IV:

SQUARE SUPPLY DIFFUSER 5" ROUND NECK (SIZING CLASS II :STANDARD)

8X8 SQUARE SIDEWALL SUPPLY DIFFUSER, 8"X8" SQUARE NECK (SIZING CLASS II: STANDARD)

SQUARE SIDEWALL TRANSFER GRILLE, 10"X10" PROFILE (SIZING CLASS I: QUIET)

SQUARE EXHAUSTGRILLE INTEGRATED WITH FAN, 4" ROUND NECK (SIZING CLASS IV: LOUD)

SQUARE SIDEWALL RETURN DIFFUSER, 12"X12" SQUARE NECK (SIZING CLASS II: STANDARD)

DESCRIPTION

Building or Zone Name: Entire House			
Litare Flouse			
A continuo de Addresso			
Location or Address:			
Design Conditions:			
besign conductions.	Cooling	Heating	
Weather Data Used	Richmond Interna	itional AP, VA, US	_
Indoor Dry Bulb Design Temperature	75 °F	65 °F	_
Indoor Design Relative Humidity	50 %	35 %	_
<ul><li>☐ TFM — Transfer Function r</li><li>☐ RTS — Radiant Time Series</li></ul>	mperature Difference / Time Averagin methods	g methods	
OTHER (please specify)  The undersigned attests that the above information used to perform the load calculations comply with the specific property of the complex of the co	ation is correct and that the provieth ANSI/ASHRAE/ACCA Standa	ocedures ard 183	
Signed:		ate:	
Submitted by:	D	ate:	

2018-Dec-07 12:30:40

wrightsoft\*

Antible\* / Bruthline Heldmany Correction

Right-Suite® Universal 2018 18.0.31 RSU27390

...\01 - DESIGN\05 - MECH\1228 HULL St. - Copy.rup Calc = CLTD Front Door faces: N

P, VA, US	Project Info	onditions		
, VA, US	Design Co	110 111 112 1 2 1 2 1 2 1 2 1		
, VA, US	Design Co	110 111 112 1 2 1 2 1 2 1 2 1		
, VA, US	Design Co	110 111 112 1 2 1 2 1 2 1 2 1		
, VA, US		323.00 - 24.4 - 0.00 to 5.4		
, 77, 00		Indoor: Indoor temperature (°F)	Heating 65	Cooling 75
1 1/5		Design TD (°F)	48	20
Heating (	Cooling	Relative humidity (%) Moisture difference (gr/lb)	35 22.5	50 44.2
Dry bulb (°F) 17 95				. CECTAGES
0 <b>#</b> 0	19 (M)	Method		
15.0	7.5	Construction quality	Average	
	Heat	ing		
		- <del> </del>		
	2040 2010 33200			
10.7 41386 36.3 23362	27.5	/		
14.8 1867	1.2	Walls		
	5.9		2000	
47.9 36911	24.5			
15958	10.6		Infiltration	
150510	100.0	Other Ceilings Floo	ors	
	Cool	ina		
Jul 1700 LDT		··· <b>J</b>		:
ft <sup>2</sup> Btuh	% of load	947 A	13.15	
3.3 12763 31.5 20273	21.6	70500000 CM I		
2.9 370	0.6		Internal Gains	
			Durate	
7.0 5379	9.1		Ducis	
	2.8		Infiltration	
9612	16.2			
		Glazing	Ceilings	
59200		C	Other	
f	17 - 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	17	17	17

Projec	t Ini	forma	ation			
For:						
			PART STORY			
Design	n Co	ondit	ions			
Outside db (°F) 17 95 Outside RH (%) 80 44 Outside wb (°F) 20 76 Daily range (°F) - 19 Moisture diff. (gr/lb) 22.5 44.2		Insid Insid	e db (°F) e RH (%) e wb (°F) gn TD (°F)	Htg Clg 65 75 35 50 51 62 48 20		
Construction descriptions	Or	Area	U-value	UA	Lore	Gain
Construction descriptions	Or	Area ft <sup>2</sup>	(Bluh/ffs-F)	(Btuh/°F)	(Btuh)	(Btuh)
Walls Bik wall, brk 8" ext, 4" thk	ne	1531	0.35	529	23971	6338
DIK Wall, DIK O GAL, 4 UIK	se	41	0.35	14.2	614	381
	sw	690	0.35	238	10911	1395
	nw	81 25	0.35 0.35	28.1 8.8	1213 379	0
	nw all	2369	0.35	818	37088	8114
Frm wall, brk 4" ext, 1/2" wood shth, r-19 cav ins, 2"x4" wood frm, 16" o.c.	ne	37	0.08	2.8	148	67
stud	se	416	0.08	31.6	1680	950
	sw	475 136	0.08 0.08	36.1 10.3	1922 548	758 162
	all	1063	0.08	80.8	4298	1936
Partitions Frm wall, 1/2" gyp.bd ext, 1/2" gypsum board int fnsh, 2"x4" wood frm, 24" o.c. stud		424	0.33	138	0	2712
Windows		Sgwdine	htg d		55,000 to	ESSENCE COL
1 glazing, cir giz, mtl no brk frm mat, 1/8" thk, cir strm; 6.67 ft head ht	se sw	17 58	0.69 / 1.13 0.69 / 1.13		615 1735	1179 0
	SW	73	0.87 / 1.2		2896	1878
	sw	16	0.69 / 1.13		600	1759
	nw all	269 433	0.69 / 1.13 0.69 / 1.13		8009 13854	0 4815
2 glazing, clr low-e outr, air gas, mtl no brk frm mat, clr innr, 1/4" gap, 1/8"	se	48	0.79 / 0.79		2017	2588
thk; 6.67 ft head ht	sw	72	0.79 / 0.79	9 56.9 / 56.9	3026	6008
1 glazing, clr glz, wd frm mat, 1/8" thk; 6.67 ft head ht	all sw	120 29	0.79 / 0.79		5043 1245	8595 0
Sky glazing, small, wood curb, no shaft lgt shaft, wd sash	SW	62	1.16 / 1.16		3220	6863

wrightsoft Component Constructions

Entire House

ns			
200-27-2	Htg C	Clg '5	- 1
db (°F) RH (%) wb (°F) TD (°F)	35 5	0	
wb (°F)	51 6 48 2	2 0	
	-10 2	.0	
	110	\$1.0000	Colo
U-value (Btuh/ff:"F)	UA (Btuh/"F)	Loss (Btuh)	Gain (Btuh)
0.05	500	22074	0000
0.35 0.35	529 14.2	23971 614	6338 381
0.35	238	10911	1395
0.35	28.1	1213	0
0.35 0.35	8.8 818	379 37088	0 8114
0.08	2.8	148	67
0.08	31.6	1680	950
0.08	36.1	1922	758
0.08 0.08	10.3 80.8	548 4298	162 1936
0.00	10010	4230	1930
0.22	120	0	2742
0.33	138	0	2712
gagas xwa	\$1200.00 1600.000		
htg dg .69 / 1.13	htg clg 11.6 / 18.9	615	1179
.69 / 1.13	40.2 / 65.8	1735	0
.87 / 1.27	63.5 / 92.7	2896	1878
.69 / 1.13	11.3 / 18.5	600	1759
.69 / 1.13	185 / 304	8009	1915
.69 / 1.13 .79 / 0.79	299 / 489 37.9 / 37.9	13854 2017	4815 2588
.79 / 0.79	56.9 / 56.9	3026	6008
.79 / 0.79	94.8 / 94.8	5043	8595
.98 / 0.98	28.8 / 28.8	1245	0
.16 / 1.16	71.7 / 71.7	3220	6863

wrightsoft\*

AMORA\* / Partializary Correpany

Right-Suite® Universal 2018 18.0.31 RSU27390

...\01 - DESIGN\05 - MECH\1228 HULL St. - Copyrup Calc = CLTD Front Door faces: N

Floors
Bg floor, light dry soil, on grade depth

22 APRIL 2019 Project Location: 1228 HULL STREET, RICHMOND, VA 23224

	KICHWION	υ,	V / ZUZZ4
Proje	ect No:		18.199
Date			ale
22 APRIL 2019			1/8'' = 1'-0''
Drawn By		Cł	necked By
	Author		Checker
N0.	DESCRIPTION		DATE

MECHANICAL LOADS, EQUIPMENT AND ZONING

Job: Date: Nov 05, 2018

Moisture difference (gr/lb)

Ceilings Other

2018-Dec-07 12:30:40 Page 7

Infiltration: Method

% of load

66349 100.0

Component Btuh/ft² Btuh % of load

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Andrew | Restaurant Institution | Right-Suite® Universal 2018 18.0.31 RSU27390

...\01 - DESIGN\05 - MECH\1228 HULL St. - Copyrup Calc = CLTD Front Door faces: N

Location:
Richmond International AP, VA, US
Elevation: 164 ft
Latitude: 38°N

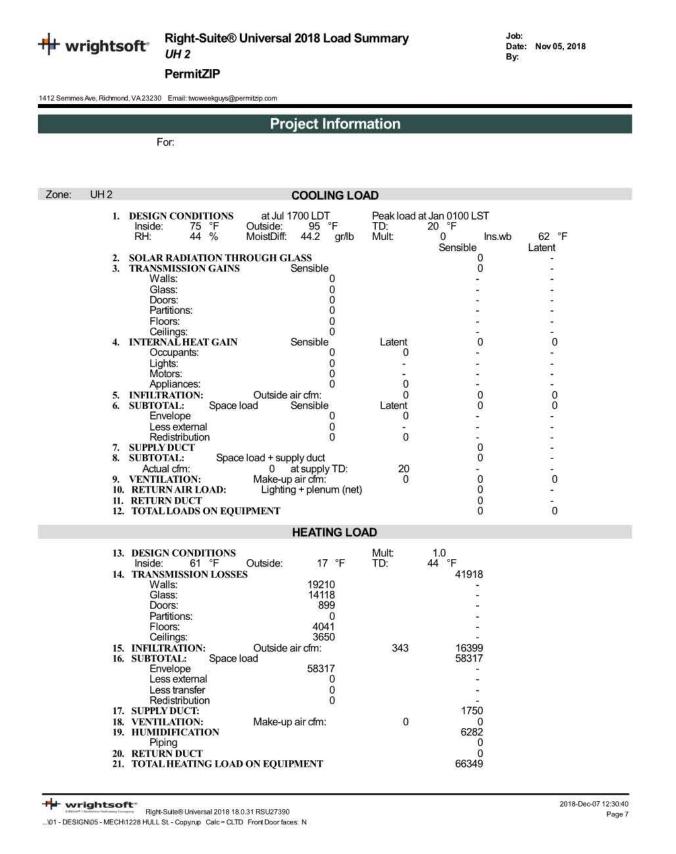
Dry bulb (°F) Daily range (°F) Wet bulb (°F)

Walls
Glazing
Doors
Ceilings
Floors
Infiltration
Ducts
Piping
Humidification
Ventilation
Adjustments

Walls
Glazing
Doors
Ceilings
Floors
Infiltration
Ducts
Ventilation
Internal gains
Blower
Adjustments
Total

Data entries checked.

Latent Cooling Load = 0 Btuh Overall U-value = 0.160 Btuh/ft²-°F



Date: Nov 05, 2018

2018-Dec-07 12:30:40

2018-Dec-07 12:30:40

Date: Nov 05, 2018

Ins.wb 62 °F

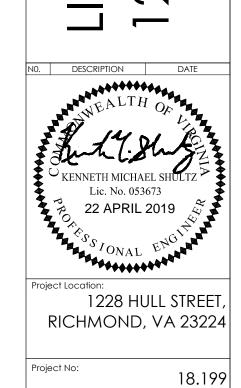
SMBW PLLC 111 VIRGINIA ST. STE 111 RICHMOND, VA 23219 T804.233.5343 F804.233.5345 WWW.SMBW.COM



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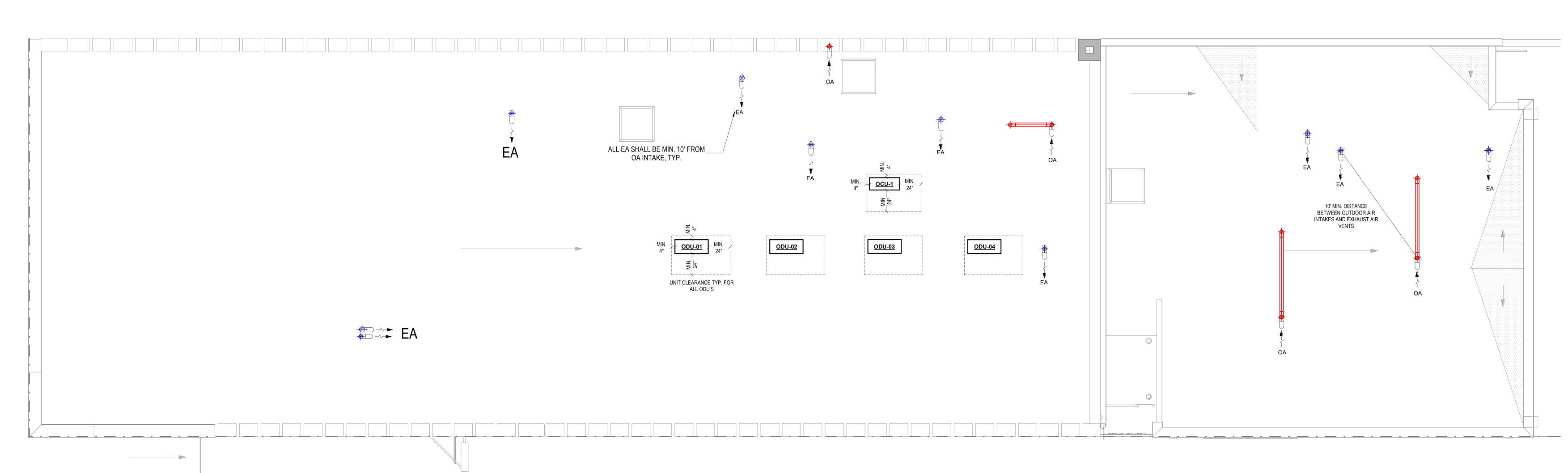
Scale 22 APRIL 2019 Checked By Author Checker IO. DESCRIPTION DATE

LOADS

—OA BALANCED TO 30 CFM

1 LEVEL 1 - NEW WORK-HVAC PLAN

1/4" = 1'-0"



ACCESS DOOR, TYP. (INSTALL
PER MANUFACTURER
RECOMMENDATIONS)

**E**d1.6 - 70

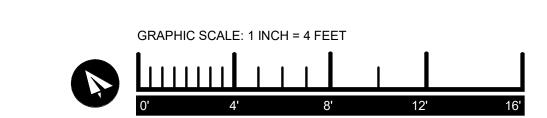
Ed1.6 - 70

—OA BALANCED TO 30 CFM

OA BALANCED TO 30 CFM

OA BALANCED TO 30 CFM

2 ROOF - NEW WORK-HVAC PLAN



Project Location: 1228 HULL STREET, RICHMOND, VA 23224

 Date
 Scale

 22 APRIL 2019
 1/4" = 1'-0"

 Drawn By
 Checked By

 Author
 Checker

 NO.
 DESCRIPTION
 DATE

1. Wall Assembly — The fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or V400 Series Wall and Partition Designs in the Fire Resistance Directory and shall include the following construction

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (61 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in.(64 mm) wide and spaced max 24 in. (610 mm). Additional framing members shall be used to completely frame around opening.

B. Gypsum Board\* — Nom 5/8 in. (16 mm) thick with square or tapered edges. The gypsum wallboard type, number of layers and sheet orientation shall be as specified in the individual Wall and Partition Design Number. Max area of opening is 1300 in.2 (0.84 m2) with the dimension of 50 in. (1.27 m). The hourly F and FH Ratings of the firestop system are equal to the hourly fire rating of the wall assembly in which it is installed.

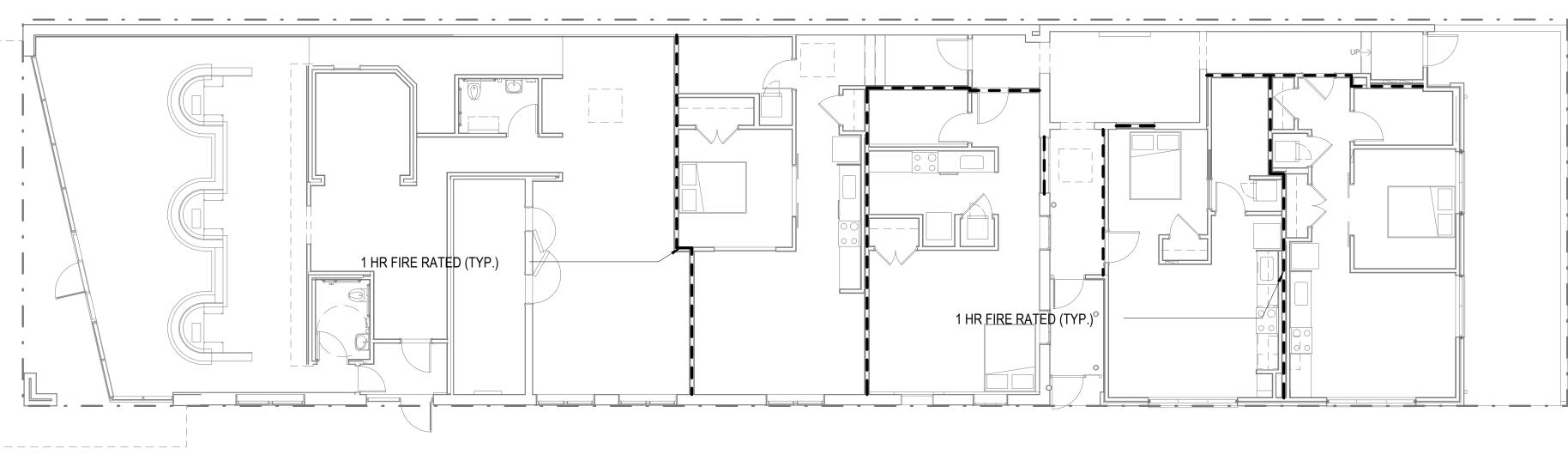
2. Steel Duct — Nom 24 in. by 48 in. (610 by 1219 mm) (or smaller) No. 24 gauge (or heavier) galv steel duct to be installed within the firestop system. The annular space shall be min 0 (point contact) in. to a max 2 in. (51 mm) Duct to be rigidly supported on both sides of the wall assembly.

3. Firestop System — The firestop system shall consist of the following: A. Fill, Void or Cavity Material\*—Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus flush with both surfaces of wall. At point contact location, a min 1/2 in. (13 mm) diam bead of fill material shall be applied to the wall/duct interface on both surfaces of wall.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC — FS-ONE Sealant, FS-ONE

Intumescent Sealant, CP601S Elastomeric Firestop Sealant or CP606 Flexible Sealant. B. Steel Retaining Angle — No. 18 MSG (0.048 in.) galv steel angles cut to fit contour of duct with a 2 in. overlap on the duct and a min 1 in. overlap on the gypsum board assembly on both sufaces of wall. 2 in. leg of angle secured to duct with min No. 8 by 3/4 in. long sheet metal screws, spaced a max of 6 in. OC. When bead of fill material is used at joint contact locations, angles shall be installed prior to full material curing.

\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.



1 LEVEL 1 - FIRE WALL - MECHANICAL

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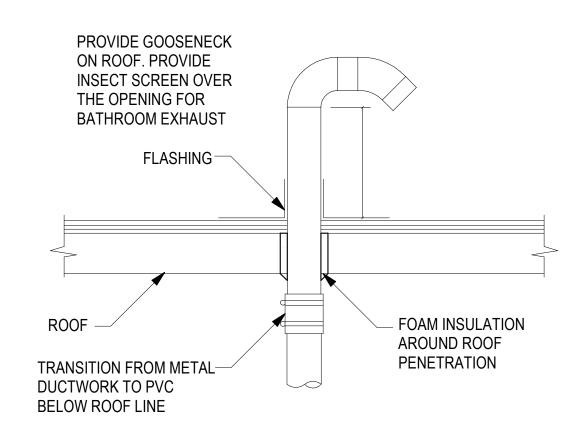
3

KENNETH MICHAEL SHULTZ

22 APRIL 2019

FIRE PENETRATION DETAILS

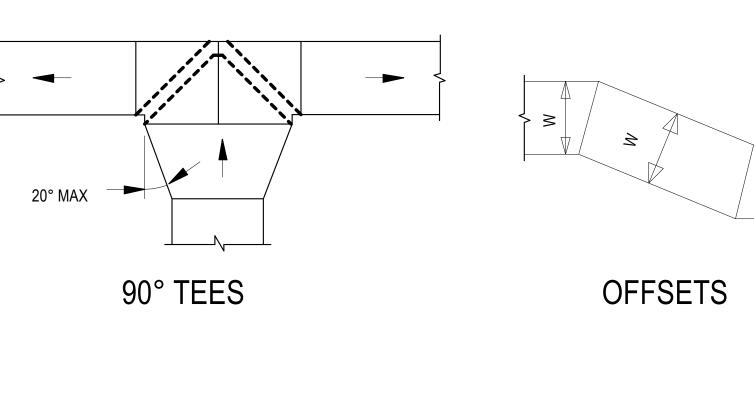
# **INDOOR AHU-HORIZONTAL**

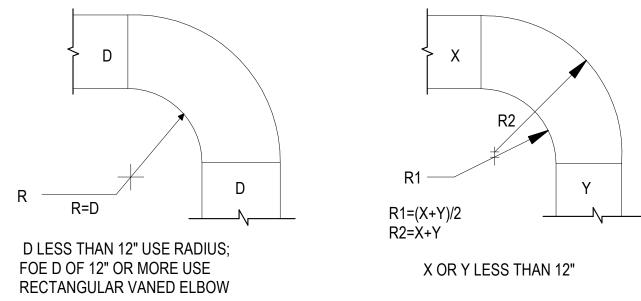


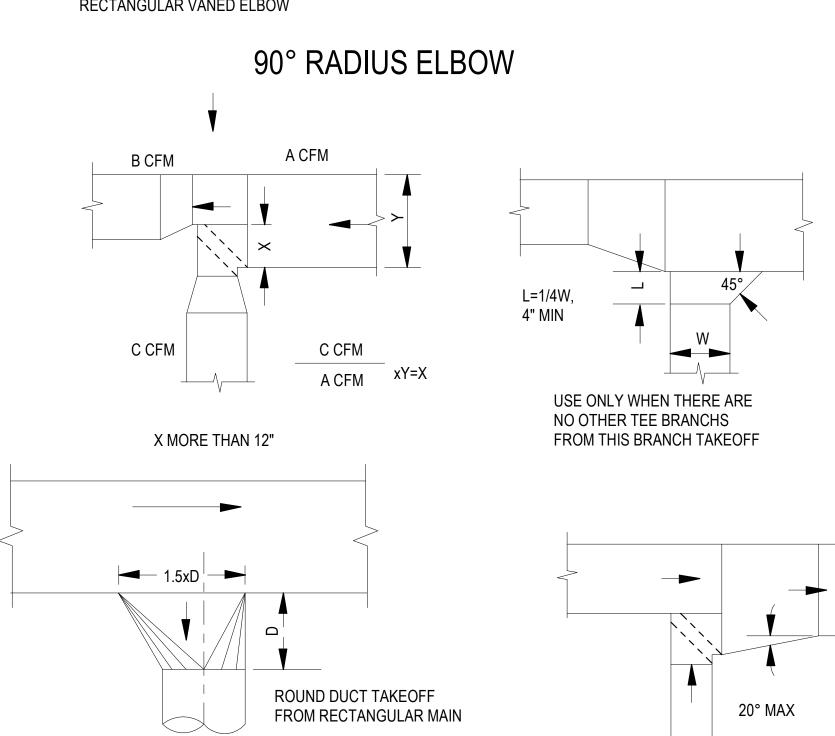
AND WIRE MESH SCREEN.

ACTIVATES SWITCH.

**GOOSENECK DETAIL** 







# **BRANCH TAKEOFFS**

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 Date
 Scale

 22 APRIL 2019
 1 : 6

 Drawn By
 Checked By

 Author
 Checker

 NO.
 DESCRIPTION
 DATE

DETAILS & DIAGRAMS

M5.11

# **GENERAL NOTES**

- THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL EQUIPMENT. EXAMINE THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND PLUMBING DRAWINGS AND SPECIFICATIONS, AND BECOME FAMILIAR WITH, AND COORDINATE WITH, ALL CONDITIONS
- AFFECTING ELECTRICAL WORK. THE DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF CIRCUITS AND OUTLETS. LOCATIONS OF SWITCHES. PANELBOARDS, CONDUIT AND OTHER WORK. ALL ITEMS NOT SPECIFICALLY NOTED, BUT NECESSARY TO A COMPLETE WORKING INSTALLATION SHALL BE INCLUDED AT NO EXTRA
- ALL WORK SHALL BE SUBJECT TO THE APPROVAL OF THE BUILDING OWNER, OR THE OWNER, OR THEIR AUTHORIZED REPRESENTATIVES
- COORDINATE ELECTRICAL EQUIPMENT LOCATION AND INSTALLATION WITH EQUIPMENT BEING SERVED. GANG ALL MULTIPLE SWITCHES UNDER ONE COMMON
- COVERPLATE. AND MOUNT IN A MULTI-GANGED OUTLET BOX OF ADEQUATE SIZE. PROVIDE BARRIERS WHERE REQUIRED. CONTRACTOR SHALL COORDINATE AND ADJUST RECEPTACLES AND/OR CIRCUITS WITH ACTUAL EQUIPMENT PURCHASED WHEN APPROVED EQUIPMENT DIFFERS FROM ORIGINAL CONTRACT
- DRAWINGS. COORDINATE EXACT LOCATIONS OF MODULAR PARTITION CONNECTIONS WITH FURNITURE BEING PROVIDED. OUTLETS ABOVE COUNTERTOPS SHALL BE 2" ABOVE
- BACKSPLASH TO BOTTOM OF WALLPLATE UNLESS NOTED OTHERWISE. COORDINATE WITH CASEWORK INSTALLER. A NYLON PULL CORD SHALL BE INSTALLED IN ALL CONDUITS IN WHICH CONDUCTORS ARE NOT INSTALLED. A 10 INCH LENGTH OF THE CORD SHALL EXTEND PAST EACH END OF THE
- BOX/CONDUIT WHERE NEW CIRCUITS ARE SHOWN TO BE CONNECTED TO EXISTING PANELS, PROVIDE NEW CIRCUIT BREAKERS IN PANELS. NEW BREAKERS BE SHALL BE COMPATIBLE WITH, SAME MAKE AS, AND SHALL MEET OR EXCEED INTERRUPTING RATING OF EXISTING EQUIPMENT. MEASURE PANEL LOADS BEFORE AND AFTER MODIFYING PANEL. CORRECT ANY OVERLOADS. BRING ANY OVERLOADED CONDITIONS THAT CANNOT BE RESOLVED TO THE ATTENTION OF THE ENGINEER.
- WHERE NEW LOADS ARE SHOWN TO BE CONNECTED TO EXISTING CIRCUITS, MEASURE CIRCUIT'S LOAD BEFORE AND AFTER MODIFICATION. CORRECT ANY OVERLOADS. BRING ANY OVERLOADED CIRCUITS THAT CANNOT BE RESOLVED TO THE ATTENTION OF THE ENGINEER.
- THE ELECTRICAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK AND SHALL NOTIFY THE ARCHITECT AND/OR ENGINEER IF A CONDITION EXISTS WHICH PREVENTS THE CONTRACTOR FROM ACCOMPLISHING THE INTENT OF THESE PLANS.
- 13. EQUIPMENT FOUND TO BE DEFECTIVE SHALL BE DOCUMENTED BY ELECTRICAL CONTRACTOR. EQUIPMENT DAMAGED IN THE COURSE OF INSTALLATION OR TEST SHALL BE REPLACED OR REPAIRED IN A MANNER MEETING THE APPROVAL OF THE ARCHITECT AND ENGINEER. WHERE APPLICABLE, ALL EQUIPMENT SHALL BE IN ACCORDANCE WITH NEMA STANDARDS.
- MAINTAIN THE CONTINUITY OF ALL CIRCUITS TO REMAIN. COORDINATE ALL WORK REQUIRING INTERRUPTION OF ELECTRICAL POWER WITH THE BUILDING OWNER AND OBTAIN WRITTEN PERMISSION FROM THE BUILDING OWNER PRIOR TO SHUTTING DOWN POWER TO ANY PANELBOARD OR SWITCHBOARD. ADDITIONALLY, PROVIDE NOTICE TO ALL OTHER
- TRADES OF ALL SCHEDULED INTERRUPTIONS. WHERE CORE DRILLS OCCUR, THE CONTRACTOR SHALL BE REQUIRED TO LOCATE BY MEANS OF X-RAY OR RADIATION, EXISTING REBAR AND CONDUITS IN THE SLAB AND MARK THE EXACT PROPOSED LOCATION OF CORE DRILLS. THE ELECTRICAL CONTRACTOR MUST RECEIVE WRITTEN PERMISSION FROM THE ARCHITECT AND THE STRUCTURAL ENGINEER PRIOR TO
- ACCOMPLISHING SAID CORE DRILLS. PRIOR TO SUBMITTING BIDS ON THE PROJECT, VISIT THE SITE OF THE WORK TO BECOME AWARE OF THE EXISTING CONDITIONS WHICH MAY AFFECT THE COST OF THE WORK. REVIEW THE SCOPE OF DEMOLITION AND NEW CONSTRUCTION. NO ADDITIONAL COSTS SHALL BE BROUGHT UPON THE OWNER FOR LACK OF THIS REVIEW.
- WHERE WORK UNDER THIS PROJECT REQUIRES EXTENSION RELOCATION, RECONNECTION OR MODIFICATIONS TO THE EXISTING EQUIPMENT OR WIRING SYSTEMS, THE EXISTING SYSTEMS OR EQUIPMENT SHALL BE RESTORED TO THEIR ORIGINAL AND FULLY OPERABLE CONDITION. EXTEND HOMERUNS OR CIRCUIT EXTENSIONS WHERE REQUIRED. DISCONNECT AND REMOVE ALL EQUIPMENT INDICATED TO BE DEMOLISHED, INCLUDING OUTLETS, DEVICES, RACEWAY, SUPPORTS AND CONDUCTORS BACK TO THE BRANCH CIRCUIT BREAKER.
- CARE SHALL BE EXERCISED IN THE REMOVAL AND STORAGE OF DEVICES AND EQUIPMENT TO BE RELOCATED OR REMOVED AND REUSED. PRIOR TO REINSTALLATION, EQUIPMENT SHALL BE CLEANED, RELAMPED (AS APPLICABLE), AND MARRED OR CHIPPED FINISHES AND ACCESSORIES SHALL BE RESTORED. PROVIDE NEW REPLACEMENT EQUIPMENT FOR ANY ITEM DEEMED UNSALVAGEABLE BY THE OWNER DUE TO MISHANDLING OR ABUSE DURING STORAGE PERIOD, AT NO ADDITIONAL COSTS TO THE OWNER.
- UPON COMPLETION OF PROJECT, MEASURE AND BALANCE EACH PANEL'S BRANCH CIRCUIT LOAD TO WITHIN 10% BETWEEN PHASES. THIS INCLUDES EXISTING PANELS AFFECTED BY THE CONTRACT.
- ALL SPECIAL EQUIPMENT AND MECHANICAL CONNECTIONS SHALL BE VERIFIED WITH ACTUAL EQUIPMENT PURCHASED PRIOR TO ROUGH-IN. ALL UNVERIFIED ROUGH-INS FOR SPECIAL EQUIPMENT AND MECHANICAL CONNECTIONS SHALL BE CORRECTED AT NO ADDITIONAL COST.

# GENERAL NOTES

### EXECUTION: COORDINATION

- BEFORE ANY CABLING, BOXES, CONDUIT, OUTLETS, EQUIPMENT, LIGHTING FIXTURES, ETC. ARE LOCATED IN ANY AREA, COORDINATE THE SPACE REQUIREMENTS OF ALL TRADES. SUCH SHALL BE ARRANGED SO THAT SPACE CONDITIONS WILL ALLOW ALL TRADES TO INSTALL THEIR WORK, AND WILL ALSO PERMIT ACCESS FOR FUTURE MAINTENANCE AND REPAIR.
- COORDINATION OF SPACE REQUIREMENTS WITH ALL TRADES SHALL BE PERFORMED SO THAT NO PIPING, DUCTWORK, ETC. IS WITHIN DEDICATED EQUIPMENT OR WORKING SPACES. VERIFY CLEARANCES PER ARTICLE 110-26 OF THE NEC.
- LIGHTING SHALL NOT BE INSTALLED ABOVE PIPING, DUCTS, OR OTHER OBSTRUCTIONS. PROTECTION OF MATERIAL
- ALL CONDUIT AND OTHER OPENINGS SHALL BE KEPT PROTECTED TO PREVENT ENTRY OF FOREIGN MATTER. FIXTURES, EQUIPMENT AND APPARATUS SHALL BE KEPT COVERED FOR PROTECTION AGAINST DIRT, WATER, CHEMICAL. AND MECHANICAL DAMAGE BEFORE AND DURING CONSTRUCTION.
- THE ORIGINAL FINISH, INCLUDING SHOP COAT OF PAINT OF FIXTURE, APPARATUS OR EQUIPMENT THAT HAS BEEN DAMAGED. SHALL BE RESTORED.
- FIRESTOPPING CONFORM TO ASTM E814, UL 1479 AND UL FIRE
- RESISTANCE DIRECTORY ALL CORE DRILLS IN SLAB OR CUTTING OF FIRE RATED WALLS SHALL BE RESTORED TO THEIR ORIGINAL FIRE RATING.
- FIRESTOP ALL PENETRATIONS THROUGH FIRE WALLS PER IBC 712 AND ARCHITECTURAL DRAWINGS AND
- SPECIFICATIONS. PROVIDE FIRE-PROOFING MATERIAL APPROPRIATE FOR THE APPLICATION AND AS SHOWN IN THE LATEST
- EDITION OF THE UL FIRE RESISTANCE DIRECTORY. DO NOT REDUCE THE FIRE RATING OF FIRE WALLS WITH RECESSED BOXES OR FIXTURES. WHERE SMALL, RECESSED, STEEL, 1 & 2 GANG DEVICE BOXES ARE LOCATED BACK-TO-BACK ON FIRE RATED WALLS, THEY SHALL BE A MINIMUM OF 24" APART HORIZONTALLY, OR PROVIDE PUTTY PADS OF ADEQUATE FIRE RATING.

# FIRE AND EGRESS

1 HOUR FIRE RATED WALL - ALL PENETRATIONS THROUGH THIS WALL TYPE SHALL COMPLY WITH PENETRATION DETAIL

PATH OF EGRESS -  $\cdot$  -  $\cdot$  -

- RECEPTACLES AND BOXES IN FIREWALLS: WHERE WALLS OR PARTITIONS ARE REQUIRED TO HAVE A FIRE RESISTANCE RATING, RECESSED FIXTURES / OUTLETS SHALL BE INSTALLED SUCH THAT THE REQUIRED FIRE RESISTANCE WILL NOT BE REDUCED.
- STEEL BOXES THAT DO NOT EXCEED 16 SQUARE INCHES (4"X4") MAY BE INSTALLED PROVIDED THE TOTAL AREA OF OPENINGS DOES NOT EXCEED 100 SQUARE INCHES FOR ANY 100 SQUARE FEET OF WALL AREA. BOXES ON OPPOSITE SIDES OF WALLS SHALL BE SEPARATED
- AS FOLLOWS: BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24". 3.2 BY A HORIZONTAL DISTANCE NOT LESS THAN THE DEPTH OF THE WALL CAVITY WHERE THE CALL CAVITY IS FILLED WITH CELLULOSE LOOSE-FILL OR MINERAL FIBER INSULATION (NOT
- STANDARD FIBERGLASS INSULATION). 3.3 BY SOLID FIRE-BLOCKING COMPLYING WITH IBC SECTION
- 3.4 BY OTHER LISTED MATERIALS AND METHODS.

# **ELECTRICAL FIXTURES**

- HARDWIRED EQUIPMENT CONNECTION. (SEE ELECTRICAL CONNECTION SCHEDULE)
- DUPLEX RECEPTACLE, NEMA 5-20R (SEE ELECTRICAL
- **CONNECTION SCHEDULE)** QUADPLEX RECEPTACLE, NEMA 5-20R (SEE ELECTRICAL

**CONNECTION SCHEDULE)** 

- GROUND FAULT RECEPTACLE, NEMA 5-20R (SEE ELECTRICAL CONNECTION SCHEDULE)
- JUNCTION BOX ON CEILING (SEE ELECTRICAL CONNECTION
- ELECTRICAL EQUIPMENT DISCONNECT (SEE ELECTRICAL CONNECTION SCHEDULE)
- QUADPLEX RECEPTACLE FLOOR BOX (SEE ELECTRICAL CONNECTION SCHEDULE)
- ELECTRICAL CONNECTION SCHEDULE)

SPECIAL RECEPTACLE WITH GFCI PROTECTION (SEE

- SURFACE MOUNTED PANEL BOARD WITH WORKING CLEARANCE.
- SMOKE ALARM. SMOKE ALARMS IN EACH DWELLING UNIT SHALL BE INTERCONNECTED. (SEE ELECTRICAL CONNECTION SCHEDULE)
- TELECOM/DATA OUTLET PROVIDE 4-11/16 BACK BOX WITH EMPTY 1" EMT CONDUIT WITH PULL STRING AND STUB OUT IN ACCESSIBLE CEILING SPACE. CABLING AND OUTLETS TO BE PROVIDED BY OTHERS
- SIDEWALL SUPPLY DIFFUSER (SHOWN FOR REFERENCE AND COORDINATION ONLY)
- SIDEWALL RETURN DIFFUSER (SHOWN FOR REFERENCE AND COORDINATION ONLY)

# LIGHTING FIXTURES

- RECESSED DOWN LIGHT
- -**♦** PENDANT LIGHT FIXTURE
- STRIP FIXTURE
- OH WALL MOUNTED LIGHT FIXTURE
- 1X4 LED LIGHT FIXTURE
- UNDERCABINET TAPELIGHT/COVELIGHT
- CEILING FAN-LIGHT FIXTURE
- REMOTE FIXTURE POWERED BY ADJACENT EMERGENCY EGRESS FIXTURE
- EXIT LIGHT, DUAL FACE, ARROWS INDICATE DIRECTION OF EMERGENCY EGRESS.
- EXIT LIGHT, SINGLE FACE, ARROWS INDICATE DIRECTION OF EMERGENCY EGRESS.
- WALL MOUNTED EMERGENCY LIGHT FIXTURE WITH BATTERY PACK - FIXTURE SHALL BE LISTED FOR EMERGENCY EGRESS USE
- CEILING MOUNTED EMERGENCY LIGHT FIXTURE WITH BATTERY PACK - FIXTURE SHALL BE LISTED FOR EMERGENCY EGRESS USE. COMBO EXIT SIGN / EMERGENCY LIGHT FIXTURE WITH BATTERY

### PACK - FIXTURE SHALL BE LISTED FOR EMERGENCY EGRESS USE. ARROWS INDICATE DIRECTION OF EMERGENCY EGRESS

# LIGHTING WIRING

- LIGHT FIXTURE DESIGNATOR. REFER TO LIGHTING FIXTURE SCHEDULE FOR MORE INFORMATION.
- UNSWITCHED LIGHTING CIRCUIT
- PANEL NAME AND CIRCUIT NUMBER

SWITCHED LIGHTING CIRCUIT

# LIGHTING DEVICES

- SINGLE POLE LIGHT SWITCH
- THREE WAY LIGHT SWITCH
- SO SO DIMMER SWITCH = 0-10V DIMMING
  - P = PHASE DIMMING NOTE: '3' PREFIX INDICATES 3-WAY CAPABLE
- WALL MOUNTED MOTION SENSOR.
- ଖି ପ୍ର ଔ WALL MOUNTED MOTION SENSOR WITH DIMMER SWITCH
- ⊯ ຨ ຨ E = ELV DIMMING
  - P = PHASE DIMMING
- NOTE: '3' PREFIX INDICATES 3-WAY CAPABLE **⊜** CEILING MOUNTED MOTION SENSOR

# ENGINEER'S INFORMATION

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### CODE DATA

2012 IECC 2012 INTERNATIONAL BUILDING CODE (IBC) 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VA USBC) 2011 NFPA, NATIONAL ELECTRICAL CODE (NEC) 2010 NFPA 72

### **BUILDING DATA**

BUILDING CONSTRUCTION: VB USE GROUP: A-2 & R-2 NOT IN FLOOD PLAIN. TOTAL AREA OF PROJECT: 4.632 SF TOTAL AREA OF BUILDING: 4.632 SF OCCUPANCY LOAD: A2 = 42 PPL, R2 = 17 PPL CHANGE OF USE? N LEVEL OF RENOVATION: GREATER THAN 50% ALTERATION LEVEL: III

# **ABBREVIATIONS**

	, , , , , , , , , , , , , , , , , , , ,
NEO	NATIONAL ELECTRICAL CODE
NEC	NATIONAL ELECTRICAL CODE
V	VOLTS
Α	AMPS
3W OR 4W	THREE WIRE OR FOUR WIRE
KVA	KILOVOLT AMPS
W	WATTS
VA	VOLT AMPS
1PH OR 3PH	
HOA	HAND-OFF-AUTO
FC	FOOT CANDLE
RMC	RIGID METALLIC CONDUIT
IMC	INTERMEDIATE METAL CONDUIT
EMT	ELECTRIC METALLIC TUBE
AWG	AMERICAN WIRE GAUGE
AL	ALUMINIUM
CU	COPPER
MC	METAL CLAD
HACR	HEATING, AIR CONDITION & REFRIGERATION
SWD	SWITCH-DUTY
THHN	THERMOPLASTIC, HIGH HEAT, NYLON
THHW	THERMOPLASTIC, HIGH HEAT, WATER RESISTANT
EGC	EQUIPMENT GROUNDING CONDUCTOR
GEC	GROUNDING ELECTRODE CONDUCTOR
MBJ	MAIN BONDING JUMPER
PIR	PERIODIC INSPECTION REPORT
IDU	INDOOR UNIT
ODU	OUTDOOR UNIT

**ROOF TOP UNIT** 

### **ELECTRICAL DRAWING INDEX** SHEET NAME LEGEND, NOTES, & ABBREVIATIONS SHEET SPECIFICATION LEVEL 1 - POWER & LIGHTING PLAN LEVEL 1 - EGRESS PLAN FIRE PENETRATION DETAILS **DETAILS & DIAGRAMS** PANELBOARD SCHEDULES

SHEET NUMBER

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# TAKE NOTE BEFORE ANY WORK IS STARTED OR **EQUIPMENT IS PURCHASED:**

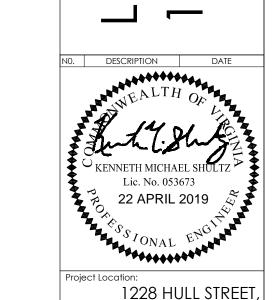
# SCHEDULE OF REQUIRED SUBMITTALS

NOTE: DESIGN IS CONTINGENT ON HAVING THE FOLLOWING INFORMATION. NO EQUIPMENT OR CONSTRUCTION SHALL BE PERMITTED TO BEGIN PRIOR TO SUBMITTING THE INFORMATION LISTED BELOW FOR ENGINEERING APPROVAL. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THIS INFORMATION IS GATHERED AND SUBMITTED TO THE ENGINEER IN A TIMELY MANNER.

PRODUCT DATA

RTU

- A. THE ENGINEER SHALL BE PROVIDED WITH CUT SHEETS OF THE FOLLOWING ITEMS FOR REVIEW:
- a. ELECTRICAL EQUIPMENT (INCLUDING SERVICE EQUIPMENT AND PANELBOARDS) b. LIGHT FIXTURE
  - c. DISCONNECTS (INCLUDING FUSE SELECTIONS IF APPLICABLE)
- SHOP DRAWINGS AND EQUIPMENT LISTS
- . SHOP DRAWINGS OF THE ELECTRICAL SERVICE EQUIPMENT
- . A SCHEDULED LIST OF ALL APPROVED MECHANICAL EQUIPMENT INDICATING MAKE, MODEL, VOLTAGE, PHASE, MCA, AND MOCP
- S. A SCHEDULED LIST OF ALL SPECIAL EQUIPMENT INDICATING MAKE, MODEL, NEMA PLUG TYPE (IF APPLICABLE), VOLTAGE, PHASE, MCA, AND MOCP. THIS LIST SHALL BE SIGNED BY THE OWNER WITH THE FOLLOWING STATEMENT: A. "I APPROVE THIS LIST OF EQUIPMENT IT REFLECTS THE FINAL INVENTORY OF EQUIPMENT AND RELEASES THE CONTRACTOR TO PURCHASE THE REQUIRED MATERIALS TO FINALIZE THE ELECTRICAL CONNECTIONS IN ACCORDANCE WITH THESE SPECIFICATIONS."



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RICHMOND, VA 23224 22 APRIL 2019 As indicated

D. DESCRIPTION DATE

NOTES, & **ABBREVIATIONS** 

LEGEND,

E0.01

2. INSTALLATION OF ALL ELECTRICAL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE FOLLOWING REGULATIONS, CODES, ETC A. VUSBC - VIRGINIA UNIFORM STATEWIDE BUILDING CODE - 2012, INCLUDING; a. IBC/2012 - INTERNATIONAL BUILDING CODE, WITH VIRGINIA AMENDMENTS b. NFPA 70/2011 - NATIONAL ELECTRICAL CODE

c. NFPA 72/2010 - NATIONAL FIRE ALARM CODE B. ADAAG - AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES C. ANSI - AMERICAN NATIONAL STANDARDS INSTITUTE

D. ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS E. IEEE - INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS F. IESNA - ILLUMINATING ENGINEERING SOCIETY OF NORTH AMERICA

H. NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION I. NETA - INTERNATIONAL ELECTRICAL TESTING ASSOCIATION J. NFPA - NATIONAL FIRE PROTECTION ASSOCIATION

G. NECA - NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION

K. OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION L. UL - UNDERWRITERS LABORATORIES, INC.

M. 2012 IBC INTERNATIONAL ENERGY CONSERVATION CODE N. LOCAL ELECTRICAL UTILITY COMPANY STANDARDS O. NSI A17.1/ASME 17.1 SAFETY CODE FOR ELEVATORS AND ESCALATORS P. ALL LOCAL JURISDICTION CODES AND ORDINANCES

3. THE CONTRACTOR SHALL OBTAIN ALL PERMITS AND LICENSES, AND PAY ALL FEES AS REQUIRED FOR EXECUTION OF THE CONTRACT. ARRANGE FOR NECESSARY INSPECTIONS AND PRESENT CERTIFICATES OF APPROVAL TO THE OWNER.

A. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE ELECTRICAL EQUIPMENT. EXAMINE THE ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL AND PLUMBING DRAWINGS AND SPECIFICATIONS AND BECOME FAMILIAR WITH AND COORDINATE WITH ALL CONDITIONS AFFECTING ELECTRICAL WORK.

B. COORDINATE ALL WORK WITH THE WORK OF OTHER TRADES. 5. STANDARDS FOR MATERIALS AND WORKMANSHIP:

A. ALL MATERIAL SHALL BE NEW (UNLESS SPECIFICALLY INDICATED TO BE

B. THE MATERIALS OF THE SAME TYPE SHALL BE THE PRODUCT OF ONE MANUFACTURER.

C. THE PUBLISHED STANDARDS AND REQUIREMENTS OF THE NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATIONS, THE AMERICAN NATIONAL STANDARDS INSTITUTE, THE INSTITUTES OF ELECTRICAL AND ELECTRONIC ENGINEERS AND THE AMERICAN SOCIETY OF TESTING MATERIALS SHALL APPLY WHERE APPLICABLE.

D. SPECIFIED CATALOG NUMBERS AND TRADE NAMES ARE INTENDED TO DESCRIBE THE MATERIAL, DEVICES OR APPARATUS DESIRED. SIMILAR MATERIALS OF OTHER MANUFACTURERS, IF OF EQUAL QUALITY, CAPACITY AND CHARACTER, MAY BE USED UPON OWNER'S APPROVAL. SUBSTITUTIONS FROM MANUFACTURES WITH INADEQUATE LOCAL SUPPORT OR MARKET SHARE

MAY BE REJECTED. 6. UNDERWRITER'S LABEL AND LISTING: A. ALL TYPES OF MATERIALS WHICH ARE COMMONLY UL LISTED SHALL BE UL LISTED, AND SHALL BEAR THE INSPECTION LABEL OF UNDERWRITER'S LABORATORIES, INC. (UL). WHERE CUSTOM BUILT EQUIPMENT IS SPECIFIED AND THE UL LABEL OR LISTING IS NOT APPLICABLE TO THE COMPLETED

PRODUCT, ALL COMPONENTS USED IN THE CONSTRUCTION OF SUCH EQUIPMENT SHALL BE LABELED OR LISTED BY UL AS APPLICABLE. 7. SHOP DRAWINGS AND ENGINEERING DATA: A. COMPLETE SHOP DRAWINGS AND ENGINEERING DATA ON ALL EQUIPMENT AND MATERIALS TO BE USED IN THE WORK OF THIS DIVISION SHALL BE SUBMITTED FOR THE ENGINEER'S APPROVAL IN ACCORDANCE WITH THE CONTRACT

DRAWINGS. B. SUBMISSIONS SHALL BE STAMPED AS APPROVED BY THE CONTRACTOR AND HAVE ALL FEATURES, OPTIONS, ACCESSORIES, AND CATALOG NUMBERS CLEARLY INDICATED.

8. TESTS:

A. AT THE COMPLETION OF THE ELECTRICAL INSTALLATION AND AT SUCH TIME AS THE ARCHITECT OR OWNER MAY DIRECT. THE CONTRACTOR FOR THE DIVISION SHALL CONDUCT AN OPERATING TEST FOR APPROVAL. ALL EQUIPMENT SHALL BE DEMONSTRATED TO OPERATE IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS AS INTENDED, PROVING SYSTEM INTEGRITY 9. FINAL INSPECTION:

A. WHEN THE WORK ON THE PROJECT HAS BEEN COMPLETED AND IS READY FOR FINAL INSPECTION, SUCH AN INSPECTION WILL BE MADE. AT THIS TIME THE CONTRACTOR SHALL DEMONSTRATE THAT THE REQUIREMENTS OF THIS DIVISION HAVE BEEN MET.

2. K-TO-BACK OUTLET BOXES.

1. THE COMPONENTS OF THE ELECTRICAL SYSTEMS SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM THE DATE OF ACCEPTANCE THEREOF EITHER FOR BENEFICIAL USE OR FINAL ACCEPTANCE, WHICHEVER IS EARLIER, AGAINST DEFECTIVE MATERIALS, DESIGN, AND WORKMANSHIP.

26 05 33 - RACEWAYS AND JUNCTION BOXES RACEWAYS

> A. CONDUIT SHALL BE GALVANIZED RMC, IMC, OR EMT UNLESS OTHERWISE SPECIFIED IN FEEDER SCHEDULE OR ON DRAWINGS. RIGID OR INTERMEDIATE METALLIC CONDUIT SHALL BE USED WHERE SUBJECT TO DAMAGE OR EXPOSED OUTSIDE OF BUILDING. EMT MAY BE USED ABOVE CONCEALED CEILINGS OR WITHIN WALLS, AND EXPOSED IN DRY, INTERIOR LOCATIONS. TYPE MC CABLE WITH GROUND MAY BE USED IN LIEU OF EMT BETWEEN WIRING DEVICES WHERE CONCEALED AND PERMITTED BY CODE. TYPE AC CABLE MAY BE USED FOR COMPUTER ROOM WIRING BELOW RAISED FLOOR.

> B. RACEWAYS SHALL BE INSTALLED AS A COMPLETE SYSTEM AND SHALL BE CONTINUOUS FROM OUTLET TO OUTLET, UNLESS NOTED OTHERWISE. RACEWAYS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO ALL BOXES AND FITTINGS. RACEWAYS AND BOXES SHALL BE SUPPORTED FROM STRUCTURAL STEEL AND NOT SUPPORTED FROM THE CEILING GRID OR ROOF DECKING PER NEC.

C. ALL CONDUIT SHALL BE INSTALLED CONCEALED EXCEPT IN UNFINISHED SPACES OR WHERE SHOWN OTHERWISE.

D. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH. E. A NYLON PULL CORD SHALL BE INSTALLED IN ALL CONDUITS IN WHICH CONDUCTORS ARE NOT INSTALLED. A 10 INCH LENGTH OF THE FISH CORD

SHALL EXTEND OUT OF EACH END OF THE CONDUIT. F. FLEXIBLE LIQUID-TIGHT METAL CONDUIT SHALL BE USED FOR CONNECTIONS TO ALL MOTORS, DRY-TYPE TRANSFORMERS AND ANY EQUIPMENT WHERE REQUIRED BECAUSE OF VIBRATION OR RELATIVE MOTION.

G. SURFACE RACEWAY MAY ONLY BE USED WHERE SPECIFICALLY SHOWN ON DRAWINGS OR APPROVED BY ARCHITECT/ENGINEER. WHERE PERMITTED, RACEWAY SHALL BE METAL AND ATTACHED TO THE WALL USING METAL FASTENERS. VERTICAL RUNS SHALL BE IN CORNERS OR AGAINST VERTICAL MOLDINGS, SUCH AS DOOR TRIM. PROVIDE MULTI-CHANNEL RACEWAY WHERE COMMUNICATIONS AND POWER ARE REQUIRED. PROVIDE ALL TRIM, FACEPLATES, AND ACCESSORIES FOR A FINISHED LOOK AND COMPLETE INSTALLATION. SYSTEM SHALL BE COMPATIBLE WITH OWNER'S COMMUNICATIONS DEVICES.

2. JUNCTION BOXES

A. PULL BOXES SHALL BE INSTALLED AT ALL NECESSARY POINTS, WHETHER INDICATED ON THE DRAWINGS OR NOT. PROVIDE WHERE REQUIRED FOR A PROPER INSTALLATION AND TO PREVENT INJURY TO THE CONDUCTORS THAT MIGHT RESULT FROM PULLING. MINIMUM DIMENSIONS SHALL NOT BE LESS THAN NEC REQUIREMENTS.

B. ALL INDOOR AND DRY LOCATIONS BOXES SHALL BE NEMA 1, GALVANIZED STEEL, RIGIDLY SECURED IN POSITION TO THE STRUCTURE. OUTDOOR BOXES SHALL BE NEMA 3R. PROVIDE WEATHERPROOF BOX WITH SINGLE GASKET FOR USE IN WET OR DAMP LOCATIONS.

C. PROVIDE BOXES, COMPLETE WITH COVER OR DEVICE PLATE FOR SWITCHES, RECEPTACLES, OR OTHER DEVICES, OR WHERE REQUIRED FOR JOINING BRANCH CIRCUIT WIRING.

D. CONDUIT BODIES MAY BE USED ON EXPOSED CONDUIT, WHERE ALLOWED BY THE NEC.

E. EXTERIOR PULL BOXES/MANHOLES SHALL BE PRECAST STEEL-REINFORCED

CONCRETE OR FIBERGLASS-REINFORCED POLYMER CONCRETE. COVERS SHALL BE LABELED FOR SYSTEM AND CAPABLE OF SUPPORTING VEHICLE TRAFFIC/MOWING EQUIPMENT LIKELY TO BE ENCOUNTERED. PROVIDE MINIMUM 12" GRAVEL BELOW BOX FOR DRAINAGE. PROVIDE DEPTH TO EXCEED REQUIRED CONDUIT BURIAL DEPTH. F. EFFECTIVELY CLOSE ALL UNUSED OPENING IN CABINETS, BOXES, EQUIPMENT

HOUSINGS, GUTTERS, ETC. G. COORDINATE BOX LOCATIONS WITH ARCHITECT AND OWNER. PROVIDE PULL &

JUNCTION BOXES LOCATED ABOVE CEILINGS UON. H. FIELD COORDINATE DOOR SWINGS AND LOCATE SWITCH BOXES 4-6" FROM

LATCH SIDE OF DOORS. I. FIELD COORDINATE LOCATION OF ALL EQUIPMENT FOR ELECTRICAL BOX LOCATIONS. COORDINATE LOCATIONS OF BOXES IN OR ABOVE MILLWORK WITH ARCHITECT/MILLWORK CONTRACTOR.

J. VERIFY ALL FIXTURE AND OUTLET BOX LOCATIONS WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.

K. PROVIDE CEILING RAN RATED BOX FOR CEILING FAN LOCATIONS. AS INDICATED.

L. PROVIDE MINIMUM OF 6" LATERAL OR VERTICAL SEPARATION FOR BACK-TO-BACK OUTLET BOXES.

1. FUSES SHALL CONFORM TO THE LATEST EDITIONS OF NEMA, UL, AND

2. FUSES SHALL BE DUAL-ELEMENT, 600-VOLT, CURRENT LIMITING, 200,000 AIC, AND SUITABLE FOR USE WITH DOWNSTREAM CIRCUIT BREAKERS, AS

3. FURNISH AND INSTALL COMPLETE SETS OF FUSES FOR ALL SWITCHES REQUIRING SAME, INCLUDING THOSE REQUIRED IN SWITCHBOARDS AND MOTOR CONTROLLERS.

4. FUSES SERVING ONLY MOTOR LOADS SHALL BE CLASS RK5 5. FUSES SERVING DISTRIBUTION SHALL BE CLASS RK1 OR L.

6. PROVIDE 1 SPARE SET OF EACH TYPE/SIZE FUSE.

<u>26 24 19 - MOTOR CONTROL</u> 1. CONFORM TO NEMA STANDARDS ICS1, ISC2, ISC3, ICS6. 2. CONFORM TO UL STANDARDS UL 508, UL 845.

3. PROVIDE ENCLOSED MOTOR STARTERS BY SIEMENS, CUTLER-HAMMER ABB, GENERAL ELECTRIC OR SQUARE-D. 4. ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL MOTOR START AND COORDINATE REQUIREMENTS WITH MECHANICAL CONTRACTOR.

MOTOR STARTS SHALL BE NEMA RATED FOR HORSEPOWER OF LOAD 5. FOR THREE-PHASE EQUIPMENT, PROVIDE FULL VOLTAGE NON-REVERSING TYPE, COMPLETE WITH "HOA" CONTROL SWITCH, INDICATING RUN LAMP, THERMAL OVERLOADS AND CONTROL CONNECTIONS AS REQUIRED FOR THE SPECIFIED OPERATION. COORDINATE OVERLOAD

CLASS WITH MOTOR LOAD. FOR SINGLE-PHASE EQUIPMENT, PROVIDE MAGNETIC (OR MANUAL MOTOR STARTER/MOTOR CONTROL SWITCH WHERE INDICATED) AS REQUIRED, WITH LOCKOUT SWITCH, THERMAL OVERLOADS, INDICATING LAMP AND CONTROL CONNECTIONS AS REQUIRED FOR THE SPECIFIED

OPERATION. 7. COORDINATE STARTER OVERLOADS WITH MOTOR PROTECTED AND

PROVIDE CLASS 10, 20 OR 30 AS REQUIRED. 8. FOR COMBINATION UNITS, PROVIDE MOTOR CIRCUIT PROTECTION PER

9. INSTALL MOTOR STARTERS OR COMBINATION STARTERS AT 79" TO TOP OF ENCLOSURE.

26 09 23 - LIGHTING FIXTURES AND ACCESSORIES 1. LIGHTING SHALL BE INSTALLED IN ACCORDANCE WITH THE

RECOMMENDED IES STANDARDS. 2. ALL FIXTURES SHALL BE FURNISHED COMPLETE WITH SOCKETS INTERNAL WIRING, LEADS, TRIM, HANGERS, SUPPORTS, FRAMES, BALLASTS, ETC., AS APPLICABLE.

ALL FIXTURES SHALL BE SUPPORTED BY MEANS OF ADEQUATE HANGERS WITH ATTACHMENTS TO BUILDING CONSTRUCTION INDEPENDENT OF ANY

4. IN NEW BUILDINGS, ALL LAMPS SHALL BE 3500 DEG K IN COLOR. MATCH EXISTING LAMP COLOR IN EXISTING CONSTRUCTION.

5. PER THE ENERGY CODE, ALL LIGHTING SHALL BE AUTOMATICALLY CONTROLLED, EXCEPT AS INDICATED, WITH MANUAL OVERRIDES. IT IS THE INTENTION OF THIS CONTRACT TO USE OCCUPANCY SENSORS AND LIGHTING CONTROL PANELS (INDEPENDENT FROM ONE ANOTHER) TO ACCOMPLISH THIS. 6. PROVIDE FIXTURES WITH TOTAL FIXTURE WATTS NO GREATER THAN

THOSE SCHEDULED. 7. COORDINATE FIXTURE MOUNTING WITH ARCHITECTURAL REFLECTED CEILING PLAN AND PROVIDE TRIM AS REQUIRED FOR CEILING TYPES

WHERE INSTALLED. SUPPORT FIXTURES FROM STRUCTURE ONLY. 9. ALL BALLASTS SHALL BE HIGH-POWER-FACTOR (0.95 MINIMUM), LOW THD

(10% MAXIMUM), ENERGY-SAVING, ELECTRONIC TYPE. 10. COORDINATE DIMMING BALLAST/DRIVER REQUIREMENTS WITH DIMMERS AND DIMMING ZONES SHOWN WHEN REQUIRED FOR LED

DIMMING, PROVIDE 0-10V DIMMING DRIVERS AS APPROPRIATE. 11. EXTERIOR LIGHTING SHALL BE CONTROLLED BY PHOTOCELLS/TIMERS FOR "DUSK-TO-DAWN" OPERATION, UON. LOCATE PHOTOCELLS WITH SENSOR FACING GENERALLY NORTH TO NORTHEAST, WHERE POSSIBLE.

12. PROVIDE FIXTURES LOCATED IN UNHEATED SPACES WITH LOW TEMPERATURE BALLAST AND LAMPS.

13. ALL EXTERIOR LIGHTING LAMPS SHALL BE OF THE SAME COLOR TEMPERATURE.

14. FIXTURES ARE PERMITTED TO PROVIDE LUMINOSITY UP TO 10% GREATER THAN THE SPECIFIED LUMENS IN THE LIGHT FIXTURE SCHEDULE. LUMENS ARE NOT PERMITTED TO BE RATED A LUMINOSITY LESS THAN THE SPECIFIED LUMENS IN THE LIGHT FIXTURE SCHEDULE.

1. TEST VOLTAGE AT SERVICE EQUIPMENT AND SUBMIT MEASUREMENTS TO ENGINEER OF RECORD FOR REVIEW 2. FOR SINGLE PHASE SERVICE, MEASURE VOLTAGES: A-B, B-N, AND A-N.

FOR THREE PHASE SERVICE, MEASURE VOLTAGE: A-B, B-C, C-A, A-N, B-N.

4. TEST VOLTAGE AT \*\*EXISTING\*\* SERVICE EQUIPMENT

26 52 19 - EMERGENCY EGRESS LIGHTING 1. EMERGENCY EXIT SIGNS AND EGRESS LIGHTING FIXTURES SHALL BE CONNECTED TO

THE SAME CIRCUIT AS NORMAL LIGHTING SERVING AREA, AHEAD OF ANY SWITCHING.

PROVIDE INTEGRAL BATTERY UNITS AS REQUIRED FOR EMERGENCY LIGHTING UNITS. EXIT SIGNS AND DESIGNATED FIXTURES. 3. PROVIDE EMERGENCY EXIT AND EMERGENCY EGRESS LIGHTING TO COMPLY WITH IBC SECTION 1006 TO PROVIDE MINIMUM INITIAL 1.0FC ALONG ALL EGRESS PATHS AND

28 31 12 - FIRE ALARM SYSTEM

MINIMUM 0.6FC AFTER 90 MINUTES.

CONFORM TO NFPA 72, UL 38, UL 268, UL 521, UL 864, UL 1971.

2. FIRE ALARM SYSTEM WILL BE DESIGNED UNDER SEPARATE CONTRACT AND

INSTALLED UNDER SEPARATE PERMIT 3. COORDINATE WORK WITH FIRE ALARM CONTRACTOR.

4. ANY FIRE ALARM DEVICES SHOWN ARE FOR REFERENCE ONLY TO INDICATE PROPOSED DEVICE AND EQUIPMENT LOCATIONS FOR COORDINATION PURPOSES ONLY AND ARE NOT TO BE CONSIDERED FINAL CODE-COMPLIANT DESIGN.

**ELECTRICAL SYSTEMS TESTING AND COMMISSIONING** 

 CONFORM TO UL 1244, UL 1436, NECA 90, NEMA AB4, NETA ATS. 2. TIGHTEN AND VERIFY BOLTED BUS, MECHANICAL LUGS, AND WIRING TERMINATIONS TO MANUFACTURER SPECIFIED TORQUE.

3. TEST INSULATION RESISTANCE (MEGGER) ALL NEW CIRCUITS TO INDICATE MINIMUM 4. TEST GROUNDING SYSTEM FOR CONTINUITY USING FALL OF POTENTIAL METHOD AND

TO INDICATE MAXIMUM RESISTANCE OF 50HM.

VERIFY PHASE, NEUTRAL AND GROUND POLARITY FOR ALL WIRING DEVICES.

6. TEST OPERATION OF ALL GROUND-FAULT CIRCUIT INTERRUPTER DEVICES.

26 05 19 - POWER CONDUCTORS AND CABLE

 CONFORM TO NEMA WC7, UL 83, UL 486C, UL 486E, UL 1581. 2. ALL WIRING SHALL BE: UL 83, 600-VOLT, TYPE THHN/THHW INSULATION, UON: A. #10 AWG AND SMALLER: SOFT-DRAWN ANNEALED COPPER, SOLID. B. #8 AWG AND LARGER: SOFT-DRAWN ANNEALED COPPER, STRANDED

C. 100 AMPERES AND LARGER: AL COMPACT-STRANDED CONDUCTORS OF EQUAL AMPACITY MAY BE SUBSTITUTED FOR COPPER. CONTRACTOR RESPONSIBLE FOR COORDINATING WIRE AND CONDUIT SIZE. VERIFY THAT ALL TERMINATION LUGS ARE RATED FOR SIZE AND TYPE WIRE PROVIDED. D. WIRING METHODS

a. NM CABLE: CONCEALED IN WALLS WITHIN DWELLING UNITS AND

COMMERCIAL AREAS FOR BRANCH CIRCUITS. b. SER CABLE: FEEDERS FROM METER CENTER TO DWELLING UNIT LOAD CENTERS. CONCEAL SER CABLING IN NEW SOFFITS, WALL OR ABOVE CEILINGS. PROVIDE IN CONDUIT WHERE INSTALLED IN PLENUMS AND

WHERE CABLING CANNOT BE CONCEALED BY ARCHITECTURAL ELEMENTS. c. INSTALL NM/SER CABLE ONLY IN CONSTRUCTION TYPE 3A, 3B, 5A, AND 5B AREAS. DO NOT INSTALL NM WIRING ABOVE LAY-IN CEILINGS. CONFORM TO NEC ARTICLE 334.10.

d. WHERE ROUTED THROUGH AREAS OF TYPE 1A, 1B, 2A, OR 2B CONSTRUCTION, PROVIDE IN CONDUIT

FROM DAMAGE USING CONDUIT OR USE UL LISTED FOR INDOORS,

OUTDOORS, SUNLIGHT RESISTANT AND DIRECT BURIAL. ARMORED CABLE ASSEMBLIES: TYPE MC CABLE (UL 1569). g. USE STRANDED WIRING FOR ALL CONTROL CIRCUITS.

E. TERMINATIONS, PROVIDED AS FOLLOWS: a. BRANCH CIRCUITS: SOLDER-LESS, COMPRESSION, TWIST SPRING CONNECTORS (WIRE NUTS) OR OTHER LISTED MEANS.

b. BOLTED BUS CONNECTIONS: 2-HOLE COMPRESSION LUGS. c. WIRING SPLICES NOT PERMITTED. F. ROUTE POWER WIRING AND LOW-VOLTAGE CONTROL WIRING IN SEPARATE

RACEWAYS. DO NOT ROUTE CIRCUITS FROM DIFFERENT SYSTEMS IN THE SAME G. PROVIDE SEPARATE, DEDICATED NEUTRAL CONDUCTORS FOR ALL BRANCH

CIRCUITS SERVING COMPUTER OR MECHANICAL EQUIPMENT. H. WIRING SHALL BE NEATLY TRAINED AND LACED IN ENCLOSURES. TEST ALL WIRING FOR CONTINUITY AND TO BE FREE OF FAULTS AND SHORT CIRCUITS. I. USE SUITABLE ANTI-OXIDIZING COMPOUND FOR ALL ALUMINUM WIRING

J. LABEL CONDUCTORS WITH CIRCUIT DESIGNATION AT EACH BRANCH CIRCUIT

TERMINATION. K. IN THE ABSENCE OF A CONSISTENT EXISTING COLOR CODE, CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS:

PHASE A - BROWN PHASE A - BLACK PHASE B - ORANGE PHASE B - RED PHASE C- YELLOW PHASE C - BLUE NEUTRAL - GRAY NEUTRAL - WHITE GROUND - GREEN GROUND - GREEN

**26 27 26 - WIRING DEVICES** 

1. WIRING DEVICES SHALL BE COMPLETE WITH ALL MOUNTING DEVICES AND OTHER APPURTENANCES AS REQUIRED. ALL WIRING DEVICES SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER EXCEPT AS SPECIFICALLY STATED OTHERWISE. CONVENIENCE RECEPTACLES SHALL BE PROVIDED NEMA 5-20, SIDE-WIRED ONLY.

GFCI RECEPTACLE PER UL 943 FOR LOCATIONS WITHIN 6' OF WATER SOURCE. EXTERIOR LOCATIONS, AND OTHER LOCATIONS WHERE INDICATED, PER NEC ARTICLE 210.8. 3. ALL LIGHT SWITCHES SHALL BE TOGGLE TYPE, SPECIFICATION GRADE, INSTALLED 48 INCHES ABOVE FINISHED FLOOR, UNLESS OTHERWISE NOTED. SWITCHES SHALL

BE 20 AMPERE, 120-277 VOLT, NOMINAL SINGLE-POLE, 3-WAY, OR 4-WAY, AS INDICATED ON PLANS 4. WALL MOUNTED DIMMERS SHALL BE 120-277V. COORDINATE WITH FIXTURE/BALLAST/DRIVER. VERIFY COMPATIBILITY OF ALL DEVICES ON THE

DIMMING CIRCUIT/ZONE. WHERE DIMMERS OCCUR ADJACENT TO SWITCHES, SWITCH SHALL BE SLIDE-TYPE TO MATCH. MOTOR RATED SWITCHES OCCURRING ADJACENT TO DIMMERS SHALL BE LUTRON NT-DPDT-CO-MA OR APPROVED EQUAL. 5. WALL OCCUPANCY SENSORS SHALL BE 120-277V, MANUAL "ON" TYPE, WITH 180 DEGREE PIR, 2100 SF COVERAGE. PROVIDE SINGLE-POLE, 3-WAY, OR 4-WAY, AS

INDICATED ON PLANS. 6. CEILING MOUNT OCCUPANCY SENSORS SHALL BE 120-277V, PIR/ULTRASONIC, 360 DEGREE, 2000 SF COVERAGE. PROVIDE WITH EMERGENCY SOURCE INPUT RELAY. 7. ALL RECEPTACLES SHALL BE DUPLEX OUTLETS, GROUNDING TYPE, SPECIFICATION

GRADE, INSTALLED 18 INCHES ABOVE FINISHED FLOOR. 8. SPECIAL AND HEAVY-DUTY TYPE RECEPTACLES SHALL BE PROVIDED AS SUITABLE FOR THE INTENDED USE.

9. COLOR OF DEVICES AND COVER PLATES SHALL BE AS DIRECTED BY THE ARCHITECT OR OWNER. 10. PROVIDE GFCI RECEPTACLE WITH "IN-USE" COVER FOR EXTERIOR, WET OR DAMP

LOCATIONS. 11. PROVIDE PLASTER RING SPACER WHERE REQUIRED TO ACCOMMODATE WALL FINISHES.

**26 05 26 - GROUNDING** 

STEEL PER NEC ARTICLE 250.

1. RACEWAYS, BOXES, OUTLETS, AND ENCLOSURES SHALL BE BOUND TOGETHER TO FORM A CONTINUOUS METALLIC GROUNDING CIRCUIT IN ACCORDANCE WITH NEC ART. 250.

2. THE MINIMUM SIZE OF GROUNDING CONDUCTOR SHALL BE PER NEC UNLESS NOTED TO BE LARGER ON THE DRAWINGS. B. GROUNDING CONDUCTORS SHALL BE PROVIDED FOR ALL BRANCH CIRCUITS AND FEEDERS. NO EXCEPTIONS! EXTEND AND CONNECT TO EACH DEVICE AND

EQUIPMENT. 4. EGC: PROVIDE SEPARATE BARE COPPER OR INSULATED GREEN GROUND CONDUCTOR IN ALL FEEDERS AND BRANCH CIRCUITS.

5. BONDING: PROVIDE BONDING OF ALL NON-CURRENT-CARRYING METALLIC PARTS OF ELECTRICAL EQUIPMENT, METALLIC RACEWAYS AND ENCLOSURE PER NEC ARTICLE 250. BOND ALL METAL BUILDING COMPONENTS, INCLUDING PIPING, DUCTWORK AND METAL BUILDING COMPONENTS.

6. GEC: PROVIDE GEC AND MBJ AS INDICATED ON SINGLE LINE DIAGRAM. PROVIDE

GROUND ELECTRODE BONDING OF METAL WATER SERVICE PIPING AND BUILDING

**26 24 16 - PANELBOARDS** 

1. PROVIDE WITH 100% RATED NEUTRAL UNLESS SCHEDULED OTHERWISE. ALL BUS BARS SHALL BE TIN (OR COPPER) PLATED ALUMINUM, REFER TO SCHEDULES FOR RATINGS, MAIN AND BRANCH DEVICES. PANELS AND BREAKERS SHALL BE RATED FOR THE AVAILABLE INTERRUPTING CURRENT AND IN NO CASE BE LESS THAN

10,000 AMPERES RMS SYMMETRICAL INTERRUPTING CAPACITY. 2. PROVIDE HANDLE LOCKING DEVICES AS REQUIRED FOR EMERGENCY LIGHTING AND

FIRE ALARM LOADS. 3. PROVIDE HANDLE-TIES FOR ALL MULTI-WIRE BRANCH CIRCUITS WITH SHARED NEUTRAL CONDUCTORS PER NEC 210.4.

4. INSTALL PANELBOARDS WITH HIGHEST OPERATOR/HANDLE AT HIGHEST POSITION AT 79" OR LESS. 5. CIRCUIT BREAKERS SHALL BE COMBINATION THERMAL AND MAGNETIC MOLDED

CASE TYPE, QUICK-MAKE AND QUICK-BREAK, BOTH ON MANUAL AND ON OVERCURRENT OPERATION. BREAKERS SHALL BE OF THE OVER-THE-CENTER TOGGLE OPERATING TYPE WITH THE HANDLE GOING TO A POSITION BETWEEN "ON" AND "OFF" TO INDICATE AUTOMATIC TRIPPING. ALL MULTI-POLE BREAKERS SHALL BE INTERNAL COMMON TRIP.

6. PANELBOARDS SHALL BE SURFACE MOUNTED OR RECESSED AS INDICATED, WITH BAKED-ON ENAMEL TRIM, ADJUSTABLE TRIM CLAMPS AND DOOR WITH LOCK AND

e. MINI-SPLIT HEAT PUMP INTERCONNECTION WIRING: PROTECT CONDUCTORS 7. PROVIDE COMPLETE TYPED WRITTEN PANELBOARD DIRECTORIES INDICATING LOAD TYPE AND LOCATION WITH FIELD CHANGES RECORDED.

8. PANELBOARDS SHALL BE BY SQUARE D, SIEMENS, GENERAL ELECTRIC, OR CUTLER-9. LOAD CENTERS MAY ONLY BE USED WITHIN DWELLING UNITS.

26 28 16 - DISCONNECT SWITCHES AND CIRCUIT BREAKERS

DISCONNECT SWITCHES

A. FUSED AND NONFUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS REQUIRED. SUCH SWITCHES SHALL BE OF THE PROPER SIZE AND NUMBER OF POLES FOR USE WITH THE EQUIPMENT REQUIRING THE SWITCH. WHERE THE MOTOR CONTROLLER IS NOT WITHIN SIGHT OF THE MOTOR OR OVERCURRENT

PROTECTION. PROVIDE TWO SWITCHES AS REQUIRED. B. DISCONNECT SWITCHES SHALL BE THE ENCLOSED HEAVY-DUTY TYPE WITH QUICK-MAKE, QUICK-BREAK MECHANISM AND EXTERNAL PAD-LOCKING OPERATING HANDLE.

. ALL SWITCH ENCLOSURES SHALL BE NEMA TYPE 1, EXCEPT SWITCHES EXPOSED TO THE WEATHER SHALL HAVE NEMA TYPE 3R, RAIN TIGHT ENCLOSURES.

D. COMBINATION STARTER/DISCONNECTS AND CIRCUIT BREAKER DISCONNECTS MAY ALSO BE USED FOR MOTOR LOADS. E. COORDINATE DISCONNECT SWITCH POLES, NEUTRAL REQUIREMENTS, FUSE

F. COORDINATE REQUIREMENTS FOR FUSE HOLDERS AND BLOCKS, AND G. LOCATE SWITCHES ACCESSIBLE AND WITHIN SIGHT OF EQUIPMENT SERVICED. H. INSTALL DISCONNECT SWITCHES WITH HIGHEST OPERATOR/HANDLE AT

VOLTAGE, AND AMPACITY WITH NAMEPLATE DATA OF EQUIPMENT SERVICED.

HIGHEST POSITION 79" OR LESS. PROVIDE DISCONNECT SWITCH FOR ALL CONDENSING UNITS. 2. CIRCUIT BREAKERS

A. CONFORM TO NEMA AB 1, UL 50, UL 489, NEMA SG3. B. CIRCUIT BREAKERS SHALL BE BY SIEMENS, CUTLER-HAMMER, GENERAL

ELECTRIC. OR SQUARE-D. C. COORDINATE CIRCUIT BREAKER POLES, NEUTRAL REQUIREMENTS, VOLTAGE, AND AMPACITY WITH NAMEPLATE OF EQUIPMENT SERVICES.

 D. COORDINATE SHORT CIRCUIT CURRENT RATINGS. A. SERIES RATINGS: PROVIDE MANUFACTURER TEST DATA FOR ALL EXISTING AND PROPOSED DEVICES UTILIZING SERIES RATINGS. SEALED BY

B. PROVIDE SUBMITTAL DATA FOR LISTED SERIES RATED DEVICES INDICATING HOW DEVICES MEET OR EXCEED AVAILABLE FAULT CURRENT. C. PROVIDE SERIES RATINGS CALCULATIONS, WHERE REQUIRED.

D. DO NOT USE SERIES RATING COMBINATIONS FOR MOTOR APPLICATIONS. MOLDED CASE CIRCUIT BREAKERS: TOGGLE-TYPE HANDLE WITH OVER-CURRENT TRIP PROTECTION AND QUICK-MAKE, QUICK-BREAK, NON-WELDING SILVER-ALLOY CONTACTS. UNIT SHALL INDICATE TRIP BY HANDLE POSITION OR INDICATOR VIEWING WINDOW.

F. PROVIDE MOTOR CIRCUIT PROTECTOR FOR MOTOR LOADS. G. PROVIDE CIRCUIT BREAKER LOCK FOR ALL CIRCUIT BREAKERS FEEDING HVAC

**EQUIPMENT OR WATER HEATERS** H. MOLDED CASE CIRCUIT BREAKERS SHALL BE "HACR" RATED FOR HVAC EQUIPMENT LOADS AND "SWD" RATED FOR LIGHTING LOADS.

CIRCUIT BREAKER ENCLOSURES A. CONFORM TO UL 50, UL 98, NEMA AB1. B. ENCLOSURES FOR CIRCUIT BREAKERS SHALL MATCH MANUFACTURER OF

INSTALLED CIRCUIT BREAKER. C. LOCATED ENCLOSED CIRCUIT BREAKERS ACCESSIBLE AND WITHIN SIGHT OF EQUIPMENT SERVICES.

D. INSTALL ENCLOSED CIRCUIT BREAKERS WITH HIGHEST OPERATOR/HANDLE AT HIGHEST POSITION 78" OR LESS.

26 05 53 - ELECTRICAL IDENTIFICATION

PROFESSIONAL ENGINEER.

1. MATERIALS: A. EQUIPMENT NAMEPLATES: PROVIDE NAMEPLATES CONSTRUCTED OF 1/16" THICK PLASTIC LAMINATED MATERIAL. ENGRAVE THROUGH COLORED SURFACE MATERIAL TO CONTRASTING COLORED SUBLAYER.

B. LIGHT SWITCH, RECEPTACLE, AND JUNCTION BOX LABELS: PROVIDE LABELS BY

ELECTRONIC LABELER BROTHER P-TOUCH, MODEL PT-20/25, DYMO-TAPE, OR EQUAL. LABEL WITH PANEL NAME AND CIRCUIT NUMBER. C. CIRCUIT DIRECTORIES: PROVIDE NEATLY TYPES SCHEDULE UNDER PLASTIC JACKET OR PROTECTIVE COVER FOR PROTECTION FROM DAMAGE OR DIRT.

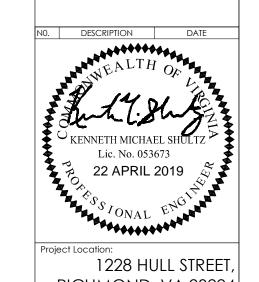
2. FOR SERVICE EQUIPMENT, PROVIDE LABEL PER 1.A INDICATING AVAILABLE FAULT CURRENT PER NEC ARTICLE 110.24. SEE SINGLE LINE. 3. PROVIDE CIRCUIT DIRECTORIES FOR EACH LOAD CENTER, PANELBOARDS, AND SWITCHBOARD BASED ON AS-BUILT CONDITIONS.

A. NUMBER EACH SINGLE POLE SPACE: ODD-NUMBERED CIRCUITS ON LEFT, EVEN ON RIGHT. B. SECURELY MOUNT ON INSIDE FACE OF PANELBOARD DOOR.

C. WHEN THERE IS NO COVER, PROVIDE INDIVIDUAL NAMEPLATES PER 1.A FOR EACH OVERCURRENT AND OTHER DEVICE. D. DEFINE BRIEFLY, BUT ACCURATELY, NATURE OF CONNECTED LOAD (I.E. LIGHTING OFFICE, ELEC ROOM, ETC.).

E. PROVIDE ROOM LOCATIONS FOR ALL LOADS AND INDICATE PANEL NAME ON THE F. MULTIPOLE CIRCUITS: USE FIRST POLE SPACE NUMBER AS CIRCUIT NUMBER. G. CONFIRM ROOM NUMBERS WITH OWNER BEFORE NOTING ON SCHEDULES.

H. SPARE CIRCUIT BREAKERS AND SPACE POSITIONS SHALL BE NOTED.



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RICHMOND, VA 23219

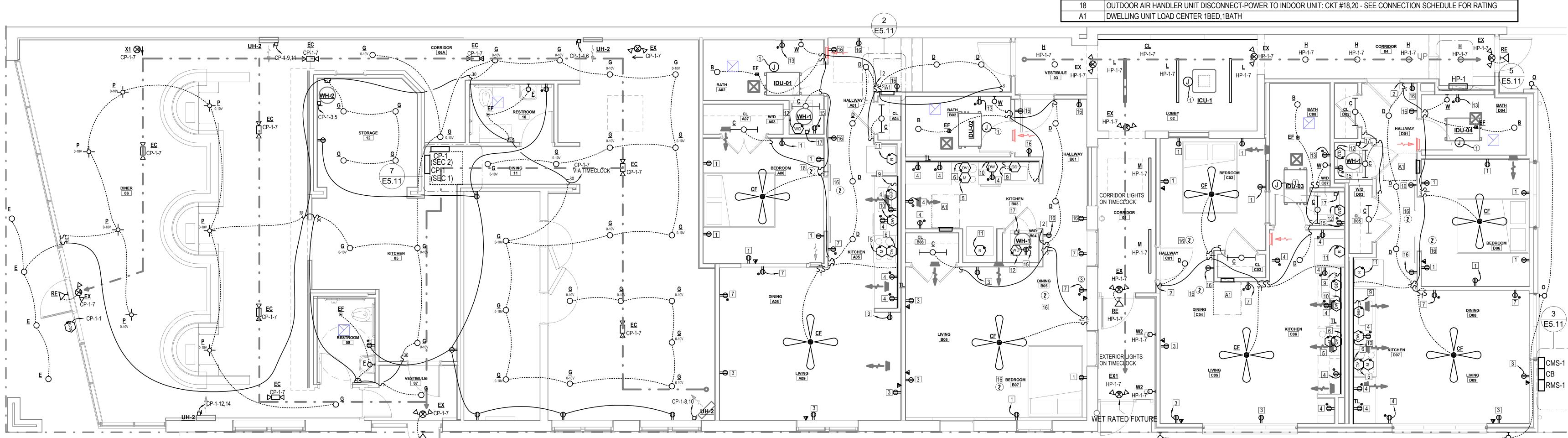
RICHMOND, VA 23224 22 APRIL 2019

**SPECIFICATION** 

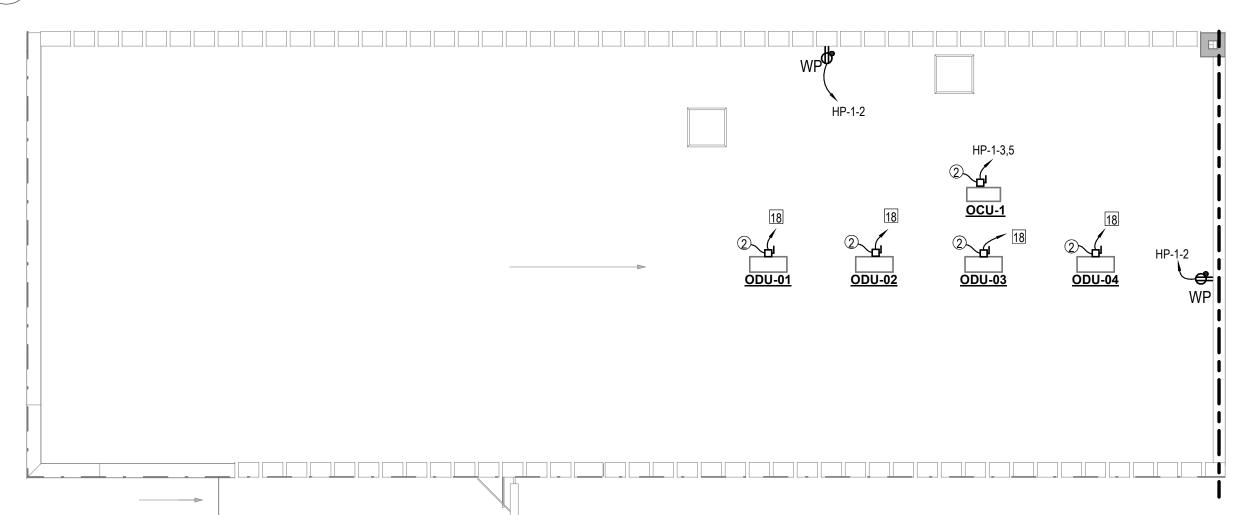
EO.1

**ELECTRICAL PLAN NOTES** POWERED BY OUTDOOR UNIT POWER TO INDOOR UNIT OUTLETS SCHEDULED ON EXISTING MASONRY WALLS WILL NEED SURFACE MOUNTED BOXES & CONDUIT. (TYP.)

	ELECTRICAL DWELLING UNIT PLAN NOTES
#	NOTE
1	BEDROOM RCPTS:NEMA 5-20R,CKT #1
2	LIVING/KITCHEN/BATH/CLOSET/HALLWAY/BEDROOM LIGHTING:NEMA 5-20R, CKT #2
3	LIVING RM RCPTS:NEMA 5-20R, CKT #3
4	KITCHEN: APPLIANCE CIRCUIT 1:NEMA 5-20R,CKT #4
5	MICROWAVE:NEMA 5-15R RCPT,CKT #5
6	RANGE/OVEN:NEMA 14-50R RCPT: CKT #6, 8
7	KITCHEN: APPLIANCE CIRCUIT 2: CKT #7
9	GARBAGE DISPOSAL,NEMA 5-20R,GFCI,CKT #9
10	DISHWASHER:NEMA 5-20R,GFI,CKT #10
11	FRIDGE:NEMA 5-20R, CKT #11
12	WASHER-DRYER COMBO:NEMA 6-30R RCPT,CKT #12, 14
13	BATHROOM GFI RCPTS NEMA 5-20R,CKT #13
15	WASHER GFI RCPT:NEMA 5-20R, CKT #15
16	HALLWAY RCPTS & SMOKE DETECTOR:NEMA 5-20R, CKT #16
17	WATER HEATER DISCONNECT: 30/250V/FUSED/NEMA1, CKT #17,19
40	CHIED COD AND HANDLED HAND DOCUMENT DOWER TO INDOCE HAND COLUMN OF COMMISSION COLUMN FOR DATING



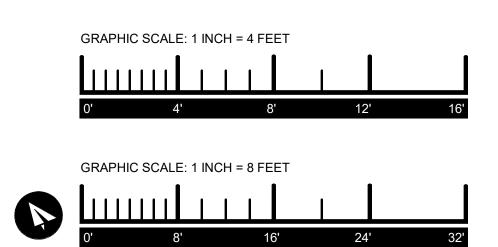
1 LEVEL 1 - NEW WORK-POWER & LIGHTING PLAN



		ELECTR	ICAI	_ CON	INECTI	ON TYPE S	CHEDULE		
							ELECTRICAL		
SYMBOL DESIGNATOR	DESCRIPTION	CONNECTION TYPE	QTY	LOAD		NUMBER OF POLES	SUMMARY	LOAD CLASSIFICATION	COMMENTS
	APPLIANCE CIRCUIT	GFI,NEMA 5-20R	27		120 V	1		NEC 220.82	
	DUPLEX CONVENIENCE RECEPTACLE	GFI,NEMA 5-20R	4	180 W	120 V	1	120 V/1-180 VA	Receptacle	
	DUPLEX CONVENIENCE RECEPTACLE	NEMA 5-20R	6	180 W	120 V	1	120 V/1-180 VA	Receptacle	
	DUPLEX CONVENIENCE RECEPTACLE	GFI,NEMA 5-20R	4	180 W	120 V	1	120 V/1-180 VA	NEC 220.82	
	DUPLEX CONVENIENCE RECEPTACLE	NEMA 5-20R	44	180 W	120 V	1	120 V/1-180 VA	NEC 220.82	
	WASHER GFI RECEPTACLE	GFI,NEMA 5-20R	4	180 W	120 V	1	120 V/1-180 VA	NEC 220.82	
DW	DISHWASHER	GFI,NEMA 5-20R	4	1200 W	120 V	1	120 V/1-1200 VA	NEC 220.82	
GD	GARBAGE DISPOSAL	GFI,NEMA 5-20R	4	900 W	120 V	1	120 V/1-900 VA	NEC 220.82	
ICU-1	INDOOR CASSETTE UNIT	HARDWIRED	1		208 V	1	208 V/1-0 VA	HVAC	POWERED BY OUTDOOR CASSETTE UNIT.
IDU	INDOOR UNIT	HARDWIRED	4		208 V	1	208 V/1-0 VA	HVAC	POWERED BY OUTDOOR UNIT.
M	MICROWAVE	GFI,NEMA 5-20R	4	1200 W	120 V	1	120 V/1-1200 VA	NEC 220.82	
OCU-1	OUTDOOR CASSETTE UNIT	30A/250V/FUSED/NEMA3R	1	3744 W	208 V	2	208 V/2-3744 VA	HVAC	FUSE AT NAMEPLATE; POWER TO INDOOR CASSETTE UNIT
ODU-1	OUTDOOR UNIT-1	30A/250V/FUSED/NEMA3R	1	3120 W	208 V	2	208 V/2-3120 VA	HVAC	FUSE AT NAMEPLATE; POWER TO INDOOR UNIT
ODU-2	OUTDOOR UNIT-2	30A/250V/FUSED/NEMA3R	1	3120 W	208 V	2	208 V/2-3120 VA	HVAC	FUSE AT NAMEPLATE; POWER TO INDOOR UNIT
ODU-3	OUTDOOR UNIT-3	30A/250V/FUSED/NEMA3R	1	3120 W	208 V	2	208 V/2-3120 VA	HVAC	FUSE AT NAMEPLATE; POWER TO INDOOR UNIT
ODU-4	OUTDOOR UNIT-4	30A/250V/FUSED/NEMA3R	1	3120 W	208 V	2	208 V/2-3120 VA	HVAC	FUSE AT NAMEPLATE; POWER TO INDOOR UNIT
OV	OVEN	NEMA 14-50R	4	8000 W	208 V	2	208 V/2-8000 VA	NEC 220.82	
R	REFRIGERATOR	GFI,NEMA 5-20R	4	400 W	120 V	1	120 V/1-400 VA	NEC 220.82	
SIGN	SIGN CIRCUIT	GFI,WP,NEMA 5-20R	1	1200 W	120 V	1	120 V/1-1200 VA	Other	
UH-2	UNIT HEATER-2	60A/250V/NON-FUSED/NEMA1	4	5013 W	208 V	2	208 V/2-5013 VA	HVAC	
WD	WASHER-DRYER COMBO	GFI,NEMA 14-30R	4	6500 W	208 V	2	208 V/2-6500 VA	NEC 220.82	
WH-1	WATER HEATER-1	60A/250V/NON-FUSED/NEMA1	4	4500 W	208 V	2	208 V/2-4500 VA	NEC 220.82	
WH-2	WATER HEATER-2	60A/250V/NON-FUSED/NEMA1	1	4500 W	208 V	2	208 V/2-4500 VA	Other	

		ı		
2 R	ROOF -	NEW WO	<u> DRK-POWEI</u>	R PLAN
4 1/	/8" = 1'-0"			

				ELECTRICAL LIGHTING	FIXTURE	SCHEDULE										
	COUNT (FOR	FIXTURE SPECIFICATIONS			FIXTURE SPECIFICATIONS		AMP SPEC	CIFICATION	IS					ELECTRIC/	AL	
TYPE	REFERENCE ONLY)	DESCRIPTION	MANUFACTURER	MODEL	DIMMING	LAMP TYPE	LAMP COUNT	LAMP LUMENS	TOTAL LUMENS		MINIMUM EFFICACY	COLOR TEMPERATURE	TOTAL MAX INPUT WATTS	VOLTS	ELECTRICAL SUMMARY	REMARKS
В	4	BATHROOM DOWNLIGHT (RESIDENTIAL)	LITHONIA LIGHTING	LDN4-35-15-LD4-120-WL	-	LED / DRIVER	1	1444 lm	-	20.44 W	70 lm/W	3500 K	20 VA	120 V	120 V/1-20 VA	
C	9	CLOSET LIGHT (RESIDENTIAL)	LITHONIA LIGHTING	FMMCL-18-840		LED / DRIVER	1	925 lm	925 lm		66 lm/W	3500 K	14 VA	120 V	120 V/1-14 VA	
CF	8	CEILING FAN-LIGHT COMBO (RESIDENTIAL)	ROYAL PACIFIC LIGHTING AND FANS	1079WH/OB/BK/BN		LED / DRIVER	1	1000 lm	1000 lm		70 lm/W	3500 K	15 VA	120 V	120 V/1-15 VA	
CL	1	COVE LIGHT	PHILLIPS	EW COVE QLX POWERCORE 48"		LED	1	1143 lm			70 lm/W	2700 K	15 VA	120 V	120 V/1-15 VA	
D	13	DOWNLIGHT (RESIDENTIAL)	LITHONIA LIGHTING	6HF-1/26DTTF6LS4-120		LED / DRIVER	1	1444 lm	1444 lm		70 lm/W	3500 K	26 VA	120 V	120 V/1-26 VA	
E	4	EXTERIOR LIGHT (COMMERCIAL)	LITHONIA LIGHTING	LDN4-35-15-LD4-120-WL		LED / DRIVER	1	3000 lm	3000 lm	+	70 lm/W	3500 K	26 VA	120 V	120 V/1-26 VA	
EC	10	CEILING MOUNTED EMERGENCY BATTERY PACK FIXTURE	LITHONIA LIGHTING	ELMT-W-LP06VS-LTP		LED W/ BATTERY BACKUP	2	523 lm	1045 lm	5.40 W	70 lm/W		11 VA	120 V	120 V/1-11 VA	
EF	2	6" RECESSED EXHAUST FAN (COMMERCIAL)	SEE MECHANICAL	SEE MECHANICAL		NA	0			20.00 W	70 lm/W		20 VA	120 V	120 V/1-20 VA	
EF	4	6" RECESSED EXHAUST FAN (RESIDENTIAL)	SEE MECHANICAL	SEE MECHANICAL		NA	0			20.00 W	70 lm/W		20 VA	120 V	120 V/1-20 VA	
EX	8	COMBINATION EGRESS FIXTURE AND EXIT SIGN	LITHONIA LIGHTING	LHQM-LED-R-HO		LED W/ BATTERY BACKUP	2	90 lm	180 lm	4.30 W	70 lm/W		9 VA	120 V	120 V/1-9 VA	
EX1	1	WET LISTED COMBINATION EGRESS FIXTURE AND EXIT SIGN	THE EXIT LIGHT CO.	ELCWLTCOMBO		LED W/ BATTERY BACKUP	2	90 lm	180 lm	4.30 W	70 lm/W		9 VA	120 V	120 V/1-9 VA	
F	2	BATH VANITY (COMMERCIAL)	SUNPARK	FL5524D-3000K		LED / DRIVER	1	1420 lm	1420 lm	19.00 W	70 lm/W	3000 K	19 VA	120 V	120 V/1-19 VA	
G	30	DOWNLIGHT (COMMERCIAL)	LITHONIA LIGHTING	LDN6-35-30-L06-LD-MVOLT-EZ1-SF	0-10V	LED / DRIVER	1	3000 lm	3000 lm	26.24 W	70 lm/W	3500 K	26 VA	120 V	120 V/1-26 VA	
Н	5	CORRIDOR CAN LIGHT (COMMERICIAL)	LITHONIA LIGHTING	LDN6-35-30-L06-LD-MVOLT-EZ1-SF	0-10V	LED / DRIVER	1	3000 lm	3000 lm	26.24 W	70 lm/W	3500 K	26 VA	120 V	120 V/1-26 VA	
L	3	LINEAR PENDANTS (COMMERICAL)	PHILIPS DAY-BRITE	VFS 07C 1 1N-W-PW		LED / DRIVER	1	1806 lm	1806 lm	18.40 W	70 lm/W	3500 K	30 VA	120 V	120 V/1-30 VA	
М	2	LINEAR SURFACE MOUNTED	EUREKA	3542-48-LED.17-35-120V		LED / DRIVER	1	1806 lm	1806 lm	17.00 W	70 lm/W	3500 K	17 VA	120 V	120 V/1-17 VA	
0	4	WALL MOUNTED EXTERIOR FIXTURE	PERFORMANCE LIGHTING	MIMIK 20 FLAT B 071186		LED / DRIVER	1	965 lm	1930 lm	25.00 W	70 lm/W	3000 K	25 VA	120 V	120 V/1-25 VA	
Р	7	DECORATIVE PENDANT (COMMERCIAL)	FOCALPOINT LIGHTING	4-FL-7000DN-2000UP-35K-1C-UNV-LD1-C48-WH	0-10V	LED / DRIVER	1	7000 lm	7000 lm	62.00 W	70 lm/W	3500 K	62 VA	120 V	120 V/1-62 VA	
RE	4	REMOTE HEAD FIXTURE	LITHONIA LIGHTING	ELA-LED-WP-M12		LED / DRIVER	1	125 lm	125 lm	1.00 W	70 lm/W	3500 K	1 VA	120 V	120 V/1-1 VA	
TL	4	UNDERCOUNTER STRIPS (RESIDENTIAL)	DIODE LED	BLAZE BASICS 100 LED TAPE LIGHT DI-12V-BLBSC-1-30		LED	1	100 lm	100 lm	10.00 W	70 lm/W	3500 K	10 VA	120 V	12 V/1-10 VA	
W	4	BATH VANITY (RESIDENTIAL)	SUNPARK	FL5524D-3000K		LED / DRIVER	1	1420 lm	1420 lm	19.00 W	75 lm/W	3000 K	19 VA	120 V	120 V/1-19 VA	
W2	2	INGROUND WALL WASH	PERFORMANCE LIGHTING	ALU-INGROUND SQUARE - 079030		LED / DRIVER	1	16 lm	16 lm	2.10 W	70 lm/W	3000 K	25 VA	120 V	120 V/1-25 VA	
X1	1	LED EXIT SIGN, SINGLE FACE, EDGE LIT	LITHONIA LIGHTING	LHQM-S-W-3-R-HO RO		LED W/ BATTERY BACKUP	1	50 lm	50 lm	3.30 W	70 lm/W		3 VA	120 V	120 V/1-3 VA	

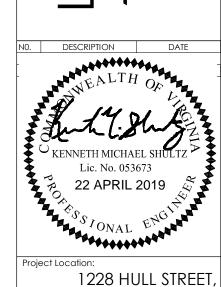


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1228 HULL STREET, RICHMOND, VA 23224

 
 Date
 Scale

 22 APRIL 2019
 As indicated

 Drawn By
 Checked By

 Author
 Checker

 NO.
 DESCRIPTION
 DATE
 2 CONSTRUCTION SET 19 APRIL 2019

LEVEL 1 -POWER & LIGHTING PLAN

32

#### EMERGENCY EGRESS CALCS 2.2 fc Average 4.7 fc Maximum 0.2 fc Minimum 23.5:1 10.9:1 Average/Min

+2.2 +2.6 +0.7 +0.9 +1.1 +1.5 +1.8 +1.9 +1.5| +0.2 +0.3 +0.4 +0.5 +0.7 +1.0 +1.3 UPLY +2.0 +2.1 +0.9

1 LEVEL 1 - NEW WORK-EMERGENCY EGRESS PLAN

 1.8
 2.2
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<sup>+</sup>1.4 <sup>+</sup>1.8 <sup>+</sup>2.0

<sup>+</sup>1.4 <sup>+</sup>1.8 <sup>+</sup>2.0

<sup>+</sup>1.4 <sup>+</sup>1.8 <sup>+</sup>2.0

<sup>+</sup>1.3 <sup>+</sup>1.7 <sup>+</sup>1.9

<sup>†</sup>0.9 <sup>†</sup>1.5 <sup>†</sup>1 <sup>+</sup>0.8 <sup>+</sup>1.3 <sup>+</sup>1

<sup>+</sup>2.6 <sup>+</sup>2.6 <sup>†</sup>2.2

<sup>+</sup>2.9 <sup>+</sup>3.2 <sup>+</sup>2.5

<sup>†</sup>3.1 <sup>†</sup>3.5 <sup>†</sup>2.7

<sup>+</sup>3.0 <sup>+</sup>3.3 <sup>+</sup>2.6

<sup>+</sup>2.5 <sup>+</sup>2.6 <sup>†</sup>2.2

<sup>+</sup>3.2 <sup>+</sup>3.6 <sup>†</sup>2.7

†3.0 †2.6 †2.1 †3.1 †3.4 †2.7 **5** 

<sup>+</sup>2.8 <sup>+</sup>2.4 <sup>+</sup>1.9

<sup>+</sup>2.8 <sup>+</sup>2.9 <sup>+</sup>2.6 +2.3\_\_ +2.5 \_\_+2.4

<sup>+</sup>2.5 <sup>+</sup>2.9 <sup>+</sup>2.4

<sup>+</sup>2.6 <sup>+</sup>3.0 <sup>+</sup>2.4

<sup>+</sup>2.8 <sup>+</sup>3.0 <sup>+</sup>2.2

<sup>+</sup>2.8 <sup>+</sup>2.9 <sup>+</sup>2.0

<sup>+</sup>2.8 <sup>+</sup>2.8 <sup>+</sup>1.9

<sup>+</sup>2.8 <sup>+</sup>2.5 <sup>+</sup>1.7

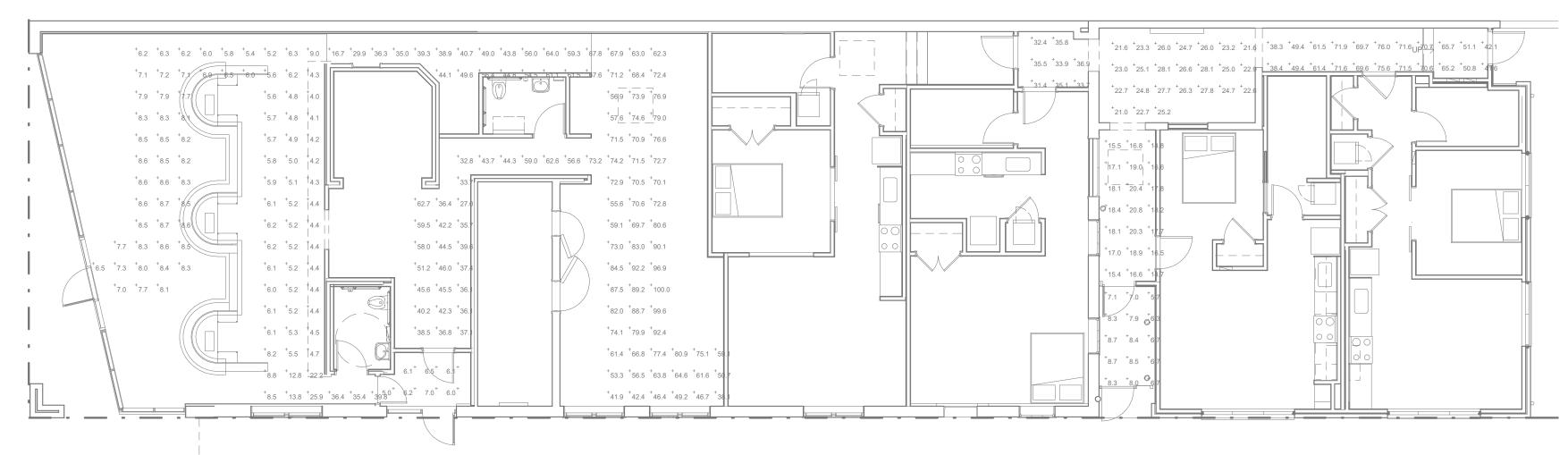
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<sup>+</sup>2.1 <sup>+</sup>2.0 <sup>+</sup>1.6 <sup>+</sup>1.2 <sup>+</sup>0.8

<sup>+</sup>2.0 <sup>+</sup>2.0 <sup>+</sup>1.7 <sup>+</sup>1.2 <sup>+</sup>0.8 <sup>+</sup>

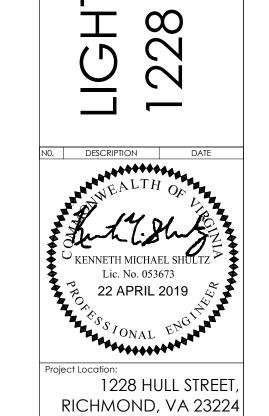
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<sup>+</sup>2.3 <sup>+</sup>0.6 <sup>+</sup>0.5 <sup>+</sup>0.5 <sup>+</sup>0.7 <sup>+</sup>0.8 <sup>+</sup>1.2 <sup>+</sup>1.7 <sup>+</sup>2.0 <sup>+</sup>2.1



NORMAL EGRESS CALCS Average 32.9 fc 100.0 fc Maximum 4.0 fc Minimum 25.0:1 Max/Min 8.2:1 Average/Min

2 LEVEL 1 - NEW WORK-NORMAL EGRESS PLAN



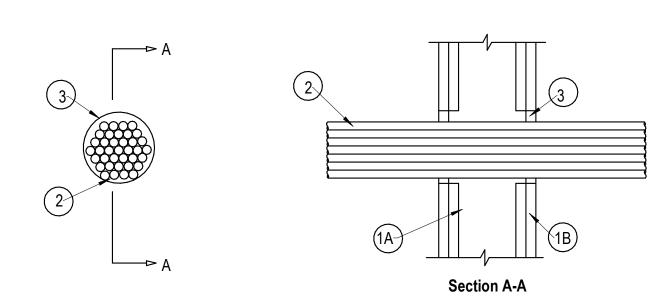
DINER

STREET,

LEVEL 1 -EGRESS PLAN

GRAPHIC SCALE: 1 INCH = 8 FEET

E1.21



1. Wall Assembly - The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs -** Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610

B. **Gypsum Board\* -** Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is

2. Cables - Max 4-1/2 in. diam tight bundle of cables to be installed eccentrically or concentrically within the opening. The annular space between the cables and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 1/2 in. (13 mm). Cable bundle to be rigidly supported on both sides of the floor or wall assembly. The following types and sizes of cables

A. Max 200 pair No. 24 AWG (or smaller) copper conductor with polyvinyl chloride (PVC) insulation and jacketing material. B. Max 1/C No. 350 kcmil (or smaller) copper conductor cable with cross-linked polyethylene (XLPE) jacket. C. Max 7/C No. 12 AWG (or smaller) copper conductor power and control cables with XLPE or PVC insulation with XLPE or PVC jacket.

D. Max 3/C No. 2/0 AWG (or smaller) copper or aluminum conductor SER cables with PVC insulation and jacket. E. Max 3/C No. 2/0 AWG (or smaller) copper conductor PVC jacketed aluminum clad or steel clad TEK cable.

F. Max 110/125 fiber optic (F.O.) cable with PVC insulation and jacket. G. Max 3/C with ground No. 8 AWG (or smaller) copper conductor NM cable (Romex) with PVC insulation and jacket. H. Max RG/U coaxial cable with fluorinated ethylene insulation and jacket.

I. Max 4 pair No. 24 AWG (or smaller) copper conductor data cable with Hylar jacket and insulation. J. Max 4/C (with ground) No. 300 kcmil (or smaller) aluminum conductor SER cables with PVC insulation and jacket. 2A. Through Penetrating Product\* - As an alternate to the cables (Item 2), max 4 in. (102 mm) diam tight bundle of max 4/C

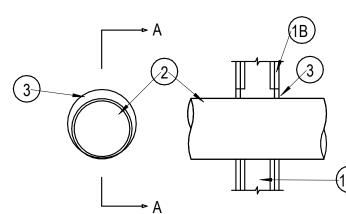
2/0 AWG (or smaller) aluminum or steel Armored Cable+ or Metal Clad Cable+ installed within the opening. Annular space between through-penetrating products and periphery of opening to be min 0 in. (0 mm, point contact) to max 1 in. (25 mm). Through penetrating product rigidly supported on both sides of floor or wall assembly. When Armored Cable or Metal Clad

Cable is used, T Rating is 1/4 hr. AFC CABLE SYSTEMS INC 3. Fill, Void or Cavity Material\* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Sealant to be forced into interstices of cable bundle to max extent possible. At point contact location, min 1/4 in. (6 mm) diam bead of fill material applied at cable bundle/gypsum board interface on both surfaces of wall.

SPECIFIED TECHNOLOGIES INC - SpecSeal LCI Sealant \* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

#### System No. W-L-1042

F Ratings - 1 and 2 Hr (See Item 1) T Ratings - 1/4 Hr



#### **Section A-A**

1. **Wall Assembly -** The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the

A. **Studs -** Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced

the individual Wall and Partition Design. Diam of opening to be 1/2 to 1 in. (13 to 25 mm) larger than outside diam of through penetrant (Item 2). Max diam of opening is 5 in. (128 mm).

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. **Through Penetrant -** One metallic pipe, conduit or tubing installed concentrically or eccentrically within the firestop system. Pipe, conduit or tubing may be installed at an angle not greater than 45 degrees from perpendicular. Pipe, conduit or tube to be rigidly supported on both sides of wall assembly. The annular space between the pipe, conduit or tube and periphery of the opening shall be min 0 in. (point contact) to max 1/2 in. (0 to 13 mm). The following types and sizes of metallic pipes, conduits or tubing may be used:

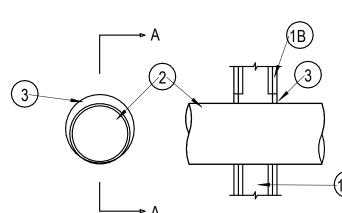
B. Iron Pipe - Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe. C. Conduit - Nom 4 in. (102 mm) diam (or smaller) steel electrical metallic tubing (EMT)

D. Copper Tubing - Nom 4 in. (102 mm) diam (or smaller) Type L (or heavier) copper

E. Copper Pipe - Nom 4 in. (102 mm) diam (or smaller) Regular (or heavier) copper pipe. 3. Fill, Void or Cavity Material\* - Sealant - Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. At the point contact location or when the annulus between the through penetrant and wall is 1/8 in.(3 mm)

SPECIFIED TECHNOLOGIES INC - Type WF300 Caulk Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions

(such as Canada), respectively.



following construction features:

16 in. (406 mm) OC. B. **Gypsum Board\* -** Thickness, type, number of layers and fasteners as specified in

A. Steel Pipe - Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel

or less, min 1/2 in. (13 mm) diam bead of fill material applied at the through penetrant/gypsum board interface.

employing the UL or cUL Certification

GRAPHIC SCALE: 1 INCH = 16 FEET

smbw

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RICHMOND, VA 23230

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2

. DESCRIPTION DATE

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111

RICHMOND, VA 23224

 22 APRIL 2019
 As indicated

 Drawn By
 Checked By

 Author
 Checker

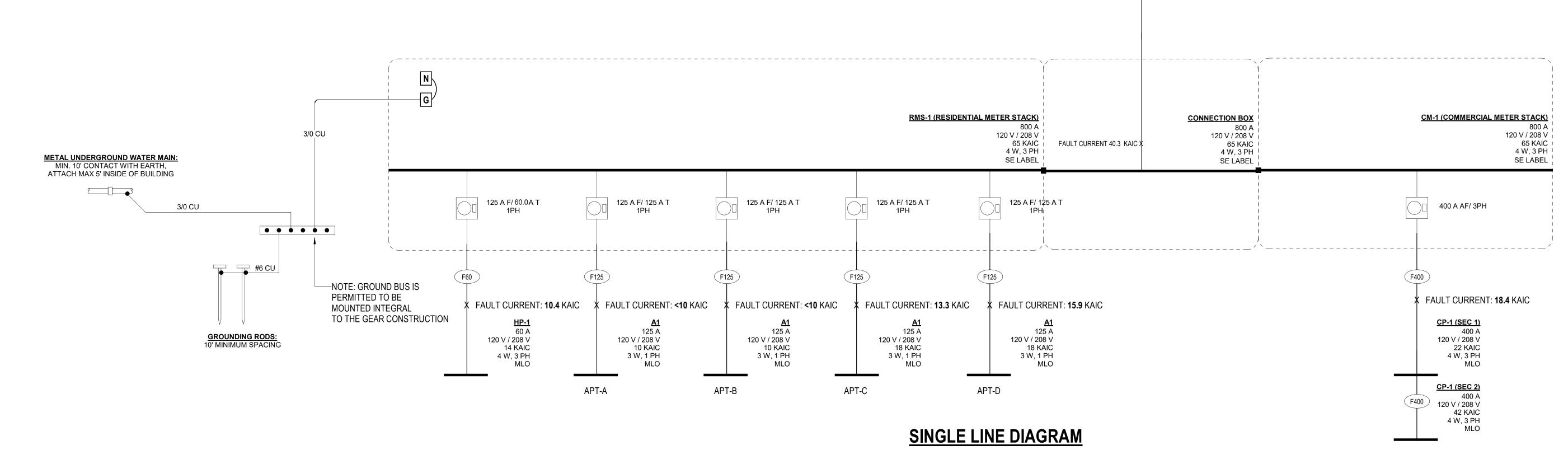
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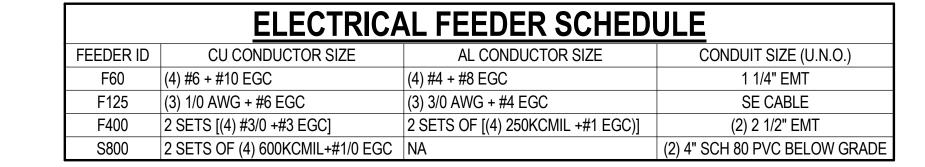
DATE

FIRE PENETRATION DETAILS

	HOUSE LO	<u>DADS</u>			I
				Sq Ft	650
			5 w/Sq. F	t. Rec/Ltg	325
				Heat	10000
		COMMI	ERCIAL T	ENANT 1	140000
			Т	otal Load	150325
			Amps (	(3 Phase)	417.3
			·	,	
BUILDING SERVIO	CE SIZE				
Total Number of Apartments	4.0				
·	Ql	JANTITY (	OF EACH	UNIT TYP	E
Unit #		<u>0</u>	<u>0</u>	<u>0</u>	
	4	0	0	0	
Connected Load for each unit type (kW)	36.4	0.0	0.0	0.0	
Total load Connected by apartment type for this building (kW)	145.4	0.0	0.0	0.0	
Total Connected Apartment Load (kW)	145.4				
Total Connected Rec/Ltg/htg House Load (kW)	10.325				
Demand Factor Based off number of units (NEC table 220.84)	39%				
Demand Load for Dwelling units and house Rec/Ltg/htg (kW)	60.7				
Demand Load for House Loads	150.3				
Total Demand Load for Building	211.1				
·		1			

585.8





#### Annex D: Checklist to Submit to City of Richmond

Project Address: Lighthouse Diner- 1228 Hull St.

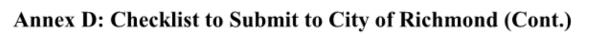
Make sure to check "✓" each box for all applicable items below that relate(s) to the above project. This checklist is required for plan review. Submit either on the plans or as a separate PDF document.

01	✓	02	✓	03	✓	04	✓	05	✓	06	✓	07	✓	08	✓	09	✓	10	<b>✓</b>
11	✓	12	✓	13	✓	14		15		16		17	✓	18	✓	19		20	
21		22		23		24		25		26	<b>✓</b>	27	<b>✓</b>						

Secti	on B-	1: G	enera	l Requ	uirem	ents							
01	✓	02		03		04	05	06	07	08	09	10	
11		12		13									

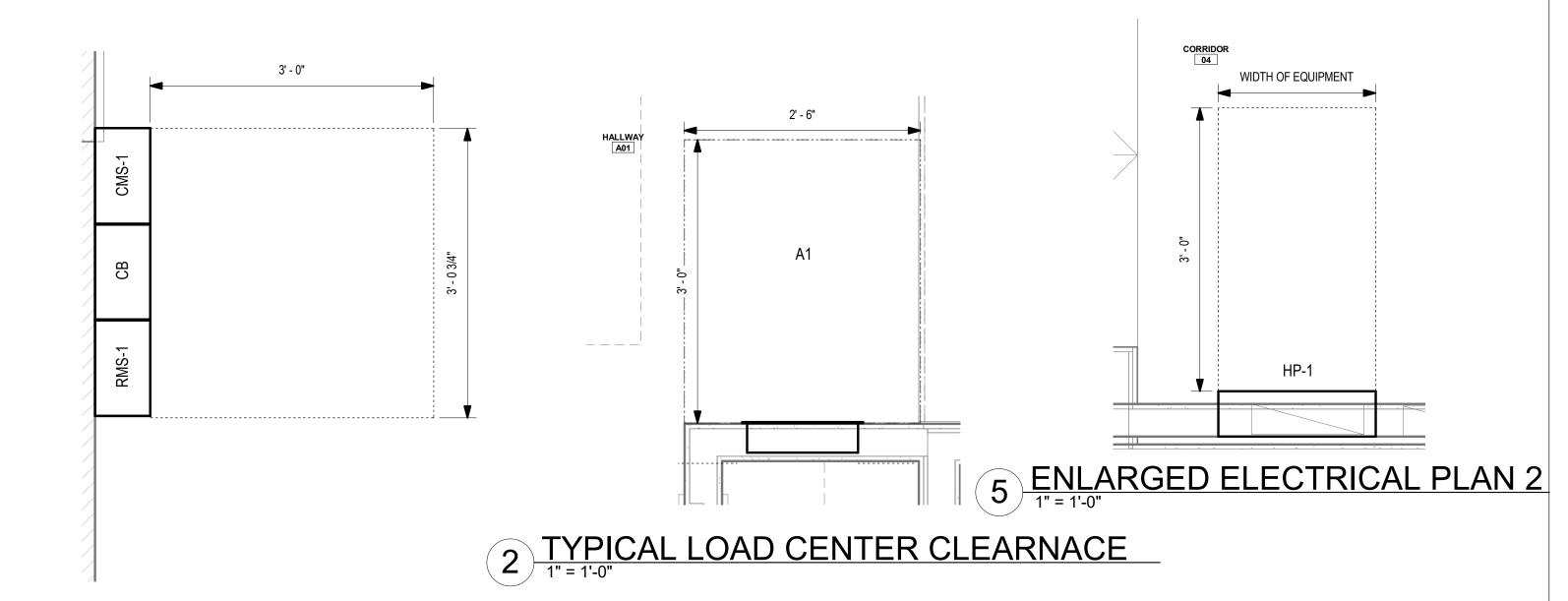
Secti	on B-	2: Co	de Re	equire	ement	ts													
01	✓	02		03		04	<b>✓</b>	05	<b>✓</b>	06	✓	07		08		09	✓	10	
11		12		13		14		15		16		17		18		19	✓	20	<b>✓</b>
21		22	✓	23	✓	24		25	✓	26	✓	27	✓	28	✓	29	✓	30	
31	✓	32		33		34		35	✓	36	✓	37		38		39		40	
41	✓	42	✓	43		44		45		46		47		48	<b>✓</b>	49		50	
51		52		53		54		55		56		57	✓	58	✓	59	✓	60	v
61	✓	62	✓	63	✓	64	✓	65	✓	66	✓	67	✓	68	✓	69	✓	70	
71		72		73		74		75		76		77		78		79		80	
81	✓	82	✓	83	✓	84	✓	85	✓	86		87		88		89		90	
91		92		93															

Page 25 Electrical Plan Requirements - September 04, 2018



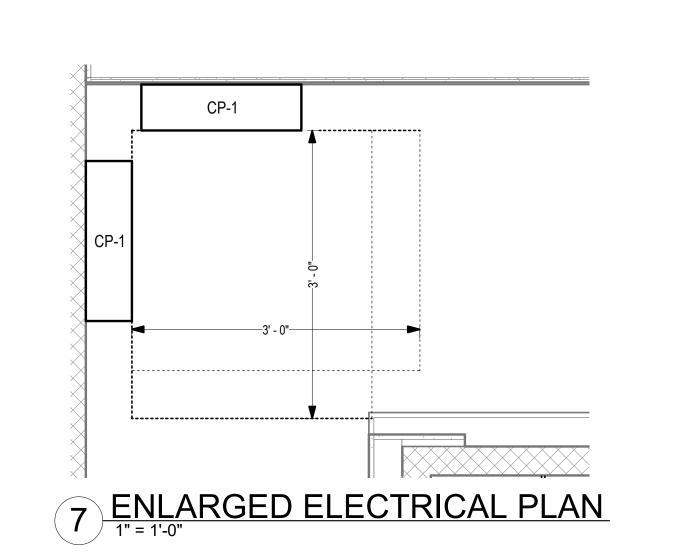
Sectio	n D-	1: Co	ordin	ation	Stud	$\mathbf{y}$												
01		02		03		04		05		06		07		08	09		10	
11		12		13		<u>14</u>		<u>15</u>										
Sectio	n D-	2: Ph	otovo	ltaic	Requ	ireme	ents											
01		02		03		04		05		06		07		08				
							_								-			
~		. ~ .		-														
Sectio	n D-	3: Sei	smic	Requ	irem	ents												
01		02		03														
n 4	E 1	1 . 372.		E	C		4.		1. (371	700	D							
Sectio	n E-	ı: vii	ginia	Enei	rgy C	onser	vatio	n Coc	ie (vi	ecc)	Kequ	uren	ients					_
01	<b>✓</b>	02		03	<b>✓</b>	04	<b>✓</b>	05	<b>✓</b>	06		07		08	09	<b>✓</b>	10	
		12		13		14		15		<u>16</u>		<u>17</u>		18				

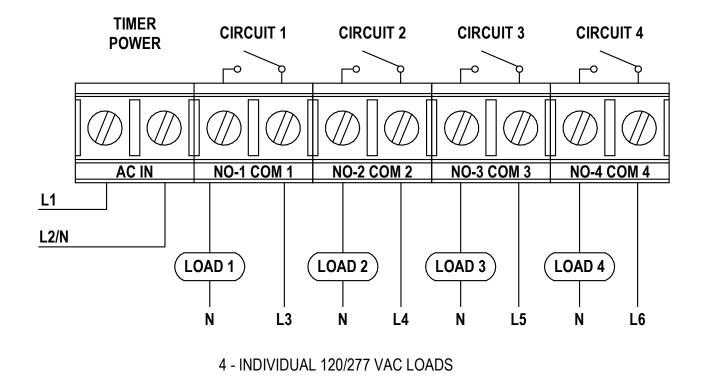
Contractor/Master Electrician Sign-off:	Engineer's Signed/Seal:	
Contractor License #:		
Master License #:		
Print Name:		
Signature:		
Date:		



INCOMING UTILITY **BELOW GRADE** 

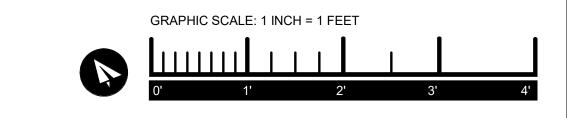
3 ENLARGED SERVICE EQUIPMENT





OUTPUT CONFIGURATION: IND - CIRCUIT 1 AND 2 OUTPUT CONFIGURATION: IND - CIRCUIT 3 AND 4 PROVIDE ONE TIMECLOCK FOR ALL LIGHTING CIRCUITS ON HOUSE PANEL. AND ONE TIMECLOCK FOR ALL LIGHTING CIRCUITS ARE COMMERCIAL PANEL.

#### TIMECLOCK DETAIL - 4 CIRCUIT SPST



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> 232 RICHMOND, DINER STREET, LIGHTHOUSE

1228 HULL STREET,

RICHMOND, VA 23224

22 APRIL 2019 As indicated D. DESCRIPTION DATE

2 CONSTRUCTION SET 19 APRIL 2019

DETAILS & DIAGRAMS

E5.1

# **▲ COM***check* Software Version 4.1.1.0

**Project Information** 2012 IECC Energy Code: Project Title: Lighthouse Diner Project Type: **New Construction** Exterior Lighting Zone 3 (Other)

Construction Site: Owner/Agent: Designer/Contractor: 1228 Hull Street Richmond, VA 23224 **Allowed Exterior Lighting Power** 

Area/Surface Category Watts / Unit Wattage (B X C) ENTRANCE (Main entry) Total Tradable Watts (a) = Total Allowed Watts = Total Allowed Supplemental Watts (b) =

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces. (b) A supplemental allowance equal to 750 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces. Proposed Exterior Lighting Power

Lamps/ # of Fixture (C X D)
Fixture Fixtures Watt. Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast ENTRANCE (Main entry 158 ft of door width): Tradable Wattage DOWNLIGHT: E: DOWNLIGHT: Other: WALL MOUNTED: O: WALL MOUNTED EXTERIOR FIXTURE: Other: Total Tradable Proposed Watts = 204

Exterior Lighting PASSES: Design 96% better than code **Exterior Lighting Compliance Statement** 

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2012 IECC requirements in COMcheck Version 4.1.1.0 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Signature

Report date: 12/07/18 Project Title: Lighthouse Diner

Diner - 1228 Hull St\01 - DESIGN\03 - ELEC\Lighthouse Diner\_ComCheck.cck

Data filename: G:\Dropbox (RoomTrotter)\Dropbox (RoomTrotter)\permitzip\2.1 Projects\18.199 - Lighthouse Page 2 of 7

SIZE 1-#12, 1-#12, 1-#12 2-#10, 1-#10, 1-#10 1-#12, 1-#12, 1-#12	CU	25	P 1 2 1	<b>A</b> (1 0.1 0.4	kVA) 0.4	<b>B (kVA)</b>	C (F	(VA) P	BKR TYP		DESCRIPTION ROOF GFI	# 2 4 6
1-#12, 1-#12, 1-#12 2-#10, 1-#10, 1-#10	CU	20 25	1 2	0.1								2 4
2-#10, 1-#10, 1-#10	CU	25	2		0.4	1.9	1.9	1	20 CU	1-#12, 1-#12, 1-#12	ROOF GFI	4
				0.4		1.9	1.9					
1-#12, 1-#12, 1-#12	CU	20	1	0.4			1.9					0
1-#12, 1-#12, 1-#12		20		0.4								8
												10
												12
												14
												16
												18
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												22
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												26
												28
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												32
												34
												36
												38
												40
		T . 4 - 1		4	\	01)/4	0.1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \				42
			Load: Total		kVA A	2 kVA 17 A		XVA Z A				
		Canna	oto d I a			Jamand Easter	Fatin	noted Demons		Dox	nal Tatala	
				oau	L		ESUI			Pai	ner rotals	
										Total Conn. Loa	ad: 5 kVA	
		- 01	<del> </del>			100.0070		0144 771				
			30	Connected L 468 VA 360 VA 3744 VA	360 VA	468 VA 360 VA	468 VA 125.00% 360 VA 100.00%	468 VA 125.00% 360 VA 100.00%	468 VA 125.00% 585 VA 360 VA 100.00% 360 VA	468 VA 125.00% 585 VA 360 VA 100.00% 360 VA	468 VA       125.00%       585 VA         360 VA       100.00%       360 VA       Total Conn. Local Conn. Local Conn. Local Conn. Local Conn. Co	468 VA     125.00%     585 VA       360 VA     100.00%     360 VA     Total Conn. Load: 5 kVA

	SUPPLY FF MOUNT TOTAL # OF PO	TION: HALLWAY A01 ROM: TING:					VOLTS PHASES WIRES		iingle				A.I.C. RATING: SE MAINS TYPE: MI BUS RATING: 12	٥ـ	
#	DESCRIPTION	SIZE	TYPE	BKR	P	Δ (1	(VA)	B //	kVA)	P	BKR	TYPE	SIZE	DESCRIPTION	#
<del></del>	BEDROOM RCPTS [1]	1-#12, 1-#12, 1-#12	CU	20	1	0.9	0.3	, D (i		1	20	CU	1-#12, 1-#12, 1-#12	LIGHTING	2
3	LIVING ROOM RCPTS [1]	1-#12, 1-#12, 1-#12	CU	20	1	0.0	0.0	0.7	1.5	1	20	CU	1-#12, 1-#12, 1-#12	APPLIANCE CIRCUIT 1 [1]	4
5	MICROWAVE	1-#14, 1-#14, 1-#14	CU	15	1	1.2	4.0								6,8
7	APPLIANCE CIRCUIT 2 [1]	1-#12, 1-#12, 1-#12	CU	20	1			1.5	4.0	2	50	CU	2-#6, 1-#6, 1-#10	RANGE	1,0
9	GARBAGE DISPOSAL [1]	1-#12, 1-#12, 1-#12	CU	20	1	0.9	1.2			1	20	CU	1-#12, 1-#12, 1-#12	DISHWASHER [1]	10
11	REFRIGERATOR [1]	1-#12, 1-#12, 1-#12	CU	20	1			0.4	3.3		40	011	0.110.4.110.4.1140		12,1
13	BATHROOM GFI	1-#12, 1-#12, 1-#12	CU	20	1	0.2	3.3			2	40	CU	2-#8, 1-#8, 1-#10	WASHER-DRYER	
15	WASHER GFI [1]	1-#12, 1-#12, 1-#12	CU	20	1			0.2	0.7	1	20	CU	1-#12, 1-#12, 1-#12	HALLWAY RECEPTS [1]	16
17,19	WATER HEATER	2 410 1 410 1 410	CLI	20	2	2.3	1.6			_	25	CLI	2 440 4 440 4 440	ODU	18,2
	WATER HEATER	2-#10, 1-#10, 1-#10	CU	30	2			2.3	1.6	2	25	CU	2-#10, 1-#10, 1-#10	ODU	
21															22
23															24
25															26
27															28
29															30
31															32
33															34
35															36
37															38
39															40
41															42
	-1			Tota	l Load:	16	kVA	16	kVA			I			
				Total	Amps:	15	1 A	15	4 A	_					
oad C	lassification		Conn	ected L	.oad		Demand Fa	ctor	Estima	ted Der	nand			Panel Totals	
IEC 22	0.82		28	8661 VA	١		60.93%		17	'465 VA					
IVAC			3	3120 VA			100.00%	5	3	120 VA			Total Conn.	Load: 32 kVA	
													Total Est. De	mand: 21 kVA	
													Total Conn. Cu	ırrent: 153 A	
													Total Est. Demand Cu	ırrent: 99 A	
						1						1		I I	

	SUPPLY MOUI TOTAL # OF P	ATION: DINING 11 FROM: NTING: SURFACE					VOLTS: PHASES: WIRES:		Vye					A.I.C. RATING: SEE MAINS TYPE: MLC BUS RATING: 400		
#	DESCRIPTION	SIZE	TYPE	BKR P	A (	kVA)	B (I	kVA)	C (I	kVA)	P	BKR	TYPE	SIZE	DESCRIPTION	#
1	SIGN CIRCUIT	1-#12, 1-#12, 1-#12	CU	20 1	1.2	1.4					1	20	CU	1-#12, 1-#12, 1-#12	COMMERCIAL RCPTS	2
3,5	WATER HEATER	2-#10, 1-#10, 1-#10	CU	30 2			2.3	2.5	2.3	2.5	2	35	CU	2-#8, 1-#8, 1-#10	UH-2	4,6
7	COMMERCIAL LIGHTING	1-#12, 1-#12, 1-#12	CU	20 1	1.5	2.5					_	25	CII	0.40.4.40.4.410	UH-2	8,10
9,11	UH-2	2-#8, 1-#8, 1-#10	CU	35 2			2.5	2.5			2	35	CU	2-#8, 1-#8, 1-#10	UH-2	
	Un-2	2-#6, 1-#6, 1-#10		35 2					2.5	2.5	2	35	CU	2-#8, 1-#8, 1-#10	UH-2	12,14
13						2.5						33		2-#0, 1-#0, 1-#10	UH-2	
15	SPARE			20 1			0.0									16
17	SPARE			20 1					0.0	0.0	1	20			SPARE	18
19	SPARE			20 1	0.0	0.0					1	20			SPARE	20
21	SPARE			20 1			0.0	0.0			1	20			SPARE	22
23	SPARE			20 1					0.0	0.0	1	20			SPARE	24
25	SPARE			20 1	0.0	0.0					1	20			SPARE	26
27	SPARE			20 1			0.0	0.0			1	20			SPARE	28
29	SPARE			20 1					0.0	0.0	1	20			SPARE	30
31	SPARE			20 1	0.0	0.0					1	20			SPARE	32
33	SPARE			20 1			0.0	0.0			1	20			SPARE	34
35	SPARE			20 1					0.0	0.0	1	20			SPARE	36
37	SPARE			20 1	0.0	0.0					1	20			SPARE	38
39	SPARE			20 1			0.0	0.0			1	20			SPARE	40
41	SPARE			20 1					0.0	0.0	1	20			SPARE	42
-				Total Load	: 9	kVA	10	kVA	10	kVA						
				Total	. 7	6 A	82	2 A	82	2 A	_					

						SECTION	2							
#	DESCRIPTION	SIZE	TYPE BKR	Р	A (kVA)	B (kVA)	C (	(VA)	Р	BKR	TYPE	SIZE	DESCRIPTION	#
43														44
45														46
47														48
49														50
51														52
53														54
55														56
57														58
59														60
61														62
63														64
65														66
67														68
69														70
71														72
73														74
75														76
77														78
79														80
81														82
83														84
Load Class	ification			ted Load		Demand Factor	Esti	nated Dei	mand			Pa	anel Totals	
Lighting				5 VA		125.00%		1894 VA						
Other				0 VA		100.00%		5700 VA				Total Conn. Lo		
Receptacle				0 VA		100.00%		1440 VA				Total Est. Dema		
HVAC			200	52 VA		100.00%		20052 VA	١			Total Conn. Curr		
											Т	otal Est. Demand Curr	rent: 81 A	
Notes:														

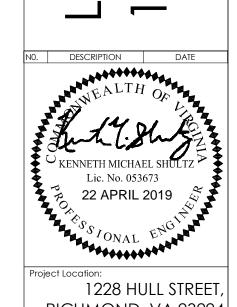
SMBW PLLC 111 VIRGINIA ST. STE RICHMOND, VA 23219 T804.233.5343 F804.233.5345 WWW.SMBW.COM



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> RICHMOND DINER REE

3



RICHMOND, VA 23224 Project No: 18.199

22 APRIL 2019 
 Drawn By
 Checked By

 Author
 Checker

 N0.
 DESCRIPTION
 DATE

PANELBOARD SCHEDULES

E6.01

. EXAMINE AND REVIEW THE CONTRACT DOCUMENTS OF ALL DIVISIONS OF THE SPECIFICATIONS IN ORDER TO COORDINATE THE

USE DIMENSIONED ARCHITECTURAL AND STRUCTURAL CONTRACT DRAWINGS TO VERIFY THE SPACE NECESSARY FOR LOCATING PIPING, DUCTWORK, AND EQUIPMENT. USE FIELD MEASUREMENTS TO VERIFY DIMENSIONS WHERE AREAS ARE CONGESTED, AND EXACT LOCATION IS CRITICAL TO ASSURE PROPER INSTALLATION.

3. COORDINATION SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, VERIFYING THE LOCATION AND SIZE OF OPENINGS IN FLOORS, WALLS, PARTITIONS, CEILINGS, AND ROOFS WITH THE INSTALLING TRADES; ALLOCATION OF SPACE WITH OTHER TRADES INSTALLING WORK IN CHASES, SHAFTS, CEILING INTERSTITIAL SPACES, AND EQUIPMENT SPACES; AND THE PHASING OF INSTALLATION WORK WITH THAT OF OTHER TRADES.

**WORKMANSHIP** 

1. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER THAT PROVIDES A PROFESSIONAL, COMPLETE INSTALLATION. **EQUIPMENT** 

1. CONTRACTOR SHALL INSTALL ALL EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS, THE SPECIFICATIONS, AND APPROVED SHOP DRAWINGS FOR EACH PIECE OF EQUIPMENT.

PROVIDE SERVICE AND OPERATING CLEARANCES AROUND ALL SIDES OF EACH PIECE OF EQUIPMENT IN ACCORDANCE WITH CODE AND THE MANUFACTURER'S PRINTED REQUIREMENTS AND RECOMMENDATIONS.

1. PROVIDE ALL PIPING IN ACCORDANCE WITH THE SPECIFICATIONS; THE PIPING PLANS AND DETAILS; AND THE PIPE INSULATION

2. PIPING SCHEMATICS AND DIAGRAMS SHOW ONLY THE BASIC FLOW PATTERN AND EQUIPMENT ARRANGEMENT, AND DO NOT SHOW ALL TERMINAL EQUIPMENT CONNECTED TO THE SYSTEM. REFER TO THE PLANS AND SECTIONS FOR DETAILED SYSTEM LAYOUT.

3. PROVIDE MANUAL AIR VENTS AT ALL HIGH POINTS IN THE PIPING SYSTEM. PROVIDE 3/4" (20mm) HOSE BIBB TYPE DRAIN VALVES AT ALL LOW POINTS IN THE PIPING SYSTEM TO ASSURE COMPLETE DRAINABILITY OF THE SYSTEM. TERMINATE DRAIN VALVES AND AIR VENTS IN ACCESSIBLE LOCATIONS.

1. DIMENSIONED AND COORDINATED SHOP DRAWINGS INDICATING THE LOCATION AND SIZE OF ALL SLEEVES AND CAST IN PLACE ITEMS NECESSARY FOR ALL WORK REQUIRED SHALL BE FURNISHED TO THE PRE-CAST CONCRETE FABRICATOR BEFORE THE FABRICATION OF THE PRE-CAST CONCRETE WORK.

**PRODUCT SUBMITTALS** 1. WHERE A PRODUCT IS SUBMITTED THAT IS NOT THE BASIS OF DESIGN (WHETHER STATED IN THE DOCUMENTS OR NOT), COORDINATE THE DIFFERENCES IN THE PRODUCT THAT IMPACT OTHER TRADES WITH THE AFFECTED TRADES. THE COST IMPACT ON OTHER TRADES RESULTING FROM A PRODUCT SUBMITTAL THAT IS NOT THE BASIS OF DESIGN SHALL BE INCLUDED IN THE CONTRACTOR'S PRICE AND SHALL NOT BE PASSED ON TO THE

**CORE DRILL** 1. GROUND PENETRATING RADAR SHALL BE PERFORMED PRIOR TO ALL CORE DRILLING TO CONFIRM LOCATIONS OF ALL UNDERGROUND DRAINAGE/PIPING.

1. THE PLUMBING CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE INSTALLATION OF CONDENSATE PIPING FOR HVAC EQUIPMENT. 2. THE PLUMBING CONTRACTOR SHALL INSTALL DRAINS AS SPECIFIED

IN THIS DRAWING SET FOR THE DISPOSAL OF CONDENSATE 3. THE MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDENSATE PIPING ATTACHED TO HVAC EQUIPMENT.

FIRE SPRINKLER 1. CONTRACTOR SHALL INCLUDE BASE BID PROVISIONS FOR A SPRINKLER DRAIN CONNECTION WITH 40' PVC (INCLUDING SAW CUTTING AND BACK FILLING AS REQUIRED) EXTENDING AND CONNECTING INTO THE BUILDING DRAIN SYSTEM. FINAL DRAIN

LOCATION WILL BE PROVIDED ONCE FIRE SPRINKLER SHOP

CODE DATA

DRAWINGS HAVE BEEN SUBMITTED.

**BUILDING CODES AND STANDARDS** ICC/ANSI 117.1-2017 2012 INTERNATIONAL BUILDING CODE

OWNER.

MEP SPECIFIC CODES AND STANDARDS 2012 INTERNATIONAL PLUMBING CODE (IPC)

2012 INTERNATIONAL BUILDING CODE (IBC) 2012 VIRGINIA UNIFORM STATEWIDE BUILDING CODE (VA USBC) 2011 NFPA, NATIONAL ELECTRICAL CODE (NEC) 2010 NFPA 72

220719 - PLUMBING PIPING INSULATION

1.1 INSULATION MATERIALS If retaining more than one type of insulation in this article, indicate where each type applies in

insulation system schedules. A. Products shall not contain asbestos, lead, mercury, or mercury compounds.

B. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871. C. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

D. Foam insulation materials shall not use CFC or HCFC blowing agents in the

E. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials. 1. FOR 1" CPVC, THE INSULATION SHALL BE ARMACELL APT13810 OR **EQUAL.** (1" THICKNESS.)

1.2 ADHESIVES Military Specification in this article was the only standard available when this Section was written. MIL-A-3316C was last updated in October 1987.

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated. Product attributes in first paragraph below are based on Foster Brand products; there are

variations among manufacturers. B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II,

1. ARMAFLEX 520 OR EQUAL. REFER TO MANUFACTURER RECOMMENDATIONS IN ADDITION TO THIS SPECIFICATION GUIDE. 1.3 SECUREMENTS

A. Bands: Wing seals are primarily used for fastening bands together. Closed seals are occasionally used for large, 84-inch- (2130-mm-) diameter applications and where fastening bands are used with springs. Wing seals are reusable; closed seals are not.

1. Stainless Steel: ASTM A 167 or ASTM A 240/A 240M, Type 304; 0.015 inch thick, 1/2 inch wide with wing seal or closed seal. 2. Aluminum: ASTM B 209 (ASTM B 209M), Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.

1.4 GENERAL INSTALLATION REQUIREMENTS A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties. B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of pipe system as specified in insulation system schedules.

accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or D. Install insulation with longitudinal seams at top and bottom of horizontal runs. E. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with

C. Install accessories compatible with insulation materials and suitable for the service. Install

adhesive recommended by insulation material manufacturer. F. Apply adhesives at manufacturer's recommended coverage rate and wet and dry film

G. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its

H. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

I. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches (100 mm) beyond damaged areas. Adhere, staple, and seal

patches similar to butt joints. J. For above-ambient services, do not install insulation to the following:

 Vibration-control devices. 2. Testing agency labels and stamps.

3. Nameplates and data plates. 4. Cleanouts.

1.5 PENETRATIONS

SHEET NUMBER

A. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions. B. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation

continuously through penetrations of fire-rated walls and partitions. . Comply with requirements in Section 078413 "Penetration Firestopping" for

firestopping and fire-resistive joint sealers. Coordinate paragraph below with Drawings.

1.6 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges: 1. Install pipe insulation to outer diameter of pipe flange. 2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.

3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation

4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows: 1. Install mitered sections of pipe insulation.

2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of

air to surface being insulated. D. Insulation Installation on Valves and Pipe Specialties:

1. Install preformed valve covers manufactured of same material as pipe insulation when available.

2. When preformed valve covers are not available, install cut sections of pipe and sheet insulation to valve body. Arrange insulation to permit access to packing and to allow valve operation without disturbing insulation. 3. Install insulation to flanges as specified for flange insulation application.

4. Secure insulation to valves and specialties and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

SHEET NAME

PLUMBING DRAWING INDEX

LEGEND. NOTES. & ABBREVIATIONS

FIRE PENETRATION DETAILS

FIRE PENETRATION DETAILS

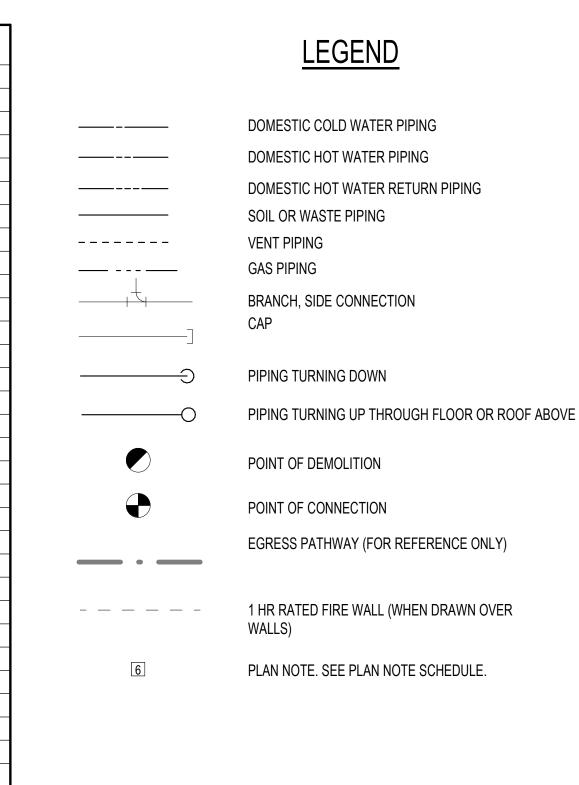
DETAILS & DIAGRAMS

LEVEL 1 - SANITARY & DOMESTIC WATER PLAN

DESCRIPTION
EXISTING
AUTOMATIC AIR VENT
AREA DRAIN
ABOVE FINISHED FLOOR
ABOVE FINISHED GRADE
AIR HANDLING UNIT
ACID NEUTRALIZATION TANK
ACCESS PANEL
APPROXIMATE OR APPROXIMATELY
ARCHITECT OR ARCHITECTURAL
ALL SERVICE JACKET
AUTOMATIC
ACID VENT
ACID WASTE
BELOW FINISHED FLOOR
BELOW FINISHED GRADE
BACKFLOW PREVENTER
BUILDING
DEGREES CELSIUS
CAST-IRON
COMPRESSED AIR
CALIBRATED BALANCING VALVE
CENTERLINE
CEILING
CONCRETE MASONRY UNIT
CLEANOUT
COMBINATION
COMPRESSOR
CONDENSATE
CONNECT OR CONNECTION
COEFFICIENT, VALVE FLOW
COLD WATER
DEGREE
PRESSURE DROP

PLUMBING ABBREVIATIONS

<u>PLUM</u>	BING ABBREVIATIONS
ABBREVIATION	DESCRIPTION
DIA	DIAMETER
DN	DOWN
DWG	DRAWING
EA	EACH
ELEV	ELEVATION
EQUIP	EQUIPMENT
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FLEX	FLEXIBLE
FLEX CONN	FLEXIBLE CONNECTION
GPM	GALLONS PER MINUTE
GW	GREY WATER
H2O	WATER
HB	HOSE BIBB
HW	HOT WATER
HWR	HOT WATER RETURN
Hz	HERTZ
INSUL	INSULATION
MAX	MAXIMUM
MIN	MINIMUM
PRESS	PRESSURE
PVC	POLYVINYL CHLORIDE
QTY	QUANTITY
RAD	RADIUS
REQD	REQUIRED
TEMP	TEMPERATURE
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VENT
VERT	VERTICAL
VTR	VENT THRU ROOF
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WCO	WALL CLEANOUT
WH	WATER HEATER



### TAKE NOTE BEFORE ANY WORK IS STARTED OR **EQUIPMENT IS PURCHASED:**

#### SCHEDULE OF REQUIRED SUBMITTALS

NOTE: DESIGN IS CONTINGENT ON HAVING THE FOLLOWING INFORMATION. IT IS THE RESPONSIBILITY OF THE CLIENT TO ENSURE

THAT THIS INFORMATION IS GATHERED AND SUBMITTED TO THE ENGINEER IN A TIMELY MANNER.

FLOW TEST

A. FLOW TEST SHALL BE COORDINATED BETWEEN DPU OPERATIONS AND THE PERFORMING CONTRACTOR.

B. FLOW TEST SHALL CONFORM TO THE RECOMMENDED METHOD IN NFPA 291. C. ALL FLOW TEST RESULTS SHALL BE DELIVERED TO THE ENGINEER FOR REVIEW PRIOR TO ROUGH IN.

FINISHED FLOOR ELEVATIONS A. A SKETCH SHALL BE SUBMITTED SHOWING THE FINISHED FLOOR ELEVATIONS

PRODUCT DATA

A. THE ENGINEER SHALL BE PROVIDED WITH CUT SHEETS OF THE FOLLOWING ITEMS FOR REVIEW:

a. REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER

b. ALL POINT OF USE BACKFLOW PREVENTERS c. ALL FIXTURES OR EQUIPMENT THAT IS REQUIRED TO HAVE A BACKFLOW PREVENTION METHOD ACCORDING TO THE FIXTURE SCHEDULE

d. THERMOSTATIC MIXING VALVES

e. WATER HAMMER ARRESTERS

f. FLOOR DRAINS AND TRAP PRIMERS

g. WATER HEATERS h. PUMPS OF ANY KIND

SHOP DRAWINGS

A. CONTRACTOR SHALL FIELD VERIFY WITH SCOPE AND SUBMIT FINDINGS TO ENGINEER FOR REVIEW PRIOR TO CORE DRILLING OR TRENCHING. IF THE LOCATION

DIFFERS FROM THE ASSUMPTION IN THIS DRAWING SET, THE DESIGN WILL BE IMPACTED. B. THE FOLLOWING INFORMATION SHALL BE REQUIRED IN A REPORT OF FINDINGS:

a. SEWER INVERT ELEVATION

b. EXACT LOCATION OF EXISTING CONNECTION TO CITY SEWER.

c. LOCATION OF BUILDING DRAIN EXITING THE BUILDING.

d. CONDITION OF SEWER LATERAL ALL THE WAY TO CITY SEWER. e. LOCATIONS AND SIZES OF EXISTING ROOF PENETRATIONS TO BE REUSED FOR VENT PIPING.

#### PROJECT DATA

BUILDING CONSTRUCTION: VB USE GROUP: A-2 & R-2 NOT IN FLOOD PLAIN. TOTAL AREA OF PROJECT: 4.632 SF TOTAL AREA OF BUILDING: 4,632 SF OCCUPANCY LOAD: A2 = 42 PPL, R2 = 17 PPL CHANGE OF USE? N LEVEL OF RENOVATION: **GREATER THAN 50%** ALTERATION LEVEL: LEVEL III

MINIMUM PLUMBING FIXTURES

WATER CLOSETS - A-2 = 1 PER SEX. R-2 = 1 PER DWELLING UNIT LAVATORIES - A-2 = 1 PER SEX. R-2 = 1 PER DWELLING UNIT

DRINKING FOUNTAINS - NA (NO OCCUPANT YET, WILL BE PROVIDED ON FUTURE TENANT DRAWINGS) SERVICE SINK - 1

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KENNETH MICHAEL SHULT Lic. No. 053673 22 APRIL 2019

RICHMOND, VA 23224 22 APRIL 2019 As indicated D. DESCRIPTION DATE

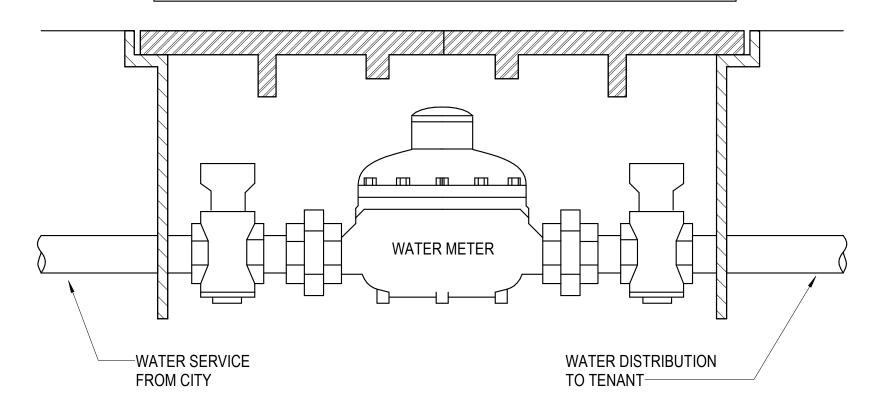
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LEGEND, NOTES, & **ABBREVIATIONS** 

### MINIMUM SIZE OF WATER METERS, MAINS AND DISTRIBUTION PIPING BASED ON WATER SUPPLY FIXTURE UNIT VALUES (w.s.f.u.)

METER AND SERVICE PIPE (INCHES)	DISTRIBUTION PIPE (INCHES)		M	AXIMUN	M DEVE	LOPME	NT LEN	IGTH (F	EET)		
PRESSURE RA	ANGE 30 TO 39 PSI	40	60	80	100	150	200	250	300	400	500
3/4	1/2ª	2.5	2	1.5	1.5	1	1	0.5	0.5	0	0
3/4	3/4	9.5	7.5	6	5.5	4	3.5	3	2.5	2	1.5
3/4	1	32	25	20	16.5	11	9	7.8	6.5	5.5	4.5
1	1	32	32	27	21	13.5	10	8	7	5.5	5
3/4	1 <sup>1/4</sup>	32	32	32	32	30	24	20	17	13	10.5
1	1 1/4	80	80	70	61	45	34	27	22	16	12
1 1/2	1 1/4	80	80	80	75	54	40	31	25	17.5	13
1	1 1/2	87	87	87	87	84	73	64	56	45	36
1 1/2	1 1/2	151	151	151	151	117	92	79	69	54	43
2	1 1/2	151	151	151	151	128	99	83	72	56	45
1	2	87	87	87	87	87	87	87	87	87	86
1 1/2	2	275	275	275	275	258	223	196	174	144	122
2	2	365	365	365	365	318	266	229	201	160	134
2	2 1/2	533	533	533	533	533	495	448	409	353	311

MINIMUM REQUIRED WATER PRESSURE*	57 PSI
TOTAL DEVELOPED LENGTH OF PIPE TO FURTHEST FIXTURE	150 FT.
TOTAL WATER FIXTURE UNITS	97 WSFU
PROPOSED WATER SERVICE PIPE SIZE	1 1/2 IN.
PROPOSED WATER DISTRIBUTION PIPE SIZE	1 1/2 IN.
*NOTE: FLOW TEST IS REQUIRED TO CONFIRM WATER PRESSURE FROM CITY. COI COORDINATE WITH CITY TO PERFORM FLOW TEST AND RESULTS SHALL BE SUBM REVIEW. SEE PRODUCT SUBMITTAL SPECIFICATIONS ON SHEET P1.01. IF ACTUAL DOES NOT REACH MINIMUM REQUIRED PRESSURE AS SHOWN ABOVE, A BOOSTEF REQUIRED.	ITTED TO ENGINEER FOR WATER PRESSURE



#### 2.04 - WATER SERVICE, METER, AND DISTRIBUTION PIPE SIZING DETAIL

		<b>WATER</b>	R HEAT	ER SCH	<b>IEDULE</b>	
TYPE MARK	MAKE/MODEL	TANK SIZE	Wattage	PHASE	VOLTAGE	REMARKS
WH-1	BRADFORD WHITE RE250L6	50 gal	4500 W	1	208 V	BRADFORD WHITE LOW BOY ELECTRIC WATER HEATER.

#### **DOMESTIC WATER PRESSURE LOSS REPORT**

<u> </u>	<u>., O, (</u>
Total FU at Service	97
Total GPM at Service [Table E103.3(3)]	42
Max Fixture Height (ft)	10
MINIMUM DESIGN PRESSURE	60 PSI
METER LOSS	3.6
Highest Pressure Required at a Fixture (Table 604.3)	35
Tap in Main Loss	.91
Static Head Loss (ft*0.43)	4.3
RPZ Loss	11
Pressure Available to Overcome Pipe Friction	5.19

					DEMAND C	ALCULATI	ONS			GPH FOR TANKED WATER HEATER SIZING
					ATER	7.12002/111		DRA	INAGE	
QTY	FIXTURE	COLD	TOTAL COLD	НОТ	TOTAL HOT	TOTAL	TOTAL WSFU	DFU	TOTAL WFU	WHS APARTMEN
2	HOSE BIBB	2.5	5	0	0	2.5	5	0	0	0 gal/h
2			5	I	0		5		0	0 gal/h
4545	.T. 45.17. A									
APAK 1	TMENT A BATHTUB	1	1	1	1	1.1	1.1		2	20 mal/h
<u> </u> 	DISHWASHING MACHINE	0	0	1.4	1.4	1.4	1.4	2	2	20 gal/h 15 gal/h
2	CONNECTION BOX FOR ICE	0.25	0.5	0	0	0.25	0.5	0.5	1	0 gal/h
2	MAKER	0.20	0.5			0.25	0.5	0.5	'	o gai/ii
1	LAVATORY	0.5	0.5	0.5	0.5	0.7	0.7	1	1	2 gal/h
1	KITCHEN SINK	1	1	1	1	1.4	1.4	2	2	10 gal/h
1	WASHER BOX	1	1	1	1	1.4	1.4	2	2	20 gal/h
1	WATER CLOSET	2.2	2.2	0	0	2.2	2.2	3	3	0 gal/h
8			6.2		4.9		9		13	67 gal/h
4 D 4 D	TMENT D									
APAR 1	TMENT B BATHTUB	1	1	1	1	1.4	1.4	2	2	20 gal/h
1	DISHWASHING MACHINE	0	0	1.4	1.4	1.4	1.4	2	2	15 gal/h
<u>'</u>	LAVATORY	0.5	0.5	0.5	0.5	0.7	0.7	1	1	2 gal/h
<u>_</u>	KITCHEN SINK	1	1	1	1	1.4	1.4	2	2	10 gal/h
1	WASHER BOX	1	1	1	1	1.4	1.4	2	2	20 gal/h
1	WATER CLOSET	2.2	2.2	0	0	2.2	2.2	3	3	0 gal/h
6	111111111111111111111111111111111111111		5.7		4.9		8.5		12	67 gal/h
1	BATHTUB DISHWASHING MACHINE	1 0	1 0	1 1.4	1.4	1.4	1.4 1.4	2 2	2 2	20 gal/h 15 gal/h
1	CONNECTION BOX FOR ICE MAKER	0.25	0.25	0	0	0.25	0.25	0.5	0.5	0 gal/h
1	LAVATORY	0.5	0.5	0.5	0.5	0.7	0.7	1	1	2 gal/h
1	KITCHEN SINK	1	1	1	1	1.4	1.4	2	2	10 gal/h
1	WASHER BOX	1	1	1	1	1.4	1.4	2	2	20 gal/h
	WATER CLOSET				· ·					1 3
1	WATER GLOSET	2.2	2.2	0	0	2.2	2.2	3	3	0 gal/h
7	WATER CLOSET	2.2	2.2 5.95	0	0 4.9	2.2	2.2 8.75		3 12.5	
		2.2		0		2.2				0 gal/h
APAR	RTMENT D	2.2	5.95		4.9		8.75	3	12.5	0 gal/h 67 gal/h
	TMENT D BATHTUB		5.95	1	4.9	1.4	8.75 1.4	2	12.5	0 gal/h 67 gal/h 20 gal/h
APAR	RTMENT D	1	5.95		4.9		8.75	3	12.5	0 gal/h 67 gal/h
APAR 1 1	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE	1 0	5.95 1 0	1 1.4	4.9 1 1.4	1.4	8.75 1.4 1.4	2 2	12.5 2 2	0 gal/h 67 gal/h 20 gal/h 15 gal/h
APAR 1 1 1	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER	1 0 0.25	5.95 1 0 0.25	1 1.4 0	4.9 1 1.4 0	1.4 1.4 0.25	1.4 1.4 0.25	2 2 0.5	12.5 2 2 0.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h
APAR 1 1 1	ETMENT D  BATHTUB  DISHWASHING MACHINE  CONNECTION BOX FOR ICE MAKER  LAVATORY  KITCHEN SINK  WASHER BOX	1 0 0.25 0.5 1	5.95 1 0 0.25 0.5 1 1	1 1.4 0 0.5 1	4.9 1 1.4 0 0.5 1 1	1.4 1.4 0.25 0.7 1.4 1.4	1.4 1.4 0.25 0.7 1.4 1.4	2 2 0.5 1 2 2	12.5 2 2 0.5 1 2 2	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h 20 gal/h
APAR 1 1 1 1 1	ETMENT D  BATHTUB  DISHWASHING MACHINE  CONNECTION BOX FOR ICE  MAKER  LAVATORY  KITCHEN SINK	1 0 0.25	5.95 1 0 0.25 0.5 1	1 1.4 0 0.5 1	4.9 1 1.4 0 0.5 1 1 0	1.4 1.4 0.25 0.7 1.4	1.4 1.4 0.25 0.7 1.4	2 2 0.5	12.5 2 2 0.5 1 2 2 3	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h
APAR 1 1 1 1 1	ETMENT D  BATHTUB  DISHWASHING MACHINE  CONNECTION BOX FOR ICE MAKER  LAVATORY  KITCHEN SINK  WASHER BOX	1 0 0.25 0.5 1	5.95 1 0 0.25 0.5 1 1	1 1.4 0 0.5 1	4.9 1 1.4 0 0.5 1 1	1.4 1.4 0.25 0.7 1.4 1.4	1.4 1.4 0.25 0.7 1.4 1.4	2 2 0.5 1 2 2	12.5 2 2 0.5 1 2 2	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h 20 gal/h
APAR 1 1 1 1 1 1 1 7	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER LAVATORY KITCHEN SINK WASHER BOX WATER CLOSET	1 0 0.25 0.5 1	5.95 1 0 0.25 0.5 1 1 2.2	1 1.4 0 0.5 1	4.9 1 1.4 0 0.5 1 1 0	1.4 1.4 0.25 0.7 1.4 1.4	1.4 1.4 0.25 0.7 1.4 1.4 2.2	2 2 0.5 1 2 2	12.5 2 2 0.5 1 2 2 3	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h 20 gal/h 0 gal/h
1 1 1 1 1 1 1 1 7	ETMENT D  BATHTUB  DISHWASHING MACHINE  CONNECTION BOX FOR ICE  MAKER  LAVATORY  KITCHEN SINK  WASHER BOX  WATER CLOSET  MERCIAL SHELL	1 0 0.25 0.5 1 1 2.2	5.95 1 0 0.25 0.5 1 1 2.2 5.95	1 1.4 0 0.5 1 1	4.9 1 1.4 0 0.5 1 1 0 4.9	1.4 1.4 0.25 0.7 1.4 1.4 2.2	8.75  1.4 1.4 0.25  0.7 1.4 1.4 2.2 8.75	2 2 0.5 1 2 2 3	12.5 2 2 0.5 1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h 20 gal/h 0 gal/h 67 gal/h
APAR 1 1 1 1 1 1 1 7	ETMENT D  BATHTUB  DISHWASHING MACHINE  CONNECTION BOX FOR ICE  MAKER  LAVATORY  KITCHEN SINK  WASHER BOX  WATER CLOSET  MERCIAL SHELL  FLOOR DRAIN	1 0 0.25 0.5 1 1 2.2	5.95 1 0 0.25 0.5 1 1 2.2 5.95	1 1.4 0 0.5 1 1 0	4.9 1 1.4 0 0.5 1 1 0 4.9	1.4 1.4 0.25 0.7 1.4 1.4 2.2	8.75  1.4 1.4 0.25  0.7 1.4 1.4 2.2 8.75	2 2 0.5 1 2 2 3	12.5  2 2 0.5  1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 2 gal/h 10 gal/h 20 gal/h 0 gal/h 0 gal/h
APAR 1 1 1 1 1 1 7 COMI 5 1	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER LAVATORY KITCHEN SINK WASHER BOX WATER CLOSET  MERCIAL SHELL FLOOR DRAIN PRESUMED FUTURE LOAD	1 0 0.25 0.5 1 1 2.2	5.95 1 0 0.25 0.5 1 1 2.2 5.95	1 1.4 0 0.5 1 1 0	4.9 1 1.4 0 0.5 1 1 0 4.9	1.4 1.4 0.25 0.7 1.4 1.4 2.2	1.4 1.4 0.25 0.7 1.4 1.4 2.2 8.75	2 2 0.5 1 2 2 3	12.5  2 2 0.5  1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 20 gal/h 20 gal/h 20 gal/h 67 gal/h 0 gal/h 0 gal/h
APAR 1 1 1 1 1 1 7 COMI	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER LAVATORY KITCHEN SINK WASHER BOX WATER CLOSET  MERCIAL SHELL FLOOR DRAIN PRESUMED FUTURE LOAD LAVATORY	1 0 0.25 0.5 1 1 2.2	5.95  1 0 0.25  0.5 1 1 2.2 5.95  0 30 3	1 1.4 0 0.5 1 1 0	4.9 1 1.4 0 0.5 1 1 0 4.9	1.4 1.4 0.25 0.7 1.4 1.4 2.2	8.75  1.4 1.4 0.25  0.7 1.4 1.4 2.2 8.75	2 2 0.5 1 2 2 3	12.5  2 2 0.5  1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 20 gal/h 20 gal/h 0 gal/h 0 gal/h 0 gal/h 67 gal/h 0 gal/h 8 gal/h
APAR 1 1 1 1 1 1 7 COMI 5 1 2 1	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER LAVATORY KITCHEN SINK WASHER BOX WATER CLOSET  MERCIAL SHELL FLOOR DRAIN PRESUMED FUTURE LOAD LAVATORY SERVICE SINK	1 0 0.25 0.5 1 1 2.2	5.95  1 0 0.25  0.5 1 1 2.2 5.95  0 30 3 2.25	1 1.4 0 0.5 1 1 0 20 1.5 2.25	4.9 1 1.4 0 0.5 1 1 0 4.9	1.4 1.4 0.25 0.7 1.4 1.4 2.2	8.75  1.4 1.4 0.25  0.7 1.4 1.4 2.2 8.75  0 30 4 3	2 2 0.5 1 2 2 3	12.5  2 2 0.5  1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 20 gal/h 20 gal/h 0 gal/h 0 gal/h 0 gal/h 0 gal/h 20 gal/h 0 gal/h 20 gal/h 20 gal/h 20 gal/h
APAR 1 1 1 1 1 1 7 COMI 5 1 2	BATHTUB DISHWASHING MACHINE CONNECTION BOX FOR ICE MAKER LAVATORY KITCHEN SINK WASHER BOX WATER CLOSET  MERCIAL SHELL FLOOR DRAIN PRESUMED FUTURE LOAD LAVATORY	1 0 0.25 0.5 1 1 2.2	5.95  1 0 0.25  0.5 1 1 2.2 5.95  0 30 3	1 1.4 0 0.5 1 1 0	4.9 1 1.4 0 0.5 1 1 0 4.9 0 20 3 2.25	1.4 1.4 0.25 0.7 1.4 1.4 2.2	8.75  1.4 1.4 0.25  0.7 1.4 1.4 2.2 8.75	2 2 0.5 1 2 2 3	12.5  2 2 0.5  1 2 2 3 12.5	0 gal/h 67 gal/h 20 gal/h 15 gal/h 0 gal/h 20 gal/h 20 gal/h 0 gal/h 0 gal/h 0 gal/h 67 gal/h 0 gal/h 8 gal/h

			PIPING SYSTEM SCHEDULE	
NOTE: PIPING SHALL A	DHERE TO THIS	SPECIFICATION	ON UNLESS OTHERWISE NOTED IN THE PLANS. CONTRACTOR SHALL PROVIDE SUBMITTALS FOR ANY PIPI	ING WHICH DOES NOT MATCH THIS SPECIFICATION.
PIPING MATERIAL	ABOVE GROUND	BELOW GROUND	JOINT METHOD	STANDARDS AND REMARKS
		<u> </u>		
OOMESTIC WATER	CPVC	CPVC	APPROVED PRIMER AND ORANGE SOLVENT CEMENT CONFORMING TO ASTM F 493.	PIPING SHALL COMPLY WITH ASTM 2846, ASTM F 441, AND ASTM F 442.
SANITARY/VENT	PVC	PVC	PURPLE COLORED PRIMER CONFORMING TO ASTM F 656 SHALL BE APPLIED TO CLEAN, DRY JOINTS. SOLVENT CEMENT SHALL NOT BE PURPLE AND SHALL CONFORM WITH ASTM D 2564,CSA B137.3, CSA B181.2, OR CSA B182.1. JOINT SHALL CONFORM WITH ASTM D 2855.	PIPING SHALL CONFORM WITH ASTM D 2665, ASTM F 891, ASTM F 1488.



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PERMITZIP 3412 W. LEIGH ST RICHMOND, VA 23230 T833.896.9335 WWW.PERMITZIP.COM

LOADS

Project Location: 1228 HULL STREET,

 Date
 Scale

 22 APRIL 2019
 As indicated

 Drawn By
 Checked By

 Author
 Checker

 NO.
 DESCRIPTION
 DATE

P0.02

<sup>1.</sup> ALL WATER PIPING SHALL BE INSULATED IN ACCORDANCE WITH SPECIFICATION ON P0.01.

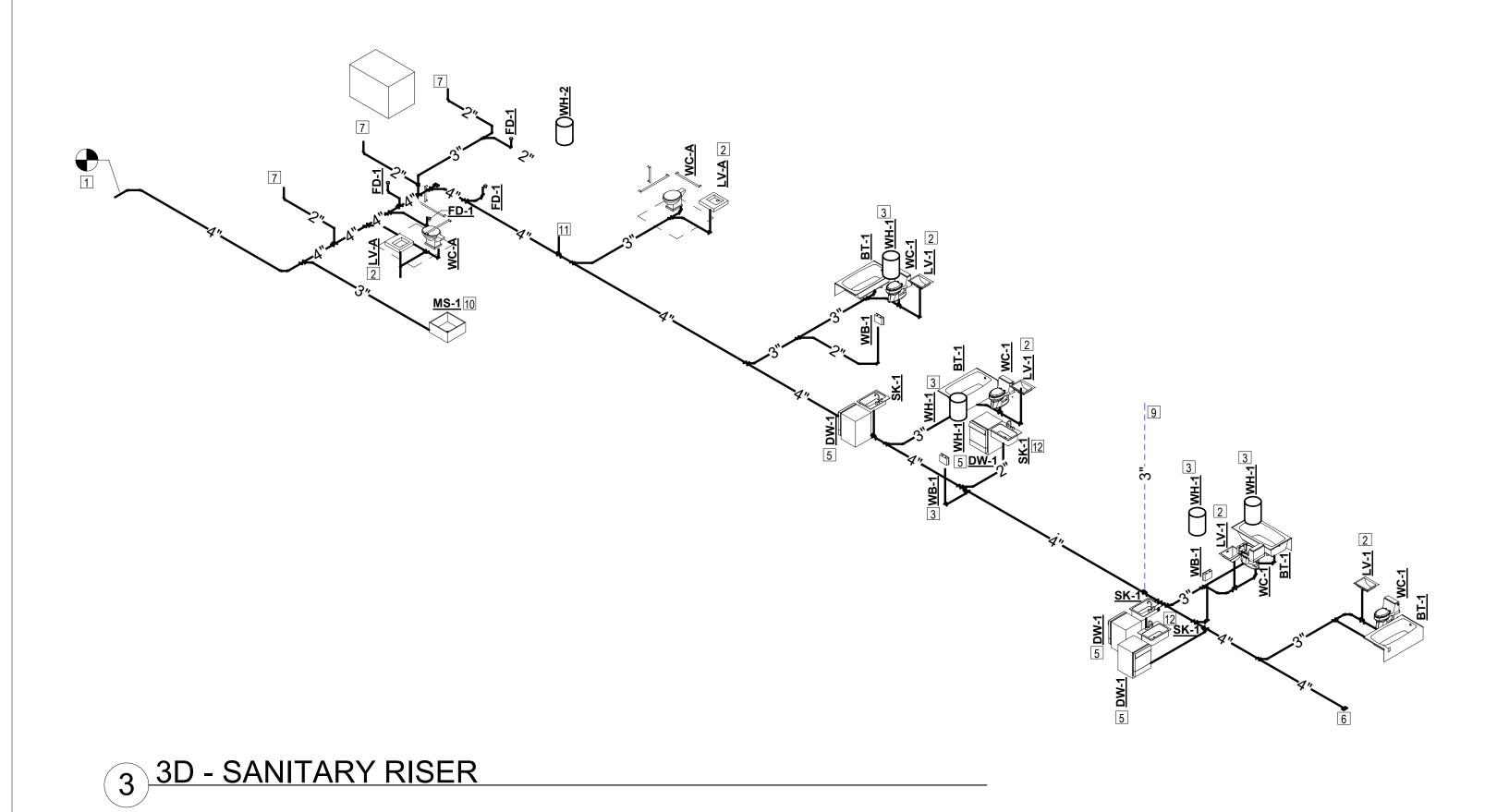
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RICHMOND, VA 23219 T804.233.5343 F804.233.5345 WWW.SMBW.COM

PERMITZIP
3412 W. LEIGH ST
RICHMOND, VA 23230
T833.896.9335
WWW.PERMITZIP.COM

WATER DRA	AFTING LEGEND
WATER PIPES UNDER SLAB:	
DISTRIBUTION WITHIN UNITS (DOWNSTREAM OF SOV):	
MAIN DISTRIBUTION PIPE :	

	PLUMBING PLAN NOTES
Plan Note Number	NOTE
1	SANITARY POINT OF CONNECTION. FIELD COORDINATE EXACT LOCATION WITH PUBLIC UTILITIES PRIOR TO SAW CUTTING. REFER TO SUBMITTAL SCHEDULE.
2	LAVATORIES VENTED WITH AAV. (TYPICAL)
3	WATER HEATER CONDENSATE SHALL DRAIN TO WASHER BOX. WASHER BOX SHALL BE VENTED VIA AAV.(TYPICAL)
4	SHUT OFF VALVE.ALL FIXTURES IN APARTMENT SHALL CONNECT DOWNSTREAM OF SOV. PROVIDE WATER SUBMETER DOWNSTREAM OF THE SHUT OFF VALVE IN EACH RESIDENTIAL UNIT.
5	DISHWASHER SHALL DRAIN TO KITCHEN SINIK. (TYPICAL)
6	FLOOR CLEAN OUT.
7	STUBBED FOR FUTURE USE.
8	BATHROOM FIXTURES SHALL BE WET VENTED VIA AAV AT LAV. (TYPICAL)
9	3" VTR
10	MS-1 SHALL BE VENTED VIA AAV.
11	SANITARY STUBB UP FOR FUTURE CONNECTIONS.
12	KITCHEN SINKS TO BE VENTED WITH AAV (TYP)



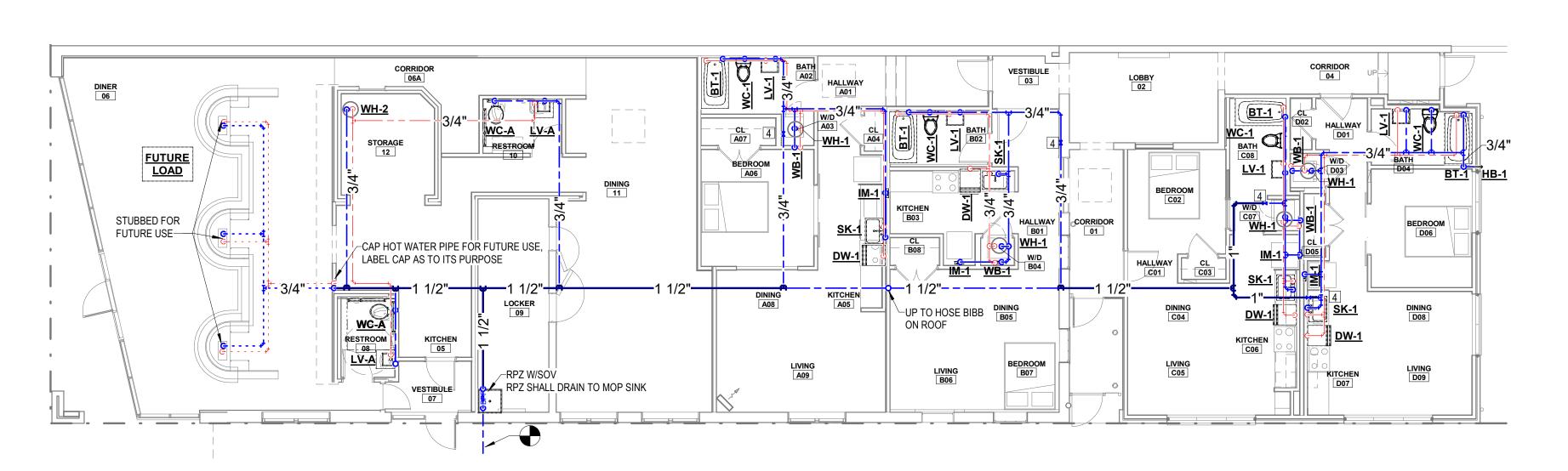
COMMINION BETWEEN STREET OF THE STREET OF TH

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1 LEVEL 1 - NEW WORK-SANITARY PLAN

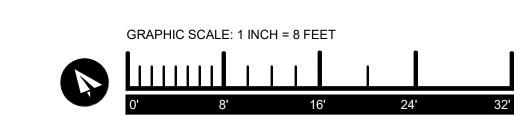
1/8" = 1'-0"

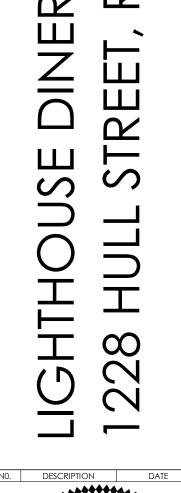




2 LEVEL 1 - NEW WORK-DOMESTIC WATER PLAN

1/8" = 1'-0"





LEVEL 1 -SANITARY & DOMESTIC

Project Location: 1228 HULL STREET, RICHMOND, VA 23224

 Date
 Scale

 22 APRIL 2019
 As indicated

 Drawn By
 Checked By

 Author
 Checker

 NO.
 DESCRIPTION
 DATE

P1.1

WATER PLAN

System No. W-L-2170

February 05, 2014

F Ratings — 1 and 2 Hr (See Item 2)

T Ratings — 0 and 1 Hr (See Item 2)

L Rating at Ambient - Less than 1 CFM/sq ft L Rating at 400° F - Less than 1 CFM/sq ft

#### SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described in the individual U300, U400, V400 or W400 Series Wall and Partition Design in the UL Fire Resistance Directory and shall include the following construction features:

> A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-5/8 in. (92 mm) wide and spaced max 24 in. (610 mm). OC.

> B. Gypsum Board\* — 5/8 in. (16 mm) thick, 4 ft (1.2 m) wide with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Design in the UL Fire Resistance Directory. Max diam of

The hourly F and T Ratings of the firestop system are dependent on the hourly fire rating of the wall and type and diam of through penetrant as shown in Item 2.

2. Nonmetallic Pipe — One nonmetallic pipe or conduit to be installed either concentrically or eccentrically within the firestop system. The annular space between the through penetrant and the periphery of the opening is dependent upon the diam of through penetrant. If the nom diam of the through penetrant is 1-1/2 in. (38 mm) or less, the annular space shall be a min 3/8 in. (10 mm) to max 1-1/8 in. (29 mm). If the nom diam of the through penetrant is greater than 1-1/2 in. (38 mm), the annular space shall be a min 5/8 in. (16 mm) to max 1 in. (25 mm). Pipe, conduit or tubing to be rigidly supported on both sides of wall assembly. The following types of nonmetallic pipes, conduits or tubing may be used:

A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (52 mm) diam (or smaller) Schedule 40 solid or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent)

B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (52 mm) diam (or smaller) SDR 1713.5 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping

C. Rigid Nonmetallic Conduit+ - Nom 2 in. diam (or smaller) Schedule 40 PVC conduit

installed in accordance with the National Electrical Code, (NFPA No. 70). D. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 1-1/2 in. (38 mm) diam Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or

E. Electrical Nonmetallic Tubing (ENT)+ — Nom 1-1/2 in. (38 mm) diam (or smaller) PVC tubing installed in accordance with the National Electrical Code, (NFPA No. 7 F. Cross Linked Polyethylene (PEX) Tubing — Nom 1-1/2 in. (38 mm) diam (or smaller) SDR

9 cross linked polyethylene (PEX) tubing for use in closed (process or supply) piping systems. The hourly F and T Ratings of the firestop system are dependent on the hourly fire rating of the wall and type and max diam of through penetrant as tabulated below:

Rating of Wall, Hr	Type of Through Penetrant	Max Diam of Through Penetrant, In. (mm)	F Rating Hr	T Rating Hr
2	PVC Pipe, CPVC Pipe or PVC Conduit		2	1
2	PVC ENT	1-1/2 (38)	2	1
2	ABS Pipe or PEX Tubing	1-1/2 (38)	2	0
1	PVC Pipe, CPVC Pipe or PVC Conduit	2 (51)		0
1	PVC ENT, ABS Pipe or PEX Tubing	1-1/2 (38)	1	0

3. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus. flush with both surfaces of wall. Additional fill material to be installed such that a min 1/4 in. (6 mm) thick crown is formed around

RECTORSEAL — FlameSafe FS1900, FS1901, FS1905, FS1929, Metacaulk 1000, Metacaulk 350i, Biostop 350i or Biostop 500+

\*Bearing the UL Classification Marking +Bearing the UL Listing Mark

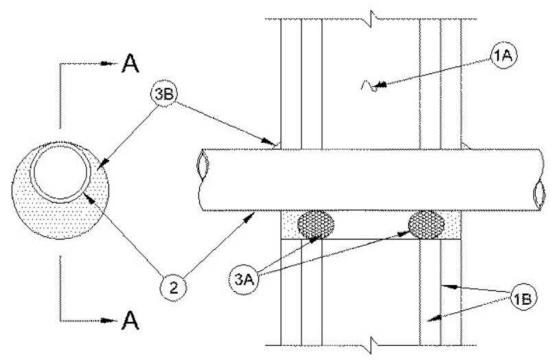
piping systems.

2" PVC/2" CPVC/1.5" PEX PENETRATION THRU GYPSUM

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System No. W-L-2457

F Ratings — 1 and 2 Hr (See Item 1) T Ratings - 1 and 2 Hr (See Item 1)



SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. OC (406 mm). Steel studs to

be min 2-1/2 in. (64 mm) wide and spaced max 24 in. OC (610 mm). B. Gypsum Board\* — The gypsum board type, thickness, number of layers and orientation shall be, as specified in the individual Wall and Partition Design. Max diam of opening is 3-5/8

The hourly F and T Ratings of the firestop system are equal to the hourly fire rating of the wall assembly. 2. Nonmetallic Pipe — One non-metallic pipe or tubing to be installed concentrically or eccentrically within the firestop

system. The annular space shall be min 0 (point contact) to max 1-1/4 in. (32 mm). Pipe to be rigidly supported on both

sides of wall assembly. The following types and sizes of non-metallic pipes may be used: A. Polyvinyl Chloride (PVC) Pipe - Nom 2 in. (51 mm) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or

> B. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping systems.

C. Electrical Non-Metallic Tubing (ENT) — Nom 2 in. (51 mm) diam (or smaller) PVC tubing installed in accordance with the National Electrical Code (NFPA 70). D. Cross Linked Polyethylene (PEX) Tubing — Nom 2 in. (51 mm) diam (or smaller) PVC

tubing installed in accordance with the National Electrical Code (NFPA 70). 3. Firestop System — The firestop system shall consist of the following:

A. Packing Material — For 2 hr wall assemblies, foam backer rod firmly packed into opening as a permanent form. Packing material to be recessed from each surface of the wall to accommodate the required thickness of fill material.

B. Fill Void or Cavity Materials\* — Caulk — Min 5/8 in. (16 mm) thickness of fill material bead of caulk shall be applied to the pipe/gypsum board interface at the point contact location RECTORSEAL — Metacaulk 350i

\*Bearing the UL Classification Mark

#### 2" PVC/CPVC/PEX PENETRATION THRU GYPSUM

FIRE-RATED WASHING MACHINE OUTLET BOX >> 696R SERIES SPECIFICATION Sioux Chief 696R series OxBox fire-rated double hose bibb outlet connection outlet boxes shall be used where necessary in plumbing supply/drainage systems. Unit shall allow for mounting with supply lines from top or bottom while straddling the stud. Unit shall be available with plain valves or valves with water hammer arresters. Arresters shall be certified to ASSE 1010 and shall be UPC listed. Metal support bracket shall install into top tracks of boxes for added support. Metal clip shall be installed on side slots of boxes in desired configuration. Drain box shall have a %" integral testable nipple on knockout. Outlet connections shall be

MATERIALS Outlet box: ABS Frame: fire-rated ABS Frame extension\*: fire-rated ABS Bracket: galvanized steel Box clip: galvanized stee Arrester clip/valve platform: ABS Arrester body: stainless steel Arrester piston: polypropylene with two EPDM o-rings Piston lubrication: Dow-Corning, 111 FDA approved silicone compound

Valve body: chrome-plated forged brass 696-EX available separately. Used with two layers of drywall for 2-hour specifications VALVE/ARRESTER WORKING LIMITS Max working temperature: 250°F Max working/testing water pressure: 250 PSIG DIMENSIONS

A: frame width B: frame height C: frame opening width D: frame opening heigh E: rough-in box width F: rough-in box depth G: rough-in box height 1/2" nominal or 2" O.C. H: supply connection I: drain connection 2" hub DWV 3/4" male hose thread J: outlet connection K: test nipple L: secondary drainage knockout† accepts 1/2", 3/4" or 1" pipe

4" (single box) or 10" (double with clip) N: bracket width

isted by Warnock Hersey to meet: ASTM E-814, CAN/ULC S115 2 hours (F), 1½ hours (T) for 2-hour design 1 hour (F), 31 minutes (T) for 1-hour design ASTM E-119, UL 1479 System design number: SC/WA120 , W/N 14409 Valves meet ASME A112.18.1 696A23B3CF

e.g. 696R2313MF: fire-rated washing machine outlet box, MIP/female sweat valves with arresters, VALVES A SUPPLY CONNECTION B R = plain valves 696-EX = frame extension M = ½" female sweat RG = no lead valves¹ C = 1/2" male CPVC 696-CF = secondary drain funnel X = 3/2" PEX Crimp F1807 ARRESTER B ■ W = ½" PEX Grip F1960 0 = no arrester ■ V = ½" Viega PureFlow® PEX 1 = with arrester A = 1/2" PEX Lock F2080 Sioux Chief Manufacturing Company | P: 1.800.821.3944 | F: 1.800.758.5950 | www.siouxchief.com 4-14

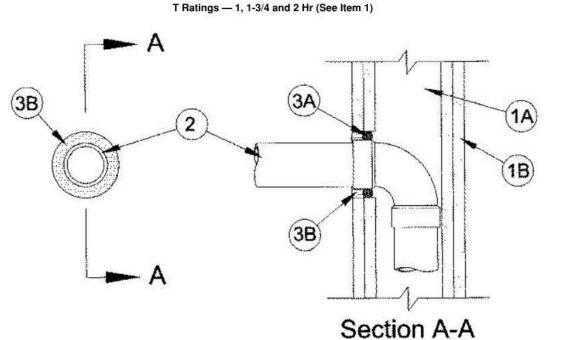
CERTIFICATIONS/APPROVALS Listed by UPC/IAPMO to meet UPC Conforms to IPC

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System No. W-L-2201

April 16, 2004

F Ratings — 1 and 2 Hr (See Item 1)



1. Wall Assembly — The 1 or 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

> A. Studs — Wall framing shall consist of wood studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC.

B. Gypsum Board\* — Min 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers and orientation shall be as specified in the individual U300 Wall and Partition Design. Max diam of opening is 3-5/8 in.

The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed. The hourly T Rating of the firestop system is 1 when installed in 1 hr rated walls. The hourly T Rating of the firestop system when installed in 2 hr rated walls is dependent upon which side of the wall is exposed to the fire. If the side opposite the pipe is exposed, the T Rating is 1-3/4 hr. If the side containing the pipe is exposed, the T Rating is 2 hr.

2. Through Penetrants — One nonmetallic pipe installed within stud cavity and connected to a 45° or 90° elbow. Additional nonmetallic pipe connected to elbow and penetrates one side of wall concentrically within the opening. The annular space between nonmetallic pipe and periphery of opening shall be nom 5/8 in. The penetrant may be installed at an angle not greater than 45 degrees from perpendicular. Pipe to be rigidly supported within wall and on penetrated side of wall assembly. The following types and sizes of nonmetallic pipes may be used:

> A. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping

B. Acrylonitrile Butadiene Styrene (ABS) Pipe — Nom 2 in. diam (or smaller) Schedule 40 cellular or solid core ABS pipe for use in closed (process or supply) or vented (drain, waste or

C. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. diam (or smaller) SDR17 CPVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. 3. Firestop System — The firestop system shall consist of the following:

> A. Packing Material — For penetrants positioned perpendicular to the wall surface, in 2 hr rated wall assemblies, foam backer rod firmly packed into opening as a permanent form. Packing material to be recessed from surface of wall as required to accommodate the required

> B. Fill, Void or Cavity Material\*—Caulk — For penetrants positioned perpendicular to the wall surface, min 1/2 in. thickness of fill material applied within the annulus, flush with surface of wall. For penetrants positioned at an angle to the wall surface, the fill material shall be applied within the annulus, flush with the surface of the wall to the full thickness of the gypsum board. RECTORSEAL — Metacaulk 1000

\*Bearing the UL Classification Mark

#### PVC SINGLE MEMBRANE **PENETRATION THRU GYPSUM**

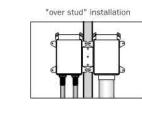
FIRE-RATED OXBOX >> DESIGN SPECIFICATION

1 WALL CONSTRUCTION a Wood or metal stud construction, max 100 in.2 of penetrations per 100 ft2 of wall b Single-layer %" gypsum construction with 1-hour fire rating c Double-layer %" gypsum construction with 2-hour fire rating d Boxes cannot be installed back to back

2 PIPE/BOX SUPPORT a Fach outlet box must be installed in a separate stud bay and attached to the stud, as shown below in "over-stud" or "separate stud bay" installation examples. Fire rating b Supplied support bar to be installed through at least one box's slotted opening c Supply lines to be installed using ordinary methods d Drain line to be supported using ordinary methods

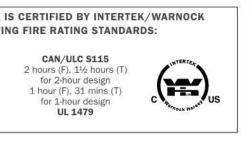
3 PIPE MATERIAL a 2" or larger metallic, PVC, or ABS DWV pipe b Metallic or plastic water supply pipe

**4 FIRESTOP DEVICE** a Sioux Chief fire-rated OxBox frame and frame extension are constructed using fire-rated resin. Boxes have 4" × 4" intumescent adhesive pads factory installed on NOTE: Gaps up to  $^4$ /s" around box can be sealed with drywall plaster. Larger gaps require firestop sealant applied to opening spanning entire drywall depth

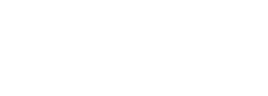


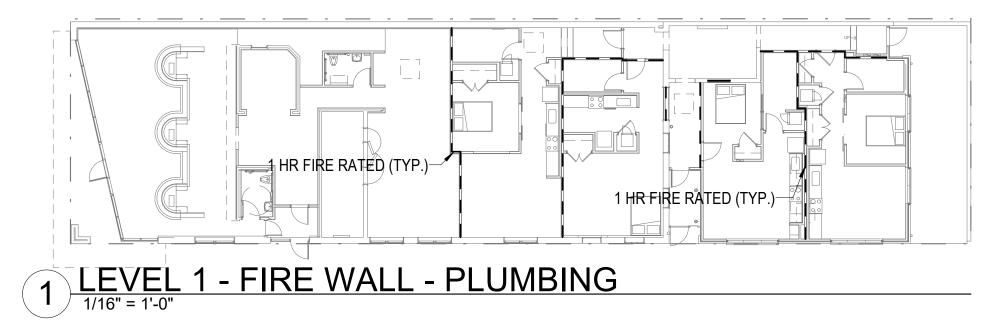
THE FIRE-RATED OX BOX IS CERTIFIED BY INTERTEK/WARNOCK





Sioux Chief Manufacturing Company | P: 1.800.821.3944 | F: 1.800.758.5950 | www.siouxchief.com 4-14

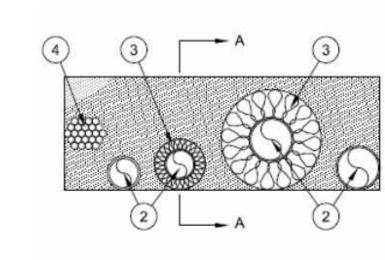


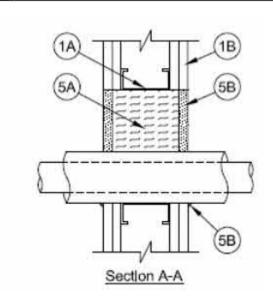


#### System No. W-L-8102

June 20, 2017

ANSI/UL1479 (ASTM E814)	CAN/ULC S115	
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)	
T Rating —0 Hr	FT Rating — 0 Hr	
	FH Rating — 1 and 2 Hr (See Item 1)	
	FTH Rating — 0 Hr	





1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction A. Studs — Wall framing may consist of either wood studs or channel shaped steel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC. Additional framing members shall be installed in stud cavity containing through-penetrating item to form a rectangular box around the penetrants. B. Gypsum Board\* — 5/8 in. (16 mm) thick with square or tapered edges. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300, U400, V400 or W400 Wall and Partition Design. If the through penetrants are installed in a wood stud/gypsum board assembly, the max area of opening is 116 in.2 (748 cm2). with max dimension of 14-1/2 in. (368 mm). If the through penetrants are installed in a steel stud/gypsum board assembly, max area of opening is 182 in2. (1174 cm2) with max dimension of 22-3/4 in. (578 mm) wide. The hourly F Rating of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

2. Through-Penetrant — One or more pipes, conduit or tubes to be installed within the opening. The total number of through-penetrants is dependent on the size of the opening and the types and sizes of the penetrants. Any combination of the penetrants described below may be used provided that the following parameters relative to the annular spaces and the spacing between the through penetrants are maintained. The separation between the penetrants shall be min 1 in. (25 mm) to max 22 in. (560 mm). The annular space between penetrants and the periphery of opening shall be min 0 in. (0 mm, point contact) to max 22 in. (560 mm). Pipes, conduit or tubes to be rigidly supported on both sides of wall assembly. The following types and sizes of pipes, conduit or tubes may be

A. Copper Tubing — Nom 3 in. (76 mm) diam (or smaller) Type L (or heavier) copper tube. B. Copper Pipe — Nom 3 in. (76 mm) diam (or smaller) Regular (or heavier) copper pipe. C. Steel Pipe — Nom 3 in. (76 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe. D. Iron Pipe — Nom 3 in. (76 mm) diam (or smaller) cast or ductile iron pipe.

FIRE RATED ASSEMBLIES NOTES

ONE HOUR RATED WALLS -

TWO HOUR RATED WALLS -

FLOOR CEILINGS ARE ONE HOUR RATED.

E. Conduit — Nom 3 in. (76 mm) diam (or smaller) electric metallic tubing (EMT) or rigid steel conduit. F. Polyvinyl Chloride (PVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 cellular or solid core PVC pipe for use in closed (process or supply) or vented (drain, waste, or vent) piping systems. G. Chlorinated Polyvinyl Chloride (CPVC) Pipe — Nom 2 in. (51 mm) diam (or smaller) SDR 13.5 CPVC pipe for use in closed (process or supply) piping

H. Rigid Nonmetallic Conduit (RNC)+ — Nom 2 in. (51 mm) diam (or smaller) Schedule 40 PVC conduit installed in accordance with the National Electrical Code I. Cross Linked Polyethylene Tubing — Nom 1 in. (25 mm) diam (or smaller) cross-linked polyethylene tubing for use in closed (process or supply) piping 3. Pipe Insulation — One or more metallic penetrants (pipe or tubing) may be insulated with the following types of pipe coverings. The annular space between the insulated penetrants and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 5 in. (127 mm). The separation between the insulated penetrants and the other penetrants shall be a min 1 in. (25 mm) to max 22 in. (560 mm): A. Pipe Covering\* — Min 1 in. (25 mm) to max 2 in. (51 mm) thick hollow cylindrical heavy density min 3.5 pcf (56 kg/m3) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with the product. See Pipe and Equipment Covering - Materials (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less

B. Tube Insulation-Plastics+ — Min 1/2 in. (13 mm) to max 3/4 in. (19 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in See Plastics+ (QMFZ2) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL 94 Flammability Classification of 94-5VA may be used.

C. Pipe Covering Materials\* — Min 1 in. (25 mm) to max 2 in. (51 mm) thick unfaced mineral fiber pipe insulation having a nom density of 3.5 pcf (56 kg/m3) or heavier and sized to fit the outside diam of pipe or tube. Pipe insulation secured with min 18 SWG steel wire spaced 12 in. (305 mm) OC. INDUSTRIAL INSULATION GROUP L L C — High Temperature Pipe Insulation 1200, High Temperature Pipe Insulation BWT and High Temperature Pipe Insulation Thermaloc

C1. Sheathing Material — (Not shown) — Optional, used in conjunction with Item 3C. Foil-scrim-kraft or all service jacket material shall be wrapped around the outer circumference of the pipe covering material (Item 3B) with the kraft side exposed. Longitudinal joints sealed with metal fasteners. See Sheathing Materials (BVDV) category in the Building Materials Directory for names of manufacturers. Any sheathing material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread value of 25 or less and a Smoke Developed value of 50 or less may be used.

D. Pipe Covering Materials\* — Cellular Glass Insulation — Nom 1-1/2 to 3 in. (38 to 76 mm) thick cellular glass units sized to the outside diam of the steel pipe and supplied in nom 24 in. (610 mm) long half sections or nom 18 in. (457 mm) long segments. Pipe insulation installed on pipe in accordance with the manufacturer's instructions. PITTSBURGH CORNING CORP — FOAMGLAS

E. Pipe Insulation - Foamed Plastic\* — Nom 1 in. (25 mm) thick polyisocyanurate foamed plastic units jacketed with an all service jacket. Longitudinal joints sealed with self-sealing lap tape. Transverse joints secured with butt tape. Nom 1/2 (13 mm) wide stainless steel band clamp to be secured around pipe insulation 1 in. (25 mm) from both surfaces of wall. See Foamed Plastic (BRYX) category in the Building Materials Directory for names of manufacturers. Any foamed plastic pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less may be used.

between the tightly-bundled cables and the periphery of the opening shall be min 0 in. (0 mm, point contact) to max 5 in. (127 mm). The separation between the cable bundle and the other penetrants shall be min 1 in. (25 mm) to max 22 in. (560 mm). Any combination of the following types and sizes of cables may be A. Max 25 pair No. 24 AWG telephone cable with polyvinyl chloride (PVC) insulation and jacket.

4. Cables — One max 4 in. (102 mm) diam bundle of cables installed within the opening and rigidly supported on both surfaces of wall. The annular space

B. Max 7/C No. 12 AWG copper conductor power and control cable with PVC or cross-linked polyethylene (XLPE) insulation and PVC jacket. C. Multiple fiber optical communication cable jacketed with PVC and having a max outside diam of 1/2 in. (13 mm). D. Max 3/C No. 8 AWG with bare aluminum ground, PVC insulated steel Metal-Clad+ Cable currently Classified under the Through Penetrating Product\* (XHLY)

E. Max 3/C (with ground) No. 12 AWG (or smaller) nonmetallic sheathed (Romex) cable with PVC insulation and jacket materials. F. RG/U coaxial cable with polyethylene (PE) insulation and polyvinyl chloride (PVC) jacket having a max outside diam of 1/2 in. (13 mm). 5. Firestop System — The firestop system shall consist of the following:

A. Packing Material — In 2 hr fire rated wall assemblies, min 4-3/4 in. (121 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. In 1 hr fire rated wall assemblies, min 3-1/2 in. (89 mm) thickness of min 4 pcf (64 kg/m3) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material recessed from both surfaces of the wall to accommodate the required thickness of fill material. B. Fill, Void or Cavity Material\* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall. At the point contact location between through penetrants and gypsum board, a min 1/4 in. (6 mm) diam bead of fill material shall be applied at the gypsum board/through penetrant interface on both surfaces of wall. 3M COMPANY 3M FIRE PROTECTION PRODUCTS — CP 25WB+ caulk or FB-3000 WT sealant.

GRAPHIC SCALE: 1 INCH = 16 FEET

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3  $\Delta$ 

DESCRIPTION Lic. No. 053673 22 APRIL 2019 1228 HULL STREET, RICHMOND, VA 23224

> 22 APRIL 2019 As indicated ). DESCRIPTION DATE

FIRE PENETRATION DETAILS

#### PEX THROUGH SINGLE MEMBRANE

THIS DESIGN REPRESENTS A FIRESTOP SYSTEM EXPECTED TO PASS THE STATED RATINGS IF TESTED

Permitzip

Date: 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 Based on testing to ASTM E814/UL 1479: Standard for Fire 11/28/2018 PAGE 1 OF 1 PAGE 1

Project: 18.153 - 1400 Semmes Ave.

Project Address: Richmond, VA 23224

Designed by: Clay Hensley

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System No. W-L-1444

September 25, 2008

SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum board/stud shaft wall assembly shall be constructed of the materials and in the manner specified in the individual U400 or V400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:

A. Steel Studs — "C-H", "C-T" or "I" shaped studs, min 2-1/2 in. (64 mm) wide by 1-1/2 in. (32 mm) deep, fabricated from min No. 25 gauge galv steel, spaced max 24 in. (610 mm). OC.
 B. Gypsum Board\* — 1 in. (25 mm) thick, 24 in. (610 mm) wide gypsum liner panels installed

C. Gypsum Board\* — Min 5/8 in. (13 or 16 mm) thick gypsum boards. The gypsum board type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual Wall and Partition Design. Max diam of opening for the shower valve (Item 5) is 4-3/8

in. (111 mm). Max diam of opening for the shower pipe (Item 6) is 1 in. (25 mm).

2. Insulation\* — Each stud cavity shall be fully insulated with nom 2 in. thick, min 4 pcf (64 kg/m³) mineral wool batt insulation.

valves and piping (Items 5 and 6) installed on finished side of wall assembly. The plumbing is to consist of nom 1-1/4 in. (32 mm) diam (or smaller) Type L (or heavier) copper tubing or Regular (or heavier) copper pipe.

3. Internal Plumbing — Hot and cold water lines are installed within the stud cavity, routed for connection to shower

4. Tube Insulation — Plastics+ — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing or sheets. All seams are to be tightly butted and secured by means of tie wires, tape or an equivalent means.

See **Plastics+** (QMFZ2) category in the Plastics Component Directory for names of manufacturers. Any Recognized Component tube insulation material meeting the above specifications and having a UL94 Flammability Classification of 94-5VA may be used.

5. Shower Valve — Brass shower valve, nom 3-1/4 in. (83 mm) diam installed within opening on finished side of wall assembly. The annular space between the valve body and the periphery of opening shall be min 1/2 in. (13 mm) to max 1 in. (25 mm). Shower valve provided with a steel escutcheon plate installed after the installation of the firestop system (Item 7) and sized to completely cover the opening.

6. Shower Pipe — Nom 1/2 in. (13 mm) diam steel tubing, routed through opening on finished side of wall assembly. The annular space between the tubing and the periphery of opening shall be min 0 in. (point contact) to max 1/2 in. (13 mm). Shower pipe provided with a steel escutcheon plate installed after the installation of the firestop system (Item 7) and sized to completely cover the opening.

7. Firestop System — The firestop system shall consist of the following:

A. Steel Collar — Collar fabricated from coils of precut min 0.016 in. (0.41 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be nom 2 in. (51 mm) deep with 1 in. (25 mm) wide by 1-1/2 in. (38 mm) long anchor tabs on 4 in. (102 mm) centers for securement to surfaces of wall. In addition, collars contain retainer tabs 1/2 in. (13 mm) wide by 3/4 in. (19 mm) long, located opposite the anchor tabs. Retainer tabs to be cut to 1/2 in. (13 mm) in length and folded 90 deg inward toward the shower valve. Collar shall be wrapped around the periphery of opening, overlapping min 1 in. (25 mm) and inverted into the opening around the shower valve. The anchor tabs are folded 90 deg away from the valve and secured to wall surface at each anchor tab by means of min 1/8 in. (3.2 mm) diam by 2-1/4 in. (57 mm) long hollow wall anchors in conjunction with 1/2 in. (13 mm) diam steel washers.

B. Fill, Void or Cavity Materials\* - Wrap Strip — Nom 2 in. (51 mm) wide by nom 1/4 in. (6 mm) thick intumescent wrap strip. Two layers shall be installed into the collar such that the layers tightly fitted to the inside of the steel collar. Wrap strip layers are held in position using

RECTORSEAL — Metacaulk Wrap Strip

C. **Packing Material** — Min 1 in. (25 mm) thickness of min 4.0 pcf (64 kg/m³) mineral wool batt insulation firmly packed into opening as a permanent form. Packing material to be recessed from surface of wall to accommodate the required thickness of fill material.

D. Fill, Void or Cavity Materials\* - Caulk — Min 1/4 in. (6 mm) thickness of caulk applied within annulus around the shower pipe, flush with surface of wall assembly. An additional film of caulk (not shown) may or may not be applied over the exposed edges of the wrap strip.
RECTORSEAL — Metacaulk 835+

\*Bearing the UL Classification Mark

#### SINGLE MEMBRANE TUB/SHOWER ASSEMBLY

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NO. DESCRIPTION DATE

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ject No: 18.199

te Scale

FIRE PENETRATION DETAILS

P5.02

CURB\

APPROVAL PRIOR TO

INSTALLATION

PIPE SHALL BE PROTECTED FROM

CONNECTION IN A MANNER APPROVED

BY THE CITY CCCS. SEE DWG. CPED.

WATER METER \*MUST HAVE CITY NO BASEMENT \*\*IF DISTANCE IS GREATER THAN 10', THEN

### 2.02 RPZ BACKFLOW PREVENTION DETAIL

INSTALLATIONS

ALLOWED

SHUT-OFF VALVE-FITTINGS-—FITTINGS —COUPLING COUPLING-WATER METER COUPLING-—COUPLING FITTINGS-SHUT-OFF VALVE-

8.04 WATER SUB METER DETAILS(OPTION)

DRAIN

5.01 MOP SINK DETAIL

NO SCALE



FUNNEL OPENING TO BE

-DRAIN ADAPTER MAX FLOW RATE 7 GPM

PROVIDE WITH WHA

-2" STANDPIPE

FINISHED FLOOR

MEASUREMENTS AND CLEARANCES OF BATHROOM.

ABOVE CEILING

ELECTRIC WATER HEATER

2" OR LARGER

2" DRAIN OPENING-

FUNNEL-

IF SANITARY STACK, MINIMUM IS 3" W-

## PUBLIC RIGHT-OF-WAY WORK IN THIS AREA REQUIRES A "STREET OPENING PRIVATE PROPERTY CITY CLEANOUT CONNECTION TO BUILDING BUILDING CLEANOUT CITY SEWER MAIN **−** FLOW INSPECTION REQUIREMENT

### BUILDING DRAINS AND SEWERS TABLE 710.1(1)

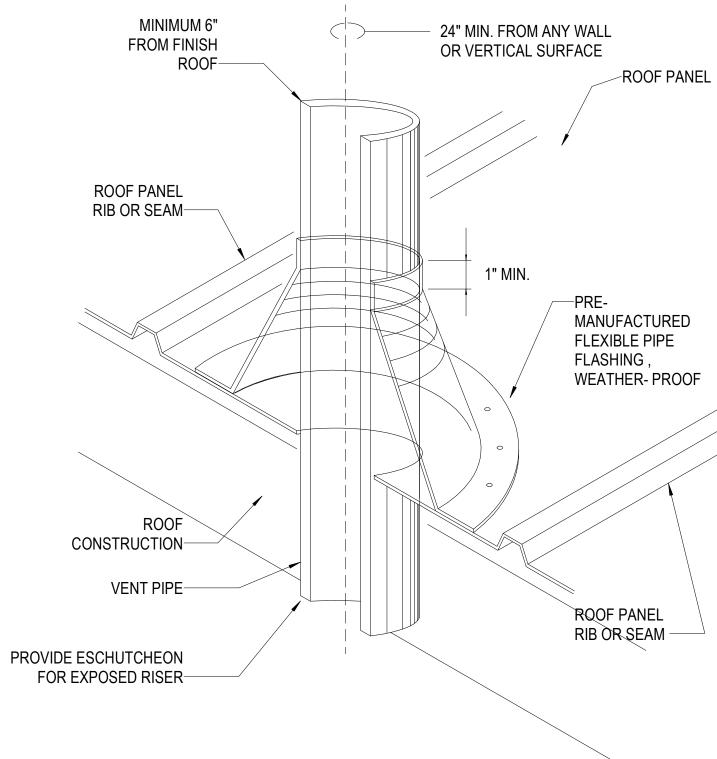
	MAXIMUM NUMBER OF DRAIN FIXTURE UNITS CONNECTION TO ANY PORTION OF THE BUILDING DRAIN OR THE BUILDING SWER, INCLUDING BRANCHES OF THE BUILDING DRAIN					
DIAMETER OF PIPE (INCHES)	SLOPE PER FOOT					
T II E (IIVOTIEO)	1/16 INCH	1/8 INCH	1/4 INCH	1/2 INCH		
1 1/4	-	-	1	1		
1 1/2	-	-	3	3		
2	-	-	21	26		
2 1/2	-	-	24	31		
3	-	36	42	50		
4	-	180	216	250		
5	-	390	480	575		
6	-	700	840	1000		
8	1400	1600	1920	2300		
10	2500	2900	3500	4200		
12	3900	4600	5600	6700		
15	7000	8300	10000	12000		

FOR SI: I INCH = 25.4 MM, I INCH PER FOOT = 83.3 MM/M. A. THE MINIMUM SIZE OF ANY BUILDING DRAIN SERVING A WATER CLOSET SHALL BE 3

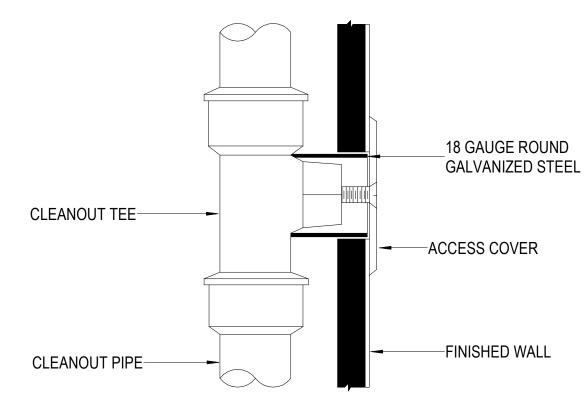
• TOTAL DFU:

• DIAMETER OF PIPE(INCHES):

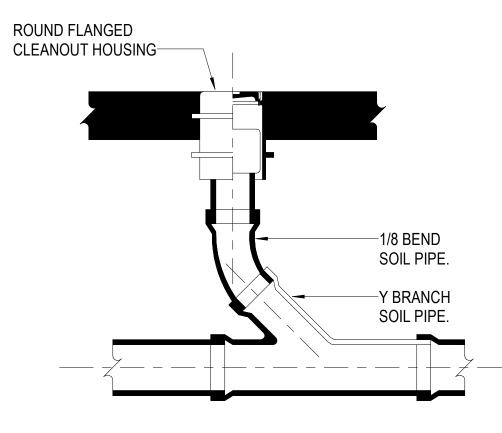
 4" PIPE SLOPING AT 1/8 FOR THE FULL LENGTH OF THE BUILDING WILL SLOPE A TOTAL OF 19 INCHES



#### **4.05 VENT THRU ROOF DETAIL**



**4.04 WALL CLEANOUT DETAL** SCALE: NONE



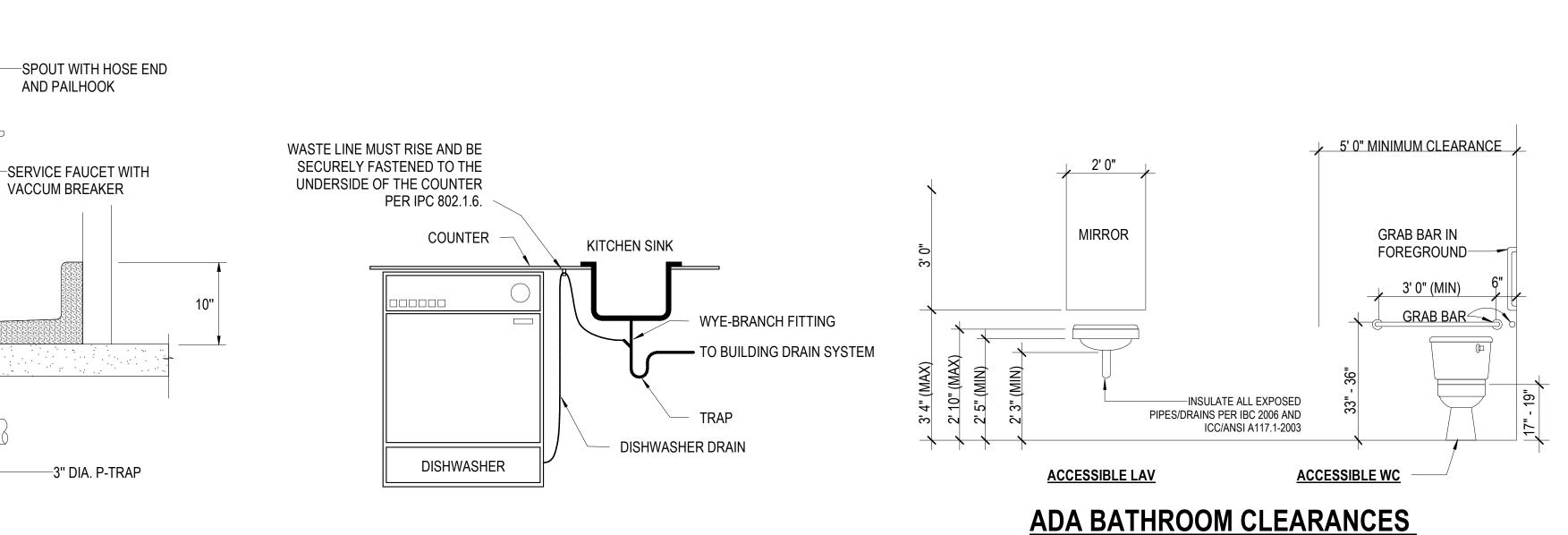
**4.03 FLOOR SANITARY CLEANOUT DETAIL** SCALE: NONE

VALVE

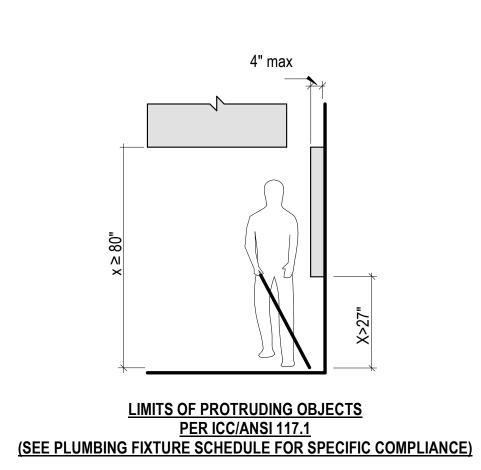
-PIPE UNION

RELIEF VALVE SHALL

DISCHARGE TO DRAIN PAN.



5.03 - TYPICAL DISHWASHER CONNECTION



1.01 CEILING MOUNTED ELECTRIC WATER HEATER DETAIL

HOT WATER

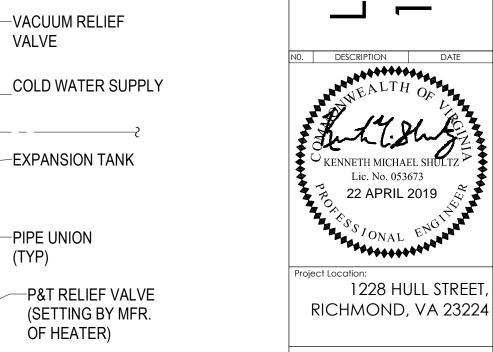
ISOLATION GATE VALVE (TYP)

DRAIN PAN-

DRAIN PAN SHALL DRAIN TO

INDIRECT WASTE DRAIN.

SANITARY SYSTEM TRHOUGH AN



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Scale 22 APRIL 2019 As indicated 

> DETAILS & DIAGRAMS

P5.11

METAL EDGE

3'-6"

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HULL

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HNLL

SECTIONS & DETAILS

