

schedule indications are estimated and shall be the responsibility of the contractor.

# const. schedule

PDP & Rezoning submittal: planning approval: permit submittal: permit approval:

approved January 2022 pending approval May 2022 approved

# project synopsis:

governing municipality: Lee's Summit, Missouri governing code: 2018 International Building Code 2018 International Plumbing Code 2018 International Mechanical Code 2018 International Fuel Gas Code 2018 International Residential Code

2018 International Fire Code 2017 National Electrical Code ICC/ANSI A117.1-2009, Accessible and Usable Buildings and Facilities

Lee's Summit Municipal Code

zoning:

IIB, pemb construction:

stories: one + mezzanine

27'-0" max. building height:

fire suppression: yes

19,800 s.f. bldg footprint:

occupancy group: A-3 (indoor sports) with B+M (office

mercantile accessory)

occupant load: 213 first floor accessory spaces: 44 mezzanine: 73

batting cages: 96

\*reference code plan and code review

# sheet index:

| A0.0  | cover sheet                  |
|-------|------------------------------|
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|       |                              |
| Civil |                              |
| C1.0  | civil cover sheet            |
| C1.1  | civil notes                  |
| C1.2  | site plan                    |
| C1.3  | utility plan                 |
| C2.1  | grading plan                 |
| C2.2  | phase I EC                   |
| C2.3  | phase II EC                  |
| C2.4  | spot elevation plan          |
| C3.1  | existing drainage map        |
| C3.2  | proposed drainage map        |
| C3.3  | storm calculations           |
| C4.1  | civil details                |
| C4.2  | civil details                |
| C4.3  | civil details                |
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|       |                              |

### Landscaping

| L1.1 | landscape plan    |
|------|-------------------|
| L1.2 | landscape details |

### Architectural A1.1

2\{

| A1.1  | architectural site plan            |
|-------|------------------------------------|
| _A2.1 | first floor plan                   |
|       | }                                  |
| A2.3  | first floor reflected ceiling plan |
| A2.4  | enlarged bathroom plans            |
| A3.1  | exterior elevations                |
| Δ4 1  | wall sections                      |

A4. I wall sections A4.2 wall sections and details A5.1 door schedule and details A5.2 first floor finish plan A5.3 mezzanine finish plan A5.4 millwork details

### Structural

| S100 | structural specifications  |
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| S200 | structural foundation plan |
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| S501 | typical foundation details |
|      |                            |

### Mechanical & Plumbing

|               | <b>O</b>               |
|---------------|------------------------|
| MP0.0         | mp specifications      |
| P1.0          | overall plumbing plan  |
| P1.1          | enlarged plumbing plan |
| P2.0          | plumbing riser diagram |
| M1.0          | mechanical floor plan  |
| <b>△{M1.1</b> | not used               |

# mechanical schedules

| Electrical |                                 |
|------------|---------------------------------|
| E0         | electrical specifications       |
| E1         | electrical lighting plan        |
| E2         | electrical power plan           |
| E3         | enlarged power plans            |
| F4         | panel schedule and riser diagra |

panei schedule and riser diagram

**E**5 site lighting plan

# owner:

WHD Management LLC PO Box 1059 Lee's Summit, MO 64063 P: 816.246.3987

# architect:

Christopher L. Hafner, AIA, LEED AP Davidson Architecture & Engineering 4301 Indian Creek Parkway Overland Park, Kansas 66207 p: 913.451.9390 f: 913.451.9391

# civil engineer:

Paul A. Miller, PE Davidson Architecture & Engineering 4301 Indian Creek Parkway Overland Park, Kansas 66207 p: 913.451.9390 f: 913.451.9391

# structural engineer:

Bryce D. Crady Apex Engineers, Inc. 1625 Locust St. Kansas City, MO 64108 p: 816.421.3222

# ─ mp engineer:

Maxwell T. Apple BC Engineers 5720 Reeder Shawnee, KS 66203 p: 913.262.1772

# electrical engineer:

Darin T. Seidel **BC** Engineers 5720 Reeder Shawnee, KS 66203 p: 913.262.1772

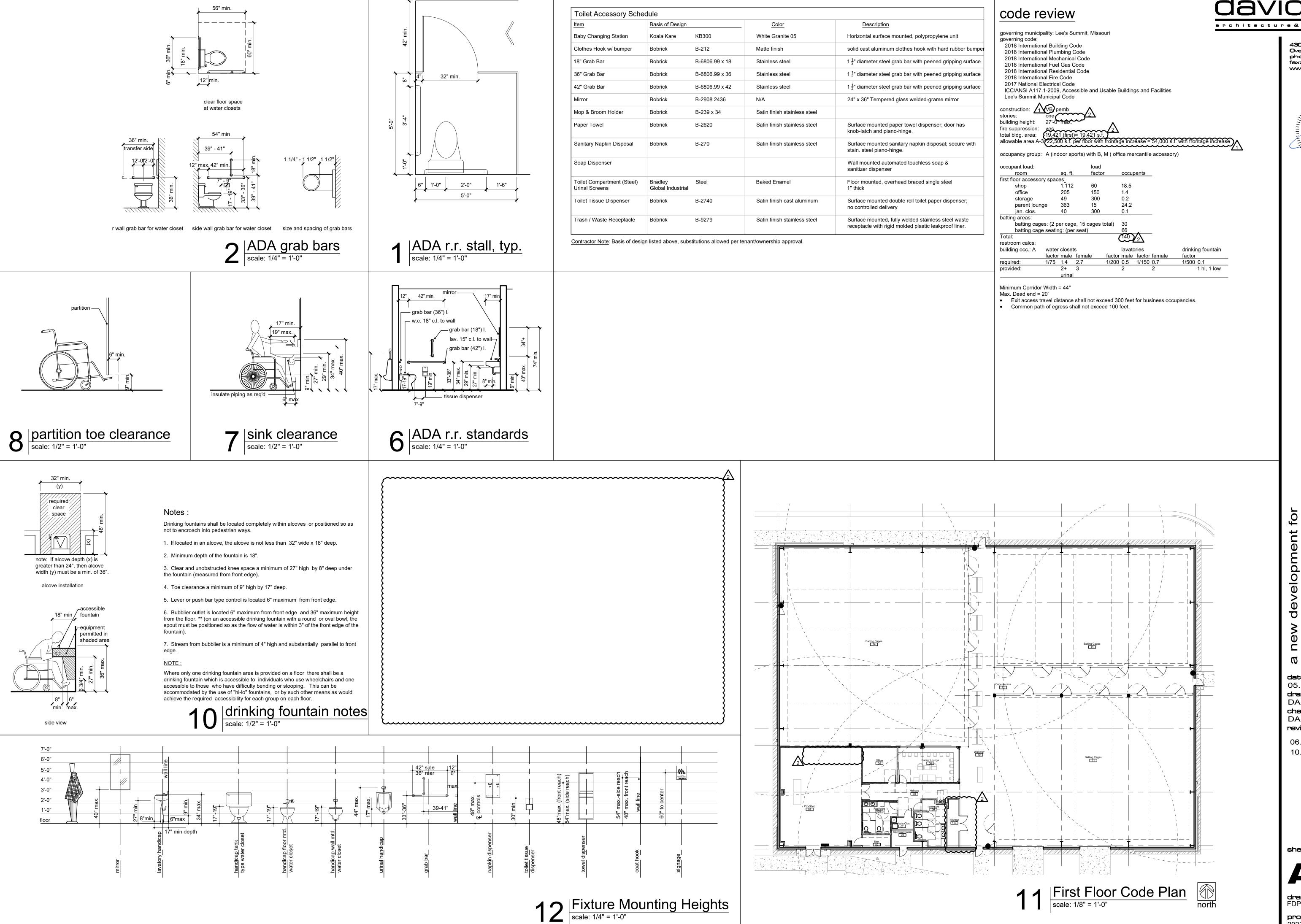


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# Missour 66

**A0.0** cover sheet



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10.13.2022

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**drawing type**FDP & Permit project number

# project synopsis

Municipality: Lee's Summit, Missouri 2018 International Building Code (IBC) Applicable Building Codes &

2018 International Plumbing Code (IPC) 2018 International Mechanical Code (IMC) 2018 International Fuel Gas Code (IFGC) 2018 International Fire Code (IFC)

2017 National Electrical Code (NEC) ICC/ANSI A117.1-2009, Accessible and Usable Buildings and

Lee's Summit Unified Development Ordinance (UDO)

Project Address: 540 NE Town Centre Drive Lee's Summit, Missouri 64064

Property Owner: WHD Management LLC PO Box 1059 Lee's Summit, MO 64063

PI - Planned Industrial

Limited Indoor Recreation Proposed Land Use:

20 ft

**Building Setbacks:** 

Zoning:

Ordinances:

Side Yard 10 ft Rear Yard 20 ft

Landscaping Setbacks: Street Frontage 20 ft

Height Requirements: Number of Dwelling Units:

Special Conditions Met: A commercial indoor and/or outdoor recreation facility or area shall be allowed provided the front entrance is 300 feet or greater distance from any residential district or use.

Adjacent Zoning (within 185'): CP-2, RP-4

Adjacent Land Use (within 185'): Commercial, Undeveloped, Residential, Government

**Building Occupancy:** Pad Site A: A-3, Limited Indoor Recreation - Batting Cages Site Area Pad Site A 83,267 sq. ft. 1.91 ac. 20,130 sq. ft.

Floor Area Ratio - Maximim 1.0

Pad Site A 20,130 Pervious/Impervious Areas

58,611 sq. ft. Pad Site A 24,656 sq. ft. 30% Parking Pad Site A: Indoor Batting -Required: 4 per 1,000 sq. ft. of office space

batting cages: determined by director Standard Parking Space Size: 9'-0"x19'-0"

\*Parking Space Length can reduce by 2'-0" at curbed landscaping and 6' deep sidewalks.

—online pick-up sign copy text by

### -ADA parking signage provided by g.c., arrow & sign to conform to r7-8d standards to be green **PARKING** on a white handicap signage per background municipality regmt's. "van accessible" shall be displayed as req'd, see plan white accessible hi-density polystyrene thermoplastic, $\Leftrightarrow$ symbol silver finish, $\frac{1}{8}$ " nominal wall thickness in a blue w/ ultra-violet anti-static addittives and 🔭 square field plastic top cap ACCESSIBLE · 6" Ø stl. pipe fill full w/ pea gravel concrete - install bollard cover with cap \$50 TO dome-top lo-density polyethylene \$300 FINE thermoplastic $\frac{1}{4}$ " nominal wall thickness black finish with reflective tape (\*\*\*blue for ADA parking spaces)

## general notes

• All construction shall conform to the standards and specifications of Lee's Summit,

The general contractor shall contact all utility companies prior to the start of

construction and verify the location and depth of any utilities that may be encountered during construction. • The contractor shall field verify exist, surface & subsurface ground conditions prior to

start of construction. Slopes shall maintain a maximum 3:1 slope.

• The contractor shall be responsible for obtaining all required permits, paying all fees, and otherwise complying with all applicable regulations governing the project. Place silt fence per civil for erosion control.

 Provide a temporary gravel access drive to prevent mud from being deposited onto the adjacent road. • Prior to installing any structure on a public storm sewer, the contractor shall submit

shop drawings for the structure(s). Installation shall not occur until drawings have been approved by public works. Prior to installing, constructing, or performing any work on the public storm sewer line (including connecting private drainage to the storm system) contact the city for

inspection of the work. Contact must be made at least 48 hours prior to the start of • Connections to the public storm sewer between structures will not be permitted.

 All exterior utility services shall be painted to match the primary building color. Signage shall comply with Lee's Summit Signage Ordinance.

 The property owner's association shall have ownership and maintenance responsibilities for the common area tract.

Reference electrical plans for ground mounted equipment.

### plan notes

1. Furnish and install 5'-0" wide concrete sidewalk with broom finish per city of Lee's Summit standards to connect to existing sidewalk.

2. Furnish and install 5'-0" wide concrete sidewalk with broom finish per city of Lee's Summit standards. Sidewalk shall be in the r.o.w. offset by 1'-0" from the property

3. Furnish and install new curb cut per city of Lee's Summit standards. Align with access across the street.

4. Furnish and install new curb cut per city of Lee's Summit standards. 5. Furnish and install 4" wide white parking space striping.

6. Furnish and install 6'-0" wide concrete sidewalk with broom finish per city of Lee's Summit standards.

7. Furnish and install handicap parking spaces with striped access aisle per UDO requirements.

8. Furnish and install handicap parking space bollard sign per UDO requirements. 9. Furnish and install door stoop with turn down edge doweled into building foundations;

coordinate with civil drawings. 10. Furnish and install strip of clean rock at perimeter of building for drainage and

maintenance if required by the geotechnical report. 11. Location of block retaining wall; reference civil drawings.

12. Furnish and install UDO compliant building mounted area light.

13. Furnish and install UDO compliant pole mounted area light; maximum top of pole 14. Furnish and install ground mounted monument sign to meet ordinance requirements.

Provide electrical to sign as required.

15. Furnish and install wall mounted sign to meet ordinance requirements. Provide electrical as required.

Property line.

17. Building setback line.

18. Furnish and install concrete pad for ground mounted RTU; provide landscape screening as required around the equipment.

19. Furnish and install equipment pad.

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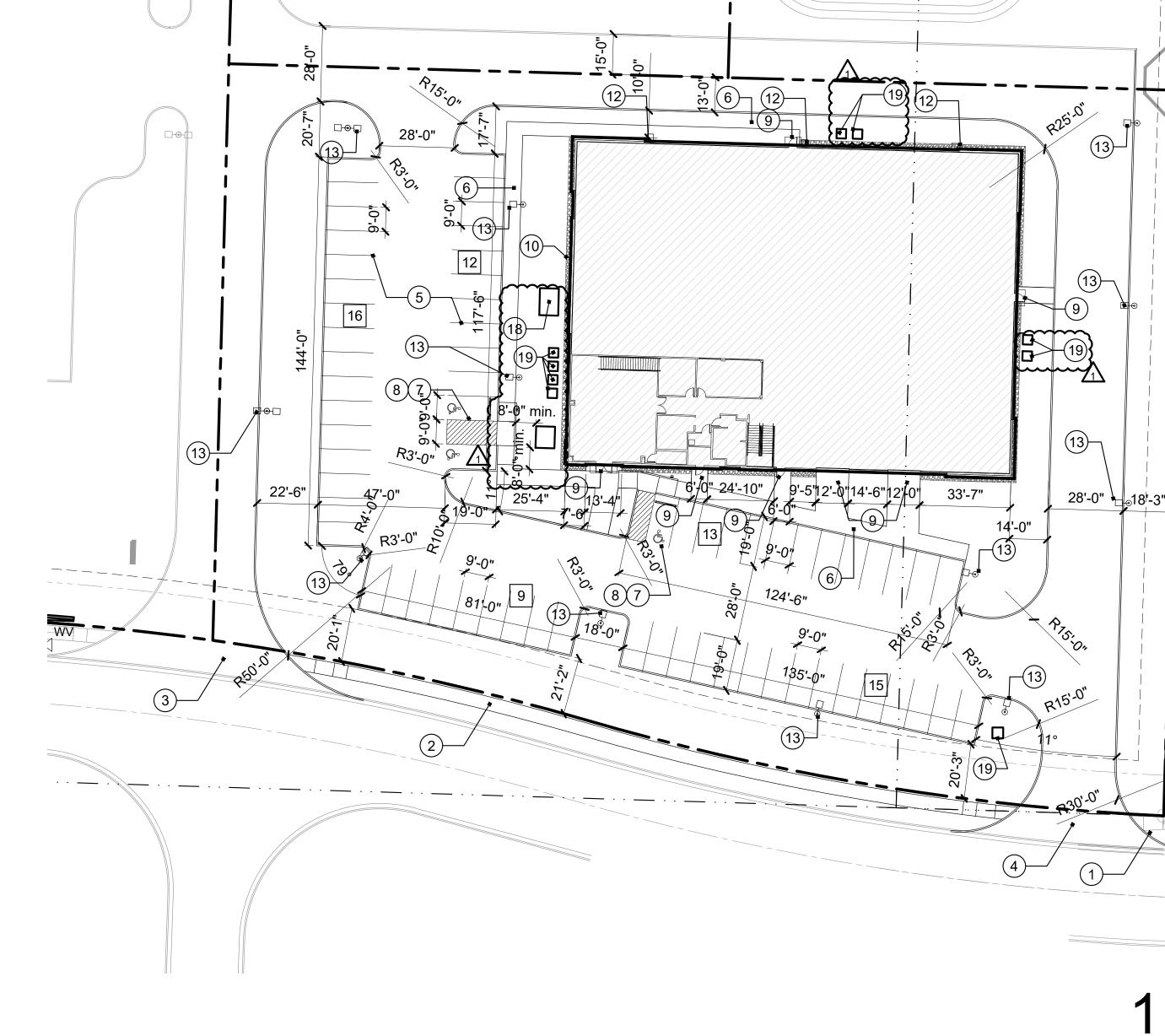
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—18"Ø conc. pier \* note: h.c. sign mounting

height and installation per municipality reqmt's.





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 Double keyed locks are not permitted on any required or marked exit. Exit/emergency lighting are subject to an on site inspection.

Provide min. 3 1/2" batt insulation between conditioned & unconditioned spaces

 Exit doors shall be openable from the inside without the use of a key or any special knowledge or effort Provide electrical outlets @ 15" a.f.f. to the lowest outlet per a.d.a.

 Egress illumination will be provided at an intensity of not less than 1 foot candle Construction materials exposed within plenums shall be noncombustible or

shall have flame spread rating of not more than 25 and a smoke development rating of not more than 50.

• All electrical outlets within 6' of any sink or water source to be GFCI protected. Mezzanine floor height is 12'-0" above first floor.

• Paint liner panels in batting cage areas PT-4 (green) up to 12'-0" a.f.f. Reference DBAT standards for painting patterns.

### construction notes #

# 1. Not used. 2 2. Merchandise display by others.

3. Verify point of sale location with owner. Coordinate stub up if required.

4. Furnish and install built-in bar height counter. 5. Furnish and install seemless interior windows.

6. Furnish and install Recessed knox box in stone. Verify final location with fire marshal.

7. Cage by others.

8. Provide access to overhead doors.

9. Benches by others. 10. Furniture by others.

11. Provide data and power at wall mounted TV location.

Netting by others. 13. Premanufactured awning above by PEMB manufacturer.

14. Decorative wall sconce. 15. Reference site and landscaping plans for perimeter rock.

16. Furnish and install millwork per details.

17. Furnish and install bracket mounted fire extinguisher, min. 5lb ABC. 18. Furnish and install semi-recessed ADA fire extinguisher cabinet (white) with min. 5lb ABC fire extinguisher.

19. Furnish and install metal guardrail at mezzanine viewing area; verify attachment to structure with structural engineer: railing must have supports/attachments a maximum of 5'-0" apart, and railing must meet loading requirements per the 2018 IBC. Railing selection must be a minimum of 42" above finish floor of the mezzanine - open space between railing parts must not allow a sphere of 4" or greater to pass through.

20. Furnish and install door stoops; reference structural.

21. Furnish and install prefabricated concrete pads for condensing units per mechanical drawings.

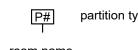
22. Provide concrete pad for ground mounted RTU as required, consult with structural.

23. Furnish and install ADA bathroom partitions.

24. Furnish and install lintel above door to support stone.

# symbol legend:







# partition legend

Insulated Interior Partition: 3-5/8" metal studs @ 16" o.c. to 6" above ceiling or to underside of decking with 5/8" gypsum board on both sides and 3-1/2" sound attenuation batt insulation. Stud gauge per supplier.

Interior Partition:

3-5/8" metal studs @ 16" o.c. to 6" above ceiling or to underside of decking with 5/8" gypsum board on both sides. Stud gauge per supplier.

\*Utilize DensArmour Plus on plumbing walls

# partition notes

utilize 6" or 8" studs for plumbing walls

walls with no ceiling shall extend up to underside of decking unless

otherwise noted (reference reflected ceiling plan).

• walls with a lowered suspended ceiling should extend 6" above the ceiling height (reference reflected ceiling plan).

• interior wall height note: Utilize  $3\frac{5}{8}$ " metal studs @ 16" o.c. to an unbraced height of 13'-8, at heights up to 26'-0", utilize 6" 20 ga. studs @ 16" o.c. adjust stud size as required for allowable L/240 deflection. Verify stud gauge

 expansion joint note: Expansion joints shall be installed at a max. of 30'-0". Joints shall also be located to anticipate building movement, structural elements and substrate transition per elevations and wall sections. wet wall note: Utilize DensArmor Plus in all plumbing wet walls, walls receiving ceramic tile, and all walls adjacent to plumbing walls or where

anticipated to be in contact with moisture. substrate: provide tile backerboard at any wall tile locations.

• blocking: Provide in wall blocking for all wall mounted items, including, but

not limited to toilet accessories, plumbing fixtures, and hardware. maximum length of an unbraced wall shall be 8'-0".

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# reflected ceiling notes #

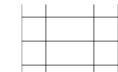
- Paint exposed structure off-white in areas open to the public. Furnish and install 2x4 suspended ceiling with lighting per reflected ceiling plan.
- Exposed structure finish to remain as-is.
  Reference room finish schedule for ceiling heights
  all materials above suspended ceilings must be fire retardant

# reflected ceiling legend

2x4 lay-in LED light fixture with direct/indirect lens for finished



2x4 LED utility light fixture for unfinished areas



CLG - 1: 2' x 4' x 3/4", with 15/16" Exposed Tee Grid System, color white

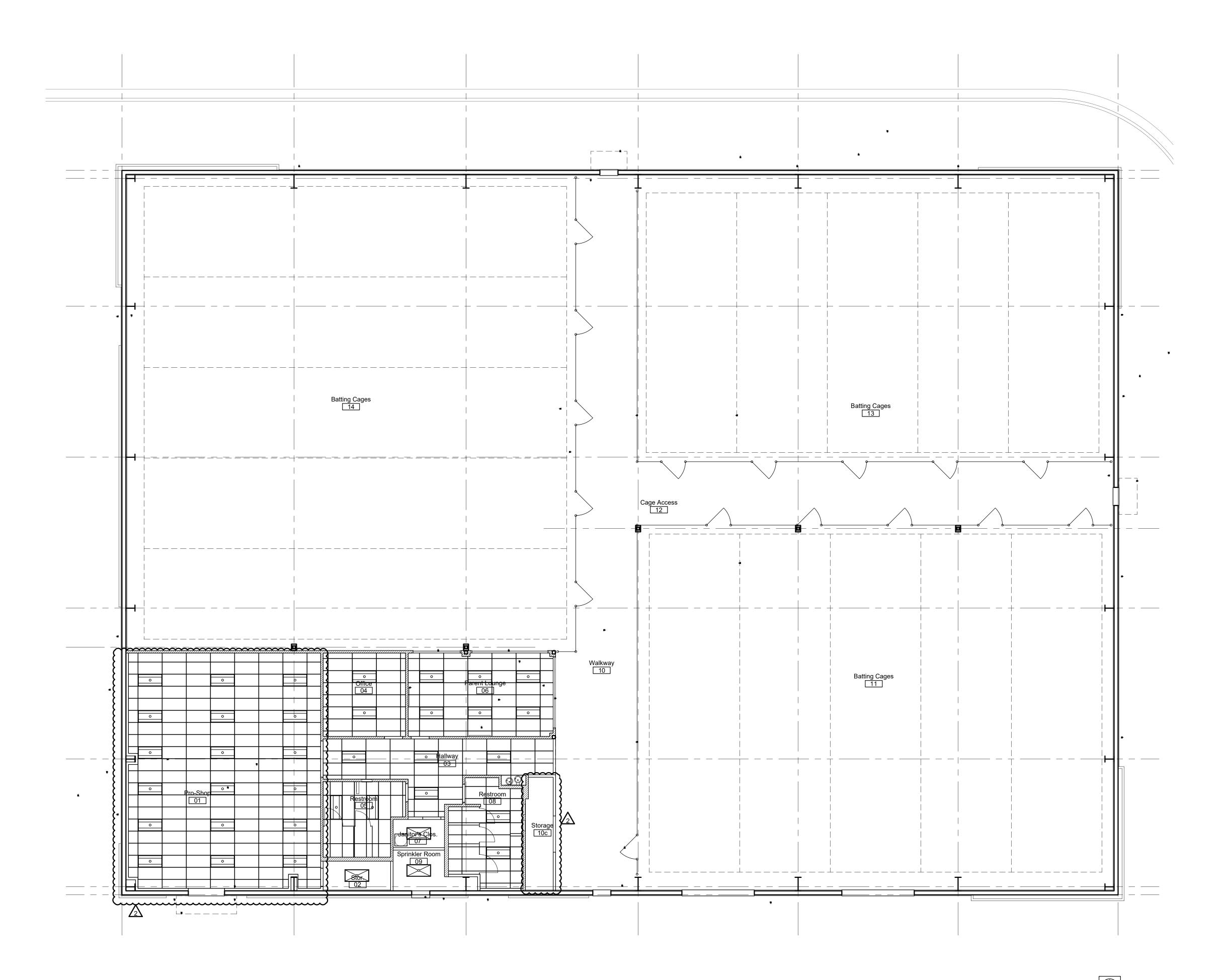
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2'-8" 2'-6" 2'-6" 3'-0"  $1'-6\frac{1}{2}$ "  $1'-6\frac{1}{2}$ "  $1'-6\frac{1}{2}$ " 1'-6" 11'-2" 8'-6"

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1 Enlarged Restroom Plan scale: 3/8" = 1'-0" north

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# ntre Lot 1

D-BAT - Town (

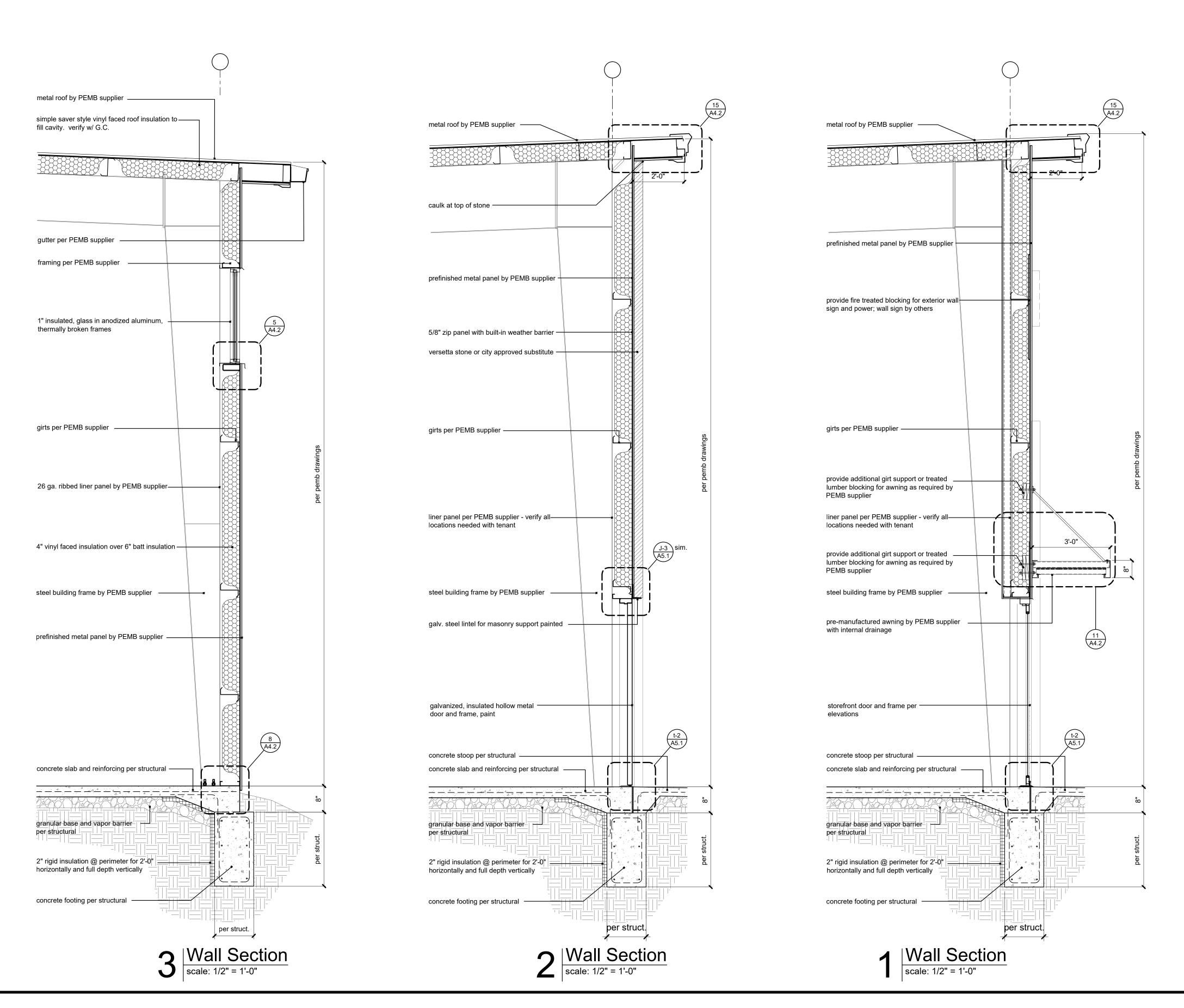
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metal roof by PEMB supplier ———

prefinished metal panel by PEMB supplier

liner panel per PEMB supplier - verify all-

trim at door head by PEMB supplier - paint

steel building frame by PEMB supplier

10'-0" x 10'-0" steel vertical lift -

1/4" drop and 1/2" slope

at o.h. door sill per detail -

concrete stoop per structural -

granular base and vapor barrier

2" rigid insulation @ perimeter for 2'-0" =

horizontally and full depth vertically

concrete footing per structural —

per structural

concrete slab and reinforcing per structural —

overhead door

locations needed with tenant

any exposed steel

girts per PEMB supplier -

\_\_\_\_\_

BAT - Town Centre

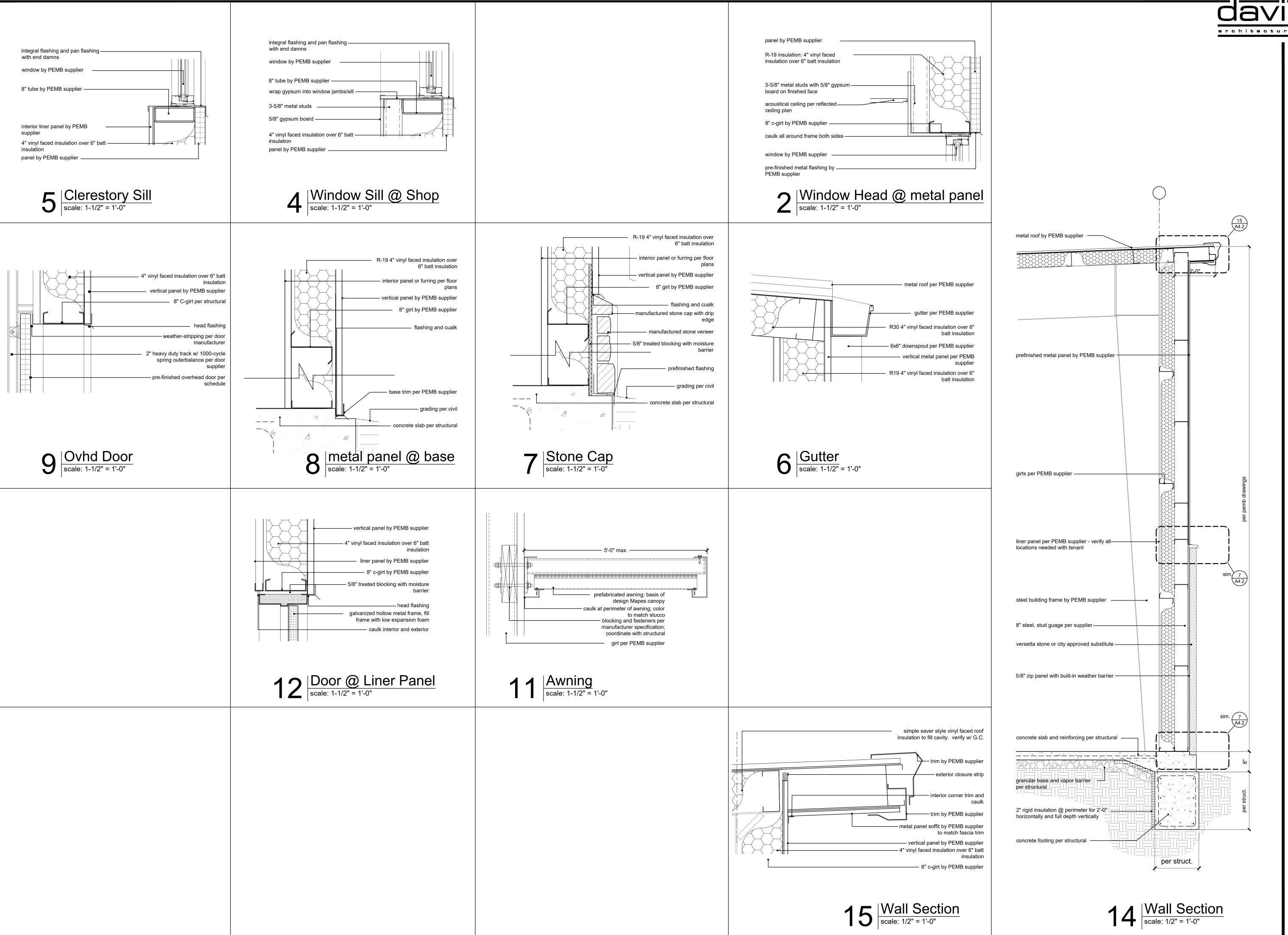
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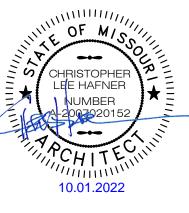


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new development for

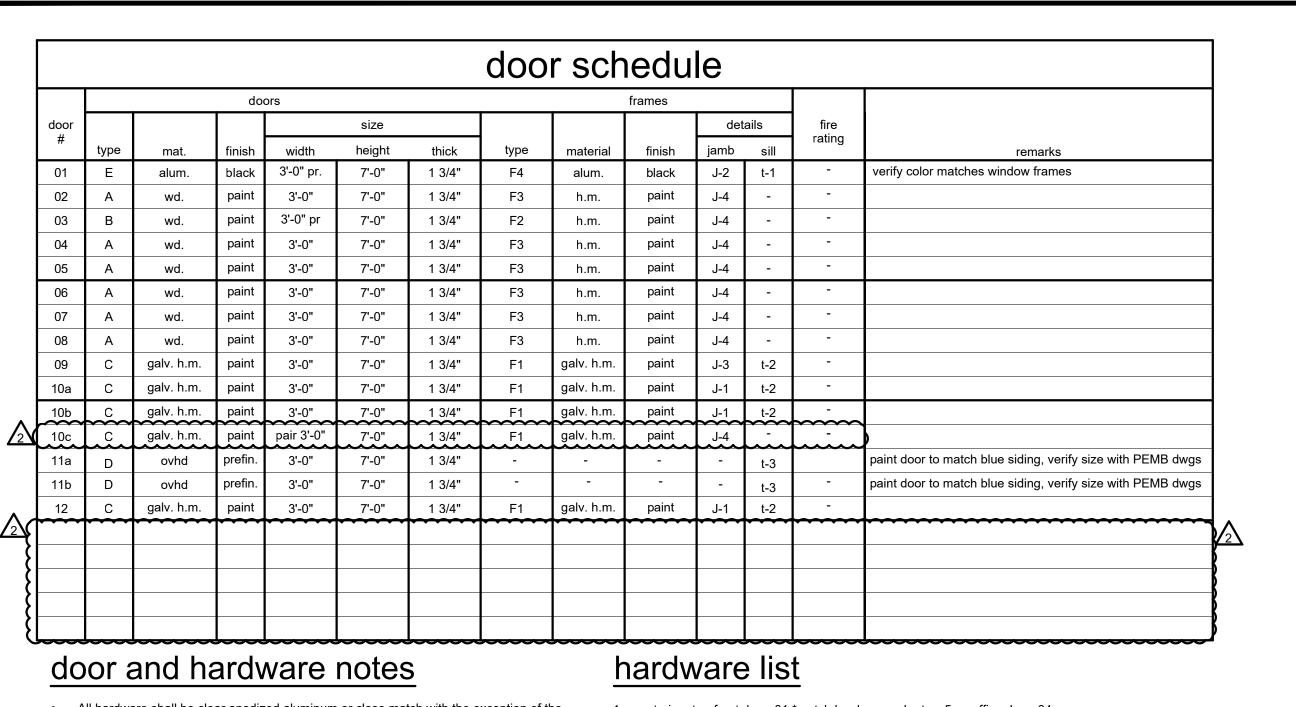
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3.5. non removable hinges

4.4. nonremovable hinges

4.6. weather gasketing

4.2. ADA exterior lever handle

3.6. wall stop

4.1. rain drip

4.3. closer

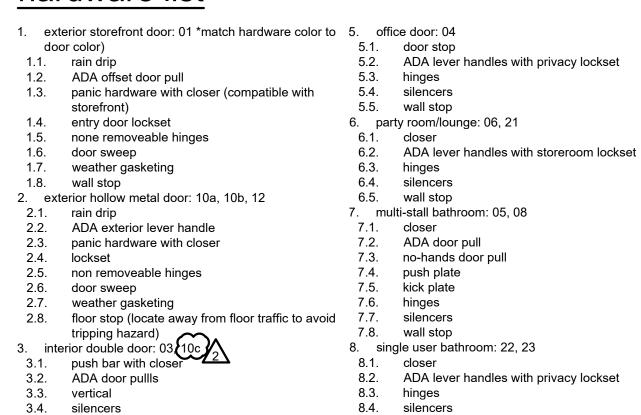
4. sprinkler room: 09

4.5. door sweep

- All hardware shall be clear anodized aluminum or close match with the exception of the exterior entry storefront door, which should match the window frames.
- Coordinate security hardware and electrical that may be required with tenant.
- All hinges at exterior doors shall have non-removable pins.
- Doors with closers shall have ball bearing hinges
- Threshold shall coordinate with adjacent floor finish at either site Hardware shall be heavy-duty, commercial grade, level 1 with lever handle
- Finish hardware shall meet article III of ADA
- Keying shall be coordinated with owner prior to order of hardware All storefronts shall be caulked around entire perimeter and at the inside corners
- All exterior doors shall include a rain guard
- All glazing shall comply with section 2406 of the 2018 IBC All glazing interior or exterior per Section 2406 of the 2018 IBC, including glass mirrors
- shall be constructed with safety glazing
- Category II glazing is required in storefront doors per section 2406 of the 2018 IBC • Category A glazing shall be utilized in glazed panels greater than 9 sq. ft. per section
- 2406 of the 2018 IBC. • Each pane of safety glazing installed in hazardous locations shall be identified by a manufacturer's designation specifying who applied the designation, the manufacturer or installer and the safety glazing standard with which is complies, as well as the information specified in '2403.1' Section 2403.1. The designation shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or aof a type that once applied,

cannot be removed without being destroyed. Tempered spandrel glass is permitted to

be identified by the manufacturer with a removeable paper designation. Panic hardware shall be provided per section 1008.1.10 of the 2018 IBC.



8.5. wall stop

9.2. hinges

10. stair: 20

9.3. silencers

9.4. wall stop

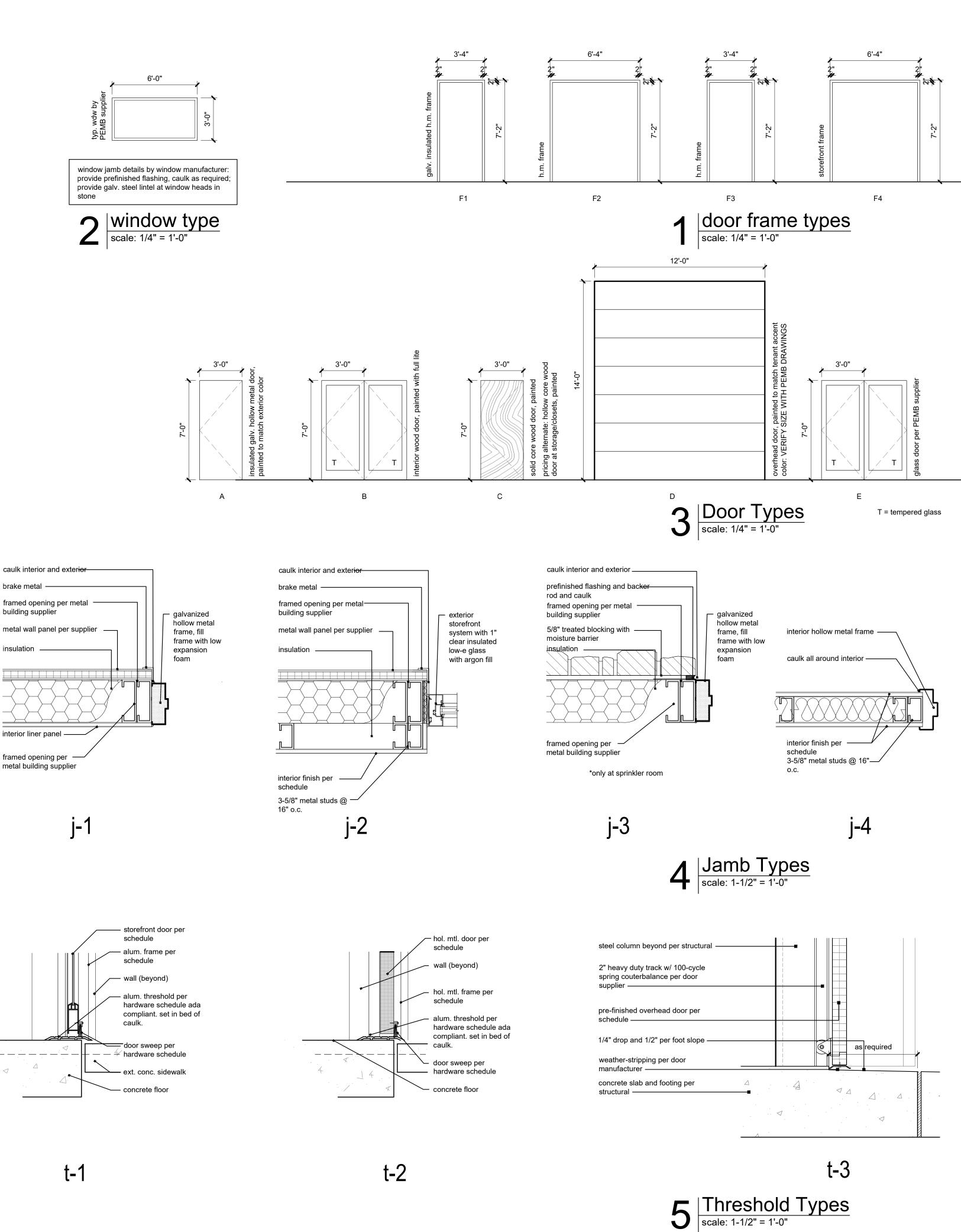
10.3. silencers 10.4. kick plates 10.5. hinges 10.6. wall stop

10.2. ADA door pull

9. storage/closet: 02, 07, 21a, 24

10.1. panic hardware with closer

9.1. ADA lever handles with storeroom lockset



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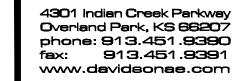
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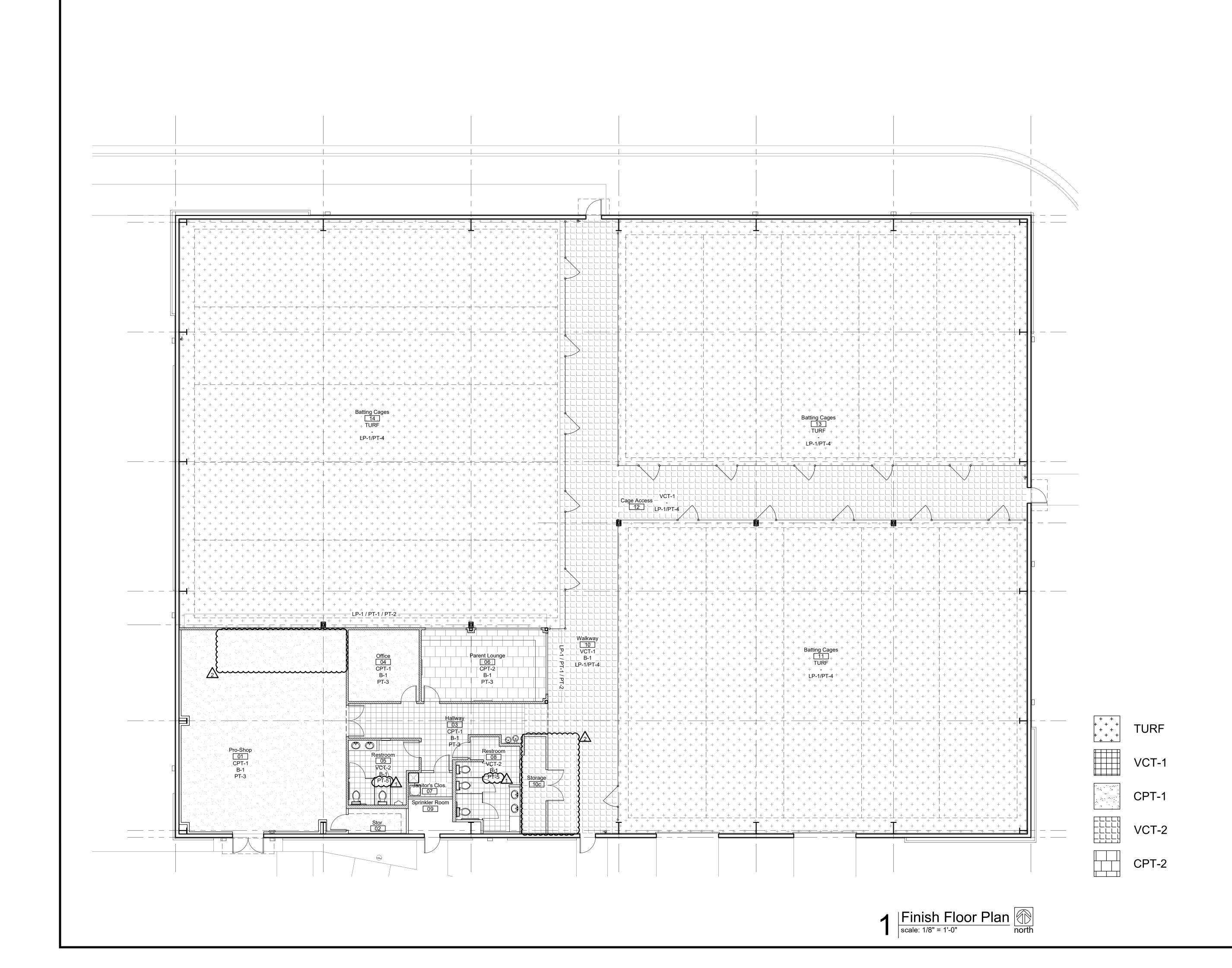


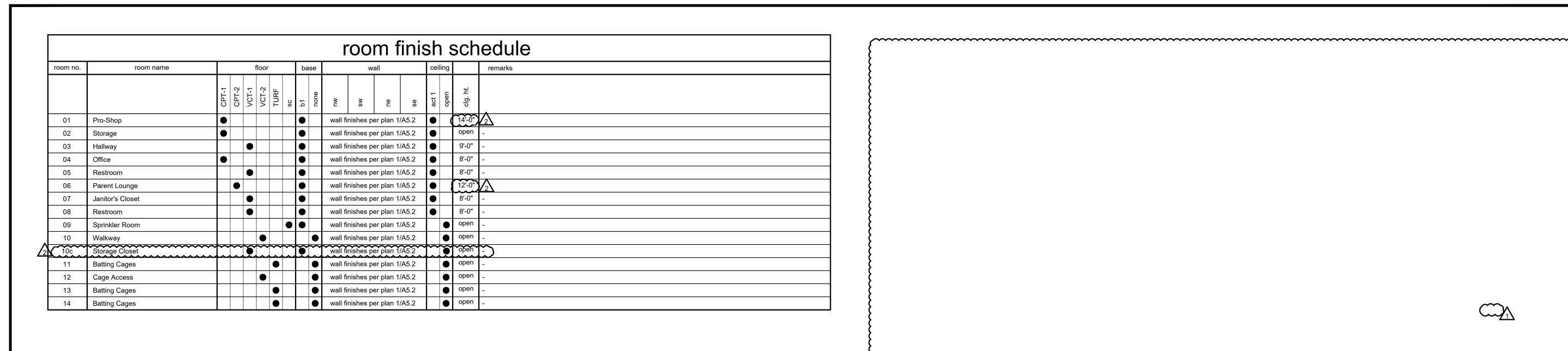


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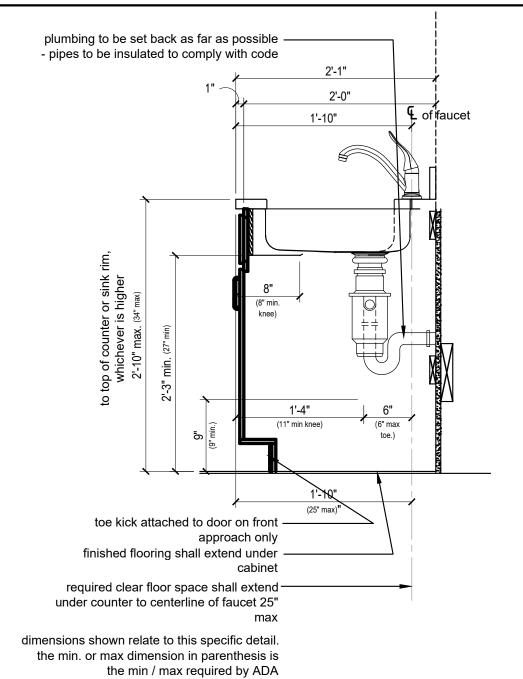
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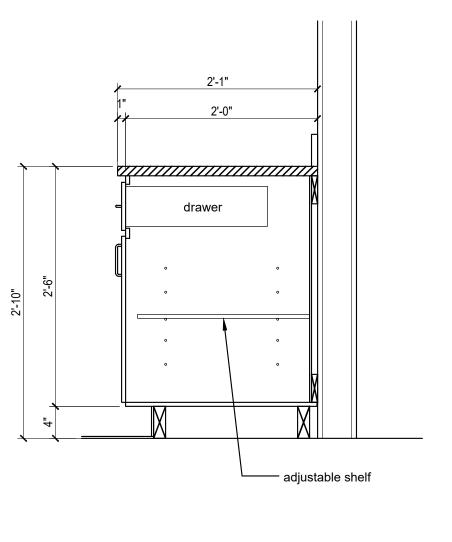
**A5.2 drawing type**FDP & Permit

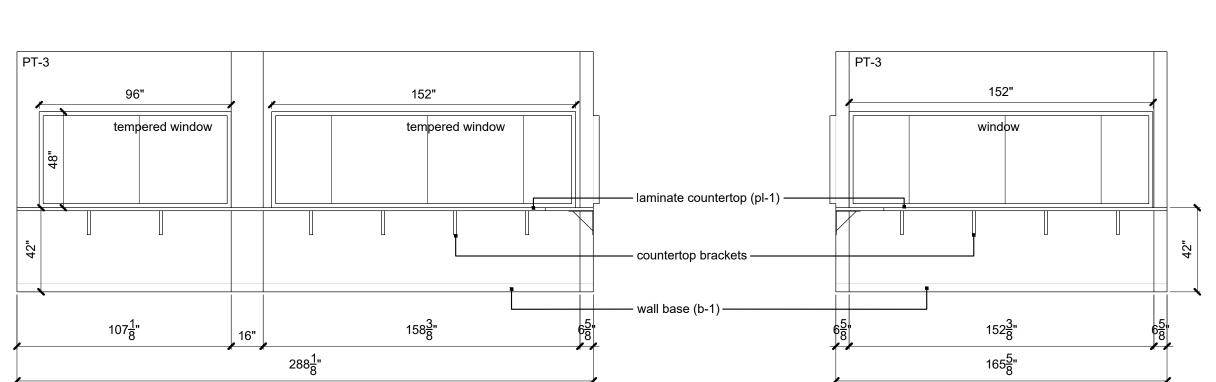




|        | finish legend  |
|--------|--|
| CPT-1  | carpet tile, Philadelphia Commercial, style: Counterpart (54816), size: 24" x 24", color: Copilot (16400)  |
| CPT-2  | carpet tile, Philadelphia Commercial, style: Counterpart (54816), size: 24" x 24", color: Correlate (16505)                                      |
| VCT-1  | vinyl composite tile, Armstrong Flooring, style: Standard Excelon Imperial Texture VCT, size: 12" x 12", color: Gentian Blue (51946)             |
| VCT-2  | vinyl composite tile, Armstrong Flooring, style: Standard Excelon Imperial Texture VCT, size: 12" x 12", color: Pomegranate Red (51814)          |
|        | pricing alternate: basis of design Restek epoxy floor, colored flakes with red as primary color - submit sample for tenant approval              |
| TURF   | D-BAT Turf   |
| SC     | sealed concrete - ashford sealer   |
| B-1    | vinyl base, manufacturer: TBD, standard cove, size: 4", color: gray  |
| PT-1   | wall paint, manufacturer: TBD, finish: eggshell, color: D-Bat Gold (1 coat primer, 2 coats paint - to cover)                                     |
| PT-2   | wall paint, manufacturer: TBD, finish: eggshell, color: D-Bat Red (1 coat primer, 2 coats paint - to cover)                                      |
| PT-3   | wall paint, manufacturer: TBD, finish: eggshell, color: D-Bat White (1 coat primer, 2 coats paint - to cover)                                    |
| PT-4   | wall paint, manufacturer: TBD, finish: eggshell, color: D-Bat Green (1 coat primer, 2 coats paint - to cover) - from base to 12'-0" a.f.f.       |
| PT-5   | epoxy paint, manufacturer: TBD, color: D-Bat White (1 coat primer, 2 coats paint - to cover)   |
| primer | primer, sherwin williams, PrepRite High Build latex primer/surfacer, B28W601   |
| PL-1   | plastic laminate, wilsonart, color: indigo (D379)  |
| PL-2   | plastic laminate, wilsonart, color: dove grey (D92)  |
| ACT-1  | acoustical ceiling tile, armstrong, 2x2, prelude xl $\frac{15}{16}$ exposed tee grid, dune #1774, angled tegular (revealed), fine texture, white |
| LP-1   | liner panel, Chief Buildings, steel liner panel, color: Emerald Green (EG)   |
| door   | door finish, manufacturer: TBD, color: manufacturer's standard white   |







6 | ADA sink | scale: 1/2" = 1'-0"

plastic laminate counter top, return

mirror glued and fastened to face

top mount lavatory in plastic lam.

plumbing to be set back as far

plastic laminate, on 1/2" plywood panel,

removable for plumbing access. support

according to manufacturer's instructions

as possible. pipes to be wrapped to comply with code

blocking as required

provide cross bracing

and backsplash

of gypsum board

— 5/8" gypsum board

— metal stud wall

5 | Sink Base Cabinet | scale: 1" = 1'-0"

4 | Base Cabinet | scale: 1" = 1'-0"

3. Each material specified for application on the entire project shall be from the same dye

4. All surfaces shall be cleaned and conditioned to receive new finish as required by finish product manufacturer. Surfaces shall be smooth, free from depressions, protrusions,

notify general contractor prior to installation if conditions are not satisfactory. All wall mounted mechanical slots or grilles to be painted to match the wall on which

they occur. Do not paint prefinished wall mullion end caps.

room outward toward partitions, unless otherwise noted. All floor finish changes to occur under centerline of door in closed position.

9. Combustible interior finish products shall be provided per the requirement of the

11. Finishes shall be bid as specified or as approved equal only.

with moisture, or walls receiving ceramic tile.

14. Refer to finish legend for level of gypsum board finish as defined by the gypsum

finish notes:

1. All interior glazing to be clear. Temper all interior glass. 2. Interior aluminum storefront shall have clear anodized aluminum finish

pits, slumps, streaks, flashing, and variation in texture. Installer/subcontractor shall

Contractor shall be responsible for leveling of floor slabs to receive specified finishes. All patterned flooring to be centered in both directions and generated from center of

international building code section 803.4. 10. Carpet seams shall occur at junctions of partitions, thresholds or change of direction in corridors. No strip patch allowed smaller than 4'-0".

12. Utilize dens-armour plus in all plumbing wet walls, walls anticipated to be in contact

13. All interior ceramic corners & tops shall receive schluter trim.

15. LVT to sealed concrete shall occur with rubber transition to match base color.

development

3 Parents' Lounge Elevation scale: 1/4" = 1'-0"

**date** 05.19.2022 **drawn by** DAE checked by DAE revisions

06.20.2022

RELEASED FOR CONSTRUCTION As Noted on Plans Review

4301 Indian Creek Parkway Overland Park, KS 66207 phone: 913.451.9390 fax: 913.451.9391 www.davidsonae.com

architecture & engineering

10.13.2022

**A5.3 drawing type**FDP & Permit

project number 20231

2. CONTRACTOR SHALL USE IBC SPECIFICATIONS AND DETAILS FOR PLACEMENT OF PERIMETER DRAINS, UNDER-SLAB DRAINS, AND ANY OTHER

3. ALL FOUNDATIONS TO BEAR ON ORIGINAL, UNDISTURBED SOIL. REMOVE ANY MUD. ORGANIC SILT, ORGANIC CLAYS, PEAT OR UNPREPARED FILL PRIOR TO PLACING FOUNDATIONS.

4. ALL FOOTING EXCAVATIONS TO BE APPROVED BY A QUALIFIED GEOTECHICAL ENGINEER PRIOR TO PLACING CONCRETE. 5. ALL EXTERIOR AND PERIMETER FOOTINGS SHALL EXTEND BELOW FROST DEPTH, REFERENCE DESIGN INFORMATION FOR FROST DEPTH.

### **NOTES - CONCRETE**

1. ALL CONCRETE CONSTRUCTION TO CONFORM TO ACI "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", THE GOVERNING EDITION OF THE ACI 318, AND ACI "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" ACI 301, UNLESS NOTED OTHERWISE. 2. WATER REDUCING ADD MIXTURES ARE ALLOWED IN CONCRETE MIX

3. SYNTHETIC MICRO-FIBERS ARE NOT ALLOWED UNLESS SPECIFICALLY NOTED IN THESE DRAWINGS.

4. UNLESS OTHERWISE SHOWN IN THE ARCHITECTURAL DRAWINGS, PROVIDE 3/4" CHAMFERS AT THE EDGES THAT ARE EXPOSED TO VIEW IN THE FINISHED STRUCTURE

5. REFERENCE ARCHITECTURAL DRAWINGS FOR DOOR AND WINDOW OPENINGS, DRIP SLOTS, REGLETS, MASONRY, ANCHORS, BRICK LEDGE ELEVATIONS AND FOR MISCELLANEOUS EMBEDDED PLATES, BOLTS, ANCHORS, ANGLES, ETC.

REFERENCE ARCHITECTURAL DRAWINGS FOR CONCRETE FINISHES. WHERE FINISH IS NOT SPECIFIED, CONFORM TO REQUIREMENTS OF ACI

7. REFERENCE MECHANICAL, PLUMBING, AND ELECTRICAL DRAWINGS FOR DRAINS, SLEEVES, OUTLET BOXES, CONDUIT, ANCHORS, ETC. 8. CONTACT APEX ENGINEERS, INC. IF HOUSE KEEPING PADS OR INERTIA BASES ARE REQUIRED BEYOND WHAT IS SHOWN IN THE STRUCTURAL CONTRACT DOCUMENTS.

9. ALL REINFORCING STEEL TO BE DETAILED IN ACCORDANCE WITH ACI "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES."

10. REINFORCING SHALL BE CONTINUOUS WHEREVER POSSIBLE. SPLICES AND LAPS TO CONFORM TO ACI 318. REFER TO CONCRETE REBAR

11. DOWELS IN FOOTING, WALLS, AND DRILLED PIERS MUST BE IN POSITION BEFORE PLACING CONCRETE WHENEVER POSSIBLE. 12. REFERENCE TYPICAL FOUNDATION DETAILS FOR INFORMATION ON REINFORCING REQUIREMENTS AT WALL AND SLAB OPENINGS. 13. REFERENCE TYPICAL FOUNDATION DETAILS FOR INFORMATION ON

REINFORCING REQUIREMENTS AT CORNER AND TEE INTERSECTIONS. 14. PROVIDE VERTICAL CONTROL JOINTS ON ALL POURED CONCRETE WALLS AND BASEMENT WALLS, EXCEPT FOUNDATION STEM WALLS LOCATED IN THE GROUND. SPACE JOINTS AT 3 x WALL HEIGHT FOR WALLS LESS THAN 10'-0" AND WALL HEIGHT FOR TALLER WALLS. PROVIDE ADDITIONAL JOINT WITHIN 10'-0" OF CORNERS.

15. OPENINGS IN SLAB OF 1'-4" AND LESS ON A SIDE ARE GENERALLY NOT SHOWN ON THE STRUCTURAL DRAWINGS. REFERENCE ARCHITECTURAL AND MECHANICAL DRAWINGS FOR SUCH OPENINGS.

### **NOTES - STEEL**

1. ALL STRUCTURAL STEEL TO BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE GOVERNING EDITION OF THE AISC "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES." 2. BOLTED CONNECTIONS: ALL BOLTED CONNECTIONS SHALL BE SNUG-TIGHT IN ACCORDANCE WITH THE "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM F3125 GRADE A325 OR A490 BOLTS" PUBLISHED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.

3. WELDED CONNECTIONS: ALL WELDING SHALL BE IN ACCORDANCE WITH THE "STRUCTURAL WELDING SOCIETY CODE" (AWS D1.1) PUBLISHED BY THE AMERICAN WELDING SOCIETY. ELECTRODES FOR WELDING SHALL COMPLY WITH THE REQUIREMENTS OF TABLE 3.1 OF (AWS D1.1). ALL WELDING TO BE DONE BY QUALIFIED WELDERS CONFORMING TO THE AMERICAN WELDING SOCIETY STANDARDS.

4. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT THE WRITTEN APPROVAL OF APEX ENGINEERS, INC. 5. CHANGES IN SIZE OR POSITION OF THE STRUCTURAL FLEMENTS, AND HOLES, SLOTS, CUTS, ETC. THROUGH ANY MEMBER, ARE NOT PERMITTED UNLESS THEY ARE DETAILED ON THE APPROVED SHOP DRAWINGS. 6. NO FINAL BOLTING OR WELDING SHALL BE MADE UNTIL AS MUCH OF THE STRUCTURE AS WILL BE STIFFENED THEREBY HAS BEEN PROPERLY

7. FABRICATE ALL BEAMS WITH THE MILL CAMBER UP UNO. 8. ALL VISIBLE WELDED CONNECTIONS ON ARCHITECTURAL ELEMENTS TO BE GROUND SMOOTH. DO NOT REDUCE THROAT SIZE OF WELD.

9. THE FABRICATOR SHALL BE RESPONSIBLE FOR THE DESIGN AND PERFORMANCE OF ALL CONNECTIONS NOT FULLY DESIGNED OR DETAILED IN THE CONTRACT DOCUMENTS, FABRICATOR TO PROVIDE ENGINEERED STAMPED SHOP DRAWINGS AND CALCULATIONS FOR ALL CONNECTIONS THAT DO NOT COMPLY WITH AISC STEEL CONSTRUCTION MANUAL CHAPTER 10 SIMPLE SHEAR CONNECTIONS.

10. STEEL MEMBERS ON THE EXTERIOR OF THE BUILDING OR EXPOSED TO SOIL MUST BE, AT A MINIMUM, PROPERLY PRIMED WITH RUST INHIBITING PRIMER AND PAINTED. STEEL MEMBERS COMPLETELY ENCLOSED IN BUILDING ENVELOPE DO NOT REQUIRE PRIMER OR PAINT, UNO. REFER TO ARCHITECTURAL DOCUMENTS FOR ADDITIONAL REQUIREMENTS OF EXPOSED STEEL.

### **NOTES - GENERAL**

1. THESE DRAWINGS ARE INTENDED TO BE USED WITH ARCHITECTURAL AND MECHANICAL DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING SUCH REQUIREMENTS INTO THEIR SHOP DRAWINGS AND

2. NO OPENING SHALL BE MADE IN ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. 3. NO CHANGE IN SIZE OR DIMENSION OF STRUCTURAL MEMBERS SHALL

MADE WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER. 4. THE CONTRACTOR IS RESPONSIBLE FOR LIMITING THE AMOUNT OF CONSTRUCTION LOAD IMPOSED UPON STRUCTURAL FRAMING. CONSTRUCTION LOADS SHALL NOT EXCEED THE DESIGN CAPACITY OF TH FRAMING AT THE TIME THE LOADS ARE IMPOSED.

5. THE STRUCTURE IS DESIGNED TO FUNCTION AS A UNIT UPON COMPLETION. THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING ALL TEMPORARY BRACING AND/OR SUPPORT THAT MAY BE REQUIRED AS THE RESULT OF THE CONTRACTOR'S CONSTRUCTION METHODS AND/OR SEQUENCES.

6. UNLESS OTHERWISE NOTED, FIREPROOFING METHODS AND MATERIAL FOR STRUCTURAL MEMBERS ARE NOT SHOWN ON STRUCTURAL DRAWINGS. REFERENCE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR FIRE RATING REQUIREMENTS, FIRE PROOFING METHODS AND MATERIALS.

7. DO NOT SCALE THESE DRAWINGS. USE DIMENSIONS SHOWN ON PLANS. 8. THE CONTRACTOR SHALL INFORM THE ARCHITECT/ENGINEER OF ANY DEVIATION FROM THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL NOT BE RELIEVED OF THE RESPONSIBILITY FOR SUCH DEVIATION BY THE ARCHITECT/ENGINEER'S APPROVAL OF SHOP DRAWINGS, PRODUCT DATA, ETC., UNLESS HE HAS SPECIFICALLY INFORMED THE ARCHITECT/ENGINEER OF SUCH DEVIATION AT THE TIME OF SUBMISSION, AND THE ARCHITECT/ ENGINEER HAS GIVEN WRITTEN APPROVAL TO THE SPECIFIC DEVIATION.

BE DEFICIENCIES, OMISSIONS, CONTRADICTIONS, BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER. PLANS AND/OR SPECIFICATIONS WILL BE CORRECTED, OR WRITTEN INTERPRETATION OF THE ALLEGED DEFICIENCY, OMISSION, CONTRADICTION OR AMBIGUITY WILL BE MADE BY THE ARCHITECT/ENGINEER BEFORE THE AFFECTED WORK

9. ALL THINGS WHICH, IN THE OPINION OF THE CONTRACTOR, APPEAR TO

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ERRORS OF DETAILING, FABRICATION AND INSTALLATION. THE CONTRACTOR SHALL MAKE ALL MEASUREMENTS IN THE FIELD NECESSARY TO VERIFY OR SUPPLEMENT DIMENSIONS SHOWN ON THE CONTRACT DRAWINGS AND HE SHALL VERIFY THAT ALL DIMENSIONS SHOWN ON THE SHOP DRAWINGS ARE COORDINATED WITH THE DIMENSIONS AND REQUIREMENTS OF THE CONTRACT DRAWINGS. REVIEW OF THE SHOP DRAWINGS DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR COMPLETING THE WORK SUCCESSFULLY IN ACCORDANCE WITH THE CONTRACT DRAWINGS AND SPECIFICATIONS.

11. SUBMIT PRINTS OR ELECTRONIC COPIES OF EACH SHOP DRAWINGS. REPRODUCIBLE COPIES OF CONTRACT DOCUMENTS SHALL NOT BE USED AS SHOP DRAWINGS. SHOP DRAWINGS SHALL BE REVIEWED BY CONTRACTOR PRIOR TO SUBMISSION. CONTRACTOR STAMP SHOP DRAWINGS ACCEPTING RESPONSIBILITY FOR COORDINATION OF DIMENSIONS SHOWN IN THE CONTRACT DOCUMENTS, QUANTITIES AND COORDINATION WITH OTHER TRADES. DRAWINGS NOT BEARING CONTRACTOR'S STAMP MAY BE REJECTED AT THE DISCRETION OF THE ARCHITECT OR STRUCTURAL ENGINEER.

12. REVIEW AND RETURN OF SHOP DRAWINGS SHALL BE BASED ON A MINIMUM OF TEN (10) WORKING DAYS IN THE STRUCTURAL ENGINEER'S OFFICE FROM RECEIPT OF SUBMISSION TO RETURN TO THE NEXT PARTY FOR THEIR ACTION. SHOP DRAWINGS SHOULD BE SUBMITTED INCREMENTALLY AS APPROPRIATE PACKAGES ARE PREPARED TO EQUALIZE THE WORKLOAD FOR REVIEW OF THE DRAWINGS. SUBMISSION OF A LARGE VOLUME OF SHOP DRAWINGS AT ONE TIME MAY RESULT IN REVIEW TIMES WHICH WILL EXCEED THOSE NOTED ABOVE. DEFINITION OF A "LARGE VOLUME" OF SHOP DRAWINGS IS SUBJECT TO INTERPRETATION.

### **NOTES - DEFERRED SUBMITTALS**

1. THE ARCHITECT OR ENGINEER OF RECORD SHALL LIST THE DEFERRED SUBMITTALS ON THE PLANS FOR REVIEW BY THE BUILDING OFFICIAL. 2. DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN THE GENERAL CONFORMANCE TO THE DESIGN OF THE

3. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

4. DEFERRED SUBMITTALS ARE DEFINED AS THOSE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF THE APPLICATION AND THAT ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL WITHIN A

5. DEFERRAL OF ANY SUBMITTAL ITEMS SHALL HAVE THE PRIOR APPROVAL OF THE BUILDING OFFICIAL. 6. SUBMITTALS SHALL INCLUDE DETAILED DRAWINGS OF EACH MEMBER

AND ITS CONNECTIONS ALONG WITH SUPPORTING CALCULATIONS PREPARED UNDER THE SUPERVISION, BEARING THE SEAL AND SIGNATURE. OF A LICENSED PROFESSIONAL ENGINEER IN THE PROJECT JURISDICTION. 7. CONTRACTOR SHALL SUBMIT STRUCTURAL DEFERRED SUBMITTAL FOR THE FOLLOWING:

• STEEL GUARDRAILS AND HANDRAILS

• STEEL FABRICATED STAIRS AND LADDERS • PRE-MANUFACTURED CANOPIES AND AWNINGS

## **NOTES - SHOP DRAWING SUBMITTALS**

1. SHOP DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL ITEMS IN ADDITION TO ITEMS REQUIRED BY ARCHITECTURAL SPECIFICATIONS. SHOP DRAWING REVIEW IS INTENDED FOR VERIFICATION OF DESIGN CONCEPT CONVEYANCE AND GENERAL CONFORMANCE TO CONTRACT DOCUMENTS ONLY.

2. CHANGES, SUBSTITUTIONS, OR DEVIATIONS FROM CONTRACT DOCUMENTS SHALL BE CLOUDED BY MANUFACTURER/FABRICATOR. ANY OF THE AFOREMENTIONED WHICH ARE NOT CLOUDED OR FLAGGED BY SUBMITTING PARTIES SHALL NOT BE CONSIDERED APPROVED AFTER ENGINEER'S REVIEW. UNO.

3. SHOP DRAWINGS DO NOT REPLACE THE CONTRACT DOCUMENTS. ITEMS SHOWN INCORRECTLY OR OMITTED AND NOT FLAGGED BY THE ENGINEER DURING REVIEW ARE NOT TO BE CONSIDERED CHANGES TO THE CONTRACT DOCUMENTS.

4. THE ADEQUACY OF ENGINEERING DESIGNS AND LAYOUT PERFORMED BY OTHERS RESTS WITH THE DESIGNING OR SUBMITTING AUTHORITY. DESIGNED SHOP DRAWINGS SHALL BE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL ENGINEER.

5. SHOP DRAWINGS MUST BE ORIGINAL DOCUMENTS. REPRODUCTION OF ANY PORTION OF THE CONTRACT DOCUMENTS FOR USE IN SUBMITTALS IS NOT PERMITTED AND MAY RESULT IN REJECTION. 6. THE ENGINEER HAS THE RIGHT TO APPROVE OR DISAPPROVE ANY

CHANGES TO CONTRACT DOCUMENTS AT ANY TIME BEFORE OR AFTER SHOP DRAWING REVIEW. 7. CONTRACTOR SHALL SUBMIT STRUCTURAL SHOP DRAWINGS FOR THE

FOLLOWING: • CONCRETE MIX DESIGN, MATERIALS, AND TEST REPORTS

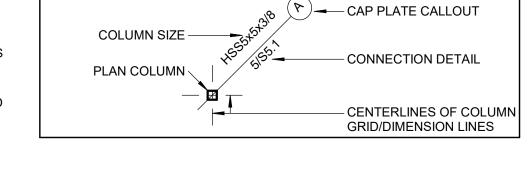
• CONCRETE REINFORCING STEEL, HARDWARE, AND FASTENERS • PRE-ENGINEERED METAL BUILDING

### SYMBOLS / ARREVIATIONS

|     |       | STIVIDU                          | L9 / AD          | DKI    | =VI  | AHONS  |
|-----|-------|----------------------------------|------------------|--------|------|--|
|     | S     | YMBOL/TAG                        | DESCR            | IPTION |      | APPLIES TO                                       |
| 0   |       | X<br>SX.X                        | DETAIL O         |        |      | DETAILS, SECTIONS,<br>& ELEVATIONS               |
| .BE |       | . = XXX' - XX"<br>. = XXX' - XX" | ELEVATION        |        |      | FOUNDATION WALLS<br>AND LEDGES (SIM)             |
|     | •     | T.O.X.<br>XXX' - XX"             | ELEVATIO         | ON MAR | K    | LEVELS, SPOT<br>ELEVATIONS, & PLAN<br>ELEVATIONS |
| HE  | T.O.  | S. = XXX' - XX"                  | TOP OF           |        |      | PLAN VIEW NOTATIONS                              |
|     | JST B | RG = XXX' - XX"                  | JOIST B<br>ELEVA | _      |      | PLAN VIEW NOTATIONS                              |
| IE  |       | X                                | REVISIO          | N MARK | (    | SHEET REVISIONS                                  |
|     | ABV   | DEFINITION                       |                  | ABV    | DEF  | INITION  |
| LS  | AR    | ANCHOR BOLT                      |                  | SIM    | SIMI | I AR CONDITION                                   |

ANCHOR BOL SIMILAR CONDITION CONTRACTION JOINT STD STANDARD CENTERLINE TOC | TOP OF CONCRETE DIA DIAMETER TOD TOP OF DECK EOD | EDGE OF DECK ANGLE TOL TOP OF LEDGE TOM | TOP OF MASONRY EOS | EDGE OF SLAB EXT EXTERIOR TOS | TOP OF STEEL TOW | TOP OF WALL GA GAUGE HAS | HEADED ANCHOR STUDS TYP TYPICAL CONDITION OC ON CENTER UNO UNLESS NOTED OTHERWISE PAF | POWDER ACTUATED FASTNR | WP | WORK POINT

BASE PLATE TAG BASE PLATE CALLOUT — BOTTOM OF BASE PLATE PLAN COLUMN \ ELEVATION - CENTERLINES OF COLUMN PLATE SHOWN FOR-GRID/DIMENSION LINES ORIENTATION COLUMN TAG





2000 psf

ASTM C 33, 3/4" MAX AGG. SIZE.

# **DESIGN INFORMATION**

**BUILDING CODE:** 2018 INTERNATIONAL BUILDING CODE AS ADOPTED AND/OR AMENDED BY LOCAL BUILDING CODES SOILS INFORMATION: THE FOUNDATION DESIGN PROVIDED IS BASED OFF OF A MINIMUM ALLOWABLE PRESUMPTIVE LOAD-BEARING VALUE AS INDICATED BY IBC TABLE 1806.2 IN LIEU OF A SITE BASE GEOTECHNICAL EVALUATION. IT IS RECOMMENDED THAT A QUALIFIED GEOTECHNICAL ENGINEER BE RETAINED TO VERIFY THESE ASSUMPTIONS PRIOR TO CONSTRUCTION. BY USE OF THIS FOUNDATION DESIGN WITHOUT PROVIDING SUCH VERIFICATION, APEX WILL NOT BE LIABLE FOR THIS DESIGN PARAMETER,  $\mathsf{I}$  AND THE OWNER SHALL ACCEPT ALL RISKS ASSOCIATED WITH DAMAGE  $\mathsf{T}$ THE STRUCTURE AS A RESULT OF EXPANSIVE, COMPRESSIBLE, SHIFTING AND/OR DIFFERENTIAL MOVEMENT AS A RESULT OF DIFFERING SUBGRADE CONDITIONS BETWEEN EXISTING AND NEW FOUNDATION ELEMENTS. FROST DEPTH

PRESUMPTIVE LOAD-BEARING PRESSURE

CONCRETE AGGREGATES

ELEVATED SLABS

FLOOR FLATNESS, FF

FLOOR LEVELNESS, FL

| MATERIAL SP                    | <b>ECIFICATIONS</b>   |
|--------------------------------|---|
| STEEL MATERIAL                 | SPECIFICATIONS  |
| STEEL MEMBERS                  | MATERIAL  |
| WIDE FLANGE SHAPES (W)         | ASTM A992   |
| CHANNELS (C), ANGLES (L)       | ASTM A36  |
| PLATES                         | ASTM A36  |
| HOLLOW STRUCTURAL SHAPES (HSS) | ASTM A500, GRADE C  |
| HIGH STRENGTH BOLTS            | ASTM F3125, GRADE A325  |
| ANCHOR BOLTS (HEX-HEAD UNO)    | ASTM F1554 (55 ksi) "S1"  |
| EPOXY ANCHOR RODS              | ASTM A36  |
| STEEL DECK, PLAIN STEEL        | ASTM A1008, (33 ksi)  |
| STEEL DECK, GALVANIZED         | ASTM A653, (33 ksi)   |
| NON-SHRINK GROUT, COL. BASES   | 5000 psi (28 DAY STRENGTH)  |
| CONCRETE & REINFORCIN          | IG STEEL SPECIFICATIONS   |
| MATERIAL                       | SPECIFICATION   |
| REINFORCING BARS               | ASTM A615, GRADE 60   |
| WELDED REBAR                   | ASTM A706   |
| WELDED WIRE FABRIC             | ASTM A1064  |
| PORTLAND CEMENT                | ASTM C 150  |
| FLY ASH                        | ASTM C 618, 15% MAX   |
|                                | STEEL MEMBERS WIDE FLANGE SHAPES (W) CHANNELS (C), ANGLES (L) PLATES HOLLOW STRUCTURAL SHAPES (HSS) HIGH STRENGTH BOLTS ANCHOR BOLTS (HEX-HEAD UNO) EPOXY ANCHOR RODS STEEL DECK, PLAIN STEEL STEEL DECK, GALVANIZED NON-SHRINK GROUT, COL. BASES CONCRETE & REINFORCIN MATERIAL REINFORCING BARS WELDED REBAR WELDED WIRE FABRIC PORTLAND CEMENT |

|  | EPOXY - THREADED F                        | ROD ANCI | HORS          | HILTI HIT-F    | 1Y 200 A C                                       | OR SIMPS          | ON SET 3G |
|--|---|----------|---------------|----------------|--|-------------------|-----------|
|  | <b>EPOXY - REINFORCIN</b>                 | G BARS   |               | HILTI HIT-H    | 1Y 200 R (                                       | OR SIMPS          | ON SET 3G |
|  | REBAR CONDITION                           |          |               | MINIMU         | JM CON   | CRETE (           | COVER     |
|  | FORMED SURFACES GROUND OR WEATHE          |          | ТО            |                | 2  | 2"                |           |
|  | UNFORMED SURFACI<br>WITH THE GROUND       | E IN CON | ГАСТ          |                | 3  | 3"                |           |
|  | WALLS AND SLABS NO<br>TO GROUND OR WEA    | _        | SED           |                | 1  | "                 |           |
|  | INTERIOR BEAMS ANI<br>(TO TIES OR STIRRUF |          | NS            |                | 1 1  | 1/2"              |           |
|  | CON                                       | ICRETE N | IIX DESIG     | N REQUIF       | REMENT   | S                 |           |
|  | CONCRETE USE                              | WEIGHT   | 28 DAY<br>f'c | CEMENT<br>TYPE | MAX<br>W/C<br>RATIO                              | SLUMP<br>(+/- 1") | % AIR     |
|  | FOOTINGS/PIERS                            | NW       | 3500 psi      | 1/11           | 0.55   | 5"                | 6% MAX    |
|  |   |          |               | +              | <del>                                     </del> | <del></del>       |           |

FOUNDATION WALLS | NW | 3500 psi | 1/II | 0.50 | 4" | 6% +/- 1%

NT. SLAB-ON-GRADE | NW | 4000 psi | I/II | 0.45 | 5" | 3% MAX

T-UP WALLS NW 4000 psi 1/II 0 45 4" 5% +/- 1 5%

CONCRETE SLAB SPECIFICATIONS

NW 5000 psi I/II 0.45 5" 1.5% +/-

SOV: 35 | MLV: 25

SOV: 24 | MLV: 17

| SHEET        | LIST - STRUCTURAL                |
|--------------|----------------------------------|
| SHEET NUMBER | SHEET NAME                       |
| S100         | GENERAL NOTES AND SPECIFICATIONS |
| S110         | SPECIAL INSPECTIONS              |
| S200         | FOUNDATION PLAN                  |
| S500         | TYPICAL FOUNDATION DETAILS       |

TYPICAL FOUNDATION DETAILS

4301 Indian Creek Parkway Overland Park, KS 66207 phone: 913.451.9390 fax: 913.451.9391 www.davidsonae.com

RELEASED FOR CONSTRUCTION



KANSAS CITY, MO 64108

816.421.3222

www.apex-engineers.com

Issue Date drawn by checked by revisions



drawing type Project Status

project number Project Number

| RECTANGULAR     | CIRCULAR        | BAR       | BAR    |
|-----------------|-----------------|-----------|--------|
| BEAM/COLUMN TIE | COLUMN/PIER TIE | CLEARANCE | SPLICE |
| D <sub>b</sub>  | STD. Ld         | (3)       | (4)    |

|      | SC      | HEDU    | JLE - I | PAD FOOTING                    |
|------|---------|---------|---------|--------------------------------|
| MARK | LENGTH  | WIDTH   | DEPTH   | REINFORCING                    |
| F4.5 | 4' - 6" | 4' - 6" | 3' - 0" | (12) #5 EACH WAY [(6) AT T&B]  |
| F5   | 5' - 0" | 5' - 0" | 3' - 0" | (14) #5 EACH WAY [(7) AT T&B]  |
| F6.5 | 6' - 6" | 6' - 6" | 3' - 0" | (18) #5 EACH WAY [(9) AT T&B]  |
| F7.5 | 7' - 6" | 7' - 6" | 4' - 0" | (26) #5 EACH WAY [(13) AT T&B] |

3. PROVIDE 1 Db (1" MINIMUM) CLEARANCE BETWEEN ADJACENT BARS.

5. DO NOT PROVIDE CLASS A SPLICE UNLESS SPECIFICALLY DETAILED.

2. PROVIDE 6" LAP AT ALL WELDED WIRE FABRIC JOINTS.

4. PROVIDE WIRÈ TIES AT EACH END OF BAR SPLICE.

| SC   | HED     | JLE - | CONTINUOUS               | FOOTING           |
|------|---------|-------|--------------------------|-------------------|
| MARK | WIDTH   | DEPTH | LONG BARS                | TRANS BARS        |
| CF16 | 1' - 4" | 36"   | (4) #4 CONT [(2) AT T&B] | #3 TIES AT 18" OC |
| CF27 | 2' - 3" | 36"   | (4) #4 CONT [(2) AT T&B] | #3 TIES AT 18" OC |

|      | SCHEDULE - SLAB ON GRADE |                 |  |  |  |  |
|------|--------------------------|-----------------|--|--|--|--|
| MARK | SLAB<br>THICKNESS        | WEIGHT<br>CLASS | SLAB REINFORCING                           | ADDITIONAL REQUIREMENTS                                      |  |  |
| SG4  | 4"                       | NW              | #3 AT 18"OC EA WAY OR 6X6<br>W2.9XW2.9 WWF | 10 MIL. VAPOR BARRIER ON 4"<br>OF 3/4" CLEAN, GRADED<br>ROCK |  |  |

| _   |    |    |
|---|----|----|
| <br>SDI TABLE 1.1   |    |    |
| INSPECTION OR EXECUTION TASKS PRIOR TO DECK PLACEMENT:  |    |    |
| TASK  | QC | QA |
| A. VERIFY COMPLIANCE OF MATERIALS (DECK AND ALL DECK ACCESSORIES) WITH CONSTRUCTION DOCUMENTS, INCLUDING PROFILES, MATERIAL PROPERTIES, AND BASE METAL THICKNESS. | Р  | Р  |
| B. DOCUMENT ACCEPTANCE OR REJECTION OF DECK AND DECK ACCESSORIES.   | Р  | Р  |

| INSPECTION OR EXECUTION TASKS AFTER DECK PLACEMENT  TASK  A. VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION DOCUMENTS. | QC<br>P | QA      |
|---|---------|---------|
| A. VERIFY COMPLIANCE OF DECK AND ALL DECK ACCESSORIES INSTALLATION WITH CONSTRUCTION  | -,-     | QA<br>D |
| ACCESSORIES INSTALLATION WITH CONSTRUCTION  | P       | В       |
|   | '       | Г       |
| B. VERIFY DECK MATERIALS ARE REPRESENTED BY THE MILL CERTIFICATIONS THAT COMPLY WITH THE CONSTRUCTION DOCUMENTS.  | N/A     | Р       |
| C. DOCUMENT ACCEPTANCE OR REJECTION OF INSTALLATION OF DECK AND DECK ACCESSORIES.   | Р       | Р       |

| SDI TABLE 1.3   |    |    |
|---|----|----|
| INSPECTION OR EXECUTION TASKS PRIOR TO WELDING                    |    |    |
| TASK  | QC | QA |
| A. WELDING PROCEDURE SPECIFICATIONS (WPS) AVAILABLE.              | 0  | 0  |
| B. MANUFACTURER CERTIFICATIONS FOR WELDING CONSUMABLES AVAILABLE. | 0  | 0  |
| C. MATERIAL IDENTIFICATION (TYPE/GRADE)                           | 0  | 0  |
| D. CHECK WELDING EQUIPMENT.                                       | 0  | 0  |

| INSPECTION OR EXECUTION TASKS DURING WELDING                    |    |    |
|---|----|----|
| TASK  | QC | QA |
| A. USE OF QUALIFIED WELDERS.                                    | 0  | 0  |
| B. CONTROL AND HANDLING OF WELDING CONSUMABLES.                 | 0  | 0  |
| C. ENVIRONMENTAL CONDITIONS (WIND SPEED, MOISTURE, TEMPERATURE) | 0  | 0  |
| D. WPS FOLLOWED   | 0  | 0  |

| TASK   | QC | QA |
|--|----|----|
| A. VERIFY SIZE AND LOCATION OF WELDS, INCLUDING SUPPORT, SIDELAP, AND PERIMETER WELDS. | Р  | Р  |
| B. WELDS MEET VISUAL ACCEPTANCE CRITERIA.  | Р  | Р  |
| C. VERIFY REPAIR ACTIVITIES.   | Р  | Р  |
| D. DOCUMENT ACCEPTANCE OR REJECTION OF WELDS.  | Р  | Р  |

SDI TABLE 1.5

| SDI TABLE 1.6  |    |    |
|--|----|----|
| INSPECTION OR EXECUTION TASKS PRIOR TO MECHANICAL FASTENING                      |    |    |
| TASK   | QC | QA |
| A. MANUFACTURER INSTALLATION INSTRUCTIONS<br>AVAILABLE FOR MECHANICAL FASTENERS. | 0  | 0  |
| B. PROPER TOOLS AVAILABLE FOR FASTENER INSTALLATION.                             | 0  | 0  |
| C.PROPER STORAGE FOR MECHANICAL FASTENERS.                                       | 0  | 0  |
|  |    |    |

|        | SDI TABLE 1.7  |    |    |
|--------|--|----|----|
|        | INSPECTION OR EXECUTION TASKS DURING MECHANICAL FASTENING                  |    |    |
|        | TASK   | QC | QA |
|        | A. FASTENERS ARE POSITIONED AS REQUIRED.                                   | 0  | 0  |
| _<br>_ | B. FASTENERS ARE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. | 0  | 0  |

| SDI TABLE 1.8  |    |    |
|--|----|----|
| INSPECTION OR EXECUTION TASKS AFTER MECHANICAL FASTENING         |    |    |
| TASK   | QC | QA |
| A. CHECK SPACING, TYPE, AND INSTALLATION OF SUPPORT FASTENERS.   | Р  | Р  |
| B. CHECK SPACING, TYPE, AND INSTALLATION OF SIDELAP FASTENERS.   | Р  | Р  |
| C. CHECK SPACING, TYPE, AND INSTALLATION OF PERIMETER FASTENERS. | Р  | Р  |
| D. VERIFY REPAIR ACTIVITIES.                                     | Р  | Р  |
| E. DOCUMENT ACCEPTANCES OR REJECTION OF MECHANICAL FASTENERS.    | Р  | Р  |

| AISC TABLE N5.4-1                                |    |    |
|--|----|----|
| INSPECTION TASKS PRIOR TO WELDING                | QC | QA |
| WELDING PROCEDURE SPECIFICATIONS (WPSs) 'AILABLE | Р  | Р  |
| MANUFACTURER CERTIFICATIONS FOR WELDING          | Р  | Р  |

| 1 | CONSUMABLES AVAILABLE  |   |   |
|---|--|---|---|
|   | 3. MATERIAL IDENTIFICATION (TYPE/GRADE)  | 0 | 0 |
| ı | 4. WELDER IDENTIFICATION SYSTEM <sup>1</sup>   | 0 | 0 |
|   | <ul> <li>5. FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)</li> <li>• JOINT PREPARATION</li> <li>• DIMENSIONS (ALIGNMENT, ROOT OPENING, ROOT FACE, BEVEL)</li> <li>• CLEANLINESS (CONDITION OF STEEL SURFACES)</li> <li>• TACKING (TACK WELD QUALITY AND LOCATION)</li> <li>• BACKING TYPE AND FIT (IF APPLICABLE)</li> </ul> | 0 | 0 |
| ı | 6. CONFIGURATION AND FINISH OF ACCESS HOLES  | 0 | 0 |
|   | <ul> <li>7. FIT-UP OF FILLET WELDS</li> <li>DIMENSIONS (ALIGNMENT, GAPS AT ROOT)</li> <li>CLEANLINESS (CONDITION OF STEEL SURFACES)</li> <li>TACKING (TACK WELD QUALITY AND LOCATION)</li> </ul>   | 0 | 0 |
| 1 | 8. CHECK WELDING EQUIPMENT   | 0 | - |

<sup>1</sup> THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW-STRESS TYPE

| INSPECTION TASKS DURING WELDING  | QC | Q. |
|--|----|----|
| 1. USE OF QUALIFIED WELDERS  | 0  | C  |
| <ul><li>2. CONTROL AND HANDLING OF WELDING CONSUMABLES</li><li>PACKAGING</li><li>EXPOSURE CONTROL</li></ul>  | 0  | C  |
| 3. NO WELDING OVER CRACKED TACK WELDS  | 0  | C  |
| <ul><li>4. ENVIRONMENTAL CONDITIONS</li><li>WIND SPEED WITHIN LIMITS</li><li>PRECIPITATION AND TEMPERATURE</li></ul>   | 0  | C  |
| 5. WPS FOLLOWED  SETTINGS ON WELDING EQUIPMENT  TRAVEL SPEED  SELECTED WELDING MATERIALS  SHIELDING GAS TYPE/FLOW RATE  PREHEAT APPLIED  INTERPASS TEMPERATURE MAINTAINED (MIN./MAX.)  PROPER POSITION (F, V, H, OH) | 0  | C  |
| 6. WELDING TECHNIQUES  INTERPASS AND FINAL CLEANING  EACH PASS WITHIN PROFILE LIMITATIONS  EACH PASS MEETS QUALITY REQUIREMENTS  | 0  | C  |

| AISC TABLE N5.4-3   |    |    |
|---|----|----|
| INSPECTION TASKS AFTER WELDING  | QC | QA |
| 1. WELDS CLEANED  | 0  | 0  |
| 2. SIZE, LENGTH AND LOCATION OF WELDS   | Р  | Р  |
| 3. WELDS MEET VISUAL ACCEPTANCE CRITERIA  CRACK PROHIBITION  WELD/BASE-METAL FUSION  CRATER CROSS SECTION  WELD PROFILES  WELD SIZE  UNDERCUT  POROSITY | Р  | Р  |
| 4. ARC STRIKES  | Р  | Р  |
| 5. K-AREA <sup>1</sup>  | Р  | Р  |
| 6. BACKING REMOVED AND WELD TABS REMOVED (IF REQUIRED)  | Р  | Р  |
| 7. REPAIR ACTIVITIES  | Р  | Р  |
| 8. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT OR MEMBER   | Р  | Р  |

| 1 WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATE    | SOR     |     |
|---|---------|-----|
| STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUAL   | LY INSP | ECT |
| THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE | WELD    |     |
|   |         |     |

| AISC TABLE N5.6-1   |    |    |
|---|----|----|
| INSPECTION TASKS PRIOR TO BOLTING   | QC | QA |
| 1. MANUFACTURER'S CERTIFICATIONS AVAILABLE FOR FASTENER MATERIALS   | 0  | Р  |
| 2. FASTENERS MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS  | 0  | 0  |
| 3. PROPER FASTENERS SELECTED FOR THE JOINT DETAIL (GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE)                 | 0  | 0  |
| 4. PROPER BOLTING PROCEDURE SELECTED FOR JOINT DETAIL   | 0  | 0  |
| 5. CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS | 0  | 0  |
| 6. PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED         | Р  | 0  |
| 7. PROPER STORAGE PROVIDED FOR BOLTS, NUTS,<br>WASHERS AND OTHER FASTENER COMPONENTS  | 0  | 0  |

| <b>AISC TABLE N5.6-2</b>   |    |    |   |
|--|----|----|---|
| INSPECTION TASKS DURING BOLTING  | QC | QA |   |
| 1. FASTENER ASSEMBLIES, OF SUITABLE CONDITION,<br>PLACED IN ALL HOLES AND WASHERS (IF REQUIRED) ARE<br>POSITIONED AS REQUIRED                    | 0  | 0  |   |
| 2. JOINT BROUGHT TO THE SNUG-TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION  | 0  | 0  |   |
| 3. FASTENER COMPONENT NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING   | 0  | 0  |   |
| FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES | 0  | 0  | 2 |
|  |    |    |   |

| AISC TABLE N5.6-3   |    |    |
|---|----|----|
| INSPECTION TASKS AFTER BOLTING                            | QC | QA |
| 1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS | Р  | Р  |

| AISC TABLE N6.1  |    |    |
|--|----|----|
| INSPECTION OF STEEL ELEMENTS OF COMPOSITE CONSTRUCTION PRIOR TO CONCRETE PLACEMENT | QC | QA |
| 1. PLACEMENT AND INSTALLATION OF STEEL DECK  | Р  | Р  |
| 2. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS                         | Р  | Р  |
| 3. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS                              | Р  | Р  |



# STATEMENT OF SPECIAL INSPECTION

| IBC CODE       | CONSTRUCTION TYPE   | FREQUENC |      |
|----------------|---|----------|------|
| REFERENCE      | CONSTRUCTION TITE   | CONT.    | PER  |
| 1705.2         | STEEL CONSTRUCTION  |          |      |
| 1705.2.1       | STRUCTURAL STEEL  |          |      |
|                | PECTION FOR STRUCTURAL STEEL SHALL BE                       | IN       |      |
|                | WITH THE QUALITY ASSURANCE INSPECTION                       |          |      |
| REQUIREMENT    | S OF AISC 360. ( <b>REFER TO AISC CHARTS ON T</b>           | HIS SHE  | ET)  |
| 1705.2.2       | COLD-FORMED STEEL DECK                                      |          |      |
|                | PECTIONS AND QUALIFIACTIONS OF WELDING                      |          |      |
|                | FOR COLD-FORMED STEEL FLOOR AND ROOF I                      |          | IALL |
|                | ANCE WITH THE QUALITY ASSURANCE INSPEC                      |          |      |
|                | S OF SDI QA/QC. (REFER TO SDI CHARTS ON T                   |          | EI)  |
|                | OPEN-WEB STEEL JOIST AND JOIST GIRDERS                      |          |      |
|                | ON OF OPEN-WEB STEEL JOISTS AND JOIST GI                    | RDERS:   |      |
| A. END CONN    | NECTIONS - WELDING OR BOLTED                                |          | Х    |
| B. BRIDGING    | - HORIZONTAL OR DIAGONAL                                    |          |      |
| 1. STANDA      | RD BRIDGING   |          | Χ    |
| 2. BRIDGIN     | G THAT DIFFERS FROM THE SJI                                 |          | Х    |
| SPECIFICA      | TIONS LISTED IN SECTION 2207.1                              |          |      |
| 1705.3         | REINFORCED CONCRETE   |          |      |
| 1. INSPECTION  | OF REINFORCING STEEL, INCLUDING                             |          | Х    |
| PRESTRESSIN    | G TENDONS, AND PLACEMENT.                                   |          | ^    |
| 2. INSPECTION  | OF REINFORCING STEEL WELDING:                               |          |      |
| A. VERIFICAT   | ION OF WELDABILITY OF REINFORCING                           |          | Х    |
| STEEL OTHE     | R THAN ASTM A 706.  |          |      |
| B. INSPECT S   | SINGLE-PASS FILLET WELDS, MAXIMUM 5/16"                     |          | Χ    |
| C. INSPECT A   | ALL OTHER WELDS   | Х        |      |
| 3. INSPECTION  | OF ANCHORS CAST IN CONCRETE:                                |          | Х    |
| 4. INSPECTION  | OF ANCHORS POST-INSTALLED IN                                |          |      |
| HARDENED CO    | NCRETE MEMBERS.   |          |      |
|                | ANCHORS INSTALLED IN HOIZONTALLY OR                         |          |      |
|                | NCLINED ORIENTATIONS TO RESIST                              | X        |      |
|                | TENSION LOADS.  |          |      |
|                | CAL ANCHORS AND ADHESIVE ANCHORS NOT                        |          | Х    |
| DEFINED IN 4   |   |          |      |
|                | JSE OF REQUIRED MIX DESIGN                                  |          | Х    |
| 6. PRIOR TO CO | ONCRETE PLACEMENT, FABRICATE                                |          |      |
|                | OR STRENGTH TESTS, PERFOR SLUMP AND                         | X        |      |
|                | TESTS, AND DETERMINE THE TEMPERATURE                        |          |      |
| OF THE CONCE   |   |          |      |
|                | OF CONCRETE AND SHOTCRETE OR PROPER APPLICATION TECHNIQUES. | X        |      |
|                |   |          |      |
| O. VERIFY WAIN | ITENANCE OF SPECIFIED CURING                                |          | Χ    |

|   | 0: 11 to 1 20 11 01 1 1 1 1 20 1 1 20 2 2 2 2 2        |          |      |
|---|--|----------|------|
|   | A. APPLICATION OF PRESTRESSING FORCES.                 | Х        |      |
|   | B. GROUTING OF BONDED PRESTRESSING TENDONS IN          | Х        |      |
| _ | THE SEISMIC-FORCE-RESISTING SYSTEM.                    |          |      |
|   | 10. ERECTION OF PRECAST CONCRETE MEMBERS.              |          | Х    |
|   | 11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR   |          |      |
|   | TO STRESSING OF TENDONS IN POST-TENSIONED              |          | X    |
|   | CONCRETE AND PRIOR TO REMOVAL OF SHORING.              |          |      |
|   | 12. INSPECT FORMWORK FOR SHAPE, LOCATION AND           |          | X    |
|   | DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.        |          | ^    |
|   | SPECIAL INSPECTION AGENCY TO PERFORM TESTS AT SEVE     | N (7) DA | NYS  |
|   | AND AT TWENTY EIGHT (28) DAYS. A STRENGTH TEST SHALL   | BE THE   |      |
|   | AVERAGE OF THE STRENGTHS OF AT LEAST TWO (2) 6"x12" C  | YLINDE   | RS   |
|   | OR AT LEAST THREE (3) 4"x8" CYLINDERS MADE FROM THE SA | AME SA   | MPLE |
|   | OF CONCRETE. HOLD ONE ADDITIONAL CYLINDER IN RESERV    |          |      |
|   | PROJECT IS COMPLETED. TESTING LABORATORY IS TO FURN    | IISH     |      |
|   | ARCHITECT/ENGINEER WITH TEST RESULTS PROMPTLY.         |          |      |
|   | FREQUENCY OF TESTING IS TO BE IN ACCORDANCE WITH AC    | CI 318:  |      |
|   | A. ONCE EACH DAY A GIVEN CLASS IS PLACED, NOR LESS 1   | HAN.     |      |
|   | B. ONCE FOR EACH 150 CUBIC YDS OF EACH CLASS PLACE     | D EACH   | DAY. |
|   |  |          |      |

|   | NOR LESS THAN.  |
|---|---|
| ı | C. ONCE FOR EACH 5000 SQFT OR SLAB WALL OR SURFACE AREA |
|   | PLACED EACH DAY.  |

| JALLI INSPECT |    | EUI |                | . =                                  |                                    |  |
|---------------|----|-----|----------------|--------------------------------------|------------------------------------|--|
| HE WELD       |    |     | 1705.6         | SOILS                                |                                    |  |
|               |    |     |                | ERIALS BELOW SHALLOW FOUNDATIONS ARE |                                    |  |
|               |    |     | ADEQUATE TO    | ACHIEVE THE DESIGN BEARING CAPACITY. |                                    |  |
|               |    |     | 2. VERIFY EXCA | AVATIONS ARE EXTENDED TO PROPER      |                                    |  |
|               |    |     | DEPTH AND HA   | VE REACHED PROPER MATERIAL.          |                                    |  |
|               | QC | QA  |                | ASSIFICATION AND TESTING OF          |                                    |  |
|               | 0  | Р   |                | ILL MATERIALS.                       |                                    |  |
|               |    | ·   |                | OF PROPER MATERIALS, DENSITIES AND   |                                    |  |
|               | 0  | 0   |                | SES DURING PLACEMENT AND COMPACTION  |                                    |  |
|               | U  | '   | OF COMPACTE    |                                      |                                    |  |
| _             |    |     | •              | ACEMENT OF COMPACTED FILL, OBSERVE   |                                    |  |
|               | 0  | 0   |                | D VERIFY THAT SITE HAS BEEN PREPARED |                                    |  |
|               |    |     | PROPERLY.      |                                      |                                    |  |
|               |    |     | 1705.8         | CAST-IN-PLACE DEEP FOUNDATIONS       |                                    |  |
|               |    |     | 1. OBSERVE DF  | RILLING OPERATIONS AND MAINTAIN      |                                    |  |
| Έ             |    |     | COMPLETE ANI   | D ACCURATE RECORDS FOR EACH ELEMENT. |                                    |  |
| F             | 0  | o   | 2. VERIFY PLAC | EMENT LOCATIONS AND PLUMBNESS,       |                                    |  |
|               |    |     |                | CONFIRM ELEM                         | MENT DIAMETERS, BELL DIAMETERS (IF |  |
|               |    |     |                | ENGTHS, EMBEDMENT INTO BEDROCK (IF   |                                    |  |
| D             | Р  | 0   | APPLICABLE) A  | ND ADEQUATE END-BEARING STRATA       |                                    |  |
|               | '  |     | CAPACITY. REC  | CORD CONCRETE OR GROUT VOLUMES.      |                                    |  |
|               |    |     | 1705.11.2      | COLD-FORMED STEEL FRAMING            |                                    |  |
|               | 0  | 0   | 1. MATERIAL VE | ERIFICATION:                         |                                    |  |
|               |    |     | •              | SIZE AND THICKNESS TO MATCH CONTRACT |                                    |  |
|               |    |     | DOCUMENTS      | INCLUDING TRACKS, STUDS, ASSEMBLIES, |                                    |  |
|               |    |     |                |                                      |                                    |  |

TEMPERATURE AND TECHNIQUES.

9. INSPECTION OF PRESTRESSED CONCRETE:

|   | CONNECTORS.   |  |  |  |  |  |  |  |  |  |
|---|---|--|--|--|--|--|--|--|--|--|
|   | B. FASTENER MATERIAL AND COMPONENTS   |  |  |  |  |  |  |  |  |  |
| ١ | 2. INSPECTION OF INISTALLATION  |  |  |  |  |  |  |  |  |  |
|   | A. INSPECT MEMBER LAYOUT, CONNECTION, ORIENTATION   |  |  |  |  |  |  |  |  |  |
|   | B. SPECIAL INSPECTION REQUIRED FOR FASTENERS PER MANUFACTURER.                            |  |  |  |  |  |  |  |  |  |
|   | C. INSPECTION PRIOR TO SHEATHING: VERIFY FLANGE ARE INTACT, STUDS ARE NOT CUT OR SPLICED. |  |  |  |  |  |  |  |  |  |
|   | 3. INSPECTION OF WELDING.   |  |  |  |  |  |  |  |  |  |
|   | 1705.14 SPRAYED FIRE-RESISTANT MATERIALS  |  |  |  |  |  |  |  |  |  |
|   | 1. STRUCTURAL MEMBER SURFACE CONDITIONS.  |  |  |  |  |  |  |  |  |  |
|   | 2. APPLICATION.   |  |  |  |  |  |  |  |  |  |
|   | 3. THICKNESS.   |  |  |  |  |  |  |  |  |  |
|   | 4. DENSITY.   |  |  |  |  |  |  |  |  |  |
|   | 5. BOND STRENGTH.   |  |  |  |  |  |  |  |  |  |
|   |   |  |  |  |  |  |  |  |  |  |

4301 Indian Creek Parkway Overland Park, KS 66207 phone: 913.451.9390 fax: 913.451.9391 www.davidsonae.com



KANSAS CITY, MO 64108 816.421.3222 www.apex-engineers.com

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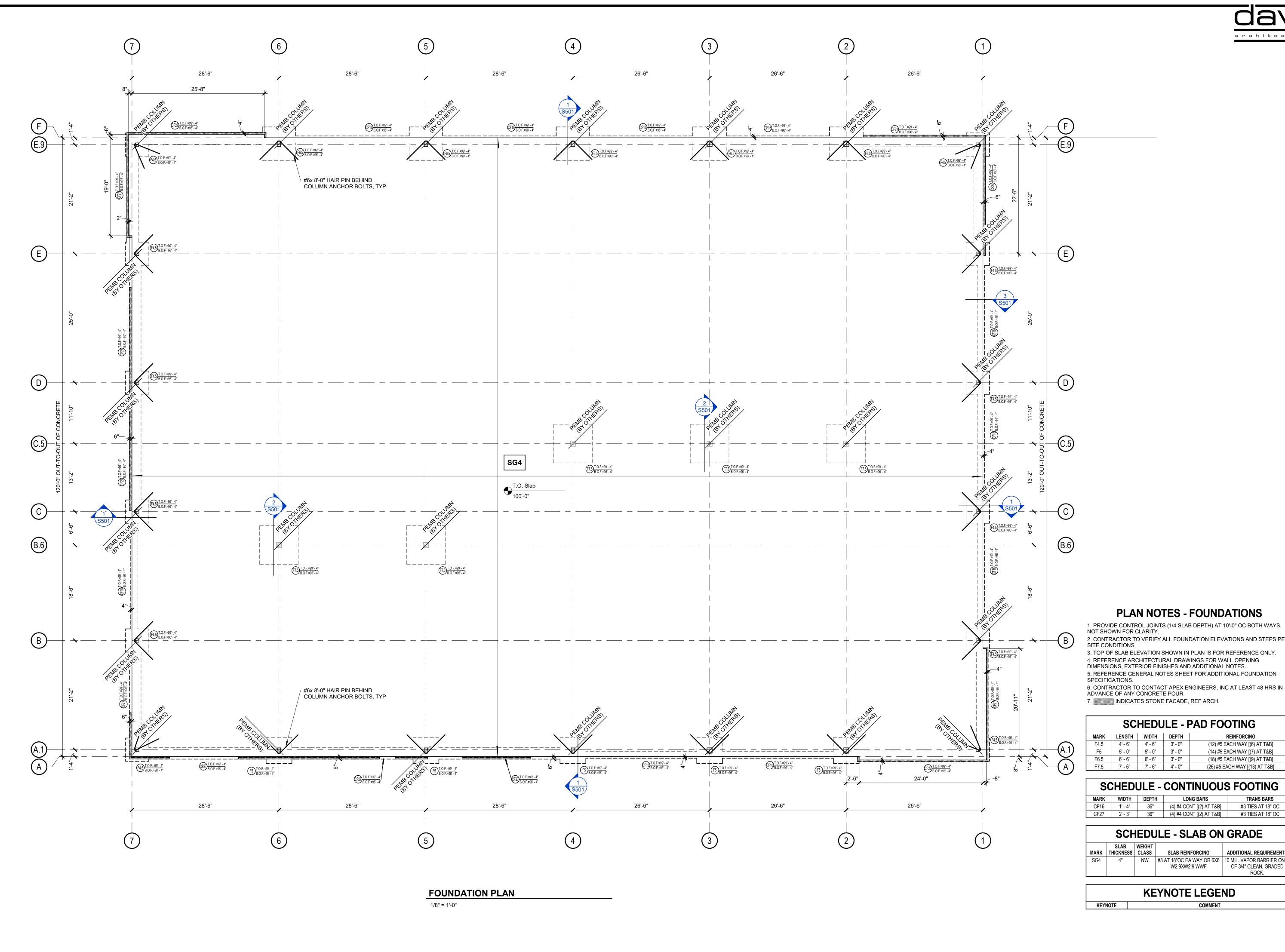
revisions



drawing type

Project Status

project number



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RELEASED FOR
CONSTRUCTION
As Noted on Plans Review



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1. PROVIDE CONTROL JOINTS (1/4 SLAB DEPTH) AT 10'-0" OC BOTH WAYS, NOT SHOWN FOR CLARITY. 2. CONTRACTOR TO VERIFY ALL FOUNDATION ELEVATIONS AND STEPS PER

3. TOP OF SLAB ELEVATION SHOWN IN PLAN IS FOR REFERENCE ONLY. 4. REFERENCE ARCHITECTURAL DRAWINGS FOR WALL OPENING DIMENSIONS, EXTERIOR FINISHES AND ADDITIONAL NOTES. 5. REFERENCE GENERAL NOTES SHEET FOR ADDITIONAL FOUNDATION

6. CONTRACTOR TO CONTACT APEX ENGINEERS, INC AT LEAST 48 HRS IN ADVANCE OF ANY CONCRETE POUR. 7. INDICATES STONE FACADE, REF ARCH.

|    | ;       | SCHED      | ULE -   | PAD FOOTING                    |
|----|---------|------------|---------|--------------------------------|
| MA | RK LEN  | GTH WIDTH  | DEPTH   | REINFORCING                    |
| F4 | .5 4' - | 6" 4' - 6" | 3' - 0" | (12) #5 EACH WAY [(6) AT T&B]  |
| F: | 5 5' -  | 0" 5' - 0" | 3' - 0" | (14) #5 EACH WAY [(7) AT T&B]  |
| F6 | .5 6' - | 6" 6' - 6" | 3' - 0" | (18) #5 EACH WAY [(9) AT T&B]  |
| F7 | .5 7' - | 6" 7' - 6" | 4' - 0" | (26) #5 EACH WAY [(13) AT T&B] |

### **SCHEDULE - CONTINUOUS FOOTING** MARK WIDTH DEPTH LONG BARS TRANS BARS

|      | SCH               | IEDL            | JLE - SLAB ON                              | GRADE   |
|------|-------------------|-----------------|--|---|
| MARK | SLAB<br>THICKNESS | WEIGHT<br>CLASS | SLAB REINFORCING                           | ADDITIONAL REQUIREMENTS                                       |
| SG4  | 4"                | NW              | #3 AT 18"OC EA WAY OR 6X6<br>W2.9XW2.9 WWF | 10 MIL. VAPOR BARRIER ON 4"<br>OF 3/4" CLEAN, GRADED<br>ROCK. |

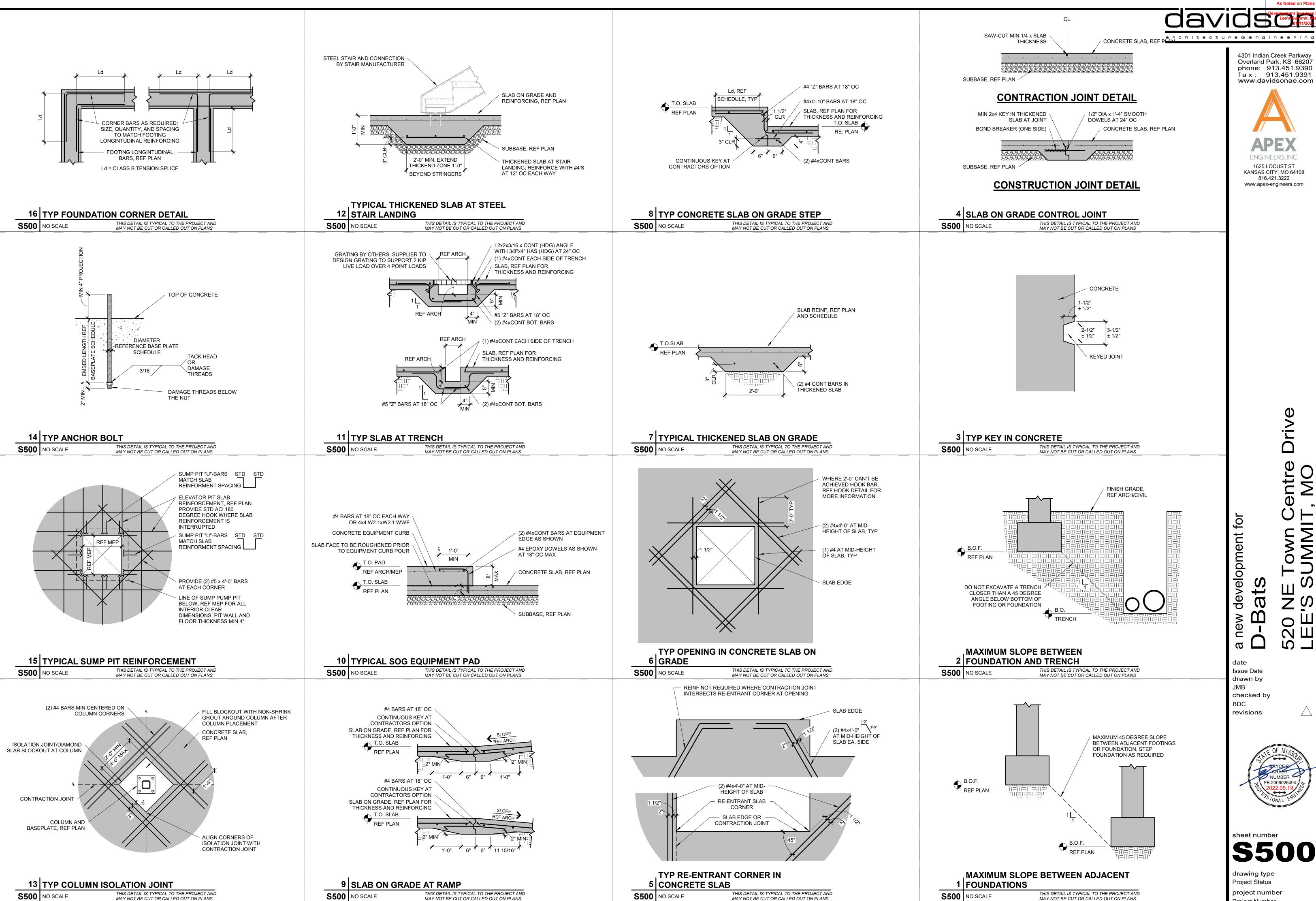
|      | KEYNOTE LEGEN |
|------|---------------|
| NOTE | COMMENT       |

Issue Date drawn by

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drawing type Project Status project number



THIS DETAIL IS TYPICAL TO THE PROJECT AND MAY NOT BE CUT OR CALLED OUT ON PLANS

S500 NO SCALE

MAY NOT BE CUT OR CALLED OUT ON PLANS

CONSTRUCTION As Noted on Plans Review

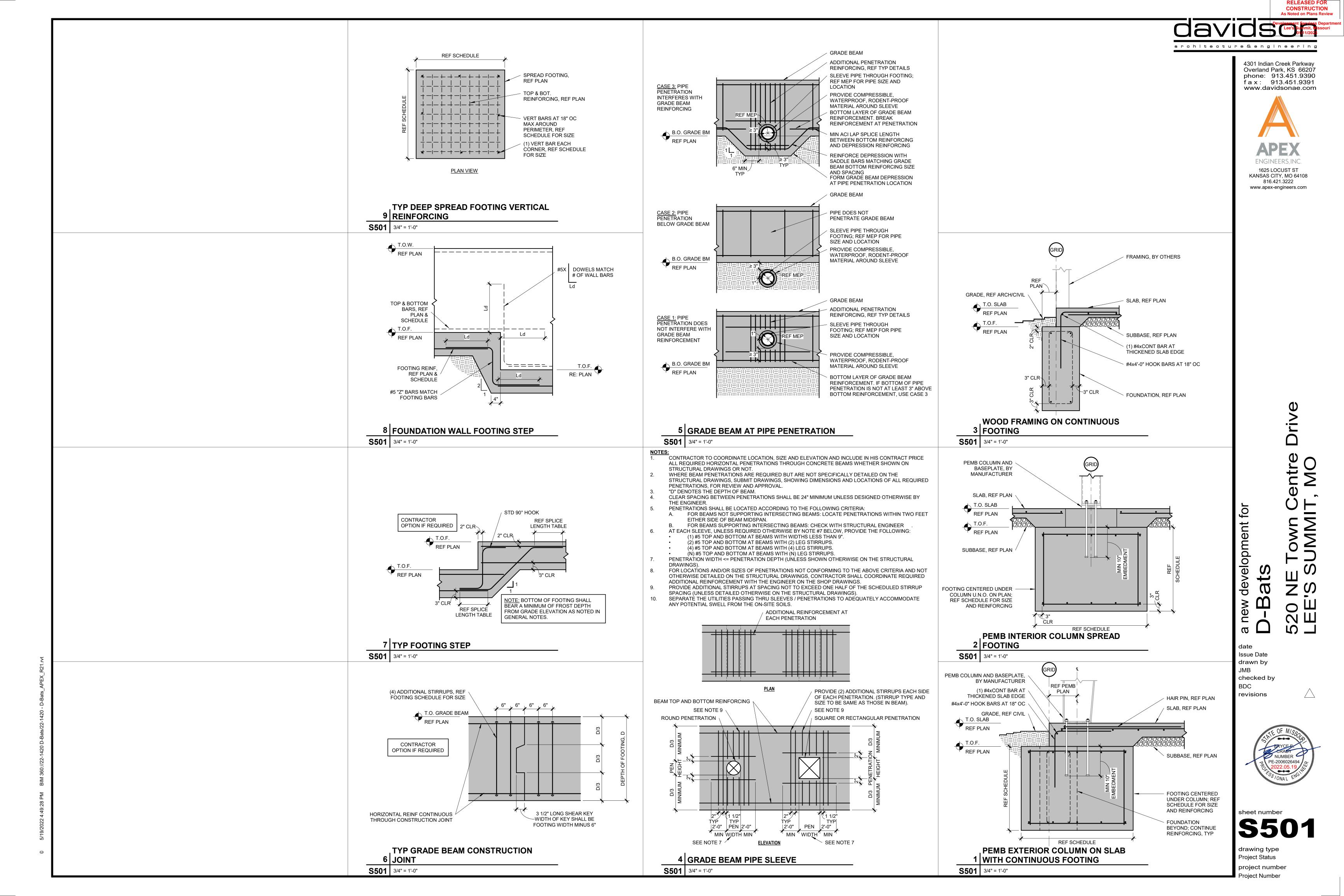
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PLUMBING AND MECHANICAL SYSTEMS OUTLINED. B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR

APPROVAL AS REQUIRED BY THE AUTHORITIES C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE LAWS, CODES AND REGULATIONS

OF THE GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE. D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK

E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, PIPE, DUCT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL

F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY WILL BE

G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE. 2. OPERATION AND MAINTENANCE MANUALS:

A DURING THE COURSE OF CONSTRUCTION COLLECT AND COMPILE OPERATING INSTRUCTIONS WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT.

B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION IN THE OPERATION AND MAINTENANCE MANUALS. C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES, ETC. SHALL BE BOUND IN A

3-RING BINDER AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC.

A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN, UNLESS NOTED OTHERWISE

4. MOTORS: A. PROVIDE THERMAL OVERLOAD PROTECTION FOR EACH MOTOR PROVIDED BY THIS WORK.

5. TESTING, BALANCING, AND CLEANING A. ALL PIPING SHALL BE TESTED FOR LEAKS BEFORE BEING CONCEALED IN WALL CONSTRUCTION OR

B. SEMER AND VENT PIPING SHALL BE HYDROSTATICALLY TESTED WITH NO LESS THAN 10 FEET OF HEAD FOR A PERIOD OF NOT LESS THAN 15 MINUTES, PER THE LOCAL PLUMBING CODE, WITH NO LEAKS.

C. FIRE PROTECTION PIPING SHALL BE TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA. D. DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 IMES THE OPERATING PRESSURE, BUT NOT LESS THAN 60 PSI, FOR A PERIOD OF NOT LESS THAN 2

E. NATURAL GAS PIPING SHALL BE PNEUMATICALLY TESTED AT A PRESSURE OF NOT LESS THAN 1-1/2 TIMES THE OPERATING PRESSURE, BUT NOT LESS THAN 50 PSI, FOR A PERIOD OF NOT LESS THAN 2 HOURS, WITH NO LEAKS.

F. DUCTMORK AND PIPING SHALL BE BALANCED BY QUALIFIED INDEPENDENT BALANCING PERSONNEL WHO HAVE PREVIOUS EXPERIENCE WITH BALANCING PROCEDURES AND ARE CERTIFIED BY THE ASSOCIATED AIR BALANCE

COUNCIL (AABC) OR NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB) 1) BALANCING SHALL INCLUDE THE BALANCING OF THE EQUIPMENT AND AIR DISTRIBUTION SYSTEMS TO PROVIDE DESIGN QUANTITIES INDICATED AND VERIFICATION OF PERFORMANCE OF ALL

EQUIPMENT AND AUTOMATIC CONTROLS. 2) WITH IN 30 DAYS OF THE COMPLETION OF THE TESTING AND BALANCING WORK, SUBMIT THE TEST AND BALANCING REPORT BEARING THE SIGNATURE OF THE TEST AND BALANCE ENGINEER. THE REPORTS SHALL BE CERTIFIED PROOF THAT THE SYSTEMS HAVE BEEN TESTED ADJUSTED AND BALANCED IN ACCORDANCE WITH THE REFERENCED STANDARDS: ARE AN ACCURATE REPRESENTATION OF HOM THE SYSTEMS HAVE BEEN INSTALLED AND ARE OPERATING. REPORTS SHALL BE BOUND IN A VINYL BINDER AND THE BINDER LABELED OR MAY BE AN ELECTRONIC PDF SUBMITTAL

G. BEFORE DOMESTIC WATER PIPING IS PLACED IN SERVICE, ALL DOMESTIC WATER DISTRIBUTION SYSTEMS, INCLUDING THOSE FOR COLD WATER AND HOT WATER SYSTEMS, SHALL BE FLUSHED, STERILIZED AND CHLORINATED IN ACCORDANCE WITH HEALTH DEPARTMENT REGULATIONS. THE SYSTEMS SHALL BE THOROUGHLY FLUSHED OF ALL DIRT AND FOREIGN MATTER, THEN FILLED WITH WATER TREATED WITH 50 PPM OF CHLORINE. DURING THE FILLING PROCESS, VALVES AND FAUCETS SHALL BE OPENED SEVERAL TIMES TO ASSURE TREATMENT OF THE ENTIRE SYSTEM. THE TREATED WATER SHALL BE LEFT IN THE SYSTEM FOR 24 HOURS AFTER WHICH TIME THE SYSTEM SHALL BE FLUSHED; IF THE RESIDUAL CHLORINE IS NOT LESS THAN 10 PPM, THE FLUSHING SHALL BE REPEATED. AFTER STERILIZATION, SAMPLES OF WATER IN THE SYSTEM SHALL BE APPROVED BY THE BOARD OF HEALTH. 6. PLUMBING:

A. PROVIDE AN APPROVED WATER HAMMER ARRESTOR FOR EACH PLUMBING FIXTURE SUPPLY AS REQUIRED BY FIXTURE MANUFACTURER.

B. ALL EXPOSED WASTE PIPE SHALL BE CHROME PLATED BRASS PIPE, NO FERROUS PIPE.

C. PROVIDE CLEANOUTS AT EACH CHANGE OF DIRECTION AND AT 100 FOOT INTERVALS IN STRAIGHT RUNS. D. PROVIDE ACCESS PANELS FOR ALL CONCEALED VALVES AND TRAPS. E. CLEANOUTS:

1) VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL 2) QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL.

3) CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL. 4) UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL. 5) WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.

6) GRADE: JR SMITH  $\pm4256$ , OR EQUAL, WITH HEAVY DUTY CAST IRON BODY AND COVER.

F. PROVIDE DIELECTRIC UNIONS WITH APPROPRIATE END CONNECTIONS TO MATCH THE PIPE SYSTEM IN WHICH INSTALLED (SCREWED, SOLDERED, OR FLANGED). PROVIDE DIELECTRIC UNIONS ON ALL PIPING CONNECTIONS TO HOT WATER HEATERS AND EXPANSION TANKS.

G. MATER HEATERS:

1) EVERY WATER HEATER SHALL HAVE AN APPROVED MEANS INSTALLED ON THE COLD WATER SUPPLY LINE ABOVE THE EQUIPMENT TO PREVENT SIPHONING OF A STORAGE WATER HEATER OR TANK. 2) BOTTOM FED WATER HEATERS AND TANKS CONNECT TO WATER HEATERS SHALL HAVE A VACCUM RELIEF VALVE INSTALLED. ANSI Z21.22.

3) STORAGE HEATERS OPERATING ABOVE ATMOSPHERIC PRESSURE SHALL HAVE AN APPROVED PRESSURE RELIEF VALVE AND/OR TEMPERATURE RELIEF VALVE.

H. ALL SEMER PIPING LOCATED INSIDE THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING SLOPES. ) INSTALL 2-1/2" AND SMALLER PIPE AT 1/4" PER FOOT FALL.

2) INSTALL 3" AND LARGER PIPE AT 1/8" PER FOOT FALL.

I. ALL SEWER PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE INSTALLED WITH THE FOLLOWING

1) INSTALL 4" AND SMALLER PIPE AT A MINIMUM OF 2% SLOPE. 2) INSTALL 6" AND LARGER PIPE AT A MINIMUM OF 1% SLOPE.

A. DOMESTIC COLD, AND HOT WATER (ABOVEGROUND) 1) TYPE L HARD DRAWN COPPER TUBING, ASTM B-88.

a) WROUGHT COPPER SOLDERED FITTINGS, ASTM B75 ALLOY C12200. ANSI B16.22. MS5 SP-104. b) MECHANICAL PRESS COPPER FITTINGS FOR USE IN PLUMBING OR MECHANICAL APPLICATIONS. ASME B16.22, ASME B16.51, OR ASME B16.18. MECHANICAL PRESS COPPER FITTINGS SHALL CONFORM TO IAPMO PS-117 OR

2) PEX, HIGH-DENSITY CROSS-LINKED POLYETHYLENE TUBING SHALL BE MANUFACTURED TO THE REQUIREMENTS OF ASTM F876 AND MEET THE STANDARD GRADE HYDROSTATIC PRESSURE RATINGS FROM PLASTIC PIPE INSTITUTE IN ACCORDANCE WITH TR-4/03.

(MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE) a) PEX-A AND PEX-B MEETING ANSI/NSF61 AND ANSI/NSF372 STANDARDS FOR POTABLE WATER SAFETY AND LEAD-FREE STANDARDS AND MUST BE MARKED WITH "PW-G", "NSF-61-G" OR OTHER NSF-APPROVED

MARKING. ASTM F2023 FOR USE WITH CHLORINATED WATER. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE) b) PEX MECHANICAL, CRIMP/INSERT OR EXPANSION FITTINGS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S

INSTRUCTIONS. PIPE SIZES GIVEN ON THE DRAWINGS ARE NOMINAL COPPER PIPE SIZE, INCREASE PEX PIPING SIZE TO EQUAL OR EXCEED COPPER PIPE INSIDE DIAMETER FOR SUPPLY MAINS. (MUST BE INSTALLED PER THE MANUFACTURERS REQUIREMENTS FOR PLENUM USE)

a) TO BE INSTALLED ON THE FIXTURE SUPPLY TO EACH PLUMBING FIXTURE. b) TO BE INSTALLED ON THE WATER SUPPLY SIDE TO EACH APPLIANCE OR MECHANICAL EQUIPMENT.

. GATE VALVE: JOMAR T/S-301G OR EQUAL. LEAD-FREE NSF 61, ANSI B1.20.1.

GLOBE VALVE: JOMAR TGG OR EQUAL. 3. BALL VALVE: JOMAR JP100PXP OR EQUAL COMPACT LEAD FREE BRASS BALL VALVE. UL842, CSA 3371-12 & 3371-92, FM, CALIFORNIA CODE AB1953, NSF61 ANNEX & APPROVED.

4. BALL VALVE: JOMAR T-100NE OR EQUAL. UL842, FM, CSA, NSF 61-8, MSS SP-110

1) TYPE K SOFT DRAWN COPPER TUBING, ASTM B-88.

a) Cast Copper Alloy Fittings for Flared Copper Tube, ASME/ANSI B16.26:

2) HDPE, PIGMENTED BLUE THROUGHOUT, CTS SIZES 1"-2" AWWA C901 4710 DR9 PC250 IPS SIZES 2"-3", ANWA C901 4710 DR11 PC200 MATERIAL AND INSTALLATION MUST CONFORM TO WATER DEPARTMENT REQUIREMENTS.

1) DUCTILE IRON PIPE & FITTINGS, AWWA C151, CLASS 50, CEMENT LINING, SEALCOATED, AWWA C104. THRUST BLOCKS IN ACCORDANCE WITH NFPA 24.

2) HDPE IPS SIZES PIGMENTED BLUE THROUGHOUT, 3" AWMA C901 4710 DR11 PC200 4" AND LARGER AWWA C906 3408/4710 DR13.5 PC160 a) STIFFENERS MUST BE USED IN THE ENDS OF THE HDPE, APPROVED TRACE WIRE MUST BE USED. # 12 AWG COPPERHEAD REINFORCED TRACE WIRE (BLUE IN COLOR) b) MATERIAL AND INSTALLATION MUST CONFORM TO WATER DEPARTMENT REQUIREMENTS.

3) POLYVINYL CHLORIDE (PVC) PIPE; AWWA C900; CLASS 200; WITH BELL END AND ELASTOMERIC GASKET, WITH PLAIN END FOR CAST-IRON OR DUCTILE-IRON FITTINGS, OR PVC ELASTOMERIC

a) PVC COUPLINGS AND FITTINGS: AWWA C900, WITH ASTM F 477 ELASTOMERIC SEAL GASKETS, b) DUCTILE-IRON AND CAST-IRON FITTINGS: AMMA C110, DUCTILE-IRON OR CAST-IRON, 250-

PSI PRESSURE RATING; OR ANWA C153, DUCTILE-IRON COMPACT FITTINGS, 350-PSI PRESSURE RATING; OF DIMENSION TO MATCH PIPE OUTSIDE DIAMETER. AWAY C104, CEMENT MORTAR LINING; GASKETS PER AWWA C111, RUBBER

4) THRUST BLOCKS IN ACCORDANCE WITH NFPA 24.

D. LEAD CONTENT OF WATER SUPPLY PIPE AND FITTINGS:

1) PIPE AND PIPE FITTINGS, INCLUDING VALVES AND FAUCETS, UTILIZED IN THE MATER SUPPLY SYSTEM SHALL NOT HAVE MORE THAN 8% LEAD CONTENT.

2) PIPE, PIPE FITTINGS, JOINTS, VALVES, FAUCETS, AND FIXTURE FITINGS UTILIZED TO SUPPLY MATER FOR DRINKING OR COOKING PURPOSES SHALL COMPLY WITH NSF 372 AND SHALL HAVE A WEIGHTED AVERAGE LEAD CONTENT OF 0.25% OR LESS.

### MECHANICAL SPECIFICATIONS (CONTINUED)

E. SANITARY SEMER, AND VENTS. (UNDERGROUND, INTERIOR TO THE BUILDING).

1) ABS PIPE AND FITTINGS: ABS PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DMV" FOR PLASTIC DRAIN, MASTE, AND VENT PIPING AND "NSF-SEMER" FOR PLASTIC SEMER PIPING. SOLID-WALL ABS PIPE: ASTM D 2661, SCHEDULE 40. ABS SOCKET FITTINGS: ASTM D 2661, MADE TO ASTM D 3311, DRAIN, WASTE, AND

VENT PATTERNS. SOLVENT CEMENT: ASTM D 2235. 2) PVC PIPE AND FITTINGS: PVC PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DMV" FOR PLASTIC DRAIN, MASTE, AND VENT PIPING AND "NSF-SEMER" FOR PLASTIC SEMER PIPING. SOLID-MALL PVC PIPE: ASTM D 2665, DRAIN, WASTE, AND VENT. PVC SOCKET FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE. ADHESIVE PRIMER: ASTM F 656. SOLVENT CEMENT: ASTM D 2564. 3) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE

MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301 HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL. 4) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

F. SANITARY SEWER AND VENTS (ABOVE GROUND, INTERIOR TO THE BUILDING).

1) ABS PIPE AND FITTINGS: ABS PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS." FOR PLASTIC PIPING COMPONENTS, INCLUDE MARKING WITH "NSF-DWV" FOR PLASTIC DRAIN, MASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING, SOLID-WALL ABS PIPE: ASTM D 2661, SCHEDULE 40. CELLULAR-CORE ABS PIPE: ASTM F 628, SCHEDULE 40.ABS SOCKET FITTINGS: ASTM D 2661, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS. SOLVENT CEMENT: ASTM D 2235.

(NOT FOR USE IN A RETURN AIR PLENUM) 2) PVC PIPE AND FITTINGS: PVC PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DMV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEMER" FOR PLASTIC SEMER PIPING. SOLID-WALL PVC PIPE: ASTM D 2665, DRAIN, CELLULAR-CORE PVC PIPE: ASTM F 891, SCHEDULE 40. WASTE, AND VENT. PVC SOCKET FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE. ADHESIVE PRIMER: ASTM F 656. SOLVENT CEMENT: ASTM D 2564.

(NOT FOR USE IN A RETURN AIR PLENUM) 3) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL.

4) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74.

G. SANITARY SEMER, AND VENTS. (UNDERGROUND, EXTERIOR TO THE BUILDING).

SHALL CONFORM TO ASTM A 53.

1) ABS PIPE AND FITTINGS: ABS PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DMV" FOR PLASTIC DRAIN, WASTE, AND VENT PIPING AND "NSF-SEMER" FOR PLASTIC SEMER PIPING. SOLID-WALL ABS PIPE: ASTM D 2661, SCHEDULE 40. ABS SOCKET FITTINGS: ASTM D 2661, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS. SOLVENT CEMENT: ASTM D 2235.

2) PVC PIPE AND FITTINGS: PVC PIPE AND FITTINGS SHALL COMPLY WITH NSF 14, "PLASTICS PIPING SYSTEMS COMPONENTS AND RELATED MATERIALS," FOR PLASTIC PIPING COMPONENTS. INCLUDE MARKING WITH "NSF-DMV" FOR PLASTIC DRAIN, MASTE, AND VENT PIPING AND "NSF-SEWER" FOR PLASTIC SEWER PIPING, SOLID-WALL PVC PIPE: ASTM D 2665, DRAIN, WASTE, AND VENT. PVC SOCKET FITTINGS: ASTM D 2665, MADE TO ASTM D 3311, DRAIN, WASTE, AND VENT PATTERNS AND TO FIT SCHEDULE 40 PIPE. ADHESIVE PRIMER: ASTM F 656. SOLVENT CEMENT: ASTM D 2564.

3) HUBLESS CAST IRON SOIL PIPE AND FITTINGS: HUBLESS CAST IRON PIPE AND FITTINGS SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 888 AND CISPI STANDARD 301. HUBLESS COUPLINGS SHALL CONFORM TO CISPI STANDARD 310 AND BE CERTIFIED BY NSF® INTERNATIONAL 4) HUB AND SPIGOT CAST IRON SOIL PIPE AND FITTINGS: HUB AND SPIGOT CAST IRON PIPE AND FITTINGS

SHALL BE MANUFACTURED FROM GRAY CAST IRON AND SHALL CONFORM TO ASTM A 74. COPPER DMV: DRAINAGE TUBE SHALL CONFORM TO ASTM B306, WROUGHT COPPER FITTINGS, ANSI B-16.29. 6) GALVANIZED STEEL PIPE, WITH MALLEABLE IRON, THREADED FITTINGS, DRAINAGE PATTERN FOR SEMERS

H. CONDENSATE DRAINS & INDIRECT WASTE (ABOVEGROUND). 1) POLYVINYLCHLORIDE (PVC) DMV PIPE, SCHEDULE 40, SOLVENT JOINT (CONDENSATE). 2) DMV, WROUGHT COPPER, ANSI B-16.29 (WATER HEATER T&P).

I. REFRIGERANT

1) ASTM B 280, TYPE ACR, HARD-DRAWN STRAIGHT LENGTHS, AND SOFT-ANNEALED COILS, SEAMLESS COPPER TUBING

2) WROUGHT COPPER, ANSI B16.22, STREAMLINED PATTERN, FITTINGS. BRAZED JOINTS, AWS A 5.8, CLASSIFICATION BAG-1 (SILVER). 3) TUBING SHALL BE FACTORY CLEANED, READY FOR INSTALLATION, AND HAVE ENDS CAPPED TO PROTECT CLEANLINESS OF PIPE INTERIORS PRIOR TO SHIPPING. 4) SIZE AND INSTALLATION OF PIPE SHALL BE IN ACCORDANCE WITH MANUFACTURER'S

RECOMMENDATIONS. J. NATURAL GAS.

1) BLACK STEEL PIPE, SCHEDULE 40, ASTM A53, a) PIPE 3" AND SMALLER; 150 LB. MALLEABLE IRON, THREADED FITTINGS.

b) PIPE 4" AND SMALLER: VIEGA MEGAPRESS & FOR WATER AND GAS, CSA LC4, TSSA/ASME B31 FOR USE WITH ASTM A53 SCHEDULE 40 BLACK IRON PIPE. c) PIPE 2-1/2" AND LARGER, WELDED

d) PLUG VALVE: ROCKMELL NORDSTROM FIGURE NO. 142 OR 143.

SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT.

e) BALL VALVE: JOMAR T-100NE. APPROVALS- UL842, FM, C5A, NSF 61-8, MSS SP-110

a) ALL BLACK STEEL GAS PIPING LOCATED EXTERIOR TO THE BUILDING SHALL BE PRIMED AND PAINTED TO EITHER MATCH ADJACENT EXTERIOR WHERE LOCATED ON OR NEAR EXTERIOR WALL AND PAINTED SAFETY YELLOW WHERE

K. ALL PIPE HANGERS AND SUPPORTS SHALL BE STANDARD PRODUCTS OF GRINNELL, FEE AND MASON, OR ELCEN. HANGER SPACING SHALL BE IN ACCORDANCE WITH MSS-SP-69.

1) PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK. ALL SLEEVES SHALL BE OF SUFFICIENT SIZE TO PERMIT PIPE MOVEMENT DUE TO EXPANSION AND CONTRACTION AND TO ACCOMMODATE PIPE INSULATION 2) INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN PIPE AND SLEEVE WITH FIRE

3) ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WATERPROOF SEAL COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTS 4) PROTECTION AGAINST CONTACT: METALLIC PIPING, EXCEPT FOR CAST IRON, DUCTILE IRON AND GALVANIZED

STEEL SHALL NOT BE PLACED IN DIRECT CONTACT WITH STEEL FRAMING MEMBERS, CONCRETE, OR CINDER WALLS AND FLOORS OR OTHER MASONRY. METALLIC PIPING SHALL NOT BE PLACED IN DIRECT CONTACT WITH CORROSIVE SOIL. SHEATHING USED TO PREVENT DIRECT CONTACT SHALL HAVE A THICKNESS OF GREATER THAN .008: AND THE SHEATHING SHALL BE MADE OF PLASTIC. ANY PIPE THAT PASSES THROUGH A FOUNDATION WALL OR FOOTING SHALL BE PROVIDED WITH A RELIEVING ARCH, OR A PIPE SLEEVE SHALL BE BUILT INTO THE FOUNDATION WALL. THE SLEEVE SHALL BE TWO SIZES GREATER THAN THE PIPE PASSING THOUGH THE WALL OR FOOTING.

5) PLUMBING VENTS: FLASH ROOF VENT INTO ROOFING SYSTEM AS REQUIRED BY THE ROOFING CONTRACTOR TO MAINTAIN EXISTING ROOF WARRANTY. ALL PLUMBING VENT TERMINALS SHALI TERMINATE A MINIMUM OF 12" ABOVE ROOF OR EQUAL TO HEIGHT OF PARAPET, WHICHEVER IS GREATER.

M. PROVIDE CHROME PLATED ESCUTCHEONS ON ALL PIPE ENTERING FINISHED AREAS. 8. MATER HEATERS

A. COMMERCIAL, LIGHT-DUTY, STORAGE, ELECTRIC, DOMESTIC-WATER HEATERS: 1. STANDARD: UL 174

2. STORAGE-TANK CONSTRUCTION: STEEL, VERTICAL ARRANGEMENT.

a. PRESSURE RATING: 150 PSIG b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING LINING MATERIAL INTO TAPPINGS.

3. FACTORY-INSTALLED, STORAGE-TANK APPURTENANCES: a. ANODE ROD: REPLACEABLE MAGNESIUM b. DIP TUBE: REQUIRED UNLESS COLD-WATER INLET IS NEAR BOTTOM OF TANK.

C. DRAIN VALVE: CORROSION-RESISTANT METAL WITH HOSE-END CONNECTION. d. INSULATION: COMPLY WITH ASHRAE/IES 90. e. JACKET: STEEL WITH ENAMELED FINISH OR HIGH-IMPACT COMPOSITE MATERIAL

F. HEAT-TRAP FITTINGS: INLET TYPE IN COLD-WATER INLET AND OUTLET TYPE IN HOT-WATER OUTLET. g. HEATING ELEMENTS: ELECTRIC, SCREW-IN IMMERSION TYPE.

h. TEMPERATURE CONTROL: ADJUSTABLE THERMOSTAT. i. SAFETY CONTROL: HIGH-TEMPERATURE-LIMIT CUTOFF DEVICE OR SYSTEM.

I. RELIEF VALVE: ASME RATED AND STAMPED FOR COMBINATION TEMPERATURE-AND-PRESSURE RELIEF VALVES. INCLUDE RELIEVING CAPACITY AT LEAST AS GREAT AS HEAT INPUT, AND INCLUDE PRESSURE SETTING LESS THAN WORKING-PRESSURE RATING OF DOMESTIC-WATER HEATER. SELECT RELIEF VALVE WITH SENSING ELEMENT THAT EXTENDS INTO STORAGE TANK.

B. DOMESTIC-WATER EXPANSION TANKS DESCRIPTION: STEEL, PRESSURE-RATED TANK CONSTRUCTED WITH WELDED JOINTS AND

FACTORY-INSTALLED, BUTYL-RUBBER DIAPHRAGM. INCLUDE AIR PRECHARGE TO MINIMUM SYSTEM-OPERATING PRESSURE AT TANK.

a. TAPPINGS: FACTORY-FABRICATED STEEL, WELDED TO TANK BEFORE TESTING AND LABELING. INCLUDE ASME B1.20.1 PIPE THREAD b. INTERIOR FINISH: COMPLY WITH NSF 61 AND NSF 372 BARRIER MATERIALS FOR POTABLE-WATER TANK LININGS, INCLUDING EXTENDING FINISH INTO AND THROUGH TANK FITTINGS AND OUTLETS.

C. AIR-CHARGING VALVE: FACTORY INSTALLED. 3. CAPACITY AND CHARACTERISTICS:

a. WORKING-PRESSURE RATING: 150 PSIG

9. FIRE PROTECTION (WET PIPE SPRINKLER SYSTEM): A. PROVIDE A "MET-PIPE" SPRINKLER SYSTEM WITH AUTOMATIC SPRINKLERS AND CONNECTED TO A SUFFICIENT WATER SUPPLY.

B. THE SYSTEM DESIGN SHALL BE BASED ON LIGHT HAZARD CLASSIFICATION, NFPA 13. C. THE WET PIPE SPRINKLER SYSTEM SHALL CONFORM TO ALL REQUIREMENTS OF THE OWNER'S INSURANCE CARRIER AND LOCAL AUTHORITIES. PROVIDE SYSTEM DRAWINGS WITH A PROFESSIONAL ENGINEERS STAMP ON THE DRAWINGS FOR REVIEW BY THE OWNER'S INSURANCE CARRIER AND LOCAL AUTHORITIES

D. THE WET PIPE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED, BASED ON A WATER FLOW DATA OBTAINED FROM THE LOCAL WATER OR FIRE DEPARTMENT.

E. PIPE AND TUBING MATERIALS:

a) ASTM A 53/A 53M STANDARD, SCHEDULE 40, SEAMLESS, BLACK STEEL PIPE. b) ASTM A 135;L ASTM A 795/A 795M; OR ASME B36.10M, WALL THICKNESS GREATER THAN OR EQUAL TO SCHEDULE 30 AND LESS THAN SCHEDULE 40, BLACK STEEL PIPE. c) ASTM A 135 OR ASTM 795/A 795M, THREADABLE, WALL THICKNESS LESS THAN

SCHEDULE 30 AND GREATER THAN SCHEDULE 10, BLACK-STEEL PIPE.

d) ASTM A 135 OR ASTM A 795/A 795M SCHEDULE 5 STEEL PIPE. 2) STEEL PIPE, 2" AND LARGER: ASTM A 795, SCHEDULE 10, SEAMLESS, BLACK STEEL MECHANICAL SPECIFICATIONS (CONTINUED)

F. FITTINGS: 1) CAST-IRON THREADED FITTINGS: ANSI B16.4, CLASS 125, STANDARD PATTERN, FOR THREADED

JOINTS. THREADS SHALL CONFORM TO ANSI B1.20.1 2) MALLEABLE-IRON THREADED FITTINGS: ANSI B16.3, CLASS 150, STANDARD PATTERN, FOR

THREADED JOINTS. THREADS SHALL CONFORM TO ANSI B1.20.1

3) STEEL FITTINGS: ASTM A 234, SEAMLESS OR WELDED, FOR WELDED JOINTS.

4) GROOVED MECHANICAL FITTINGS: ASTM A 536, GRADE 65-45-12 DUCTILE IRON; ASTM A 47 GRADE 32510 MALLEABLE IRON; OR ASTM A53, TYPE F, E, OR S; GRADE B FABRICATED STEEL FITTINGS WITH GROOVES OR SHOULDERS DESIGNED TO ACCEPT GROOVED END COUPLINGS, IN ACCORDANCE WITH ITS LISTING. G. HANGERS AND SUPPORTS

1) HANGERS, ANCHORS, AND SUPPORTS FOR FIRE PROTECTION PIPING AND EQUIPMENT SHALL BE IN ACCORDANCE WITH NFPA 13. HANGERS, ANCHORS, SUPPORTS, AND COMPONENTS SHALL BE LISTED BY UL AND ANY OTHER AGENCIES REQUIRED BY THE LOCAL FIRE AUTHORITIES AND THE OWNER'S NSURANCE CARRIER H. AUTOMATIC SPRINKLERS: 1) SPRINKLER HEADS: TYPE AS INDICATED OR REQUIRED BY THE APPLICATION. UNLESS OTHERWISE

REQUIRED, PROVIDE QUICK RESPONSE HEADS WITH NOMINAL 1/2 INCH DISCHARGE ORIFICE, FOR "LIGHT HAZARD" TEMPERATURE RANGE. 2) SPRINKLER HEADS SHALL BE OF THE FOLLOWING CONSTRUCTION, CONFIGURATIONS, AND FINISH FOR THE AREAS INDICATED:

b) UNFINISHED AREAS; UPRIGHT, ROUGH BRASS. 3) FURNISH THREE EXTRA SPRINKLER HEADS OF EACH TYPE INCLUDED IN THE PROJECT, AND PROVIDE A SPRINKLER HEAD CABINET AND ANY SPECIAL WRENCHES TO REMOVE OR INSTALL SPRINKLER

a) FINISHED AREAS; SEMI-RECESSED PENDANT, CHROME PLATED, CHROME ESCUTCHEON CUP.

4) FURNISH QUICKSTOP TALON SPRINKLER TOOL. QUICKSTOP TALON SHALL STOP  $\frac{1}{2}$ " AND  $\frac{3}{4}$ " HEADS. THE TOOL SHALL FEATURE A FUSIBLE LINK TO RELEASE THE TOOL IF HEATED AND SHALL BE 100% WATER I. ALARM DEVICES: 1) WATER FLOW INDICATORS: VANE TYPE WATERFLOW DETECTOR, RATED TO 250 PSIG; DESIGNED FOR

HORIZONTAL OR VERTICAL INSTALLATION: HAVE 2-SPDT CIRCUIT SWITCHES TO PROVIDE ISOLATED

ALARM AND AUXILIARY CONTACTS, 7 AMPERE 125 VOLTS AC AND 0.25 AMPERE 24 VOLTS DC;

COMPLETE WITH FACTORY-SET, FIELD-ADJUSTABLE RETARD ELEMENT TO PREVENT FALSE SIGNALS, AND TAMPER-PROOF COVER WHICH SENDS A SIGNAL WHEN COVER IS REMOVED. 2) SUPERVISORY SMITCHES: SPST, NORMALLY CLOSED CONTACTS, DESIGNED TO SIGNAL VALVE IS IN OTHER THAN FULL OPEN POSITION

10. INSULATION AND DUCT LINING A. ALL INSULATIONS AND ACCESSORIES SHALL HAVE A FIRE HAZARD CLASSIFICATION WITH A FLAME

SPREAD RATING OF NOT OVER 25, A FUEL CONTRIBUTION RATING OF NOT OVER 50, AND A SMOKE DEVELOPED RATING OF NOT OVER 50, IN ACCORDANCE WITH NFPA. B. PIPE INSULATION - ABOVE GRADE:

1) THE PIPING INSULATION USED SHALL HAVE A THERMAL CONDUCTIVITY OF 0.27 Btu PER in/hr\*sqft\*F° OR LESS. 2) FIBERGLASS INGLILATION WITH FACTORY APPLIED VAPOR BARRIER AS LIACKET FACTORY APPLIED PRESSURE SEALING LONGITUDE LAP JOINT, NO STAPLES, ZESTON PREMOLDED PVC FITTING COVERS. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

SENSITIVE ADHESIVE SYSTEM FOR CLOSURE AND VAPOR SEALING, EQUAL TO ARMSTRONG AP ARMAFLEX OR ARMAFLEX 2000. 4) FOR NON CIRCULATING SYSTEMS, THE FIRST & FEET OF INLET AND OUTLET PIPING BETWEEN THE

3) FLEXIBLE CLOSED CELL ELASTOMERIC THERMAL INSULATION, UNSLIT OR PRESLIT WITH PRESSURE

5) FOR CIRCULATING SYSTEMS, ALL HOT WATER PIPING IN THE CIRCULATION LOOP MUST BE INSULATED 6) INSULATION SCHEDULE:

TANK AND THE HEAT TRAP (INCLUDING THE HEAT TRAP) MUST BE INSULATED.

a) DOMESTIC COLD WATER b) DOMESTIC HOT WATER

1" FOR PIPING UP TO 1-1/4" \$\Phi\$, \$ 1-1/2" FOR PIPING 1-1/2" \$P\$ AND LARGER c) CONDENSATE DRAINS INSIDE BUILDING 1/2" 3/4" FOR PIPING UP TO 1-1/4" \$ 1" FOR PIPING 1-1/2" \$ AND LARGER d) REFRIGERANT SUCTION C. EQUIPMENT INSULATION:

1/2" : THROUGHOUT THE FIRST 10 FEET OF DUCT.

1/2" : THROUGHOUT THE FIRST 10 FEET OF DUCT.

1) FLEXIBLE FIBERGLASS: GLASS FIBER INSULATION, ASTM C 553, TYPE 1, CLASS B-4, SEMI-RIGID BOARD, WITH FACTORY LAMINATED KRAFT ALUMINUM FOIL (ALL SERVICE JACKET), VAPOR BARRIER, OWENS/CORNING PIPE AND TANK INSULATION. D. DUCTWORK: ACOUSTICAL INSULATION

1) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS a) DUCT LINING SCHEDULE

(2) RETURN AIR DUCT (3) SOUND BOOTS E. DUCTWORK: THERMAL INSULATION

(3) RETURN AIR DUCT

SMACNA STANDARDS.

(1) RECTANGULAR SUPPLY DUCT

1) DUCT COVERING: 3/4 LB/CF, FIBERGLASS BLANKET WITH FACTORY APPLIED VAPOR BARRIER AND FACING, THICKNESS AS SCHEDULED, INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

a) DUCT COVERING SCHEDULE: MINIMUM R-6 (1) ROUND SUPPLY DUCT (2) RECTANGULAR SUPPLY DUCT

(4) MAKE-UP AIR DUCT (4) OUTDOOR AIR 2) DUCT LINING: 2 LB/CF, THICKNESS AS SCHEDULED, AIR STREAM SIDE COATED, INSTALL PER

a) DUCT LINING SCHEDULE (1) RECTANGULAR SUPPLY DUCT (2) ROUND SUPPLY DUCT (3) RETURN AIR DUCT

3) EXPOSED SPIRAL DUCT. a) DOUBLE WALL SPIRAL - DOUBLE WALL INSULATED SPIRAL DUCT AND FITTINGS WITH PERFORATED

1"LINER WITH A K VALUE OF 0.27. b) SPIRAL DUCT LINING: JOHNS MANVILLE SPIRACOUSTIC PLUS ROUND DUCT LINER SYSTEM, VSD, SD, AND LD SIZES, 8"\$\Phi\$ AND UP. MEETS ASTM E 84 25/50 FLAME AND SMOKE, ASHRAE 62, MEA#237-86-M, SMACNA APPLICATION STANDARDS FOR DUCT LINERS, NAIMA FIBERBLASS DUCT LINER STANDARD. 1" THICKNESS, AIR STREAM SIDE COATED, INSTALL PER SMACNA STANDARDS. 4) DUCT COVERING (EXTERIOR SUPPLY AND RETURN)

a) EXTERIOR INSULATION: JOHN MANVILLE XSPECT ISOFOAM APF BOARD, 1-1/2" THICK R-9.3, UNIFORM CLOSED-CELL POLYISOCYANURATE FOAM CORE BONDED WITH A FOIL FACER. INSTALLED PER MANUFACTURER'S REQUIREMENTS. COVER ISOFOAM BOARD INSULATION WITH POLYGUARD ALUMAGUARD COMPOSITE MEMBRANE MULTI-PLY EMBOSSED UV-RISISTANT ALUMINUM FOIL/POLYMER LAMINATE, ALL MEATHER FLEXIBLE WEATHER-PROOFING JACKET. MINIMUM R-8 RATING. MINIMUM R-12 CLIMATE ZONES 5-8.

A. ALL DUCTWORK, UNLESS OTHERWISE INDICATED, SHALL BE FABRICATED FROM GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 527, LOCKFORMING QUALITY, WITH G 90 ZINC COATING IN ACCORDANCE WITH

ASTM A 525; AND MILL PHOSPHATIZED FOR EXPOSED LOCATIONS. B. WHERE DUCTWORK IS INDICATED TO BE EXPOSED TO VIEW IN OCCUPIED SPACES, PROVIDE MATERIALS WHICH ARE FREE FROM VISUAL IMPERFECTIONS INCLUDING PITTING, SEAM MARKS, ROLLER MARKS, STAINS AND DISCOLORATIONS, AND OTHER IMPERFECTIONS, INCLUDING THOSE WHICH WOULD IMPAIR

C. DUCTWORK, METAL GAUGES, REINFORGING, ETC. SHALL BE CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS," LATEST EDITION FOR A 2 INCH WATER GAUGE STATIC

1) RECTANGULAR DUCT a) ELBOMS, UNLESS INDICATED OTHERWISE SHALL BE CONSTRUCTED WITH CENTERLINE RADIUS OF NOT LESS THAN 1.5 DUCT WIDTH OR SQUARE ELBOW WITH DOUBLE WALL STREAMLINE VANES. b) RETURN AIR ACOUSTICAL ELBOMS AND SOUND BOOTS SHALL BE A SQUARE ELBOM WITH NO

c) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3. 2) ROUND AND OVAL SPIRAL SEAM DUCT a) PROVIDE RADIUS TYPE FITTINGS FABRICATED OF MULTIPLE SECTIONS WITH MAXIMUM 15 DEGREE CHANGE OF DIRECTION PER SECTION. UNLESS SPECIFICALLY DETAILED OTHERWISI USE 45 DEGREE LATERALS FOR BRANCH TAKEOFF CONNECTIONS. WHERE 90 DEGREE BRANCHES

b) SLOPES FOR TRANSITIONS OR OTHER CHANGES IN DIMENSIONS SHALL BE MINIMUM 1 TO 3. c) AS AN OPTION, PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS, IN LIEU OF SHOP-

ARE INDICATED PROVIDE CONICAL TYPE TEES.

(1) ELBOMS: ONE PIECE CONSTRUCTION FOR 90 DEGREES AND 45 DEGREE ELBOM 14" AND SMALLER. PROVIDE MULTIPLE GORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.

IN CONCEALED LOCATIONS FOR EXTENSION TO FLEX FOR DIFFUSERS, UNLESS OTHERWISE D. DUCT SIZES SHOWN ON THE DRAWINGS ARE SHEETMETAL SIZES, ALLOWANCE FOR DUCT LINER HAS BEEN MADE WHERE APPLICABLE.

(2) DIVIDED FLOW FITTINGS: 90 DEGREE TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.

d) ROUND LONGITUDINAL SEAM DUCT. USE FOR RIGID METAL DUCT ON LEAVING SIDE OF DUCT

E. INSTALLATION OF METAL DUCTWORK: 1) GENERAL: ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR-TIGHT SYSTEMS (MAXIMUM 5% LEAKAGE), WITH NO OBJECTIONABLE NOISE, AND CAPABLE OF PERFORMING INDICATED SERVICE. INSTALL EACH RUN MITH MINIMUM NUMBER OF JOINTS. ALIGN DUCTWORK ACCURATELY WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE STRAPS, BRACES, HANGERS AND ANCHORS IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS" LATEST EDITION. DUCT HANGERS SHALL BE OF THE TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING. SUPPORT VERTICAL DUCTS AT EVERY FLOOR.

2) AUXILIARY STEEL: PROVIDE AUXILIARY STEEL AS REQUIRED TO ADEQUATELY SUPPORT DUCTWORK. 3) ROUTING: LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT ENCLOSURE ELEMENTS OF BUILDING. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW, BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE

LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.

MECHANICAL SPECIFICATIONS (CONTINUED)

4) DO NOT ROUTE DUCTWORK THROUGH ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES, UNLESS INDICATED OTHERWISE. 5) PENETRATIONS:

a) WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS OR EXTERIOR WALLS, AND ARE EXPOSED TO VIEW, CONCEAL SPACE BETWEEN OPENING AND DUCT OR DUCT INSULATION WITH SHEET METAL FLANGES OF SAME GAGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1 1/2". FASTEN TO DUCT AND WALL

b) WHERE DUCTS PASS THROUGH FIRE-RATED FLOORS, WALLS, OR PARTITIONS, PROVIDE FIRESTOPPING BETWEEN DUCT AND WALL

6) COORDINATION: COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES, DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS, AND OTHER ASSOCIATED WORK OF THE DUCTWORK

7) INSTALLATION: INSTALL METAL DUCTWORK IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS", LATEST EDITION. F. EQUIPMENT CONNECTIONS:

1) CONNECT METAL DUCTWORK TO EQUIPMENT AS INDICATED PROVIDE FLEXIBLE CONNECTION FOR EACH DUCTWORK CONNECTION TO EQUIPMENT MOUNTED ON VIBRATION ISOLATORS, AND/OR EQUIPMENT CONTAINING ROTATING MACHINERY. PROVIDE ACCESS DOORS AS REQUIRED G. SEAL ALL CONCEALED DUCTWORK JOINTS WITH NON-HARDENING, NON-MIGRATING MASTIC SEALANT, AS

RECOMMENDED FOR SEALING SEAMS AND JOINTS IN DUCTWORK. OIL BASE CAULKING AND GLAZING COMPOUNDS SHALL NOT BE ACCEPTABLE. DUCTS SHALL BE SEALED TO THE CLASS LEVEL LISTED BELOW. 1) UNCONDITIONED SPACES CLASS B CLASS A CLASS C 2) CONDITIONED SPACES (PLENUM) CLASS C CLASS B CLASS B CLASS C SUPPLY < 2" M.C. SUPPLY > 2" M.C. EXHAUST RETURN

12. FLEXIBLE DUCT:

A. ATCO #086 (R-6), OR EQUAL. B. FACTORY APPLIED INSULATION AND VAPOR BARRIER, 1-1/2" THICK.

C. MAXIMUM LENGTH OF 5'-O". 13. FLUES AND ACCESSORIES:

LINE SERVICE VALVES.

C. SAFETY CONTROLS SHALL INCLUDE:

a) LOW PRESSURE CUTOUT, MANUAL RESET.

b) HIGH PRESSURE CUTOUT MANUAL RESET

RECEIVES THE SAME AMOUNT OF REFRIGERANT

GAS APPLIANCE MANUFACTURER. FLUES SHALL BE SCHEDULE 40, PVC OR CPVC PIPE PER THE MANUFACTURERS INSTALLATION REQUIREMENTS B. PROVIDE MANUFACTURER'S STANDARD ACCESSORY ITEMS INCLUDING BIRD PROOF TOP, STORM COLLAR, ROOF THIMBLE, ETC. AS REQUIRED FOR A COMPLETE INSTALLATION. ROOF THIMBLES THROUGH THE

A. FLUE FOR GAS FIRED CONDENSING WATER HEATER OR FURNACE SHALL BE AS RECOMMENDED BY THE

BUILDING ROOF SHALL BE SUITABLE FOR USE WITH THE ROOF PROVIDED. 14. EXHAUST FANS: A. CENTRIFUGAL CEILING EXHAUSTERS SHALL BE ELECTRICALLY POWERED CENTRIFUGAL TYPE FAN SUITABLE FOR MOUNTING IN THE CEILING WITH A PERFORATED OFF-WHITE METAL GRILLE WITH A THUMBSCREW ATTACHMENT FOR EASY ACCESS TO FAN HOUSING. UNIT SHALL CONSIST OF A GALVANIZED STEEL HOUSING LINED WITH ACOUSTICAL INSULATION AND SHALL INCLUDE AN INTEGRAL BACKDRAFT DAMPER

OF DISCONNECT AT MOTOR IN FAN HOUSING.

A. UNIT SHALL BE FACTORY-ASSEMBLED AND TESTED, DESIGNED FOR ROOF INSTALLATION, AND SHALL CONSIST OF SCROLL TYPE COMPRESSOR(S), CONDENSERS, EVAPORATOR COILS, THERMAL EXPANSION VALVE, CONDENSATE DRAIN PAN, CONDENSER AND EVAPORATOR FANS, CONDENSER FANS TO BE SEQUENCED. REFRIGERATION CONTROLS, GAS FIRED HEAT EXCHANGER OR ELECTRIC HEATING SECTION, FILTERS, AND DAMPERS. CAPACITIES AND ELECTRICAL CHARACTERISTICS SHALL BE AS SCHEDULED ON THE DRAWINGS. B. COMPRESSOR(S): UNIT SHALL INCLUDE VIBRATION ISOLATORS AND CRANKCASE HEATER. REFRIGERANT CIRCUIT SHALL INCLUDE A FILTER DRYER, SIGHT GLASS, COMPRESSOR SERVICE VALVES, AND LIQUID

ON FAN DISCHARGE. MOTOR SHALL BE A PERMANENT SPLIT-CAPACITOR TYPE MOTOR, PERMANENTLY

LUBRICATED, WITH THERMAL OVERLOAD PROTECTION. PROVIDE DISCONNECT SWITCH OR OTHER MEANS

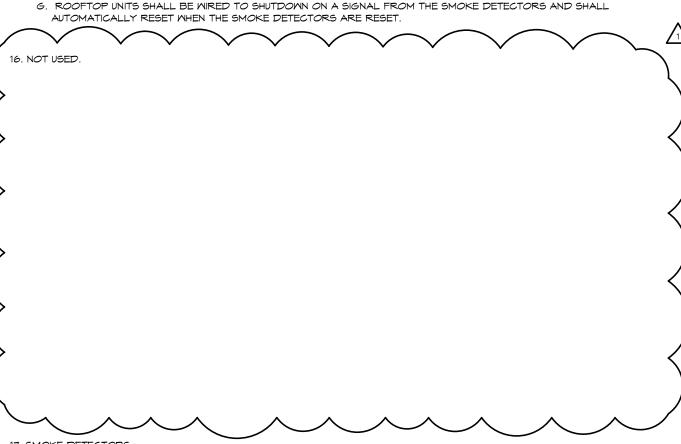
c) COMPRESSOR MOTOR OVERLOAD PROTECTION, MANUAL RESET. d) ANTI-RECYCLING TIMING DEVICE. e) ADJUSTABLE LOW-AMBIENT LOCKOUT. f) OIL PRESSURE SMITCH D. REFRIGERANT COIL: ALUMINUM FINS BONDED TO SEAMLESS COPPER TUBE BY MEANS OF MECHANICAL

EXPANSION. AN EQUALIZING TYPE VERTICAL DISTRIBUTOR SHALL ENSURE EACH COIL CIRCUIT

DAMPER. PROVIDE POWERED EXHAUST FAN WITH MANUFACTURER'S STANDARD CONTROLS FOR UNITS SCHEDULED ON THE DRAWINGS. F. GAS HEAT: INDIRECT FIRED, GAS HEAT EXCHANGER, AUTOMATIC SPARK IGNITION, MANUFACTURER'S STANDARD GAS TRAIN WITH REGULATOR (IF REQUIRED), AGA APPROVED. VERIFY GAS SERVICE

PRESSURE TO INDIVIDUAL ROOFTOP UNITS. G. ROOFTOP UNITS SHALL BE WIRED TO SHUTDOWN ON A SIGNAL FROM THE SMOKE DETECTORS AND SHALL

E. ECONOMIZER SHALL CONSIST OF RETURN AIR DAMPER, OUTDOOR AIR DAMPER, AND BAROMETRIC RELIEF



17. SMOKE DETECTORS

A. UNITS MOUNTED IN THE DUCTWORK SHALL BE A DUCT MOUNTED UL LISTED PHOTO-ELECTRIC SELF-CONTAINED SMOKE DETECTOR WITH HOUSING. UNITS SHALL BE EQUAL TO SIMPLEX #4098-9687. THE

SAMPLING TUBE SHALL BE #2098-9804, LENGTH AS REQUIRED FOR DUCT. B. DUCT DETECTOR REMOTE TEST STATION SHALL BE SIMPLEX #4098-9842 WITH REMOTE ALARM INDICATOR, POWER-ON INDICATOR, TONE-ALERT, TONE-ALERT SILENCE SWITCH, AND TEST/RESET SWITCH. 1) DEVICES SHALL BE MOUNTED IN APPROVED LOCATION AS INDICATED ON THE FLOOR PLANS OR AS DIRECTED BY LOCAL AUTHORITY HAVING JURISDICTION.

C. PROVIDE AND INSTALL A PHOTO-ELECTRIC SMOKE DETECTOR IN THE RETURN AIR DUCT FOR EACH HVAC UNIT AS INDICATED ON THE FLOOR PLANS. DETECTORS ARE TO BE PROVIDE WITH A SUB-BASE CONTAINING AUXILIARY RELAY CONTACTS. RELAY CONTACTS SHALL BE WIRED INTO UNIT CONTROL WIRING, SO AS TO SHUT UNIT DOWN IN THE CASE OF SMOKE DETECTION. PROVIDE ALL CONTROL WIRING. ELECTRICAL CONTRACTOR SHALL PROVIDE 120 VOLT POWER TO EACH DETECTOR D. SMOKE DETECTORS SHALL BE INTERLOCKED. IN ALARM CONDITION OF A SINGLE DETECTOR

ALL UNITS SHALL SHUT DOWN. A. ELECTRICAL WIRING AND WIRING CONNECTIONS REQUIRED FOR THE INSTALLATION OF THE TEMPERATURE CONTROL SYSTEM, SHALL BE PROVIDED BY THIS CONTRACTOR, UNLESS SPECIFICALLY SHOWN ON THE

ELECTRICAL DRAWINGS OR SPECIFICATIONS.

B. INSTALL CONTROL WIRING, WITHOUT SPLICES BETWEEN TERMINAL POINTS, COLOR CODED. INSTALL IN NEAT MORKMANLIKE MANNER, SECURELY FASTENED. INSTALL IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE AND THE ELECTRICAL SPECIFICATIONS. 1) INSTALL CIRCUITS OVER 25 VOLT WITH COLOR CODED NUMBER 12 WIRE.

TEMPERATURE 105 DEGREES F PLASTIC INSULATION ON EACH CONDUCTOR AND PLASTIC SHEATH OVER

2) INSTALL CIRCUITS UNDER 25 VOLT WITH COLOR CODED NUMBER 18 WIRE WITH 0.031 INCH HIGH

3) INSTALL ELECTRONIC CIRCUITS WITH COLOR CODED NUMBER 22 WIRE WITH 0.023 INCH POLYETHYLENE INSULATION ON EACH CONDUCTOR WITH PLASTIC JACKETED COPPER SHIELD OVER 4) INSTALL LOW VOLTAGE CIRCUITS, LOCATED IN CONCRETE SLABS AND MASONRY WALLS, OR EXPOSED IN OCCUPIED AREAS, IN ELECTRIC CONDUIT.

5) ALL MIRING IN AREAS USED AS AIR PLENUMS SHALL BE IN ELECTRIC CONDUIT EXCEPT THAT LOW

SPECIFICALLY APPROVED FOR INSTALLATION IN AIR PLENUMS, WHERE ACCEPTABLE BY LOCAL 6) ALL WIRING IN AREAS NOT USED FOR AIR MOVEMENT SHALL BE IN ELECTRIC METALLIC TUBING EXCEPT LOW VOLTAGE WIRING MAY BE IN APPROVED SIGNAL CABLE WHERE ACCEPTED BY LOCAL

VOLTAGE WIRING MAY BE TEFLON COATED, ALUMINUM SHEATHED CABLE OR OTHER WIRE

C. THERMOSTATIC CONTROLS TO HAVE A 5°F DEADBAND AND SETPOINT OVERLAP RESTRICTIONS. 1) TEMPERATURE CONTROLS SETBACK TO BE 55°F (HEAT) AND 85° (COOL) 2-HOUR OCCUPANT OVERRIDE, 10-HOUR BACKUP.

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> 4301 Indian Creek Parkway Overland Park, KB 88207 phone: 913.451.9390 fax: 913.451.9391 www.davidsonae.com

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12/22/2022 KNUDSEN NI JMBFR

checked by EK/DS 12.20.22 REV 1

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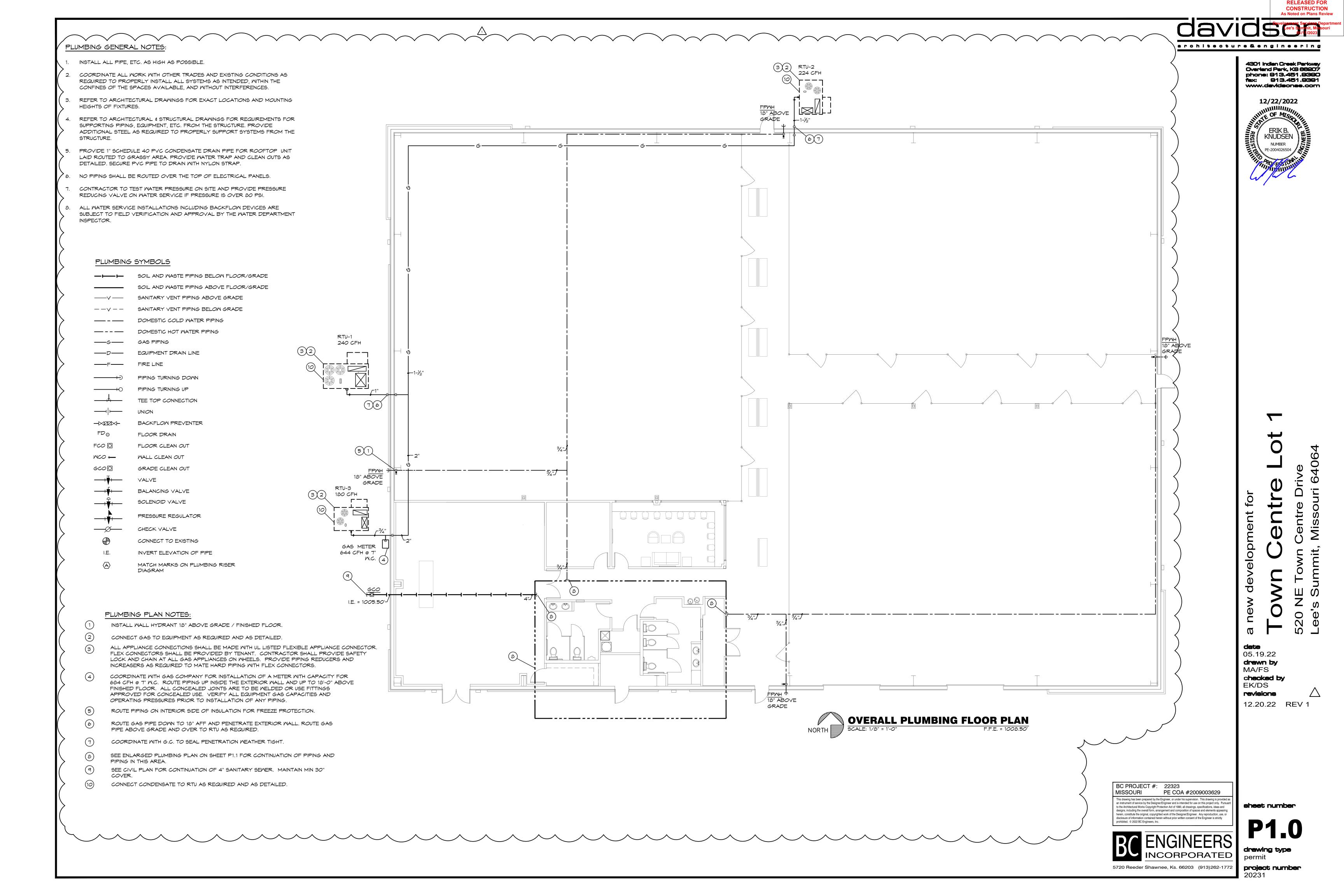
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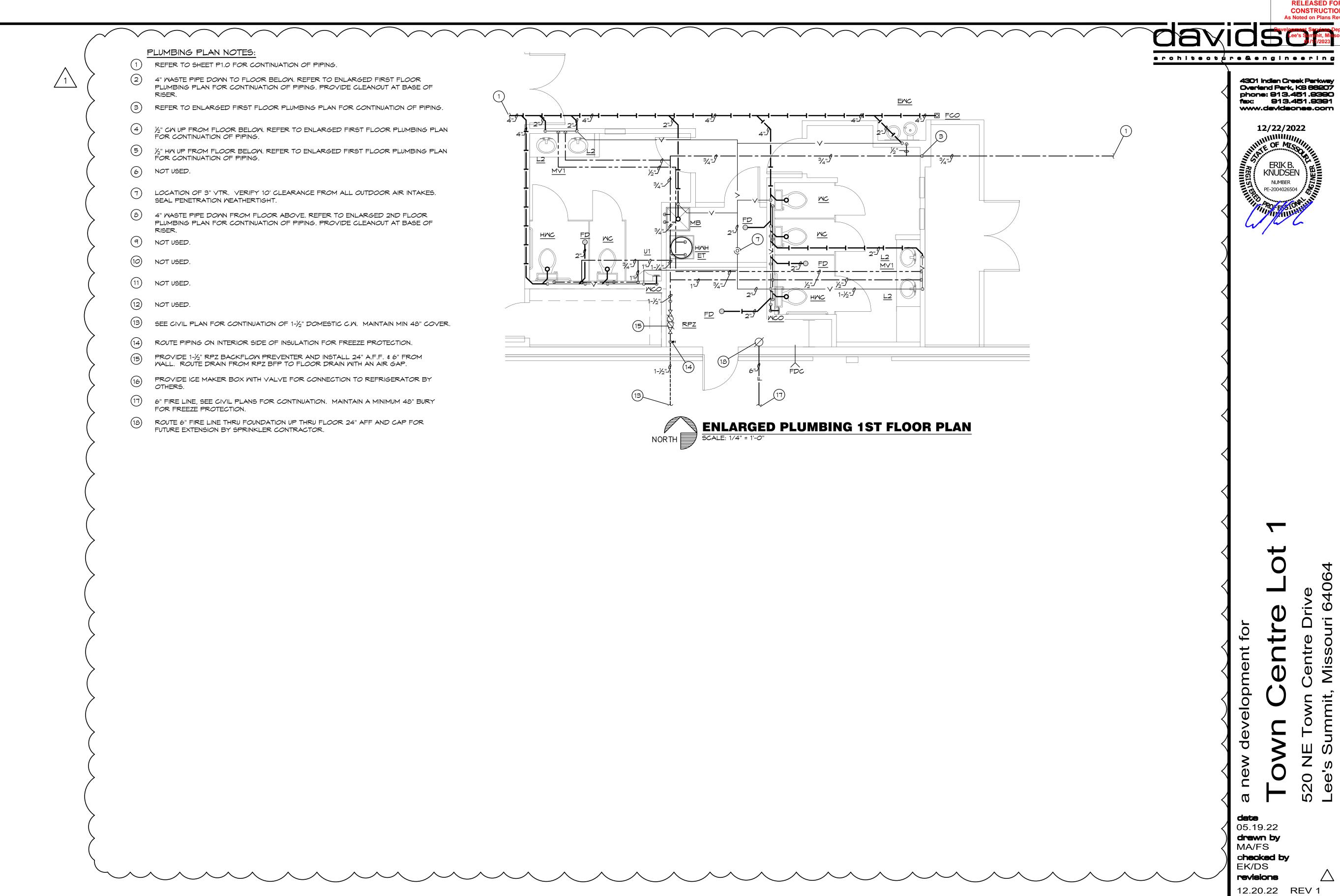
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12/22/2022

KNUDSEN

| 1-1/2" | 1-1/2" | 1/2" |

NOTE: INDIVIDUAL VENTS FOR FIXTURES ON PLANS AND RISER DIAGRAMS HAVE BEEN INCREASED WHERE HORIZONTAL VENT LENGTH IS IN EXCESS OF THE MAXIMUM DISTANCE INDICATED BY THE CODE.

ELECTRIC WATER COOLER (BI-LEVEL)

| PIPE HANG  | ER SCHEI                     | DULE                   |
|--|------------------------------|------------------------|
| PIPE MATERIAL  | MAXIMUM<br>HANGER<br>SPACING | HANGER ROD<br>DIAMETER |
| ABS (All sizes)                                      | 4'                           | 3/8"                   |
| PVC (All Sizes)                                      | 4'                           | 3/8"                   |
| CPVC, 1 inch and smaller                             | 3'                           | 1/2"                   |
| CPVC, 1-1/4 inches and larger                        | 4'                           | 1/2"                   |
| Cast Iron (All Sizes)                                | 5'                           | 5/8"                   |
| Cast Iron (All Sizes) with<br>10 foot length of pipe | 10'                          | 5/8"                   |
| Copper Tube, 1-1/4 inches and smaller                | 6'                           | 1/2"                   |
| Copper Tube, 1-1/2 inches and larger                 | 10'                          | 1/2"                   |
| Steel, 3 inches and smaller                          | 12'                          | 1/2"                   |
| Steel, 4 inches and larger                           | 12'                          | 5/8"                   |
| Pex, 1" and below without support channel            | 32"                          | 3/8"                   |
| Pex, 1-1/4" and above without support channel        | 48"                          | 3/8"                   |
| Pex ¾" and below with support channel                | 6'                           | 3/8"                   |
| Pex 1" and above with support channel                | ව'                           | 3/8"                   |

| E          | P     | LUMBING FIXTURE SCHEDULE:   |
|------------|-------|---|
| - <u>-</u> | _     | archite   |
| HM         | HMC   | HANDICAP WATER CLOSET: TOTO, #CST744EL(R)N, "DRAKE CLOSE COUPLED TOILET",   |
|            | 17.50 | 1.28 GALLON FLUSH, 16-1/2" HIGH ELONGATED BOML, FLOOR MOUNTED, FLOOR<br>OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT |
|            |       | SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND<br>RISER. HANDLE ON WIDE SIDE OF FIXTURE.                                    |
|            | MC    | WATER CLOSET: TOTO, #CST744E(R)(G)N, "DRAKE CLOSE COUPLED TOILET",1.28  |

NOT USED.

LUSH, 16-1/2" HIGH ELONGATED BOWL, FLOOR MOUNTED, FLOOR TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT CK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND ON WIDE SIDE OF FIXTURE. TOTO, #CST744E(R)(G)N, "DRAKE CLOSE COUPLED TOILET",1.28

GALLON FLUSH, ELONGATED BOWL, FLOOR MOUNTED, FLOOR OUTLET, TANK TYPE, VITREOUS CHINA, SIPHON-JET ACTION, #SC534 OPEN FRONT SEAT WITH CHECK HINGE AND LESS COVER, CHROME PLATED ANGLE STOP AND RISER. 

HANDICAP LAVATORY, COUNTERTOP: TOTO, #LT501, VITREOUS CHINA,20"X 17" OVAL BASIN, DELTA #501 FAUCET WITH SINGLE METAL LEVER HANDLE, OFFSET GRID DRAIN WITH 1-1/4" TAILPIECE, CHROME PLATED P-TRAP(MOUNTED PARALLEL WITH WALL), CHROME PLATED ANGLE STOPS AND RISERS, INSULATE EXPOSED DRAIN, WATER SUPPLIES, AND VALVES WITH PROWRAP SEAMLESS MOLDED CLOSED CELL VINYL

URINAL, WALL HUNG: TOTO, #UT447.01, VITREOUS CHINA, WASH OUT, WALL HUNG URINAL WITH 3/4" TOP SPUD, #TMU1NNC-12 FLUSH VALVE, FLOOR MOUNTED FIXTURE SUPPORT. SET RIM HEIGHT PER ARCHITECTURAL DRAWINGS.

NOT USED.

MOP BASIN: FIAT, #M5B-2424, MOLDED STONE MOP BASIN, 2" DRAIN, 24"x 24" BASIN VINYL BUMPER GUARD, STERN MILLIAMS #T-10-VB FAUCET, SPRING CHECKS, VACUUM BREAKER, INTEGRAL STOPS, WALL BRACE & PAIL HOOK, WALL BRACKET WITH 30"

EMC ELECTRIC WATER COOLER: OASIS, #PG8ACSL, BARRIER FREE TWO-STATION WATER COOLER, 8.0 GPH, 50 DEGREES F WATER WITH 90 DEGREES F AIR TEMPERATURE, 120 YOLT, COLOR TO BE SELECTED BY ARCHITECT AFTER AWARD OF CONTRACT, FRONT AND SIDE ANTIMICROBIAL PUSH PADS, ANITMICROBIAL FLEX BUBBLERS, CHROME PLATED CAST BRASS P-TRAP WITH CLEANOUT, CHROME PLATED LOOSE KEY ANGLE STOP, FLOOR MOUNTED CARRIER AND CANE APRON.

FLOOR DRAIN: SIOUX CHIEF, #842, PVC FLOOR DRAIN WITH ADJUSTABLE TOP AND CAST BRASS STRAINER.

HOT WATER HEATER: AO SMITH #DEL-40, 40 GALLON STORAGE, 208 VOLT, SINGLE PHASE, (2) 4500 WATT ELEMENT, NON-SIMULTANEOUS, ASME TEMPERATURE AND PRESSURE RELIEF VALVE. SET TEMPERATURE TO 120°F.

HOT WATER EXPANSION TANK: AMTROL, #5T-8, 3.2 GALLON EXPANSION TANK WITH DIAPHRAGM. MY NOT USED. 

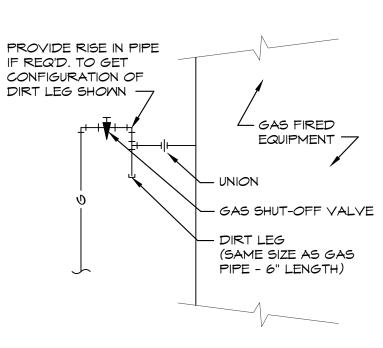
MIXING VALVE: WATTS, #LFMMV THERMOSTATIC CONTROLLED MIXING VALVE,LEAD FREE BRONZE BODY, LOCKED TEMPERATURE ADJUSTMENT CAP (VANDAL RESISTANT), SOLID WAX HYDRAULIC PRINCIPLE THERMOSTAT, INTEGRAL FILTER WASHERS AND CHECK VALVES ON HOT AND COLD INLETS.(SET TO 110°F) ASSE #1017,#1069,#1070

REDUCED ZONE PRESSURE BACKFLOW PREVENTOR: WATTS #LF009, LEAD FREE BRONZE BODY CONSTRUCTION, TWO, IN-LINE INDEPENDENT CHECK VALVES, REPLACEABLE CHECK SEATS WITH AN INTERMEDIATE RELIEF VALVE, AND BALL

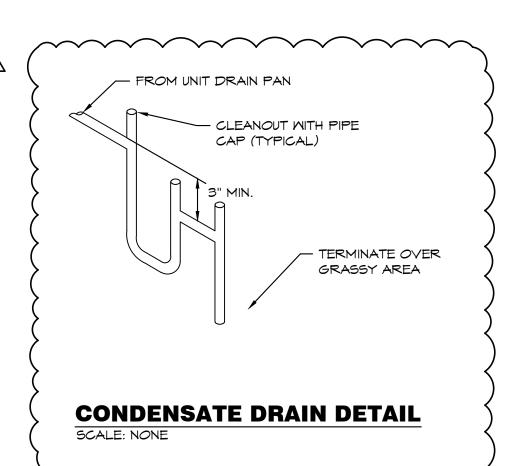
VALVE TEST COCKS. FCO/MCO VINYL TILE FLOOR: JR SMITH #4140, OR EQUAL. QUARRY TILE FLOOR: JR SMITH #4200, OR EQUAL. CARPETED FLOOR: JR SMITH #4020-Y, OR EQUAL.

UNFINISHED FLOOR: JR SMITH #4020, OR EQUAL. WALL: JR SMITH #4472, OR EQUAL, 24" ABOVE THE FLOOR.

FPWH FREEZEPROOF WALL HYDRANT: JR SMITH #5609, 3/4" SIZE, NICKEL-BRONZE FACE, KEY OPERATED, INTEGRAL VACUUM BREAKER.



**GAS CONNECTION DETAIL** SCALE: NONE



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> INCORPORATED 5720 Reeder Shawnee, Ks. 66203 (913)262-17

4301 Indian Creek Parkway Overland Park, KS 66207 phone: 913.451.9390 fex: 913.451.9391 www.devideonee.com

12/22/2022 KNUDSEN NUMBER PE-2004026504

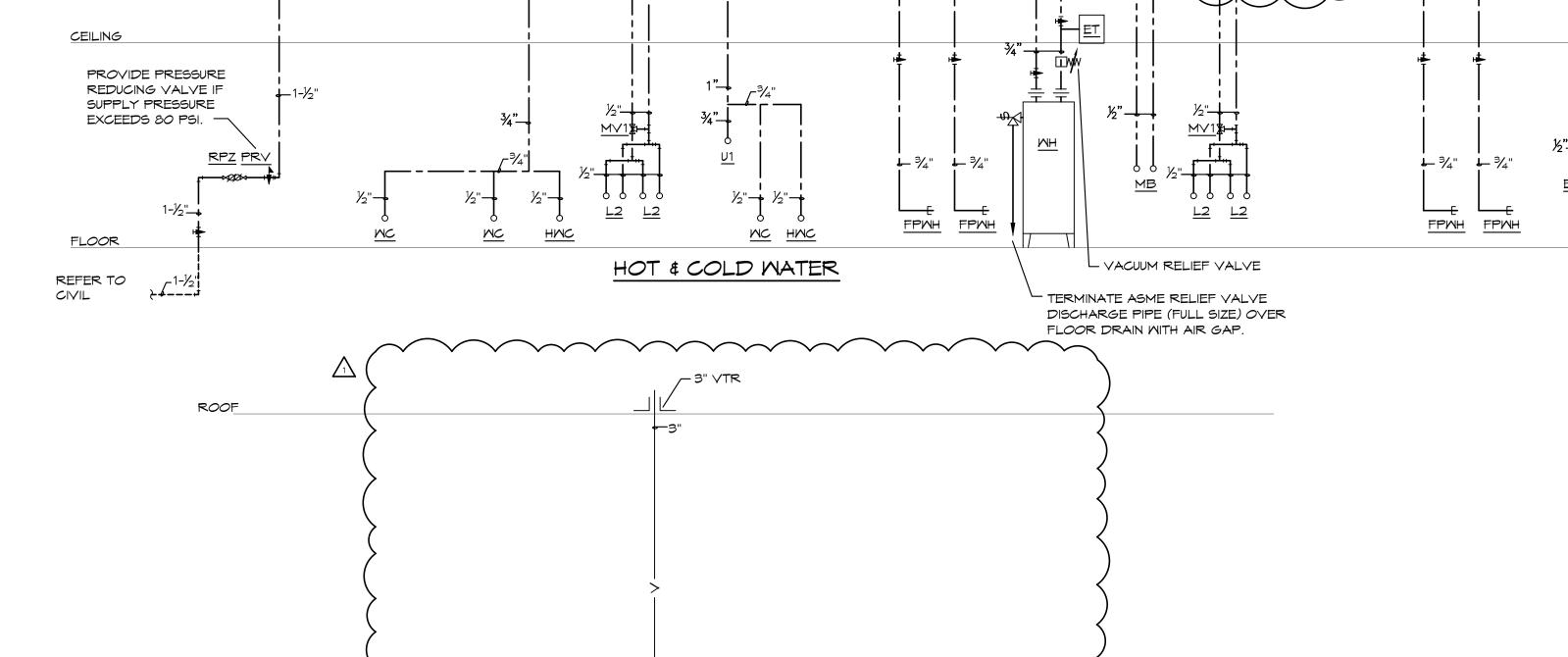
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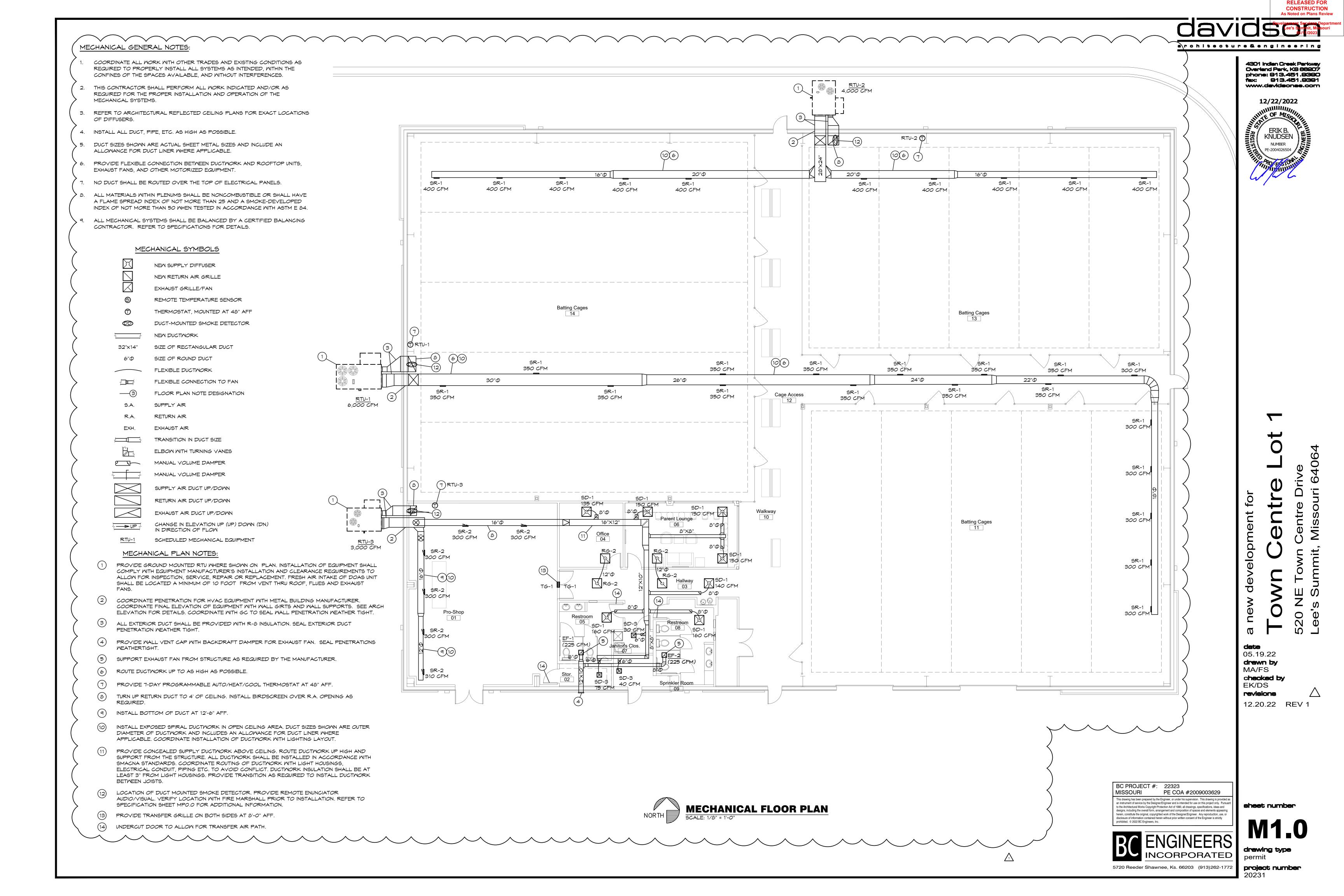
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Γ1" Γ<sup>3</sup>/<sub>4</sub>"

CEILING FLOOR GCO

> WASTE & VENT **PLUMBING RISER DIAGRAMS**





development for

**date** 05.19.22

drewn by MA/FS

EK/DS revisions

checked by

12.20.22 REV 1

sheet number

4301 Indian Creek Parkway Overland Perk, K8 68207 phone: 913.451.9390 fax: 913.451.9391 www.davidsonae.oom



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|                   | As Noted on Plans Review   |
|-------------------|--|
| davids            | Development Services Departme<br>Lee's Summit, Missouri<br>of / 1/2023 |
| erchitecture & en | gineering  |

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4301 Indian Creek Parkway Overland Park, KS 88207 phone: 913.451.8390

fax: 913.451.9391 www.devideonee.com

12/22/2022

|      | EXHAUST FAN SCHEDULE |          |          |                                  |          |            |          |              |          |          |  |
|------|----------------------|----------|----------|----------------------------------|----------|------------|----------|--------------|----------|----------|--|
| MARK |                      |          |          | EXTERNAL<br>STATIC P.<br>IN. MG. | RPM      | ELECTRICAL |          |              |          |          |  |
|      | MFGR                 | MODEL    | CFM      |                                  |          | VOLT/Ф/HZ  | PMR      | FAN TYPE     | CONTROLS | NOTES    |  |
| EF-1 | COOK                 | GC-182   | 225      | 0.25                             | 1,400    | 120/1/60   | 167 M    | CEILING EXH. | SMITCH   | 1        |  |
| EF-2 | <b>†</b>             | <b>†</b> | <b>*</b> | •                                | <b>†</b> | <b>†</b>   | <b>†</b> | <b>†</b>     | <b>†</b> | <b>†</b> |  |

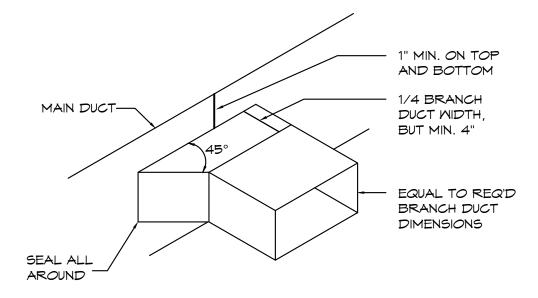
NOTES: 1. PROVIDE CEILING GRILLE, INTEGRAL BACK DRAFT DAMPER, VARI-SPEED CONTROLLER (NEAR FAN AND ABOVE CEILING), AND WALL CAP.

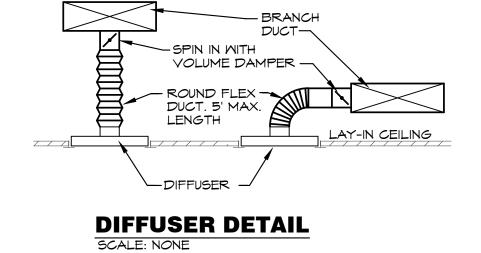
|       |         |              |              |           |                   |                   |         |            |      | ROOF               | FTOP U        | NIT SCH       | HEDULE         | :                 |           |                 |                  |               |                   |          |               |          |            |                        |          |                 |             |
|-------|---------|--------------|--------------|-----------|-------------------|-------------------|---------|------------|------|--------------------|---------------|---------------|----------------|-------------------|-----------|-----------------|------------------|---------------|-------------------|----------|---------------|----------|------------|------------------------|----------|-----------------|-------------|
|       |         |              | NO.          | OM. EVAP. | EXT.<br>STATIC P. |                   |         | COOLING    |      | нот                | HEATING (GAS) |               | ELECTRICAL     |                   |           | UNIT            | BLOWER           | ECONOMIZER +  | BAROMETRIC RELIEF | MINIMUM  | SEER          | TOTAL    |            |                        |          |                 |             |
| MARK  | MFGR.   | MODEL NO.    | NOM.<br>TONS | CFM       | IN. MG.           | COOLING<br>STAGES |         | SENS. BTUH | AMB. | EVAP. EAT<br>DB/WB | GAS<br>REHEAT | BTUH<br>INPUT | BTUH<br>OUTPUT | HEATING<br>STAGES | VOLT/Ф/HZ | BLOWER<br>MOTOR | POWER<br>EXHAUST | MCA<br>(AMPS) | MOCP<br>(AMPS)    | CONTROLS | DRIVE<br>TYPE | TYPE     | CONTROLLER | OUTDOOR<br>AIR (CFM) * | /==0     | MEIGHT<br>(LBS) | NOTES       |
| RTU-1 | CARRIER | 48TCED16A2A5 | 15           | 6,000     | 0.5               | 2                 | 184,780 | 137,040    | 105  | 80/67              | N             | 240,000       | 195,000        | 2                 | 208/3/60  | 6.1 HP          | N                | 71            | 80                | DIGITAL  | CAV           | STANDARD | SENSIBLE   | 450                    | - / 11.2 | 1760            | 1,2,3,4,5,6 |
| RTU-2 |         | 48TCED12A2A5 | 10           | 4,000     | 0.5               | 2                 | 124,100 | 96,200     | 105  | 80/67              | N             | 224,000       | 184,000        | 2                 | 208/3/60  | 4.7 HP          | N                | 49            | 60                | DIGITAL  | CAV           | STANDARD | SENSIBLE   | 450                    | - / 11   | 1149            | 1,2,3,4,5,6 |
| RTU-3 | ,       | 48FCEM08A2A5 | 7.5          | 3,000     | 0.5               | 2                 | 90,000  | 66,020     | 105  | 80/67              | N             | 180,000       | 148,000        | 2                 | 208/3/60  | 3 HP            | N                | 39            | 50                | DIGITAL  | CAV           | STANDARD | SENSIBLE   | 925                    | - / 11.2 | 914             | 1,2,3,4,5,6 |
|       |         |              |              |           |                   |                   |         |            |      |                    |               |               |                |                   |           |                 |                  |               |                   |          |               |          |            |                        |          |                 |             |

NOTES: 1. PROVIDE HINGED ACCESS DOORS, SCROLL COMPRESSORS WITH CRANKCASE HEATER, HIGH PRESSURE SWITCHES, FREEZESTAT, HAIL GUARDS. STANDARD COOLING DOWN TO 30°F.
OUTDOOR AIR DAMPER TO FULLY CLOSE W/ FAN SHUTDOWN FOR ALL UNITS.

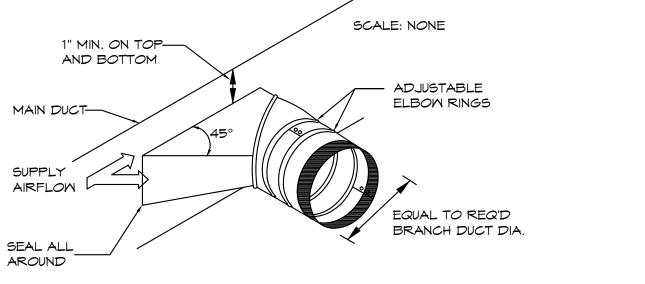
- 2. EXTERNAL STATIC PRESSURE LISTED REPRESENTS STATIC PRESSURE REQUIRED FOR DUCTWORK AND DIFFUSERS OUTSIDE THE HVAC UNIT COMPLETELY INDEPENDENT OF ANY PRESSURE DROP THROUGH THE HVAC
- EQUIPMENT INCLUDING BUT NOT LIMITED TO FILTERS, COILS AND ECONOMIZERS. THE FAN AND MOTOR SHALL BE SIZED APPROPRIATELY TO MEET THIS DEFINITION OF EXTERNAL STATIC PRESSURE.
- 3. PROVIDE COMMERCIAL 7-DAY PROGRAMMABLE HEAT/COOL/AUTO CHANGEOVER TOUCHSCREEN THERMOSTAT WITH OPTIMUM START CONTROLS.
  OUTDOOR AIR DAMPER IS TO CLOSE DURING UNOCCUPIED HOURS.
- 4. PROVIDE NEW 2" MERY 8 FILTERS UPON COMPLETION OF CONSTRUCTION.
- 5. PROVIDE 14" PRE-FABRICATED GROUND MOUNTED CURB,
- 6. MECHANICAL CONTRACTOR SHALL COORDINATE ALL UNIT MOCP'S OF ACTUAL INSTALLED EQUIPMENT WITH ELECTRICAL CONTRACTOR.
- \* OCCUPANCY FOR BATTING CAGES IS 30 PEOPLE. 30\*30 = 900 CFM MINIMUM REQUIRED FOR BATTING CAGE AREA.

|           |       |        | I                                     | DIFFUSER              | R SCHEDI  | ULE      |                           |              |       |
|-----------|-------|--------|---------------------------------------|-----------------------|-----------|----------|---------------------------|--------------|-------|
| MARK MFGR |       | MODEL  | BORDER TYPE                           | NECK SIZE             | FACE SIZE | FINISH   | DAMPER                    | ACCESSORIES  | NOTES |
| SD-1      | TITUS | TMS    | 3                                     | 8"Ф                   | 24"x24"   | MHITE    | -                         | -            | -     |
| SD-2      |       |        |                                       | 1                     | <b>†</b>  |          | OB DAMPER                 | TRM KIT      | -     |
| SD-3      |       |        |                                       | 6"Ф                   | 12"x12"   |          | -                         | -            | -     |
| SD-4      |       | +      |                                       | •                     | <b>†</b>  |          | OB DAMPER                 | TRM KIT      | -     |
| RG-1      |       | PAR    |                                       | 18"x18"               | 24"x24"   |          | -                         | 12           | -     |
| RG-2      |       | *      |                                       | 12"Ф                  | 24"×24"   |          | -                         | <del>-</del> |       |
| SR-1      |       | 300F5  |                                       | 12"X10"               | -         |          | OB DAMPER                 | <del>-</del> |       |
| SR-2      |       | 5300F5 |                                       | 20"X4"                | -         | ANODIZED | FULL LENGTH VOLUME DAMPER | -            |       |
| TG-1      |       | 350RL  | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | <b>V V</b> - <b>V</b> | 14"×14"   | MHITE    | <u> </u>                  |              | 1     |

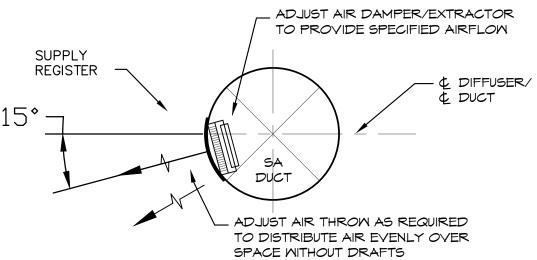








BRANCH DUCT TAKEOFF DETAIL
SCALE: NONE



SUPPLY REGISTER DETAIL SCALE: NONE

|       | OUTDOOR AIR CALCULATIONS |                          |                              |  |  |                                     |   |   |                                 |  |
|-------|--------------------------|--------------------------|------------------------------|--|--|-------------------------------------|---|---|---------------------------------|--|
| UNIT  | Area (sqft)              | OCCUPANCY CLASSIFICATION | Occupant Density #/1000 sqft | People outdoor<br>airflow rate in<br>breathing zone,<br>(Rp)<br>cfm/person | Area outdoor<br>airflow rate in<br>breathing<br>zone, (Ra)<br>cfm/sqft | Exhaust<br>airflow rate<br>cfm/sqft | Breathing<br>zone<br>outdoor<br>airflow (Vbz) | Zone air<br>distribution<br>effectivene<br>ss<br>(Ez) | Zone<br>outdoor<br>airflow (cfm |  |
|       | 1230                     | Sales                    | 15                           | 7.5  | 0.12   |                                     | 286   | 0.8   | 357                             |  |
|       | 1015                     | Conference rooms         | 50                           | 5  | 0.06   |                                     | 315   | 0.8   | 393                             |  |
| RTU-3 | 336                      | Conference/meeting       | 50                           | 5  | 0.06   |                                     | 104   | 0.8   | 130                             |  |
|       | 188                      | Office spaces            | 5                            | 5  | 0.06   |                                     | 16  | 0.8   | 20                              |  |
|       | 320                      | Corridors                | 0                            | 0  | 0.06   |                                     | 19  | 0.8   | 24                              |  |

BC PROJECT #: 22323

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sheet number

M2\_0

development for

**date** 05.19.22 **drawn by** 

MA/FS

EK/DS

revisions

checked by

12.20.22 REV 1

drawing type
permit

project number
20231

### ELECTRICAL SPECIFICATIONS

### 1. GENERAL PROVISIONS

- A. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, NECESSARY FOR THE COMPLETE INSTALLATION OF THE ELECTRICAL SYSTEMS OUTLINED
- B. OBTAIN ALL PERMITS, FEES, LICENSES, INSPECTIONS, AND CERTIFICATES OF COMPLIANCE OR APPROVAL AS REQUIRED BY THE AUTHORITIES
- C. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE NATIONAL ELECTRIC CODE (NEC), AND ALL APPLICABLE LAWS, CODES AND REGULATIONS OF THE
- D. ALL TESTING REQUIRED BY AUTHORITIES SHALL BE CONSIDERED PART OF THIS WORK.

GOVERNMENTAL BODIES HAVING JURISDICTION OVER THE SITE.

- E. DURING CONSTRUCTION, ALL FIXTURES, EQUIPMENT, CONDUIT, ETC. SHALL BE COVERED, PLUGGED, OR CAPPED AS REQUIRED TO KEEP CLEAN AND UNDAMAGED. ALL DAMAGED ITEMS SHALL BE RESTORED TO ORIGINAL CONDITION OR REPLACED. ALL PROTECTIVE COVERING SHALL BE REMOVED BEFORE FINAL
- F. PROVIDE ALL NECESSARY CUTTING AND PATCHING OF WALLS, FLOORS, CEILINGS, AND ROOFS AS NECESSARY. PATCH AROUND ALL OPENINGS SHALL MATCH ADJACENT AREA. COORDINATE ALL ROOFING WORK WITH OWNER OR RESPONSIBLE PARTY, SO THAT THE EXISTING ROOFING WARRANTY
- G. CONTRACTOR SHALL GUARANTEE ALL WORK AND MATERIALS AGAINST DEFECTS FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.
- H. CONTRACTOR SHALL PROVIDE ACCESS PANELS WHERE NECESSARY FOR CONCEALED ELECTRIAL COMPONENTS.

### 2. OPERATION AND MAINTENANCE MANUALS:

- A. DURING THE COURSE OF CONSTRUCTION, COLLECT AND COMPILE OPERATING INSTRUCTIONS, WIRING DIAGRAMS, CATALOG CUTS, LUBRICATION AND PREVENTIVE MAINTENANCE INSTRUCTIONS, PARTS LISTS, ETC. FOR ALL EQUIPMENT FURNISHED UNDER THIS CONTRACT
- B. ALL LITERATURE AND INSTRUCTIONS SHIPPED WITH THE EQUIPMENT SHALL BE SAVED FOR INCLUSION N THE OPERATION AND MAINTENANCE MANUALS.
- C. ALL LITERATURE LISTED ABOVE AND ALL PAPERS LISTING WARRANTIES ETC SHALL BE COLL ATED AND LABELED WITH THE PROJECT NAME, ADDRESS, ARCHITECT, ENGINEER, CONTRACTORS, ETC. CONTRACTORS, ETC. DOCUMENTS SHALL BE COMPILED AND BOUND IN DIGITAL FILE OR 3 RING BINDER.
- A. MANUFACTURERS, MODEL NUMBERS, ETC. INDICATED OR SCHEDULED ON THE DRAWINGS SHALL BE INTERPRETED AS HAVING ESTABLISHED A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION. ARTICLES, FIXTURES, ETC. OF EQUAL QUALITY BY MANUFACTURERS SHALL BE ACCEPTABLE, SUBJECT TO STRUCTURAL AND ELECTRICAL CONSTRAINTS OF THE PROJECT DESIGN UNLESS NOTED OTHERWISE

- A. ALL CIRCUITS SHALL BE TESTED FOR CONTINUITY, SHORTS, AND GROUNDS BEFORE CONNECTING TO THE PROPER PHASE AS DESIGNED TO BALANCE THE LOADING BETWEEN PHASES.
- B. POWER AND LIGHTING PANELS SHALL BE PROPERLY PHASED TO DISTRIBUTE THE LOAD AND SHALL BE CONNECTED AND ADJUSTED TO OPERATE AS SPECIFIED.
- C. ALL MOTORS AND SIMILAR EQUIPMENT SHALL BE CHECKED FOR PROPER PHASE ROTATION AND OPERATION. 5. RACEMAYS:
- A. CONDUIT INSIDE THE BUILDING SHALL BE METALLIC TUBING (EMT), BEARING THE UL LABEL, WITH COMPRESSION TYPE FITTINGS OR SCREW SET FITTINGS.
- B. CONDUIT EXPOSED TO THE MEATHER, INSTALLED UNDERGROUND, IN CONCRETE, OR USED FOR SERVICE ENTRANCE SHALL BE STANDARD RIGID CONDUIT (GALVANIZED) WITH THREADED FITTINGS.
- C. UNDERGROUND CONDUIT MAY BE POLYVINYL CHLORIDE WITH A DEFLECTION TEMPERATURE, UNDER LOAD AT 264 PSI, OF 78 DEGREES C, AND A TENSILE STRENGTH OF 5,200 PSI. JOINTS SHALL BE FLUSH SOLVENT MELDED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE EQUAL TO CARLON POWER AND COMMUNICATIONS DUCT TYPE DB (DIRECT BURIAL). CONDUIT AND FITTINGS SHALL BE PRODUCED BY THE SAME MANUFACTURER.
- D. FLEXIBLE METAL CONDUIT SHALL ONLY BE USED FOR CONNECTIONS TO MOTORS, TRANSFORMERS, AND LIGHT FIXTURES. MAXIMUM LENGTH SHALL BE 6'-0".

### 6. CONDUCTORS

- A. WIRES SHALL BE CONTINUOUS WITHOUT SPLICES OR TAPS IN CONDUIT RUNS. ALL SPLICES SHALL BE MADE IN JUNCTION, PULL, OR OUTLET BOXES. ALL WIRE SHALL BE INSTALLED IN CONDUIT, WIREWAYS, OR OTHER PROTECTIVE COVER SANCTIONED BY CODES.
- B. CONDUCTORS FOR LIGHTING AND POWER SHALL BE COPPER, MINIMUM NO. 12 A.W.G., 600 VOLT.
- C. NO. 10 GAUGE AND SMALLER CONDUCTORS SHALL BE TYPE THMN (WET LOCATIONS) OR THHN (DRY LOCATIONS), SOLID CONDUCTOR, UNLESS OTHERWISE INDICATED.
- D. NO. 8 GAUGE AND LARGER CONDUCTORS SHALL BE TYPE THWN (WET LOCATIONS) OR THHN (DRY
- LOCATIONS), STRANDED, UNLESS OTHERWISE INDICATED E. SERVICE ENTRANCE AND PANEL FEEDER CONDUCTORS, NO. 3 GAUGE AND LARGER SHALL BE TYPE
- F. ALUMINUM SERVICE WIRE MAY BE USED FOR SERVICE ENTRANCE CONDUCTORS AND/OR PANEL FEEDERS
- ONLY. ALL OTHER WIRING SHALL BE COPPER CONDUCTORS AS HEREINBEFORE SPECIFIED.
- G. ALUMINUM CONDUCTORS SHALL BE TYPE 'XHHM-2', ALCAN, "STABILOY" TYPE ALLOY CONDUCTORS UTILIZING "AA-8030" ALUMINUM ALLOY. CONDUCTORS SHALL BE UL LISTED.
- H. ALL ALUMINUM CONDUCTORS SHALL BE TERMINATED IN CONNECTIONS OR LUGS WHICH ARE DUAL RATED (ALTCU OR ALPCU) AND ARE LISTED BY UL FOR USE WITH ALUMINUM OR COPPER CONDUCTORS AND SHALL BE SIZED TO ACCEPT ALUMINUM CONDUCTORS OF THE AMPACITY SPECIFIED.

### 7. MC CABLE

- A. MC CABLE SHALL CONSIST OF INTERLOCK ARMORED CABLE MADE OF THREE OR FOUR TYPE THHN SOLID (#8 AMG AND LARGER MAY BE STRANDED) COPPER CONDUCTORS RATED 90°C FOR DRY LOCATIONS, WITH NYLON OR EQUIVALENT UL LISTED JACKET, PER UL STANDARD 83 THE THREE CONDUCTORS SHALL BE TWISTED TOGETHER WITH THE COPPER GROUNDING CONDUCTOR, SUITABLE FILLERS, AND WRAPPED IN BINDER TAPE. THE ASSEMBLY SHALL BE ARMORED WITH SPIRALLY MRAPPED INTERLOCKED ARMOR OF ALUMINUM OR GALVANIZED
- B. CABLES SHALL BE TESTED IN ACCORDANCE WITH UL STANDARD 1569 FOR TYPE MC CABLE AND RATED AT 600 VOLTS, 90 DEG. C FOR DRY LOCATIONS AND 75 DEG. C FOR WET LOCATIONS.

### 8. WIRING DEVICES:

- A. WALL SWITCHES SHALL BE SPECIFICATION GRADE, QUIET TYPE, FLUSH TOGGLE SWITCH, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES.
- 1) SINGLE POLE: HUBBELL #C51221-X, OR EQUAL. 2) THREE WAY: HUBBELL #C51223-X, OR EQUAL. 3) AS SPECIFIED ON PLANS
- B. RECEPTACLES SHALL BE SPECIFICATION GRADE, DUPLEX, GROUNDING, THREE-WIRE TYPE, RATED FOR 20 AMPS, WITH THERMOPLASTIC COVER PLATES. HUBBELL #CR5352-X, OR EQUAL.
- C. GROUND FAULT INTERRUPTER RECEPTACLES (GFI) SHALL BE HUBBELL #GF20-XL. DEVICE COVER
- PLATES SHALL BE AS HEREINBEFORE SPECIFIED. D. ISOLATED GROUND RECEPTACLES (IG) SHALL BE HUBBELL #CR5352IG, ORANGE COLOR. DEVICE
- E. RECEPTACLES OUTSIDE BUILDING AND WHERE NOTED AS WEATHERPROOF, SHALL BE LISTED 'WEATHER-RESISTANT' HUBBEL #GFTR20-X OR EQUAL AND SHALL BE INSTALLED IN A MEATHERPROOF ENCLOSURE WHICH SHALL BE INTERMATIC #WP1010MXD OR #WP1010HMXD DIEGAST METAL WEATHERPROOF RECEPTACLE COVER. COVER SHALL BE WEATHER PROOF RATED WHILE IN USE.
- F. VERIFY DEVICES AND DEVICE COVERPLATES COLOR AND STYLE WITH ARCHITECT.
- 9. BOXES:

COVER PLATES SHALL BE AS HEREINBEFORE SPECIFIED.

A. HOT DIPPED GALVANIZED STEEL BOXES. PROVIDE TYPE TO SUIT CONDITIONS FOR INSTALLATION. B. ALL BOXES SHALL BE FLUSH MOUNTED, UNLESS INDICATED OTHERWISE.

### ELECTRICAL SPECIFICATIONS (CONTINUED)

### 10. PANELBOARDS:

- A. FURNISH AND INSTALL CIRCUIT BREAKER PANELBOARDS AS SHOWN ON THE DRAWINGS. PANELBOARDS CAPACITY INDICATED ON THE PANEL SCHEDULE. PANELBOARDS SHALL BE EQUAL TO SQUARE D TYPE NQ OR NF WITH BOLT IN TYPE BREAKERS. PANELBOARD LUGS SHALL BE RATED AT 75°C.
- FAULT CURRENT FROM LOCAL UTILITY.
- CARRY 80% OF NAMEPLATE RATING CONTINUOUSLY IN FREE AIR AT 40° C. CIRCUIT BREAKERS SHALL BE TRIP INDICATING AND FULLY INTERCHANGEABLE WITHOUT DISTURBING ADJACENT UNITS. WIRE CONTACTS CANNOT BE HELD CLOSED AGAINST ANY ABNORMAL OVERCURRENT OR SHORT CIRCUIT
- a) BREAKERS SHALL MEET APPLICABLE NEMA AND/OR UL SPECIFICATIONS.
- D. PANELBOARD INTERIORS SHALL CONSIST OF REINFORCED GALVANIZED SHEET STEEL FRAMES WITH ALUMINUM BUS BARS AND CIRCUIT BREAKERS, PROPERLY SUPPORTED TO PREVENT VIBRATIONS AND BREAKAGE IN HANDLING. BUS BARS SHALL BE SEQUENCE PHASED. PANELBOARD SHALL HAVE A FULL SIZED SOLID
- E. BUS BAR BRACING SHALL BE UL LISTED AS INDICATED ON DRAWINGS. ADDITIONAL BRACING SHALL BE PROVIDED AS REQUIRED TO MEET OR EXCEED INDICATED AVAILABLE FAULT
- LOAD SERVED, INCLUDING EXISTING CIRCUITS. CIRCUIT BREAKERS SHALL BE IDENTIFIED BY CIRCUIT NUMBER LABELS AS HEREINBEFORE SPECIFIED.

- FOR PAD LOCKING. FUSED AND NON-FUSED DISCONNECT SWITCHES SHALL BE PROVIDED AS INDICATED
- B. INDOOR SWITCHES SHALL BE NEMA I AND OUTDOOR SWITCHES SHALL BE NEMA 3R, UNLESS INDICATED OTHERWISE.
- A. FUSES PROTECTING CIRCUIT BREAKER PANELS SHALL BE CURRENT LIMITING U.L. CLASS RK-1 FUSES WITH 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE SILVER FOR
- B. ALL OTHER FUSES SHALL BE U.L. CLASS RK-5, DUAL-ELEMENT WITH A MINIMUM TIME-DELAY OF 10
- 13. LIGHT FIXTURES:
- SHALL BE A MINIMUM OF 12 GAUGE GALVANIZED STEEL WIRE, SOFT ANNEALED,
- B. FIXTURES ARE REQUIRED AT ALL LIGHTING OUTLETS SHOWN ON THE DRAWINGS. APPROVED LIGHTING FIXTURE WIRE IS REQUIRED IN ALL FIXTURES AND FIXTURE RACEWAYS. WEATHERPROOF WIRING IS REQUIRED FOR EXTERIOR FIXTURES. ALL PARTS OF FIXTURES AND WIRING SHALL BE IN ACCORDANCE WITH NEC REQUIREMENTS.
- C. ALL FIXTURES SHALL CARRY UL AND ETL LABELS.
- 14. SLEEVES:
- A. PROVIDE, SET, AND PROPERLY LOCATE PIPE SLEEVES AS REQUIRED FOR THIS WORK.
- B. INTERIOR PARTITIONS: 16 GAGE GALVANIZED STEEL, PACK BETWEEN CONDUIT AND SLEEVE WITH FIRE
- C. ROOF: PROSET OR EQUAL, MANUFACTURED PVC SCHEDULE 40 PIPE SLEEVE WITH WEATHERPROOF SEAL. COORDINATE WITH ROOFING CONTRACTOR AND FLASH AS REQUIRED TO MAINTAIN ROOF WARRANTY.

### 15. GROUNDING

- AND ANY LOCAL REQUIREMENTS. INSURE CONTINUOUS BOND WHERE FLEXIBLE CONDUIT IS USED. PROVIDE BONDING JUMPER INSIDE ALL FLEXIBLE CONDUIT.
- B. BOND METAL PIPING SYSTEMS IN COMPLIANCE WITH NEC 250.4(A)(4).

- INDICATED TO BE REMOVED AND NOT INDICATED TO BE SALVAGED OR REMAIN.
- 2) ALL MATERIALS AND EQUIPMENT DESIGNATED TO BE REUSED OR RELOCATED SHALL BE CAREFULLY REMOVED, AND STORED UNTIL NEEDED FOR REMODELING WORK. ALL ITEMS SHALL BE RESTORED TO "LIKE NEM" CONDITION WITH RUST OR CORROSION REMOVED, SURFACE PAINT TOUCHED UP OR REPAINTED AS REQUIRED TO MATCH NEW CONSTRUCTION, AND THOROUGHLY CLEANED AND INSPECTED ANY ITEMS WHICH BECOME DAMAGED BEYOND REPAIR AS A RESULT OF CONSTRUCTION OR DEMOLITION ACTIVITY SHALL BE REPLACED WITH NEW MATERIAL EQUIVALENT IN EVERY RESPECT.
- C. DISPOSAL AND CLEANUP: REMOVE FROM THE SITE AND LEGALLY DISPOSE OF DEMOLISHED MATERIALS AND EQUIPMENT NOT INDICATED TO BE SALVAGED.
- BARRIERS TO KEEP DIRT, DUST, AND NOISE FROM BEING TRANSMITTED TO ADJACENT AREAS. REMOVE PROTECTION AND BARRIERS AFTER REMODELING OPERATIONS ARE COMPLETE.
- AND OPERATION OF ALL EXISTING ELECTRICAL SYSTEMS, INTEGRATING THE NEW AND EXISTING AREAS. LOCATE, IDENTIFY, AND PROTECT ELECTRICAL SERVICES PASSING THROUGH REMODELING AREA AND SERVING OTHER AREAS OUTSIDE THE REMODELING LIMITS. MAINTAIN SERVICES TO AREAS OUTSIDE REMODELING LIMITS. WHEN SERVICES MUST BE INTERRUPTED, INSTALL TEMPORARY SERVICES FOR
- WALLS OR PARTITIONS SHALL HAVE DEVICES AND WIRE REMOVED, AND SHALL BE COVERED.
- FLOOR TO BE REMOVED, FURNISH AND INSTALL NEW CONDUIT AND WIRE TO EITHER REPOUTE THE CIRCUIT OR FEED THE REMAINING OUTLET(S) FROM ANOTHER ELECTRICAL SOURCE, BUT IN SUCH
- 4) WHERE EXISTING OUTLETS IN A WALL, CEILING, OR FLOOR TO BE REMOVED ARE ESSENTIAL TO LOCATION. EXISTING WIRING DEVICES SHALL NOT BE REUSED. UNLESS OTHERWISE INDICATED.
- EXISTING CONDUIT (IF APPLICABLE) FOR THE NEW LIGHTING. ALL UNUSED CONDUIT SHALL BE 6) WHERE A TELEPHONE CIRCUIT EXTENDS BEYOND AN OUTLET IN AN EXISTING WALL, CEILING, OR
- 7) WHERE EXISTING CONDUIT AND WIRE RUNS ARE LOCATED IN OR ATTACHED TO AN EXISTING WALL,
- 8) CONDUIT SHALL BE CONCEALED WITHIN THE EXISTING BUILDING CONSTRUCTION WHEREVER

### 17. BOXES IN FIRE RATED ASSEMBLIES:

18. FIRE ALARM SYSTEM:

- A. OUTLET BOXES THAT DO NOT EXCEED 16 SQUARE INCHES AND INSTALLED IN FIRE RATED WALLS SHALL NOT BE INSTALLED CLOSER THAN 24" HORIZONTAL INCHES TO OTHER OUTLET BOXES.
- PROTECTED WITH LISTED PUTTY PADS, 3M FIRE BARRIER MOLDABLE PUTTY + OR EQUAL.
- A. ELECTRICAL CONTRACTOR SHALL PROVIDE DESIGN BUILD ENERGINEERED SHOP DRAWINGS OF FIRE ALARM SYSTEM TO BE INSTALLED. PROVIDE DEVICES, CONDUIT, WIRES, CABLE, PROGRAMMING AND TESTING AS DIRECTED BY EQUIPMENT MANUFACTURER AND LOCAL FIRE DEPARTMENT FOR A CODE SYSTEM WITH SIZES AND BATTERY CALCULATIONS. EQUIPMENT TO BE NEW AND SHALL BE STAMPED, SIGNED, CALIBRATION AND TESTED BY FACTORY CERTIFIED TECHNICIAN. FIRE ALARM DEVICES ARE

- SHALL BE LISTED BY UL AND SO LABELED, AND SHALL BE FULLY RATED FOR THE VOLTAGE AND CURRENT
- 1) CIRCUIT BREAKER INTERRUPTING CAPACITIES SHALL MEET OR EXCEED THE AVAILABLE RMS SYMMETRICAL FAULT CURRENTS INDICATED AND AS REQUIRED TO MEET OR EXCEED THE AVAILABLE
- B. CIRCUIT BREAKERS SHALL MEET APPLICABLE PORTIONS OF UL STANDARD 489 AND NEMA AB-L. CIRCUIT BREAKERS SHALL BE BOLT-ON, GROUP MOUNTED, AMBIENT MAGNETIC, WITH COMMON TRIP, UL RATED TO TERMINALS SHALL BE RATED 75 DEGREES C. THE OPERATING MECHANISM SHALL BE TRIP-FREE SO THAT
- C. PANELBOARD BOXES SHALL BE GALVANIZED SHEET STEEL WITH AMPLE WIRING GUTTER SPACE IN ACCORDANCE WITH NEC. FRONTS SHALL BE OF SHEET STEEL PAINTED LIGHT GREY OVER A SUITABLE RUST INHIBITOR PRIMER. PANELBOARDS SHALL BE EQUIPPED WITH ONE PIECE DOOR, CYLINDER TUMBLER TYPE LOCK, DIRECTORY CARD-HOLDER AND QUARTER-TURN ADJUSTABLE TRIM CLAMPS.
- ALUMINUM NEUTRAL AND GROUND BUS.
- F. DIRECTORY CARDS SHALL BE COMPLETELY FILLED IN BY TYPEWRITER, LISTING CIRCUIT NUMBERS AND
- A. DISCONNECTS SHALL BE EXTERNALLY OPERATED, QUICK-MAKE, QUICK-BREAK, SAFETY, WITH PROVISIONS
- 12. FUSES:
- RATINGS ABOVE 60 AMPERES
- SECONDS AT 500% RATING. FUSES SHALL HAVE CURRENT-LIMITING SHORT-CIRCUIT LINKS AND 200,000 AMPERES RMS SYM INTERRUPTING CAPACITY. FUSING ELEMENTS SHALL BE COPPER.
- A. WHERE LIGHT FIXTURES ARE MOUNTED IN A LAY-IN CEILING, PROVIDE A MINIMUM OF 2 SUPPORT WIRES ATTACHED DIRECTLY BETWEEN EACH LIGHT FIXTURE AND THE BUILDING STRUCTURE. SUPPORT WIRES

- SAFING AND CAULK AT EACH END WITH FIRE RESISTANT SEALANT

- A. GROUND ALL ELECTRICAL APPARATUS IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC) 250,

- A. DEMOLITION: DISCONNECT, DEMOLISH AND REMOVE ABANDONED ELECTRICAL MATERIALS AND EQUIPMENT
- 1) DISCONNECT AND REMOVE EXISTING ELECTRICAL EQUIPMENT INDICATED TO BE REMOVED AND SALVAGED. DELIVER EQUIPMENT TO THE LOCATION DESIGNATED BY THE OWNER FOR STORAGE.
- D. PROTECT ADJACENT MATERIALS INDICATED TO REMAIN. INSTALL AND MAINTAIN DUST AND NOISE
- E. PROVIDE ALL ALTERATIONS AND REMORK INDICATED AND/OR REQUIRED FOR THE PROPER INSTALLATION
- 1) ABANDONED CONDUIT SHALL HAVE WIRE REMOVED AND SHALL BE CAPPED. ABANDONED OUTLETS IN
- 2) WHERE EXISTING CONDUITS TERMINATE AT AN EXISTING OUTLET IN A WALL, CEILING, OR FLOOR TO BE REMOVED, DISCONNECT AND REMOVE DEVICE AND WIRE FROM CONDUIT. CONDUIT SHALL BE CUT BACK AND CAPPED (BELOW THE FLOOR OR ABOVE THE CEILING) SO NOT TO CREATE AN OBSTRUCTION. PATCH FLOOR TO MATCH EXISTING.
- 3) WHERE EXISTING CIRCUITS EXTEND BEYOND THE OUTLET IN THE EXISTING WALL, CEILING, OR A MANNER AS NOT TO REVISE THE CIRCUIT. ALL REPOUTED CONDUIT SHALL BE APPROVED BY THE
- MAINTAIN OPERATION OF OTHER REMAINING OUTLETS, RELOCATE THE OUTLET TO A NEW CONVENIENT 5) WHERE LIGHTING FIXTURES ARE INDICATED TO BE DEMOLISHED, REMOVE ALL WIRE AND MODIFY THE
- FLOOR TO BE REMOVED, PROVIDE NECESSARY EMPTY CONDUIT AND NOTIFY THE OWNER WHO WILL REQUEST THE OWNER TO ARRANGE WITH THE TELEPHONE COMPANY FOR NEW WIRING TO OUTLETS THAT
- CEILING OR FLOOR TO BE REMOVED, THEY SHALL BE REROUTED IN EITHER NEW OR EXISTING CONSTRUCTION TO MAINTAIN CONTINUITY OF CIRCUITS UNLESS OTHERWISE INDICATED.
- POSSIBLE, EXCEPT WHERE OTHERWISE INDICATED. 9) EXISTING WIRE SHALL BE DISCONNECTED AND REMOVED WHEREVER EXISTING CIRCUITS ARE

- B. IF BOXES MUST BE INSTALLED WITHIN 24" OF EACH OTHER THAN BOTH OUTLET BOXES SHALL BE
- COMPLIANT FIRE ALARM/DETECTION SYSTEM. MATERIALS, EQUIPMENT, AND WORKMANSHIP SHALL MEET PREVAILING CODES. THE SYSTEM SHALL BE COMPLETE AND OPERABLE. SUBMIT ONE LINE DIAGRAM OF SHOWN FOR INTENT ONLY FOR PERMITTING PROCESS. CONTRACTOR IS RESPONSIBLE FOR INCLUDING IN BID/DESIGN ALL NECESSARY DEVICES (ANNUNCIATOR(S), NOTIFICATION APPLICANCES, INITIATING DEVICES, AND ADDITIONAL COMPONENTS).

|       | ELECTRICAL SYMBOLS LIST   |  |  |  |  |  |  |  |  |
|-------|---|--|--|--|--|--|--|--|--|
| CIRCU | CIRCUITING & NOTES  |  |  |  |  |  |  |  |  |
| +46"  | SPECIAL MOUNTING HEIGHT FOR ASSOCIATED DEVICE (CENTERLINE OF DEVICE)                                    |  |  |  |  |  |  |  |  |
| GFI   | GROUND FAULT CIRCUIT INTERRUPTER DEVICE   |  |  |  |  |  |  |  |  |
| MP    | WEATHERPROOF ENCLOSURE ON DEVICE  |  |  |  |  |  |  |  |  |
| MR    | WEATHERPROOF RESISTANT DEVICE   |  |  |  |  |  |  |  |  |
| 16    | ISOLATED GROUND DEVICE  |  |  |  |  |  |  |  |  |
| EM    | EMERGENCY BATTERY BACKUP  |  |  |  |  |  |  |  |  |
| TR    | TAMPER RESISTANT OUTLET   |  |  |  |  |  |  |  |  |
| USB   | COOPER #TR7756-X OR EQUAL DUPLEX RECEPTACLE WITH DUAL USB CHARGING PORTS. PROVIDE 2-1/8" DEEP BACK BOX. |  |  |  |  |  |  |  |  |
| (TIE) | PARTIAL HOMERUN. REFER TO PLANS FOR ADDITIONAL DEVICES CONNECTED TO THIS CIRCUIT.                       |  |  |  |  |  |  |  |  |
| X     | ELECTRICAL FLOOR PLAN NOTE WITH DESIGNATION   |  |  |  |  |  |  |  |  |
| 2     | CONDUIT CONCEALED WHERE POSSIBLE OR AS NOTED, ARROWS  |  |  |  |  |  |  |  |  |

### INDICATE HOME RUN TO PANEL. CIRCUIT NUMBERS INDICATED $\mid$ #12 WIRE IN CONDUIT, UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION

### GROUNDING CONDUCTOR, #12 WIRE UNLESS NOTED OTHERWISE ON DRAWINGS OR SPECIFICATION /--> | CONDUIT ROUTED UNDER FLOOR/GRADE

| ·   |  |
|-----|--|
|     | EMERGENCY TWIN HEAD LIGHT FIXTURE            |
| 181 | EXIT LIGHT WITH DIRECTIONAL ARROWS INDICATED |
|     |  |

- RECESSED OR SURFACE MOUNTED FIXTURE WITH TYPE DESIGNATION NIGHT LIGHT, CONNECT TO UNSWITCHED CIRCUIT
- CEILING OR RECESSED FIXTURE WITH TYPE DESIGNATION A () H | WALL MOUNTED FIXTURE WITH TYPE DESIGNATION

A STRIP FIXTURE WITH TYPE DESIGNATION

NON-FUSED DISCONNECT SMITCH

FUSED DISCONNECT SMITCH

MOTOR WITH DESIGNATION

| ф   | DUPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE                     |
|-----|---|
| ф   | FOURPLEX RECEPTACLE, BOTTOM OF BOX AT 16" AFF, UNLESS NOTED OTHERWISE                   |
| # ♦ | TVSS SURGE SUPPRESSION RECEPTACLE   |
| •   | HEAVY DUTY OUTLET - NEMA CONFIGURATION SIZE PER EQUIPMENT MANUFACTURER'S RECOMMENDATION |
|     | PANEL BOARD, TOP OF BOX 6'-0" AFF   |
| Q)  | JUNCTION BOX  |

### • FLOOR BOX

POWER DEVICES

LIGHTING

| <u>CONTROLS</u> |  |  |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|--|--|
| 5               | SINGLE POLE WALL SWITCH, TOP OF BOX AT 48" AFF |  |  |  |  |  |  |  |
| <b>5</b> 3      | THREE-WAY WALL SMITCH, TOP OF BOX AT 48" AFF   |  |  |  |  |  |  |  |
| <b>Š</b> p      | DIMMER SWITCH, TOP OF BOX AT 48" AFF           |  |  |  |  |  |  |  |
|                 |  |  |  |  |  |  |  |  |

### DUAL TECHNOLOGY/ULTRASONIC CEILING SENSORS SHALL BE MOUNTED 6 FROM SUPPLY/EXHAUST AIR DIFFUSERS.

2. LOM VOLTAGE CEILING SENSORS SHALL BE PROVIDED WITH 6' SLACK

MANUAL MOTOR STARTER WITH OVERLOADS

| CONDUCTOR COILED AT SENSOR. |  |  |  |  |  |  |  |  |  |  |
|-----------------------------|--|--|--|--|--|--|--|--|--|--|
| <b>5</b> 0                  | WALL MOUNTED DUAL-TECHNOLOGY OCCUPANCY SENSOR, WATT STOPPER #DW-100, TOP OF BOX AT 48" AFF                                       |  |  |  |  |  |  |  |  |  |
| <b>©</b>                    | DUAL TECHNOLOGY CEILING MOUNT OCCUPANCY SENSORS, WATTSTOPPER DT-300  |  |  |  |  |  |  |  |  |  |
| PP                          | OCCUPANCY SENSOR POWER PACK, WATTSTOPPER BZ-150 OR EQUAL, PROVIDE LOW VOLTAGE WIRING TO OCCUPANCY SENSORS AND MOMENTARY SWITCHES |  |  |  |  |  |  |  |  |  |
| 5 <sub>MO</sub>             | MOMENTARY SWITCH, TOP OF BOX AT 48" AFF  |  |  |  |  |  |  |  |  |  |
| COMM                        | MUNICATIONS  |  |  |  |  |  |  |  |  |  |

| • | DATA/TELEPHONE OUTLET WITH MINIMUM $^3\!\!/_4$ " CONDUIT STUBBED UP TO ABOVE ACCESSIBLE CEILING, BOTTOM OF BOX AT 16", UNLESS NOTED OTHERWISE. PROVIDE WITH PULL STRING   |
|---|---|
| ₽ | FLAT SCREEN TELEVISION - PROVIDE AND INSTALL ONE (1) HUBBELL #RR1510X RECESSED TAMPER-RESISTANT DUPLEX RECEPTACLE WITH COVERPLATE AND ONE(1) HUBBELL #HBL260 TWO GANG LARGE CAPACITY WALL BOX (UP TO 2" KNOCKOUT) W/ MUD RING AND COVERPLATE FOR DATA. PROVIDE 2"C WITH PULL STRING TO ABOVE ACCESSIBLE CEILING FOR DATA CABLES. MOUNT BOX AT 7"-6" AFF UNLESS NOTED OTHERWISE (VERIFY) |

### ELECTRICAL GENERAL NOTES:

- 1. COORDINATE ALL WORK WITH OTHER TRADES AND EXISTING CONDITIONS AS REQUIRED TO PROPERLY INSTALL ALL SYSTEMS AS INTENDED, WITHIN THE CONFINES OF THE SPACES AVAILABLE, AND WITHOUT INTERFERENCES.
- 2. WHERE CONDUIT IS SHOWN UNDER FLOOR, YERIFY IF FLOOR IS STRUCTURAL SLAB OR SLAB ON GRADE. IF STRUCTURAL SLAB, CORE DRILL PENETRATION, AND ROUTE CONDUIT IN SPACE BELOW. IF SLAB ON GRADE, SAW CUT EXISTING FLOOR SLAB AS REQUIRED FOR INSTALLATION OF UNDER FLOOR CONDUIT. NO STRUCTURAL ELEMENTS SHALL BE CORE DRILLED OR SAW CUT. WHEN SAW CUTTING, PATCH FLOOR TO MATCH EXISTING SURFACE AS REQUIRED.
- 3. IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO PROPERLY BALANCE ALL BRANCH CIRCUITS BETWEEN THE PHASES OF THE SYSTEM REGARDLESS OF CIRCUITING INDICATED.
- 4. ALL EXPOSED RACEWAYS SHALL BE EMT CONDUIT, MC CABLE IS NOT PERMITTED IN EXPOSED AREAS.
- 5. ELECTRICAL CONTRACTOR TO COORDINATE MANUFACTURER ELECTRICAL REQUIREMENTS FOR HVAC EQUIPMENT BEING FURNISHED WITH MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN. EQUIPMENT DISCONNECTS TO BE PROVIDED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE IN MECHANICAL SCHEDULES.
- 6. ALL MATERIALS EXPOSED WITHIN PLENUMS SHALL BE NONCOMBUSTIBLE OR SHALL HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
- 7. EACH BRANCH CIRCUIT SHALL HAVE A DEDICATED NEUTRAL PER NEC 210.4.
- 8. FIRE ALARM SYSTEM IS SHOWN FOR SCHEMATIC PURPOSES. THE FIRE ALARM CONTRACTOR IS RESPONSIBLE FOR PROVIDING DESIGN AND SHOP DRAWINGS SUBMITTAL TO FIRE MARSHAL FOR APPROVAL AS REQUIRED BY THE FIRE MARSHAL. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE ADDITIONAL DEVICES, POWER SUPPLIES, ETC FOR COMPLIANCE WITH CODE.
- 9. ALL BRANCH CIRCUITS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 3% VOLTAGE DROP. ALL FEEDERS SHALL BE SIZED TO ALLOW FOR A MAXIMUM OF 2% VOLTAGE DROP. ELECTRICAL CONTRACTOR SHALL VERIFY WIRING INDICATED IS SUFFICIENT AND INCREASE CONDUCTOR SIZE AS REQUIRED BASED OFF ACTUAL INSTALLED LENGTH OF CONDUCTORS.
- 10. PROVIDE LOW VOLTAGE WIRING BETWEEN ALL 0-10V DIMMING DRIVERS CONTROLLED BY 0-10V DIMMERS PER MANUFACTURER'S INSTRUCTIONS WHETHER INDICATED ON PLANS OR NOT.
  - 11. COORDINATE VENDING AND TV LOCATIONS WITH OWNER

ELECTRICAL SYMBOLS LIST

FIRE ALARM HORN/STROBE COMBINATION SIGNAL, CENTERLINE AT

FIRE ALARM HORN/STROBE COMBINATION SIGNAL, PENDANT

FIRE ALARM VISUAL STROBE, CENTERLINE AT 6'-8" AFF

F FIRE ALARM PULL STATION, TOP OF BOX AT 48" AFF

FIRE ALARM

MOUNTED

MATER FLOW SMITCH

TAMPER SMITCH

© CEILING MOUNT SMOKE DETECTOR

DUCT MOUNT SMOKE DETECTOR

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4301 Indian Creek Parkway Overland Park, KS 66207

phone: 913.451.9390

fex: 913.451.9391

www.devideonee.com

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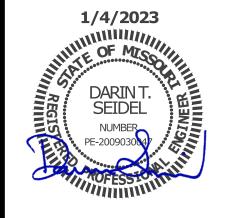
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1 PROVIDE QUAD RECEPTACLE AND DATA TO EACH PITCHING MACHINE. EACH MACHINE REQUIRES (2) ETHERNET CABLES AND (1) MULTI CABLE WIRE, SUPPLIED BY PITCHING MACHINE COMPANY, IN CONDUIT FROM THE PITCHING MACHINE TO THE CARD OPERATED BOX KIOSK. VERIFY ALL ELECTRICAL SPECIFICATIONS WITH PITCHING MACHINE COMPANY PRIOR TO ROUGH-IN.

2 VERIFY LOCATION OF CARD OPERATED BOX KIOSK WITH OWNER PRIOR TO ROUGH-IN.

3 VERIFY EXACT LOCATION OF ELECTRICAL DEVICES IN MOUNTED IN CASEMORK.

4 VERIFY LOCATION OF 2'X4'X3/4" FIRE RETARDANT PLYWOOD TELEPHONE BACKBOARD WITH GROUND BAR AND #6 CU BOND TO BUILDING ELECTRODE SYSTEM PROVIDE 4" C TO PROPERTY LINE FOR BUILDING TELEPHONE AND INTERNET SERVICE TERMINATE AS DIRECTED BY SERVICE PROVIDER. VERIFY ROUTING AND DISTANCE.

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POWER PLAN

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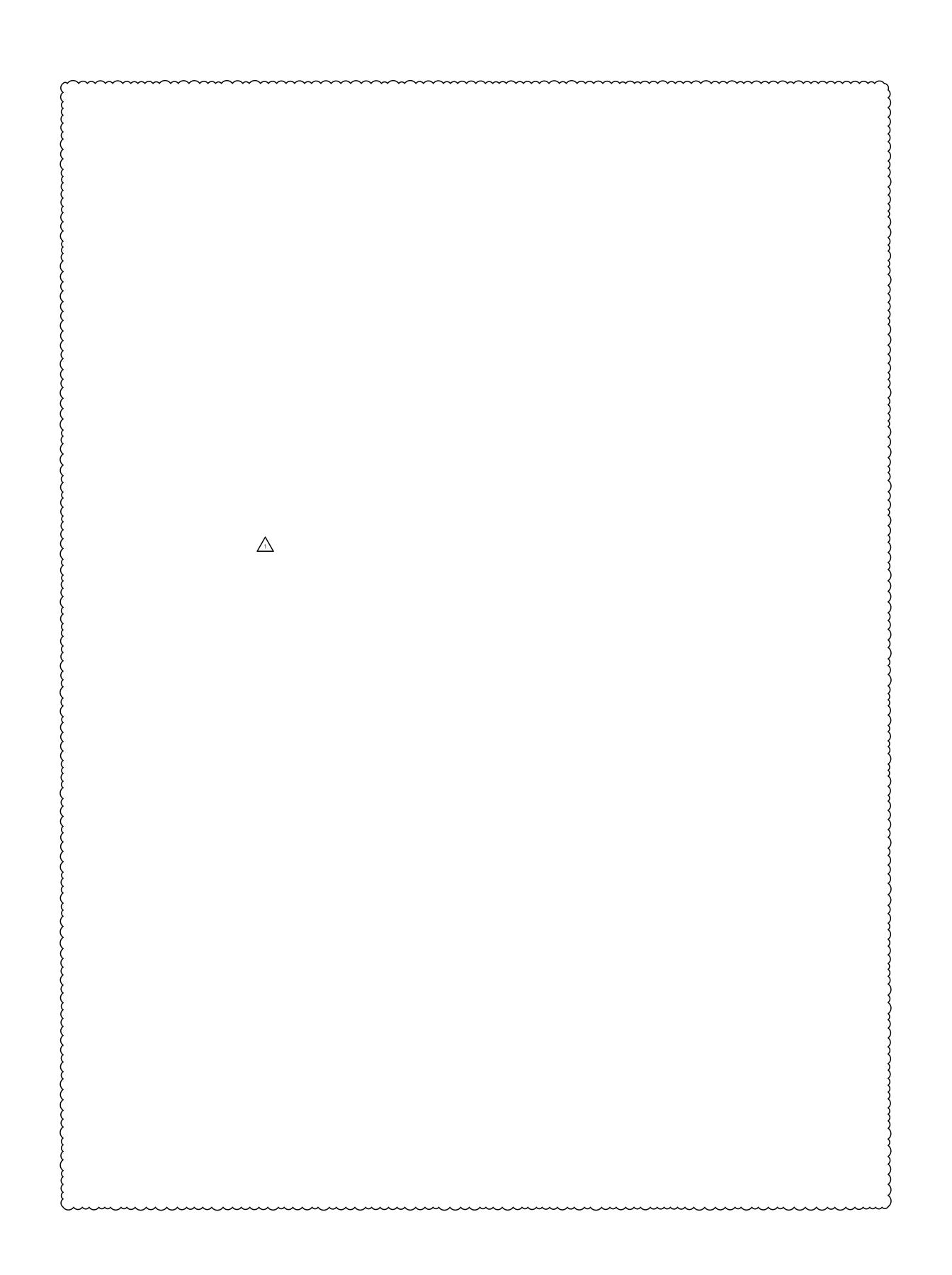
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|             |  | LIG                | HT FIX                    | TURE SCHEDULE  |                                    |
|-------------|--|--------------------|---------------------------|--|------------------------------------|
| MARK<br>NO. | MANUFACTURER & CATALOG NUMBER  | VOLTS<br>MATTS     | LIGHT<br>SOURCE           | DESCRIPTION  | EQUIVALENT<br>MANUFACTURERS        |
| A           | LUX DYNAMICS IK10 SERIES E 3 D A 850 4 U10 CP B XXY X GYM  | 12 <i>0</i><br>229 | LED<br>36,000LUM<br>5000K | 3 LIGHT BAR 2 CHANNEL LED 36,000 LUMEN,<br>5,000 KELVIN, 2-POINT Y CABLE MOUNT, VERIFY<br>FINISH COLOR. MOUNT BOTTOM OF FIXTURE AT<br>22' AFF. ORDER CABLE TO LENGTH REQUIRED  | WILLIAMS<br>COLUMBIA OR<br>EQUAL   |
| В           | LUX DYNAMICS IK10 SERIES E 1 S A 850 4 U10 CP B XXY X GYM  | 120<br>78          | LED<br>11,000LUM<br>5000K | 1 LIGHT BAR 1 CHANNEL LED 11,000 LUMEN,<br>5,000 KELVIN, 2-POINT Y CABLE MOUNT, VERIFY<br>FINISH COLOR. MOUNT BOTTOM OF FIXTURE AT<br>22' AFF. ORDER CABLE TO LENGTH REQUIRED  | MILLIAMS<br>COLUMBIA OR<br>EQUAL   |
| BE          | LUX DYNAMICS<br>IK10 SERIES<br>E 1 S A 850 4 U10 CP B<br>E15 XXY X GYM                                   | 120<br>78          | LED<br>11,000LUM<br>5000K | 1 LIGHT BAR 1 CHANNEL LED 11,000 LUMEN,<br>5,000 KELVIN, 2-POINT Y CABLE MOUNT WITH<br>EMERGENCY DRIVER, 2,561 LUMEN. VERIFY FINISH<br>COLOR. MOUNT BOTTOM OF FIXTURE AT 22' AFF.<br>ORDER CABLE TO LENGTH REQUIRED                | MILLIAMS<br>COLUMBIA<br>OR EQUAL   |
| C           | LITHONIA<br>EPANL 2X4 4000LM<br>80CRI 50K EZT MVOLT  | 12 <i>0</i><br>38  | LED<br>4000LUM<br>5000K   | LED FLAT PANEL, 4000 LUMEN, 5000 KELVIN, VERIFY MOUNTING REQUIREMENTS AND HEIGHTS  | MILLIAMS<br>COLUMBIA<br>OR EQUAL   |
| C1          | LITHONIA<br>EPANL 2X4 3000LM<br>80CRI 50K EZT MVOLT  | 120<br>29          | LED<br>3000LUM<br>5000K   | LED FLAT PANEL, 3000 LUMEN, 5000 KELVIN, VERIFY MOUNTING REQUIREMENTS AND HEIGHTS  | MILLIAMS<br>COLUMBIA<br>OR EQUAL   |
| DE          | LITHONIA CLX L48 4000LM SEF RDL 120 EZ1 40K 80CRI PS1050 WH  | 12 <i>0</i><br>28  | LED<br>4000LUM<br>4000K   | 4' LED STRIP FIXTURE WITH ROUND LENS, 4000<br>LUMEN, 4000 KELVIN, WALL MOUNTED   | WILLIAMS<br>COLUMBIA<br>OR EQUAL   |
| M           | EXTERIOR SCONCE,<br>VERIFY FINISH WITH<br>OWNER  | 120                | LED<br>LUM<br>K           | LED SCONCE   |                                    |
| M1          | CREE LIGHTING XSPW-B-WM-4ME-AL- 40K-UNV  | 12 <i>0</i><br>31  | LED<br>4270LUM<br>4000K   | MALL MOUNTED LED BUILDING LIGHT WITH TYPE IV MEDIUM THROW OPTIC. VERIFY FINISH COLOR WITH ARCHITECT  |                                    |
| SA          | CREE LIGHTING OSQ-M-B-9L-40K7-4M- UNV-NM MOUNT-SOQ-ML-B-DA SHIELD-OSQ-BLSMF POLE-SSS-4-11-12-CW- BS-1D-C | 120<br>130         | LED<br>7075LUM<br>4000K   | POLE MOUNTED WITH HOUSE SIDE SHIELD LED<br>AREA LIGHT WITH TYPE IV MEDIUM THROW OPTIC.<br>MOUNT ON 12'X4" SQUARE STEEL POLE WITH 3'<br>CONCRETE BASE. VERIFY FINISH COLOR WITH<br>ARCHITECT  |                                    |
| SB          | CREE LIGHTING  05Q-M-B-9L-40K7-5Q-  UNV-NM  MOUNT-50Q-ML-B-DA  POLE-555-4-11-12-CM-  BS-2D18-C           | 120<br>120         | LED<br>10250LUM<br>4000K  | POLE MOUNTED LED 180 DEGREE AREA LIGHT<br>WITH TYPE V SQUARE OPTIC. MOUNT ON 12'X4"<br>SQUARE STEEL POLE WITH 3' CONCRETE BASE.<br>VERIFY FINISH COLOR WITH ARCHITECT  |                                    |
| Ľ,          | DUAL-LITE<br>EV2   | 12 <i>0</i><br>1   | INCL                      | EMERGENCY LIGHT WITH TWIN ADJUSTABLE 1 WATT LED HEADS AND BATTERY, MOUNT AT 7'-6"±, TO CLEAR OBSTACLES. (PROVIDES 1 FC AVG. ON 27' CENTER FIXTURE SPACING)   | SURE-LITES<br>LITHONIA<br>OR EQUAL |
| <b>⊗</b>    | DUAL-LITE<br>EVE-U-R-M-VR53  | 12 <i>0</i><br>1   | INCL                      | EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, UNIVERSAL MOUNT, BATTERY BACKUP, WITH VANDAL RESISTANT SHIELD  | SURE-LITES<br>LITHONIA<br>OR EQUAL |
| 48∕         | DUAL-LITE<br>EVC-U-R-M-VR53  | 12 <i>0</i><br>3   | INCL                      | COMBINATION EMERGENCY/EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, TWIN LED EMERGENCY LIGHT HEADS, UNIVERSAL MOUNT, BATTERY BACKUP, WITH VANDAL RESISTANT SHIELD  | SURE-LITES<br>LITHONIA<br>OR EQUAL |
| <b>₹</b>    | DUAL-LITE<br>EVC-U-R-M-D4-VR53<br>WITH EVO-D-X   | 120<br>5           | INCL                      | COMBINATION EMERGENCY/EXIT LIGHT WITH LED LAMPS, RED LETTERS ON WHITE BACKGROUND, TWIN 6W EMERGENCY LIGHT HEADS, UNIVERSAL MOUNT, HIGH CAPACITY BATTERY BACKUP, VANDAL RESISTANT SHEILD AND REMOTE TWIN HEAD OUTDOOR RATED FIXTURE | SURE-LITES<br>LITHONIA<br>OR EQUAL |
| EX          | LITHONIA<br>AFF-OEL-XX-UVOLT-<br>LTP-SDRT-MT-CM  | 12 <i>0</i><br>12  | LED<br>INCL<br>4000K      | ARCHITECTURAL EXTERIOR LED EMERGENCY LIGHT WITH COLD WEATHER BATTERY, COORDINATE FINISH TO MATCH BUILDING  | SURE-LITES<br>LITHONIA<br>OR EQUAL |



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| davids            | Revelopment Services Departme<br>Lee's Simmit, Missouri<br>of /*1/2023 |
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4301 Indian Creek Parkway Overland Park, K8 88207 phone: 813.451.8380 fax: 813.451.8380

1/4/2023

|     | PANEL: P              | VOLT5: 120/208V |               | PH:  | ЗΦ       | MIRE: | 4M LOCATION: |        | STORAGE |     |          | MOUNTING: SURFACE |      |                         |     |
|-----|-----------------------|-----------------|---------------|------|----------|-------|--------------|--------|---------|-----|----------|-------------------|------|-------------------------|-----|
|     | BUS: 400A             | MAIN:           | 400A          | MLO  | IC:      | 22,   | 000          | RMS SY | M AMPS  |     |          |                   |      | FEEDER: SEE RISER DIAGR | RAM |
| CKT | DESCRIPTION           | AMPS            | POLE          | MIRE | ФА       | ΦB    | ФС           | ФА     | ΦB      | ФС  | MIRE     | POLE              | AMPS | DESCRIPTION             | CKT |
| 1   | BATTING CAGE LTG      | 20              | 1             | 12   | 1,145    |       |              | 360    |         |     | 12       | 1                 | 20   | PITCHING MACHINE        | 2   |
| 3   | BATTING CAGE LTG      | 20              | 1             | 12   |          | 1,145 |              |        | 360     |     | 12       | 1                 | 20   | PITCHING MACHINE        | 4   |
| 5   | BATTING CAGE LTG      | 20              | 1             | 12   |          |       | 1,145        |        |         | 360 | 12       | 1                 | 20   | PITCHING MACHINE        | 6   |
| 7   | BATTING CAGE LTG      | 20              | 1             | 12   | 1,145    |       |              | 360    |         |     | 12       | 1                 | 20   | PITCHING MACHINE        | 8   |
| 9   | BATTING CAGE LTG      | 20              | 1             | 12   |          | 1,145 |              |        | 360     |     | 12       | 1                 | 20   | PITCHING MACHINE        | 10  |
| 11  | BATTING CAGE LTG      | 20              | 1             | 12   |          |       | 916          |        |         | 900 | 12       | 1                 | 20   | PITCHING MACHINE KIOSKS | 12  |
| 13  | BATTING CAGE LTG      | 20              | 1             | 12   | 916      |       |              | 600    |         |     | 12       | 1                 | 20   | DRINKING FOUNTAIN [GF]  | 14  |
| 15  | BATTING CAGE LTG      | 20              | 1             | 12   |          | 916   |              |        | 900     |     | 12       | 1                 | 20   | PARENT LOUGE RCPT       | 16  |
| 17  | BATTING CAGE LTG      | 20              | 1             | 12   |          |       | 916          |        |         | 720 | 12       | 1                 | 20   | OFFICE RCPT             | 18  |
| 19  | BATTING CAGE LTG      | 20              | 1             | 12   | 916      |       |              | 600    |         |     | 12       | 1                 | 20   | OFFICE COPIER           | 20  |
| 21  | BATTING CAGE LTG      | 20              | 1             | 12   |          | 687   |              |        | 180     |     | 12       | 1                 | 20   | PRO-SHOP POS RCPT       | 22  |
| 23  | BATTING CAGE LTG      | 20              | 1             | 12   |          |       | 687          |        |         | 180 | 12       | 1                 | 20   | PRO-SHOP POS RCPT       | 24  |
| 25  | BATTING CAGE LTG      | 20              | 1             | 12   | 687      |       |              | 600    |         |     | 12       | 1                 | 20   | PRO-SHOP COPIER         | 26  |
| 27  | BATTING CAGE LTG      | 20              | 1             | 12   |          | 687   |              |        | 900     |     | 12       | 1                 | 20   | PRO-SHOP CONV RCPT      | 28  |
| 29  | BATTING CAGE LTG      | 20              | 1             | 12   |          |       | 687          |        |         | 360 | 12       | 1                 | 20   | PHONEBOARD RCPT         | 30  |
| 31  | BC LTG CONTACTORS     | 20              | 1             | 12   | 200      |       |              | 200    |         |     | 12       | 1                 | 20   | FACP [HL]               | 32  |
| 33  | PRO-SHOP/OFFICE LTG   | 20              | 1             | 12   |          | דדד   |              |        |         |     | }        | 1                 | 20   | SPARE                   | 34  |
| 35  | HALL/CAGE ACCESS LTG  | 20              | 1             | 12   |          |       | 1,130        |        |         |     | <b>\</b> | 1                 | 20   | SPARE                   | 36  |
| 37  | FRONT SIGNAGE         | 20              | 1             | 12   | 1,200    |       |              | 1,200  |         |     | 12       | 1                 | 20   | SIDE SIGNAGE            | 38  |
| 39  | EXTERIOR TIMECLOCK    | 20              | 1             | 12   |          | 200   |              |        |         |     | {        | 1                 | 20   | SPARE                   | 40  |
| 41  | EXTERIOR WALL SCONCES | 20              | 1             | 12   |          |       | 480          |        |         |     | }        | 1                 | 20   | SPARE                   | 42  |
| 43  | EXT BUILDING/SITE LTG | 20              | 1             | 10   | 873      |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 44  |
| 45  | SITE LTG              | 20              | 1             | 10   |          | 760   |              |        |         |     | {        | 1                 | 20   | SPARE                   | 46  |
| 47  | SPARE                 | 20              | 1             |      | }        |       |              |        |         |     | {        | 1                 | 20   | SPARE                   | 48  |
| 49  | SPARE                 | 20              | 1             |      | }        |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 50  |
| 51  | SPARE                 | 20              | 1             |      | }        |       |              |        |         |     | (        | 1                 | 20   | SPARE                   | 52  |
| 53  | SPARE                 | 20              | 1             |      | }        |       |              |        |         |     | {        | 1                 | 20   | SPARE                   | 54  |
| 55  | WATER HEATER          | 30              | $\frac{1}{2}$ | 10   | 2,250    |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 56  |
| 57  |                       |                 |               |      |          | 2,250 |              |        |         |     | }        | 1                 | 20   | SPARE                   | 58  |
| 59  | EXTERIOR CONV RCPT    | 20              | 1             | 12   |          |       | 720          |        |         |     | {        | 1                 | 20   | SPARE                   | 60  |
| 61  |                       |                 |               |      | 8,520    |       |              |        |         |     | {        | 1                 | 20   | SPARE                   | 62  |
| 63  | RTV-1                 | 80              | 3             | 4    | }        | 8,520 |              |        |         |     | {        | 1                 | 20   | SPARE                   | 64  |
| 65  |                       |                 |               |      | }        |       | 8,520        |        |         |     | {        | 1                 | 20   | SPARE                   | 66  |
| 67  |                       |                 |               |      | 5,880    |       |              |        |         |     | {        | 1                 | 20   | SPARE                   | 68  |
| 69  | RTU-2                 | 60              | 3             | 6    | {        | 5,880 |              |        |         |     | {        | 1                 | 20   | SPARE                   | 70  |
| 71  |                       |                 |               |      | {        |       | 5,880        |        |         |     | {        | 1                 | 20   | SPARE                   | 72  |
| 73  |                       |                 |               |      | 4,680    |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 74  |
| 75  | RTV-3                 | 50              | 3             | 6    |          | 4,680 |              |        |         |     | }        | 1                 | 20   | SPARE                   | 76  |
| 77  |                       |                 |               |      | }        |       | 4,680        |        |         |     | }        | 1                 | 20   | SPARE                   | 78  |
| 79  | SPARE                 | 20              | 1             |      | <b>\</b> |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 80  |
| 81  | SPARE                 | 20              | 1             |      | {        |       |              |        |         |     | }        | 1                 | 20   | SPARE                   | 82  |

SPARE

90,960 VA

97,225 VA

269.87 A

TOTAL CONNECTED LOAD:

DEMAND AMPS @ 208 VOLT / 30:

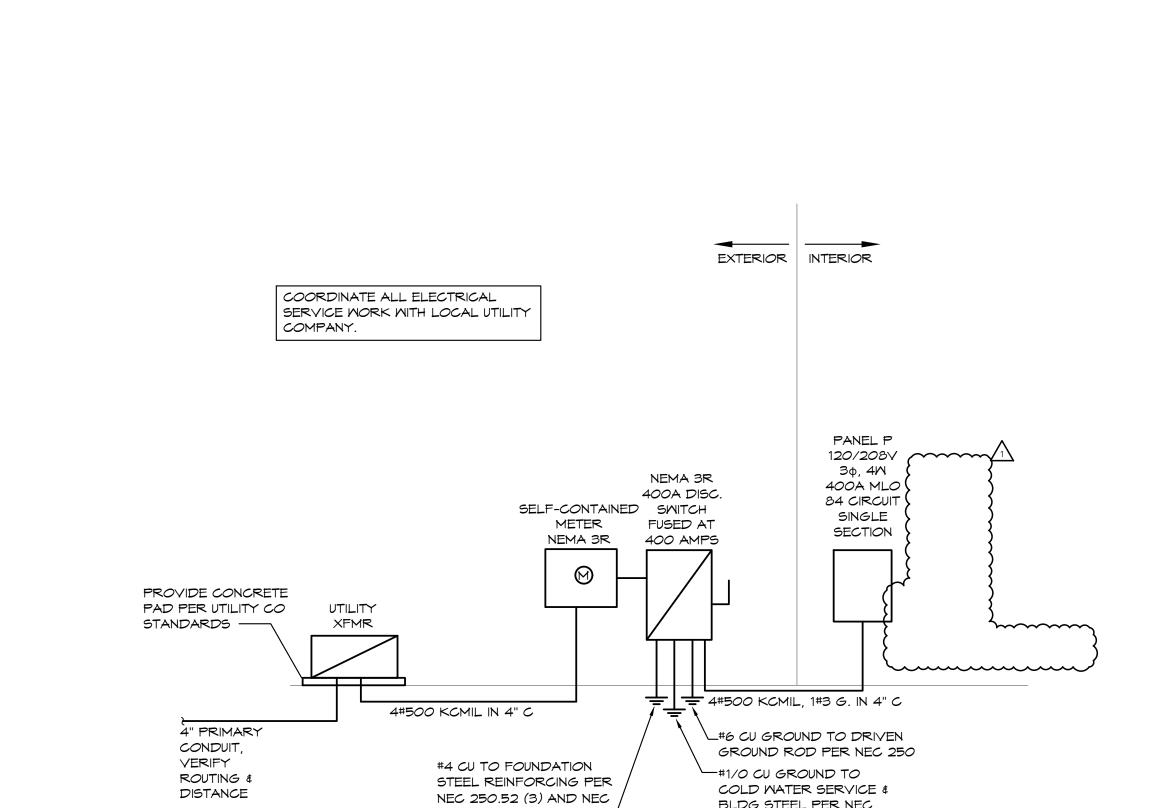
NEC DEMAND LOAD:

SPARE

[GF]-GFC| BRKR 5MA, [HL]-HANDLE LOCK

32,332 30,347

28,281



250.66 (B). ———

SCALE: NONE

**ELECTRICAL RISER DIAGRAM** 

BLDG STEEL PER NEC

development for

date 05.19.22 drewn by MA/FS checked by EK/DS revisions

 $\boldsymbol{\omega}$ 

12.20.22 REV 1

sheet number

RISER DIAGRAM, DETAILS AND PANEL SCHEDULES

drawing type

permit

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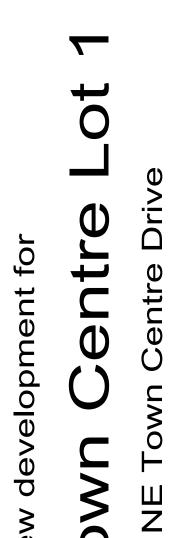


RELEASED FOR









 $\boldsymbol{\omega}$ **date** 05.19.22 **drewn by** MA/FS checked by EK/DS revisions

12.20.22 REV 1

sheet number

drawing type

project number

permit

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5720 Reeder Shawnee, Ks. 66203 (913)262-17

