A D D E N D U M N O . 3

TO: All Plan Holders

FROM: Studio Kremer Architects

DATE: March 30, 2021

PROJECT: **OVEC Head Start Classrooms: Building Addition and Renovation**
Dixie Highway Location
7304 Dixie Highway
Louisville, KY 40258
ska# 2019-52.06

This Addendum supersedes and supplements all portions of the Construction Documents with which it conflicts. Acknowledgement of this Addendum shall be noted on the Form of Proposal.

Any revisions to the Drawings indicated on the attached architectural sketches **(ASK's)** will be clouded.

If the information included in this addendum does not fully answer a previously submitted question or if new questions arise from this addendum, contractors may submit additional questions until Thursday, April 1st at 3:00pm.

Addendum No.3 makes the following modifications and clarifications to the Construction Drawings and Specifications:

Architectural Items:

Item No.1:

Attached in this addendum are Site drawings with the full scope of site work proposed. Drawings C1.0 and C2.0 dated 09.11.2020 include the site work to be included in the bid. Also attached are copies of these drawing sheets that have been submitted to the various Louisville Metro jurisdictional bodies and include the approval stamps from those respective offices. In some cases, but not all, those drawings are the same dated drawings from 09.11.2020.

With regard to the Demolition Keynote #4 on drawing sheet C1.0, please see attached the revised form of proposal which includes an alternate to provide an asphalt overlay for the full parking lot with new striping throughout.

Removal and clean up of all remaining trees, shrubs, brush and debris on site not addressed in the attached drawings will be addressed by the owner. Owner shall also address any grass areas once construction is complete.

studio kremer architects

1231 S Shelby Street, Louisville, KY 40203
TEL 502.499.1100 FAX 502.499.1101

Item No.2:

Please see attached the following specification sections which were not included in the original bid documents:

- Plastic Laminate Casework
- Door Hardware
- Electrical
- 23 09 00 Instrumentation and Control for HVAC

Item No.3:

Revisions to select Electrical, Mechanical and Plumbing drawings are attached which coordinate the final quantity and locations of casework and sinks throughout the building. Reference the revised drawings fully for all changes.

Item No.4:

Per mention in the specifications, this project will be receiving federal funding, which will require current Davis Bacon wage rates. It shall be the responsibility of the general contractor to determine the current wage rates to this project location.

Item No.5:

Door 100.2 shall be a Solid Core Wood Door as listed in the door schedule, but this frame shall be a **painted hollow metal frame.** Schedule in the construction documents incorrectly indicates this frame as anodized aluminum.

Item No.6:

Please see attached the revisions to the casework layout in classroom 102. Per attached plastic laminate casework specification, locks shall be provided for all drawers and cabinets in the project and all shall be keyed the same. See specification for additional requirements and Bid Form for additional unit price for locks.

As a result of this change to room 102, Storage 109 has been deleted. Door 109 and its associated hardware shall also be deleted.

Item No.7:

Per the attached ASK documents, all existing windows in this building shall be replaced. The new windows shall be sized to fit existing openings and shall be dark bronze anodized, thermally-broken frames with 1" insulated glazing. All windows to be installed with aluminum sub-sill flashing and end dams at each jamb.

All aluminum storefront framing for this project shall be dark bronze anodized finish.

Item No.8:

In addition to the new dimensional asphalt shingles listed on the roof plan, the following shall be added to the scope:

- Existing gutters to be removed. New pre-finished metal gutters matching the existing style, profile and color shall be installed. If exact color match cannot be achieved through manufacturer's standard colors, full range of available colors to be presented to the design team to determine a color.
- Existing wood fascia to be removed. New metal-clad wood fascia to be installed in its place with color to match the new gutter.
- Existing soffit board and perforated vent strip to be removed. New HardieSoffit "vented smooth" soffit board to be installed in its place.
- Once the pre-finished metal colors have been determined for the new gutters and metal-clad fascia, a paint color will be determined for the new soffit board and both existing and new board and batten siding above the brick veneer throughout.
- The new board and batten product on the addition shall be Hardie products as recommended to achieve the board and batten design and shall be cut and installed to match the pattern of the existing siding and per the exterior elevation drawings in the construction documents. The existing thru-wall louver in the board and batten on the west side of the building (south end) shall be in-filled with wood framing, APA rated wall sheathing and patched to match the existing pattern.
- All new Hardie products installed on this project shall be factory-primed and shall receive 2 finish coats of paint as recommended by both Hardie and paint manufacturer for this application. All existing board and batten siding to also receive 2 finish coats of paint.

Item No.9:

The existing brick veneer at the south façade of the building is intended to remain. Prior to new framing being installed at this location for the addition, brick shall be removed from this wall in enough quantity to patch select areas around the existing building where brick has been damaged or removed by previous demolition or vandalism. Holes and damaged brick to be removed such that full bricks can be toothed in for patch and grout to be mixed to match color.

Item No. 10:

The following toilet accessories shall be deleted from the GC scope throughout the building:

- Toilet Paper dispensers
- Paper Towel dispensers
- Soap dispensers

These accessories will be provided by and installed by the owner.

Item No. 11:

For clarification, owner shall provide all smart boards for this project, but GC shall install. Prior to closing walls in the proposed locations indicated on the electrical drawings, coordinate with the owner the final locations for any required in-wall blocking for installation.

Similarly, owner shall provide and install all televisions for this project. Prior to installation of the power, data and television coax in the TV locations, coordinate with the owner the exact location and height.

Item No. 12:

In addition to the removal of existing GWB on the exterior walls of the existing building, it shall be assumed that the existing GWB on interior walls shall also be removed throughout with new GWB scheduled for all walls once all in-wall work is completed.

A unit price has been added to the Bid Form for cost of selective existing GWB patch and repair should it be in the owner's best interest to consider areas of existing GWB remaining and patched back as necessary. An onsite meeting will be conducted once a general contractor is under contract to determine the most cost-effective method to pursue.

For clarification, high-impact gypsum board is NOT required for this project. Standard type-X GWB shall be used throughout.

At existing exterior walls, existing GWB to be removed and new R-20 batt insulation to be installed in wall cavities prior to new GWB installation.

As referenced in the drawings, the existing GWB attached to the underside of the roof trusses shall remain. GC shall be responsible for patching any areas where GWB has failed or is not present. Provide GWB to patch these areas and mud for full coverage. This in-fill and patching shall include the existing attic access opening in what will become classroom 102.

Item No. 13:

In specification section 08 41 13, 1.07, Warranty, B., 1., the following change shall be made:

Warranty Period: 10 years from date of Substantial Completion.

Item No. 14:

With regard to the Head and Jamb details depicted on sheet 5.00, any reference or depiction of metal studs shall be replaced with wood stud construction. Similarly, the overall width of the walls depicted shall be adjusted to accommodate a 3 ½" wood stud and a 5 ½" stud.

An additional clarification shall be made to the "Typical Bulkhead Section" on sheet A1.01. The graphic depiction should not be misconstrued to be metal studs. This detail is shown with a 3 ½" stud width and it shall be assumed that all wall framing shall be wood studs.

Item No. 15:

With regard to notes 3.2 and 3.3 on sheet D1.00, no hazardous materials were located in the ceiling areas of this building. **HOWEVER**, asbestos was identified in the tan VCT flooring and will need to be removed by a licensed Kentucky Asbestos Abatement contractor. The hazardous materials testing report is attached in this addendum for reference.

Item No. 16:

Any reference in drawings or specs to "sound attenuation" batt insulation shall refer to fiberglass products. Mineral wool or Thermafiber is not required for purposes of sound attenuation.

Item No. 17:

With regard to the required Bid Bond at the time of bid, bond may be accepted in the forms listed in the Invitation to Bid. A draft copy of an AIA A310 is attached for reference should any GC and their surety company need additional formal documentation options.

Item No. 18:

In reference to specification section 09 51 13, Lay-in ceilings, all acoustical lay-in ceilings ceilings in this project shall be "ACT-1". Requirements for an "ACT-2" Ceramaguard shall be deleted.

Item No. 19:

As a point of clarification in regards to the "half walls and doors" at select restrooms, the following doors shall be 3'-0" x 3'-0" as graphically shown on drawing A on sheet A1.03:

- 105.1
- 105.2
- 106
- 107.1
- 118.1

The following doors shall be full height (3'-0" x 7'-0") in full height walls:

- 102.1
- 117.1

With door 107.1 and it associated wall being a "half wall", the path of fire barrier walls shall be changed in this area of the building. The new wall installed to create Storage 120 and the wall separating restrooms 107.1 and 119 shall be the path of a 1-hour fire barrier to reach the exterior wall.

Item No. 20:

With regard to fire extinguishers and fire extinguisher cabinets, the extinguishers shown shall be type "A" extinguishers. The basis of design for the cabinets shall be ***Larsen AL2409-R1.*** Cabinet door and trim shall be clear anodized extruded aluminum. Fully glazed panel door shall be provided with 1/8" clear tempered float glass. Cabinet to be recessed such that it is compatible with wall construction and manufacturers available trim kits. Where located within a fire rated wall per the life safety plan, cabinet assembly shall be UL listed for approval in a 1-hour fire barrier wall.

Item No. 21:

As listed in the attached revised Bid Form, unit prices have been added for the installation of underground gas lines. Upon site visits on 3/24/2021, LG&E flags were visible indicating the existing underground gas lines serving the existing meter to be roughly 8 feet away from the existing building. This line is under the footprint of the proposed addition. **General Contractor bids shall include the cost to extend this gas line around the addition to re-establish connection at the existing gas entrance to the property from Dixie Highway. It shall be assumed, for purposes of the bid, that a total of 160 linear feet is required to re-route around the addition and re-establish connection at the existing gas entrance to this property. 160 linear feet at the listed unit prices for both trenching and gas line installation is assumed to be within the General Contractors bids, respectively.**

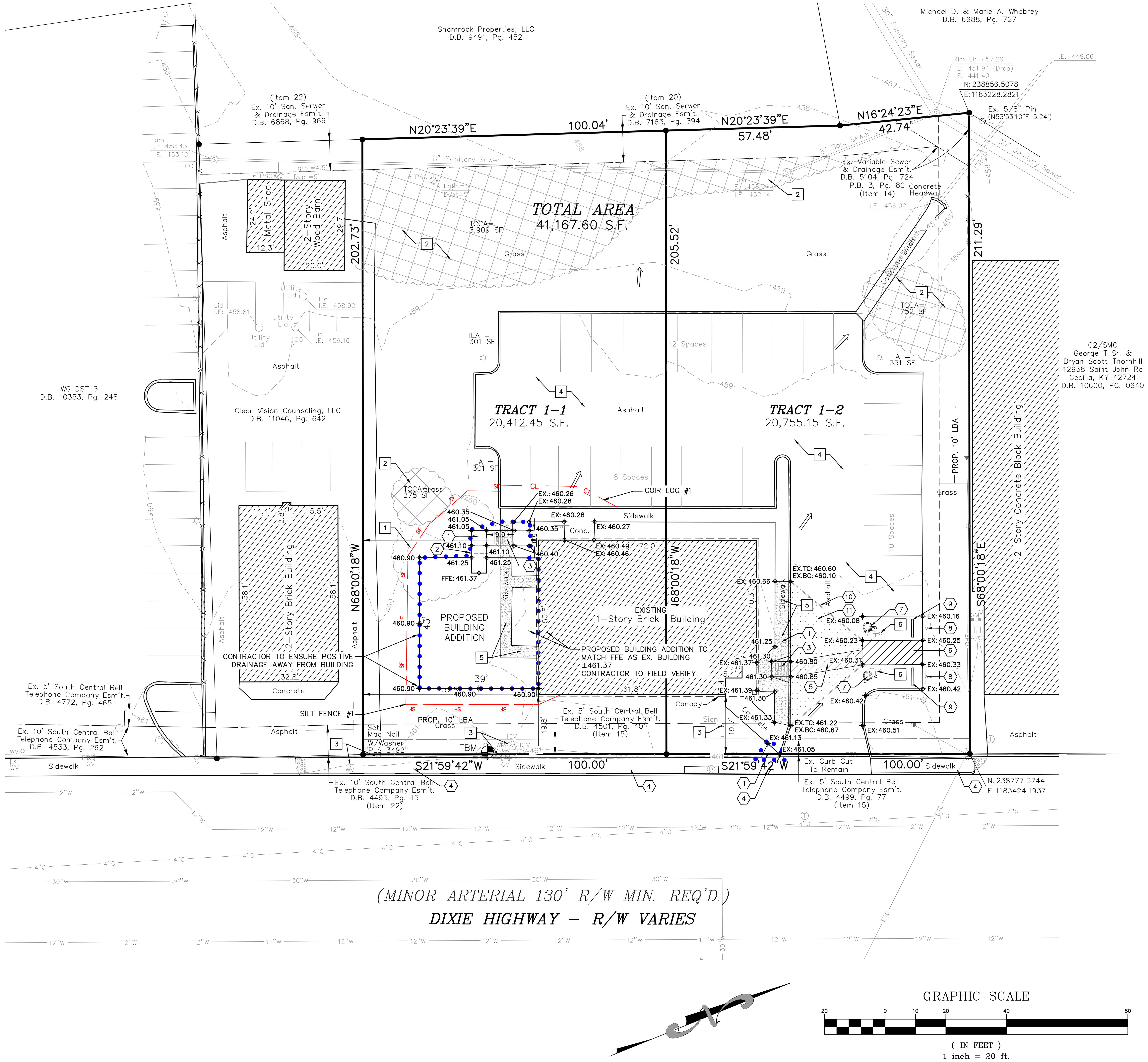
Once the successful general contractor is under contract, GC shall reach out to LG&E to organize a meeting on site to discuss options per LG&E's discretion. If LG&E agrees to re-route this service as described above at their own costs, the assumed total within the GC bid for trenching and gas line installation shall be credited back to the owner via a deductive change order. In the event that this cost is required to be paid by the owner, the listed unit prices shall be used for any adjustment to the scope above or below the assumed 160 linear feet.

In the event that the owner is required to pay for the costs associated with the scope of this work, any equipment, material or labor required to make this connection beyond the linear feet listed above shall be presented to the design team with labor and materials as separate line items for review and approval prior to commencing with the work.

End of Addendum 3

Attachments:

- Site drawings (2 pages)
- Site approvals (3 pages)
- Casework Specification
- Door Hardware Specification
- Electrical Specifications
- 23 09 00 Instrumentation and Control for HVAC
- Plumbing, Mechanical and Electrical drawing revisions
- Architectural Drawing revisions
- Asbestos Inspection performed by Environmental Concerns
- AIA document A310 – Bid Bond (draft, for reference)
- Bid Form (revised)



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

LOCATION MAP
NOT TO SCALE

DEMOLITION KEYNOTES:

1. CONTRACTOR TO GRUB AND REMOVE EXISTING TREES AND VEGETATION AND DISPOSE OF OFFSITE.
2. TREE & DRIPLINE TO BE PROTECTED THROUGHOUT CONSTRUCTION. CONTRACTOR TO REPLACE TREES(S) IF DAMAGED OR ALTERED IN ANY SIGNIFICANT WAY.
3. EXISTING UTILITIES TO BE PROTECTED THROUGHOUT CONSTRUCTION. IF DAMAGED, CONTRACTOR TO REPAIR AT THEIR EXPENSE
4. EXISTING ASPHALT TO REMAIN. IF DAMAGED, CONTRACTOR TO REPAIR TO PRE–CONSTRUCTION CONDITIONS. ASPHALT OVERLAY AT OWNERS DISCRESSION
5. EXISTING SIDEWALK TO BE SAWCUT, REMOVED, AND DISPOSED OF OFFSITE
6. EXISTING PARKING STRIPING TO BE GROUND OFF WHERE INDICATED

KEY NOTES LEGEND

1. PROPOSED CONCRETE SIDEWALK PER DETAIL, DETAIL SHEET. EXPANSION JOINT REQUIRED BETWEEN ALL COLD FORM JOINTS
2. DUAL 4" SCHEDULE 40 CONDUIT WITH PULL STRINGS
3. ADA RAMP PER ALL ADA REQUIREMENTS AND SPECIFICATIONS AND PER DETAIL, DETAIL SHEET
4. CONTRACTOR TO CONFIRM EXISTING RIGHT–OF–WAY SIDEWALK MEETS ALL KTC & ADA REQUIREMENTS PRIOR TO CONSTRUCTION. ADJUSTMENTS TO BE MADE AS NECESSARY
5. PROPOSED CROSSWALK PER ALL ADA & MUTCD REQUIREMENTS
6. ADA STRIPING PER ALL ADA REQUIREMENTS AND SPECIFICATIONS
7. BLUE PAINTED ADA SYMBOL AND 24" "VAN" (TYP) TO MEET ALL MUTCD REQUIREMENTS. "VAN" MARKING ONLY WHERE 8' STRIPED MARKING EXISTS
8. ADA PARKING SIGN PER DETAIL, DETAIL SHEET
9. CONCRETE WHEELSTOP PER DETAIL, DETAIL SHEET
10. KEY PROPOSED ASPHALT TO EXISTING PER DETAIL, DETAIL SHEET
11. CONTRACTOR TO WEDGE ASPHALT TO PROPOSED GRADES

GRADING NOTE(S)

1.) CONTRACTOR TO FIELD VERIFY ALL LOCATIONS AND DEPTHS OF EXISTING STORM AND SANITARY SEWERS USED IN THIS PROJECT PRIOR TO BEGINNING CONSTRUCTION TO INSURE ADEQUATE DEPTH.
2.) ALL GRATES AND DRAINAGE PIPES HAVE BEEN SIZED APPROPRIATELY TO CONVEY THE STORM DRAINAGE TOWARD THEM.
3.) ALL SPOT ELEVATIONS ALONG EDGE OF DRIVING SURFACE ARE TO BOTTOM OF CURB UNLESS OTHERWISE NOTED.
4.) CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS
5.) ALL SIDEWALKS AND CROSSWALKS TO HAVE A MAXIMUM OF 2% CROSS–SLOPE AND 5% LONGITUDINAL SLOPE AND A MINIMUM OF 1%.
6.) ALL LONGITUDINAL SLOPES WITHIN ADA RAMP TRANSITIONS TO BE NO GREATER THAN 8.33%.

GENERAL NOTE(S)

- LIGHTING DESIGN BY OTHERS. NO LIGHTS SHOWN ON CURRENT PLAN
- ALL DIMENSIONS ARE FROM FACE OF VERTICAL CURB UNLESS OTHERWISE NOTED. ANY PLACE WHERE DRAINAGE LEAVES A CURBLINE & 12" CURB AND GUTTER IS SPECIFIED, CONTRACTOR TO ENSURE SLOPE OF THE GUTTER MATCHES SLOP OF ASPHALT PAVEMENT
- UNLESS OTHERWISE NOTES, THE RADIUS OF ALL CURBS ARE 5'
- ALL WALKWAY AND HANDICAP ACCESSIBLITY ROUTES TO COMPLY WITH MINIMUM REQUIREMENTS OF "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN". WALKWAYS NOT TO EXCEED 5% GRADIENT ALONG PATHWAYS OR 2% CROSSWALK GRADIENT. CONTRACTOR IS RESPONSIBLE FOR REMOVAL & REPLACEMENT OF ALL CONSTRUCTED NON–COMPLIANT WALKWAYS
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITTING PRIOR TO CONSTRUCTION

GENERAL NOTE(S)

THE EROSION PREVENTION AND SEDIMENT CONTROL DEVICES SHOWN ON THIS PLAN SET ARE INTENDED TO BE THE MINIMUM CONTROL MEASURES. ADDITIONAL EPSC DEVICES MAY NEED TO BE INSTALLED AS NECESSARY BY THE CONTRACTOR TO PREVENT EROSION AND SEDIMENTATION

AT THE END OF EACH WORK DAY DISTURBED AREAS SHALL HAVE SILT CONTROL INSTALLED OR WILL BE STABILIZED SO THAT SEDIMENT WILL NOT GET OFF SITE OR INTO THE STORM SYSTEM DURING A RAIN EVENT

BMP PLAN REVISIONS DEEMED NECESSARY BASED ON INSPECTIONS SHALL BE IMPLEMENTED WITHIN 7 DAYS

REQUIRED BMP INSPECTIONS SHALL BE DOCUMENTED WITH THE COMPLETION OF AN INSPECTION REPORT OF THE CONTROL MEASURES INCLUDING: SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS MADE RELATING TO THE IMPLEMENTATION OF THE BMP PLAN, AND ANY CORRECTIVE ACTION TAKEN. INSPECTION REPORTS SHALL BE DEPT AS PART OF THE BMP PLAN FOR AT LEAST THREE YEARS AFTER THE DATE OF THE INSPECTION OR UNTIL ONE YEAR AFTER COVERAGE UNDER THE PERMIT ENDS. INSPECTION REPORTS SHALL BE SIGNED BY A QUALIFIED PERSONNEL.

IMPERVIOUS AREA

EXISTING IMPERVIOUS AREA	17,090 SF / ±0.39 AC
PROPOSED IMPERVIOUS AREA	18,690 SF / ±0.43 AC
INCREASED IMPERVIOUS AREA	1,600 SF / ±0.04 AC

EROSION PREVENTION AND SEDIMENT CONTROL NOTES

THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) PLAN SHALL BE IMPLEMENTED PRIOR TO ANY LAND–DISTURBING ACTIVITY ON THE CONSTRUCTION SITE. ANY MODIFICATIONS TO THE APPROVED EPSC PLAN MUST BE REVIEWED AND APPROVED BY MSD'S PRIVATE DEVELOPMENT REVIEW OFFICE. EPSC BMP'S (BEST MANAGEMENT PRACTICES) SHALL BE INSTALLED PER THE PLAN AND MSD STANDARDS.

DETENTION BASINS, IF APPLICABLE, SHALL BE CONSTRUCTED FIRST AND SHALL PERFORM AS SEDIMENT BASINS DURING CONSTRUCTION UNTIL THE CONTRIBUTING DRAINAGE AREAS ARE SEEDED AND STABILIZED.

ACTIONS MUST BE TAKEN TO MINIMIZE THE TRACKING OF MUD AND SOIL FROM CONSTRUCTION AREAS ONTO PUBLIC ROADWAYS. SOIL TRACKED ONTO THE ROADWAY SHALL BE REMOVED DAILY.

SOIL STOCKPILES SHALL BE LOCATED AWAY FROM STREAMS, PONDS, SWALES, AND CATCH BASINS. STOCKPILES SHALL BE SEEDED, MULCHED, AND ADEQUATELY CONTAINED THROUGH THE USE OF SILT FENCE.

ALL STREAM CROSSINGS MUST UTILIZE LOW–WATER CROSSING STRUCTURES PER MSD STANDARD DRAWING ER–02.

SEDIMENT–LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING OR OTHER EXCAVATION ACTIVITIES SHALL BE PUMPED TO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.

WHERE CONSTRUCTION OR LAND DISTURBING ACTIVITY WILL OR HAS TEMPORARILY CEASED ON ANY PORTION OF A SITE, TEMPORARY SITE STABILIZATION MEASURES SHALL BE REQUIRED AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER THE ACTIVITY HAS CEASED.

PHASING & SEQUENCING:

1. CONTRACTOR PRE–CONSTRUCTION MEETING WITH MSD INSPECTOR
2. EXISTING PAVEMENT TO ACT AS CONSTRUCTION ENTRANCE. CONTRACTOR TO ENSURE SILT STAYS OFF ADJACENT HIGHWAY
3. SILT FENCE & SILT CONTROL TO BE INSTALLED PER MSD STANDARDS
4. CONTRACTOR TO COMMENCE WITH SITE DEMOLITION AS LISTED
5. CONTRACTOR TO GRADE SITE AS NECESSARY FOR BUILDING EXPANSION, ENSURING POSITIVE DRAINAGE AWAY FROM BUILDING PAD
6. CONTRACTOR TO INSTALL HARDSCAPES AND BUILDING ADDITION. BUILDING CONSTRUCTION MAY BEGIN ANY TIME AFTER EROSION CONTROL IS INSTALLED AND PAD IS PREPARED
7. CONTRACTOR TO REMOVE ALL BMP'S ONCE SITE IS FULLY STABILIZED
8. ALL EROSION CONTROL BMP'S TO BE INSPECTED AND REPAIRED/REPLACED AS NECESSARY AND CLEANED WEEKLY OR AFTER EVERY ½ INCH RAIN EVENT

UTILITY NOTE(S)

ALL LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES AND COORDINATE WITH ALL THE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

SAWCUT NOTE

WHEN MATCHING EXISTING BITUMINOUS PAVEMENTS, A TWO (2) INCH DEPTH SAW–CUT A MINIMUM OF TWELVE (12) INCHES FROM THE EDGE OR TO SOUND ASPHALT MATERIAL AND ROADWAY ROCK BASE AND THE ASPHALT MATERIAL PLACED TO FORM A WATERTIGHT JOINT AS DIRECTED BY METRO PUBLIC WORKS.

KYTC NOTE

ALTHOUGH NOT SPECIFICALLY PART OF THESE PLANS, KYTC REQUIRES ALL NEW AND EXISTING SIDEWALKS TO HAVE NO GREATER THAN A 2% CROSS SLOPE AND 5% LONGITUDINAL SLOPE. CONTRACTOR TO CHECK EXISTING SIDEWALKS WITH A SLOPE LEVEL AND INCLUDE REPAIRS AS NECESSARY TO BRING ALL SIDEWALKS IN OR ALONG THE PROJECT BOUNDARY INTO ADA COMPLIANCE INTO THEIR BIDS

STANDARD EROSION CONTROLS		
SF	SILT FENCE	EF–09–02
CL	COIR LOG	SEE DETAIL
● ● ● ● ● ●	LIMITS OF DISTURBANCE	1,960 SF / ±0.04 AC

Kentucky 811
Call 811 Before You Dig.
CALL 2 WORKING DAYS BEFORE YOU DIG

UTILITY NOTE: ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER, "**KENTUCKY 811**" (TOLL FREE PHONE NO. 1–800–752–6007 OR LOCAL NO. 502–266–5123) FORTY EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (I.E. CABLES, ELECTRIC WIRES, GAS, AND WATERLINES). WHEN CONTACTING THE "**KENTUCKY 811**" CALL CENTER, PLEASE STATE THAT THE WORK TO BE DONE IS FOR A PROPOSED MSD SEWER OR DRAINAGE FACILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

WM#12174

LEGEND

OWM	Water Meter
PVC	Polyvinyl Chloride Pipe
—2"G—	Underground Gas Line
—4"W—	Underground Water Line
—UE—	Underground Electric Line

SITE ADDRESS:
7304 DIXIE HIGHWAY
TAX BLOCK 1123, LOT 0042
D.B. 6354, PG. 0486

OWNER:
WILLIAM E. & SARAH ERIKSEN
447 TIMBER LANE
ELIZABETHTOWN, KY 42701

BENCHMARK DESCRIPTION

TBM #50=RAILROAD SPIKE IN WEST SIDE OF A UTILITY POLE. THE UTILITY POLE IS LOCATED ON THE WEST SIDE OF DIXIE HIGHWAY 340'+/– NORTH OF ST. ANDREWS CHURCH ROAD.
ELEVATION=462.275' (NAVD 88)

SOURCE – ELEVATIONS ARE BASED ON LOJIC MONUMENT "GREENWOOD1".
ELEVATION=452.64 (NAVD 88)

REVISIONS

NO.	DATE	DESCRIPTION	BY

SURVEYOR'S SEAL

ENGINEER'S SEAL

PROJECT DATA
FILE NAME: 20108 – C1.0 LAY
DATE: 09/11/2020
SCALE: 1" = 20'
CHECKED BY: BR
DRAWN BY: TO

LD&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING • LAND SURVEYING • LANDSCAPE ARCHITECTURE
503 WASHBURN AVENUE, SUITE 101 LOUISVILLE, KENTUCKY 40222
FAX: 502.426.9375 PHONE: 502.426.9374
WEB SITE: WWW.LDD-INC.COM

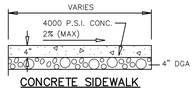
SITE DEMO, LAYOUT, GRADING, & EPSC SHEET

OVEC
7304 DIXIE HWY

DEVELOPER
OHIO VALLEY EDUCATIONAL COOPERATIVE
100 ALPINE ROAD
SHELBYVILLE, KY 40065

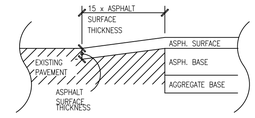
JOB NO. 20108

SHEET C1.0



CONCRETE SIDEWALK

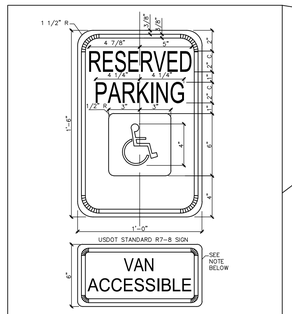
NO SCALE



NOTE:
END KEY WORK SHALL INCLUDE CUTTING OUT THE EXISTING ASPHALT TO A MINIMUM DEPTH AND WIDTH AS SHOWN, SO THE NEW SURFACE HEELS INTO THE EXISTING SURFACE. END KEY SHALL ALSO INCLUDE ALL NECESSARY MATERIALS, LABOR, EQUIPMENT ETC. TO PERFORM THE WORK AND DISPOSE OF THE ASPHALT MATERIAL REMOVED. THE COST OF THE WORK TO BE INCLUDED IN THE PRICE OF THE ASPHALT.

LONGITUDINAL ASPHALT KEY

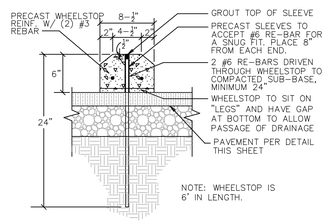
NO SCALE



NOTE (R7-8 SIGN): THIS IS A STANDARD SIGN AND MAY BE ORDERED FROM ANY TRAFFIC SIGN SUPPLIER BY NUMBER. THE SIGN MUST BE SUPPLEMENTED WITH A "VAN ACCESSIBLE" SIGN AS APPLICABLE AND/OR AMOUNT OF THE FINE FOR ILLEGALLY PARKING IN THE RESERVED SPACE(S) A MUNICIPALITY MAY IMPOSE. CONFIRM WITH LOCAL REGULATIONS.

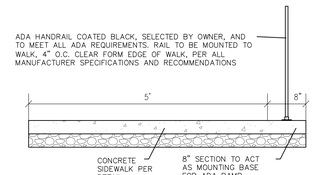
ACCESSIBILITY SIGNAGE

NO SCALE



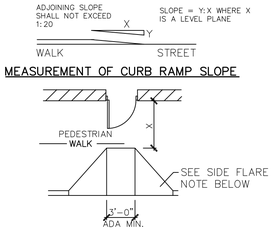
PRECAST WHEEL STOP

NO SCALE



HANDICAP RAMP WITH RAILS

NO SCALE

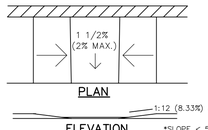


MEASUREMENT OF CURB RAMP SLOPE

CURB RAMP

"X" IS 60" MIN. AT AN OUT SWING DOOR WITH A SLOPE OF 1:50 (2%) MAXIMUM. LEVEL SURFACE IS PREFERRED.

SIDE FLARE NOTE: (SEE REFERENCE DIAGRAM ABOVE). SIDE FLARES SHALL HAVE A MAXIMUM SLOPE OF 1:10 (10%), WHERE "X" IS LESS THAN 48", SIDE FLARE SLOPE SHALL BE 1:12 (8.33%) MAXIMUM. WHERE "X" IS LESS THAN 36".



"IN-LINE" RAMP

*IN THE STATE RIGHT OF WAY, INLINE HANDICAP RAMPS SHALL MATCH KYTC STD. DWG. RPM-170-09 WITH DETECTABLE WARNERS PER RGX-010-03.

NOTES: A CURB RAMP(S) MUST BE PROVIDED ALONG ALL ACCESSIBLE PATHS.

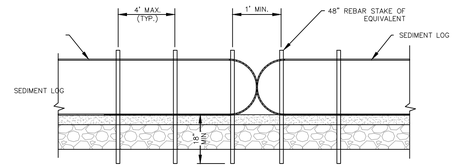
A RAMP IS ANY SLOPE GREATER THAN 1:20 (5%) AND SHALL HAVE A MAXIMUM SLOPE OF 1:12 (8.33%). THE MAXIMUM SLOPE IS 1" OF RISE PER FOOT OF DISTANCE TRAVELED. ALL SLOPED AREAS OF THE RAMP ARE TO CONSIST VISUALLY FROM ADJOINING SURFACES.

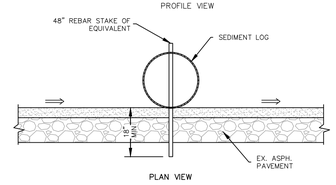
THE CLEAR WIDTH OF ANY RAMP IS A MINIMUM OF 36".

CURB RAMPS HAVE A MAXIMUM RISE OF 6" AND DO NOT REQUIRE HANDRAILS. ANY RAMP WITH GREATER THAN A 6" RISE SHALL HAVE HANDRAILS ON BOTH SIDES AND CURBED EDGE PROTECTION ON BOTH SIDES. EDGE PROTECTION CONSISTS OF CURBS, WALLS, RAILINGS, OR PROJECTING SURFACES THAT PREVENT PEOPLE FROM SLIPPING OFF THE RAMP. HANDRAIL DETAILS SHALL FOLLOW ACCESSIBLE GUIDELINES.

CURB RAMPS AND OTHER RAMPS

NO SCALE





COIR LOG
(OR APPROVED EQUAL)

NO SCALE

Kentucky 811
Call 811 Before You Dig
CALL 2 WORKING DAYS BEFORE YOU DIG

UTILITY NOTE: ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER, **"KENTUCKY 811"** (TOLL FREE PHONE NO. 1-800-752-6007 OR LOCAL NO. 502-266-5123) FORTY EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (I.E. CABLES, ELECTRIC WIRES, GAS, AND WATERLINES). WHEN CONTACTING THE **"KENTUCKY 811"** CALL CENTER, PLEASE STATE THAT THE WORK TO BE DONE IS FOR A PROPOSED MSD SEWER OR DRAINAGE FACILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

WM#

REVISIONS

NO.	DATE	DESCRIPTION	BY

ENGINEER'S SEAL

SURVEYOR'S SEAL

PROJECT DATA

FILE NAME: 20108 - C1.0 LAY

SCALE: 1" = 20'

DATE: 09/11/2020

DRAWN BY: TO

CHECKED BY: BR

L D&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING • LAND SURVEYING • LANDSCAPE ARCHITECTURE
503 WASHBURN AVENUE, SUITE 101 LOUISVILLE, KENTUCKY 40222
PH: (502) 814-5292 FAX: (502) 814-5294
WEB SITE: WWW.LDD-INC.COM

SITE DETAIL SHEET

OVEC
7304 DIXIE HWY
DEVELOPER
OHIO VALLEY EDUCATIONAL COOPERATIVE
100 ALPINE ROAD
SHELBYVILLE, KY 40065

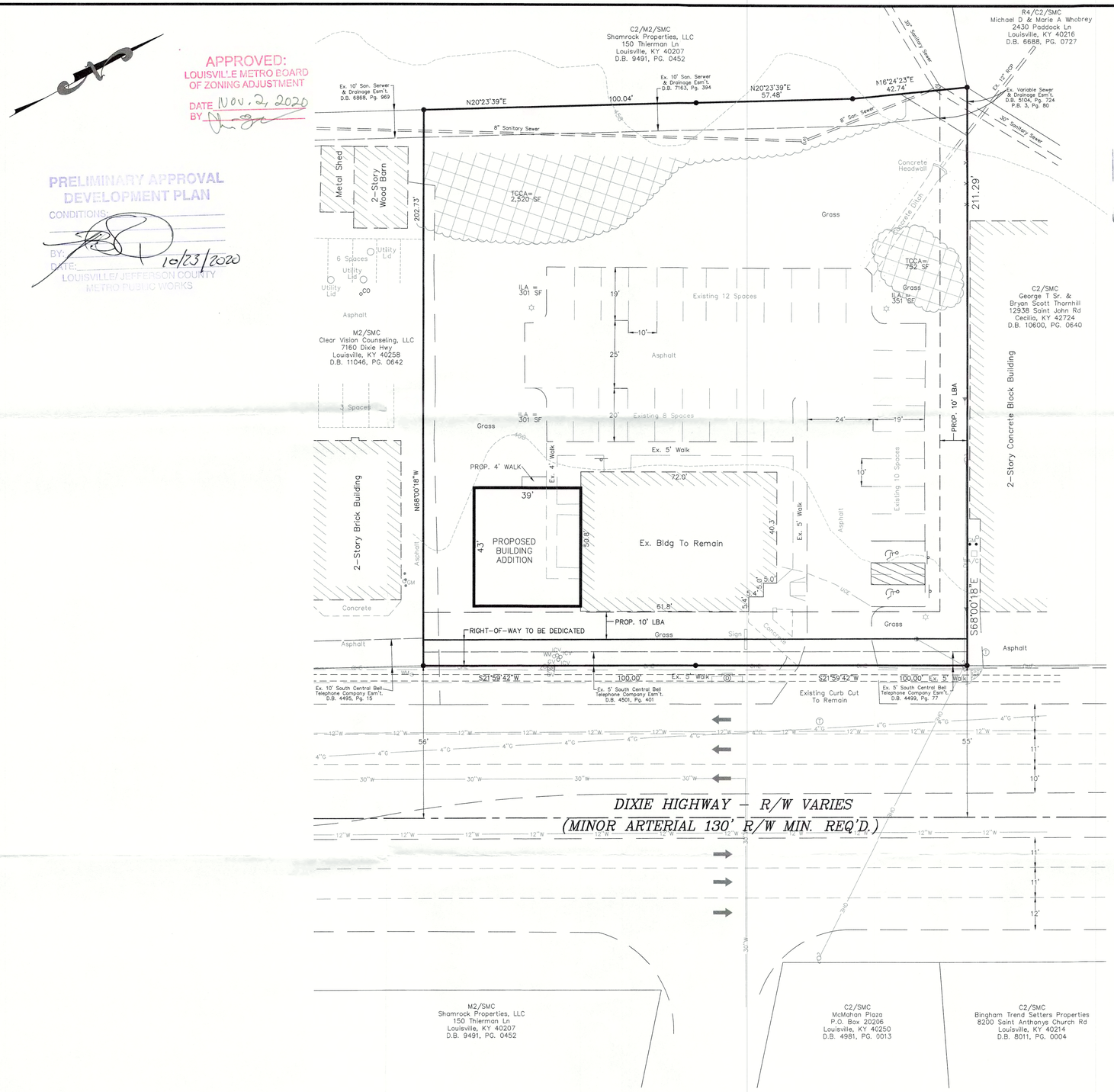
JOB NO. 20108

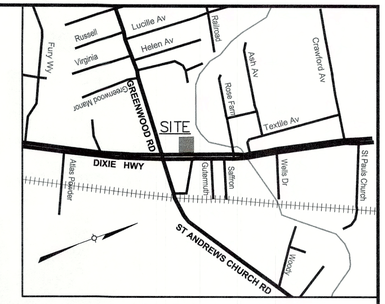
SHEET C2.0

APPROVED:
LOUISVILLE METRO BOARD OF ZONING ADJUSTMENT
DATE NOV. 2, 2020
BY

PRELIMINARY APPROVAL
DEVELOPMENT PLAN
CONDITIONS:
BY:
DATE: 10/23/2020
LOUISVILLE/JEFFERSON COUNTY
METRO PUBLIC WORKS

PRELIMINARY APPROVAL
Condition of Approval:
Michelle for T.K. 10-21-20
Development Review Date
LOUISVILLE & JEFFERSON COUNTY
METROPLOITAN SEWER DISTRICT





LOCATION MAP
NOT TO SCALE

PROJECT DATA

EX. SITE AREA	= 1.0± Ac. (41,168 SF)
RIGHT-OF-WAY TO BE DEDICATED	= 1,910 SF
PROP. SITE AREA	= 0.9± AC (39,257 SF)
EXISTING ZONING	= M-2
FORM DISTRICT	= SUBURBAN MARKETPLACE CORRIDOR
EXISTING USE	= OFFICE
PROPOSED USE	= COMMUNITY SERVICE FACILITY (C.U.P.)
BUILDING HEIGHT	= 1 STORY (60' MAX. ALLOWED)
BUILDING AREA	
EXISTING BUILDING	= 3,578 SF
PROPOSED BUILDING ADDITION	= 1,700 SF (47% INCREASE)
TOTAL BUILDING AREA	= 5,278 SF
F.A.R.	= 0.12 (3.0 MAX. ALLOWED)

PARKING REQUIRED	MIN.	MAX.
TO BE DETERMINED BY THE BOARD OF ZONING.		

TOTAL VEHICULAR USE AREA	= 11,746 SF
INTERIOR LANDSCAPE AREA REQUIRED	= 880 SF (7.5%)
INTERIOR LANDSCAPE AREA PROVIDED	= 963 SF
EXISTING IMPERVIOUS	= 16,911 SF
PROPOSED IMPERVIOUS	= 18,402 SF (9% INCREASE)

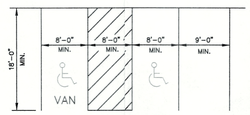
GENERAL NOTES:

1. Parking areas and drive lanes to be a hard and durable surface.
2. No increase in drainage run off to state roadways.
3. There shall be no commercial signs in the right-of-way.
4. Site lighting shall not shine in the eyes of drivers. If it does it shall be re-aimed, shielded, or turned off.
5. Construction fencing shall be erected prior to any construction or grading activities preventing compaction of root systems of trees to be preserved. The fencing shall enclose the area beneath the drip line of the tree canopy and shall remain in place. No parking, material storage, or construction activities shall be permitted within the fenced area.
6. Mitigation measures for dust control shall be in place during construction to prevent fugitive particulate emissions from reaching existing roads and neighboring properties.
7. Compatible utilities shall be placed in a common trench unless otherwise required by appropriate agencies.
8. Wheel stops or curbing, at least six inches high and wide, shall be provided to prevent vehicles from overhanging abutting sidewalks, properties or public right-of-ways, to protect landscaped areas and adjacent properties. Wheel stops shall be located at least (3) feet from any adjacent wall, fence, property line, woody vegetation, walkway or structure.
9. A Revised Landscape Plan will be required prior to construction approval.
10. Upon development or redevelopment of adjacent properties, a unified access and circulation system shall be developed to eliminate preexisting curb cuts and provide for vehicular movement throughout adjacent sites as determined appropriate by the Department of Public Works. A cross access agreement to run with the land and in a form acceptable to Planning Commission legal counsel shall be recorded prior to the time of construction approval for the adjacent property to be developed
11. Existing sidewalk reconstruction and repairs shall be required, as necessary, to meet current KYTC standards and shal be inspected prior to final bond release.

MSD NOTES:

1. Construction plans and documents shall comply with Louisville and Jefferson County Metropolitan Sewer District Design Manual and Standard Specifications and other local, state and federal ordinances.
2. Sanitary sewer service wil be provided by connection and subject to applicable fees. A Downstream Facilities Capacity request will be submitted to MSD.
3. No portion of the site is within the 100 year flood plain per FIRM Map No. 21111 C 0089 E dated December 5, 2006.
4. Drainage pattern depicted by arrows (⟹) is for conceptual purposes.
5. If the site has thru drainage an easement plat will be required prior to MSD granting construction plan approval.
6. Site will be subject to MSD Regional Facilities Fee.
7. All drainage, EPSC and Water Quality practices shown on this plan are for conceptual purposes only. Final design of these elements will be determined prior to construction plan approval and shall comply with all MS4 and MSD Design Manual requirements.
8. MSD site disturbance permit required prior to issue of building permits.
9. Downspouts to be directed to the rear of structure.
10. Existing MSD sewer line location to be field verified prior to MSD construction plan approval. Additional easement may be required.

LEGEND
= PROPOSED STORM SEWER, CATCH BASIN
= PROPOSED SEWER AND MANHOLE
= PROPOSED DRAINAGE SWALE



24' MINIMUM WIDTH OF AISLEWAY

TYPICAL PARKING SPACE LAYOUT
NO SCALE

TREE CANOPY CALCULATIONS

SITE AREA	=	39,257 S.F.
TOTAL TREE CANOPY AREA REQUIRED	=	17.5% (6,870 S.F.)
EXISTING TREE CANOPY TO BE PRESERVED	=	8% (3,272 S.F.)
PROPOSED TREE CANOPY TO BE PLANTED	=	9% (3,598 S.F.)
TOTAL TREE CANOPY TO BE PROVIDED	=	17.5% (6,870 S.F.)

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

RECEIVED
AUG 24 2020
PLANNING & DESIGN SERVICES

OWNER:
WILLIAM E. & SARAH ERIKSEN
447 TIMBER LANE
ELIZABETHTOWN, KY 42701

SITE ADDRESS:
7304 DIXIE HIGHWAY
TAX BLOCK 1123, LOT 0042
D.B. 6354, PG. 0486

COUNCIL DISTRICT – 12
FIRE PROTECTION DISTRICT – PLEASURE RIDGE PARK
MUNICIPALITY – LOUISVILLE

RELATED CASE 16VARIANCE1093
WM# 12174

NO.	DATE	DESCRIPTION	BY
1	8-3-20	PER AGENCY COMMENTS	DT
1	8-24-20	PER AGENCY COMMENTS	DT

REVISIONS

SURVEYOR'S SEAL

ENGINEER'S SEAL

PROJECT DATA
FILE NAME: 20108-CUP
DATE: 7/6/2020
SCALE: AS SHOWN
DRAWN BY: JH
CHECKED BY: DT

L D&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING · LAND SURVEYING · LANDSCAPE ARCHITECTURE
503 MAXWELTON COURT, SUITE 15 BOWLING GREEN, KENTUCKY 42103
PHONE: 502.414.2914
FAX: 502.414.2915
WEB SITE: WWW.LDD-INC.COM

CONDITIONAL USE PERMIT PLAN

OVEC
7304 DIXIE HWY
DEVELOPER
OHIO VALLEY EDUCATIONAL COOPERATIVE
100 ALPINE ROAD
SHELBYVILLE, KY 40065

JOB NO. 20108

SHEET 1 OF 1

20 - CUP - 0100

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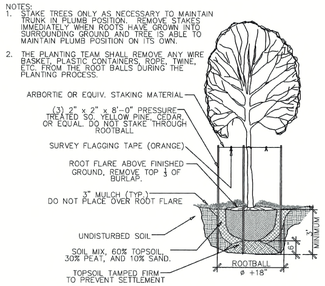
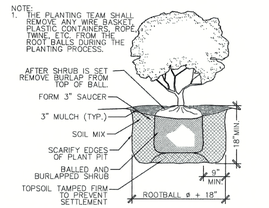


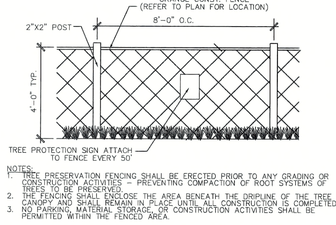
TYPICAL TREE PLANTING & STAKING

N.T.S.



TYPICAL SHRUB PLANTING DETAIL

N.T.S.



TREE PRESERVATION FENCE DETAIL

N.T.S.

TREE CANOPY PROTECTION AREA (TCPA/TCCA):

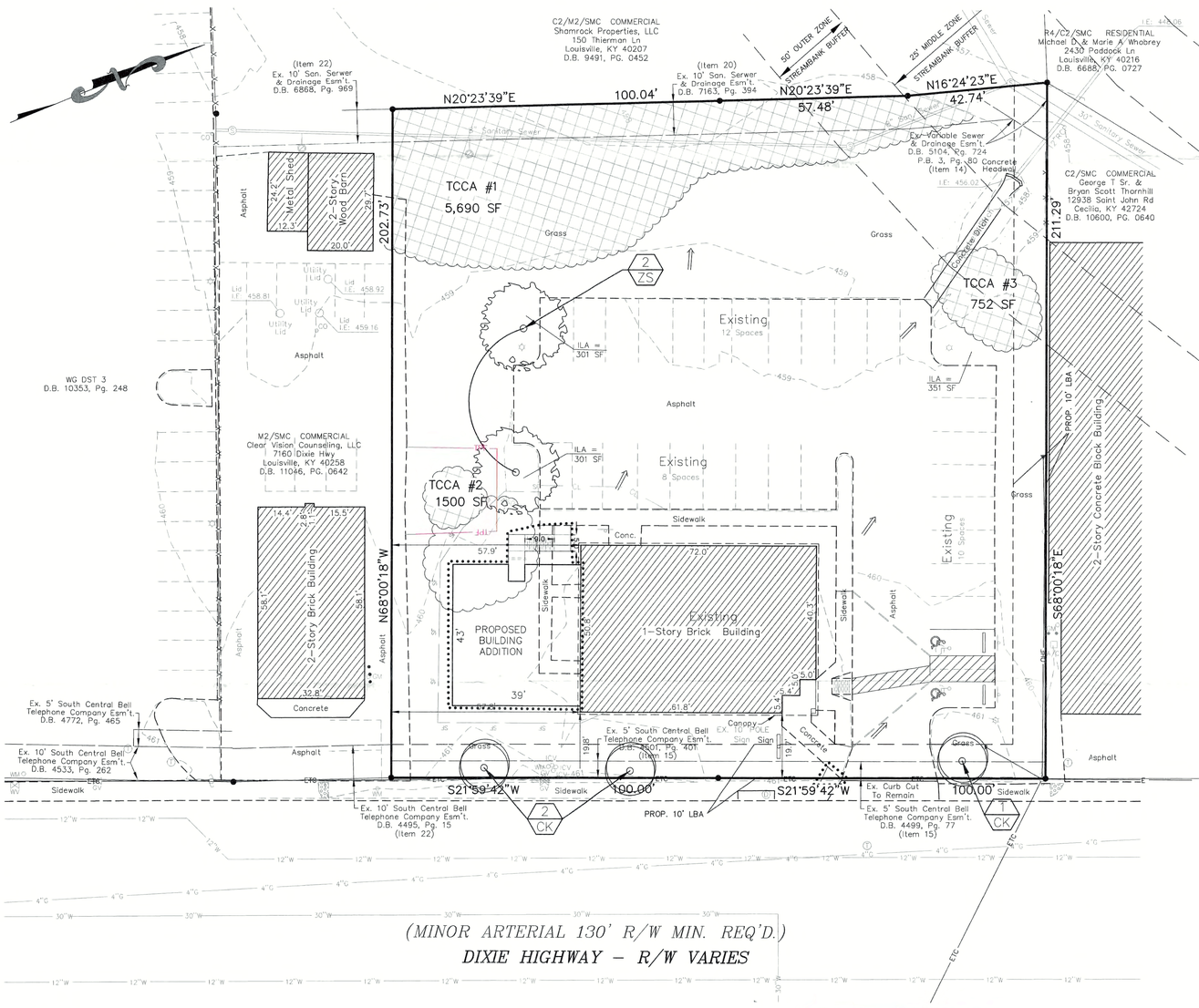
1. TREE CANOPY PROTECTION AREAS (TCPAs)/TREE CANOPY CREDIT AREAS (TCCAs) IDENTIFIED ON THIS PLAN REPRESENT PORTIONS OF THE SITE DESIGNATED TO MEET THE TREE CANOPY REQUIREMENTS OF CHAPTER 10, PART 1 OF THE LAND DEVELOPMENT CODE AND ARE TO BE PERMANENTLY PROTECTED. ALL CLEARING, GRADING, AND FILL ACTIVITY IN THESE AREAS MUST BE IN KEEPING WITH RESTRICTIONS ESTABLISHED AT THE TIME OF PLAN APPROVAL. AS TREES WITHIN THE TCPAs/TCCAs ARE LOST THROUGH NATURAL CAUSES, NEW TREES SHALL BE PLANTED IN ORDER TO MAINTAIN MINIMUM TREE CANOPY AS SPECIFIED ON THE APPROVED DEVELOPMENT OR PRELIMINARY SUBDIVISION PLAN.
2. DIMENSION LINES HAVE BEEN USED ON THIS PLAN TO ESTABLISH THE GENERAL LOCATION OF TCPAs/TCCAs AND REPRESENT MINIMUM DISTANCES. THE FINAL BOUNDARY FOR EACH TCPA/TCCA SHALL BE ESTABLISHED IN THE FIELD TO INCLUDE CANOPY AREA OF ALL TREES AT OR WITHIN THE DIMENSION LINE.
3. TO PROTECT THE EXISTING TREE STANDS AND THEIR ROOT SYSTEMS, TREE PROTECTION FENCING SHALL BE ERECTED ADJACENT TO ALL TCPAs/TCCAs PRIOR TO SITE DISTURBANCE APPROVAL. THE FENCING SHALL BE LOCATED AT LEAST THREE (3) FEET FROM THE OUTSIDE EDGE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED.
4. NO PARKING, MATERIAL STORAGE, OR CONSTRUCTION ACTIVITIES ARE PERMITTED WITHIN TCPAs/TCCAs AREAS.
5. REMOVAL OF TREES SHOWN TO BE PRESERVED SHALL CONSTITUTE A VIOLATION. IF A SITE IS FOUND IN VIOLATION OF THE TREE PRESERVATION POLICIES AND APPLICABLE CODE REQUIREMENTS RELATED TO REQUIRED LANDSCAPING, MITIGATION MEASURES WILL BE ENFORCED BY THE APPROPRIATE CODE ENFORCEMENT AGENCY. PENALTIES AND MITIGATION MEASURES FOR REMOVAL OF EXISTING TREES SHOWN TO BE OTHERWISE PEMANENTLY PRESERVED AND REMOVAL OF LANDSCAPING REQUIRED BY THE LDC SHALL BE DETERMINED BY THE PLANNING COMMISSION OR ITS DESIGNEE.

GENERAL LANDSCAPE NOTES:

1. GRASS OR GROUNDCOVER SHALL BE PLANTED ON ALL PORTIONS OF THE LANDSCAPE BUFFER AREA (LBA) NOT OCCUPIED BY OTHER LANDSCAPE MATERIAL.
2. EXISTING TREES AND PLANT MATERIAL ARE BEING USED TO MEET LANDSCAPE CODE REQUIREMENTS. IF ANY TREES OR SCREENING VEGETATION DIE OR ARE REMOVED THEY WILL BE REPLACED AS PER THE LANDSCAPE CODE REQUIREMENTS.
3. IT WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNER TO PERPETUALLY MAINTAIN ALL LANDSCAPE AREAS AND ASSOCIATED PLANT MATERIAL REQUIRED UNDER LAND DEVELOPMENT CODE REGULATIONS. THE PROPERTY OWNER SHALL ALSO BE RESPONSIBLE FOR MAINTAINING THE VERGE AND ASSOCIATED TREES WITHIN THE VERGE UNLESS THE AGENCY HAVING JURISDICTION OVER THAT VERGE ASSUMES THAT RESPONSIBILITY.
4. ALL UNHEALTHY OR DEAD PLANT MATERIAL SHALL BE REPLACED WITHIN ONE YEAR, OR BY THE NEXT PLANTING PERIOD, WHICHEVER COMES FIRST, WHILE OTHER DEFECTIVE PLANT MATERIAL SHALL BE REPLACED OR REPAIRED WITHIN THREE (3) MONTHS.
5. ALL PLANT MATERIAL LOCATED WITHIN A UTILITY EASEMENT THAT IS DAMAGED OR REMOVED DUE TO WORK REQUIRED BY THE UTILITY COMPANY SHALL BE IMMEDIATELY REPLACED BY THE OWNER IN ACCORDANCE WITH LAND DEVELOPMENT CODE CHAPTER 10 REQUIREMENTS
6. ALL ABOVE GROUND SERVICE STRUCTURES SHALL BE SCREENED IN ACCORDANCE WITH LAND DEVELOPMENT CODE CHAPTER 10, SECTION 10.2.6 AND 10.4.9. SERVICE STRUCTURES INCLUDE BUT ARE NOT LIMITED TO: PROPANE TANKS, DUMPSTERS, HVAC UNITS, ELECTRIC TRANSFORMERS, TELECOM BOXES, ETC.
7. AN AUTHORIZED INSPECTOR SHALL HAVE THE RIGHT TO ENTER ONTO ANY PROPERTY TO INSPECT THE HEALTH AND GENERAL CONDITION OF PLANT MATERIAL THAT IS; LOCATED IN THE RIGHT OF WAY; PART OF AN APPROVED DEVELOPMENT/LANDSCAPE PLAN; OR REPORTED AS A PUBLIC HAZARD.
8. A TREE REMOVAL PERMIT SHALL BE ISSUED PRIOR TO REMOVAL OF EXISTING TREES ON NON-RESIDENTIAL AND MULTI-FAMILY DEVELOPMENT SITES WHERE LANDSCAPING AND TREE CANOPY ARE REQUIRED. A PERMIT APPLICATION CAN BE OBTAINED FROM PLANNING DESIGN SERVICES UPON REQUEST.
9. PRIOR TO THE RECEIVING A CERTIFICATE OF OCCUPANCY, A LANDSCAPE ARCHITECT SHALL INSPECT AND CERTIFY THAT ALL REQUIRED LANDSCAPING SHOWN ON THE APPROVED LANDSCAPE PLAN HAS BEEN INSTALLED AND/OR PRESERVED.
10. LANDSCAPE PLANTINGS MUST BE INSTALLED PRIOR TO OCCUPANCY OF THE SITE OR AT THE NEXT AVAILABLE PLANTING SEASON. THESE PLANTINGS ARE TO BE MAINTAINED THEREAFTER. REFER TO NOTES #2, #3, #4 AND #5 FOR MAINTENANCE AND REPLACEMENT OF REQUIRED AND PRESERVED PLAN MATERIAL.
11. THE GROUND PLANE OF ALL INTERIOR LANDSCAPE AREAS (ILA) SHALL BE PLANTED USING EITHER SHRUBS, GROUNDCOVER OR TURF.
12. LIGHT POLES, SIDEWALKS, BENCHES, ETC. SHALL NOT OCCUPY MORE THAN 25% OF ANY INTERIOR LANDSCAPE AREA (ILA) OR REDUCE THE WIDTH OF ANY PLANTED AREA TO LESS THAN 4 FEET. CONTRACTOR SHALL COORDINATE LIGHT POLE LOCATIONS WITH LANDSCAPE PLAN PROPOSED TREE PLANTING TO AVOID CONFLICT.
30. REMOVE ALL BROKEN, DISEASED, OR WEAK BRANCHES. MAKE ALL CUTS LEVEL, HAVING AS LITTLE STUB AS POSSIBLE. SAUCERS SHALL BE SOAKED WITH WATER AND MULCHED IMMEDIATELY FOLLOWING PLANTING. ALL ROOT BALLS REMOVED FROM CANS SHALL BE SCARIFIED PRIOR TO BACKFILLING. SCARIFY ALL EDGES AND WALLS OF PLANT PITS 8". LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF PLANT MATERIAL AS PER PLANS. PLANT SCHEDULE IS FOR CONTRACTOR'S CONVENIENCE ONLY. CONTRACTOR SHALL VERIFY ALL QUANTITIES. MULCH ALL PLANTS AND PLANT BEDS AS PER DETAILS. ALL TREES MUST BE STRAIGHT TRUNKED AND FULL HEADED. NEVER CUT A LEADER WHEN PRUNING.
31. LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES BEFORE COMMENCING CONSTRUCTION AND SHALL BE RESPONSIBLE FOR ANY DAMAGE DURING CONSTRUCTION.
32. MAINTENANCE FOR PLANT MATERIAL SHALL INCLUDE WATERING, SPRAYING, MULCHING, FERTILIZING, PRUNING, ETC., AND IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR UNTIL FINAL APPROVAL BY LANDSCAPE ARCHITECT AND OWNER.
33. THE OWNER SHALL PROVIDE ALL MAINTENANCE (INCLUDING WATERING) THROUGHOUT THE GUARANTEE PERIOD UNLESS OTHERWISE SPECIFIED.
34. ALL PLANT MATERIAL SHALL CONFORM TO THE SIZE AND QUALITY AS SPECIFIED IN THE "AMERICAN STANDARDS FOR NURSERY STOCK" – CURRENT EDITION.
35. ALL PLANT MATERIAL SHALL BE INSTALLED AT THE SAME DEPTH AS GROWN AT THE NURSERY.
36. A MINIMUM 6" HEIGHT CURB WILL BE PROVIDED ON ALL EDGE OF PAVEMENT ON THE SITE TO PROTECT PLANT MATERIAL AND SIDEWALKS FROM DAMAGE BY VEHICLE OVERHANG.
37. CONSTRUCTION FENCING SHALL BE ERECTED PRIOR TO ANY GRADING OR CONSTRUCTION ACTIVITIES – PREVENTING COMPACTION OF ROOT SYSTEMS OF TREES TO BE PRESERVED. THE FENCING SHALL ENCLOSE THE AREA BENEATH THE DRIPLINE OF THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED. NO PARKING, MATERIAL STORAGE, OR CONSTRUCTION ACTIVITIES SHALL BE PERMITTED WITHIN THE FENCED AREA.

GENERAL TREE PRESERVATION/PROTECTION NOTES:

1. CONSTRUCTION FENCING SHALL BE ERECTED WHEN OFF-SITE TREES OR TREE CANOPY EXISTS WITHIN 3' OF A COMMON PROPERTY LINE. FENCING SHALL BE IN PLACE PRIOR TO ANY GRADING OR CONSTRUCTION TO PROTECT THE EXISTING ROOT SYSTEMS FROM COMPACTION. THE FENCING SHALL ENCLOSE THE ENTIRE AREA BENEATH THE TREE CANOPY AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IS COMPLETED. NO PARKING, MATERIAL STORAGE OR CONSTRUCTION ACTIVITIES ARE PERMITTED WITHIN THE PROTECTED AREA.
2. PRIOR TO SITE DISTURBANCE OR CONSTRUCTION ACTIVITIES A SITE INSPECTION BY PDS STAFF OR DESIGNEE SHALL BE SCHEDULED TO CONFIRM AND VERIFY THE TREE PRESERVATION/ PROTECTION FENCING AND SIGNAGE IS INSTALLED AND CORRECTLY PLACED. TO SCHEDULE AN INSPECTION APPOINTMENT CALL PDS CUSTOMER SERVICE 574-6230.
3. THE CONTRACTOR SHALL POST SIGNAGE ON THE TREE PRESERVATION/ PROTECTION FENCING AND CONSTRUCTION FENCING IDENTIFYING THE ENCLOSED AREA AS TREE PRESERVATION/ PROTECTION AREA. THE SIGNS SHALL INCLUDE THE FOLLOWING TEXT: *"STAY OUT TREE PRESERVATION/ PROTECTION AREA. NO EQUIPMENT, MATERIALS OR VEHICLES SHALL BE STORED OR PLACED WITHIN THE AREA ENCLOSED BY THIS TREE PRESERVATION/ PROTECTION FENCE. THIS FENCE MAY NOT BE REMOVED WITHOUT THE APPROVAL OF THE METRO LOUISVILLE PLANNING COMMISSION. FAILURE TO COMPLY WILL RESULT IN FINES AND TREE MITIGATION. REPORT NON-COMPLIANCE TO 574-6230."* THE STANDARD TREE PROTECTION SIGN CAN BE DOWNLOADED FROM THIS LINK: Https://louisvilleky.gov/sites/default/files/planning_design/pre-applications/tree_pres_sign_0.pdf.
4. THE TREE PRESERVATION/ PROTECTION AREA SIGNAGE SHALL BE POSTED EVERY 50 FEET ALONG THE TREE PRESERVATION FENCE. THE SIGNS SHALL BE A MINIMUM SIZE OF 8" X 10" AND WEATHER RESISTANT. IF THE SIGNS ARE DAMAGED OR FADE THEY SHALL BE REPLACED WITHIN TEN WORKING DAYS OR TWO WEEKS
5. DURING ALL CONSTRUCTION ACTIVITY (INCLUDES CLEARING, GRADING, BUILDING CONSTRUCTION, AND VUA CONSTRUCTION) A COPY OF THE APPROVED TREE PRESERVATION PLAN SHALL BE ON-SITE.
6. AN AUTHORIZED INSPECTOR SHALL HAVE THE RIGHT TO ENTER ONTO ANY PROPERTY TO INSPECT THE HEALTH AND GENERAL CONDITION OF PLANT MATERIAL THAT IS: LOCATED IN THE RIGHT-OF-WAY; PART OF AN APPROVED DEVELOPMENT/LANDSCAPE PLAN, OR REPORTED AS A PUBLIC HAZARD.



LEGEND

- = EXISTING CONTOUR
- = PROPOSED STORM SEWER, CATCH BASIN W/ INLET PROTECTION AND HEADWALL
- = EXISTING STORM SEWER
- = EXISTING SEWER AND MANHOLE
- = PROPOSED SEWER AND MANHOLE
- = EXISTING DRAINAGE SWALE
- = DISTURBANCE AREA
- = WATER LINES
- = GAS LINES
- = UNDERGROUND ELECTRIC
- = ELECTRIC TELECOMMUNCATIONS OVERHEAD LINES
- = PROPOSED TREE PROTECTION FENCE
- = EXISTING TREE LINE
- = DRAINAGE FLOW DIRECTION
- = WATER METER
- = EXISTING UTILITY POLE
- = TCCA
- = SILT FENCE

TREE PRESERVATION PLAN APPROVED
Date: 02/12/21
By: Planning & Design Services
Louisville Metro Planning Commission

Chapter 10 Landscaping Compliance Plan APPROVED
Date: 02/12/21
Docket No: 21-Landscape-0004
Planning & Design Services
Louisville Metro Planning Commission

PLANT SCHEDULE

TREES						
		BOTANICAL NAME	COMMON NAME	SIZE		
ZS	2	ZELKOVA SERRATA	JAPANESE ZELKOVA	2" CAL.	B&B	TYPE "A" (D)
CK	3	CORNUS KOUSA	KOUSA DOGWOOD	6 FT. HT.	B&B	TYPE "A" (C)

LOCATION MAP

NOT TO SCALE

PROJECT DATA

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RIGHT-OF-WAY TO BE DEDICATED	= 1,910 SF
PROP. SITE AREA	= 0.9± AC (39,257 SF)
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FORM DISTRICT	= SUBURBAN MARKETPLACE CORRIDOR
EXISTING USE	= OFFICE
PROPOSED USE	= COMMUNITY SERVICE FACILITY (C.U.P.)
BUILDING HEIGHT	= 1 STORY (60' MAX. ALLOWED)
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PARKING REQUIRED (MIN. / MAX.)
TO BE DETERMINED BY THE BOARD OF ZONING.

TOTAL VEHICULAR USE AREA	= 11,746 SF
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INTERIOR LANDSCAPE AREA PROVIDED	= 963 SF
EXISTING IMPERVIOUS	= 16,911 SF
PROPOSED IMPERVIOUS	= 18,402 SF (9% INCREASE)
ILA TREES REQUIRED (11,746 / 4,000)	= 3 TREES
ILA TREES PROVIDED	= 3 TREES (2 NEW, 1 EXISTING)

SECTION 5.3.2 SETBACKS
FRONT = 65 FT MEASURED FROM DIXIE HIGHWAY CENTERLINE
SIDE AND REAR = NONE

NOTE: CURB SIDE TRASH COLLECTION

TREE CANOPY CALCULATION

SITE AREA	= 39,257 SF
EXISTING TREE CANOPY	= 7,942 SF (20%)
EXISTING TREE CANOPY TO BE PRESERVED	
TCCA #1	=5,690 SF
TCCA #2 (Ex. 6" cal. Acer Rubrum Red Maple in good condition)	=1,500 SF
TCCA #3	= 752 SF
TOTAL	= 7,942 SF (20%)
TOTAL TREE CANOPY REQUIRED	= 6,870 SF (17.5%)*
*PER LDC 10.1.2.B.2 (HALF OF 35% REQUIRED = 17.5%)	
NEW TREE CANOPY TO BE PROVIDED	
(2) TYPE A TREES @1,200 SF EACH	= 2,400 SF (6%)
(3) TYPE C TREES @ 240 SF EACH	= 720 SF (2%)
TOTAL CANOPY TO BE PROVIDED PRESERVED + PROPOSED	=11,062 SF (28%)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

Kentucky 811 Call 811 Before You Dig
CALL 2 WORKING DAYS BEFORE YOU DIG

UTILITY NOTE: ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER, "KENTUCKY 811" (TOLL FREE PHONE NO. 1-800-752-6007 OR LOCAL NO. 502-266-5123) FORTY EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (I.E. CABLES, ELECTRIC WIRES, GAS, AND WATERLINES). WHEN CONTACTING THE "KENTUCKY 811" CALL CENTER, PLEASE STATE THAT THE WORK TO BE DONE IS FOR A PROPOSED MSD SEWER OR DRAINAGE FACILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

CASE 21-LANDSCAPE-0004

RELATED CASES 16VARIANCE1093 & 20-CUP-0100

SITE ADDRESS:
7304 DIXIE HIGHWAY
LOUISVILLE, KY. 40258
TAX BLOCK 1123, LOT 0042
D.B. 6354, PG. 0486

OWNER:
WILLIAM E. & SARAH ERIKSEN
447 TIMBER LANE
ELIZABETHTOWN, KY 42701

COUNCIL DISTRICT – 12
FIRE PROTECTION DISTRICT – PLEASURE RIDGE PARK
MUNICIPALITY – LOUISVILLE

WM#12174

REVISIONS

NO.	DATE	DESCRIPTION	BY
1	02.12.21	AGENCY COMMENTS	AER

PROFESSIONAL'S SEAL

PROJECT DATA
FILE NAME: 20108 – LANDSCAPE
DATE: 1/12/2021
SCALE: 1" = 20'
CHECKED BY: DT
DRAWN BY: BB

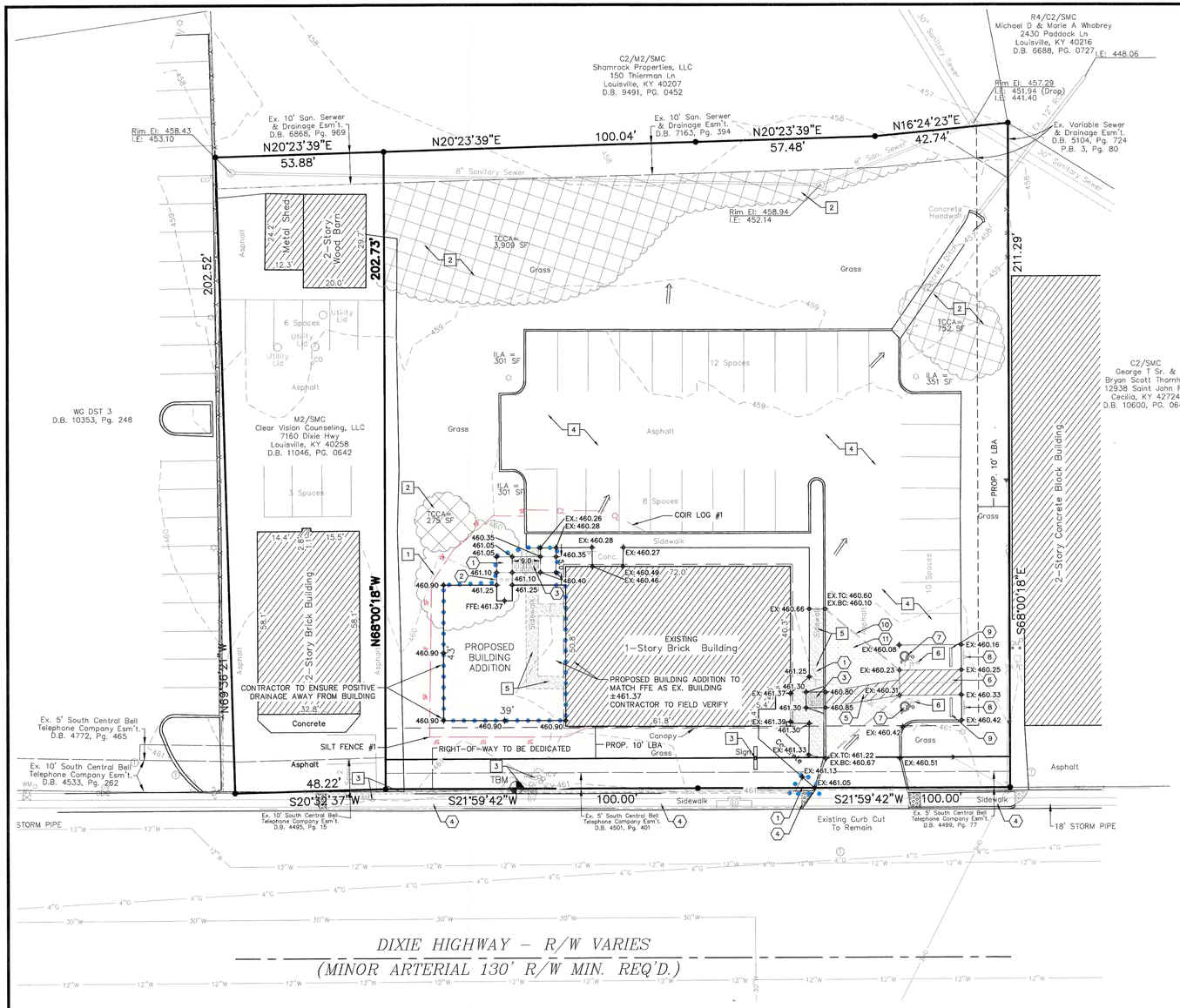
LDC CHAPTER 10 LANDSCAPE AND TREE PRESERVATION PLAN

OVEC
7304 DIXIE HWY
DEVELOPER
OHIO VALLEY EDUCATIONAL COOPERATIVE
100 ALPINE ROAD
SHELBYVILLE, KY 40065

L D&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING • LAND SURVEYING • LANDSCAPE ARCHITECTURE
529 WASHBURN AVENUE, SUITE 101, LOUISVILLE, KENTUCKY 40222
PHONE: 502.426.9375 FAX: 502.426.9374
WEB SITE: WWW.LDNDINC.COM

JOB NO. 20108

SHEET L.1 OF 1



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DEMOLITION KEYNOTES:

1. CONTRACTOR TO GRUB AND REMOVE EXISTING TREES AND VEGETATION AND DISPOSE OF OFFSITE.
2. TREE & DRIPLINE TO BE PROTECTED THROUGHOUT CONSTRUCTION. CONTRACTOR TO REPLACE TREES(S) IF DAMAGED OR ALTERED IN ANY SIGNIFICANT WAY.
3. EXISTING UTILITIES TO BE PROTECTED THROUGHOUT CONSTRUCTION. IF DAMAGED, CONTRACTOR TO REPAIR AT THEIR EXPENSE
4. EXISTING ASPHALT TO REMAIN. IF DAMAGED, CONTRACTOR TO REPAIR TO PRE-CONSTRUCTION CONDITIONS. ASPHALT OVERLAY AT OWNERS DISCRESSION
5. EXISTING SIDEWALK TO BE SAWCUT, REMOVED, AND DISPOSED OF OFFSITE
6. EXISTING PARKING STRIPING TO BE GROUND OFF WHERE INDICATED

KEY NOTES LEGEND

1. PROPOSED CONCRETE SIDEWALK PER DETAIL, THIS SHEET. EXPANSION JOINT REQUIRED BETWEEN ALL COLD FORM JOINTS
2. DUAL 3" SCHEDULE 40 CONDUIT WITH PULL STRINGS
3. ADA RAMP PER ALL ADA REQUIREMENTS AND SPECIFICATIONS AND PER DETAIL, THIS SHEET
4. CONTRACTOR TO CONFIRM EXISTING RIGHT-OF-WAY SIDEWALK MEETS ALL KTC & ADA REQUIREMENTS PRIOR TO CONSTRUCTION. ADJUSTMENTS TO BE MADE AS NECESSARY
5. PROPOSED CROSSWALK PER ALL ADA & MUTCD REQUIREMENTS
6. ADA STRIPING PER ALL ADA REQUIREMENTS AND SPECIFICATIONS
7. BLUE PAINTED ADA SYMBOL AND 24" "VAN" (TYP) TO MEET ALL MUTCD REQUIREMENTS. "VAN" MARKING ONLY WHERE 8' STRIPED MARKING EXISTS
8. ADA PARKING SIGN PER DETAIL, THIS SHEET
9. CONCRETE WHEELSTOP PER DETAIL, THIS SHEET
10. KEY PROPOSED ASPHALT TO EXISTING PER DETAIL, THIS SHEET
11. CONTRACTOR TO WEDGE ASPHALT TO PROPOSED GRADES

GRADING NOTE(S)

1.) CONTRACTOR TO FIELD VERIFY ALL LOCATIONS AND DEPTHS OF EXISTING STORM AND SANITARY SEWERS USED IN THIS PROJECT PRIOR TO BEGINNING CONSTRUCTION TO INSURE ADEQUATE DEPTH.
2.) ALL GRATES AND DRAINAGE PIPES HAVE BEEN SIZED APPROPRIATELY TO CONVEY THE STORM DRAINAGE TOWARD THEM.
3.) ALL SPOT ELEVATIONS ALONG EDGE OF DRIVING SURFACE ARE TO BOTTOM OF CURB UNLESS OTHERWISE NOTED.
4.) CONTRACTOR TO ENSURE POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS
5.) ALL SIDEWALKS AND CROSSWALKS TO HAVE A MAXIMUM OF 2% CROSS-SLOPE AND 5% LONGITUDINAL SLOPE AND A MINIMUM OF 1%.
6.) ALL LONGITUDINAL SLOPES WITHIN ADA RAMP TRANSITIONS TO BE NO GREATER THAN 8.33%

GENERAL NOTE(S)

- LIGHTING DESIGN BY OTHERS. NO LIGHTS SHOWN ON CURRENT PLAN
- ALL DIMENSIONS ARE FROM FACE OF VERTICAL CURB UNLESS OTHERWISE NOTED. ANY PLACE WHERE DRAINAGE LEAVES A CURBLINE & 12" CURB AND GUTTER IS SPECIFIED, CONTRACTOR TO ENSURE SLOPE OF THE GUTTER MATCHES SLOP OF ASPHALT PAVEMENT
- UNLESS OTHERWISE NOTES, THE RADIUS OF ALL CURBS ARE 5'
- ALL WALKWAY AND HANDICAP ACCESSIBILITY ROUTES TO COMPLY WITH MINIMUM REQUIREMENTS OF "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN". WALKWAYS NOT TO EXCEED 5% GRADIENT ALONG PATHWAYS OR 2% CROSSWALK GRADIENT. CONTRACTOR IS RESPONSIBLE FOR REMOVAL & REPLACEMENT OF ALL CONSTRUCTED NON-COMPLIANT WALKWAYS
- CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITTING PRIOR TO CONSTRUCTION

GENERAL NOTE(S)

THE EROSION PREVENTION AND SEDIMENT CONTROL DEVICES SHOWN ON THIS PLAN SET ARE INTENDED TO BE THE MINIMUM CONTROL MEASURES. ADDITIONAL EPSC DEVICES MAY NEED TO BE INSTALLED AS NECESSARY BY THE CONTRACTOR TO PREVENT EROSION AND SEDIMENTATION

AT THE END OF EACH WORK DAY DISTURBED AREAS SHALL HAVE SILT CONTROL INSTALLED OR WILL BE STABILIZED SO THAT SEDIMENT WILL NOT GET OFF SITE OR INTO THE STORM SYSTEM DURING A RAIN EVENT

BMP PLAN REVISIONS DEEMED NECESSARY BASED ON INSPECTIONS SHALL BE IMPLEMENTED WITHIN 7 DAYS

REQUIRED BMP INSPECTIONS SHALL BE DOCUMENTED WITH THE COMPLETION OF AN INSPECTION REPORT OF THE CONTROL MEASURES INCLUDING: SCOPE OF THE INSPECTION, NAMES AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, DATE OF THE INSPECTION, MAJOR OBSERVATIONS MADE RELATING TO THE IMPLEMENTATION OF THE BMP PLAN, AND ANY CORRECTIVE ACTION TAKEN. INSPECTION REPORTS SHALL BE DEPT AS PART OF THE BMP PLAN FOR AT LEAST THREE YEARS AFTER THE DATE OF THE INSPECTION OR UNTIL ONE YEAR AFTER COVERAGE UNDER THE PERMIT ENDS. INSPECTION REPORTS SHALL BE SIGNED BY A QUALIFIED PERSONNEL.

IMPERVIOUS AREA

EXISTING IMPERVIOUS AREA	17,090 SF / ±0.39 AC
PROPOSED IMPERVIOUS AREA	18,690 SF / ±0.43 AC
INCREASED IMPERVIOUS AREA	1,600 SF / ±0.04 AC

LOCATION MAP
NOT TO SCALE

EROSION PREVENTION AND SEDIMENT CONTROL NOTES

THE APPROVED EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) PLAN SHALL BE IMPLEMENTED PRIOR TO ANY LAND-DISTURBING ACTIVITY ON THE CONSTRUCTION SITE. ANY MODIFICATIONS TO THE APPROVED EPSC PLAN MUST BE REVIEWED AND APPROVED BY MSD'S PRIVATE DEVELOPMENT REVIEW OFFICE. EPSC BMP'S (BEST MANAGEMENT PRACTICES) SHALL BE INSTALLED PER THE PLAN AND MSD STANDARDS.

DETENTION BASINS, IF APPLICABLE, SHALL BE CONSTRUCTED FIRST AND SHALL PERFORM AS SEDIMENT BASINS DURING CONSTRUCTION UNTIL THE CONTRIBUTING DRAINAGE AREAS ARE SEEDED AND STABILIZED.

ACTIONS MUST BE TAKEN TO MINIMIZE THE TRACKING OF MUD AND SOIL FROM CONSTRUCTION AREAS ONTO PUBLIC ROADWAYS. SOIL TRACKED ONTO THE ROADWAY SHALL BE REMOVED DAILY.

SOIL STOCKPILES SHALL BE LOCATED AWAY FROM STREAMS, PONDS, SWALES, AND CATCH BASINS. STOCKPILES SHALL BE SEEDED, MULCHED, AND ADEQUATELY CONTAINED THROUGH THE USE OF SILT FENCE.

ALL STREAM CROSSINGS MUST UTILIZE LOW-WATER CROSSING STRUCTURES PER MSD STANDARD DRAWING ER-02.

SEDIMENT-LADEN GROUNDWATER ENCOUNTERED DURING TRENCHING, BORING OR OTHER EXCAVATION ACTIVITIES SHALL BE PUMPED TO A SEDIMENT TRAPPING DEVICE PRIOR TO BEING DISCHARGED INTO A STREAM, POND, SWALE, OR CATCH BASIN.

WHERE CONSTRUCTION OR LAND DISTURBING ACTIVITY WILL OR HAS TEMPORARILY CEASED ON ANY PORTION OF A SITE, TEMPORARY SITE STABILIZATION MEASURES SHALL BE REQUIRED AS SOON AS PRACTICABLE, BUT NO LATER THAN 14 DAYS AFTER THE ACTIVITY HAS CEASED.

PHASING & SEQUENCING:

1. CONTRACTOR PRE-CONSTRUCTION MEETING WITH MSD INSPECTOR
2. EXISTING PAVEMENT TO ACT AS CONSTRUCTION ENTRANCE. CONTRACTOR TO ENSURE SILT STAYS OFF ADJACENT HIGHWAY
3. SILT FENCE & SILT CONTROL TO BE INSTALLED PER MSD STANDARDS
4. CONTRACTOR TO COMMENCE WITH SITE DEMOLITION AS LISTED
5. CONTRACTOR TO GRADE SITE AS NECESSARY FOR BUILDING EXPANSION, ENSURING POSITIVE DRAINAGE AWAY FROM BUILDING PAD
6. CONTRACTOR TO INSTALL HARDSCAPES AND BUILDING ADDITION. BUILDING CONSTRUCTION MAY BEGIN ANY TIME AFTER EROSION CONTROL IS INSTALLED AND PAD IS PREPARED
7. CONTRACTOR TO REMOVE ALL BMP'S ONCE SITE IS FULLY STABILIZED
8. ALL EROSION CONTROL BMP'S TO BE INSPECTED AND REPAIRED/REPLACED AS NECESSARY AND CLEANED WEEKLY OR AFTER EVERY ½ INCH RAIN EVENT

UTILITY NOTE(S)

ALL LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. CONTRACTOR TO FIELD VERIFY LOCATION OF ALL UTILITIES AND COORDINATE WITH ALL THE UTILITY COMPANIES PRIOR TO ANY CONSTRUCTION.

SAWCUT NOTE

WHEN MATCHING EXISTING BITUMINOUS PAVEMENTS, A TWO (2) INCH DEPTH SAW-CUT A MINIMUM OF TWELVE (12) INCHES FROM THE EDGE OR TO SOUND ASPHALT MATERIAL AND ROADWAY ROCK BASE AND THE ASPHALT MATERIAL PLACED TO FORM A WATERTIGHT JOINT AS DIRECTED BY METRO PUBLIC WORKS.

KYTC NOTE

ALTHOUGH NOT SPECIFICALLY PART OF THESE PLANS, KYTC REQUIRES ALL NEW AND EXISTING SIDEWALKS TO HAVE NO GREATER THAN A 2% CROSS SLOPE AND 5% LONGITUDINAL SLOPE. CONTRACTOR TO CHECK EXISTING SIDEWALKS WITH A SLOPE LEVEL AND INCLUDE REPAIRS AS NECESSARY TO BRING ALL SIDEWALKS IN OR ALONG THE PROJECT BOUNDARY INTO ADA COMPLIANCE INTO THEIR BIDS

Jefferson County Suburban Fire Service
PRFD Fire District

Approved as noted, based on information shown. This approval is subject to an on-site inspection by the Fire Department.

- [x] Plans approved as submitted.
- [ ] Fire lane required as noted on plans.
- [ ] Fire Hydrant(s) required as noted on plans, and in compliance with the Louisville Ordinance.
- [ ] FDC required as noted on plans. Size / Type:

The above approvals shall meet the current adopted Building / Fire Codes & Ordinances.

Date reviewed 10-8-2020 By Mark Richard Major #2204

STANDARD EROSION CONTROLS		
SF	SILT FENCE	EF-09-02
CL	COIR LOG	SEE DETAIL
• • • • • •	LIMITS OF DISTURBANCE	1,960 SF / ±0.04 AC

Kentucky 811
Call 811 Before You Dig
CALL 2 WORKING DAYS BEFORE YOU DIG

UTILITY NOTE: ALL UTILITIES SHOWN ON THESE PLANS ARE APPROXIMATE. THE INDIVIDUAL SERVICE LINES ARE NOT SHOWN. THE CONTRACTOR OR SUBCONTRACTOR SHALL NOTIFY THE UTILITY PROTECTION CENTER, **"KENTUCKY 811"** (TOLL FREE PHONE NO. 1-800-752-6007 OR LOCAL NO. 502-266-5123) FORTY EIGHT HOURS IN ADVANCE OF ANY CONSTRUCTION ON THIS PROJECT. THIS NUMBER WAS ESTABLISHED TO PROVIDE ACCURATE LOCATIONS OF EXISTING BELOW GROUND UTILITIES (I.E. CABLES, ELECTRIC WIRES, GAS, AND WATERLINES). WHEN CONTACTING THE **"KENTUCKY 811"** CALL CENTER, PLEASE STATE THAT THE WORK TO BE DONE IS FOR A PROPOSED MSD SEWER OR DRAINAGE FACILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR BECOMING FAMILIAR WITH ALL UTILITY REQUIREMENTS SET FORTH ON THE PLANS IN THE TECHNICAL SPECIFICATIONS AND SPECIAL PROVISIONS.

WM#12174

LEGEND

OWM	Water Meter
PVC	Polyvinyl Chloride Pipe
2"G	Underground Gas Line
4"W	Underground Water Line
UE	Underground Electric Line

SITE ADDRESS:
7304 DIXIE HIGHWAY
TAX BLOCK 1123, LOT 0042
D.B. 6354, PG. 0486

OWNER:
WILLIAM E. & SARAH ERIKSEN
447 TIMBER LANE
ELIZABETHTOWN, KY 42701

BENCHMARK DESCRIPTION

TBM #50=RAILROAD SPIKE IN WEST SIDE OF A UTILITY POLE. THE UTILITY POLE IS LOCATED ON THE WEST SIDE OF DIXIE HIGHWAY 340'+/- NORTH OF ST. ANDREWS CHURCH ROAD.
ELEVATION=462.275' (NAVD 88)

SOURCE - ELEVATIONS ARE BASED ON LOJIC MONUMENT "GREENWOOD1".
ELEVATION=452.64 (NAVD 88)

REVISIONS

NO.	DATE	DESCRIPTION	BY

SURVEYOR'S SEAL

ENGINEER'S SEAL

PROJECT DATA
FILE NAME: 20108 - C1.0 LAY
DATE: 09/11/2020
SCALE: 1" = 20'
DRAWN BY: TD
CHECKED BY: BR

SITE DEMO, LAYOUT, GRADING, & EPSC SHEET

OVEC
7304 DIXIE HWY
DEVELOPER
OHIO VALLEY EDUCATIONAL COOPERATIVE
100 ALPINE ROAD
SHELBYVILLE, KY 40065

LD&D
LAND DESIGN & DEVELOPMENT, INC.
ENGINEERING • LAND PLANNING • LANDSCAPE ARCHITECTURE
529 WESTPORT AVENUE, SUITE 101 LOUISVILLE, KENTUCKY 40222
PHONE: 502.744.9774
FAX: 502.744.9775
WEB SITE: WWW.LDD-INC.COM

JOB NO. 20108

SHEET C1.0

12 32 00 – CASEWORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Extent of casework is shown on the Drawings and as follows:

1. Plastic laminate casework, rail mounted.
   a. Cabinets with doors and drawers
2. Miscellaneous items.
3. All filler strips.
4. Plastic laminate countertops.
5. Custom cabinetwork.
6. Plumbing items as specified herein.

B. Work includes the fabrication and installation of standard components of plastic laminate base cabinets, sink base cabinets, wall cabinets, door bases and other units as indicated in the Drawings and as scheduled.

C. Related Sections include the following:

1. Division 06 Section “Rough Carpentry”, for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.

D. Wood blocking within metal stud and gypsum board walls and partitions shall be provided by the General Contractor.

E. Cabinets indicated to receive sinks shall be constructed to allow for installation of sinks for sizes indicated. Coordinate with Division 22 for sink sizes, unless specified herein. Cutouts in casework shall be by the casework installer. Sink cutouts shall have 2-coats of sealer applied to any exposed wood / particle board edges.

1.03 DEFINITIONS

A. Plastic laminate casework includes wood furring, shims, and hanging strips, unless concealed within other construction before casework installation.

1.04 SYSTEM DESCRIPTION

A. Casework Accessibility Requirements shall be provided to conform with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and State and local regulations. These requirements supersede Technical Specifications in the section.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's data and installation instruction for each type of manufactured casework unit.

B. Samples: Submit 6-inch x 6-inch samples of specified finishes, including top material. Samples will be reviewed by Architect for color, texture and pattern only. Compliance with other specified requirements is exclusive responsibility of the Contractor.

1. Submit samples of mechanical and electrical service fixtures when requested by Architect, complete with fittings and accessories with specified finish.

a. Acceptable sample units will be used for comparison, inspections at project. Unless otherwise directed, acceptable sample units may be incorporated in the Work. Notify the Architect of their exact location. If not incorporated in the Work, retain acceptable samples units in building until completion of the Work and remove sample units from premises when directed by the Architect.

C. Shop Drawings: Submit shop drawings for casework, showings plans, elevations, ends, cross-sections, service run spaces, location and type of service fixture with lines thereto. Show details and location of anchorages and fitting to floors, walls and base. Include layout of units with relation to surrounding walls, doors, soffits, windows, and other building components.

1.06 QUALITY ASSURANCE

A. Single Source Responsibility: Provide manufactured casework with tops and other components all manufactured or furnished by same casework company for single responsibility.
1. Manufacturer will show evidence of a minimum of five (5) years' experience in providing manufactured casework systems for similar types of projects, produce evidence of financial stability, and adequate facilities and personnel required to perform this project.

B. Quality Standards: Unless otherwise indicated, comply with the following standards:
1. Work in this Section shall be performed by a firm certified by the Architectural Woodwork Institute (AWI) Quality Certification Program. Work in this section shall comply with the specified grades of work written herein and Sections 400 and 1600 of the 8th Edition of the Architectural Woodwork Institute Quality Standards.
2. Compliance shall be evidenced by the firm through the application of AWI Quality Certification labels on the work according to AWI/QCP labeling guidelines.

1.07 PRODUCT HANDLING

A. Deliver casework only after wet operations in building are complete.

B. Store completed casework in a ventilated place, protected from the weather, with relative humidity therein of 50-degrees or less at 70-degrees F.

C. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with polyethylene film or other protective covering.

1.08 WARRANTY

A. Manufactured laminate-clad casework products, including epoxy tops, to provide a 1-year Guarantee and Warranty to the Owner against defective material and workmanship. This is a warranty of replacement and repair only, whereby manufacturer will correct defects in material and/or workmanship without charge.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers. Subject to compliance with requirements, provide products by one of the following:
   1. Campbell Rhea
   2. TMI Systems Design Corporation
   3. Sheldon
   4. Stevens Industries / LSI
   5. Precision Millwork & Plastics

B. Equal products of other manufacturers will be acceptable of they are pre-qualified by the Architect 10 days prior to the bid date. Such approvals will be incorporated by Addendum.

2.02 PLASTIC LAMINATE CASEWORK

A. Definition of cabinet components by surface visibility. Reference to the following locations will be made in Section 2.03 when describing surface materials:

   1. Exposed Surfaces
      a. Surface visible when drawers and doors are closed.
      b. Portion of cabinets visible when fixed appliances are installed.

   2. Semi-Exposed Surfaces
      a. Surface visible when drawers and doors are open.
      b. Interior surfaces of open units.
      c. Bottoms of cabinets, 30-inches or more above floor.

d. Top of cabinets less than 78-inches above floor or when visible from an upper floor or staircase after installation.

3. Concealed Surfaces
   a. Surfaces not normally visible after installation.
   b. Bottoms of cabinets less than 30-inches above floor.
   c. Top of cabinets more than 78-inches above floor and not visible from above after installation.
   d. Stretchers. Blocking and/or components concealed by drawers.

B. Vertical Exterior Laminate: GP28 vertical surface grade, high pressure laminate for exposed cabinet and table frame surfaces. Color as selected from casework manufacturer's full range of colors from WilsonArt, Formica, Nevamar or Pionite.

1. Basis of Design manufacturer: Formica, Infiniti line.

C. Particleboard: Grade 1-M-3, 45-50 lb. density, 3/4-inch (except for 1-inch shelves).

D. Backing Sheet: White thermofused melamine cabinet liner for casework interior surfaces.

E. Plywood: Seven-ply, 3/4-inch veneer core plywood with cross and face plies bonded with Type II water resistant glue; drawers are nine-ply, 1/2-inch.

F. Glue: Laminating glue – Type II water resistant glue. Assembly glue – Type III glue.

G. Banding: PVC thickness for cabinet body edge to be 3-mm from manufacturer's standard color offering; door and drawer edges to have 3-mm. Edge banding shall be hardwood when wood veneers are selected. T-molding is not acceptable.

H. All casework shall be fabricated with balanced construction.

2.03 CASEWORK FABRICATION

A. General fabrication requirements:

1. Units shall be doweled and glue construction utilizing 8-mm (min.) diameter fluted hardwood dowels spaced at 96-mm o.c., providing rigid, self-supporting unit.
2. Apply edge banding with hot melt adhesive.
3. Unfinished cabinet ends to have balanced surfaces.
4. At all vertical filler strips in casework installed next to walls, provide filler panel at top and bottom of wall cabinets to close off any voids.

B. Base units, floor mounted and suspended:

1. Sub-top Panel / Frame: Full depth, 3/4-inch particleboard, banded front edge, balanced surfaces, fastened to both end panels, or hardwood top frame. None on sink units.

2. Bottom Panel, Floor Mounted Base Unit: 3/4-inch particleboard, banded front edge, balanced surfaces.
3. Bottom Panel, Suspended Base Unit: 1-inch particleboard, banded front edge, balanced surfaces.
4. End Panels: 3/4-inch particleboard, banded exposed edges, balanced surfaces for both exposed and unexposed panels, sufficient number of drilled holes for insertion of shelf clips where required.
5. Back Construction: 1/4-inch hardboard, fused melamine interior surface, captured at sub-top and bottom, one-piece behind cupboard units and two-piece behind drawers. Sink cabinets to have full-height back with removable panel. Suspended unit has 3/4-inch particleboard panel, doweled into ends, balanced surfaces of same color. Also acceptable back construction, 1/2" particleboard, onset design.
6. Drawer: Lock shoulder construction with sub-front, sides and back of 1/2-inch (12 mm) PVC clad particleboard. 6 mm hardboard bottom with white surface, grooved into drawer box and sealed with hot melt glue process around entire drawer bottom perimeter. Also acceptable drawer bottom, 1/2", hardboard, onset drawer bottom with bottom mounted drawer slide.
7. Drawer and Door Fronts: 3/4-inch particleboard core with vertical exterior laminate, 3 mm PVC banding, all edges.
8. Vertical Dividers Between Drawers: 1-1/2-inch panel product, banded front edge.
9. Security Panels (where locks are specified): 3/4-inch particleboard, edge band in front, balanced surfaces, full depth of cabinet.
10. Intermediate Front Rails (not used when security panels are used); 3/4-inch x 5-3/8-inch panel product, edge band in front, balanced surfaces on cabinets. All drawers units are 36-inches or more wide come standard with one intermediate front rail to act as spacer between panes.
11. Toe Base: Separate, veneer core plywood, factory attached (unless otherwise noted).
12. Knee Space Table Frame: 3/4-inch particleboard; 3/4-inch hardwood if drawer cutouts are included.

C. Wall and Upper Cases:

1. End Panels: 3/4-inch particleboard, banded exposed edges, balanced surfaces for both exposed and unexposed panels, sufficient number of drilled holes for insertion of shelf clips where required.
2. Top and Bottom Panel: 3/4-inch particleboard, banded front edge, balanced surfaces.
3. Back Construction: 1/4-inch hardboard, thermofused melamine interior, captured in top, bottom and side panels; 3/4-inch x 3-inch full width mounting cleat at top.

D. Countertops and Accessories:

1. Plastic Laminate Tops:

    a. Core: 1 inch, ANSI A208.1 – 1993, M-2 particleboard.
    b. Surface: HGS high pressure decorative laminate with balanced backer sheeting.
    c. Edges, including applied backsplash: High-pressure decorative laminate.

1. Rounded edges at all classrooms.

d. Provide countertops for base cabinets and counter sections, as shown on the Drawings.

e. Sealants: Fully bed and seal splashes to tops and other splashes with Dow Corning 786 mildew resistant, silicone, clear sealant.

E. Doors:

1. Solid Doors: 3/4-inch particleboard, 3 mm PVC banding all edges; balanced surfaces.

F. Shelves, for Base and Wall Cabinets:

1. Base cabinets are to have thermofused, melamine clad, 3/4-inch thick (unless otherwise noted) particleboard shelf, less than 34-inches wide, to match interior; provide 1-mm PVC banded front edge to match interior color, full depth. Provide 1-inch thick shelf for spans over 34-inches wide.
2. Wall and upper cases to have full depth shelves sized appropriately for the depth of the unit.

2.04 CASEWORK HARDWARE AND ACCESSORIES

A. Provide manufacturer's standard, satin finish (US26D) hardware units, unless otherwise indicated.

B. Hinges: Institutional type, 5-knuckle. Provide (1) pair for doors less than 4-feet high and (1-1/2) pairs for doors over 4-feet.

C. Pulls: Solid metal, 4-1/2-inch long for drawers and swings doors, mounted with (2) screws, fastened from back. Provide (2) pulls for drawers over 24-inches wide.

D. Door Catches: Nylon roller, spring catch. Provide (2) catches on doors over 4-feet high.

E. Metal Drawer Slides: Slides shall be heavy duty, full extension, side mounted type, 75-pound capacity, zinc plated steel, equipped with heavy duty, ball bearing nylon wheel. Provide 100-pound capacity at file drawers.

F. Drawer and Cabinet Door Locks:

1. Provide at <u>all</u> drawers and doors.
2. Locks to be CompX National (or equal), Lock Number M3-3713-301, pin tumbler, box lock.
3. Furnish (24) keys for the full project .
4. Key all cabinets and drawers within the project the same.

G. Resilient Base: Furnished and installed under Division 09.

H. Adjustable Shelf Supports: BHMA B84072, wrought steel, mortise mounted.

PART 3 EXECUTION

3.01 CASEWORK INSTALLATION

A. Install wall track/lock rail system plumb, level, true and straight with no distortions. Shim as required, using concealed shims.

B. When hanging casework on wall track/lock rail system, adjust as necessary so that installation remains plumb, level, true, and straight with no distortions. Where casework abuts other finished work, scribe and apply filler strips for accurate fit with fasteners concealed where practicable.
   1. A third/intermediate rail will be required on any cabinets taller than 56 inches.

C. Base Cabinets: Set cabinets straight, plumb and level. Adjust sub-tops within 1/16-inch of single plane. Fasten each individual cabinet to wall track/lock rail system. Fasten continuous cabinets together.

   1. Do not attach casework directly to walls.
   2. Where required, assemble units into (1) integral unit with joints flush, tight and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16-inch.

D. Wall Cabinets: Securely fasten to wall track/lock rail system, not to wall. Anchor, adjust and align wall cabinets as necessary and attach together for straight lines.
   1. Do not attach casework directly to walls.

E. Adjust casework and hardware so that doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.02 INSTALLATION OF TOPS

A. Field jointing: Where practicable, make in same manner as factory jointing, using dowels, splines, adhesives and fasteners as recommended by manufacturer. Locate field joints as shown on accepted shop drawings, factory prepared so there is no job site processing of top and edge surfaces.

B. Fastenings: Use concealed clamping devices for field joints located within 6-inches of front and at back edges, and at intervals not exceeding 24-inches. Tighten in accordance with manufacturer's instructions to exert a constant, heavy clamping pressure at joints. Secure tops to cabinets with "z"-type fasteners or equivalent, using (2) or more fasteners at each front, end and back.

   1. For plastic laminate tops, anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop. Apply sealant to space between backsplash and wall or countertop with sealant specified in Division 07 Section "Joint Sealants".

C. Workmanship: Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints to top units using clamping devices.

D. After installation, carefully dress joints smooth, remove any surface scratches, clean and polish entire surface.

E. Provide holes and cutouts as required for mechanical and electrical service fixtures.

F. Provide scribe moldings for closures at junctures of top, curb and splash with walls as recommended by manufacturer for material involved. Use chemical resistant, permanently elastic sealing compound where recommended by manufacturer.

3.03 INSTALLATION OF ACCESSORIES

A. Install in a precise manner in accordance with manufacturer's directions. Turn screws to a flat seat; do not drive. Adjust moving parts to operate freely without excessive bind.

3.04 CLEANING AND PROTECTION

A. Repair or remove and replace defective work as directed upon completion of installation.

B. Clean shop-finished surfaces, touch-up as required and remove or refinish damaged or soiled areas, as acceptable to the Architect. Wipe down all cabinets and drawers inside and out to remove dust, construction debris and layout marks.

C. Protection: Advise Contractor of procedures and precautions for protection of materials and installed casework from damage by work of other trades.

END OF SECTION 12 32 00

SECTION 08 71 00 – DOOR HARDWARE

Part 1 General

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Commercial door hardware for the following swinging doors:
   a. Aluminum.
   b. Hollow metal.
   c. Flush wood.
2. **Electrified access control door hardware. See Door Hardware Schedule and Door-Set Numbering Index (this Section) for hardware sets prefixed with "E". See electrical specifications for additional electrical work and materials required.**
3. **Low-energy ADA automatic door operators requiring electrical work and materials, and installation by AAADM certified installer.**

B. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. KENTUCKY BUILDING CODE.

1.3 SUBMITTALS

A. Number of Submittals: All items listed in this section are to be included in one submittal prepared by one Supplier.

B. Product Data: Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Samples for Initial Selection: For each finish, color, and texture required for each type of door hardware as requested by Architect.

D. Qualification Data:

1. Finish Hardware Installers

a. Finish hardware, including electrified hardware, for wood, hollow metal, and aluminum doors to be installed by personnel trained and certified by the manufacturer of the product furnished.
b. Provide manufacturer's certificates for installer as part of Contractor's bid information. Failure to supply certificates may result in rejection of bid.

2. Hardware Supplier
   a. Established contract hardware firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the lock being furnished.
   b. Hardware scheduled and furnished by or under direct supervision an Architectural Hardware Consultant.
   c. All schedules submitted to the Architect for approval and job use must carry the signature and certified seal of this Architectural Hardware Consultant.
3. Architectural Hardware Consultant
   a. Currently certified by the Door and Hardware Institute.
   b. Full-time employee of the Hardware Supplier or an individual having no contractual ties to any supplier/manufacturer entity.
   c. Available at reasonable times to Architect, Owner, and Contractor during course of work.
4. Automatic Door Operator Supplier
   a. Established automatic operator distribution and installation firm which maintains and operates an office, display, and stock in project area and which is a factory authorized distributor of the automatic operator being furnished.
   b. Currently certified by AAADM to install both high and low energy automatic door operators.
   c. All schedules submitted to the Architect for approval and job use must include copies of the distributors factory authorization to distribute and install their operators and AAADM certification to install both high and low energy automatic door operators.

E. Maintenance Data: For each type of door hardware. Include final hardware schedule, keying schedule, riser diagrams, and point-to-point wiring diagrams in 3-ring binder, labeled on spine with project name and "Door Hardware".

F. Warranty: Special warranty specified in this Section.

G. Other Action Submittals:

1. Door Hardware Sets: Prepared by or under the supervision of a DHI certified Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

   a. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule"; other formats will be rejected without review. Double space entries, and number and date each page.

b. Numerical Sequence of Sets and Headings: Submittal headings shall be in exact order as hardware sets in specification: one heading only per set. Submittal set numbers shall relate to specification set numbers, ie. if three headings are required for Set 12 due to door width differences, then the heading numbers should be 12.1, 12.2, and 12.3 or employing similar linking logic.

c. Door Numbers: Identical to those used in the contract documents.

d. Content: Include the following information:

1) Identification number, location, hand, fire rating, and material of each door and frame.
2) Type, style, function, size, quantity, and finish of each door hardware item.
3) Complete designations of every item required for each door or opening including name and manufacturer.
4) Degree of opening for closer and overhead stop and holder installation.
5) Keying information.
6) Fastenings and other pertinent information.
7) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
8) Explanation of abbreviations, symbols, and codes contained in schedule.
9) Mounting locations for door hardware.
10) Notes included with specification hardware sets <u>transcribed verbatim</u> into submittal hardware sets.
11) Door and frame sizes and materials.
12) List of related door devices specified in other Sections for each door and frame.

e. Submittal Sequence: Submit the final door hardware sets at earliest possible date, particularly where approval of the door hardware sets must precede fabrication of other work that is critical in Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the door hardware sets.

f. Door Hardware will not be approved/released until all electronic schematics are also submitted for approval. Coordination of hardware with wiring schematics will be critical and hardware approval will not precede confirmation that the systems will perform as designed.

2. Keying Schedule: Prepared by or under the supervision of Architectural Hardware Consultant, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 QUALITY ASSURANCE

A. Furnish proper hardware types and quantities for door function, hardware mounting and clearances, and to meet applicable codes. Bring discrepancies to the attention of the Architect a minimum of (10) days prior to bid date so that an addendum may be issued. No

additional compensation will be allowed after bidding for hardware changes required for proper function, hardware mounting or clearances, or to meet codes.

B. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

C. Source Limitations: **All items listed in hardware sets are to be furnished by one supplier**. Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.

D. Regulatory Requirements: Comply with NFPA 70, NFPA 80, NFPA 101 and ANSI A117.1 requirements and guidelines as directed in the model building code including, but not limited to, the following:

1. NFPA 70 "National Electrical Code", including electrical components, devices, and accessories listed and labeled as defined in Article 100 by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
2. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1 as follows:
    a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    b. Door Closers: Comply with the following maximum opening-force requirements indicated:
        1) Interior Hinged Doors: 5 lbfapplied perpendicular to door.
        2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
    c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
3. NFPA 101: Comply with the following for means of egress doors:
    a. Latches, Locks, and Exit Devices: Not more than 15 lbfto release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
    b. Thresholds: Not more than 1/2 inchhigh.
4. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 (neutral pressure at 40" above sill) or UL-10C.
    a. Test Pressure: Positive pressure labeling.

E. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

F. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

G. Access Control Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Conference is to include representatives of the Owner, Architect, Contractor, CM if applicable, and Access Control (or Security) Supplier. Access control conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future access control system expansion.
3. Requirements for access control storage of credentials and software.
4. Assignment and distribution of permanent access control credentials, badging equipment, and software.
5. Access control privilege assignments including doors, time schedules, users, user groups, special credential functions, etc.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Deliver hardware for aluminum doors to GC in timely manner so as not to delay fabrication of aluminum doors and frames. Balance of hardware may be delivered to GC at same time, packaged separately from aluminum door hardware, and may be billed as stored materials.

C. Tag each item or package separately with identification related to the final door hardware sets, and include basic installation instructions, templates, and necessary fasteners with each item or package.

D. Deliver keys to Owner by registered mail or overnight package service. Obtain Owner's contact name and address from Architect.

1.6 COORDINATION

A. Templates: Distribute door hardware templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Distribute templates in a timely manner so as not to delay suppliers. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices, access control system, and security system.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Seven years for heavy duty cylindrical (bored) locks and latches.
3. Five years for standard duty cylindrical (bored) locks and latches.
4. Five years for exit hardware.
5. Ten years for manual door closers.
6. Two years for electromechanical door hardware.
7. Five years for motorized electric latch retraction exit devices.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide (6) months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door hardware operation. Provide parts and supplies same as those used in the manufacture and installation of original products.

1.9 EXTRA MATERIALS

A. Furnish full-size units of door hardware described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hardware:
    a. (2) closer bodies
    b. (1) classroom security lockset
    c. (1) storeroom lockset
    d. (1) office lockset
    e. (1) mortise dormitory lockset w/indicator
    f. (5) permanent key cylinder cores
    g. (2) rim panic device with cylinder dogging, less trim

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this and door hardware sets indicated in Part 3 "Door Hardware Sets" Article.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.

B. Designations: Requirements for design, grade, function, material, finish, size and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
2. References to BHMA Standards: In addition to other requirements in this section, provide products complying with or exceeding these standards and requirements for description, quality, and function.

C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electrified access control door hardware, in compliance with specifications, must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01 "Substitution Procedures". Approval of requests is at the discretion of the architect, owner, and their designated consultants.

D. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.2 BUTT HINGES, GENERAL

A. Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to 60 inches.
2. Three Hinges: For doors with heights 61 to 90 inches.
3. Four Hinges: For doors with heights 91 to 120 inches.
4. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

B. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Hinge Height, Width, and Weight: Unless otherwise indicated, provide the following:

1. Doors with Exit Devices or 3’6” or more in width: 5” high, heavy-weight hinges.
2. Doors less than 3’6” in width: 4-1/2” high, standard-weight hinges.
3. Width: 4-1/2” heavy-weight, 4" standard-weight, unless proper clearance requires a different width.
4. Doors with Closers: Antifriction-bearing hinges.

D. Hinge Base Metal: Unless otherwise indicated, provide the following:

1. Exterior and in-swinging restroom door hinges: Stainless steel, with stainless-steel pin.
2. Balance of hinges: Steel, with steel pin.

E. Hinge Options: Provide the following:

1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for reverse bevel lockable doors.
2. Corners: Square.
3. Number of knuckles: Three.

F. Fasteners: Comply with the following:

1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
2. Wood Screws: For wood doors and frames.
3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
4. Screws: Phillips flat-head. Finish screw heads to match surface of hinges.

G. Template Hinge Dimensions: BHMA A156.7.

H. Available Manufacturers:

1. Bommer Industries, Inc. (BI).
2. Hager Companies (HAG).
3. McKinney Products Company; an ASSA ABLOY Group company (MCK).

4. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
5. PBB, Inc. (PBB)

2.3 CONTINUOUS HINGES

A. Provide hinge of general series as indicated in hardware sets and of proper shape and model to suit door and frame configuration.

B. Continuous, Pinless-Type Hinges: Extruded-aluminum, pinless, hinge leaves; with concealed, self-lubricating thrust bearings.

1. Available Manufacturers:

a. Hager Companies (HAG).
b. IVES Hardware; an Ingersoll-Rand Company (IVS).
c. McKinney Products Company; an ASSA ABLOY Group company (MCK).
d. Architectural Builders Hardware (ABH).
e. Pemko Manufacturing Co. (PEM).
f. Select Products Limited (SPL).
g. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
h. Zero International (ZRO).

2.4 ELECTRONIC ACCESSORIES

A. Exit Device Electronics Kits

1. Types:

a. Motorized electric retraction, warranted for use with filtered regulated power supplies by other manufacturers.
b. Touchbar (request to exit) monitor contacts.
c. Latch position monitor contacts.

2. Acceptable Manufacturers:

a. Security Door Controls (SDC).
b. Architectural Control Systems (ACS).

B. Electronic Power Transfers:

1. Concealed: For new doors and frames, concealed when door is closed. All metal construction, cast housing with steel backboxes, two universal joints and rigid tubing. Acceptable Manufacturers:

a. Security Door Controls (SDC).
b. Securitron Door Controls (SEC).
c. Architectural Builders Hardware (ABH).
d. Hager (HAG).
e. Von Duprin (VON).

2.5 LOCKS AND LATCHES, GENERAL

A. Accessibility Requirements: Where indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.

B. Latches and Locks for Means of Egress Doors: Comply with NFPA 101. Latches shall not require more than 15 lbf to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

C. Electrified Locking Devices: BHMA A156.25. Equal in all characteristics to model specified.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
e. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

D. Lock Trim:

1. Levers: Cast.
   a. Best 14 model with full smooth return.
2. Roses: Forged.
   a. Best C model.
3. Lockset Designs: Provide design indicated in hardware sets, or, if sets are provided by another manufacturer, provide designs that match those designated.

E. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Bored Locks: Minimum 1/2-inch latchbolt throw.
2. Mortise Locks: Minimum 3/4-inch latchbolt throw.
3. Deadbolts: Minimum 1-inch bolt throw.

F. Backset: 2-3/4 inches, unless otherwise indicated.

G. Strikes: Manufacturer's standard strike with strike box for each latchbolt or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, and as follows:

1. Strikes for Bored Locks and Latches: BHMA A156.2.
2. Strikes for Mortise Locks and Latches: BHMA A156.13.
3. Strikes for Auxiliary Deadlocks: BHMA A156.5.

2.6 MECHANICAL LOCKS AND LATCHES

A. Lock Types: Provide mortise or bored locks as indicated by model number in the Hardware Schedule.

B. Lock Functions: Function numbers and descriptions indicated in door hardware sets comply with the following:

1. Bored Locks: BHMA A156.2.
2. Mortise Locks: BHMA A156.13.

C. Bored Locks: BHMA A156.2 Grade 1.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).

D. Mortise Locks: Stamped steel case with steel or brass parts; BHMA A156.13 Grade 1.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).

E. Compatibility with Key Cylinders: fully warranted for use with key cylinder furnished.

2.7 AUXILIARY LOCKS AND LATCHES

A. Auxiliary Locks: BHMA A156.5, Grade 1.

1. Available Manufacturers:

a. Best Access Systems; Div. of The Stanley Works (BAS).
b. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
d. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).

2.8 DOOR BOLTS

A. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Surface Bolts: Minimum 1-1/8-inch throw.
2. Mortise Flush Bolts: Minimum 3/4-inch throw.

B. Surface Bolts: BHMA A156.16, Grade 1.

1. Flush Bolt Heads: Minimum of 1/4-inch-(6mm) x 1/2-inch- bolts of stainless steel with minimum 12-inch- long rod for doors up to 84 inches in height. Provide longer rods as necessary for doors exceeding 84 inches.
2. Available Manufacturers:

    a. Door Controls International (DCI).
    b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
    c. Hager Companies (HAG).
    d. IVES Hardware; an Ingersoll-Rand Company (IVS).
    e. McKinney Products Company; an ASSA ABLOY Group company (MCK).
    f. Rockwood Manufacturing Company (RM).
    g. Trimco (TBM).

C. Manual Flush Bolts: BHMA A156.16, Grade 1; designed for mortising into door edge.

1. Available Manufacturers:

    a. Door Controls International (DCI).
    b. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
    c. Hager Companies (HAG).
    d. IVES Hardware; an Ingersoll-Rand Company (IVS).
    e. McKinney Products Company; an ASSA ABLOY Group company (MCK).
    f. Rockwood Manufacturing Company (RM).
    g. Trimco (TBM).

D. Automatic and Self-Latching Flush Bolts: BHMA A156.3, Grade 1; designed for mortising into door edge.

1. Available Manufacturers:

    a. Door Controls International (DCI).
    b. Hager Companies (HAG).
    c. IVES Hardware; an Ingersoll-Rand Company (IVS).
    d. Rockwood Manufacturing Company (RM).
    e. Trimco (TBM).

2.9 EXIT DEVICES

A. Exit Devices: BHMA A156.3, Grade 1.

B. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.

C. Exit Devices for Means of Egress Doors: Comply with NFPA 101. Exit devices shall not require more than 15 lbf to release the latch. Locks shall not require use of a key, tool, or special knowledge for operation.

D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

E. Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

F. Removable Mullions

1. BHMA A156.3.
2. Key removable.
3. Provide head cap spacers, angle brackets, and other mounting accessories as needed for proper mounting, and anchoring and support of screws, as needed for top jamb configuration.
4. Provide mullion stabilizer sets for mullions at exterior openings.

G. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.

1. Operation: Rigid.

H. Outside Trim: As specified in hardware sets; material and finish to match locksets, unless otherwise indicated.

1. Match design for locksets and latchsets, unless otherwise indicated.

I. Fasteners. Manufacturer's standard, except furnish sex bolts for attachments to doors.

J. Shims: Provide shims if needed for clearance.

K. Available Manufacturers:

1. Detex, Inc. (DTX)
2. Precision Hardware, Inc. (PH).
3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Von Duprin; an Ingersoll-Rand Company (VD).

2.10 KEY CYLINDERS AND CYLINDER HOUSINGS

A. Permanent Cores: Best Cormax; furnished by Contract Hardware Supplier; shipped directly from factory to Owner; installed by Owner.

B. Key Cylinder Housings: Provide key cylinder housings for all locking devices and items requiring a key cylinder to properly function. Housings must be compatible and warranted for use with Best key cylinders of keyway and number of pins as directed by Owner.

C. Construction Keying: Comply with the following:

1. Construction Cores: Provide keyed brass construction cores that are replaceable by permanent cores for exterior doors plus six extra. Provide 6 construction master keys.

a. Remove construction cores as directed by Owner.

D. Manufacturer of Housings: Same manufacturer as for locks and latches.

E. Available Manufacturers for Cylinder Housings:

1. Best Access Systems; Div. of The Stanley Works (BAS).
2. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company (CR).
3. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).
4. Schlage Commercial Lock Division; an Ingersoll-Rand Company (SCH).
5. Yale Commercial Locks and Hardware; an ASSA ABLOY Group company (YAL).

2.11 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference, and as follows:

1. Existing System: Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

a. Notation: "DO NOT DUPLICATE."

2. Quantity: Provide the following:

a. Cylinder Change Keys: Three per cylinder.
b. Master Keys: Six per master.
c. Grand Master Keys: Six.
d. Great-Grand Master Keys: Five.
e. Control Keys: Two.
f. Construction Control Keys: Two.
g. Blanks: One hundred.

2.12 OPERATING TRIM

A. Materials: Fabricate from stainless steel, unless otherwise indicated.

B. Dimensions: All dimensions, shapes, fasteners, and other properties identical to models specified in hardware sets.

C. Push Plates:

1. 0.125" thick, Type 304 solid stainless steel, 4" or 8" wide as indicated by model number in hardware sets, 16" high (unless stile width requires different width), heavy bevel all (4) edges, 3/8" radius rounded corners, factory prepped for key cylinders and thumb-turns as required.
2. Dimensions:
    a. Top of plate to horizontal centerline of key cylinder: 5".
    b. Horizontal centerline of key cylinder to horizontal centerline of thumb-turn: as required per dimension of lock model.
    c. Lock-side edge of plate to vertical centerline of key cylinder: 2".

D. Pull Plates:

1. Plate: 0.050" thick, 4" wide x 16" high (unless stile width requires different width), bevel all (4) edges, 3/8" radius rounded corners, factory prepped for key cylinders and thumb-turns as required.
2. Grip: 1" wide, 8" CTC, Type 304 solid stainless steel, half-moon profile.
3. Dimensions:
    a. Top of plate to horizontal centerline of key cylinder: 2".
    b. Horizontal centerline of key cylinder to horizontal centerline of thumb-turn: as required per dimension of lock model.
    c. Edge of plate to vertical centerline of key cylinder and grip: 2".
    d. Top of plate to horizontal centerline of grip: 10".

E. Available Manufacturers:

1. Hager Companies (HAG).
2. Hiawatha (HIW).
3. Burns (BRN).
4. IVES Hardware; an Ingersoll-Rand Company (IVS).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.13 ACCESSORIES FOR PAIRS OF DOORS

A. Coordinators: BHMA A156.3.

1. Available Manufacturers:

    a. Door Controls International (DCI).
    b. Hager Companies (HAG).
    c. IVES Hardware; an Ingersoll-Rand Company (IVS).
    d. Rockwood Manufacturing Company (RM).
    e. Trimco (TBM).

2.14 SURFACE CLOSERS

A. Accessibility Requirements: Where handles, pulls, latches, locks, and other operating devices are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

1. Comply with the following maximum opening-force requirements:

    a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
    b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

B. Door Closers for Means of Egress Doors: Comply with NFPA 101. Door closers shall not require more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.

C. Fasteners: Manufacturer’s standard for arms, shoes and brackets. Sex bolts for fastening closers to doors.

D. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of closers and arms to door and frame.

E. Spring Size of Units: Provide field-sizable closers, adjustable for spring sizes 1-6, plus 50% extra spring power at spring size 6, to meet field conditions and requirements for opening force.

F. Cylinders: 1-1/2" minimum diameter; cast iron or high-silicon alloy aluminum.

G. Mounting Configuration: Unless otherwise indicated by model number in the hardware sets:

1. Do not furnish closers capable of being mounted on the corridor side of doors.
2. Do not furnish regular arm closers in areas accessible to students.
3. If tri-pack closers are furnished for regular arm applications, remove parallel arm shoe from closer box before delivering to job.
4. Parallel Arm closers are to be manufacturer's double forged rigid models.

H. Available Manufacturers and Series for Cam and Roller Surface Closers:

1. Dorma (DOR); TS9315 series.
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT): 421-CT series.
3. Norton Door Controls; an ASSA ABLOY Group company (NOR): 2800ST series.
4. Corbin-Russwin: DC5200 series.

I. Available Manufacturers and Series for Rack and Pinion Surface Closers:

1. LCN Closers; an Ingersoll-Rand Company (LCN): 4040XP series.
2. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT): 281 or 351 series.

3. Stanley Commercial Hardware; Div. of The Stanley Works (STH): D4550 series.
4. Corbin-Russwin: DC8000 series.

2.15 AUTOMATIC DOOR OPERATORS

A. Standard: Set up operator to comply with Low Energy BHMA A156.19 standard. Operator shall also be capable of complying with High Energy BHMA A156.10 standard with no additional equipment required other than safety sensors.

B. Performance Requirements:

1. Not more than 15 lbf1 inch from latch edge of door to prevent stopped door from opening or closing.
2. If power fails, not more than 30 lbf1 inch from latch edge of door to manually set door in motion.
3. **Warranted for use on out-swinging exterior doors with the use of a supplemental stop.**

C. Operation: Power opening and spring closing; **power closing to get door latched when encountering resistance**. When not in automatic mode, door operator shall function as manual door closer, with or without electrical power.

D. Operating System: Electromechanical.

E. Microprocessor Control Unit: Solid-state controls.

F. Features:

1. Adjustable opening and closing speed.
2. Adjustable opening and closing force.
3. Adjustable backcheck.
4. Adjustable latch speed.
5. Adjustable hold-open time of not less than 0 to 30 seconds.
6. Adjustable time delay.
7. Adjustable acceleration.
8. Obstruction recycle.
9. **Provide lock interface relay when not specified as part of locking device power supply.**

G. Mounting: Surface mounted to top jamb.

H. Mounting Accessories: Provide shoes, brackets, drop plates, spacers, etc., as needed for proper mounting of operators and arms to door and frame.

I. Bollards:

1. Of material, size, configuration and shape indicated.
2. Material: Stainless steel.
3. Available Manufacturers for Bollards:

a. Wikk Industries.

J. Actuators:

1. Wall Push-Plate Switch: Semiflush, wall-mounted, door control switch; of material, size, and shape indicated; mounted in recessed junction box. Provide engraved message as indicated.
2. Material: Stainless steel.
3. Message: International symbol of accessibility and "Push to Open."
4. Available Manufacturers for Actuators:

a. BEA (BEA).
b. Wikk Industries.

K. Automatic Door Operator Signage:

1. Comply with BHMA A156.19.
2. Consult Architect before applying signage to door.

L. Available manufacturers for Automatic Door Operators:

1. Dorma; ED400 series. (DRM).
2. LCN Closers; an Ingersoll-Rand Company (LCN); Senior Swing series.
3. Stanley Commercial Hardware; Div. of The Stanley Works (STH); Magic Force series.
4. Besam SW200i.

2.16 PROTECTIVE TRIM UNITS

A. Size:
1. Width
a. Singles, and pairs with removable mullions or surface applied astragals: 2 inches less than door width on push side and 1 inch less than door width on pull side
b. Other pairs: 1 inch less than door width
2. Height: as specified in door hardware sets; or, if constrained by door bottom rail height, 1" less bottom rail height.

B. Fasteners: Manufacturer's machine or self-tapping countersunk screws.

C. Metal Protective Trim Units: BHMA A156.6; beveled 4 sides; fabricated from 0.050-inch- thick stainless steel.

D. Available Manufacturers:

1. Hager Companies (HAG).
2. IVES Hardware; an Ingersoll-Rand Company (IVS).
3. Hiawatha (HIW).
4. Burns (BRN).
5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.17 MECHANICAL WALL AND FLOOR STOPS AND HOLDERS

A. Stops and Bumpers: BHMA A156.16, Grade 1.

1. Provide wall stops for doors unless floor, overhead, or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Provide floor stops (and spacers if needed) of proper height and configuration to accommodate floor condition. Where floor or wall stops are not appropriate, provide overhead holders.
2. Properties. Cast construction with fastener suitable for wall or floor condition.
3. Available Manufacturers:
    a. Hager Companies (HAG).
    b. IVES Hardware; an Ingersoll-Rand Company (IVS).
    c. Hiawatha (HIW).
    d. Burns (BRN).
    e. Rockwood Manufacturing Company (RM).
    f. Trimco (TBM).

B. Wall and Floor mounted Combination Door Stops and Holders: BHMA A156.16, Grade 1.

1. Properties: Heavy cast with adjustable holding force, self-compensating for changes up to ¼" in vertical door position. **Provide flush spacers finished to match adjoining substrates for clearance as needed.**
2. Manufacturer and Model: Trimco 1283.

2.18 OVERHEAD STOPS AND HOLDERS

A. BHMA A156.8, Grade 1. Template for maximum degree of opening before encountering obstruction.

B. Available Manufacturers:

1. Architectural Builders Hardware Mfg., Inc. (ABH).
2. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
3. Hager (HAG).
4. Rixson Specialty Door Controls; an ASSA ABLOY Group company (RIX).
5. SARGENT Manufacturing Company; an ASSA ABLOY Group company (SGT).

2.19 SILENCERS

A. Provide silencers for Metal Door Frames: BHMA A156.16, Grade 1; neoprene or rubber, minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

B. Available Manufacturers:

1. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
2. Hager Companies (HAG).
3. IVES Hardware; an Ingersoll-Rand Company (IVS).
4. McKinney Products Company; an ASSA ABLOY Group company (MCK).

5. Rockwood Manufacturing Company (RM).
6. Trimco (TBM).

2.20 DOOR GASKETING

A. General: Provide continuous weather-strip gasketing on exterior hollow metal doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners as indicated by models in hardware sets.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame. If hardware is to be attached to the frame and would interfere with the gasketing, then provide hardware compatible gasketing that does not need to be cut for the mounting of hardware.
2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
3. Mullion Gasketing: Fasten to mullions, forming seal when doors are closed.
4. Sweeps: Apply to bottom of in-swinging exterior hollow metal doors, or as required for sound attenuation, forming seal with threshold or floor when door is closed.
5. Seals integral to threshold at out-swinging exterior hollow metal doors.

B. Requirements per type of rated door provided (these requirements supersede models indicated in hardware sets):

1. Category A wood doors: provide models indicated in hardware sets.
2. Category B wood doors: provide Category G&H seals at jambs and meeting edges. If Category H seals are indicated in hardware sets, provide Cat G seals in addition to the Category H seals.
3. Category A and B hollow metal doors: provide models indicated in hardware sets.

C. Air Leakage: Not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.

D. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke-control ratings indicated, based on testing according to UL 1784.

1. Provide smoke-labeled gasketing on 20-minute-rated doors and on smoke-labeled doors.

E. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 or UBC Standard 7-2.

1. Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches or less above the sill.

F. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.

G. Mullion Gasketing: Sealing up to 1/4" gaps, 4 vanes, adhesive backed, collapsible to 1/32", black. Basis of Design: DHSI (DHS) Model MS-SA/75 x BK.

H. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

I. Jamb Gasketing Materials:
   1. Adhesive Seals. As specified in hardware sets or approved equal.
   2. Intumescents: As required.
   3. Screwed-on weatherstrip and sweeps. Neoprene.
   4. Panic type thresholds. Neoprene.

J. Available Manufacturers for Jamb Gaskets (provided they provide items with neoprene inserts):

   1. Hager Companies (HAG).
   2. National Guard Products (NGP).
   3. Pemko Manufacturing Co. (PEM).
   4. Reese Enterprises (REE).
   5. Zero International (ZER).

2.21 THRESHOLDS

A. Standard: BHMA A156.21

B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)."

   1. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.

C. Thresholds for Means of Egress Doors: Comply with NFPA 101. Maximum 1/2 inch high.

D. Fasteners: ¼-20 machine screws and expansion anchors.

E. Gasketing material: At panic-type thresholds: neoprene.

F. Available Manufacturers (provided they provide items with neoprene inserts):

   1. Hager Companies (HAG).
   2. National Guard Products (NGP).
   3. Pemko Manufacturing Co. (PEM).
   4. Reese Enterprises (RE).
   5. Zero International (ZRO).

2.22 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

C. Fasteners: Manufacturer's standard, except as noted in product sections of this specification.

2.23 FINISHES

A. Standard: BHMA A156.18, as indicated in door hardware sets.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

3.3 INSTALLATION

A. Low-energy Automatic Door Operators:

1. Installer is to have current AAADM certification to install automatic door operators and actuating systems.

B. Mounting Heights: Mount door hardware units at heights indicated as follows unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Pulls: locate pulls as directed by Architect.
4. Push Plates: Top edge of plate: 53"AFF.
5. Pull Plates: Top edge of plate: 50" AFF. Centerline of Grip: 40" AFF.
6. Key Cylinders for Auxiliary Deadbolts: 48" AFF.

C. Mounting Locations:

1. Floor Stops and Holders: Locate at least 20" out from hinge edge of door for maximum degree of opening before door encounters obstruction.
2. Wall Stops: Locate so that lockset spindle and wall stop share horizontal and vertical centerlines.
3. Wall Stop/Holders: Locate 4" down and in from top lock-edge corner of door w/holder slot at bottom of unit.
4. **Closers and Overhead Stop/Holders: Template and mount closers and overhead stops for maximum degree of opening before door encounters obstruction or so as to interface with specified wall stops and holders. When used with closers, template and locate overhead stops so that closer arm does not fully extend and bottom out. These functionality requirements override any degree of opening information in the specifications or submittals.**

D. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

E. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule. Document cross-indexing per manufacturer's instructions.

F. Weatherstrip and Gasketing with Metal Retainers: Fit up as needed for neat appearance with no gaps between retainers or bulbs. Do not cut seals for the installation of hardware; mount hardware directly to the seals.

G. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants." **Position for complete seal with bottom of doors with no penetration of air or daylight.**

3.4 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

B. Overhead Stops/Holders: Set adjustable stops for maximum degree of opening before door encounters obstruction. Adjust friction to control door.

C. Wall and Floor Mounted Stop/Holders: Adjust holding force with spanner head wrench so that door is held securely, yet is easy to pull out of hold open.

D. Door Closers:

1. Unless otherwise required by authorities having jurisdiction, adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
2. Adjust latch period so that door does not slam nor injure fingers.
3. **Adjust spring power for minimum force required so that door properly and reliably latches. It is recommended that all closers be adjusted to a Spring Size 1 (either at the factory or at the facility of the Contract Hardware Supplier) prior to delivery to job; they can then be adjusted up to meet requirements. ADA maximum force to open a non-rated interior doors is 5 lbf; 8.5lbf for an exterior non-rated door. Installer is required to adjust spring power on every closer during installation using a door force gage. If ADA requirements cannot be met due to door-frame-hardware clearance issues of HVAC issues, bring to Contractors attention to resolve problem.**
4. Adjust backcheck to slow door down before hitting stop point so as to prevent damage to closer, arm, door, frame, and fasteners.

E. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer shall examine and readjust, including adjusting operating forces, each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DOOR HARDWARE SCHEDULE (on following pages followed by Door-Set Index)

Note 1: See Part 2 Door Gasketing for requirements regarding Category G and Category H seals per type of rated door provided.

Note 2: Hardware Sets with electrified door hardware of any kind are prefixed with the letter "E" to aid in reference. Sets not prefixed with "E" do not have any electrified door hardware. See electrical specifications for additional information.

Hardware Set E01

(1)	Continuous Hinge	SL11HD	628	SEL
(1)	NS Panic Device, Rim, 03	2403LD	630	STA
(1)	Rim Cylinder	IE72	626	STA
(1)	Offset Pull	7191-2 x N-MD Mtg	630	TRI
(1)	Closer, w/Spring Stop	D-4550 CS x P45HD-110 x P45HD-112	689	STA
(1)	Automatic Door Operator	Magic Force x BR3 Lock Interface Relay	689	STA
(1)	HW Oprtr Actuator, S-Gng, Sq	4X4-3WR	630	WIK
	Note: Mount on exterior wall as directed by Architect.			
(1)	HW Operator Actuator, Jamb Mnt			
(1)	Panic Threshold	896N x RCE	628	NGP
(1)	Cardreader (single-gang, see Electrical Specifications)			

Note 1: Jamb seals by door supplier.

Hardware Set 02

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Thumb-turn Deadbolt	48H7K-S1	626	STA
(1)	Push Plate	1809-4 x RC x CFT	630	TRI
	Note: See Parts II and III for push and pull plate dimensions and mounting locations.			
(1)	Pull Plate	1014-3B x RC x CFC	630	TRI
	Note: See Parts II and III for push and pull plate dimensions and mounting locations.			
(1)	Closer, HD Parallel Arm	D-4550 EDA	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 03

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Privacy Set w/Indicator	45H0L-14H x VIT	626	STA

(1)	Closer, Regular Arm	D-4550 Regular Arm	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 04

(3)	Butt Hinges	LB8002-454	630	BOM
(1)	Dormitory Lock w/Indicator	45H7T-14H x VIT	626	STA
(1)	Closer, w/Stop	D-4550 S	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Mop Plate	KM050 4 x 1LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 05

(2)	Butt Hinges	LB8000-454	652	BOM
(1)	Passage Set	93K0N-S3	626	STA
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 06

(6)	Butt Hinges	LB8000-454	652	BOM
(1)	Classroom Deadbolt	48H7R-S1	626	STA
(1)	Manual Flush Bolt	3917-12	626	TRI
(1)	Manual Flush Bolt	3917-24 (top)	626	TRI
(2)	Roller Latch	1554 (mount top jamb)	626	TRI
(2)	Closet Pull, 6"CTC, 1/2"D	1150 x E Mtg	630	TRI
(2)	Overhead Stop, MD, Surface	450F	630	GLY

Hardware Set 07

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Storeroom Lock	93K7D-14C-S3	626	STA
(1)	Closer, Regular Arm	D-4550 Regular Arm	689	STA
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 07A

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Storeroom Lock	93K7D-14C-S3	626	STA
(1)	Closer, w/Stop	D-4550 S	689	STA
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 07B

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Storeroom Lock	93K7D-14C-S3	626	STA
(1)	Closer, Regular Arm	D-4550 Regular Arm	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 08

(3)	Butt Hinges	LB8000-454	652	BOM

(1)	Office Lock	93K7AB-14C-S3	626	STA
(1)	Closer, Regular Arm	D-4550 Regular Arm	689	STA
(1)	Wall Stop/Holder	1283-6S	626	TRI

Hardware Set 09

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Passage Set	93K0N-S3	626	STA
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 10

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Passage Set	93K0N-S3	626	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Mop Plate	KM050 4 x 1LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 10A

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Passage Set	93K0N-S3	626	STA
(1)	Closer, w/Stop	D-4550 S	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Mop Plate	KM050 4 x 1LDW x CS x B4E	630	TRI

Hardware Set 10B

(3)	Butt Hinges	LB8000-454	652	BOM
(1)	Passage Set	93K0N-S3	626	STA
(1)	Closer, Regular Arm	D-4550 Regular Arm	689	STA
(1)	Kick Plate	KO050 8 x 2LDW x CS x B4E	630	TRI
(1)	Wall Stop, Convex	1270CX	626	TRI

Hardware Set 11

(3)	Butt Hinges	LB8006-545	630	BOM
(1)	Store Lock w/Deadbolt/AV	45H7TD-V	626	STA
(1)	Lock Guard, Mortise Lock	5000T	626	TRI
(1)	Closer, w/Spring Stop/HO	D-4550 HCS	689	STA
(1)	Kick Plate	KO050 8 x 1LDW x CS x B4E	630	TRI
(1)	Overhead Rain Drip	16A	628	NGP
(1)	Cat H Adhesive Jamb Seal Set	2525B	Brown	NGP
(1)	Door Shoe w/Drip	216APK	628	PEM
(1)	¼" HD Saddle Threshold	513HD	628	NGP

Note: Door-Set Index on follow page.

3.7 DOOR-SET INDEX

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102	07
102.1	04
103	07
104	07
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110	07B
111	10
113	10B
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115	07B
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117	07A
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118.1	05
119	03
120	06
121.1	11
121.2	10B
C104	E01

END OF 08 71 00

OVEC
Dixie Head Start
Louisville, Kentucky

ELECTRICAL SPECIFICATIONS INDEX:

SECTION 260500 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electrical installation requirements.

1.2 SUBMITTALS

A. Product Data: For sleeve seals.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

    a. Advance Products & Systems, Inc.
    b. Calpico, Inc.
    c. Metraflex Co.
    d. Pipeline Seal and Insulator, Inc.

3. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
4. Pressure Plates: Stainless steel. Include two for each sealing element.
5. Connecting Bolts and Nuts: Stainless steel]of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 260500

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Louisville, Kentucky

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. **Copper** Conductors: Comply with NEMA WC 70.

B. Conductor Insulation: Comply with NEMA WC 70 for Types **THW** and **THHN-THWN**.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.

3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.4 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide **the product indicated on Drawings** or a comparable product by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: **EPDM** or **NBR** interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: **Stainless steel**. Include two for each sealing element.
3. Connecting Bolts and Nuts: S**tainless steel** of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: **Copper** Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: **Type THHN-THWN, single conductors in raceway.**

B. Exposed Feeders: **Type THHN-THWN, single conductors in raceway.**

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: **Type THHN-THWN, single conductors in raceway.**

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: **Type THHN-THWN, single conductors in raceway.**

E. Exposed Branch Circuits, Including in Crawlspaces: **Type THHN-THWN, single conductors in raceway**.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: **Type THHN-THWN, single conductors in raceway**.

G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: **Type THHN-THWN, single conductors in raceway**.

H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

I. Class 1 Control Circuits: Type THHN-THWN, in raceway.

J. Class 2 Control Circuits: **Type THHN-THWN, in raceway**.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

I. Wiring at Outlets: Install conductor at each outlet, with at least **6 inches** of slack.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

D. Cut sleeves to length for mounting flush with both wall surfaces.

E. Extend sleeves installed in floors 2 inches above finished floor level.

F. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed.

G. Seal space outside of sleeves with grout for penetrations of concrete and masonry **and with approved joint compound for gypsum board assemblies**.

H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."

J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test **service entrance and feeder conductors, and conductors feeding the following critical equipment and service** for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.

    a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
    b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.

2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

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SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad, 3/4 inch by10 feet in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No.8 AWG and smaller, and stranded conductors for No.6 AWG and larger, unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.

2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Armored and metal-clad cable runs.
8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
9. Computer and Rack-Mounted Electronic Equipment Circuits: Install insulated equipment grounding conductor in branch-circuit runs from equipment-area power panels and power-distribution units.
10. X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

C. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

E. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.

2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.

a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
b. Perform tests by fall-of-potential method according to IEEE 81.

B. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).

C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.3 SUBMITTALS

A. Product Data: For steel slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Equipment supports.

C. Welding certificates.

1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Allied Tube & Conduit.
    b. Cooper B-Line, Inc.; a division of Cooper Industries.
    c. ERICO International Corporation.
    d. GS Metals Corp.
    e. Thomas & Betts Corporation.
    f. Unistrut; Tyco International, Ltd.
    g. Wesanco, Inc.

3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
6. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) Hilti Inc.
        2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
        3) MKT Fastening, LLC.
        4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

    a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

        1) Cooper B-Line, Inc.; a division of Cooper Industries.
        2) Empire Tool and Manufacturing Co., Inc.
        3) Hilti Inc.
        4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
        5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted [or other]support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.

6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi , 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section Miscellaneous Cast-in-Place Concrete.

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. See Division 26 Section "Underground Ducts and Raceways for Electrical Systems" for exterior ductbanks and manholes, and underground handholes, boxes, and utility construction.

1.2 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: ANSI C80.1.

B. IMC: ANSI C80.6.

C. EMT: ANSI C80.3.

D. FMC: Zinc-coated steel.

E. LFMC: Flexible steel conduit with PVC jacket.

F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
2. Fittings for EMT: Steel or die-cast, compression type.

2.2 NONMETALLIC CONDUIT AND TUBING

A. ENT: NEMA TC 13.

B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

C. LFNC: UL 1660.

D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

E. Fittings for LFNC: UL 514B.

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.

C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

D. Metal Floor Boxes: Cast metal, fully adjustable, rectangular.

E. Nonmetallic Floor Boxes: Nonadjustable, round.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic.

I. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit or IMC.
2. Concealed Conduit, Aboveground: rigid steel conduit, IMC or EMT.
3. Underground Conduit: RNC, Type EPC-40PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC. Includes raceways in the following locations:

    a. Loading dock.
    b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    c. Mechanical rooms.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: Rigid steel conduit or IMC.
7. Raceways for Optical Fiber or Communications Cable: EMT.
8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

J. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

K. Raceways for Communications Cable: Install as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

L. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

M. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.

1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

    a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
    b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
    c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.
    d. Attics: 135 deg F temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

N. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

O. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

P. Set metal floor boxes level and flush with finished floor surface.

Q. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 31 Section "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.

3.4 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 260533

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following lighting control devices:
   1. Indoor occupancy sensors.
   2. Daylight sensors
   3. Lighting control systems and components

B. See drawing details and notes for "Network Lighting Controls" for low-voltage, manual and programmable lighting control systems.

C. See Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

D. All systems, controls, devices, components etc. shall meet California Title 24 requirements.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 LIGHTING CONTROL SYSTEMS AND COMPONENTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product deemed equivalent by engineer::

2.2 INDOOR OCCUPANCY SENSORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product deemed equivalent by engineer:
   1. Lithonia Lighting; Acuity Lighting Group, Inc.

2. Sensor Switch, Inc.
3. Watt Stopper (The).

B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.

1. Operation: As indicated on drawings and notes
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
4. Mounting:

    a. Sensor: Suitable for mounting in any position on a standard outlet box.
    b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure.
    c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
6. Bypass Switch: Override the on function in case of sensor failure.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; Provide 0-10vdc dimming control with adjustable daylighting discount factor.

C. PIR/SOUND Dual detection Type: Ceiling mounting; detect occupancy by sensing a combination of heat, movement and sound in area of coverage.

1. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of not less than 36 sq. in.
2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft when mounted on a 96-inch high ceiling.
3. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot high ceiling.

2.3 OUTDOOR PHOTOELECTRIC SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
1. Intermatic, Inc.
2. Lithonia Lighting; Acuity Lighting Group, Inc.
3. Paragon Electric Co.; Invensys Climate Controls.
4. Square D; Schneider Electric.
5. TORK.
6. Watt Stopper (The).

B. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.

1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
2. Time Delay: 15-second minimum, to prevent false operation.
3. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.
4. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

C. Description: Solid state, with SPST dry contacts rated for 1800 VA to operate connected load, relay, or contactor coils; complying with UL 773.

1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
2. Time Delay: 30-second minimum, to prevent false operation.
3. Lightning Arrester: Air-gap type.
4. Mounting: Twist lock complying with IEEE C136.10, with base.

D. Description: Electrically operated and electrically held, combination type with fusible switch, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices as indicated on Drawings matching the NEMA type specified for the enclosure.

2.4 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No.14AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

B. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

3.2 WIRING INSTALLATION

A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch.

B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

1. Identify controlled circuits in lighting contactors.
2. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.

B. Label components with a unique designation.

3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

B. Lighting control devices that fail tests and inspections are defective work.

END OF SECTION 260923

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Include evidence of NRTL listing for series rating of installed devices.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
7. Include wiring diagrams for power, signal, and control wiring.
8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.

C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

D. Field quality-control reports.

E. Panelboard schedules for installation in panelboards.

F. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Enclosures: Flush- and surface mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
b. Outdoor Locations: NEMA 250, Type 3R.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
4. Directory Card: Inside panelboard door, mounted in transparent card holder.

C. Incoming Mains Location: Top and bottom.

D. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Compression type.
3. Ground Lugs and Bus Configured Terminators: Compression type.
4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.

5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices, and listed and labeled for series-connected short-circuit rating by an NRTL.

I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

D. Mains: Circuit breaker.

E. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

F. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

G. Branch Overcurrent Protective Devices: Fused switches.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.

2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: Circuit breaker or lug.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

F. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

C. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

    a. Instantaneous trip.
    b. Long- and short-time pickup levels.
    c. Long- and short-time time adjustments.
    d. Ground-fault pickup level, time delay, and I^2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).

6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
7. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
8. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor materials.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."
    f. Shunt Trip: 120V trip coil energized from separate circuit, set to trip at [55] [75] percent of rated voltage.
    g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
    h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

D. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."

2.5 ACCESSORY COMPONENTS AND FEATURES

A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Receive, inspect, handle, store and install panelboards and accessories according to NECA 407.

B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

C. Mount top of trim 90 inches above finished floor unless otherwise indicated.

D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

E. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

F. Install filler plates in unused spaces.

G. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch empty conduits into raised floor space or below slab not on grade.

H. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

I. Comply with NECA 1.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262416

SECTION 262726 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Wall-box motion sensors.
3. Snap switches and wall-box dimmers.
4. Solid-state fan speed controls.
5. Wall-switch and exterior occupancy sensors.
6. Communications outlets.

B. See Division 27 Section "Communications Horizontal Cabling" for workstation outlets.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; 5351 (single), 5352 (duplex).
    b. Hubbell; HBL5351 (single), CR5352 (duplex).
    c. Leviton; 5891 (single), 5352 (duplex).
    d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, feed through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; GF20.
    b. Pass & Seymour; 2084.

2.4 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
    b. Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).

c. Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
d. Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).

2.5 WALL-BOX DIMMERS

A. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on-off switches, with audible frequency and EMI/RFI suppression filters.

B. Control: Continuously adjustable slider; with single-pole or three-way switching. Comply with UL 1472.

C. Incandescent Lamp Dimmers: 120 V; control shall follow square-law dimming curve. On-off switch positions shall bypass dimmer module.

1. 600 W; dimmers shall require no derating when ganged with other devices. Illuminated when "OFF."

D. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

2.6 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: Smooth, high-impact thermoplastic 0.035-inch.
3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant thermoplastic with lockable cover.

2.7 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.
2. Wiring Devices Connected to Emergency Power System: Red.
3. TVSS Devices: Blue.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

    a. Cut back and pigtail, or replace all damaged conductors.
    b. Straighten conductors that remain and remove corrosion and foreign matter.
    c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.

9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar

problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

END OF SECTION 262726

SECTION 262813 - FUSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Cartridge fuses rated 600-V ac and less for use in control circuits, enclosed switches, switchboards and motor-control centers.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA FU 1 for cartridge fuses.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Cooper Bussmann, Inc.
2. Edison Fuse, Inc.
3. Ferraz Shawmut, Inc.
4. Littelfuse, Inc.

2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

PART 3 - EXECUTION

3.1 FUSE APPLICATIONS

A. Service Entrance: [Class L, fast acting] [Class L, time delay] [Class RK1, fast acting] [Class RK1, time delay] [Class J, fast acting] [Class J, time delay] [Class T, fast acting].

B. Feeders: [Class L, fast acting] [Class L, time delay] [Class RK1, fast acting] [Class RK1, time delay] [Class RK5, fast acting] [Class RK5, time delay] [Class J, fast acting] [Class J, time delay].

C. Motor Branch Circuits: Class RK1, time delay.

D. Other Branch Circuits: Class RK1, time delay.

E. Control Circuits: Class CC, fast acting.

3.2 INSTALLATION

A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.

3.3 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block and holder.

END OF SECTION 262813

SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Receptacle switches.
4. Shunt trip switches.
5. Molded-case circuit breakers (MCCBs).
6. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.4 SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

D. Field quality-control reports.

E. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide **product indicated on Drawings** or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type GD, General Duty, Single Throw, 240-V ac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with cartridge fuse interiors to accommodate **indicated** fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 MOLDED-CASE CIRCUIT BREAKERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide **product indicated on Drawings** or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

F. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; **integrally mounted, self-powered** type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
6. Auxiliary Contacts: **One SPDT switch** with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
7. Alarm Switch: One **NO** contact that operates only when circuit breaker has tripped.

2.3 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, **Type 1**.
2. Outdoor Locations: NEMA 250, **Type 3R**.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in fusible devices.

E. Comply with NECA 1.

3.2 IDENTIFICATION

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

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END OF SECTION 262816

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.2 SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories. Product Certificates: For each type of driver and dimmer-controlled fixtures, from manufacturer.

C. Field quality-control reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings. Substitutions shall be submitted to Engineer minimum (10) days prior to bid date for evaluation.

2.2 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture. Comply with all Seismic requirements.

B. Comply with NFPA 70 for minimum fixture supports.

C. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

D. Adjust aimable lighting fixtures to provide required light intensities.

E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265100

SECTION 265600 - EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps and ballasts.
2. Luminaire-mounted photoelectric relays.
3. Poles and accessories.

1.2 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Anchor-bolt templates keyed to specific poles and certified by manufacturer.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with IEEE C2, "National Electrical Safety Code."

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings.

2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.

1. LER Tests Incandescent Fixtures: Where LER is specified, test according to NEMA LE 5A.
2. LER Tests HID Fixtures: Where LER is specified, test according to NEMA LE 5B.

B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.

C. Metal Parts: Free of burrs and sharp corners and edges.

D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.

E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.

F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.

G. Exposed Hardware Material: Stainless steel.

H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.

J. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:

1. White Surfaces: 85 percent.
2. Specular Surfaces: 83 percent.
3. Diffusing Specular Surfaces: 75 percent.

K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.

M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.

a. Color: As selected from manufacturer's standard catalog of colors.
b. Color: Match Architect's sample of manufacturer's standard color.
c. Color: As selected by Architect from manufacturer's full range.

N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
2. Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
3. Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
4. Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.

a. Color: By architect – provide color samples.

O. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp and ballast characteristics:

a. "USES ONLY" and include specific lamp type.
b. Lamp tube configuration (twin, quad, triple), base type, and nominal wattage for compact fluorescent luminaires.
c. Lamp type, wattage, bulb type (ED17, BD56, etc.) and coating (clear or coated) for HID luminaires.
d. Start type (preheat, rapid start, instant start) compact fluorescent luminaires.
e. ANSI ballast type (M98, M57, etc.) for HID luminaires.
f. CCT and CRI for all luminaires.

2.3 FLUORESCENT BALLASTS AND LAMPS

A. Ballasts for Low-Temperature Environments:

1. Temperatures 0 Deg F and Higher: Electronic type rated for 0 deg F starting and operating temperature with indicated lamp types.
2. Temperatures Minus 20 Deg F and Higher: Electromagnetic type designed for use with indicated lamp types.

B. Ballast Characteristics:

1. Power Factor: 90 percent, minimum.

2. Sound Rating: Class A.
3. Total Harmonic Distortion Rating: Less than [**10**] [**20**] percent.
4. Electromagnetic Ballasts: Comply with ANSI C82.1, energy-saving, high power factor, Class P, automatic-reset thermal protection.
5. Case Temperature for Compact Lamp Ballasts: 65 deg C, maximum.
6. Transient-Voltage Protection: Comply with IEEE C62.41.1 and IEEE C62.41.2, Category A or better.

C. Low-Temperature Lamp Capability: Rated for reliable starting and operation with ballast provided at temperatures 0 deg F and higher.

2.4 BALLASTS FOR HID LAMPS

A. Comply with ANSI C82.4 and UL 1029 and capable of open-circuit operation without reduction of average lamp life. Include the following features unless otherwise indicated:

1. Ballast Circuit: Constant-wattage autotransformer or regulating high-power-factor type.
2. Minimum Starting Temperature: Minus 22 deg F.
3. Normal Ambient Operating Temperature: 104 deg F.
4. Ballast Fuses: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast manufacturer.

B. High-Pressure Sodium Ballasts: Electromagnetic type with solid-state igniter/starter and capable of open-circuit operation without reduction of average lamp life. Igniter/starter shall have an average life in pulsing mode of 10,000 hours at an igniter/starter-case temperature of 90 deg C.

2.5 HID LAMPS

A. High-Pressure Sodium Lamps: ANSI C78.42, CRI 21 (minimum), CCT color temperature 1900K, and average rated life of 24,000 hours, minimum.

1. Dual-Arc Tube Lamp: Arranged so only one of two arc tubes is lighted at one time and, when power is restored after an outage, the cooler arc tube, with lower internal pressure, lights instantly, providing an immediate 8 to 15 percent of normal light output.

B. Low-Pressure Sodium Lamps: ANSI C78.43.

C. Metal-Halide Lamps: ANSI C78.43, with minimum CRI 65, and CCT color temperature 4000K.

D. Pulse-Start, Metal-Halide Lamps: Minimum CRI 65, and CCT color temperature 4000K.

E. Ceramic, Pulse-Start, Metal-Halide Lamps: Minimum CRI 80, and CCT color temperature 4000K.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

B. Fasten luminaire to indicated structural supports.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Adjust luminaires that require field adjustment or aiming.

3.2 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.3 GROUNDING

A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole unless otherwise indicated.
2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole.
2. Install grounding conductor and conductor protector.
3. Ground metallic components of pole accessories and foundations.

END OF SECTION 265600

FIRE ALARM SYSTEM – SECTION 283116

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

B. Related Sections:

1. Division 01 General Requirements

2. Division 07 Thermal and Moisture Protection, Section 078413 Penetration Firestopping

3. Division 08 Openings, Section 087100 Door Hardware

4. Division 21 Fire Suppression

5. Division 23 Heating Ventilating and Air Conditioning Monitoring & Control (HVAC).

6. Division 26 Electrical, Section 260500 Common Work Results for Electrical

1.02 SUMMARY

A. Section Includes:

1. This specification describes an addressable Fire Detection and alarm signaling system. The control panel shall be intelligent device addressable, analog detecting, low voltage and modular, with digital communication techniques, in full compliance with all applicable codes and standards. The features and capacities described in this specification are required as a minimum for this project and shall be furnished by the successful contractor.

2. The system shall be in full compliance with National and Local Codes.

3. The system shall include all required hardware, raceways, interconnecting wiring and software to accomplish the requirements of this specification and the contract drawings, whether or not specifically itemized herein.

4. All equipment furnished shall be new and the latest state-of-the-art products of a single manufacturer, engaged in the manufacturing and sale of analog fire detection devices for over ten years.

5. The system as specified shall be supplied, installed, tested and approved by the local Authority Having Jurisdiction, and turned over to the owner in an operational condition.

6. In the interest of job coordination and responsibilities, the installing contractor shall contract with a single supplier for fire alarm equipment, engineering, programming,

inspection and tests, and shall be capable of providing a "UL Listing Certificate" for the complete system.

7. The system specified shall be that of Siemens Desigo™ Fire Safety which meets the project requirements, or a system deemed equivalent by Engineer. For alternate systems to be considered, system shall be submitted 10 days prior to bid date for approval by the Engineer. All system approved shall meet all the requirements spelled out in this specification. System approval shall be in writing by the Engineer and a copy shall be submitted with the system submittals. Siemens factory direct office shall perform the work on this project. Substituted systems (subject to Engineer approval) shall also be provided by factory direct office of said system - no "3rd party" alternative products will be considered. See drawings for other requirements.

1.03 DEFINITIONS

A. ASME: American Society of Mechanical Engineers.

B. FACP: Fire alarm control panel.

C. FM: FM Global (Factory Mutual).

D. Furnish: To supply the stated equipment or materials.

E. Install: To set in position and connect or adjust for use.

F. LED: Light-emitting diode.

G. NCC: Network Command Center.

H. NFPA: National Fire Protection Association. Definitions in NFPA 72 apply to fire alarm terms used in this Section.

I. NICET: National Institute for Certification in Engineering Technologies.

J. Provide: To furnish and install the stated equipment or materials.

K. UL: Underwriters Laboratories.

1.04 SYSTEM DESCRIPTION

A. The system shall be a complete, electrically supervised fire detection and notification system, with a microprocessor based operating system having the following capabilities, features, and capacities:

1. The local system shall provide status indicators and control switches for all of the following functions:

a. Audible and visual notification alarm circuit zone control.

b. Status indicators for sprinkler system water-flow and valve supervisory devices.

c. Any additional status or control functions as indicated on the drawings, including but not limited to; emergency generator functions, fire pump functions, door unlocking and security with bypass capabilities.

1.05 PERFORMANCE REQUIREMENTS

A. General Performance: Comply with NFPA 72 and all contract documents and specification requirements.

B. All interconnections between this system and the monitoring system shall be arranged so that the entire system can be UL-Certificated.

C. System shall be a complete, supervised, non-coded, addressable multiplex fire alarm system conforming to NFPA 72.

D. The system shall have Style 4 circuits for each floor. The system shall operate in the alarm mode upon actuation of any alarm initiating device. The system shall remain in the alarm mode until all initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal.

E. The system shall be capable of the following configurations. Both configurations are permitted on the same network.

1. The system shall support up to 252 addressable devices, which may be divided in any ratio on one, two, three, or four separate, isolated Class B circuits.

2. The system shall support two loops of 252 addressable devices, each of which may be divided in any ratio on one, two, three, or four separate, isolated Class B circuits.

F. The system shall support H-series devices and Desigo™ Fire Safety series devices.

G. The system shall have an optional digital alarm communication transmitter.

H. The system shall provide an off-normal warning prior to reset for all active devices.

I. The system shall be capable of remote monitoring via Desigo™ View®, a proprietary software system that provides a graphical representation of the fire alarm control panel at a remote PC when connected via Ethernet to the system. The display will show the exact state of the panel, including blinking LEDs, and with menu buttons for control.

J. The system shall be capable of being configured via a PC Tool.

K. The system shall provide the following functions and operating features:

1. The FACP and auxiliary power panels shall provide power, annunciation, supervision and control for the system.

2. Provide Class B initiating device circuits.

3. Provide two Class B notification appliance circuits. Arrange circuits to allow individual, selective, and visual notification by zone. Notification appliance circuits shall be zoned to correspond with the building fire barriers and other building features.

4. Strobes shall be synchronized throughout the entire building.

5. Provide electrical supervision of the primary power (AC) supply, presence of the battery, battery voltage, and placement of system modules within the control panel.

L. The system shall provide a field test function where one person can test the complete system or a specific area while maintaining full operational function of other areas not being tested. Alarms, supervisory signals, trouble signals shall be logged in system history during the walk-test.

M. Alarm functions shall override trouble or supervisory functions. Supervisory functions shall override trouble functions.

N. Fire alarm signal initiation shall be by one or more of the following devices:

1. Manual pull station

2. Heat detector

3. Addressable area smoke detectors

4. Standard Addressable Duct smoke detector

5. Specialized Duct Smoke detector

6. Automatic sprinkler system water flow switch.

O. Activation of any system fire, security, supervisory, trouble, or status initiating device shall cause the following actions and indications at all network Person Machine Interfaces using an LCD display with multiple detail screens.

1. Fire Alarm Condition:

a. Sound an audible alarm and display a custom message defining the building in alarm and the specific alarm point initiating the alarm on an LCD display.

b. Log into the system history archives all activity pertaining to the alarm condition.

c. Sound the ANSI 117-1 signal with synchronized audible notification appliances and synchronized strobes throughout the facility.

d. Audible signals shall be silenced from the fire alarm control panel by an alarm silence switch. Visual signals shall be programmable to flash until system reset or alarm silencing, as required.

e. A signal dedicated to sprinkler system water flow alarm shall not be silenced while the sprinkler system is flowing at a rate of flow equal to a single head.

f. Activation of any smoke detector in a single elevator lobby or an elevator equipment room shall, in addition to the actions described, cause the recall of that bank of elevators to the 1st floor and the lockout of controls. In the event of recall initiation by a detector in the first floor lobby, the recall shall be to the alternate floor as determined by the AHJ.

g. Where indicated on drawings heat detectors in elevator shaft and machine rooms shall activate an elevator power shunt trip breaker. The heat detectors shall be rated at a temperature below the ratings of the sprinkler heads in respective locations to insure that the power shall be shut off before activation of sprinkler system.

h. System operated duct detectors as per local requirements shall accomplish HVAC shut down.

i. Door closure devices shall operate by floor or by local requirements.

2. Supervisory Condition:

a. Display the origin of the supervisory condition report at the local fire alarm control panel LCD display.

b. Activate supervisory audible and dedicated visual signal.

c. Audible signals shall be silenced from the control panel by the supervisory acknowledge switch.

d. Record within system history the initiating device and time of occurrence of the event.

3. Trouble Condition

a. Display at the local fire alarm control panel LCD display, the origin of the trouble condition report.

b. Activate trouble audible and visual signals at the control panel and as indicated on the drawings.

c. Audible signals shall be silenced from the fire alarm control panel by a trouble acknowledge switch.

d. Trouble conditions that have been restored to normal shall be automatically removed from the trouble display queue and not require operator intervention. This feature shall be software selectable and shall not preclude the logging of trouble events to the historical file.

e. Trouble reports for primary system power failure to the master control shall be automatically delayed for a period of time equal to 25% of the system standby battery capacity to eliminate spurious reports as a result of power fluctuations.

f. Record within system history, the occurrence of the event, the time of occurrence and the device initiating the event.

P. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

1.06 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories. Complete manufacturer's catalog data including supervisory power usage, alarm power usage, physical dimensions, and finish and mounting requirements.

B. Power calculations. Battery capacity calculations. Battery size shall be a minimum of 125% of the calculated requirement. Provide the following supporting information:

1. Supervisory power requirements for all equipment.

2. Alarm power requirements for all equipment.

3. Power supply rating justification showing power requirements for each of the system power supplies. Power supplies shall be sized to furnish the total connected load in a worst-case condition plus 25% spare capacity.

4. Voltage drop calculations for wiring runs demonstrating worst-case condition.

5. NAC circuit design shall incorporate a 15% spare capacity for future expansion.

C. Submit manufacturer's requirements for testing Signaling Line Circuits and device addresses prior to connecting to control panel. At a minimum the following tests shall be required; device address, the usage (Alarm, Supervisory etc), environmental compensation, temperature ratings for thermal detectors and smoke detector sensitivities. This requirement shall need approval before any wiring is connected to the control panel.

D. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

2. Wiring Diagrams: For power, signal, and control wiring.

3. Complete drawings covering the following shall be submitted by the contractor for the proposed system:

a. Floor plans in a CAD compatible format at a scale of 1/8”=1’-0” showing all equipment and raceways, marked for size, conductor count with type and size, showing the percentage of allowable National Electric Code fill used.

b. Provide a fire alarm system function matrix as referenced by NFPA 72, Figure A-7-5.2.2 (9). Matrix shall illustrate alarm input/out events in association with initiation devices. Matrix summary shall include system supervisory and trouble output functions. Include any and all departures, exceptions, variances or substitutions from these specifications and/or drawings at time of bid.

4. Installation drawings shop drawings, and as-built drawings shall be prepared by an individual experienced with the work specified herein.

5. Incomplete submittals shall be returned without review, unless with prior approval of the Engineer.

E. Coordination Drawings: Reflected ceiling plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:

1. Light fixtures.

2. HVAC registers

3. Fire protection equipment interfaces

4. Special suppression system interfaces

F. Qualification Data: For qualified Installer, Applicator, manufacturer, fabricator, professional engineer, testing agency, and factory-authorized service representative.

G. Source quality-control reports.

H. Field quality-control reports.

I. Operation and Maintenance Data: For all fire alarm equipment, to include in operation and maintenance manuals.

J. Software and Firmware Operational Documentation:

1. Software operating and upgrade manuals.

2. Program Software Backup: On magnetic media or compact disk, complete with data files.

3. Device address list.

4. Printout of software application and graphic screens.

K. Warranty: Sample of special warranty.

1.07 QUALITY ASSURANCE

A. Manufacturer Qualifications: The publications listed below form a part of this publication to the extent referenced. The publications are referenced in the text by the basic designation only. The latest version of each listed publication shall be used as a guide unless the authority having jurisdiction has adopted an earlier version.

1. FM Global (Factory Mutual (FM)):FM Approval Guide

2. National Fire Protection Association (NFPA)

a. NFPA 70 National Electrical Code

b. NFPA 72 National Fire Alarm Code

c. NFPA 90A Standard For The Installation of Air Conditioning and Ventilating Systems

d. NFPA 101 Life Safety Code

3. Underwriters' Laboratories, Inc. (UL) equipment standards, Latest Edition

a. UL Fire Protection Equipment Directory

b. UL Electrical Construction Materials Directory

c. UL 38 – Manually Actuated Signaling Boxes for Use With Fire Protection Signaling Systems

d. UL 228 – Door Holding Devices

e. UL 268 - Smoke Detectors for Fire Protective Signaling Systems

f. UL 268A - Smoke Detectors for Duct Application

g. UL 464 - Audible Signal Appliances

h. UL 497A – Secondary Protectors for Communications Circuits

i. UL 521 - Heat Detectors for Fire Protective Signaling Systems

j. UL 864 - Control Units for Fire Protective Signaling Systems

k. UL 1283 – Electromagnetic Interference Filters

l. UL 1449 - Transient Voltage Surge Suppressors

m. UL 1971 - Signaling Devices for the Hearing Impaired

4. International Code Council

a. International Building Code

b. International Fire Code.

5. State and Local Building Codes as adopted and/or amended by The Authority Having Jurisdiction, ADA, and/or State and local equivalency standards as adopted by The Authority Having Jurisdiction.

6. California State Fire Marshal

7. NY-MEA

8. ISO 9002

B. Supplier Qualifications

1. The manufacturer of the supplied products must utilize multi-channel product distribution on a national basis to be considered for this bid. The manufacturer must have factory branches as well as independent distributors to allow the end user with the ability to utilize factory trained and authorized competitive service providers after system installation and commissioning.

2. Provide the services of a factory trained and certified representative or technician, experienced in the installation and operation of the type of system provided. The representative shall be licensed in the State if required by law.

3. The technician shall supervise installation, software documentation, adjustment, preliminary testing, final testing and certification of the system. The technician shall provide the required instruction to the owner's personnel in the system operation and maintenance.

4. The suppliers shall furnish evidence they have an experienced service organization, which carries a stock of spare and repair parts for the system being furnished.

5. The equipment supplier shall be authorized and trained by the manufacturer to calculate, design, install, test, and maintain the air sampling system and shall be able to produce a certificate stating such upon request.

C. Installer Qualifications:

1. Before commencing work, submit data showing that the manufacturer has successfully installed fire alarm systems of the same scope, type and design as specified.

2. The contractor shall submit copies of all required Licenses and Bonds as required in the State having jurisdiction.

3. Contractors unable to comply with the provisions of Qualification of Installers shall present proof of engaging the services of a subcontractor qualified to furnish the required services.

D. Testing Agency Qualifications: Qualified for testing indicated.

E. Source Limitations for fire alarm equipment: Obtain fire alarm equipment from single source.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in original, unopened packages with intact and legible manufacturers' labels identifying product and manufacturer, date of manufacture, and shelf life if applicable.

B. Store materials inside, under cover, above ground, and kept dry and protected from physical damage until ready for use. Remove from site and discard wet or damaged materials.

1.09 PROJECT CONDITIONS

A. Installed products or materials shall be free from any damage including, but not limited to, physical insult, dirt and debris, moisture, and mold damage.

B. Environmental Limitations: Do not deliver or install products or materials until spaces are enclosed and weather-tight, wet work in spaces is complete and dry, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire alarm equipment that fail(s) in materials or workmanship within specified warranty period.

1. Warranty Period: 1 year from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements all equipment shall be Siemens Desigo™ Fire Safety.

2.02 CONTROL PANEL

A. The fire alarm control panel shall be microprocessor based using multiple microprocessors throughout the system providing rapid processing of smoke detector and other initiation device information to control system output functions.

B. There shall be a watchdog circuit, which shall verify the system processors and the software program. Problems with either the processors or the system program the panel shall activate a trouble signal, and reset the panel.

C. The system modules shall communicate with an RS 485 network communications protocol. All module wiring shall be to terminal blocks.

D. The system shall be capable of the following configurations. Both configurations are permitted on the same network.

1. The system shall support up to 252 addressable devices, which may be divided in any ratio on one, two, three, or four separate, isolated Class B circuits.

2. The system shall support two DLC of 252 addressable devices, each of which may be divided in any ratio on one, two, three, or four separate, isolated Class B circuits.

E. The system shall be capable of supporting unshielded wiring applications.

F. System Components:

1. The System Periphery board shall be capable of 252 intelligent devices distributed between one, two, three, or four Class B SLC circuits. Any trouble on one circuit shall not affect the other circuit. This module controls the signaling from the initiation devices reporting alarms and troubles to the control panel. This module shall also provide the signaling to the field devices for the controlling the output of specific initiation devices. The on board microprocessor provides the periphery board with the ability to function even if the main microprocessor fails. LED's on the board shall provide annunciation for the following; Power, Gnd. Fault, Alarm, Trouble. This board is integral to the system. The board shall be model number FCI2016-U1.

2. The system periphery board shall be capable of supporting two system drivers of 252 intelligent devices distributed between one, two, three, or four Class B SLC circuits, for a total panel capacity of 504 addressable devices. Any trouble on one circuit shall not affect the other circuit. This module controls the signaling from the initiation devices reporting alarms and troubles to the control panel. This module shall also provide the signaling to the field devices for the controlling the output of specific initiation devices. The on board microprocessor provides the periphery board with the ability to function even if the main microprocessor fails. LED's on the board shall provide annunciation for the following: Power, Gnd. Fault, Alarm, Trouble. This board is integral to the system. The board shall be model number FCI2017-U1.

3. The Signal Line Circuits (SLC) shall be tested for opens, shorts and communications with all addressable devices installed before connection to the control panel. Systems without this capability shall have a test panel installed for initial testing to eliminate any possible damage short term or long term to the control panel. After initial testing replace the test panel and proceed with complete testing.

4. The standard Operator Interface shall have the ability to view events, acknowledge, silence, and reset the system and any networked Desigo™ Fire Safety control panels, when configured as a global PMI.

5. The LED Operator Interface shall have the ability to view events, acknowledge, silence, and reset the system and any networked Desigo™ Fire Safety control panels, when

configured as a global PMI. Additionally, the operator interface provides twelve multicolored configurable LEDs for annunciating system status

6. The System Periphery Board shall contain 2 Class B NAC circuits rated at 3 amps each with power-limited outputs. The zones shall be isolated and independently supervised. There shall be at least 6 unique codes/signals for each circuit based on system logic. These signals shall be Temporal Code 3 (Evacuation), Steady (Such as "Recall"), Temporal Code 3 (for CO alarms), March Time 120ppm, March Time 60ppm, and March Time 30ppm. The card shall have the following LED's to provide trouble shooting and annunciation; Power, Gnd. Fault, Zone Activation or Trouble. This functionality shall be integral to the system. The card shall be model number FCI2016-U1/FCI2017-U1.

7. The control panel shall be equipped with four Form C relays for alarm, trouble, supervisory, and programmable output. The system shall provide the mounting of all system cards, field wiring, and panel's inter-card wiring. All power limited field wiring shall be separated from all non-power limited internal wiring. The card shall be model number FCI2016-U1/FCI2017-U1.

G. System response time from alarm to output shall be an average of three (3) seconds.

H. All system cards and modules shall have Flash memory for downloading the latest module firmware.

I. Passwords:

1. Technician Level Password - There shall be a 4 character password that a user must enter into the control panel in order to perform such maintenance- and control-related functions at the panel as:

a. Arming and disarming devices.

b. Activating, deactivating or modifying detector ASD and sensitivity settings.

c. Activating and deactivating the History Log function, and deleting obsolete entries.

d. Changing the system time and date.

2. Maintenance Level Password - There shall be a 4 character password that a user must enter into the control panel in order to access the panel's reporting functions and walktest functions.

3. Acknowledge Silenceable Reset Access - There shall be a key required to open a locked cabinet that a system user must use in order to acknowledge events, turn silenceable audibles and visuals on and off, and perform panel resets.

J. Degrade Mode Alarm Activation:

1. Each Desigo™ Fire Safety panel shall operate as a stand-alone fire alarm control panel with complete functionality in the event of loss of communications with other Desigo™ Fire Safety panels on a network.

K. Software Modifications: The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made. Systems that require the use of external programmers or change of EPROMs are not acceptable.

L. Logic: The fire alarm system shall support generic functions that deal with binary states (True/False, high/low), and produce desired outputs from one or more binary inputs (for example, alarm outputs from detector or manual station inputs). AND, OR, NOT, Any N, Latches, Start Timer, Delay Timer, Restart Timer are generic functions. Generic functions can be used as inputs to other function. The system shall support 500 logic functions.

M. History: The system shall store 2000 events in history. Trouble warnings will occur when the History buffer is full.

2.03 POWER SUPPLY

A. The system Power Supply FP2011-U1 shall be a 170 Watt, 6-amp that provides 24VDC power for system operation. The power supply shall be filtered and regulated. The power supply provides power for all system operation, including signaling line circuits, notification appliance circuits, auxiliary power, battery charger, and all optional modules The power supply shall be rated for 120/240 VAC 50/60 Hz. The module shall be model number FP2011-U1

B. The power supply provides power for all system operation, including signaling line circuits, notification appliance circuits, auxiliary power, battery charger, and all optional modules. The power supply shall be rated for 120/240 VAC 50/60 Hz. The module shall be model number FP2012-U1.

C. The battery charger shall be able to charge the system batteries up to 100 AH batteries. Battery charging shall be microprocessor controlled and programmed to select battery sizes.

D. Transfer from AC to battery power shall be instantaneous when AC voltage drops to a point where it is not sufficient for normal operation.

2.04 SYSTEM ENCLOSURE

A. Provide the enclosure as specified. Provide the color as to the local AHJ requirements.

B. Provide Black cabinet enclosure.

C. Provide Red cabinet enclosure.

2.05 INTELLIGENT INITIATING DEVICES

A. General

1. All initiation devices shall be insensitive to initiating loop polarity. Specifically, the devices shall be insensitive to plus/minus voltage connections.

B. Smoke Detectors – Standard Addressable H-Series

1. The detector shall be guaranteed in writing not to false alarm when configured by the factory trained certified technician. The detector must provide up to 11 different environmental algorithms that allow the detector to provide superior false alarm immunity without the need for additional alarm verification delays.

2. The detector shall have a multicolor LED to streamline system maintenance/inspection by plainly indicating detector status as follows: green for normal operation, amber for maintenance required, red for alarm.

3. The multi-criteria smoke detector shall be an intelligent digital photoelectric detector with a programmable heat detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes. The detector communications shall allow the detector to provide alarm input to the system and alarm output from the system within four (4) seconds. So as to minimize the effort required by the installing and maintenance technician to appropriately configure the detector to ensure optimal system design, the detectors shall be programmable as application specific. Application settings shall be selected in software for a minimum of eleven environmental fire profiles unique to the devices installed location.

4. The detector shall be designed to eliminate the possibility of false indications caused by dust, moisture, RFI/EMI, chemical fumes and air movement while factoring in conditions of ambient temperature rise, obscuration rate changes and hot/cold smoke phenomenon into the alarm decision to give the earliest possible real alarm condition report.

5. The intelligent smoke detector shall be capable of providing three distinct outputs from the control panel. The outputs shall be from an input of smoke obscuration, a thermal condition or a combination of obscuration and thermal conditions. The detector shall be designed to eliminate calibration errors associated with field cleaning of the chamber.

6. The detector shall support the use of a relay, or LED remote indicator without requiring an additional software address. Low profile, white case shall not exceed 2.5 inches of extension below the finish ceiling.

7. For the detector where required, there shall be available a locking kit and detector guard to prevent unauthorized detector removal.

8. The smoke detector shall be model number HFP-11.

C. Heat Detectors – Addressable

1. Thermal Detectors shall be rated at 135 degrees fixed temperature and 15 degrees per minute rate of rise. Detectors shall be constructed to compensate for the thermal lag inherent in conventional type detectors due to the thermal mass, and alarm at the set point of 135 degrees Fahrenheit. The choice of alarm reporting as a fixed temperature detector or a combination of fixed and rate of rise shall be made in system software and be changeable at any time without the necessity of hardware replacement.

2. The detectors furnished shall have a listed spacing for coverage up to 2,500 square feet and shall be installed according to the requirements of NFPA 72 for open area coverage. The thermal detector shall be model number HFPT-11.

3. Model FDT421 heat detector shall have the following temperature settings:

   a. Fixed temperature at 135°F, 145°F, 155°F, 165°F, 174°F
   b. Rate of Rise at 15°F/ min (8.3°C) at 135°F (57°C)
   c. Rate of Rise at 15°F/ min (8.3°C) at 174°F (79°C)
   d. Low temperature warning at 40°F (4.4°C)

D. Duct Smoke Detectors – Addressable

1. For duct detector applications, the smoke detector shall be an intelligent digital photoelectric detector. Detectors shall be listed for use as open area protective coverage, in duct installation and sampling assembly installation and shall be insensitive to air velocity changes.

2. The detector communications shall allow the detector to provide alarm input to the system and alarm output from the system within four (4) seconds. The detector shall be mounted in a duct detector housing listed for that purpose. The duct detector shall support the use of a remote test switch, relay or LED remote indicator. The duct detector shall be supplied with the appropriate sampling tubes to fit the installation.

3. Where duct detectors are exposed to the weather a weatherproof enclosure shall be available. The duct housing cover shall include a test port for functional testing of the detector without cover removal. The duct housing shall include a cover removal switch capable of indicating cover removal status to the fire alarm control panel.

4. The intelligent duct detector shall be model number AD2-P Series. Where required there shall be available a duct housing with an on-board relay. Also where required, there shall be a standalone housing available with its own power supply and test/reset switch that does not require connection to a fire alarm control panel. It shall be model AD2-4W.

5. Duct smoke detector housing shall allow use in duct systems with air velocity ranging from 100 to 4,000 feet per minute, within temperature ranges of 32°F to 120°F per minute, and with relative humidity ranging from 0 to 95%.

E. Manual Pull Stations – Addressable

1. Provide addressable manual stations where shown on the drawings, to be flush or surface mounted as required. Manual stations shall contain the intelligence for reporting address, identity, alarm and trouble to the fire alarm control panel. The manual station communications shall allow the station to provide alarm input to the system and alarm output from the system within less than four (4) seconds.

2. The manual station shall be equipped with terminal strip and pressure style screw terminals for the connection of field wiring. Surface mounted stations where indicated on the drawings shall be mounted using a manufacturer's prescribed matching red enamel outlet box.

3. The double action pull station shall be model number HMS-D.

4. Where required, there shall also be available pull stations with break glass, capable of explosion proof installation, capable of weatherproof installation, reset key operation, and metal housings.

F. Addressable Interface Devices

1. Addressable Interface Devices shall be provided to monitor contacts for such items as water-flow, tamper, and PIV switches connected to the fire alarm system. These interface devices shall be able to monitor a single or dual contacts. An address will be provided for each contact. Where remote supervised relay is required the interface shall be equipped with a SPDT relay rated for 4 amps resistive and 3.5 amps inductive. The addressable interface modules shall be model number HTRI Series.

2. Where needed, a Conventional Zone Module shall connect to the Signal Line Circuit, which will allow the use of conventional initiation devices. This module shall have the ability to support up to 15 conventional smoke detectors and an unlimited number of contact devices. This module shall also be capable of monitoring Linear Beam detectors and conventional Flame detectors. Where required, there shall be an intrinsically safe detection solution for NEMA defined intrinsically safe installations (model DI-3IS with ISI-1) compatible with the conventional zone module. The module shall be model HZM.

3. Single Device Damper Monitoring and Control: A single HTRI switch input shall be able to monitor all 3 states of a damper – open, closed, and in transit. A single HTRI-R shall be able to fully control a damper (through the relay connected to the motor control) while also using its switch input for monitoring all 3 states of the damper.

4. Model FCIO422 addressable input/output module shall be insensitive to polarity and shall have capability for up to 4 separate inputs (Class B) or 2 separate Class A inputs and 4 separate outputs (Class B).

5. Any field modules required to monitor points outside the building (sprinkler supervisory devices, etc…) shall have surge suppression with proper grounding and cabling installed in accordance with manufacturer's instructions at the point the wiring leaves the building. All underground wiring shall be rated for wet conditions.

2.06 NOTIFICATION APPLIANCES

A. Series ZH & ZR – Strobes, Horns, Horn/Strobes

1. Audible/Visual notification appliances shall be listed for indoor use, and shall meet the requirements of FCC Part 15 - Class B

2. Appliances shall be listed under UL Standard 1971 (Standard for Safety Signaling Devices for Hearing Impaired) and UL Standard 464 (Fire Protective Signaling)

3. Appliances shall use a universal back plate, which shall allow mounting to a single-gang, double-gang, 4-inch-square, 4"-octal, or a 3-1/2"-octal backbox

4. Two-wire appliance wiring shall be capable of directly connecting to the mounting back plate

5. Continuity check shall occur for entire NAC circuit prior to attaching any audible / visual-notification appliances

6. Dust cover shall fit and protect the mounting plate

7. Dust cover shall be easily removed when the appliance is installed over the back plate

8. Removal of an appliance shall result in a trouble condition by the Fire Alarm Control Panel (FACP)

9. Strobe appliances shall produce a minimum flash rate of 60 flashes per minute (1 flash per second) over the Regulated Input Voltage Range, and shall incorporate a Xenon flashtube enclosed in a rugged Lexan® lens

10. Strobes shall be available with two or four field-selectable settings in one unit, and shall be rated – per UL 1971 – for up to:

    a. 185cd for wall mounting

    b. 177cd for ceiling mounting

11. Strobes shall operate over an extended temperature range of 32°F to 120°F (0°C to 49°C), and be listed for maximum humidity of 95% RH

12. Strobe inputs shall be polarized for compatibility with standard reverse-polarity supervision of circuit wiring by a Fire Alarm Control Panel (FACP)

13. Audibles and Audible/Strobe Combinations

    a. Horns and horn / strobes shall be listed for Indoor use under UL Standard 464

    b. Horns shall be able to produce continuous synchronized output or a temporal code-3 synchronized output

    c. Horns shall have at least 2 sound-level settings of 90 and 95 dBA

    d. Synchronization Modules

    e. The strobe portion, when synchronization is required, shall be compatible with DSC sync modules, FS-250 panel, FireFinder XLS panel, or PAD-3 power supply with built-in sync protocol

14. The strobes shall not drift out of synchronization at any time during operation

15. Audibles and strobes shall be able to synchronize on a 2-wire circuit with the capability to silence the audible, if required

16. Strobes shall revert to a non-synchronized flash-rate, if the sync module or Power Supply should fail to operate (i.e. – contacts remain closed)

17. All notification appliances shall be listed for Special Applications: Strobes are designed to flash at 1-flash-per-second minimum over their "Regulated Input Voltage Range"

2.07 DIGITAL COMMUNICATOR

A. The Multi-Point Digital Alarm Communicator FCA2015-U1 shall be UL864 listed to provide point identification of alarm, supervisory, security and trouble events to a Central or Remove Receiving Station. The DACT shall support the following:

1. Ademco Contact ID or SIA protocol

2. Ademco Contact ID selection shall provide the ability to transmit events for up to 999 individual zones

3. SIA selection shall provide the ability to transmit events for up to 10000 individual points

4. Programming of accounts and phone numbers

5. Dual phone line interface

6. Line fault monitoring.

7. Automatic 24-hour test

8. The DACT supports configurable alarm, alarm restoral, trouble, trouble restoral, supervisory, supervisory restoral, and reset events.

9. The DACT supports Ademco Contact ID alarm event codes for general alarm, smoke detector alarm, waterflow alarm, duct alarm, and manual alarm events.

10. Optionally, the DACT can be programmed to report events by event queue only.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Perform work in accordance with the requirements of NFPA 70, NFPA 72 and NECA 1-2006, Standard of Good Workmanship in Electrical Contracting.

B. Fasten equipment to structural members of building or metal supports attached to structure, or to concrete surfaces.

C. In the event that limited energy cable installation is allowed, all cable runs shall be run at right angles to building walls, supported from structure at intervals not exceeding 3 feet and where installed in environmental air plenums, be rated for such use and tied/supported by components listed for environmental air plenums installation.

D. Wiring Method: Install cables in raceways and cable trays except within consoles, cabinets, desks, and counters and except in accessible ceiling spaces and in gypsum board partitions where unenclosed wiring method may be used. Conceal raceway and cables except in unfinished spaces.

E. Wiring Method: Conceal conductors and cables in accessible ceilings, walls, and floors where possible.

F. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.

G. Provide primary power for each panel from normal/ emergency panels as indicated on the Electrical Power Plans. Power shall be 120 VAC service, transformed through a two-winding, isolation type transformer and rectified to low voltage DC for operation of all circuits and devices.

3.03 BOXES, ENCLOSURES AND WIRING DEVICES

A. Boxes shall be installed plumb and firmly in position.

B. Extension rings with blank covers shall be installed on junction boxes where required.

C. Junction boxes served by concealed conduit shall be flush mounted.

D. Upon initial installation, all wiring outlets, junction, pull and outlet boxes shall have dust covers installed. Dust covers shall not be removed until wiring installation when permanent dust covers or devices are installed.

E. "Fire alarm system" decal or silk-screened label shall be applied to all junction box covers.

3.04 CONDUCTORS

A. Each conductor shall be identified as shown on the drawings at each with wire markers at terminal points. Attach permanent wire markers within 2 inches of the wire termination. Marker legends shall be visible.

B. All wiring shall be supplied and installed in compliance with the requirements of the National Electric Code, NFPA 70, Article 760, and that of the manufacturer.

C. Wiring for strobe and audible circuits shall be a minimum 14 AWG, signal line circuits minimum 18 AWG twisted.

D. All splices shall be made using solder-less connectors. All connectors shall be installed in conformance with the manufacturer recommendations.

E. Crimp-on type spade lugs shall be used for terminations of stranded conductors to binder screw or stud type terminals. Spade lugs shall have upset legs and insulation sleeves sized for the conductors.

F. The installation contractor shall submit for approval prior to installation of wire, a proposed color code for system conductors to allow rapid identification of circuit types.

G. Wiring within sub panels shall be arranged and routed to allow accessibility to equipment for adjustment and maintenance.

3.05 DEVICES

A. Relays and other devices to be mounted in auxiliary panels are to be securely fastened to avoid false indications and failures due to shock or vibration.

B. Wiring within panels shall be arranged and routed to allow accessibility to equipment for adjustment and maintenance.

C. All devices and appliances shall be mounted to or in an approved electrical box.

3.06 IDENTIFICATION

A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

B. Permanently label or mark each conductor at both ends with permanent alphanumeric wire markers.

C. A consistent color code for fire alarm system conductors throughout the installation.

3.07 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Testing General:

1. All Alarm Initiating Devices shall be observed and logged for correct zone and sensitivity. These devices and their bases shall be tagged with adhesive tags located in an area not visible when installed, showing the initials of the installing technician and date.

2. Wiring runs shall be tested for continuity, short circuits and grounds before system is energized. Resistance, current and voltage readings shall be made as work progresses.

3. The acceptance inspector shall be notified before the start of the required tests. All items found at variance with the drawings or this specification during testing or inspection by the acceptance inspector shall be corrected.

4. Test reports shall be delivered to the acceptance inspector as completed.

5. All test equipment, instruments, tools and labor required to conduct the system tests shall be made available by the installing contractor. The following equipment shall be a minimum for conducting the tests:

    a. Ladders and scaffolds as required to access all installed equipment.

    b. Multi-meter for reading voltage, current and resistance.

    c. Two-way radios and flashlights.

    d. A manufacturer recommended device for measuring air flow through air duct smoke detector sampling assemblies.

    e. Decibel meter.

    f. In addition to the testing specified to be performed by the installing contractor, the installation shall be subject to test by the acceptance inspector.

3.08 ACCEPTANCE TESTING

A. A written acceptance test procedure (ATP) for testing the fire alarm system components and installation will be prepared by the engineer in accordance with NFPA 72 and this specification. The contractor shall be responsible for the performance of the ATP, demonstrating the function of the system and verifying the correct operation of all system components, circuits, and programming.

B. A program matrix shall be prepared by the installing contractor referencing each alarm input to every output function affected as a result of an alarm condition on that input.

C. The installing contractor prior to the ATP shall prepare a complete listing of all device labels for alphanumeric annunciator displays.

D. Loop Resistance Tests: Measure and record the resistance of each circuit with each pair of conductors in the circuit short-circuited at the farthest point from the circuit origin. The tests shall be witnessed by the owner and test results recorded for use at the final acceptance test.

E. Preliminary Testing: Conduct preliminary tests to ensure that all devices and circuits are functioning properly. After preliminary testing is complete, provide a letter certifying that the installation is complete and fully operable. The letter shall state that each initiating and indicating device was tested in place and functioned properly. The letter shall also state that all panel functions were tested and operated properly. The Contractor and an authorized representative from each supplier of equipment shall be in attendance at the preliminary testing to make necessary adjustments.

F. Final Acceptance Test: Notify the owner in writing when the system is ready for final acceptance testing. Submit request for test at least 14 calendar days prior to the test date. A final acceptance test will not be scheduled until meggar test results, the loop resistance test results, and the submittals required in Part 1 are provided to the owner. Test the system in accordance with the procedures outlined in NFPA 72.

1. Verify that the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.

2. Test each initiating and indicating device and circuit for proper operation and response. Disconnect the confirmation feature for smoke detectors during tests to minimize the amount of smoke or test gas needed to activate the detector.

3. Test the system for all specified functions in accordance with the contract drawings and specifications and the manufacturer's operating and maintenance manual.

4. Visually inspect all wiring.

5. Verify that all software control and data files have been entered or programmed into the FACP.

6. Verify that Shop Drawings reflecting as-built conditions are accurate.

7. Measure the current in circuits to assure that there is the calculated spare capacity for the circuits.

8. Measure voltage readings for circuits to assure that voltage drop is not excessive.

9. Measure the voltage drop at the most remote appliance on each notification appliance circuit.

G. The acceptance inspector shall use the system record drawings in combination with the documents specified in this specification during the testing procedure to verify operation as programmed. In conducting the ATP, the acceptance inspector shall request demonstration of any or all input and output functions. The items tested shall include but not be limited to the following:

1. System wiring shall be tested to demonstrate correct system response and correct subsequent system operation in the event of:

   a. Open, shorted and grounded signal line circuits.

   b. Open, shorted and grounded notification, releasing circuits.

   c. Primary power or battery disconnected.

2. System notification appliances shall be demonstrated as follows:

   a. All alarm notification appliances actuate as programmed

   b. Audibility and visibility at required levels.

3. System indications shall be demonstrated as follows:

   a. Correct message display for each alarm input at the control display.

b. Correct annunciator light for each alarm input at each annunciator and graphic display as shown on the drawings.

c. Correct history logging for all system activity.

4. System off-site reporting functions shall be demonstrated as follows:

a. Correct zone transmitted for each alarm input

b. Trouble signals received for disconnect

5. Secondary power capabilities shall be demonstrated as follows:

a. System primary power shall be disconnected for a period of time as specified herein. At the end of that period, an alarm condition shall be created and the system shall perform as specified for a period as specified.

b. System primary power shall be restored for forty-eight hours and system-charging current shall be normal trickle charge for a fully charged battery bank.

c. System battery voltages and charging currents shall be checked at the fire alarm control panel.

3.09 DOCUMENTATION

A. System documentation shall be furnished to the owner and shall include but not be limited to the following:

1. System record drawings and wiring details including one set of reproducible drawings, and a CD ROM with copies of the record drawings in DXF format for use in a CAD drafting program.

2. System operation, installation and maintenance manuals.

3. System matrix showing interaction of all input signals with output commands.

4. Documentation of system voltage, current and resistance readings taken during the installation, testing and ATP phases of the system installation.

5. System program showing system functions, controls and labeling of equipment and devices.

3.10 PROTECTION

A. Remove and replace devices and panel components that are wet, moisture damaged, or mold damaged.

3.11 DEMONSTRATION

A. Instructor: Include in the project the services of an instructor, who shall have received specific training from the manufacturer for the training of other persons regarding the

inspection, testing and maintenance of the system provided. The instructor shall train the employees designated by the owner, in the care, adjustment, maintenance, and operation of the fire alarm system.

B. Training sessions shall cover all aspects of system performance, including system architecture, signaling line circuit configurations, sensor and other initiating device types, locations, and addresses, fire alarm control panel function key operation, and other functions as designated by the owner.

C. Required Instruction Time: Provide 16 hours of instruction after final acceptance of the system. The instruction shall be given during regular working hours on such dates and times as are selected by the owner. The instruction may be divided into two or more periods at the discretion of the owner. One training session shall be videotaped by the contractor. Videotapes shall be delivered to the owner.

D. Provide a typeset printed or typewritten instruction card mounted behind a Lexan plastic or glass cover in a stainless steel or aluminum frame. Install the frame in a conspicuous location observable from the FACP. The card shall show those steps to be taken by an operator when a signal is received as well as the functional operation of the system under all conditions, normal, alarm, supervisory and trouble. The instructions shall be approved by the owner.

E. Comprehensive system troubleshooting training shall be provided for a single individual designated by the owner. This session shall be separate and distinct from the above described sessions.

F. All training sessions shall be conducted following final system certification and acceptance. Three additional training sessions shall be provided for all security personnel on all shifts six months after final system certification.

G. All training sessions shall be conducted by an authorized fire alarm system distributor representative, who has received specific training from the manufacturer for the training of other persons regarding the inspection, testing, and maintenance of the system provided.

END OF SECTION

OVEC Head Start
7304 Dixie Highway
Louisville, Kentucky

SECTION 230900 - INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

A. Extent of temperature control system work is indicated by drawings and schedules, and by requirements of this section.

B. Control Wiring, except for power wiring, necessary for electric-electronic temperature control systems, is work of this section.

1.2 SHOP DRAWINGS:

A. Submit cutsheets of electric-electronic temperature control devices including wiring, thermostats, controllers, switches, panels and contactors, showing accurately scaled components and their relation to associated equipment, and connections of signal and electrical power feeders.

PART 2 - PRODUCTS

2.1 GENERAL MATERIALS AND EQUIPMENT:

A. General: Provide electric-electronic temperature control products in sizes and capacities indicated, consisting of dampers, thermostats, clocks, sensors, controllers, and other components as required for complete installation. Except as otherwise indicated, provide manufacturer's standard temperature information, designed and constructed as recommended by manufacturer. Provide electric-electronic temperature control systems with the following functional and construction features as indicated.

B. Relays & Switches: Relays and switches shall be of the positive and gradual acting type and shall be furnished and installed as required for the successful operation of the system. All switches shall have suitable indicating plates.

C. The Contractor shall provide all required relays, transformers, terminal strips, enclosures, wiring, etc. to ensure that the required control sequences are maintained. Fully coordinate with the equipment manufacturer all control requirements that involves relays to the motor starters.

PART 3 - EXECUTION

3.1 FINAL ADJUSTMENT:

A. After completion of installation, adjust thermostats, motors and similar equipment provided as

work of this section.

B. Instruct the Owner's representative in the operation and maintenance of all control systems and equipment. Provide a minimum of 4 hours of detailed instruction for the Owner's Representative.

3.2 PROGRAMMABLE THERMOSTATS FURNISHED BY MANUFACTURER

A. Programmable thermostats shall be wired with remote temperature sensors as indicated on the Drawings for all thermostatic control and operation to be located in the indicated office. Thermostats shall be programmed to the Owner’s time schedules, and shall be thoroughly checked and placed in proper operation by the Contractor. Replace all units, where such thermostats are found faulty.

3.3 CONTROLS SEQUENCES

A. VENTILATION CONTROLS

1. DEDICATED OUTSIDE AIR UNIT DOA-1

a. Unit supply and exhaust fans shall be controlled by Occupied/Unoccupied timeclock.

b. A discharge air temperature sensor to control the heating and cooling functions of the unit. Minimum discharge air temperature shall be 68 degrees F. (adj.). If the unit is not in cooling mode (with hot gas reheat available), then the minimum setpoint shall be maintained by engaging the gas heat of the DOA unit to maintain 65 degrees F. discharge. If cooling is utilized to maintain maximum wet-bulb temperature, then hot gas refrigerant reheat is to maintain the minimum supply air discharge temperature.

c. Cooling shall be staged to maintain either a maximum discharge air temperature of 75 deg.F. (adj.) or the maximum discharge air wet bulb temperature of 63 deg.F. as sensed by enthalpy sensors or as programmed by temperature and humidity sensors correlated to the wet bulb temperature. Both conditions must be maintained. Reheat to maintain discharge dry-bulb air temperature to be by hot gas reheat when cooling is being performed.

END OF SECTION 230900

GENERAL NOTES- ELECTRICAL:

A. CONTRACTOR SHALL FOLLOW SEISMIC RESTRAINT AND DESIGN REQUIREMENTS CONTAINED IN LATEST ADOPTED STATE AND INTERNATIONAL BUILDING CODES, WITH ALL AMENDMENTS AS ADOPTED BY THE CURRENT LEGISLATION.

B. THE TERM "PROVIDE" SHALL MEAN CONTRACTOR SHALL FURNISH AND INSTALL ITEMS AND CONNECT AS REQUIRED TO OBTAIN A COMPLETE WORKING SYSTEM.

C. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ALL LOCAL, STATE, AND NATIONAL CODES. INCLUDING BUT NOT LIMITED TO NFPA 70 (NATIONAL ELECTRIC CODE), NFPA 72, INTERNATIONAL BUILDING CODE, ETC.

D. ALL WORK SHALL BE COORDINATE WITH EXISTING CONDITIONS, NEW CONSTRUCTION, OWNER'S VENDORS, ALL TRADES, AND THEIR DOCUMENTS. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING HIS BID. CONTRACTOR SHALL CONTACT OWNER FOR AN APPOINTMENT TO VISIT THE SITE. NO ALLOWANCE WILL BE MADE FOR EXISTING CONDITIONS NOT KNOWN BY THE CONTRACTOR.

E. NO MORE THAN THREE CIRCUITS (4-SINGLE CONDUCTOR CABLES PLUS GROUND) SHALL BE PULLED IN SINGLE CONDUIT, (EXCEPTION: SEPARATE NEUTRALS FOR GROUND FAULT CIRCUITS). WIRE (EXCEPT GROUND) MUST BE OF SAME SIZE AND MUST BE ON OPPOSITE PHASES IF USING COMMON NEUTRAL. ALL PANELBOARDS AND WIRING SHALL MEET NEC 210.4 MULTIWIRE BRANCH CIRCUITS. IT IS AT THE CONTRACTOR'S DISCRETION TO EITHER PROVIDE DEDICATED NEUTRALS OR MULTI-POLE BREAKERS.

F. WHEN RUNNING MORE THAN 3 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT, DERATE AMPACITIES IN ACCORDANCE WITH NFPA 70.

G. A CODE SIZE INSULATED GROUND CONDUCTOR SHALL BE PROVIDED IN ALL FEEDER AND BRANCH CIRCUIT CONDUITS. THIS INCLUDES EXISTING DEVICES LOCATED WITHIN THE RENOVATED AREA THAT ARE TO REMAIN, REPLACE DEVICES AS REQUIRED.

H. ALL THHN/THWN/THHW/THW/XHHW CONDUCTORS ARE SIZED BASED ON 75°C TEMPERATURE RATING. ALL TERMINATIONS FOR ALL EQUIPMENT AND DEVICES SHALL BE LISTED AND IDENTIFIED FOR USE WITH 75°C CONDUCTORS. IF CONTRACTOR PROVIDES TERMINATIONS OF LESS THAN 75°C, THE ASSOCIATED CONDUCTOR SIZES SHALL BE INCREASED DUE TO THE DERATING AMPACITY PER NEC TABLE 310-15(B)(16). CONTRACTOR SHALL MAKE ALL CHANGES (I.E. CONDUIT SIZES, ETC.) AS NECESSARY AND SHALL MAKE ALL REVISIONS ON "AS-BUILT" DRAWINGS.

I. MINIMUM CONDUIT SIZE IS 3/4 INCH, MINIMUM WIRE SIZE IS #12 AWG (COPPER CONDUCTOR THHN/THWN), UNLESS OTHERWISE NOTED ON PLANS OR IN CIRCUIT REVIEWS.

J. ALL CONDUIT SHALL BE RUN CONCEALED WHEREVER POSSIBLE ABOVE CEILINGS, INSIDE WALLS, OR UNDER FLOOR SLAB (ONLY WHERE SHOWN DASHED ON PLAN), UNLESS OTHERWISE NOTED ON PLAN. IN HIGH-BAY (NO CEILING) AREAS, RUN EXPOSED CONDUIT HIGH AS POSSIBLE. ALL CONDUIT SHALL BE RUN PARALLEL OR PERPENDICULAR TO NEARBY SURFACE OR STRUCTURAL MEMBERS AND FOLLOW THE SURFACE CONTOURS AS MUCH AS PRACTICAL. NO CONDUIT SHALL BE INSTALLED IN FLOOR SLAB UNLESS SPECIFICALLY NOTED OTHERWISE.

K. CONTRACTOR SHALL PROVIDE RIGID METAL SLEEVES TO FACILITATE PATHWAY (I.E. THRU BLOCK WALLS) FOR ELECTRICAL AND TELECOMMUNICATION DEVICES.

L. PROVIDE ALL NECESSARY TEMPORARY OR PERMANENT CAPS OR PLUGS FOR CONDUITS. DO NOT LEAVE PIPING/ CONDUITS OPEN ENDED. PROVIDE END BUSHINGS FOR ALL STUB-OUTS AND SLEEVES DESIGNATED TO BE UTILIZED FOR THIS PROJECT. COORDINATE WITH OWNER'S REPRESENTATIVE FOR SYSTEMS NOT PROVIDED UNDER THIS CONTRACT.

M. PROVIDE FIRE STOP TO ALL CONDUITS AND DEVICES PENETRATING FIRE RATED WALLS, SMOKE WALLS AND FLOORS.

N. MOUNTING HEIGHTS ABOVE FINISHED FLOOR (AFF) ARE TO CENTER OF DEVICE UNLESS NOTED OTHERWISE.

O. DEVICES/OUTLETS SHALL BE COORDINATED WITH ASSOCIATED ARCHITECTURAL DRAWINGS (I.E. FLOOR PLANS, CASEWORK DETAILS/ELEVATIONS, ETC.) FOR EXACT LOCATIONS AND MOUNTING, PRIOR TO ROUGH-IN. IF EXACT LOCATIONS AND MOUNTING ARE NOT INDICATED ON ARCHITECTURAL DRAWINGS, FIELD VERIFY EXACT LOCATIONS AND MOUNTING WITH OWNER AND ALL TRADES.

P. DEVICES SHALL NOT BE INSTALLED BACK TO BACK ON A COMMON WALL WHERE CONDITION EXISTS FOR ADJACENT OFFICE ROOMS OR ROOMS WHERE SOUND TRANSMISSION IS NOT PERMITTED. OR PROVIDE SOUND INSULATION.

Q. RECEPTACLES SHALL BE CIRCUITED WITH A SEPARATE GROUND WIRE. RECEPTACLES PROTECTED BY A GROUND FAULT CIRCUIT INTERRUPTER CIRCUIT BREAKER SHALL HAVE A DEDICATED NEUTRAL WIRE PULLED FOR THAT CIRCUIT. RECEPTACLES PROTECTED BY A GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE SHALL BE WIRED PER MANUFACTURERS RECOMMENDATIONS.

R. RECEPTACLES ARE TO BE INSTALLED WITH THE GROUND PIN IN THE TOP POSITION.

S. FOR EACH RECEPTACLE SUPPLIED FROM A GROUND FAULT CIRCUIT INTERRUPTER BREAKER IN PANELBOARD, PROVIDE A COVER PLATE WITH THE FOLLOWING PERMANENTLY ETCHED OR ENGRAVED MARKING: "G.F.C.I. PROTECTED".

T. ELECTRICAL DRAWINGS SHALL BE COORDINATED WITH EXISTING CONDITIONS, ASSOCIATED MECHANICAL DRAWINGS AND MECHANICAL CONTRACTOR FOR MOTORS, DEVICES, FIXTURES, ETC. FOR EXACT LOCATIONS BEFORE ROUGH-IN OF CONDUIT SYSTEM

U. LIGHTING FIXTURES SHALL BE WIRED TO SWITCHES GENERALLY SHOWN IN EACH ROOM AND CONNECTED TO LIGHTING PANELS WITH THE REQUIRED QUANTITY OF WIRES FOR PROPER OPERATION. A CONTINUOUS GROUND MUST BE PROVIDED THROUGH CONDUIT SYSTEM. EXIT LIGHTS, INVERTORS, AND NIGHT LIGHTS SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING ON SAME CIRCUIT.

V. SEE/VERIFY ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF CEILING MOUNTED DEVICES, i.e. LIGHT FIXTURES, SPEAKERS, FIRE ALARM DEVICES, ETC.

W. (Rev. 1) FROM EACH COMMUNICATION SYSTEM TYPE OUTLET BACK BOXES, PROVIDE A (MIN.) 1 INCH CONDUIT (WITH PULL WIRE) STUBBED TO ACCESSIBLE CEILING WITH INSULATED BUSHING, UNLESS OTHERWISE NOTED.

X. WHEN ROUTED THROUGH AN AIR RETURN PLENUMS, ALL TELEPHONE/DATA, CRT, TV, PAGING, ETC. COMMUNICATION CABLING SHALL BE ROUTED IN A COMPLETE CONDUIT RACEWAY SYSTEM OR SHALL BE PLENUM RATED. (NO PVC CONDUIT SHALL BE INSTALLED). COORDINATE ALL CONDUIT RUNS WITH ALL TRADES AND THEIR VENDORS. SEE MECHANICAL FOR LOCATION OF ANY AIR RETURN PLENUMS.

Y. TURN OVER TO THE OWNER ALL MANUFACTURERS WARRANTIES FOR EQUIPMENT AND MATERIALS PROVIDED.

Z. PROVIDE NEW UPDATED TYPED PANEL LEDGER/CIRCUIT DIRECTORY FOR EACH NEW AND ALTERED PANELBOARD.

AA. ALL NEW ELECTRICAL JUNCTION BOXES ABOVE CEILING IN AREAS RELATED TO CONSTRUCTION ARE TO BE IDENTIFIED AND LABELED WITH A PERMANENT MARKER. FIRE ALARM JUNCTION BOXES ARE TO BE PAINTED RED.

AB. NO MC CABLE SHALL BE PERMITTED ON PROJECT UNLESS SPECIFICALLY NOTED. WHEN MC CABLE IS ALLOWED, IT SHALL ONLY BE USED FOR POWER CONNECTIONS FOR INTERIOR BRANCH CIRCUITS DOWN INTO WALLS FOR RECEPTACLES AND TO LIGHT FIXTURES. NOTE HARD CONDUIT SHALL STILL BE PROVIDED FROM PANELBOARDS TO CORRIDOR/ACCESSIBLE CEILING LOCATIONS – MC CABLE SHALL BE ROUTED ONLY TO DEVICES/FIXTURES AND IN INTERNAL WALLS/CEILINGS FROM THIS POINT. PROVIDE DEDUCT ALTERNATE FOR INCLUSION OF MC CABLE (HOSPITAL GRADE IN ALL AREAS PER NEC 517).

AC. CONTRACTOR SHALL REMOVE EXISTING ELECTRICAL DEVICES, FIXTURES, ETC. IN AREA OF CONSTRUCTION TO ACCOMMODATE NEW DESIGN, AND COORDINATE WITH GENERAL CONTRACTOR.

SYSTEMS COORDINATION

SYSTEM TYPE	BACK BOX AND CONDUIT	DEVICES AND CABLING	EQUIPMENT	INSTALLATION	POWER	VENDOR	DESIGN	SPECIFICATIONS
FIRE ALARM	IN CONTRACT	IN CONTRACT	IN CONTRACT	IN CONTRACT	IN CONTRACT	PER CD	PER CD	PER CD
VOICE/DATA/INTERNET	IN CONTRACT	BY OWNER	OWNER'S VENDOR	OWNER'S VENDOR	IN CONTRACT	OWNER'S VENDOR	OWNER'S VENDOR	OWNER'S VENDOR
CABLE TV	IN CONTRACT	IN CONTRACT	IN CONTRACT	IN CONTRACT	IN CONTRACT	OWNER'S VENDOR	PER CD	PER CD

REMARKS: COORDINATE ALL SYSTEMS WORK WITH OWNER'S VENDORS FOR ALL, INCLUDING BUT NOT LIMITED TO: DEVICE LOCATIONS, DEVICE REQUIREMENTS, EQUIPMENT LOCATIONS, EQUIPMENT REQUIREMENTS, POWER LOCATIONS, POWER REQUIREMENTS, AND QUANTITIES REQUIRED. PROVIDE ALL LABOR AND MATERIALS FOR A COMPLETE AND OPERABLE SYSTEM.

LUMINAIRE SCHEDULE

NOTE... (WHERE APPICABLE; ALL NOTES APPLY TO ALL LUMINAIRE TYPES)

1. FIXTURE SUBSTITUTIONS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL 10 DAYS PRIOR TO BID DATE, NO EXCEPTIONS.
2. FINAL SELECTION OF FINISH MATERIAL, ETC. BY ARCHITECT.
3. ALL LED DRIVERS ARE "CONSTANT CURRENT".
4.

TYPE	DESCRIPTION	MOUNTING	LAMP TYPE	DRIVER TYPE	VOLTAGE	INPUT POWER	MANUFACTURER	CATALOG NUMBER	ALTERNATE MANUFACTURERS AND MODEL NUMBERS	REMARKS
D2	6" APERATURE DOWNLIGHT WITH CLEAR SPECULAR REFLECTOR, GALVANIZED STEEL MOUNTING FRAME	RECESSED CEILING	LED	CONSTANT CURRENT	120 V	35 VA	LITHONIA	LDN6 40 20 LO6 AR LD	PER REVIEW BY ENGINEER	
EM	EMERGENCY LIGHTING UNIT	WALL	LED	NICKEL CADMIUM	120 V	3.6 VA	Acuity Brands Lighting	ELM2-LED-SD	PER REVIEW BY ENGINEER	MOUNT AT 7'-8"AFF TO CENTER, UNO. CONNECT COMPLETE AHEAD OF ANY SWITCHING. CIRCUIT WITH SAME AREA.
OL1	EXTERIOR WALL BRACKET WITH DIE-CAST ALUMINUM HOUSING, 3000 LM, 4000K, FORWARD THROW OPTICS, DARK BRONZE, WITH SURFACE MOUNTED BACK BOX AND EMERGENCY BATTERY BACK UP	EXTERIOR WALL	LED	CONSTANT CURRENT	120 V	25 VA	Acuity Brands Lighting	WST LED P2 40K VF MVOLT E20WH BBW DDBXD	PER REVIEW BY ENGINEER	
T2	2X2 SWITCHABLE LUMEN DIMMABLE LED FLAT PANEL, SIWTCH SET TO 2400 LUMENS, 4000K,>80CRI (DGA22) DRYWALL GRID ADAPTER FOR 2X2 LUMINAIRES RECESSED IN DRYWALL CEILINGS WHERE REQUIRED	RECESSED CEILING	LED	CONSTANT CURRENT	120 V	18.9 VA	Acuity Brands Lighting	CPANL 2x2 24/33/44LM 40K - M4-SET SWITCH TO 24LM (2400 LUMENS) - WITH DGA22, WHERE REQUIRED	PER REVIEW BY ENGINEER	
T2S	2X2 SWITCHABLE LUMEN, DIMMABLE LED SURFACE MOUNTED FLAT PANEL, SWITCH SET TO 2400 LUMENS, 4000K, >80CRI (WITH MULTI - USE SURFACE MOUNT KIT 2X2, SHALLOW DEPTH	SURFACE CEILING	LED	CONSTANT CURRENT	120 V	18.9 VA	Acuity Brands Lighting	CPANL 2x2 24/33/44LM 40K - M4 - SET SWITCH TO 24LM (2400 LUMENS) - WITH 2X2 SMKSH KIT	PER REVIEW BY ENGINEER	
V2	LED VANITY LIGHT ABOVE MIRROR, WITH (5) 4.5 WATT LED G25 BULBS, 2700K - MOUNT CENTER OF FIXTURE 4" ABOVE TOP OF MIRROR (VIF TOP OF EACH MIRROR HIEGHT)	WALL ABOVE MIRROR	LED	CONSTANT CURRENT	120 V	24 VA	Acuity Brands Lighting	$100.00 ALLOWANCE	PER REVIEW BY ENGINEER	ALLOWANCE ONLY INCLUDES LUMINAIRE AN BULBS. ALLOWANCE DOES NOT INCLUDE SHIPPING, STORAGE, ANY ADDTIONAL CHARGES, LABOR OR MATERIALS FOR INSTALLATON.
X	SINGLE FACED BACK MOUNTED EXIT LIGHT, THERMOPLASTIC HOUSING IS IMPACT-RESISTANT, SCRATCH-RESISTANT AND CORROSION-PROOF, UV-STABLE WHITE RESIN RESISTS DISCOLORATION FROM NATURAL AND MAN-MADE LIGHT SOURCES, LED, RED LETTERING, UNIVERSAL MOUNT, SELF DIAGN	WALL BACK MOUNTED	LED	NICKEL CADMIUM	120 V	3.3 VA	Acuity Brands Lighting	LHQMSW3R-120/277-N	PER REVIEW BY ENGINEER	ARROWS PER PLANS
X1	SINGLE FACED CEILING MOUNTED EXIT LIGHT, THERMOPLASTIC HOUSING. LED: RED LETTERING, UNIVERSAL MOUNT, SELF DIAGNOSTIC NI-CAD BATTERY.	CEILING MOUNTED	LED	NICKEL CADMIUM	120 V	2 VA	Acuity Brands Lighting	LQMS W 3 R 120/277 ELN	PER REVIEW BY ENGINEER	ARROWS PER PLANS.
X2	DOUBLE FACED CEILING MOUNTED EXIT LIGHT, THERMOPLASTIC HOUSING. LED: RED LETTERING, UNIVERSAL MOUNT, SELF DIAGNOSTIC NI-CAD BATTERY.	CEILING MOUNTED	LED	NICKEL CADMIUM	120 V	2 VA	Acuity Brands Lighting	LQMS W 3 R 120/277 ELN	PER REVIEW BY ENGINEER	ARROWS PER PLANS.
XE	SINGLE FACED BACK MOUNTED EXIT LIGHT, THERMOPLASTIC HOUSING IS IMPACT-RESISTANT, SCRATCH-RESISTANT AND CORROSION-PROOF, UV-STABLE WHITE RESIN RESISTS DISCOLORATION FROM NATURAL AND MAN-MADE LIGHT SOURCES, LED, RED LETTERING, UNIVERSAL MOUNT, SELF DIAGN	WALL BACK MOUNTED	LED	NICKEL CADMIUM	120 V	3 VA	Acuity Brands Lighting	LHQMSW3R-120/277-N	PER REVIEW BY ENGINEER	ARROWS PER PLANS
Z1	ZL1N 48" 3000 LUMENS FROSTED DIFFUSER MVOLT 4000K 80CRI	SURFACE CEILING	LED	CONSTANT CURRENT	120 V	52.1 VA	Acuity Brands Lighting	ZL1N L48 3000LM FST MVOLT 40K 80 CRI	PER REVIEW BY ENGINEER	

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	CEILING OUTLET AND INCANDESCENT, FLUORESCENT, LED OR HID FIXTURE
	WALL OUTLET AND INCANDESCENT, FLUORESCENT, LED OR HID FIXTURE
	CEILING OUTLET AND FLUORESCENT FIXTURE OR LED FIXTURE (SEE FIXTURE SCHEDULE)
	FIXTURE ON EMERGENCY POWER OR POWERED BY EMERGENCY INVERTER, SEE PLANS AND KEYNOTES AND FIXTURE SCHEDULE FOR EXACT INFORMATION
	FIXTURE HALF ON NORMAL/HALF ON BATTERY BALLAST CIRCUIT, DUAL CIRCUITS OR WITH DUAL SWITCHING (REQUIRES TWO BALLASTS). CIRCUITING/SWITCHING AS INDICATED.
	WALL MOUNTED FLUORESCENT FIXTURE
	FLUORESCENT STRIP/INDUSTRIAL FIXTURE
	TRACK LIGHTS
	FLOODLIGHT
	EMERGENCY BATTERY PACK (8'-6" A.F.F. TO CENTER UNLESS OTHERWISE NOTED)
	EMERGENCY LIGHTING REMOTE HEAD
	EXIT SIGN. CEILING MOUNTED
	EXIT SIGN. MOUNT 4" ABOVE DOOR FRAME
a, b, c	LOWER CASE LETTERS AT OUTLETS INDICATE SWITCHING ARRANGEMENT
A (2)	LIGHT FIXTURE TYPE CALLOUT. REFER TO FIXTURE SCHEDULE FOR COMPLETE FIXTURE DESCRIPTION. QUANTITY OF THIS TYPE NOTED IN PARENTHESIS.
$	SINGLE POLE SWITCH – 20 AMP, 277V (46" A.F.F.TO BOTTOM, TYP. ALL SWS.)
$D	DIMMER SWITCH, TO MATCH TYPE OF LIGHTING CONTROLLED – COORDINATE WITH FIXTURE MANUFACTURER AND ENGINEER.
$2	2=2-POLE SWITCH,3=THREE-WAY,4=FOUR-WAY, LV##=LOW VOLTAGE FOR OCC SENSOR (SEE DETAIL FOR MODEL NUMBERS), OC=OCCUPANCY SENSOR TYPE SENSOR SWITCH #WSXPDT, VS= VACANCY SENSOR TYPE SENSOR SWITCH #WSXPDTSA (SEMI-AUTOMATIC TO MEET IECC)
P	PHOTO-CELL (TORK MODEL B2101 OR EQUAL)
	EXTERIOR POLE MOUNTED LIGHT FIXTURE (# OF HEADS AS INDICATED)
	DUPLEX RECEPTACLE – 20 AMP,125V,2P,3W,TYP.MTG. AT 18" A.F.F. TO BOTTOM UON WITH HEIGHT NOTED AFF
	DEDICATED 20AMP DUPLEX RECEPTACLE
	QUADRAPLEX RECEPTACLE – (2) DUPLEX RECEPTACLES IN 3 GANG BOX WITH 2 GANG PLASTER RING
	FLUSH FLOOR MOUNTED RECEPTACLE(S) PER SYMBOL, BRUSHED ALUMINUM COVER PLATE, UON – VERIFY COVERPLATE WITH FLOOR TYPE BY ARCHITECT PRIOR TO ORDERING. WHEN SHOWN WITH ADJACENT COMMUNICATION DEVICE, PROVIDE COMBINATION DEVICE PER SYMBOL SHOWN. SEE COMMUNICATION DEVICE/GENERAL NOTES FOR ADDITIONAL INFORMATION, ROUTE CONDUITS UNDER FLOOR OVER TO NEAREST WALL AND STUB UP OR DOWN TO ABOVE CEILING AS NECESSARY.
	DUPLEX RECEPTACLE – 20 AMP, 125V, 2P, 3W, TYP MTG. ABOVE DROP CEILING
J	JUNCTION BOX
	PLUGSTRIP WITH RECEPTACLES AT 12" O.C, UNO. MOUNT BOTTOM 2" ABOVE COUNTER TOP BACKSPLASH, UNO.
6-20	SPECIAL OUTLET, NEMA CONFIGURATION AS NOTED OR AS REQUIRED BY EQUIPMENT
	SPECIALTY RECEPTACLE – TL = TWIST LOCK, AMPERAGE INDICATED NEMA CONFIGURATION INDICATE. COORDINATE ALL RECEPTACLES WITH EQUIPMENT MANUFACTURES RECOMMENDATIONS AND REQUIREMENTS.
	PUSH-BUTTON REMOTE RELEASE OR DOOR OPERATOR – COORDINATE WITH ARCHITECT, VENDOR/MANUFACTURER/SUPPLIER
EPO	EMERGENCY POWER OFF PUSH-BUTTON, RED MUSHROOM HEAD, AT 54" AFF, UNO.
	START/STOP PUSH-BUTTON STATION, AT 54" AFF, UNO.
	NEMA 1 ENCL, 600 VOLT, 3P, 30AMP, FUSED DISCONNECT SWITCH AT 4'-6" AFF, UNO.
	NEMA 1 ENCL., 600 VOLT, 3P, 30AMP, NON-FUSED DISCONNECT SWITCH AT 4'-6" A.F.F, UNO.
	MAGNETIC STARTER SIZE 1, NEMA 1 ENCLOSURE WITH HAND-OFF-AUTO SELECTOR SWITCH AT 4'-6" AFF, UNO.
	COMBINATION MAGNETIC STARTER AND FUSED SWITCH SIZE 1, NEMA 1 ENCLOSURE WITH HAND-OFF-AUTO SELECTOR SWITCH AT 4'-6" AFF, UNO.
	MOTOR LOCATION
	EXHAUST FAN WITH INTEGRAL DISCONNECT FURNISHED BY MECHANICAL
$M	MANUAL MOTOR RATED SWITCH/CONTROLLER, SIZE AS REQUIRED BY LOAD. MOUNT 46" A.F.F. UNLESS OTHERWISE NOTED
	CONDUIT CONCEALED WHERE POSSIBLE (NOTE NOT ALL CONDUIT IS INDICATED ON PLANS)
	CONDUIT CONCEALED IN FLOOR OR BELOW GRADE (NOTE NOT ALL CONDUIT IS INDICATED ON PLANS)
	RECESSED MOUNTED PANELBOARDSEE PLANS/SINGLE-LINE FOR NAME, VOLTAGE AND SIZE
	SURFACE MOUNTED PANELBOARD, SEE PLANS/SINGLE-LINE FOR NAME, VOLTAGE AND SIZE
	SURFACE MOUNTED PANELBOARD, SEE PLANS/SINGLE-LINE FOR NAME, VOLTAGE AND SIZE
[Rev 1]	BOX AND COVER PLATE FOR COMMUNICATION OUTLET. MOUNT 18" A.F.F. (W = 48" A.F.F., P = PAY PHONE, D = DICTATION). PROVIDE 1-1/4" CONDUIT W/BUSHING & PULLSTRING STUBBED ABOVE ACCESSIBLE CEILING U.O.N.
	BOX AND COVER PLATE FOR COMMUNICATION OUTLET. FLOOR MOUNTED. PROVIDE 1" CONDUIT W/BUSHING & PULLSTRING STUBBED ABOVE ACCESSIBLE CEILING U.O.N.
F C 30cd	VISUAL ADA COMPLIANT FIRE ALARM APPLIANCE:(WALL MOUNT AT 80" A.F.F.), 30 CANDELLA(cd), OR AS OTHERWISE REQUIRED BY SPACE TO MEET CODE, (C = CEILING MOUNT). VERIFY CANDELLA OF STROVE WITH CODE AND FIRE ALARM VENDOR.
70db	CALCULATED SOUND VALUE IN DECIBLES(db),ASSUME 100db AT 10FT FROM HORN WITH 35db LOSS THRU DOOR OR PARTITION TO OBTAIN 70db DESIGN AVERAGE
SD	SMOKE DETECTOR IN DUCT SYSTEM WITH REMOTE TEST SWITCH IN CORRIDOR WALL UNLESS OTHERWISE NOTED. CONNECT PER CODE AND MANUFACTURER REQUIREMENTS, COORDINATE WITH HVAC AND FIRE ALARM MANUFACTURER. PROVIDE FOR FAN SHUTDOWN.
FS	FIRE ALARM FLOW SWITCH
PS	FIRE ALARM PRESSURE SWITCH
TS	FIRE ALARM TAMPER SWITCH
F	FIRE ALARM BREAK STATION MOUNTED 46" A.F.F. TO BOTTOM
F	AUDIO/VISUAL ADA COMPLIANT FIRE ALARM DEVICE (WALL MOUNT @80" A.F.F.), HORN (OR SPEAKER IN HIGH RISE) WITH STROBE APPLIANCE, UNLESS NOTED OTHERWISE ON PLAN OR SPECS. VERIFY CANDELLA OF STROBE WITH CODE & FIRE ALARM VENDOR.
S	SPEAKER/SOUNDER CODE COMPLIANT FIRE ALARM DEVICE(WALL MOUNT AT 80" A.F.F.),
SD A	SYSTEM SMOKE DETECTOR, CEILING MOUNTED UNLESS OTHERWISE NOTED. A= LOW FREQ. AUDIBLE BASE TO MEET APPLICABLE RESIDENTIAL CODE REQUIREMENTS, COORDINATE EXACT LOCATION WITH VENDOR, OTHER EQUIPMENT AND CODE.
R	135 DEGREE F.FIXED TEMPERATURE & RATE OF RISE DETECTOR,UNLESS OTHERWISE NOTED ON PLAN
FP	FIRE FIGHTERS PHONE JACK. COORDINATE EXACT REQUIREMENTS WITH FIRE ALARM.
FACP	MAIN"FIRE ALARM CONTROL PANEL"
FAA	REMOTE"FIRE ALARM ANNUNICIATOR"
SDT	BEAM TYPE WALL MOUNTED SMOKE DETECTOR TRANSMITTER, FIELD ALIGN BEAM WITH RECEIVER, SEE PLANS FOR LOCATION.
SDR	BEAM TYPE WALL MOUNTED SMOKE DETECTOR RECEIVER, FIELD ALIGN BEAM FROM TRANSMITTER, SEE PLANS FOR LOCATION.
S	CEILING SPEAKER
S	WALL MOUNTED SPEAKER, 12" BELOW CEILING, UNO.
$V	SPEAKER VOLUME CONTROL, CONNECT TO SPEAKERS IN ROOM LOCATED
TV [Rev 1]	BOX AND COVER PLATE FOR TV OUTLET, COORDINATE HEIGHT WITH ARCHITECTURAL ELEVATIONS, PROVIDE 120V DUPLEX RECEPTACLE ADJACENT IN SEPARATE BOX/COMPARTMENT W/COMMON COVERPLATE. SEE GENERAL NOTES, PROVIDE A RG-6U COAX AND A CAT. 6 CABLE IN 1-1/4" CONDUIT FROM DEVICE TO CTV PATCH PANEL IN TELECOM ROOM, UNO.
CTV	INCOMING COAX PATCH PANEL/SPLITTERS BY LOCAL UTILITY. COIL RG-6U COAX AT LOCATION FOR TERMINATION BY LOCAL PROVIDER.
KP	KP = KEYPAD, CR = CARD READER, EL = ELECTRIC LATCH. CONTRACTOR SHALL PROVIDE BACKBOX AND 1"C STUBBED AND TURNED ABOVE ACCESSIBLE CEILING WITH PULL STRING FOR SECURITY/ACCESS CONTROL DEVICE. PROVIDE 120V CONNECTION TO DOOR LATCHES AS REQUIRED, COORDINATE WITH SECURITY VENDOR FOR EXACT REQUIREMENTS
SPD	SURGE PROTECTION DEVICE, ALSO LABELED AS "TVSS" TRANSIENT VOLTAGE SURGE SUPPRESSION
AC	ABOVE COUNTER – BOTTOM OF COVER PLATE FOR OUTLET 2" ABOVE COUNTER TOP BACKSPLASH.
AFF	ABOVE FINISHED FLOOR – (TO CENTER, UNO.)
HD	HD TELEVISION OUTLET DUPLEX RECEPTACLE AT 57"AFF IN A RECESSED FLAT SCREEN COMBINATION BACK BOX, UNO.
C	CONDUIT
IG	ISOLATED GROUND(TYPE RECEPTACLE)
EM	EMERGENCY
NL	NIGHT LIGHT CIRCUIT (NON-SWITCHED)
WP	WEATHERPROOF (NEMA 3R). PROVIDE IN USE TYPE COVER WHERE NEC REQUIRED
GND	GROUND
GFI GF	GROUND FAULT INTERRUPTER(RECEPTACLE)
UON	UNLESS OTHERWISE NOTED
	THIS IS A STANDARD LEGEND. ALL ITEMS MAY NOT APPEAR ON THIS JOB.

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MEP PROJECT #: 19150

ELECTRICAL LEGEND, SCHEDULES AND NOTES

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 11.06.2020
DRAWN BY: RAB
CHECKED BY: KAP
REVISIONS:
1 03.31.21

2019-52.06

E-0

DEMOLITION

FIRST FLOOR PLAN

GRAPHIC SCALE SUPERSEDES NUMERIC SCALE

0 4 8 16

GENERAL NOTES- DEMOLITION

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

A. SEE DRAWING E-0 FOR ADDITIONAL GENERAL NOTES.

B. DASHED LINES INDICATE ITEMS TO BE REMOVED: ALL EXISTING DEVICES ARE NOT INDICATED ON DRAWINGS, DEVICES INDICATED ON DRAWINGS ARE FOR ADDITIONAL CLARIFICATION. ALL EXISTING DEVICES, LIGHTING, ETC. SHALL BE REMOVED COMPLETE WHETHER INDICATED OR NOT – EXCEPT EXISTING TO REMAIN ITEMS AS NOTED ON DRAWINGS. PULL ALL CIRCUITS OUT COMPLETE, INCLUDING CONDUIT EXCEPT AS NOTES OTHERWISE.

C. COORDINATE WITH ALL TRADES AND THEIR DOCUMENTS FOR THE DEMOLITION AND RELOCATION OF THEIR EQUIPMENT. PROVIDE ALL LABOR AND MATERIAL WHERE REQUIRED.

D. THE LOCATION OF ALL ELECTRICAL DISTRIBUTION EQUIPMENT, DEVICES, SYSTEMS EQUIPMENT, CIRCUITS, FEEDERS, TERMINATIONS, ETC., AS INDICATED ON THIS DRAWING WERE TAKEN FROM VARIOUS SOURCES. THE INFORMATION IS DIAGRAMMATIC ONLY AND IS SUBJECT TO VARIATION FROM EXISTING CONDITIONS. IN FACT, CERTAIN EXISTING CONDITIONS MAY NOT BE INDICATED AT ALL. CONTRACTORS PROPOSING TO DO ANY PART OF THE WORK INDICATED HEREIN OR AS DEFINED IN THE SCOPE OF WORK SHALL REVIEW THE COMPLETE SET OF CONTRACT DOCUMENTS, VISIT THE SITE AND DETERMINE TO HIS/HER SATISFACTION THAT HE/SHE WILL BE ABLE TO COMPLETE ALL WORK REQUIRED FOR THE BID AMOUNT PROPOSED.

E. COORDINATE THE LOCATION OF EXISTING CONDUITS AND JUNCTION BOXES WITH NEW MECHANICAL SYSTEM AND OTHER APPLICABLE SYSTEMS. DEVICES, CONDUITS, CABLING, SUPPORTS, AND JUNCTION BOXES THAT ARE IN CONFLICT SHALL BE RELOCATED TO BOTTOM OF STRUCTURE ABOVE AS NECESSARY TO ACCOMMODATE ALL NEW CONSTRUCTION, INCLUDING BUT NOT LIMITED TO NEW CEILINGS, MECHANICAL, PLUMBING, NEW CONDUIT ROUTING, AND ELECTRICAL EQUIPMENT AND SYSTEMS.

F. THE CONTRACTOR SHALL MAINTAIN THE CONTINUITY OF EXISTING CIRCUITS THAT CONTAIN DEVICES OR EQUIPMENT THAT ARE TO REMAIN. WHERE DEMOLITION/RELOCATION OF DEVICES AND EQUIPMENT IS INDICATED, THE CONTRACTOR SHALL ENSURE THAT OTHER DEVICES OR EQUIPMENT THAT ARE CONNECTED TO THE SAME CIRCUIT, WHETHER "UPSTREAM" OR "DOWNSTREAM", SHALL REMAIN OPERATIONAL. UNUSED CIRCUIT BREAKERS SHALL REMAIN AND BE LABELED AS SPARES IN ALL AFFECTED PANELBOARDS. IN ADDITION, PROVIDE NEW TYPEWRITTEN DIRECTORIES IN ALL AFFECTED PANELBOARDS.

G. COORDINATE WITH ALL TRADES NOT TO DAMAGE EXISTING CABLES AND WIRING (DESIGNATED TO BE RELOCATED IN NEW CONSTRUCTION) BEING TEMPORARILY COILING UP AND STORED ABOVE CEILING. TEST ALL CABLES AND WIRING PRIOR TO DEMOLITION. NOTIFY CONSTRUCTION MANAGER OF ALL CABLES THAT DO NOT OPERATE PER SYSTEMS SPECIFICATIONS. CABLES NOT BEING REUSED SHALL BE REMOVED COMPLETELY. MAINTAIN "UPSTREAM" AND/OR "DOWNSTREAM" CONNECTIONS.

H. COORDINATE WITH CONSTRUCTION MANAGER TO REWORK AND RELOCATE ANY DISTURBED EXISTING SYSTEM DEVICES PER OWNER'S VENDOR.

I. NOT USED.

KEYNOTES- DEMOLITION

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

1 REMOVE ALL EXISTING LIGHT FIXTURES AND LIGHTING CONTROL DEVICES AND ASSOCIATED BOXES, CONDUITS, WIRING, AND SUPPORTS COMPLETE. WHERE APPLICABLE, RETAIN EXISTING CONDUITS AND BACK BOXES IN WALLS THAT ARE IN LIKE NEW CONDITION AND MEET MINIMAL CODE AND PROJECT REQUIREMENTS, FOR REUSE IN RENOVATION. REFER TO LIGHTING RENOVATION PLAN, AND COORDINATE WITH ALL CONTRACT DOCUMENTS.

2 REMOVE ALL EXISTING BUT NOT LIMITED TO: ELECTRICAL DEVICES, COMMUNICATIONS DEVICES, SIGNAL-VOLTAGE DEVICES AND ASSOCIATED BOXES, CONDUITS, WIRING, AND SUPPORTS COMPLETE. WHERE APPLICABLE, RETAIN EXISTING CONDUITS AND BACK BOXES IN WALLS THAT ARE IN LIKE NEW CONDITION AND MEET MINIMAL CODE AND PROJECT REQUIREMENTS, FOR REUSE IN RENOVATION. REFER TO POWER AND SYSTEMS RENOVATION PLAN, AND COORDINATE WITH ALL CONTRACT DOCUMENTS.

3 REMOVE ALL EXISTING EXTERIOR LIGHT FIXTURES AND EXTERIOR LIGHTING CONTROL DEVICES AND ASSOCIATED BOXES, CONDUITS, WIRING, AND SUPPORTS COMPLETE. WHERE APPLICABLE, RETAIN EXISTING CONDUITS AND BACK BOXES IN WALLS THAT ARE IN LIKE NEW CONDITION AND MEET MINIMAL CODE AND PROJECT REQUIREMENTS, FOR REUSE IN RENOVATION. REFER TO LIGHTING RENOVATION PLAN, AND COORDINATE WITH ALL CONTRACT DOCUMENTS

4 EXISTING SERVICE ENTRANCE DISTRIBUTION, REFER TO "ELECTRICAL ONE-LINE DIAGRAM", SHEET E-3.

5 EXISTING UTILITY COMPANY METER: COORDINATE INCLUDING BUT NOT LIMITED TO ALL LABOR, MATERIALS, FEES, ETC. FOR A COMPLETE INSTALLATION PER ALL CODES AND UTILITY COMPANY'S REQUIREMENTS.

6 REMOVE EXISTING PANELBOARD COMPLETE.

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MEP PROJECT #: 19150

PARTIAL FLOOR PLAN - LIGHTING

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 11.06.2020
DRAWN BY: RAB
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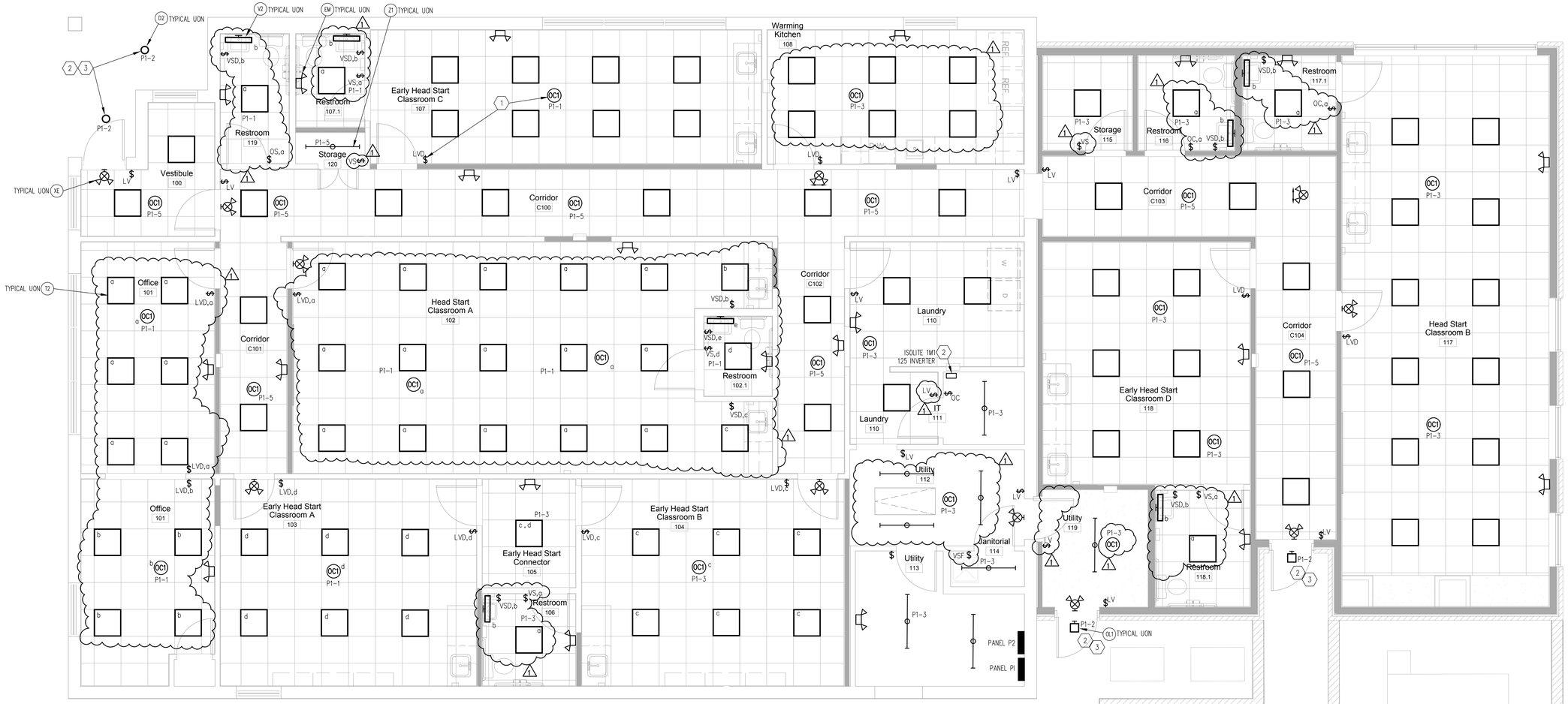
2019-52.06

E-D



LIGHTING
FIRST FLOOR PLAN

GRAPHIC SCALE SUPERSEDES NUMERIC SCALE

0 2 4 8

GENERAL NOTES - LIGHTING:

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

A. SEE DRAWING E-0 FOR ADDITIONAL NOTES AND FIXTURE SCHEDULE.

B. COORDINATE EXACT MOUNTING HEIGHTS AND LOCATIONS WITH ARCHITECTURAL ELEVATIONS, NEW WORK, AND ALL TRADES (MECHANICAL, PLUMBING EQUIPMENT, DUCTWORK, ETC.)

C. ALL LIGHTING FIXTURES ARE TO BE SUPPORTED PER CURRENT NEC.

D. LIGHTING FIXTURES SHALL BE WIRED TO SWITCHES GENERALLY SHOWN IN EACH ROOM AND CONNECTED TO LIGHTING PANELS WITH THE REQUIRED QUANTITY OF WIRES FOR PROPER OPERATION. A CONTINUOUS GROUND MUST BE PROVIDED THROUGH CONDUIT SYSTEM. EXIT LIGHTS, INVERTERS, AND NIGHT LIGHTS SHALL BE CONNECTED AHEAD OF LOCAL SWITCHING ON SAME CIRCUIT.

E. FOR CEILING MOUNTED OCCUPANCY SENSORS, PROVIDE CEILING MOUNTED LIGHTING CONTROL CONSISTING OF A SENSOR SWITCH, CIRCUIT AHEAD OF ANY WALL BOX CONTROLS OR SWITCHES, (SEE PLAN). COLOR PER ARCHITECT. SEE TYPICAL DIAGRAM DRAWING E-3.

F. FOR WALL SWITCH/OCCUPANCY SENSORS. PROVIDE WALL BOX LIGHTING CONTROL CONSISTING OF A SENSOR SWITCH PER LEGEND OR TYPICAL DIAGRAM DRAWING E-3 AS APPROPRIATE, ALL DEVICES IVORY IN COLOR.

G. FOR LIGHTING SWITCH DESIGNATION SEE LIGHTING CONTROL "SWITCHES" SCHEDULE THIS DRAWING.

H. FOR ALL WALL SWITCH COVER PLATES PROVIDE OUTLET BOX COVER PLATE CONSISTING WITH LUTRON CW-X OUTLET BOX COVER PLATE. (X-INDICATED NUMBER OF DEVICES PER LOCATION. ALL DEVICES AND COVERPLATES IVORY IN COLOR).

I. PROVIDE ALL LABOR AND MATERIALS TO REWORK AND/OR RELOCATE SWITCHING WHERE DOOR AND DOOR FRAMES ARE BEING REPLACED (ENLARGED) AND REQUIRED MOVING SWITCH, COORDINATE WITH ALL CONTRACT DOCUMENTS. PROVIDE NEW DEVICE TO MATCH EXISTING ROOM DEVICE COLOR AND COVER PLATE TO MATCH EXISTING ROOM DEVICE COLOR AND MATERIAL IF APPLICABLE.

1 J. COORDINATE EXACT INSTALLATION HEIGHTS LOCATIONS OF DEVICES (AND FACEPLATES) WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. (INCLUDING BUT NOT LIMITED TO HALF WALLS, CASEWORK, DOOR SWINGS, OTHER DEVICES, OTHER TRADES, ETC.)

KEYNOTES - LIGHTING:

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

1. SEE VACANCY/OCCUPANCY CONTROL TYPICAL WIRING DIAGRAMS ON DRAWING E-3, TYPICAL. COORDINATE WITH ENGINEER. COORDINATE EXACT LOCATION OF CEILING MOUNTED SENSORS WITH MANUFACTURER, OTHER TRADES AND ENGINEER/CONTRACTOR/ARCHITECT PRIOR TO ROUGH-IN TO CONFIRM COVERAGE.
2. CIRCUIT EXTERIOR FIXTURES VIA REMOTE EMERGENCY INVERTER ISOLITE IM1 125 IN THE IT ROOM 111. COORDINATE THIS CONNECTION REQUIREMENT WITH MANUFACTURER FOR CORRECT NUMBER OF CONDUCTORS, ETC. FOR PROPER OPERATION OF NORMAL SWITCHING AND EMERGENCY OPERATION.
3. CIRCUIT EXTERIOR FIXTURES INDICATED THRU PHOTOCELL/TIMECLOCK SYSTEM.
4. PROVIDE NEW CIRCUIT P1-44 FOR EXISTING PARKING LOT LIGHTING STANDARDS. VERIFY EXACT LOCATION OF FIXTURES IN FIELD.
5. PROVIDE NEW CIRCUITS P1-46 AND P1-48 FOR BUILDING SIGNAGE. VERIFY EXACT LOCATIONS IN FIELD.

LIGHTING CONTROL (OCCUPANCY SENSORS)

NOTES:
1. POWER PACKS AND CONTROLLED RELAYS ARE NOT INDICATED ON PLANS AND ARE TO BE PROVIDED PER MANFUCATURER'S REQUIREMENTS TO MEET THE INTENT OF THE DESIGN.
2. OTHER POWER PACKS AND CONTROLLED RELAYS AS REQUIRED.

DEVICE LABEL	SYMBOL LABEL	DESCRIPTION	MANUFACTURER	MODEL	DEVICE TYPE
	OC1	LOW VOLTAGE CEILING MOUNT SENSOR, PASSIVE DUAL TECHNOLOGY, LARGE MOTION / EXTENDED RANGE 360° LENS, (CAT5E PATCH CABLE & RJ45 SPLITTER INCLUDED.)	nLIGHT	nCM PDT 9 RJB	SENSOR
AR	OC1	LOW VOLTAGE CEILING MOUNT SENSOR, PASSIVE DUAL TECHNOLOGY, LARGE MOTION / EXTENDED RANGE 360° LENS, WITH AUXILIARY RELAY AND REAR RJ45 (CAT5E PATCH CABLE & RJ45 SPLITTER INCLUDED.)	nLIGHT	nCM PDT 9 AR RJB	SENSOR

LIGHTING CONTROL (SWITCHES)

NOTES:
1. POWER PACKS AND CONTROLLED RELAYS ARE NOT INDICATED ON PLANS AND ARE TO BE PROVIDED PER MANFUCATURER'S REQUIREMENTS TO MEET THE INTENT OF THE DESIGN.
2. OTHER POWER PACKS AND CONTROLLED RELAYS AS REQUIRED.

DEVICE LABEL	SYMBOL LABEL	DESCRIPTION	MANUFACTURER	MODEL	DEVICE TYPE
	$	DESIGNER STYLE SINGLE POLE SWITCH. TURN THE LIGHTS ON AND OFF WITH THE PADDLE SWITCH. (VERIFY VOLTAGE AND COLOR)	LUTRON	CA-1PSH	LINE-VOLTAGE SWITCH
OC	$	WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY (1) BUTTON (ON/OFF) PRESET AT "AUTO-ON" FOR ROOM LIGHTS. ("XX" COLOR AS SPECIFIED)	SENSOR SWITCH	WSX PDT XX	LINE-VOLTAGE SWITCH
LV	$	LOW VOLTAGE (2) BUTTON PUSH-BUTTON WALLPOD ("XX" COLOR AS SPECIFIED). USE VACANCY CONTROL TYPE "SA" POWER PACKS, UNLESS NOTED OTHERWISE. COORDINATE PROGRAMMING WITH OWNER.	nLIGHT	NPODM XX	LOW-VOLTAGE SWITCH
LVD	$	LOW VOLTAGE (3) BUTTON (RAISE, LOWER, AND ON/OFF-TOGGLE) PUSH-BUTTON WALLPOD ("XX" COLOR AS SPECIFIED). USE VACANCY CONTROL TYPE "SA" POWER PACKS, UNLESS NOTED OTHERWISE. RAISE/LOWER DIMMING WITHOUT WIRES.	nLIGHT	NPODM DX XX	LOW-VOLTAGE SWITCH
VS	$	WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY (1) BUTTON (ON/OFF-TOGGLE) PRESET AT "MANUAL-ON" FOR ROOM/AREA LIGHT(S). ("XX" COLOR AS SPECIFIED). USE VACANCY CONTROL TYPE "SA", U.N.O	SENSOR SWITCH	WSX PDT SA XX	LINE-VOLTAGE SWITCH
VSD	$	WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY (3) BUTTON (RAISE, LOWER, AND ON/OFF-TOGGLE) PRESET AT "MANUAL-ON" FOR ROOM/AREA LIGHT(S). ("XX" COLOR AS SPECIFIED). USE VACANCY CONTROL TYPE "SA", U.N.O	SENSOR SWITCH	WSX PDT D SA XX	LINE-VOLTAGE SWITCH
VSF	$	WALL SWITCH SENSOR, PASSIVE DUAL TECHNOLOGY (1) BUTTON (ON/OFF). SET SWITCH TO "MANUAL-ON" FOR ROOM LIGHTS AND FAN (1) BUTTON (ON/OFF) PRESET AT "AUTO-ON" FOR ROOM EXHAUST FAN. ("XX" COLOR AS SPECIFIED).	SENSOR SWITCH	WSX PDT 2P FAN XX	LINE-VOLTAGE SWITCH

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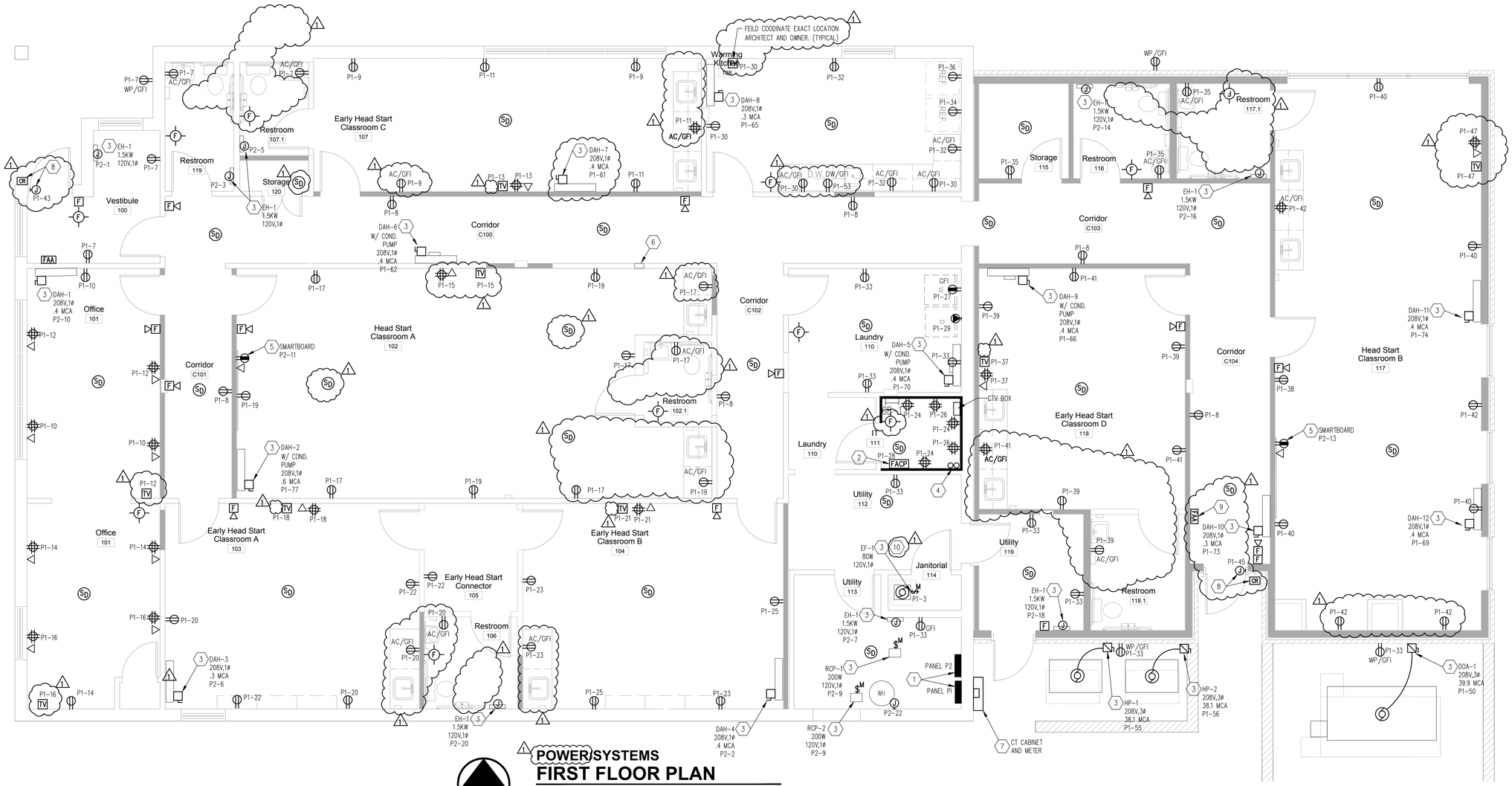
E-1



POWER/SYSTEMS FIRST FLOOR PLAN

GRAPHIC SCALE SUPERSEDES NUMERIC SCALE

0 2 4 8

GENERAL NOTES - :

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

A. SEE DRAWING E-0 FOR ADDITIONAL LEGEND, GENERAL NOTES, AND OTHER SCHEDULES.

B. COORDINATE REMOVAL OF HVAC/MECHANICAL/PLUMBING EQUIPMENT WITH MECHANICAL/PLUMBING DRAWINGS. REMOVE ALL ELECTRICAL, PULL ALL CIRCUITS BACK TO SOURCE UNLESS REQUIRED TO NEW EQUIPMENT (SEE PLANS FOR NOTES).

C. COORDINATE EXACT MOUNTING HEIGHTS AND LOCATIONS WITH EXISTING CONDITIONS, ARCHITECTURAL ELEVATIONS, NEW WORK, AND ALL TRADES. ALL DEVICES AND COVERPLATES TO BE IVORY IN COLOR, COORDINATE WITH ARCHITECT.

D. COORDINATE WITH ALL SYSTEMS AND TRADES TO PROVIDE COMPLETE DISTRIBUTION SYSTEMS REQUIRED FOR COMPLETE AND OPERABLE SYSTEMS. INCLUDING BUT NOT LIMITED TO HVAC, PLUMBING, FIRE ALARM, SECURITY, DOOR ELECTRONICS, CCTV, CTV, MONITORING, INTERCOM, CLOCK, PAGING, VOICE/DATA, CABLE TELEVISION, ETC.

E. COORDINATE MOUNTING AND EXACT LOCATIONS OF ALL MECHANICAL AND PLUMBING EQUIPMENT DISCONNECTS, STARTERS, ETC. WITH ALL TRADES AND IN ACCORDANCE WITH ALL STATE, LOCAL, AND NATIONAL CODES. PROVIDE ALL LABOR AND MATERIALS TO CONNECT COMPLETE. PROVIDE SIZES PER UNIT NAME PLATE, FINAL CONNECTIONS WITH SEAL-TITE.

F. PROVIDE DUCT SMOKE DETECTORS FOR ALL SMOKE DAMPERS AND IN ALL NEW MECHANICAL EQUIPMENT PER FIRE ALARM SUPPLIER, HVAC EQUIPMENT SCHEDULES, ALL TRADES AND CODES. COORDINATE EXACT SAMPLING TUBE, EXACT LOCATION, MOUNTING METHODS, QUANTITY AND REQUIREMENTS. PROVIDE ALL LABOR AND MATERIALS TO CONNECT COMPLETE. PROVIDE FAN SHUTDOWN PER APPLICABLE CODES, STANDARDS AND FIRE MARSHALL.

G. COORDINATE EXACT AND SIGNAL-VOLTAGE REQUIREMENTS, LOCATIONS, CONDUITS, AND CABLING REQUIREMENTS FOR ALL SYSTEMS SPECIFIED BY OWNER'S VENDORS AND WITH GENERAL CONTRACTOR AND OWNER. PROVIDE ALL LABOR AND MATERIALS TO CONNECT COMPLETE.

H. REFER TO EQUIPMENT SCHEDULES ON ALL CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION FOR HVAC AND PLUMBING CONNECTIONS. PROVIDE ALL LABOR AND MATERIALS TO CONNECT COMPLETE.

I. COORDINATE EXACT LOCATION AND NUMBER OF "TV" CABLE AND OUTLETS WITH OWNER PRIOR TO INSTALLATION. PROVIDE ALL LABOR AND MATERIALS TO CONNECT COMPLETE.

J. COORDINATE EXACT WALL BOX REQUIREMENTS PRIOR TO ROUGH-IN. WHERE POSSIBLE REUSE EXISTING RACEWAYS AND BOXES, OR FISH WALLS AND PROVIDE RECESSED BACK BOXES. PROVIDE SURFACE MOUNTED RACEWAY CONDUITS, BACK BOXES AND ALL ACCESSORIES EQUAL TO WIREMOLD SERIES #V2000WH WHERE RACEWAYS AND BACK BOXES ARE EXPOSED (VERIFY WITH ARCHITECT PRIOR TO INSTALLATION). PROVIDE ALL LABOR AND MATERIALS TO CONNECT NEW EQUIPMENT, DEVICES, ETC. COMPLETE TO PANEL INDICATED, 20A/1P, U.N.O.

F. ALL RECEPTACLES NEAR SINKS AND OTHER SIMILAR LOCATIONS, EXTERIOR AND ROOFTOP AREAS SHALL BE PROTECTED BY GFCI PER NEC 210.8 (B). IN GENERAL, ALL DEVICES IN AREAS DESIGNATED IN NEC 210.8 SHALL BE GFCI PROTECTED WHETHER INDICATED OR NOT.

G. ALL DEVICES IN GENERAL CARE PEDIATRIC LOCATIONS (AS DEFINED IN NEC 517) SHALL ALSO BE TAMPER-RESISTANT TO MEET NEC 517.18 (C).

H. COORDINATE ALL FIRE ALARM WORK WITH FIRE ALARM SYSTEM VENDOR REPRESENTATIVE BEFORE SUBMITTING BIDS AND PROVIDE A COMPLETE AND FULLY CONDUITED SYSTEM. PAINT ALL JUNCTION BOX COVERS RED AND PROVIDE ALL FIRE ALARM WIRING IN RED CONDUIT MANUFACTURED BY ALLIED TUBE AND CONDUIT. PROVIDE ALL CONNECTIONS TO DUCT SMOKES, ETC. FOR FULLY FUNCTIONAL NFPA COMPLIANT SYSTEM. PROVIDE DEDUCT ALTERNATE TO PROVIDE PLENUM RATED UL LISTED FIRE ALARM CABLING TO MEET ALL APPLICABLE CODES IN LIEU OF A FULLY CONDUITED SYSTEM.

1 ↓ COORDINATE EXACT INSTALLATION HEIGHTS LOCATIONS OF DEVICES (AND FACEPLATES) WITH ARCHITECT AND OWNER PRIOR TO ROUGH-IN. (INCLUDING BUT NOT LIMITED TO HALF WALLS, CASEWORK, DOOR SWINGS, OTHER DEVICES, OTHER TRADES, ETC.)

KEYNOTES - :

(ALL NOTES MAY NOT APPLY TO THIS SHEET)

1. PROVIDE NEW ELECTRICAL BRANCH PANELS AS INDICATED. SEE E-3 FOR SINGLE-LINE DIAGRAM AND E-4 FOR PANEL SCHEDULES AND ADDITIONAL INFORMATION.
2. PROVIDE FIRE ALARM SYSTEM WITH DIGITAL DIALER AND ANNUNCIATOR CONFORMING TO ALL LOCAL, STATE AND NATIONAL CODES. COORDINATE WITH LOCAL AHJ/FIRE MARSHALL FOR ALL REQUIREMENTS AND PROVIDE COMPLETE. PROVIDE FOR SPRINKLER MONITORING AND DUCT SMOKE DETECTION/FAN SHUTDOWN TO MEET APPLICABLE CODES. PROVIDE DATA CONNECTION(S) TO DATA CLOSET AS REQUIRED FOR DIGITAL DIALER.
3. CONNECTION FOR MECHANICAL/PLUMBING EQUIPMENT. COORDINATE EXACT LOCATION, CONTROLS, AND REQUIREMENTS WITH EQUIPMENT MANUFACTURER AND ALL TRADES TO INSTALL COMPLETE. PROVIDE DISCONNECT RATED (NEMA 1 INTERIOR, NEMA 3R EXTERIOR) AND SIZED/FUSED PER MANUFACTURER RECOMMENDATIONS IF NOT FACTORY PROVIDED AS PART OF EQUIPMENT (SEE MECHANICAL FOR BASIS OF DESIGN MCA AND MOCP). PROVIDE CIRCUIT TO PANEL INDICATED. EXACT CIRCUIT BREAKER AND BRANCH CIRCUIT SIZE SHALL BE BASED ON ACTUAL EQUIPMENT PROVIDED TO MEET MANUFACTURER'S RECOMMENDATIONS. FINAL CONNECTION WITH SEAL-TITE.
4. PROVIDE FIRE RETARDANT BACKBOARD FOR DATA/TELECOM EQUIPMENT AS INDICATED. PROVIDE DEDICATED 20A, 120V. CIRCUITS TO QUADRAPLEX OUTLETS AS INDICATED. PROVIDE (2) 4"C TO EXTERIOR UTILITY CONNECTION PER LOCAL UTILITY. FIELD COORDINATE EXACT REQUIREMENTS AND LOCATIONS WITH OWNER'S IT REPRESENTATIVE AND LOCAL UTILITY PROVIDER. PROVIDE GROUND BAR AS INDICATED, SEE DETAIL ON E-3.
5. PROVIDE 120V. 1ø CIRCUIT FOR SMARTBOARD. VERIFY EXACT LOCATION WITH ARCHITECT, VERIFY WIRING REQUIREMENTS WITH VENDOR PRIOR TO ROUGH-IN OF BOXES AND CONDUITS.
6. FIRE/SMOKE DAMPER, VERIFY EXACT LOCATION WITH MECHANICAL CONTRACTOR. SEE GENERAL NOTE F, THIS DRAWING.
7. PROVIDE CT CABINET AND METERING PER UTILITY COMPANY REQUIREMENTS. SEE SINGLE - LINE DIAGRAM ON DRAWING E-3.

1
8. PROVIDE CONNECTION TO ELECTRIC DOOR STRIKE AND ROUGH-IN FOR KEYPAD OR CARD READER (COORDINATE WITH SECURITY). ALL WORK, BACK BOXES, AND CONDUITS SIZED PER MANUFACTURER RECOMMENDATION AND OWNER'S SECURITY CONSULTANT. PROVIDE PULL STRINGS BETWEEN ALL BOXES. FIELD COORDINATE EXACT LOCATION AND REQUIREMENTS OF ALL COMPONENTS.
9. PROVIDE A FIRE ALARM REMOTE "FIRE ALARM ANNUNICIATOR" PANEL COORDINATE EXACT LOCATION WITH AHJ.
10. 30 AMP, 2 POLE, MANUAL MOTOR STARTER, EQUAL TO HUBBELL #HBL1372D. CONNECT TO AND CONTROL BY ROOM LIGHTING/FAN CONTROL(S).

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E-2

208Y/120V 3-Phase 4-Wire LIGHTING PANEL — Name: P1

Section 1

Mains: 400A Main molded case breaker
Trim: Surface Door: Yes
Neutral: S/N
Ground bar: As required for service entrance equipment

Min Sym IC: 10000
Fed from: UTILITY
Provide UL SE Label
Feeder: Note 1

CIR	DESCRIPTION	CONDUIT	PHASE	NEUT	GND	TRIP	POLES	PHASE LOADS A	PHASE LOADS B	PHASE LOADS C	POLES	TRIP	CONDUIT	PHASE	NEUT	GND	DESCRIPTION	CIR
1	LTG.Class & Off.	3/4"	#12	#12	#12	20	1	889			1	20	3/4"	#12	#12	#12	Exterior Ltg	2
3	LTG.Class Rm	3/4"	#12	#12	#12	20	1		100		1	20	–				Spare	4
5	LTG.Entry, Corr.	3/4"	#12	#12	#12	20	1			1186	1	20	–				Spare	6
7	Rec.Ext,RR,Entry	3/4"	#12	#12	#12	20	1	900			1	20	3/4"	#12	#12	#12	Rec. Corridors	8
9	Rec.HS-8	3/4"	#12	#12	#12	20	1		1080		1	20	3/4"	#12	#12	#12	Rec. Office	10
11	Rec.HS-8	3/4"	#12	#12	#12	20	1			720	1	20	3/4"	#12	#12	#12	Rec. Office	12
13	Rec.HS-8	3/4"	#12	#12	#12	20	1	540			1	20	3/4"	#12	#12	#12	Rec. Office	14
15	Rec.HS-15	3/4"	#12	#12	#12	20	1		900		1	20	3/4"	#12	#12	#12	Rec. Office	16
17	Rec.HS-15	3/4"	#12	#12	#12	20	1			540	1	20	3/4"	#12	#12	#12	Rec. HS-8	18
19	Rec.HS-15	3/4"	#12	#12	#12	20	1	720			1	20	3/4"	#12	#12	#12	Rec. HS-8	20
21	Rec.HS-8	3/4"	#12	#12	#12	20	1		540		1	20	3/4"	#12	#12	#12	Rec. HS-8	22
23	Rec.HS-8	3/4"	#12	#12	#12	20	1			360	1	20	3/4"	#12	#12	#12	Rec. IT room	24
25	Rec.HS-8	3/4"	#12	#12	#12	20	1	360			1	20	3/4"	#12	#12	#12	Rec. IT room	26
27	Rec.WASHER	3/4"	#12	#12	#12	20	1		1500		1	20	3/4"	#12	#12	#12	FACP Panel	28
29	REC. DRYER	3/4"	#10	–	#10	30	2			2500	1	20	3/4"	#12	#12	#12	Rec. Break Rm	30
31	–		#10				–	2500			1	20	3/4"	#12	#12	#12	Rec. Break Rm	32
33	Rec.Laund, Elect	3/4"	#12	#12	#12	20	1		1260		1	20	3/4"	#12	#12	#12	Rec. Refrig.	34
35	Rec.Stor,Rest RM	3/4"	#12	#12	#12	20	1	540			1	20	3/4"	#12	#12	#12	Rec. Refrig.	36
37	Rec.HS-8	3/4"	#12	#12	#12	20	1		540		1	20	3/4"	#12	#12	#12	Rec. HS-17	38
39	Rec.HS-8	3/4"	#12	#12	#12	20	1			720	1	20	3/4"	#12	#12	#12	Rec. HS-17	40
41	Rec.HS-8	3/4"	#12	#12	#12	20	1			720	1	20	3/4"	#12	#12	#12	Rec. HS-17	42
43	Door Cntrls-C101	3/4"	#12	#12	#12	20	1	500			1	20	3/4"	#12	#12	#12	Parking lot ltg	44
45	Door Cntrls-C104	3/4"	#12	#12	#12	20	1		500		1	20	3/4"	#12	#12	#12	Sign Ltg.	46
47	Rec. HS-17	3/4"	#12	#12	#12	20	1			540	1	20	3/4"	#12	#12	#12	Sign Ltg.	48
49	Spare	–				20	1	500			3	50	3/4"	#8	–	#10	DOS	50
51	Spare	–				20	1		500		–			#8			–	52
53	REC.DW-Break Rm	3/4"	#12	#12	#12	20	1			1500	–			#8			–	54
55	HP-1	3/4"	#8	–	#10	50	3	4572			3	60	3/4"	#8	–	#10	HP-2	56
57	–		#8				–		4572		–			#8			–	58
59	–		#8				–			4572	–			#8			–	60
61	DAH-7	3/4"	#12	–	#12	15	2	42			2	15	3/4"	#12	–	#12	DAH-6	62
63	–		#12				–		41		–			#12			–	64
65	DAH-8	3/4"	#12	–	#12	15	2			42	2	15	3/4"	#12	–	#12	DAH-9	66
67	–		#12				–	41			–			#12			–	68
69	DAH-12	3/4"	#12	–	#12	15	2		42		2	15	3/4"	#12	–	#12	DAH-5	70
71	–		#12				–			41	–			#12			–	72
73	DAH-10	3/4"	#12	–	#12	15	2	42			2	15	3/4"	#12	–	#12	DAH-11	74
75	–		#12				–		41		–			#12			–	76
77	DAH-2	3/4"	#12	–	#12	15	2			63	1	—	–				Space only	78
79	–		#12				–	62			3	100	1-1/4"	#3	#3	#8	P2	80
81	Spare	–				20	1	500			–			#3			–	82
83	Spare	–				20	1		500		–			#3			–	84

Phase load totals	A	34973	
	B	31869	
	C	32585	

Demand load = 78.7 KVA Demand amps = 218

Notes for P1:

1 Feeder is (1) 3" – 4#500kcmil THWN Copper

COMPUTATION SUMMARY		VOLT-AMPS		DEMAND FACTOR		DEMAND
Continuous lights		5280	*	1.25	=	6600
Noncontinuous lights		0				0
Receptacles	– total =	26260				
	1st 10000	10000	*	1.00	=	10000
	remainder	16260	*	0.50	=	8130
Resistance heat		15355	*	0.00	=	0
Heat motors (seasonal)		0				0
A/C motors (seasonal)		27432	*	1.00	=	27432
Motors (nonseasonal)		0				0
Other continuous		0				0
Other noncontinuous		19700	*	1.00	=	19700
Water heat		400	*	1.00	=	400
Kitchen		0				0
User defined		0				0
Spares		3000	*	1.00	=	3000
Largest motor (A/C add 25%)		13716	*	0.25	=	3429
TOTAL DEMAND						78691
NOTE: TOTAL DEMAND does not include subfed spare demand					=	2000
Minimum feeder ampacity =		78691 / 360.27			=	218A
Minimum feeder overcurrent protection						225A
Feeder overcurrent protection in use						400A
Usable V-A on 400A feeder =		400 * 360.27 minus 78691			=	65416

208Y/120V 3-Phase 4-Wire LIGHTING PANEL — Name: P2

Mains: 100A MLO
Trim: Surface Door: Yes
Neutral: S/N
Ground bar: Yes

Min Sym IC: 10000
Fed from: P1
Feeder: Note 1

CIR	DESCRIPTION	CONDUIT	PHASE	NEUT	GND	TRIP	POLES	PHASE LOADS A	PHASE LOADS B	PHASE LOADS C	POLES	TRIP	CONDUIT	PHASE	NEUT	GND	DESCRIPTION	CIR
1	EH-1 Rm 100	3/4"C	#12	#12	#12	20	1	1500			2	15	3/4"	#12	–	#12	DAH-4	2
3	EH-1 Rm 119	3/4"C	#12	#12	#12	20	1		1500		–			#12			–	4
5	EH-1 Rm 107.1	3/4"C	#12	#12	#12	20	1			1500	2	15	3/4"	#12	–	#12	DAH-3	6
7	EH-1 Rm 113	3/4"C	#12	#12	#12	20	1	1500			–			#12			–	8
9	Water Htr. RCP-2	3/4"C	#12	#12	#12	20	1		200		2	15	3/4"	#12	–	#12	DAH-1	10
11	SMARTBOARD RM102	3/4"C	#12	#12	#12	20	1			500	–			#12			–	12
13	SMARTBOARD RM117	3/4"C	#12	#12	#12	20	1	500			1	20	3/4"C	#12	#12	#12	EH-1 Rm 116	14
15	Spare	–				20	1		500		1	20	3/4"C	#12	#12	#12	EH-1 Rm 117.1	16
17	Spare	–				20	1			500	1	20	3/4"C	#12	#12	#12	EH-1 Rm 119	18
19	Space only	–				—	1	—			1	20	3/4"C	#12	#12	#12	EH-1 Rm 108	20
21	Space only	–				—	1		—		1	20	3/4"C	#12	#12	#12	Water Htr.	22
23	Space only	–				—	1			—	1	20	3/4"C	#12	#12	#12	Water Htr.RCP-1	24
25	Space only	–				—	1	—			1	20	–				Spare	26
27	Space only	–				—	1		—		1	20	–				Spare	28
29	Space only	–				—	1			—	1	—	–				Space only	30
31	Space only	–				—	1	—			1	—	–				Space only	32
33	Space only	–				—	1		—		1	—	–				Space only	34
35	Space only	–				—	1			—	1	—	–				Space only	36
37	Space only	–				—	1	—			1	—	–				Space only	38
39	Space only	–				—	1		—		1	—	–				Space only	40
41	Space only	–				—	1			—	1	—	–				Space only	42

Phase load totals	A	7060	
	B	4483	
	C	4259	

Demand load = 15.8 KVA Demand amps = 44

Notes for P2:

1 Feeder is (1) 1-1/4" – 4#3 + #8 GND THWN Copper

COMPUTATION SUMMARY		VOLT-AMPS		DEMAND FACTOR		DEMAND
Continuous lights		0				0
Noncontinuous lights		0				0
Receptacles	– total =	1000				
	1st 10000	1000	*	1.00	=	1000
Resistance heat		202	*	1.00	=	202
Heat motors (seasonal)		0				0
A/C motors (seasonal)		0				0
Motors (nonseasonal)		0				0
Other continuous		0				0
Other noncontinuous		12200	*	1.00	=	12200
Water heat		400	*	1.00	=	400
Kitchen		0				0
User defined		0				0
Spares		2000	*	1.00	=	2000
Largest motor		0				0
TOTAL DEMAND						15802
Minimum feeder ampacity =		15802 / 360.27			=	44A
Minimum feeder overcurrent protection						45A
Feeder overcurrent protection in use						100A
Usable V-A on 100A feeder =		100 * 360.27 minus 15802			=	20225

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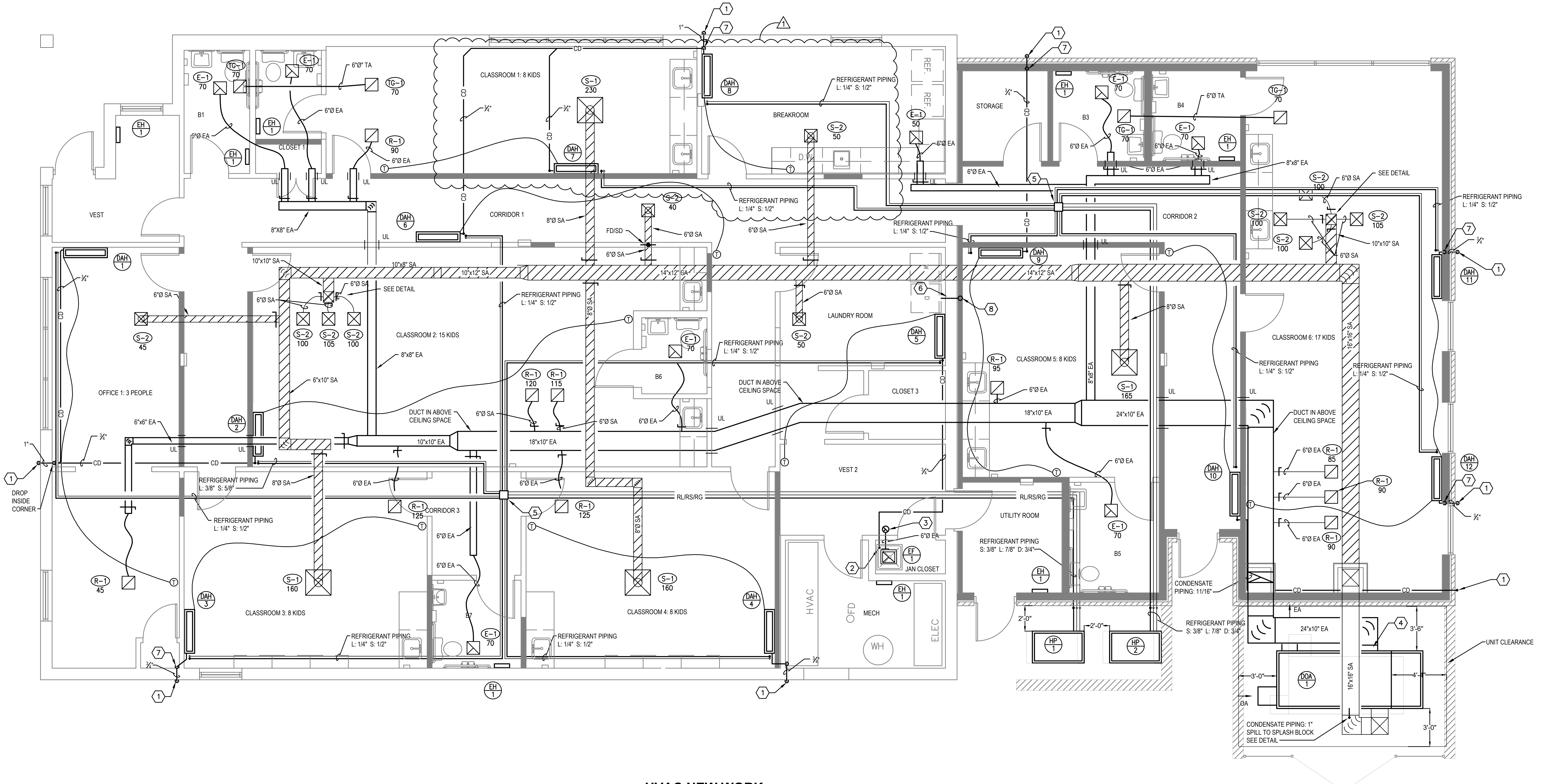
E-4



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HVAC NEW WORK
FIRST FLOOR PLAN

GRAPHIC SCALE SUPERSEDES NUMERIC SCALE
0 2 4 8

TAGGED NOTES

1. SPILL CONDENSATE TO GRADE 6" ABOVE GROUND.
2. SPILL CONDENSATE TO MOP SINK.
3. 6" EXHAUST DUCT UP TO ROOF HOOD.
4. CONNECT 12"x10 EXHAUST DUCT TO RETURN AIR INLET.
5. SIX BRANCH BS BOX.
6. 4" DRYER VENT UP TO ROOF HOOD. VENT STUBBED OUT THROUGH WALL AT 24" AFF.
7. DROP CONDENSATE IN WALL.
8. 4" DRYER VENT UP TO ALUMINUM DRYER TERMINATION WITH BACKDRAFT DAMPER.

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2019-52.06

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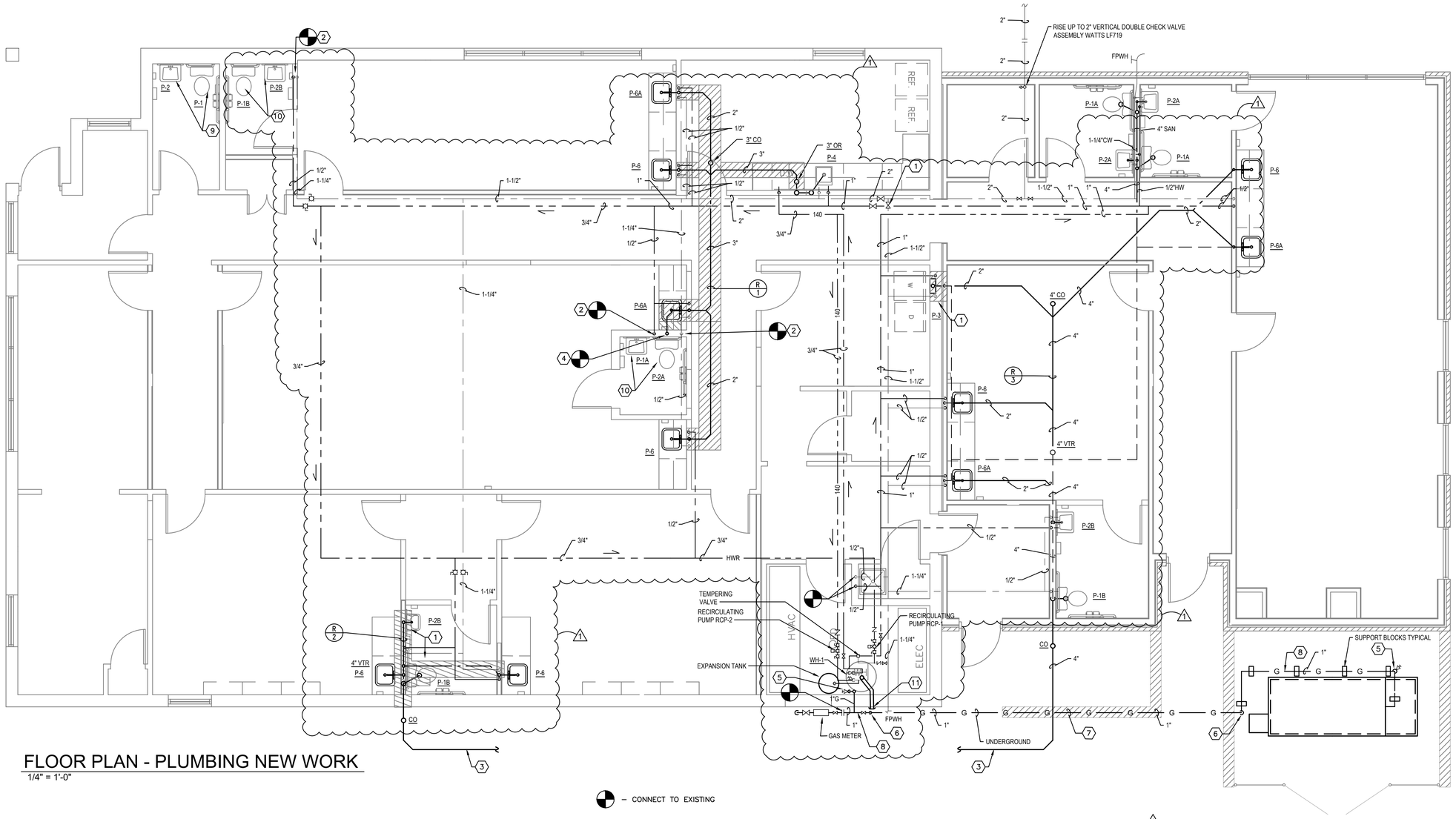

FLOOR PLAN - PLUMBING NEW WORK

1/4" = 1'-0"

– CONNECT TO EXISTING

GENERAL NOTES:

GENERAL:

1. COORDINATE MECHANICAL WORK WITH ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL AND LANDSCAPE WORK SHOWN ON OTHER CONTRACT DOCUMENTS. PROVIDE ADDITIONAL OFFSETS FOR COORDINATED INSTALLATION WHERE REQUIRED.
2. COORDINATE HVAC, PLUMBING AND FIRE PROTECTION WORK PRIOR TO INSTALLATION. DUCTWORK AND EQUIPMENT ACCESS TAKES PRECEDENCE OVER PIPING FOR AVAILABLE SPACE.
3. WHERE USED, THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
4. COORDINATE EQUIPMENT CONNECTIONS WITH MANUFACTURERS' CERTIFIED DRAWINGS. COORDINATE AND PROVIDE DUCT AND PIPING TRANSITIONS REQUIRED FOR FINAL EQUIPMENT CONNECTIONS TO FURNISHED EQUIPMENT. FIELD VERIFY AND COORDINATE DUCT AND PIPING DIMENSIONS BEFORE FABRICATION.
5. PROVIDE MISCELLANEOUS STEEL REQUIRED TO ENSURE PROPER INSTALLATION OF MECHANICAL SYSTEMS.
6. LOCATE VALVES, WATER HAMMER ARRESTERS, CLEANOUTS AND SIMILAR COMPONENTS SO THAT THEY ARE ACCESSIBLE. PROVIDE ACCESS DOORS FOR MECHANICAL EQUIPMENT INSTALLED BEHIND WALLS, ABOVE INACCESSIBLE CEILINGS AND BELOW FLOORS. COORDINATE ACCESS DOOR LOCATIONS WITH ARCHITECT/ENGINEER. INSTALL TAG ON CEILING GRID FRAME TO INDICATE LOCATION AND TYPE OF EQUIPMENT THAT REQUIRES MAINTENANCE. PROVIDE 16 GA, STEEL, FLUSH TYPE ACCESS DOOR WITH CONCEALED HINGE AND SLOT SCREWDRIVER TYPE CAM LATCH. PROVIDE FACTORY PRIMED IN PAINTED SURFACE AREAS FOR FIELD PAINTING. PROVIDE STAINLESS STEEL FOR ALL OTHER AREAS. PROVIDE UL LISTED AND LABELED DOOR WHERE FIRE-RESISTANCE RATING IS INDICATED ON DRAWINGS. ACCESS DOOR SHALL BE SIZED SO THAT ADJACENT EQUIPMENT IS ACCESSIBLE. PROVIDE ACUDOR, ELMDOR, MILCOR, OR APPROVED.
7. COORDINATE ATTACHMENTS TO STRUCTURE TO VERIFY THAT ATTACHMENT POINTS ON EQUIPMENT AND STRUCTURE CAN ACCEPT SEISMIC, WEIGHT, AND OTHER LOADS IMPOSED.
8. REFER TO TYPICAL DETAILS PROVIDED IN THIS DWG SET FOR DUCTWORK, PIPING, AND EQUIPMENT INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR CONFORMANCE WITH DETAILS.
9. LOCATIONS AND SIZES OF FLOOR, WALL, AND ROOF OPENINGS SHALL BE COORDINATED WITH OTHER TRADES INVOLVED. INCLUDE IN THE COST OF MECHANICAL WORK, CUTTING, CORING, PATCHING AND PAINTING OF EXISTING WALLS, CEILINGS, FLOORS AND ROOFS AS REQUIRED TO ACCOMMODATE WORK AS INDICATED IN THE MECHANICAL CONTRACT DOCUMENTS, UNLESS SPECIFICALLY SHOWN ON ARCHITECTURAL DRAWINGS.
10. PROVIDE ELASTOMERIC FOAM MATERIAL ON MECHANICAL EQUIPMENT THAT PRESENT A SAFETY HAZARD.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFEKEEPING OF HIS OWN PROPERTY ON THE JOB SITE. OWNER ASSUMES NO RESPONSIBILITY FOR PROTECTION OF PROPERTIES AGAINST FIRE, THEFT AND ENVIRONMENTAL CONDITIONS.
12. CLEAN THE JOB SITE DAILY AND REMOVE FROM THE PREMISES ANY DIRT AND DEBRIS CAUSE BY THE PERFORMANCE OF THE WORK INCLUDED IN THIS CONTRACT. BEFORE SUBSTANTIAL COMPLETION, CLEAN EQUIPMENT, FIXTURES, EXPOSED DUCTS, PIPING AND SIMILAR ITEMS.
13. PROVIDE EQUIPMENT THAT FITS INTO THE SPACE ALLOTTED AND ALLOWS ADEQUATE ACCEPTABLE CLEARANCE FOR INSTALLATION, REPLACEMENT, ENTRY, SERVICING AND MAINTENANCE. COORDINATE WITH OTHER TRADES TO ENSURE NO CONFLICT WITH REQUIRED CLEARANCES.
14. PROVIDE OFFSETS IN PIPING WHERE PLUMBING/PIPING WALL IS LOCATED DIRECTLY ABOVE STRUCTURE. OFFSET PIPING INTO CASEWORK OR SHAFT TIGHT TO WALL AND BACK INTO WALL ONCE BELOW STRUCTURE. REFER TO STRUCTURAL DRAWINGS.
15. BUILDING SPACE IS LIMITED. STRONG ATTENTION TO DETAIL AND CARE MUST BE TAKEN WHEN DEVELOPING SHOP DRAWING SO ROUTING IS COORDINATED WITH OTHER DISCIPLINES.
16. MATERIALS 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 OR UL 723.

PLUMBING:

1. DOMESTIC WATER TUBE, PIPE, FITTINGS, JOINING MATERIALS, SPECIALTIES, PLUMBING EQUIPMENT, PLUMBING FIXTURES, PLUMBING FITTINGS AND ALL OTHER APPURTENANCES IN CONTACT WITH DRINKING WATER SHALL BE LEAD-FREE EXCEPT THOSE EXPLICITLY EXEMPTED IN SECTION 3874 OF THE SAFE WATER DRINKING ACT. LEAD-FREE SHALL MEAN (A) NOT CONTAINING MORE THAN 0.2 PERCENT LEAD WHEN USED WITH RESPECT TO SOLDER AND FLUX; AND (B) NOT MORE THAN A WEIGHTED AVERAGE OF 0.25 PERCENT LEAD WHEN USED WITH RESPECT TO WETTED SURFACES OF DOMESTIC WATER TUBE, PIPE, FITTINGS, JOINING MATERIALS, SPECIALTIES, PLUMBING EQUIPMENT, PLUMBING FIXTURES, AND PLUMBING FITTINGS.
2. PROVIDE WATER HAMMER ARRESTORS IN DOMESTIC WATER PIPING IN ACCORDANCE WITH PDI-WH 201.
3. PROVIDE LINE SIZE STRAINER UPSTREAM OF EACH BACKFLOW PREVENTER, WATER PRESSURE REDUCING VALVE, CONTROL VALVE, SOLENOID VALVE AND PUMP. PROVIDE SHUTOFF VALVE ON EACH SIDE OF STRAINER.
4. VALVES, EXPANSION FITTINGS/LOOPS, AND PIPING SPECIALTIES SHALL BE FULL SIZE OF PIPE UNLESS NOTED OTHERWISE.
5. PLUMBER RESPONSIBLE FOR TRENCHING SLAB FOR NEW SANITARY AND POURING REPLACEMENT SLAB.

NON-STRUCTURAL MECHANICAL COMPONENTS:

1. THE FOLLOWING ITEMS ARE TAKEN DIRECTLY FROM THE 2012 INTERNATIONAL BUILDING CODE AND FROM THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 7-10. THE CONTRACTOR SHALL REFER TO THE ABOVE FOR ADDITIONAL INFORMATION, EXCEPTIONS, AND FURTHER DESCRIPTIONS. THE CONTRACTOR SHALL ADHERE TO REQUIREMENTS AND AS SUCH, SHALL BE INCLUDED WITHIN BID.
2. 2012 IBC 1613.1 SCOPE: ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND NON-STRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH ASCE 7-10, EXCLUDING CHAPTER 14 AND APPENDIX 11A.
3. 2012 IBC 1705.11 CONTRACTOR RESPONSIBILITY: THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF A SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM, OR SEISMIC-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS.
4. HANGERS AND SEISMIC BRACING FOR THE MECHANICAL SYSTEMS SHALL BE DESIGNED AND PROVIDED BY THE MECHANICAL CONTRACTOR. REFER TO CONTRACTOR SHOP DRAWINGS FOR LOCATIONS OF EQUIPMENT AND HUNG MECHANICAL SYSTEMS. THE MECHANICAL CONTRACTOR SHALL COORDINATE THE SUPPORT SYSTEMS AND DESIGN LOADS FOR HUNG MECHANICAL SYSTEMS WITH THE GENERAL CONTRACTOR AND OTHER TRADES THAT MAY BE IMPACTED.

TAGGED NOTES

1. HATCHING INDICATES FLOOR TRENCHING FOR NEW SEWER SYSTEMS.
2. DROP NEW WATER PIPING DOWN IN WALL TO BACK FEED EXISTING PLUMBING FIXTURES. FLUSH ALL PIPING AFTER CONENCTION TO EXISTING PIPING.
3. PIPE NEW SEWER LINES TO EXISTING SANITRY SEWER OUTFALL(S). AS PER SHEET DM1.1, CONTRACTOR TO DETERMINE EXISTING OUTFALLS AND DEPTHS BY CAMERA. EXTEND NEW PIPING TO OUTFALLS AND CONNECT TO LOCATION WITH ADEQUATE ELEVATION.
4. USE PLUMBING CAMERA TO LOCATE EXISTING MAIN WASTE LINE IN THIS AREA. CONNECT NEW SANITARY WASTE PIPING TO EXISTING WASTE UNDERFLOOR.
5. PROVIDE GAS EQUIPMENT CONNECTION WITH SHUT–OFF VALVE, DIRT LEG, AND, ELECTRIC UNION.
6. PROVIDE TRANSITION BETWEEN UNDERGROUND THERMOPLASTIC PIPING AND ABOVE GROUND STEEL WITH ANDDELESS RISER.
7. 1" THERMOPLASTIC GAS PIPING UNDERGROUND. PROVIDE #8 COPPER TRACER WIRE.
8. PAINT EXTERIOR STEEL GAS PIPING WITH (2) COATS OF A HIGH ZINC CONTENT EXTERIOR PAINT.
9. REPLACE FIXTURES WITH NEW AS INDICATED. CONNECT TO EXISTING PIPING.
10. REPLACE FIXTURES WITH NEW AS INDICATED. LOWER EXISTING PIPE CONNECTIONS FOR NEW ELEVATIONS, SEE ARCHITECTURAL. MODIFY CLOSET FLANGE IF THE EXISTING CLOSET FLANGE DOESN'T ALIGN WITH NEW TOILET FIXTURE.
11. 3" DIRECT VENT TO CONCENTRIC WALL TERMINATION PIPE FLUE AND INTAKE PER MANUFACTURER'S DETAILS AND SPECIFICATIONS.

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MEP PROJECT #: 19150

FLOOR PLAN - PLUMBING NEW WORK

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 11.06.2020
DRAWN BY: RVS
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REVISIONS:
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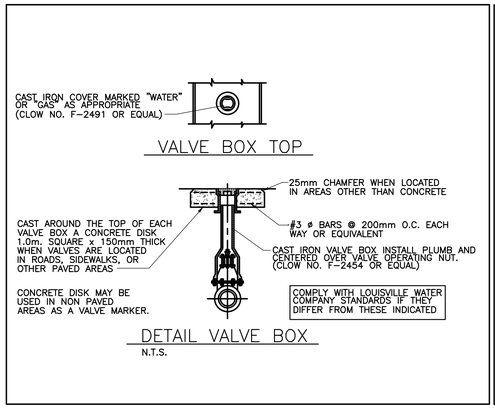

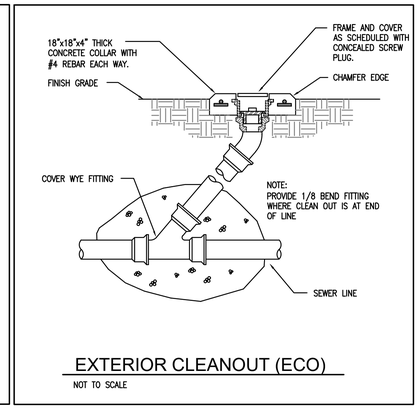

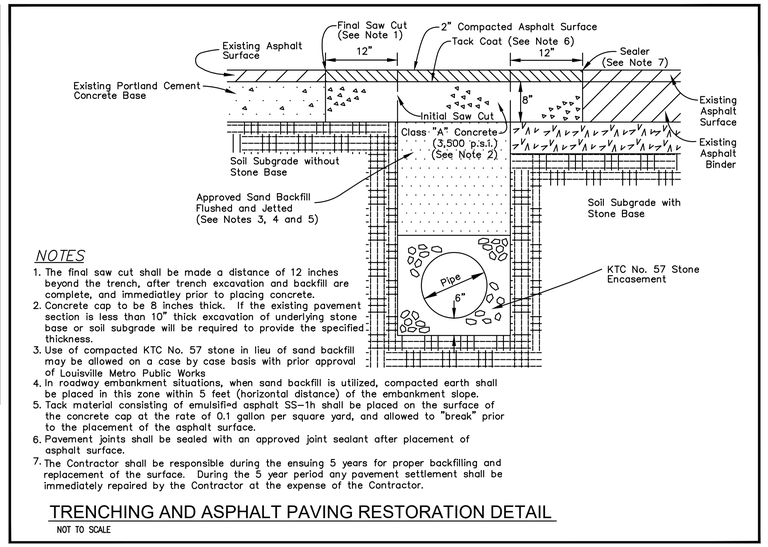

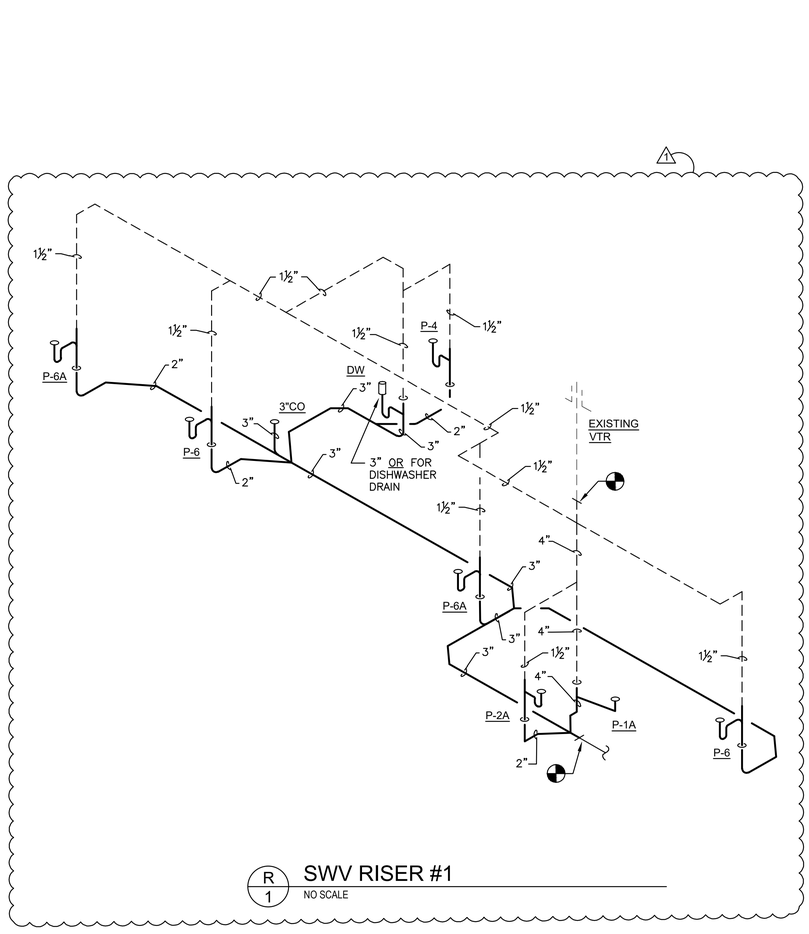

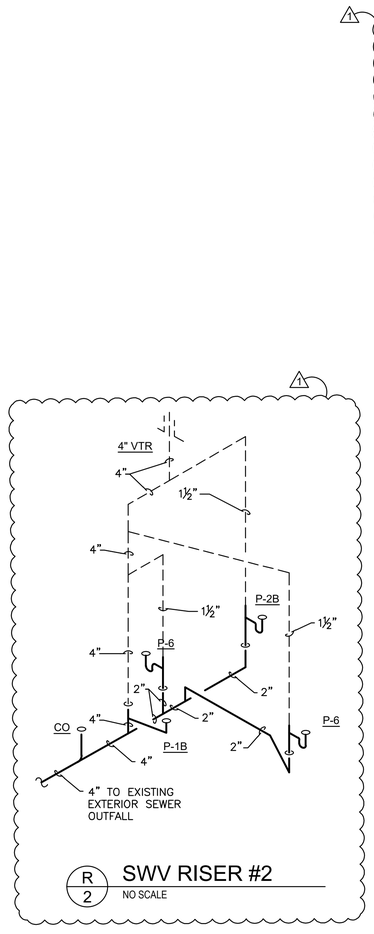

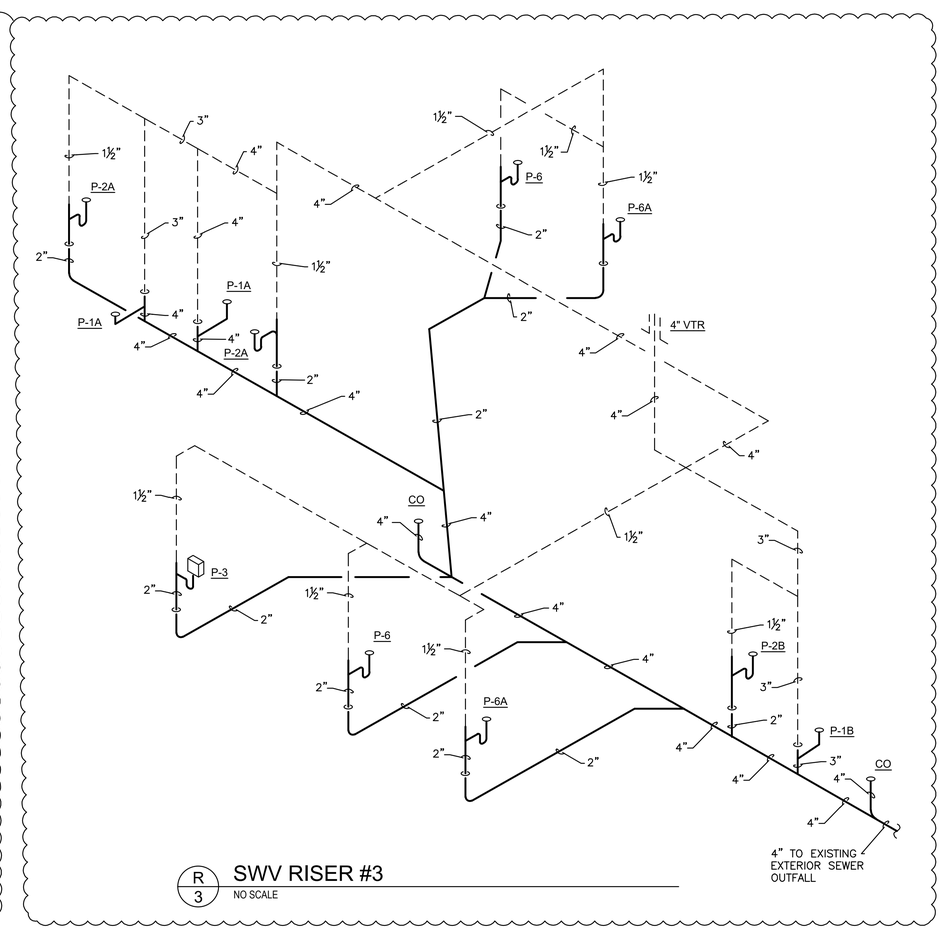

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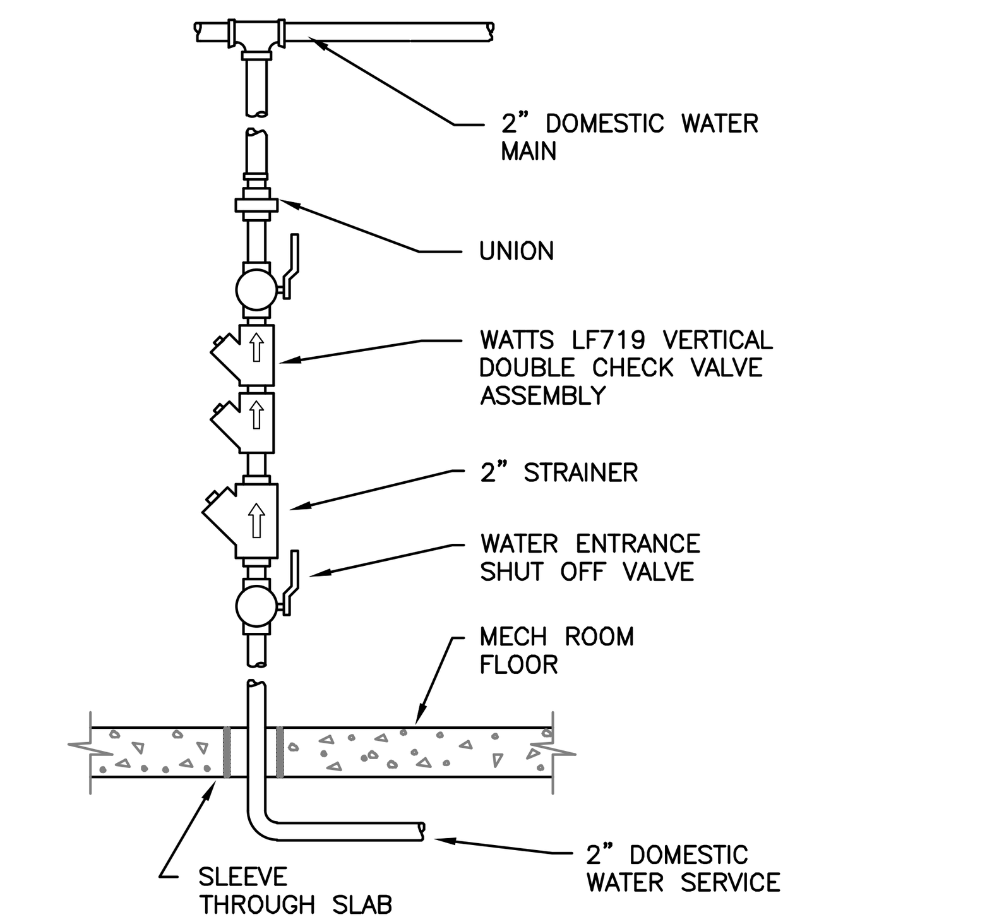
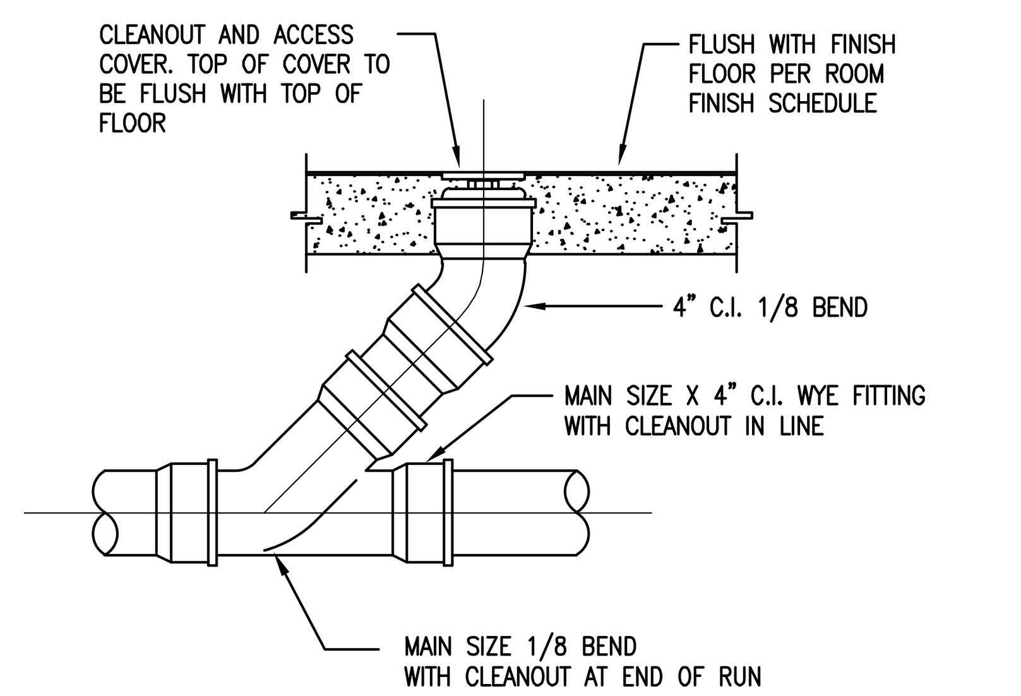
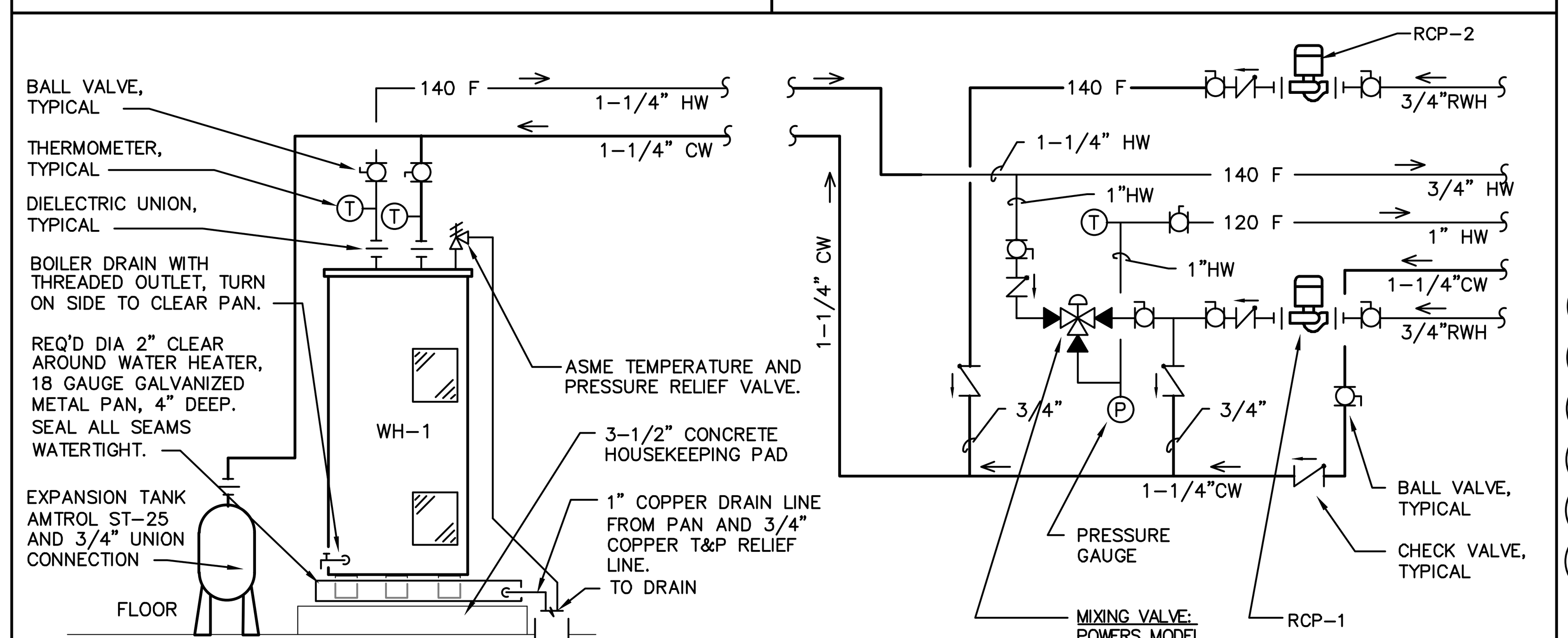


(A) WATER ENTRANCE DETAIL
NOT TO SCALE



(B) FLOOR CLEANOUT (CO)
NOT TO SCALE

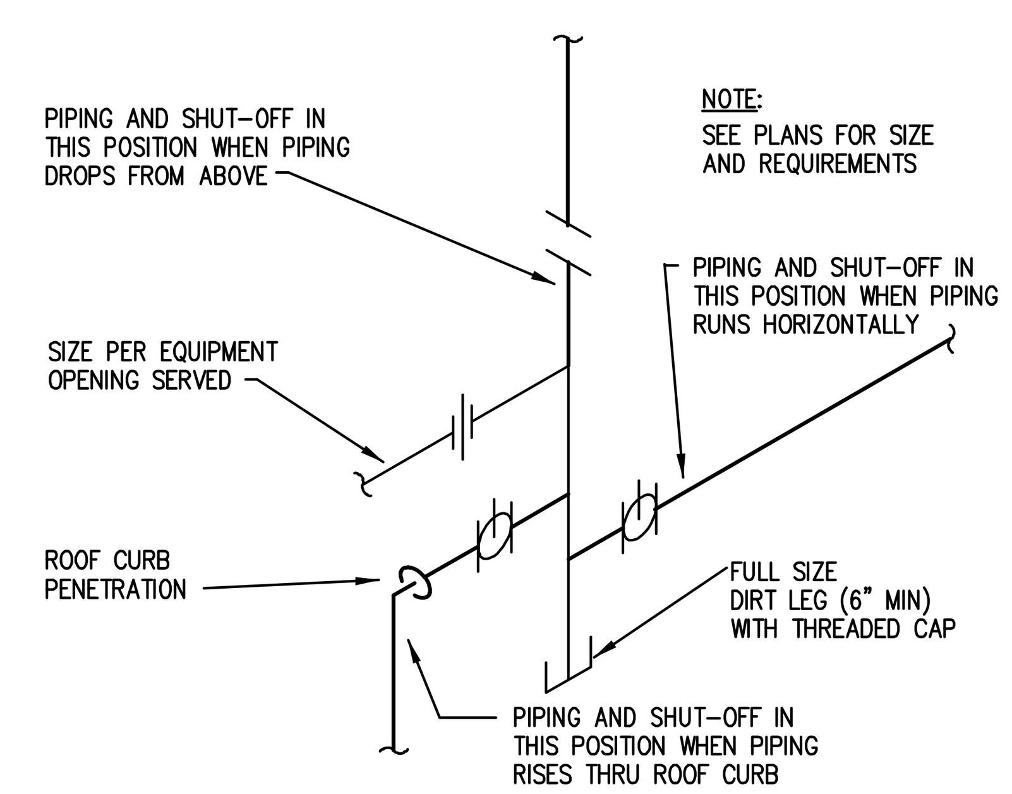


MIXING VALVE: POWERS MODEL #SH1432 MAX PRESSURE DROP AT 17 GPM TO BE 5 PSIG.

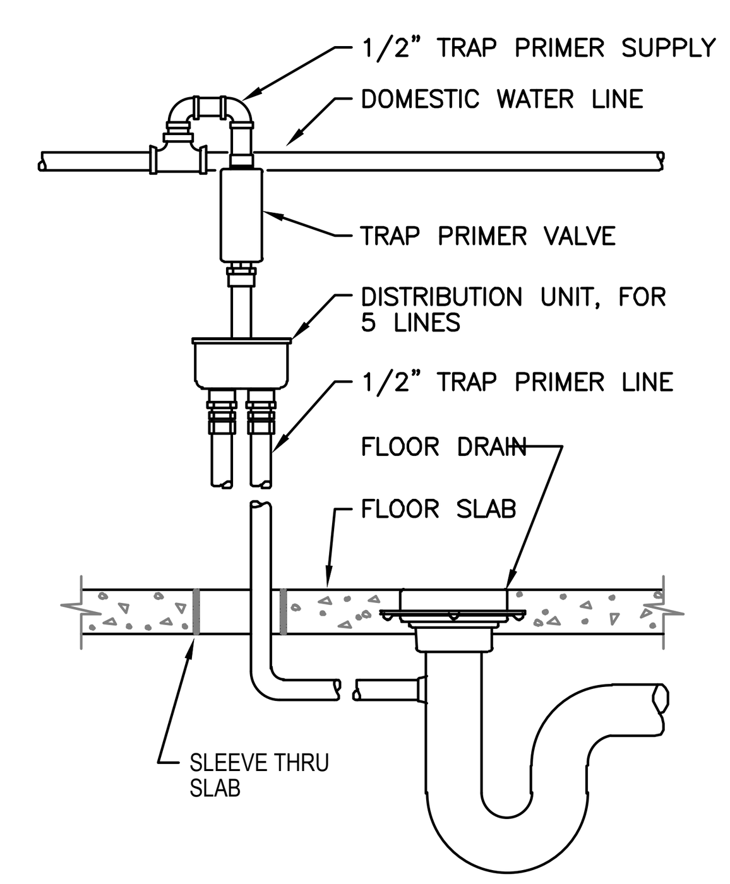
RCP-1/RCP-2: DOMESTIC HOT WATER RECIRCULATING PUMP: TACO BRONZE CIRCULATOR #2420, 5 GPM AT 31 FT" HEAD, BRONZE, 1/6 HP, 115 VOLT, WITH AUTOMATIC TIMER KIT.

NOTES:
1. SET WATER HEATER THERMOSTAT(S) TO DELIVER 140øF HOT WATER TEMPERATURE.
2. DO NOT INSTALL WATER HEATER INTO DRAIN PAN. PROVIDE BRICK OR OTHER ELEVATE BOTTOM OF WATER HEATER ABOVE EDGE OF PAN.

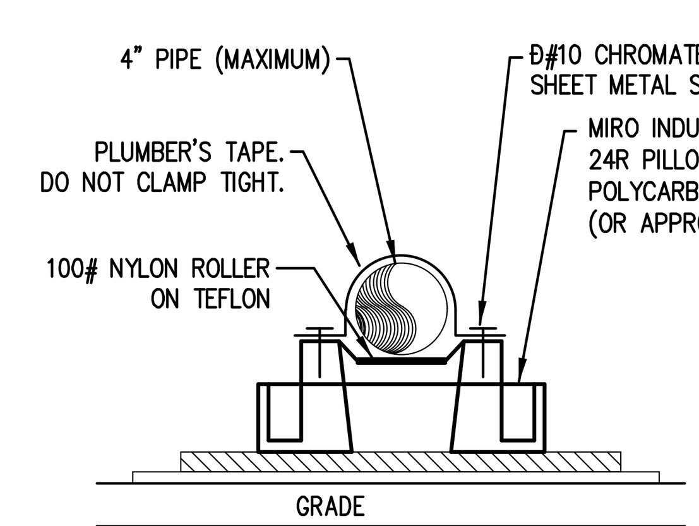
(C) WATER HEATER #1 PIPING SCHEMATIC
NOT TO SCALE



(D) GAS PIPING DIRT LEG DETAIL
NOT TO SCALE



(E) TRAP SEAL PRIMER DETAIL
NOT TO SCALE



PIPE SIZE	SUPPORT SPACING
0"	6'-0"
1"	7'-0"
1Ì"	8'-0"
1Ð"	9'-0"
2"	10'-0"
2Ð"	11'-0"
3"	12'-0"
4"	14'-0"

(F) GAS PIPING SUPPORT DETAIL
NOT TO SCALE

PLUMBING SYMBOLS AND ABBREVIATIONS

NOTE:
SOME SYMBOLS SHOWN IN THIS LEGEND MAY NOT NECESSARILY BE USED FOR THIS PROJECT.

—X—X—X—X—	DEMOLISH PIPING
—E(SAN)—	EXISTING SOIL AND WASTE PIPING
—SAN—	SOIL AND WASTE PIPING
	VENT PIPING
	COLD WATER PIPING (CW)
	120 F. HOT WATER PIPING (HW)
	RECIRCULATING HOT WATER PIPING (RHW)
—140—	140 F. HOT WATER PIPING (HW)
	NATURAL GAS PIPING
VTR	VENT-THRU-ROOF
	UNION
	CHECK VALVE OR BACKFLOW PREVENTER
	BALL VALVE
	VALVE
	CLEANOUT
	CONNECT TO EXISTING
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
	POINT OF DEMOLITION
	FREEZE PROOF WALL HYDRANT
	HOSE BIBB

WATER HAMMER ARRESTOR SCHEDULE

PDI UNITS	A	B	C	D
FIXTURE UNITS	1-11	12-32	33-60	61-113

PLUMBING FIXTURE SCHEDULE

MARK	ITEM	HW	CW	WASTE	DESCRIPTION
P-1	WATER CLOSET FLOOR MOUNT SENSOR FLUSH	--	1"	4"	AMERICAN STANDARD MADERA ELONGATED BOWL WATER CLOSET, FLOOR MOUNTED WITH EXPOSED TOP SPUD SLOAN OPTIMA SENSOR OPERATED FLUSH VALVE #8111-MC-YBYC, BATTERY POWERED, 1.6 GAL/FLUSH. PROVIDE CHURCH 9500C OPEN FRONT SEAT, NO COVER, PROVIDE CHROME SUPPLY AND ESCUTCHEON.
P-2	LAVATORY WALL MOUNT	1/2"	1/2"	1-1/4"	AMERICAN STANDARD LUCERNE #0355.012 WALL HUNG VITREOUS CHINA, 4" CENTERS, FAUCET #2385.004 WITH SINGLE LEVER HANDLE, GRID DRAIN & 0.5 GPM AERATOR. PROVIDE CHROME PLATED P-TRAP AND SUPPLIES.
P-1A	WATER CLOSET FLOOR MOUNT SENSOR FLUSH	--	1"	4"	AMERICAN STANDARD MADERA #3043.001.020, ADA HEIGHT ELONGATED WATER CLOSET, FLOOR MOUNTED WITH EXPOSED TOP SPUD SLOAN OPTIMA SENSOR OPERATED FLUSH VALVE #8111-MC-YBYC, BATTERY POWERED, 1.6 GAL/FLUSH. PROVIDE CHURCH 9500C OPEN FRONT SEAT, NO COVER, PROVIDE CHROME SUPPLY AND ESCUTCHEON.
P-2A	LAVATORY WALL MOUNT (BARRIER FREE)	1/2"	1/2"	1-1/4"	AMERICAN STANDARD LUCERNE #0355.012 WALL HUNG VITREOUS CHINA, 4" CENTERS, FAUCET #2385.004 WITH SINGLE LEVER HANDLE, GRID DRAIN & 0.5 GPM AERATOR. PROVIDE CHROME PLATED P-TRAP AND SUPPLIES. MOUNT BOTTOM OF APRON AT 31" AFF AND PROVIDE "TRU-BRO" ADA TRAP WRAP FOR BARRIER FREE PROTECTION.
P-1B	WATER CLOSET FLOOR MOUNT	--	1"	3"	AMERICAN STANDARD BABY DEVERO ELONGATED FLOOR MOUNT FLUSHOMETER BOWL, KIDDIE HEIGHT TOILET. 10-1/2" HEIGHT WITH EXPOSED TOP SPUD. 1.28 GPF MANUAL FLUSH VALVE PROVIDE CHROME SUPPLY AND ESCUTCHEON.
P-2B	LAVATORY WALL MOUNT	1/2"	1/2"	1-1/4"	SAME AS P-2, EXCEPT AT CHILD HEIGHT, SEE ARCHITECTURAL
P-3	WASHER BOX	1/2"	1/2"	2"	20 GA. WASHER BOX WITH GFCI AND 3 WIRE DRYER RECEPTACLE. COORDINATE WITH ARCHITECT FOR COLOR.
P-4	KITCHEN SINGLE BOWL SINK	1/2"	1/2"	1-1/2"	ELKAY ELRAD2521 SINK, 18 GAUGE TYPE 302 SELF RIM, BOWL 25" X 15" X 5-3/8" DEEP, 2 HOLE PUNCH FOR DECK MOUNTED SINGLE LEVEL LKA2438 FAUCET WITH SWING SPOUT, WRISTBLADE HANDLES, AND SPRAY ATTACHMENT. PROVIDE CHROME PLATED P-TRAP AND SUPPLIES.
P-6	SINGLE BOWL SINK, WITH BUBBLER	1/2"	1/2"	1-1/2"	ELKAY DRKAD2220C SINGLE BOWL ADA SINK WITH SINGLE HOLE FAUCET, RIGHT HAND SLOTTED HOLE, LK20858 SINGLE LEVER ADA FAUCET WITH 8" GOOSENECK SPOUT. SINK TO 18 GAUGE TYPE 302 SELF RIM, BOWL 13.5" X 16" X 5-1/2" DEEP, PROVIDE LK1141A BUBBLER, AND WRISTBLADE HANDLES. PROVIDE CHROME PLATED P-TRAP AND SUPPLIES.
P-6A	SINGLE BOWL SINK	1/2"	1/2"	1-1/2"	SAME AS FIXTURE P-6, LESS BUBBLER
OR	OPEN RECEPTACLE	--	--	LINE SIZE	JAY R. SMITH 2646 STRAIGHT SPIGOT ADAPTER WITH TOP AT 2" AFF OR AS REQUIRED. PROVIDE WITH TRAP PRIMER CONNECTION.
CO	CLEANOUT	--	--	LINE SIZE	ZURN 1400 SERIES DUCO CAST IRON BODY WITH ROUND HEAVY DUTY SCORIATED POLISHED BRONZE TOP. ADJUSTABLE TO FLOOR LEVEL AFTER CONCRETE HAS SET.
ECO	EXTERIOR CLEANOUT	--	--	LINE SIZE	ZURN 1400 SERIES DUCO CAST IRON BODY WITH ROUND HEAVY DUTY ENAMEL COATED DUCTILE IRON TOP. ADJUST LEVEL TO CONCRETE APRON. SEE DETAIL THIS SHEET.
FPWH	WALL HYDRANT	--	3/4"	--	WOODFORD MODEL 65C, AUTOMATIC DRAINING, FREEZELESS, WITH VACUUM BREAKER, LOOSE KEY.

PLUMBING FIXTURE SCHEDULE NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL CARRIER FOR EACH FIXTURE WHICH IS WALL HUNG, UNLESS OTHERWISE NOTED. PROVIDE APPROPRIATE CARRIER PER FIXTURE TYPE AND REQUIREMENTS.
2. CONTRACTOR SHALL FURNISH AND INSTALL WATTS, ZURN OR P.P.P. INC. TRAP PRIMERS TO SERVE ALL APPROPRIATE FLOOR DRAINS AND/OR OPEN RECEPTACLES AS REQUIRED.
3. ACCEPTABLE ALTERNATE MANUFACTURERS FOR ITEMS INCLUDING BUT NOT LIMITED TO
   - 3.A. WATER CLOSETS: KOHLER, ELJER, CRANE, MANSFIELD LAVATORIES: SAME AS WATER CLOSETS.
   - 3.B. URINALS: SAME AS WATER CLOSETS.
   - 3.C. FLOOR DRAINS AND CLEANOUTS: WADE, ZURN, PLASTIC ODDITIES.
   - 3.D. WATER HEATERS: LOCHINVAR, PVI, HESCO.
   - 3.E. HOSE BIBBS/WALL HYDRANTS: ZURN, CHICAGO FAUCET, T&S BRASS.
4. ENCLOSE ALL EXPOSED SUPPLIES AND P-TRAPS OF BARRIER FREE LAVATORIES WITH A PROTECTIVE INSULATING MATERIAL AND A SMOOTH JACKET (TRAP-WRAP OR EQUAL).
5. SHOCK ARRESTORS FOR BRANCH PIPING TO FIXTURES WITH QUICK CLOSING VALVES SHALL BE BY P.P.P. INC., ZURN (OR EQUAL), SIZED PER PDI REQUIREMENTS.

DOMESTIC WATER HEATER SCHEDULE

MARK	LOCHINVAR MODEL	TANK SIZE	GPH RECOVERY AT 90°F RISE	GAS INPUT/OUTPUT MBH	HT.	DIA.	ELECTRICAL		REMARKS
							FLA	VOLTS/ø	
WH-1	PRN050 65ES	50 GAL.	73 GPH	62/45	69"	22"	--	120/1	1, 2, 3

REMARKS:
1. FURNISH WITH ASME TEMPERATURE AND PRESSURE GAUGES.
2. TEMPERATURE CONTROL W/HIGH TEMP CUT OFF
3. POWER DIRECT VENT GAS FIRED WITH SIDEWALL CONCENTRIC 3" PVC FLUE/COMBUSTION AIR INTAKE

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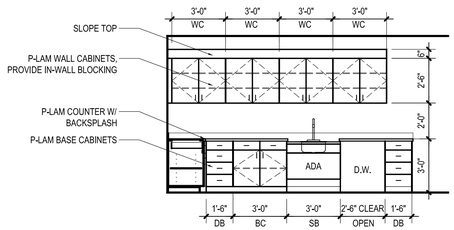

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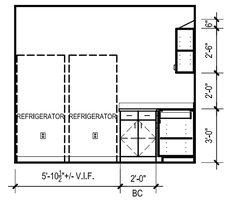
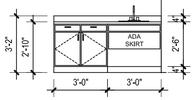
Scale: 1/4" = 1'-0"



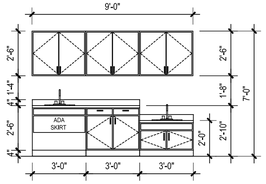
B CASEWORK ELEV

Scale: 1/4" = 1'-0"



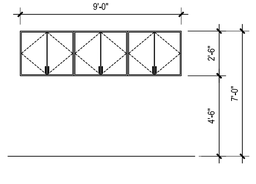
C CASEWORK ELEV

Scale: 1/4" = 1'-0"



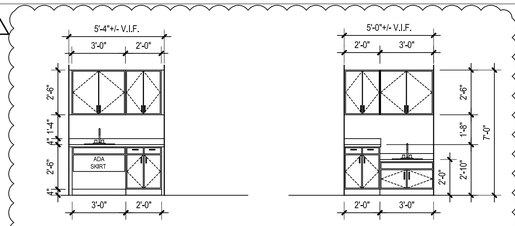
D CASEWORK ELEV

Scale: 1/4" = 1'-0"



E CASEWORK ELEV

Scale: 1/4" = 1'-0"

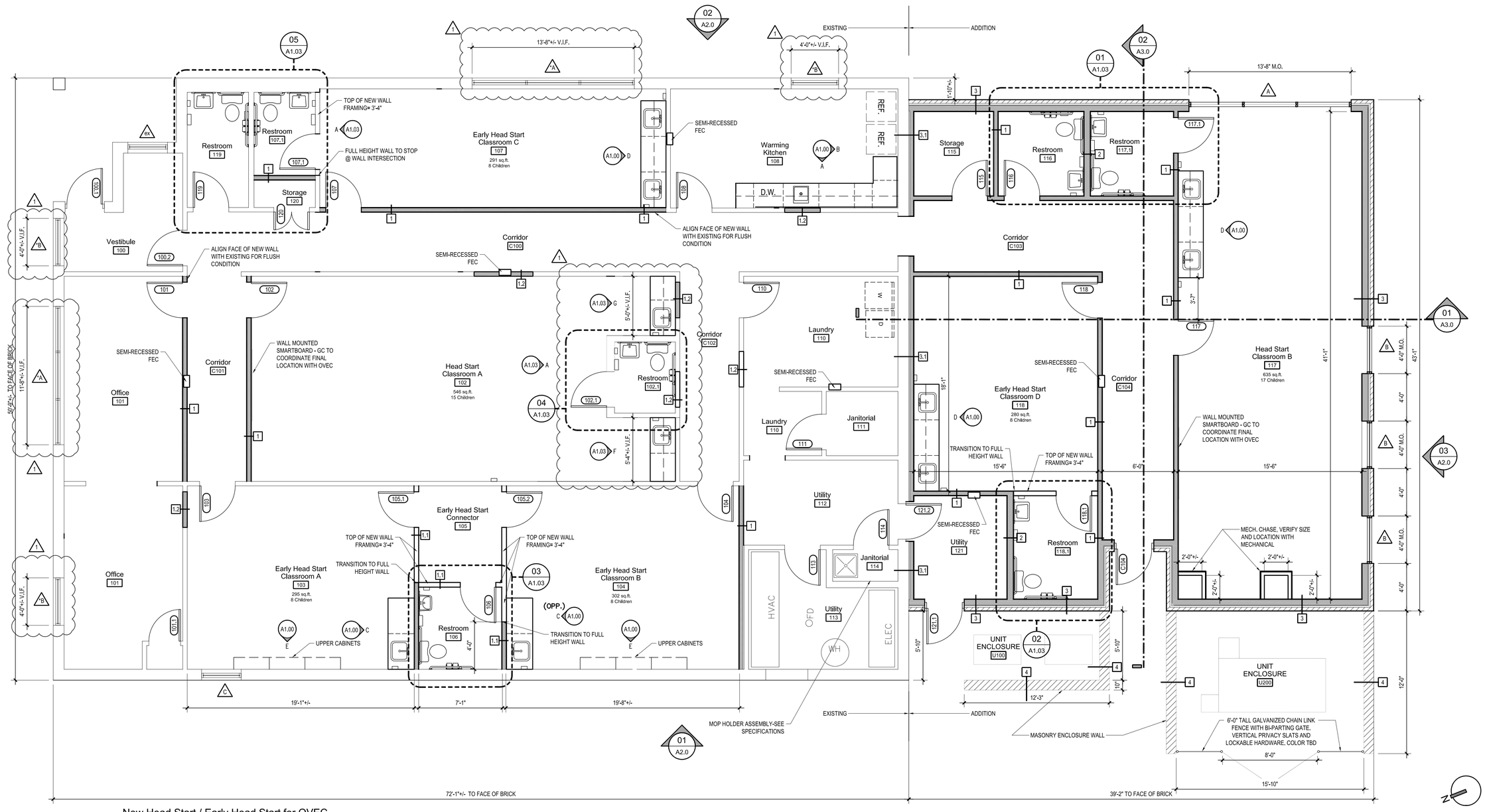


F CASEWORK ELEV

Scale: 1/4" = 1'-0"

G CASEWORK ELEV

Scale: 1/4" = 1'-0"



01 New Head Start / Early Head Start for OVEC FLOOR PLAN

Scale: 1/4" = 1'-0"

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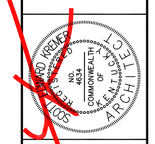
TEL 502.499.1100 FAX 502.499.1101



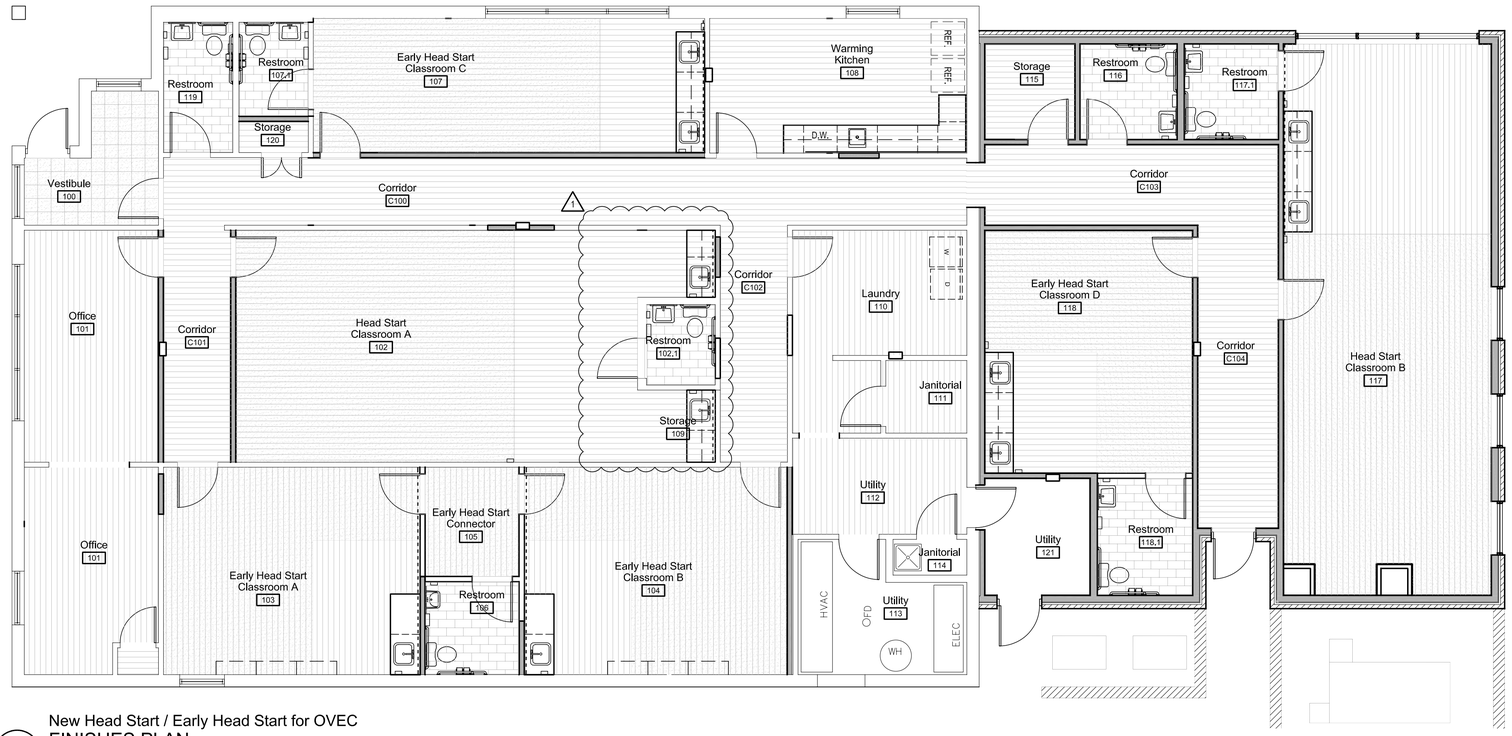
RENOVATION FLOOR PLAN

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 03.17.2021
DRAWN BY: JA / BM
CHECKED BY:
REVISIONS:
REV. 1 ADD 3: 03.31.21

2019-52.06

A1.00



01 New Head Start / Early Head Start for OVEC
FINISHES PLAN

Scale: 3/16" = 1'-0"

FINISH LEGEND

FINAL FINISH SELECTIONS BY OWNER. REFER TO FINISH PLAN FOR MATERIAL LOCATION AND INTALL PATTERN

BASIS OF DESIGN:

LVT - LUXURY VINYL TILE "INTERFACE": BRUSHED LINES PLANK 25CM X 1M - 6 COLORS

CPT 1 - CARPET TILE MODULAR CARPET TILE "INTERFACE": HARMONIZE 25CM X 1M COLOR: PEWTER

CPT 2 - WALK OFF MAT

CT1 - PORCELAIN WALL TILE "ATLAS CONCORDE USA": EON 12"X24" COLOR: ELDORADO

CT2 - PORCELAIN FLOOR TILE "ATLAS CONCORDE USA": EON 12"X24" COLOR: ELDORADO

ACCENT PAINT LOCATOIN SHOWN ON FINISH PLAN WITH DASHED LINE

PT1 - FIELD COLOR PAINT SW 7003 TOQUE WHITE EGGSHELL FINISH

PT 2 - DOOR FRAME PAINT SW 9170 ACIER SATIN FINISH

PT 3 - ACCENT PAINT SW 9055 BILLOW BREEZE EGGSHELL FINISH

PT 4 - ACCENT PAINT SW 6218 TRADEWIND EGGSHELL FINISH

RUBBER WALL BASE - 4" RUBBER BASE "JOHNSONITE": 32 PEBBLE

LAMINATE CASE WORK - PLASTIC LAMINATE CASEWORK "FORMICA" CHERRY RIFTWOOD 6411-NG

LAMINATE COUNTERTOPS - PLASTIC LAMINATE COUNTERTOPS "FORMICA" WHITE DROPS 8824-58

DOOR FINISH - WOOD DOORS PLAIN SLICED RED OAK STAIN:HAZEL #375

ROOM FINISH SCHEDULE

Number	Name	Floor Finish	Wall Finish	Base Finish	Ceiling Finish	Comments
100	VESTIBULE	CPT 2	PT 4	RUBBER	ACT 1	
101	OFFICE	LVT	PT 4	RUBBER	ACT 1	
102	HEAD START "A"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
103	EARLY HEAD START "A"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
104	EARLY HEAD START "B"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
105	CONNECTOR	CPT 1	PT 1	RUBBER	ACT 1	
106	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
107	EARLY HEAD START "C"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
107.1	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
108	WARMING KITCHEN	LVT	PT 4	RUBBER	ACT 1	
109	STOR.	LVT	PT 1	RUBBER	PTD	
110	LAUNDRY	LVT	PT 1	RUBBER	PTD	
111	JANITORIAL	LVT	PT 1	RUBBER	PTD	
112	UTILITY	LVT	PT 1	RUBBER	PTD	
113	UTILITY	CONCRETE	PT 1	RUBBER	PTD	CLEAR SEAL FINISH
114	JANITORIAL	CONCRETE	PT 1	RUBBER	PTD	CLEAR SEAL FINISH
115	STOR.	LVT	PT 1	RUBBER	PTD	
116	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
117	HEAD START "B"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
117.1	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
118	EARLY HEAD START "D"	LVT/CPT 1	PT 1/3	RUBBER	ACT 1	
118.1	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
119	RESTROOM	CT2	CT1/PT 1	CT	ACT 1	SEE ELEVATIONS
120	STOR.	LVT	PT 1	RUBBER	PTD	
121	UTILITY	CONCRETE	PT 1	RUBBER	PTD	CLEAR SEAL FINISH
C100 C101 C102 C103 C104	CORRIDOR	LVT	PT 1	RUBBER	ACT 1	

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FINISH PLAN AND SCHEDULE

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 03.17.2021
DRAWN BY: JA / BM
CHECKED BY:
REVISIONS:
REV. 1 ADD 3: 03.31.21

2019-52.06

A1.04

DOOR HARDWARE SETS

HARDWARE SET # 1
- *DOOR #100.1, C104*

2EA	CYLINDER	AS REQUIRED x FINISH x MK	DOR
2 EA	AUTO OPERATOR	120 VAC x HARDWIRED ACTUATORS	DOR
1 EA	ELECTRIC STRIKE	FAIL SECURE 24V DC	
1 EA	CYLINDER	AS REQ'D x FINISH x MK (KEYSWITCH)	DOR
1 EA	KEYSWITCH	MAINTAINED 630	SDC
1 EA	*BALANCE OF DOOR HARDWARE BY DOOR SUPPLIER / 08410*		*B/O*

OPERATIONAL DESCRIPTION:
DOOR NORMALLY CLOSES AND EXIT DEVICES ARE IN THE DOGGED POSITION. AUTO OPERATOR BY HARDWIRED ACTUATORS. AFTER HOURS OPERATION, DOORS ARE CLOSED AND LOCKED. KEYSWITCH DEACTIVATES ACTUATORS. FREE EGRESS AT ALL TIMES. ELECTRIC STRIKE AND POWER TO BE INTEGRATED w/ OWNER'S ACCESS CONTROLS CONTRACTOR.

HARDWARE SET #2
- *DOORS #100.2*

3 EA	HINGES	
1 EA	PUSH PLATE	ENGRAVED "PUSH"
1 EA	PULL PLATE	ENGRAVED "PULL"
1 EA	RA CLOSER	
1 EA	WALL STOP	

HARDWARE SET #3
- *DOORS #116, 119*

3 EA HINGES
1 EA PRIVACY LOCKSET
1 EA WALL STOP
1 EA CLOSER

HARDWARE SET #4
- *DOORS #102.1, 117.1*

3 EA HINGES
1 EA PASSAGE SET
1 EA FLOOR STOP

HARDWARE SET #5
- *DOORS #105.1, 105.2, 106, 107.1, 118.1*

2 EA HINGES
1 EA PASSAGE SET
1 EA WALL STOP

HARDWARE SET #6
- *DOORS #120*

6 EA HINGES
2 EA CLOSET ROLLER LATCH
2 EA WALL STOP

HARDWARE SET # 7
- *DOORS #102, 103, 104, 107, 108, 117, 118*

3 EA HINGES
1 EA CYLINDER
1 EA CLASSROOM LOCKSET
1 EA RA CLOSER
1 EA KICKPLATE (2" LESS WIDTH)
1 EA WALL STOP

HARDWARE SET #8
- *DOORS #101*

3 EA HINGES
1 EA OFFICE LOCKSET
1 EA RA CLOSER
1 EA WALL STOP

HARDWARE SET #9
- *DOORS #101.1*

3 EA HINGES
1 EA STOREROOM LOCKSET
1 EA WALL STOP

HARDWARE SET #10
- *DOORS #109, 110, 111, 113, 114, 115, 121.2*

3 EA HINGES
1 EA STOREROOM LOCKSET
1 EA RA CLOSER
1 EA WALL STOP

HARDWARE SET #11
- *DOOR #121.1*

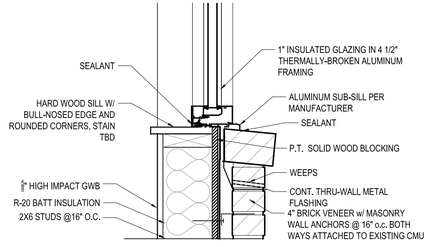
3 EA HINGES
1 EA CLOSER
1 EA CYLINDER
1 EA WEATHERSTRIP
1 EA THRESHOLD
1 EA SWEEP
1 EA DRIP CAP

DOOR AND FRAME SCHEDULE

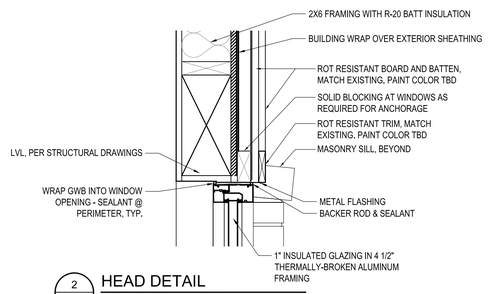
Door No.	Room Name	Door / View Panel Size W	H	T	MAT'L.	FIN.	TYPE	Frame Size MAT'L.	FIN.	TYPE	HDWR SET	Remarks
100.1	Vestibule	3'-0"	7'-0"	1 3/4"	ALUM	ANOD	C	ALUM	ANOD	3	1	NOTE 1, 4
100.2	Vestibule	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	2	NOTE 1, 4
101	OFFICE	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	8	NOTE 1, 3
101.1	CLOSET	2'-8"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	9	NOTE 1
102	HEAD START "A"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
102.1	RESTROOM	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	4	NOTE 2
103	EARLY HEAD START "A"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
104	EARLY HEAD START "B"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
105.1	CONNECTOR	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	5	--
105.2	CONNECTOR	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	5	--
106	RESTROOM	3'-0"	3'-0"	1 3/4"	SCWD	STAIN	D	HM	PNT	1	5	NOTE 2
107	EARLY HEAD START "C"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
107.1	RESTROOM	3'-0"	3'-0"	1 3/4"	SCWD	STAIN	D	HM	PNT	1	5	NOTE 2
108	WARMING KITCHEN	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	7	NOTE 1, 3
109	NOT USED	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	10	NOTE 3
110	LAUNDRY	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	10	NOTE 3
111	JANITORIAL	3'-0"	7'-0"	1 3/4"	HM	PNT	A	HM	PNT	1	10	NOTE 1
113	UTILITY	3'-0"	7'-0"	1 3/4"	HM	PNT	A	HM	PNT	1	10	NOTE 1
114	JANITORIAL	3'-0"	7'-0"	1 3/4"	HM	PNT	A	HM	PNT	1	10	NOTE 1
115	STORAGE	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	10	NOTE 3
116	RESTROOM	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	3	NOTE 3
117	HEAD START "B"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
117.1	RESTROOM	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	4	NOTE 2
118	EARLY HEAD START "D"	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	B	HM	PNT	1	7	NOTE 3
118.1	RESTROOM	3'-0"	3'-0"	1 3/4"	SCWD	STAIN	D	HM	PNT	1	5	NOTE 2
119	RESTROOM	3'-0"	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	3	NOTE 1, 3
120	STORAGE	2(1'-6")	7'-0"	1 3/4"	SCWD	STAIN	A	HM	PNT	1	6	--
121.1	UTILTY	3'-0"	7'-0"	1 3/4"	HM	PNT	A	HM	PNT	2	11	NOTE 1; INSULATED HOLLOW METAL DOOR
121.2	UTILTY	3'-0"	7'-0"	1 3/4"	HM	PNT	A	HM	PNT	2	10	INSULATED HOLLOW METAL DOOR
C104	CORRIDOR	3'-0"	7'-0"	1 3/4"	ALUM	ANOD	C	ALUM	ANOD	3	1	NOTE 4

DOOR NOTES:
1. NEW DOOR AND FRAME TO BE PROVIDED. IF EXISTING FRAME CAN BE RE-USED, COORDINATE w/ HARDWARE SCHEDULE AND PROVIDE CREDIT FOR COST OF FRAME.
2. FOR RESTROOM DOORS THAT DIRECTLY SERVE CLASSROOMS, DOORS SHALL NOT HAVE LOCKING CAPABILITY FROM INSIDE THE RESTROOM.
3. 45-MINUTE FIRE RATED DOOR AND FRAME REQUIRED IN 1-HR FIRE RATED FIRE BARRIER (CORRIDOR WALLS).
4. FRAME AND DOOR TO BE COORDINATED w/ OWNER'S ACCESS CONTROLS CONTRACTOR.

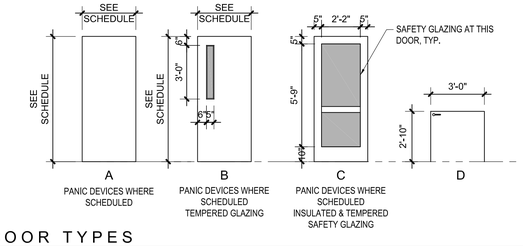
- ALL DOORS TO HAVE LEVER-TYPE DOOR HANDLES TO MEET ADA REQUIREMENTS. COORDINATE HANDLE w/ LOCKSET LISTED IN HARDWARE SCHEDULE.



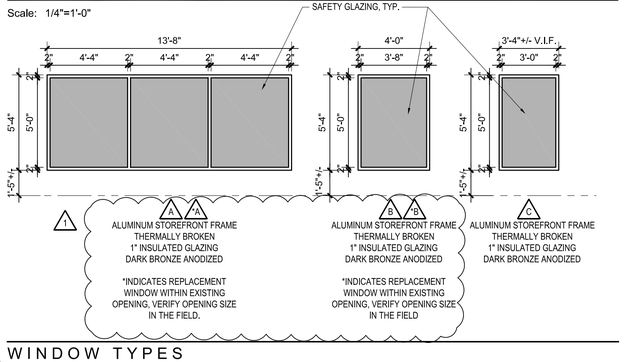
1 / A5.0 SILL DETAIL
Scale: 1 1/2"=1'-0"



2 / A5.0 HEAD DETAIL
Scale: 1 1/2"=1'-0"

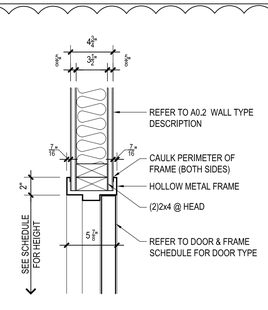


A5.00 DOOR TYPES
Scale: 1/4"=1'-0"

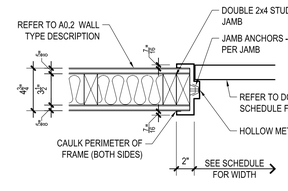


A5.00 WINDOW TYPES
Scale: 1/4"=1'-0"

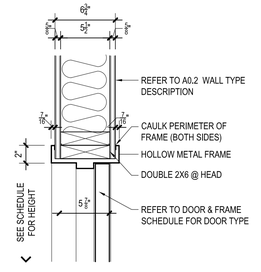
1



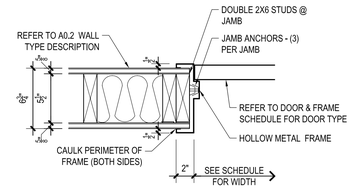
3 / A5.00 HEAD DETAIL
Scale: 1 1/2" = 1'-0"



4 / A5.00 JAMB DETAIL
Scale: 1 1/2" = 1'-0"



5 / A5.00 HEAD DETAIL
Scale: 1 1/2" = 1'-0"



6 / A5.00 JAMB DETAIL
Scale: 1 1/2" = 1'-0"

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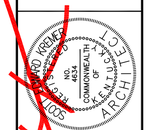

DOOR & WINDOW DETAILS/ SCHEDULE

Addition & Renovation
OVEC Head Start
7304 Dixie Highway
Louisville, KY 40258

DATE: 03.17.2021
DRAWN BY: JA / BM
CHECKED BY:
REVISIONS:
REV. 1 ADD 3: 03.31.21

2019-52.06

A5.00

Environmental Concerns, Inc.

Project # 19288

Asbestos Inspection

Vacant Building
7304 Dixie Highway
Louisville, KY

Scope of Work

Environmental Concerns, Inc. conducted a NESHAP Renovation Inspection at a vacant office building located at 7304 Dixie Highway in Louisville, Kentucky. Potential asbestos-containing building materials were thoroughly inspected, sampled, and quantified by a Kentucky licensed Asbestos Building Inspector. The inspection was performed by Pete Gibson, on May 22, 2020.

The quantities contained within this report are estimates. If Abatement Contractor's use this report for bid preparation, they should conduct site inspections and determine their own quantities for calculation of their bids.

Sample Selection Procedure

Our asbestos survey was semi-destructive in nature, and where feasible, bulk material samples were collected from "suspect" building materials. These samples consist of a small quantity of various materials which are considered suspect asbestos materials.

Asbestos-containing materials cannot be disturbed, moved, or broken, unless using special precautions and performed by a licensed Asbestos Abatement Contractor. However, additional sampling should be completed in any areas of the building where renovation or repair work will damage or disturb materials not previously shown to be free of asbestos. Each sample was collected in a controlled manner and placed in an airtight container with appropriate documentation. Samples were then delivered to a National Voluntary Laboratory Accreditation Program (NVLAP) accredited environmental testing laboratory. Samples are identified in the report by a numeric or an alphanumeric labeling system on the Chain of Custody. Results of the analysis are included as a part of this report.

Summary

Sampled materials included suspect asbestos containing materials. An asbestos-containing material is defined as containing greater than 1% asbestos. The following table lists the materials sampled and their respective asbestos content:

Asbestos Sample Log
7304 Dixie Highway

HA #	Sample #	Material	Location	Result
1	*7304-1*	*12" Tan floor tile/black mastic*	*Front office*	*Positive*
1	*7304-2*	*12" Tan floor tile/black mastic*	*South center office*	*Positive*
2	7304-3	Drywall	South center office	Negative
3	7304-4	Compound	South center office	Negative
3	7304-5	Compound	North center office	Negative
2	7304-6	Drywall	North center office	Negative
4	7304-7	2'x4' Layin ceiling tile	North center office	Negative
4	7304-8	2'x4' Layin ceiling tile	North center office	Negative

1	*7304-9*	*12" Tan floor tile/black mastic*	*Rear center at HVAC*	*Positive*
5	7304-10	Carpet mastic	Hall	Negative
5	7304-11	Carpet mastic	Reception area	Negative
6	7304-12	Ceiling texture	Reception area	Negative
6	7304-13	Ceiling texture	Reception area	Negative
7	7304-14	Window caulk	Exterior	Negative
7	7304-15	Window caulk	Exterior	Negative
6	7304-16	Ceiling texture	Reception area	Negative

Summary of Asbestos Containing Materials

Twelve inch white/tan floor tile and black mastic are located in most offices. The floor tile and mastic were sampled in three locations and each sample indicated the mastic is asbestos containing. The mastic is nonfriable and in good condition. Approximately 1300 square feet is present.

Laboratory Analysis

All samples collected with locations and results are listed within this report. Sample analysis was provided by McCall and Spero Environmental in Louisville, Kentucky. Analysis sheets are included in the appropriate appendix.

Recommendations

These recommendations were developed after reviewing analysis of samples collected during the inspection as well as considering local, state, and federal regulations associated with asbestos.

The following materials resulted in asbestos content greater than one percent and should only be disturbed by trained and licensed individuals:

12" Floor tile mastic

The above materials should be removed by a Kentucky licensed Asbestos Abatement Company prior to any construction activities at the site that will disturb the material.

Prepared by,

Pete Gibson
Asbestos Building Inspector

Environmental Concerns, Inc.

SAMPLE ANALYSIS

1448 Gardiner Lane · P.O. Box 19848 · Louisville, Kentucky 40259 · (502) 458-4488 · Fax: (502) 458-4499

McCall and Spero
Environmental, Inc.
Specialists in Microanalysis

1831 Williamson Court • Suite 100 • Louisville, KY 40223
Phone (502) 244-7135 • FAX (502) 244-7136
E-mail: customerservice@mselabs.com • Website: www.mselabs.com

Date: May 28, 2020

Attention: Pete Gibson
Environmental Concerns

Subject: Analysis of bulk samples for asbestos mineral fibers by Polarized Light Microscopy (PLM) with Dispersion Staining (EPA/600/R-93/116)

RE: MSE-P5220ECI
7304 Dixie Highway Project

Dear Mr. Gibson:

McCall & Spero Environmental, Inc. has completed the analyses of the bulk samples we received from your offices on May 22, 2020. These samples represent the bulk samples from the 7304 Dixie Highway Project.

The PLM bulk analysis was performed according to the "Method of the Determination of Asbestos in Bulk Building Materials", R. L. Perkins and B. W. Harvey (EPA/600/R-93/116).

The results for the nineteen (19) samples are summarized in the following report. Please note that for samples consisting of two or more distinct components, each component is analyzed and reported individually (EPA 40 CFR Part 61 [FRL-4821-71]).

Thank you for consulting McCall & Spero Environmental, Inc. Should you have any questions concerning these results, please contact our office.

Sincerely,

Kevin R. Bean, B.A.
PLM Laboratory Director

NVLAP®
NVLAP Lab Code 101895-0
Testing

SUMMARY OF PLM BULK ANALYSIS RESULTS

Project Name: 7304 Dixie Highway Project
McCall & Spero Environmental Project No. MSE-P5220ECI

MSE # P5220ECI-	SAMPLE # DESCRIPTION	ASBESTOS TYPE & %	OTHER FIBROUS MATERIAL & %	% NON-FIBROUS MATERIAL	COLOR
001 (A)	7304-01 (A) Floor Tile	ND**	Cellulose / 2%	98%	Tan
001 (B)	7304-01 (B) Mastic	CH / 3%	Cellulose / 2%	95%	Black
002 (A)	7304-02 (A) Floor Tile	ND**	Cellulose / 2%	98%	Tan
002 (B)	7304-02 (B) Mastic	CH / 3%	Cellulose / 2%	95%	Black
003	7304-03 Drywall	ND	Cellulose / 15%	85%	White
004	7304-04 Joint Compound	ND	Cellulose / 3%	97%	White
005	7304-05 Joint Compound	ND	Cellulose / 3%	97%	White
006	7304-06 Drywall	ND	Cellulose / 15%	85%	White
007	7304-07 Ceiling Tile	ND	Cellulose / 60% Glass / 20%	20%	Gray
008	7304-08 Ceiling Tile	ND	Cellulose / 60% Glass / 20%	20%	Gray
009 (A)	7304-09 (A) Floor Tile	ND**	Cellulose / 2%	98%	Tan
009 (B)	7304-09 (B Mastic	CH / 3%	Cellulose / 2%	95%	Black
010	7304-10 Carpet Mastic	ND**	Cellulose / 5%	95%	Tan
011	7304-11 Carpet Mastic	ND**	Cellulose / 5%	95%	Tan
012	7304-12 Ceiling Texture	ND	Cellulose / 3%	97%	White

SUMMARY OF PLM BULK ANALYSIS RESULTS

MSE # P5220ECI-	SAMPLE # DESCRIPTION	ASBESTOS TYPE & %	OTHER FIBROUS MATERIAL & %	% NON-FIBROUS MATERIAL	COLOR
013	7304-13 Ceiling Texture	ND	Cellulose / 3%	97%	White
014	7304-14 Window Caulk	ND**	Cellulose / 2%	98%	Black
015	7304-15 Window Caulk	ND**	Cellulose / 2%	98%	Black
016	7304-16 Ceiling Texture	ND	Cellulose / 3%	97%	White

NOTES:

ND = None Detected CH = Chrysotile A = Amosite AC = Actinolite
CR = Crocidolite AN = Anthophyllite TR = Tremolite

For samples consisting of separate components, each component is analyzed and reported separately.

Results apply only to items tested. Quantification is accurate to within ± 10%. Results from this report must not be reproduced, except in full, with the approval of McCall & Spero Environmental, Inc. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

** EPA recommends that bulk materials found negative for asbestos or less than one percent asbestos by polarized light microscopy that fall into one of five dominantly nonfriable categories be reanalyzed by an additional method, such as transmission electron microscopy. (EPA Notice of Advisory, FR Vol. 59, No. 146 & Test Method EPA 600/ R-93/ 116).

Analyst: Kevin R. Bean, B.A.

McCall and Spero Environmental, Inc.
Specialists in Microanalysis

1831 Williamson Court • Suite 100 • Louisville, KY 40223
Phone (502) 244-7135 • (800) 841-0180 • FAX (502) 244-7136
E-mail: customerservice@mselabs.com • Website: www.mselabs.com

BULK SAMPLE CHAIN OF CUSTODY FORM

Company: ECI Telephone # 502/458-4488 Fax #:
Contact: Pete Gibson Client Project Number:
Relinquished by: Date: Time:
Written Report To:
Project Name: 7304 Dixie Hwy
Turn-Around (Circle One): Same Day 24 Hour (2-3 Day) 4-5 Day Weekend Rush After Hour Rush
Analysis Requested (Circle One): PLM Bulk Analysis TEM Qualitative Analysis TEM Quantitative Analysis (4-5 Day)

For Laboratory Use Only

MSE Project # 05220ECI Method: EPA/600/R-93/116
Samples Received by: Date: 5/22/20 Time: 10:00

Client Sample Number	Location	Sample Description	Sampled By
7304.1	front center	12" tan fl. tile / bl. mastic	
2	South center	1 1	
3	1	drywall	
4		compound	
5	North center	1	
6	1	drywall	
7		2'x4' lay in ceiling tile	
8		1 1	
9	Rear center	12" tan/white fl. tile / mastic	
10	Lobby	carpet mastic	
11	1	1	
12		ceiling texture	
13		1	
14	exterior - North	window caulk	
15	1	1	
16	Lobby	ceiling texture	

Environmental Concerns, Inc.

INSPECTOR LICENSE

1448 Gardiner Lane • P.O. Box 19848 • Louisville, Kentucky 40259 • (502) 458-4488 • Fax: (502) 458-4499

MATTHEW G. BEVIN
GOVERNOR

CHARLES G. SNAVELY
SECRETARY

ENERGY AND ENVIRONMENT CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION

ANTHONY R. HATTON
COMMISSIONER

300 SOWER BOULEVARD
FRANKFORT, KENTUCKY 40601

November 13, 2019

Pete L Gibson
PO Box 19848
Louisville, Kentucky 40259

Asbestos Management Planner
AI Number: 139798
License Number: 62591
Expires: November 6, 2020

Dear Pete L Gibson:

This is to acknowledge receipt of your application for accreditation as an asbestos abatement professional. Your application has been approved and the above-referenced card is enclosed.

Initial accreditation fee is $100.00 per person per discipline, except for abatement worker ($20.00). Renewal fees for accreditations within one year of the expiration date are one-half of the initial fees. Renewals for accreditations expired over one year require the initial fee. There is a $10.00 duplication charge to replace a lost card. Please also note that the expiration date on your license is determined by the expiration date on the training certificate submitted with your application.

When submitting application packets, please note the following:

- do not staple any of the application materials;
- make sure to fill out the application completely, including your signature; and
- include current proof of training for the discipline(s) for which you are applying

If you have any questions regarding this matter, please call our office at (502) 782-6717.

Sincerely,

Emma Moreo

Emma Moreo
Field Support Section
Field Operations Branch

Enclosure

DRAFT

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)
« »« »
« »

SURETY:
(Name, legal status and principal place of business)
« »« »
« »

OWNER:
(Name, legal status and address)
«Ohio Valley Educational Cooperative »« »
«100 Alpine Road
Shelbyville, KY 40065 »

BOND AMOUNT: $ « »

PROJECT:
(Name, location or address, and Project number, if any)
«OVEC interior renovation and addition for Dixie Highway»
«7304 Dixie Highway»
«Louisville, KY 40258 »

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An ***Additions and Deletions Report*** that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

Signed and sealed this « » day of « » , « »

	« »
	(Contractor as Principal) *(Seal)*
	« »
(Witness)	*(Title)*
	« »
	(Surety) *(Seal)*
	« »
(Witness)	*(Title)*

BID FORM – Submit three copies in sealed envelope.

1.1 SCOPE OF WORK:
The scope of the Work is as specified or indicated in the Contract Documents.

1.2 DOCUMENTS & PLANS/SPECIFICATIONS:
The interior renovation work and building addition for Ohio Valley Education Cooperative ("OVEC") at 7304 Dixie Highway in Louisville, Kentucky shall be constructed in accordance with the Invitation to Bid and the Contract Documents. As listed in the INVITATION TO BID, General Contractors may obtain plans at Don Meredith Company, 2432 Crittenden Dr, Louisville, KY 40217 for a non-refundable payment. No digital files will be provided unless provided directly by Don Meredith.

1.3 CONTRACT TIME:
The Contractor proposes the contract period as _____ calendar days from the Notice to Proceed in order to complete the work.

A Notice to Proceed shall be mailed to the Contractor after OVEC has approved the contract bid. The Contractor shall provide all insurance documents prior to commencing work. Contractor proposes to mobilize no later than _____ days from the issuance of a Notice to Proceed.

1.4 PROJECT SCHEDULE/PAYMENT PROCEDURES:
The CONTRACTOR shall submit a proposed schedule of work and Schedule of Values on which payments will be based. Schedules shall be submitted within two weeks of Notice to Proceed.

Payment for work completed will be made once per month. Invoices for work completed less ten (10%) percent retainage shall be submitted to the Owner for approval no later then the Twentieth (20^{th}) of each month. Approved payment shall be made by OVEC to the Contractor by the Tenth (10^{th}) day of the month.

1.5 BONDS:
A Performance Bond, and a Labor & Material Payment Bond shall be required of the contractor by the OWNER prior to contract award. The bid bond shall be equal to 5% of the bid amount and shall be submitted with the Contractor's bid proposal. The Performance Bond, and Labor & Material Bond will be required within two weeks of the Notice to Proceed. Failure to provide these documents shall be justification for Contract termination at no cost to the Owner.

1.6 INDEMNIFICATION/INSURANCE:
The Contractor shall purchase and maintain at the Contractor's expense for the full contract period such insurance as in the following amounts:

Workman's Compensation:	Statutory
Employer's Compensation:	$1,000,000
Comprehensive General Liability	
Bodily Injury Liability:	$1,000,000 for each occurrence
Personal Injury Damage Liability:	$1,000,000 for each occurrence
Property Damage Liability:	$1,000,000 for each occurrence
Comprehensive Automobile Liability	
Bodily Injury Liability:	$1,000,000 for each person
	$1,000,000 for each occurrence
Property Damage Liability:	$1,000,000 for each occurrence

The insurance shall cover claims which may arise from the Work performed with this contract which includes Claim under Worker's Compensation, disability benefits and

claims for damages because of bodily injury, sickness or disease, or death of any the CONTRACTOR's Employees or for any persons other than the CONTRACTOR's Employees who may be hurt/killed as a result of the Contractor's Work on this contract.

1.7 BID FORM:

For the interior renovation and building addition work for Ohio Valley Education Cooperative at 7304 Dixie Highway, Louisville, Kentucky, 40258,

I, (name)_____The duly authorized representative of the

CONTRACTOR, (name)_____ of (address)

_____, (phone)_____

do/does hereby propose to provide all labor, equipment, material and supplies necessary to perform the renovation and addition work in accordance with the Invitation to Bid and Contract Documents for the following amount:

$_____ . _____

ADD ALTERNATE #1

Please provide a price below for a 1.5" asphalt overlay on the remaining portion of the parking lot not already included as asphalt wedging per the Construction Documents. This area is roughly 11,000 SF and should include all necessary efforts for matching grades along the curb and gutter perimeter. Contractor should ensure positive drainage to the existing concrete ditch in the northern corner of the lot per the current conditions. Contractor to ensure a clean existing surface prior to overlay installation and apply tack coat as required. All ASTM Standards to be followed. Upon acceptance of this alternate, a recommendation by Vector Engineers (special inspector) shall be obtained prior to proceeding with the work.

$_____ . _____

Having carefully examined the Instructions to Bidders, Contract Agreement, General Conditions, Specifications, and Drawings, on the above referenced project, the undersigned bidder proposes to finish all labor materials, equipment, tools, supplies, and temporary devices required to complete the work in accordance with the contract documents and any addenda listed below for the price stated herein.

Addendum No._____, Dated_____
Addendum No._____, Dated_____
Addendum No._____, Dated_____
Addendum No._____, Dated_____

The bid proposal shall be good for forty-five (45) calendar days from bid opening date.

The Owner reserves the right to accept any bid, to reject any or all bids, to waive any informalities in bids received where such acceptance, rejection, or waiver is considered to be in the best interest of the Owner, and to reject any bid where evidence or information submitted by the bidder does not satisfy the Owner that the bidder is qualified to carry out the details of the contract documents.

UNIT PRICES

Indicate on the lines below those unit prices to determine any adjustment to the contract price due to changes in work or extra work performed under this contract. The unit prices shall include the furnishing of all labor and materials, cost of all items, and overhead and profit for the Contractor, as well as any subcontractor involved.

WORK	PRICE	UNIT
Patching of GWB and finish to be flush	$_____	/ S.F.
Trenching for utility connections (up to 6' deep)	$_____	/ L.F.
Sanitary Sewer Line Installation	$_____	/ L.F.
Domestic Water Line Installation	$_____	/ L.F.
Underground Gas Line Installation	$_____	/ L.F.
Lock for Plastic Laminate Cabinet or Drawer	$_____	/ Lock

(Provide attachment for additional unit prices)

NOTE: The bidder shall submit the above list of unit prices with the bid.

LIST OF PROPOSED SUBCONTRACTORS

List on the lines below each major branch of work and major material category for this project and the subcontractor or supplier involved with that portion of work. If the branch of work is to be done by the Contractor, so indicate.

The listing of more than one subcontractor in a work category shall invalidate the bid.

The listing of the bidder as the subcontractor for a work category certifies that the bidder has in current employment, skilled staff and necessary equipment to complete that category. The architect/engineer will evaluate the ability of all listed subcontractors to complete the work and notify the owner. Listing of the bidder as the subcontractor may invalidate the bid should the architect's review indicate bidder does not have skilled staff and equipment to complete the work category at the time the bid was submitted.

	BRANCH OF WORK/MATERIAL CATEGORY	SUBCONTRACTOR/SUPPLIER
1.	Concrete	_____
2.	Masonry	_____
3.	Wall Framing and Drywall	_____

4. Flooring _____ _____
5. Ceiling _____ _____
6. Roofing _____ _____
7. Door Hardware _____ _____
8. Painting _____ _____
9. HVAC/Plumbing _____ _____
10. Electrical _____ _____

NOTE: The bidder shall submit the above list of Sub Contractors/Suppliers with the bid.

LIST OF MATERIALS/MANUFACTURERS

MATERIAL DESCRIPTION BY SPECIFICATION DIVISION AND CATEGORY	MANUFACTURER
1. Roofing	
2. HVAC	
3. Gypsum Board / Ceilings	
4. Paint	
5.	

(Provide attachment for additional material/manufacturers.)

NOTE: The bidder shall submit the above list of materials with the bid.

TIME LIMIT FOR EXECUTION OF CONTRACT DOCUMENTS

In the event that a bidder's proposal is accepted by the Owner and such bidder should fail to execute the contract within ten (10) consecutive days from the date of notification of the awarding of the contract, the Owner, at its option, may determine that the awardee has abandoned the contract. The bidder's proposal shall then become null and void.

The bidder hereby agrees that failure to submit herein above all required information and/or prices can cause disqualification of this proposal.

Submitted by:

NAME OF CONTRACTOR: _____

AUTHORIZED REPRESENTATIVE: _____ _____
Signature Date

NAME (typed or printed): _____

TITLE: _____

This form shall not be modified. Attach supplemental form of proposal information pages for project specific requirements as needed.

END OF BID FORM