Troy Schools District

RFP #2324-22
BP#3B Smith Middle School - ARCH & MEP & Civil - Addendum #1
July 9th, 2024

Content Included in this Addendum:

Cover Page (1 Page)
Barton Malow Write Up (2 Pages)
TMP Food Service Equipment Specification Section (64 Pages)
New Smith Middle School Technology Specifications (45 Pages)
New Smith Middle School Technology Drawings (15 Pages)

TOTAL PAGES: 2 Pages

Barton Malow BUILDERS

July 9th, 2024

Troy Schools District – BP#3B Smith Middle School – ARCH & MEP & Civil – Addendum #1

Addendum #1 Bidder Clarifications

A. General Clarifications

- Issued Structured Cabling Drawings and Specifications
- Issued Food Service Equipment Specifications
- Schedule Update
- Re-issued Project Manual with additional work scopes and changes (changes noted below)
    - Not issued in the addendum but will be updated on Building Connected due to size.

B. Clarifications and Additions to Work Scopes

- Removed theatre lighting reference from Electric scope (Changes listed in red)
- Removed Low-Voltage scope from Glazing contractor (Changes listed in red)
- Removed Decorative Metal Railing from Carpentry Scope
- Added Structured Cabling Scope of Work
    - Bids are due on 7/30 at 2:00 pm local time
- Added Earthwork Scope of Work
    - Bids are due on 7/30 at 2:00 pm local time
- Added Landscaping Scope of Work
    - Bids are due on 7/30 at 2:00 pm local time
- Added Paving Scope of Work
    - Bids are due on 7/30 at 2:00 pm local time

C. RFI Responses

Q: The drawings only give the make and model number for food service equipment, but no accessories listed that are needed. Will there be a food service spec section 11 4000 be made available?
A: Yes, it is be included in Addendum #1

Q: Clarification between spec and door schedule for finishes on coiling doors

- Doors A127, B130, D116A are McKeon Coiling Fire Doors with Egress. That portion of the spec mentions both galvanized steel and stainless steel finish. Please confirm
  A: A127, B130, D116A and D116B to be galvanized steel, factory finish paint
- Door A135B – Spec calls for Insulated Galvanized steel while the door schedule calls for insulated Aluminum finish. Please confirm
  A: Door A135B to be galvanized steel, factory finish paint
- Door D201 – The spec mentions both galvanized steel and stainless steel finish. Please confirm
  A: D201 to be galvanized steel, factory finish paint

Q: Are door lights for wood doors in the door schedule marked with PFN to be supplied by their respective category or by Glass and Glazing?
A: Yes, it will be supplied by the glass and glazing contractor

Q: Please clarify what we are to provide for the 05-7000 Decorative Metal? The spec lists "Screen Wall Divider"
A: This is the pre-finished divider panel system at the serving area in area D. Show on interior elevations and Millwork details 9/8.4 typ.

Q: Who is supposed to include the equipment yard screen shown on A1.1A?
A: Structural steel is the responsibility of the steel contractor and the panels are the responsibility of the metal panel contractor

Q: Who is supposed to include the Roof Top Screen (metal panels and galvanized structural steel framing) shown on A1.3A through A1.3E?
A: Structural steel is the responsibility of the Steel contractor and the panels are the responsibility of the metal panel contractor

Q: Clarification on what is supposed to be provided for the decorative metal railings?
A: This will be removed from the carpentry scope and be handled by the steel contractor

Q: Please clarify what is supposed to be provided for the 05-7500 Decorative Formed Metal?

- Counter pipe support at the dining common booths in 1&11/A8.2?
  A: Responsibility of the Casework Contractor
- Steel post and plates for the art gallery bench in 3&5/A8.2?
  A: Responsibility of the Casework Contractor
- Barstool with footrest and counter pipe support in 2&6/A8.3
  A: Responsibility of the Casework Contractor
- Laser cut divider panel and steel posts at Dining Common Trash millwork in 9/A8.4?
  A: Responsibility of Carpentry Contractor (Section 05-7000)

SECTION 11 4000 – FOOD SERVICE EQUIPMENT
****ADD1****

GENERAL REQUIREMENTS

RELATED DOCUMENTS

The general provisions of the Contract, including instructions to bidders, General Conditions, Supplementary Conditions, General Requirements, apply to the work specified in this section.

1. DESCRIPTION

The fabrication requirements attached are a governing part of this specification and shall be consulted for all matters pertaining to the work. When references are made to FSEC, the same shall be construed to designate the Food Service Equipment Contractor.

The FSEC is to provide all items, articles, materials, transportation, operations, and methods listed, mentioned, or scheduled on the drawings and specifications, including all labor, materials, equipment, and incidentals necessary and as required for their completion.

2. QUALITY ASSURANCE

Brands and Names

The manufacturer's catalog designations used in the following specifications are intended to illustrate and represent the standards which will be required by the Owner. Bidders are to list, by item number, manufacturer's name and quantities on itemized proposal form attached to the specifications for approval by the Owner. When not attached, the FSEC shall make up his own itemized list and submit same attached with his bid. NOTE! Base Bid must be on fixtures specified for fair comparison of all bids.

Substitutions

Substitutions by any bidder wishing to supply alternate equipment other than that specified may submit a separate itemized proposal on similar articles of other manufacturers of the same standard performance, capacity, size, durability, and appearance but must accompany their alternate proposal with complete descriptive literature of the item quoted.

Owner and Architect reserve the right to accept or reject such proposed substitutions. Bidders recommending such substitutions are cautioned to examine the mechanical plans that may have already been approved and conditions at the building site to determine if such substitutions require changes in mechanical connections already planned or installed.

If the proposed substitutions require such changes, the Bidder shall include the cost of same in his bid and call it to the attention of the Architect and Owner by including a descriptive notation in his bid.

Discrepancies

Where model numbers, quantities, sizes, or gauges of material differ on plans and specifications, it shall be understood that the FSEC shall figure the larger quantities, longest size and heavier gauge unless advised otherwise in writing.

Where an accessory or piece of equipment is shown on elevation or plan, it shall be deemed part of the

Food Service Contract, even if it is not listed in the Item Specifications.

Where an item is listed in Item Specifications and not shown on plan or elevations, the item shall be deemed part of the Food Service Equipment Contract.

Measurements

All dimensions given on bidding documents are approximate and are as accurate as can be determined at the time. The Equipment Contractor shall check all measurements at the building prior to fabrication of equipment and shall bring any deviation from the dimensions shown or required by building conditions to the Architects attention. All equipment must conform to the finished building conditions. Where obstructions occur, equipment must be neatly scribed fitting to and around same resulting in a sanitary fixture.

Prior to fabrication, the Architect or the Owner reserves the right to require the Contractor to make reasonable modifications in the routing of the work and relocation of the equipment. This specifically refers to conditions where interference occurs or where materials cannot be installed because of structural or mechanical conditions encountered. The Contractor will receive no additional compensation for such work.

Ordinances

Work and materials shall be in full accord with the latest rules of U.S. Public Health Service, National Board of Fire Underwriters, O.S.H.A., local and state ordinances, State Accident Commissions Safety Ordinances, regulations of the Bureau of Fire Services and with prevailing ordinances.

Ordinances including building codes, gas codes, steam codes, and other codes applying to this contract shall be followed.

All applicable items shall conform to latest Standards Revisions established by the National Sanitation Foundations, (N.S.F.), Ann Arbor, Michigan.

Electric operated and/or heated equipment, fabricated or otherwise shall conform to the latest standards of National Electric Manufacturer's Association, Underwriters Laboratories, Inc., National Electric Code or local standards such as to be acceptable to authorities having jurisdiction.

Standard steam heated equipment shall be manufactured in accordance with A.S.M.E. code requirements and carry the A.S.M.E. stamp.

Burners for gas heated equipment shall be equipped with automatic lighters. Oven burners and other concealed burners shall have automatic safety pilots and conform to A.G.A. standards. All gas equipment is to be furnished with appliance pressure regulators.

The drawings and specifications shall govern whenever they require longer sizes or higher standards than are required by the ordinances.

The Ordinances shall govern whenever drawings and specifications require something which will violate the ordinances.

No extra change will be paid for furnishing items required by local and state ordinances not specified or shown on drawings. Rulings and interpretations of the enforcing agencies shall be considered as part of the ordinances.

Should any change in the drawings and specifications be required to conform to the above, the Architect shall be notified when bid is submitted.

After entering into contract, all necessary work shall be done to meet above laws, ordinances, Bureau of Fire Services requirements, etc., without additional expense to the Owner.

Samples

Samples of all hardware, locks, feet, brackets, and other materials that may be requested shall be submitted for approval before use.

Scheduling of Work

The work shall be scheduled so there will be no interference with work of other trades and so that it will cause no delay. A time schedule will be worked out for the entire building and this work shall keep pace with the set schedule, working nights, Sundays and holidays, if necessary, to complete the work within the time limit.

3. SUBMITTALS

All submittals to be reviewed, stamped and dated by FSEC prior to sending them to the Contractor, & Architect. Submittals not bearing the FSEC's stamp will be rejected.

FSEC shall submit required number of drawings, brochures and portfolios of all equipment, apparatus, materials, etc., which are applicable to this contract together with detailed specifications. Each piece of equipment, apparatus, and accessory to be checked by the FSEC to insure compliance with requirements of Architect's drawings and specifications and also brochures or any other item of information to be clearly marked for identification with respect to their application and installation locations. This specification page shall appear on every shop drawing.

Approval and/or review of shop drawings, details, and equipment by the Architect is for design and concept only and does not relieve the FSEC of responsibility for compliance with design drawings, details and specifications, verification of all dimensions of equipment and building conditions and reasonable adjustments due to deviations.

While the Architect's drawings and specifications propose to be complete in all respects as to layout, type of equipment and materials, they are not intended to serve as detailed sleeve or insert drawings, and preparation of such drawings, required or necessary for this purpose, or to set equipment accurately, are to be the responsibility of the FSEC.

FSEC shall submit drawings of all custom fabricated equipment within thirty (30) days after notification of contract award. Drawings to be accurately laid out and correlated with other contractors work and latest architectural final construction plans. Equipment elevation shop drawings must be on 3/4" scale (3/4" = 1'-0").

Drawings to show detailed construction for each piece of equipment. Before submitting detail drawings for review, they must be checked by the FSEC with the specifications and shall show exactly how item will be fabricated. Construction of equipment shall not deviate from approved shop drawings without written approval from the Architect.

FSEC shall submit rough-in drawings for approval at a scale of 1/4" = 1'-0", locating accurately all utility

connections for each item of equipment requiring the same. Rough-in plan to be drawn up using final architectural building drawings. NOTE! All rough-in connections to conform with normal acceptable standards. Rough-in requirements for present or future food service equipment shall be included on all drawings.

FSEC 1/4" scale rough-in drawings are to be dimensioned from ends of finished walls. Shop drawings with dimensions from centerline of columns will not be accepted, unless approval has been given by Architect or the General Contractor.

Drawings showing all dimensions of bases or platforms and depressions to be submitted on a scale of l/4" = 1'-0".

Rough in connection notes are not to be listed under numbered rough in schedule, except for general purpose outlets or where drawing space is limited.

Equipment rough in plans are to be furnished complete with layout plan and item schedule similar to food service Architects FSE drawings. Plumbing, electrical, ventilation & depression plan, and base detail when required.

Plumbing and electrical plans are to be on separate sheets when drawings are prepared at 1/4" scale.

Manufacturers to strictly adhere to approved and reviewed drawings, except where field conditions require changes and in that event the Architect must be notified in writing.

Manufacturing of any equipment fitting between walls or between columns and walls to be withheld until actual field dimensions are set and approved by the General Contractor. All other items which do not require field dimensions are to be manufactured upon receipt of reviewed shop drawings.

Upon completion of contract, the contractor is to deliver to the Owner two (2) complete sets of final working drawings and two (2) portfolios of purchased equipment bound in a binder.
A time schedule will be worked out for the entire building and this work shall keep pace with set schedule, working nights, Sundays, and holidays, if necessary, to complete the work within the time limit.

4. JOB CONDITIONS

Job Meetings

It shall be the responsibility of the FSEC to have a qualified representative at all monthly or special job meetings to help the Architect and other contractors on the job to correlate work or answer questions so that the job can progress without any obstructions.

Examination of Premises

FSEC to check the Architectural Contract Plans and visit the premises at a suitable time to determine maximum size of equipment he can safely get into the building in one piece. Field joints to be held to a minimum. Should door openings not be large enough, FSEC shall provide field joints in equipment as required and re-weld inside of building.

Utilities Services

Rough-in cold water, hot water, waste and vent piping, duct work and electrical wiring to be installed by Plumbing and Electrical Trades. Such items are to be brought away from surface of floors, walls and/or

ceilings by these Trades and capped prior to installation of food service equipment.

5. GUARANTEE

FSEC is to furnish one (1) year written guarantee for equipment starting from date of acceptance by the Owner or the Owner's duly authorized representative. Guarantee to be in accordance with Architect's General Conditions.

Refrigeration - Self-contained

All self-contained refrigeration compressors for milk coolers, ice cream cabinets, cold food counters, reach in refrigerators or freezers, etc., shall be furnished with a five (5) year compressor warranty and one (1) year refrigeration service starting from date of final acceptance.

6. PRODUCTS

Fabrication Requirements – See following page for details

All food service equipment is to be constructed in strict compliance with the latest standards of the National Sanitation Foundation and to meet all requirements of the local and State Health Regulations. All equipment to bear the N.S.F. seal of approval.

Welding

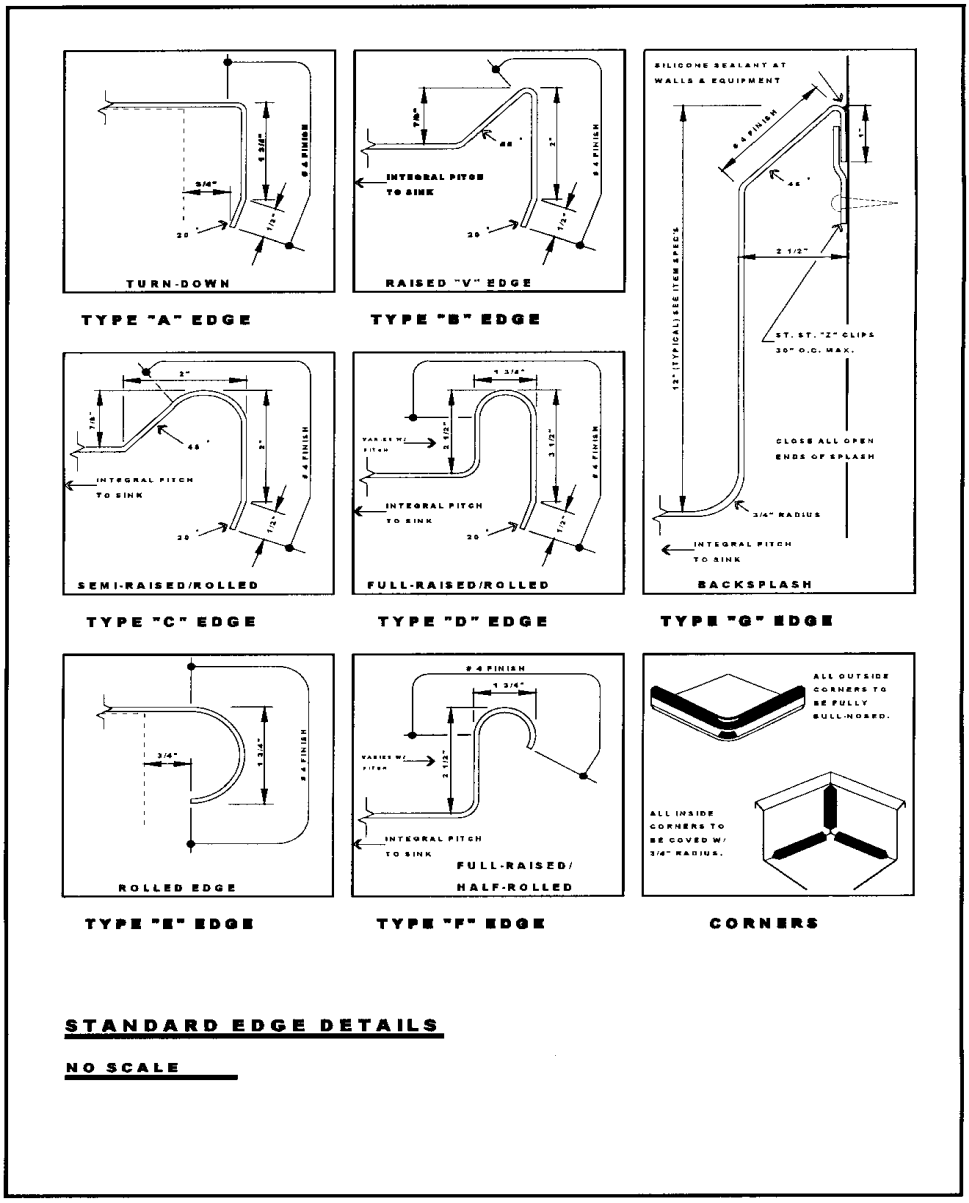
The words "weld", "welded", or "welding" as used in the item specifications, mean a metal joint continuously welded then all exposed parts ground smooth and polished to match adjoining surfaces.

All welding to be done in a thorough manner with welding rod of same composition as sheets or parts welded. Welds to be strong, ductile with excess metal and discoloration ground off and joint finished smooth to match adjoining surfaces.

Welds to be free of imperfections such as pits, runs, splatters, cracks, warping or discoloration. All welded joints to be homogeneous with parent metal itself. All fabricated equipment items where metal to metal butt joints occur to be joined and properly welded then ground and polished smooth.

Grinding, Polishing and Finishing

All exposed welded joints to be ground flush with adjoining material and neatly finished to harmonies therewith.



STANDARD EDGE DETAILS

NO SCALE

Whenever material has been depressed or sunken in by welding operations, such depressions shall be suitably hammered and peened flush with adjoining surfaces to then be polished and/or buffed to match adjoining surfaces to a degree consistent with good workmanship. Care shall be exercised in all grinding operations to avoid excessive heating of metal and metal discoloration. Abrasive wheels and belts used in grinding to be iron free and not having been used on carbon steel. In all cases, the grain or rough finish to be removed by successively finer polishing operations to be consistent with reasonable care and good workmanship. Final polishing operations to be uniform and smooth.

Where break band occurs, free of open texture or orange peel appearance, all such marks shall be removed by grinding, polishing and finishing. Wherever sheared edges occur, they shall be free from burrs, projections and fins to obviate all danger from cutting or laceration when hand is drawn over such sheared edges.

Where miters or bullnosed corner, they will be neatly ground to uniform condition and in no case will overlapping materials be acceptable.

Equipment quality finish consistent with high grade of manufacturing practiced in industry. All exposed surfaces to be commercial mill finishes known as #4 satin finish for corrosion resistant steel. All exposed edges to be furnished with a #7 mirror finish, unless otherwise noted in item specifications.

All cabinets, doors and shelves where exposed to be interpreted as meaning inside surface exposed to view when swinging door or sliding doors are opened. Unless otherwise specified, underside of shelves need not be satin finish.

Doors - Hinged

To be full height of door opening. Each door shall not be over 30" wide for high cabinets and 24" wide for low cabinets. Doors to be double pan construction flush type and braced and thoroughly sound deadened made of 18 ga. st. st. Inner and outer pans to be sealed with 3/4" long tack welds spaces approximately 6" apart. Balance of the space to be completely sealed between tack welds with silver solder or N.S.F. approved hard solder (Silicone not approved).

All welds ground and polished smooth. All bracings to be on proper centers to fit door size.

Doors to be mounted on heavy semi concealed nickel bronze olive knuckle hinges fastened to inside ledge of door and cabinet so that only pin will be exposed to heavy st. st. piano hinges. Provide each door with Component Hardware #M22-2420.

Doors - Sliding

Make same as specified for hinged doors, except they shall operate on Component Hardware #B58-5513 and #B58-5523 nylon tire wheels running on one (1) piece drawn aluminum overhead Component Hardware #B57 tracks. Bottom shall be guided by st. st. Component Hardware #B56-1096 guide pins at center of door openings. Provide locks where called for in item specifications. Provide flush type polished handles. (Heated cabinets with sliding doors to use Component Hardware #B58-5511 and #B58-5523 st. st. ball bearing wheels).

"High" type fixtures to be fitted with two (2) sets of doors in height, each set opening into half height of fixture.

"Low" type fixtures to be fitted with (1) set of full height doors. No door length to exceed 36".

Sinks

All sinks to be made of 14 ga. st. st. unless otherwise specified. All corners shall be coved at least 5/8" radius, with all corners and joints welded, ground and polished smooth to a #4 satin finish. Sinks, unless otherwise specified, shall not be less than 14" deep. The use of solder or separate filler pieces to obtain coved corners will not be acceptable. All sink bottoms are to be integrally pitched to insure complete drainage of sink to waste opening. Edges at table height to have exposed edges formed to match adjoining table. Edges adjacent to table to be welded to table with all welds ground and polished smooth.

Unless otherwise specified, all sinks to be provided with backsplash 12" high x 2-1/2" wide to allow for pipe space in rear. Flange over at ends, with top edge turned back 2-1/2" at 45 degree angle and down l". Provide openings for combination swinging type water faucet for each compartment.

In sinks of two (2) or more compartments, furnish between each sink compartment a 3/4" wide full height portion integrally welded to sinks at front, back and bottom maintaining smooth 5/8" radius coved corners as described in preceding paragraph.

Front of multiple compartment sinks shall consist of st. st. apron same gauge as sinks having length same as overall length of sink bowls and same depth as bowls. This apron shall be "L" shaped and welded to or part of the top rim.

Design of apron front to be such that sinks shall have an appearance of a continuous one (1) piece front face of all overlapping joints and open spaces between sink compartments.

Each compartment to be furnished with Component Hardware rotary handle type drain, connected rear overflow, 6" tailpiece and faucet of make and model number as called for in Item Specifications. Also each sink to be furnished with 14 ga. st. st. waste handle bracket welded to underside of sink.

Tables & Tops - Height

All working tops to be 34" high from floor, unless otherwise stated under specific item.

Metal Tops

Unless otherwise specified in Item Specifications, metal tops to be 14 ga. st. st. reinforced and braced on underside by framework consisting of 1-1/2" x 1-1/2" x 3/16" angles and 1" x 3" x 3/16" channels, galvanized where concealed and st. st. where exposed.

Framework angles to run full length and width and with angle crossbrace on not over 2'-6" centers. Channel reinforcing to run full length of tops down center of top. All tops with sinks shall be integrally pitched towards same.

All joints of framework to be welded with weld re-metalized. Tops to be bolted to framework in a concealed manner with st. st. bolts similar to AN-COR-LOX cup nuts. All metal tops to appear as one piece with all field and shop joints reinforced and welded, ground smooth, and polished, also to be made of largest piece obtainable.

No short pieces of metal will be acceptable. St. st. tops to have a #4 satin finish and all tops of this metal to be full l/2" cove at re-entrant corners, also where turned up in rear or in front, such as

dishtables. Solder filled corners will not be acceptable.

Metal edges to be made as described below and/or shown on detail drawings. Top to have all edges turned down 1-3/4" then back 1/2" at a 70 degree angle all around with all corners welded, ground, and polished smooth with no cracks or openings showing. All exterior corners to be well rounded bullnosed in 1-1/4" radius.

Dishtables & Pot Washing Tables

All free edges to be turned up 2-3/4" then rolled to 1-5/8" x 180 degrees and furnished with apron edge front, as per Edge Detail Sheet. All exposed and exterior corners to be coved at 5/8" radius with all joints welded, ground, and polished smooth.

Where tables abut a wall or other tall equipment, extend back and/or ends up 12" then back 2-1/2" at 45 degrees and down l" parallel to wall. Provide with end filler pieces and all welded surfaces ground and polished smooth.

The underside of Dish and Pot Washing tables to be reinforced with 1-1/2" x 1-1/2" x 3/16" st. st. angles and l" x 3" st. st. channels. Angles to run full length of tops at both front and rear of tops with crossbrace front to back on 2'-6" centers. Channel bracing to run down center, full length of tops. Tops shall be integrally pitched to dishwasher and sinks.

Fastening Tops to Washers and Other Equipment

Where tops are shown adjacent to dish or glass washer, etc., ends are to be turned down 1-1/2" into fixture and bolted tightly to it with approved gaskets between body and turned down edges. Backsplashes to have edge against fixture turned out 1-1/2" and tightly fitted to it. Free edges to be neatly fitted to fixture corners to prevent water from dripping on floor. All tops to have integral pitch to drain towards dishwasher.

Dish & Pot Table Drainage

During installation of dish tables and dishwasher, FSEC shall water test all counter tops to make sure of proper pitch before final plumbing and electrical connections are made. All water on counter tops shall drain with no standing puddles allowed. Should the FSEC fail to pitch tables properly, he shall be responsible for disconnecting plumbing and electrical connections and re-adjust tables to insure proper pitch. FSEC shall also be responsible for re-connecting all service lines after tables have been re-aligned.

Pipe Stands

All equipment requiring pipe legs or stands to be provided with sufficient supports to carry superimposed load of 100 lbs. per sq. ft. Top to be fabricated of 16 ga. st. st. Tubing to be Component Hardware #A46-5288 complete leg assembly Model Number 2236HB, 1-5/8" O.D., with st. st. hex head bullet shaped feet as previously specified. All pipe stands to be braced with crossrails, Component Hardware #A46-4288, 1-5/8" st. st. pipe welded to legs approximately 10" above floor or braced by lower shelf as specified hereinafter. Provide Component Hardware #A18-0206 st. st. gussets as previously specified, welded to framework on underside of top.

In place of gussets, st. st. legs may be welded to st. st. channels 5" long which shall fit into channel crossbracing. Flange of both channels to be machine bolted together. Holes for bolts to be slotted for adjustment. Provide legs on not over 5'-0" centers and additional if required or requested.

All pipe legs or vertical members to be set back from table top on ends and on front and back sufficient distance to offset any interference with workers, columns, walls or other items. Where tops are welded to sinks, omit pipe legs supporting top at sink location.

Shelves Under Tables

Under tops which are mounted on pipe legs or stands, shelves under table to be fabricated of 16 ga. st. st. with all edges flanged down 1-1/2" or as otherwise noted in the Item Specifications. Shelves to fit tightly around contour of legs and welded from underside. Shelves to be made up from long lengths with all joints welded, ground, and polished smooth.

Short lengths will not be permitted. Reinforced, as required, to support load of 50 lbs. per sq. ft. All sharp edges, burrs, and corners to be ground smooth and removed and then be slightly rounded. All shelves in cabinet bases are to be angle reinforced.

Cabinet Bases

Exterior cabinet bases to be constructed of 18 ga. st. st. with front face, exposed ends, rear, and corners integrally exposed with all welds ground and polished smooth to form a one piece construction appearance.

St. st. exterior to be mounted over a 1-1/2" x 1-1/2" x l/8" all welded galvanized iron angle frame. Where st. st. exterior meets angle framework at drawer, door or shelf openings, exterior shall be turned in 1-1/2" over angle framework inside of openings. All drawers and doors to be flush with cabinet face.

All cabinet base bottoms to be enclosed with 18 ga. galvanized iron panels. Interior shelves of cabinet base to be constructed of 16 ga. st. st. and be reinforced with 1-1/2" x 1-1/2" x 1/8" angles. Rear and ends of shelves to be turned up 2" with all interior corners coved to 5/8" radius.

Drawers

Drawer front to be 3/4" thick double pan construction with 16 ga. st. st. telescoping rear panels. Joints to be sealed same as specified for double pan hinged doors. Drawer front fitted with recessed st. st. grip handle, Component Hardware #CAGP63-1012. Drawer to be furnished with 18 ga. galvanized iron bottom with openings in front to accommodate drawer. Provide with cylinder type lock when specified under Item Specifications or shown on elevation details.

Opening in front to have edges turned in to fit drawer front which will be flush when drawer is closed. Bottom of enclosure to be open with edges turned in l" on all sides.

All corners on enclosure to be continuously welded, then polished and ground smooth. Exposed rivets or screws will not be acceptable. Component Hardware #S81-2020 Drawer insert to consist of removable die-stamped 18 ga. st. st. pan approximately 20" square x 5" deep. Top edges of drawer insert to be flanged out on all sides, not less than l/2" for resting on drawer extension glides. All sharp edges and burrs to be removed from drawer flange.

Housing supports to be made of 12 ga. st. st. formed into angles welded to underside of metal tops or

screwed to underside of wood tops and to extend full width of top with rear enclosure, where exposed. All welded items to be ground and polished smooth. Screws for wood tops to be st. st. countersunk. Drawer housings to slide on 14 ga. st. st. telescoping channels with st. st. rollers, Component Hardware #S52 series extension roller slides.

Drawers

This mechanism must be designed so that drawer will not tilt when fully opened. Provide with stop mechanism to prevent pulling the housing from slides but with suitable extension so it may be removed for cleaning.

Tier of Drawers

To be two (2) or three (3) in number of same size as specified for above and entirely enclosed with 18 ga. st. st. same as specified under cabinet bases with openings for drawers with all joints flush welded, grounded, and polished smooth.

Single drawers under table tops to be one inch (1") back of edge of fixture. All draws shall have front flush with cabinet body.

Fasteners

Exposed screw or bolt heads will not be permitted on fixtures. Rivets, if specified, shall be countersunk flush. Rivets to be same material as they join. Butt joints made by riveting straps under seams and then filling with solder or caulking will not be permitted or accepted.

Name Plates

All buy-out equipment shall be furnished with a permanently affixed metal name plate listing manufacturer's name, model number, voltage, cycle, phase, horsepower, etc., in an easily readable location. Dealers, installers, fabricators or service agencies name plate stickers shall not be fastened to any item without the approval of the Architect

7. MATERIALS AND WORKMANSHIP

Unless otherwise specified, all material shall be new and of best quality, perfect, and without flaws and shall be delivered upon completion in an undamaged condition.

Stainless Steel

Shall be type 304 having a standard analysis of 18% chrome and 8% nickel. St. st. to be as manufactured by Republic Steel Company, "Endure", Allegheny Metal Company, Crucible Steel Company, "Rezistal" or approved equal. Gauge to be specified under Item Specifications and furnished with #4 satin finish, unless otherwise specified.

Galvanized Iron

Shall be American Rolling Mills "Armco", Republic Steel, Inland Steel, "Tocan" or approved equal.

Pipe legs shall be Standard-Keil #2235HB, 16 ga. st. st. (0.65" thick), tubing furnished with st. st.

adjustable foot and Standard-Keil #481-58 with enclosed gusset welded to underside of table top reinforcing channel.

Tubing to be seamless drawn, ground, and polished smooth to a #4 satin finish. Bottom of legs to be swedged for close fit to adjustable foot. Where space permits furnish 1-1/4" dia. st. st. crossrails welded to leg uprights. All welds shall have radius corners and be ground and polished smooth to a #4 satin finish.

Handles, Hinges & Door Fasteners

All hardware and other fittings used in connection with the equipment to be cast nickel bronze or st. st. Handles to be welded or bolted to the equipment in a concealed manner. Bolts to be st. st. and hinges to be recessed in door with st. st. Component Hardware #M75-l002 lift-off, N.S.F. approved hinge. Hinges to be fastened in place with st. st. recessed rivets or welded in place with weld ground and polished smooth.

Sliding doors to be depressed type and furnished with Component Hardware Model #P62-1010 handles. Hinges to be olive knuckle, semi concealed type of nickel bronze or st. st. piano type as described under the specific item.

Painting and Coating

All metal that is not st. st. is to be painted with two (2) coats of an approved rust-proof paint such as Rustoleum or other approved equal of highest quality gray enamel.

Electric Receptacles

All 120V-1 phase duplex receptacles in cabinet bases to be Pass & Seymour Model #6307 and receptacles over 120 volt shall be Hubbel receptacles sized as per the rough-in drawings.

All receptacles are to be grounded type being both dust and moisture proof. Furnish outlets with st. st. face plates and neoprene mats. In cabinet bases, all receptacles are to be mounted in Chase #R-1 all coved corners st. st. recessed type enclosure mounted to cabinet base. Component Hardware #R73 - 1210 receptacles shall be pre-wired by FSEC to junction box in bottom of base cabinet left ready for final connection by Electrical Trades. All wiring between receptacles and junction box to be run in rigid conduit.

All counter top receptacles to be Component Hardware #R58 chrome plated type as specified in Item Specifications. Counter top receptacles to be pre-wired to junction box in rigid conduit same as previously specified. All wiring to be in strict compliance with latest standards of the National Sanitation Foundation and Board of Health Requirements.

Quietness of operation of all food service equipment is a requirement and the FSEC shall be required to remove or repair any equipment producing objectionable noises.

Shop Drawing Review

All submittals to be reviewed, stamped and dated by FSEC prior to sending them to the Contractor, Architect

By reviewing and submitting shop drawings and samples, the FSEC thereby represents that he has verified all construction criteria, materials, catalog numbers and similar data and that he has checked and

coordinated each shop drawing and sample with the requirements of the work and of the contract documents.

If shop drawings and/or samples are submitted without proper identification and in the Architects opinion it is evident that they have not been properly reviewed by the FSEC or if shop drawings are submitted in an unprofessional manner, they will be returned to the FSEC for identification and/or review and re-submission. In such an event, it will be held that the FSEC has not complied with the above requirements for reviewing and identifying shop drawings and samples. The FSEC shall bear the risk of all delays in work or in work of any other trade, the same as if no shop drawing or samples had been submitted. The above requirements will be strictly enforced.

The Architect will review and process only two (2) submissions of each shop drawing and/or sample. Shop drawings and samples returned because the FSEC has not complied with the above requirements shall be counted as the first submission. If more than two (2) submissions are required, the FSEC shall pay the Architects cost for reviewing and processing the third and subsequent submissions.

The Architects cost shall be computed at two and one half (2-1/2) times payroll plus reproduction and mailing expense.

Buy-out Booklets

By submitting prepared Buy-out Booklets, the FSEC thereby represents that he has determined and verified voltage and phase requirements and that he has checked and coordinated each item with shop drawings and contract documents.

Each item in the Buy-out booklet shall have a typed title page, complete with descriptive details and included accessories.

TITLE PAGE TO BE AS PER THE FOLLOWING PAGE.

SAMPLE TITLE PAGE

Food Service Equipment Contractor _____

ITEM # _____ QUANTITY _____

Description: _____

Electrical

Motor H.P. ____ Volts _____ Phase _____ Cycle _____

Heating Element: KW ____ Volts ____ Phase _____

Lighting and/or Fan Circuit: _____ Volts _____ Phase _____

Refrigeration specs.

Plumbing

Cold Water _____ 140 degree water _____ 180 degree water _____

Steam in _____ Steam Pressure _____ Pounds _____

Steam Return _____ Connected Waste _____ Floor Waste _____

Gas

Kind _____ Size _____ B.T.U. _____

Spec. Gravity _____ Pressure _____

Direction of Feed for Dishwasher

Right to Left, Left to Right, Straight Thru, Corner type, Clockwise, and Counter Clockwise (circle unit required).

Door Hinged

Right Side, Left side (Circle unit required).

8. EXECUTION

Inspections

The Owner, Architect, and/or their duly authorized representative shall have free access to the contractor's shop or shops during the construction of this equipment for the purpose of making inspections to see that the plans and specifications and detailed drawings are being adhered to carefully.

Contractor shall correct any errors found during the inspections, to the extent within the scope of the plans, specifications and detailed drawings.

Upon being notified of job completion, it shall be the responsibility of the Architect to inspect the job site and prepare an itemized Punch List.

If items are found not to be complete per approved drawings, General Requirements and the Architects Item Specifications, upon receiving the Punch List, the FSEC shall correct all items on the list within thirty (30) days.

It shall be the responsibility of the Plumbing and Electrical Trades to check all rough-in connections installed by their personnel to make sure that they agree with the dimensioned

FSEC shall verify with the Electrical Trades the voltage and phase required for each piece of equipment that is to be supplied. Should the FSEC fail to verify the voltage characteristics it shall be his responsibility for changing the equipment on the job site to fit the voltage on the site.

When deemed necessary by the Architect and FSEC shall meet on the job site with the Electrical and Plumbing Trades to determine the best way of offsetting rough-in connections that interfere with beams, foundations or other possible field obstructions.

The FSEC shall check all base sizes, after installation by the Architectural Trades, to make sure that they will fit his equipment. Should base be installed incorrectly, the FSEC shall advise the Architectural Trades in writing at once to have base corrected as required.

The FSEC shall check all walls where equipment abuts or fits between, after installation by the Architectural Trades, to make sure that the equipment will fit correctly.

9. PREPARATION

All gas equipment is to be furnished with appliance pressure regulators. Electrical requirements shall be in accordance with rough-in plan and verified on the job site.

Should the electrical requirements and the item specifications not agree with the rough-in plan or electrical requirements on the job site, it shall be the responsibility of the FSEC to send a written report to the Architect advising them of the discrepancy. Should the FSEC fail to verify voltages on the job site, it shall be his full responsibility to make all necessary changes on his equipment at no cost to the Owner.

All measurements shall be verified at the building site and full responsibility for their correctness must be assumed by the Contractor.

No extra charge or compensation will be allowed on account of difference between actual dimensions and the measurements indicated on the drawings. All or any differences which may be found shall be submitted to the Architect for consideration before proceeding with the work.

10. INSTALLATION

Food Service Equipment

FSEC shall be responsible for assembly and erection of all equipment included herein and in required location as shown on drawings, leaving same with outlets for other contractors to make final steam, plumbing, electrical and ventilation connections.

FSEC is to provide a competent foreman to supervise the erection and placing of equipment and to advise other Trades in regards to connections at time of installation. Where applicable, he shall deliver to other Trades all plumbing, steam fittings, and electrical parts included with his equipment for their proper installation.

FSEC to have qualified personnel on job site while the Plumbing, Electrical, and H.V.A.C. Trades are making final connections between rough-in and equipment. Where necessary, FSEC is to move equipment to allow these Trades to make final connections.

Should the FSEC fail to assist the other Trades and final location of equipment is incorrect, it shall be the responsibility of the FSEC to move the equipment to correct location and assume the cost of disconnecting and reconnecting the service connections.

FSEC is responsible for cutting all holes thru tops, backsplashes, shelves and cabinets so the other Trades can make final connections to outlets in fixtures from his rough-in.

Should these Trades fail to check rough-in before slab is poured, they shall assume all responsibility for making necessary changes and paying all the costs involved. Should the dimensioned rough-in drawings be incorrect, it shall be the responsibility of the FSEC to assume costs involved for revising all connections involved in the dimensioned error.

FSEC shall verify with the Electrical Trades the voltage and phase required for each piece of equipment that is to be supplied. Should the FSEC fail to verify the voltage characteristics it shall be his responsibility for changing the equipment on the job site to fit the voltage on the site.

When deemed necessary by the Architect FSEC shall meet on the job site with the Electrical and Plumbing Trades to determine the best way of offsetting rough-in connections that interfere with beams, foundations or other possible field obstructions.

Rough-in Inspections

It shall be the responsibility of the Plumbing and Electrical Trades to check all rough-in connections installed by their personnel to make sure that they agree with the dimensioned rough-in drawings as prepared by the FSEC.

Should these Trades fail to check rough-in before slab is poured, they shall assume all responsibility for making necessary changes and paying all the costs involved. Should the dimensioned rough-in drawings

be incorrect, it shall be the responsibility of the FSEC to assume costs involved for revising all connections involved in the dimensioned error.

FSEC to have qualified personnel on job site while the Plumbing, Electrical, and H.V.A.C. Trades are making final connections between rough-in and equipment. Where necessary, FSEC is to move equipment to allow these Trades to make final connections. Should the FSEC fail to assist the other Trades and final location of equipment is incorrect, it shall be the responsibility of the FSEC to move the equipment to correct location and assume the cost of disconnecting and reconnecting the service connections.

FSEC is responsible for cutting all holes thru tops, backsplashes, shelves and cabinets so the other Trades can make final connections to outlets in fixtures from his rough-in.

Should specified equipment arrive at the job site with incorrect finish, model number, damaged, etc. A replacement item must be ordered immediately. Should the project schedule require the incorrect unit for opening operation, existing unit is to be left in operation until replacement is available, at no cost to the owner. It shall be the responsibility of the FSEC to assume all costs for re-stocking, re-selling, etc., of the incorrect items that have been used by the Owner.

All holes or openings must be cut in a workmanlike manner, with all edges ground and polished smooth and free of sharp edges. Opening in rear of base cabinet must not be larger than l" bigger than pipe extending thru cabinet. Oversize cutouts with rough edges will not be approved.

All faucets and waste assemblies to be furnished by the FSEC and to be turned over to the Plumbing Trades for their installation. NOTE! Faucets and waste assemblies to be tagged properly to insure proper installation of these items on the correct fixtures.

Ventilating Trades

This Trade will furnish all ductwork to openings on top hoods, furnished by the FSEC.

Electrical and Plumbing Trades

These Trades shall furnish all final electrical and plumbing connections between fixtures and rough-in outlets in walls or floors.

Internal connections on booster heater and disposer to be furnished by the Plumbing and Electrical Trades and proper installation of these above named items. FSEC shall also include detailed drawings showing proper location of all accessories. General Building Contractor shall furnish all masonry platforms, tile bases and floor depressions.

Trimming & Sealing Equipment

Space between units to walls, ceilings, and floors and adjoining units not portable and with enclosed bodies, shall be completely sealed against entrance of food particles or vermin by means of st. st. trim strips, welding or commercial joint material suitable to the nature of the equipment. Sealer when not exposed to extreme heat shall be silicone construction sealant in the appropriate color. Ends of hollow sections to be closed. Enclosed fixtures without legs mounted on masonry bases or floor shall be sealed watertight to base of floor.

All equipment setting on masonry bases will be constructed to overhang to provide toe spaces, however, metal framework and/or housings are to be turned under a sufficient distance to overlap masonry base

and eliminate openings at these points. Bases to be sealed with Dow Corning sealant #786 or approved G.E. sealant.

Caulking at all backsplash areas in pot washing, dishwashing and preparation sinks and counters shall not have any recessed or convex areas which will allow for debris and water to sit on caulk.

Upright penetrations in backsplash and counter tops to have gap sealed with silicone.

11. ADJUST & CLEAN

FSEC shall adjust and lubricate all moving parts for smooth quiet operation. The FSEC shall touch up scratches, marred or abraded surfaces to restore equipment to the original condition.

The FSEC shall also remove all crating and packing material from the job site and shall also remove fingerprints and leave equipment and adjacent equipment or surfaces clean.

The FSEC shall be responsible for missing items unless he can produce signed receipts from the Owner's personnel that the items were received and an accounted for. Owner cannot be responsible for items that were dropped off at the job site and were not signed for by the Owner's personnel or representatives.

l2. DEMONSTRATION

The FSEC shall arrange a demonstration date with the Owner and at the same time check out all loose items with the Food Service Manager.

13. GUARANTEE

All items furnished by the Food Service Equipment Contractor as part of this Contract, shall be guaranteed against defects in workmanship and material for a period of one (l) year.

Manufacturers of standard items of equipment as supplied under this Contract are to provide a one (l) year warranty on parts and labor.

In addition, connected pieces of equipment requiring calibration are to be so calibrated by a qualified person as part of this Contract.

Commencement date for warranty purposes is as follows:

a. Connected equipment: - When equipment is started up for intended use."
b. non-connected equipment: - At date of Owner acceptance."

14. PROTECTION OF EQUIPMENT

Fabricated fixtures such as custom st. st. & plastic laminate items are to have fiberboard or plywood taped to tops and exposed body panels. Protective covering is to be left in place until all trades are completed.

Manufactured equipment is to have fiberboard or plywood tape as required per equipment shape and installation access requirements.

Prohibited use of equipment; tool and material storage area, workbench, scaffold, stacking area, etc.

15. APPROVED CUSTOM ST. ST. FABRICATORS

The following is a list of fabricators who have demonstrated the ability to provide quality equipment.

Florida Stainless
Oviedo, FL

American Stainless Steel Corp
Englewood, CO.

PRS
Warren, MI

R&D Fabricating
Clinton Twp, MI

Great Lakes Stainless
Traverse City, MI

MCM Fixture Co.
Hazel Park, MI

Midwest Stainless Fabricating Co.
Livonia, MI

Nationwide Fabrication, Inc.
Northglenn, CO

Stainless Fixtures Inc.
Pomona, CA

Use of a food service equipment fabricator other than those listed must be specifically approved in writing by the architect prior to submission of food service equipment bids on this project.

MAIN KITCHEN AND SERVERY ITEMS 1 THROUGH 76

ITEM # 1 WALK IN REFRIGERATOR/FREEZER

QTY: One (1)

MFG: AMERICAN PANEL

CONST:

Walk-In Refrigerator/Freezer provided under this portion of the specifications shall be prefabricated of modular design and construction. They shall be constructed to allow convenient and accurate field assembly. See Sheets FSE-9 & 10 for additional details.

Size of Refrigerator/Freezer to be 17' – 0" deep x 19' – 8" wide overall outside per plan with 8' - 4" clear inside height. **Nominal sizing is not permitted**.

Panel Construction - All panels shall consist of interior and exterior metal surfaces precision formed to exact dimensions with double 90° edges to enhance overall panel rigidity. The finished metal surfaces shall be fitted with a teardrop profile gasket and placed in precision tooled fixtures where they are injected with *Foamed-in-Place* urethane insulation. Curing of the insulating core shall take place at a controlled temperature within the foaming fixture to provide permanent adhesion to the metal surfaces, allowing for uniform foam expansion and to maximize finished panel strength. Panel edges shall have a molded urethane tongue and groove profile of insulation factor equal to core material to accurately align panels during installation and to assure an airtight seal. No structural wood, steel, straps, high density urethane or other non-insulating materials shall be used in panel construction.
Finished panels must be UL classified building units.

Finished panels will be 4" thick and will be provided in 11 ½", 23", 34 ½" and 46" widths to conform to project drawings. Corner panels shall be one piece 90° angled construction and shall measure 12" x 12" or 12" x 6 ¼" where required. For units with multiple compartments, specially designed "tee" panels shall be provided to form partition wall to outside wall junctures. "Tee" panels shall measure 23" x 12" or 23" x 6 ¼" where required. All panels shall be interchangeable with like panels or standard door frame sections for fast and easy assembly.

Floor Construction and Finish - Wall panels shall be set into a 7" deep depressed floor area arranged so that finished interior floor will be level with the finished building floor. After walls are set, building slab within each insulated area shall be covered with polyethylene film forming a vapor barrier. American Panel to provide two (2) layers of 2" board urethane and ethylene slip sheet. Quarry Tile, Concrete or epoxy finished wear surface and coved base to be provided by General Contractor.

Door Construction **-** Entrance doors are constructed similar to other panels and shall be flush mount, magnetic in-fitting type. Door sections shall be constructed to conform to Underwriters Laboratories Standards for electrical safety and shall bear all appropriate U.L. listing labels. The perimeter of the door and frame shall be built of a fiberglass reinforced plastic (FRP) pultrusion's weighing not less than 11 ounces per lineal foot. All pultrusion's shall be non-conductive, non-corrosive, rust proof and listed by the National Sanitation Foundation. Door jamb shall house a door frame heater circuit and a magnet attracting stainless steel trim strip. Door frame shall be equipped with flexible bellows type vinyl door gasket with magnetic core and flexible EPDM (ethylene propylene diene monomer) door sweep. Standard door frame sections 46", 57 ½" or 69" wide shall be equipped with a vapor proof light fixture and globe pre-wired to a pushbutton type light switch with pilot light and a 2 1/2" diameter dial-type thermometer. An aluminum braided heater wire with integral circuit closure providing activation while

refrigerated room is within operating temperature and a 16 gauge stainless steel threshold plate shall also be included in all door frames.

Door hardware shall be die cast zinc with brushed satin finish. Doors shall be mounted with two (2) heavy duty cam lift hinges. Pull handle assembly shall incorporate a keyed cylinder deadbolt style lock, provision for owner supplied padlock and an inside safety release to prevent personnel entrapment. Positive door closing and sealing shall be assisted by a hydraulic closer device.

Per code, provide clear vinyl strip curtains at door openings.

ACCESSORIES:

View-Through Window: To provide vision in the walk-in room, a 14” x 14” triple-pane window shall be used with a heated frame as standard. For freezer applications or humid conditions, heated glass shall be used. Window shall be neatly trimmed and designed for replacement in the field.

Cylinder Lock: A cylinder locking device shall be installed on reach-in doors as required. It shall consist of a cylinder lock and locking cam with a non-conductive housing.

Thru-Ceiling Electrical: A thru-ceiling electrical assembly shall be supplied at the entrance door to allow the door electrical components to be pre-wired through to the exterior ceiling. It shall consist of a flexible cord with plug on the door section and receptacle installed in the ceiling panel.

Kickplate: Provide 1/8” aluminum diamond kickplate on interior and exterior of all entrance doors. Kickplate to be 36” high x width of door.

Provide 48” long LED ceiling mounted light fixtures in each compartment. Exposed conduit on interior ceiling is not permitted. FSEC to be responsible for installation of light fixtures. Loose box of fixtures turned over to electrical trades is not acceptable. FSEC to mount lights and leave ready for interwiring and final connections to switch(s) and building power supply by electrical.

NOTE! Per code, The light intensity shall be at least 110 lux (10 foot candles) at a distance of 75 cm (30 inches) above the floor, in walk-in refrigeration units, dry food storage areas and in other areas during periods of cleaning. American Panel to provide fixture quantities to meet these requirements.

Wall Protectors: To prevent damage to Walk-Ins in heavy traffic areas, the following bumper rail shall be supplied on the exposed walls:

A 1-1/2” wide extruded aluminum rail with vinyl insert. Field mounted with unexposed with sheet metal screws/supplied with end caps.

Closure Panels: Furnish removable closure panels to enclose the area between the building and the walk-in ceilings. Panels to be fabricated of same material as walk-in exterior.

Trim Strips: Furnish trim strips between walk-in and building walls where shown. Constructed and finished of same material as exterior of walk-in.

Corner Guard: Provide 16 gauge stainless steel corner guards 6” x 6” x 60” high on exposed exterior corner of walk-in.

Base Cove: General Contractor to provide base cove, where specified, to seal walk-in to building floor and facilitate easy cleaning.

Two (2) Intelligent Controller Plus (IC+) (Wi-Fi, Dry Contacts, USB Interface, Battery Backup, Auto Lights)
One (1) Lot exterior wall bumpers where exposed
One (1) Lot of LED lights at doorway
One (1) Lot of 48" LED Tube Light Fixtures on ceiling
Two (2) Flex Strip Curtain
One (1) Heated Pressure Relief Vent Model 1825
Two (2) Vision Windows 14" x 14"

DETAILS:

Finishes - The interior and exterior finish on panel surfaces is to be manufactured from a combination of the following premium grade materials. The gauge or thickness of the metal material listed is rated prior to embossing.

- Interior walls shall be .032. Stucco Aluminum
- Interior ceilings shall be .032. White Stucco Aluminum
- Exposed Exterior walls shall be .032. Stucco Aluminum
- Exterior ceiling shall be .032. Stucco Aluminum
- Exposed Exterior Front shall be 032. Stucco Aluminum

Insulation - Insulation shall be 4" thick high pressure impingement mixed (HPIM) foamed-in-place urethane, minimum 2.4 lb. per cubic foot density, fully heat cured and bonded to metal finishes. The insulation shall be manufactured using an HFC 245fa expanding agent. The thermal conductivity ("K" factor) shall not exceed 0.133 BTU/Hour/Square Foot/Degree Fahrenheit/Inch of Thickness across the entire width of the panel. Overall coefficient of heat transfer ("U" factor) shall not exceed .033 and the resistance to heat penetration ("R" factor) shall not be less than 30. The insulation shall have a 97% closed cell structure to prevent absorption of liquids. The finished panel (not just the core material) shall be listed by Underwriters Laboratories as a Class 1 (UL-723) building unit and demonstrate a flame spread rating of 20 or less. The core material smoke developed Underwriters Laboratory rating shall be no greater than 300 as documented by and in accordance with ASTM Standards.

Panel Assembly - Assembly of walk-in shall be accomplished by the use of cam-action locking mechanisms precisely positioned along the outside tongue or groove edges of each panel to exactly correspond with a matching mechanism in the adjacent panel. Cam lock spacing on vertical joints shall not exceed 46" and at junction of vertical and horizontal joints by 23". Cam locks shall be foamed-in-place and anchored securely in the panel by steel "wings" integral to the lock housing. Cam locks shall be operated through access ports by the use of a hex wrench, thereby, pulling the panels together and establishing an airtight seal. All access ports shall be located on the walk-in interior to facilitate assembly when close to building structures and shall be covered by vinyl snap-in caps after final assembly. Complete step-by-step assembly instructions and erection drawings shall be supplied by the walk-in manufacturer and installing contractor must be factory authorized!

Walk-In Monitoring System IC+ System to have an LED display with high and low alarm set points with audible and visual alerts for alarm conditions. All functions shall be programmable and accessible from the face of the controller. System to display freeze and refrigerator temperatures in alternating pattern.

System shall have an integrated, push button light switch with on/off indicator light. System shall comply with Jan 1, 2009, federal energy requirements by incorporating an automatic lighting shut-off. System shall actively monitor and control door heater assembly for proper operation and lower energy

consumption by having programmable initiation temperature, termination temperature and percentage of operation time adjustability.

System to have 115V output for connection to external alarms, dialers, etc. that run on standard 115V input. Where specified, the system shall be supplied with a dry contact kit for connection to equipment that requires dry contacts.

Warranty - Insulated panel products are to be warranted for a period of ten (10) years after date of installation to the original user should the panels be installed properly and be used under normal service conditions. Installing contractor is to closely adhere to manufacturer's recommendations and guidelines for installation so as to ensure a quality operating product. All accessories and components shall have a one year warranty.

Refrigeration System **-** All system field connections shall be made by a licensed refrigeration contractor (as a subcontractor to the kitchen equipment contractor) that is certified in refrigerant recovery. Condensing units shall be preassembled remote, fully hermetic, air cooled units for outdoor installation as manufactured by Copeland or Tecumseh and shall be supplied with matching Russell evaporators. Condensing units shall be equipped with PSC fan motors and evaporator fans shall utilize the ECM type fan motors. Manufacturer is to calculate heat loads and provide systems with a minimum of 105% of needed capacity to maintain holding temperatures of 35° F in coolers and –10° F in freezers. Calculations shall take into consideration box ambient, refrigeration system ambient, air flow, exposure to sunlight and altitude. Interconnection of refrigeration lines, insulation and electrical wiring shall be accomplished by the appropriate trades and shall be a portion of the kitchen equipment contract.

Systems to consist of the following air cooled units.

2.60 HP hermetic air cooled refrigeration system -10° F Freezer 208/230/60/3 Includes an electric defrost evaporator coil Includes 5-Year Compressor Warranty Condensing Unit Model # FFAL-A26Z-TFC-075 (R-448A) and BEL0100BS6EE w/ E.C. Motors & I.R.C.

2.00 HP hermetic air cooled refrigeration system 35° F Cooler 208/230/60/3 Includes standard evaporator coil Includes 5-Year Compressor Warranty Condensing Unit Model # FFAP-A20Z-TFC-075 (R-448A) and BEL0115BS6AM w/ E.C. Motors & I.R.C.

Note! FSEC to verify makes and model numbers to insure proper operation and connection loads. Units to be installed on roof area in location as determined by architect. FSEC to verify distance at time of bidding to insure proper system sizing.

Refrigeration Warranty **-** All parts shall be warranted for one year from date of installation with an additional four (4) year compressor warranty added by the manufacturer. A one year labor warranty of the system is to be provided by the licensed installation contractor as a subcontractor to the kitchen equipment contractor.

NSF: All Walk-Ins shall be fabricated to comply with National Sanitation Foundation Standard No. 7. The NSF label shall be affixed to the interior door pan. Interior corners and floor shall be coved to meet NSF specifications.

Submit shop drawing for review and approval.

ITEM # 2 REMOTE REFRIGERATOR CONDENSER

One (1) Included with item # 1.

ITEM # 2.1 REFRIGERATOR BLOWER COIL

One (1) Included with item # 1.

ITEM # 3 REMOTE FREEZER CONDENSER

One (1) Included with item # 1.

ITEM # 3.1 FREEZER BLOWER COIL

One (1) Included with item # 1.

ITEM # 3.2 HEAT TAPE

One (1) Lot included with item # 1.

ITEM # 4 RACK, DUNNAGE

Four (4) CAMBRO model #DRS480 slotted top dunnage rack sized 21" deep x 12" high x 48” long per plan. Unit to have 3000 pound capacity. Provide units in speckled gray (480)

ITEM # 5 PORTABLE WALK IN FZR, SHELVING

QTY: One (1) Lot per plan.

MFG/MODEL: InterMetro Industries Corp SUPER ERECTA WITH METROSEAL3 SHELVING

CONST: Shelves to have # 10 gauge mat wires spaced 21/32" on centers with #6 gauge cross braces a maximum of 8" on centers and running perpendicular to crosswires. Additional center cross bracing is augmented with 1/4" snake wire support on shelves with depth 21" and greater. Side construction to consist of 1/4" diameter top and bottom support wires with 7 gauge snake wire welded between the top and bottom support wires. The top and bottom support wires are to be welded to round 1 1/4" i.d. collar to form corner. All contact points are to be welded.

Posts are to be provided as 1" O.D. round tubes grooved at 1 " increments and numbered at 2" increments. Posts are double-grooved every 8" for easy identification. A round plastic post cap will be installed on the top of each post. A slip sleeve will be provided for each collar to stay at selected position on the post.

The finish will be Metroseal3, a proprietary applied electrostatic process over a self-sealing hydrated base layer. Metroseal3 contains Microban, which is an antimicrobial product which inhibits the growth of bacteria.

ACCESSORIES:

One (1) Set of 5” dia., swivel casters, 2 with locks to be provided with each section of shelving.

DETAILS:

Shelving to be furnished four (4) tiers high with One (1) set of 70UPK3 posts per unit. Post sized to allow mobile units to be rolled in and out of 75" doors while on 5" casters. FSEC to coordinate shelving length with walk in interior to insure proper fit.

ITEM # 6 PORTABLE WALK IN REF, SHELVING

QTY: One (1) Lot per plan.

MFG/MODEL: InterMetro Industries Corp SUPER ERECTA WITH METROSEAL3 SHELVING

CONST: Shelves to have # 10 gauge mat wires spaced 21/32" on centers with #6 gauge cross braces a maximum of 8" on centers and running perpendicular to crosswires. Additional center cross bracing is augmented with 1/4" snake wire support on shelves with depth 21" and greater. Side construction to consist of 1/4" diameter top and bottom support wires with 7 gauge snake wire welded between the top and bottom support wires. The top and bottom support wires are to be welded to round 1 1/4" i.d. collar to form corner. All contact points are to be welded.

Posts are to be provided as 1" O.D. round tubes grooved at 1 " increments and numbered at 2" increments. Posts are double-grooved every 8" for easy identification. A round plastic post cap will be installed on the top of each post. A slip sleeve will be provided for each collar to stay at selected position on the post.

The finish will be Metroseal3, a proprietary applied electrostatic process over a self-sealing hydrated base layer. Metroseal3 contains Microban, which is an antimicrobial product which inhibits the growth of bacteria.

ACCESSORIES:

One (1) Set of 5” dia., swivel casters, 2 with locks to be provided with each section of shelving.

DETAILS:

Shelving to be furnished four (4) tiers high with One (1) set of 70UPK3 posts per unit. Post sized to allow mobile units to be rolled in and out of 75" doors while on 5" casters. FSEC to coordinate shelving length with walk in interior to insure proper fit.

ITEM # 7 STATIONARY STORE ROOM SHELVING

QTY: One (1) Lot per plan

MFG & MODEL: InterMetro Industries Corp Super Brite Super Erecta Shelving

CONST: All carbon steel construction. Shelves to have 10 ga. mat wires spaced 21/32" apart. Mat wires to be supported by 6 ga. support wire. Support wire spacing specific to shelf size. Shelf width greater than 18" include one to two 7 ga. snake wire supports running the length of the shelf. Shelf frame to be made up of 7 ga. snake wire with two 6 ga. snake support wire. A round 1 1/2" steel collar is welded at each corner. All contact points are to be welded.

Posts are to be provided as 1" O.D. Round tubes notched every 1" of the post. A polypropylene post cap will be installed on the top of each post. The bottom of the post to have F04-004 hex head leveler and C03-002 post insert for the purpose of leveling the shelving.

Finish will be Super Brite, a zinc based chromate bath.

DETAILS: Each shelving to be furnished five (5) tiers high with four (4) 86" high posts. Shelving size and quantity to be sized per plan. Shared uprights will not be accepted.

ITEM # 8 CART, UTILITY

One (1) LAKESIDE model #511 st. st. portable utility cart.

ITEM # 9 HAND SINK, WALL MOUNT

QTY: One (1) Lot

MFG. & MODEL: ADVANCE #7-PS-40

CONST: Sink to be constructed of Stainless Steel Sink to be furnished with 8" backsplash with 2" return to wall and flange down.

ACCESSORIES: Furnish with strainer type 6" tailpiece and "P" trap all to be chrome plated brass. Faucet shall be T & S EC 3101 TMV electronic gooseneck faucet, aerator, mixing valve, 120 Volt A.C. transformer. Soap and towel dispenser to be provided by owner. Unit to include right and left hand splash shields.

DETAILS: Sink to be mounted with rim 34" above finished floor with rough-in for water and waste located 4-7/8" below the 6-1/2" deep sink.

ITEM # 10 DISPOSER, GARBAGE

QTY: One (1) Lot

MFG/MODEL: IN-SINK-ERATOR SS-200-18B-AS101 AQUA SAVER

CONSTRUCTION: Unit shall be a commercial, heavy-duty disposer with two (2) horsepower motor, stainless steel and chrome plated finish. Control Panel shall be 18 gauge st. st. NEMA 4, waterproof enclosure.

ACCESSORIES:

One (1) 18” cone w/ two fixed nozzles
One (1) St. St. Removable Cover and Scrap Block
One (1) Automatic Reversing Feature
One (1) Time Delay Relay set for 30 seconds
One (1) 24 volt line voltage transformer, controls operate on 24 volts
One (1) Line Disconnect Switch, Interlocks with front cover
One (1) Start/Stop Push Button
Two (2) Flow control valves and solenoids
One (1) St. st. support leg
One (1) 14 gauge st. st. mounting bracket
One (1) T&S B-2278 Pre-rinse unit w/ built in vacuum breaker & wall bracket
One (1) T&S B-0455 Vacuum Breaker Assembly w/ chrome plated pipe extension & elbows above backsplash area

DETAILS: Cone to be continuously welded to top with all welds ground and polished smooth. Control panel bracket welded to underside to top and set back so disconnect handle does not project beyond edge of table. Backsplash to be pre-drilled on exact centers to accommodate Vacuum Breaker Assembly.

FSEC shall tag all accessories with item numbers and locations of equipment. Accessories are then to be delivered to Plumbing and Electrical Contractors for their internal and final connections. FSEC shall furnish detailed drawings showing proper installation of loose accessories and piping details.

ITEM # 11 ST. ST. SOILED/CLEAN DISHTABLES

One (1) Lot Custom fabricated soiled and clean dishtables sized per with integral pitch to allow tables to drain towards dishwasher. See detail drawing for additional construction information.

TOP

Fabricated of 14 gauge stainless steel with front and exposed ends furnished with type "D" raised rim with apron type edge. Working surface to have integral pitch to drain surface area of any excess water. Top of rim to be parallel with floor. Reinforcing under and polish to be furnished in accordance with General Requirements and standard edge details. Provide table limit switch mounting location on soiled dishtable.

BACKSPLASH

Rear as shown on plan against wall to be furnished with 12" high integral backsplash. Top to be turned back at 45 degree angle with 1" return down parallel back of flight type

Provide clear silicone sealant to wall and equipment per Board of Health Requirements. See Edge Detail type "G" for construction requirements

LEGS

Top to be support with st. st. legs with flange feet. Feet to be secured to floor with st. st. screws and anchors.

SHELF UNDER

Under top as shown on plan or elevation, furnish 16 gauge stainless steel removable shelf. Shelf to be rolled over crossrails in front and sides. Rear to be turned up 3 against walls or side equipment. Shelf to have all coved corners at not less than 5/8 radius

.

DISPOSER CUTOUT - Where shown, top to be cut out to accommodate disposer cone specified under separate item. Cone to be continuously welded around full perimeter, then ground and polished smooth to a #4 satin finish. Under top furnish 14 ga. st. st. bracket to accommodate disposer control panel or switch. Rear backsplash to be punched out to accommodate vacuum breaker assembly specified under disposer item #10.

TABLE DRAINER - In top of soiled table, furnish integrally welded table drainer 6" wide x 3" deep x full width of dishtable. (Full width to mean from front vertical inside edge of rolled rim to back of vertical edge of backsplash). Inside edges both horizontally and vertically furnished with not less than ½" radius. Interior of drainer to be furnished with all coved cornered perforated strainer basket made of 16 gauge stainless steel.

Include 1/4" stainless steel rod guide handles to allow racks to slide over drainer area. Drainer pitched to drain and to have die stamped opening and furnished with basket drain, brass chrome plated with 1-1/2" tailpiece.

Submit shop drawing for review and approval

ITEM # 12 PORTABLE STORAGE SHELVING

QTY: One (1)

MFG/MODEL: InterMetro Industries Corp Super Brite Super Erecta Shelving

CONST:

All carbon steel construction. Shelves to have 10 ga. mat wires spaced 21/32" apart. Mat wires to be supported by 6 ga. support wire. Support wire spacing specific to shelf size. Shelf width greater than 18" include one to two 7 ga. snake wire supports running the length of the shelf. Shelf frame to be made up of 7 ga. snake wire with two 6 ga. snake support wire. A round 1 1/2" steel collar is welded at each corner. All contact points are to be welded.

Posts are to be provided as 1" O.D. Round tubes notched every 1" of the post. A polypropylene post cap will be installed on the top of each post.

Finish will be Super Brite, a zinc based chromate bath.

ACCESSORIES:

The bottom of the post to have heavy duty casters, two with locks.

DETAILS:

Each shelving to be furnished four (4) tiers high with four (4) 72" high posts. Shelving size and quantity to be sized per plan.

ITEM # 13 SPARE – NOT USED

ITEM # 14 WAREWASHER, RACK CONVEYOR

One (1) HOBART MODEL CL44EN ADV 44” Conveyor Style dishmachine with electric tank heat and built in booster heater.

CONST: Tank, chamber, frame, legs, control box, doors and panels are constructed of stainless steel.

ACCESSORIES:

One (1) Lot Soil Recovery
Two (2) Stainless steel vent hoods w/ locking type damper
Three (3) Peg type dishracks
Three (3) Combination type dishracks
Two (2) Sheet Pan Rack
One (1) 30KW booster heater

One (1) Lot Single Point Connection for Tank Heat, Motors and Controls
One (1) Built In Booster Heater (Separate Electrical Connection)
One (1) Drain water tempering kit (included)
One (1) Table Limit Switch – Turned over to table fabricator for installation.

DETAILS: Provide as standard equipment; Power wash section and Opti-rinse final rinse system. Automatic fill, energy saving auto-timer, low temperature alert. Rapid return conveyor drive system with a ball detent clutch. Horizontally mounted stainless steel self draining pump and impeller. Horizontally mounted splash proof, ventilated, grease packed ball bearing motor with inherent motor overload protection. Scrap screen and deep basket system. Top mounted programmable controls. Door actuated drain closures. Insulated hinged double doors with interlock switches. Vent fan control. One electrical connection for motors and controls and tank heat and one connection for built in SST chamber booster heater.

Electrical Trades and Plumbing Trades to be responsible for final connections.

ITEM # 15 SOAP AND RINSE SYSTEM

One (1) Lot furnished and installed by owner's soap vendor. "NIC"

ITEM # 16 ST. ST. EXHAUST DUCTS

Two (2) Custom Fabricated or equal ADVANCE TABCO VR-1 4 x 16 Exhaust ducts fabricated of 18 ga. st.st. with all welded construction. Duct shall be extended from top of dishwasher to ceiling above approx., 9'-0 above finished floor line.

Include 18 ga. st.st. ceiling trim collar with feathered edges and welded corners. FSEC to coordinate ducts with operator provided dishwasher to insure proper fit.

Submit shop drawing for review and approval.

ITEM # 17 WIRE WALL SHELVING

One (1) Lot Metro Chrome wire wall shelving sized per plan. Unit to consist of two (2) 14" deep chrome shelves with two (2) 2WD14C chrome wire wall supports. Each chrome wire wall support consists of one shelf support and mount plate with two caps. FSEC to mount wire shelf supports to wall with heavy duty SST lag bolts.

ITEM # 18 PORTABLE STORAGE SHELVING

QTY: One (1)

MFG/MODEL: InterMetro Industries Corp Super Brite Super Erecta Shelving

CONST:

All carbon steel construction. Shelves to have 10 ga. mat wires spaced 21/32" apart. Mat wires to be supported by 6 ga. support wire. Support wire spacing specific to shelf size. Shelf width greater than 18" include one to two 7 ga. snake wire supports running the length of the shelf. Shelf frame to be made up of 7 ga. snake wire with two 6 ga. snake support wire. A round 1 1/2" steel collar is welded at each corner. All contact points are to be welded.

Posts are to be provided as 1" O.D. Round tubes notched every 1" of the post. A polypropylene post cap will be installed on the top of each post.

Finish will be Super Brite, a zinc based chromate bath.

ACCESSORIES:

The bottom of the post to have heavy duty casters, two with locks.

DETAILS:

Each shelving to be furnished four (4) tiers high with four (4) 72" high posts. Shelving size and quantity to be sized per plan.

ITEM # 19 ST. ST. WALL PANELING

One (1) Lot of Custom Fabricated 18 ga. st. st. 30" high rear and side wall paneling to extend from top of backsplash. Provide st. st. panel on wall behind dishwasher down to top of coved base.
Furnish paneling hair line butt joints. Paneling to be sealed on sides and top with clear silicone sealant.
Submit shop drawing for review and approval.

ITEM # 20 ST. ST. PREP SINK AND TABLE

One (1) Custom fabricated unit sized per plan x 34 high to working surface.

TOP: Fabricated of 14 ga. Stainless Steel with front and exposed end furnished with type A edges

BACKSPLASH: Rear and sides as shown on plan, against walls or equipment to be furnished with 8 high integral backsplash. Top to be turned back at 45 degree angle with 1 return down parallel to wall. Furnish 14 gauge stainless steel Z clips to hold backsplash tight to wall in neat and workmanlike manner. Provide clear silicone sealant to wall and equipment per Board of Health requirements. See Edge Detail type G for construction requirements.

SINKS: In top, furnish two Integrally welded sink 21 x 26 x 12 deep. Bottom of sink compartment to be pitched and furnished with die stamped opening to accommodate waste flange. Sink to be all coved cornered and fabricated per General Requirements.

SINK TRIM: Sink to be furnished with the following:

One (1) T&S B-0230-LN with 060X 8" swing nozzle
One (1) T&S B-0199-01 Aerator
One (1) T&S B-0230-K Nipple Assembly
Two (2) T&S B-3950-01 Lever waste with over flow assembly. twist drain handle furnished with 14 gauge stainless steel brackets welded to underside of sink.

Sink trim to be furnished with identification tags and signed over to the Plumbing Trades for their internal and final connections to rough in locations.

LEG SUPPORTS: Top and sink to be mounted on EFW all stainless steel one (1) leg support. Gusset, leg, crossbrace and wall flange fabricated in accordance with isometric detail drawing attached to contract drawings.

SHELF UNDER: Under top, per plan or elevation, furnish 16 gauge stainless steel removable shelves. Shelves to be rolled over crossrails in front and sides. Rear to be turned up 3 against walls or side equipment. Shelves to be all coved cornered fabricated at not less than 5/8 radius.

SHELF OVER: Over top as shown on plan furnish single deck 16 ga. st. st. shelf with 1 rolled rim on all sides. Shelf to be mounted on 1 1/4 dia., st. st. cantilever uprights extending up thru top Holes in top to be cut out to fit upright with not more than 1/16 clearance, then caulked with clear silicone sealant. Top of shelf turn up to align with top edge of st. st. wall cap.

DRAWER: Under top as shown on plan furnish 18 gauge stainless steel drawers 20 x 20 x 5 deep. Drawer insert to be removable type with roller bearing extension slides, double pan construction drawer front and 18 gauge stainless steel cabinet enclosure constructed per General Requirements. Drawer to be furnished with cylinder lock installed per manufacturer's recommendations. All drawer locks to be keyed alike on entire job.

SHOP DRAWING: Submit shop drawing for review and approval.

ITEM # 21 ST. ST. WALL PANELING

One (1) Lot of Custom Fabricated 18 ga. st. st. 30” high rear wall paneling to extend from top of backsplash.
Furnish paneling hair line butt joints. Paneling to be sealed on sides and top with clear silicone sealant. Submit shop drawing for review and approval.

ITEM # 22 ST. ST. THREE COMP SINK

One (1) Custom fabricated unit sized per plan and elevation detail x 2'-9" wide x 34" high to working surface.

TOP: Fabricated of 14 ga. st. st. w/front & exposed end furnished with type "D" raised rolled edges. Working surface to have integral pitch towards sink with top of rim parallel with floor. **NOTE! Edge in front of sink area to be 1-1/2" lower than edge on drainboards**. Edges to be integrally tapered at both ends of sink as shown on elevation detail. Top reinforcing and No 4 edge finish furnished in accordance with general requirements and standard edge details.

BACKSPLASH: Rear and sides as shown on plan against walls or equipment to be furnished with 12" high integral backsplash. Top to be turned back at 45 degree angle with 1" return down parallel to wall. Furnish 14 ga. st. st. "Z" clips to hold backsplash tight to wall in neat and workmanlike manner. Provide clear silicone sealant to wall and equipment. Caulking to fill gap without any recessed areas which will allow for debris and water to sit on caulk. Caulking requirements to be typical of all areas.

See Edge Detail type "G" for construction requirements.

SINKS: In top, furnish three (3) integrally welded sink compartments per plan location. Sink Compartments to be 24 x 28" x 14" deep. Bottom of each sink compartment furnished with die-stamped opening to accommodate waste flange. Sink bottom all coved cornered, pitched to waste and fabricated per General Requirements.

SINK TRIM: Three (3) compartment unit to be furnished with the following:

Two (2) T&S Model B-0290-112X (3/4" I.P.S) to fit in rear of Backsplash to accommodate 3/4" water lines. Right faucet to have Pre-rinse w/ 10" "Add a Faucet" (1) T&S Model B-0287-427-B, Remove T&S Model 114X, 12" spout and provide T&S Model 112x 10" spout.

Furnish each faucet complete with T&S Model B-0427 Assembly to facilitate fastening to Backsplash

Three (3) T&S Model B-3950-01 Twist Handle Drains with connected rear overflow & 010387-45 removable basket strainers. Twist Handle Drains Furnished with 14 ga. st. st. bracket welded to underside of sink.

Sink trim to be furnished with identification tags and signed over to Plumbing Trades for their internal and final connections to rough-in locations.

LEG SUPPORTS: Top and sink to be mounted on all st. st. one (1) leg support. Gusset leg crossbrace and wall flange fabricated in accordance with isometric detail drawing attached to contract drawings.

SHELF UNDER: Over tops, per plan or elevation, furnish 16 ga. st. st. removable shelf. Shelf to be rolled over crossrails in front and sides. Rear to be turned up 3" against walls or side equipment. Shelf to have all coved corners at not less than 5/8" radius.

Submit shop drawing for review and approval.

ITEM # 23 ST. ST. WALL PANELING

One (1) Lot of Custom Fabricated 18 ga. st. st. rear wall paneling to extend from top of backsplash up to partial height wall & 30" high at full height wall.
Furnish paneling hair line butt joints. Paneling to be sealed on sides and top with clear silicone sealant.
Submit shop drawing for review and approval.

ITEM # 24 RACK, PAN

One (1) ADVANCE TABCO model #PR20-3W. Units to be front load all welded portable pan rack. Unit to be furnished per manufacturers standards. Include heavy duty casters, two with locks.

ITEM # 25 REFRIGERATOR, REACH-IN

QTY: One (1)

MFG/MODEL: Traulsen G10010

CONST: Per manufacturers standards.

ACCESSORIES:

One (1) Full height stainless steel door
One (1) Set of Heavy Duty 6" High Casters with wheel locks
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
Six (6) Epoxy coated wire shelves
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges
Five (5) Year non-prorated compressor Warranty.

Details: Compressor to be top mounted, air cooled unit. Include self-closing door, cylinder lock & Microprocessor Control System with LED Temperature Readout. Door swing hinged per plan.

Elect: Per rough-in plan.

ITEM # 26 ST. ST. PREP TABLE

One (1) Custom fabricated unit sized per plan x 34 high to working surface.

TOP: Fabricated of 14 ga. Stainless Steel with front and exposed end furnished with type A edges

BACKSPLASH: Rear and sides as shown on plan, against walls or equipment to be furnished with 8 high integral backsplash. Top to be turned back at 45 degree angle with 1 return down parallel to wall. Furnish 14 gauge stainless steel Z clips to hold backsplash tight to wall in neat and workmanlike manner. Provide clear silicone sealant to wall and equipment per Board of Health requirements. See Edge Detail type G for construction requirements.

LEG SUPPORTS: Top and sink to be mounted on EFW all stainless steel one (1) leg support. Gusset, leg, crossbrace and wall flange fabricated in accordance with isometric detail drawing attached to contract drawings.

SHELF UNDER: Under top, per plan or elevation, furnish 16 gauge stainless steel removable shelves. Shelves to be rolled over crossrails in front and sides. Rear to be turned up 3 against walls or side equipment. Shelves to be all coved cornered fabricated at not less than 5/8 radius.

SHELF OVER: Over top as shown on plan furnish single deck 16 ga. st. st. shelf with 1 rolled rim on all sides. Shelf to be mounted on 1 1/4 dia., st. st. cantilever uprights extending up thru top Holes in top to be cut out to fit upright with not more than 1/16 clearance, then caulked with clear silicone sealant. Top of shelf turn up to align with top edge of st. st. wall cap.

DRAWER: Under top as shown on plan furnish 18 gauge stainless steel drawers 20 x 20 x 5 deep. Drawer insert to be removable type with roller bearing extension slides, double pan construction drawer front and 18 gauge stainless steel cabinet enclosure constructed per General Requirements. Drawer to be furnished with cylinder lock installed per manufacturer's recommendations. All drawer locks to be keyed alike on entire job.

SHOP DRAWING: Submit shop drawing for review and approval.

ITEM # 27 ST. ST. WALL PANELING W/ CAP

One (1) Lot of Custom Fabricated 18 ga. st. st. rear wall paneling to extend from top of backsplash up to partial height wall. Provide single piece wall cap with 1.5” turn down with welded mitered corners. Furnish paneling hair line butt joints. Paneling to be sealed on sides and top with clear silicone sealant. Submit shop drawing for review and approval.

ITEM # 28 ST. ST. EXHAUST HOOD

One (1) CAPTIVEAIRE model # 6624-ND-2 PSP F exhaust only canopy rated for all types of cooking equipment. The hood shall have the size, shape and performance specified on drawings. Construction shall be type 430 stainless steel with a #4 polish where exposed. Individual component construction shall be determined by the manufacturer, ETL, and NSF. Construction shall be dependent on the structural

application to minimize distortion and other defects. All seams, joints and penetrations of the hood enclosure to the lower outermost perimeter that directs and captures grease-laden vapor and exhaust gases shall have a liquid-tight continuous external weld in accordance with NFPA 96. Hood shall be wall type with a minimum of four connections for hanger rods. Connectors shall have 9/16" holes pre-punched in 1 ½" x 1 ½" angle iron at the factory to allow for hanger rod connection by FSEC.

Ventilator shall be furnished with U.L. classified high efficiency stainless steel baffle filters, supplied in size and quantity as required by ventilator. The filters shall extend the full length of the hood and the filler panels shall not be more than 6" in width.

The hood manufacturer shall supply complete computer generated submittal drawings including hood sections view and hood plan view. These drawings must be available to the engineer, architect and owner for their use in construction, operation and maintenance.

Exhaust duct collar to be 4" high with 1" flange. Duct sizes, CFM and static pressure requirements shall be as shown on drawings. Static pressure requirements shall be precise and accurate; air velocity and volume information shall be accurate within 1-ft increments along the length of the ventilator.

The hood shall have:

A double wall insulated front to eliminate condensation and increase rigidity. The insulation shall have a flexural modulus of 475 EL, meet UL 181 requirements and be in accordance with NFPA 90A and 90B.

An integral front baffle to direct grease laden vapors toward the exhaust filter bank.

Removable grease cup for easy cleaning.

The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper", NSF Listed and built in accordance with NFPA 96. The hood shall be listed for 450°F cooking surfaces at 150 CFM/ft, 600°F cooking surfaces at 200 CFM/ft, and 700°F cooking surfaces at 250 CFM/ft. The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper".

Accessories to be included:

One (1) Utility Cabinet
One (1) PSP – F per detail drawing
One (1) Lot Recessed Round LED lights
Two (2) St. St. full end panels w/ legs
One (1) Lot Stainless filters Captrate Solo filter with hook, ETL Listed. Particulate capture efficiency: 93% efficient at 9 microns, 72% efficient at 5 microns
One (1) Lot Extra Tall Field Wrapper Panels – FSEC to verify ceiling heights
One (1) Lot Balance Damper
One (1) Lot DCV Smart Controls
One (1) Pre-piped fire system
One (1) Electronic Gas valve
One (1) Remote Touch pad

FSEC/CAPTIVEAIRE to coordinate DCV smart controls with PBA Engineering to insure proper function of HVAC System. See Detail drawings for additional information.

Submit shop drawing for review.

ITEM # 28.1 EXHAUST HOOD CONTROL

One (1) Unit included with item # 28.

ITEM # 29 ST. ST. WALL PANELING

One (1) Lot of CAPTIVEAIRE or custom fabricated 18 ga. Stainless steel rear wall paneling sized per plan. Provide wall panels from bottom edge of hood down to top of base cove on end risers, Provide panels with finish to match hood and in lengths to match hood(s) section(s) wherever possible. Panels to butt together with hairline joint and be installed with concealed fasteners.

FSEC to provide all necessary cut outs for utility lines. Submit shop drawing for review and approval.

ITEM # 30 SPARE - NOT USED

ITEM # 31 SPARE - NOT USED

ITEM # 32 FIRE EXTINGUISHER

One (1) K Type unit provided by CaptiveAire. Verify mounting location.

ITEM # 33 FIRE SUPPRESSION SYSTEM

One (1) CAPTIVEAIRE System included with exhaust hood item # 28. System to be installed per manufacturers standards. System to comply with all state and local authorities. Submit shop drawing of system for review.

ITEM # 33.1 ELECTRONIC GAS VALVE

One (1) Lot included with item # 33.

ITEM # 34 OVEN-STEAMER, COMBINATION, GAS

One (1) UNOX Model No. (2)XAVC-06FS-GPLM ChefTop MIND.Maps™ Plus Combi Oven, gas, countertop, (6) 18" x 26" full size sheet or (12) hotel size pan capacity, MIND.Maps™ technology, programmable menu, 2-11/16" shelf spacing, glass door, left-to-right door opening, stainless steel interior & exterior,WIFI/USB for data transfer to HACCP software, 1kW, 8 amps, 120v/60/1-ph, cETLus, NSF, ENERGY STAR® (cooking chamber built from 316L stainless steel)

(For safety and reliability purposes, CHEFTOP MIND.Maps™ Gas ovens (Free Standing and Countertop Models) must be equipped with only UNOX brand casters with safety chains),Gas lines is not included with the oven and must be purchased separately.

See plan for door swing.

Note: Double Stack.

1 ea INSTALL FORM End User Data & Installation Confirmation Form 2 ea 2 Year parts and 1 year labor warranty standard; In K-12 LongLife4 extends warranty to 4 Year parts and 2 year labor warranty with wifi connection.

1 ea LONG.LIFE4-B1 LONG.LIFE4-B1, extended warranty with certified installation (Pricing based on a 100 mile radius from installer, Additional charges may apply). UNOX Long.Life4 program includes the following, which remains subject to UNOX, Inc. Terms and conditions: 1.) Extended Warranty providing a 4yr/10,000 ON hours parts/1 yr labor warranty. Oven must be connected to the internet via Ethernet cable or WIFI and must remain accessible for remote login by UNOX. 2) Pre- installation site inspection by an UNOX Certified Service Agent of the site where the UNOX equipment will be installed; Follow-up instructions advising customer of any additional material needed for site preparation required prior to installation; Assembly, setting and leveling of the UNOX equipment & Final Hook-up by Certified UNOX Service Agent. (1st 1011, 06FS, 10FS)

1 ea LONG.LIFE4-B2 LONG.LIFE4-B2, extended warranty with certified installation for 2nd or more unit(s) installed at same time and location as 1st unit. (1011, 06FS, 10FS)(NET)
1 ea LONG.LIFE4-ST Stacked unit installation - must be purchased with corresponding unit LONG.Life4. (NET)
2 ea NOTE: Stacking kit must be purchased whenever units are stacked.
2 ea Natural gas
1 ea XAAQC-00E2-G Stacking Kit for ChefTop MIND.Maps™ Plus, includes installation kits and stacking parts for stacking two ovens, for gas ovens including floor stand (XWARC-00-EF-F) and casters (XUC012)

2 ea It is the sole responsibility of the owner/operator/purchaser of this equipment to verify that the incoming water supply is comprehensively tested (Free Chlorine, Chloramine, TDS (Total Dissolved Solids), Silica, pH, TH (Total Hardness), Chlorides & Alkalinity) & if required, provide a means of water treatmeant that would meet the minimum requirements of the manufacturer's water quality standards as outlined on the product spec sheet. Non- compliance with these minimum standards will potentially damage this equipment and/or components & VOID the original equipment manufacturer's warranty
2 ea XHC012 UNOX.Finest Filtering System, reduces carbonate hardness of water, ChefTouch™ monitors water consumption and notifies user to replace cartridge
2 ea LONG.LIFE4-WF Water Filter installation - must be purchased with corresponding unit LONG.Life4 and installation must take place at same time as unit installation (NOTE: Installation can only be purchased when the Water Filtration is also purchased from UNOX) (NET)
2 cs DB1015A0 UNOX Detergent & Rinse Plus, (10) 1 liter tanks, double concentrate, cleaning chemicals for Rotor. Klean™ (There is a hazardous shipping charge for detergents)
12 ea GRP560 CHROMO.GRID, 18"x26", stainless steel
One (1) Lot DORMONT gas and water hoses with quick disconnects
One (1) Set DORMONT caster positioning kit

ITEM # 35 OVEN-STEAMER, COMBINATION, GAS

One (1) Unit same as item # 34.

ITEM # 36 OVEN, CONVECTION, GAS

One (1) Vulcan Model VC44GD Dimensions: 70(h) x 40(w) x 42.25(d)

Convection Oven, gas, double-deck, standard depth, solid state controls, electronic spark igniters, 60 minute timer, (5) nickel plated racks per oven, 8" high legs, stainless steel front, top & sides, stainless steel doors with windows, (2) 50,000 BTU, NSF, CSA Star, CSA Flame, ENERGY STAR®

One (1) 1 year limited parts & labor warranty, standard
Two (2) 120v/60/1-ph, 15.4 amps total, (2) cords with plugs, standard

One (1) Gas manifold piping included with stacking kit to provide single point gas connection
One (1) Lot casters, set of (4) in lieu of standard legs
One (1) Lot DORMONT gas hose assembly with quick disconnects, wall restraint and caster positing kit.

ITEM # 37 RANGE, RESTAURANT, GAS

One (1) Vulcan Model No. 24S-4BN.Fully MIG welded aluminized steel frame for added durability. Stainless steel front, sides, back riser, high shelf. Extra deep crumb tray with welded corners. Four 30,000 BTU/hr. open top burners with lift-off burner heads. Energy saving flashtube open burner ignition system (one pilot for every two burners) shrouded for reliability. Heavy duty cast grates, easy lift-off 12" x 12½" in the front and 12" x 14½" in the back to better accommodate stock pots or large pans. Grates have a built in aeration bowl for greater efficiency.

Burner knobs are cool to the touch, high temperature material. One oven: 23,000 BTU/hr. standard bakers depth ovens with porcelain oven bottom and door panel, measures 26¼"d x 20¼"w x 14"h. Oven thermostat adjusts from 250°F to 500°F with a low setting. Oven is supplied with two racks, two rack guide sets, and four rack positions. Oven door is heavy duty with an integrated door hinge/spring mechanism requiring no adjustment. ¾" rear gas connection and pressure regulator. Total input 143,000 BTU/hr.

Include the following standard and optional accessories:

One (1) DORMONT Super Swivel gas hose with quick disconnect and wall restraints
One (1) Lot casters, two with locks
One (1) Extra oven rack
One (1) Rear gas connection
One (1) Set DORMONT Safety-set caster positioners

ITEM # 38 ST. ST. COOKS TABLE W/ SINK

One (1) Custom fabricated unit sized 13' - 0" long x 2'-6" wide x 34" high.

TOP: Fabricated of 14 gauge stainless steel with type "A" edges on all open sides. Top to have bullnosed corners with No. 4 finish and reinforcing angles/channels under, per General Requirements. Provide 6” x 1” integral backsplash against wall as shown. Splash to have coved base at top.

DRAWERS & ENCLOSURE: Under top, furnish tier of three (3) 18 ga. st. st. drawers each 20" x 20" x 5" deep. Drawer inserts to be removable type with roller bearing extension slides, double pan construction drawer fronts and 18 ga. st. st. cabinet enclosure constructed per General Requirements. Base of unit to be mounted on Standard-Keil #1072-0641-1755, 6" high st. st. adjustable legs.

CYLINDER LOCKS: Each drawer to be furnished with Standard-Keil #1210 Cylinder Locks installed per Manufacturer's recommendations. All drawer locks to be keyed alike on entire job.

SINK: In top per plan furnish integrally welded sink 24" x 20" x 12" deep. Sink fabricated of 14 ga. st. st. with horizontal and vertical corners with not less than 5/8" integral radius. Sink bottom to be pitched to drain towards 3 1/2" dia., die stamped opening. Sink to be polished out in all corners to a #4 finish.

SINK TRIM: One (1) T&S Model B-0220-LN deck type faucet furnished with 060X, 8” swing spout with B-0199-01 aerator. Faucet caulked watertight to counter top. Faucet to be cast red brass, all chrome plated with color coded hot and cold water faucets.

One (1) One (1) T&S Model B-3950-01 Twist Handle Drains with connected rear overflow & 010387-45 removable basket strainers

SINK ENCLOSURE: Cabinet base under sink section furnished with 18 ga. st. st. louvered access door. Door to be double pan construction, sound deadened, with Standard Keil N.S.F. hinges and recessed st. st. handles per General Requirements. Bottom of sink enclosure, to be furnished with removable 16 ga. st. st. shelf, coved interior corners with rear and ends turned up 2" against cabinet interior. NOTE! shelf to be held back 8" from rear of cabinet to allow space for water and waste rough in connections.

DRAWERS & ENCLOSURE: Under top, furnish tier of three (3) 18 ga. st. st. drawers each 20" x 20" x 5" deep. Drawer inserts to be removable type with roller bearing extension slides, double pan construction drawer fronts and 18 ga. st. st. cabinet enclosure constructed per General Requirements. Base of unit to be mounted on Standard-Keil #1072-0641-1755, 6" high st. st. adjustable legs.

CYLINDER LOCKS: Each drawer to be furnished with Standard-Keil #1210 Cylinder Locks installed per Manufacturer's recommendations. All drawer locks to be keyed alike on entire job.

ELECTRICAL: Per rough in plan furnish duplex receptacle recessed as shown on electrical plan. Junction box to be located below drawer enclosure. See electrical plan for outlet locations.

Receptacle to be duplex unit Pass & Seymour model #6307 set in Standard-Keil #2773 stainless steel recessed receptacle holder. Include Pass & Seymour neoprene mat gasket and stainless steel faceplate. Receptacle to be three (3) prong grounded type installed to meet all safety and electrical codes.

SHELF UNDER: Under top, where shown on plan furnish 16 gauge stainless steel removable shelf with all free edges rolled over 90 degrees to match contour of crossrails. Edge against drawer enclosure to be turned up 2" with coved interior corners. Shelf to be made in two (2) removable sections with edges turned down 1" at 90 degree bend at all joints. Shelf to be open type accessible from both sides of work table.

SHELF OVER: Over top as shown on plan furnish single deck 16 ga. st. st. shelf with 1" rolled rim on all sides. Shelf to be mounted on 1 1/4" dia., st. st. cantilever uprights extending up thru top Holes in top to be cut out to fit upright with not more than 1/16" clearance, then caulked with clear silicone sealant.

LEGS: Cabinet base to be mounted 6" high st. st. adjustable legs with flange feet on four corners. Bullet feet in middle.

Submit shop drawing for review and approval.

ITEM # 39 OVEN, MICROWAVE

One (1) PANASONIC model # NE-2180 microwave oven furnished per manufacturers standards.

ITEM # 40 SPARE - NOT USED

ITEM # 41 SPARE - NOT USED

ITEM # 42 HAND SINK, WALL MOUNT

QTY: One (1) Lot

MFG. & MODEL: ADVANCE #7-PS-40

CONST: Sink to be constructed of Stainless Steel Sink to be furnished with 8" backsplash with 2" return to wall and flange down.`

ACCESSORIES: Furnish with strainer type 6" tailpiece and "P" trap all to be chrome plated brass. Faucet shall be T & S EC 3101 TMV electronic gooseneck faucet, aerator, mixing valve, 120 Volt A.C. transformer. Soap and towel dispenser to be provided by owner. Unit to include right and left hand splash shields.

DETAILS: Sink to be mounted with rim 34" above finished floor with rough-in for water and waste located 4-7/8" below the 6-1/2" deep sink.

ITEM # 43 REFRIGERATOR, REACH-IN

QTY: One (1)

MFG/MODEL: Traulsen G20010

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height stainless steel doors Door swings hinged per plan.
One (1) Set of Heavy Duty 6” High Casters with wheel locks
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
Six (6) Epoxy coated wire shelves per section
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges
Five (5) Year non-prorated compressor Warranty.

Details: Refrigerator to have 48 cu. Ft. Capacity, size 52 1/8” w x 32” d x 83 1/4" high. Compressor to be top mounted, air cooled unit. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout. .

Elect: Per rough-in plan.

ITEM # 44 FREEZER, REACH-IN

QTY: One (1)

MFG/MODEL: Traulsen G22010

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height stainless steel doors - Door swings hinged per plan.
One (1) Set of Heavy Duty 6” High Casters with wheel locks
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
Six (6) Epoxy coated wire shelves per section

Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges
Five (5) Year non-prorated compressor Warranty.

Details: Freezer to have 48 cu. Ft. Capacity, size 52 1/8” w x 32” d x 83 1/4" high. Compressor to be top mounted, air cooled unit. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout.

Elect: Per rough-in plan.

ITEM # 45 REFRIGERATOR, REACH-IN

QTY: One (1)

MFG/MODEL: Traulsen G20012

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height stainless steel doors Door swings hinged per plan.
One (1) Set of Heavy Duty 6” High Casters with wheel locks
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
Six (6) Epoxy coated wire shelves per section
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges
Five (5) Year non-prorated compressor Warranty.

Details: Refrigerator to have 48 cu. Ft. Capacity, size 52 1/8” w x 32” d x 83 1/4" high. Compressor to be top mounted, air cooled unit. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout.

Elect: Per rough-in plan.

ITEM # 46 HAND SINK, WALL MOUNT

QTY: One (1) Lot

MFG. & MODEL: ADVANCE #7-PS-40

CONST: Sink to be constructed of Stainless Steel Sink to be furnished with 8" backsplash with 2" return to wall and flange down.

ACCESSORIES: Furnish with strainer type 6" tailpiece and "P" trap all to be chrome plated brass. Faucet shall be T & S EC 3101 TMV electronic gooseneck faucet, aerator, mixing valve, 120 Volt A.C. transformer. Soap and towel dispenser to be provided by owner. Unit to include right and left hand splash shields.

DETAILS: Sink to be mounted with rim 34" above finished floor with rough-in for water and waste located 4-7/8" below the 6-1/2" deep sink.

ITEM # 47 TABLE, WORK, 14 GAUGE, BACK SPLASH W/ UNDERSHELF

One (1) ADVANCE TABCO model #KSS-305 st. st. work table furnished with 5" integral backsplash, st. st. under shelf, heavy duty SS-2015 enclosed drawer and four st. st. legs with bullet feet

ITEM # 48 CABINET, HEATED, PASS-THRU

QTY: One (1)

MFG/MODEL: Traulsen G1431xP

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height st. st. hinged doors Door swings hinged per plan.
One (1) Lot 6" High st. st. legs with adjustable feet
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
One (1) Lot of Universal angle slides for 12x20 , 14x18 & 18x26 trays on 3" Centers
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges

Details: Warmer to have 25.6 cu. Ft. Capacity, size 29 7/8" w x 32" d x 83 1/4" high. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout. Verify door swing per plan.

Elect: Per rough-in plan.

ITEM # 49 REFRIGERATED SELF-SERVICE CASE

One (1) Structural Concepts Model B3632

Oasis® Self-Service Refrigerated Merchandiser, high profile, open front, (4) non-lighted shelves, top light, Breeze-E (Type ll) with EnergyWise self-contained refrigeration system, Blue Fin coated coil, one piece formed ABS plastic tub, black interior, full end panels with mirror, cETLus, ETL-Sanitation

One (1) Lot 1 yr. parts & labor warranty, 5 yr. compressor warranty, standard
One (1) Lot Breeze-E (Type ll) with EnergyWise self-contained refrigeration, lower front air intake/upper front air discharge, standard
One (1) 6 ft straight blade power cord NEMA 6-20P (base exit), standard
One (1) Model CLEAN SWEEP Clean Sweep®, automatic condenser coil cleaner
One (1) Base Support: Casters, with levelers, standard
One (1) Lot Exterior: Wilsonart or Formica NON-PREMIUM laminate (Color chart available from factory rep or access color selections via www.wilsonart.com or www.formica.com)
One (1) Lower front panel: Black, standard
One (1) Lot left end panel: Full with mirrored interior, metal edging, standard
One (1) Right end panel: Full with mirrored interior, metal edging, standard
One (1) Exterior back panel: Solid back panel, black painted, standard
One (1) Digital Fahrenheit thermometer, standard
One (1) Lot Add Lights (LED) to standard shelves (4)
One (1) Lot Roll-down security cover, locking

One (1) Rear access door with lock.

FSEC to verify finishes with architect prior to ordering.

ITEM # 50 SPARE - NOT USED

ITEM # 51 SPARE - NOT USED

ITEM # 52 FLAT TOP UTILITY COUNTER

One (1) Duke Manufacturing Model No. TST-88SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF. Uni to include the following:

Counter length: 88"L body, 89.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUSTOM Stainless steel isolation trim ring, countertop cutout, and prep to accept drop-in unit
1 ea CUSTOM Stainless steel control panel, modify apron/rail, cutouts, touch screen switches mounted & wired
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-6P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit, * 34" high ADA Compliant Countertop *
1 ea TDST-X-1 For special length counter.
1 ea CUSTOM Louvered hinged doors on open side, stainless steel grilles, lift-off hinges and ADA compliant door pulls
1 ea MOD-2S-6CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea CUSTOM Electric Inter-Connect, stainless steel box & cover, receptacles & breakers, mounted in base and wired 1 ea CORD-10 10 ft. cord & plug, NEMA 5-50P. This counter has a single cord/plug (HCF-5/LED under top extension/Heat with LED in PMG sneeze guard).
1 ea CUSTOM Installation of food guards (posts) supplied by dealer Installed by Duke including wiring. Note glass panels are field installed by FSEC. 1 ea LED-88 Lights under top extension/tray slide
1 ea ON & OFF switch for LED lights under top extension.
1 ea ON & OFF switch for LED lights for sneeze guard

Submit shop drawing for review

ITEM # 52.1 BUFFET/CAFETERIA, HOT/COLD CONVERTIBLE

One (1) Duke Manufacturing Model No. HCF-5 Hot/Cold/Freeze Drop-In Food Well Unit, heated & refrigerated, 80" long, (5) 12" x 20" individual pans, 300 series stainless steel top rim, 5" deep 300 series stainless steel interior liners, steel exterior housing, individual wired remote digital controls for hot or cold operation, air- cooled condensing unit, individual drains manifolded to a valve, 6' cord & plug NEMA #14-30P, 208 volt, 60 hrz, 1 phase, 18 amps, UL, cULus, NSF #4 & 7

1 ea HCF-5-120 120v/60/1-ph, 28.0 amps
1 ea MOD-DRY No Drains, in lieu of standard drains. Each well comes with lift out silicone pan liner.

ITEM # 52.2 ADJ SNEEZE GUARD W/ LED & HEAT

One (1) Premier Metal & Glass Model No. TM2N-A
Tm2n-a-ext - 1" od gearless adjustable food shield with top Shelf and rear supports; 3/8" clear tempered glass with Polished edges and radius corners; both end panels included (fixed); surface mounting option with 2.5" round flange; Hatco grnm narrow max watt heat lamp and ultraslim led Lights (with external driver) in complimentary colored Housing; brushed stainless finish; approx 84.5" cl length; Approx 220 lbs ea (2 end supports), ext clear span. Note: 120V/1P and 2075W/10A for heat, 120V/1P and .25A for LED light fixture.

ITEM # 53 BUFFET/CAFETERIA, FLAT TOP

One (1) Duke Manufacturing Model No. TST-88SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 78"L body, 79.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
2 ea CUT-OP1-G Round cutout with grommet, in counter top for cord pass, * Locate on Operator's Side *
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-6P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea TDST-X-1 For special length counter
1 ea CUSTOM Hinged doors on open side, stainless steel, lift-off hinges and

ADA compliant door pulls
1 ea MOD-2S-6CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, duplex or single receptacle & stainless steel cover, wired to existing power source:
-- (1) simplex receptacle L14-20R for Hatco L14-20P plug
-- (1) duplex receptacle 120V/1P NEMA 5-20R for counter top equipment use and for LED light under top extension.
2 ea CORD 6 ft. cord & plug: (1) L14-20P and (1) 5-20P from counter base receptacles.
1 ea LED-88 Lights under top extension/tray slide
1 ea ON & OFF switch for duplex receptacle 120V (LED lights).

Submit shop drawing for review.

ITEM # 54 DISPLAY CASE, HEATED

One (1) HATCO model # GR2SDS-42D heated gravity chutes furnished per manufacturers standards. Unit to be provided with the following standard and optional accessories:

One (1) Designer Color
One (1) LED temp control
One (1) UL Cord and plug – Coordinate with counter mounted receptacle.
Ten (10) Total stainless divider rods

ITEM # 55 SPARE – NOT USED

ITEM # 56 BUFFET/CAFETERIA, FLAT TOP

One (1) Duke Manufacturing Model No. TST-74SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 68"L body, 69.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUSTOM Stainless steel isolation trim ring, countertop cutout, and prep to accept drop-in unit
1 ea CUSTOM Stainless steel control panel, modify apron/rail, cutouts, touch screen switches mounted & wired

1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-5P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea TDST-X-1 For special length counter.
1 ea CUSTOM Louvered hinged doors on open side, stainless steel grilles, lift-off hinges and ADA compliant door pulls
1 ea MOD-2S-5CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R duplex receptacle & stainless steel cover, wired to existing power source. This receptacle for LED light under the top extension and LED light in PMG sneeze guard.
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R simplex receptacle for Duke cold pan drop-in & stainless steel cover, wired to existing power source. Note Duke to wire together the simplex and duplex receptacles for a single cord/plug for counter.
1 ea CORD-10 10 ft. cord & plug, NEMA 5-15P.
1 ea CUSTOM Installation of food guards (posts) supplied by dealer Installed by Duke including wiring. Note glass panels are field installed by FSEC.
1 ea LED-74 Lights under top extension/tray slide
1 ea ON & OFF switch for duplex which controls LED lights under top extension and in sneeze guard.

Submit shop drawings for review.

ITEM # 56.1 DROP-IN, COLD PAN

One (1) Duke Manufacturing Model No. FCP4-SB Flush Mount Cold Pan Unit, drop-in unit, 60-13/16"W x 26"D x 24"H, (4) pan size, touchscreen control, 12" x 20" food pan, drain for each well manifolded to one location, 6' cord & plug, 120v/60/1-ph, R448a, NEMA 5-15, 4.9 amps, NSF, CULus, UL EPH Classified

ITEM # 56.2 BUFFET/CAFETERIA, SNEEZE GUARD

One (1) 1Premier Metal & Glass TM2R-F fixed glass fusion self Serve 1" od post food shield with top shelf and rear supports; 3/8" clear tempered glass with polished edges and radius Corners; both end panels included (fixed); surface mounting Option 2.5" diam flange; ultraslim led lights (with external Driver) in complimentary colored housing; brushed stainless Finish; approx 64.75" cl length; approx 190 lbs ea (2 end Supports)

Note: 120V/1P and .15A for LED light fixture

ITEM # 57 CASHIERS STAND

One (1) Duke Manufacturing Model No. TCS-30SS Thurmaduke™ Cashier Stand, mobile, 14ga stainless welded frame, 20ga stainless steel body & bottom shelf, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 41"L body, 42.25"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 10" on customer's side, on stainless steel fixed brackets, 3-1/2" high eased edge profile, 34" high, 42" deep, and 42.25" long.
1 ea CS-DR-LK Stainless steel drawer, with lock and keys, for cashier stand
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUT-OP1-G Round cutout with grommet, in counter top for cord pass
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
2 ea MOD-3P Veneer on customer's side
1 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea MOD-32 For special width body…per unit,
* 42" wide *
1 ea 329-SS-2L-LK Single door, with lock & keys, left hand hinge, stainless steel, magnetic catch, recessed stainless steel pull,
* Full bottom Shelf *
* Louvered Vents in door *
2 ea MOD-2S-3CU Kick Plate, both sides, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R duplex receptacle & stainless steel cover, wired to existing power source.
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R simplex receptacle for LED light under top extension & stainless steel cover, wired to existing power source. Note Duke to wire together the simplex and duplex receptacles for a single cord/plug for counter.
1 ea CORD 6 ft. cord & plug, NEMA 5-15P
1 ea LED-30 Lights under top extension/tray slide
1 ea ON & OFF switch for LED lights under top extension.

Submit shop drawing for review

ITEM # 58 POS/CASH REGISTER SYSTEM

One (1) System provided by owner. “NIC”

ITEM # 59 CASHIERS STAND

One (1) Duke Manufacturing Model No. TCS-30SS Thurmaduke™ Cashier Stand, mobile, 14ga stainless welded frame, 20ga stainless steel body & bottom shelf, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 41"L body, 42.25"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 10" on customer's side, on stainless steel fixed brackets, 3-1/2" high eased edge profile, 34" high, 42" deep, and 42.25" long.
1 ea CS-DR-LK Stainless steel drawer, with lock and keys, for cashier stand
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUT-OP1-G Round cutout with grommet, in counter top for cord pass
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
2 ea MOD-3P Veneer on customer's side
1 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea MOD-32 For special width body…per unit,
* 42" wide *
1 ea 329-SS-2L-LK Single door, with lock & keys, left hand hinge, stainless steel, magnetic catch, recessed stainless steel pull,
* Full bottom Shelf *
* Louvered Vents in door *
2 ea MOD-2S-3CU Kick Plate, both sides, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R duplex receptacle & stainless steel cover, wired to existing power source.
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R simplex receptacle for LED light under top extension & stainless steel cover, wired to existing power source. Note Duke to wire together the simplex and duplex receptacles for a single cord/plug for counter.
1 ea CORD 6 ft. cord & plug, NEMA 5-15P
1 ea LED-30 Lights under top extension/tray slide
1 ea ON & OFF switch for LED lights under top extension.

Submit shop drawing for review

ITEM # 60 SPARE - NOT USED

ITEM # 61 SPARE - NOT USED

ITEM # 62 BUFFET/CAFETERIA, FLAT TOP

One (1) Duke Manufacturing Model No. TST-74SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 68"L body, 69.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUSTOM Stainless steel isolation trim ring, countertop cutout, and prep to accept drop-in unit
1 ea CUSTOM Stainless steel control panel, modify apron/rail, cutouts, touch screen switches mounted & wired
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-5P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea TDST-X-1 For special length counter.
1 ea CUSTOM Louvered hinged doors on open side, stainless steel grilles, lift-off hinges and ADA compliant door pulls
1 ea MOD-2S-5CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R duplex receptacle & stainless steel cover, wired to existing power source. This receptacle for LED light under the top extension and LED light in PMG sneeze guard.
1 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, NEMA 5-15R simplex receptacle for Duke cold pan drop-in & stainless steel cover, wired to existing power source. Note Duke to wire together the simplex and duplex receptacles for a single cord/plug for counter.
1 ea CORD-10 10 ft. cord & plug, NEMA 5-15P.
1 ea CUSTOM Installation of food guards (posts) supplied by dealer Installed by Duke including wiring. Note glass panels are field installed by FSEC.
1 ea LED-74 Lights under top extension/tray slide
1 ea ON & OFF switch for duplex which controls LED lights under top extension and in sneeze guard.

Submit shop drawings for review.

ITEM # 62.1 DROP-IN, COLD PAN

One (1) Duke Manufacturing Model No. FCP4-SB Flush Mount Cold Pan Unit, drop-in unit, 60-13/16"W x 26"D x 24"H, (4) pan size, touchscreen control, 12" x 20" food pan, drain for each well manifolded to one location, 6' cord & plug, 120v/60/1-ph, R448a, NEMA 5-15, 4.9 amps, NSF, CULus, UL EPH Classified

ITEM # 62.2 BUFFET/CAFETERIA, SNEEZE GUARD

One (1) 1Premier Metal & Glass TM2R-F fixed glass fusion self Serve 1" od post food shield with top shelf and rear supports; 3/8" clear tempered glass with polished edges and radius Corners; both end panels included (fixed); surface mounting Option 2.5" diam flange; ultraslim led lights (with external Driver) in complimentary colored housing; brushed stainless Finish; approx 64.75" cl length; approx 190 lbs ea (2 end Supports)

Note: 120V/1P and .15A for LED light fixture

ITEM # 63 SPARE - NOT USED

ITEM # 64 DISPLAY CASE, HEATED

One (1) HATCO model # GR2SDS-42D heated gravity chutes furnished per manufacturers standards. Unit to be provided with the following standard and optional accessories:

One (1) Designer Color
One (1) LED temp control
One (1) UL Cord and plug – Coordinate with counter mounted receptacle.
Ten (10) Total stainless divider rods

ITEM # 65 BUFFET/CAFETERIA, FLAT TOP

One (1) Duke Manufacturing Model No. TST-88SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 78"L body, 79.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
2 ea CUT-OP1-G Round cutout with grommet, in counter top for cord pass, * Locate on Operator's Side *
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-6P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *

1 ea TDST-X-1 For special length counter.
1 ea CUSTOM Hinged doors on open side, stainless steel, lift-off hinges and ADA compliant door pulls
1 ea MOD-2S-6CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
2 ea E-OP2 Electric outlet, mounted in base, with galvanized junction box, duplex or single receptacle & stainless steel cover, wired to existing power source:
-- (1) simplex receptacle L14-20R for Hatco L14-20P plug
-- (1) duplex receptacle NEMA 5-20R for counter top equipment use and for LED light under top extension.
2 ea CORD 6 ft. cord & plug: (1) L14-20P and (1) 5-20P from counter base receptacles.
1 ea LED-88 Lights under top extension/tray slide
1 ea ON & OFF switch for duplex receptacle 120V (LED lights).

Submit shop drawing for review.

ITEM # 66 FLAT TOP UTILITY COUNTER

One (1) Duke Manufacturing Model No. TST-88SS Thurmaduke™ Solid Top Unit, mobile utility counter, 14ga stainless steel welded frame & supports, 20ga stainless steel body & undershelves, 5" dia. gray poly swivel casters & brakes, NSF

Counter length: 88"L body, 89.5"L quartz top

1 ea CUSTOM Engineered Stone countertop, 3cm Silestone (or equal) quartz composite on 14ga stainless steel backer, stainless steel pin & latch line up device under countertop, extend 9.75" on customer's side and 2.25" OP side, on stainless steel fixed brackets, 3-1/2" high eased edge profile all sides, 34" high counter, 42" deep top overall, length per drawing.
1 ea ILD Internal Locking Device (on both ends), stainless steel pin & latch line up device under countertop, per unit price (Note: Units required to be portable)
1 ea CUSTOM Stainless steel isolation trim ring, countertop cutout, and prep to accept drop-in unit
1 ea CUSTOM Stainless steel control panel, modify apron/rail, cutouts, touch screen switches mounted & wired
1 ea P-LAM Veneer plastic laminate on body (NOTE: Manufacturer's standard colors ONLY, metallics, color-core & raised textures may incur additional cost)
1 ea MOD-6P Veneer on customer's side
2 ea MOD-P-END Veneer on end, each
1 ea MOD-31 For special height unit,
* 34" high ADA Compliant Countertop *
1 ea TDST-X-1 For special length counter.
1 ea CUSTOM Louvered hinged doors on open side, stainless steel grilles, lift-off hinges and ADA compliant door pulls
1 ea MOD-2S-6CU Kick Plate, customer's side, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling

2 ea MOD-2S-E Kick Plate, end, stainless steel, recessed, screw attached, 1/2" above floor for easy rolling
1 ea CUSTOM Electric Inter-Connect, stainless steel box & cover, receptacles & breakers, mounted in base and wired
1 ea CORD-10 10 ft. cord & plug, NEMA 5-50P. This counter has a single cord/plug (HCF-5/LED under top extension/Heat with LED in PMG sneeze guard).
1 ea CUSTOM Installation of food guards (posts) supplied by dealer Installed by Duke including wiring. Note glass panels are field installed by FSEC.
1 ea LED-88 Lights under top extension/tray slide
1 ea ON & OFF switch for LED lights under top extension.
1 ea ON & OFF switch for LED lights for sneeze guard.

Submit shop drawing for review.

ITEM # 66.1 BUFFET/CAFETERIA, HOT/COLD CONVERTIBLE

One (1) Duke Manufacturing Model No. HCF-5 Hot/Cold/Freeze Drop-In Food Well Unit, heated & refrigerated, 80" long, (5) 12" x 20" individual pans, 300 series stainless steel top rim, 5" deep 300 series stainless steel interior liners, steel exterior housing,individual wired remote digital controls for hot or cold operation, air-cooled condensing unit, individual drains manifolded to a valve, 6' cord & plug NEMA #14-30P, 208 volt, 60 hrz, 1 phase, 18 amps, UL, cULus, NSF #4 & 7

1 ea HCF-5-120 120v/60/1-ph
1 ea MOD-DRY No Drains, in lieu of standard drains. Each well comes with lift out silicone pan liner.

Submit shop drawing for review.

ITEM # 66.2 ADJ SNEEZE GUARD W/ LED & HEAT

One (1) Premier Metal & Glass Model No. TM2N-A Tm2n-a-ext - 1" od gearless adjustable food shield with top Shelf and rear supports; 3/8" clear tempered glass with Polished edges and radius corners; both end panels included (fixed); surface mounting option with 2.5" round flange; Hatco grnm narrow max watt heat lamp and ultraslim led Lights (with external driver) in complimentary colored Housing; brushed stainless finish; approx 84.25" cl length; Approx 220 lbs ea (2 end supports), ext clear span.
Note: 120v/1p and 2075w/10a for heat, 120v/1p and .25a for led light Fixture.

ITEM # 67 REFRIGERATED SELF-SERVICE CASE

One (1) Structural Concepts Model B3632

Oasis® Self-Service Refrigerated Merchandiser, high profile, open front, (4) non-lighted shelves, top light, Breeze-E (Type ll) with EnergyWise self-contained refrigeration system, Blue Fin coated coil, one piece formed ABS plastic tub, black interior, full end panels with mirror, cETLus, ETL-Sanitation

One (1) Lot 1 yr. parts & labor warranty, 5 yr. compressor warranty, standard
One (1) Lot Breeze-E (Type II) with EnergyWise self-contained refrigeration, lower front air intake/upper front air discharge, standard

One (1) 6 ft straight blade power cord NEMA 6-20P (base exit), standard
One (1) Model CLEAN SWEEP Clean Sweep®, automatic condenser coil cleaner
One (1) Base Support: Casters, with levelers, standard
One (1) Lot Exterior: Wilsonart or Formica NON-PREMIUM laminate (Color chart available from factory rep or access color selections via www.wilsonart.com or www.formica.com)
One (1) Lower front panel: Black, standard
One (1) Lot left end panel: Full with mirrored interior, metal edging, standard
One (1) Right end panel: Full with mirrored interior, metal edging, standard
One (1) Exterior back panel: Solid back panel, black painted, standard
One (1) Digital Fahrenheit thermometer, standard
One (1) Lot Add Lights (LED) to standard shelves (4)
One (1) Lot Roll-down security cover, locking
One (1) Rear access door with lock.

FSEC to verify finishes with architect prior to ordering.

ITEM # 68 REFRIGERATOR, REACH-IN

QTY: One (1)

MFG/MODEL: Traulsen G20013

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height stainless steel doors - Door swings hinged per plan.
One (1) Set of Heavy Duty 6” High Casters with wheel locks
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
Six (6) Epoxy coated wire shelves per section
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges
Five (5) Year non-prorated compressor Warranty.

Details: Refrigerator to have 48 cu. Ft. Capacity, size 52 1/8” w x 32” d x 83 1/4" high. Compressor to be top mounted, air cooled unit. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout.

Elect: Per rough-in plan.

ITEM # 69 HAND SINK, WALL MOUNT

QTY: One (1) Lot

MFG. & MODEL: ADVANCE #7-PS-40

CONST: Sink to be constructed of Stainless Steel Sink to be furnished with 8" backsplash with 2" return to wall and flange down.

ACCESSORIES: Furnish with strainer type 6" tailpiece and "P" trap all to be chrome plated brass. Faucet shall be T & S EC 3101 TMV electronic gooseneck faucet, aerator, mixing valve, 120 Volt A.C.

transformer. Soap and towel dispenser to be provided by owner. Unit to include right and left hand splash shields.

DETAILS: Sink to be mounted with rim 34" above finished floor with rough-in for water and waste located 4-7/8" below the 6-1/2" deep sink.

ITEM # 70 CART, UTILITY

Two (2) LAKESIDE model #511 st. st. portable utility carts.

ITEM # 71 SPARE - NOT USED

ITEM # 72 TABLE, WORK, 14 GAUGE, BACK SPLASH W/ UNDERSHELF

One (1) ADVANCE TABCO model #KSS-305 st. st. work table furnished with 5” integral backsplash, st. st. under shelf, heavy duty SS-2015 enclosed drawer and four st. st. legs with bullet feet

ITEM # 73 CABINET, HEATED, PASS-THRU

QTY: One (1)

MFG/MODEL: Traulsen G14312P

CONST: Per manufacturers standards.

ACCESSORIES:

Two (2) Full height st. st. hinged doors - Door swings hinged per plan.
One (1) Lot 6” High st. st. legs with adjustable feet
One (1) UL. approved grounded cord & plug
One (1) Automatic condensate evaporator
One (1) Lot of Universal angle slides for 12x20 , 14x18 & 18x26 trays on 3” Centers
Three (3) Year service/labor policy
One (1) Lot Lifetime warranty on door handles and hinges

Details: Warmer to have 25.6 cu. Ft. Capacity, size 29 7/8” w x 32” d x 83 1/4" high. Include self-closing doors, cylinder locks & Microprocessor Control System with LED Temperature Readout. Verify door swing per plan.

Elect: Per rough-in plan.

ITEM # 74 HEATED HOLDING CABINET

One (1) FWE model #MTU-10 portable hot food cart. Units to be sized to accommodate both 12 x 20 & 18 x 26 pans and trays. Provide units with the following standard and optional accessories:

One (1) Lot of locking casters
One (1) UL Approved cord and plug

ITEM # 75 PORTABLE KIOSK CART

One (1) Multiteria Model # RXT 72 to be constructed with heavy duty 1" welded stainless steel tubular frame and laminated front and side panels made from 3/4" laminated medium density fiberboard. Counter top to be manufactured 3 cm quartz in material and color as selected by architect.

Unit in closed position is 32" x 72" x 77"H (designed to fit through common doorways). Locking mechanism holds the 48" expansion section in closed position when moving. Unit in extended position increases length by 48" to O.A. size 32" x 120" x 77"H. Casters (6 ea.) are 5" heavy-duty, all swivel. Unit is UL listed.

Electrical
Provide power management system with single 50 amp 120 volt supply cord for tower lighting and counter top equipment as shown. Provide switch for tower lighting.

Body Frame
Counter to have 4' expandable section equipped with locking mechanism to secure expanding section within main counter body during transport. Include locking hinged doors on main and expanded section. POS shelf to be included on pull out end.

Tower With LED Lighting All-stainless steel tower construction includes stainless steel structural supports for rigidity and removable access panels for service and maintenance. Tower to include vertical backlit plexiglass signage plate with laser cut stainless steel cover. Lettering to be verified with owner. Tower supports a cantilevered U-shaped LED light fixture over
main counter.

Submit shop drawing for review and approval.

ITEM # 76 COUNTER TOP REFRIGERATOR

One (1) TRUE model # GDM-06-34-HC-TSLO1 counter top refrigerator furnished per manufacturer standards.

ITEM #77 HEATED DISPLAY CHUTES

One (1) HATCO model # GRSDS-24D heated gravity chutes furnished per manufacturers standards. Unit to be provided with the following standard and optional accessories:

One (1) Designer Color
One (1) LED temp control
One (1) UL Cord and plug
Eight (8) stainless divider rods

ITEM #78 HEATED DISPLAY CHUTES

One (1) HATCO model # GRBW-30 heated merchandiser furnished per manufacturers standards. Unit to be provided with the following standard and optional accessories:

One (1) Designer Color
One (1) Front sneeze guard only for single side use.
One (1) UL Cord and plug

ITEM # 79 POS/CASH REGISTER SYSTEM

One (1) System provided by owner. "NIC"

ITEM # 80 FIELD ERECTION LABOR

FSEC shall deliver, unload, uncrate, and install all items herein specified ready for final plumbing, electrical and ventilation connections furnished by respective trades as outlined in the General Requirements.

All equipment shall be cleaned and polished before demonstrating equipment to the Owner. All crating and packing material to be removed from job site.

FSEC shall arrange demonstration date with Owner and at the same time check out all loose items with the Food Service Manager.

FSEC shall be responsible for missing items unless he can produce signed receipts from Owner's personnel that the items were received and accounted for. Owner cannot be responsible for items delivered to the job site that were dropped off without being signed for by Owner's personnel or representatives.

Rough-in plans to be submitted at a scale of 1/4" = 1'-0". When present equipment is re-used at new locations, it shall be the FSEC'S responsibility to show necessary rough-in requirements for these items. (See General Requirements for complete details relating to submission of shop drawings).

Two (2) complete sets of all final shop drawings, instructions, and parts lists are to be turned over to the Owner secured in a binder. This booklet shall include the telephone number and address of the service company for each piece of equipment.

NOTE! FSEC shall pay all sales, consumer, use and other similar taxes for the work or portions thereof provided by the Contractor which are legally enacted at the time bids are received, whether or not yet effective.

Final payment cannot be recommended until all of the above items have been completed to our satisfaction.

LIFE SKILLS AND SPECIAL ED ITEMS 1 THROUGH 9

ITEM # 1 ST. ST. EXHAUST HOOD W/ CABINET & FIRE SYSTEM

One (1) CAPTIVEAIRE model # 4824-ND-2 exhaust only canopy rated for all types of cooking equipment. The hood shall have the size, shape and performance specified on drawings. Construction shall be type 430 stainless steel with a #4 polish where exposed. Individual component construction shall be determined by the manufacturer, ETL, and NSF. Construction shall be dependent on the structural application to minimize distortion and other defects. All seams, joints and penetrations of the hood enclosure to the lower outermost perimeter that directs and captures grease-laden vapor and exhaust gases shall have a liquid-tight continuous external weld in accordance with NFPA 96. Hood shall be wall type with a minimum of four connections for hanger rods. Connectors shall have 9/16" holes pre-punched in 1 ½" x 1 ½" angle iron at the factory to allow for hanger rod connection by FSEC.

Ventilator shall be furnished with U.L. classified high efficiency stainless steel baffle filters, supplied in size and quantity as required by ventilator. The filters shall extend the full length of the hood and the filler panels shall not be more than 6" in width.

The hood manufacturer shall supply complete computer generated submittal drawings including hood sections view and hood plan view. These drawings must be available to the engineer, architect and owner for their use in construction, operation and maintenance.

Exhaust duct collar to be 4" high with 1" flange. Duct sizes, CFM and static pressure requirements shall be as shown on drawings. Static pressure requirements shall be precise and accurate; air velocity and volume information shall be accurate within 1-ft increments along the length of the ventilator.

The hood shall have:

A double wall insulated front and sides to eliminate condensation and increase rigidity. The insulation shall have a flexural modulus of 475 EL, meet UL 181 requirements and be in accordance with NFPA 90A and 90B.

An integral front baffle to direct grease laden vapors toward the exhaust filter bank.

Removable grease cup for easy cleaning.

The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper", NSF Listed and built in accordance with NFPA 96. The hood shall be listed for 450°F cooking surfaces at 150 CFM/ft, 600°F cooking surfaces at 200 CFM/ft, and 700°F cooking surfaces at 250 CFM/ft. The hood shall be ETL Listed as "Exhaust Hood Without Exhaust Damper".

Accessories to be included:

One (1) Utility Cabinet
One (1) Lot Recessed Round LED lights
One (1) Lot Stainless filters Captrate Solo filter with hook, ETL Listed. Particulate capture efficiency: 93% efficient at 9 microns, 72% efficient at 5 microns
One (1) Lot Extra Tall Field Wrapper Panels – FSEC to verify ceiling heights
One (1) Lot Balance Damper
One (1) Lot DCV Smart Controls
One (1) Pre-piped fire system
One (1) Remote Touch pad

FSEC/CAPTIVEAIRE to coordinate DCV smart controls with PBA Engineering to insure proper function of HVAC System. See Detail drawings for additional information.

Submit shop drawing for review.

ITEM # 1.1 EXHAUST HOOD TOUCH PAD

Two (2) Units included with item # 1 and 7

ITEM # 2 ST. ST. EXHAUST HOOD W/ CABINET & FIRE SYSTEM

One (1) Unit same as item # 1.

ITEM # 3 ST. ST. EXHAUST HOOD

One (1) Unit same as item # 1, except omit utility cabinet. St. St. wall panel to run from of coved base to bottom of quartz sill cap.

ITEM # 4 ST. ST. EXHAUST HOOD

One (1) Unit same as item # 1, except omit utility cabinet. St. St. wall panel to run from of coved base to bottom of quartz sill cap.

ITEM # 5 ST. ST. ISLAND EXHAUST HOOD

One (1) Unit with similar construction as item 1, except provide model # 6024-ND-WI island style hood. Without utility cabinet. St. St. wall panel to run from of coved base to bottom of quartz sill cap.

ITEM # 6 ST. ST. EXHAUST HOOD W/ CABINET & FIRE SYSTEM

One (1) Unit same as item # 1.

ITEM # 7 ST. ST. EXHAUST HOOD W/ CABINET & FIRE SYSTEM

One (1) Unit same as item # 1.

ITEM # 8 30" ST. ST. EXHAUST HOOD W/ FIRE SYSTEM

One (1) CAPTIVEAIRE model 2424WRH exhaust hood with built in fire suppression system furnished and installed per manufacturers standard. See detail drawings for construction and installation requirements.

ITEM # 8.1 FIRE SYSTEM PULL STATION

One (1) Unit included with item # 8.

ITEM # 9 FIRE EXTINGUISHERS

One (1) K Type unit provided by CaptiveAire. Verify mounting location.

NAME OF BIDDER:_____

ADDRESS:_____

DATE:_____ TELEPHONE NO_____

BASE BID

If this Proposal is accepted in writing within thirty (30) days from the date of the bid opening, undersigned having familiarized themselves with the drawings and specifications as prepared by TMP ASSOCIATES, INC. agrees to enter into a Contract for furnishing all labor, materials, and facilities for Food Service Equipment in connection with the above named project for the total base bid sum amount of $_____ including sales tax.

($_____DOLLARS)

The amount shown shall be shown in both words and figures. In case of a discrepancy, the amount shown in words shall govern. Sales tax amount must be shown.

TIME OF COMPLETION

The Bidder agrees to complete the above named project in_____ consecutive calendar days.

BID GUARANTEE TYPE:_____

AMOUNT $_____

CONTRACT ASSUMPTIONS

The Bidder agrees to enter into a sub contract with the General Construction Work Contractor, (Architectural Trades) as designated by the Owner. The sub contract shall be based upon the prices, terms, and conditions set forth in the Proposal.

ADDENDA

Proposal is based on the following Addenda:

Addendum #_____ Dated:_____

Addendum #_____ Dated:_____

Addendum #_____ Dated:_____

SIGNATURE

Signed By:_____

Dated and signed at:_____

State of_____this_____day of_____, 2024

LEGAL STATUS OF BIDDER

A Corporation duly organized and doing business under the laws of the State of_____for whom_____ whose signature is affixed to this Proposal is duly authorized to execute contracts.

A Partnership, all members:

_____

_____

_____

An individual whose signature is affixed to this Proposal: _____

_____

_____

INSTRUCTIONS

The Base Bid must be on fixtures specified for a fair comparison of all the bids. Prices on alternate equipment will be accepted on a separate sheet made up by the Bidder with illustrations and alternate specifications.

The following pages contain a schedule of the various items of equipment. All manufacturers' names and other data requested must be filled in by the Bidder.

ON FABRICATED ITEMS, PLEASE GIVE THE NAME OF YOUR FABRICATOR

ITEM NUMBER	DESCRIPTION	QUANTITY	MANUFACTURER'S OR FABRICATOR'S NAME AND MODEL NUMBER	PRICE
1	Walk In Refrigerator/Freezer	_____	_____	_____
2	Remote Refrigerator Condenser	_____	_____	_____
2.1	Refrigerator Blower Coil	_____	_____	_____
3	Remote Freezer Condenser	_____	_____	_____
3.1	Freezer Blower Coil	_____	_____	_____
3.2	Heat Tape	_____	_____	_____
4	Rack, Dunnage	_____	_____	_____
5	Portable Walk In Fzr, Shelving	_____	_____	_____
6	Portable Walk In Ref, Shelving	_____	_____	_____
7	Stationary Store Room Shelving	_____	_____	_____
8	Cart, Utility	_____	_____	_____
9	Hand Sink, Wall Mount	_____	_____	_____
10	Disposer, Garbage	_____	_____	_____
11	St. St. Soiled/Clean Dishtables	_____	_____	_____
12	Portable Storage Shelving	_____	_____	_____
13	Spare – Not Used			
14	Warewasher, Rack Conveyor	_____	_____	_____
15	Soap And Rinse System	_____	_____	_____
16	St. St. Exhaust Ducts	_____	_____	_____
17	Wire Wall Shelving	_____	_____	_____
18	Portable Storage Shelving	_____	_____	_____
19	St. St. Wall Paneling	_____	_____	_____
20	St. St. Prep Sink And Table	_____	_____	_____

21 St. St. Wall Paneling	_____	_____	_____
22 St. St. Three Comp Sink	_____	_____	_____
23 St. St. Wall Paneling	_____	_____	_____
24 Rack, Pan	_____	_____	_____
25 Refrigerator, Reach-In	_____	_____	_____
26 St. St. Prep Sink And Table	_____	_____	_____
27 St. St. Wall Paneling W/ Cap	_____	_____	_____
28 St. St. Exhaust Hood	_____	_____	_____
28.1 Exhaust Hood Control	_____	_____	_____
29 St. St. Wall Paneling	_____	_____	_____
30 Spare - Not Used			
31 Spare - Not Used			
32 Fire Extinguisher	_____	_____	_____
33 Fire Suppression System	_____	_____	_____
34 Oven-Steamer, Combination, Gas	_____	_____	_____
35 Oven-Steamer, Combination, Gas	_____	_____	_____
36 Oven, Convection, Gas	_____	_____	_____
37 Range, Restaurant, Gas	_____	_____	_____
38 St. St. Cooks Table W/ Sink	_____	_____	_____
39 Oven, Microwave	_____	_____	_____
40 Spare - Not Used			
41 Spare - Not Used			
42 Hand Sink, Wall Mount	_____	_____	_____
43 Refrigerator, Reach-In	_____	_____	_____
44 Freezer, Reach-In	_____	_____	_____
45 Refrigerator, Reach-In	_____	_____	_____

46 Hand Sink, Wall Mount	_____	_____	_____
47 Table, Work	_____	_____	_____
48 Cabinet, Heated, Pass-Thru	_____	_____	_____
49 Refrigerated Self-Service Case	_____	_____	_____
50 Spare - Not Used			
51 Spare - Not Used			
52 Flat Top Utility Counter	_____	_____	_____
52.1 Hot/Cold Convertible	_____	_____	_____
52.2 Adj Sneeze Guard	_____	_____	_____
53 Buffet/Cafeteria, Flat Top	_____	_____	_____
54 Display Case, Heated	_____	_____	_____
55 Spare – Not Used			
56 Buffet/Cafeteria, Flat Top	_____	_____	_____
56.1 Drop-In, Cold Pan			
56.2 Buffet/Cafeteria, Sneeze Guard	_____	_____	_____
57 Cashiers Stand	_____	_____	_____
58 Pos/Cash Register System	_____	_____	_____
59 Cashiers Stand	_____	_____	_____
60 Spare - Not Used			
61 Spare - Not Used			
62 Buffet/Cafeteria, Flat Top	_____	_____	_____
62.1 Drop-In, Cold Pan			
62.2 Buffet/Cafeteria, Sneeze Guard	_____	_____	_____
63 Spare - Not Used			
64 Display Case, Heated	_____	_____	_____
65 Buffet/Cafeteria, Flat Top	_____	_____	_____

66 Flat Top Utility Counter	_____	_____	_____
66.1 Hot/Cold Convertible	_____	_____	_____
66.2 Adj Sneeze Guard	_____	_____	_____
67 Refrigerated Self-Service Case	_____	_____	_____
68 Refrigerator, Reach-In	_____	_____	_____
69 Hand Sink, Wall Mount	_____	_____	_____
70 Cart, Utility	_____	_____	_____
71 Spare - Not Used			
72 Table, Work	_____	_____	_____
73 Cabinet, Heated, Pass-Thru	_____	_____	_____
80 Field Erection Labor	_____	_____	_____

LIFE SKILLS AND SPECIAL ED

1 St. St. Exhaust Hood/FS Cabinet	_____	_____	_____
1.1 Exhaust Hood Controls	_____	_____	_____
1.2 Fire Pull Station	_____	_____	_____
2 St. St. Exhaust Hood/FS Cabinet	_____	_____	_____
3 St. St. Exhaust Hood	_____	_____	_____
4 St. St. Exhaust Hood	_____	_____	_____
5 St. St. Exhaust Hood	_____	_____	_____
6 St. St. Exhaust Hood/FS Cabinet	_____	_____	_____
7 St. St. Exhaust Hood/FS Cabinet	_____	_____	_____
8 St. St. Exhaust Hood/FS	_____	_____	_____
8.1 Fire Pull Station	_____	_____	_____

Sales Tax _____

Total base bid _____

ALTERNATE #2

74 Heated Holding Cabinet	_____	_____	_____
75 Portable Cart	_____	_____	_____
76 Counter Top Refrigerator	_____	_____	_____
77 Heated Chutes	_____	_____	_____
78 Heated Shelf w/ Protecto	_____	_____	_____
79 POS Register System	_____	_____	_____
		Sales Tax	_____
		Alternate #2 Total	_____

END OF SECTION

SECTION 27 0000 – GENERAL TECHNOLOGY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This section includes general administrative and procedural requirements. The following requirements are included to supplement the requirements specified in Division 1 Specification Sections.

B. Along with the drawings and details, these specifications establish the requirements for the cabling infrastructure for the New Smith Middle School.

C. The project consists of the following major systems:

1. Structured cabling system
2. Racks, cabinets, and supporting equipment

1.3 GENERAL REQUIREMENTS

A. Bidders must submit a bill of materials with the proposal. BOM must list all major components, quantities, and extended price. BOM is provided for information only to assist in evaluating the various bid proposals. Bidder agrees to the scope of work outlined in the bid documents.

B. The bid documentation does not provide for every component or requirement of installation; however, it does establish minimum requirements for the system. The final solution shall be well documented within the bid proposal. Drawings are not intended to be scaled for rough-in or to serve as shop drawings. Take all field measurements required to complete the work. Installation within a reasonable distance from the locations shown on the drawing will be performed without additional cost.

C. Contractor is to visit the site, examine and verify the conditions under which the work will be performed before submitting a bid response. The submitting of a bid response implies that the Contractor has visited the site and understands the conditions under which the work must be conducted. Additional charges will not be allowed because of failure to make this examination or to include all materials and labor to complete the work.

D. Other bids may be issued related to this Contractor's scope of work. This Contractor is responsible for knowing what work will be provided by others and how it affects their Work (e.g. electrical rough-ins, etc.). Contractors, during bidding or after, can contact the project team to view related drawings and/or specifications.

E. If backend systems (power supplies, master clock, master PA console, etc.) need dedicated or hardwired electrical connections, each Contractor is to provide the requirements for their systems as part of the bid response. If the electrical requirements are not specifically called out

in the bid response, the Contractor will subcontract to a licensed electrical contractor to complete the electrical work as part of the Contractor's cost.

F. Additional information provided with a bid response shall be used in the evaluation of bids, but do not replace the requirements established by the contract documents (project manual, drawings, specifications, etc.). The Technology Designer and Owner will not be responsible for reviewing equipment lists for completeness or conformance to the contract documents. Lists of material, bills of material, etc. submitted by the contractor do not replace the submittal requirements and do not replace the requirements established by the contract.

G. The Contractor shall provide the services necessary to engineer, procure, install, test, and certify the systems described in the bid documents conforming to manufacturer specifications and applicable industry standards.

H. All materials and equipment shall be furnished complete with all accessories normally supplied for a complete and operating system. All materials and equipment shall be new and shall be standard products in production and shall be of the manufacturer's current design. Any items with a known end of manufacture date will be specifically called out for approval before procurement. All equipment of the same or similar systems shall be by the same manufacturer.

I. The methods of implementation shall be in accordance with the latest issue of the various authorities including but not limited to:

1.	ANSI	American National Standards Institute
2.	ASTM	American Society for Testing and Materials
3.	BICSI	Building Industries Consulting Services International
4.	EIA	Electronics Industries Association
5.	FCC	Federal Communications Commission
6.	ICEA	Insulated Cable Engineers Association
7.	IEEE	Institute of Electrical and Electronics Engineers
8.	ISO	International Organization for Standardization
9.	NEC	National Electrical Code
10.	NECA	National Electrical Contractors Association
11.	NEMA	National Electrical Manufacturer's Association
12.	NFPA	National Fire Protection Association
13.	TIA	Telecommunications Industry Association
14.	UL	Underwriters Laboratories, Inc.

J. Notify the Technology Designer before the bid period question deadline, established at the pre-bid meeting, should any changes in bid documents be required to conform to recommended manufacturer guidelines or the applicable codes, rules, or regulations. After entering into Contract, make all changes required to conform to applicable guidelines, ordinances, rules, and regulations without additional expense to the Owner.

K. Any required permits, licenses, inspections, approvals, and fees for the work shall be secured and paid for by the Contractor. All work shall conform to all applicable codes, rules, and regulations. Perform all tests required by state, city, county and/or other agencies having jurisdiction. Provide all materials, equipment, etc., and labor required for tests.

L. Contractor shall comply with all rules and regulations of local utility companies. Coordinate requirements with applicable companies supplying service and include the cost of all such items in proposal.

M. Each contractor is to provide any backboards and access panels necessary for their installation that meet the manufacturer guidelines for the equipment to be installed. Materials are to be fire-

rated. Provide D-rings, spaced no greater than 12” apart, to support cables routed to and along backboards.

N. Each contractor is to use plenum rated cabling and accessories throughout the project.

O. Where not provided by the electrical contractor, each contractor is required to provide their own penetrations, sleeves, and cores with firestopping. Sleeves and cores shall have nylon bushings.

P. Install surge suppressors where ac-power-operated devices are not protected against voltage transients by integral surge suppressors specified in UL 1449. Install surge suppressors at the devices' power-line terminals. All surge suppression devices shall warranty protection of all downstream equipment.

Q. Unit prices established for the project shall remain in effect throughout the duration of the contract.

1.4 DEFINITIONS

A. ADA: Americans with Disabilities Act.

B. AIA: American Institute of Architects.

C. FBO: Furnished By Others.

D. IR: Infrared.

E. MC: Main Cross-Connect. (Applies to MDF or Headend references).

F. OFE: Owner Furnished Equipment. (Applies to OFCI references)

G. POE: Power over Ethernet.

H. RF: Radio Frequency.

I. TR: Telecommunications Room. (Applies to MDF or IDF references).

1.5 SUBMITTALS

A. All submittals shall be complete and organized by related items. Incomplete submittal packets will be returned unchecked. Any modifications to or deviations from the bid documents shall be specifically highlighted on the submittals. In addition to requirements specified in Division 1, include the following:

B. Lists of material, bills of material, etc. submitted by the contractor do not replace the submittal requirements and do not replace the requirements established by the contract documents. The Technology Designer and Owner will not be responsible for reviewing lists of material for completeness or conformance to the contract documents.

C. Copies of any professional licenses or certifications requested in the documents.

D. Product Data: For each product indicated in the specifications or included in the scope, provide a product data sheet in PDF format. Data sheets indicating multiple products must have the applicable product highlighted or marked.

E. Shop Drawings: Shop drawings are to be provided in both PDF and native electronic format (e.g AutoCAD format).

F. Closeout documents will include a spreadsheet identifying system components, installed location, model number, serial number, label designation, and any other pertinent data. Submittals shall include spreadsheet format for approval.

1.6 QUALITY ASSURANCE

A. The Contractor and their Sub-Contractors shall be experienced in all aspects of the work and shall demonstrate direct experience on recent systems of similar type, complexity, and size.

1. Upon request, Contractor shall furnish for both the Contractor and all Sub-Contractors information on the corporation, project manager, and installers indicating recently completed projects, technical experience, and completed training.
2. The Contractor shall maintain consistent staffing for Project Management and lead installers throughout the project, except for illness or loss of personnel. The Technology Designer and Owner reserve the right to require staffing substitutions if deemed beneficial to satisfactory completion of the project.

B. The Contractor shall utilize equipment from manufacturers regularly engaged in the production of similar systems and components for a minimum of five (5) years.

C. The Contractor must be a certified reseller and installer for the products/solutions provided and/or installed.

D. The Contractor shall install in accordance with all applicable codes and standards, including federal, state, and local codes and authorities.

1.7 COORDINATION

A. Contractor is to coordinate with other construction and technology contractors.

B. Contractors shall be responsible for coordinating their configuration with the Owner, access providers, and other integrators whose systems will interact. If problems occur during implementation or commissioning, all contractors will be responsible for ongoing/additional coordination regarding configuring, testing, and troubleshooting of related/ inter-related devices until a resolution acceptable to the Owner is achieved. This includes coordination with outside agencies such as telephone service providers and internet service providers when necessary.

C. Coordinate layout, rough-in requirements, and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

D. Coordinate with the appropriate utility companies for installation and cutover.

E. Where multiple contractors will share a common pathway or faceplate, coordinate requirements and installation.

F. Contractor shall uncover Work as needed for review by the Owner, Technology Designer, Architect, Construction Manager, or contractors performing related work. Work uncovered for observation will be replaced at the Contractor's expense without change in the Contract Time or Contract Sum.

G. Where the cabling and A/V contractor(s) will be sharing a faceplate, the A/V contractor is to provide the faceplate and any blank modules. The faceplate must be able to accept the termination jack chosen by the data cabling contractor. Contractors shall coordinate all faceplate and termination requirements.

1.8 WARRANTY

A. All division 27 and 28 systems shall be provided with a five (5) year warranty unless noted otherwise in scope specific specification sections. Manufacturer and contractor warranties are to include the entire system (equipment, software updates, licensing, installation, etc.).

B. Unless a specification section has a specific requirement, manufacturer warranties for each component shall begin on the date that equipment is delivered from the manufacturer/supplier. The contractor warranty period shall begin at the date indicated on the certificate of substantial completion or the date of Owner acceptance (to be received in writing and approved by the Owner), whichever comes later.

C. Contractor is to provide:

1. Evidence of the manufacturer's warranty end date.
2. Procedures for warranty issues (e.g. phone number to call, warranty ID numbers, etc.)
3. Documentation for all manufacturer's warranties including the operating conditions required for the warranty.
4. Contractor's guarantee.

D. The manufacturer warranty shall include phone support and software assurance including patches, updates and version upgrades for both major and minor releases throughout the warranty period.

E. After substantial completion the following are also required throughout the contractor warranty period.

1. Contractor is to install critical firmware updates during the warranty period.
2. Contractor is to provide an annual "health check" on the system with corresponding report noting items corrected and suggested maintenance or configuration changes.
3. Contractor is to provide an overview of non-critical updates and version upgrades as they become available.
4. Owner will decide which version upgrades they wish to implement.
5. Contractor to install maximum of two (2) major version upgrades throughout warranty period. Contractor is to make configuration changes on the equipment and provide administrative training session on the new features and system administration, but Contractor is not required to perform any work on individual devices or computers.

F. The Owner shall not be responsible for additional charges during the equipment warranty period. Labor, service charges, trip charges, etc. to configure and install equipment during the warranty period shall be included in the contractor's warranty.

G. Contractor is to register all equipment in the Owner's name, not the Contractor's. All manufacturer warranty and support must be available to the Owner directly and not required to channel through the Contractor, distributor, or other entity.

H. When a manufacturer's warranty is provided, it is the Bidder's responsibility to make sure the manufacturer's records reflect the correct warranty period start date as established in the contract terms.

I. The contractor warrants the system to be free of product, workmanship, and configuration defects and will inspect and repair the system within 48 hours during school breaks during the warranty period at no additional cost to the Owner. The Contractor shall respond on site within four (4) hours' notice, and without cost to the Owner, during this warranty period. Contractor agrees to correct system deficiencies and replace components that fail in materials or workmanship including deficiencies arising when used according to the manufacturer or Contractor's written instructions. No warranty or terms therein shall limit or be interpreted to limit remedies as provided by law.

J. Contractor will be responsible for repairing/replacing (including installation) any aspect of the system unless a specific specification section states that the Owner will install replacement equipment.

K. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 GENERAL

A. Contractor is responsible for ensuring that no asbestos containing building materials (ACBM) are used and must certify to the Owner and Technology Designer that none was used.

B. Any equipment, software, system, etc. with time dependent functions (e.g. bell systems) shall automatically adjust for daylight saving time without human intervention.

2.2 MANUFACTURERS

A. Permit Competition. The name of a model, manufacturer or brand in this RFP shall not be considered as exclusive of other brands. Brands and models specified in this RFP are preferred. Owner expects all supplies, materials, equipment, or products bid by a Bidder to meet or exceed the specifications set forth in this RFP. Further, it is Owner's intent that this RFP permit competition. Accordingly, the use of any patent, proprietary name or manufacturer's name is for demonstrative purposes only and is not intended to curtail competition. Whenever any supplies, material, equipment or products requested in this RFP are specified by patent, proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or comparable equivalent," whether or not such words appear. Owner, in its sole and absolute discretion, shall have the right to determine if the proposed equivalent products/brands submitted by Bidder meet the specifications contained in this RFP and possess equivalent and/or better qualities. It is the Bidder's responsibility to notify Owner in writing if any specifications or suggested comparable equivalent products/brands require clarification by Owner prior to the Due Date for Bids. All Bid deviations from specifications must be noted on the Proposal Form.

B. Base bid shall utilize manufacturers listed in the applicable specification sections. Contractor may include deviations as voluntary alternates in addition to the base bid, not in lieu of the base bid.

C. The Owner expects all supplies, materials equipment or products proposed by a Bidder to meet or exceed the Specifications set forth in the Bidding Documents. Further, it is the Owner's intent that the Bidding Documents permit competition. Accordingly, the use of any patent, proprietary name or manufacturer's name is for demonstrative purposes only and is not intended to curtail competition. Whenever any supplies, material, equipment or products requested in the Bidding Documents are specified by patent, proprietary name or by the name of the manufacturer, unless stated differently, such specification shall be considered as if followed by the words "or comparable equivalent," whether or not such words appear. The Owner, in its sole and absolute discretion, shall have the right to determine if the proposed equivalent products/brands submitted by Bidder meet the Specifications contained in the Bidding Documents and possess equivalent and/or better qualities. It shall be the Bidder's responsibility to notify the Owner in writing if any Specifications or suggested comparable equivalent products/brands require clarification by the Owner prior to the Due Date for Bid Proposals.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor's responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Failure or omission of the Contractor to examine the site or documents does not relieve the Contractor. No additional payment will be made to the Contractor for failure to comply.

C. Review building plans and installations to confirm outlet and conduit installation and location. Check outlets, conduits, raceways, cable trays, and other elements in the proposed pathways for compliance with space allocations, clearances, installation tolerances, hazards to cable installation, and other conditions affecting installation in compliance with manufacturer requirements.

D. Device locations shown on drawings are diagrammatic only and may not represent intended location due to conflicts with other CAD symbols, room names, etc. Field verify conditions and coordinate device locations with other trades. Devices shall be installed to perform optimally for the usage and conditions of the space. Notify Barton Malow of conflicts that negatively affect performance prior to installation.

E. Contractor shall choose appropriate mounting method and materials for each location based on manufacturer's requirements, wall construction, building structure, etc.

F. On projects where existing category cabling is to be reused, Contractors are to assume that the existing cabling is appropriately labeled, but in some instances (up to 25% of the time) labels may be missing or damaged. In these situations, the Contractor installing the equipment (i.e. wireless access points, cameras, phones, etc) will be responsible for toning and relabeling the cabling. If the cabling is found to be damaged and requires replacement or re-termination, the Contractor will be compensated for the repair or replacement by means of utilizing unit pricing.

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

3.2 DEMOLITION

A. Demolition of existing equipment and materials will be performed by the Contractor unless otherwise noted. Demolition work indicated on the drawings is conceptual in nature. Include all items related to the existing system including equipment, cabling, raceway, supports, etc., in order to remove abandoned systems or accomplish the installation of the specified new work.

B. Unless specifically noted to the contrary, removed materials shall not be reused in the work. Salvaged materials that are to be reused shall be stored safe against damage and turned over to the appropriate trade for reuse. Salvaged materials of value that are not to be reused shall remain the property of the Owner unless such ownership is waived. Items on which the Owner waives ownership shall become the property of the Contractor, who shall remove and legally dispose of same, away from the premises. If requested, Contractor will provide certification showing the items have been environmentally disposed of in accordance with applicable laws.

C. Savings due to items with residual value / trade-in credit / scrap recycling value / etc. should be reflected in the base bid.

D. Reroute cabling and relocate equipment as required to maintain service until systems can be permanently removed.

E. Cables shall be removed to their source and any corresponding labels removed from the equipment or termination point. Dust covers shall be installed in patch panel ports associated with removed cables. Remove corresponding patch cable from patch panel or cross-connect cable from a 66 or 110 block.

F. Cabling contractor is to provide blank stainless-steel faceplates for any empty low-voltage boxes that will remain after demolition.

G. Contractor shall replace ceiling tiles where removing equipment (e.g. cameras, ceiling projectors, mounts, etc.) and the new equipment will not cover the original opening. Contractor is to provide ceiling tiles (acoustical, metal, etc.) to match existing manufacturer/model unless the drawings or specifications state that the contractor can use Owner's spare tiles. Verify manufacturer/model for each location with Owner.

H. Contractor to provide 16-gauge (min) metal cover plate for any opening (clock, speaker, AV equipment, etc.) that will not be completely covered by the new device. Paint to match surrounding surface or provide with powder coat finish in color approved by Owner. Sheet metal coverings will not be accepted.

3.3 INSTALLATION

A. Equipment that extends more than 4" from the wall will be mounted above 80" above finished floor unless reviewed and approved by Technology Designer or Owner.

B. Consult with the Owner's Representative as to the method of completing work to avoid interfering with the Owner's operation. All systems shall remain operational and shall only be interrupted at times coordinated with the Owner's Representative.

C. The Contractor shall provide all miscellaneous items and accessories required to make the system operational whether or not such items are specifically mentioned in the plans or specifications.

D. The Contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification, within standards of generally accepted workmanship, and in accordance with manufacturer's recommended installation practices.

E. The Contractor shall protect equipment and components during installation. Damage resulting from the Contractor's work shall be promptly replaced or repaired at the Contractor's expense.

F. The Contractor shall provide all lifts and temporary supports necessary to accomplish their installation.

G. The Contractor shall accomplish all cutting, removal and replacement of ceiling tile, drilling, coring and patching of walls, floors, casework, and ceilings required to complete their work. Contractor is responsible for replacing any damaged tiles and cleaning the ceiling grid upon completion of their work.

H. Contractor to ensure Owner and Technology Designer have reviewed above ceiling or concealed work before reinstalling ceiling tiles or other obstructions. If work is performed in occupied areas where ceiling tiles or other obstructions must be re-installed upon completion of work, Contractor will be required to remove and reinstall in selected areas for inspection by Owner or Technology Designer.

I. The Contractor, in accordance with all applicable codes, shall provide fire and smoke stopping through all partitions. Verify that penetrations of rated fire walls are made using products labeled for type of partition penetrated.

J. All cables within racks, cabinets, or enclosures will be cable wrapped with hook and loop tape (Velcro) at no greater than one-foot intervals. Cabling housed in wiring management shall be tied at no less than two-foot intervals.

K. Due to field conditions or other situations, installation locations may have to be relocated a reasonable distance from the plan location. Unless relocations, modifications and reengineering are consistently or substantially unfavorable to either the Contractor or the Owner, there will be no additional charge or credit for this work.

L. No additional compensation will be provided for moving installed equipment for reasons including, but not limited to:

    1. Performance issues.
    2. Failure to coordinate with other trades for existing conditions and renovations or new construction.
        a. All drawings (including Architectural, Mechanical, Electrical, etc.) are available for review at the jobsite.
    3. Locations deviating from design drawings (unless approval has been obtained prior to installation).
    4. Failing to follow manufacturer's recommendations.

M. The lack of permanent power does not relieve contractor of installation requirements as dictated in the specifications. If permanent power is not available, contractor must provide temporary power (e.g. UL approved extension cords) to complete installation, configuration, and testing of equipment (e.g. projectors, interactive whiteboards, etc.). Extension cords and/or other means of temporary power are to be removed immediately after the initial installation/configuration. At the time permanent power is completed, contractor to return to make final equipment connections and any necessary adjustments. Refer to the safety section of the project manual for guidelines of proper use with regards to temporary power.

3.4 CLEANING

A. All debris will be removed by the contractor daily as required to maintain the work area in a neat, orderly condition.

B. Contractors working above ceiling or drilling are to bring their own vacuums unless the building custodian allows theirs to be used.

C. Contractor shall clean all equipment before Owner acceptance using methods and materials recommended by the manufacturer.

3.5 PROTECTION AND HANDLING OF EQUIPMENT AND MATERIALS

A. Equipment and materials shall be protected from theft, injury, or damage. Equipment set in place must be provided with temporary protection.

B. Provide adequate storage for all equipment and materials delivered to the site. Owner shall not be required to provide secure storage but will attempt to accommodate the Contractor's requirements.

C. Contractor will be required to protect any Owner-Furnished-Contractor-Installed (OFCI) equipment and will be responsible for replacing any missing or damaged equipment.

3.6 IDENTIFICATION

A. Unless noted otherwise, use logical and systematic designations for facility's architectural arrangement and nomenclature.

B. Contractor is responsible for permanently identifying all major components used in the project. Component list, identification method, and nomenclature to be coordinated with and approved by the Technology Designer.

C. All cross-connecting cable shall be adequately tagged as "to" and "from."

3.7 FIELD QUALITY CONTROL

A. All ancillary accessories (e.g. remote controls, keys, etc.) shall be collected, identified by installation location, and turned over to the Owner. Coordinate delivery with Technology Designer to ensure appropriate signoffs are received.

B. The Owner and/or Technology Designer may designate an agent who may be present during testing and may provide additional testing to verify cabling installer results. The agent shall accept or reject the installation.

3.8 DEMONSTRATION AND STARTUP

A. All training and demonstration will be provided at no cost to the District.

B. At the completion of each phase of work, Contractor will provide four (4) hours of startup assistance for out-of-scope work, scheduled at the Owner's discretion. The assistance time may not be contiguous and does not include travel time to or from the project site. Startup

assistance shall utilize staff involved in the onsite installation unless added personnel is needed to complete the base scope of work according to the project schedule or Owner's requirements. Unused time will be deducted utilizing the labor material price.

C. Additional training requirements are listed in individual specification sections.

3.9 DOCUMENTATION

A. For multi-phase projects, adequate documentation for completed work shall be submitted as each phase is completed to allow the owner and project team to utilize the system.

B. Provide progressive "as-builts" to the Owner as devices are installed, including MAC address, serial number information, and specific installed location. Provide this information to the Owner daily as necessary, through a collaborative software (ex. Google Sheets, or Office365) and in a format approved by the Owner and Technology Designer. Handwritten notes will not be accepted.

C. At the conclusion of the project (or major phase for multi-phase projects), all documentation is to be compiled into an organized, comprehensive package. Copies are to be submitted both in hard copy and electronic formats. CAD drawings shall be in AutoCAD formats. The Contractor is responsible for any fees charged by the architect for providing CAD backgrounds.

D. Contractor responsible for all equipment registration per manufacturer's instructions.

E. As-Built: In addition to requirements specified in Division 1, include the following:

1. As-built drawings are to reflect all changes between the bid documents and the final installation, including final location of all equipment, outlets, racks, penetrations, etc. inclusive of the base bid, implementation add/changes, and all change orders.
2. Drawings for systems showing location and cabinet/enclosure layout. Include all components identifying component manufacturer and model, serial numbers, and connections.
3. Cable tests, OTDR traces, etc. are to be provided in both hardcopy format as well as electronic format. Any software necessary to view the tests must be provided to the Owner.
4. Wiring and systems certification.
5. Certificate of manufacturer's extended warranty, where applicable.
6. Spreadsheet identifying system components, installed location, model number, serial number, label designation, warranty expiration, and any other project-specific pertinent data. Spreadsheet format to be approved by Technology Designer.
7. Schematics shall be created in AutoCAD or Visio format. Handwritten drawings shall be accepted for draft or working copies only.
8. Drawings with floorplans shall be created in AutoCAD format. Handwritten drawings shall be accepted for draft or working copies only.
9. All as-built and other closeout documentation to be submitted as a PDF in addition to the native file format.

F. Maintenance Data: In addition to requirements specified in Division 1, include the following:

1. Detailed operating instructions covering operation under both normal and abnormal conditions.
2. Routine maintenance procedures for system operation, customized for the installation.
3. Lists of spare parts and replacement components recommended being stored at the site.

END OF SECTION 27 0000

SECTION 27 1000 – GENERAL CABLING REQUIREMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1116 – Racks and Cabinets
3. 27 1300 – Backbone (and Outdoor) Cabling
4. 27 1500 – Data and Voice Horizontal Cabling

1.2 SUMMARY

A. This Section includes general cabling requirements for contractors installing cabling within their scope of work.

B. Contractor is required to furnish and install cables and accessories in locations as shown on plan drawings, details, and specifications.

C. Scope of work includes all physical cable management hardware, including, but not limited to backboards, cable supports, raceway, and cable management required to complete the system.

D. Where adequate pathways are not provided by the electrical contractor, each Contractor is required to provide their own penetrations, sleeves, and cores with firestopping. Sleeves and cores shall have nylon bushings. Contractors are to control dust generated from penetrations, protect nearby equipment and surfaces from dust, and follow all OSHA regulations.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. All cable types
2. Terminations components for each system
3. Faceplates
4. Cable supports
5. Grounding and surge suppression
6. Firestopping

B. Shop Drawings:

1. Include all labeling schemes for all systems such as station outlets, cable runs, patch panels, punchdown blocks, racks, etc.
2. Include composite drawing indicating cable routing plans. Label cable types.

3. Include dimensioned plan and elevation views of telecommunication equipment rooms, with each individual component labeled. Show workspace requirements and access for cable connections.

C. Qualification Data:

1. Include written confirmation from the manufacturer that the bidder is a certified installer for the structured cable plant solution.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Contractor must be certified by the manufacturer of the solution being installed and be BICSI certified.

B. Layout Responsibility: Preparation of Shop Drawings by an RCDD.

C. Installation Supervision: Installation and testing shall be performed by BICSI Registered Installers or manufacturer certified installers, with a consistent supervisor who shall be present at all times when work of this section is performed.

D. Comply with all requirements of the 2017 NEC unless jurisdiction requires a different version. Cables must comply with temperature rating requirements including Table 725.144.

E. Comply with EIA/TIA 568B-2.1, EIA/TIA 569, and EIA/TIA 606.

1.5 COORDINATION

A. Coordinate layout and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

B. All Contractors utilizing a shared pathway shall be responsible for coordinating and ensuring that firestopping requirements are fulfilled. All unused penetrations installed by the electrical contractor for future use shall be firestopped by the data cabling contractor.

C. All Contractors utilizing penetrations shall be present during electrical and fire marshal inspections with adequate firestopping material and shall immediately correct any issues identified during the inspections.

D. Each Contractor is to protect their own cables during installation. Rough cables are to be properly supported and not left on the floor. If conditions necessitate leaving cables Contractor is to put a note on the cables to reduce chance of damage by others and note cable location to controlling contractor.

E. Each Contractor to protect their cables in areas where ceilings will be painted to ensure cable sheath is not painted.

F. For projects where the structured cabling for access points, video surveillance cameras, etc. is being provided by a different contractor, the Contractor providing and installing the equipment (access point, video surveillance camera, etc.) will be responsible for coordinating the cable locations with the structured cabling contractor. In general:

1. Equipment contractor is to extend the cable to the final equipment mounting location including penetrations, firestopping, waterproofing, raceway, etc. Equipment contractor to provide longer patch cables if needed to reach the mounted equipment location.

2. For areas where equipment will be mounted in accessible ceiling, cabling contractor is to run the cable to the center of the space for wireless access points or the general area where video surveillance cameras or other equipment are shown. Coil adequate cable to reasonably relocate the equipment within the space.

3. For outdoor equipment, stairwells, equipment in open ceiling spaces to be mounted adjacent to accessible the accessible ceiling in an adjacent space (corridor, etc.) cabling contractor is to run the cable to the adjacent interior space. Equipment contractor is to create the penetration and extend cable to final equipment location, and seal the penetration as required for weatherproofing or firestopping.

4. For open ceiling areas where cabling will be routed away from the adjacent accessible ceiling (e.g. along the perimeter of the space or along the beams/trusses and dropped down to the equipment location in a gymnasium, natatorium, atrium, etc.), the cabling contractor is to run the cable near/above the equipment location. Equipment contractor is to extend cable to final equipment location.

1.6 WARRANTY

A. The contractor warrants the system to be free of defects of workmanship or products and will inspect and repair the system during the warranty period at no additional cost to the Owner. Contractor agrees to correct system deficiencies and replace components that fail in materials or workmanship including deficiencies arising when used according to the manufacturer or Contractor's written instructions. No warranty, or terms therein shall limit or be interpreted to limit remedies as provided by law

B. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

C. The data and voice structured cable plant shall be covered by the manufacturer's extended warranty (eg. Panduit Certification Plus System Warranty, Hubbell Premise Wiring Mission Critical Warranty and System Performance Guarantee, etc.).

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Coordinate the features of materials and equipment so they form an integrated system complying with TIA/EIA-568B. Match components and interconnections for optimum future performance.

B. The Contractor is to use plenum rated cabling and accessories throughout the project. All cables shall be continuous and free from splices.

2.2 FACEPLATES, CONDUIT, AND SURFACE-MOUNTED RACEWAYS

A. These general requirements apply to all contractor(s) unless more specific information is included in a particular contractor's specification sections (i.e. structured cabling, audiovisual cabling, etc.).

B. Where the data and audio/video contractor(s) will be sharing a faceplate, the video contractor is to provide the faceplate and any required blank modules. The faceplate must be able to accept the termination jack chosen by the data cabling contractor. Contractors shall coordinate all faceplate and termination requirements.

C. Coordinate faceplate requirements with the furniture installer, where applicable.

D. Each contractor shall provide and install blank faceplates / insert on any outlets provided by the electrical contractor for their potential technology use (video outlets, security outlets, data/voice general purpose telecommunication outlets, etc.).

E. Faceplate labels shall be secured to the faceplate (loose or removable labels on the screw covers are not permanent and not acceptable).

F. Each Contractor installing cabling is responsible for all surface-mounted raceways and conduit not provided by the electrical contractor. Common potential locations requiring conduit for cables are described below:

1. Conduit for security cameras, wireless access points, audiovisual components, or general communications outlets installed outdoor or in large open spaces without drop ceilings (i.e. gymnasium, cafeteria).
2. Security cabling for access control systems and intrusion detection systems in vestibules, entrances, doorways, or other areas where cabling cannot be concealed.
3. Other public spaces where cabling cannot be concealed, and contractor could have reasonably known they existed.
4. In all other instances requiring surface-mounted raceways that the contractor could not have reasonably known about from construction coordination drawings (e.g. ceiling plans) or pre-bid walkthroughs made available to the contractor whether or not they participated, unit pricing will be utilized. Approval must be obtained prior to installation.

G. The following are general guidelines for raceways:

1. Surface-mounted raceway shall not be used unless the wall or other structure cannot be fished and cut into. Contractor to obtain approval prior to installing surface-mounted raceway in areas not already indicated on the drawings.
2. Surface-mounted raceways shall be sized appropriately for each installation following all manufacturers' guidelines.
3. Steel raceway (e.g. Legrand/Wiremold) shall be used in classroom and office areas. EMT conduit may be used in lieu of steel raceways in gymnasiums or other similar spaces and only after approval is received.
4. All surface-mounted raceways shall be steel construction (e.g. Legrand/Wiremold V700, V4000, etc.).
5. All steel raceways shall be ivory.

H. The following are general guidelines for faceplates:

1. For recessed boxes and surface-mounted faceplates, data faceplates shall be stainless steel with module frames or decora inserts. A/V faceplates may be plastic if necessary to provide the required A/V inserts.

2. Where single-channel surface-mounted raceway and boxes are used, faceplates shall match the raceway color.
3. Where dual-channel surface-mounted raceway is used (e.g. Legrand/Wiremold V4000), faceplate shall match the faceplates used in the existing installation.
4. Plastic faceplates are to be used where necessary to coordinate and match modular furniture systems.
5. Blank faceplates are to be stainless steel. Blank inserts for dual-channel raceway shall match the faceplate type and color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor's responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

B. Review building plans and installations to confirm outlet and conduit installation and location. Check outlets, conduits, raceways, cable trays, and other elements in the proposed pathways for compliance with space allocations, clearances, installation tolerances, hazards to cable installation, and other conditions affecting installation in compliance with manufacturer requirements.

C. Contractors are to examine existing telecommunication rooms, equipment, cabinets, racks, etc. to ensure the conditions will not interfere with their installation. Contractors will be responsible for moving existing items where possible to allow for their installation (e.g. shifting patch panels, wire management, and equipment within a rack or cabinet; moving items on a backboard, etc. to make room for the new installation). If the rework requires re-ordering the existing items or removing wire management, review the layout with the Technology Designer and Owner.

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

3.2 INSTALLATION

A. The Contractor shall provide all miscellaneous items and accessories required to make the system operational whether or not such items are specifically mentioned in the plans and specifications.

B. The Contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification, manufacturer's specifications, and within standards of generally accepted workmanship.

C. Contractor shall be familiar and install in accordance with all applicable codes and standards, including FCC, NEC (NFPA 70), EIA/TIA 568, 569 and 606, BICSI (Telecommunications Distribution Methods Manual, Current Edition), federal, state, and local building/fire codes.

D. All cable above the ceiling must be independently and properly supported to the building structure with hangers or cable tray independent from the ceiling grid or other support systems (e.g. cables shall not be run through trusses). Each contractor will provide all supports necessary for their work.

1. Separate supports are to be used for each type of cabling runs (e.g. data, voice, fiber, video, PA, security, etc.).
2. Cable supports (e.g. J-Hooks) shall be wide enough to maintain required cable bend radius and to avoid pinch points on the corners of the support.
3. All cable hangers/supports shall be no more than 60” apart.
4. Each cable bundle shall include a maximum of 192 cables.
5. Special care will be taken to avoid damage to ceiling grid, ceiling tiles, or other installed work. Cable “draped” across ceiling tiles is unacceptable.

E. Ensure all cables within cable trays are arranged to avoid individual cables supporting the weight of the cable bundle. Cable trays shall have appropriate bend radii for cable and fiber. Provide elbows, supports, and ties to assist in offloading the weight of the cable and adequately support the tray.

F. Support riser cables every floor and at the top of the run with cable grips. Limit number of four-pair data riser cables per grip to fifty (50).

G. Fiber optic cable shall be plenum rated armored cable.

H. Fill rates for all cable supports must not exceed the lesser of 50 percent, or as recommended by the manufacturer(s).

I. All wiring shall be protected from moving mechanical or physical contacts. All cabling shall be free from tension at both ends, as well as the length of each run.

J. Cables to be kept a minimum of 18” from power lines, fluorescent fixtures, or heat generating devices. All cross-connecting cable shall meet or exceed the transmission characteristics for the cable used in the adjoining segments.

K. All cabling shall be bundled and properly secured and terminated in the telecommunication room cabinet. Cables must be properly supported and separated to avoid crushing or cinching by supports, protective covers, doors, etc. All cables within wire management cabinets will be cable wrapped with Velcro cable ties at no greater than one-foot intervals. Velcro tie-wraps only are to be used.

L. For general communications outlets, Contractor to provide additional 10' of cabling coiled above nearest accessible ceiling at each drop and 10’ of cable at each telecommunication room. Unless noted otherwise, specialized systems (i.e. security and wireless) shall have 20’ of cable coiled above the ceiling at each drop and 10’ of cable at each telecommunication room. The additional lengths of cable shall be included in distance calculations. Cable routing within the telecommunication closet is to be approved by the Technology Designer before beginning termination.

M. In general, adhesives and non-mechanical fastening methods of installation will not be accepted. All conduit, cable and raceway installation support must be mechanically fastened to walls, decks, slab, structure, etc.

N. Install parallel to building lines, follow surface contours, and support the cable according to manufacturer's written instructions. Do not run adjacent and parallel to power or data cables.

O. All horizontal cabling terminations shall be provided with sufficient additional cabling to permit re-termination within the cabinet. The additional lengths of cable shall be included in distance calculations. Service loops shall be irregularly coiled to avoid electromagnetic or antenna effects.

P. All connections of twisted wiring shall be made in such a way as to minimize the extent in which each twisted pair is unraveled at the point of its physical termination. No more than 0.5 inches of exposed untwisted pairs shall be present at these locations.

Q. Provide sufficient pulling lubrication for all underground cable pulls. Do not exceed the manufacturers tension requirements for any installation.

R. Exposed wiring will not be accepted unless approved in writing by the Technology Designer. Cabling shall be in the wall, above the ceiling, or in conduit or raceways designed for the application. A difficult installation will not be sufficient to avoid the requirement for non-exposed wiring.

1. Contractor to install conduit in exposed areas along cable pathway. Raceway can be used for the vertical segment transitioning to the outlet location (e.g. from ceiling space down wall to outlet). Conduit in exposed areas are to be painted to match surrounding conduits/ceiling color.
2. Exposed wiring will be acceptable in crawl spaces.
3. Exposed wiring will be acceptable in high bay gymnasiums if the cables are run along a joist and hidden from view. Cables must be concealed from the wall to the joist.
4. No exposed cabling will be allowed in natatoriums.
5. No exposed cabling will be allowed in architecturally significant spaces, such as a media center or entrance lobby.
6. In instances greater than 15’ requiring conduit that the contractor could not have reasonably known about from available drawings (e.g. ceiling plans) or pre-bid walkthroughs made available to the contractor whether or not they participated, the contractor may request reimbursement for the installation. Approval must be obtained prior to installation.

S. Locate service loops in accessible ceiling unless location in exposed room is approved by Owner..

1. Example: in areas with a drop ceiling “cloud” in the room but exposed ceilings on the room perimeter, the service loop is to be above the cloud.
2. Example: cables running from drop ceiling corridor to a space with open ceilings are to have the service loop in the corridor at the penetration location.

T. In unheated crawl spaces, contractor is to install the cable at least four feet (4’) from the exterior wall mounted securely to the slab or structure.

3.3 UNDERGROUND INSTALLATION

A. Prior to beginning any underground work, Contractor shall contact MISS DIG, local utility survey staff, and utility companies for the location of all existing underground services and provide, if requested, documentation of such contact to Barton Malow. If necessary, Contractor shall pay for appropriate layout and locating of all existing utilities, and stake said utilities.

B. In addition to contacting MISS DIG, Contractors are to survey the extents of the area where the potential ground disturbance will take place utilizing a Ground Penetrating Radar System (GPRS). Produce a report to Barton Malow that deciphers the findings and proceed with underground boring or excavation only after reviewing the GPRS survey results and identifying a clear, safe path for the required underground work.

C. Utilities and/or other services which are shown, or not shown but encountered, shall be protected by the Contractor from any damage arising or resulting from work, unless or until they

are abandoned. If the utilities or services are damaged from Contractor's work, Contractor shall notify the Technology Designer immediately. Contractor shall repair any damage and restore the utilities and services to an equal or better condition than that which existed prior to the damage within four (4) hours. If the Contractor does not repair the work or the Owner or Barton Malow considers the damage unresolved in a timely manner, repairs will be made at Contractor expense.

D. Contractor shall provide and maintain proper shoring and bracing during its excavation, to protect from collapse or movement, or other type of damage until such time as they are to be removed, incorporated into the new Work or can be properly backfilled upon completion of the work and inspections.

E. Contractor shall photograph and document the environment immediately before beginning work, upon exposing any utilities, and after work and/or repair is completed. Barton Malow shall review the work and/or repairs before any work is buried.

F. Contractor will be responsible for all liabilities, damages, expenses, lawsuits or claims arising or resulting from such damage and will defend, hold harmless and indemnify Owner and Barton Malow from any claims or lawsuits or other expenses.

3.4 IDENTIFICATION

A. In addition to requirements in this Article, comply with TIA/EIA-606.

B. Use logical and systematic designations for facility's architectural arrangement and nomenclature, and a consistent color-coded identification of individual conductors. All rack fields, devices, components, etc. shall be tagged with appropriate designations on the front and rear of the equipment. All devices are to be installed and labeled in a sequential, logical order.

C. Adhesive labels shall meet the legibility, defacement, and adhesion requirements specified in UL969 for indoor use. Cable labels shall have a durable substrate, such as vinyl, suitable for wrapping. Labeling practices shall be consistent across the installation.

D. Cable runs shall be machine labeled within 1" of each termination. All cabling and fiber optics are to be tagged in a consistent manner, approved by the Technology Designer.

E. Fiber Optic Safety Installation. Label all fiber optic junction boxes and termination points with "fiber-optic cable - lasers in-use - possible eye injury" warnings inside and outside of the location.

F. At junction boxes, label with a description of the cable, termination location, and strand count.

3.5 FIELD QUALITY CONTROL

A. Contractor will provide cabling acceptance testing. Agent of owner may provide additional testing and cable acceptance. Contractor is responsible for correcting any instances of test failures.

B. Indicate and interpret test results for compliance with performance requirements of installed systems. All test results shall be marked as "Pass" or "Fail".

C. All test results must be provided in both hard copy and electronic format.

D. Contractor is responsible for correcting any instances of marginal test results or test failures.

3.6 DOCUMENTATION

A. As-Built Documentation:

1. Include scaled drawings reflecting all changes between the bid documents and the final installation, including final location of all telecommunication rooms, equipment, cable paths, outlets, etc.
2. Drawings shall include all cable routing, outlet locations, and outlet labels.
3. Drawings shall be created in AutoCAD format. Handwritten drawings shall be accepted for draft or working copies only.

END OF SECTION 27 1000

SECTION 27 1116 – RACKS AND CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1000 – General Cabling Requirements
3. 27 1300 – Backbone Cabling
4. 27 1500 – Data and Voice Horizontal Cabling

1.2 SUMMARY

A. This section includes specifications and requirements for racks and cabinets to be used throughout the technology project.

B. Refer to appropriate drawings and specification sections for cabinet types, quantities, and locations.

1.3 DEFINITIONS

A. Unless noted otherwise, “cabinet” refers to cabinets, relay racks, etc.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Cabinet(s)
2. Wire Management
3. Cabinet Accessories

B. Shop Drawings: Include dimensioned plan and elevation views of telecommunications equipment rooms, with each individual component labeled. Show cabinet assemblies, workspace requirements, and access requirements.

1.5 COORDINATION

A. Coordinate layout and installation of the work of this section with the Owner's equipment, furniture, electrical, mechanical, architectural, and other technology trades.

B. Coordinate telecommunication room and cabinet layouts with related contractors.

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. All materials shall be installed with matching color and quality to ensure a high-quality finished installation. Unless noted otherwise or approved in writing by Technology Designer, all materials shall have a black finish.

B. Where cabinets are not specified in the drawings, details, or specifications, contractor may use 84” relay racks for 19” EIA mounting with specified components.

C. Provide side panels for the ends of bolted cabinet rows.

D. All lockable cabinets are to be keyed alike. Contractor to coordinate keying with Technology Designer.

E. For each cabinet or rack section:

1. Provide one rack mounted surge suppression outlet power strip and/or vertical power strip as appropriate.
2. Provide rack-grounding termination. If a ground buss isn’t provided by electrical or other trade, contractor is to provide grounding of equipment and cabinets as required by the current electrical code and the local inspection authority.

2.2 RACKS

A. General Requirements:

1. Racks shall be high-grade black anodized-aluminum with front and back standard 19” EIA mounting screw holes.
2. Minimum height 84".
3. Contractor will provide 6” wide, duct-style vertical wiring management with removable protective covers on both sides of each rack.

B. Manufacturer:

1. Hubbell
2. Ortronics
3. Panduit
4. Approved Equal

2.3 FLOOR EQUIPMENT CABINET

A. General Requirements:

1. Unless noted otherwise, cabinets are to be 84” high, black painted steel, with final depth confirmed with verification of equipment size and front patch cabling clearance requirements.
2. Cabinets are to be provided with a fixed base and swing-away cabinet enclosure. Cabinets provide with casters will not be accepted.
3. Cabinet enclosures shall be fan ventilated with a standard rear door.

4. For cabinets located in public areas, provided with a hinged and lockable smoked Plexiglas front.
5. Each cabinet section shall have front and rear leveling legs.
6. All cables running to the cabinet will be installed in either raceway or conduit.

B. Manufacturer:

1. Great Lakes
2. Hubbell
3. Lowell
4. Middle Atlantic
5. Ortronics
6. Panduit
7. Rack Solutions
8. Tripplite

2.4 WALL MOUNTED CABINET

A. General Requirements:

1. Cabinets are to be a minimum of 24” wide and 48” high (unless noted otherwise on drawings), black painted steel, with final depth confirmed with verification of equipment size and front cabling requirements. Assume 30” deep for pricing if depth is unknown at bid time.
2. Include motorized fan for venting.
3. Lockable perforated metal or scratch-resistant tinted glass front door and standard rear door.
4. Cabinet enclosures shall be field-reversible (Left or Right) hinged
5. Entire unit shall swing at each door to permit front and rear equipment and cabling access.
6. All cables running to the cabinet will be installed in either raceway or conduit.

B. Manufacturer:

1. Hoffman Accessplus II or EWMW
2. Middle Atlantic
3. Approved equivalent

2.5 RACK AND CABINET COMPONENTS

A. Power Strip / PDU

1. Manufacturer standard nine (9) minimum outlet or greater receptacle strip rated at 20A minimum with surge suppression plug, and circuit breaker. Contractor to supply proper power strip for voltage supplied
2. Unit shall be provided with rack bolting.

B. Cable Ties

1. Cable ties shall be plenum rated.
2. Cabinet and rack ties shall be Velcro-type ties

2.6 SPARES

A. Provide spare of the following spare equipment and/or parts

1. Provide one (1) box of mounting bolts or screws for each type of cabinet.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor's responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

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

3.2 INSTALLATION

A. The Contractor shall provide all miscellaneous items and accessories required to make the system operational whether such items are specifically mentioned in the plans and specifications.

B. The Contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification, manufacturer's specifications, and within standards of generally accepted workmanship.

C. The contractor shall protect equipment and components during installation and clean all equipment before owner acceptance using methods and materials recommended by the manufacturer.

D. All units shall be aligned and perpendicular to adjacent walls.

E. Racks and cabinets are to be properly installed and secured to handle equipment load. The racks shall be bolted to floor, cable tray, and/or wall for added rigidity. Adjacent cabinets shall be bolted together at the top and bottom at both the front and rear of the units.

F. Provide independent circuit grounding recommended by manufacturer. Grounding is to be consistent with ANSI/TIA/EIA 607 and NEC requirements as a minimum. Each contractor to connect their cabinets to a single-point ground which is connected to the building ground system via #6 AWG green insulted copper grounding conductor.

G. Contractor to adjust side mounting rails to optimize front and rear cabinet clearances. No less than three inches of clearance must be provided between the equipment and the cabinet door for cabling.

H. Equipment Mounting Positions (From Top):

1. WAN fiber panel (where applicable)
2. LAN fiber panel
3. Alternating copper patch panels and switches
4. Power Strip

5. UPS
6. Verify phone gateway, master clock system, PA, etc. location if mounted in cabinets

END OF SECTION 27 1116

SECTION 27 1300 – BACKBONE AND OUTDOOR CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1000 – General Cabling Requirements
3. 27 1116 – Racks and Cabinets
4. 27 1500 – Data and Voice Horizontal Cabling

1.2 SUMMARY

A. Extent of the cabling systems work is indicated by the drawings and schedules, and is hereby defined to include, but not by of limitation, the provisions of:

1. Backbone cables between the telecommunication rooms.
2. Indoor/outdoor station cabling
3. All termination blocks, outlets/jacks, patch panels, patch cords, etc.
4. Termination, cross connect, and patching.

B. The data cabling infrastructure shall compliant with EIA/TIA standards under T568B-2.1. Campus voice, fiber optic, data and video infrastructure shall be implemented compliant with applicable standards.

C. Data and POE voice cables shall be routed so as not to exceed 90 meters in length. Notify the Technology Designer before bid period question deadline, established at the pre-bid meeting, should any changes in bid documents be required to conform to this limitation. After entering into Contract, Contractor shall provide Technology Designer-approved solution to meet the 90-meter requirement without additional expense to the Owner.

D. Unless noted otherwise, provide and install twelve (12) strands of OM4 multimode between each TR and MC.

E. Contractor shall review all underground segments with the Owner.

F. Provide coordination and installation in accordance with standards, rules, regulations and requirements of utilities, ROW owners, state, county, cities, villages, townships, municipalities, and any other authority having jurisdiction.

G. Patching:

1. This Contractor is responsible for patching to switches or equipment provided by others.

2. Patch cables shall be the minimum lengths necessary to patch one-for-one while utilizing the wire management. Technology Designer to approve patching method before installation.

3. Do NOT patch unused patch panel ports.

H. Cross-connects:

1. This Contractor is responsible for cross connecting between the systems utilizing the cables installed under this specification section.

1.3 DEFINITIONS

A. AHJ: Authority Having Jurisdiction

B. ER: Equipment Room

C. HH: Handhole

D. MC: Main Cross-connect [Applies to references to MDF]

E. MMF: Multimode fiber

F. SMF: Single-mode fiber

G. TR: Telecommunication Rooms [Applies to references to IDF]

H. TP: Transition point

1.4 SUBMITTALS

A. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Cable
2. Terminations (Patch panels, punchdown blocks, etc.)
3. Patch cables (Identify lengths, colors, and quantities)

B. Samples:

1. Faceplate with proposed labeling format.

C. Qualification Data:

1. Include written confirmation from the manufacturer that the bidder is a certified installer for the cable plant solution.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Cabling Installer must have on-staff personnel certified by the cable solution manufacturer and BICSI.

B. Layout Responsibility: Preparation of Shop Drawings by an RCDD.

C. Installation Supervision: Installation and testing shall be performed by BICSI Registered Installers or manufacturer certified installers, with a consistent supervisor who shall be present at all times when work of this section is performed.

1.6 COORDINATION

A. Coordinate cables installed in this section with the Owner and phone, data, security, network, etc. contractors whose equipment will be using the cabling.

1.7 WARRANTY

A. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. The cable plant shall be covered by the manufacturer's warranty (eg. Panduit Certification Plus System Warranty, Hubbell Premise Wiring Mission Critical Warranty and System Performance Guarantee, etc.).

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Coordinate the features of materials and equipment so they form an integrated system complying with TIA/EIA standards. Match components and interconnections for optimum future performance.

B. Contractor is to use plenum rated cable and cabling accessories throughout this installation.

2.2 MANUFACTURERS

A. The following are acceptable manufacturers for general equipment within this section, unless noted otherwise for any product. Any deviations must be approved in writing by the Technology Designer before installation.

1. Voice Backbone Cable
    a. Berk-Tek
    b. Belden
    c. Commscope
    d. General
    e. Lucent
    f. Mohawk

2. Indoor/Outdoor UTP Voice/Data Cable
    a. Berk-Tek
    b. Belden

c. Commscope
d. General
e. Hitachi
f. Lucent
g. Mohawk
h. Superior Essex

3. Fiber Optic Cable
   a. Berk-Tek
   b. Belden
   c. Commscope
   d. Draka Comteq
   e. General
   f. Legrand Infinium Quantum
   g. Lucent
   h. Siecor
   i. Tyco

4. Patch Panels, Faceplates, Station Terminations, Jacks, other Accessories
   a. Cable manufacturer
   b. Hubbell
   c. Panduit

2.3 FIBER OPTIC CABLING BACKBONE

A. Cable Standards:

1. Indoor backbone cable is to be continuous, armored, plenum-rated, tight-buffered 50/125 micron laser optimized OM4 multimode fiber optic cable.

2. Outdoor backbone cable is to be continuous, single armored dry buffer, loose-tube ITU G.652D single-mode fiber optic cable rated for aerial and underground applications.
   a. Cable is to be Corning SMF-28e+ or equivalent
   b. Any facilities in which the termination point is greater than 50' from the location the fiber enters the building will be fusion spliced to plenum rated cable in a wall-mounted fiber optic splice enclosure. Utilize indoor fiber optic standards for the remaining portion of the work modifying applicable language for single-mode installations to reflect cable type and yellow sheathing.

3. Each fiber must be individually jacketed.
4. Call shall have EIA/TIA -598 color coding for fiber optic cable.
5. All multi-mode fiber is to be OM4 for distances up to 500m. Use single mode fiber for distances exceeding 500m and all outdoor applications.
6. All pig tails and patch cables are to match the type of fiber optic cable installed.
7. All fiber is to be fusion spliced; no field terminations or mechanical splices will be accepted.
8. Indoor cable sheath and accessories are to follow the following color designation:
   a. OM4 Violet
   b. Singlemode Yellow

B. Termination Standards:

1. Provide 19” rack mounted (sized as necessary, 72-port maximum) optical fiber termination panels with cable strain relief and slack storage. Provide breakout and

storage of 5’ of cable. Size the patch panel for an additional space for 12 future terminations.

2. LC terminations are to be used, or as required by the equipment manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor’s responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

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

3.2 INSTALLATION

A. Contractor shall be familiar and install in accordance with all applicable codes and standards, including FCC, NEC (NFPA 70), EIA/TIA 568, 569 and 606, BICSI (Customer-Owned Outside Plant Design Manual, current edition), BICSI (Telecommunications Distribution Methods Manual, current edition), federal, state, and local building/fire codes.

B. Installation must be in accordance with applicable utility company standards.

C. Contractor to follow the applicable grounding and bonding requirements.

D. Contractor to provide additional cabling coiled above ceiling at both the workstation locations and in telecommunication rooms. The additional lengths of cable shall be included in distance calculations. Cable routing within the telecommunication closet is to be approved by the Owner’s Representative before beginning termination.

E. Fiber optic cables shall be marked with warning labels every twenty feet (20’).

3.3 AERIAL BUILDING ENTRANCE REQUIREMENTS

A. Contractor may use an aerial entry into buildings identified on the drawings. Contractor must obtain written permission before aerial entrances are used at any other buildings.

B. Service drop into the building shall utilize a minimum 3" rigid galvanized steel conduit with weather head securely attached to the building. The installation shall comply with the National Electric Code (NFPA 70).

C. Provide conduit and sealed junction box at all exterior wall penetrations designed to maintain the required bend radii. All entrances into the building will be properly water and fire stopped. Penetrations through exterior walls will be core or drilled hole and mortared and finished with adequate seal and weatherproofing. Chiseling of bricks or portions of bricks is not acceptable. Filling penetrations with expanding foam insulation is not acceptable.

D. Contractor will provide strain relief on all service entrances to avoid cable overloading.

3.4 UNDERGROUND INSTALLATION AND BUILDING ENTRANCE REQUIREMENTS

A. Prior to beginning any underground work, Contractor shall contact MISS DIG, local utility survey staff, and utility companies for the location of all existing underground services and provide, if requested, documentation of such contact to Barton Malow. If necessary, Contractor shall pay for appropriate layout and locating of all existing utilities, and stake said utilities.

B. In addition to contacting MISS DIG, Contractors are to survey the extents of the area where the potential ground disturbance will take place utilizing a Ground Penetrating Radar System (GPRS). Produce a report to Barton Malow that deciphers the findings and proceed with underground boring or excavation only after reviewing the GPRS survey results and identifying a clear, safe path for the required underground work.

C. Contractor to install new underground pathway and conduit between the building(s) and outdoor equipment location.

D. Provide conduit and sealed junction box at all exterior wall penetrations designed to maintain the required bend radii. All entrances into the building will be properly water and fire stopped. Penetrations through exterior walls will be core or drilled hole, mortared, and finished with adequate seal and weatherproofing. Chiseling of bricks or portions of bricks is not acceptable. Filling penetrations with expanding foam insulation is not acceptable.

F. Provide a minimum 2" conduit (or as shown on the drawings) with material appropriate to the installation. All joints shall be cleaned, coupled, connected, and sealed to prevent infiltration of water.

G. Provide and install a trace wire in each underground segment.

H. Provide underground handholes where required. The top of the handhole shall be stamped or etched “Communication” or manufacturer’s equivalent. Install the handholes with ¼ inch of the final ground level, at a distance of no greater than 300' apart. Handholes shall also be installed whenever the combination of elbows and bends totals greater that 180 degrees. Handhole sizes shall be based on NEC Article 314.16 and Article 315.28; however larger than 4’x4’x4’ shall not be used without written approval.

I. Contractor may utilize a directional bore or trench to install the conduit. Conduits to be installed to a minimum of 36" below grade. Installation shall follow OSHA requirements.

J. Compact all backfilled materials and level site. Restore remainder of topsoil for grass installations and re-sod restored excavation. Any concrete or asphalt damage shall be restored. Backfill excavation and trenches with compacted sand to 1' below grade and provide warning tape. Restore remainder of topsoil for grass installations. Compact crushed stone/sand for concrete/asphalt installations and restore to original condition.

K. Any installation in a public right of way, easement, or public roadways or other property not owned by the Owner shall be restored in accordance with property owners' or governing agency regulations and requirements. If no regulations govern, as a minimum restore to a condition similar to pre-installation quality.

L. Utilities and/or other services which are identified, or not identified but encountered, shall be protected by the Contractor from any damage arising or resulting from work, unless or until they are abandoned. If the utilities or services are damaged from Contractor’s work, Contractor shall notify the Technology Designer immediately. Contractor shall repair any damage and restore the utilities and services to an equal or better condition than that which existed prior to the damage within four (4) hours. If the Contractor does not repair the work or the Owner or Barton

Malow considers the damage unresolved in a timely manner, repairs will be made at Contractor expense.

1. Contractor shall photograph and document the environment immediately before beginning work, upon exposing any utilities, and after work and/or repair is completed. Barton Malow shall review the work and/or repairs before any work is buried.
2. Contractor will be responsible for all liabilities, damages, expenses, lawsuits or claims arising or resulting from such damage and will defend, hold harmless and indemnify Owner and Barton Malow Builders from any claims or law suits or other expenses.

M. Contractor shall provide and maintain proper shoring and bracing during its excavation, to protect from collapse or movement, or other type of damage until such time as they are to be removed, incorporated into the new Work or can be properly backfilled upon completion of the work and inspections.

N. Unless specifically noted on the drawings as a direct-buried installation, underground installations shall be in conduit.

3.5 HANDHOLE REQUIREMENTS

A. Provide underground handholes as needed to facilitate the installation and future servicing of the backbone cables.

B. Provide Quazite underground handhole enclosures rated to 15,000 lbs.

C. The top of the handhole shall be stamped or etched "Fiber Optic Cabling" or manufacturer’s equivalent.

D. Install the handholes at final ground level, at a distance of no greater than 300' apart. Handholes shall also be installed whenever the combination of elbows and bends totals greater that 180 degrees.

E. Handhole sizes shall be based on NEC Article 314.16 and Article 315.28; however larger than 2’x2’x2’ shall not be used without written approval.

F. Conduits are to sweep up through the bottom of the handhole with the handhole bottom filled with gravel.

G. Install a ground rod in each vault or handhole and connect to wire electrode.

3.6 INSIDE CABLE INSTALLATION

A. Contractor is to follow the requirements established in section 27 1000.

B. If the termination location is greater than 50' from the building point of entrance, or as required by applicable codes, cable will be fusion spliced to plenum rated cable in a wall-mounted fiber optic splice enclosure. Point of entrance is the point within the building where the cable emerges from an external wall, from a concrete floor slab, or from rigid metal conduit or intermediate metal conduit connected to an electrode by a grounding conductor in accordance with NEC 2014 800.100 and 800.2.

C. Due to field conditions or other situations, installation locations may have to be relocated a reasonable distance from the plan location. Unless relocations, modifications and reengineering

are consistently or substantially unfavorable to either the contractor or the owner, there will be no additional charge or credit for this work.

D. The contractor shall be familiar with the site and the rooms to ensure a proper installation. The final installation methods are left to the discretion of the contractor in accordance with this specification and within standards of generally accepted workmanship.

E. If non-armored fiber is approved for use, fiber optic cable shall be installed in orange, plenum-rated innerduct. Maximum fill is 40%.

3.7 IDENTIFICATION

A. In addition to requirements in this Article, comply with TIA/EIA-606-A

B. Label patch panels/punchdown blocks for voice tie cables as “Voice Tie Cable to [LOCATION]“

C. The cable run shall be machine labeled or legibly hand labeled with indelible ink within 1” of termination. Final termination at the distribution frame is also to be appropriately tagged. All cabling and fiber optics are to be tagged in a consistent manner.

D. Fiber Optic Safety Installation. Label all fiber optic junction boxes and termination points with "fiber-optic cable - lasers in-use - possible eye injury" warnings inside and outside of the location.

E. At junction boxes, label with a description of the cable, termination location, and strand count.

3.8 FIELD QUALITY CONTROL

A. The UTP installation is to be tested to the current EIA/TIA TSB Channel Performance Testing Standard, or equivalent as approved by the Technology Designer.

1. Cables are to be tested with a Fluke OmniScanner2, or equivalent by Agilent or Wavetek, using the correct software version and adapter for the cable installation or as required for manufacturers warranty program.
2. Cables are to be tested consistently with the tester in the MC, and the injector at the remote TR.

B. Document for each pair as well as the worst margin the following test results:

1. Cable identification (Building and Circuit ID)
2. Test date
3. Cable length (ft.)
4. Wiremap
5. Delay (ns)
6. Skew (ns)
7. Resistance (Ohms)
8. Attenuation
9. NEXT
10. ELFEXT
11. Return Loss
12. PSNEXT
13. PSELFEXT

C. Optical Time Domain Reflectometer (OTDR) testing is required on all terminated fiber optic cables. The operator of the test equipment must be properly trained and have experience in the operation of this equipment and interpreting and certifying test results. While preterminated, factory-certified cables may be installed; the contractor must provide a field verifiable method of determining attenuation, continuity, bandwidth, etc. Contractor is to provide an OTDR test of each fiber spool before installation to verify fiber is not damaged upon delivery.

D. Any cables that do not meet the minimum performance criteria established by the standards or manufacturer shall be corrected or replaced at no additional cost to the Owner. If the copper backbone cable contains more than one (1) percent bad pairs, remove and replace entire cable.

3.9 DEMONSTRATION

A. Contractor shall train the Owner on the layout of the backbone cabling system including the pathways, termination methods, and interconnections.

3.10 DOCUMENTATION

A. As-Built Documentation:

1. Include scaled drawings documenting the final installation, including final location of all telecommunication rooms, cable paths, etc.
2. Provide plan drawings of all telecommunication rooms, with elevation drawings of all cabinets and backboards identifying components and interconnections.
3. Drawings shall be created in AutoCAD format. Hand written drawings shall be accepted for draft or working copies only.
4. Include photographs of the completed fiber splice trays for each telecommunication closet location.

B. Cable Testing

1. Cable test results are to be provided electronically (PDFs) organized by building and telecommunication room.
2. Contractor is to review fiber/OTDR test results with Owner and annotate a sample test result indicating key indicators.

C. Underground Conduit Labeling

1. For each underground conduit used, Contractor is to label both ends of the **conduit** identifying where the conduit runs (e.g. “Fiber to Pressbox”)

D. Warranty

1. Provide certificate of manufacturer’s extended warranty for the cabling system.

END OF SECTION 27 1300

SECTION 27 1500 – DATA AND VOICE HORIZONTAL CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

B. Specification Sections:

1. 27 0000 – General Technology Requirements
2. 27 1000 – General Cabling Requirements
3. 27 1116 – Racks and Cabinets
4. 27 1300 – Backbone Cabling

1.2 SUMMARY

A. This Section includes general cabling requirements for contractors installing structured data or voice cabling within their scope of work.

B. The cabling infrastructure shall be implemented as a data and voice solution compliant with EIA/TIA standards under T568B-2.1. Campus voice, fiber optic, data and video infrastructure shall be implemented compliant with applicable standards.

C. Extent of the cabling systems work is indicated by the drawings and schedules, and is hereby defined to include, but not by of limitation, the provisions of:

1. Horizontal cables to the telecommunication rooms.
2. All termination blocks, outlets/jacks, patch panels, patch cords, etc.
3. Termination, cross connect, and patching.

D. Data and voice cables shall be routed so as not to exceed 90 meters in length. Notify the Technology Designer before bid period question deadline, established at the pre-bid meeting, should any changes in bid documents be required to conform to this limitation. After entering Contract, Contractor shall provide Technology Designer-approved solution to meet the 90-meter requirement without additional expense to the Owner.

E. Color Coding:

1. The following chart describes the cable type/color for the primary structured cabling systems defined in this spec section.

System	Cable Type	Distribution Cable	Patch Cable (Station)	Patch Cable (Closet)	Jack Color (User End)	Jack Color (Patch Panel)
Data	CAT 6	Blue	Black	Blue	Blue	Blue
Voice (PoE)	CAT 6	Blue	Black	Blue	Blue	Blue
Apple TV	CAT 6	Blue	Black	Blue	Blue	Blue
Wireless	CAT 6A	Purple	Purple	Purple	Purple	Purple
Security	CAT 6	Green	Green	Green	Green	Green

F. Patching:

1. This Contractor is responsible for patching to all switches. Switches will be provided, by others, equal to the number of data ports. Provide **Category 6** patch cables. Quantity shall match the total number of data cables installed.

2. Patch cables shall be the minimum lengths necessary to patch one-for-one while utilizing the wire management. Technology Designer to approve patching method before installation.

3. Do NOT patch unused patch panel ports.

4. Patch cables shall NOT have boots

5. Patch cable manufacturer shall be consistent with the patch panel and jack manufacturer.

G. Cross-connects:

1. This Contractor is responsible for cross connecting between the phone demark and the building systems (e.g. elevators, fire alarm, security, pool controls, fax machines, etc.). This excludes lines used for the Owner's telephone system.

H. Contractor shall provide and install horizontal cable tray in each telecommunication room. Unless noted otherwise, cable tray will start at the edge of the room where incoming cables are fed, provide cable support for all racks, and be secured to the walls.

1.3 DEFINITIONS

A. ER: Equipment Room

B. MC: Main Cross-connect [Applies to references to MDF]

C. TR: Telecommunication Rooms [Applies to references to IDF]

D. PoE: Power over Ethernet

1.4 SUBMITTALS

A. Prior to installation, provide a schematic of each closet and the proposed rack layout. This shall include integration of existing equipment, patch panels, wire management, etc. as well as any new components introduced as part of this scope. Coordinate with Technology Designer and other contractors (e.g. wireless, network electronics, etc.) prior to installation. Do not proceed without written direction to do so.

B. Prior to ordering, confirm colors of horizontal cables, patch cables, and jacks.

C. Product Data: For each type of product indicated, provide a product data sheet in both hard-copy and electronic (PDF) formats. Data sheets indicating multiple products must have the applicable product highlighted or marked.

1. Cable
2. Faceplates
3. Terminations (Patch panels, jacks, etc.)
4. Patch cables (Identify lengths, colors, and quantities)

D. Samples:

1. Faceplate with proposed labeling format.
2. A minimum one-foot sample of each proposed cable-type to be used on this project with labeling.

E. Qualification Data:

1. Include written confirmation from the manufacturer that the bidder is a certified installer for the cable plant solution.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Contractor must be certified by the manufacturer of the solution being installed and be BICSI certified.

B. Layout Responsibility: Preparation of Shop Drawings by an RCDD.

C. Installation Supervision: Installation and testing shall be performed by BICSI Registered Installers or manufacturer certified installers, with a consistent supervisor who shall always be present when work of this section is performed.

D. Comply with EIA/TIA 568B-2.1, EIA/TIA 569, and EIA/TIA 606.

1.6 COORDINATION

A. Coordinate cables for door entry, video surveillance, wireless infrastructure, etc. with the contractor who will be installing the equipment for termination location and method.

B. Other bids may be issued related to this contractor’s scope of work. This Contractor is responsible for knowing what work will be provided by others and how it affects their Work (e.g. electrical rough-ins, etc.). Contractors, during bidding or after, can contact the project team to view related drawings and/or specifications.

1.7 WARRANTY

A. Contractor is also to provide terms of any additional warranties as a manufacturer's standard. Special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. The cable plant shall be covered by the manufacturer's warranty for a minimum of fifteen (15) years (e.g. Panduit Certification Plus System Warranty, Hubbell Premise Wiring Mission Critical Warranty and System Performance Guarantee, etc.).

PART 2 - PRODUCTS

2.1 SYSTEM REQUIREMENTS

A. Coordinate the features of materials and equipment so they form an integrated system complying with TIA/EIA-568-B. Match components and interconnections for optimum future performance.

B. One manufacturer must be used for all termination jacks, patch panels, and patch cables.

C. Contractor is to use plenum rated cable and cabling accessories throughout this project.

D. All Category 6A cables will be UL limited power (LP) rated.

2.2 MANUFACTURERS

A. The following are acceptable manufacturers for general equipment within this section, unless noted otherwise for any product. Any deviations must be approved in writing by the Technology Designer before installation.

1. Voice and Data Cable
    a. Berk-Tek
    b. Belden
    c. Commscope
    d. General
    e. Liberty Wire & Cable
    f. Lucent
    g. Mohawk
    h. Superior Essex
    i. Approved Equal
2. Patch Panels, Faceplates, Station Terminations, Jacks, other Accessories
    a. Hubbell
    b. Panduit
    c. Ortronics
    d. Leviton
    e. Approved Equal

2.3 DATA CABLE AND TERMINATIONS

A. Cable Standards:

1. Cabling shall be contiguous, plenum rated **Category 6**, four-pair UTP cable compliant with EIA/TIA 568B-2.1 standards.
2. Cable shall be solid copper.
3. Cabling shall be certified as a complete system with other components required herein to achieve manufacturers cabling system extended warranty.

B. Termination Standards:

1. Terminations shall be **Category 6** compliant modular, T568B RJ-45 jacks.
2. Terminate PoE wall-voice outlets on single-gang stainless steel faceplates or raceway module with six-conductor jack and wall telephone mounting lugs.
3. Video surveillance, wireless access point, or other equipment terminations shall be modular T568B RJ-45 jacks in a plenum-rated biscuit box located in the nearest accessible ceiling or junction box to the end device. Alternatively contractor can use a modular plug terminated link (i.e. direct connect) that meets the ANSI/TIA-568-C.2 clause 6.3 requirements. If a modular plug terminated link (MPTL) is used, testing must be performed with the appropriate channel adapter.

2.4 INDOOR/OUTDOOR DATA/VOICE STATION CABLING

A. Cable Standards:

1. Cable is to be continuous, Category 6 compliant UTP cable rated for indoor and outdoor installations between two environmentally protected points, including underground pathways.
2. Use in areas with thermal or chemical exposure.
3. Plenum-rated required when cabling indoors extend beyond 50’ from the building entry location.
4. Cable shall have an UV-resistant sheath and a core of solid-copper conductors, dual insulated resistant to chemical, moisture, and thermal exposure.
5. Cabling shall be certified as a complete system with other components required herein to achieve manufacturer’s cabling system extended warranty.

B. Manufacturer:

1. Hitachi Cable Drybit Indoor-Outdoor Cable
2. Super Essex with FEP Jacket CMP Indoor/Outdoor
3. Approved equivalent

C. Termination standards:

1. Contractor shall install lightning protectors in telecommunication room for each data/voice cable.
2. Terminate at station location in “biscuit box” or as recommended by station equipment manufacturer.

2.5 EXTENDED DISTANCE CABLING

A. General Requirements:

1. Extended distance cabling is only to be used for video surveillance and IP-paging devices with cable distances under 150m.
2. Prior to installation the contractor must demonstrate functionality with the end point (i.e. camera) and a spool of cable that meets or exceeds the expected distance, and obtain Owner sign off.
3. Contractor is to note on each cable test result that the cable run uses extended distance cabling.
4. Cable must be a different color or have a distinctive stripe to visually separate it from the Category cable used throughout the project. Review color or designation with project team before ordering.

B. Approved Manufacturers:

1. Belden RemoteIP Cable
2. Paige GameChanger Cable

2.6 PATCH PANEL DISTRIBUTION FRAME TERMINATIONS

A. Standards:

1. Patch panels must be Category 6, 19", 48-port patch panels with T568B terminations.
2. Patch panels shall accept keystone jacks. Keystone color should match the distribution cable color.
3. Provide patch panels for all cables installed plus eight (8) open ports in each telecommunication room for future use.
4. Patch panels shall have a rear strain relief bar to organize cables and maintain appropriate bend radius.
5. Separate patch panels shall be used for data, video surveillance, and wireless access point locations.
6. Data cables shall be terminated sequentially. If terminated on the patch panels, cables installed for building systems (fire alarm phone line, security phone line, pay phones, etc.) shall be terminated together in the last patch panel positions and its use labeled on the patch panel.

2.7 FACEPLATES AND MODULE FRAMES

A. Faceplates shall be sized to accommodate the raceway, back box, or floorbox for each location with adequate modules for the required jacks.

B. All faceplates shall be Decora style stainless steel. Utilize smooth metal 302/304 stainless steel for all faceplates. Blank plates shall be sized to fit box without Decora cutout.

1. Exception: Plastic module frames shall be used where necessary to match installation of other contractors.

C. Faceplate labels shall be secured to the faceplate (loose or removable labels on the screw covers are not permanent and not acceptable).

2.8 CABLE TRAY

A. General Requirements:

1. Contractor may utilize cable tray or ladder rack.

2. Cable tray shall have a black finish to match cabinets within each telecommunication room.

B. Size:

1. Cable tray shall be sized so that there is no more than 30% fill at the completion of the project.
2. Provide 12” wide minimum in telecommunication rooms.

C. Cable tray supports shall be adequately sized to accommodate a minimum of 5 times the weight of the maximum cable fill and tray plus 300 lbs. and as per the manufacturer's recommendations.

2.9 PATCH CABLES

A. Provide Category 6 (Category 6A for wireless cables) 8-conductor patch cables for use within telecommunication rooms. Provide one for every data cable installed throughout the project. Patch cables shall be the minimum lengths necessary to patch while utilizing the wire management. Technology Designer to approve patching method.

B. In addition to the patch cables to be used in the telecommunication rooms, provide Category 6 8-conductor patch cables for the owner’s use at the station end in the following lengths and colors. Provide one for every data cable installed throughout the project.

Min. Length	Color	Quantity
6 ft	black	40%
10 ft	black	40%
20 ft	black	20%

C. Patch cable manufacturer shall be consistent with the patch panel and jack manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. It is the Contractor’s responsibility to review the site work, architectural, structural, mechanical, and electrical drawings, specifications, and field conditions, for any details that may impact the installation or provisioning of the system.

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

3.2 INSTALLATION

A. Review all closet layouts with Technology Designer prior to installation.

B. Contractor shall be familiar and install in accordance with all applicable codes and standards, including FCC, NEC (NFPA 70), EIA/TIA 568, 569 and 606, BICSI (Telecommunications Distribution Methods Manual, current edition), federal, state, and local building/fire codes.

C. Contractor shall limit cable bundles for cable runs, cables in telecommunication rooms, and penetrations to:

1. Cat 5e 52 cables
2. Cat 6 64 cables
3. Cat 6A 74 cables

D. Contractor to provide additional cabling coiled above ceiling at both the workstation locations and in telecommunication rooms. The additional lengths of cable shall be included in distance calculations. Cable routing within the telecommunication closet is to be approved by the Owner's Representative before beginning termination.

E. At station locations, terminate all 8 conductors on all jacks, regardless of data or telephone use.

F. Ensure all cables within cable trays are arranged to avoid individual cables supporting the weight of the cable bundle. Cable trays shall have appropriate bend radii for cable and fiber. Provide elbows, supports, and ties to assist in offloading the weight of the cable and adequately support the tray.

G. Service loops for Cat 6A cables are to be installed in an S-configuration and not a circular loop.

H. All service loops are to be located in accessible ceiling, not in exposed visible locations.

3.3 IDENTIFICATION

A. In addition to requirements in this Article, comply with TIA/EIA-606-A.

B. Each termination module shall be labeled with a white, wrap-around self-adhesive label. Use Panduit MINI-COM® Module Port Identification Self-Adhesive Labels, or equivalent.

C. Each label shall identify the telecommunication room, patch panel and patch panel port. For example: 1-A-34 would refer TR-1, patch panel A, port 34.

D. Data cable patch panels shall be labeled sequentially with letter designations A, B, C, etc. Voice cable patch panels shall be labeled sequentially with a V designation (V1, V2, etc. if more than one).

E. Patch panel ports used for mounted devices (wireless access points, surveillance cameras, displays, etc.) will be labeled with the device name (e.g. WAP-09 for access point 9, CAM-07 for surveillance camera 7).

F. In addition to the faceplate label, each cable is to be labeled behind the faceplate and patch panel with a machine generated wrap-around self-adhesive label that matches the port label on the patch panel and faceplate.

G. Each rack is to be labeled with the IDF/MDF designation (e.g. IDF-1, IDF-2) utilizing permanent adhesive labels. Labels shall be at least 2" high and should be located in the lower right-hand corner of the backboard.

3.4 FIELD QUALITY CONTROL

A. The installations must be tested and certified as compliant for Category 6 and Category 6A connectivity. The installation is to be tested to the current EIA/TIA TSB Channel Performance

Testing Standard, or equivalent as approved by the Technology Designer. For workstation locations without a patch cable, use a 10' cable at for testing purposes.

1. Cables are to be tested with a Fluke Versiv Cable Certifier, or equivalent by Agilent or Wavetek, using the correct software version and adapter for the cable installation or as required for manufacturers warranty program.
2. Cables are to be tested consistently with the tester in the telecommunication room, and the injector at the workstation termination locations.
3. Testing will be performed after faceplates have been secured to the raceway/wall/floorbox.

B. Document for each pair as well as the worst margin the following test results:

1. Cable identification (Building and Circuit ID)
2. Test date
3. Cable length (ft.)
4. Wiremap
5. Delay (ns)
6. Skew (ns)
7. Resistance (Ohms)
8. Attenuation
9. NEXT
10. ELFEXT
11. Return Loss
12. PSNEXT
13. PSELFEXT

C. Any cables that do not meet the minimum performance criteria established by the standards or manufacturer shall be corrected or replaced at no additional cost to the Owner.

3.5 DEMONSTRATION

A. Contractor shall train the Owner on the layout of the cabling system including the pathways, termination methods, and interconnections.

3.6 DOCUMENTATION

A. As-Built Documentation:

1. Include scaled drawings reflecting the final installation, including final location of all telecommunication rooms, equipment, cable paths, outlets, etc.
2. Drawings shall include all cable routing, outlet locations, and outlet labels.
3. Provide pictures of all cabinets where equipment, patch panel, and labeling is visible.
4. Provide plan drawings of all telecommunication rooms, with elevation drawings of all cabinets identifying components and interconnections.
5. Drawings shall be created in AutoCAD format. Handwritten drawings shall be accepted for draft or working copies only.

B. Cable Testing

1. Cable test results are to be provided in hard copy format as well as a PDF organized by building and telecommunication room.

C. Warranty

1. Provide certificate of manufacturer's extended warranty for the structured cabling system.

END OF SECTION 27 1500

GENERAL TECHNOLOGY NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. CONTRACTORS SHALL PROVIDE ALL INCIDENTAL MATERIALS AND LABOR FOR A COMPLETE AND FULLY FUNCTIONAL SYSTEM.
2. PRIOR TO BEGINNING WORK, CONTRACTORS ARE TO REVIEW BUILDING PLANS, INSTALLATION LOCATIONS, AND SITE CONDITIONS. NOTIFY THE TECHNOLOGY DESIGNER OF ANY CONDITIONS THAT MAY: PREVENT PROPER INSTALLATION AND OPTIMAL PERFORMANCE OF THE SYSTEMS, VOID THE MANUFACTURER'S WARRANTY, OR THAT CONFLICT WITH THE INTENT OF THE PROJECT. PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN RESOLVED. THE CONTRACTOR IS RESPONSIBLE FOR ANY ADDITIONAL WORK RELATED TO CORRECTING UNREPORTED CONFLICTS AND ISSUES, AT NO ADDITIONAL COST TO THE OWNER.
3. FIELD VERIFY LOCATIONS, CONDITIONS AND LENGTHS PRIOR TO INSTALLATION.
4. CONTRACTOR IS REQUIRED TO PROVIDE THEIR OWN PENETRATIONS, SLEEVES, AND CORES THROUGH ALL WALLS AND FLOORS. ALL SLEEVES SHALL HAVE NYLON BUSHINGS.
5. CONTRACTOR SHALL PROVIDE FIRESTOPPING ON PENETRATIONS PASSING THROUGH WALLS AND FLOORS IN WHICH THEY WORK.
6. CONTRACTOR SHALL COORDINATE TELECOMMUNICATION ROOM LAYOUTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATION.
7. CONTRACTOR SHALL COORDINATE ALL EQUIPMENT LOCATIONS AND ROUGH-IN REQUIREMENTS WITH BARTON MALOW AND ALL IMPACTED CONTRACTORS PRIOR TO INSTALLATIONS.
8. CONTRACTOR SHALL PROVIDE FACEPLATES, INSERTS, AND ADAPTERS AS NECESSARY FOR THEIR DEVICES TO FIT-IN AND WORK-WITH: RACEWAY; FLOOR, TABLE, AND BACK BOXES; AND ELECTRICAL OUTLETS, WHETHER EXISTING OR PROVIDED BY OTHERS.
9. CONTRACTOR SHALL PROVIDE PROTECTIVE GUARDS ON THEIR DEVICES (CLOCKS, PHONES, ACCESS POINTS, MOTION DETECTORS, ETC.) SUBJECT TO ABUSE IN GYMNASIUMS AND NATATORIUMS.

T3 SHEETS - STRUCTURED CABLING

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- LOCATED IN FLOOR BOX
- LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)
- LOCATED ON WALL, MID HEIGHT (36"-84" AFF)
- LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)
- LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

#	NUMBER OF DATA DROPS
AP	WIRELESS ACCESS POINT LOCATION, INCLUDE 1 DATA DROP
ATV	APPLE TV DEVICE LOCATION, INCLUDE 1 DATA DROP
DC	DIGITAL CLOCK LOCATION, INCLUDE 1 DATA DROP
PS	PULL STATION LOCATION, INCLUDE 1 DATA DROP
SFA	SOUNDFIELD AMPLIFIER LOCATION, INCLUDE 1 DATA DROP
WP	WALL PHONE LOCATION, INCLUDE 1 DATA DROP & WALL PHONE PLATE
VS	VIDEO SURVEILLANCE CAMERA LOCATION, INCLUDE 1 DATA DROP

SHEET INDEX:

Barton Malow

Barton Malow Builders
26500 American Drive
Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

TROY SCHOOL DISTRICT

Troy, Michigan

Project Number: TBD
Project Manager: Brian Jessie
Drawn By: Bill Dawson
Checked By: Brian Beck

Issued For	Date
BIDS	06/18/2024

Key Plan:

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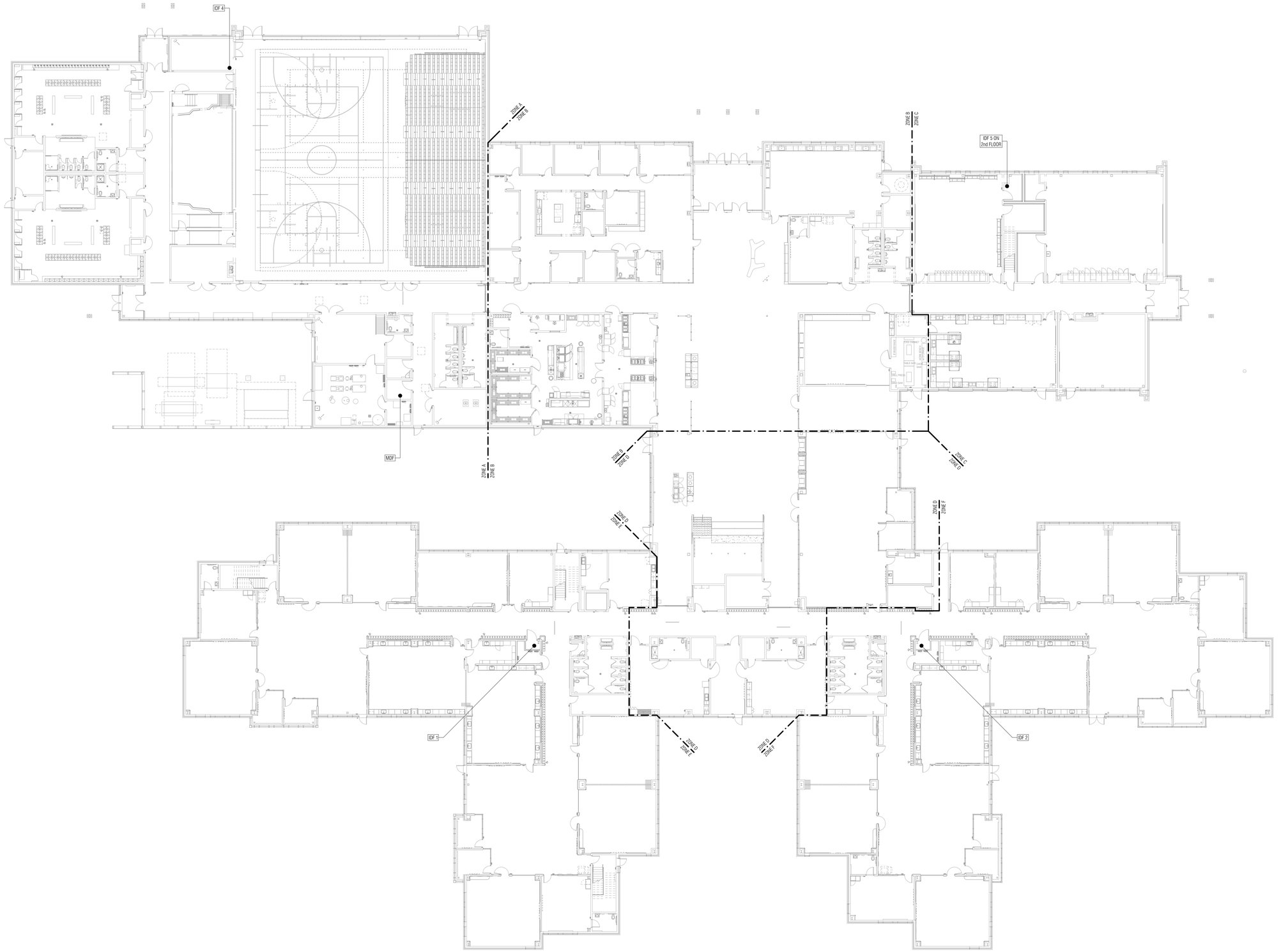
Scale: None

Bid Package 3
Smith Middle School

Smith
Middle School

Technology Systems

T0



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Barton Malow Builders
26500 American Drive
Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

Troy School District

Troy, Michigan

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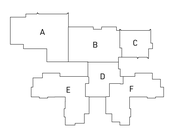

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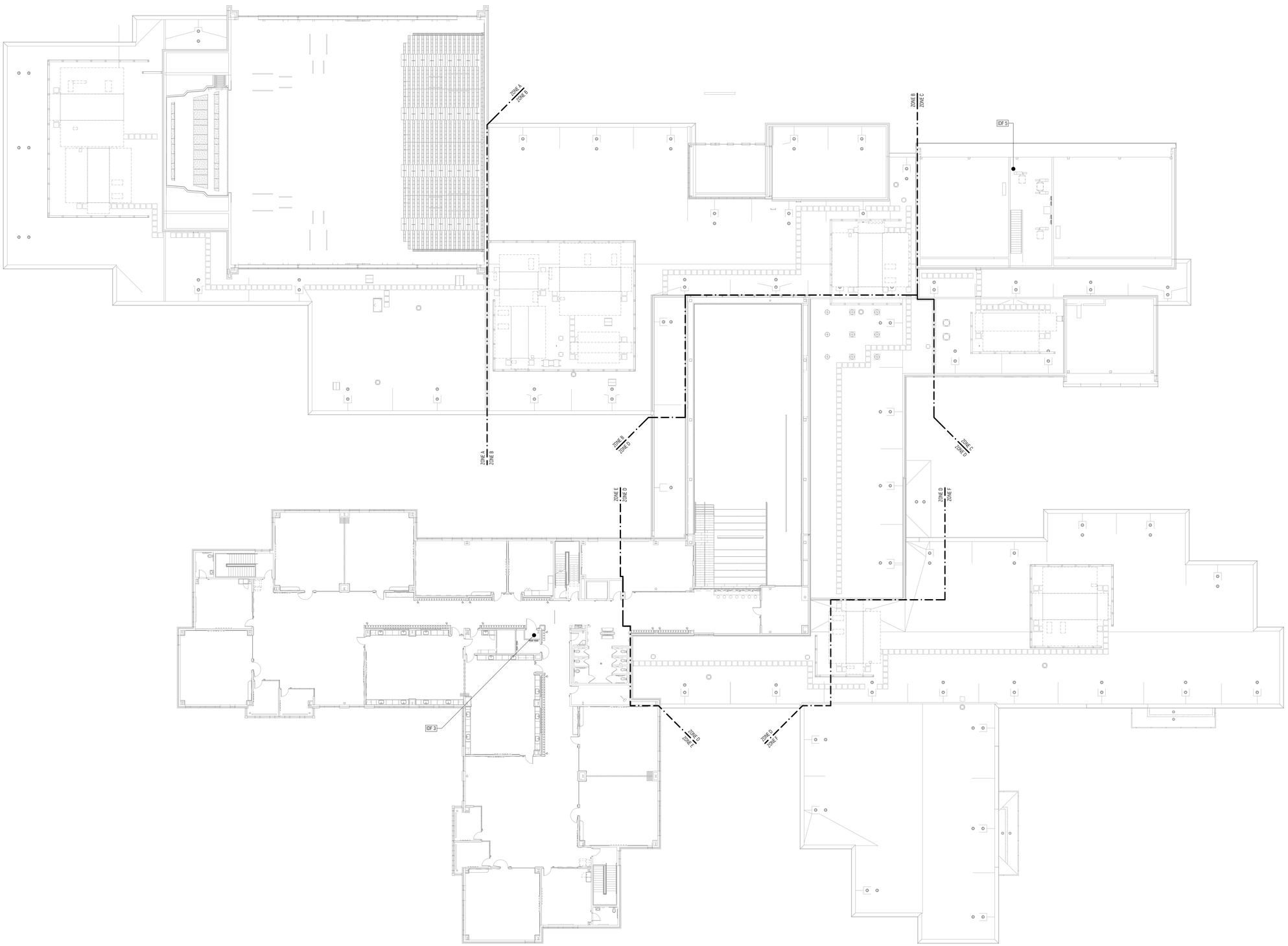
Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Composite
New Floor Plan

T1.1



Barton Malow

Barton Malow Builders
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Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

TROY SCHOOL DISTRICT

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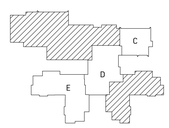

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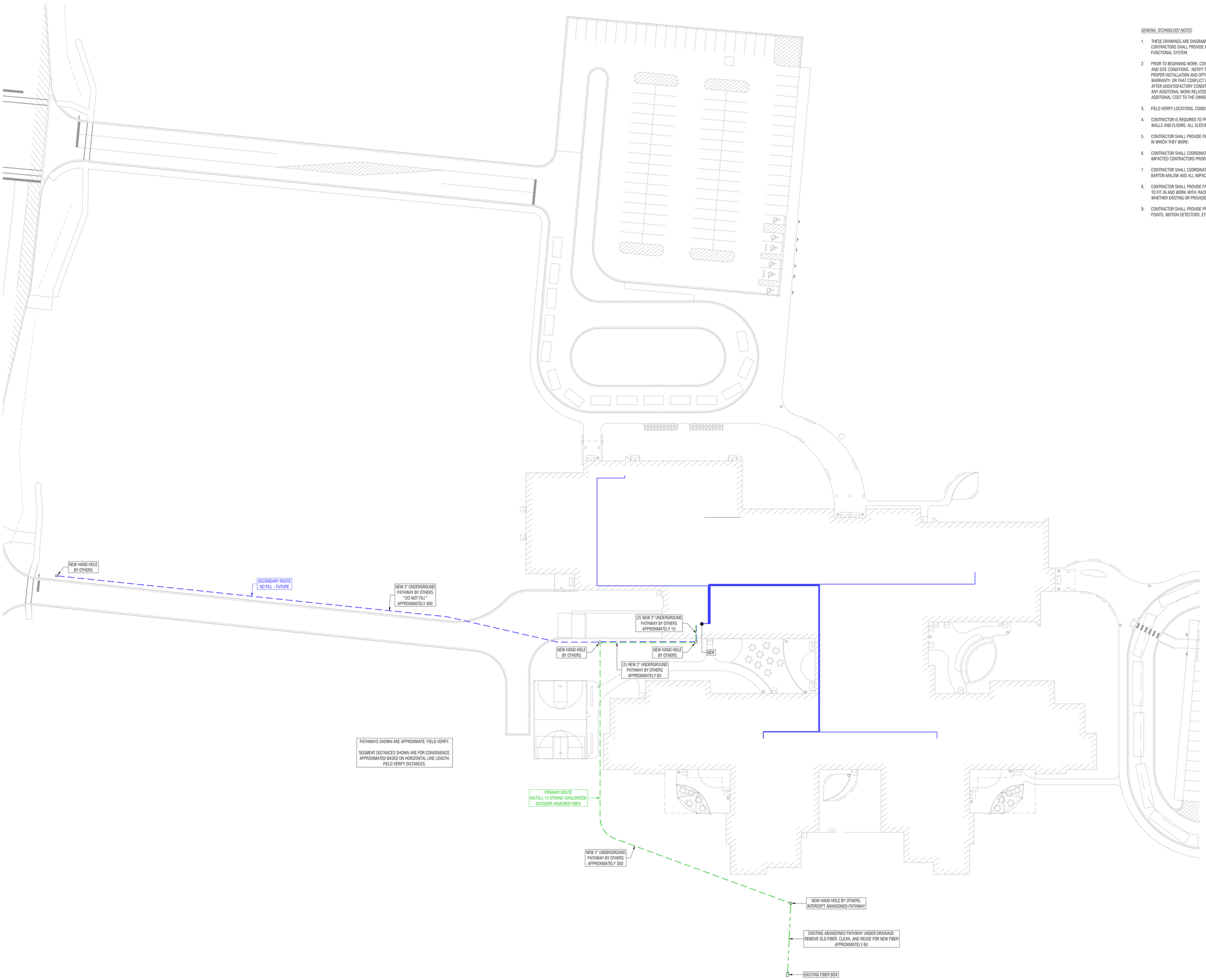
Bid Package 3
Smith Middle School

Smith
Middle School

2nd Floor Composite
New Floor Plan

T1.2

N



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Barton Malow

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26500 American Drive
Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

TROY SCHOOL DISTRICT

Troy, Michigan

Project Number: TBD
Project Manager: Brian Jessie
Drawn By: Bill Dawson
Checked By: Brian Beck

Issued For	Date
BIDS	06/18/2024

Key Plan:

Native Page Size: 42" X 30"

Scale: 1/32" = 1'

0' 8'16' 32' 64'

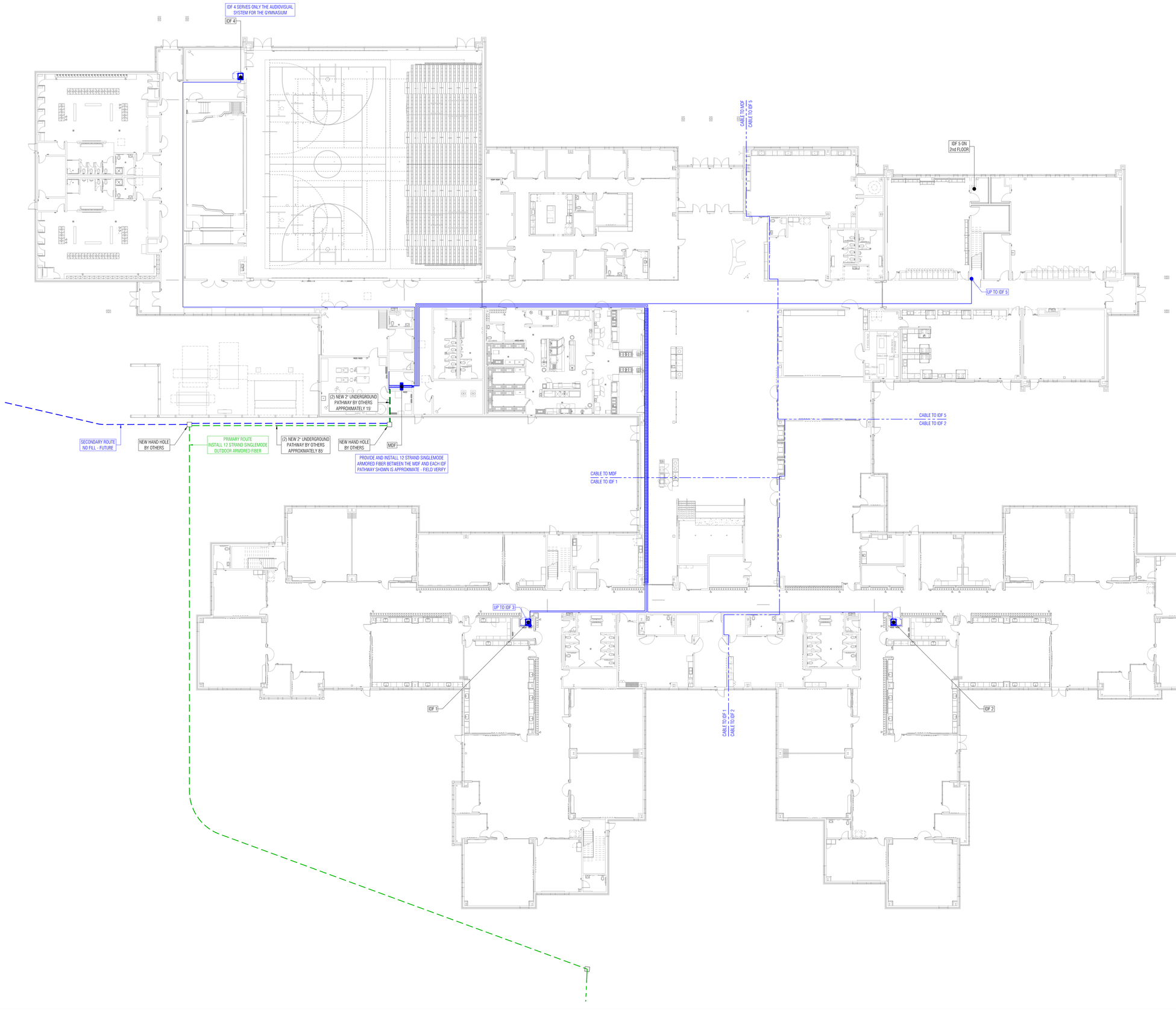
Bid Package 3
Smith Middle School

Smith
Middle School

Site Plan
Fiber Infrastructure

T2.1

N



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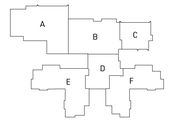

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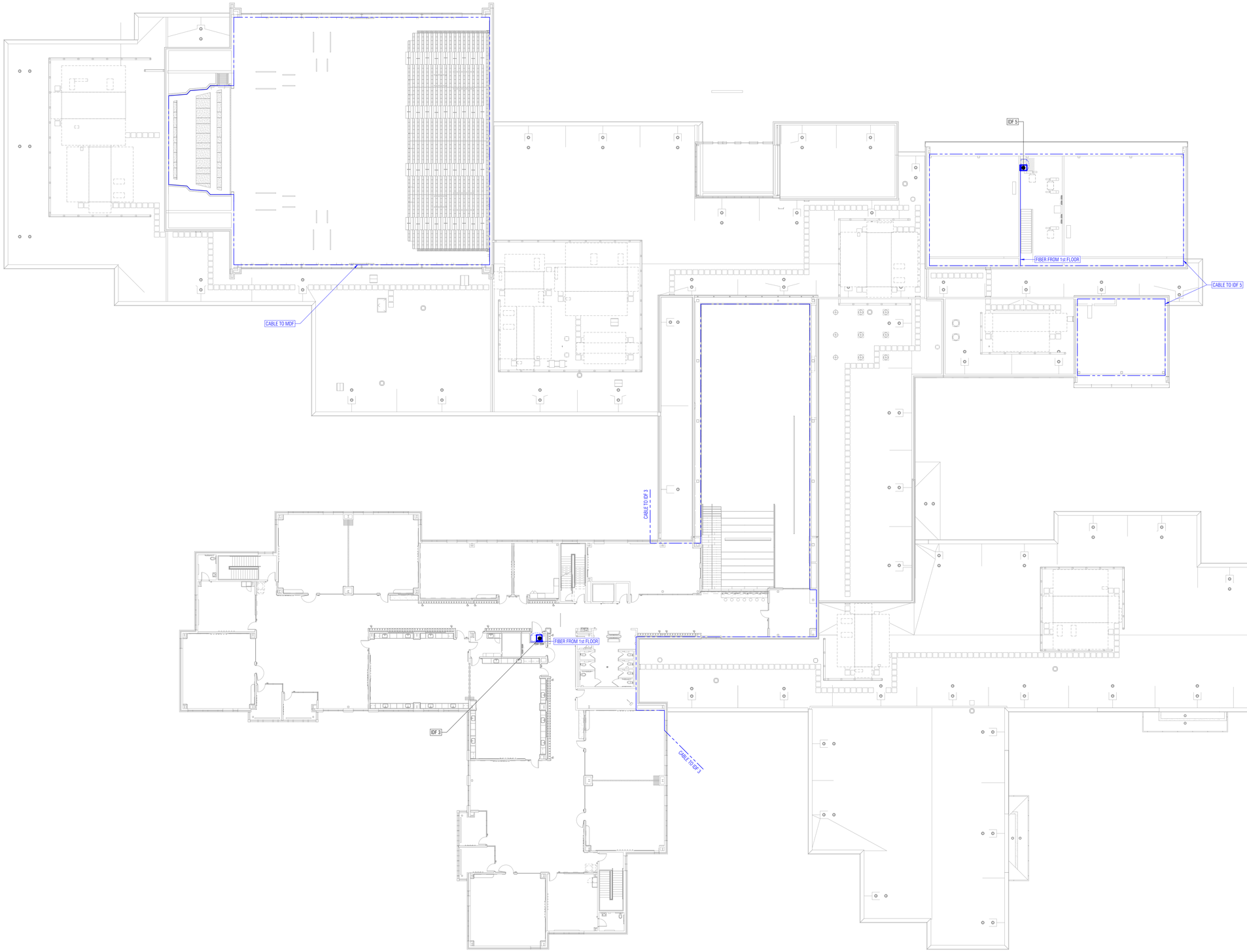
Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Composite
Fiber Infrastructure

T2.1

N



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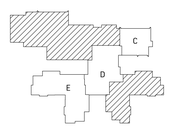

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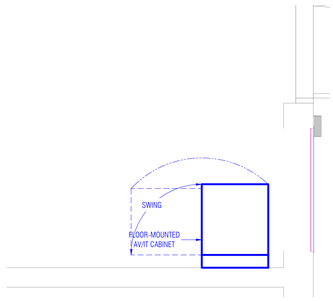
Bid Package 3
Smith Middle School

Smith
Middle School

2nd Floor Composite
Fiber Infrastructure

T2.2

N



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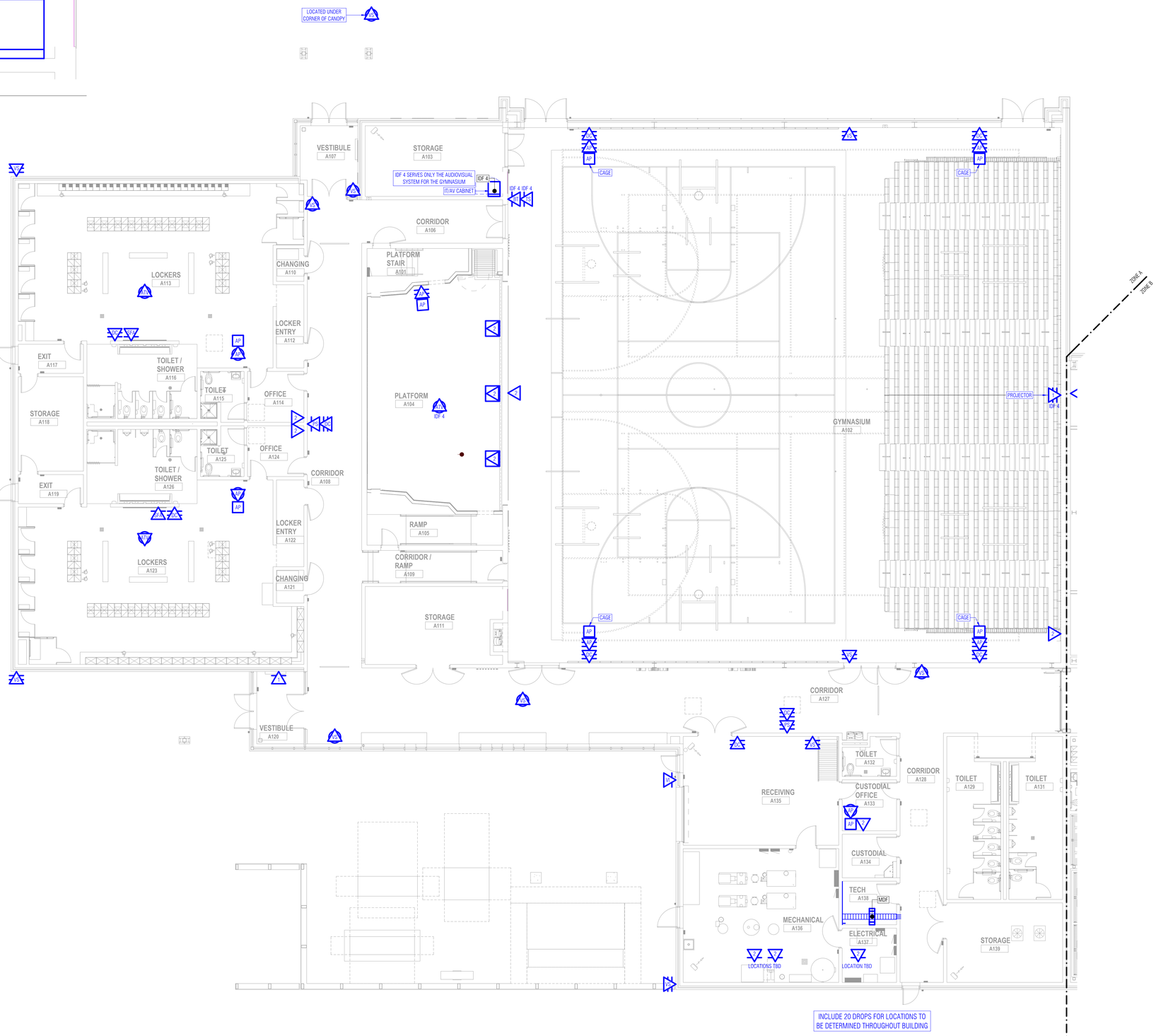
SCALE: 1/2" = 1'



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T3 SHEETS - STRUCTURED CABLING

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

LOCATED IN FLOOR BOX

LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)

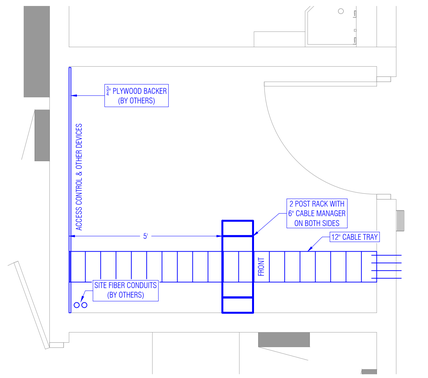
LOCATED ON WALL, MID HEIGHT (36"-84" AFF)

LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)

LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

#	NUMBER OF DATA DROPS
AP	WIRELESS ACCESS POINT LOCATION, INCLUDE 1 DATA DROP
ATV	APPLE TV DEVICE LOCATION, INCLUDE 1 DATA DROP
DC	DIGITAL CLOCK LOCATION, INCLUDE 1 DATA DROP
PS	PULL STATION LOCATION, INCLUDE 1 DATA DROP
SFA	SOUNDFIELD AMPLIFIER LOCATION, INCLUDE 1 DATA DROP
WP	WALL PHONE LOCATION, INCLUDE 1 DATA DROP & WALL PHONE PLATE
VS	VIDEO SURVEILLANCE CAMERA LOCATION, INCLUDE 1 DATA DROP



Enlarged MDF Plan
SCALE: 1/2" = 1'

Barton Malow

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248.436.5000
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Owner:

Troy School District

Troy, Michigan

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Issued For	Date
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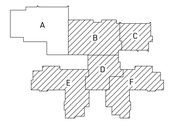

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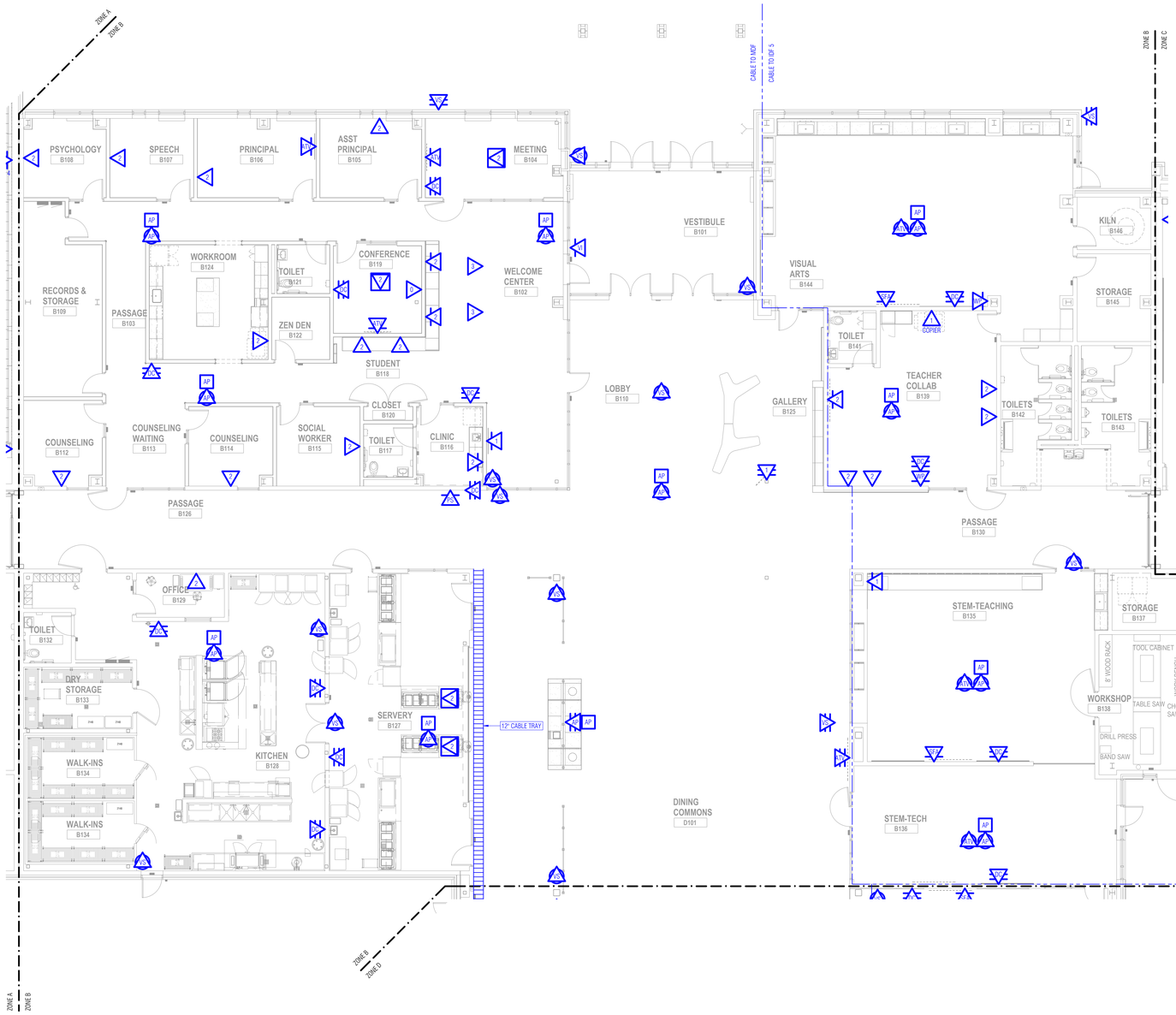
Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Zone A
Structured Cabling

T3.1A



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T3 SHEETS - STRUCTURED CABLING

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- LOCATED IN FLOOR BOX
- LOCATED ON WALL, LOW HEIGHT (0'-36" AFF)
- LOCATED ON WALL, MID HEIGHT (36'-84" AFF)
- LOCATED ON WALL, HIGH HEIGHT (84'+ AFF)
- LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

#	NUMBER OF DATA DROPS
AP	WIRELESS ACCESS POINT LOCATION, INCLUDE 1 DATA DROP
ATV	APPLE TV DEVICE LOCATION, INCLUDE 1 DATA DROP
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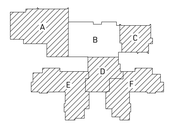

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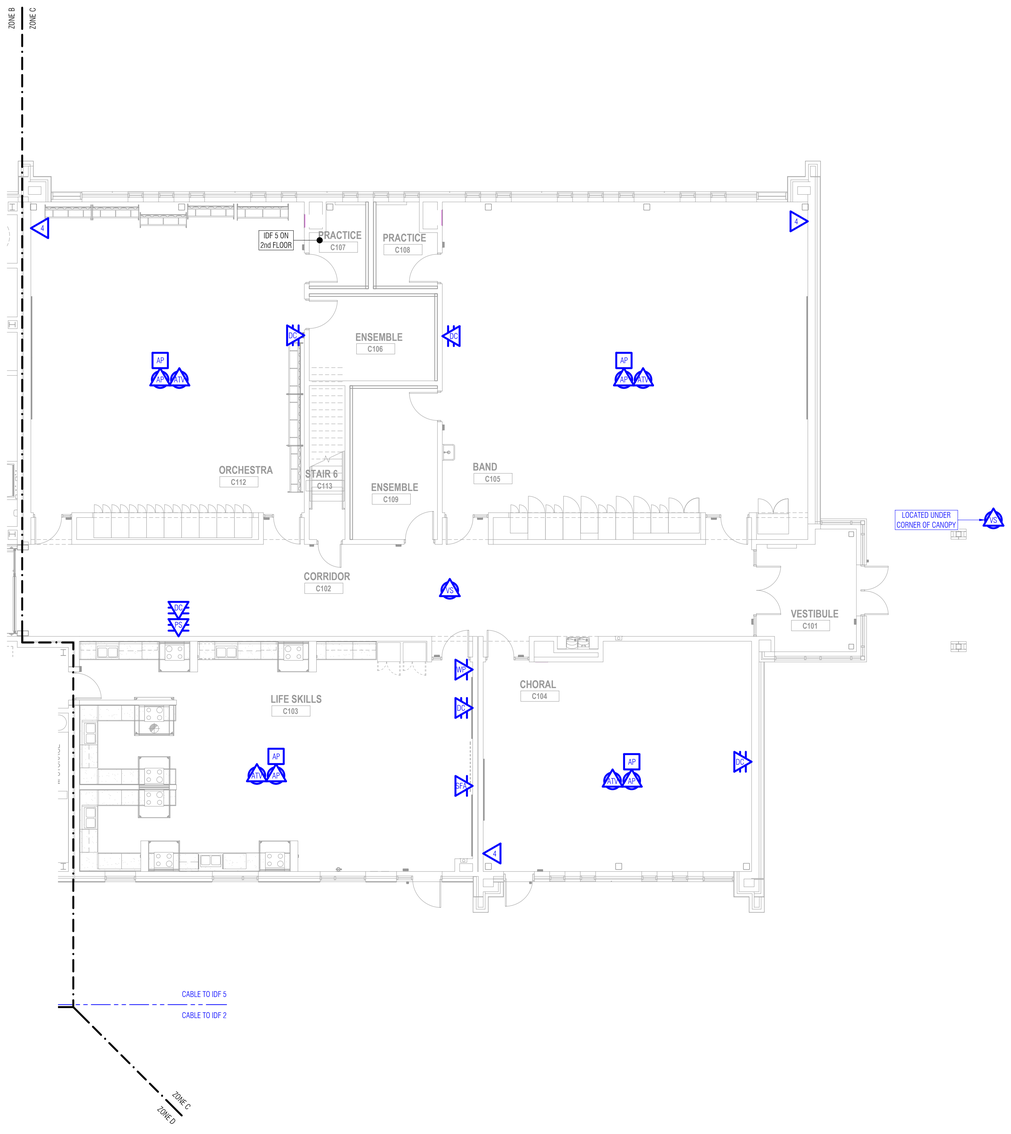
Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Zone B
Structured Cabling

T3.1B

N



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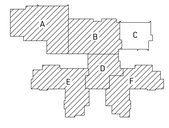

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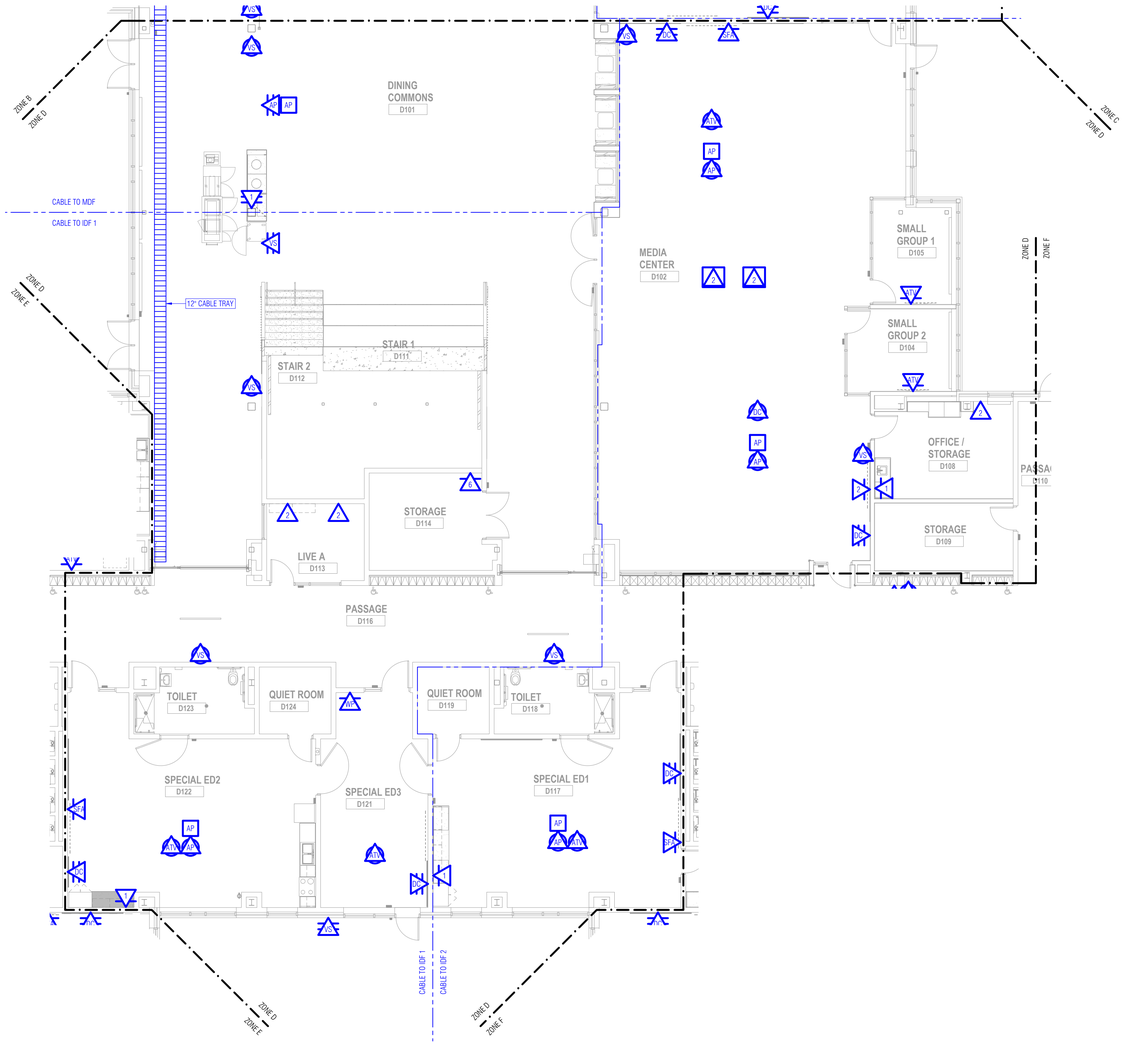
Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Zone C
Structured Cabling

T3.1C

N



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T3 SHEETS - STRUCTURED CABLING

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OUTLET / PLATE ABBREVIATIONS

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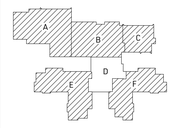

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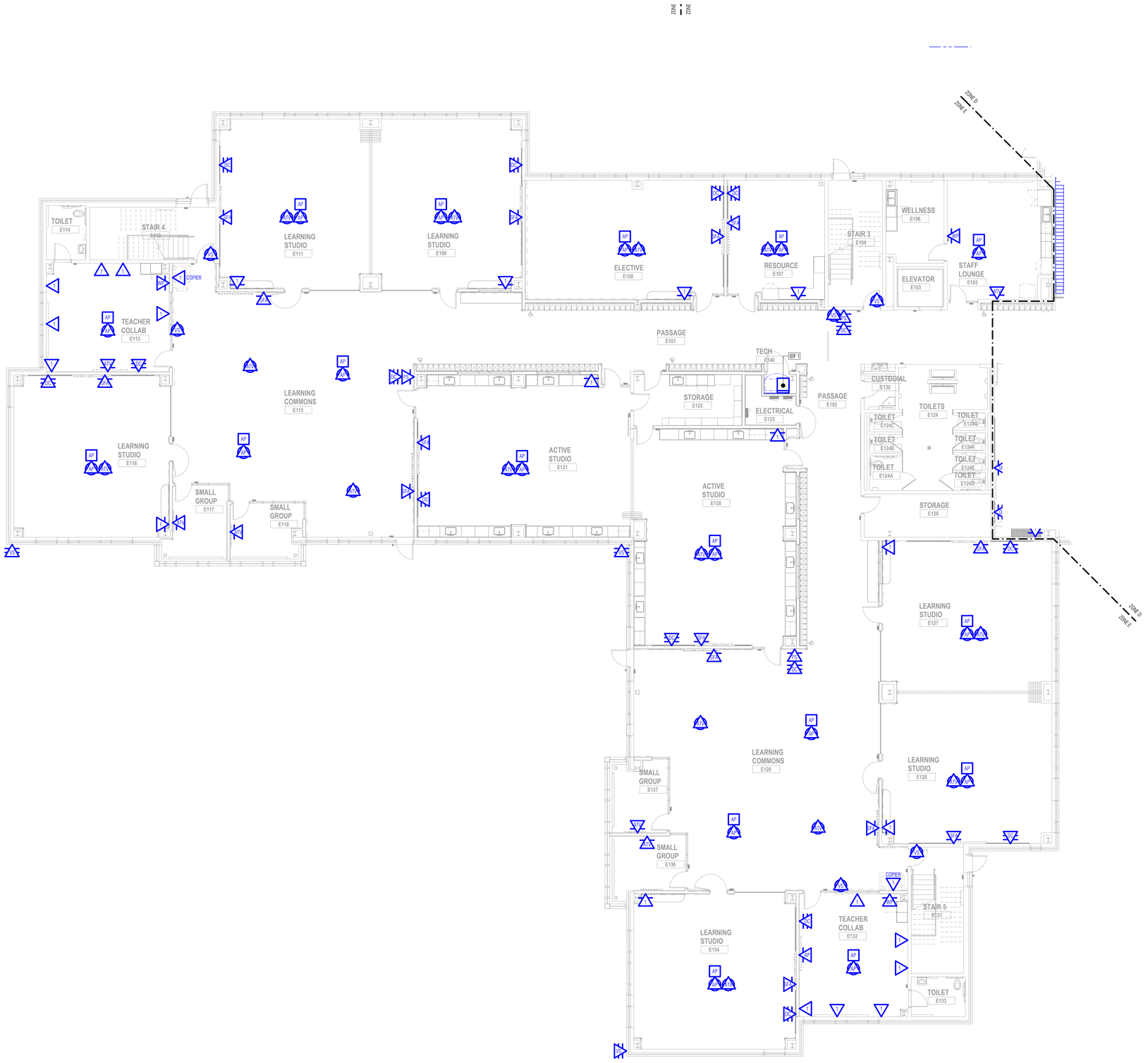
Smith Middle School

Smith
Middle School

1st Floor Zone D
Structured Cabling

N

T3.1D



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T3 SHEETS - STRUCTURED CABLING

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

AP — LOCATED IN FLOOR BOX

AP — LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)

AP — LOCATED ON WALL, MID HEIGHT (36"-84" AFF)

AP — LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)

AP — LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

#	NUMBER OF DATA DROPS
AP	WIRELESS ACCESS POINT LOCATION, INCLUDE 1 DATA DROP
ATV	APPLE TV DEVICE LOCATION, INCLUDE 1 DATA DROP
DC	DIGITAL CLOCK LOCATION, INCLUDE 1 DATA DROP
PS	PULL STATION LOCATION, INCLUDE 1 DATA DROP
SFA	SOUNDFIELD AMPLIFIER LOCATION, INCLUDE 1 DATA DROP
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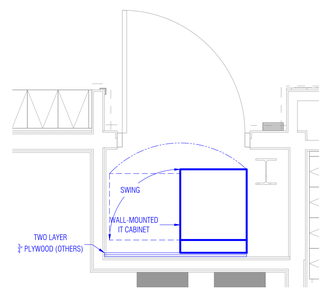
VS	VIDEO SURVEILLANCE CAMERA LOCATION, INCLUDE 1 DATA DROP



Enlarged IDF 1 Plan
SCALE: 1/2" = 1'

Barton Malow

Barton Malow Builders
26500 American Drive
Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

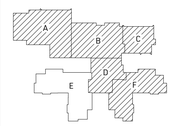
TROY SCHOOL DISTRICT

Troy, Michigan

Project Number: TBD
Project Manager: Brian Jessie
Drawn By: Bill Dawson
Checked By: Brian Beck

Issued For	Date
BIDS	06/18/2024

Key Plan:



Native Page Size: 42" X 30"

Scale: 1/4" = 1'

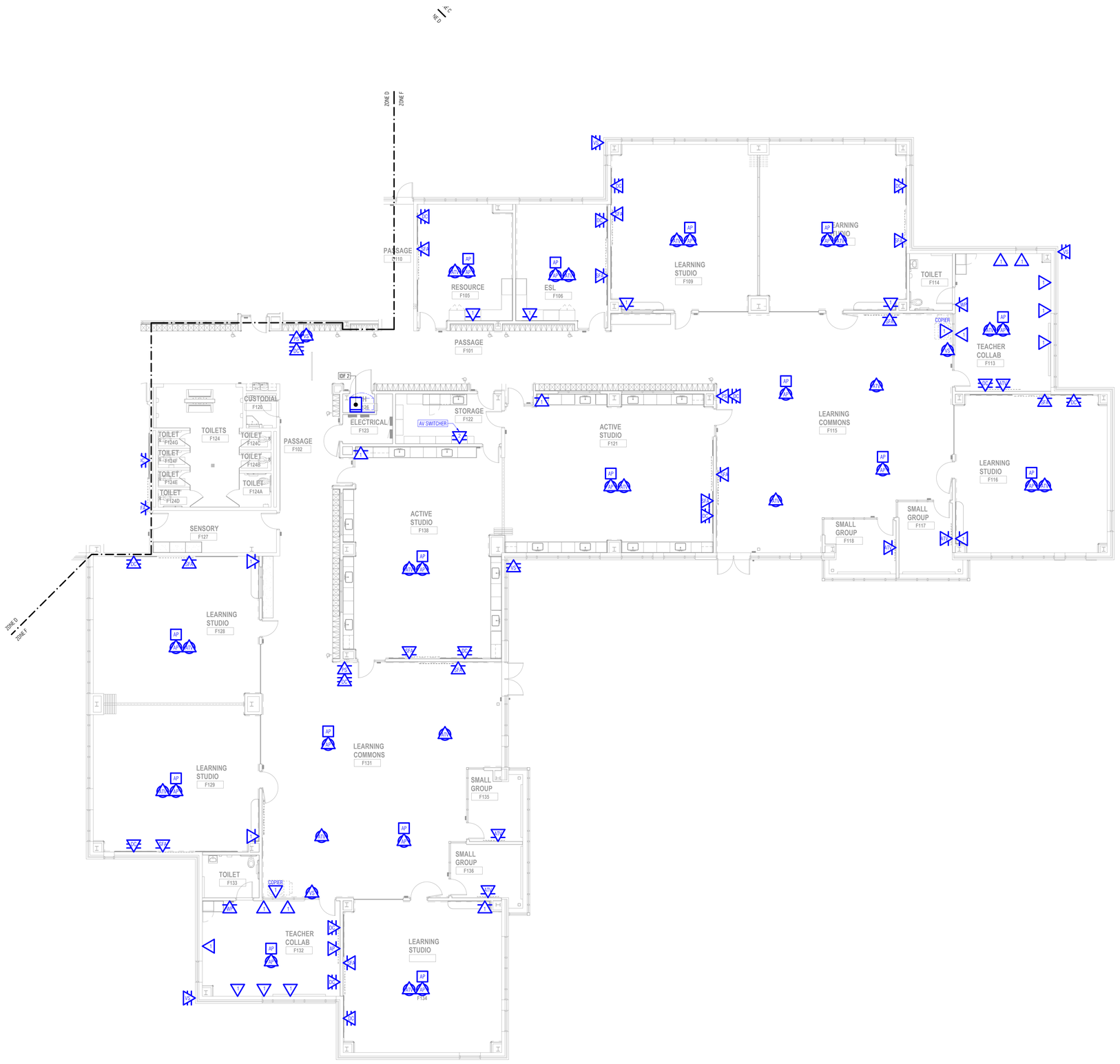
0' 1' 2' 4' 8'

Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Zone E
Structured Cabling

T3.1E



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T3 SHEETS - STRUCTURED CABLING

SYMBOL STYLES & ABBREVIATIONS:

CABLING OUTLET / WALL PLATE

- LOCATED IN FLOOR BOX
- LOCATED ON WALL, LOW HEIGHT (0"-36" AFF)
- LOCATED ON WALL, MID HEIGHT (36"-84" AFF)
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- LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

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AP	WIRELESS ACCESS POINT LOCATION, INCLUDE 1 DATA DROP
ATV	APPLE TV DEVICE LOCATION, INCLUDE 1 DATA DROP
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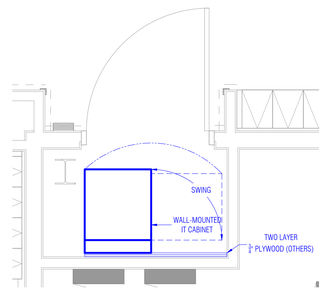
VS	VIDEO SURVEILLANCE CAMERA LOCATION, INCLUDE 1 DATA DROP



Enlarged IDF 2 Plan
SCALE: 1/2" = 1'

Barton Malow

Barton Malow Builders
26500 American Drive
Southfield, MI 48034

248.436.5000
www.bartonmalow.com

Owner:

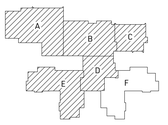
TROY SCHOOL DISTRICT

Troy, Michigan

Project Number: TBD
Project Manager: Brian Jessie
Drawn By: Bill Dawson
Checked By: Brian Beck

Issued For	Date
BIDS	06/18/2024

Key Plan:



Native Page Size: 42" X 30"

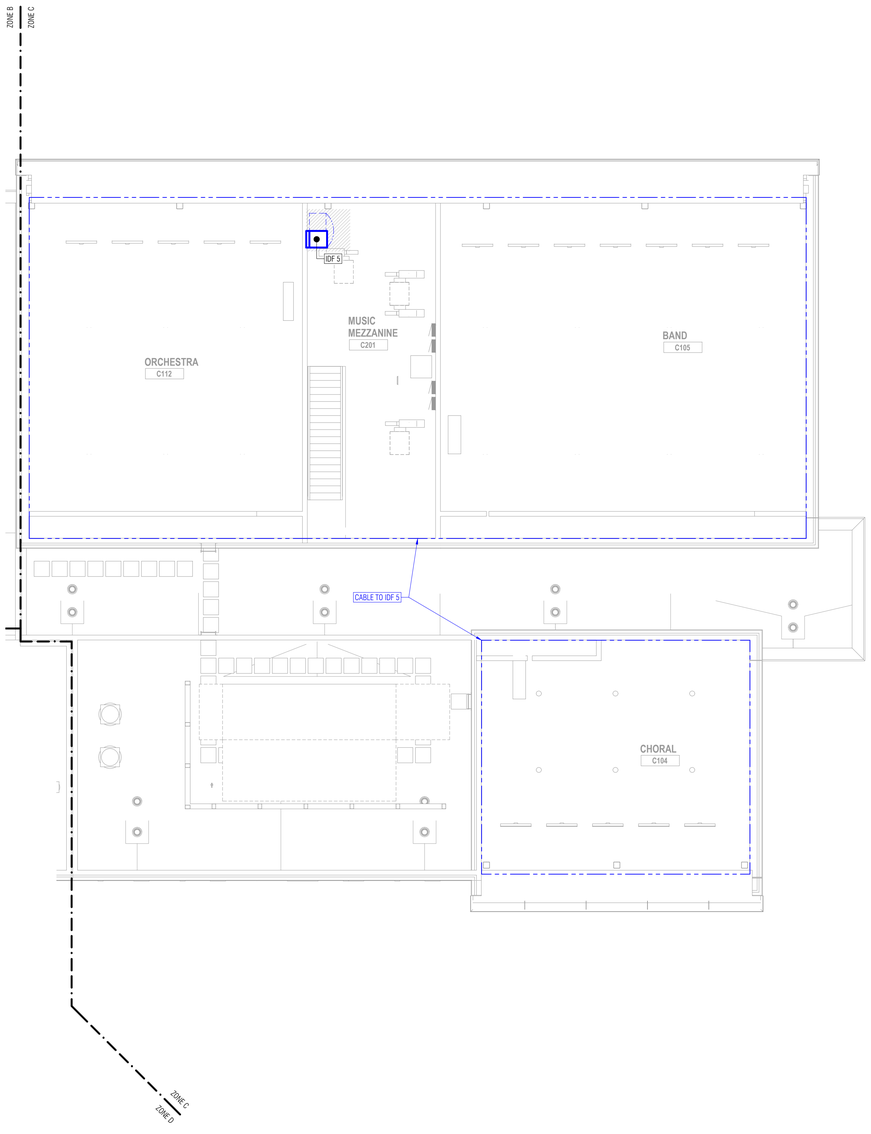
Scale: 1/8" = 1'
0' 2' 4' 8' 16'

Bid Package 3
Smith Middle School

Smith
Middle School

1st Floor Zone F
Structured Cabling

T3.1F



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T3 SHEETS - STRUCTURED CABLING

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LOCATED ON WALL, MID HEIGHT (36'-84" AFF)

LOCATED ON WALL, HIGH HEIGHT (84"+ AFF)

LOCATED AT CEILING

OUTLET / PLATE ABBREVIATIONS

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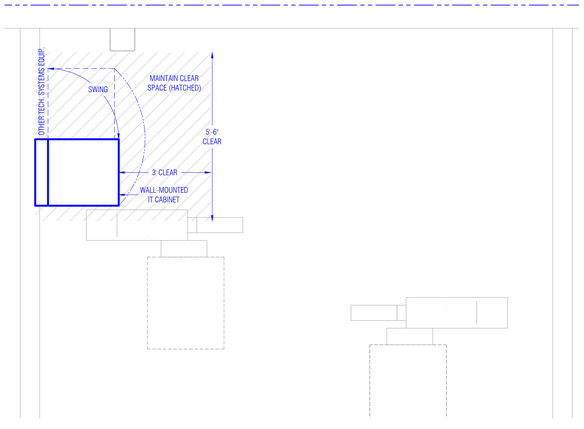

Enlarged IDF 5 Plan
SCALE: 1/2" = 1'

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Owner:

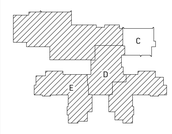
Troy School District

Troy, Michigan

Project Number: TBD
Project Manager: Brian Jessie
Drawn By: Bill Dawson
Checked By: Brian Beck

Issued For	Date
BIDS	06/18/2024

Key Plan:



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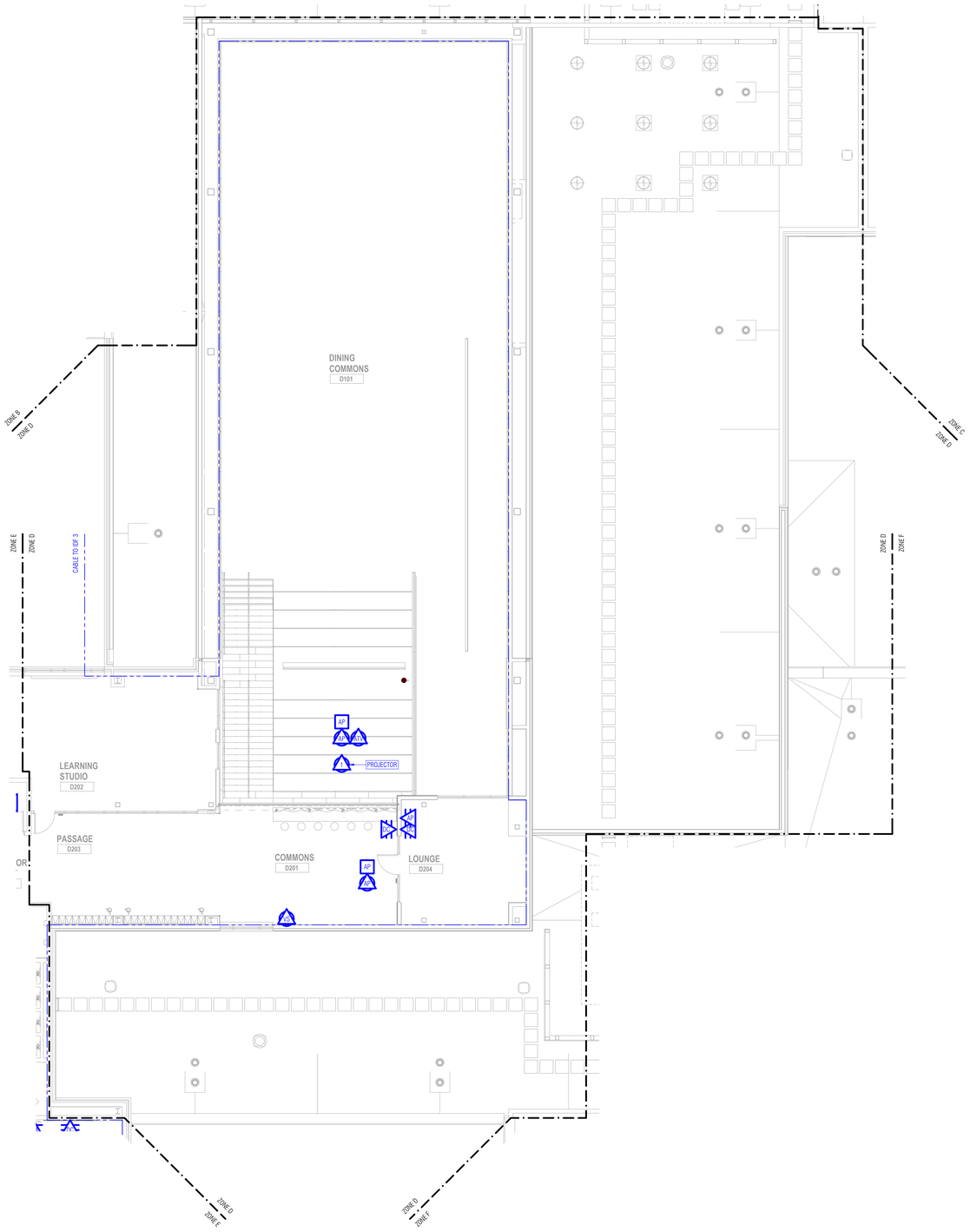
Bid Package 3
Smith Middle School

Smith
Middle School

2nd Floor Zone C
Structured Cabling

T3.2C



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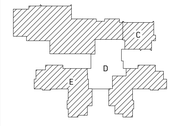


Native Page Size: 42" X 30"

Scale: 1/8" = 1'

0' 2' 4' 8' 16'

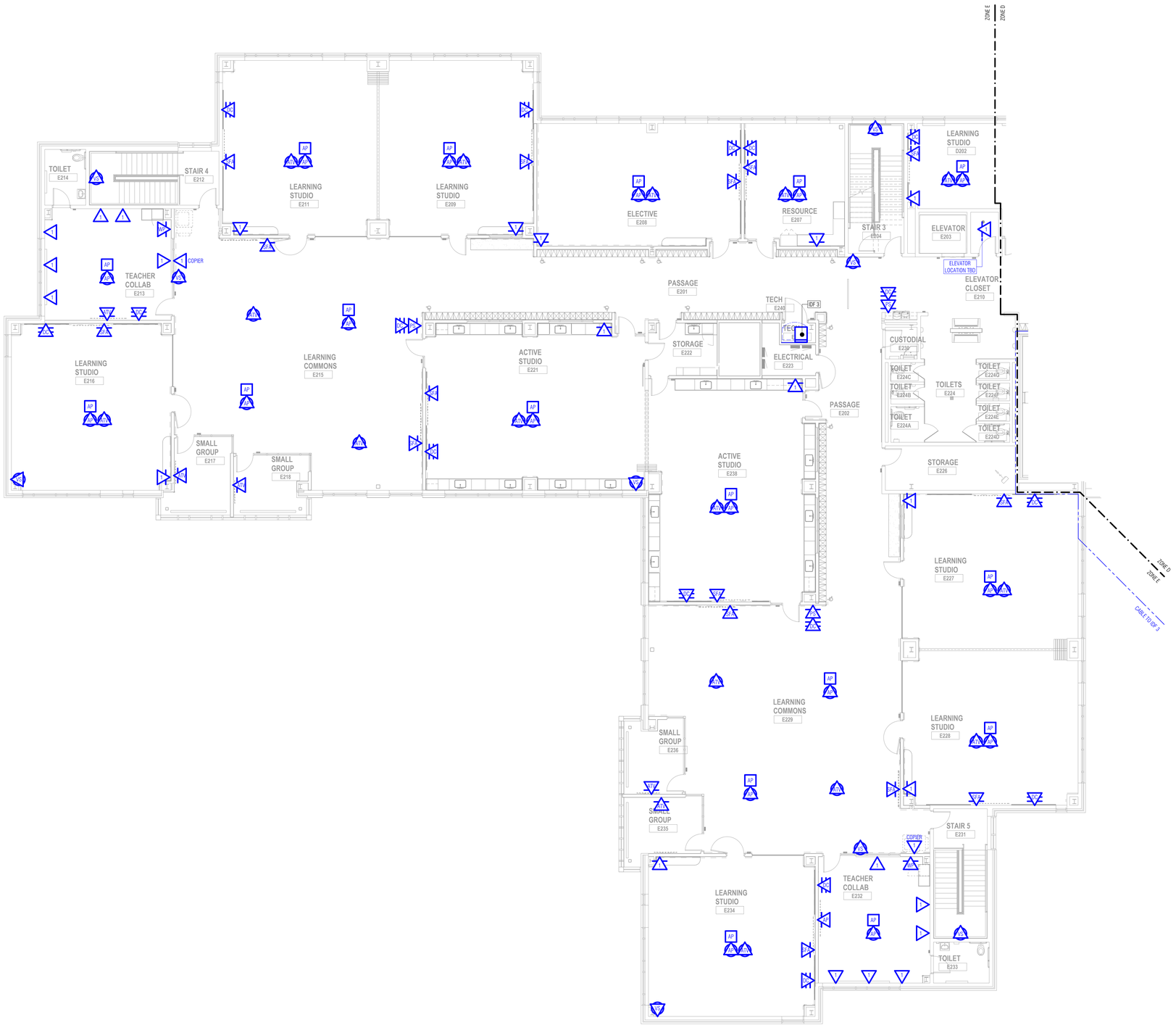
Bid Package 3
Smith Middle School

Smith
Middle School

2nd Floor Zone D
Structured Cabling

N

T3.2D



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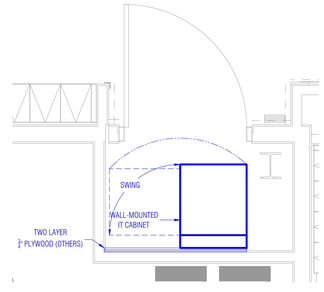

Enlarged IDF 3 Plan
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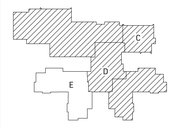

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Bid Package 3
Smith Middle School

Smith
Middle School

2nd Floor Zone E
Structured Cabling

T3.2E