# *Addendum*

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|---|---|
| **Date** | March 18, 2026 |
| **Project Name** | Dexter Community Schools – Dexter High School New Field House |
| **TMP Project No(s).** | 25026E |
| **Design Release No.** | Two (2) |
| **Addendum No.** | One (1) |

The Bidding Documents are modified, supplemented, or augmented as follows and the Addendum is hereby made a part of the proposed Contract Documents.

The following Drawing(s) and Attachment(s) are issued with this Addendum:

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|---|---|
| **Drawing No(s).:** | S1.0A, S1.0B, S1.2A, S4.2, S6.1, AD.1, A1.2A, A7.1, A9.1A, A9.1B, A9.2A, A9.2B, A9.3, A10.1A, A10.2A, M2.0A, M2.1A, M4.1A, E2.1A, E2.2A, E3.1A, E3.2A, E5.1, E5.2, E7.1, E7.2, E7.3, E7.10, E7.11, TC101, TC102, TC201A, TC301, TC302, TC303, TC402A, TC502, TC503, TC505, TR101, TR102, TR201A, TR201B, TR202A |
| **Attachment(s):** | Specification Section(s): 00 0110, 04 2000, 07 9513, 08 7100, 09 3000, 09 6513, 09 6566, 11 6623, 221319, 230933, 237200, 32 0519, 32 1126 |

| **Item No.** | **Specification Changes** |
|---|---|
| SC-1 | Refer to Section No. 00 0110 - TABLE OF CONTENTS (reissued):<br>A. Refer to Issuance Column revised to indicate documents affected by this Addendum. |
| SC-2 | Refer to Section No. 04 2000 – UNIT MASONRY (reissued):<br>A. Refer to Paragraph 2.03 revised to modify Sentence C as indicated.<br>B. Refer to Paragraph 2.05 revised to delete Sentences I and L. as indicated.<br>C. Refer to Paragraph 3.01 deleted as indicated. |
| SC-3 | Refer to Section No. 07 9513 - EXPANSION JOINT COVER ASSEMBLIES (not reissued):<br>A. Section deleted from Specification Manual. |
| SC-4 | Refer to Section No. 08 7100 – DOOR HARDWARE (new):<br>A. Section added to Specification Manual. |

SC-5 Refer to Section No. 09 3000 – HARD TILING (reissued):

A. Refer to paragraph 2.02.1, added additional information to clarify size.

SC-6 Refer to Section No. 09 6513 – RESILIENT BASES AND ACCESSORIES (reissued):

A. Refer to paragraph 2.01.A.2, added style information for STR1.

SC-7 Refer to Section No. 09 6566 – RESILIENT ATHLETIC FLOORING (reissued):

A. Refer to paragraph 2.01.B.g, revised to add game line paint as indicated.

SC-8 Refer to Section 11 6623 – GYMNASIUM EQUIPMENT (reissued):

A. Refer to Paragraph 1.01 revised to delete Sentence A as indicated.
B. Refer to Sentence 2.03.C.2.a. revised 5 feet in lieu of 8 feet, as indicated.
C. Refer to Sentence 2.04.A.2 revised to add Sentence a. as indicated.
D. Refer to Paragraph 2.05 revised as follows:
    a. Sentence A.2.a. revised to 4 inches in lieu of 3 inches as indicated.
    b. Sentence A.4 added for a Second Story Socket Form as indicated.
    c. Sentence B added for Long / Tripple Jump Take-off Boards as indicated.

SC-9 Refer to Section No. 221319 – DRAINAGE PIPING SPECIALTIES (reissued):

A. Added new section to Specification Manual.

SC-10 Refer to Section No. 230933 – TEMPERATURE CONTROLS (reissued):

A. Added Control Solutions, Inc to list of approved contractors.

SC-11 Refer to Section No. 237200 – AIR-TO-AIR ENERGY RECOVERY EQUIPMENT (new):

A. Section added to Specification Manual.

SC-12 Refer to Section No. 32 0519 – GEOSYNTHETICS FOR EXTERIOR IMPROVEMENTS (new):

A. Section added to Specification Manual.

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| SC-13 | Refer to Section No. 32 1120 – AGGREGATE BASE COURSES (new):<br>A. Section added to Specification Manual. |

| **Item No.** | **Structural Drawing Changes** |
|---|---|
| SD-1 | Refer to Drawing No. S1.0A (reissued):<br>A. Deleted Detail cut 1/S4.2 as indicated.<br>B. Added Detail cut 11/S4.2 as indicated.<br>C. Revised footing elevations as indicated.<br>D. Revised stoop slab sizes as indicated |
| SD-2 | Refer to Drawing No. S1.0B (reissued):<br>A. Revised Detail cut 12/S4.1 as indicated.<br>B. Added retaining wall as indicated.<br>C. Added Detail cut 10/S4.2 as indicated.<br>D. Added 12/S4.2 as indicated.<br>E. Revised pole vault note as indicated. |
| SD-3 | Refer to Drawing No. S1.2A (reissued):<br>A. Added Detail cut 12/S6.1 as indicated.<br>B. Added C8 framing at Volleyball sleeves as indicated.<br>C. Revised Detail cut 7/S6.1 direction as indicated.<br>D. Revised canopy framing dimensions as indicated. |
| SD-4 | Refer to Drawing No. S4.2 (reissued):<br>A. Refer to Detail 9. Revised top course to 12” CMU as indicated. Revised brick ledge dimension as indicated.<br>B. Added Details 10, 11, and 12 as indicated. |
| SD-5 | Refer to Drawing No. S6.1 (reissued):<br>A. Deleted Detail 3/S6.1 as indicated.<br>B. Refer to Details 8 and 9, revised deck direction as indicated.<br>C. Revised Details 7 and 9 as indicated. |

| Item No. | Architectural Drawing Changes |
|---|---|
| AD-1 | Refer to Drawing No. AD.1 (reissued):<br>A. Revised door hardware sets as indicated. |
| AD-2 | Refer to Drawing No. A1.2A (reissued):<br>A. Revised volleyball pole sleeves in concrete from 3'' to 4'' diameter as indicated. |
| AD-3 | Refer to Drawing No. A7.2 (reissued):<br>A. Refer to elevation 2, added note to align banners and light fixtures as indicated. |
| AD-4 | Refer to Drawing No. A9.1A, A9.1B, A9.2A, and A9.2B (reissued):<br>A. Removed Projection Screen Schedule as indicated. |
| AD-5 | Refer to Drawing No. A9.3 (reissued):<br>A. Added Dreadnought Logo Floor Plan as indicated.<br>B. Added Dexter Logo Floor Plan as indicated.<br>C. Added general notes as indicated. |
| AD-6 | Refer to Drawing No. A10.1A (reissued):<br>A. Revised flooring at A119 to RSF2B as indicated.<br>B. Revised specific note for flooring at A117 as indicated. |
| AD-7 | Refer to Drawing No. A10.2A (reissued):<br>A. Added game lines at A201, as indicated.<br>B. Revised specific note for flooring at 202 as indicated. |

| Item No. | Mechanical Drawing Changes |
|---|---|
| MD-1 | Refer to Drawing No. M2.0A (reissued):<br>A. Added underground storm piping. |
| MD-2 | Refer to Drawing No. M2.1A (reissued):<br>A. Added roof drains and associated RC and ORC piping to canopy. |

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| MD-3 | Refer to Drawing No. M4.1A (reissued):<br>A. Shifted supply duct main location. |

| **Item No.** | **Electrical Drawing Changes** |
|---|---|
| ED-1 | Refer to Drawing No. E2.1A (reissued):<br>A. Added mounting height note for light fixture type L10 in the lobby.<br>B. Designated one L1 fixture in the passage as a night light/emergency fixture.<br>C. Indicated fixture label and circuit designation at 2x4 light fixture at the toilet entrance. |
| ED-2 | Refer to Drawing No. E2.2A (reissued):<br>A. Added exit sign to the west stair entrance.<br>B. Added construction note 8 at fixture type L11 in the elevator hoistway as indicated.<br>C. Revised circuiting for the EBU in the electrical room as indicated. |
| ED-3 | Refer to Drawing No. E3.1A (reissued):<br>A. Added circuit numbers for the future hand dryers in toilet rooms as indicated.<br>B. Revised TWCP location and associated power connection as indicated.<br>C. Indicated location of turf equipment controller in J.C. A120. |
| ED-4 | Refer to Drawing No. E3.2A (reissued):<br>A. Revised inverter footprint in electrical room.<br>B. Revised key notes 2, 5, 17 and 19 as indicated.<br>C. Revised hardwired connection for ACU-1 to a non-fused disconnect switch.<br>D. Revised DF-1 thru DF-4 circuiting as indicated & revised receptacle to non-fused disconnect.<br>E. Revised smoke detector to heat detector in elevator hoiseway. |
| ED-6 | Refer to Drawing No. E5.1 (reissued):<br>A. Added (2) 200A spaces in MSB-FH & associated keynote #4 as indicated.<br>B. Indicated RP-FH-2 as subfed from RP-FH-1. |

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| ED-7 | Refer to Drawing No. E5.2 (reissued):<br>A. Added note inside inverter panel schedule.<br>B. Updated panel schedules room numbers to match Architectural Rooms.<br>C. Revised 10A breaker to 15A in DP-FHM as indicated.<br>D. Revised TU-03 breaker to 15A/2P & added (1) 20A spare as indicated.<br>E. Revised 20A breaker to 15A for ACU-1/ACCU-1 as indicated.<br>F. Revised DF-1 thru DU-4 from 15A/1P to 15A/2P to match mechanical as indicated.<br>G. Revised Inverter breaker in panelboard LP-FH as indicated. |
| ED-8 | Refer to Drawing No. E7.1 (reissued):<br>A. Removed telecommunication outlet detail as indicated.<br>B. Revised lighting controller detail as indicated. |
| ED-9 | Refer to Drawing No. E7.2 (reissued):<br>A. Revised grounding system diagram primary service detail as indicated.<br>B. Revised main telecommunications room grounding diagram detail as indicated. |
| ED-10 | Refer to Drawing No. E7.3 (reissued):<br>A. Revised smoke detector to heat detector in elevator detail as indicated.<br>B. Eliminated unused/not applicable inputs/outputs from fire alarm matrix as indicated.<br>C. Revised note 1 in Turf & Mezzanine Equipment Relay Controller Detail as indicated. |
| ED-11 | Refer to Drawing No. E7.10 (reissued):<br>A. Revised lighting control schedule as indicated. |
| ED-12 | Refer to Drawing No. E7.11 (reissued):<br>A. Revised luminaire schedule as indicated. |
| **Item No.** | **Technology Drawing Changes** |
| TD-1 | Refer to Drawing No. TC101 (reissued):<br>A. Updated schedule and detail with correct info as indicated. |

TD-2 Refer to Drawing No. TC102 (reissued):
A. Updated connectivity codes with correct info as indicated.

TD-3 Refer to Drawing No. TC201A (reissued):
A. Added cable routing note as indicated.

TD-4 Refer to Drawing No. TC301 (reissued):
A. Updated schedules with WC as indicated.

TD-5 Refer to Drawing No. TC302 (reissued):
A. Updated details with correct info as indicated.

TD-6 Refer to Drawing No. TC303 (reissued):
A. Updated detail with correct info as indicated.

TD-7 Refer to Drawing No. TC402A (reissued):
A. Added AV as indicated.

TD-8 Refer to Drawing No. TC502 (reissued):
A. Updated detail with correct info as indicated.

TD-9 Refer to Drawing No. TC503 (reissued):
A. Updated detail with correct info as indicated.

TD-10 Refer to Drawing No. TC505 (reissued):
A. Updated detail with correct info.

TD-11 Refer to Drawing No. TR101 (reissued):
A. Updated detail with correct info.

TD-12 Refer to Drawing No. TR102 (reissued):
A. Updated detail with correct info.

TD-13 Refer to Drawing No. TR201A (reissued):
A. Revised raceways as indicated.

TD-14 Refer to Drawing No. TR201B (reissued):

A. Revised raceways as indicated.

TD-15 Refer to Drawing No. TR202A (reissued):

A. Revised raceways as indicated.

***END OF ADDENDUM NO. 1 – DESIGN RELEASE NO. 2***

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### DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS


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| 00 0107 | Professional Seals Page | **CD** |
| **00 0110** | **Table of Contents** | **CD, ADD1** |
| 00 0115 | List of Drawings | **CD** |
| 00 3100 | Available Project Information | **CD** |
| 00 8200 | Availability of Electronic Files | **CD** |
| 00 8200.01 | Electronic Files Release Form | **CD** |


## SPECIFICATIONS GROUP

## GENERAL REQUIREMENTS SUBGROUP

### DIVISION 01 - GENERAL REQUIREMENTS


| Section | Title | Issued |
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| 01 2500 | Substitution Procedures | **CD** |
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| 01 4000 | Quality Requirements | **CD** |
| 01 4100 | Regulatory Requirements | **CD** |
| 01 4216 | Definitions | **CD** |
| 01 4219 | Reference Standards | **CD** |
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**FACILITY SERVICES SUBGROUP**

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| | | |
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|---|---|---|
| 27 5123.60 | Area of Rescue Assistance Two-Way Intercommunication Systems | **CD** |

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| 28 3500 | Access Control | **CD** |
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## SITE AND INFRASTRUCTURE SUBGROUP

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Not Used

### DIVISION 32 – EXTERIOR IMPROVEMENTS


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| **32 1126** | **Aggregate Base Courses** | **ADD1** |
| 32 1723.28 | Artificial Turf | **CD** |


### DIVISION 33 – UTILITIES

Not Used

## APPENDIXES

### APPENDIX 1


| | |
|---|---|
| Report on Geotechnical Investigation – Dated December 29, 2025 | **CD** |


**END OF SECTION**

# SECTION 04 2000 - UNIT MASONRY

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Concrete block.
B. Clay facing brick.
C. Reinforcement and anchorage.
D. Flashings.
E. Cavity wall insulation.
F. Lintels.
G. Accessories.
H. Products installed under this section:
   1. Precast architectural concrete units set in masonry; furnished by Section 03 4500 - Precast Architectural Concrete.
   2. Cast stone units set in masonry; furnished by Section 04 7200 - Cast Stone Masonry.
   3. Loose steel lintels in unit masonry; furnished by Section 05 5000 - Metal Fabrications.
   4. Manufactured reglets embedded in unit masonry; furnished by Section 07 6200 - Sheet Metal Flashing and Trim.
I. Products furnished under this section:
   1. Dovetail anchor slots for connecting masonry to cast-in-place concrete; installed by Section 03 3000 - Cast-in-Place Concrete.
   2. Structural steel anchor sections for connecting masonry to structural steel; installed by Section 05 1200 - Structural Steel Framing.

### 1.02 REFERENCE STANDARDS

A. ACI 315 - Guide to Presenting Reinforcing Steel Design Details; 2018.
B. ASTM D1056 - Standard Specification for Flexible Cellular Materials—Sponge or Expanded Rubber; 2020.
C. ASTM D2000 - Standard Classification System for Rubber Products in Automotive Applications; 2018.
D. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Wall Assemblies Containing Combustible Components; 2025.
E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2023.
F. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications; 2023a.
G. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2025.
H. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2019.
I. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2024.
J. ASTM C90 - Standard Specification for Dry-Cast Loadbearing Concrete Masonry Units; 2024a.
K. ASTM C91/C91M - Standard Specification for Masonry Cement; 2025.
L. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar; 2025.
M. ASTM C150/C150M - Standard Specification for Portland Cement; 2024.
N. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale); 2024.
O. ASTM C270 - Standard Specification for Mortar for Unit Masonry; 2025a.
P. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2024.

Q. ASTM C476 - Standard Specification for Grout for Masonry; 2023.
R. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete; 2024.
S. ASTM C 1329 - Standard Specification for Mortar Cement - 2016.
T. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry; 2019a.
U. ASTM D226/D226M - Standard Specification for Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing; 2025.
V. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing; 2017.
W. BIA Technical Notes No. 13 - Ceramic Glazed Brick Exterior Walls; 2017.
X. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures; 2022, with Errata (2024).

**1.03 ADMINISTRATIVE REQUIREMENTS**

A. Product Coordination and Limitations: Provide products that when combined with materials and components of other sections, form exterior wall assemblies as detailed on Drawings, that comply with NFPA 285 testing and acceptance criteria.

**1.04 SUBMITTALS**

A. Product Data: Provide data for the following:
   1. Masonry Units:
      a. Include data on material properties.
      b. Masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
   2. Brick units:
      a. For exposed brick, include test report for efflorescence according to ASTM C 67.
      b. Include size-variation data verifying that the actual range of sizes falls within specified tolerances.
   3. Cementitious materials. Include name of manufacturer, brand name and type.
   4. Mortar admixturers.
   5. Preblended, dry mortar mixes. Include description of type and proportion of ingredients.
   6. Grout mixes. Include description of type and proportion of ingredients.
   7. Sound Isolating anchors.
   8. Anchors, ties, weep/cavity vent, preformed control-joint gaskets, cavity drainage material, and metal accessories.
B. Shop Drawings: Indicate pertinent dimensions, materials, anchorage, size and type of fasteners, and accessories for masonry.
   1. Masonry Units: Indicate sizes, profiles, coursing, and locations of special units.
   2. Reinforcing: Indicate bending, lap lengths, and placement of unit masonry reinforcing bars.
      a. Comply with ACI 315.
   3. Flashings: Provide details of embedded flashings including end dams, corners, drips, weeps.
C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
   1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C91/C 91M for air content.
   2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirements.

D. Samples: Submit 3 samples of standard block, decorative block, facing brick, ceramic glazed facing brick, and ceramic glazed structural clay facing tile units to illustrate color, texture, and extremes of color range.
E. Test Reports:
   1. Concrete masonry manufacturer's test reports for units with integral water repellent admixture.
   2. Masonry Veneer Anchors: At wall cavities greater than 4-1/2 inches, provide masonry veneer anchor manufacturer's test reports indicating compliance with TMS 402/602 for lateral load requirements; wall cavity depth includes airspace and cavity wall insulation thickness.
F. NFPA 285 Documentation: For each product, submit documentation listing compatible materials and components that when used together in wall assemblies as detailed on Drawings, comply with NFPA 285 testing and acceptance criteria.
G. Manufacturer's Qualification Statement.
H. Installer's Qualification Statement.
I. Cold-Weather and Hot-Weather Procedures: Detail description of methods, material, and equipment to be used to comply with requirements.

**1.05 QUALITY ASSURANCE**

A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
B. Fire Rated Assemblies: Comply with applicable codes and UL Assembly Numbers indicated.
C. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section with minimum 5 years of documented experience.
D. Installer Qualifications: Company specializing in performing work of the type specified and with at least 5 years of documented experience.

**1.06 MOCK-UPS**

A. Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for material and execution.
B. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high; include mortar, accessories, structural backup, wall openings, flashings (with lap joint, corner, and end dam), through-wall flashing (omit masonry above half of flashings, wall insulation, and sealant-filled joint at least 16 inches long in exterior wall in mock-up.
C. Include lower corner of window opening at upper corner of exterior wall mockup. Make opening approximately 12 inches wide by 16 inches high.
D. Locate where directed.
E. Where masonry is to match existing, erect mockups adjacent and parallel to existing surface.
F. Clean one-half of exposed faces of mockups with masonry cleaner as indicated.
G. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
   1. Approval of mockups is also for other materials and construction qualities specifically approved by Architect in writing.
   2. Approval of mockups does not constitute approval of deviations from Contract Documents contained in the mock-ups unless Architect specifically approves such deviations in writing.

**1.07 DELIVERY, STORAGE, AND HANDLING**

A. Deliver, handle, and store masonry units by means of that will prevent mechanical damage and contamination by other materials.

B. Store masonry units on elevated platforms in a dry location. If units are not stored in a enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.
F. Handle and store ceramic glazed masonry units in protective cartons or trays. Do not remove from protective packaging until ready for installation.

**1.08 FIELD CONDITIONS**

A. Protection of Masonry: During construction, cover tops of walls, protections, and sills with waterproof sheeting at end of each days's work. Cover partially completed masonry when construction is not in progress.
   1. Extend cover a minimum of 24 inches (600 mm) down both sides of walls, and hold cover securely in place.
   2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches (600 mm) down face next to unconstructed wythe, and hold cover in place.
B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
   1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
   2. Protect sills, ledges, and projections from mortar droppings.
   3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
   4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in **TMS 602/ACI 530.1/ASCE 6**.
   1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in **TMS 602/ACI 530.1/ASCE 6**.

## PART 2 PRODUCTS

**2.01 UNIT MASONRY, GENERAL**

A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work and will be within 20 feet (6 m) vertically and horizontally of a walking surface.

C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.

1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

## 2.02 CONCRETE MASONRY UNITS (CMU)

A. Concrete Block: Comply with referenced standards and as follows:

1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
3. Exposed Outside Block Corners: Provide bullnose, radiused, corners unless otherwise indicated on Drawings.
   a. Field-ground radiused corners are not permitted.
   b. Stop bullnose at bulkhead/soffits.
   c. Provide square corners at door frame even with block and bullnose where door frame is set back from corner.
4. Load-Bearing and Non-Loadbearing Units: ASTM C90, normal weight.
   a. Standard Units:
      1) Exposed Faces: Manufacturer's standard color and texture as approved by Architect per ASTM C90.
      2) Manufacturers:
         (a) Best Block Company: www.bestblock.net.
         (b) Consumers Concrete Corp.: www.consumersconcrete.com.
         (c) Echelon by Oldcastle: www.echelonmasonry.com.
         (d) Fendt Builder’s Supply, Inc.: www.fendtproducts.com.
         (e) Grand Blanc Cement Products: www.grandblanccementproducts.com.
         (f) Michigan Certified Products, Inc.: www.micertconcrete.com.
         (g) National Block Company: www.nationalblock.com.
         (h) Substitutions: See Section 01 6000 - Product Requirements.

## 2.03 BRICK UNITS

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Manufacturers: Provide products from the manufacturer listed for each brick type.

1. Substitutions: Not permitted.

C. Facing Brick:

1. Special shapes: Provide molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.
2. **Field Brick:**

a. **Manufacturer: Glen-Gery Corp.: www.glengery.com.**
   1) **Substitutions: Not permitted.**
b. **ASTM C216, Type FBS, Grade SW.**
c. **Size (Actual)): 3-5/8 inches wide by 3-5/8 inches high by 11-5/8 inches long ( Utility).**
d. **Color/Blend: Woodbury.**
e. **Texture: Velour.**

3. **Accent Brick:**
   a. **Manufacturer: Elgin Butler Brick Company:.**
      1) **Substitutions: Not permitted.**
   b. **ASTM C216, Type FBS, Grade SW.**
   c. **Size (Actual): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long ( Modular).**
   d. **Color/Blend: Colonial Red Glazed.**
   e. **Texture: Smooth. ***ADD1*****

## 2.04 MORTAR AND GROUT MATERIALS

A. Masonry Cement: ASTM C91/C91M.
B. Mortar Cement: ASTM C1329.
C. Mortar Aggregate: ASTM C144.
D. Grout Aggregate: ASTM C404.
E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
   1. Color(s): As selected by Architect from manufacturer's full range.
   2. Manufacturers:
      a. Davis Colors: www.daviscolors.com.
      b. Lambert Corporation: www.lambertusa.com.
      c. Solomon Colors: www.solomoncolors.com/sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.
F. Water: Clean and potable.
G. Packaged Dry Material for Mortar for Unit Masonry:
   1. At Contractor's option, prepackaged dry material for mortar may be used subject to compliance with mortar requirements of this section including, but not limited to, the following:
      a. Mortar Types: As indicated.
      b. Color(s): As selected by Architect from manufacturer's full range.
      c. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
   2. Portland Cement Based: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
      a. Manufacturers:
         1) Amerimix, an Oldcastle brand; www.amerimix.com.
         2) The QUIKRETE Companies; wwwquikcrete.com.
         3) SPEC MIX, Inc.: www.specmix.com.
         4) Substitutions: See Section 01 6000 - Product Requirements.
   3. Masonry Cement Based: Premixed masonry cement and mason's sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
      a. Manufacturers:
         1) Amerimix, an Oldcastle brand; www.amerimix.com.
         2) The QUIKRETE Companies; wwwquikcrete.com.
         3) SPEC MIX, Inc.: www.specmix.com.
         4) Substitutions: See Section 01 6000 - Product Requirements.

H. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
   1. At Contractor's option, prepackaged dry material for grout may be used subject to compliance with grout requirements of this section.
   2. Manufacturers:
      a. Amerimix, an Oldcastle brand; www.amerimix.com.
      b. The QUIKRETE Companies; wwwquikcrete.com.
      c. SPEC MIX, Inc.: www.specmix.com.
      d. Substitutions: See Section 01 6000 - Product Requirements.

**2.05 REINFORCEMENT AND ANCHORAGE**

A. Manufacturers:
   1. Basis-of-Design Product: The design for each item specified is based on the product named. Provide either the named product or a comparable product by one of the following:
      a. Fero Corp.; www.ferocorp.com.
      b. Heckmann Building Products; www.heckmannbuildingprods.com.
      c. Hohmann & Barnard, Inc.; www.h-b.com.
      d. Wire-Bond; www.wirebond.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.

B. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi), deformed billet bars; uncoated.

C. Reinforcing Bar Positioners: 0.156 inch, ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to 16 CFR 1201 Class B.
   1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: RB and RB-Twin Rebar Positioners.

D. Reinforcing Bar Lap Joint Ties: ASTM A1064/A1064M steel wire, mill galvanized to 16 CFR 1201 Class 3.
   1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: Spyra-Lox Rebar Lap-Joint Tie.

E. Single Wythe Joint Reinforcement: Truss or ladder type; ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to 16 CFR 1201 Class B; 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage on each exposure.
   1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: 120 Truss-Mesh or 220 Ladder-Mesh.

F. Adjustable Multiple Wythe Joint Reinforcement: Truss or ladder type with adjustable ties or tabs spaced at 16 in on center ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/153M, Class B; 0.1483 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
   1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: 170 Truss LOX-ALL Adjustable Eye Wire or 270 Ladder LOX-ALL Adjustable Eye Wire with 2X-HOOK.

G. Rigid Anchors: Fabricate from steel bars 1-1/2 inches wide by 1/4 inch thick by 24 inches long, with ends turned up 2 inches; hot dip galvanized to ASTM A153/A153M Class B.
   1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: 344 Rigid Partition Anchor.

H. Partition Top Anchors: 0.1875 inch thick metal plate with a 3/8 inch diameter metal rod 6 inches long welded to plate and with closed-end plastic tube fitted over rod that allows rod to move in and out of tube; hot dip galvanized to ASTM A153/A153M Class B.

1. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: PTA-420-HS and PTA Tubes.

I. ~~Dovetail Anchor Slots for Connecting to Concrete: 2-piece anchors that permit differential movement between masonry and concrete frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.~~
   1. ~~Concrete frame: Dovetail anchors of bent steel, nominal 1 inch width by 1 inch deep by 0.03 in thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.~~
      a. ~~Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: 305 Dovetail Slot with 315 Flexible Dovetail Brick Ties.~~*****ADD1*****

J. Adjustable Anchors for Connecting to Structural Steel Framing: 2-piece anchors that permit differential movement between masonry and steel frame, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face.
   1. Crimped wire anchors for welding to frame, 0.25 inch thick, with trapezoidal wire ties 0.1875 inch thick, hot dip galvanized to ASTM A 153/A 153M, Class B.
   2. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: 359/359FP anchors with 301W or VBT ties.

K. Adjustable Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
   1. For cold-formed metal framing and sheathing back-up.
   2. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners.
   3. Wire ties: Rectangular shape, 0.1875 inch thick.
   4. Vertical adjustment: Not less than 2 inches.
   5. Basis-of-Design Product: Hohmann & Barnard, Inc.; www.h-b.com: HB-213 anchors with 2X-HOOK.

L. ~~Sound Isolating Anchors.~~
   1. ~~Provide as indicated on the Drawings.~~
      a. ~~Basis of Design Product: Provide PSB-M isolators as manufactured by Kinetics. Texture Wire cut or as follows:~~
         1) ~~Mason Industries AB-716.~~ *****ADD1*****

## 2.06 FLASHINGS

A. Flexible Fabric Flashing - Self-Adhering: Self-adhering stainless steel/polymer fabric flashing. ASTM A240/A240M; 2 mil type 304 stainless steel sheet bonded on one side to one sheet of polymer fabric. Flashing shall be self-adhering using a pressure-sensitive adhesive.
   1. Type 304 stainless steel.
      a. Thickness: 2 mils, minimum.
   2. Manufacturers:
      a. Hohmann & Barnard, Inc; Mighty-Flash Stainless Flashing SA: www.h-b.com/#sle.
      b. WIRE-BOND; Bond-N-Flash SA: www.wirebond.com/#sle.
      c. York Manufacturing, Inc; Multi-Flash SS: www.yorkmfg.com/#sle.
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Factory-Fabricated Inside and Outside Flashing Corners and End Dams: Stainless steel.
   1. Manufacturer shall be the same as flexible fabric flashing manufacturer.

C. Factory-Fabricated Drip Plates including Inside and Outside Corners: Stainless steel.
   1. Pre-formed smooth drip plates with hemmed edges.
   2. Manufacturer shall be the same as stainless steel/polymer fabric flashing manufacturer.

D. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.

1. Manufacturer shall be the same as flexible fabric flashing manufacturer.

**2.07 CAVITY WALL INSULATION**

A. Refer to Section 07 2100 Thermal Insulation.

**2.08 ACCESSORIES**

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints. ASTM D2000, 2AA-805.
   1. Manufacturers:
      a. Hohmann & Barnard, Inc: www.h-b.com/sle.
      b. WIRE-BOND: www.wirebond.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Compressible Joint Filler: Closed cell neoprene; oversized 50 percent to joint width; self expanding; in maximum lengths available. ASTM D1056, Grade 2A1.
   1. Manufacturers:
      a. Hohmann & Barnard, Inc: www.h-b.com/sle.
      b. WIRE-BOND: www.wirebond.com/#sle.
      c. Substitutions: See Section 01 6000 - Product Requirements.

C. Cavity Mortar Control/Drainage Material: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
   1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
      a. Full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.
      b. Basis-of-Design Product: Provide Hohmann & Barnard, Inc.; www.h-b.com; Mortar Trap or a comparable product by one of the following:
         1) Advanced Building Products Inc.; www.advancedbuildingproducts.com.
         2) Heckmann Building Products; www.heckmannbuildingprods.com.
         3) Mortar Net Solutions; www.mortarnet.com.
         4) Wire-Bond; www.wirebond.com.
         5) Substitutions: See Section 01 6000 - Product Requirements.

D. Building Paper: ASTM D226/D226M, Type I ("No.15") asphalt felt.

E. Termination Bars: Stainless steel, 1/8 inch thick by 1-1/2 inch high with 3/8 inch sealant flange at top; compatible with flashing membrane and adhesives.
   1. Manufacturers:
      a. Advanced Building Products Inc.; www.advancedbuildingproducts.com
      b. Heckmann Building Products; www.heckmannbuildingprods.com.
      c. Hohmann & Barnard, Inc.; www.h-b.com.
      d. Wire-Bond; www.wirebond.com.
      e. York Manufacturing, Inc.; www.yorkmfg.com
      f. Substitutions: See Section 01 6000 - Product Requirements.

F. Weep Inserts and Cavity Vents:
   1. Type: Plastic cellular/honeycomb design.
   2. Color(s): As selected by Architect from manufacturer's full range.
   3. Basis-of-Design Product: Provide Hohmann & Barnard, Inc.; www.h-b.com; QV Quadro-Vent or a comparable product by one of the following:
      a. Advanced Building Products Inc.; www.advancedbuildingproducts.com.
      b. Heckmann Building Products; www.heckmannbuildingprods.com.
      c. Mortar Net Solutions; www.mortarnet.com.
      d. Wire-Bond; www.wirebond.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.

G. Mortar and Grout Screen: 1/4 inch square, polypropylene monofilament screening for preventing grout flow; width sized to match masonry widths.

1. Basis-of-Design Product: Provide Hohmann & Barnard, Inc.; www.h-b.com; MGS or a comparable product by one of the following:
   a. Heckmann Building Products; www.heckmannbuildingprods.com.
   b. Wire-Bond; www.wirebond.com.
   c. Substitutions: See Section 01 6000 - Product Requirements.

H. Masonry Cleaners:
1. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
   a. Basis-of-Design Products: Provide PROSOCO, Inc.; www.prosoco.com: Sure Klean 600 or Sure Klean Vana Trol or a comparable product by one of the following:
      1) Diedrich Technologies, Inc.; www.diedrichtechnologies.com.
      2) Substitutions: See Section 01 6000 - Product Requirements.

## 2.09 LINTELS

A. Masonry Lintels: Masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and weight classification; reinforcing bars as indicated, and filled with grout.

B. Loose Steel Lintels: Refer to Section 05 5000 - Metal Fabrications.

## 2.10 MORTAR AND GROUT MIXING

A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
1. Masonry below grade and in contact with earth: Type S.
2. Exterior, loadbearing masonry: Type S.
3. Exterior, non-loadbearing masonry: Type N.
4. Interior, loadbearing masonry: Type S.
5. Interior, non-loadbearing masonry: Type N.
6. Precast concrete units: Same Type as wall masonry in which unit is set.
7. Limestone units: Same Type as wall masonry in which unit is set.
8. Pointing Mortar: Type N.

B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.

C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
1. Grout Strength: 3000 psi at 28 days, unless otherwise indicated.

D. Mixing: Use mechanical batch mixer and comply with referenced standards.

# PART 3 EXECUTION

## 3.01 ~~SALVAGING BRICK~~

A. ~~General: Comply with Section 02 4100 - Demolition.~~

B. ~~Where indicated, remove and salvage existing brick.~~
1. ~~Carefully remove brick by hand. Cut out full units from joint to joint.~~
   a. ~~If required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.~~
2. ~~Salvage as many whole, undamaged bricks as needed for new construction.~~
3. ~~Salvage damaged brick that may be cut and used where cut units are required.~~
4. ~~Take care not to chip, crack or otherwise damage surrounding masonry.~~

C. ~~Remove mortar, loose particles and soil from salvaged brick by cleaning with hand chisels, brushes and water. Store brick for reuse.~~

D. ~~Clean remaining masonry at edges of removal areas by removing mortar, dust, and loose debris in preparation for new construction.~~

E. ~~Support and protect remaining masonry that surrounds removal area. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.~~ ***ADD1***

**3.02 EXAMINATION**

A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that foundations are within tolerances specified.
C. Verify that related items provided under other sections are properly sized and located.
D. Verify that built-in items are in proper location, and ready for roughing into masonry work.
E. Verify that reinforcing dowels are properly placed.

**3.03 PREPARATION**

A. Direct and coordinate placement of metal anchors supplied for installation under other sections.

**3.04 INSTALLATION, GENERAL**

A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
B. Build chases and recesses to accommodate items specified in this and other Sections.
C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
D. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.

**3.05 COURSING**

A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Existing Masonry: Match coursing and bonding of existing masonry unless otherwise indicated.
D. Concrete Masonry Units: Unless otherwise indicated:
    1. Bond: Running.
    2. Coursing: One unit and one mortar joint to equal 8 inches.
    3. Mortar Joints: Concave.
    4. Mortar Joint Thickness: 3/8 inch.
E. Brick Units: Unless otherwise indicated:
    1. Bond: Running.
    2. Coursing: Three units and three mortar joints to equal 8 inches.
    3. Mortar Joints: Concave.
    4. Mortar Joint Thickness: 3/8 inch.

**3.06 PLACING AND BONDING**

A. Lay hollow masonry units with face shell bedding on head and bed joints.
B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
C. Remove excess mortar and mortar smears as work progresses.
D. Interlock intersections and external corners.
E. Tooth-in new masonry work with existing, unless otherwise indicated on Drawings.
F. Tooth-in cutting and patching masonry work unless otherwise indicated on Drawings.

G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
I. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.
J. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.
K. Isolate cast stone units and precast architectural concrete units from clay masonry with building paper or similar method of providing a continuous bond break/slip plane.
L. Set cast-stone trim units in full bed of mortar with full vertical joints. Fill dowel, anchor, and similar holes.
    1. Clean soiled surfaces with fiber brush and soap powder and rinse thoroughly with clear water.
    2. Allow cleaned surfaces to dry before setting.
    3. Wet joint surfaces thoroughly before applying mortar.
    4. Rake out mortar joints for pointing with sealant.

**3.07 WEEPS INSERTS/CAVITY VENTS**

A. Install weep inserts in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
B. Install cavity vents in veneer and cavity walls at 24 inches on center horizontally below shelf angles and lintels and near top of walls.

**3.08 CAVITY MORTAR CONTROL**

A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
B. Provide not less than 2 inches of airspace between back of masonry veneer and face of insulation.
    1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace. Do not attempt to trowel or remove mortar fins protruding into airspace.
C. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
D. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

**3.09 HORIZONTAL JOINT REINFORCEMENT AND ANCHORAGE - SINGLE WYTHE MASONRY AND CAVITY WALL MASONRY**

A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Lap joint reinforcement ends minimum 6 inches.
E. Masonry to Structural Steel and Concrete:
    1. Provide an open space not less than 1/2 inch wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
    2. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 24 inches vertically.
F. Embed ties and anchors in mortar joint and extend into masonry unit a minimum of 1-1/2 inches with at least 5/8 inch mortar cover to the outside face of the anchor.

## 3.10 MASONRY VENEER REINFORCEMENT AND ANCHORAGE

A. Masonry Back-Up: Embed anchors to bond veneer at maximum 16 inches on center vertically and 16 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

B. Stud Back-Up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 16 inches on center vertically and 16 inches on center horizontally. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.

C. Embed ties and anchors in mortar joint and extend into masonry veneer unit a minimum of 1-1/2 inches with at least 5/8 inch mortar cover to the outside face of the anchor.

## 3.11 MASONRY FLASHINGS

A. General:
   1. Install masonry flashings according to manufacturer's instructions and as indicated on the Drawings.
   2. Remove or cover protrusions or sharp edges that could puncture flashings.
   3. Lap end joints of flashings at least 6 inches, minimum, and seal watertight with flashing sealant/adhesive.
   4. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
      a. Extend flashings full width at such interruptions and at least 6 inches, minimum, into adjacent masonry or turn up at least 8 inches, minimum, to form watertight pan at non-masonry construction.
   5. Terminate flashing up 8 inches minimum on vertical surface of backing:
      a. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer’s direction, unless otherwise indicted.
      b. Anchor vertical leg of flashing into backing with a termination bar and sealant.
   6. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7, unless more stringent requirements are specified in this section.

B. Flexible Fabric Flashing:
   1. Use factory-fabricated drip plates, corners and end dams.
   2. Extend flexible fabric flashing to within 1/4 inch of exterior face of masonry overlapping metal drip plate.
   3. Extend flexible fabric flashing full width of cavity space and turn up inner masonry wythe or sheathing at least 14 inches.
   4. Secure flexible fabric flashing to wall with continuous termination bar and apply sealant across top of termination bar.

## 3.12 LINTELS

A. Install loose steel lintels over openings.

B. Install reinforced unit masonry lintels over openings where steel lintels are not scheduled.
   1. Unless otherwise indicated, reinforce as follows:
      a. Openings to 48 inches: Place two, No. 4 reinforcing bars 1 inch from bottom web.
      b. Openings from 48 inches to 80 inches: Place two, No. 5 reinforcing bars 1 inch from bottom web.
      c. Openings over 80 inches: Reinforce openings as detailed.
   2. Do not splice reinforcing bars.
   3. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
   4. Place and consolidate grout fill without displacing reinforcing.
   5. Allow masonry lintels to attain specified strength before removing temporary supports.

C. Where the Drawings do not indicate otherwise, provide reinforced unit masonry lintels at all openings and penetrations wider than 12 inches in brick and 24 inches in CMU.

D. Maintain minimum 8 inch bearing on each side of opening unless otherwise indicated.

**3.13 BOND BEAMS**

A. Bond Beams: At bond beams or other locations for horizontally reinforced masonry, provide special masonry units.
B. Reinforce bond beams with 2, No. 5 bars, 1 inch from bottom web unless otherwise indicated.
C. Lap reinforcing bar splices minimum 24 bar diameters, unless otherwise indicated.
D. Place and consolidate grout fill without displacing reinforcing.

**3.14 VERTICAL MASONRY REINFORCEMENT**

A. Reinforcement: Size and place vertical masonry reinforcement to comply with TMS 402/602 requirements and as indicated on Drawings.
B. Place and consolidate grout fill without displacing reinforcing.

**3.15 GROUTING**

A. Reinforced Hollow Unit Masonry: Keep vertical cores to be grouted clear of mortar, including bed area of first course.
B. Perform grouting by means of high-lift technique, except in locations that mandate use of low-lift grouting technique.
   1. Do not use high-lift grouting where size of cavities mandates use of fine grout.
C. Low-Lift Grouting:
   1. Limit height of pours to 12 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.
D. High-Lift Grouting:
   1. Verify that horizontal and vertical reinforcement is in proper position and adequately secured before beginning pours.
   2. Clean out masonry cells and other cavities to be grouted by high pressure water spray or compressed air. Remove debris, allow to dry, and inspect before sealing cleanout openings.
   3. Hollow Masonry: Limit lifts to maximum 4 feet and pours to maximum height of 24 feet.
   4. Place grout for spanning elements in single, continuous pour.

**3.16 GROUTED COMPONENTS**

A. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
B. Place and consolidate grout fill without displacing reinforcing.
C. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.

**3.17 CONTROL AND EXPANSION JOINTS**

A. Do not continue horizontal joint reinforcement through control or expansion joints.
B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
   1. Refer to Section 07 9200 - Joint Sealants for sealant installation.

**3.18 BUILT-IN WORK**

A. As work progresses, install built-in metal door frames, glazed frames, anchor bolts, plates, and reglets and other items to be built into the work and furnished under other sections.
B. Install built-in items plumb, level, and true to line.
C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.

1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

**3.19 TOLERANCES**

A. Dimensions and Locations of Elements:
   1. Location of elements in plan; do not vary from that indicated on Drawings by more than:
      a. Plus or minus 1/2 inch.
   2. Dimensions in cross section; do not vary from that indicated on Drawings by more than:
      a. Minus 1/4 inch.
      b. Plus 1/2 inch.

B. Maximum Variation from Alignment of Columns and Pilasters: 1/4 inch.

C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

G. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

H. Lines and Levels:
   1. Maximum variation from level:
      a. Includes, but is not limited to, the following:
         1) Lintels.
         2) Sills.
         3) Parapets.
         4) Reveals.
         5) Other conspicuous lines.
      b. Do not vary from level by more than:
         1) 1/4 inch in 20 feet.
         2) 1/2 in in 40 feet or more.
   2. Maximum variation from plumb:
      a. Includes, but is not limited to, the following:
         1) External corners.
         2) Control and expansion joints.
         3) Reveals.
         4) Other conspicuous lines.
      b. Do not vary from plumb by more than:
         1) 1/4 inch in 20 feet.
         2) 1/2 in in 40 feet or more.

I. Mortar Joint Thickness: Do not vary thickness indicated by more than plus or minus 1/8 inch.

**3.20 FIELD QUALITY CONTROL**

A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000 - Quality Requirements.

**3.21 CLEANING**

A. Protect surrounding elements and finishes from damage due to cleaning procedures.

B. Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 10 feet away, subject to Architect's approval.

C. Remove excess mortar and mortar droppings.

D. Clean soiled surfaces with cleaning solution.

E. Apply masonry cleaners to masonry surfaces according to manufacturer's written instructions; use brush or spray application.
   1. Periodically during rinsing, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
      a. Repeat rinsing until tested pH of water runoff is between 6.7 and 7.5.

F. Ground-Face CMU: Refer to Section 07 1900-Water Repellent Acrylic Penetrating Sealer for field applied sealer.

**END OF SECTION 04 2000**

# SECTION 09 3000 - HARD TILING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Hard tile.
B. Hard tile trim units.
C. Solid surfacing thresholds.
D. Tile setting materials, grout, sealants, and accessories.
E. Metal trim.
F. Waterproofing, Uncoupling, and Crack Isolation Membranes.

### 1.02 REFERENCE STANDARDS

A. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive; 2021.
B. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar; 2023.
C. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2023.
D. ANSI A118.11 - American National Standard Specifications for EGP (Exterior Glue Plywood) Modified Dry-Set Mortar; 2017 (Reaffirmed 2022).
E. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation; 2014 (Reaffirmed 2024).
F. ANSI A118.15 - American National Standard Specifications for Improved Modified Dry-Set Cement Mortar; 2023.
G. ANSI A137.1 - American National Standard Specifications for Ceramic Tile; 2022.
H. ISFA 2-01 - Classification and Standards for Solid Surfacing Material; 2013.
I. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
J. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation; 2025.

### 1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
D. Samples:
    1. Full-size units of each type of tile and each color and finish.
    2. Full-size units of each type of trim, threshold and accessory for each color and finish.
        a. Trim and Threshold Samples: 4 inches long, minimum.
E. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.
F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
    1. See Section 01 6000 - Product Requirements, for additional provisions.
    2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than one box of each type.

**1.05 QUALITY ASSURANCE**

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

B. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.

C. Source Limitations for Setting Materials and Accessories: Obtain product of a uniform quality for each application condition from a single manufacturer:

D. Preinstallation Conference: Conduct conference at the Project Site.

1. Convene one week prior to commencing work of this section.
2. Require attendance of installation material manufacturer, tile supplier, tile installer, and intallers of related work. Review installation procedures and coordination required with related work.
3. Meeting agenda includes, but is not limited to:
   a. Surface preparation.
   b. Tile and installation material compatibility.
   c. Manufacturer and installer warranty duration and scope coverd by warranty.
   d. Edge protection, transition, and pre-fabricated movement joint profiles.
   e. Waterproofing techniques.
   f. Crack isolation techniques.

**1.06 DELIVERY, STORAGE, AND HANDLING**

A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.

B. Storage: Store materials as directed by manufacturer's written instructions.

**1.07 FIELD CONDITIONS**

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

**PART 2 PRODUCTS**

**2.01 PERFORMANCE REQUIREMENTS**

A. Floor Tile: Floor tile shall comply with the following:

1. Dynamic Coefficient of Friction (DCOF): 0.42 or greater when tested in accordance with DCOF AcuTest per ANSI A137.1.

**2.02 HARD TILE**

A. CT1 Wall Tile: ANSI A137.1 standard grade.

1. Size:
   a. 12 by 12 inch, nominal**. (CT1B) **ADD1****
   b. 12 by 24 inch, nominal **(CT1A) **ADD1****
2. Thickness: 5/16 inch, nominal.
3. Surface Finish: Matte.
4. Color(s): _____
   a. CT1A Matte Designer White 0061.
   b. CT1B Matte Passion 0021.
5. Joint Size: 1/16 inch.
6. Products:
   a. American Olean; Color Story Floor: https://www.americanolean.com/.
   b. Substitutions: Not permitted.
   c. Manufacturer's Representative: Kathleen Black, kathleen.black@virginatile.com, 248.467.4362.

B. CT2 Floor Tile: ANSI A137.1 standard grade.

1. Size: 12 by 24 inch, nominal.
2. Thickness: 0.37 inch(9.5 mm), nominal.
3. Surface Finish: Unpolished (UPS).

4. Color(s): ARG17 Clean Slate.
5. Joint Size: 1/8 inch.
6. Base: Schluter Systems, DILEX-AHK. .
   a. Schluter-Systems: www.schluter.com.
   b. Substitutions: See Section01 6000-Product Requirements.
7. Products:
   a. Crossville; Argent 2.0: www.crossville.com.
   b. Substitutions: Not permitted.
   c. Manufacturer's Representative: Kathleen Black, kathleen.black@virginatile.com, 248.467.4362.

**2.03 TILE TRIM UNITS**

A. Trim Units: For tile with coordinating trim units, provide bullnoses, cove bases, and other shapes as required for a complete installation.
   1. Shapes: As selected by Architect from manufacturer's standard shapes; coordinate with adjacent flat tile sizes and jointing.
   2. Sizes: As selected by Architect from manufacturer's standard sizes; coordinate with adjacent flat tile sizes and jointing.
   3. Manufacturers: Same as adjacent flat tile, unless otherwsie indicated.

**2.04 THRESHOLDS**

A. Thresholds - General:
   1. Beveled Edges:
      a. Maximum Height: 1/2 inch.
      b. Bevel Slope: 1:2 slope.
      c. Align lower bevel edge with adjacent floor finish.
      d. Finish bevels to match threshold face.

B. THR-1Solid Surfacing Thresholds: Plastic resin casting complying with ISFA 2-01 and NEMA LD 3; acrylic or polyester resin, mineral filler or unfilled, and pigments; homogenous, non-porous; no surface coating; color and pattern consistent throughout thickness.
   1. Size: 4 inches wide by full width of opening; 1/2 inch thick; beveled long edge, both sides.
   2. Finish on Exposed Surfaces: Matte, gloss rating of 5 to 20.
   3. Products:
      a. E. I. DuPont De Nemours and Co.; Corian Solid Surface: www.corian.com.
      b. Substitutions: Not permitted
   4. Color: Carbon Concrete

C. Applications:
   1. At doorways where tile terminates.

D. Latex-Portland Cement Thin-Set Mortar Bond Coat: ANSI A118.4, ANSI A118.11 andANSI A118.15 .
   1. Products:
      a. Bostik, Inc; Bostik PM: www.bostik.com.
      b. Custom Building Products; VersaBond Flex Professional Thin-Set Mortar: www.custombuildingproducts.com.
      c. H.B. Fuller Construction Products, Inc; Sturdi Flex Thin Set Mortar: www.tecspecialty.com/#sle.
      d. LATICRETE International, Inc; 253 Gold: www.laticrete.com.
      e. MAPEI Corp.; Porcelain Tile Mortar: www.mapei.com.
      f. Schluter Systems L.P.; All Set Thinset Morter; www.schluter.com
      g. Substitutions: See Section 01 6000 - Product Requirements.

E. Large Format Tile Latex-Portland Cement Medium-Bed Mortar Bond Coat: ANSI A118.4, ANSI A118.11 and ANSI A118.15 .
   1. Products:
      a. Bostik, Inc; Big Tile & Stone: www.bostik.com.

b. Custom Building Products; Natural Stone & Large Tile Premium Mortar: www.custombuildingproducts.com.
c. LATICRETE International, Inc; 4-XLT: www.laticrete.com.
d. MAPEI Corp.; Large Tile & Stone Mortar: www.mapei.com.
e. Schluter Systems L.P.; All Set thinset mortar; www.schluter.com.
f. H.B. Fuller Construction Products Inc; Ultimate Large Tile Mortar or Permalastic LHT: www.tecspecialty.com.
g. Substitutions: See Section 01 6000 - Product Requirements.

F. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.
1. Color(s):
a. CT1 Grout: Mapei, Warm Grey 5093
b. CT2 Grout: Mapei, Iron 5107
2. Products:
a. Bostik, Inc; EzPoxy EzClean: www.bostik.com.
b. Custom Building Products; CEG-Lite 100% Solids Commercial Epoxy Grout : www.custombuildingproducts.com.
c. H.B. Fuller Construction Products, Inc; TEC AccuColor EFX Epoxy Grout and Mortar : www.tecspecialty.com/#sle.
d. LATICRETE International, Inc; SPECTRALOCK Pro Premium: www.laticrete.com.
e. MAPEI Corp.; Kerapoxy or Kerapoxy CQ: www.mapei.com
f. Substitutions: See Section 01 6000 - Product Requirements.
1) Substitutions will only be accepted for manufacturers for epoxy grout. Product substitutions for other than epoxy grouts will not be accepted.

## 2.05 METAL TRIM

A. Metal Trim: Provide metal profiles in heights to match tile and setting-bed thicknesses, designed specifically for hard tile applications.
1. Profiles:
a. Angle or L-shaped.
b. Other shapes as indicated on Drawings.
2. Material: Brushed stainless steel.
3. Applications and Locations:
a. Open edges of wall tile.
b. Open edges of floor tile.
c. Outside wall corners.
d. Transitions between hard tile and other floor finishes.
e. Tile perimeters not against a wall or other solid vertical surface.
f. Other areas as indicated on Drawings.
4. Manufacturers:
a. Schluter-Systems: www.schluter.com.
b. Substitutions: See Section 01 6000 - Product Requirements.

## 2.06 WATERPROOFING AND CRACK ISOLATION MEMBRANE

A. Waterproofing and Crack Isolation Membrane: Elastomeric liquid applied membrane complying with ANSI A118.10 and ANSI A118.12.
1. Applications: Use at the following locations:
a. All floor and traffic areas.
b. Shower walls and floors.
c. Shower pans and walls.
d. Other areas as indicated.
2. Thickness: As recommended by membrane manufacturer.
3. Crack Resistance: No failure at 1/8 inch gap, minimum.
4. Membrane system may or may not include fabric reinforcing.
5. Products:
a. Without Fabric Reinforcing:

1) Custom Building Products; RedGard: www.custombuildingproducts.com.
2) LATICRETE International, Inc; Hydro Ban: www.laticrete.com.
3) LATICRETE International, Inc; Hydro Barrier: www.laticrete.com.
4) MAPEI Corp.; Mapelastic AquaDefense: www.mapei.com.
5) Substitutions: See Section 01 6000 - Product Requirements.

b. With Fabric Reinforcing:
1) Bostik, Inc; GoldPlus: www.bostik.com.
2) Custom Building Products; 9240 Waterproofing and Anti-Fracture Membrane: www.custombuildingproducts.com.
3) MAPEI Corp.; Mapelastic AquaDefense: www.mapei.com.
4) TEC, H.B. Fuller Construction Products Inc; HydraFlex: www.tecspecialty.com.
5) Substitutions: See Section 01 6000 - Product Requirements.

**2.07 WATERPROOFING - SHEET APPLIED MEMBRANE**

A. Waterproofing Membrane: Sheet Applied membrane complying with ANSI A118.10 andANSI A118.12 .
1. Schluter Systems; L.P. KERDI / KERDI DS Membrane: www.schluter.com.

**2.08 UNCOUPLING MEMBRANE**

A. Waterproofing and Uncoupling Membrane: Elastomeric liquid membrane complying with ANSI A118.10 and as defined in the Tile Council on North America (TCNA) Handbook.
1. Schluter Systems; L.P. DITRA / DITRA XL Membrane: www.schluter.com.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
1. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of setting materials to sub-floor surfaces.
2. Verify that substrates comply with tolerances of TCNA (HB).

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
1. Verify that substrates comply with tolerances of TCNA (HB).

**3.02 PREPARATION**

A. Protect surrounding work from damage.
B. Vacuum clean surfaces and damp clean.

**3.03 INSTALLATION - GENERAL**

A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
B. Install waterproofing and crack isolation membrane according to manufacturer's instructions and TCNA (HB) recommendations.
1. Applications: Use at the following locations:
a. All floor and traffic areas.
b. Shower walls and floors.
c. Other areas as indicated.

C. Bond Coats:
1. Use latex-portland cement thin-set mortar, unless otherwise indicated.
a. Exceptions:
1) For tiles that have at least one side greater than 15 inches long, use large format tile latex-portland cement medium-bed mortar.
2) For large areas of glass tile, other than accents and bands, use glass tile latex-portland cement thin-set mortar.
b. Bond Coat Color: White or gray.

1) Exception: White at glass tiles.

D. Grout:
1. Use epoxy grout.

E. Install tile prior to installation of equipment, cabinets, and other recessed and surface mounted items.

F. Completely cover substrates with tile, including those which will be under and behind surface mounted items in finished construction.

G. Lay tile from center lines outward unless otherwise indicated.

H. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

I. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly.

J. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

K. Form internal angles square and external angles square, with metal trim, or bullnose trim pieces as indicated.

L. Install accessories rigidly in place in accordance with manufacturer's instructions..

M. Install metal trim in accordance with manufacturer's instructions.

N. Sound tile after setting. Replace hollow sounding units.

O. Keep control and expansion joints free of mortar, grout, and adhesive.

P. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

Q. Grout tile joints unless otherwise indicated.

R. Joint Sealant:
1. Use joint sealant at the following locations instead of grout.
a. Tile changes in plane.
b. Tile-to-tile control joints .
c. Junctions of tile and dissimilar materials
d. And elsewhere as required by TCNA (HB), EJ171 movement joint guidelines.
2. Install joint sealant with bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

S. Grout Sealers:
1. Seal the following:
a. High performance grout joints only as recommended by grout manufacturer.

**3.04 INSTALLATION - FLOORS - THIN-SET METHODS**

A. Over concrete substrates, install in accordance with TCNA (HB) Method F122 or F122A, as appropriate to substrate conditions.
1. Provide waterproofing and crack isolation membrane.

**3.05 INSTALLATION - WALL TILE**

A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244C .
1. Provide waterproofing and crack isolation membrane in wet areas and elsewhere as indicated.

B. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.
1. Provide waterproofing and crack isolation membrane where indicated.

C. Over concrete and masonry install in accordance with TCNA (HB) Method W202I.
1. Provide waterproofing and crack isolation membrane in wet areas and elsewhere as indicated.

**3.06 CLEANING**

A. Clean tile and grout surfaces.

**3.07 PROTECTION**

A. Do not permit traffic over finished floor surface for 4 days after installation.

**END OF SECTION 09 3000**

# SECTION 09 6513 - RESILIENT BASES AND ACCESSORIES

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Resilient base.
B. Stair coverings.
C. Floor moldings.

### 1.02 REFERENCE STANDARDS

A. ASTM F1861 - Standard Specification for Resilient Wall Base; 2021 (Reapproved 2025).
B. ASTM F2169 - Standard Specification for Resilient Stair Treads; 2015 (Reapproved 2020).

### 1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
C. Shop Drawings: Indicate seaming plans and floor patterns.
D. Verification Samples:
   1. Resilient Base, Floor Moldings, and Stair Coverings: Submit 3 samples, 12 inches long illustrating color, pattern, and profile for each accessory specified.
E. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.
F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Wall Base: Quantity equal to 2 percent of total installed, but not less than 8 linear feet of each type and color.
   3. Extra Stair Covering Materials: Quantity equal to 2 percent of total installed, but not less than 8 linear feet for each type and color.
   4. Extra Floor Moldings: Quantity equal to 2 percent of total installed, but not less than 8 linear feet of each type and color.

### 1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified resilient accessories with minimum 5 years documented experience.
B. Installer Qualifications: Company specializing in installing specified resilient accessories with minimum 5 years documented experience.

### 1.05 DELIVERY, STORAGE, AND HANDLING

A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
B. Store all materials off of the floor in an acclimatized, weather-tight space.
C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
D. Protect roll materials from damage by storing on end.
E. Do not double stack pallets.

### 1.06 FIELD CONDITIONS

A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

## PART 2 PRODUCTS

### 2.01 STAIR COVERING

A. STR1Stair Treads with Integral Risers: Rubber; full height of riser, full width and depth of tread in one piece; tapered thickness.
   1. Manufacturers: Provide products from one of the following:

a. Interface Nora: https://shop.interface.com/US/en-US/resilient/nora-rubber/.
b. Substitutions: Not permitted.
c. Manufacturer's Representative: Sofia Davila, 347-633-0577, sofia.davila@interface.com

2. **Style: Norament, Grano **ADD1****
3. Minimum Requirements: Comply with ASTM F2169, Type TS, rubber, vulcanized thermoset.
4. Nominal Thickness: 0.1875 inch.
5. Nosing: Square.
6. Striping: 2 inch wide contrasting color strips.
   a. Color: Black Smooth.
7. Tread Texture: Hammered.
8. Colors: Black Pepper 5304.

## 2.02 RESILIENT BASE

A. RB1Resilient Base: ASTM F1861, Type TS rubber, vulcanized thermoset; top set Style B, Cove.
   1. Manufacturers: Provide products from one of the following:
      a. Armstrong Flooring Inc.: www.armstrongflooring.com.
      b. Burke Flooring: www.burkeflooring.com.
      c. Johnsonite, a Tarkett Company: www.johnsonite.com.
      d. Roppe Corp: www.roppe.com.
      e. Substitutions: See Section 01 6000 - Product Requirements.
   2. Height: 4 inch.
   3. Thickness: 0.125 inch.
   4. Finish: Satin.
   5. Length: Roll.
   6. Colors: Black.

## 2.03 FLOOR MOLDINGS

A. Floor Moldings: Resilient edge and transition strips for changes in flooring materials.
   1. Manufacturers:
      a. Johnsonite, a Tarkett Company: www.johnsonite.com.
      b. Substitutions: See Section 01 6000 - Product Requirements.
   2. Material: Rubber or vinyl as is standard with manufacturer.
   3. Profiles: As standard with manufacturer and as appropriate for floor finishes, unless otherwise indicated
   4. Provide floor moldings at the following locations unless otherwise indicated:
      a. Open perimeters of resilient flooring; reducer strips.
      b. Open perimeters of carpeting; edge guards.
      c. Changes in floor finishes from resilient flooring to carpeting; transition strips.
      d. Other areas as indicated or required for complete floor finish installations.
      e. Height changes due to various flooring thickness:
         1) RSF3 (10.5mm) to CONCS
         2) RSF3 (10.5mm) to RSF1 (6mm)
         3) RSF2 (10mm) to RSF1 (6mm)
         4) RSF2 (10mm) to RFT1 (3.5mm)
         5) RSF2 (10mm) to CONCS
         6) CPT1 (0.222 inches) to RSF2 (10mm)
         7) RFT1 (3.5mm) to CONCS
   5. Colors: As selected by Architect.

## 2.04 ACCESSORIES

A. Primers and Adhesives: Waterproof; types recommended by accessories manufacturer.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that surfaces are flat to tolerances acceptable to stair covering manufacturer, free of cracks that might telegraph through stair coverings, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of stair coverings to substrate.

B. Verify that surfaces are flat, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of floor moldings to substrate.

C. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

### 3.02 PREPARATION

A. Clean substrates.

### 3.03 INSTALLATION - GENERAL

A. Install in accordance with manufacturer's written instructions.

B. Adhesive-Applied Installation:

1. Fully adhere resilient base, stair coverings, and floor moldings, to substrates using a full spread of adhesive completely covering substrate.
2. Spread only enough adhesive to permit installation of materials before initial set.
3. Fit joints and butt seams tightly.

C. Install floor moldings at unprotected or exposed edges, where flooring terminates, and where indicated.

1. Resilient Strips: Attach to substrate using adhesive.

### 3.04 INSTALLATION - RESILIENT BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Install with minimal amount of joints; tops of adjacent pieces shall be aligned.

C. Miter internal corners. At external corners, 'V' cut back of base strip to 2/3 of its thickness and fold. At exposed ends, use premolded units.

D. Install base on solid backing. Bond tightly to wall and floor surfaces.

E. At masonry and other irregular substrates fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

F. Scribe and fit to door frames and other interruptions.

### 3.05 INSTALLATION - STAIR COVERINGS

A. Install stair coverings in one piece for full width and depth of tread, where possible.

B. Adhere over entire surface. Fit accurately and securely.

C. Use filler as recommended by stair covering manufacturer to fill substrates that do not conform tightly to stair covering contours.

### 3.06 INSTALLATION - FLOOR MOLDINGS

A. Install floor moldings in one piece for full width of installation, where possible.

B. Where joints are unavoidable, fit tightly together and align adjacent molding profiles.

C. Adhere over entire surface. Fit accurately and securely.

### 3.07 CLEANING

A. Remove excess adhesive from floor, base, and wall surfaces without damage.

### 3.08 PROTECTION

A. Prohibit traffic on resilient stair coverings and floor moldings for 48 hours after installation.

**END OF SECTION 09 6513**

# SECTION 09 6566 - RESILIENT ATHLETIC FLOORING

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Rubber sheet flooring, adhesively installed.

### 1.02 RELATED REQUIREMENTS

A. Section 03 3003 - Cast-In-Place Concrete Requirements for Floor Slabs - Methods and materials for moisture reducing admixtures in cast-in place concrete and related testing.

B. Section 09 0561 - Common Work Results for Flooring Preparation: Removal of existing floor coverings, cleaning, and preparation.

### 1.03 REFERENCE STANDARDS

A. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness; 2015 (Reapproved 2021).

B. EN 14808 - Surfaces For Sports Areas - Determination of Shock Absorption; 2005.

C. EN 14809 - Surfaces For Sports Areas - Determination of Vertical Deformation; 2005.

D. EN 1516 - Surfaces For Sports Areas - Determination of Resistance to Indentation; 2005.

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, and layout, colors, and widths of game lines and equipment locations.

D. Selection Samples: Manufacturer's color charts for flooring materials specified and game line paints, indicating full range of colors and textures available.

E. Verification Samples:

1. Resilient Flooring: Submit 3 samples, 8 inch square, illustrating color and pattern for each resilient flooring product specified.

F. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

### 1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum 5 years documented experience.

B. Installer Qualifications: Company specializing in installing specified flooring with minimum 5 years documented experience and approved by flooring manufacturer.

C. Floor Slab Moisture Content: Manufacturer and Installer of Athletic Surfacing acknowledge that concrete slabs scheduled to receive Athletic Surfacing products are constructed with concrete mix designs containing water-vapor reducing admixtures. Manufacture and Installer of Athletic Surfacing agree to cooperate with manufacturer of water–vapor reducing admixtures including methods for testing slab moisture content, interpretation of moisture test results, and methods for slab preparation to receive Athletic Surfacing. Claims for additional compensation based on disagreements arising from interpretation of slab moisture testing will not result in additional costs to the Owner, or be acceptable cause for modification of warranty (guarantee) requirements included in this section or other sections of the contract documents.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

B. Store materials in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

**1.07 FIELD CONDITIONS**

A. Maintain temperature in spaces to receive adhesively installed resilient flooring within range of 70 to 95 degrees F for not less than 48 hours before the beginning of installation and for not less than 48 hours after installation has been completed. Subsequently, do not allow temperature in installed spaces to drop below 50 degrees F or to go above 100 degrees F.

**PART 2 PRODUCTS**

**2.01 PREFORMED ATHLETIC FLOORING**

A. RSF1 Resilient Ahtletic Flooring - Multipurpose
   1. Rubber Sheet Flooring: Multi-layer, dual-durometer, vulcanized sheet rubber flooring; smooth top wear layer with marbleization throughout the wear layer's entire depth.
      a. Products:
         1) Mondo USA; Advance, 2 Layer: www.mondoworldwide.com
         2) Substitutions: Not permitted.
         3) Manufacturer's Representative: Kevin Walsh, 847.887.9541, Kevin@kieferusa.com.
      b. Total System Thickness: 6mm
      c. Sheet Width: 6 feet, 1 inch
      d. Sheet Lengths: As necessary to minimize transverse seams.
      e. Wear Layer:
         1) Wear Layer Thickness: 2mm.
         2) Surface Finish: Smooth
         3) Color: L70 Light Grey.
      f. Performance Requirements:
         1) Durameter Hardness. Type A: When tested in accordance with ASTM D2240.
            (a) Top/Wear Layer: 78 mininum
            (b) Bottom Layer: 60 minimum

B. RSF2 Resilient Ahtletic Flooring - Multipurpose
   1. Rubber Sheet Flooring: Multi-layer, dual-durometer, vulcanized sheet rubber flooring; smooth top wear layer with marbleization throughout the wear layer's entire depth.
      a. Products:
         1) Mondo USA; Advance, 2 Layer: www.mondoworldwide.com
         2) Substitutions: Not permitted.
         3) Manufacturer's Representative: Kevin Walsh, 847.887.9541, Kevin@kieferusa.com.
      b. Total System Thickness: 8mm
      c. Sheet Width: 6 feet, 1 inch
      d. Sheet Lengths: As necessary to minimize transverse seams.
      e. Wear Layer:
         1) Wear Layer Thickness: 10mm.
         2) Surface Finish: Smooth
         3) RSF2A: L70 Light Grey.
         4) RSF2B: L06 Dark Grey.
      f. Performance Requirements:
         1) Durameter Hardness. Type A: When tested in accordance with ASTM D2240.
            (a) Top/Wear Layer: 78 mininum
            (b) Bottom Layer: 60 minimum
      g. **Game Lines: Manufacturer’s standard pigmented polyurethane paint.**
         1) **Colors: Up to 2 colors, unless otherwise indicated.**
         2) **Locations: As indicated on drawing. **ADD1****

C. RSF3Resilient Athletic Flooring - Running Track:
   1. Rubber Sheet Flooring: Multi-layer, dual-durometer, vulcanized sheet rubber flooring; textured top wear layer with hexagonal backing layer.
      a. Products:

1) Mondo USA; Super X 720: www.mondoworldwide.com.
2) Substitutions: Not permitted.
3) Manufacturer's Representative: Kevin Walsh, 847.887.9541, Kevin@kieferusa.com.

b. Total System Thickness: 10.5mm (13/32 inches).
c. Sheet Width: Minimum 48 inches.
d. Sheet Lengths: As necessary to minimize transverse seams.
e. Wear Layer:
1) Surface Finish: Super X 720 Embossing
2) Colors:
(a) RSF3A: Dark Grey P06
(b) RSF3B: Terracotta P121
(c) RSF3C: Medium Grey P31
f. Game Lines: Manufacturer's standard pigmented polyurethane paint.
1) Colors: Up to 1 colors.
(a) White.
g. Performance Requirements:
1) Durometer Hardness, Type A: When tested in accordance with ASTM D2240:
(a) Top/Wear Layer: 55, minimum.
(b) Bottom Layer: 35, minimum.

## 2.02 ACCESSORIES

A. Leveling Compound: Latex-modified cement formulation as recommended by flooring. manufacturer for substrate conditions.
B. Flooring Adhesive: Waterproof; types recommended by flooring manufacturer.

# PART 3 EXECUTION

## 3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of athletic flooring. Proceed with installation only after unsatisfactory conditions have been corrected.
B. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of athletic flooring to substrate.
C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
1. Test in accordance with Section 09 0561 - Common Work Results for Flooring Preparation.

## 3.02 PREPARATION

A. Prepare floor substrates as recommended by flooring and adhesive manufacturers.
B. Concrete: Use leveling compound as necessary to achieve substrate flatness of plus or minus 1/8 inch within 10 ft radius.
C. Remove coatings that are incompatible with flooring adhesives, using methods recommended by flooring manufacturer.
D. Broom clean areas to receive athletic flooring immediately before beginning installation.

## 3.03 INSTALLATION

A. Starting installation constitutes acceptance of subfloor conditions.
B. Install in accordance with manufacturer's written instructions.
C. Rubber Sheet Flooring:
1. Installed sheet flooring shall be without open cracks, raising and puckering at joints, bubbling, telegraphing, and other imperfections.

2. Unless otherwise indicated lay flooring with joints and seams parallel to longer room dimensions, to produce minimum number of seams. Lay out seams to avoid widths less than 1/3 of roll width; match patterns at seams.
3. Unroll flooring and allow to relax before beginning installation.
4. Mix adhesive thoroughly and apply to substrate with notched trowel. Roll flooring into fresh adhesive, overlapping end seams and double cutting, butting factory edges and compression fitting.
5. Roll entire flooring surface with steel roller to assure adhesion to substrate and eliminate air bubbles.
6. Immediately remove any adhesive from flooring surface, using chemical recommended by flooring manufacturer.
7. Fit joints and butt seams tightly.
8. Lay out game lines using tape and taping machine approved by flooring manufacturer. Apply game line paint with roller, and allow to dry before removing tape.
9. Apply transparent top coat over flooring if recommended by manufacturer, to achieve a uniform finished appearance.

**3.04 CLEANING**

A. Clean flooring using methods recommended by manufacturer.
   1. Complete final cleaning of floor not more than 5 days prior to Substantial Completion.

**3.05 PROTECTION**

A. Protect finished athletic flooring from construction traffic to ensure that it is without damage upon Date of Substantial Completion.
   1. After cleaning, place protective coverings over finished floors; do not remove coverings until Date of Substantial Completion.

**END OF SECTION 09 6566**

# SECTION 11 6623 - GYMNASIUM EQUIPMENT

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. ~~Basketball equipment.~~ **ADD1**
B. Wall safety pads.
C. Divider curtains.
D. Indoor batting cages.
E. Volleyball equipment.

### 1.02 DEFINITIONS

A. NFHS: National Federation of State High School Associations.

### 1.03 REFERENCE STANDARDS

A. ANSI A208.1 - American National Standard for Particleboard; 2022.
B. ASTM A391/A391M - Standard Specification for Grade 80 Alloy Steel Chain; 2021.
C. ASTM A413/A413M - Standard Specification for Carbon Steel Chain; 2021.
D. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings; 1999, with Editorial Revision (2022).
E. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2020.
F. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.
G. ASTM F2440 - Standard Specification for Indoor Wall/Feature Padding - 2018.
H. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.
I. NEMA IA 10030 - Industrial Control and Systems: Enclosures; 2024.
J. NFHS (Guide) - Court and Field Diagram Guide; current edition.
K. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
L. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
M. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films; 2023, with Errata.
N. PS 1 - Structural Plywood; 2023.
O. PS 2 - Performance Standard for Wood Structural Panels; 2018.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
B. Large Components: Ensure that large components can be moved into final position without damage to other construction.
C. Electrically Operated Equipment: Coordinate location and electrical characteristics of service connection.

### 1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's data showing configuration, sizes, materials, finishes, hardware, and accessories; include:
   1. Electrical characteristics and connection locations.
C. Shop Drawings:
   1. Include plans, elevations, sections, and attachment details.
   2. Include point loads and locations for attachment of gymnasium equipment to structure.

3. Indicate operational clearances.
4. Include diagrams for power, signal, and control wiring
5. For divider curtains:
   a. Include plans showing alignment of curtains in relation to court layout and overhead structural supports.
   b. Include system clearances, stacking requirements, and limits for fitting into adjacent construction.

D. Coordination Drawings: Court layout plans, reflected ceiling plans, and other details, drawn to scale, and coordinated with ceiling-suspended gymnasium equipment, divider curtains, floor inserts, game lines, and markers applied to finished flooring, and coordinated with each other, using input from installers of the items involved:
   1. Structural members to which overhead-supported gymnasium equipment will be attached.
   2. Suspended ceiling components, if any.
   3. Items supported from building structure above the courts, including, but not limited to, the following:
      a. Luminaires.
      b. Air outlets and inlets.
      c. Speakers.
      d. Sprinklers.
      e. Smoke detectors.
      f. Acoustical treatments or panels.
      g. Access panels.

E. Samples: Submit 3 samples 3 by 3 inches in size showing each color and finish selected.

F. Selection Samples: Where colors and finishes are not specified, submit 3 sets of color and finish selection charts or chips.

G. Operating and maintenance data for each operating equipment item.

H. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

## 1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than 5 years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified with minimum 5 years of documented experience and approved by manufacturer.

## 1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in manufacturer's original packaging with factory original labels attached.

B. Store products indoors and elevated above floor; prevent warping, twisting, or sagging.

C. Store products in accordance with manufacturer's instructions; protect from extremes of weather, temperature, moisture, and other damage.

## 1.08 FIELD CONDITIONS

A. Environmental Limitations: Do not install equipment until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Field Measurements: Verify position and elevation of floor inserts and layout for gymnasium equipment.

## 1.09 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Manufacturer agrees to repair or replace components of gymnasium equipment that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Basketball backboard failures, including glass breakage.
   b. Faulty operation of divider curtains and basketball backstops.
   c. Faulty operation of volleyball standards and winches.
2. Warranty Periods:
   a. 1 year from date of Substantial Completion for volleyball nets, volleyball referee stand, volleyball equipment cart, safety pads, volleyball antennas, volleyball sideline markers, and volleyball cable covers.
   b. 3 years from date of Substantial Completion volleyball winch assembly, volleyball floor sleeves, and volleyball cover plates.
   c. 4 years from date of Substantial Completion for basketball goals.
   d. 5 years from date of Substantial Completion for divider curtains.
   e. 10 years from date of Substantial Completion for basketball backboard safety pads and volleyball standards.
   f. 25 years from date of Substantial Completion for ceiling mounted basketball backstops.
   g. Lifetime for basketball backboards.

## PART 2 PRODUCTS

### 2.01 MANUFACTURERS

A. Gymnasium Equipment: The design for each item specified is based on the product name. Provide either the product identified as "Basis of Design" or an equivalent product from one of the following:
   1. ADP Lemco, Inc: www.adplemco.com/#sle.
   2. Draper, Inc: www.draperinc.com/#sle.
   3. IPI by Bison, Inc: www.ipibybison.com/#sle.
   4. JayPro Sports, LLC; www.jayprosports.com.
   5. Performance Sports Systems: www.perfsports.com/#sle.
   6. Porter Athletic Equipment Company: www.porterathletic.com/#sle.
   7. Spalding Sports Equipment; www.spaldingequipment.com
   8. Shelde Sports ; www.scheldesports.us; (833) 724-3533.
   9. Substitutions: See Section 01 6000 - Product Requirements.

### 2.02 GENERAL REQUIREMENTS

A. See drawings for sizes and locations, unless noted otherwise.
B. Where mounting dimensions or sizes are not indicated, comply with applicable requirements of the following:
   1. National Federation of State High School Associations (NFHS) sports rules; NFHS (Guide).
C. Provide mounting plates, brackets, and anchors of sufficient size and strength to securely attach equipment to building structure; comply with requirements of Contract Documents.
   1. Equipment supplier / Installer to provide all required support pipes, hangers, chains, cables, etc., to install their products from the main structure. Equipment cannot be mounted to secondary roof purlins.
D. Hardware: Heavy duty steel hardware, as recommended by manufacturer.
E. Electrical Wiring and Components: Comply with NFPA 70; provide UL-listed equipment.
F. Structural Steel Fabrications: Welded in accordance with AWS D1.1/D1.1M, using certified welders.

### 2.03 GYMNASIUM DIVIDER CURTAINS

A. Netting: Fixed.
   1. Netting: Black; No. 36 Nylon
      a. Mesh openings: 1 3/4 inch square.
   2. Color: Black.
B. Divider-Curtain System: Electrically operated.

1. Operation: Vertical lift fold-up conforming to ceiling profile;
2. Outer Edge Hems: Double turned and welded.
3. Supports and Fittings: Corrosion-resistant steel clamps and hangers.
4. Drive Pipe: 3-1/8-inch nominal diameter, fabricated from steel or aluminum, with minimum number of joints for required lengths. Black finish.
5. Curtain Battens: 1-1/2-inch nominal diameter, fabricated from steel pipe or tubing, with minimum number of joints for required lengths. Black finish.

C. Divider Curtains:
1. Upper Curtain, Mesh: Woven mesh of polyester yarn coated with vinyl, weighing not less than 9 oz./sq. yd.
   a. Color: Standard color as selected by Architect.
2. Lower Curtain, Solid: Woven polyester fabric coated with vinyl, 22 oz./sq. yd.
   a. Height Above Floor: ~~8 feet~~**.5 feet **ADD1****
   b. Color: Standard color as selected by Architect.
3. Hems: Folded and electronically welded.
4. Seams: Electronically welded.
5. Overall Curtain Height: Floor to ceiling, within installation clearances required.
6. Bottom of Curtain: Approximately 2 inches above finished floor.
7. Flame-Resistance Rating: Passes NFPA 701 Test 2.

D. Curtain Operators:
1. Electric motors of size and capacity recommended by divider curtain manufacturer for proper operation.
   a. Include wiring from control stations to motors and between synchronizer and dual motors for long curtains.
   b. Coordinate operator wiring requirements and electrical characteristics with building electrical system.
2. Electrical Components, Devices, and Accessories: Listed and labeled according to NFPA 70 and marked for intended location and application.
3. Motor Electrical Characteristics:
   a. Horsepower: 1 hp.
   b. Voltage: 120 V AC, single phase, 60 hertz.
4. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop divider curtain at fully extended and fully retracted positions.
5. Safety Lock: Locks drive system when speed exceeds 1-1/2 fps or manufacturer's recommended speed; whichever is more restrictive.
6. Controls: Controlled by a remote control station.

E. Locations: As indicated.

F. Basis of Design: Refer to Drawings for locations of the following types: .
1. Divider Curtain: Performance Sports Systems; Model Peak Fold 4025-Peak: www.perfsports.com
2. Divider Curtain: Performance Sports Systems; Model Slope Fold 4025-Slope: www.perfsports.com
3. Divider Curtain: Performance Sports Systems; Model 4030 Roll Up; www.perfsports.com
4. Walk Draw Curtain: Performance Sports Systems; Model 4013: www.perfsports.com
5. Walk Draw Curtain:

## 2.04 INDOOR CONTAINMENT

A. Indoor Batting Cages:
1. Enclosure Material: Netting on top and sides with sewn rope border allowing for additional material on sides to rest on floor to retain balls within batting cage.
2. Netting: Black, No.36 nylon, 1-3/4 inches square.
   a. **For batting cages on Mezzanine Level: Netting to be Black, No 21 nylon, 3/4 inch square, to restrict the passage of golf balls, rated at 210 pound minimum tensile strength.**

b. **Batting Cages on Mezzanine Level: Refer to Alternate No.1 – Section No. 01 2300 – Alternates.**ADD1****

3. Size:
   a. Length:70 feet.
   b. Width: 12 feet.
   c. Height: 12 feet.
4. Upper Support Frame: At least 1-1/2 inches diameter aluminum pipe and necessary fittings to provide symmetrical layout with uniform spacing.
5. Support Cables: Steel cables at least 1/8 inch in diameter with minimum of 1800 pounds tensile strength spaced to align with support frame horizontal members providing uniform load distribution and stability.
6. Basis of Design: Performance Sports Systems; Model 4080BL - 70: www.perfsports.com

B. Indoor Suspended Throwing Cage:
1. Enclosure Material: Netting on top and sides with sewn rope border allowing for additional material on sides to rest on floor to retain balls within batting cage.
2. Netting: Black, No.36 nylon, 1-3/4 inches square.
3. Width: 16 feet 5 inches
4. Radius: 8 feet 2 1/2 inches
5. Height: 12 feet 2 inches
6. Basis of Design: Performance Sports Model 4075

## 2.05 FLOOR-MOUNTED EQUIPMENT

A. Sleeves for Volleyball Posts:
1. Manufacturer: Shelde Sports:
2. Size:
   a. Diameter: ~~3 inches~~. 4inches. **ADD1**
   b. Length: 9 inches
   c. Flange thickness: 1/8 inch.
3. Cover:
   a. Material: Brass alloy construction
      1) Provide spacers to accommodate distance between finished floor level and cast in places sleeve body.
   b. Color: Painted to match color sample provided by Architect.
4. **Second Story Socket Form: Refer to Structural Drawings for custom fabricated element for each volleyball post. **ADD1****

B. **Long / Triple Jump Take Off Board:**
1. **Manufacturer: Sportsfield Special;ties; www.sportsfieldspecialties.com.**
2. **Model: LTJT0B8BL-8 inch Long and Triple Jump Take-Off Board System with Blanking Lid.**
3. **Components:**
   a. **White Synthetic Polyboard with Textured Surface:**
      1) **Dimensions: 8 inches wide x 48 inches long, 3/4 inches deep.**
      2) **Grooved Edges for Slide-on Assembly, no exposed fastening hardware.**
   b. **Extruded Aluminum Insert/Spacer:**
      1) **Wall Thickness: 0120 inches.**
      2) **Designed to accommodate Slide-on Board Assembly.**
   c. **Formed Aluminum Blanking Lid:**
      1) **Material:1/8 inch (0.125 inches) Aluminum Sheet.**
      2) **1/2 inch Recess to accept synthetic Track Surfacing by Section 09 8566 – Resilient Athletic Flooring**
   d. **16 Gauge (0.60 inch) 304 Stainless Steel Tray:**
      1) **Cap 1 inch PVC drain stub (oriented at either end). **ADD1****

## 2.06 WALL SAFETY PADS

A. Wall Safety Pads: Padded wall panels attached in a continuous row.

1. Construction: Fabric covered fill material laminated to backer board,
   a. Backer Board: Minimum 1/2 inch thick plywood or oriented strand board.
   b. Fill: Fire-resistive, high impact-resistant, neoprene foam.
      1) Thickness: 2 inches, minimum.
      2) Density: 6 lb per cu. ft.
   c. Fabric: Puncture and tear resistant, PVC-coated polyester or nylon-reinforced PVC fabric.
      1) Weight: 14-oz./sq. yd., minimum.
      2) Secure fabric to back of backer board.
      3) Fabric shall be free of sags and wrinkles.
      4) Treat with fungicide for mildew resistance.
      5) Colors: Two standard colors as selected by Architect.
2. Performance Requirements:
   a. Complies with ASTM F2440 for impact protection.
   b. Surface-Burning Characteristics: ASTM E84, Class A.
      1) Flame-Spread Index: 25 or less.
      2) Smoke-Developed Index: 450 or less.
3. Sizes:
   a. Standard Padding:
      1) Width: 24 inches.
      2) Length: 72 inches.
   b. L and C Shaped Padding:
      1) Manufacturer's standard L and C shapes for corners. Length to match standard padding.
   c. Specially Shaped Padding: Custom fabricate special shapes and sizes to fit irregularly shaped members, areas, and protrusions in walls.
      1) Provide padding for:
         (a) I-beams.
         (b) Pilasters / Columns
         (c) Other items as indicated.
4. Cutout Trim: Provide manufacturer's standard flanged cutout trim kits for fitting pads around switches, receptacles, and other obstructions.
5. Mounting Method: Concealed Z-clips.
6. Locations: As indicated.
7. Basis-of-Design: Performance Sports Systems; Model 4130 Wall Pads with Model 4196 z-clips.

## 2.07 REMOTE CONTROL SYSTEM

A. Remote Control System:
   1. General: All gymnasium operable equipment within each gymnasium space shall be controlled from a single system located within full view of all the operable gymnasium equipment.
      a. Systems shall be capable of controlling all the operable equipment within the space including, but not limited to, the following:
         1) Divider curtains.
         2) Batting cages
         3) Throwing cages
      b. Provide two (2) separate control systens as follows:
         1) One to control Divider Curtains and containment items on the first levelk.
         2) One to control the Batting Cages on the Mezzanine Level (Alternate No. 1)
   2. Remote-Control Stations: NEMA IA 10030, Type 1 enclosure for flush mounting. Key-pad controlled, with constant pressure on the key pad to control gymnasium equipment.
      a. Control station shall be capable of controlling gymnasium equipment individually or in multiple pre-programmed groups.

b. Control station shall require a four digit password to operate and shall go inactive after 30 seconds of non-use.
c. Control station shall use LED lights and buzzer, or similar method, to provide information to user as follows:
1) Green LED and buzzer activation occurs after correct password has been entered, and system is activated.
2) Yellow LED indicates standby mode.
3) Red LED indicates activation and operation of selected gymnasium equipment.
d. Locations: As indicated.
3. Include all associated relay boards and wiring as required for a complete remote control system.
4. Basis-of-Design: Performance Sports Systems; Model TSC1500.

**2.08 MISCELLANEOUS MATERIALS**

A. Cheer Mat: EZ Flex Carpet Bonded Foam Mat; www.ezflexmats.cpom
1. Foam Type: Cross-Linked Polyethylene
2. Thickness: 2 inches
3. Size: 6 feet wide x 43 long feet.
4. Quantity: Seven (7) for total width of 42 feet.
5. Color: Selected by Architect from standard range

B. Jump Form Sand Pit: Sports Specialties: www.sportsfield.com
1. Model: SPSCHS
2. Size:
a. Interior length: 23 feet, 5 1/4" inches.
b. Exterior length: 26 feet 4 inches
c. Width: 13
3. Provide Standard cover consisting of eight (8) panels.
4. Provide 1/8 inch aluminum sheet sand catchers complete with:
a. 1/8 inch Aluminum sheet base forms with welded cross supports.
b. Integrated drain tubess at each corner.
c. 1 inch x 1/8 inch thick aluminum swag grating,
d. q.2 inch thick rubber mats with 1 1/4 inch round perforations.
5. Provide 8 inch Take off Board, complete with:
a. 3/4 inch white polyboard stextured surface (Replacable).
b. Extruded spacer
c. Stainless steel trough connected to sub-surgace drainage stystem.

C. Vault Box Plug:
1. Sportsfield Specialties: Model PVBCPSS
a. Material:
1) Aluminum.
2) Thickness: 0.090 inches.
3) Depth: Tapered from 0 inches to 7 3.4 inches.
4) Width: 1 foot 11 9/16 inches.
5) Length: 3 feet 6 3/16 inches.
b. Cover recessed 1/2 inch to receive synthetic track material, and provided with retractable lift handle.
c. Provide:
1) Pole Vault Uprights:
(a) Model: PVS0517 (two).
(1) Frame: Custom Extruded Uprights with 1 1/2 inch square tune extension post,1/8" thick wall construction.
(2) Steel rolling base
(3) Bar rest pins
(b) Cross Bar positions 5 feet to 17 feet.

2) Provide Cross bar
   (a) Model PVX
   (b) Length: 13 feet 1 inch.
   (c) Material: High strength, High visability Fiberglass.
3) Provide fall mats full set with 2 color logo
   (a) Model: PV2224HDZ Durazone
      (1) PVDG - Digitally printed grapgic.
      (2) Artwork to be provided by Architect.
4) Provide Pole Vault Standard Angled Base Protector Pads for uprights: Model PVBPANG

D. Wrestling Mat: EZ Flex Carpet Bonded Foam Mat: www.ezflexmats.com
   1. Foam Type: Cross linked Polyethylene.
   2. Thickness: 2 inches.
   3. Size: 6 feet wide x 42 feet long.
   4. Quantity: Seven (7) for a total width of 42 feet.
   5. Color: Selected by Architect from standard range.
   6. Logo: Provide 2 color logo for center of the combined matt layout.
      a. Artwork for logo to be provided to Contractor.

E. Equipment-Mounting Boards: Wood; size and quantity as required to mount gymnasium equipment according to manufacturer's instructions.
   1. Finish: Gymnasium equipment manufacturer's standard transparent finish.

F. Associated Hardware, Support, and Fasteners:
   1. Support Cable: Manufacturer's standard galvanized-stranded-steel wire rope with a breaking strength of 7000 lbs.
      a. Provide fittings according to the wire rope manufacturer's instructions for size, number, and installation method.
   2. Support Chain and Fittings: ASTM A391/A391M, Grade 80, heat-treated alloy-steel chains.
      a. Provide hot-dip galvanized or zinc-plated steel connectors and hangers.
   3. General Purpose Chain: For chains not used for overhead lifting, ASTM A413/A413M carbon steel chain, Grade 30 proof coil chain or higher as recommended by gymnasium equipment manufacturer.
      a. Provide coating type, chain size, number, and installation method according to manufacturer's instructions.
   4. Castings and Hangers: ASTM A47/A47M malleable iron; grade as required for structural loading.
   5. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard corrosion-resistant units; concealed; tamperproof, vandal-resistant design.

G. Plywood: PS 1, Exterior Exposure.

H. Oriented Strand Board (OSB): PS 2.

I. Particle Board: ANSI A208.1.

J. Grout: Nonshrink, nonmetallic, premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout, ASTM C1107/C1107M; with minimum strength recommended by gymnasium equipment manufacturer.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Take field measurements to ensure proper fitting of work. If taking field measurements before fabrication will delay work, allow for adjustments within recommended tolerances.

B. Inspect areas and conditions before installation, and notify Architect in writing of unsatisfactory or detrimental conditions.
   1. Verify that supporting structure, subfloors, and other substrates are properly prepared to receive and support work of this section.

C. Do not proceed with this work until conditions have been corrected; commencing installation constitutes acceptance of work site conditions.
D. Verify that electrical services are correctly located and have proper characteristics.

**3.02 INSTALLATION - GENERAL**

A. Install gymnasium equipment in accordance with Contract Documents and manufacturer's instructions.
B. Install gymnasium equipment after other finishing operations, including painting, have been completed unless otherwise indicated.
C. Coordinate installation of inserts and anchors that must be built in to flooring or subflooring.
D. Install equipment rigid, straight, plumb, and level.
E. Secure equipment with manufacturer's recommended anchoring devices.
    1. Fasteners and anchors shall properly transfer gymnasium equipment loads to structural supports.
F. Separate dissimilar metals to prevent electrolytic corrosion.
G. Electric Installation: Connect wiring to building electrical system.

**3.03 OPERATIONAL GYMNASIUM EQUIPMENT**

A. Operating Gymnasium Equipment: Verify clearances of movable components of gymnasium equipment throughout entire range of operation and for access to operating components.

**3.04 FLOOR INSERTS**

A. Floor Inserts:
    1. Coordinate locations with application of game lines and markers.
    2. Coordinate installed elevation heights of floor inserts with installation and field finishing of finish flooring; ensure that installed cover plates are flush with adjacent flooring.
    3. Installation:
        a. Clean oversized, recessed voids in concrete substrate of debris.
        b. Position each sleeve, and fill void around sleeve with grout, mixed and placed according to grout manufacturer's written instructions.
        c. Hold sleeve in proper position until grout is sufficiently cured.

**3.05 WALL SAFETY PADS**

A. Install wall padding securely, with edges tight to wall and without wrinkles in fabric covering.
B. Bottom of pads shall be 4 inches above finish floor unless otherwise indicated.
C. Limit cuts in face of wall padding so that cuts are securely and fully concealed behind cutout trim.

**3.06 ADJUSTING**

A. Verify proper placement of equipment.
B. Verify proper placement of floor inserts; install volleyball standard posts and equipment and verify installation is proper and all equipment functions correctly.
C. Perform operational tests of all operable equipment.
    1. Adjust operating equipment for proper operation; remove and replace equipment causing noise or vibration; lubricate equipment as recommended by manufacturer.
    2. Verify that limit switches are properly set.

**3.07 CLEANING**

A. Remove masking or protective covering from finished surfaces.
B. Clean equipment in accordance with manufacturer's recommendations.

**3.08 PROTECTION**

A. Protect installed products until Date of Substantial Completion.
B. Replace damaged products before Date of Substantial Completion.

**3.09 DEMONSTRATION**

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain gymnasium equipment.

**END OF SECTION 11 6623**

# SECTION 22 1319 - DRAINAGE PIPING SPECIALTIES

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## PART 1 GENERAL

### 1.01 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. Related Sections include the following:

1. Division 20 Section “Mechanical General Requirements.”

2. Division 20 Section “Basic Mechanical Materials and Methods.”

### 1.02 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. FOG: Fats, oils, and greases.

C. FRP: Fiberglass-reinforced plastic.

D. HDPE: High-density polyethylene plastic.

E. PE: Polyethylene plastic.

F. PP: Polypropylene plastic.

G. PUR: Polyurethane plastic.

H. PVC: Polyvinyl chloride plastic.

### 1.03 SUBMITTALS

A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and accessories.

B. Shop Drawings:

1. Show fabrication and installation details for frost-resistant vent terminals.

2. Wiring Diagrams: Power, signal, and control wiring.

C. Field quality-control test reports.

D. Operation and Maintenance Data: For drainage piping specialties to include in operation and maintenance manuals.

### 1.04 QUALITY ASSURANCE

A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

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

C. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic sanitary and storm piping specialty components.

### 1.05 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.

B. Coordinate size and location of roof penetrations.

## PART 2 PRODUCTS

### 2.01 CAST-IRON CLEANOUTS

A. Size: Cleanouts shall be same nominal size as the pipe they serve up to 4 inches. For pipes larger than 4 inches nominal size, minimum size of cleanout shall be 4 inches.

B. Exposed Cast-Iron Cleanouts:

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

a. Josam Company; Josam Div.; Series 58910.

b. MIFAB, Inc.; C1460.

c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; 4510 Series.

d. Tyler Pipe; Wade Div.

e. Watts Drainage Products Inc.

f. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M for cast iron for cleanout test tee.

3. Body Material: Hub-and-spigot, cast-iron soil pipe T-branch or hubless, cast-iron soil pipe test tee as required to match connected piping.

4. Closure: Countersunk or raised-head, brass or bronze plug with tapered threads.

C. Cast-Iron Floor Cleanouts (On-Grade Interior Floor Areas):

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

a. Josam Company; Josam Div.
b. MIFAB, Inc.; C1220-R.
c. Sioux Chief Manufacturing Company, Inc.
d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 4023S-F.
e. Tyler Pipe; Wade Div.
f. Watts Drainage Products Inc.
g. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.36.2M.
3. Type: Adjustable housing.
4. Body or Ferrule: Cast iron.
5. Clamping Device: Not required.
6. Outlet Connection: Spigot.
7. Closure: Brass, bronze, or plastic plug with tapered threads.
8. Adjustable Housing Material: Cast iron with threads, set-screws or other device.
9. Frame and Cover Material and Finish: Nickel-bronze, copper alloy with scoriated cover in service areas, and recessed cover to accept floor finish material in finished floor areas.
10. Frame and Cover Shape: Round.
11. Top Loading Classification: Medium Duty.
12. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

D. Cast–Iron Floor Cleanouts (Not-On-Grade Interior Floor Areas):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.
   b. MIFAB, Inc.; C-1100-C-R-34.
   c. Sioux Chief Manufacturing Company, Inc.
   d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 4333C.
   e. Tyler Pipe; Wade Div.
   f. Watts Drainage Products Inc.
   g. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M.
3. Type: Adjustable housing.
4. Body or Ferrule: Cast iron.
5. Clamping Device: Required.
6. Outlet Connection: Spigot.
7. Closure: Brass, bronze, or plastic plug with tapered threads.
8. Adjustable Housing Material: Cast iron with threads, set-screws or other device.

9. Frame and Cover Material and Finish: Nickel-bronze, copper alloy with scoriated cover in service areas, and recessed cover to accept floor finish material in finished floor areas.
10. Frame and Cover Shape: Round.
11. Top Loading Classification: Medium Duty.
12. Riser: ASTM A 74, Service class, cast-iron drainage pipe fitting and riser to cleanout.

E. Cast-Iron Wall Cleanouts (Finished Wall Areas):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Josam Company; Josam Div.; Model 58790-20.
   b. MIFAB, Inc.; C1460-RD.
   c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
   d. Tyler Pipe; Wade Div.
   e. Watts Drainage Products Inc.
   f. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.36.2M. Include wall access.
3. Body: Hub-and-spigot, cast-iron soil pipe T-branch or hubless, cast-iron soil pipe test tee as required to match connected piping.
4. Closure: Countersunk or raised-head, drilled-and-threaded bronze or brass plug with tapered threads.
5. Wall Access: Round, deep, chrome-plated bronze flat, chrome-plated brass or stainless-steel cover plate with screw.

## 2.02 PLASTIC CLEANOUTS

A. Size: Cleanouts shall be same nominal size as the pipe they serve up to 4 inches. For pipes larger than 4 inches nominal size, minimum size of cleanout shall be 4 inches.

B. Plastic Floor Cleanouts:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. IPS Corporation.
   b. MIFAB, Inc.
   c. NDS Inc.
   d. Sioux Chief Manufacturing Company, Inc.
   e. Zurn Plumbing Products Group; Light Commercial Operation.
2. Body: PVC.
3. Closure Plug: PVC.
4. Riser: Drainage pipe fitting and riser to cleanout of same material as drainage piping.

## 2.03 BACKWATER VALVES

A. Horizontal, Plastic Backwater Valves:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Canplas LLC.
    b. IPS Corporation.
    c. NDS Inc.
    d. Oatey.
    e. Plastic Oddities; a division of Diverse Corporate Technologies.
    f. Sioux Chief Manufacturing Company, Inc.; ProCheck.
    g. Zurn Plumbing Products Group; Light Commercial Operation.
2. Size: Same as connected piping.
3. Body: PVC.
4. Cover: Same material as body with threaded access to check valve.
5. Check Valve: Removable swing check.
6. End Connections: Socket type.
7. Deep-Bury Adapters: Same material as body, with solvent weld connections to extension.
8. Extension: NPS 6, Schedule 40 PVC extension to backwater valve cover at floor.

**2.04 FLOOR DRAINS**

A. Cast-Iron Floor Drains (Toilet Rooms, Kitchen and Janitor's Closet) FD-1:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Josam Company; Josam Div.
    b. MIFAB, Inc.
    c. Sioux Chief Manufacturing Company, Inc.; Finish Line Adjustable Drainage System.
    d. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 2005Y-A.
    e. Tyler Pipe; Wade Div.
    f. Watts Drainage Products Inc.
    g. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Seepage Flange: Required.
6. Clamping Device: Required.
7. Outlet: Bottom.
8. Coating on Interior and Exposed Exterior Surfaces: Enamel.
9. Top or Strainer Material: Nickel bronze.
10. Top of Body and Strainer Finish: Nickel bronze.

11. Top Shape: Round, with vandal proof screws.
12. Dimensions of Top or Strainer: 7 inch diameter.
13. Top Loading Classification: Light Duty.
14. Funnel: Not required.
15. Inlet Fitting: Gray iron, with spigot outlet.

B. Cast-Iron Floor Drains (Mechanical Rooms and Electrical Rooms) FD-2:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Josam Company; Josam Div.
    b. MIFAB, Inc.
    c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 2142Y.
    d. Tyler Pipe; Wade Div.
    e. Watts Drainage Products Inc.
    f. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3.
3. Pattern: Floor drain.
4. Body Material: Gray iron.
5. Seepage Flange: Required.
6. Clamping Device: Required.
7. Outlet: Bottom.
8. Coating on Interior and Exposed Exterior Surfaces: Enamel.
9. Sediment Bucket: 3-3/4 inches deep, slotted sediment bucket with lift bar.
10. Top or Strainer Material: Cast-iron.
11. Top Shape: Round.
12. Dimensions of Top or Strainer: 11-1/2 inch diameter tractor grate, 29 square inches of free area. Provide partial grate where required to accept equipment drains.
13. Top Loading Classification: Heavy Duty.
14. Funnel: Not required.
15. Outlet Fitting: Gray iron, with spigot outlet.

C. Cast-Iron Floor Sink Drains FS-1:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Josam Company; Josam Div.
    b. MIFAB, Inc.
    c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
    d. Tyler Pipe; Wade Div.
    e. Watts Drainage Products Inc.

f. Zurn Plumbing Products Group; Specification Drainage Operation.

g. Commercial Enameling Co.

h. Prier Products, Inc.

i. Zurn Plumbing Products Group; Light Commercial Operation.

2. Standard: ASME A112.6.3.

3. Pattern: Floor drain.

4. Body Material: Gray iron.

5. Seepage Flange: Required.

6. Clamping Device: Required.

7. Outlet: Bottom.

8. Coating on Interior and Exposed Exterior Surfaces: Acid resistant enamel.

9. Top or Strainer Material: No grate top.

10. Body and Strainer Finish: Nickel bronze.

11. Depth: 10 inches.

12. Top Shape: Square.

13. Dimensions of Top or Strainer: 12 inch by 12 inch, having 28 square inches of free area, and with flat bottom strainer.

14. Top Loading Classification: Light Duty.

15. Outlet Connection: Gray iron, with spigot outlet.

## 2.05 TRENCH DRAINS

A. Modular Cast-Iron Trench Drains (TD-1):

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

a. Josam Company; Josam Div.

b. MIFAB, Inc.

c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 2810 Series.

d. Tyler Pipe; Wade Div.

e. Watts Drainage Products Inc.

f. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Standard: ASME A112.6.3 for trench drains.

3. Material: Cast iron or ductile iron.

4. Flange: Anchor.

5. Clamping Device: Not required.

6. Outlet: Bottom unless otherwise indicated.

7. Grate Material: Cast iron.

8. Grate Finish: Not required.

9. Dimensions of Frame and Grate: 6 inches wide, and length indicated on Drawings.
10. Top Loading Classification: Heavy Duty.
11. Extension Sections: As required to suit project.

B. Modular Cast-Iron Trench Drains (TD-2):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Josam Company; Josam Div.
    b. MIFAB, Inc.
    c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
    d. Tyler Pipe; Wade Div.
    e. Watts Drainage Products Inc.
    f. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.3 for trench drains.
3. Material: Cast iron or ductile iron.
4. Flange: Anchor.
5. Clamping Device: Not required.
6. Outlet: Bottom unless otherwise indicated.
7. Grate Material: Nickel bronze.
8. Grate Finish: Not required.
9. Dimensions of Frame and Grate: 6 inches wide, and length indicated on Drawings.
10. Top Loading Classification: Light Duty.
11. Extension Sections: As required to suit project.

C. Trench Drain, (TD-3):

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Josam Company; Josam Div.
    b. MIFAB, Inc.
    c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.
    d. Tyler Pipe; Wade Div.
    e. Watts Drainage Products Inc.
    f. Zurn Plumbing Products Group; Specification Drainage Operation.; Z874-12
2. Type: Modular system of channel sections, grates, and appurtenances; designed so grates fit into channel recesses without rocking or rattling.
    a. Channel Sections: Interlocking-joint, HDPE modular units, with end caps. Include flat, rounded, bottom, with sloped-invert, and with outlets in number, sizes, and locations indicated.
        1) Dimensions: 12 inches wide. Include number of units required to form total lengths indicated.

b. Frame Materials: Powder coated carbon steel.

c. Grates: Stainless steel with slots or perforations and widths and thickness that fit recesses in channel sections, and including construction covers.

d. Supports, Anchors, and Setting Devices: (10) 4” long concrete anchors per 80” section.

e. Outlet: 4” No hub bottom outlet.

f. Rebar Clips: Required.

g. Vandal Proof Lockdown Grate: Required.

h. Channel-Section Joining and Fastening Materials: As recommended by system manufacturer.

i. Bottom Dome Strainer: Required.

## 2.06 AIR-ADMITTANCE VALVES

A. Fixture Air-Admittance Valves:

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

a. Ayrlett, LLC.

b. Durgo, Inc.

c. Oatey.

d. ProSet Systems Inc.

e. RectorSeal.

f. Studor, Inc.

2. Standard: ASSE 1051, Type A for single fixture or Type B for branch piping.

3. Housing: Plastic.

4. Operation: Mechanical sealing diaphragm.

5. Size: Same as connected fixture or branch vent piping.

B. Stack Air-Admittance Valves:

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

a. Durgo, Inc.

b. Oatey.

c. Studor, Inc.

2. Standard: ASSE 1050 for vent stacks.

3. Housing: Plastic.

4. Operation: Mechanical sealing diaphragm.

5. Size: Same as connected stack vent or vent stack.

C. Wall Box:

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

a. Durgo, Inc.

b. Oatey.

c. RectorSeal.

d. Studor, Inc.

2. Description: White plastic housing with white plastic grille, made for recessed installation. Include bottom pipe connection and space to contain one air-admittance valve.

3. Size: About 9 inches wide by 8 inches high by 4 inches deep.

## 2.07 ROOF FLASHING ASSEMBLIES

A. Roof Flashing Assemblies:

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

a. Acorn Engineering Company; Elmdor/Stoneman Div.

b. Thaler Metal Industries Ltd.

B. Description: Manufactured assembly consisting of metal flashing collar and skirt extending at least 8 inches from pipe, with boot reinforcement and counterflashing fitting.

## 2.08 ROOF DRAINS

A. **Metal Roof Drains RD-1:**

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

**a. Josam Company; Josam Div.**

**b. MIFAB, Inc.**

**c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 1015/1074.**

**d. Tyler Pipe; Wade Div.**

**e. Watts Drainage Products Inc.**

**f. Zurn Plumbing Products Group; Specification Drainage Operation.**

**2. Standard: ASME A112.6.4**

**3. Pattern: Roof drain.**

**4. Body Material: Cast iron.**

**5. Dimensions of Body: Minimum 10 inch diameter body.**

**6. Combination Flashing Ring and Gravel Stop: Required.**

**7. Flow-Control Weirs: Not required.**

**8. Outlet: Bottom unless otherwise noted.**

**9. Dome Material: Cast iron, or ductile iron.**

**10. Extension Collars: Required.**

**11. Underdeck Clamp: Required.**

**12. Sump Receiver: Required.**

B. **Metal Secondary Roof Drains RD-2:**

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

**a. Josam Company; Josam Div.**

**b. MIFAB, Inc.**

**c. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.; Model 1015/1074.**

**d. Tyler Pipe; Wade Div.**

**e. Watts Drainage Products Inc.**

**f. Zurn Plumbing Products Group; Specification Drainage Operation.**

**2. Standard: ASME A112.6.4**

**3. Pattern: Roof drain.**

**4. Body Material: Cast iron.**

**5. Dimensions of Body: Minimum 10 inch diameter body.**

**6. Combination Flashing Ring and Gravel Stop: Required.**

**7. Flow-Control Weirs: Not required.**

**8. Outlet: Bottom unless otherwise noted.**

**9. Dome Material: Cast iron, or ductile iron.**

**10. Extension Collars: Required.**

**11. Underdeck Clamp: Required.**

**12. Sump Receiver: Required.**

**13. Standpipe: Cast iron. 2 inches high where overflow drains are indicated. **ADD1****

## 2.09 TRAP SEAL PROTECTION DEVICES

A. Barrier Type Trap Seal Protection Devices:

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

   a. Smith, Jay R. Mfg. Co.; Quad Close Trap Seal Device Fig. 2692.

   b. SureSeal Manufacturing; Inline Floor Drain Trap Sealer.

2. Standard: ASSE 1072-2007.

3. Sealing Element: Neoprene rubber or chemically resistant elastomer.

4. Size: 2 inch, 3 inch, 3-1/2 inch, or 4 inch.

5. Gravity Drain Outlet Connection: Compression fit sealing gasket 80 durometer.

## 2.10 THROUGH-PENETRATION FIRESTOP ASSEMBLIES

A. Through-Penetration Firestop Assemblies:

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

   a. ProSet Systems Inc.

2. Standard: UL 1479 assembly of sleeve and stack fitting with firestopping plug.

3. Size: Same as connected soil, waste, or vent stack.

4. Sleeve: Molded PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.

5. Stack Fitting: ASTM A 48/A 48M, gray-iron, hubless-pattern, wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.

6. Special Coating: Corrosion resistant on interior of fittings.

## 2.11 MISCELLANEOUS DRAINAGE PIPING SPECIALTIES

A. Hub Outlets:

1. Description: Shop or field fabricate from ASTM A 74, Service class, hub-and-spigot, cast-iron, soil-pipe fittings. Include P-trap, hub-and-spigot riser section; and where required, increaser fitting joined with ASTM C 564, rubber gaskets.

2. Size: Same as connected waste piping.

B. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.

2. Body: Bronze or cast iron.

3. Inlet: Opening in top of body.

4. Outlet: Larger than inlet.

5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

C. Sleeve Flashing Device:

1. Description: Manufactured, cast-iron fitting, with clamping device, that forms sleeve for pipe floor penetrations of floor membrane. Include galvanized-steel pipe extension in top of fitting that will extend 2 inches above finished floor and galvanized-steel pipe extension in bottom of fitting that will extend through floor slab.

2. Size: As required for close fit to riser or stack piping.

D. Stack Flashing Fittings:

1. Description: Counterflashing-type, cast-iron fitting, with bottom recess for terminating roof membrane, and with threaded or hub top for extending vent pipe.

2. Size: Same as connected stack vent or vent stack.

E. Vent Caps:

1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.

2. Size: Same as connected stack vent or vent stack.

## 2.12 FLASHING MATERIALS

A. Lead Sheet: ASTM B 749, Type L51121, copper bearing, with the following minimum weights and thicknesses, unless otherwise indicated:

1. General Use: 4.0-lb/sq. ft., 0.0625-inch thickness.

2. Vent Pipe Flashing: 3.0-lb/sq. ft., 0.0469-inch thickness.

3. Burning: 6-lb/sq. ft., 0.0938-inch thickness.

B. Copper Sheet: ASTM B 152/B 152M, of the following minimum weights and thicknesses, unless otherwise indicated:

1. General Applications: 12 oz./sq. ft.

2. Vent Pipe Flashing: 8 oz./sq. ft.

C. Zinc-Coated Steel Sheet: ASTM A 653/A 653M, with 0.20 percent copper content and 0.04-inch minimum thickness, unless otherwise indicated. Include G90 hot-dip galvanized, mill-phosphatized finish for painting if indicated.

D. Elastic Membrane Sheet: ASTM D 4068, flexible, chlorinated polyethylene, 40-mil minimum thickness.

E. Fasteners: Metal compatible with material and substrate being fastened.

F. Metal Accessories: Sheet metal strips, clamps, anchoring devices, and similar accessory units required for installation; matching or compatible with material being installed.

G. Solder: ASTM B 32, lead-free alloy.

H. Bituminous Coating: SSPC-Paint 12, solvent-type, bituminous mastic.

## 2.13 OIL SEPARATORS

A. Oil Interceptors (OS-1):

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

a. Highland Tank & Manufacturing Co., Inc.

b. Josam Company; Josam Div.

c. MIFAB, Inc.

d. Rockford Sanitary Systems, Inc.

e. Smith, Jay R. Mfg. Co.; Division of Smith Industries, Inc.

f. Striem (OS-75 Basis of Design).

g. Tyler Pipe; Wade Div.

h. Watts Drainage Products Inc.

i. Zurn Plumbing Products Group; Specification Drainage Operation.

2. Type: Factory-fabricated interceptor for separating and removing light oil from wastewater.

3. Body Material: Cast iron, steel, or polypropylene.

4. Interior Lining: Corrosion-resistant enamel for cast iron or steel bodies. Not required for polypropylene bodies.

5. Exterior Coating: Corrosion-resistant enamel for cast iron or steel bodies. Not required for polypropylene bodies.

6. Size and Capacities: 4-inch connections, 75 GPM, 110 gallon capacity.

7. Cleanout: Integral or field installed on outlet.

8. Mounting: Recessed, flush with floor.

## PART 3 EXECUTION

### 3.01 CONCRETE BASES

A. Anchor grease interceptors to concrete bases.

1. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 19-inch centers around full perimeter of base.
2. For installed equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
3. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be imbedded.
4. Install anchor bolts to elevations required for proper attachment to supported equipment.
5. Concrete base construction requirements are specified in Division 20 Section "Basic Mechanical Materials and Methods."
6. Cast-in-place concrete materials and placement requirements are specified in Division 3.

### 3.02 INSTALLATION

A. Refer to Division 20 Section "Basic Mechanical Materials and Methods" for piping joining materials, joint construction, and basic installation requirements.

B. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

C. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.

D. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

E. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.

1. Position floor drains for easy access and maintenance.
2. Set floor drains below elevation of surrounding finished floor to allow floor drainage. Set with grates depressed according to the following drainage area radii:
    a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4-inch total depression.
    b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
    c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1-inch total depression.
3. Install floor-drain flashing collar or flange so no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes where penetrated.

4. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

F. Install roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof.

G. Install through-penetration firestop assemblies in plastic conductors and stacks at floor penetrations.

H. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

I. Install sleeve flashing device with each riser and stack passing through floors with waterproof membrane.

J. Install vent caps on each vent pipe passing through roof.

K. Install manufactured, gray-iron downspout boots at grade with top 12 inches above grade. Secure to building wall.

L. Install conductor nozzles at exposed bottom of conductors where they spill onto grade.

M. Install grease interceptors, including trapping, venting, and flow-control fitting, according to authorities having jurisdiction and with clear space for servicing.

1. Recessed Floor Installation: Set unit in receiver housing having bottom or cradle supports, with receiver housing cover flush with finished floor.

2. Install cleanout immediately downstream from interceptors not having integral cleanout on outlet.

N. Install wood-blocking reinforcement for wall-mounting-type specialties.

O. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

P. Install escutcheons at wall, floor, and ceiling penetrations in exposed finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding pipe fittings.

## 3.03 FLASHING INSTALLATION

A. Fabricate flashing from single piece unless large pans, sumps, or other drainage shapes are required. Join flashing according to the following if required:

1. Lead Sheets: Burn joints of lead sheets 6.0-lb/sq. ft., 0.0938-inch thickness or thicker. Solder joints of lead sheets 4.0-lb/sq. ft., 0.0625-inch thickness or thinner.

2. Copper Sheets: Solder joints of copper sheets.

B. Install sheet flashing on pipes, sleeves, and specialties passing through or embedded in floors and roofs with waterproof membrane.

1. Pipe Flashing: Sleeve type, matching pipe size, with minimum length of 10 inches, and skirt or flange extending at least 8 inches around pipe.

2. Sleeve Flashing: Flat sheet, with skirt or flange extending at least 8 inches around sleeve.

3. Embedded Specialty Flashing: Flat sheet, with skirt or flange extending at least 8 inches around specialty.

C. Set flashing on floors and roofs in solid coating of bituminous cement.

D. Secure flashing into sleeve and specialty clamping ring or device.

E. Install flashing for piping passing through roofs with counterflashing or commercially made flashing fittings, according to Division 7 Section "Sheet Metal Flashing and Trim."

F. Extend flashing up vent pipe passing through roofs and turn down into pipe, or secure flashing into cast-iron sleeve having calking recess.

G. Fabricate and install flashing and pans, sumps, and other drainage shapes.

## 3.04 LABELING AND IDENTIFYING

A. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:

1. Grease interceptors.

2. Solids interceptors.

B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit. Nameplates and signs are specified in Division 20 Section "Mechanical Identification."

## 3.05 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled grease removal devices and their installation, including piping and electrical connections, and to assist in testing.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.

2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

## 3.06 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

## 3.07 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain grease removal devices. Refer to Division 1 Section "Demonstration and Training."

**END OF SECTION**

# SECTION 23 0933 - TEMPERATURE CONTROLS

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## PART 1 GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work of this section.

B. Related Sections include the following:

1. Division 20 Section “Mechanical General Requirements.”
2. Division 20 Section “Basic Mechanical Materials and Methods.”

3. Division 23 Section “Testing, Adjusting, and Balancing.”
4. Division 26 Section “Electrical General Requirements.”
5. Division 26 Section “Control-voltage Electrical Power Cables.”
6. Division 26 Section “Hangers and Supports for Electrical Systems.”
7. Division 26 Section “Raceways and Boxes.”

## 1.02 SUMMARY

A. This Section includes control equipment for HVAC systems and components, including control components for terminal heating and cooling units not supplied with factory-wired controls.

## 1.03 DEFINITIONS

A. BACnet: Communications open protocol for building automation system networks and control (developed by ASHRAE and documented per ANSI/ASHRAE Standard 135-2012.

B. BAS: Building Automation System

C. CAD: Computer Aided Design.

D. DDC: Direct-digital controls.

E. TC: Temperature Control.

## 1.04 SYSTEM DESCRIPTION

A. Temperature control building automation system consisting of direct digital control system controllers, sensors, transducers, relays, switches, data communication network, etc. and all associated control wiring and raceway systems.

B. BAS/DDC system programming, database generation. Graphic display generation accessible through Building Network Supervisory Controller or at the remote operator workstation (when applicable for project).

C. Electric thermostats, control valves, dampers, operators, control wiring, etc.

D. Gauges, indicating devices, electric and electronic control accessories, and other control system devices.

## 1.05 SEQUENCE OF OPERATION

A. Control sequences for HVAC systems, subsystems, and equipment are indicated on project drawings.

## 1.06 SUBMITTALS

A. Submit under Division 20 and 23 provisions of respective project and as supplemented in this section.

B. All control submittal requirements shall be submitted at one time with exception to control valves, automated dampers, and initial phases of work associated with fast-track projects (when required). Early submittals of control valves and automated dampers shall be incorporated with the complete temperature controls submittal.

C. Product Data: Include manufacturer's technical literature for each control device. Indicate dimensions, capacities, performance characteristics, electrical characteristics, finishes for materials, and installation and startup instructions for each type of product indicated.

1. Each control device labeled with setting or adjustable range of control

D. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

E. Shop Drawings:

1. Shop drawings shall be done on CAD. Minimum size 11” x 17”.
2. Schematic flow diagrams showing fans, pumps, coils, dampers, valves, and control devices.
3. Wiring Diagrams: Power, signal, and control wiring. Differentiate between manufacturer-installed and field-installed wiring.
4. Details of control enclosure including panel faces and interior, including controls, instruments, terminations blocks and component labeling.
5. Written sequence of operation for each controlled system.
6. Schedule of dampers including size, leakage, and flow characteristics (Refer to Design Data).
7. Schedule of valves including leakage and flow characteristics (Refer to Design Data).
8. Complete bill of materials to identify and quantify all control components.
9. Overall system schematic showing communication trunk cabling from Building Network Supervisory Controller(s) to BAS field level controllers including component locations and wire termination details.
10. DDC controller layouts showing connected data points and LAN connections. DDC controller terminations including power supply and remote control component termination details shall be provided.
11. Point list for each DDC controller including point descriptions and addresses. This information may be incorporated with DDC controller layouts.

F. Graphic Displays: One month after TC Shop Drawing submittal, TC Contractor shall submit graphical display backgrounds for preliminary Engineer review. Concept for each floor plan, each system, each terminal unit template. Engineer understands that final representation of graphics may not be available until BAS database is established during course of construction. Thorough graphics review will be conducted by Engineer as part of the TC/BAS acceptance procedure.

G. Design Data: Provide indicated component selection and sizing criteria for the following component categories:

1. Dampers:
    a. Component tag.
    b. Equipment served/function.
    c. Overall damper size (inch width x inch height).
    d. Quantity of damper sections with respective size(s):
    e. Material and gauge of thickness.
    f. Mounting orientation (horizontal or vertical).
    g. Blade configuration (parallel or opposed)
    h. Pressure drop (in. WG).
    i. Shut-off rating/differential pressure rating (in. wg).
    j. Leakage rating (CFM/sq. ft. at 4 in. wg).
    k. Normal position (normally open, normally closed, floating).
    l. Actuator spring range (where applicable).
    m. Actuator power requirement.
    n. Actuator torque requirement.

o. Actuator quantity.

p. Damper manufacturer/model number.

q. Actuator manufacturer/model number.

H. Wall mounted temperature sensor, thermostat and/or other temperature control device cover color shall be coordinated to match color of wall mounted electrical device components and cover plates – coordinate with electrical contractor. Provide samples of available temperature control device cover colors to Architect upon request or if available temperature control device colors do not match electrical device colors so a desired color selection may be determined. Provide sample of temperature sensor / thermostat guard upon request of Architect, Engineer or Owner.

I. Qualification Data: For firms and persons specified in "Quality Assurance" Article.

J. Submit field reports indicating operating conditions after detailed check out of systems at Date of Substantial Completion.

K. Project Record Documents: Include the following:

1. Revise Shop Drawings to reflect actual installation and operating sequences.
2. Record actual locations of control components, including control units, thermostats, and sensors.
3. Submit the electronic files for all as-built shop drawings in pdf format.

L. Software and Firmware Operational Documentation: Include the following:

1. DDC controller keypad operating instructions and DDC controller override features, where applicable.
2. Device address list.
3. Program Software Backup: On a magnetic media or compact disc, complete with data files.

M. Maintenance Manuals: Include the following:

1. Product data with installation details, maintenance instructions and lists of spare parts for each type of control device.
2. Keypad illustrations and step-by-step procedures indexed for each operator function, where applicable.
3. Inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
4. Calibration records and list of set points.

## 1.07 REFERENCES

A. AMCA 500 - Test Methods for Louvers, Dampers and Shutters.

B. ANSI/ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure fittings.

C. ANSI/ASTM B32 - Solder Metal.

D. ANSI/NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

E. ASTM B280 - Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

F. ASTM B75 - Seamless Copper Tube for General Engineering Purposes.

G. ASTM D1693 - Environmental Stress - Cracking of Ethylene Plastics.

H. ASTM E1 - Specification for ASTM Thermometers.

I. MMC – Michigan Mechanical Code, version applicable for project.

J. NEMA DC 3 - Low-Voltage Room Thermostats.

K. UL 1820 - Fire Test of Pneumatic Tubing for Flame and Smoke Characteristics Only.

**1.08 QUALITY ASSURANCE**

A. Installer Qualifications: An experienced installer who is a certified installer of the automatic control system manufacturer for both installation and maintenance of units required for this Project.

B. Manufacturer Qualifications: A firm experienced in manufacturing automatic temperature-control systems similar to those indicated for this Project and with a record of successful in-service performance.

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

D. Comply with all applicable code requirements for project.

**1.09 DELIVERY, STORAGE, AND HANDLING**

A. Factory-Mounted Components: Where control devices specified in this Section are indicated or optional to be factory mounted on equipment, arrange for shipping of control devices to unit manufacturer.

**1.10 COORDINATION**

A. Coordinate work under Division 20 and 23 provisions and as supplemented in this section.

B. Coordinate location of space temperature sensors, space humidity sensor, thermostats, humidistats, and other exposed control sensors with plans and room details before installation.

C. Coordinate installation of system components with installation of mechanical systems and equipment to achieve compatibility.

D. Ensure installation of components is complementary to installation of similar components in other systems.

E. Coordinate control wiring requirements, including actual terminal block numbers, with mechanical equipment manufacturers or suppliers.

F. Coordinate equipment with Division 26 Section "Lighting Controls" to achieve compatibility with equipment that interfaces with that system.

G. Coordinate equipment with Division 28 Section "Fire Alarm" to achieve compatibility with equipment that interfaces with that system.

H. Ensure control system installation is complete, checked, tested and functioning properly prior to system balancing and Owner/Engineer system checkout.

I. Cooperate fully with the Test and Balance Contractor and provide labor to operate the temperature control system as required to meet the scope of work defined in Division 23 Section "Testing, Adjusting and Balancing."

**1.11 WARRANTY**

A. Provide warranty per Division 20 Section "Mechanical General Requirements" and as supplemented in this section.

B. Provide 24 hour per day emergency service during warranty period, with maximum response period of four (4) hours. Provide phone number(s) for quick assistance by a Service Engineer regarding hardware or software problems.

C. Provide scheduled maintenance service during warranty period to inspect, calibrate, and adjust controls. Make a minimum of one four hour service call every three months. Notify Owner prior to each scheduled inspection trip. Submit written reports upon completion of service.

D. Provide any software or firmware revisions which are released by the DDC system manufacturer during the warranty period, at no additional cost to the Owner.

### 1.12 POSTED OPERATING INSTRUCTIONS

A. Provide DDC controller related as-built documents in protective binder or clear plastic display envelope for each control enclosure panel. These instructions shall include such items as as-built control diagrams and sequence of operation, simplified narrative instructions and materials necessary to aid in the operation of the equipment at the local control panels.

### 1.13 SPECIAL TOOLS

A. Deliver two sets of any special tools required for operation, adjustment, resetting or maintenance, excluding PC laptop.

### 1.14 PROTECTION OF PROPRIETARY INFORMATION

A. Non-disclosure agreement(s) that may be subject to proprietary manuals and software shall be submitted by the proprietary equipment manufacturer to the Owner for approval and signature during the warranty period.

## PART 2 PRODUCTS

### 2.01 DESCRIPTION OF THE BUILDING AUTOMATION SYSTEM (BAS)

A. The building automation system (BAS) shall be fully integrated, distributed data processing system incorporating direct digital control (DDC) for the control and monitoring of heating, ventilating and air conditioning (HVAC) equipment and other related systems. Microprocessor based BAS field level DDC controllers shall be directly connected to HVAC equipment sensors and actuators. A data communication network shall allow data exchange between the BAS field level DDC controllers and the Building Network Supervisory Controller. The Building Network Supervisory Controller shall be the primary operator BAS interface point for the building either through web-browser direct or through server application software (when applicable) or through local or remote Operator Workstation (when applicable to project).

B. Approved Manufacturer – System / Approved Installer (Locations) as listed:

1. Johnson Controls – Facility Explorer with FX Controllers / by:
    a. BASS Controls (Sterling Heights, MI).
    b. Conti Corp Controls Group. (Sterling Heights, MI).
    c. ControlNet (Swartz Creek, Kalamazoo & Grand Rapids, MI).
    d. Johnson Controls, Inc. (Auburn Hills, MI) – NOT Metasys Products.
    e. K&S Ventures, Inc. (Rochester Hills, MI).
    f. Knight Watch (Kalamazoo, Grand Rapids, Lansing & Troy, MI).
    g. Metro Controls, Inc. (Clinton Twp, MI).
    h. Michigan Environmental Controls, Inc. (New Hudson, MI).
    i. Pulse Building Services (Grand Rapids, MI).
    j. SysTemp Corporation. (Rochester Hills, MI).
    k. W.J. O'Neil Controls Group. (Livonia, MI).
    **l. Control Solutions Inc. (Alpena, Rochester Hills & Wyoming, MI). **ADD1****

### 2.02 BAS BUILDING NETWORK SUPERVISORY CONTROLLER (TRIDIUM N4 PLATFORM)

A. The Building Network Supervisory Controller, utilizing the HTML5 platform, shall provide the interface between the Owner's Ethernet and the field control devices, and provide global supervisory control functions over the control devices connected to the NAC. It shall be capable of executing application control programs to provide:

1. Calendar functions

2. Scheduling.
3. Trending.
4. Alarm monitoring and routing.
5. Time synchronization.
6. Integration of BACnet controller data.
7. Network Management functions for all BACnet based devices.

B. The Network Area Controller shall provide the following hardware and driver features as a minimum:

1. One RS-232 port
2. One RS-485 port with BACnet MS/TP Driver.
3. Battery Backup
4. Flash memory for long term data backup (If battery backup or flash memory is not supplied, the controller must contain a hard disk with at least 1 gigabyte storage capacity).
5. Where the option for expanded memory is available, it must be supplied.

C. Provide LonWorks or MODBUS driver(s) as required for system or equipment integration requirements for project.

D. The network supervisory controller shall be sized appropriately per building to handle the required quantity of connected controllers and devices.

E. Provide 5 year service agreement per network supervisory controller for updating firmware/software as available by manufacturer. Labor for updating the controllers shall be included.

F. For Tridium based systems, provide Niagara 4 JACE-8000 series network supervisory controllers.

G. Manufacturer:

1. Manufacturers as listed for Building Automation System (based on N4 JACE-9000 platform).
2. Vykon N4 JACE-9000 series is to be used in lieu of listed manufacturer's standard product per requirements of Owner's existing network or as indicated on the construction drawings.

## 2.03 DIRECT DIGITAL CONTROL (DDC) FIELD LEVEL CONTROLLERS

A. Modular in design and consisting of stand-alone microprocessor board with ROM and fully custom programmable RAM, EPROM, and/or EEPROM memory, integral interface equipment and power surge protection. DDC controllers shall be connected directly to sensors, controlled devices and the communication network.

B. Powerfail Restart and Battery Backup: Minimum of 72 battery backup hours for complete system RAM memory and clock, with automatic battery charger or 48 hour low voltage alarm warning. Upon full system power recovery, all clocks shall be automatically synchronized, and all controlled equipment shall be automatically re-started based on correct clock time and sequence of operation.

C. Provide fully functional communication interface ports for communication between processor, other processors, portable programmer's terminal, portable operator's unit or the remote Operator Workstation when applicable for project.

D. Panel enclosure for controller, associated power supply and other ancillary control components shall be finished steel or rigid plastic with hinged door and keyed lock. Electronics shall be removable for protection during mounting of panel.

## 2.04 DDC CONTROLLER SOFTWARE

A. Operating system shall work in real time, provide prioritized task scheduling, control time programs, monitor DDC controller communications, scan inputs and outputs, and contain built-in diagnostics.

B. Input/output point processing shall include the following:

1. Continuous update of input and output values and/or conditions. All connected points are to be updated at least once per second.
2. Assignment of proper engineering units and status condition identifiers to all points.
3. In addition to physical or "hardware" points required, "software" points shall be provided where required for command access and meaningful displays, where required by the "execution" portion of this section or where required on the DDC input/output points lists. "Software" points shall appear identical to physical points in output displays and shall be assignable to text descriptors, logical groups, reports, etc. in the same manner as physical points. "Software" points shall be assigned alarm limits in the same manner as physical points.

C. Command control software shall manage the receipt of commands from control panels, portable programmer's terminal, portable operator's unit or the remote Operator Workstation when applicable for project.

1. Command delay, programmable from 0 to 2 minutes, shall be provided to prevent simultaneous energizing of large loads. Command delays shall be honored throughout the BAS DDC network, not just within the DDC controller. Delays shall be assignable on an individual per point basis.
2. Each command shall be assigned a command and residual priority to manage contentions created by multiple programs having access to the same command point. Only commands with a higher command priority than the existing residual priority shall be permitted to execute. Whenever a command is allowed to execute, its assigned residual priority shall replace the existing residual priority.
3. A "fixed mode" option shall be supported to allow inputs to, and outputs from DDC control programs to be set to a fixed state or value. When in the "fixed mode," inputs and outputs shall be so noted in all reports.
4. A "last user" record is to be maintained to positively identify which program or manual command is in control of a given point. The last user information shall be displayed and printed along with other point data of logical groups.

D. Provide self-test procedure. Notify remote Operator Workstation (when applicable for project) for maintenance, performance, software, cable break, or data transmission problems. Identify variables as reliable or unreliable. Variables identified as unreliable shall use default in calculation.

E. Alarm Processing

1. High/Low Alarm: Analog input alarm comparison with the ability to assign two individual sets of high and low limits (warning and actual alarm) to an input. Each alarm shall be assigned a unique differential to prevent a point from oscillating into and out of alarm. Alarm comparisons are to be made each scan cycle.
2. Floating Alarm: Where analog controlled values are automatically varied by software (such as hot water temperature reset), a single set of alarm limits shall be provided for those varying values. These alarm limits shall then "float" a user definable differential above and below the varying setpoint value.
3. Abnormal Alarm: When a digital input is not in agreement with the commanded state of its associated output point, or when a digital input is not in its normal state, an abnormal alarm

shall be generated. Abnormal "on" shall cause an alarm, as well as abnormal "off." Alarm time delay for digital inputs to prevent nuisance alarms shall be provided. Each digital input alarm time delay shall be adjustable from zero to two minutes in one-second increments.

4. Alarm lockout shall be provided to positively lock out alarms when equipment is turned off or when a true alarm is dependent on the condition of an associated point. Lockout points and lockout initiators shall be operator programmable. On initial startup of air handler and other mechanical equipment, a "timed lockout" period shall be assigned to analog points to allow them to reach a stable condition before activating alarm comparison logic. Timed lockout period shall be programmable on a per point basis from 0 to 90 minutes in one-minute increments.

5. The capability of automatically initiating commands upon the occurrence of an alarm.

F. Totalization

1. Run time shall be accumulated based on the status of digital input points. It shall be possible to totalize either on time or off time up to 10,000 hours with one-minute resolution. Run time counts shall be resident in memory and have DDC controller resident run time limits assignable through portable programmer’s terminal, portable operator’s unit or the remote Operator Workstation when applicable for project.

2. A transition counter shall be provided to accumulate the number of times a device has been cycled on or off. Counter shall be capable of accumulating 600,000 switching cycles. Limits shall be assignable to counts to provide maintenance alarm printouts.

3. Analog totalization capability shall be provided to allow the totalization of electricity, air, water and steam flow, etc. These flows shall be totalized with respect to time and converted to the appropriate energy unit. It shall be possible to automatically set time intervals for totalization, adjustable from one second to 365 days. The totalization program shall keep track of the maximum and minimum instantaneous analog value measured during the period, including the date and time at which each occurred.

G. DDC Controller Programming / Configuration

1. All DDC controllers shall be fully programmable or configurable per required controller application type. DDC controllers which require remote or factory programming or configuration are not acceptable. DDC controllers with custom programs which may not be modified by the user are not acceptable. "Custom" programming shall mean allowing the alteration of actual control logic, and shall not be limited to allowing only the alteration of setpoints, gains, parameters, time constants, etc.

2. DDC controllers shall be provided to meet the control strategies as called for in the sequences of operation on the drawings. If a configurable application specific DDC controller cannot meet this requirement, a DDC fully programmable controller shall be provided.

3. All DDC controller setpoints, gains, parameters, time constants, etc., associated with DDC controller programs shall be available to the operator for display and modification via portable programmer’s terminal, portable operator’s unit or the remote Operator Workstation when applicable for project.

4. Each DDC controller shall have resident in its memory and available to the programs a full library of DDC algorithms, intrinsic control operators, and arithmetic, logic and relational operators for implementation of control sequences. Functions to be provided shall include, but not be limited to, the following:

   a. Mathematical: Absolute value, calculate, square root, power, sign, average, totalize.

   b. Logic: OR, AND, compare, negate.

c. Fixed Formula: High and low select, span, rate, ramp, enthalpy, wet bulb, dew point, relative humidity, humidity ratio, and filter.

d. Data Manipulation: Store, file and set.

e. Control Routines: Real-time based functions, proportional control, proportional-integral control, proportional-integral-derivative control, adaptive control (self-tuning), direct-acting, reverse acting, feedforward, fixed setpoint, calculated setpoint, adjustable setpoint, lead lag, hysteresis correction, event initiation/ software interlock.

H. Building Automation System program applications (as required for controllers)

1. Time of day scheduling: Allow the creation and maintenance of operating schedules for selected points based on time of day and holiday scheduling. At least two independent start and stop times per day for each system shall be allowed. Each point shall be allowed to have a unique time program, or points shall be able to be grouped and assigned to a common time program. Both digital and analog output points shall be able to be assigned to a time program. This software shall work in conjunction with the time of day scheduler software at the remote Operator Workstation (when applicable for project). This program shall also work in conjunction with the optimum start and optimum stop application software.

2. Optimum Start: Start equipment based on outdoor temperature, space temperature, and system response to minimize energy usage and to assure that comfort conditions are reached exactly at scheduled occupancy time (occupancy schedules are defined under "Time Of Day Scheduling"). This program shall operate in both the heating and cooling cycles. An adaptive algorithm shall be employed which automatically adjusts the start time according to previous performance and shall automatically assign longer lead times for weekend and holiday shutdowns.

3. Enthalpy Optimization: Using standard psychrometric calculations, automatically determine which air source, outdoor air or return air, presents the least total heat load, and automatically adjust mixed air damper position. When outside enthalpy exceeds return air enthalpy, the outside air damper shall go to its minimum position. Typically, the outside air damper must be in its minimum position before the cooling coil valve is allowed to open.

4. Warm-Up: Position the outside air dampers in an adjustable (minimum) position, and trigger a digital output(s) normally used to signal air terminal units to move to their maximum flow settings. When the desired space temperature is reached, as determined by feedback from space temperature sensor(s), the digital output shall return the air terminal units to their normal operation. When occupancy time is reached, the outside air dampers shall be controlled by the normal occupied mode control sequence. During the warm-up cycle, the outside air damper shall be set at the position which minimizes outside air intake while preventing over/under pressurizing of ductwork. This program shall work in conjunction with the time scheduling program and/or the optimum start program as required.

5. Night Cycle: Cycle HVAC equipment on and off as required to maintain an operator selectable unoccupied space temperature. During the equipment "on" time, the outside air damper shall be maintained in an adjustable position which minimizes outside air intake while preventing over/under pressurization of ductwork. The equipment shall be cycled such that energy reduction during unoccupied periods is uniform.

6. Night Purge: Night Purge program shall apply to cooling cycle only. Night Purge shall introduce 100% outdoor air any time the outdoor air is above 50 degrees F, the space temperature is above 75 degrees F, the outdoor air temperature is below space temperature and the outdoor air dew point is less than 60 deg F. Purging shall stop when outdoor air is below 50 deg F, or space temperature is below 75 deg F, or outdoor

temperature is less than 5 deg F cooler than space temperature, or outdoor air dew point is greater than 60 deg F.

7. Reset Optimization: Adjust equipment discharge setpoints based on one of the following criteria:

   a. By sensing the worst case requirements (e.g., the zone requiring the most heating or cooling and providing only the minimum energy required to meet the load.

   b. Adjusting the setpoint in direct proportion to another sensed variable (e.g., reset supply water temperature based on outside temperature).

## 2.05 DDC AIR TERMINAL UNIT CONTROLLERS

A. Microprocessor based controllers capable of stand-alone operation for control of pressure independent air terminal units. Controllers shall be networked together and connected to the building's BAS/DDC network.

B. Controllers shall have separate adjustable minimum and maximum airflow setpoints. Controllers shall work in conjunction with the air handling unit's DDC panel to provide the sequence of operation as indicated on the drawings. Setpoints shall be adjustable through the portable programmer terminal.

C. Provide electronic type air terminal unit damper operators compatible with the controller and the air terminal units provided.

D. Each controller shall have an internal differential pressure transducer capable of utilizing the total and static pressure signals from the air terminal unit's velocity sensor. Velocity sensor shall be furnished by air terminal unit manufacturer.

E. Each controller shall have electronic outputs compatible with the electronically operated air terminal unit tempering coil control valve and perimeter radiation control valve where applicable

F. TC contractor shall provide 24 VAC power requirements including transformers.

G. If coordinated with mechanical contractor. Controllers and damper operators shall be furnished to the air terminal unit manufacturer for factory mounting by the air terminal unit manufacturer; otherwise, controls shall be field installed.

H. Room temperature sensors for the DDC air terminal unit controllers:

1. Sensing Element: Thermistor or resistance temperature detector (RTD) type. Accuracy shall be+/- 0.5 degrees F over the range of 55 degrees F to 95 degrees F, including calibration error, repeatability, hysteresis, and yearly drift.

2. Cover: with tamper-proof fasteners.

3. Provide with exposed setpoint adjustment dial and exposed temperature reading.

4. Provide with exposed override switch to allow an occupant to reset the space to occupied control during the unoccupied cycle for a predetermined time period.

5. Provide with portable operator unit plug-in port.

## 2.06 DDC INPUT/OUTPUT SENSORS

A. Air Static/Differential Pressure Transmitters:

1. Variable capacitance type with ranges not exceeding 150 percent of maximum expected input. Transmitter shall have zero and span adjustments.

2. Safe overpressure rating shall be minimum 5 times the range.

3. Temperature compensated with thermal error of not greater than 0.04 percent of full scale in temperature range of 40 to 100 deg F.

4. Accuracy: +/- 0.5% of full scale including calibration error, repeatability, hysteresis, and yearly drift.
5. Manufacturers:
    a. Air Monitor.
    b. Belimo.
    c. Dwyer.
    d. Modus
    e. Setra.

B. Carbon Dioxide Sensors:

1. Carbon dioxide sensing cell shall consist of a nondispersive infrared carbon dioxide gas cell that uses a pulsed source and has no free air optical path. Output shall be linearized 4-20 mA with the 24 VDC input. In addition, the unit shall be capable of providing SPDT switching of an external low voltage circuit at an adjustable setpoint. The unit shall be specifically designed for the wall or duct application specified. Return air aspiration boxes shall be designed by and approved by the manufacturer. Unit shall have single point setpoint and span adjustment. The unit shall have no moving parts.
2. Power for the sensor shall be extended from a transformer or adaptor installed adjacent to the DDC controller enclosure panel, and shall be run parallel to the 4-20 mA signal cable.
3. Minimum sensing range shall be 0-2,000ppm.
4. Overall Accuracy shall be 3% of full scale including calibration error, repeatability, hysteresis and yearly drift.
5. Minimum calibration interval shall be 5 years.
6. Contractor shall provide all necessary equipment and test gas for calibration and shall calibrate all $CO_2$ sensors in accordance with the manufacturer's recommendations.
7. Manufacturer:
    a. Specified BAS product where available that meets the requirements herein.
    b. Belimo.
    c. TelAire.
    d. Vaisala.
    e. Veris.

C. Current Switches:

1. Split-core or donut type transformer for monitoring AC current, with digital output signal. Current switches used on motor side of variable frequency drives shall have low frequency detection capability.
2. For Electronically Commutated Motor (ECM) applications: Current switch shall be rated for ECM operation with amperage trip setting higher than trickle/idle/standby amperage with ECM off and amperage trip setting lower than minimum speed setting. Verify minimum amperage expectation for equipment with equipment suppliers to select appropriate current switch from list of approved manufacturers as their minimum trip settings vary from 0.15A to 0.5A.
3. For induction motor applications (as applicable): Current switch shall have adjustable trip setting to accommodate VFC minimum speed settings, to detect fan belt loss, or to detect pump coupling detachment. Set trip setting at approximately 90% of normal motor operating amperage.

4. Manufacturers:
    a. ACI.
    b. Johnson Controls.
    c. Senva.
    d. Veris Industries.

D. Humidity Sensors:
1. Elements: Thin film or polymer capacitive type or bulk polymer resistance type with linear output, accurate within ± 2% RH throughout the range of 10-95% RH and drift to be less than +/-0.25%.
2. Humidity sensors shall be resistant to chlorine and other cleaning agents.
3. Room Sensors: With locking cover matching space temperature sensors used.
4. Duct Sensors: With duct probe and mounting plate.
5. Manufacturers:
    a. Specified BAS product where available that meets the requirements herein.
    b. Belimo.
    c. GE Industrial, Sensing (formerly General Eastern)
    d. Rotronic.
    e. Vaisala.
    f. Veris – HD/HO Series.

E. Outside Air Temperature/Humidity Combination Transmitters:
1. Dual transmitters housed in a single hinged enclosure with integral probes configured for exterior wall mount application with PVC sun shield. Unit shall provide separate 4-20 mA signals for temperature and humidity measurement.
2. Temperature sensor: Refer to Temperature Sensors specifications. Range of operation shall be -25 degrees F to 125 degrees F.
3. Humidity sensor: Refer to Humidity Sensors specifications. Range of operation shall be 0-100% RH.
4. Manufacturer:
    a. Belimo.
    b. Vaisala.
    c. Veris.

F. Temperature Sensors:
1. Resistance temperature detectors (RTD) with 1000 ohm, thin-filmed platinum, nickel or balco element having 0.000385 temperature coefficient meeting the input requirements of the DDC controller.
2. Thermally sensitive resistors (thermistor) shall be 10k-type, epoxy or glass coated, having NTC characteristic, meeting the input requirements of the DDC controller.
3. Initial calibration accuracy shall be +/- 0.5 deg F over the entire range. Range shall be as indicated below, or as appropriate to the application.
4. Additional error such as repeatability, stability, tolerance, linearity and hysteresis shall not exceed an additional +/- 0.5 deg F additive (using RMS method) throughout the selected operating range for the application.

5. Temperature sensors shall be resistant to chlorine and other cleaning agents
6. Single point duct mounted sensors shall have 18" rigid probe and calibrated span of 20 - 120°F.
7. Averaging duct mounted sensors shall have 25' long averaging element and calibrated span of 20 - 120°F.
8. Liquid immersion sensors shall have welded stainless steel thermowells for ferrous pipe and brass thermowells for copper pipe. Length of sensor and thermowell shall be selected based on the diameter of the pipe to provide accurate, reliable and homogeneous sensing of the liquid temperature. Thermowell pressure rating shall meet or exceed the system minimum pressure rating. Sensors for chilled water application shall have calibrated span of 20 - 120°F. Sensors for hot water applications shall have calibrated span of 40 - 240°F
9. Room sensors shall have locking cover and a minimum span of 40 - 90°F.
10. Outside air temperature (only) sensors shall have watertight inlet fitting and shall be shielded from direct rays of sun and wind.
11. Manufacturers:
    a. Specified BAS product where available that meets the requirements herein.
    b. ACI – except PT1000 averaging sensor.
    c. BAPI – Basys Series.
    d. Belimo.
    e. MAMAC
    f. Minco.
    g. TCS.

## 2.07 AIRFLOW MEASURING PROBES – DUCT MTD THERMAL DISPERSION (INCLUDING OA FLOW)

A. Duct airflow measuring probes shall be Thermal Dispersion type.

B. Probes shall be constructed of extruded aluminum. Probes shall be provided with mounting plate, and gasket. Probe and mounting hardware shall facilitate easy removal and reinstallation of the probes.

C. The number of sensors on each probe, and the quantity of probes provided at each location, shall comply with ASHRAE standards for duct traversing. Multiple probes provided at a single location shall be interconnected external to the duct to produce an average signal.

D. For each airflow measurement location, the measured velocity pressure shall have accuracy within ± 2% of the full scale throughout the velocity range of 0-4000 fpm.

E. Associated transmitter at each airflow measurement location shall be provided with LCD readout to indicate airflow (in CFM) of the connected airflow measuring station.

F. Manufacturers / Model:
    1. Ebtron / Gold Series.
    2. Air Monitor Corporation / ELECTRA-flo.

## 2.08 DDC DATA COMMUNICATIONS NETWORK

A. Data communication network shall be provided to allow data exchange between the BAS field level DDC controllers and the Building Network Supervisory Controller.

B. The BAS/DDC system-wide communication network shall consist of a primary peer-to-peer network, and at the Contractor's option, secondary sub-networks linked to the primary network.

The primary network shall support peer-to-peer communications between primary network BAS field level DDC controllers. The Building Network Supervisory Controller shall be connected to the primary network. Secondary sub-networks when used shall interface with the primary network though the primary network BAS field level DDC controllers. At least one DDC controller connected to the primary peer-to-peer network shall be provided in each mechanical room, or as indicated on the drawings.

C. Data communications media shall be twisted pair wires.

D. The communications network shall allow shared point and control information between BAS field level DDC controllers. All required repeaters, hubs, active links, gateways, etc. and associated power supplies shall be provided as required to provide shared point and control information between BAS field level DDC controllers.

E. Failure of any individual BAS field level DDC controller shall not cause the loss of communications between peer BAS field level DDC controllers.

F. All data transmitted must be positively acknowledged as received or negatively acknowledged as not received. Negative acknowledgments shall cause a retransmission of the data. Network connected devices must send a "functioning" message each network cycle. Lack of a "functioning" message after successive retries shall constitute a device failure and shall be recognized as such by the network.

G. Error recovery and communication initialization routines shall be resident in each network connected device.

## 2.09 CONTROL AND INSTRUMENTATION TUBING

A. Copper Tubing: ASTM B280 or ASTM B75, seamless, hard drawn or annealed.

1. Fittings: ANSI/ASME B16.22, wrought copper.
2. Joints: ANSI/ASTM B32, 95-5 tin antimony.

B. Copper Tubing: ASTM B280 or ASTM B75, seamless, hard drawn or annealed.

1. Fittings: UL approved rod or forged brass rated to 200 psig at 100 degrees F.
2. Joints: Ball Sleeve compression type.

C. Polyethylene Tubing: Black, UL 1820 flame and smoke retardant where exposed in an air plenum, virgin polyethylene, conforming to modified ASTM D1693 test. All non-metallic tubing shall be minimum 1/4" O.D.; micro-sleeve is not acceptable.

1. Fittings: UL approved rod or forged brass rated to 200 psig at 100 degrees F.
2. Joints: Compression or barbed type.

## 2.10 DAMPERS, INSULATED OUTDOOR AIR / RELIEF AIR / EXHAUST AIR - AUTOMATED

A. Performance: AMCA certified for Air Performance and Air Leakage.

B. Frames: Extruded aluminum, .080-inch thickness minimum, 4 inches deep minimum, thermally broken, and insulated with polystyrene or polyurethane foam insulation.

C. Blades: Extruded aluminum, internally insulated, and thermally broken. Maximum blade size 8 inches wide, 60 inches long.

D. Shafts: Minimum 7/16 inch hexagonal or square corrosion resistant zinc plated steel.

E. Blade Seals: Extruded EPDM, silicone, or synthetic elastomeric, mechanically attached.

F. Jamb Seals: Silicone, or synthetic elastomeric, mechanically attached.

G. Bearings: Dual bearing assembly of durable synthetic polymer resulting in no metal-to-metal contact. Provide thrust washers at bearings for all dampers which are to be mounted with blades in the vertical position.

H. Linkage: Linkage shall be installed in the frame side and shall be constructed of aluminum and/or corrosion resistant zinc plated steel.

I. Leakage: Less than 3 CFM per square foot at 1 inch W.G. pressure differential at minus 40 deg F.

J. Static Pressure Rating: As scheduled on the drawings, or if not scheduled, minimum 4 inches W.G.

K. Maximum Velocity: As scheduled on the drawings, or design for maximum velocity to be encountered in location where installed.

L. Temperature Limits: Minus 40 to 155 deg F.

M. Manufacturers:

1. Greenheck ICD-45.
2. Ruskin TED50 Series.
3. Tamco Series 9000 BF.

## 2.11 DAMPER OPERATORS - ELECTRIC

A. Electric damper motor shall be 24 or 120 volt two-position or modulating as required with spring return type and sized to operate the damper with sufficient reserve power for smooth operation from full close to full open and tight shut-off. Damper motor shall have "O ring" gaskets for weatherproof operation.

B. Number: Sufficient to achieve unrestricted movement throughout damper range. Provide sufficient number of operators such that one operator does not operate more than the maximum square footage of damper area as recommended in standard catalog of manufacturer.

C. Manufacturers:

1. Belimo.
2. Delta Control Products.
3. Honeywell.
4. Schneider Electric Controls.
5. Johnson Controls.
6. Siemens.

## 2.12 DIFFERENTIAL PRESSURE SWITCHES

A. Shall provide electrical switching action upon a sensed pressure differential increase between two sensed points. Sensitivity shall be suitable for the application. Setpoint shall be adjustable over the full range of the device. Switching action shall open or close two independent single-pole, double-throw (SPDT) switches. Electrical switch rating shall be based on the application and circuit voltage

B. Pressure rating of switch/connecting tubing and reset type:

1. Filter pressure drop - Rated for 2 inches w.g. Provide automatic reset type.
2. Duct static pressure - Rated for 10 inches w.g. Provide manual reset type when used for high limit cutout safety.

## 2.13 ELECTRICAL REQUIREMENTS FOR CONTROLS WORK

A. Electrical accessories such as relays, switches, contactors and control transformers shall meet the requirements of the Division 26 Specifications of respective project.

B. Electrical wiring and conduit shall meet the requirements of the Division 26 Specifications.

C. All control wiring in mechanical rooms and any other exposed areas shall be run in conduit. Low voltage temperature control wiring in concealed accessible locations (i.e. above lay-in ceilings), as well as low voltage temperature control wiring within partitions, may be run using plenum rated cable, neatly tie-wrapped and fastened to the building structure (not to ceiling or ceiling support wires).

D. Conduits carrying control wiring shall be sized for a maximum fill of 40% of capacity.

E. Where raceway is required, two separate raceway systems shall be provided; one for A.C. wiring and the other for D.C. wiring.

F. Data transmission cabling and equipment grounding procedures shall meet the latest FCC guidelines for electromagnetic field generation.

G. All control wiring sizes and types shall meet or exceed the equipment manufacturer's recommendations.

H. TC Contractor shall provide 24V power supply transformers for TC Contractor provided controllers. Maximum Transformer circuit for controls shall be 100VA serving controllers within mechanical room control panels or for remote terminal unit controllers served from common 24V power supply circuit. Transformers shall be located within enclosures provided by TC Contractor.

## 2.14 LOCAL AND AUXILIARY CONTROL COMPONENT ENCLOSURE PANELS

A. Unitized cabinet type for each system under automatic control with relays and controls mounted in cabinet and temperature indicators, pressure gauges, pilot lights, pushbuttons and switches flush on cabinet panel face, or as detailed on drawings. Provide panel with locking door.

B. ANSI/NEMA 250, general purpose utility enclosures with enameled finished face panel, or as indicated on the drawings.

C. Panels shall be sized for a maximum fill of 50% capacity, and shall not be smaller than 24" X 24".

## 2.15 REFERENCE PROBE - DUCT STATIC PRESSURE

A. Duct static pressure probe shall be capable of static pressure measurement with bi-directional flow in a duct, plenum or air handling unit. Probe shall have minimum 4" insertion depth, shall compensate for total pressure error, and shall provide an accurate, repeatable and stable static pressure value with a maximum flow of 4000 fpm.

B. Probe shall be constructed of aluminum, with mounting flange suitable for round or flat duct surfaces. Probe shall have static pressure signal fitting.

C. Manufacturers:

1. MAMAC # A-520.
2. Dwyer # A-305.
3. Tek-Air # T-SPP 7100/7200.

## 2.16 REFERENCE PROBE - INDOOR STATIC PRESSURE

A. Indoor pressure reference probe shall be a shielded static pressure sensor suitable for flush mounting in the ceiling, complete with multiple sensing ports, pressure impulse suppression chamber, airflow shielding, control tubing take-off fitting, and brush finish on exposed surface. Probe shall be capable of sensing the static pressure in the proximity of the sensor to within 1% of the actual pressure value while being subjected to a maximum airflow of 1000 fpm from a radial source.

B. Manufacturers:

1. Air Monitor Corporation.
2. Tek-Air.

## 2.17 REFERENCE PROBE - OUTDOOR STATIC PRESSURE

A. Outdoor pressure reference probe shall be constructed of anodized aluminum, with control tubing take-off fitting, which shall be capable of sensing the outside ambient air pressure to within 2% of the actual value when subjected to radial wind velocities up to 80 miles per hour with approach angles up to 30 degrees to the horizontal.

B. Manufacturers:

1. Air Monitor Corporation.
2. Tek-Air.

## 2.18 THERMOSTATS – ELECTRONIC & ELECTRIC

A. Electronic Floating Control Room Thermostats: Microprocessor based tri-state (floating) proportional thermostat providing individual room control with setpoint adjustment, locking cover and range stops, output status LED's, night setback/setup feature with local override switch. Manufacturer: Honeywell, Model T6984 or similar.

B. Electronic Modulating Control Room Thermostats: Microprocessor based modulating 2-10V DC thermostat providing individual room control with setpoint adjustment, locking cover and range stops, output status LED's, night setback/setup feature with local override switch. Capable of single and dual modulating outputs to meet required control application. Manufacturer: Honeywell, Model T7984 or similar.

C. Line Voltage Room Thermostats: Adjustable single setpoint with exposed setpoint indicator and exposed thermometer for a range of 55 deg F to 85 deg F with maximum dead band of 1-1/2 degrees F, and locking cover. Contacts shall be rated for load, single-pole or two-pole as required. Provide with integral manual On/Off/Auto selector switch where indicated on control details. Power Requirement: 24 V, ac or 120 V, ac as required.

D. Room Thermostat Accessories:

1. Thermostat Covers: Manufacturers standard with finish as selected by Architect.
2. Insulating Bases: Provide one inch insulating base for thermostats located on exterior walls.
3. Adjusting Key: As required for device.

E. Electric Low Limit Duct Thermostat (freezestat): Snap acting which trips if temperature sensed across any 12 inches of bulb length is equal to or below setpoint, fixed 5 deg F differential, range 30 deg F to 60 deg F, requiring minimum 20 feet length of bulb. Manual-reset unless indicated on drawings to be auto-reset type. Provide one thermostat for every 20 sq ft of coil surface. Switch shall be UL listed and rated for 10 amps at 120 VAC. Provide additional switch or contacts for connection to monitoring system.

# PART 3 EXECUTION

## 3.01 INSTALLATION - CONTROL SYSTEMS

A. Install in accordance with manufacturer's instructions.

B. Check and verify location of temperature sensors, thermostats and other exposed control sensors with plans and room details before installation. Locate room temperature sensors and thermostats 48 inches above floor unless noted otherwise.

C. The location of all control-related items to be mounted on the exterior of the building must be approved by the Architect prior to installation. Indicate proposed locations on the shop drawings.

D. Caulk both sides of damper frames to duct walls to prevent leakage between damper frame and duct.

E. Mount control panels adjacent to associated equipment on vibration free walls or free standing angle iron supports. Sensors used for closed loop control must be connected to the same DDC controller as the associated output signal.

F. Provide conduit and electrical wiring where required.

G. All wiring in altered and unaltered areas shall be run concealed. "Wiremold" in finished areas shall be allowed when wiring cannot be run concealed in walls or partitions. Minimize “wiremold” routing.

H. Splicing of DDC sensor cabling at junction boxes shall not be acceptable.

I. All equipment which has moving parts and is remotely started by the control system shall be provided with warning labels no less than 2 inches in height, and in bright warning color, stating that the equipment is remotely started by automatic controls. Such labels shall be posted clearly in the area of any moving parts, such as belts, fans, pumps, etc.

J. Coil and conceal excess capillary on remote element instruments.

K. Install thermometers in air duct systems on flanges.

L. Install all gauges and thermometers in locations where they are easily read from normal floor level. Provide tubing or wiring as required.

M. Locate all control components and accessories such that they are easily accessible for adjustment, service and replacement.

N. Locate, size and support sensing elements in airstreams so that they properly sense the representative condition. Controlling, transmitting and indicating elements shall be located to sense the average condition. Safety elements shall be located to sense the extreme condition.

O. Locate and size sensing elements in liquid lines so that they are in moving liquid and not in stagnant or turbulent locations. Wells shall not obstruct the flow of the liquid being measured. Pipes one inch and smaller shall be increased at least one pipe size at the point of insertion.

P. Locate pressure sensing taps in liquid lines in straight runs of pipe with at least 10 pipe diameters of straight pipe both upstream and downstream of pressure tap. Provide a shut-off cock in sensing line at each pressure tap.

Q. Install pressure sensing elements in ducts and casings with clean, sharp taps to accurately read true static pressure, avoiding velocity influence and turbulence.

R. Locate, support and install all control components and accessories so that they will not be subject to vibration, excessive temperatures, dirt, moisture or other harmful conditions beyond their rated limitations.

S. Where insulation is penetrated due to the installation of sensing elements or tubing, reseal the openings air and vapor tight. Provide brackets for devices to be located on insulated surfaces so as to clear the finished surface of the insulation and to avoid puncturing the vapor seal.

T. Provide all necessary relays, switches, linkages, control devices, accessories and connections as required for a complete and operational control system as specified herein and shown.

U. All electric valve and damper operators shall be capable of moving from full closed to full open, or vice versa, within 120 seconds.

**3.02 IDENTIFICATION AND MARKING**

A. All sensors, relays, switches, etc. shall be marked with the same identification number as used on the as-built shop drawings. Use Brother P-touch label maker or similar with black text on clear or white super adhesive tape. If label applied in wet environment, spray label with clear enamel for waterproofing.

B. Wire shall be color coded according to functional use. Identify color coding format on record drawings.

C. Identify each wire as to ID number at each controller termination, field device termination or on the field device.

D. All control panels and auxiliary enclosures shall be supplied with engraved phenolic nameplate permanently attached on the front exterior with panel identification to match details of temperature control submittals and include system(s) served and area(s) served on the labeling. Include labeling near 120VAC terminations within panel identifying power source panel ID and specific circuit breaker used.

## 3.03 GRAPHIC DISPLAY GENERATION

A. Provide the following graphic displays as a minimum at the operator interface, arranged in logical penetration paths:

1. Overall campus layout which shows all of the buildings on the Owner's campus.
2. Individual building layout or isometric for each building connected to the system.
3. Floor plans for each floor within each building, with display of present values of space conditions sensed by connected space sensors, display of the name of the air handler associated with each space sensor, display of the room number in which the sensor is located and color coding to indicate whether the sensed space condition is within the acceptable range, is too high, or is too low. TC Contractor shall confirm Owner desired room names prior to graphics generation which may differ from the room names indicated on construction documents.
4. Schematic diagram for each HVAC system. Each system schematic display shall include at least the following:
    a. Schematic arrangement of ductwork, fans, dampers, coils, valves, piping, pumps, equipment etc.
    b. System name.
    c. Area served.
    d. Present value or status of all inputs, along with present setpoint.
    e. Present percent open for each damper, valve, etc. based on commanded position.
    f. Reset schedule parameters for all points, where applicable.
    g. Present occupancy mode.
    h. Present economizer mode, where applicable.
    i. Present outside air temperature.
    j. Associated space conditions and setpoints, where applicable.
    k. Status of application programs (e.g., warm-up, night cycle, duty cycle, etc.).
    l. Color coding to indicate normal and abnormal values, alarms, etc.
5. Manual override capability for each on/off or open/closed controlled digital output (for fans, pumps, 2-position dampers and valves, etc.) and each modulating analog output (for dampers, valves, VFD speed modulation type points, etc.) shall be provided. Graphic display of output point auto or manual override status shall be provided.
6. Sequence of operation in written (text) format for each HVAC system.
7. Overall BAS system schematic.
8. System management graphic for each network device and/or DDC controller.

## 3.04 OWNER INSTRUCTION AND TRAINING

A. Provide a minimum of eight (8) hours of combined on-site and classroom instruction and training to the Owner on the operation of the control systems for the initial installation.

B. Instruction and training shall be performed by a competent Contractor representative familiar with the control systems operation, maintenance and calibration.

C. Training shall take place after check, test, start-up of temperature controls system at a time mutually agreed upon by the Owner and Contractor.

## 3.05 CALIBRATION AND START-UP

A. After installation and connection of control components, test, adjust and re-adjust as required all control components in terms of function, design, systems balance and performance. Make systems ready for environmental equipment acceptance tests.

B. After environmental equipment has been accepted and after the systems have operated in normal service for two weeks, check the adjustment on control components and recalibrate where required. Components not in calibration shall be recalibrated to function as required, or shall be replaced. Control devices, linkages, and other control components shall be calibrated and adjusted for stable and accurate operation in accordance with the design intent and to obtain optimum performance from the equipment controlled. Cause every device to automatically operate as intended to ensure its proper functionality.

## 3.06 ACCEPTANCE PROCEDURE

A. Upon successful completion of start-up and recalibration as indicated in this section, the Architect shall be requested in writing to inspect the satisfactory operation of the control systems.

B. Demonstrate operation of all control systems, including each individual component, to the Owner and Architect.

C. After correcting all items appearing on the punch list, make a second written request to the Owner and Architect for inspection and approval.

D. After all items on the punch list are corrected and formal approval of the control systems is provided by the Architect, the Contractor shall indicate to the Owner in writing the commencement of the warranty period.

**END OF SECTION**

# SECTION 23 7200 - AIR-TO-AIR ENERGY RECOVERY EQUIPMENT

****ADD1****

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## PART 1 GENERAL

### 1.01 RELATED DOCUMENTS

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

B. Related Sections include the following:

1. Division 07 Section "Roof Accessories" for roof curb installation.
2. Division 20 Section “Mechanical General Requirements.”
3. Division 23 Section "Temperature Controls" for control wiring and control devices connected to energy recovery units.

### 1.02 ACTION SUBMITTALS

A. Product Data: Include rated capacities, furnished specialties, and accessories.

### 1.03 INFORMATIONAL SUBMITTALS

A. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other Work. For installed products indicated to comply with design loads, include structural analysis data.
2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, and base weights.
3. Wiring Diagrams: Power, signal, and control wiring.

### 1.04 CLOSEOUT SUBMITTALS

A. Field quality-control test reports.

### 1.05 QUALITY ASSURANCE

A. Source Limitations: Obtain air-to-air energy recovery units through one source from a single manufacturer.

B. Product Options: Drawings indicate size, profiles, and dimensional requirements of air-to-air energy recovery units and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by an NRTL acceptable to authorities having jurisdiction, and marked for intended use.

D. AHRI Compliance: Ratings for energy recovery devices shall comply with AHRI 1060, “Rating Air-to-Air Heat Exchangers for Energy Recovery Ventilation Equipment.”

E. ASHRAE Compliance:

1. Capacity ratings for air-to-air energy recovery equipment shall comply with ASHRAE 84, "Method of Testing Air-to-Air Heat Exchangers."

F. NRCA Compliance: Roof curbs for roof-mounted equipment shall be constructed according to recommendations of NRCA.

G. UL Compliance:

1. Packaged heat recovery ventilators shall comply with requirements in UL 1812, "Ducted Heat Recovery Ventilators"; or UL 1815, "Nonducted Heat Recovery Ventilators."

2. Electric coils shall comply with requirements in UL 1995, "Heating and Cooling Equipment."

## 1.06 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 07 Section "Roof Accessories."

## 1.07 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Filters: Furnish one set of each type of filter specified.

2. Wheel Belts: Furnish one set of belts for each heat wheel (not required for units with minimum 5-year wheel drive warranty).

# PART 2 PRODUCTS

## 2.01 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

## 2.02 FIXED-PLATE HEAT EXCHANGERS

A. Manufacturers:

1. Innergytech.

2. Innovent Air Handling Equipment.

3. Nortek.

4. XeteX Inc.

B. Casing: Aluminum with duct collars.

1. Drain Pan: Same material as casing, with drain connections on exhaust and supply side.

C. Plates: Construct with plates evenly spaced and sealed and arranged for counter airflow.

1. Plate Material: Minimum 0.008-inch thick, 99.5 percent pure aluminum.

2. Plate Coating: Air-dried phenolic where required for corrosive airstreams.

D. Bypass: Construct bypass plenum within casing, with gasketed face-and-bypass dampers having operating rods extended outside casing.

**2.03 PACKAGED ENERGY RECOVERY UNITS**

A. Manufacturers:

1. Addison.

2. Bousquest/Nagas.

3. Greenheck Fan Corporation.

4. Ice Western.

5. Innovent Air Handling Equipment.

6. Nortek Air Solutions: Governaire.

7. Nortek Air Solutions; Venmar CES Inc.

8. Spinnaker Industries Inc.

9. XeteX Inc.

B. General: Construct unit as specified. Single wall and 1-inch double wall casing are unacceptable. Fans and coils must be removable without dismantling the structural framing of the unit. Unit shall be suitable for indoor or outdoor installation as detailed on the plan drawings.

C. Base: Construct base of minimum 10 gage welded structural steel with cross supports integral lifting lugs. Base shall be insulated and provided with a minimum 22 gage galvanized G90 steel subfloor. Coat base with 2-part epoxy primer and urethane modified enamel top coat.

D. Flooring: Provide double wall floor construction. Walk on floor material shall be a minimum of 18 gage galvanized G90 steel. Flooring sheets shall be sealed with a closed-cell neoprene gasket material to minimize sound transmission to spaces located below the unit. Subfloor shall be welded to the base frame.

E. Framing: Frame is constructed of formed galvanized members designed to support flush-mounted double-wall panels. Framing must have gasketing between support members and panels. Casing must be thermal break construction.

F. Panels: Unit shall have non-load bearing heavy gage 2-inch double-wall panels. 22 gage galvanized perforated lining will be provided in the fan sections for additional sound attenuation.

G. Casing Ratings: Maximum casing panel deflection shall not exceed L/250 at 8 inches w.c. TSP (where L is the longest panel span on the unit). Casing shall meet a SMANCA duct class leakage rating of 5 at 8 inches w.c. TSP. The panel insertion loss, per octave band, shall not be less than the following:

| Frequency: | 100 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|---|---|---|---|---|---|---|---|---|
| Insertion loss, dB: | 24 | 16 | 30 | 32 | 33 | 34 | 63 | 60 |

H. Insulation: Walls, floor, and roof shall be double wall and insulated. Walls and roof shall be insulated with either glass fiber or polyurethane foam insulation having minimum R-value of 8. Floors shall be insulated with polyurethane foam insulation to achieve minimum R-13. Insulation shall not be exposed to the air stream.

I. Glass Fiber Housing Insulation: Comply with NFPA 90A or NFPA 90B.

1. Materials: Glass-fiber, ASTM C 1071.

2. Thickness: 2 inches.

3. Thermal Conductivity (k-Value): 0.26 at 75 deg F mean temperature.
4. Fire-Hazard Classification: Maximum flame-spread index of 25 and smoke-developed index of 50, when tested according to ASTM C 411.
5. Liner Adhesive: Comply with NFPA 90A or NFPA 90B and ASTM C 916.
6. Mechanical Fasteners: Galvanized steel, suitable for adhesive attachment, mechanical attachment, or welding attachment without damaging liner when applied as recommended by manufacturer and without causing leakage in housing.
7. Location and Application: Encased between outside and inside casing.

J. Injected Foam Housing Insulation: Comply with NFPA 90A or NFPA 90B.

1. Rated UL94 HF-1.
2. Thickness: 2 inches.
3. Polyurethane Injected Foam: 2.5 pounds per cubic foot density with an effective thermal conductivity (C) of 0.154 BTU in/hr sq. ft °F).
4. Ozone depletion potential of 0.
5. Global warming potential of 0.
6. VOC exempt.

K. Coatings: Exterior casing shall be coated with 2 part epoxy primer with urethane modified enamel top coat. Interior casing shall be galvanized G90 steel and coated with air-dried phenolic where specified for corrosive environment.

L. Access Doors: Full height. Same materials and finishes as housing, complete with stainless steel piano hinges, latches, handles, and gaskets. Doors shall be sized and located to allow periodic maintenance and inspections. Allegis corrosion resistant compression latches (tool lockable in fan sections), and minimum 24-inch clear opening width at all walk-in sections. Supply and exhaust air streams shall not be covered by a single door. Provide doors for access to areas requiring routine maintenance. Access panels in lieu of access door are unacceptable.

M. Door Accessories:

1. Access doors shall be provided with stainless steel door tie backs.
2. Door shall be thermal break design.

N. Weather hoods (for outdoor units): Provide weather hoods and bird screens over all exposed inlets and outlets. Ship hoods loose for installation in the field.

O. Roof (for outdoor units): Provide roof with standing seam construction. Pitch roof with sufficient slope to ensure water drainage. Roof overhang to be provided around complete perimeter of the unit.

P. Heat Recovery Device: Fixed-plate heat exchanger.

Q. Supply and Exhaust Blower: 12 blade aluminum airfoil plenum fan with minimum L10 200,000 hour rated bearings. Plenum fans with less than 12 blades are not acceptable due to increased noise levels. Non-airfoil blades are not acceptable due to decreased efficiency of the fan. Hi-Pro Polyester urethane powder coating or equivalent air-dried Heresite coating for corrosive environments.

R. Refer to Division 20 Section "Motors" for general requirements.

S. Belt-Drives: Adjustable pitch sheaves for 10 hp motors and smaller, fixed pitch sheaves for 15 hp motors and larger. Belt-drives shall be minimum 2-groove with 2 belts and minimum 1.2 service factor. Refer to Division 23 Section “Common Work Results for HVAC” for additional requirements.

T. Isolation: Refer to Division 20 Section “Mechanical Vibration Controls.”

U. Accessories:

1. Lube Lines: Provide extended lube lines for fans/motors. Terminate lube lines inside nearest access door.
2. Belt guards / fan outlet safety cages for plenum fans / inlet screens shall be provided.
3. Variable Frequency Controllers: Provide variable frequency controllers for supply and exhaust fan(s) where indicated. VFCs shall be factory provided and installed.

V. Dampers: Motorized dampers shall be low leakage type with aluminum construction, airfoil blades, vinyl edge seals, metal jamb seals, and synthetic bearings. Gravity dampers shall have aluminum frame, aluminum blades, extruded vinyl edge seals, and synthetic bearings.

1. Provide the following dampers:
   a. Outside air heat exchanger face sequencing dampers, parallel blade type, two-position actuators. A minimum of 5 dampers shall be provided across the face of the HX to allow defrost operation without affecting performance.
   b. Outside air heat exchanger bypass damper, parallel blade type, 2-position actuator.
   c. Exhaust gravity damper.
   d. Outside Air Damper: Fully modulating actuator.
   e. Recirculation Air Damper: Fully modulating actuator.

W. Filters:

1. Mixed Air Filter: Provide 2-inch thick, MERV 8 filter bank downstream of the heat exchanger. Mount in galvanized steel side access slide rack and size for 500 fpm maximum face velocity.
2. Aluminum Outside Air Filter: Provide 2-inch thick, washable aluminum filter bank in the location shown on unit drawing. Mount in galvanized steel front access rack and size for 650 fpm maximum face velocity.

X. Indirect Fired Duct Furnace: Indirect fired duct furnace provided with performance as specified in the schedule. Furnace shall be ETL listed using ANSI Z83.8 standards. Furnace shall have a tubular heat exchanger constructed of Type 409 stainless steel. Tubes shall have integral formed dimples to maximize heat transfer and condensate drainage. Burner assembly shall include inshot type burners, electronic spark ignition system, high temperature safety control, air proving switch, and draft inducer.

1. Allowable Gas Inlet Pressure: 6 inches to 14 inches w.c.
2. Gas Valve: Minimum 4:1 turndown electronic modulating or turndown as scheduled, whichever is greater.
3. Vent Pipe for Indoor Unit: Furnished and installed by the Contractor.

Y. Indirect Fired Drum Furnace: Provide furnace with Type 304 stainless steel primary and secondary heat exchangers, combustion air blower, air proving switch, electronic flame safety system, spark pilot ignition system, and high limit.

1. Gas Valve: Full modulation with 10:1 turndown.
2. Gas Train: Standard.
3. Vent Pipe for Indoor Unit: Furnished and installed by the Contractor.

Z. Direct Expansion Refrigerant Coils (ERU-3 Only):

1. Performance Ratings: Tested and rated according to AHRI 410 and ASHRAE 33.

2. Minimum Working-Pressure Rating: 300 psig.
3. Source Quality Control: Factory tested to 450 psig.
4. Tubes: ASTM B 743 copper, minimum 0.020 inch wall thickness, and minimum 0.50 inch diameter.
5. Fins: Aluminum, minimum 0.010 inch thick.
6. Suction and Distributor Piping: ASTM B 88, Type L copper tube with brazed joints.
7. Frames: ASTM A 666, Type 304 stainless steel, minimum 0.0625 inch thick.
8. Drain Pans:
    a. Description: For cooling coils, IAQ compliant formed to slope from all directions to the drain connection as required by ASHRAE 62.
    b. Construction: Minimum 22 gage, Type 304 stainless steel with welded joints, positively sloped a minimum of 1/8 inch per foot, with threaded drain connection at lowest point of pan.

AA. Hot Gas Reheat Coil (ERU-3 Only): Provide AHRI rated coil with 0.016-inch thick copper tubes, stainless casing, and rippled aluminum plate fin secondary surface with a thickness of 0.0075-inch.

1. Coil: Dehydrated with 140 deg F DB/40 deg F dew point air before shipment.
2. Source Quality Control: Tested with 315-psig air pressure under warm water and guaranteed for 250 psig working pressure.
3. Provide coil with a three-way control valve.

BB. Integral Condensing Unit (ERU-3 Only): Provide integral air cooled condensing system factory piped, wired, charged, and tested. Entire condensing section must be assembled by the unit manufacturer. Skid mounting another manufacturer's condensing unit is not acceptable.

1. Provide hermetic scroll type compressors with suction and discharge service valves, reverse rotation protection, sight glass, oil level adjustment, oil filter, rotary dirt trap, non-short cycling control, and high and low pressure limits.
2. Provide condenser coils with galvanized casing, seamless copper tubes, and aluminum fins.
3. Condenser fans shall be direct drive with fan guards.
4. Independent circuits shall be provided completely tested, dehydrated, and fully charged with refrigerant and oil.
5. Provide hot gas bypass on lead circuit(s) with HGB valve and solenoid valve.
6. Drains must be provided in the base of each condensing section to eliminate standing water.

CC. Electrical:

1. Factory-installed and -wired switches, motor controllers, transformers, and other electrical devices necessary shall provide a single-point field power connection.
2. House in a unit-mounted, NEMA 250, Type 3R enclosure with hinged access door with lock and key or padlock and key.
3. Wiring shall be numbered and color-coded to match wiring diagram.
4. Field power interface shall be to NEMA KS 1, heavy-duty, nonfused disconnect switch.
5. Minimum SCCR according to UL 508 shall be as indicated on the Drawings.

6. Each motor shall have branch power circuit and controls with one of the following disconnecting means having SCCR to match main disconnecting means:
    a. NEMA KS 1, heavy-duty, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2 protection according to IEC 60947-4-1.
    b. NEMA KS 1, heavy-duty, nonfusible switch.
    c. UL 489, motor-circuit protector (circuit breaker) with field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
7. Each motor shall have overcurrent protection.
8. Factory test wiring and controls before shipment.
9. A phase/voltage protection relay shall be provided for each unit. Upon sensing a loss of phase or voltage the unit shall be de-energized.
10. A door safety kill switch shall be provided on all blower section access doors. The door safety kill switch shall de-energize the blower motor if the access door is opened. The kill switch shall prevent motor startup if the blower section access door is open.
11. Lights: Provide vapor proof marine lights in all access sections. Wire lights to a single light switch. Mount light switch near the electrical panel and wire switch to a terminal strip in the electrical panel. Separate 120V power must be provided to the switch. A transformer will be provided to provide power to the lighting circuit.
12. Convenience Receptacles: Provide a GFCI duplex receptacle mounted near the electrical panel and wire receptacle to a terminal strip in the electrical panel. Separate 120V power must be provided to the receptacle. A transformer will be provided to provide power to the circuit.
13. Dirty filter indicators: Provide differential pressure switches across all filter racks. Wire pressure switches to terminal block in main electrical panel.

DD. Piping: Fabricate units with space within housing for piping.

EE. Unit Controls: Solid-state control board and components contain at least the following features:
1. Supply-air fan control relay.
2. Default control to ensure proper operation after power interruption.
3. Service relay output.
4. Unit diagnostics and diagnostic code storage.
5. Field-adjustable control parameters.
6. For units indicated to have single zone variable air volume control, utilize hot gas reheat for dehumidification control with space humidity sensor furnished by unit manufacturer for field installation.
7. For units other than single zone control, utilize hot gas reheat for dehumidification control with return air humidity sensor furnished by unit manufacturer for field installation.
8. Provide outside airflow measuring device for minimum airflow setpoint control.
9. Economizer control complying with ASHRAE 90.1 including automated fault detection and diagnostics.
10. Indoor-air quality control with carbon dioxide sensor furnished by unit manufacturer for field installation.
11. Unoccupied mode (outside air damper lockout).
12. Low-refrigerant pressure control.

13. Variable-Air-Volume Control: As scheduled on the Drawings.
    a. For units indicated to have single zone variable air volume (SZVAV) control, provide space temperature sensor furnished by unit manufacturer for field installation.
    b. For units indicated to have discharge air temperature, duct static pressure variable air volume (DAT-DSP VAV) control, variable frequency controller maintains remote supply air duct static pressure. Provide remote duct static pressure sensor for field installation. Factory installed and wired supply air static pressure limit shuts unit down on high pressure.
        1) Provide factory installed differential pressure transmitter.
        2) Provide duct static pressure sensor (Dwyer model A302 or equal) furnished by unit manufacturer for field installation.
    c. Where drawings indicate return fan application, provide differential supply-return airflow tracking.
    d. Where drawings indicate relief fan application, modulate relief fan speed to maintain space pressure.
        1) Provide factory installed differential pressure transmitter, for field connection to space and outdoor static pressure sensors.
        2) Provide space static pressure sensor (Dwyer model A-417A or equal) furnished by unit manufacturer for field installation.
        3) Provide outdoor static pressure sensor (Dwyer model A-306 or equal) furnished by unit manufacturer for field installation.

FF. Programmable DDC (with field mounted sensors): Wall-mounted, with integral thermostat function, heating setback and cooling setup with seven-day programming; and the following:
1. Touch sensitive keypad.
2. Digital display of outside temperature, supply-air temperature, return-air temperature, economizer damper position, and control parameters.
3. Deg F space temperature readout.
4. LED indicators.
5. Time and operational mode readout.
6. Status indicator.
7. Battery backup.
8. Dirty-filter indication.

GG. BAS Communication Link (BACnet MSTP or IP as indicated on drawings): Providing link between unit controls and BAS. Interface shall communicate data and faults as indicated on drawings.

## PART 3 EXECUTION

### 3.01 INSTALLATION

A. Install fixed-plate heat exchangers so supply and exhaust airstreams flow in opposite directions.
1. Install duct access doors in both supply and exhaust ducts, both upstream and downstream, for access to heat exchanger. Access doors and panels are specified in Division 23 Section "Duct Accessories."

B. Install floor-mounted units on 4-inch- high concrete base.

C. Support suspended units from structure; use threaded steel rods.

D. Install units with clearances for service and maintenance.

E. Install new filters at completion of equipment installation and before testing, adjusting, and balancing.

F. Pipe condensate drains from heat exchanger units and drain pans to nearest floor drain or roof drain. Use same size piping as condensate drain connection. For equipment located outdoors, insulate and provide electrical heat trace for condensate drains.

**3.02 CONNECTIONS**

A. Piping installation requirements are specified in other Division 20 and 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Units shall be provided complete for single point connection to hydronic piping system.

B. Install piping adjacent to machine to allow service and maintenance.

C. Duct and fan installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of ducts, fittings, and specialties.

D. Ground equipment according to Division 26 Section "Grounding and Bonding."

E. Connect wiring according to Division 26 Section "Conductors and Cables."

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

**3.03 FIELD QUALITY CONTROL**

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including piping and electrical connections. Report results in writing.

1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
2. Adjust seals and purge.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
4. Set initial temperature and humidity set points.
5. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

B. Air-to-air energy recovery equipment will be considered defective if it does not pass tests and inspections.

C. Remove malfunctioning units, replace with new units, and retest as specified above.

**3.04 DEMONSTRATION**

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

**END OF SECTION**

# SECTION 32 0519 - GEOSYNTHETICS FOR EXTERIOR IMPROVEMENTS
**ADD1**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Geotextile for separation.

### 1.02 RELATED REQUIREMENTS

A. Section 32 1120 - Aggrigate Base Courses
B. Section 31 2316 - Excavation.
C. Section 31 2323 - Fill.

### 1.03 REFERENCE STANDARDS

A. AASHTO M 288 - Standard Specification for Geosynthetics for Highway Applications; 2024.
B. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a (Reapproved 2023).
C. ASTM D4833/D4833M - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products; 2007 (Reapproved 2020).
D. ASTM D4873/D4873M - Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples; 2017 (Reapproved 2021).
E. ASTM D5199 - Standard Test Methods for Measuring the Nominal Thickness of Geosynthetics; 2025.

### 1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene preinstallation meeting one week prior to start of work of this section; require attendance by affected installers.
B. Sequencing: Install utility connections before geosynthetics.

### 1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Manufacturer's data on each product used, including physical properties, seaming materials, and installation instructions.
C. Shop Drawings:
    1. Indicate overall layout, dimensions, geotextile sheet, and seam layout.
    2. Indicate anchorage, penetration, and seaming details.
D. Samples: Two sheets, 12 by 12 inches in size, indicating physical properties.
E. Certificate: Certify that products of this section meet or exceed specified requirements.
F. Manufacturer's Instructions: Indicate seaming method.
G. Manufacturer's qualification statement.
H. Installer's qualification statement.

### 1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least 3 years of documented experience.
B. Installer Qualifications: Company specializing in performing work of type specified and with at least 3 years of documented experience and approved by manufacturer.

### 1.07 DELIVERY, STORAGE, AND HANDLING

A. Identify, store, and handle geosynthetic rolls and samples in accordance with ASTM D4873/D4873M.
B. Protect materials from sunlight and other ultraviolet light sources during storage.
C. Handle geosynthetics carefully and prevent dragging, dropping, or imbalanced lifting.

**1.08 FIELD CONDITIONS**

A. Temperature Requirements: Do not place geosynthetic when ambient air or base surface temperature is less than 40 degrees F or above 140 degrees F.
B. Surface Requirements: Do not place geosynthetic when receiving surface is saturated or has ponded water.
C. Follow recommendations of geosynthetic manufacturer.

**PART 2 PRODUCTS**

**2.01 MANUFACTURERS**

A. SKAPS Industries; _____: www.skaps.com/#sle.
B. Solmax; _____: www.solmax.com/#sle.
C. US Fabrics Inc; _____: www.usfabricsinc.com/#sle.
D. Substitutions: See Section 01 6000 - Product Requirements.

**2.02 GEOSYNTHETIC**

A. Provide geosynthetic in largest size sheets possible to minimize field joining.
B. Uniform thickness in accordance with ASTM D5199.
C. Resistant to mildew and chemicals in soil, stable under freeze-thaw cycles, does not shrink or expand under wet conditions, and does not unravel or become clogged during use.

**2.03 GEOTEXTILE**

A. General:
    1. Material: Polyethylene consisting of 5 percent maximum regrind and free of contaminants.
    2. Survivability: Class 1, when tested in accordance with AASHTO M 288.
    3. Elongation: 35 percent, minimum, when tested in accordance with ASTM D4632/D4632M.
B. Geotextile for Separation: Capable of restricting adjacent material mixing.
    1. Type: Woven.
    2. Seams: Loose laid.
        a. Overlap: According to manufacturer.
            1) 12 inches, minimum.
    3. Grab Strength: 300 lbf, minimum, when tested in accordance with ASTM D4632/D4632M.
    4. Puncture Strength: 450 lbf, minimum, when tested in accordance with ASTM D4833/D4833M.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

A. Verify receiving surface is smooth, without ruts or protrusions, and grades are according to design drawings.
B. Verify receiving surface is unsaturated and free of ponded water.
C. Verify geosynthetic is free of defects or flaws that degrade physical performance.

**3.02 PREPARATION**

A. Remove unsuitable materials.
B. Fill in holes, including stake holes, backfill, and fill.

**3.03 INSTALLATION**

A. General:
    1. Notify Architect minimum of 24 hours before geosynthetic installation.
    2. Prevent surface drainage from eroding under geosynthetic. Repair undermined areas before backfill.
    3. Position geosynthetic smooth and wrinkle-free on prepared surface; unroll or unfold carefully, avoiding stretching.

B. Separation:
   1. Install geotextile according to manufacturer's recommendations.
   2. Lay sheets in direction of construction.
   3. Repairs: Remove damaged portion of geotextile and seam additional layer to cover affected area.

**3.04 BACKFILL**

A. Obtain approval for geosynthetic sheet installation from Architect before placing fill.
B. Backfill in manner to prevent damage to geosynthetic. Repair geosynthetic damaged during backfill operations.
C. Cover geosynthetic in installed direction.

**3.05 FIELD QUALITY CONTROL**

A. See Section 01 4000 - Quality Requirements for additional requirements.
B. Provide geosynthetic installation schedule to manufacturer's field representative.
C. Inspect completed liner for pinholes, punctures, and tears; inspect seams and joints for unbonded areas. Repair defects or damages found.

**3.06 PROTECTION**

A. Do not exceed geosynthetic manufacturer's recommended exposure to UV radiation.
B. Prevent surface water runoff from contaminating geosynthetic.
C. Do not use pins or staples where risk of damaging underlying geosynthetic layer is present.
D. Erect barricades preventing traffic over unfilled geosynthetic.

**END OF SECTION 32 0519**

# SECTION 32 1120 - AGGREGATE BASE COURSES
**ADD1**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Aggregate base course.
B. Finishing stone course.

### 1.02 RELATED REQUIREMENTS

A. Section 32 1723.28 - Artificial Turf
B. Section 31 0519 - Geosynthetics for Earthwork.

### 1.03 REFERENCE STANDARDS

A. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil–Aggregate Subbase, Base, and Surface Courses; 2017 (Reapproved 2021).
B. ASTM F1551 - 03 - DIN 18-035, Part 6
C. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop; 2025.
D. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)); 2012 (Reapproved 2021).
E. ASTM D1556/D1556M - Standard Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method; 2024.
F. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)); 2012 (Reapproved 2021).
G. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method; 2015.
H. ASTM D3665 - Standard Practice for Random Sampling of Construction Materials; 2024.
I. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth); 2023.

### 1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Geotextile material.
C. Test Reports:
    1. Aggregate Composition: Results of laboratory tests on proposed and actual materials used.
    2. Compaction Density: Results of laboratory tests on compacted course.
D. Manufacturer's instructions: Geotextile membrane installation procedure.

### 1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.
B. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of type specified in this section.

### 1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver geotextile material to project site wrapped in protective covering, maintain prior to use.
B. Aggregate Storage: Prevent material intermixing, contamination, and deterioration.

## PART 2 PRODUCTS

### 2.01 MATERIALS

A. Field Drainage Course:
    1. Field Drainage Base aggregate shall be MDOT 4G modified:
        a. Permeability shall be or exceed 20 inches/hour per ASTM F 1551-03, Suffix DIN 18-25, Part 6

b. The percentage of crushed particles, within the Athletic Mix shall exceed 95% per MTM 117.
c. Abrasion Resistance of Athletic Base Stone by Los Angeles machine shall be less than 45% loss as tested according to MTM 102.
d. Moisture Content shall be less than 5%.
e. Aggregate Mix:

| Sieve | Percentage Passing Base Stone (Open Aggregate) | Percentage Passing Finishing Stone |
|---|---|---|
| 1 1/2 inches | 100 | - |
| 1 inch | 90-100 | - |
| 3/4 inch | 60-80 | 100 |
| 1/2 incxh | 35-65 | - |
| 3/8 inch | 18-45 | 85-100 |
| 1/4 inch | 17-35 | 75-100 |
| # 4 | 16-30 | 60-90 |
| # 8 | 14-25 | 45-65 |
| # 16 | 10-20 | 10-55 |
| # 30 | 5-18 | 0-40 |
| # 60 | 2-8 | 0-15 |
| # 100 | 1-5 | 0-8 |
| # 200 | 0-5 | 0-4 |

2. Finishing Aggregate:
a. Aggregate shall be 3/8 inch free-flowing, providing a bridge with the lower drainage layer of aggregate.
b. Finishing aggregate shall be 100% fractured by mechanical means, with elongayted characters on each particle larger than 1/4 inch.
c. Materials shall be washed and devoid on mineral fines.
d. All particles smaller than 1/4 inch shall be produced by manufactured means only.
e. Rounded sands or aggregates are prohibited.

B. Geosynthetic:
1. Geotextile: See Section 31 0519.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that survey benchmarks and intended elevations for the work are as indicated.
B. Verify substrate has been inspected, and gradients and elevations are correct and dry.

### 3.02 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompacting.
B. Do not place aggregate on soft, muddy, or frozen surfaces.

### 3.03 PLACEMENT

A. Spread course uniformly over prepared substrate to a total compacted thickness:
1. Install geosynthetic membrane on substrate in accordance with manufacturers instructions.
2. Aggregate Base Thickness: According to design drawings.
B. Place course in maximum 4-inch layers and roller compact to specified density.
C. Level and contour surfaces to elevations and gradients indicated.
D. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

### 3.04 TOLERANCES

A. Variation From Design Elevation: Within 1/2 inch.

B. Flatness: Maximum variation of 1/2 inch measured with 10-foot straight edge.

**3.05 FIELD QUALITY CONTROL**

A. See Section 01 4000 - Quality Requirements for additional requirements.

B. Aggregate Base Compaction Density Testing: In accordance with ASTM D1556/D1556M, ASTM D2167, or ASTM D6938.

C. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with AASHTO T 180, ASTM D698 ("standard Proctor"), or ASTM D1557 ("modified Proctor").

D. Frequency of Tests: In accordance with ASTM D3665.

E. Remove, replace, and retest work that does not meet specified requirements.

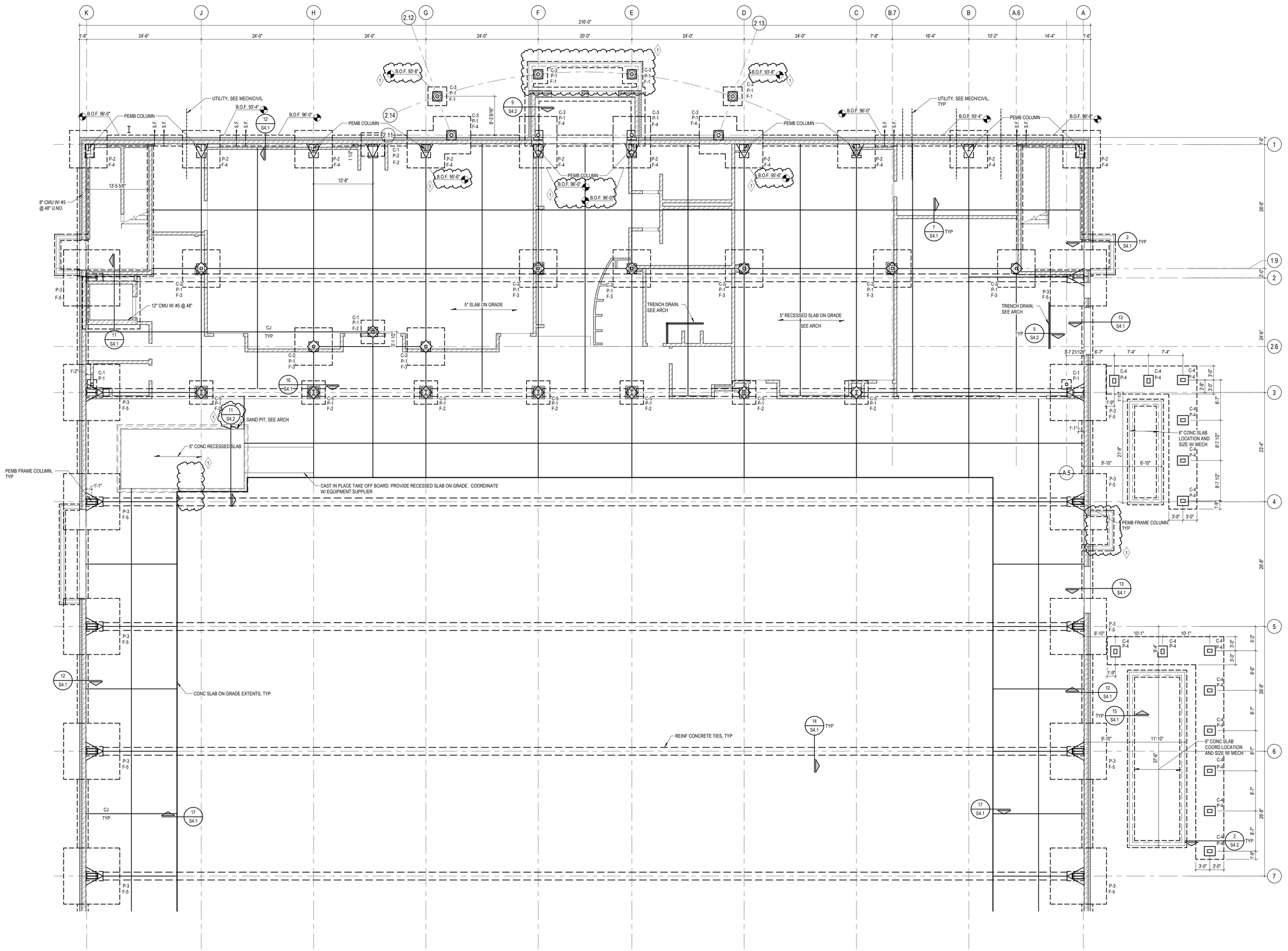
**3.06 CLEANING**

A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.

B. Stockpile unused materials neat and compact.

C. Remove unused materials and grade areas to prevent standing surface water.

**END OF SECTION 32 1120**




## FOUNDATION PLAN - ZONE 'A'

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

NOTES:
1. REFER TO S4.1 FOR FOOTING AND PIER SCHEDULE.
2. REFER TO S4.1 FOR COLUMN SCHEDULE.
3. PROVIDE (2) #5 X 4'-0" LONG AT ALL RE-ENTRANT CORNERS.
4. PROVIDE MASONRY CONTROL JOINTS IN CMU AT MAX 25'-0" SPACING AND MINIMUM 2'-0" FROM OPENING EDGE.
5. PROVIDE THICKENED SLAB UNDER ALL NON-LOAD BEARING CMU. SEE DETAIL 7/S4.1.


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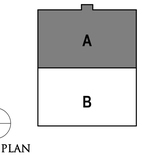

PROJECT TITLE

# NEW FIELD HOUSE

**DEXTER COMMUNITY SCHOOLS**
**DEXTER, MI**

DRAWING TITLE

**Foundation Plan - Zone 'A'**




KEY PLAN

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |
| 12-16-2025 | BID PACKAGE NO. 1 PEMB |

| DATE: | ISSUED FOR: |
|---|---|
| DRAWN | A. FISCHHABER |
| CHECKED | B. KANNERS |
| APPROVED | E. MANNOR |

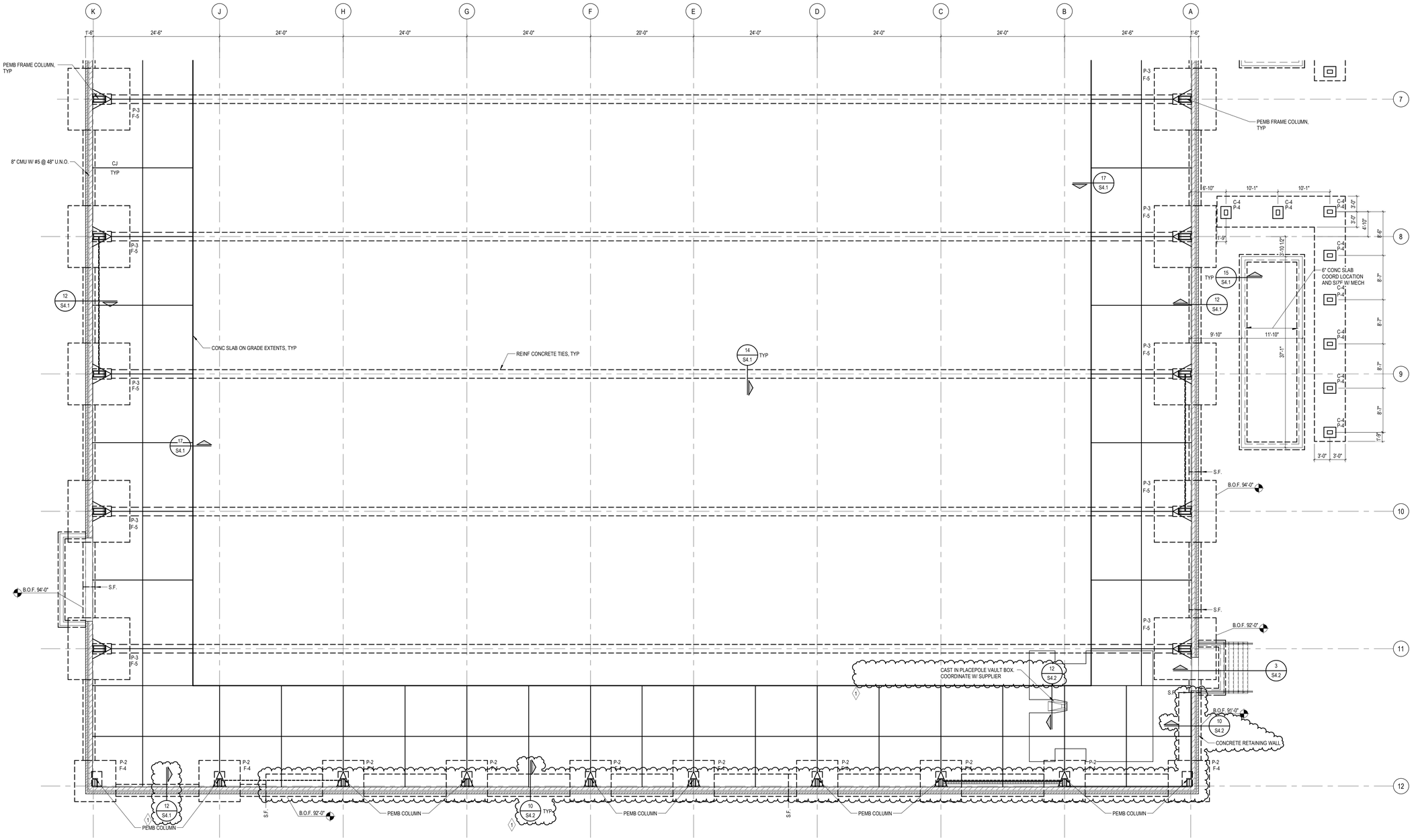
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**25026E**

DRAWING NO.

**S1.0A**


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## FOUNDATION PLAN - ZONE 'B'

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

NOTES:
1. REFER TO S4.1 FOR FOOTING AND PIER SCHEDULE.
2. REFER TO S4.1 FOR COLUMN SCHEDULE.
3. PROVIDE (2) #5 X 4'-0" LONG AT ALL RE-ENTRANT CORNERS.
4. PROVIDE MASONRY CONTROL JOINTS IN CMU AT MAX 25'-0" SPACING AND MINIMUM 2'-0" FROM OPENING EDGE.
5. PROVIDE THICKENED SLAB UNDER ALL NON-LOAD BEARING CMU. SEE DETAIL 7/S4.1.


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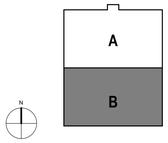

PROJECT TITLE

# NEW FIELD HOUSE

**DEXTER COMMUNITY SCHOOLS**
**DEXTER, MI**

DRAWING TITLE

**Foundation Plan - Zone 'B'**




KEY PLAN

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
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| 12-19-2025 | DESIGN DEVELOPMENT |
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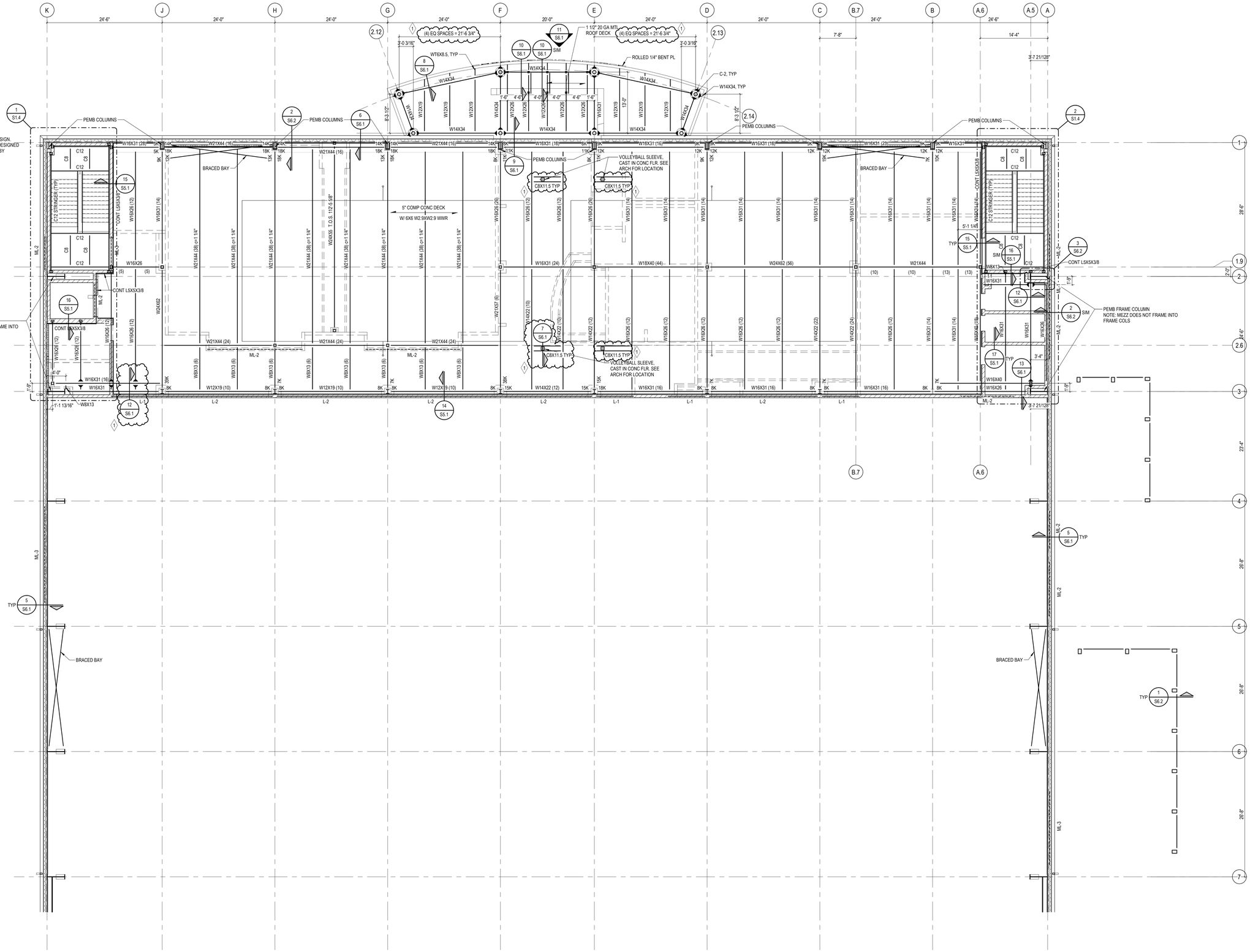
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DRAWING NO.

**S1.0B**


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## SECOND FLOOR FRAMING PLAN - ZONE 'A'

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

NOTES:
1. ◀ INDICATES MOMENT CONNECTION
2. DESIGN PEMB COLUMNS FOR ADDITIONAL MEZZANINE REACTIONS AS NOTED ON PLAN. LOADS ARE UNFACTORED.
3. REFER TO S5.1 FOR STEEL AND MASONRY LINTEL SCHEDULES.
4. REFER TO S6.2 FOR BEARING PLATE SCHEDULE


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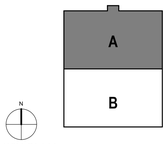
# NEW FIELD HOUSE

**DEXTER COMMUNITY SCHOOLS**
**DEXTER, MI**

DRAWING TITLE

**Second Floor Framing Plan - Zone 'A'**

KEY PLAN




ISSUE DATES

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|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |
| 12-16-2025 | BID PACKAGE NO. 1 PEMB |

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| APPROVED | E. MANNOR |

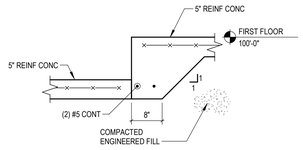
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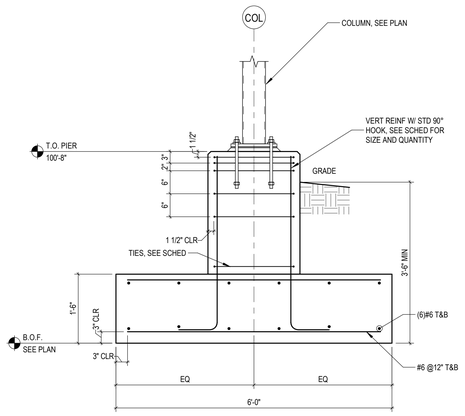
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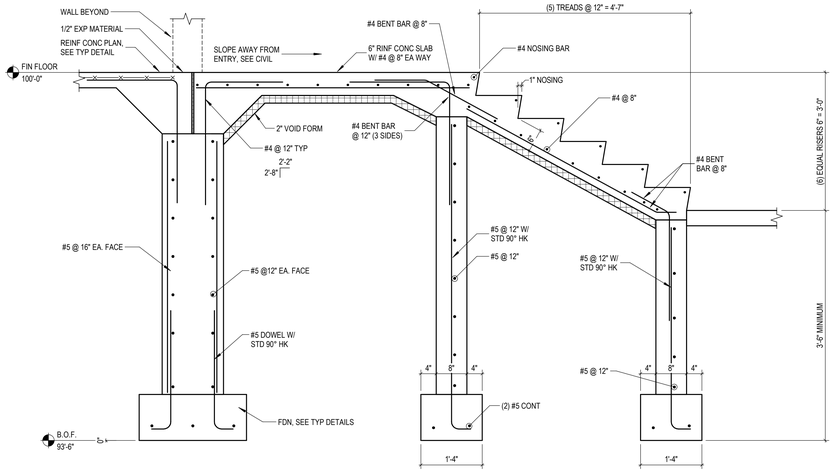

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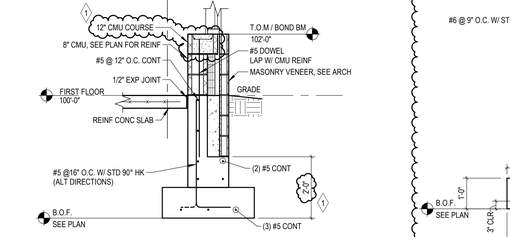

1 S4.2 TYP RECESSED SLAB
SCALE: 3/4" = 1'-0"




2 S4.2 DETAIL
SCALE: 3/4" = 1'-0"




3 S4.2 DETAIL
SCALE: 3/4" = 1'-0"




4 S4.2 TYP PIT SUMP COVER
SCALE: 3/4" = 1'-0"




5 S4.2 TYP TRENCH DRAIN DETAIL
SCALE: 3/4" = 1'-0"




6 S4.2 PIER P-1
SCALE: 3/4" = 1'-0"



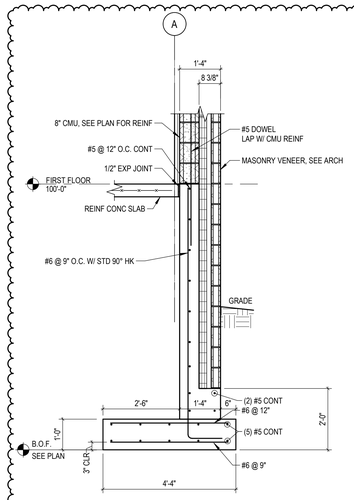

7 S4.2 PIER P-2
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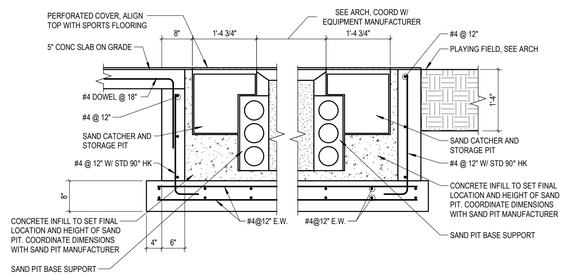

8 S4.2 PIER P-3
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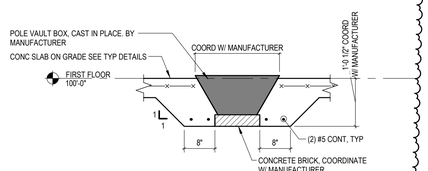

9 S4.2 DETAIL
SCALE: 1/2" = 1'-0"




10 S4.2 DETAIL
SCALE: 1/2" = 1'-0"




11 S4.2 SAND PIT SECTION
SCALE: 3/4" = 1'-0"




12 S4.2 DETAIL
SCALE: 3/4" = 1'-0"

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PROJECT TITLE
# NEW FIELD HOUSE

**DEXTER COMMUNITY SCHOOLS**
**DEXTER, MI**

DRAWING TITLE
**Concrete Details**

KEY PLAN

ISSUE DATES

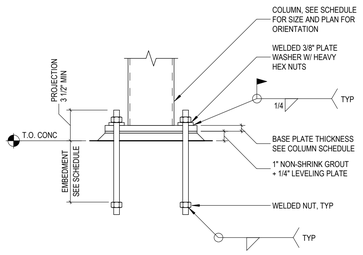
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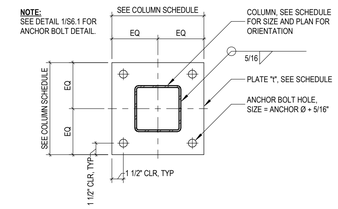
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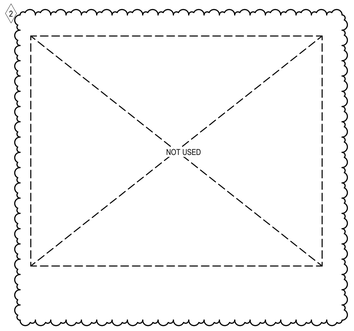
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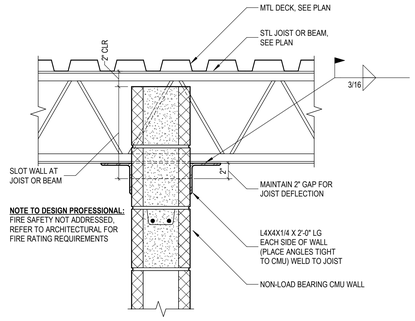



1 S6.1 TYPICAL ANCHOR BOLT DETAIL
NOT TO SCALE

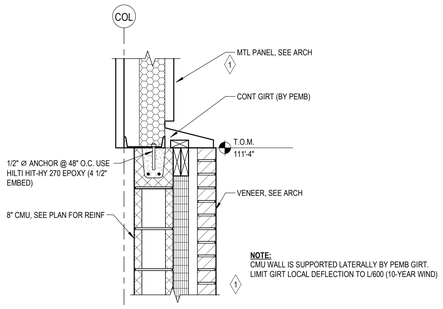



2 S6.1 TYPICAL BASE PLATE DETAIL
NOT TO SCALE

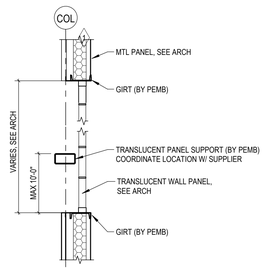


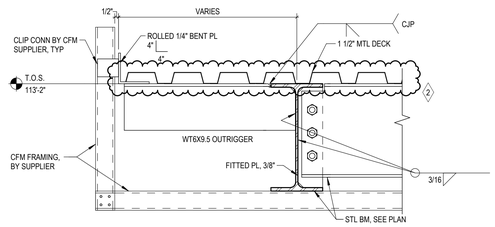

4 S6.1 TYP T.O. WALL AT STRUCTURAL FRAMING
NOT TO SCALE



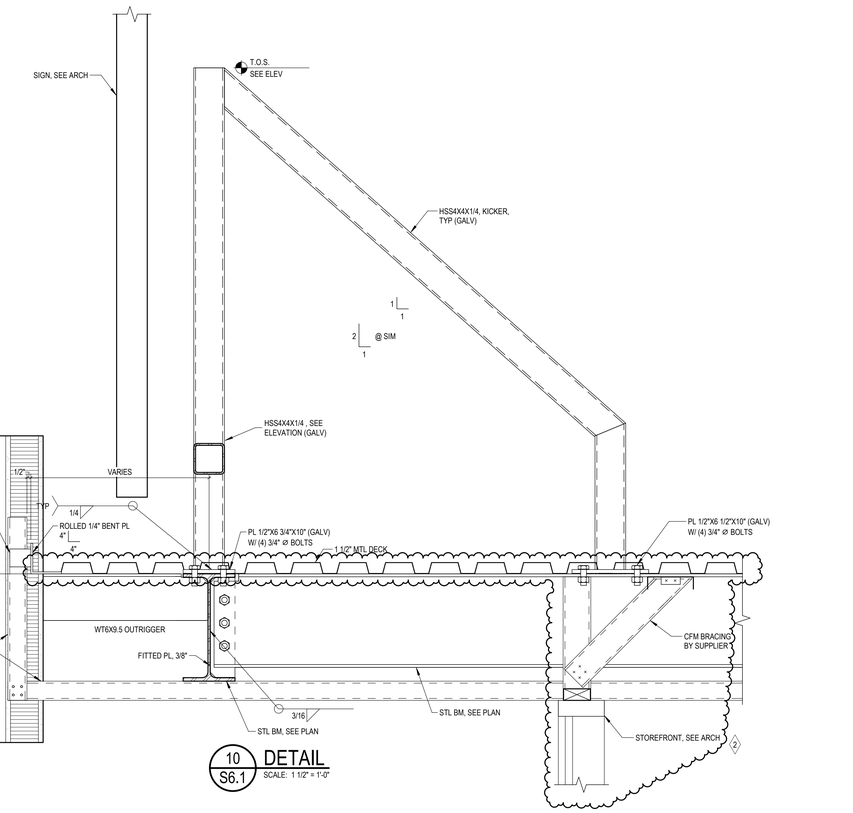

5 S6.1 DETAIL
SCALE: 1" = 1'-0"



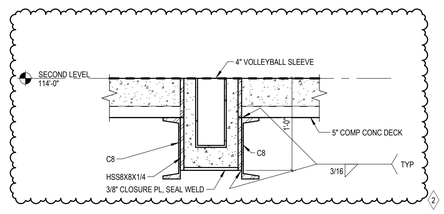

6 S6.1 DETAIL
SCALE: 1/2" = 1'-0"



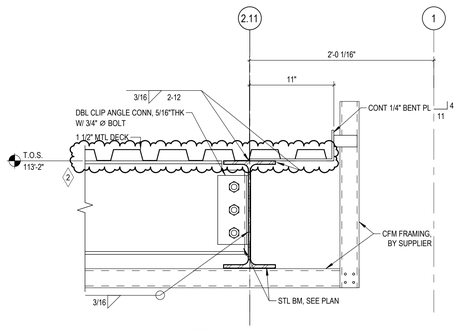

8 S6.1 DETAIL
SCALE: 1 1/2" = 1'-0"



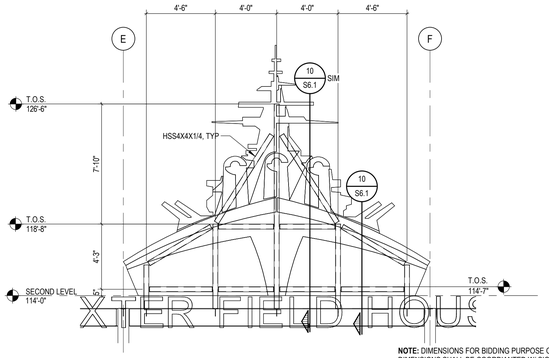

10 S6.1 DETAIL
SCALE: 1 1/2" = 1'-0"




7 S6.1 VOLLEYBALL SLEEVE DETAIL
SCALE: 1 1/2" = 1'-0"

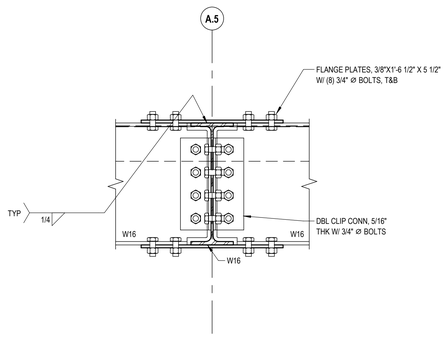



9 S6.1 DETAIL
SCALE: 1 1/2" = 1'-0"

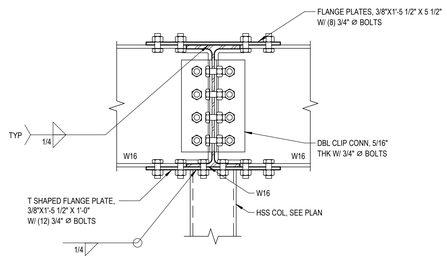



NOTE: DIMENSIONS FOR BIDDING PURPOSE ONLY. FINAL DIMENSIONS SHALL BE COORDIANTED W/ SIGN MANUFACTURER

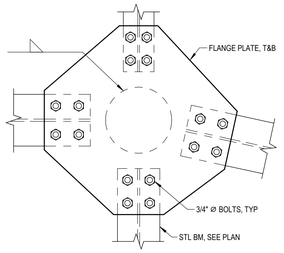
11 S6.1 SIGN ELEVATION
SCALE: 1/4" = 1'-0"




12 S6.1 DETAIL
SCALE: 1 1/2" = 1'-0"




13 S6.1 DETAIL
SCALE: 1 1/2" = 1'-0"




NOTE: STEEL FABRICATOR TO DESIGN CONNECTIONS FOR THE FOLLOWING LOADS (LRFD):
SHEAR = 15 KIPS
MOMENT = 25 K-FT

14 S6.1 TYP MOMENT CONN
SCALE: 1 1/2" = 1'-0"

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD · BOX 289
BLOOMFIELD HILLS · MICHIGAN · 48302
PH · 248.338.4561 FX · 248.338.0223
EM · INFO @TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

WILLIAM A. KIBBE & ASSOCIATES, INC.
ENGINEERS | ARCHITECTS | SURVEYORS

PROJECT TITLE
# NEW FIELD HOUSE

**DEXTER COMMUNITY SCHOOLS**
**DEXTER, MI**

DRAWING TITLE
**Steel Details**

KEY PLAN

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 01-16-2026 | ADDENDUM NO. 1 - BP NO. 1 |
| 12-19-2025 | DESIGN DEVELOPMENT |
| 12-16-2025 | BID PACKAGE NO. 1 PEMB |

| | |
|---|---|
| DRAWN | A. FISCHHABER |
| CHECKED | B. KANNERS |
| APPROVED | E. MANNOR |

PROJECT NO.
**25026E**

DRAWING NO.
**S6.1**

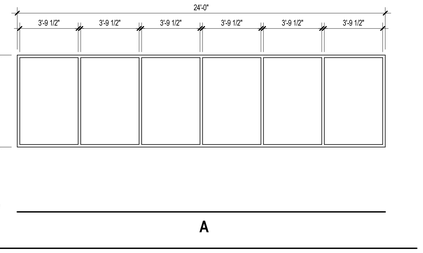
Autodesk Docs://25026E_Dexter - New Field House/25147302O_Dexter Athletic Facility_S_v25.rvt
3/18/2026 9:52:58 AM

## BORROWED LITE SCHEDULE

| Opening | | | Frame | | | | Details | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Opening Size (Width x Height) | | Type | Material | Finish | Glass | Head | Jamb | Sill | | U.L. Label | | Remarks |
| ZONE A | | | | | | | | | | | | | |
| A106B | 14'-8 3/8" x 6'-0" | OPENING | 5 | HM | PTD | GL-2 | 6/AD.2 | 4 & 5/AD.2 | 3/AD.2 | | | | |
| A114B | 16'-0" x 6'-0" | OPENING | 5 | HM | PTD | GL-2 | 6/AD.2 | 4 & 5/AD.2 | 3/AD.2 | | | | |
| A115B | 16'-0" x 6'-0" | OPENING | 5 | HM | PTD | GL-2 | 6/AD.2 | 4 & 5/AD.2 | 3/AD.2 | | | | |

## DOOR & FRAME SCHEDULE

| Opening | | Door | | | | Frame | | | | Details | | | Threshold | U.L. Label | Hdwe. Set | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Opening Size (Width x Height) | Type | Material | Finish | Glass | Type | Material | Finish | Glass | Head | Jamb | Sill | | | | |
| First Level - Zone 'A' | | | | | | | | | | | | | | | | |
| A101 | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 6 | AL | PFN | GL-4 | 2/A4.3 | 14/AD.2 | 12 & 13/AD.2 | MTL | - | 21 | |
| A101A | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 6 | AL | PFN | GL-4 | 2/A4.3 | 14/AD.2 | 12 & 13/AD.2 | MTL | - | 21 | |
| A101B | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 6 | AL | PFN | GL-4 | 2/A4.3 | 14/AD.2 | 12 & 13/AD.2 | MTL | - | 21 | |
| A101C | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 6 | AL | PFN | GL-4 | 2/A4.3 | 14/AD.2 | 12 & 13/AD.2 | MTL | - | 22 | |
| A101D | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 7 | AL | PFN | GL-1 | 9/AD.2 | 8/AD.2 | 7/AD.2 | - | - | 19 | |
| A101E | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 7 | AL | PFN | GL-1 | 9/AD.2 | 8/AD.2 | 7/AD.2 | - | - | 19 | |
| A101F | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 7 | AL | PFN | GL-1 | 9/AD.2 | 8/AD.2 | 7/AD.2 | - | - | 19 | |
| A101G | 3'-0" x 7'-10" | FG2 | AL | PFN | GL-1 | 7 | AL | PFN | GL-1 | 9/AD.2 | 8/AD.2 | 7/AD.2 | - | - | 20 | |
| A104 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | 18/AD.2 | THR-1 | - | 15 | |
| A105 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | 18/AD.2 | THR-1 | - | 15 | |
| A106 | 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 14 | |
| A106A | 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 11 | |
| A107 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 1 | |
| A109 | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A109A | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A110 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 9 | |
| A110A | 10'-0" x 10'-0" | CD(F) | METAL | PFN | - | - | - | - | - | 11/AD.2 | 10/AD.2 | - | - | - | N/A | OVERHEAD COILING DOOR |
| A110B | 10'-0" x 10'-0" | CD(F) | METAL | PFN | - | - | - | - | - | 17/AD.2 | 16/AD.2 | - | | | N/A | INSULATED OVERHEAD COILING DOOR |
| A110C | 3'-0" x 7'-2" | F | FRP | PFN | - | 1 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 13 | |
| A111 | 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 7 | |
| A112 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 7 | |
| A114 | (2) 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 12 | |
| A114A | 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 11 | |
| A114C | 39'-0" x 9'-0" | FPP | STL | PFN | - | - | - | - | - | 9/A5.2 | - | - | - | - | N/A | FOLDING PANEL PARTITION - SEE SPEC SECTION 10 2239 |
| A115 | (2) 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 12 | |
| A115A | 3'-0" x 7'-2" | N | WD | PFN | GL-2 | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 11 | |
| A116 | (2) 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 18 | |
| A117 | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A117A | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A117B | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 16 | |
| A117C | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 16 | |
| A120 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 5 | |
| A121 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | 19/AD.2 | THR-1 | - | 5 | |
| A122 | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122A | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122B | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122C | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122D | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122E | 3'-0" x 7'-2" | F | FRP | PFN | - | 4 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122F | 10'-0" x 10'-0" | CD(F) | METAL | PFN | - | - | - | - | - | 17/AD.2 | 16/AD.2 | - | | | N/A | INSULATED OVERHEAD COILING DOOR |
| A122G | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A122H | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| A123 | (2) 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 17 | |
| First Level - Zone 'B' | | | | | | | | | | | | | | | | |
| B101 | 3'-0" x 7'-2" | F | FRP | PFN | - | 3 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101A | 3'-0" x 7'-2" | F | FRP | PFN | - | 3 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101B | 3'-0" x 7'-2" | F | FRP | PFN | - | 3 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101C | 3'-0" x 7'-2" | F | FRP | PFN | - | 3 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101D | 3'-0" x 7'-2" | F | FRP | PFN | - | 3 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101E | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| B101F | 3'-0" x 7'-2" | F | FRP | PFN | - | 2 | AL | PFN | - | 15/AD.2 | 14/AD.2 | 12/AD.2 | MTL | - | 6 | |
| Second Level - Zone 'A' | | | | | | | | | | | | | | | | |
| A202 | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 4 | |
| A202A | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 4 | |
| A203 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 3 | |
| A204 | 3'-6" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 1 | |
| A205 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 2 | |
| A206 | 3'-0" x 7'-2" | F | WD | PFN | - | 1 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | - | 2 | |
| A207 | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 4 | |
| A207A | 3'-0" x 7'-2" | V | WD | PFN | FRGL-1 | 2 | HM | PTD | - | 2/AD.2 | 1/AD.2 | - | - | 60 | 4 | |




A

### WINDOW FRAME TYPES

### GLAZING TYPES

GL-1 5/16" (8mm) HEAT-STRENGTHENED LAMINATED GLASS
GL-2 1/4" (6mm) CLEAR TEMPERED MONOLITHIC GLASS
GL-3 1" (25mm) CLEAR TEMPERED INSULATED MONOLITHIC GLASS (LOW-E)
GL-4 1" (25mm) CLEAR HEAT-STRENGTHENED LAMINATED INSULATED GLASS (LOW-E)

FRGL-1 5/16" (8mm) FIRE PROTECTIVE GLAZING (60 MIN)

## DOOR SCHEDULE ABBREVIATIONS AND NOTES

(REFER TO SPECIFICATIONS FOR ADDTIONAL DOOR INFORMATION)

### DOOR SCHEDULE ABBREVIATIONS

| | |
|---|---|
| AL | ALUMINUM |
| ALGL | ALUMINUM AND GLASS |
| EX | EXISTING |
| FRAF | FIRE RATED ALUMINUM FRAMING |
| FRP | FIBERGLASS REINFORCED POLYESTER |
| HM | HOLLOW METAL |
| LAM | PLASTIC LAMINATE CLAD |
| MET | METAL THRESHOLD |
| NAT | NATURAL FINISHED WOODWORK |
| PFN | PREFINISHED BY MANUFACTURER |
| PTD | PAINTED |
| SDSF | SOLID SURFACE THRESHOLD |
| STL | STEEL |
| STSTL | STAINLESS STEEL |
| WD | SOLID CORE HARDWOOD |

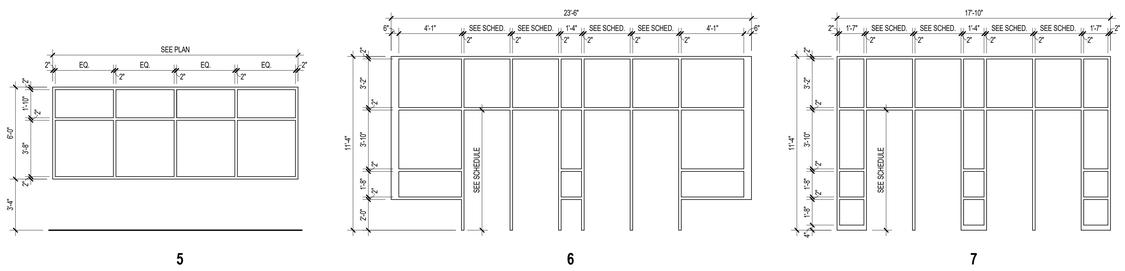
### DOOR SCHEDULE GENERAL NOTES

1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATIONS.
2. DOORS ARE 1-3/4" THICKNESS UNLESS OTHERWISE NOTED
3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED.
4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5-3/4" WIDE.
5. HOLLOW METAL FRAMES SET IN GYPSUM BD./METAL STUD PARTITIONS SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH SIDE OF THE PARTITION. PROVIDE EQUAL RABBETS.
6. AN ASTERICK (*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

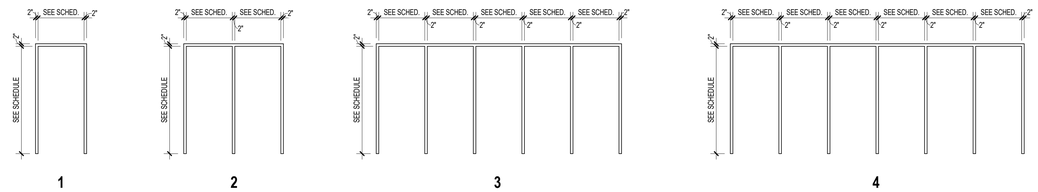
### U.L. DOOR LABEL DESIGNATIONS

| U.L. LABEL** | MIN. OPENING PROTECTION ASSEMBLY |
|---|---|
| 180 | 3 HR. RATING |
| 90 | 1-1/2 HR. RATING |
| 60 | 1 HR. RATING |
| 45 | 3/4 HR. RATING |
| 20 | 1/3 HR. RATING |

**ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED.

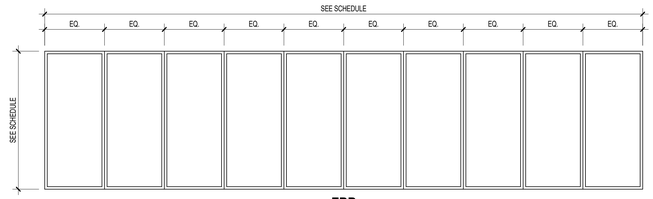



5 6 7

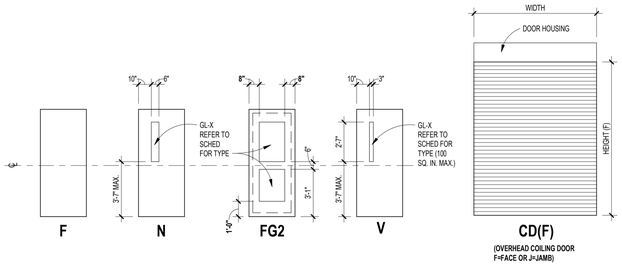



1 2 3 4

### FRAME TYPES




FPP




F N FG2 V CD(F)

(OVERHEAD COILING DOOR F=FACE OR J=JAMB)

### DOOR TYPES


ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS - MICHIGAN - 48302
PH - 248.338.4561
EM - INFO@TMP-ARCHITECTURE.COM


REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

## Door & Frame Schedule

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 12-19-2025 | DESIGN DEVELOPEMENT |
| 12-16-2025 | BID PACKAGE NO. 1 - PEMB |
| 10-17-2025 | SCHEMATIC DESIGN |
| DATE: | ISSUED FOR: |
| DRAWN | JM |
| CHECKED | MS |
| APPROVED | DL |

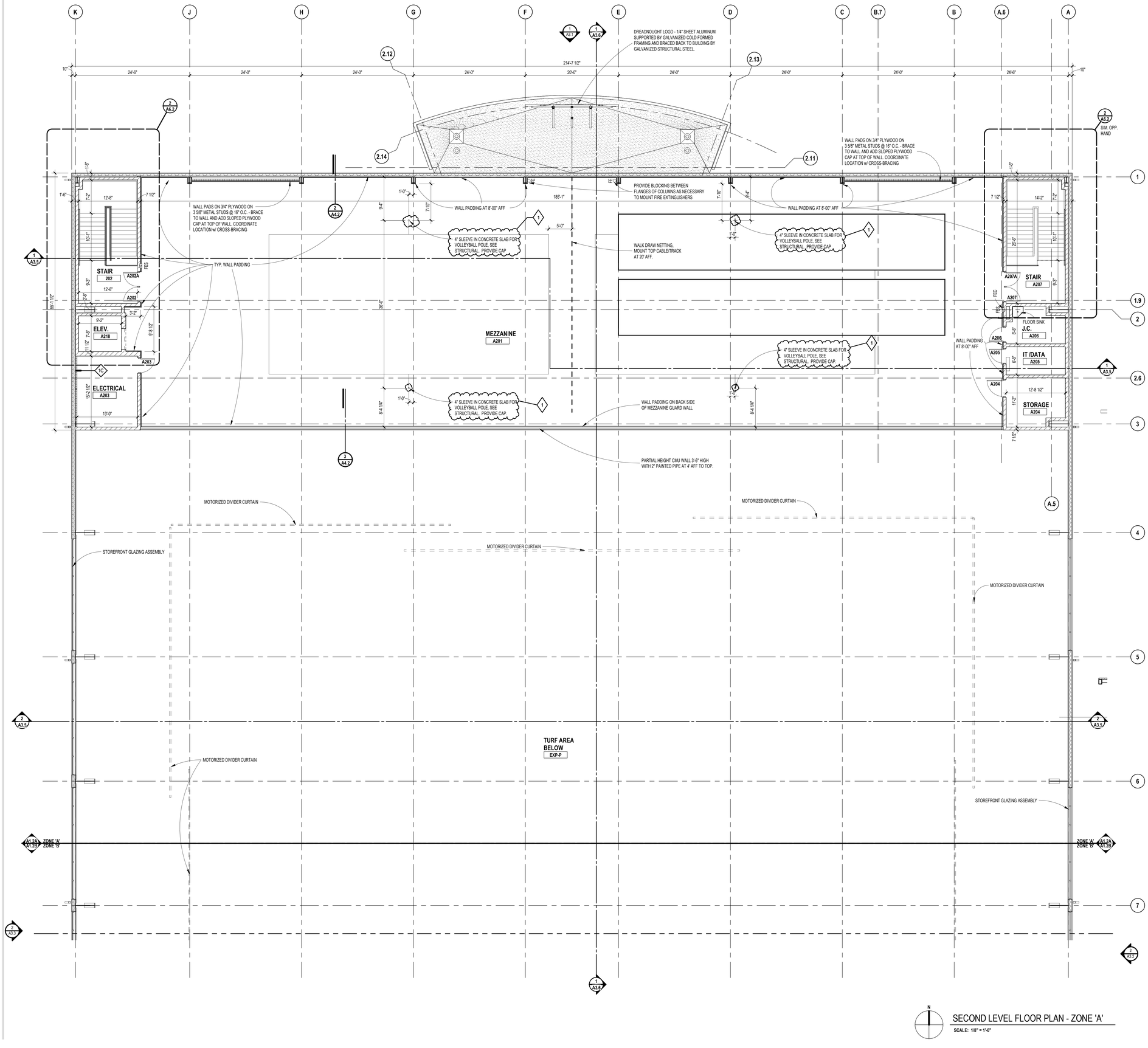
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## SECOND LEVEL FLOOR PLAN - ZONE 'A'

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

## WALL / PARTITION KEY

- EXISTING WALL CONSTRUCTION
- METAL STUD PARTITION
- CONCRETE MASONRY UNIT WALL w/ HORIZONTAL REINFORCEMENT AT 16" OC
- CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)

## WALL / PARTITION LEGEND

- 1C 3 5/8" METAL STUDS AT 16" O.C. (MAX.) WITH 5/8" GYPSUM BOARD ONE SIDE. HEIGHT: FROM FLOOR TO 4" ABOVE CEILING. BRACE TO ADJACENT WALL AS REQUIRED
- 1G 3 5/8" METAL STUDS @ 16" OC (MAX) W/ 5/8" GYP BOARD ONE SIDE TO STRUCTURE ABOVE
- 4D 12" CMU TO ONE FULL COURSE ABOVE CEILING
- 4E 4" CMU TO DECK ABOVE
- 4F 6" CMU TO DECK ABOVE
- 5D 12" CMU TO DECK ABOVE, 1 HOUR RATED, UL DESIGN NO. U905

NOTES:

1. COORDINATE WITH THE REFLECTED CEILING PLANS FOR RATED WALLS. WALLS WHICH EXTEND UP TO THE STRUCTURE ABOVE AND WALLS WHICH EXTEND ONLY A MINIMUM OF 4" ABOVE THE ADJACENT HIGHEST CEILING. DIMENSIONS OF WALLS ARE SHOWN ACTUAL U.N.O. IN PLAN FOR DETERMINING THE CMU THICKNESS. REFER TO BUILDING SECTIONS, WALL SECTIONS AND INTERIOR ELEVATIONS FOR BANDING OF SPECIAL CMU TYPES OR ANY OTHER SPECIAL CONDITIONS. PARTIAL HEIGHT CMU WALLS WILL BE NOTED AS SUCH ON THE FLOOR PLANS.
2. REFER TO MASONRY SPECIFICATION FOR VERTICAL REINFORCEMENT AND WALL BRACING NOT INDICATED ON DRAWINGS.
3. AT FIRE-RATED AND SMOKE-RESISTING WALLS (MASONRY OR GYPSUM BOARD), PROVIDE U.L. APPROVED, FIRE-RATED, HEAD-OF-WALL TERMINATIONS AS INDICATED. IF NOT INDICATED, PROVIDE "BASIS OF DESIGN", HEAD-OF-WALL FIRESTOP JOINT SYSTEM AS INDICATED IN SPECIFICATION SECTION 078446 ( OR 2 HOUR AS APPROPRIATE). PROVIDE MINIMUM 1 HOUR TERMINATION AT SMOKE-RESISTING WALLS.
4. ALL CMU IS 8" THICK (ACTUAL= 7 5/8") UNLESS DIMENSIONED OR TAGGED OTHERWISE.
5. PROVIDE BULLNOSE CMU UNITS AT ALL OUTSIDE COURNERS WHEN CORNERS ARE EXPOSED IN FINAL CONSTRUCTION. DO NOT BULLNOSE CORNERS WHEN ABUTTING CONSTRUCTION (i.e. GYPSUM BOARD) IS INTENDED TO BE FLUSH WITH CMU.
6. ALL GYPSUM WALLS TO RECEIVE ABUSE RESISTANT GYPSUM BOARD BELOW 4'-0" AFF, TYPICAL.
7. WHERE FINISH PLANS (A10 SERIES DRAWINGS) CALL FOR WALL TILE, PROVIDE CEMENT BOARD SUBSTRATE IN LIEU OF GYPSUM BOARD.
8. ALL DOORS LOCATED 4" FROM JAMB TO ADJACENT WALL UNLESS OTHERWISE INDICATED.

## GENERAL NOTES

1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING PADS AND / OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
2. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECT'S FIELD REPRESENTATIVE.
3. FLOOR PLANS ARE DIMENSIONED TO ACTUAL WALL THICKNESS - TYPICAL.
4. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND / OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.
5. INSTALL CONTROL JOINTS IN GYPSUM BOARD AND METAL STUD-FRAMED PARTITIONS, WALLS, CEILINGS, BULKHEADS, FASCIAE AND SOFFITS IN COMPLIANCE WITH SPECIFICATIONS, AND WITH GENERAL REQUIREMENTS OF ASTM C840. PRIOR TO COMMENCEMENT OF FRAMING INSTALLATION SUBMIT COORDINATION DRAWINGS INDICATING PROPOSED LOCATIONS OF ALL CONTROL JOINTS, AS SPECIFIED.
6. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR / INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS).
7. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL LINTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.
8. REFER TO LIFE SAFETY PLANS FOR LOCATIONS OF REQUIRED FIRE RESISTANCE RATINGS. BECAUSE OF THE DRAWING SCALE OF THE LIFE SAFETY PLANS, COORDINATE THE REQUIRED FIRE RESISTANCE RATINGS WITH THOSE SHOWN ON THE REFLECTED CEILING PLANS.
9. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.
10. REFER TO STRUCTURAL DRAWINGS FOR ALL WIND FRAME LOCATIONS AT INTERIOR AND EXTERIOR WALLS.
11. REFER TO A10_ SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.
12. REFER TO STRUCTURAL DRAWINGS FOR ORIENTATION AND SIZES OF ALL STRUCTURAL COLUMNS.
13. REFER TO DRAWING A8_ FOR TYPICAL DETAILS PERTAINING TO WALL TERMINATIONS AT STRUCTURE ABOVE AND MASONRY CONTROL JOINT DETAILS.
14. VERIFY ALL DIMENSIONS IN FIELD.
15. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS i.e. GRAB BARS, TOWEL DISPENSERS, PENCIL SHARPENERS, WALL STOPS, ACCORDIAN PARTITION JAMBS, ETC. REFER ALSO TO A9_ SERIES AND A6_ SERIES DRAWINGS.
16. REFER TO EXTERIOR ELEVATIONS AND PLAN DETAILS FOR LOCATIONS OF CONTROL JOINTS IN EXTERIOR WALLS.
17. WHERE SLAB DEPRESSIONS ARE INDICATED FOR WOOD FLOOR SYSTEMS, CONFIRM DEPRESSION WITH WOOD FLOORING CONTRACTOR. ADJUST DEPRESSION, AS REQUIRED, TO MEET FLUSH WITH ADJACENT FLOOR MATERIALS (i.e. CERAMIC TILE, QUARRY TILE, ETC.).


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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

## Second Level Floor Plan - Zone 'A'

A
B

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 12-19-2025 | DESIGN DEVELOPEMENT |
| 12-16-2025 | BID PACKAGE NO. 1 - PEMB |
| 10-17-2025 | SCHEMATIC DESIGN |

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PROJECT NO.

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DRAWING NO.

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## ACCESSORIES LEGEND

1. SURFACE-MOUNTED , LIQUID SOAP DISPENSER (40 OZ. CAPACITY). (BOTTOM OF UNIT 4" ABOVE LAVATORY RIM OR COUNTER).
2. PAPER TOWEL DISPENSER
3. SURFACE-MOUNTED, DOUBLE ROLL, TOILET PAPER HOLDER
4. SURFACE-MOUNTED, SANITARY NAPKIN DISPOSAL UNIT
5. CHANNEL FRAME MIRROR (18" W x 36" H).
6. GRAB BAR (36" LONG).
7. GRAB BAR (42" LONG).
8. TWO WALL GRAB BAR (18" x 33" LONG).

## GENERAL NOTES

1. MOUNTING HEIGHTS AND POSITIONING SHALL BE AS INDICATED ON GENERAL INFORMATION SHEET (TG.1), U.O.N.

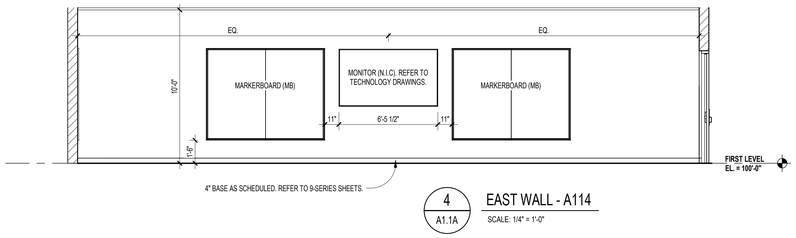
## GLAZING TYPES

GL-1 5/16" (8mm) HEAT-STRENGTHENED LAMINATED GLASS
GL-2 1/4" (6mm) CLEAR TEMPERED MONOLITHIC GLASS
GL-3 1" (25mm) CLEAR TEMPERED INSULATED MONOLITHIC GLASS (LOW-E)
GL-4 1" (25mm) CLEAR HEAT-STRENGTHENED LAMINATED INSULATED GLASS (LOW-E)

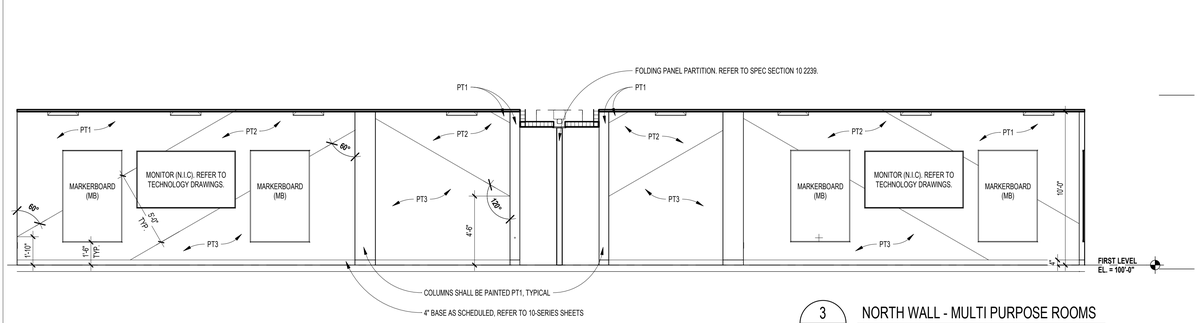
FRGL-1 5/16" (8mm) FIRE PROTECTIVE GLAZING (60 MIN)



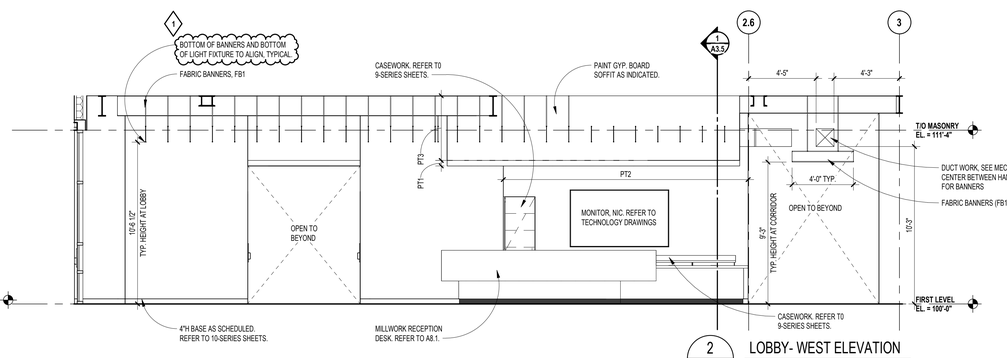

5 A1.1A SOUTH WALL - MULTI-PURPOSE ROOMS
SCALE: 1/4" = 1'-0"



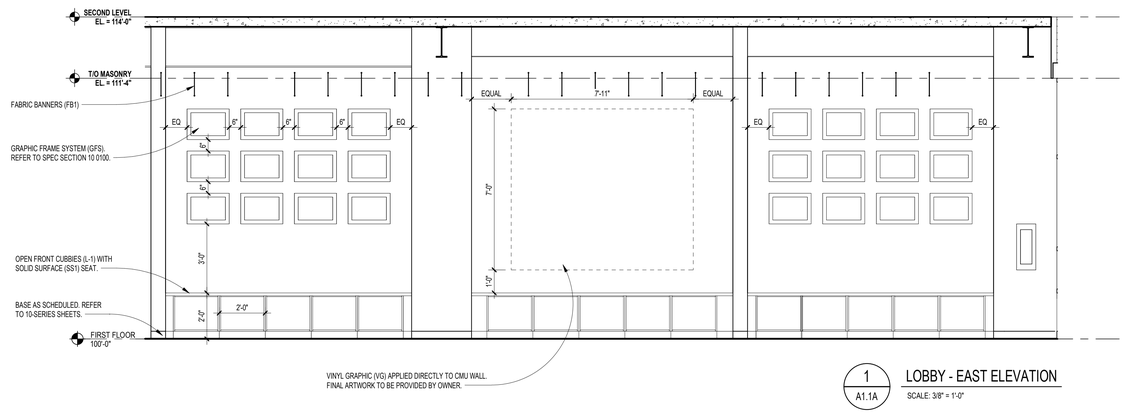

4 A1.1A EAST WALL - A114
SCALE: 1/4" = 1'-0"




3 A1.1A NORTH WALL - MULTI PURPOSE ROOMS
SCALE: 1/4" = 1'-0"




2 A1.1A LOBBY- WEST ELEVATION
SCALE: 1/4" = 1'-0"




1 A1.1A LOBBY - EAST ELEVATION
SCALE: 3/8" = 1'-0"


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CONSULTANT

PROJECT TITLE

# NEW FIELD HOUSE

## DEXTER COMMUNITY SCHOOLS
## DEXTER, MICHIGAN

DRAWING TITLE

## Interior Elevations

ISSUE DATES

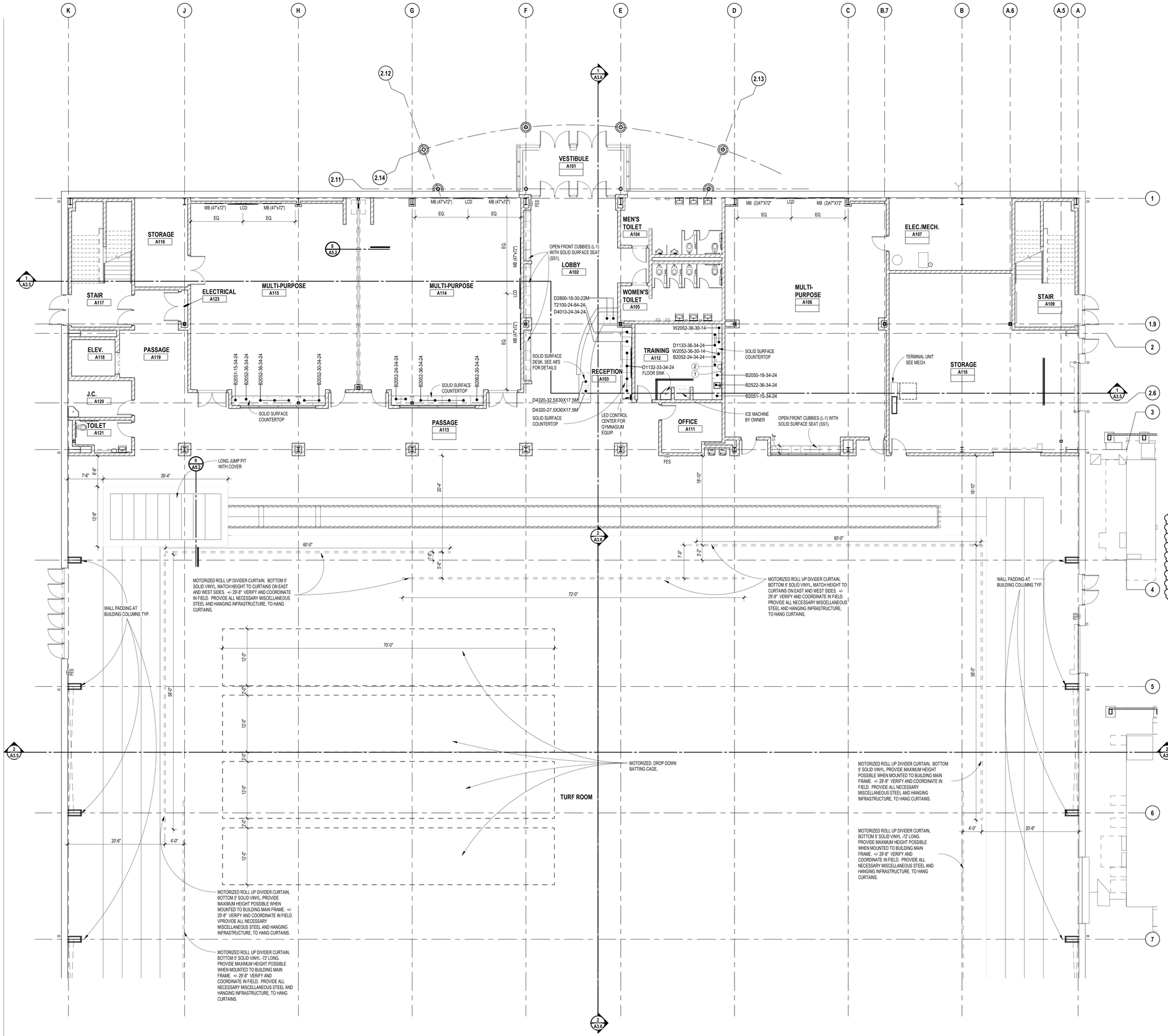
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| 10-17-2025 | SCHEMATIC DESIGN |

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## LEGEND

- T.V. MONITOR (N.I.C.) & OVERHEAD SUSPENDED MOUNT (N.I.C.).
- FES / FEC — FIRE EXTINGUISHER IN CABINET (FEC)
- FE — FIRE EXTINGUISHER ON WALL BRACKET (FE)

## VISUAL DISPLAY BOARD NOTES

TYPE OF BOARD — 6'-0" MB — WIDTH OF BOARD/STRIP

HEIGHT OF ALL BOARDS ARE 4'-0" (UON)

NOTES:

1. MB = MARKERBOARD
   TB = TACKBOARD
   TS = TACK STRIP
   SB = SMART BOARD (BY OTHERS)
2. MOUNTING HEIGHTS (UON):
   MB/TB = 3'-0" AFF TO BOTTOM
   TS = 6'-0" AFF TO CENTER
3. MAP RAILS SHALL BE CONTINUOUS OVER MARKERBOARDS.
4. ALL MARKERBOARDS SHALL BE PROVIDED WITH TRAYS & MAP RAILS.

## CASEWORK NOTES

1. ALL PREFABRICATED CABINETS INDICATED ARE BASED ON TMI STORAGE SYSTEMS CORPORATION PRODUCTS. REFER TO TMI CATALOG FOR TYPICAL NUMBERING FORMAT.
2. ALL TMI CABINETS ARE DESIGNATED USING THE TYPICAL TMI ELEVEN (11) DIGIT NOTATION SYSTEM. THE FIRST FIVE DIGITS ARE THE MODEL NUMBER FOLLOWED BY THREE SETS OF TWO DIGIT NUMBERS FOR THE WIDTH, HEIGHT AND DEPTH.
3. WIDTH, HEIGHT AND DEPTH OF PREFABRICATED CABINETS IS INDICATED IN INCHES UNLESS NOTED OTHERWISE. MODEL DIMENSIONS ARE NOMINAL UNLESS SPECIFICALLY NOTED. "00000-00-00-00-M" INDICATES MODIFIED CASEWORK.
4. PROVIDE PLASTIC LAMINATE COUNTERTOPS (WITH BACKEND SPLASHES) AT ALL BASE CABINETS. RADIUS ALL OUTSIDE CORNERS (U.O.N.)
5. ALL EXPOSED SURFACES OF CASEWORK TO BE FINISHED, TYPICAL.
6. WALL CABINETS (OVER COUNTERS) ARE TYPICALLY MOUNTED AT 7'-6" AFF TO TOP (UON).
7. PROVIDE FINISHED END PANELS ON ALL EXPOSED CASEWORK ENDS.
8. PROVIDE RESTRAINING CHAINS ON ALL END BASE AND WALL CABINET DOORS WHICH OPEN AGAINST PERPENDICULAR WALLS.
9. WHERE CASEWORK IS HELD AWAY FROM WALLS, TO FLUSH-OUT WITH ADJACENT CABINETS, SCRIBE END/FILLER PANELS TO WALLS.
10. PROVIDE FILLER PANELS WHERE SHOWN AND/OR OTHERWISE REQUIRED FOR A COMPLETE INSTALLATION.
11. PROVIDE LOCKS AT ALL CABINET DOORS AND DRAWERS (U.O.N.)
12. MODIFY SINK BASE CABINETS AS REQUIRED TO ACCOMMODATE OVERSIZED SINKS (SEE MECHANICAL FOR OVERSIZED SINK LOCATIONS.
13. WHERE BF 34" HIGH BASE CABINETS ARE INDICATED, MODIFY CABINET CONSTRUCTION BY REDUCING THE HEIGHT OF ALL COMPARTMENTS EQUALLY (INDICATE ON SHOP DWGS.)
14. PROVIDE INTERMEDIATE PLASTIC LAMINATE CLAD SUPPORT PANELS @ 4'-0" OC MAXIMUM AT ALL UNSUPPORTED COUNTER TOPS (UON).
15. PROVIDE GROMMETS AT ALL COUNTERS WITH KNEESPACES, WHERE POWER/DATA OUTLETS ARE LOCATED BELOW (REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS). PROVIDE (1) ONE GROMMET PER KNEESPACE (UON). FINAL LOCATION(S) WILL BE MARKED-UP ON THE SHOP DRAWING SUBMITTAL.
16. PROVIDE MOISTURE RESISTANT PARTICLE BOARD AT SINK BASE, COUNTERTOP, AND SPLASH WITHIN 18" OF SINK.

1 A3.1 — FIRST LEVEL CASEWORK AND EQUIPMENT PLAN - ZONE 'A'
SCALE: 1/8" = 1'-0"


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PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

First Level Casework & Equipment Plan - Zone 'A'

A
B

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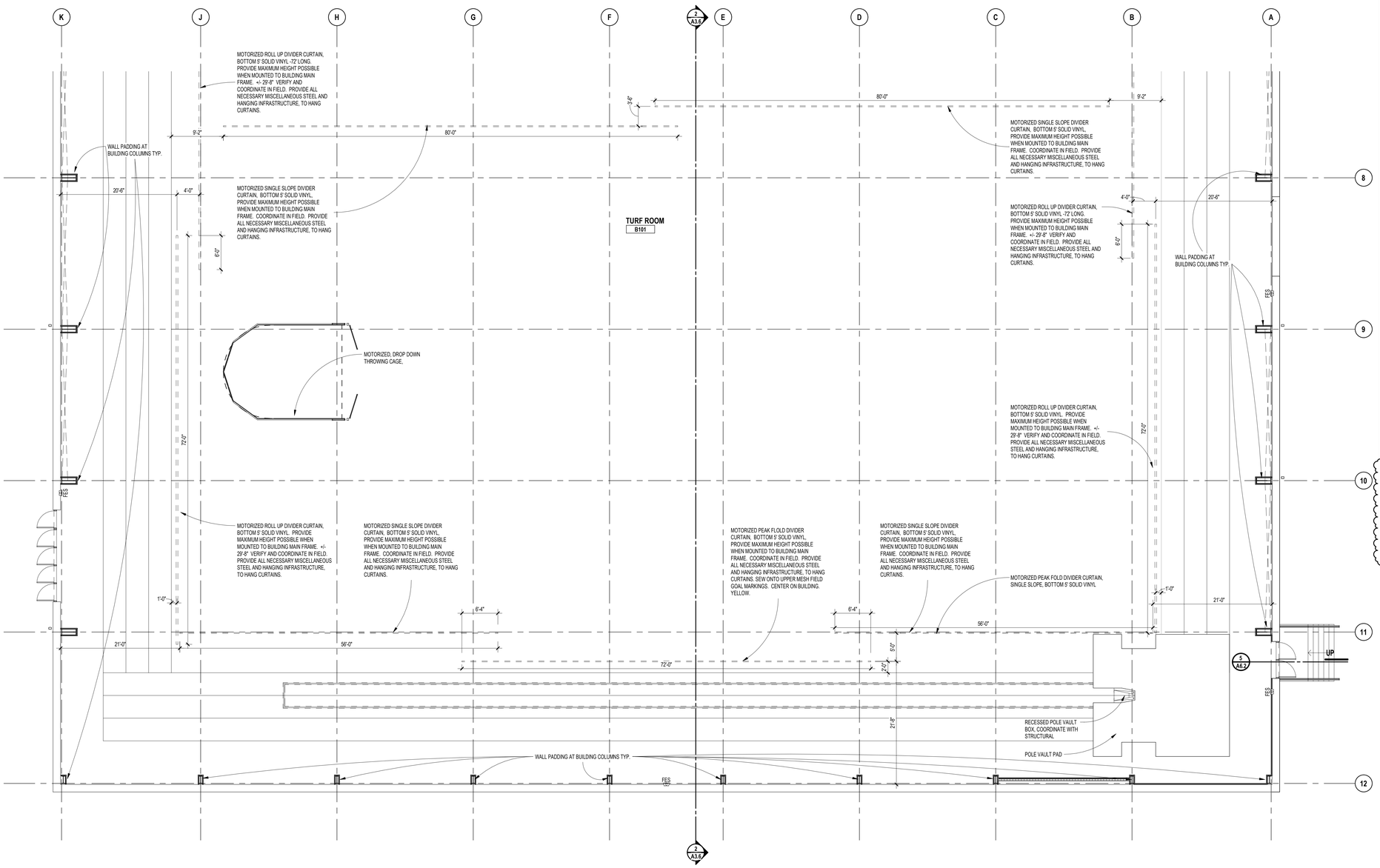
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FIRST LEVEL CASEWORK & EQUIPMENT PLAN - ZONE 'B'

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

## LEGEND

T.V. MONITOR (N.I.C.) & OVERHEAD SUSPENDED MOUNT (N.I.C.).

FES FEC — FIRE EXTINGUISHER IN CABINET (FEC)

FE — FIRE EXTINGUISHER ON WALL BRACKET (FE)

## VISUAL DISPLAY BOARD NOTES

TYPE OF BOARD — 6'-0" MB — WIDTH OF BOARD/STRIP

HEIGHT OF ALL BOARDS ARE 4'-0" (UON)

NOTES:

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   TB = TACKBOARD
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2. MOUNTING HEIGHTS (UON):
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3. MAP RAILS SHALL BE CONTINUOUS OVER MARKERBOARDS.
4. ALL MARKERBOARDS SHALL BE PROVIDED WITH TRAYS & MAP RAILS.

## CASEWORK NOTES

1. ALL PREFABRICATED CABINETS INDICATED ARE BASED ON TMI STORAGE SYSTEMS CORPORATION PRODUCTS. REFER TO TMI CATALOG FOR TYPICAL NUMBERING FORMAT.
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3. WIDTH, HEIGHT AND DEPTH OF PREFABRICATED CABINETS IS INDICATED IN INCHES UNLESS NOTED OTHERWISE. MODEL DIMENSIONS ARE NOMINAL UNLESS SPECIFICALLY NOTED. "00000-00-00-00-M" INDICATES MODIFIED CASEWORK.
4. PROVIDE PLASTIC LAMINATE COUNTERTOPS (WITH BACK/END SPLASHES) AT ALL BASE CABINETS. RADIUS ALL OUTSIDE CORNERS (U.O.N.)
5. ALL EXPOSED SURFACES OF CASEWORK TO BE FINISHED, TYPICAL.
6. WALL CABINETS (OVER COUNTERS) ARE TYPICALLY MOUNTED AT 7'-6" AFF TO TOP (UON).
7. PROVIDE FINISHED END PANELS ON ALL EXPOSED CASEWORK ENDS.
8. PROVIDE RESTRAINING CHAINS ON ALL END BASE AND WALL CABINET DOORS WHICH OPEN AGAINST PERPENDICULAR WALLS.
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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

# NEW FIELD HOUSE

## DEXTER COMMUNITY SCHOOLS
## DEXTER, MICHIGAN

DRAWING TITLE

First Level Casework & Equipment Plan - Zone 'B'

A
B

ISSUE DATES

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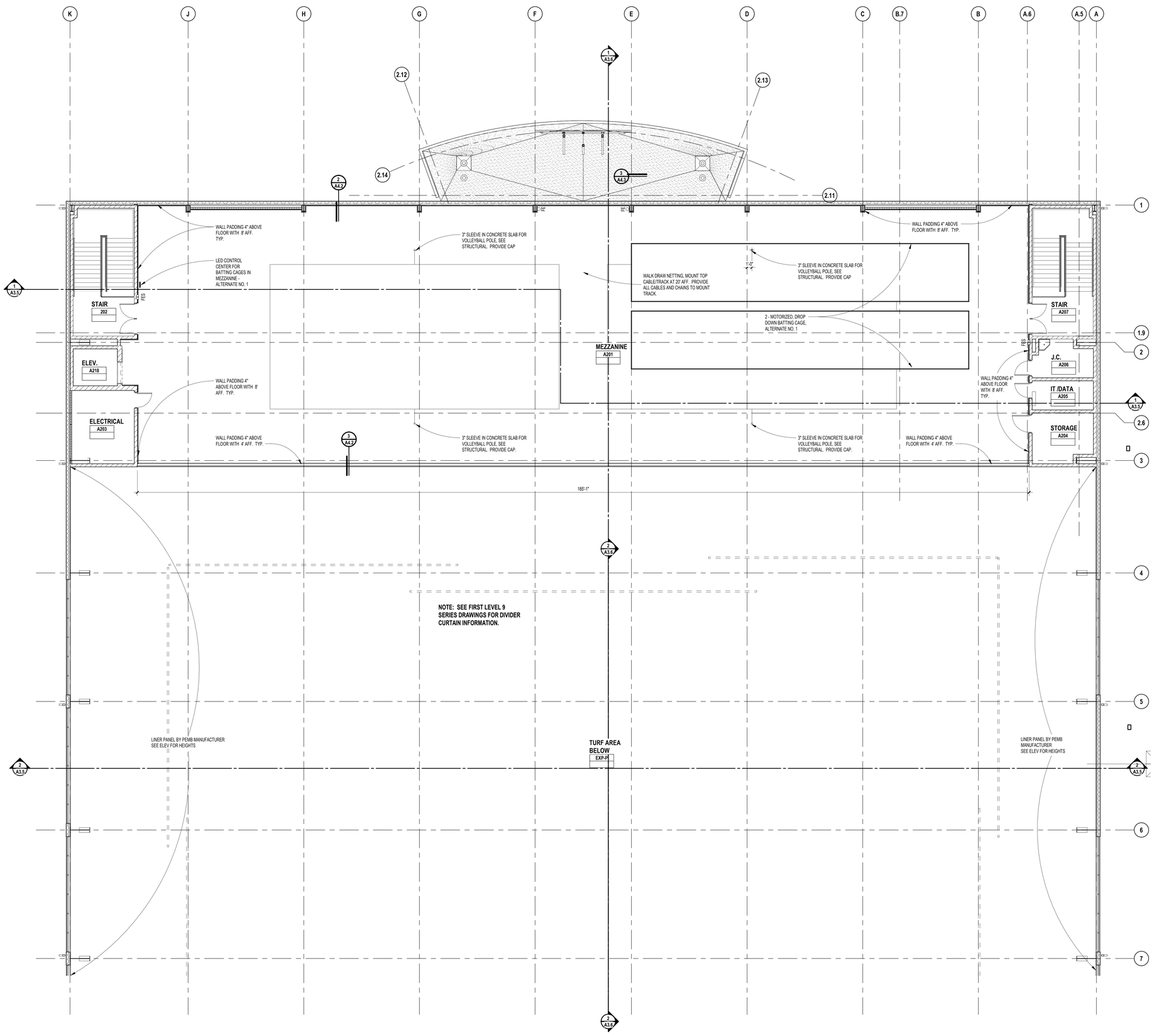
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1 A3.1 SECOND LEVEL CASEWORK & EQUIPMENT PLAN - ZONE 'A'

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

## LEGEND

T.V. MONITOR (N.I.C.) & OVERHEAD SUSPENDED MOUNT (N.I.C.).

FES FEC — FIRE EXTINGUISHER IN CABINET (FEC)

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13. WHERE BF 34" HIGH BASE CABINETS ARE INDICATED, MODIFY CABINET CONSTRUCTION BY REDUCING THE HEIGHT OF ALL COMPARTMENTS EQUALLY (INDICATE ON SHOP DWGS.)
14. PROVIDE INTERMEDIATE PLASTIC LAMINATE CLAD SUPPORT PANELS @ 4'-0" OC MAXIMUM AT ALL UNSUPPORTED COUNTER TOPS (UON).
15. PROVIDE GROMMETS AT ALL COUNTERS WITH KNEESPACES, WHERE POWER/DATA OUTLETS ARE LOCATED BELOW (REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS). PROVIDE (1) ONE GROMMET PER KNEESPACE (UON). FINAL LOCATION(S) WILL BE MARKED-UP ON THE SHOP DRAWING SUBMITTAL.
16. PROVIDE MOISTURE RESISTANT PARTICLE BOARD AT SINK BASE, COUNTERTOP, AND SPLASH WITHIN 18" OF SINK.


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registration seal

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PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER,

DRAWING TITLE

## Second Level Casework & Equipment Plan - Zone 'A'

KEY PLAN — A / B

issue dates

| date: | issued for: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 12-19-2025 | DESIGN DEVELOPEMENT |
| 12-16-2025 | BID PACKAGE NO. 1 - PEMB |
| 10-17-2025 | SCHEMATIC DESIGN |

| | |
|---|---|
| drawn | JM |
| checked | MS |
| approved | DL |

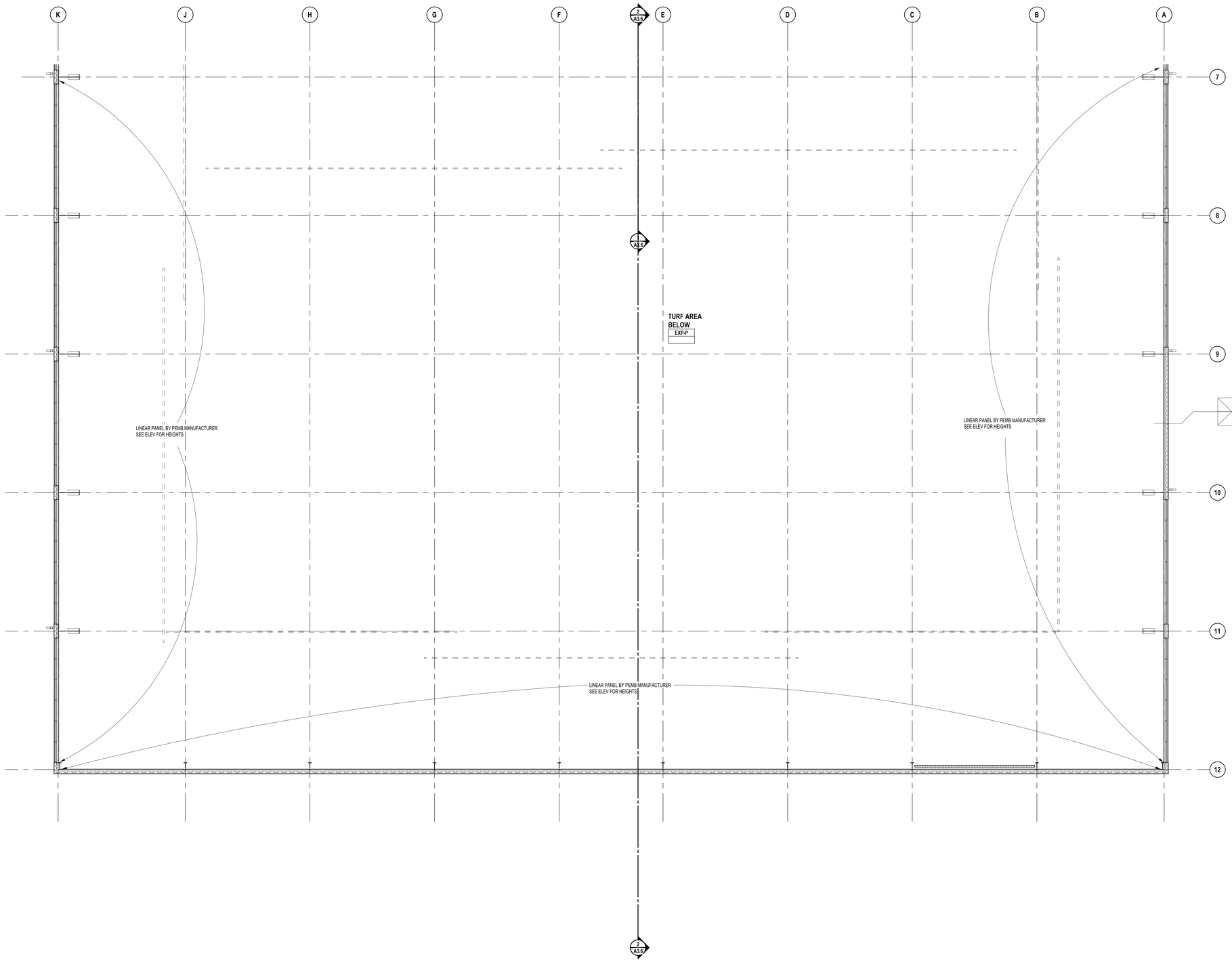
project no.

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drawing no.

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## SECOND LEVEL CASEWORK & EQUIPMENT PLAN - ZONE 'B'

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

## LEGEND

T.V. MONITOR (N.I.C.) & OVERHEAD SUSPENDED MOUNT (N.I.C.).

FES FEC — FIRE EXTINGUISHER IN CABINET (FEC)

FE — FIRE EXTINGUISHER ON WALL BRACKET (FE)

## VISUAL DISPLAY BOARD NOTES

TYPE OF BOARD — 6'-0" MB — WIDTH OF BOARD/STRIP

HEIGHT OF ALL BOARDS ARE 4'-0" (UON)

NOTES:

1. MB = MARKERBOARD
   TB = TACKBOARD
   TS = TACK STRIP
   SB = SMART BOARD (BY OTHERS)
2. MOUNTING HEIGHTS (UON):
   MB/TB = 3'-0" AFF TO BOTTOM
   TS = 6'-0" AFF TO CENTER
3. MAP RAILS SHALL BE CONTINUOUS OVER MARKERBOARDS.
4. ALL MARKERBOARDS SHALL BE PROVIDED WITH TRAYS & MAP RAILS.

## CASEWORK NOTES

1. ALL PREFABRICATED CABINETS INDICATED ARE BASED ON TMI STORAGE SYSTEMS CORPORATION PRODUCTS. REFER TO TMI CATALOG FOR TYPICAL NUMBERING FORMAT.
2. ALL TMI CABINETS ARE DESIGNATED USING THE TYPICAL TMI ELEVEN (11) DIGIT NOTATION SYSTEM. THE FIRST FIVE DIGITS ARE THE MODEL NUMBER FOLLOWED BY THREE SETS OF TWO DIGIT NUMBERS FOR THE WIDTH, HEIGHT AND DEPTH.
3. WIDTH, HEIGHT AND DEPTH OF PREFABRICATED CABINETS IS INDICATED IN INCHES UNLESS NOTED OTHERWISE. MODEL DIMENSIONS ARE NOMINAL UNLESS SPECIFICALLY NOTED. "00000-00-00-00-M" INDICATES MODIFIED CASEWORK.
4. PROVIDE PLASTIC LAMINATE COUNTERTOPS (WITH BACK/END SPLASHES) AT ALL BASE CABINETS. RADIUS ALL OUTSIDE CORNERS (U.O.N.)
5. ALL EXPOSED SURFACES OF CASEWORK TO BE FINISHED, TYPICAL.
6. WALL CABINETS (OVER COUNTERS) ARE TYPICALLY MOUNTED AT 7'-6" AFF TO TOP (UON).
7. PROVIDE FINISHED END PANELS ON ALL EXPOSED CASEWORK ENDS.
8. PROVIDE RESTRAINING CHAINS ON ALL END BASE AND WALL CABINET DOORS WHICH OPEN AGAINST PERPENDICULAR WALLS.
9. WHERE CASEWORK IS HELD AWAY FROM WALLS, TO FLUSH-OUT WITH ADJACENT CABINETS, SCRIBE END/FILLER PANELS TO WALLS.
10. PROVIDE FILLER PANELS WHERE SHOWN AND/OR OTHERWISE REQUIRED FOR A COMPLETE INSTALLATION.
11. PROVIDE LOCKS AT ALL CABINET DOORS AND DRAWERS (U.O.N.)
12. MODIFY SINK BASE CABINETS AS REQUIRED TO ACCOMMODATE OVERSIZED SINKS (SEE MECHANICAL FOR OVERSIZED SINK LOCATIONS.
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PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

## Second Level Casework & Equipment Plan - Zone 'B'

A
B

ISSUE DATES

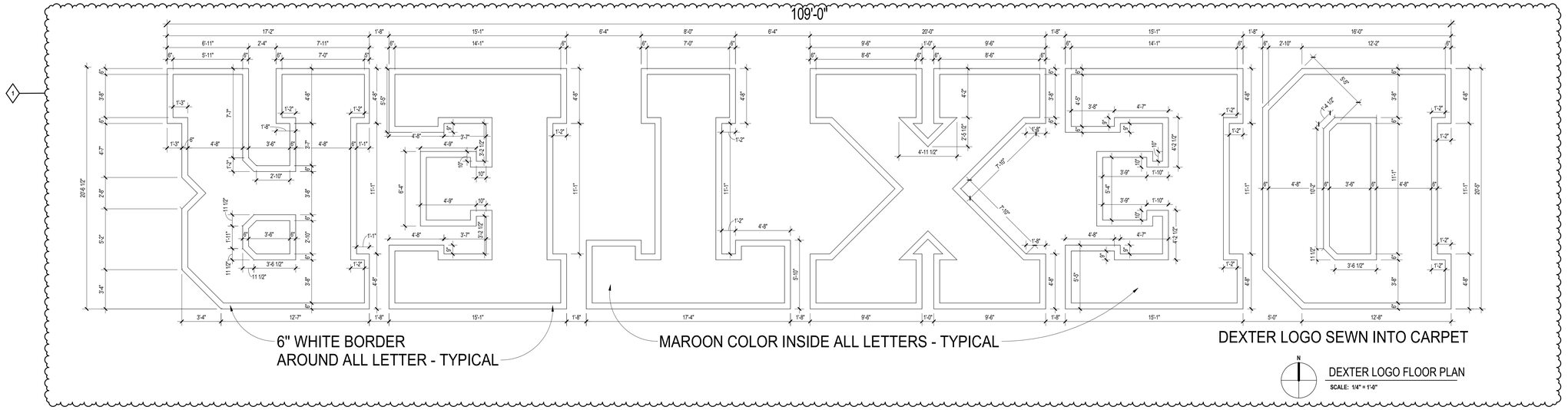
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| DRAWN | JM |
| CHECKED | MS |
| APPROVED | DL |

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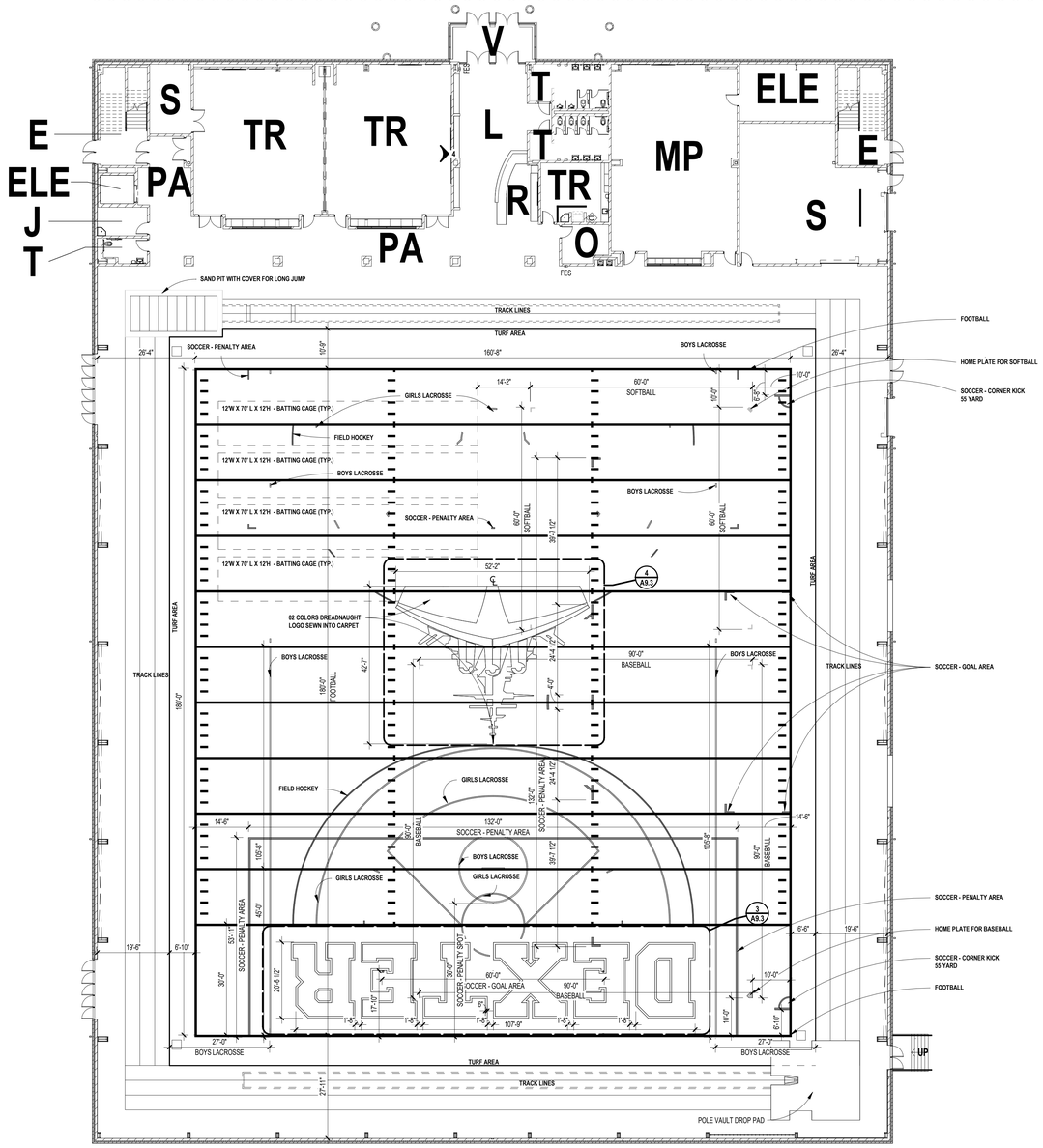
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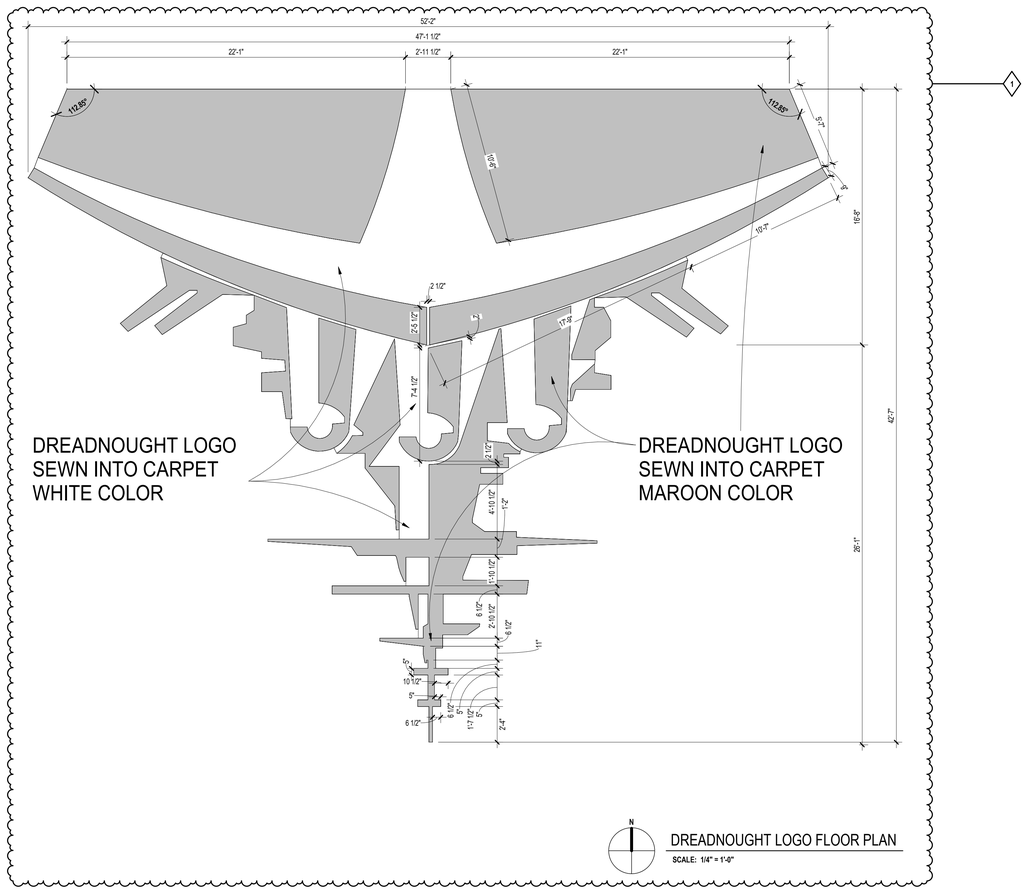

DEXTER LOGO FLOOR PLAN

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




SPORTS LINES FLOOR PLAN

SCALE: 1/16" = 1'-0"




DREADNOUGHT LOGO FLOOR PLAN

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

**NOTES**

- SPORTS LINES COLORS : EACH SPORTS WILL HAVE IT OWN UNIQUE COLOR
- BASIC DIMENSIONS PROVIDED TO ASSIST IN BIDDING
- FOR DREADNOUGHT LOGO.
- OWNER WILL PROVIDE ART WORK OF LOGO
- TO INSTALL AND FABRICATE.
- EXACT COLORS WILL BE PROVIDED FOR LOGOS
- AND TEXT CHARACTERS


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# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

## Sports Lines Floor Plan

ISSUE DATES

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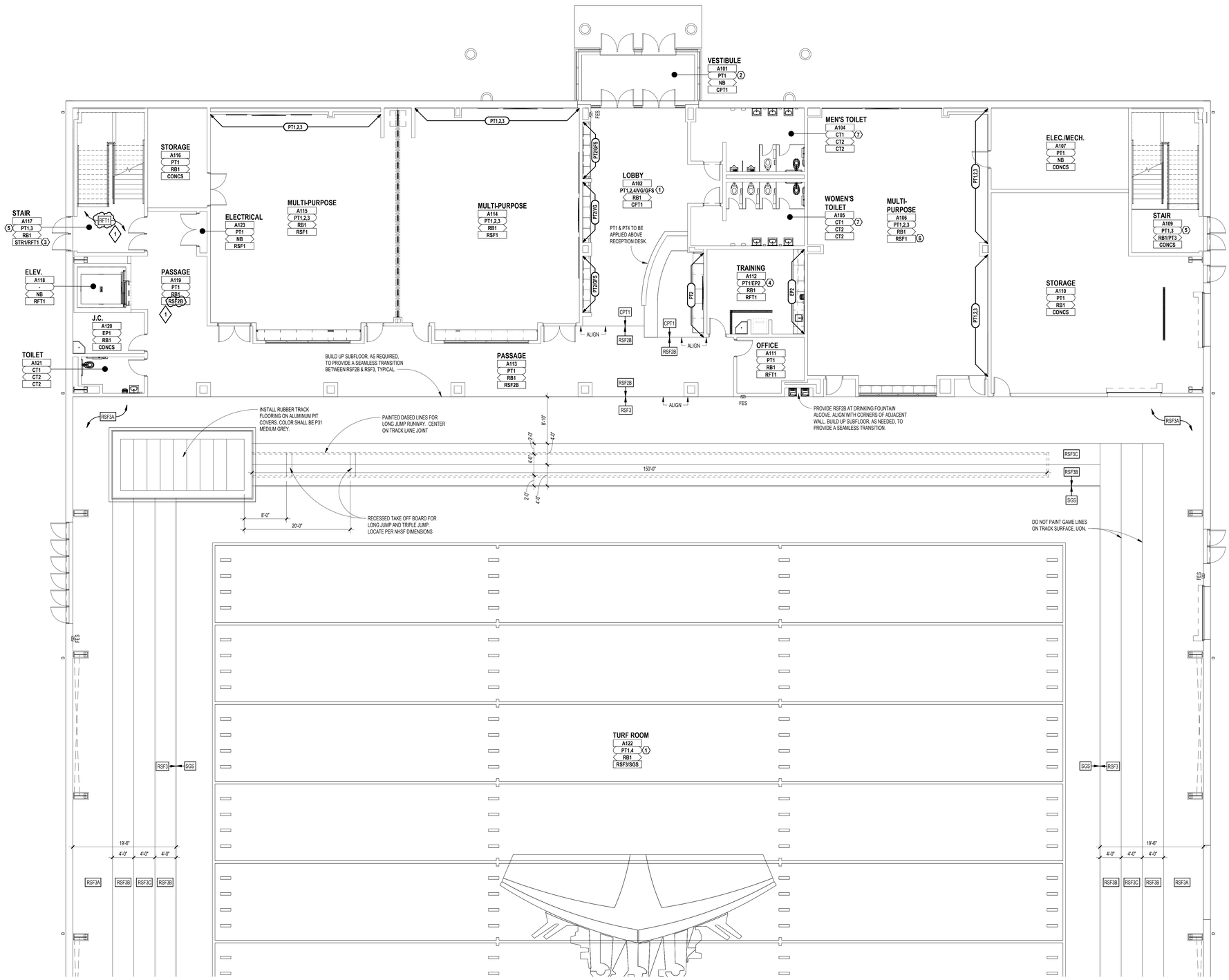
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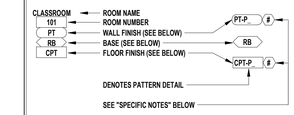

## FINISH LEGEND

ROOM FINISH TAGS

ROOM NAME AND NUMBER PLUS GENERAL ROOM FINISH INFORMATION. FINISH TAGS SHALL APPLY TO ALL LIKE MATERIALS WITHIN A ROOM (UON)

FINISH LEGEND

FINISH LEGEND IS GENERAL SEE SPECIFICATIONS FOR SPECIFIC FINISH INFORMATION. MULTIPLE FINISH TYPES ARE DENOTED BY NUMBER FOLLOWING ABBREVIATION.




## WALL FINISH ABBREVIATIONS

| | |
|---|---|
| CT | CERAMIC TILE |
| EP | EPOXY PAINT |
| EX | EXISTING (NO NEW FINISH) |
| GFS | GRAPHIC FRAME SYSTEM |
| PT | PAINT |
| VG | VINYL GRAPHICS |

## BASE FINISH ABBREVIATIONS

| | |
|---|---|
| CT | CERAMIC TILE |
| NB | NO BASE, WALL FINISH EXTENDS TO FLOOR |
| RB | RESILIENT BASE |

## FLOOR FINISH ABBREVIATIONS

| | |
|---|---|
| CONCS | CONCRETE - WITH APPLIED SURFACE SEALER |
| CPT | CARPET TILE |
| CT | CERAMIC TILE |
| RFT | RESILIENT FLOOR TILE |
| RSF | RESILIENT SPORTS FLOOR |
| STR | INTEGRATED STAIR TREAD & RISER SYSTEM |
| SGS | SYNTHETIC GRASS SURFACING |

## GENERAL NOTES

1. REFER TO REFLECTED CEILING PLANS FOR CEILING TYPES, HEIGHTS AND FINISH INFORMATION.
2. AT CERAMIC TILE LOCATIONS, INSTALLER TO USE APPROPRIATE TROWEL TO ACCOMMODATE DIFFERENT TILE THICKNESSES.
3. REFER TO STRUCTURAL DRAWINGS FOR DEPRESSED SLAB LOCATIONS, INDICATIVE OF MUDSET BEDS AT CERAMIC TILE. SLOPE MUDSET TO DRAINS. REFER TO ARCHITECTURAL DRAWINGS FOR DRAIN ELEVATIONS AND LOCATIONS.
4. PROVIDE ANTI-FRACTURE MEMBRANE AT ALL THINSET CERAMIC TILE LOCATIONS, UNLESS OTHERWISE NOTED.
5. PROVIDE RESILIENT BASE AT TOE KICK OF ALL CASEWORK AND BEHIND ALL MOVABLE EQUIPMENT/APPLIANCES, WHEN SCHEDULED WITHIN A ROOM.
6. ALL WALL MOUNTED MECHANICAL EQUIPMENT (DIFFUSERS, GRILLES, ETC) AND ELECTRICAL EQUIPMENT (PANELS, ETC) SHALL BE PAINTED TO MATCH THE ADJACENT WALL COLOR. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR QUANTITIES AND LOCATIONS.
7. REFER TO SPEC, SECTION 012300 FOR COMPLETE LIST AND DESCRIPTION OF ALTERNATIVES.
8. PROVIDE APPROPRIATE TRANSITION STRIPS BETWEEN DISSIMILAR FLOORING MATERIALS AT VERTICAL AND/OR HORIZONTAL APPLICATIONS.
9. CARPET EDGES SHALL BE CAPTURED BY NOSING, NOSING SHALL BE MITERED AT ALL OUTSIDE AND INSIDE CORNER CONDITIONS. ALL EDGES OF CARPET SHALL BE SEALED WITH A SEAM-SEALER.
10. FLOORING CONTRACTOR SHALL INSTALL INSERTS TO MATCH ADJACENT FLOORING MATERIAL AT ALL ELECTRICAL FLOOR BOX COVERS AS REQUIRED.
11. FOR MORE INFORMATION REGARDING THRESHOLDS AT TILE INSTALLATIONS, SEE DOOR SCHEDULE SHEET.

## SPECIFIC NOTES

1. ALL STRUCTURAL ELEMENTS TO BE PAINTED PT4, TYPICAL.
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6. SPRUNG FLOORING SYSTEM WITH RESILIENT SURFACE TO BE UTILIZED. REFER TO SPEC SECTION 09 6466 & 09 6506.
7. REFER TO A7.2/12 FOR TYPICAL TILE PATTERN

FIRST LEVEL FINISH PLAN - ZONE 'A'

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


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REGISTRATION SEAL

CONSULTANT

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

First Level Finish Plan - Zone 'A'

A
B

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
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| APPROVED | DL |

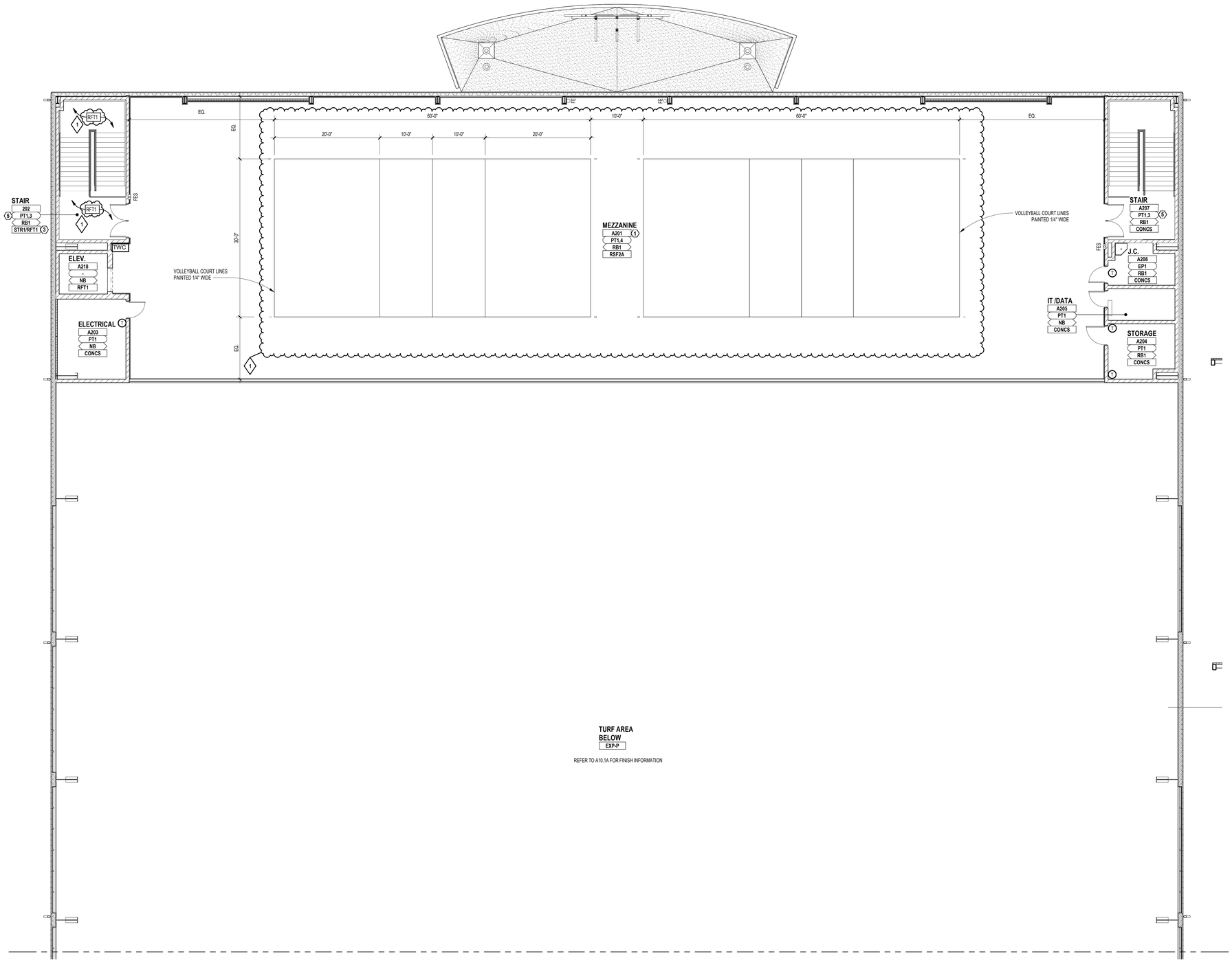
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SECOND LEVEL FINISH PLAN - ZONE 'A'

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

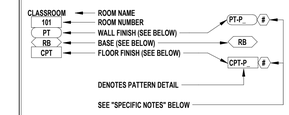
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ARCHITECTURE

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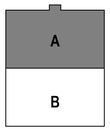
PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MICHIGAN

DRAWING TITLE

## Second Level Finish Plan - Zone 'A'




ISSUE DATES

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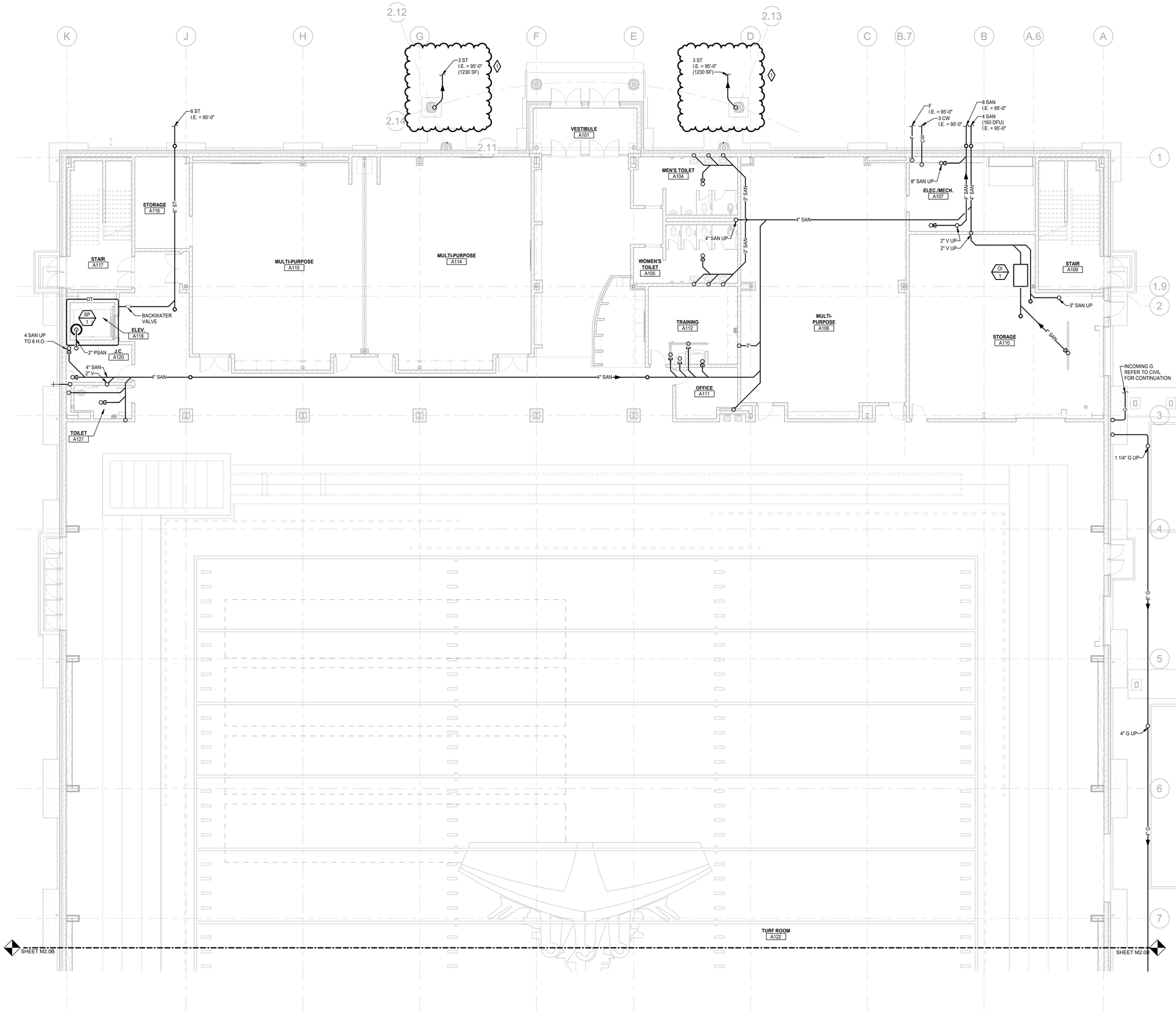
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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"




## PLUMBING GENERAL NOTES:

1 THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.

2 INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.

3 PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.

4 COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.

5 PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.

6 REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.

7 HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.

8 PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.

9 PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.

10 MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

11 WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST <<<72">>>, OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION, OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

## # CONSTRUCTION KEY NOTES:

1 3/4 CW AND 3/4 HW AND 1/2 HWR FROM BELOW TO SERVE SECOND FLOOR SS-1.

2 ROUTE 2 PSAN FROM UNDERGROUND AND SPILL INTO 6 HUB OUTLET APPROXIMATELY 36 INCHES AFF.

3 ROUTE 2 CW UNDIMINISHED IN SIZE TO FARTHEST FIXTURE. CONNECT FIXTURES TO 2 CW PER PLUMBING FIXTURE CONNECTION SCHEDULE.

4 STACK CW AND FP SERVICES ON WALL. REFER TO DETAIL.

5 ROUTE 1/2 CW THROUGH BACKFLOW PREVENTER TO SERVE ICE MACHINE. ROUTE I.W. FROM ICE MAKER AND BFP TO FLOOR DRAIN.

6 PROVIDE ELECTRIC HEAT TRACE ON ERU HEAT EXCHANGER CONDENSATE DRAIN(S) PIPING AND INSULATE. LOCATE HEAT TRACE CONTROLLER WITHIN ERU CONTROL SECTION.

## FIRST LEVEL UNDERGROUND PLUMBING PLAN - ZONE A

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


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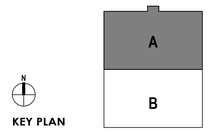

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

FIRST LEVEL UNDERGROUND PLUMBING NEW WORK PLAN - ZONE 'A'




ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |

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|---|---|
| DRAWN | KRD |
| CHECKED | KRD |
| APPROVED | SVM |

PROJECT NO.

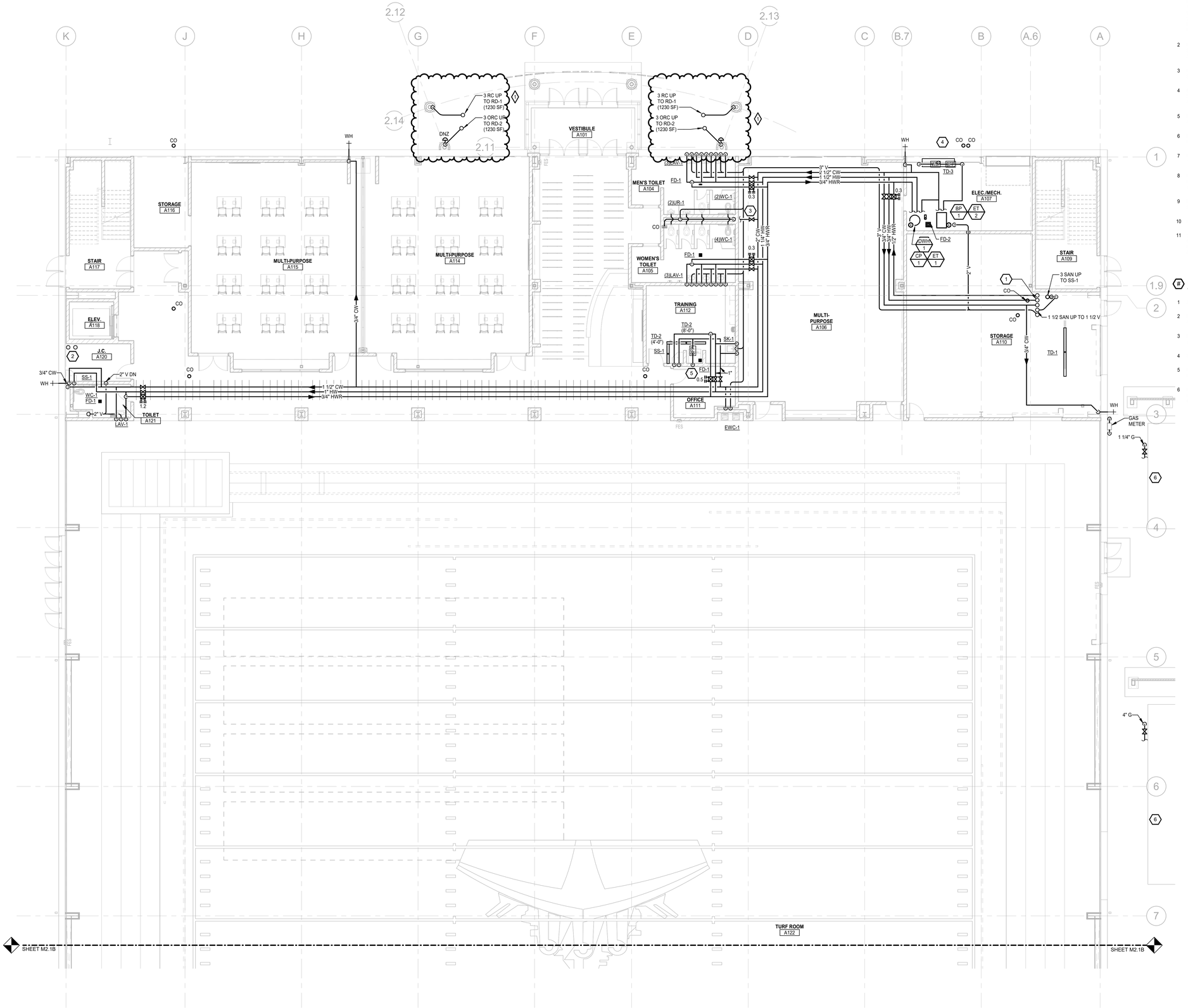
25026E

DRAWING NO.

M2.0A


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THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"




## PLUMBING GENERAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. REFER TO ARCHITECTURAL PLANS FOR DIMENSIONED LOCATIONS OF PLUMBING FIXTURES.
7. HOT AND COLD WATER PIPING RUN-OUTS TO LAVATORIES AND SINKS SHALL BE 1/2" UNLESS OTHERWISE NOTED.
8. PLUMBING VENT PIPING THROUGH ROOF SHALL BE LOCATED A MINIMUM OF 10'-0" FROM ANY FRESH AIR INTAKE LOCATION AND A MINIMUM OF 18" CLEAR FROM THE INSIDE FACE OF PARAPET.
9. PROVIDE CODE REQUIRED CLEARANCE FOR ALL CLEANOUTS INSTALLED IN SANITARY WASTE AND VENT PIPING.
10. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".
11. WATER SERVICE ENTRANCE PIPING SHALL BE BURIED WITH DEPTH OF COVER OVER TOP OF PIPE OF AT LEAST <<<72">>>. OR WITH TOP OF PIPE AT LEAST 12" BELOW LEVEL OF MAXIMUM FROST PENETRATION. OR AS REQUIRED BY AUTHORITIES HAVING JURISDICTION, WHICHEVER IS DEEPEST.

## # CONSTRUCTION KEY NOTES:

1. 3/4 CW AND 3/4 HW AND 1/2 HWR FROM BELOW TO SERVE SECOND FLOOR SS-1.
2. ROUTE 2 PSAN FROM UNDERGROUND AND SPILL INTO 6 HUB OUTLET APPROXIMATELY 36 INCHES AFF.
3. ROUTE 2 CW UNDIMINISHED IN SIZE TO FARTHEST FIXTURE. CONNECT FIXTURES TO 2 CW PER PLUMBING FIXTURE CONNECTION SCHEDULE.
4. STACK CW AND FP SERVICES ON WALL. REFER TO DETAIL.
5. ROUTE 1/2 CW THROUGH BACKFLOW PREVENTER TO SERVE ICE MACHINE. ROUTE I.W. FROM ICE MAKER AND BFP TO FLOOR DRAIN.
6. PROVIDE ELECTRIC HEAT TRACE ON ERU HEAT EXCHANGER CONDENSATE DRAIN(S) PIPING AND INSULATE. LOCATE HEAT TRACE CONTROLLER WITHIN ERU CONTROL SECTION.

## FIRST LEVEL PLUMBING PLAN - ZONE A

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


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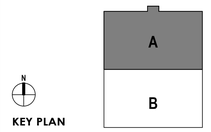
# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

FIRST LEVEL PLUMBING NEW WORK PLAN - ZONE 'A'

KEY PLAN




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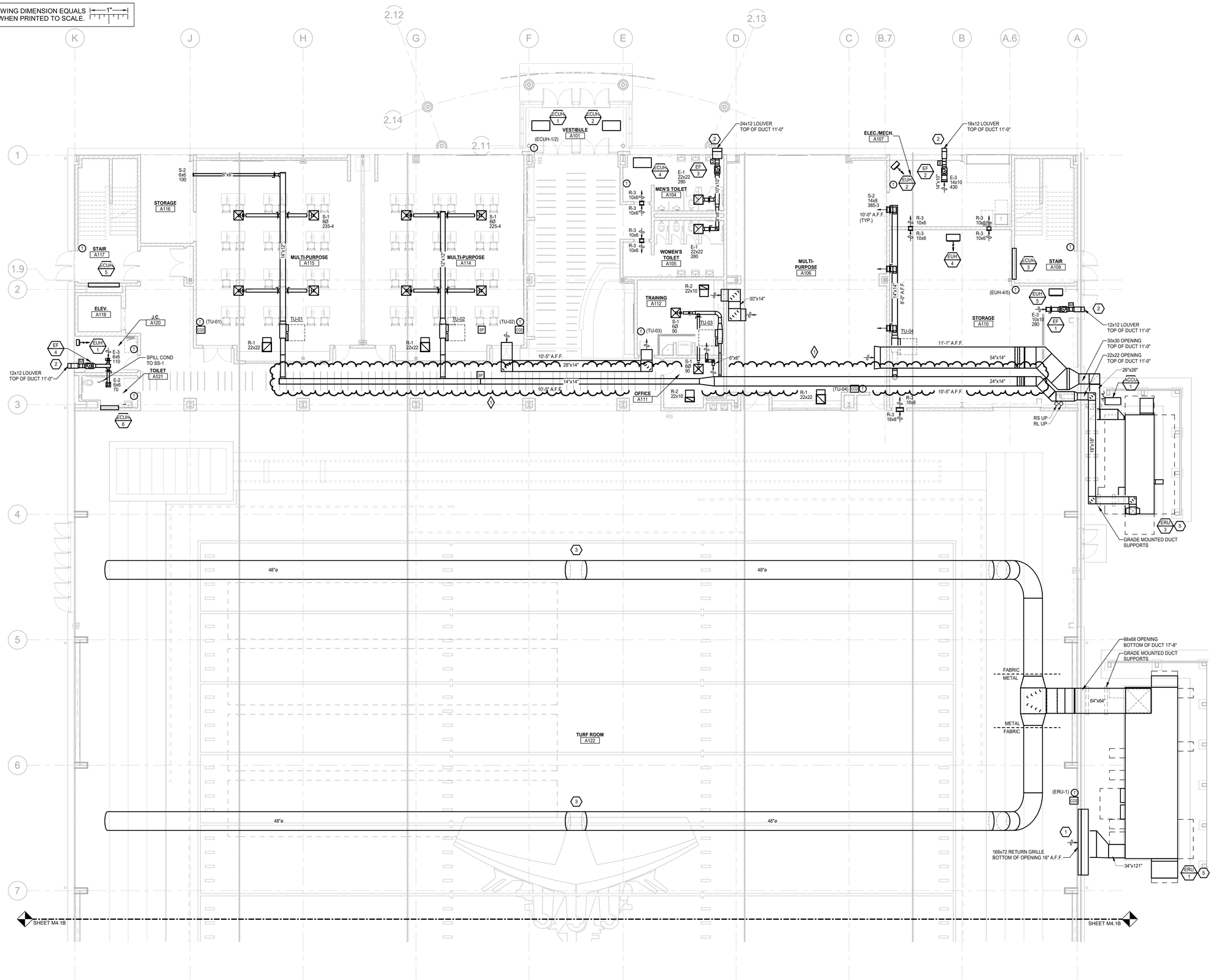
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PROJECT NO.
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DRAWING NO.
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## FIRST LEVEL SHEET METAL PLAN - ZONE A

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

GENERAL NOTES: SEE M4.1B, M4.2A

CONSTRUCTION NOTES: SEE M4.1B, M4.2A


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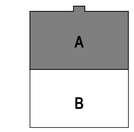
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## FIRST LEVEL SHEET METAL PLAN - ZONE 'A'

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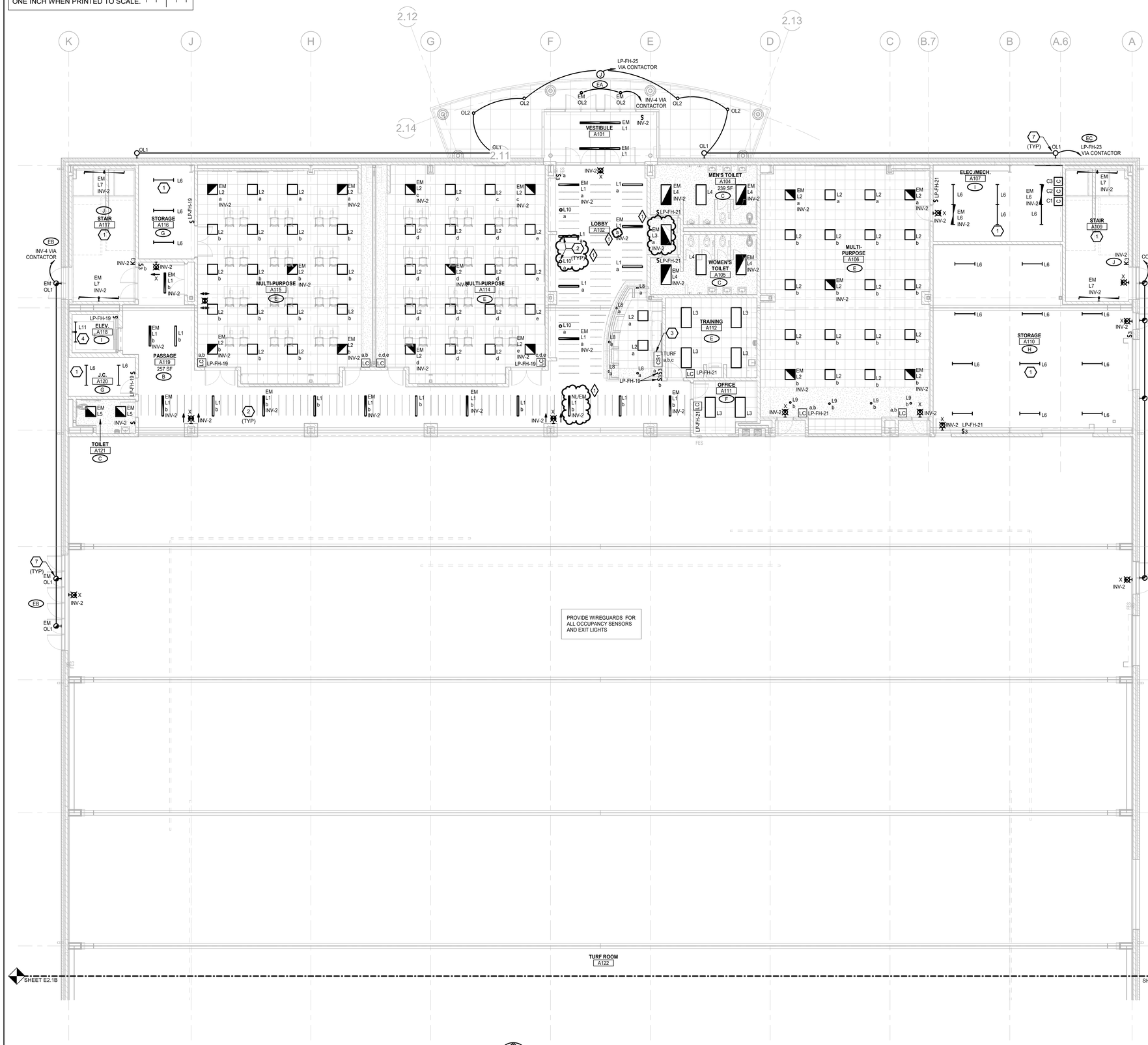
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6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
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10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES, DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. THE FIRE ALARM DEVICES SHOWN ON PLAN ARE A PARTIAL REPRESENTATION OF THE FIRE ALARM SYSTEM. PROVIDE THE DESIGN AND INSTALATION OF A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS, DRAWINGS, AND ALL APPLICABLE CODES. THE FIRE ALARM VENDOR SHALL PROVIDE LAYOUT DRAWINGS INDICATING THE REQUIRED QUANTITIES AND LOCATIONS OF MANUAL PULL STATIONS, NOTIFICATION APPLIANCES, SMOKE AND HEAT DETECTORS, CONTROL MODULES, INTERFACE MODULES, MODULES FOR SPRINKLER FLOW AND TAMPER SWITCHES, ALL CONTROL PANELS, POWER SUPPLIES, AND ADDITIONAL DEVICES AND EQUIPMENT REQUIRED. COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL FINISHES AND REFLECTED CEILING PLANS, INCLUDING ADDITIONAL SMOKE AND HEAT DETECTORS REQUIRED FOR NON-SMOOTH CEILING APPLICATIONS. INCLUDE ALLOWANCES FOR ADJUSTMENT OF DEVICES BY THE ARCHITECT AT THE TIME OF SUBMITTAL TO COORDINATE WITH BUILDING FINISHES AND OTHER CEILING ELEMENTS.
12. REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
13. CONNECT EXIT SIGNS TO EMERGENCY LIGHTING BRANCH CIRCUIT SERVING THE AREA. CONNECT AHEAD OF ANY LIGHTING CONTROL DEVICE OR SYSTEM.
14. PROVIDE TAMPER-RESISTANT TYPE RECEPTACLES FOR ALL NEW RECEPTACLES UNLESS OTHERWISE NOTED.

## CONSTRUCTION KEY NOTES:

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2. MOUNT BOTTOM OF L1 LIGHT FIXTURES PARALLEL WITH BOTTOM OF ADJACENT BANNERS.
3. REMOTE MOUNTED CONTROL STATION FOR FIELD LIGHTS.
4. MOUNT LIGHT FIXTURE IN PIT AT APPROXIMATELY 4'-0"A.F.F.
5. MUSCO LIGHT FIXTURE MOUNTED AT APPROXIMATELY 24'A.F.F. OF FIELD. COORDINATE INSTALLATION WITH MUSCO LIGHTING REPRESENTATIVE.
6. MUSCO LIGHT FIXTURE MOUNTED AT APPROXIMATELY 20'A.F.F. OF FIELD. COORDINATE INSTALLATION WITH MUSCO LIGHTING REPRESENTATIVE.
7. MOUNT OL1 FIXTURE AT 9'-0" AF.F.
8. MOUNT APPROXIMATELY AT 4'-0" BELOW THE TOP OF HOISTWAY. COORDINATE EXACT HEIGHT AND LOCATION WITH ELEVATOR MANUFACTURER'S DRAWINGS.

## FIRST LEVEL LIGHTING PLAN - ZONE A

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


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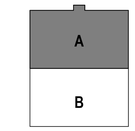
# NEW FIELD HOUSE

## DEXTER COMMUNITY SCHOOLS
## DEXTER, MI

DRAWING TITLE

## FIRST LEVEL LIGHTING PLAN - ZONE 'A'

KEY PLAN




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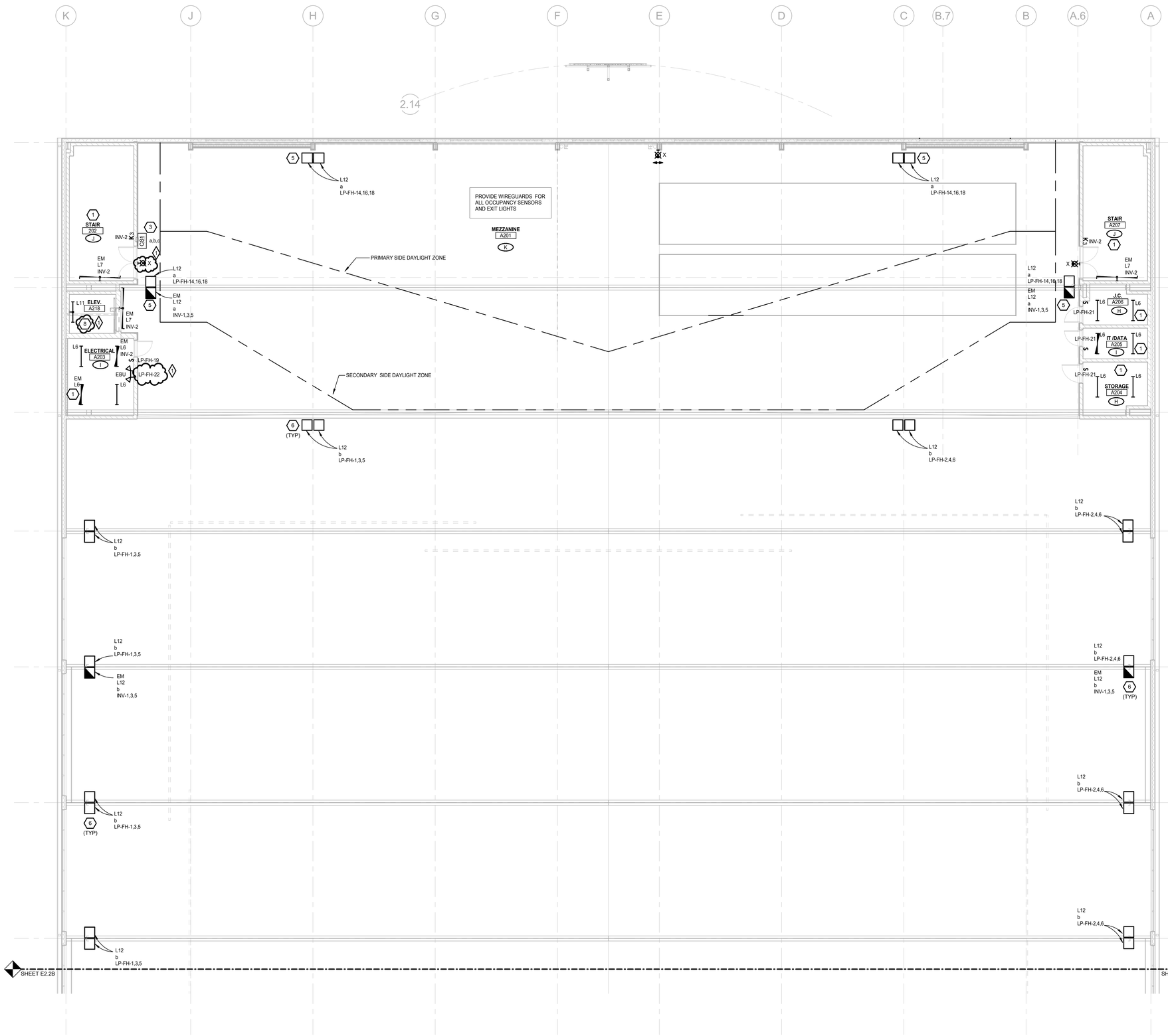
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## CONSTRUCTION KEY NOTES:

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4. MOUNT LIGHT FIXTURE IN PIT AT APPROXIMATELY 4'-0"A.F.F.
5. MUSCO LIGHT FIXTURE MOUNTED AT APPROXIMATELY 24'A.F.F. OF FIELD. COORDINATE INSTALLATION WITH MUSCO LIGHTING REPRESENTATIVE.
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## SECOND LEVEL LIGHTING PLAN - ZONE A

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


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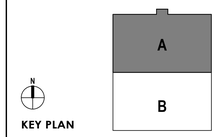
# NEW FIELD HOUSE

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## SECOND LEVEL LIGHTING PLAN - ZONE 'A'

KEY PLAN




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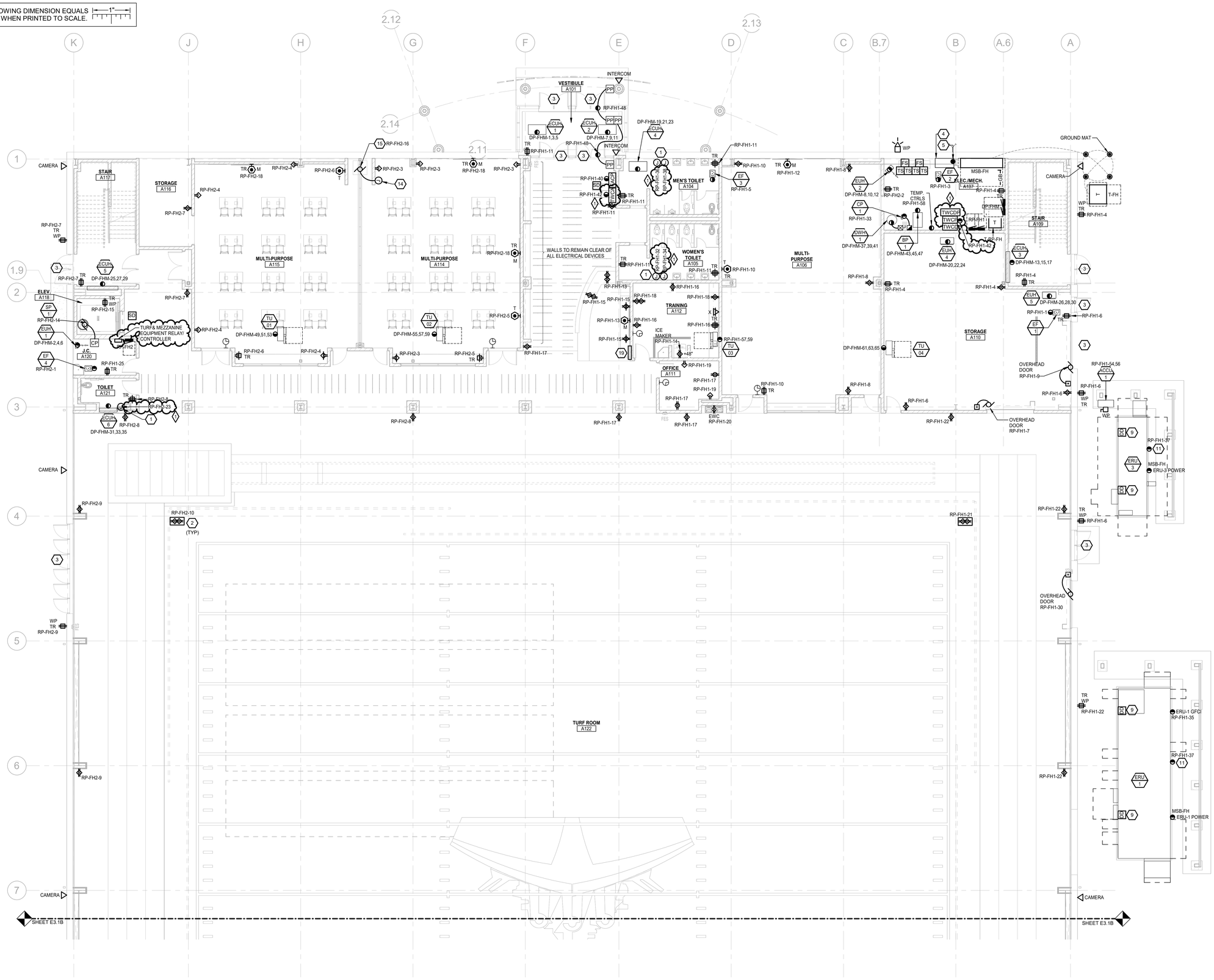
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## FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE A

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

GENERAL NOTES: SEE E3.2A.

CONSTRUCTION NOTES: SEE E3.1B.

CUSTOM TELECOM SCHEDULE: SEE E3.1B

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PBA Project No.: 2025.0327

PROJECT TITLE

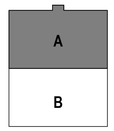
# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## FIRST LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

KEY PLAN




ISSUE DATES

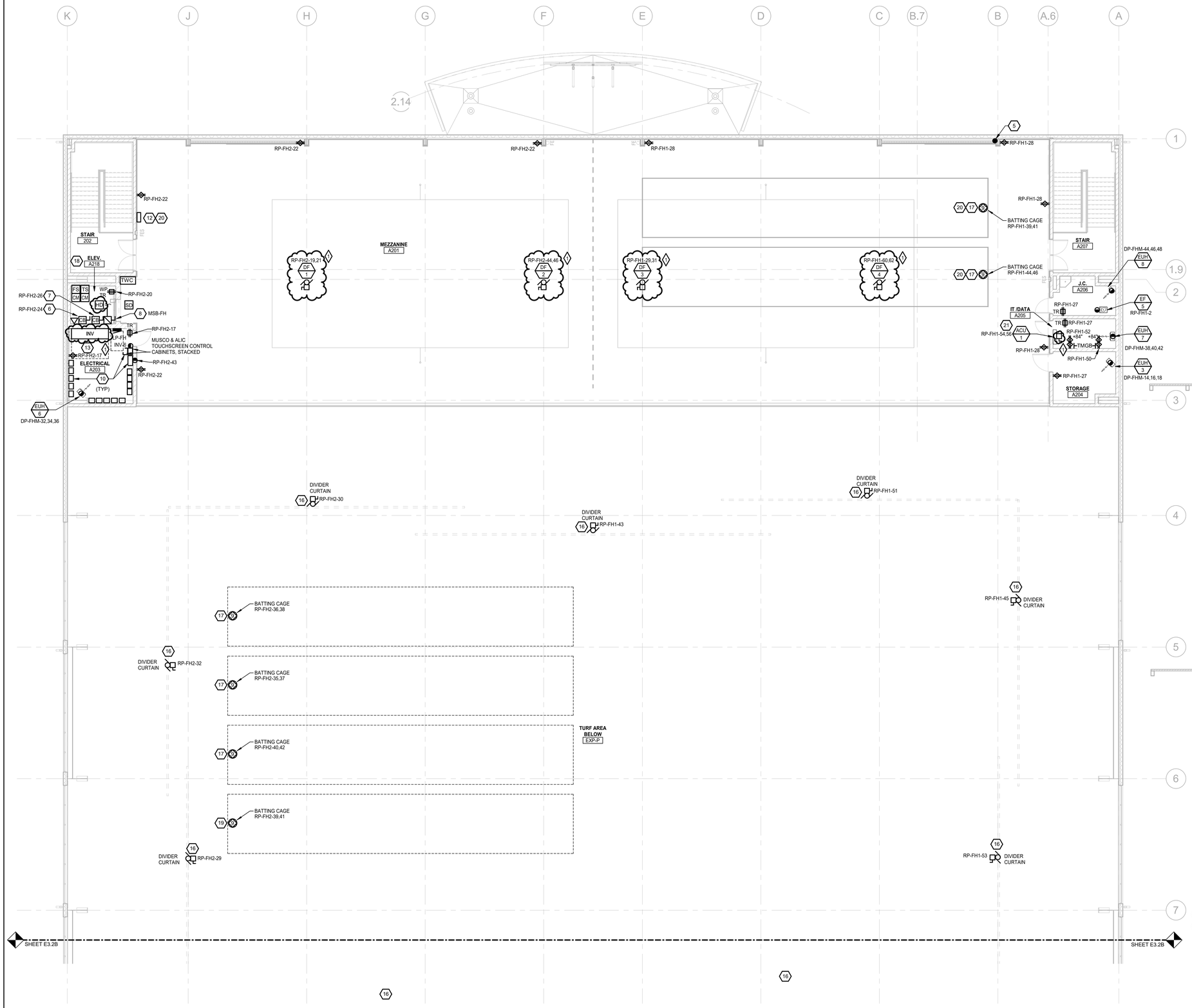
| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |
| DATE: | ISSUED FOR: |

| | |
|---|---|
| DRAWN | DMN |
| CHECKED | STP |
| APPROVED | STP |

PROJECT NO.
25026E

DRAWING NO.
E3.1A

THE FOLLOWING DIMENSION EQUALS ONE INCH WHEN PRINTED TO SCALE. 1"




## SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE A

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

## ELECTRICAL GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
4. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
5. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH TRANSFORMER CIRCUIT SIZING SCHEDULE SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
6. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
7. COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
8. COORDINATE EXACT LOCATIONS OF ALL FLOOR SERVICE FITTINGS AND POKE-THROUGH ASSEMBLIES WITH FINAL FURNITURE LAYOUT DRAWINGS.
9. REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT. PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS. WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
10. REFER TO TEMPERATURE CONTROLS SHEETS FOR REQUIRED FIRE ALARM CONTROL MODULES. DUCT SMOKE DETECTORS, AND MOTOR CONTROLLERS. PROVIDE ALL ACCESSORIES INDICATED.
11. THE FIRE ALARM DEVICES SHOWN ON PLAN ARE A PARTIAL REPRESENTATION OF THE FIRE ALARM SYSTEM. PROVIDE THE DESIGN AND INSTALLATION OF A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH THE SPECIFICATIONS, DRAWINGS, AND ALL APPLICABLE CODES. THE FIRE ALARM VENDOR SHALL PROVIDE LAYOUT DRAWINGS INDICATING THE REQUIRED QUANTITIES AND LOCATIONS OF MANUAL PULL STATIONS, NOTIFICATION APPLIANCES, SMOKE AND HEAT DETECTORS, CONTROL MODULES, INTERFACE MODULES. MODULES FOR SPRINKLER FLOW AND TAMPER SWITCHES. ALL CONTROL PANELS, POWER SUPPLIES, AND ADDITIONAL DEVICES AND EQUIPMENT REQUIRED. COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL FINISHES AND REFLECTED CEILING PLANS, INCLUDING ADDITIONAL SMOKE AND HEAT DETECTORS REQUIRED FOR NON-SMOOTH CEILING APPLICATIONS. INCLUDE ALLOWANCES FOR ADJUSTMENT OF DEVICES BY THE ARCHITECT AT THE TIME OF SUBMITTAL TO COORDINATE WITH BUILDING FINISHES AND OTHER CEILING ELEMENTS.
12. REFER TO LIGHTING CONTROL SCHEDULE FOR ROOM CONTROL AND EMERGENCY LIGHTING CIRCUIT CONTROL REQUIREMENTS. DESIGNATION FOR ROOM IS INDICATED AS A LETTERED OVAL SYMBOL.
13. CONNECT EXIT SIGNS TO EMERGENCY LIGHTING BRANCH CIRCUIT SERVING THE AREA. CONNECT AHEAD OF ANY LIGHTING CONTROL DEVICE OR SYSTEM.
14. PROVIDE TAMPER-RESISTANT TYPE RECEPTACLES FOR ALL NEW RECEPTACLES UNLESS OTHERWISE NOTED.

## CONSTRUCTION KEY NOTES:

1. ELECTRIC HAND DRYER FURNISHED BY OTHERS, INSTALLED BY ELECTRICAL CONTRACTOR. FIELD COORDINATE MOUNTING HEIGHT WITH ARCHITECT.
2. MOUNT RECEPTACLE IN TURF BOX. TURF BOX PROVIDED BY OTHERS.
3. REFER TO TC5XX AND/OR TC6XX DRAWINGS FOR SECURITY DETAILS.
4. SPACE ALLOCATED FOR ELECTRICAL ENERGY STORAGE SYSTEM-READY AREA PER IECC 2021.
5. DEDICATED PATHWAY SPACE FOR ROUTING OF POWER CONDUITS TO SOLAR READY ZONE OF ROOF PER IECC 2021. PROVIDE ROUTE FOR (1)4"C MINIMUM.
6. ELEVATOR AUXILIARY POWER. PROVIDE CONNECTION TO CONTROLLER LOCATED IN DOOR JAMB.
7. ELEVATOR CAB LIGHTING. PROVIDE CONNECTION TO CONTROLLER LOCATED IN DOOR JAMB.
8. ELEVATOR CONTROL POWER. CONTROLLER LOCATED IN DOOR JAMB. PROVIDE WITH 25A FUSES. PROVIDE SAME SIZE GROUND CONDUCTOR AS PHASE AND NEUTRAL CONDUCTORS. COORDINATE REQUIREMENTS WITH ELEVATOR MANUFACTURER.
9. DUCT SMOKE DETECTOR SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR. COORDINATE MOUNTING LOCATION AND QUANTITY WITH THE MECHANICAL DUCTWORK CONTRACTOR. ELECTRICAL CONTRACTOR SHALL WIRE DUCT SMOKE DETECTOR/ERU SUPPLY/RETURN FAN MOTOR CONTROLLER SO THAT UPON DETECTION OF SMOKE, THE SUPPLY/RETURN FAN WILL SHUT DOWN. THIS SHALL BE ACCOMPLISHED VIA THE FIRE ALARM CONTROL PANEL. PROVIDE ALL REQUIRED CONTROL MODULES AND RELAYS. COORDINATE WITH THE TEMPERATURE CONTROLS/FIRE ALARM CONTRACTOR. PROVIDE WEATHERPROOF ENCLOSURES AS REQUIRED.
10. MUSCO LIGHTING CONTROLS & DRIVER CABINETS. COORDINATE EXACT QUANTITIES AND LOCATIONS IN THE FIELD WITH MUSCO LIGHTING. PROVIDE SPACE FOR MINIMUM (13) ELECTRICAL ENCLOSURE CABINETS, (1)CONTROL & MONITORING CABINET, (1)TOUCHSCREEN CONTROL CABINET & (1) ALIC CABINET.
11. HEAT TRACE BY OTHERS.
12. TOUCH PANEL FOR THE BATTING CAGES. VERIFY EXACT LOCATION WITH OWNER PRIOR TO INSTALLATION.
13. PROVIDE 16.7KVA CENTRAL BATTERY INVERTER, 480/277V INPUT / 480/277V OUTPUT, WITH BREAKERS AS INDICATED IN PANEL SCHEDULE.
14. CONTROL BOX FOR ELECTRICALLY OPERATED PARTITIONS. VERIFY EXACT LOCATION WITH OWNER PRIOR TO ROUGHING-IN.
15. ELECTRICALLY OPERATED PARTITIONS.
16. DIVIDER CURTAIN BY ARCHITECTURAL TRADES. PROVIDE ALL POWER CONNECTIONS, EQUIPMENT , AND MOTORS AND ALL REQUIRED RACEWAYS AND BACKBOXES FOR WIRING AND CONTROLS. COORDINATE EXACT LOCATION OF CONTROLS WITH ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.
17. PROVIDE ALL POWER CONNECTIONS TO MOTORIZED THROWING/BATTING CAGE, EQUIPMENT, AND MOTORS AND ALL REQUIRED RACEWAYS AND BACKBOXES FOR WIRING AND CONTROLS. COORDINATE EXACT LOCATION OF CONTROLS WITH ARCHITECTURAL TRADES PRIOR TO ROUGH-IN.
18. PROVIDE POWER & TELECOMM TO SERVE ELEVATOR. REFER TO DETAIL ON E7.3 FOR ADDITIONAL INFORMATION.
19. PROVIDE CONNECTION TO TOUCHSCREEN CONTROLLER(BY OTHERS) FOR DIVIDER CURTAIN & GYMNASIUM EQUIPMENT. COORDINATE EXACT LOCATION OF CONTROLS WITH ARCHITECTURAL TRADES PRIOR TO ROUGH IN.
20. EQUIPMENT IS PART OF ALTERNATE. REFER TO ARCHITECTURAL DRAWINGS FOR MORE INFORMATION.
21. POWER FED FROM OUTDOOR UNIT TO INDOOR UNIT.


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PBA Project No.: 2025.0327


PROJECT TITLE

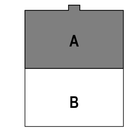
# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## SECOND LEVEL POWER AND AUXILIARY SYSTEMS PLAN - ZONE 'A'

KEY PLAN




ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
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| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |

| | |
|---|---|
| DRAWN | DMN |
| CHECKED | STP |
| APPROVED | STP |

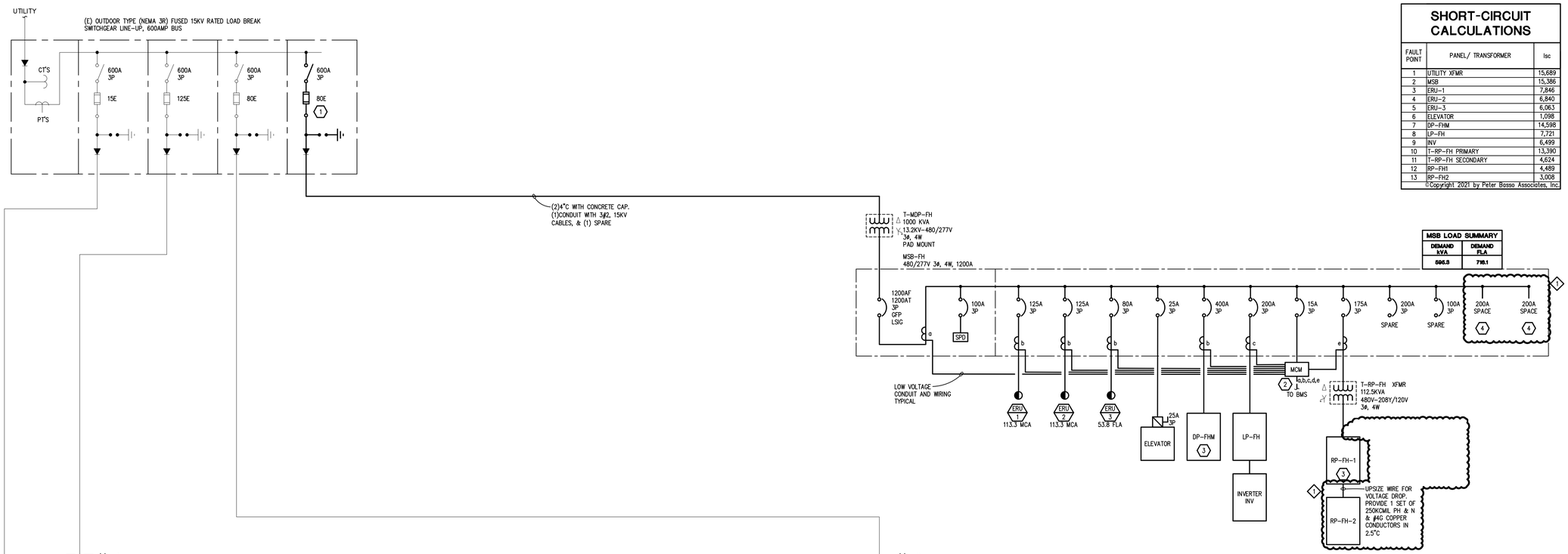
PROJECT NO.

25026E

DRAWING NO.

E3.2A


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3/18/2026 10:56:16 AM Autodesk Docs://25026E_Dexter - New Field House/2025-0327_MEP_Dexter Fieldhouse_v25.rvt




## ONE LINE DIAGRAM
**NO SCALE**

## SHORT-CIRCUIT CALCULATIONS

| FAULT POINT | PANEL/ TRANSFORMER | Isc |
|---|---|---|
| 1 | UTILITY XFMR | 15,689 |
| 2 | MSB | 15,386 |
| 3 | ERU-1 | 7,846 |
| 4 | ERU-2 | 6,840 |
| 5 | ERU-3 | 6,063 |
| 6 | ELEVATOR | 1,098 |
| 7 | DP-FHM | 14,598 |
| 8 | LP-FH | 7,721 |
| 9 | INV | 6,499 |
| 10 | T-RP-FH PRIMARY | 13,390 |
| 11 | T-RP-FH SECONDARY | 4,624 |
| 12 | RP-FH1 | 4,489 |
| 13 | RP-FH2 | 3,008 |

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## DIAGRAM GENERAL NOTES:

1. THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS. COORDINATE EXACT EQUIPMENT LOCATIONS, ELEVATIONS, AND FINAL CONNECTION REQUIREMENTS. PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS AND OFFSETS.
2. FEEDER AND BRANCH CIRCUIT CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
3. TRANSFORMER SECONDARY CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH THE "TRANSFORMER CIRCUIT SIZING SCHEDULE-GENERAL PURPOSE" ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
4. MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH THE MOTOR CIRCUIT SIZING SCHEDULES ON THE "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS SPECIFICALLY NOTED OTHERWISE.
5. BASIS OF DESIGN IS SQUARE D DISTRIBUTION EQUIPMENT AND ASCO TRANSFER SWITCHES. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT FROM OTHER APPROVED MANUFACTURERS, THE CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE THE LAYOUT AND CLEARANCE REQUIREMENTS IN ALL SPACES CONTAINING ELECTRICAL EQUIPMENT AND PROVIDE EQUIPMENT MEETING THE SPECIFICATIONS AND ACHIEVING CODE REQUIRED CLEARANCES WITHIN THE SPACE PROVIDED.

## ⟨#⟩ CONSTRUCTION KEY NOTES:

1. PROVIDE NEW MEDIUM VOLTAGE FUSED SWITCH ADJACENT TO EXISTING LINEUP. COORDINATE WORK WITH UTILITY.
2. PROVIDE SUB METERING PER MICHIGAN COMMERCIAL ENERGY CODE. LOAD CLASSIFICATION SHALL BE DESIGNATED AS FOLLOWS AND AS CALLED OUT ON THE ONE LINE DIAGRAM AND:
   a. TOTAL BUILDING ENERGY
   b. HVAC SYSTEMS
   c. INTERIOR LIGHTING
   d. EXTERIOR LIGHTING
   e. RECEPTACLE LOADS
3. PROVIDE 2-SECTION PANELBOARD. REFER TO PANEL SCHEDULES FOR ADDITIONAL INFORMATION.
4. RESERVED SPACE FOR POSSIBLE INSTALLATION OF A DUAL-POLE CIRCUIT BREAKER FOR FUTURE SOLAR ELECTRIC AND A DUAL-POLE CIRCUIT BREAKER FOR FUTURE ELECTRICAL ENERGY STORAGE SYSTEM INSTALLATION. PROVIDE LABEL "FOR FUTURE SOLAR ELECTRIC AND STORAGE".

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PBA Project No.: 2025.0327

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

ONE LINE DIAGRAM - NEW WORK

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
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|---|---|
| DRAWN | DMN |
| CHECKED | STP |
| APPROVED | STP |

PROJECT NO.
25026E

DRAWING NO.
E5.1

g:\2025\2025-0327-00\CAD\2025-0327-E5-DG.dwg, E5.2, 3/18/2026 10:58:14 AM, Tonya L. Cavanaugh, None .0.09448, Peter Basso Associates Inc.

## PANELBOARD DP-FHM

| # | LOAD TYPE | DESCRIPTION | CB TYPE | CB | A | | B | | C | | CB | CB TYPE | DESCRIPTION | LOAD TYPE | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 2245 | 1108 | | | | | | | | | 2 |
| 3 | E | ECUH-1 - VEST 101 | | 15 | | | 2245 | 1108 | | | 15 | | EUH-1 - JC 120 | E | 4 |
| 5 | | | | | | | | | 2245 | 1108 | | | | | 6 |
| 7 | | | | | 2245 | 1690 | | | | | | | | | 8 |
| 9 | E | ECUH-2 - VEST 107 | | 15 | | | 2245 | 1690 | | | 15 | | EUH-2 - ELEC 107 | E | 10 |
| 11 | | | | | | | | | 2245 | 1690 | | | | | 12 |
| 13 | | | | | 8508 | 1690 | | | | | | | | | 14 |
| 15 | E | ECUH-3 - STAIR 109 | | 45 | | | 8508 | 1690 | | | 15 | | EUH-3 - STORAGE 204 | E | 16 |
| 17 | | | | | | | | | 8508 | 1690 | | | | | 18 |
| 19 | | | | | 2245 | 10004 | | | | | | | | | 20 |
| 21 | E | ECUH-4 - MENS 104 | | 15 | | | 2245 | 10004 | | | 50 | | EUH-4 - STORAGE 110 | E | 22 |
| 23 | | | | | | | | | 2245 | 10004 | | | | | 24 |
| 25 | | | | | 8508 | 10004 | | | | | | | | | 26 |
| 27 | E | ECUH-5 - STAIR 117 | | 45 | | | 8508 | 10004 | | | 50 | | EUH-5 - STORAGE 110 | E | 28 |
| 29 | | | | | | | | | 8508 | 10004 | | | | | 30 |
| 31 | | | | | 2245 | 1690 | | | | | | | | | 32 |
| 33 | E | ECUH-6 - TOILET 121 | | 15 | | | 2245 | 1690 | | | 15 | | EUH-6 - ELEC 203 | E | 34 |
| 35 | | | | | | | | | 2245 | 1690 | | | | | 36 |
| 37 | | | | | 5986 | 1690 | | | | | | | | | 38 |
| 39 | C | DHW-1 - MECH 107 | | 30 | | | 5986 | 1690 | | | 15 | | EUH-7 - INF.TECH 205 | E | 40 |
| 41 | | | | | | | | | 5986 | 1690 | | | | | 42 |
| 43 | | | | | 1662 | 1690 | | | | | | | | | 44 |
| 45 | M | BP-1 - MECH 107 | | 15 | | | 1662 | 1690 | | | 15 | | EUH-8 - JC 206 | E | 46 |
| 47 | | | | | | | | | 1662 | 1690 | | | | | 48 |
| 49 | | | | | 2933 | 0 | | | | | | | | | 50 |
| 51 | M | TU-01 - MULTI-PURPOSE ROOM A115 | | 15 | | | 2933 | 0 | | | 20 | -- | SPARE | -- | 52 |
| 53 | | | | | | | | | 2933 | 0 | | | | | 54 |
| 55 | | | | | 2800 | 0 | | | | | | | | | 56 |
| 57 | M | TU-02 - MULTI-PURPOSE ROOM A114 | | 15 | | | 2800 | 0 | | | 20 | -- | SPARE | -- | 58 |
| 59 | | | | | | | | | 2800 | 0 | | | | | 60 |
| 61 | | | | | 2900 | 0 | | | | | | | | | 62 |
| 63 | M | TU-04 - STORAGE A110 | | 15 | | | 2900 | 0 | | | 20 | -- | SPARE | -- | 64 |
| 65 | | | | | | | | | 2900 | 0 | | | | | 66 |
| 67 | | | | | 0 | 0 | | | | | | | | | 68 |
| 69 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 70 |
| 71 | | | | | | | | | 0 | 0 | | | | | 72 |
| 73 | | | | | 0 | 0 | | | | | | | | | 74 |
| 75 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 76 |
| 77 | | | | | | | | | 0 | 0 | | | | | 78 |
| 79 | | | | | 0 | 0 | | | | | | | | | 80 |
| 81 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 82 |
| 83 | | | | | | | | | 0 | 0 | | | | | 84 |
| | | | | | 71843 | | 71843 | | 71843 | | | | | | |
| | | | | | ØA | | ØB | | ØC | | | | | | |

| PANELBOARD INFORMATION | | BRANCH CIRCUIT CONNECTED LOAD | | DEMAND FACTOR | CALCULATED LOAD | | FEEDER AND OCPD SIZING |
|---|---|---|---|---|---|---|---|
| VOLTAGE: | 480Y/277V | CONTINUOUS LOAD (C): | 17957 | 100% | 17957 | 125% | 22446.25 |
| BUS AMPACITY: | 400A | ELECTRIC HEAT (E) | 166686 | 100% | 166686 | 100% | 166686 |
| MAIN TYPE: | MLO | NON-CONTINUOUS LOAD (NC): | 0 | 100% | 0 | 100% | 0 |
| MINIMUM A.I.C.: | 22,000 | KITCHEN LOAD (K): | 0 | | 0 | 100% | 0 |
| MOUNTING: | SURFACE | RECEPT BASE LOAD (R): | 0 | 100% | 0 | 100% | 0 |
| | | RECEPT DEMAND LOAD (R): | 0 | 50% | 0 | 100% | 0 |
| | | LIGHTING LOAD (L): | 0 | 100% | 0 | 125% | 0 |
| | | ADDITIONAL TRACK LIGHTING LOAD: | | | | 100% | 0 |
| PANELBOARD LOCATION | | MOTORS, HIGHEST LOAD (M): | 8800 | 125 % | 11000 | 100% | 11000 |
| ELEC / MECH A107 | | MOTORS, REMAINING | 22086 | 100 % | 22086 | 100 % | 22086 |
| | | NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD | | TOTAL (kVA): | 217.73 | | |
| | | | | TOTAL (AMPS): | 261.89 | TOTAL (AMPS): | 267.29 |

NOTES

FEED THRU LUGS
PROVIDE 2-SECTION PANELBOARD WITH QUANTITY OF POLE INDICATED

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## PANELBOARD RP-FH1

| # | LOAD TYPE | DESCRIPTION | CB TYPE | CB | A | | B | | C | | CB | CB TYPE | DESCRIPTION | LOAD TYPE | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M | EF-1 - STORAGE 110 | | 15 | 384 | 384 | | | | | 15 | | EF-3 - JC 206 | M | 2 |
| 3 | M | EF-2 - ELEC 107 | | 15 | | | 384 | 900 | | | 20 | | RECEPTACLES - RM. A110, A107, A109 | R | 4 |
| 5 | M | EF-3 - MENS 104 | | 15 | | | | | 528 | 900 | 20 | | RECEPTACLES - RM. A110, OUTDOOR | R | 6 |
| 7 | M | OVERHEAD DOOR - RM. A110 | | 20 | 700 | 540 | | | | | 20 | | RECEPTACLES - RM. A106 | R | 8 |
| 9 | M | OVERHEAD DOOR - RM. A110 | | 20 | | | 700 | 540 | | | 20 | | RECEPTACLES - RM. A106 | R | 10 |
| 11 | R | RECEPTACLES - RM. A104, A105,A101,A102 | | 20 | | | | | 1080 | 180 | 20 | | RECEPTACLES - RM. A106 | R | 12 |
| 13 | R | RECEPTACLES - LOBBY | | 20 | 540 | 900 | | | | | 20 | GFCI | ICE MAKER - RM. A112 | NC | 14 |
| 15 | R | RECEPTACLES - LOBBY | | 20 | | | 720 | 540 | | | 20 | | RECEPTACLES - RM. A112 | R | 16 |
| 17 | R | RECEPTACLES - RM. A111, LOBBY | | 20 | | | | | 900 | 540 | 20 | | RECEPTACLES - RM. A112 | R | 18 |
| 19 | R | CONTROLLED RECEPTACLES - RM. A111 | | 20 | 360 | 500 | | | | | 20 | GFCI | ELECTRIC WATER COOLER | NC | 20 |
| 21 | R | TURF BOX RECEPTACLES - RM. A122 | | 20 | | | 360 | 720 | | | 20 | | RECEPTACLES - RM. A122, OUTDOOR | R | 22 |
| 23 | R | TURF BOX RECEPTACLES - RM. A122 | | 20 | | | | | 360 | 540 | 20 | | RECEPTACLES - RM. A122, OUTDOOR | R | 24 |
| 25 | R | RECEPTACLE - RM. A120 | | 20 | 180 | 540 | | | | | 20 | | RECEPTACLES - RM. A122, OUTDOOR | R | 26 |
| 27 | R | RECEPTACLES - RM. A101, A102, A103 | | 20 | | | 540 | 720 | | | 20 | | RECEPTACLE - MEZZ. A201 | R | 28 |
| 29 | M | DF-3 | | 15 | | | | | 88 | 700 | 20 | | OVERHEAD DOOR - RM. A120 | M | 30 |
| 31 | R | | | 20 | 88 | 0 | | | | | 20 | GFCI | FUTURE HAND DRYER - RM. A105 | NC | 32 |
| 33 | R | | | 20 | | | 100 | 0 | | | 20 | GFCI | FUTURE HAND DRYER - RM. A105 | NC | 34 |
| 35 | R | RECEPTACLES - ERU-1, ERU-2 | | 20 | | | | | 360 | 0 | 20 | GFCI | FUTURE HAND DRYER - RM. A104 | NC | 36 |
| 37 | E | HEAT TRACE - ERU-1 THRU ERU-3 | | 20 | 600 | 0 | | | | | 20 | GFCI | FUTURE HAND DRYER - RM. A104 | NC | 38 |
| 39 | | | | | | | 718 | 700 | | | 20 | LOD | FIRE ALARM CONTROL PANEL | C | 40 |
| 41 | R | BATTING CAGE - MEZZ A201 | | 20 | | | | | 718 | 700 | 20 | | TWO-WAY COMMUNICATION PANEL | C | 42 |
| 43 | M | DIVIDER CURTAIN - RM. A122 | | 20 | 1660 | 718 | | | | | 20 | | BATTING CAGE - MEZZ A201 | R | 44 |
| 45 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | 1660 | 718 | | | | | | | 46 |
| 47 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | | | 1660 | 200 | 20 | | MOTORIZED DOORS - A101 | M | 48 |
| 49 | M | DIVIDER CURTAIN - RM. A122 | | 20 | 1660 | 360 | | | | | 20 | | RECEPTACLES - RM. A205 | R | 50 |
| 51 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | 1660 | 360 | | | 20 | | RECEPTACLES - RM. A205 | R | 52 |
| 53 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | | | 1660 | 1160 | 15 | | ACU-1 & ACCU-1 | M | 54 |
| 55 | M | DIVIDER CURTAIN - RM. A122 | | 20 | 1660 | 1168 | | | | | | | | | 56 |
| 57 | M | TU-03 - RM. A112 | | 20 | | | 650 | 1000 | | | 20 | | SPARE | -- | 58 |
| 59 | | | | | | | | | 650 | 88 | 15 | | DF-4 | M | 60 |
| 61 | -- | SPARE | -- | 20 | 0 | 88 | | | | | | | | | 62 |
| 63 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 64 |
| 65 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 66 |
| 67 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 68 |
| 69 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 70 |
| 71 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 72 |
| 73 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 74 |
| 75 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 76 |
| 77 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 78 |
| 79 | -- | SPARE | -- | 20 | 0 | 9623 | | | | | | | | Spare; L; R; M; NC | 80 |
| 81 | -- | SPARE | -- | 20 | | | 0 | 11724 | | | 20 | | RP-FH2 | | 82 |
| 83 | -- | SPARE | -- | 20 | | | | | 0 | 9070 | | | | | 84 |
| | | | | | 22651 | | 25413 | | 22089 | | | | | | |
| | | | | | ØA | | ØB | | ØC | | | | | | |

| PANELBOARD INFORMATION | | BRANCH CIRCUIT CONNECTED LOAD | | DEMAND FACTOR | CALCULATED LOAD | | FEEDER AND OCPD SIZING |
|---|---|---|---|---|---|---|---|
| VOLTAGE: | 208Y/120V | CONTINUOUS LOAD (C): | 1400 | 100% | 1400 | 125% | 1750 |
| BUS AMPACITY: | 400A | ELECTRIC HEAT (E) | 600 | 100% | 600 | 100% | 600 |
| MAIN TYPE: | 400A MCB | NON-CONTINUOUS LOAD (NC): | 1400 | 100% | 1400 | 100% | 1400 |
| MINIMUM A.I.C.: | 10,000 | KITCHEN LOAD (K): | 0 | | 0 | 100% | 0 |
| MOUNTING: | SURFACE | RECEPT BASE LOAD (R): | 10000 | 100% | 10000 | 100% | 10000 |
| | | RECEPT DEMAND LOAD (R): | 21105 | 50% | 10552.5 | 100% | 10552.5 |
| | | LIGHTING LOAD (L): | 255 | 100% | 255 | 125% | 318.75 |
| | | ADDITIONAL TRACK LIGHTING LOAD: | | | | 100% | 0 |
| PANELBOARD LOCATION | | MOTORS, HIGHEST LOAD (M): | 2336 | 125 % | 2920 | 100% | 2920 |
| ELEC / MECH A107 | | MOTORS, REMAINING | 33056 | 100 % | 33056 | 100 % | 33056 |
| | | NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD | | TOTAL (kVA): | 60.18 | | |
| | | | | TOTAL (AMPS): | 167.05 | TOTAL (AMPS): | 168.20 |

NOTES

PROVIDE 2-SECTION PANELBOARD WITH QUANTITY OF POLE INDICATED

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## PANELBOARD RP-FH2

| # | LOAD TYPE | DESCRIPTION | CB TYPE | CB | A | | B | | C | | CB | CB TYPE | DESCRIPTION | LOAD TYPE | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | M | EF-4 - JC 120 | | 15 | 384 | 180 | | | | | 20 | | RECEPTACLE - RM. A107 | R | 2 |
| 3 | R | RECEPTACLES - RM. A114 | | 20 | | | 720 | 720 | | | 20 | | RECEPTACLES - RM. A115 | R | 4 |
| 5 | R | RECEPTACLES - RM. A114 | | 20 | | | | | 540 | 540 | 20 | | RECEPTACLES - RM. A115 | R | 6 |
| 7 | R | RECEPTACLES - RM. A116,A117, OUTDOOR | | 20 | 720 | 540 | | | | | 20 | | RECEPTACLES - RM. A122, A121 | R | 8 |
| 9 | R | RECEPTACLES - RM. A122, OUTDOOR | | 20 | | | 540 | 360 | | | 20 | | TURF BOX RECEPTACLES - RM. A122 | R | 10 |
| 11 | R | RECEPTACLES - RM. A122, OUTDOOR | | 20 | | | | | 540 | 360 | 20 | | TURF BOX RECEPTACLES - RM. A122 | R | 12 |
| 13 | R | RECEPTACLES - RM. A122 | | 20 | 540 | 1176 | | | | | 20 | | ELEVATOR SUMP PUMP | M | 14 |
| 15 | R | RECEPTACLE - ELEVATOR PIT | | 20 | | | 180 | 1176 | | | 20 | | ELECTRICALLY OPERATED... | M | 16 |
| 17 | R | RECEPTACLES - RM. A103 | | 20 | | | | | 360 | 540 | 20 | | TV MONITORS - RM. A114, A115 | R | 18 |
| 19 | M | DF-1 | | 15 | 88 | 180 | | | | | 20 | | RECEPTACLE - ELEVATOR PIT | R | 20 |
| 21 | | | | | | | 88 | 720 | | | 20 | | RECEPTACLES - MEZZ A201 | R | 22 |
| 23 | R | RECEPTACLES - RM. A122, OUTDOOR | | 20 | | | | | 0 | 0 | 20 | | ELEVATOR AUXILIARY POWER | NC | 24 |
| 25 | R | THROWING CAGE - RM. A122 | | 20 | 718 | 0 | | | | | 20 | | ELEVATOR CAB LIGHTING | NC | 26 |
| 27 | R | | | 20 | | | 718 | 1660 | | | 20 | | DIVIDER CURTAIN - RM. A122 | M | 28 |
| 29 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | | | 1660 | 1660 | 20 | | DIVIDER CURTAIN - RM. A122 | M | 30 |
| 31 | M | DIVIDER CURTAIN - RM. A122 | | 20 | 1660 | 1660 | | | | | 20 | | DIVIDER CURTAIN - RM. A122 | M | 32 |
| 33 | M | DIVIDER CURTAIN - RM. A122 | | 20 | | | 1660 | 1660 | | | 20 | | DIVIDER CURTAIN - RM. A122 | M | 34 |
| 35 | R | BATTING CAGE - RM. A122 | | 20 | | | | | 718 | 718 | 20 | | BATTING CAGE - RM. A122 | R | 36 |
| 37 | | | | | 718 | 718 | | | | | | | | | 38 |
| 39 | R | BATTING CAGE - RM. A122 | | 20 | | | 718 | 718 | | | 20 | | BATTING CAGE - RM. A122 | R | 40 |
| 41 | | | | | | | | | 718 | 718 | | | | | 42 |
| 43 | L | MUSCO CONTROL & MONITORING... | | 20 | 255 | 88 | | | | | 15 | | DH-2 | M | 44 |
| 45 | -- | SPARE | -- | 20 | | | 0 | 88 | | | | | | | 46 |
| 47 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 48 |
| 49 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 50 |
| 51 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 52 |
| 53 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 54 |
| 55 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 56 |
| 57 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 58 |
| 59 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 60 |
| | | | | | 9623 | | 11724 | | 9070 | | | | | | |
| | | | | | ØA | | ØB | | ØC | | | | | | |

| PANELBOARD INFORMATION | | BRANCH CIRCUIT CONNECTED LOAD | | DEMAND FACTOR | CALCULATED LOAD | | FEEDER AND OCPD SIZING |
|---|---|---|---|---|---|---|---|
| VOLTAGE: | 208Y/120V | CONTINUOUS LOAD (C): | 0 | 100% | 0 | 125% | 0 |
| BUS AMPACITY: | 200A | ELECTRIC HEAT (E) | 0 | 100% | 0 | 100% | 0 |
| MAIN TYPE: | MLO | NON-CONTINUOUS LOAD (NC): | 0 | 100% | 0 | 100% | 0 |
| MINIMUM A.I.C.: | 10,000 | KITCHEN LOAD (K): | 0 | | 0 | 100% | 0 |
| MOUNTING: | SURFACE | RECEPT BASE LOAD (R): | 10000 | 100% | 10000 | 100% | 10000 |
| | | RECEPT DEMAND LOAD (R): | 5455 | 50% | 2727.5 | 100% | 2727.5 |
| | | LIGHTING LOAD (L): | 255 | 100% | 255 | 125% | 318.75 |
| | | ADDITIONAL TRACK LIGHTING LOAD: | | | | 100% | 0 |
| PANELBOARD LOCATION | | MOTORS, HIGHEST LOAD (M): | 1660 | 125 % | 2075 | 100% | 2075 |
| | | MOTORS, REMAINING | 13046 | 100 % | 13046 | 100 % | 13046 |
| | | NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD | | TOTAL (kVA): | 28.1 | | |
| | | | | TOTAL (AMPS): | 78.01 | TOTAL (AMPS): | 78.18 |

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## PANELBOARD LP-FH

| # | LOAD TYPE | DESCRIPTION | CB TYPE | CB | A | | B | | C | | CB | CB TYPE | DESCRIPTION | LOAD TYPE | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 4230 | 4230 | | | | | | | | | 2 |
| 3 | L | MUSCO FIELD LIGHTS - NORTH END WEST | | 20 | | | 4230 | 4230 | | | 20 | | MUSCO FIELD LIGHTS - NORTH END EAST | L | 4 |
| 5 | | | | | | | | | 4230 | 4230 | | | | | 6 |
| 7 | | | | | 3290 | 3290 | | | | | | | | | 8 |
| 9 | L | MUSCO FIELD LIGHTS - SOUTH END WEST | | 20 | | | 3290 | 3290 | | | 20 | | MUSCO FIELD LIGHTS - SOUTH END EAST | L | 10 |
| 11 | | | | | | | | | 3290 | 3290 | | | | | 12 |
| 13 | | | | | 2820 | 2820 | | | | | | | | | 14 |
| 15 | L | MUSCO FIELD LIGHTS - SOUTH END BOTTOM | | 20 | | | 2820 | 2820 | | | 20 | | MUSCO FIELD LIGHTS - MEZZANINE | L | 16 |
| 17 | | | | | | | | | 2820 | 2820 | | | | | 18 |
| 19 | L | LTG - FIRST FLOOR WEST | | 20 | 2578 | 1055 | | | | | 20 | | LTG - EBU - ELEC A 203 | L | 20 |
| 21 | L | LTG - FIRST FLOOR EAST | | 20 | | | 1061 | 5 | | | 20 | | LTG - EBU - ELEC A 203 | L | 22 |
| 23 | L | EXTERIOR BUILDING MOUNTED... | | 20 | | | | | 175 | 0 | 20 | -- | SPARE | -- | 24 |
| 25 | L | FUTURE SIGNAGE | | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 26 |
| 27 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 28 |
| 29 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 30 |
| 31 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 32 |
| 33 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 34 |
| 35 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 36 |
| 37 | Other; Spare; L | INVERTER | | 35 | 6499 | 0 | | | | | 20 | -- | SPARE | -- | 38 |
| 39 | | | | | | | 3020 | 0 | | | 20 | -- | SPARE | -- | 40 |
| 41 | | | | | | | | | 2820 | 0 | 20 | -- | SPARE | -- | 42 |
| | | | | | 30811 | | 24766 | | 23675 | | | | | | |
| | | | | | ØA | | ØB | | ØC | | | | | | |

| PANELBOARD INFORMATION | | BRANCH CIRCUIT CONNECTED LOAD | | DEMAND FACTOR | CALCULATED LOAD | | FEEDER AND OCPD SIZING |
|---|---|---|---|---|---|---|---|
| VOLTAGE: | 480Y/277V | CONTINUOUS LOAD (C): | 0 | 100% | 0 | 125% | 0 |
| BUS AMPACITY: | 200 | ELECTRIC HEAT (E) | 0 | 100% | 0 | 100% | 0 |
| MAIN TYPE: | MLO | NON-CONTINUOUS LOAD (NC): | 0 | 100% | 0 | 100% | 0 |
| MINIMUM A.I.C.: | 10,000 | KITCHEN LOAD (K): | 0 | | 0 | 100% | 0 |
| MOUNTING: | SURFACE | RECEPT BASE LOAD (R): | 0 | 100% | 0 | 100% | 0 |
| | | RECEPT DEMAND LOAD (R): | 0 | 50% | 0 | 100% | 0 |
| | | LIGHTING LOAD (L): | 79252.4 | 100% | 79252.4 | 125% | 99065.5 |
| | | ADDITIONAL TRACK LIGHTING LOAD: | | | | 100% | 0 |
| PANELBOARD LOCATION | | MOTORS, HIGHEST LOAD (M): | 0 | 125 % | 0 | 100% | 0 |
| | | MOTORS, REMAINING | 0 | 100 % | 0 | 100 % | 0 |
| | | NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD | | TOTAL (kVA): | 79.25 | | |
| | | | | TOTAL (AMPS): | 95.33 | TOTAL (AMPS): | 119.16 |

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## PANELBOARD INV

| # | LOAD TYPE | DESCRIPTION | CB TYPE | CB | A | | B | | C | | CB | CB TYPE | DESCRIPTION | LOAD TYPE | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | 2820 | 3679 | | | | | 20 | | EM LTG - INTERIOR | L | 2 |
| 3 | L | MUSCO FIELD LIGHTS | | 20 | | | 2820 | 200 | | | 20 | | EM LTG- EXTERIOR | L | 4 |
| 5 | | | | | | | | | 2820 | 0 | 20 | | MUSCO ALIC CABINET | Other | 6 |
| 7 | -- | SPARE | -- | 20 | 0 | 0 | | | | | 20 | -- | SPARE | -- | 8 |
| 9 | -- | SPARE | -- | 20 | | | 0 | 0 | | | 20 | -- | SPARE | -- | 10 |
| 11 | -- | SPARE | -- | 20 | | | | | 0 | 0 | 20 | -- | SPARE | -- | 12 |
| | | | | | 6499 | | 3020 | | 2820 | | | | | | |
| | | | | | ØA | | ØB | | ØC | | | | | | |

| PANELBOARD INFORMATION | | BRANCH CIRCUIT CONNECTED LOAD | | DEMAND FACTOR | CALCULATED LOAD | | FEEDER AND OCPD SIZING |
|---|---|---|---|---|---|---|---|
| VOLTAGE: | 480Y/277V | CONTINUOUS LOAD (C): | 0 | 100% | 0 | 125% | 0 |
| BUS AMPACITY: | | ELECTRIC HEAT (E) | 0 | 100% | 0 | 100% | 0 |
| MAIN TYPE: | | NON-CONTINUOUS LOAD (NC): | 0 | 100% | 0 | 100% | 0 |
| MINIMUM A.I.C.: | | KITCHEN LOAD (K): | 0 | | 0 | 100% | 0 |
| MOUNTING: | | RECEPT BASE LOAD (R): | 0 | 100% | 0 | 100% | 0 |
| | | RECEPT DEMAND LOAD (R): | 0 | 50% | 0 | 100% | 0 |
| | | LIGHTING LOAD (L): | 12338.6 | 100% | 12338.6 | 125% | 15423.25 |
| | | ADDITIONAL TRACK LIGHTING LOAD: | | | | 100% | 0 |
| PANELBOARD LOCATION | | MOTORS, HIGHEST LOAD (M): | 0 | 125 % | 0 | 100% | 0 |
| | | MOTORS, REMAINING | 0 | 100 % | 0 | 100 % | 0 |
| | | NOTE: DEMAND AND SIZING INFORMATION IS CALCULATED FROM CONNECTED LOAD | | TOTAL (kVA): | 12.34 | | |
| | | | | TOTAL (AMPS): | 14.84 | TOTAL (AMPS): | 18.55 |

NOTES

16.7 KVA CENTRAL BATTERY INVERTER. 480/277V INPUT / 480/277V OUTPUT

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PBA Project No.: 2025.0327

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## PANEL SCHEDULES

ISSUE DATES

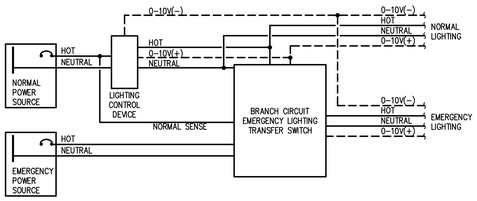
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|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |
| DATE: | ISSUED FOR: |

| | |
|---|---|
| DRAWN | DMN |
| CHECKED | STP |
| APPROVED | STP |

PROJECT NO.
25026E

DRAWING NO.
E5.2

Autodesk Docs://25026E_Dexter - New Field House/2025-0327_MEP_Dexter Fieldhouse_v25.rvt
3/18/2026 10:56:17 AM Autodesk Docs://25026E_Dexter - New Field House/2025-0327_MEP_Dexter Fieldhouse_v25.rvt

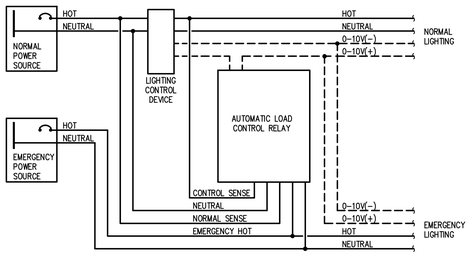



## BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH FOR 0-10V DIMMING

**NO SCALE**

NOTES:

1. BASIS OF DESIGN IS LVS CONTROLS EPC-0-F-ATS. REFER TO SPECIFICATIONS FOR APPROVED MANUFACTURERS. ADJUST WIRING AS NECESSARY FOR OTHER APPROVED MANUFACTURERS.
2. PROVIDE ONE BRANCH CIRCUIT EMERGENCY LIGHTING TRANSFER SWITCH PER LIGHTING CONTROL ZONE.

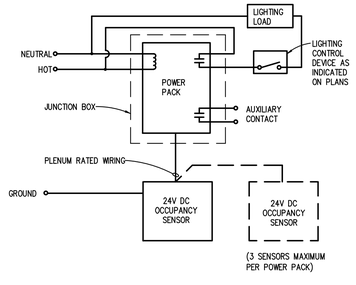



## AUTOMATIC LOAD CONTROL RELAY FOR 0-10V DIMMING

**NO SCALE**

NOTES:

1. BASIS OF DESIGN IS LVS CONTROLS EPC-2-D. REFER TO SPECIFICATIONS FOR APPROVED MANUFACTURERS. ADJUST WIRING AS NECESSARY FOR OTHER APPROVED MANUFACTURERS.
2. PROVIDE ONE AUTOMATIC LOAD CONTROL RELAY PER LIGHTING CONTROL ZONE.

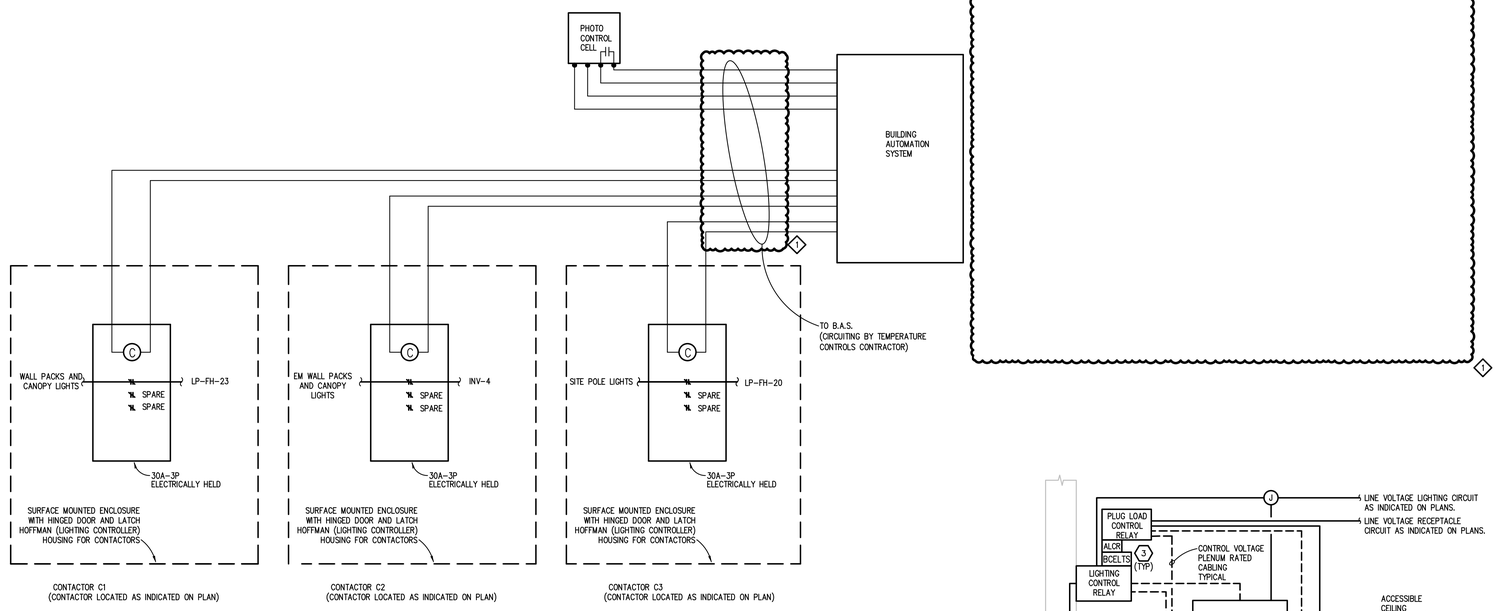



## OCCUPANCY SENSOR WIRING DIAGRAM

**NO SCALE**

NOTES:

1. REFER TO SPECIFICATIONS FOR ACCEPTED MANUFACTURERS.
2. PROVIDE POWER PACKS AND SLAVE PACKS AS REQUIRED FOR SWITCHING AS INDICATED ON PLAN. REVISE DETAIL AS REQUIRED BY MANUFACTURER.
3. MOUNTING LOCATION PER MANUFACTURER'S RECOMMENDATION.
4. ADJUST SENSITIVITY LEVELS PER THE OWNER REQUIREMENTS.
5. PROVIDE FACTORY SUPPORT FOR AIMING/ADJUSTING OF SENSORS.
6. PLACE CEILING MOUNTED OCCUPANCY SENSORS IN CENTER OF A FULL CEILING TILE, WHERE APPLICABLE.
7. SENSOR ADJUSTMENT: BEFORE MAKING ADJUSTMENTS, MAKE SURE ROOM FURNITURE IS INSTALLED, LIGHTING CIRCUITS ARE TURNED ON, AND THE HVAC SYSTEMS ARE IN THE ON POSITION. VAV SYSTEMS SHOULD BE SET TO THEIR HIGHEST AIRFLOW. SET THE LOGIC CONFIGURATION DIP SWITCHES TO "EITHER". EITHER REQUIRES MOTION DETECTION BY ONLY ONE TECHNOLOGY. SET THE TIME DELAY PER OWNERS DIRECTION.

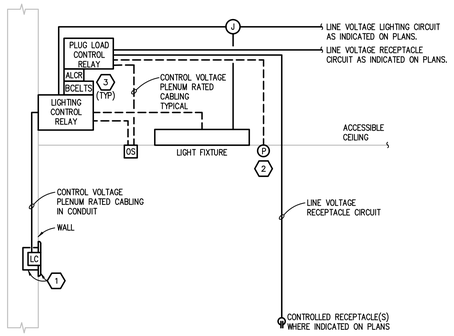



## LIGHTING CONTROLLER DETAIL

**NO SCALE**

NOTES

1. PROGRAM B.A.S. SYSTEM TIME SCHEDULE PER THE OWNER'S DIRECTION
2. PHOTOCELL SHALL CONTROL EXTERIOR LIGHTING VIA THE B.A.S. SYSTEM CONTROLS.




## LIGHTING CONTROL SYSTEM DIAGRAM LOW VOLTAGE

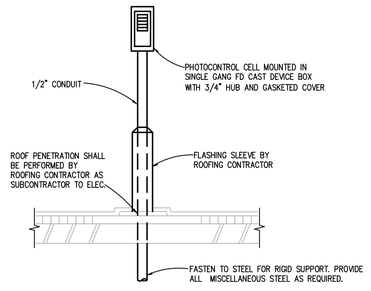
**NO SCALE**

GENERAL NOTES:

1. BASIS OF DESIGN IS ACUITY nLIGHT. REFER TO SPECIFICATIONS FOR APPROVED MANUFACTURERS. ADJUST WIRING AS NECESSARY FOR OTHER APPROVED MANUFACTURERS.
2. PROVIDE QUANTITY OF LIGHTING CONTROLLERS AS REQUIRED TO MEET FUNCTIONALITY INDICATED ON PLANS AND LIGHTING CONTROL SCHEDULE(S).
3. REFER TO MANUFACTURER'S SUBMITTAL FOR WIRING METHOD AND MATERIALS.
4. LOCATE SENSORS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS TO ACHIEVE FULL COVERAGE OF SPACE. WHEN SENSORS ARE INSTALLED IN LAY-IN CEILINGS, LOCATE SENSORS IN CENTER OF CEILING TILE.
5. ADJUST OCCUPANCY SENSOR SENSITIVITY AFTER FURNITURE IS IN PLACE AND HVAC SYSTEMS HAVE BEEN BALANCED AND VAV UNITS SET TO MAXIMUM AIRFLOW.

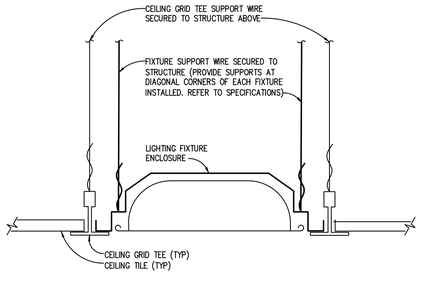
**KEYED NOTES:**

1. GANG MULTIPLE LIGHTING CONTROL DEVICES IN COMMON BOX. PROVIDE ONE PIECE, MATCHING COVER PLATE BY THE LIGHTING CONTROL DEVICE MANUFACTURER.
2. CEILING MOUNTED PHOTOCELL (WHERE REQUIRED). REFER TO PLANS FOR PRIMARY AND SECONDARY ZONE CONTROL.
3. LOCATE LIGHTING CONTROL SYSTEM COMPONENTS IN ACCESSIBLE CEILING ADJACENT TO DOOR, DIRECTLY ABOVE LIGHTING CONTROL DEVICE. PROVIDE AN ACCESS PANEL IF CEILING SPACE IS NOT ACCESSIBLE.



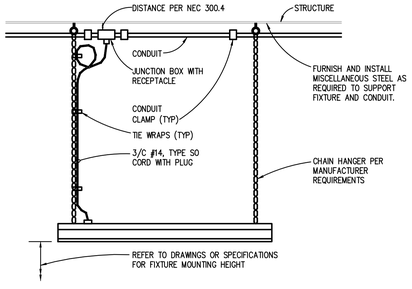

## PHOTOCONTROL CELL MOUNTING DETAIL

**NO SCALE**



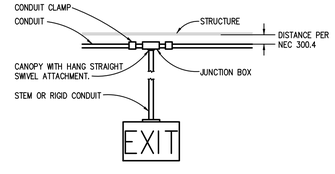

## RECESSED LIGHTING FIXTURE INSTALLATION DETAIL

**NO SCALE**




## TYPICAL MOUNTING DETAIL FOR CHAIN HUNG LIGHTING FIXTURES

**NO SCALE**




## EXIT SIGN PENDANT MOUNTING DETAIL

**NO SCALE**

NOTES:

1. STEM OR RIGID CONDUIT LENGTH TO BE COORDINATED TO ENSURE SIGNAGE IS READILY VISIBLE FROM ANY DIRECTION OF EGRESS TRAVEL. THE BOTTOM OF THE SIGNAGE SHALL NOT BE MORE THAN 6'-8" ABOVE THE TOP EDGE OF THE EGRESS OPENING INTENDED FOR DESIGNATION BY THE SIGNAGE (NFPA 101 7.10.1.9).
2. MOUNT EXIT SIGN PER MANUFACTURER'S RECOMMENDATIONS AT BOTTOM OF STEM/RIGID CONDUIT.

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PBA Project No.: 2025.0327

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

ELECTRICAL DETAILS AND DIAGRAMS

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |
| DATE: | ISSUED FOR: |

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| DRAWN | DMN |
| CHECKED | STP |
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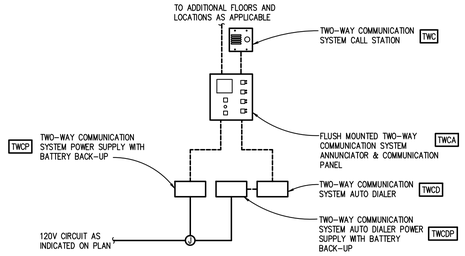
PROJECT NO.

25026E

DRAWING NO.

E7.1

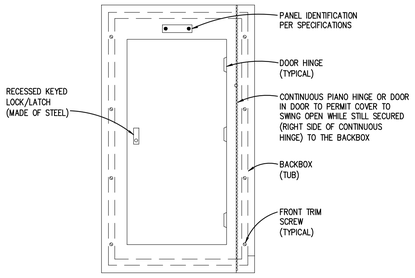
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## AREA OF REFUGE (AREA OF RESCUE ASSISTANCE) EMERGENCY TWO-WAY COMMUNICATION SYSTEM DIAGRAM - BATTERY BACKUP

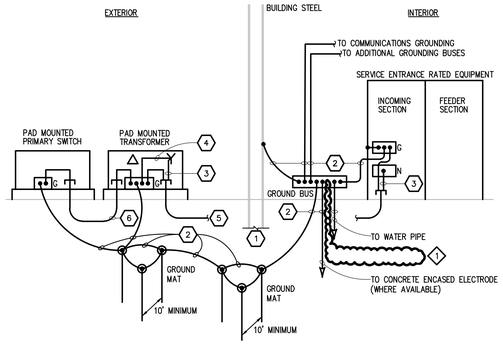
**NO SCALE**

NOTES:
1. REFER TO SPECIFICATIONS FOR SYSTEM REQUIREMENTS.
2. REFER TO PLANS FOR SYSTEM DEVICE LOCATIONS.




## PANELBOARD FRONT COVER DETAIL

**NO SCALE**

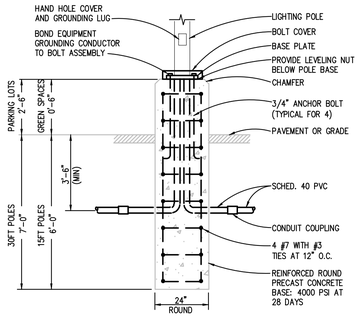



## GROUNDING SYSTEM DIAGRAM PRIMARY SERVICE EXTERIOR SERVICE ENTRANCE EQUIPMENT

**NO SCALE**

**(#) KEYED NOTES:**

1. METAL IN-GROUND SUPPORT STRUCTURE IN DIRECT CONTACT WITH EARTH VERTICALLY FOR A MINIMUM OF 10FT, WHERE AVAILABLE.
2. GROUNDING ELECTRODE CONDUCTOR, #4/0 COPPER.
3. GROUNDED CONDUCTOR (NEUTRAL); SEE ONE LINE DIAGRAM.
4. SYSTEM BONDING JUMPER, PROVIDED BY MANUFACTURER AS PART OF LISTED EQUIPMENT PER NEC 250.30A AND 250.30C, SIZED PER NEC 250.28 AND 250.102.
5. PHASE CONDUCTORS, GROUNDED CONDUCTOR, AND SUPPLY SIDE BONDING JUMPER IN CONDUIT (3P,N,SSBJ). SEE ONE LINE DIAGRAM.
6. PRIMARY PHASE CONDUCTORS AND GROUND IN CONDUIT. SEE ONE LINE DIAGRAM.

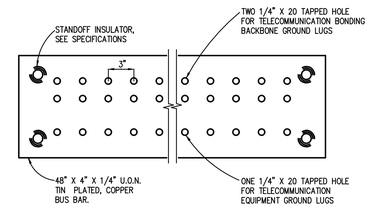



## LIGHTING POLE BASE DETAIL

**NO SCALE**

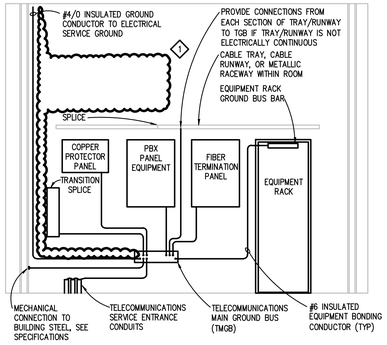
NOTE:

1. PROVIDE PRECAST CONCRETE BASE AS MANUFACTURED BY NORTHERN CONCRETE PIPE, INC. OR APPROVED EQUAL.
2. CONCRETE REINFORCEMENTS SHALL BE BARE, ZINC GALVANIZED, OR ELECTRICALLY CONDUCTIVE COATED STEEL. BOND ALL CONCRETE REINFORCEMENTS AND ANCHOR BOLTS TOGETHER SO THAT SYSTEM IS ELECTRICALLY CONTINUOUS.




## TELECOMMUNICATIONS MAIN GROUND BUS (TMGB) DETAIL

**NO SCALE**

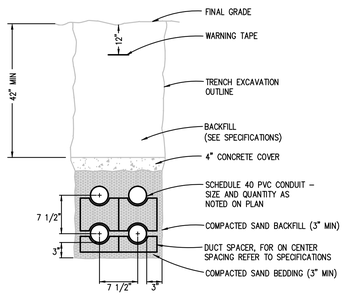



## MAIN TELECOMMUNICATIONS ROOM GROUNDING DIAGRAM

**NO SCALE**

NOTES:

1. ALL GROUNDING SHALL COMPLY WITH NEC ARTICLE 250 AND TIA/EIA-607.
2. CONNECT ALL EQUIPMENT RACKS INCLUDING MAIN DISTRIBUTION FRAME (MDF) TO TMGB WITH A SEPARATE EQUIPMENT BONDING CONDUCTOR.

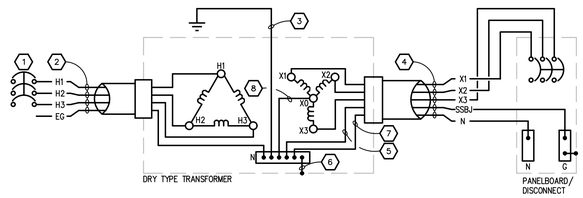



## UNDERGROUND CONDUIT DETAIL

**NO SCALE**

NOTES:

1. QUANTITY AND CONFIGURATION OF DUCTS SHALL BE AS SHOWN ON PLAN DRAWINGS. 12" MINIMUM SEPARATION SHALL BE MAINTAINED BETWEEN ELECTRICAL AND COMMUNICATIONS DUCTS.

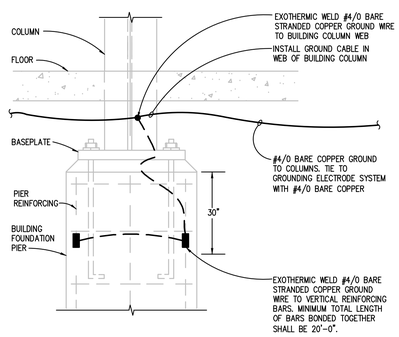



## DRY TYPE DISTRIBUTION TRANSFORMER GROUNDING ARRANGEMENT

**NO SCALE**

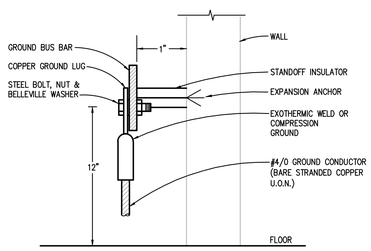
**(#) KEYED NOTES:**

1. 480V, 3# PRIMARY CIRCUIT BREAKER BASED ON DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING UNLESS OTHERWISE NOTED.
2. PRIMARY FEEDER BASED ON FEEDER AND BRANCH CIRCUIT SIZING TABLE ON ELECTRICAL STANDARD SCHEDULE DRAWING UNLESS OTHERWISE NOTED.
3. GROUNDING ELECTRODE CONDUCTOR TO NEAREST GROUNDING ELECTRODE (i.e. METAL IN GROUND SUPPORT STRUCTURE, METAL WATER PIPE, GROUND RING, OR GROUND BUS). SEE DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING FOR SIZE UNLESS OTHERWISE NOTED.
4. 208Y/120V, 3Φ, 4W SECONDARY FEEDER BASED ON DRY TYPE DISTRIBUTION TRANSFORMER CIRCUIT SIZING SCHEDULE ON ELECTRICAL STANDARD SCHEDULE DRAWING UNLESS OTHERWISE NOTED.
5. SUPPLY SIDE BONDING JUMPER.
6. SYSTEM BONDING JUMPER.
7. GROUNDED CONDUCTOR (NEUTRAL).
8. NEUTRAL CONDUCTOR PROVIDED WITH EQUIPMENT.




## COLUMN GROUNDING DETAIL

**NO SCALE**




## GROUND BUS DETAIL

**NO SCALE**


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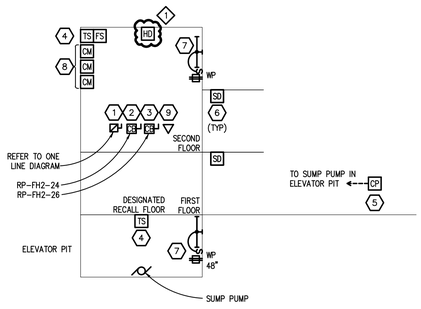
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25026E

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## ELEVATOR DETAIL - MACHINE ROOMLESS

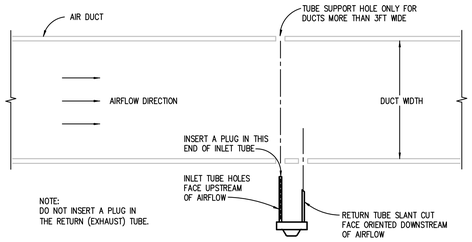
**NO SCALE**

## GENERAL NOTES:

1. DETAIL SHOWS GENERAL EXTENT OF WORK AND SHOULD NOT BE CONSIDERED A FABRICATION DRAWING. REFER TO PLANS FOR LOCATIONS OF ROOMS, ELEVATOR SHAFT(S), ETC. COORDINATE REQUIREMENTS WITH ELEVATOR MANUFACTURER AND INSTALLER.
2. PIT LIGHTING SHALL BE IP66, WET LOCATION LISTED. PIT TO BE ILLUMINATED TO 10 FOOT-CANDLES AT FLOOR. (ASME A17.1 2010, 2.2.5.1, 2.8.2.3.4)
3. HOISTWAY MACHINE SPACE LIGHTING SHALL BE IP66, WET LOCATION LISTED AND BE ILLUMINATED TO 19 FOOTCANDLES. (ASME A17.1 2010, 2.7.5.1)
4. ELEVATOR HOISTWAY TO BE DEDICATED FOR ELEVATOR EQUIPMENT ONLY. (ASME A17.1 2010, SECTION 2.8)
5. ELEVATOR THRESHOLD LIGHTING TO BE 10 FOOT-CANDLES MINIMUM. (ASME A17.1 2010, 2.11.10.2)
6. HOISTWAY MACHINE SPACE AND ELEVATOR PIT LIGHTING AND RECEPTACLES SHALL BE SERVED FROM SEPARATE BRANCH CIRCUITS. HOISTWAY MACHINE SPACE LIGHTING AND RECEPTACLES MUST BE SERVED FROM SEPARATE BRANCH CIRCUITS. THE ELEVATOR PIT RECEPTACLES AND LIGHTING CAN BE SERVED FROM THE SAME CIRCUIT AS LONG AS THE LIGHTING IS CONNECTED TO THE LINE SIDE AHEAD OF THE GFCI DEVICE (NEC 620.23, 630.24).
7. ELEVATOR EMERGENCY PHONE MUST BE MONITORED 24 HOURS A DAY BY AUTHORIZED PERSONAL, HAVE THE ABILITY TO BE CALLED REMOTELY, AND STAY OPERATIONAL DURING EMERGENCY CONDITIONS (ASME A17.1 2010 2.27.1.1.1–2.27.1.1.5).
8. REFER TO NEW WORK PLANS FOR ALL CIRCUITING, LIGHTING FIXTURE TYPES, AND LIGHTING FIXTURE QUANTITIES.

## KEYED NOTES:

1. DISCONNECT SWITCH OR ENCLOSED CIRCUIT BREAKER CAPABLE OF BEING LOCKED OFF FOR ELEVATOR CONTROLLER. GROUND CONDUCTOR TO BE SAME SIZE AS PHASE CONDUCTORS. COORDINATE EXACT MOUNTING LOCATION AND REQUIREMENTS WITH ELEVATOR CONTRACTOR.
2. PROVIDE 20A/1P ENCLOSED CIRCUIT BREAKER CAPABLE OF BEING LOCKED OFF FOR ELEVATOR CAB LIGHTING. COORDINATE EXACT MOUNTING LOCATION AND REQUIREMENTS WITH ELEVATOR CONTRACTOR.
3. PROVIDE 20A/1P ENCLOSED CIRCUIT BREAKER CAPABLE OF BEING LOCKED OFF FOR ELEVATOR AND AUXILIARY CONTROLS. COORDINATE EXACT MOUNTING LOCATION AND REQUIREMENTS WITH ELEVATOR CONTRACTOR.
4. PROVIDE FIRE ALARM SYSTEM COMPONENTS AS REQUIRED AND PROVIDE CONNECTIONS TO EACH TAMPER AND FLOW SWITCH PROVIDED WITH THE FIRE PROTECTION SYSTEM. COORDINATE EXACT LOCATIONS, QUANTITIES, AND REQUIREMENTS WITH FIRE SUPPRESSION CONTRACTOR.
5. PROVIDE REQUIRED CONDUIT, WIRING, AND CONNECTIONS BETWEEN SUMP PUMP CONTROL PANEL(S) AND SUMP PUMP(S). COORDINATE REQUIREMENTS WITH MECHANICAL TRADES AND SUMP PUMP MANUFACTURER.
6. THE LOBBY ELEVATOR SMOKE DETECTORS SHALL BE WITHIN 21' OF THE DOOR CENTERLINE. FOR LOBBIES WITH CEILINGS HIGHER THAN 15', THE SMOKE DETECTOR SHALL BE INSTALLED WITHIN 60" OF THE TOP OF THE ELEVATOR DOOR. (NFPA 72 2019 21.3.5)
7. COORDINATE GFCI RECEPTACLE, LIGHT SWITCH AND LIGHT FIXTURE PLACEMENT IN PIT/HOISTWAY WITH ELEVATOR MANUFACTURER DRAWINGS AND TRADES. LIGHT SWITCH TO BE LOCATED AT TOP OF LADDER. CIRCUIT GFCI RECEPTACLE AND LIGHT FIXTURE AS INDICATED ON PLAN.
8. FIRE ALARM CONTROL MODULES FOR ELEVATOR RECALL. REFER TO FIRE ALARM MATRIX FOR CONTROL MODULE FUNCTIONALITY. CONTROL MODULES TO BE LOCATED WITHIN 3' OF ELEVATOR CONTROLLER (NFPA 72 2019 21.2.4).
9. PROVIDE TELEPHONE LINE FOR ELEVATOR EMERGENCY PHONE. REFER TO SPECIFICATIONS FOR CABLE TYPE.
10. COORDINATE EXACT DESIGNATED AND ALTERNATE RECALL FLOOR WITH ARCHITECT AND ELEVATOR MANUFACTURER AND INSTALLER.




## DUCT TYPE DETECTOR INSTALLATION

**NO SCALE**

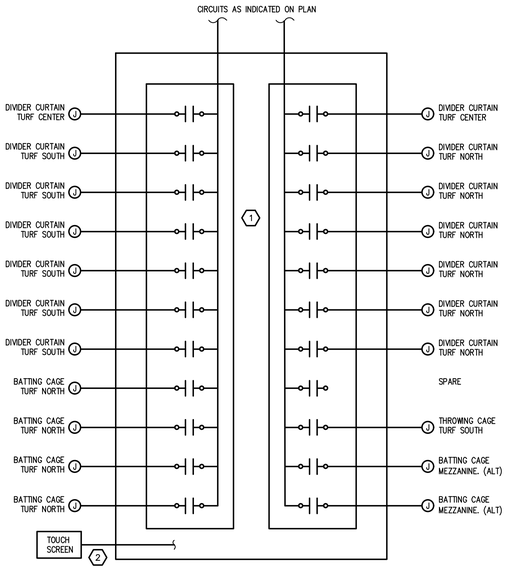
NOTES:

1. PROVIDE SAMPLING TUBE LENGTH AS REQUIRED FOR WIDTH OF DUCT.

| | | SYSTEM OUTPUTS | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ANNUNCIATION | | | | | | | | | | | NOTIFICATION | | | | | | FIRE SAFETY | | | | | | | | |
| | | INITIATE FIRE ALARM SIGNAL | INITIATE CARBON MONOXIDE ALARM SIGNAL | IDENTIFY ALARM AT FACP | IDENTIFY ALARM AT REMOTE ANNUNCIATOR(S) | ANNUNCIATE SUPERVISORY SIGNAL AT FACP | ANNUNCIATE SUPERVISORY SIGNAL AT REMOTE ANNUNCIATOR(S) | ANNUNCIATE TROUBLE SIGNAL AT FACP | ANNUNCIATE TROUBLE SIGNAL AT REMOTE ANNUNCIATOR(S) | ACTIVATE ELEVATOR LOBBY "FLASH HAT" WARNING | ACTIVATE IN ELEVATOR IN-CAR WARNING SIGNAL | DISPLAY ELEVATOR RECALL STATUS AT ANNUNCIATOR | OPERATE ALARM NOTIFICATION APPLIANCES CONTINUOUSLY | ACTIVATE VOICE/ALARM COMMUNICATION SYSTEM | TRANSMIT ALARM SIGNAL TO REMOTE ALARM RECEIVING STATION | TRANSMIT SUPERVISORY SIGNAL TO REMOTE ALARM RECEIVING STATION | TRANSMIT TROUBLE SIGNAL TO REMOTE ALARM RECEIVING STATION | RECORD EVENTS IN THE SYSTEM MEMORY | UNLOCK ELECTRIC DOOR LOCKS IN DESIGNATED EGRESS PATHS | DISABLE SOUND MASKING, PAGING, OR AUDIO SYSTEMS | CLOSE ACCESS CONTROLLED DOORS | TURN ON EGRESS LIGHTING TO FULL BRIGHTNESS | DISABLE AUTOMATIC DOORS | SHUTDOWN ASSOCIATED AIR DISTRIBUTION SYSTEM | CLOSE ASSOCIATED SMOKE DAMPER | RECALL ELEVATOR TO DESIGNATED RECALL LEVEL | RECALL ELEVATOR TO ALTERNATE RECALL LEVEL | ILLUMINATE HOISTWAY LIGHTING |
| SYSTEM INPUTS | INITIATION | MANUAL FIRE BOX OPERATION | ● | | ● | ● | | | | | | | | | ● | ● | | | | | ● | ● | | | | | | | |
| | | AREA SMOKE DETECTION | ● | | ● | ● | | | | | | | | | ● | ● | ● | | | | ● | ● | ● | | | | | | |
| | | HEAT DETECTOR OPERATION | ● | | ● | ● | | | | | | | | | ● | ● | ● | | | | ● | ● | ● | | | | | | |
| | | PROJECTED BEAM DETECTOR OPERATION | ● | | ● | ● | | | | | | | | | ● | ● | ● | | | | ● | ● | ● | | | | | | |
| | | SMOKE DETECTOR OPERATION AT SMOKE DAMPER | | | | | ● | ● | | | | | | | | | | ● | | | | | | | ● | | | | |
| | | SMOKE DETECTOR OPERATION AT/IN RETURN AND/OR SUPPLY DUCTWORK | | | | | ● | ● | | | | | | | | | | ● | | | | | | ● | | | | | |
| | | SMOKE DETECTOR OPERATION AT/IN COMMON RETURN AIR RISER | | | | | ● | ● | | | | | | | | | | ● | | | | | | ● | | | | | |
| | | FIRE SUPPRESSION SYSTEM WATER FLOW OPERATION | ● | | ● | ● | | | | | | | | | ● | ● | ● | | | | ● | ● | ● | | | | | | |
| | | SMOKE DETECTION IN ELEVATOR LOBBY – DESIGNATED RECALL LEVEL | ● | | ● | ● | | | | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | | ● | |
| | | SMOKE DETECTION IN ELEVATOR LOBBY – ALL OTHER LEVELS | ● | | ● | ● | | | | | | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | ● | | |
| | | SMOKE OR HEAT DETECTION IN ELEVATOR HOISTWAY | ● | | ● | ● | | | | | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | ● | | |
| | | FIRE SUPPRESSION SYSTEM WATER FLOW IN ELEVATOR HOISTWAY | ● | | ● | ● | | | | | ● | | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | ● | | |
| | | SMOKE OR HEAT DETECTION IN ELEVATOR MACHINE ROOM | ● | | ● | ● | | | | | ● | ● | ● | ● | ● | ● | ● | | | | ● | ● | ● | | | | ● | | |
| | EXTERNAL SYSTEM INPUT | FIRE SUPPRESSION SYSTEM VALVE TAMPER OPERATION | | | | | ● | ● | | | | | | | | | | ● | | ● | | | | | | | | | |
| | | DRY-PIPE FIRE SUPPRESSION SYSTEM LOW AIR PRESSURE SWITCH ACTIVATION | | | | | ● | ● | | | | | | | | | | ● | | ● | | | | | | | | | |
| | | PHASE II RECALL INITIATED BY ELEVATOR CONTROL SYSTEM | | | | | | | | | | | | | | | | | | | | | | | | | | | ● |
| | STATUS | OPEN CIRCUIT | | | | | | | ● | ● | | | | | | | | | ● | ● | | | | | | | | | |
| | | GROUND FAULT | | | | | | | ● | ● | | | | | | | | | ● | ● | | | | | | | | | |
| | | NOTIFICATION APPLIANCE CIRCUIT SHORT | | | | | | | ● | ● | | | | | | | | | ● | ● | | | | | | | | | |
| | | FACP AC POWER FAILURE | | | | | | | ● | ● | | | | | | | | | ● | ● | | | | | | | | | |
| | | FACP LOW SYSTEM BATTERY | | | | | | | ● | ● | | | | | | | | | ● | ● | | | | | | | | | |
| | | KNOX BOX OPEN | | | | | ● | ● | | | | | | | | | | ● | | ● | | | | | | | | | |

## FIRE ALARM MATRIX

**NO SCALE**

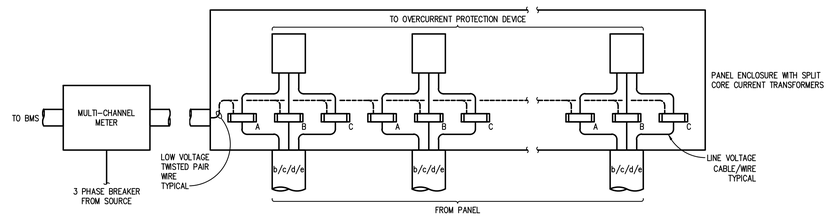



## TURF & MEZZANINE EQUIPMENT RELAY/CONTROLLER DETAIL

**NO SCALE**

NOTES:

1. COORDINATE FINAL RELAY CONFIGURATION WITH EQUIPMENT SUPPLIER. (1)
2. PROVIDE 1" C FROM CONTROL PANEL TO TOUCH SCREEN LOCATION. PROVIDE CAT 6 COMMUNICATION WIRE FROM TOUCH SCREEN LOCATION TO RELAY/CONTROLLER.




## FEEDER ELECTRICAL METERING DIAGRAM - INSIDE PANEL

**NO SCALE**

NOTES:

1. PROVIDE SPLIT CORE CURRENT TRANSFORMERS FOR EACH CATEGORY OF USE FOR EACH PHASE:
   a. TOTAL ELECTRICAL ENERGY/DEMAND
   b. HVAC SYSTEMS
   c. INTERIOR LIGHTING
   d. EXTERIOR LIGHTING
   e. RECEPTACLE CIRCUITS
2. EXACT LOCATION/SIZE OF WIREWAY TO BE DETERMINED BASED ON FINAL CONDUIT ROUTING.
3. CURRENT TRANSFORMERS ARE PERMITTED TO BE IN THE PANEL ENCLOSURE IF SUFFICIENT SPACE EXISTS.


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g:\2025\2025-0327-00\CAD\2025-0327-E7-DT.dwg, E7.3, 3/18/2026 10:58:25 AM, Tonya L. Cavanaugh, None .0.09448, Peter Basso Associates Inc.

## INTERIOR LIGHTING CONTROL SCHEDULE

| LIGHTING CONTROL DESIGNATION | ROOM TYPE | SYSTEM CONFIGURATION | | | | CONTROL | | SENSOR TYPE | TURN ON LIGHTING TO % | BI-LEVEL CONTROL | DAYLIGHT | | | NO DETECTION PARTIAL OFF | | NO DETECTION FULL OFF (MIN) | TIME-CLOCK SCHEDULE | | RECEPTACLE CONTROL | EMERGENCY LIGHTING CIRCUIT CONTROL | HVAC CONTROL | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TYPE | | SWITCH | CONTROL STATION DESIGNATION | ON | OFF | | | | SIDE LIGHT | TOP LIGHT | MAINTAIN FC LEVEL | REDUCE TO (%) | AT(MIN) | | ON | OFF | | | | |
| A | LOBBY (ALL OTHER LOBBIES) | WIRED | STANDALONE | ON-OFF | NA | MANUAL | SENSOR | DUAL TECHNOLOGY | FULL 100% | N/A | YES | N/A | MAINTAIN FC OUTSIDE DAYLIGHT ZONE | 50 | 20 | 20 | | | N/A | ALCR | YES | |
| B | CORRIDOR (ALL OTHER CORRIDORS) | WIRED | STANDALONE | ON-OFF | NA | SENSOR | SENSOR | DUAL TECHNOLOGY | FULL 100% | N/A | N/A | N/A | NA | 50 | 20 | 20 | | | N/A | ALCR | YES | |
| C | RESTROOM (ALL OTHER RESTROOMS) | WIRED | STANDALONE | ON-OFF | NA | SENSOR | SENSOR | ULTRASONIC | FULL 100% | N/A | N/A | N/A | NA | N/A | N/A | 20 | | | N/A | ALCR | YES | FOR ROOMS THAT HAVE ALL EMERGENCY FIXTURES PROVIDE BCELTS |
| D | CLASSROOM/LECTURE HALL/TRAINING ROOM (ALL OTHER CLASSROOMS/LECTURE HALLS/TRAINING ROOMS) | WIRED | STANDALONE | ON-OFF-DIM | NA | SENSOR | SENSOR | DUAL TECHNOLOGY | PARTIAL 50% | CONTINUOUS DIM | N/A | N/A | NA | N/A | N/A | 20 | | | OCCUPANCY SENSOR | ALCR | YES | |
| E | CONFERENCE/MEETING/MULTIPURPOSE ROOM | WIRED | STANDALONE | ON-OFF-DIM | NA | SENSOR | SENSOR | DUAL TECHNOLOGY | PARTIAL 50% | CONTINUOUS DIM | N/A | N/A | NA | N/A | N/A | 20 | | | OCCUPANCY SENSOR | ALCR | YES | |
| F | OFFICE (ENCLOSED AND ≤ 250 SQFT) | WIRED | STANDALONE | ON-OFF-DIM | NA | SENSOR | SENSOR | DUAL TECHNOLOGY | PARTIAL 50% | CONTINUOUS DIM | N/A | N/A | NA | N/A | N/A | 20 | | | OCCUPANCY SENSOR | ALCR | YES | |
| G | STORAGE ROOM (≥50 SQFT AND ≤ 1000 SQFT) | WIRED | STANDALONE | ON-OFF | NA | MANUAL | SENSOR | ULTRASONIC | FULL 100% | N/A | N/A | N/A | NA | N/A | N/A | 20 | | | N/A | ALCR | YES | |
| H | STORAGE ROOM (ALL OTHER STORAGE ROOMS) | WIRED | STANDALONE | ON-OFF | NA | MANUAL | SENSOR | ULTRASONIC | FULL 100% | N/A | N/A | N/A | NA | N/A | N/A | 20 | | | N/A | ALCR | YES | |
| I | ELECTRICAL/MECHANICAL ROOM | WIRED | STANDALONE | ON-OFF | NA | MANUAL | MANUAL | N/A | FULL 100% | N/A | N/A | N/A | NA | N/A | N/A | N/A | | | N/A | ALCR | YES | |
| J | STAIRWELL | WIRED | NETWORKED | ON-OFF (KEYED) | NA | SENSOR | SENSOR | ULTRASONIC | FULL 100% | CONTINUOUS DIM | N/A | N/A | NA | 50 | 20 | 20 | | | N/A | BCELTS | YES | |
| K | GYMNASIUM/FITNESS CENTER (IN A PLAYING AREA) | WIRED | NETWORKED | CONTROL STATION | CS1 | SENSOR | SENSOR | PASSIVE INFRARED | PARTIAL 50% | CONTINUOUS DIM | YES | N/A | MAINTAIN FC OUTSIDE DAYLIGHT ZONE | N/A | N/A | 20 | | | N/A | ALCR | YES | |

1 1 1 1

N/A = NOT APPLICABLE

NOTE:
1. REFER TO PLANS FOR LOCATION OF LOCAL CONTROL.
2. REFER TO PLANS FOR LIGHTING CONTROL ZONES.
3. REFER TO PLANS FOR PRIMARY AND SECONDARY DAYLIGHT ZONES.
4. PROVIDE EMERGENCY LIGHTING CIRCUIT CONTROL (BCELTS OR ALCR) PER SWITCHING CIRCUIT AS REQUIRED.
5. CONTRACTOR SHALL PROVIDE FLOOR PLAN INDICATING SENSOR AND EQUIPMENT LOCATIONS OF CHOSEN CONTROL SYSTEM.
6. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE CHARACTERISTICS.
7. LIGHTING SENSOR SHALL HAVE CONTACT FOR HVAC CONTROL WHEN A "YES" SELECTION IS MADE IN THE HVAC CONTROL COLUMN.
8. REFER TO TEMPERATURE CONTROL DRAWINGS AND DIAGRAMS FOR ADDITIONAL SENSOR REQUIREMENTS.
9. PROVIDE WIRING CONTROL DIAGRAM FOR APPLICABLE CONTROL SYSTEM(S).

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## EXTERIOR LIGHTING CONTROL SCHEDULE

| LIGHTING CONTROL DESIGNATION | EXTERIOR LOCATION | SYSTEM CONFIGURATION | | CONTROL | | PHOTOCELL LOCATION | NO ACTIVITY PARTIAL OFF | | NO DETECTION FULL OFF (MIN) | TIME-CLOCK / BMS SCHEDULE | | EMERGENCY LIGHTING CIRCUIT CONTROL | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | TYPE | | ON | OFF | | REDUCE TO (%) | AT(MIN) | | ON | OFF | | |
| EA | ENTRY CANOPY | WIRED | WIRED | PHOTOCELL AND BMS | PHOTOCELL AND BMS | CENTRAL | N/A | N/A | N/A | COORDINATE WITH OWNER | COORDINATE WITH OWNER | ALCR | |
| EB | BUILDING ENTRANCE / EGRESS | WIRED | WIRED | PHOTOCELL AND BMS | PHOTOCELL AND BMS | CENTRAL | N/A | N/A | N/A | COORDINATE WITH OWNER | COORDINATE WITH OWNER | BCELTS | |
| EC | BUILDING FAÇADE | WIRED | WIRED | PHOTOCELL AND BMS | PHOTOCELL AND BMS | CENTRAL | N/A | N/A | N/A | COORDINATE WITH OWNER | COORDINATE WITH OWNER | ALCR | |
| ED | PARKING AREA | WIRED | WIRED | PHOTOCELL AND BMS | PHOTOCELL AND BMS | CENTRAL | 50 | 20 | 40 | COORDINATE WITH OWNER | COORDINATE WITH OWNER | N/A | |

N/A = NOT APPLICABLE

NOTE:
1. PROVIDE EMERGENCY LIGHTING CIRCUIT CONTROL (BCELTS OR ALCR) PER SWITCHING CIRCUIT AS REQUIRED.
2. CONTRACTOR SHALL PROVIDE PLAN INDICATING SENSOR AND EQUIPMENT LOCATIONS OF CHOSEN CONTROL SYSTEM.
3. REFER TO LUMINAIRE SCHEDULE FOR FIXTURE CHARACTERISTICS.
4. PROVIDE WIRING CONTROL DIAGRAM FOR APPLICABLE CONTROL SYSTEM(S).

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## CONTROL STATION SCENE SCHEDULE

| TYPE | | LOCATION | ZONE DESCRIPTION | PRESET BUTTONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | ALL ON | MEZZANINE | FIELD 100% | NORTH FIELD 50% | SOUTH FIELD 50% | RAISE/LOWER | OFF |
| CS1 | BUTTON CONTROL | FIELD A120 & MEZZANINE A204 | A-MEZZANINE | 100% | 100% | 20% | 20% | 20% | | |
| | | | B-FIELD NORTH | | 20% | 100% | 50% | 20% | | OFF |
| | | | C-FIELD SOUTH | | 20% | 100% | 20% | 50% | | |

NOTE:
1. PERCENTAGES REPRESENT LIGHT OUTPUT, NOT RELATIVE DIMMING OF PRECEDING PRESET.
2. SET EXACT PERCENTAGES FOR EACH SCENE DURING INITIAL PROGRAMMING OF LIGHTING CONTROL SYSTEM.
3. LIGHTING LEVELS TO BE FIELD ADJUSTED BY ELECTRICAL ENGINEER WITH OWNER PRESENT.

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PBA Project No.: 2025.0327

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

LIGHTING CONTROL SCHEDULES AND DETAILS

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |

| | |
|---|---|
| DRAWN | STP |
| CHECKED | DMN |
| APPROVED | DMN |

PROJECT NO.
25026E

DRAWING NO.
E7.10

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## LUMINAIRE SCHEDULE

| TYPE | DESCRIPTION | MANUFACTURER(S) | WATTAGE | VOLTAGE | LIGHT CHARACTERISTICS | REMARKS |
|---|---|---|---|---|---|---|
| L1 | 8' LINEAR SUSPENDED DIRECT LED FIXTURE:<br>ALUMINUM HOUSING WITH DIE CAST ENDS. (1)<br>100% DOWN LIGHT, WIDESPREAD OPTIC, ADJUSTABLE AIR GAP T<br>CABLE MOUNTING, STRAIGHT POWER FEED CORD.<br>0-10 VOLT 10% DIMMING.<br>FINISH BY ARCHITECT.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE AUTOMATIC LOAD CONTROL RELAY. | 1.CORONET, LS3 LED SERIES<br>2.AXIS LIGHTING BEAM 2 SERIES<br>3.FOCAL POINT SEAM 2 SERIES | 7.5 W/FT | MULTI | 5000K, 90CRI, 800 LM/FT | |
| L2 | 2'X2' RECESSED FLAT PANEL LIGHT FIXTURE:<br>ALUMINUM BEZEL, STEEL BACKING AND WHITE FROST ACRYLIC DIFFUSER. 0-10V 10% DIMMING.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE AUTOMATIC LOAD CONTROL RELAY | 1. LITHONIA CPX SERIES<br>2. METALUX CGTX SERIES<br>3. COLUMBIA CBT SERIES | 36.3 | MULTI | 5000K , 80CRI , 4000L | |
| L3 | 2X4' RECESSED LED FLAT PANEL LIGHT FIXTURE :<br>ALUMINUM BEZEL, STEEL BACKING AND WHITE FROST ACRYLIC DIFFUSER. 0-10V 10% DIMMING | 1. LITHONIA CPX SERIES<br>2. METALUX CGTX SERIES<br>3. COLUMBIA CBT SERIES | 36.7 | MULTI | 5000K , 80CRI , 4000L | |
| L4 | 2X4' LED RECESSED LIGHT TROFFER LIGHT FIXTURE:<br>VANDAL RESISTANCE, DAMP LOCATION. ACRYLIC FROSTED LENS WITH 1/8" POLYCARBONATE CLEAR LENSE.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE AUTOMATIC LOAD CONTROL RELAY | 1.LUMINAIRE LED VRP SERIES<br>2.FAILSAFE GRW//GRV SERIES<br>3.VRUI -CERTOLUS SERIES | 30.8 | MULTI | 5000K,80CRI, 4000L | |
| L5 | 2X2' LED RECESSED TROFFER LIGHT FIXTURE:<br>VANDAL RESISTANCE, DAMP LOCATION. ACRYLIC FROSTED LENS WITH 1/8" POLYCARBONATE CLEAR LENSE.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE BCELT BRANCH CIRCUIT EMERGENCY LIGHT TRANSFER SWITCH (BCELTS). | 1.LUMINAIRE LED VRP SERIES<br>2.FAILSAFE GRW//GRV SERIES<br>3.VRUI -CERTOLUS SERIES | 32.9 | MULTI | 5000K, 80CRI , 4000L | |
| L6 | 4'-0" CHAIN HUNG LED STRIPLIGHT FIXTURE:<br>MOUNTING AS DESIGNATED ON PLANS. WHITE COLOR, FROSTED LENS WITH WIREGUARD. LOCATE FIXTURES TO AVOID MECHANICAL EQUIPMENT.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE AUTOMATIC LOAD CONTROL RELAY | 1. METALUX SNX LENSED SERIES<br>2. LITHONIA CLX SERIES<br>3. COLUMBIA LCL LED SERIES | 31.8 | MULTI | 5000K , 80CRI , 5000L | |
| L7 | 8' WALL MOUNTED VANDAL RESISTANT FIXTURE:<br>EXTRUDED ALUMINUM SMOOTH WHITE FINISH, FLAT END CAPS ONE PIECE EXTRUDED UV STABILIZED POLYCARBONATE LENS WITH LIFETIME WARRANTY.<br>0-10V 10% DIMMING (1)<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE BCELT BRANCH CIRCUIT EMERGENCY LIGHT TRANSFER SWITCH (BCELTS). | 1.KENALL MLHA8 SERIES<br>2. FAIL-SAFE HVL8 LED SERIES<br>3. NEWSTAR VICTORY NARROW SERIES | 67W | MULTI | 5000K , 80CRI , 6700L | |
| L8 | 4" ROUND RECESSED LED DOWNLIGHT RECESSED FIXTURE:<br>WITH VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED WHITE TRIM RING WITH SEMI-SPECULAR REFLECTOR, DIFFUSED LENS, WIDE DISTRIBUTION.<br>0-10 VOLT 10% DIMMING. | 1. GOTHAM IVO4" SERIES<br>2. MAXILUME HH4 LED SERIES<br>3.PORTFOLIO LD4C SERIES | 5W | MULTI | 5000K, 80CR I, 500L | |
| L9 | 4" ROUND RECESSED LED DOWNLIGHT RECESSED FIXTURE:<br>WITH VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED WHITE TRIM RING WITH SEMI-SPECULAR REFLECTOR, DIFFUSED LENS, WIDE DISTRIBUTION.<br>0-10 VOLT 10% DIMMING. | 1. GOTHAM IVO4" SERIES<br>2. MAXILUME HH4 LED SERIES<br>3.PORTFOLIO LD4C SERIES | 15W | MULTI | 5000K, 80CRI, 1500L | |
| L10 | 4" ROUND PENDANT LED DOWNLIGHT FIXTURE:<br>WITH VENTILATED DIE CAST ALUMINUM HEAT SINK, PENDANT MOUNT, STANDARD CYLINDER, WALL WASH FUNCTION , WITH SEMI-SPECULAR REFLECTOR, LENSED WASH DISTRIBUTION. ADJUSTABLE CORD, 0-10 VOLT 10% DIMMING.<br>COLOR AND FINISH BY ARCHITECT | 1. GOTHAM IVO4CYL SERIES<br>2. CORONET DROP WIDE 4.0 DIRECT<br>3. PRESCOLITE LTC-4RDW SERIES | 20W | MULTI | 5000K , 80CR I, 2000L | |
| L11 | 4' LINEAR SURFACE MOUNTED LED FIXTURE:<br>WALL MOUNTD IN ELEVATOR PIT, VAPOR TIGH, RATED FOR WET LOCATION. | 1.LITHONIA LIGHTING , CSVT SERIES<br>2.METALUX APVT SERIES<br>3.COLUMBIA CVT-LSCS SERIES | 49 | MULTI | 5000K , 80CRI , 6000L | |
| L12 | (2)FIELD LIGHT ,LED SPORTS LIGHTING FIXTURE:<br>HIGH-EFFICIENCY CHIP-ON-BOARD LED WIRED AND BONDED DIRECTLY TO CIRCUIT BOARD; SELF-SEALING OPTICAL ASSEMBLY; 0-10V DIM-TO-OFF MODE; INTEGRAL SURGE PROTECTION FOR DRIVERS; ALUMINUM CHASIS WITH ANODIZED HEAT SINK AND THERMALLY ISOLATED LED MODULES; ANODIZED LIGHT ENGINE PLATE AND HEAT SINKS; STAINLESS STEEL HARDWARE AND T-ARM FOR MOUNTING TO STRUCTURAL COLUMNS; DRIVER COMPONENTS FULLY ENCASED IN POTTING MATERIAL; ALUMINUM NEMA 3R REMOTE LED DRIVER CABINETS WITH STAINLESS STEEL HARDWARE.<br>MANUFACTURER TO PROVIDE LAYOUT DRAWINGS WITH FIXTURE QUANTITIES TO MEET 50FC AVERAGE (NORMAL); 1FC MINIMUM AND 40FC MAX/MIN (EMERGENCY).<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE DEDICATED REMOTE DRIVER CABINET.<br>FINISH SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURERS STANDARD COLORS. | MUSCO LIGHTING-TLC-ELD-1500 LUMINAIRE AND DRIVER | 1410 | 480 | 5700K, 70 CRI,150000L | |
| L13 | (2)FIELD LIGHT ,LED SPORTS LIGHTING FIXTURE:<br>HIGH-EFFICIENCY CHIP-ON-BOARD LED WIRED AND BONDED DIRECTLY TO CIRCUIT BOARD; SELF-SEALING OPTICAL ASSEMBLY; 0-10V DIM-TO-OFF MODE; INTEGRAL SURGE PROTECTION FOR DRIVERS; ALUMINUM CHASIS WITH ANODIZED HEAT SINK AND THERMALLY ISOLATED LED MODULES; ANODIZED LIGHT ENGINE PLATE AND HEAT SINKS; STAINLESS STEEL HARDWARE AND T-ARM FOR MOUNTING TO STRUCTURAL COLUMNS; DRIVER COMPONENTS FULLY ENCASED IN POTTING MATERIAL; ALUMINUM NEMA 3R REMOTE LED DRIVER CABINETS WITH STAINLESS STEEL HARDWARE.<br>MANUFACTURER TO PROVIDE LAYOUT DRAWINGS WITH FIXTURE QUANTITIES TO MEET 50FC AVERAGE (NORMAL); 1FC MINIMUM AND 40FC MAX/MIN (EMERGENCY).<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE DEDICATED REMOTE DRIVER CABINET.<br>FINISH SHALL BE SELECTED BY ARCHITECT FROM MANUFACTURERS STANDARD COLORS. | MUSCO LIGHTING-TLC-ELD-1200 LUMINAIRE AND DRIVER | 1170 | 480 | 5700K, 70 CRI,120000L | |

## LUMINAIRE SCHEDULE

| TYPE | DESCRIPTION | MANUFACTURER(S) | WATTAGE | VOLTAGE | LIGHT CHARACTERISTICS | REMARKS |
|---|---|---|---|---|---|---|
| OL1 | EXTERIOR LED ARCHITECTURAL WALL PACK LIGHT FIXTURE:<br>DIE CAST ALUMINUM HOUSING WITH INTEGRATED HEAT SINKS FULLY GASKETED, IP66 RATING, P2 PACKAGE, VISUAL COMFORT DISTRIBUTION. DUAL SWITCHING OPTION.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN PROVIDE BCELT BRANCH CIRCUIT EMERGENCY LIGHT TRANSFER SWITCH (BCELTS). | 1.LITHONIA WDGE1 LED WALL SCONCE<br>2.RAYON "T631 LED" SERIES<br>3.PERFORMANCE IN LIGHTING "SHIELD+ 2" SERIES | 15W | MULTI | 5000K , 80CRI , 2000 L | |
| OL2 | 4" ROUND RECESSED LED VANDAL RESISTANT LED ROUND DOWNLIGHT:<br>LED WITH VENTILATED DIE CAST ALUMINUM HEAT SINK, DIE CAST ALUMINUM BEZEL, TAMPER RESISTANT TORX SCREWS, FULLY SEALED AND GASKETED, SELF FLANGED WHITE TRIM RING WITH CLEAR POLYCARBONATE LENS, WIDE DISTRIBUTION. IP 65 RATED. UL LISTED FOR WET LOCATIONS.<br>FOR FIXTURES INDICATED AS EMERGENCY ON PLAN, PROVIDE AUTOMATIC LOAD CONTROL RELAY. | 1.GOTHAM , IVO VR SERIES<br>2.FAILSAFE FLD4C SERIES<br>3.MAXILUME HL4-IP-VR-LED SERIES | 24.7W | MULTI | 5000K, 80CRI ,2500L | |
| OL3 | LED POLE MOUNTED SITE LIGHTING FIXTURE:<br>POLE TOP CONFIGURATION AS SHOWN ON PLAN. TYPE (3) DISTRIBUTION. FULLY GASKETED ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT ELECTRONIC LED DRIVER THAT IS U.L. LISTED FOR WET LOCATIONS.<br>POLE SHALL HAVE APPROPRIATE MOUNTING BRACKETS WITH CONFIGURATION AS SHOWN ON PLAN, 30'-0" TALL (5") SQUARE, STEEL STRAIGHT, POWDER COAT FINISH WITH SQUARE BOLT COVER AND HAND HOLE. COLOR SHALL MATCH FIXTURE.<br>FINISH BY ARCHITECT | 1. LITHONIA D SERIES SIZE 1<br>2.COOPER GALLEON 2 SERIES<br>3.NLS NV-1 SERIES | 125 | MULTI | 5000K, 80CRI , 16,345L | |
| OL4 | LED POLE MOUNTED SITE LIGHTING FIXTURE:<br>POLE TOP CONFIGURATION AS SHOWN ON PLAN. TYPE (5) DISTRIBUTION. FULLY GASKETED ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT ELECTRONIC LED DRIVER THAT IS U.L. LISTED FOR WET LOCATIONS.<br>POLE SHALL HAVE APPROPRIATE MOUNTING BRACKETS WITH CONFIGURATION AS SHOWN ON PLAN, 30'-0" TALL (5") SQUARE STEEL STRAIGHT, POWDER COAT FINISH WITH SQUARE BOLT COVER AND HAND HOLE. COLOR SHALL MATCH FIXTURE.<br>FINISH BY ARCHITECT | 1.LITHONIA D SERIES SIZE 1<br>2.COOPER GALLEON 2 SERIES<br>3.NLS NV-1 SERIES | 68 | MULTI | 5000K , 80CRI , 9,953L | |
| OL5 | LED POLE MOUNTED SITE LIGHTING FIXTURE:<br>POLE TOP CONFIGURATION AS SHOWN ON PLAN. TYPE (5) DISTRIBUTION. FULLY GASKETED ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT ELECTRONIC LED DRIVER THAT IS U.L. LISTED FOR WET LOCATIONS.<br>POLE SHALL HAVE APPROPRIATE MOUNTING BRACKETS WITH CONFIGURATION AS SHOWN ON PLAN, 12'-0" TALL (4") SQUARE STEEL STRAIGHT, POWDER COAT FINISH WITH SQUARE BOLT COVER AND HAND HOLE. COLOR SHALL MATCH FIXTURE.<br>FINISH BY ARCHITECT | 1. LITHONIA D SERIES SIZE 1<br>2.COOPER GALLEON 2 SERIES<br>3.NLS NV-1 SERIES | 68 | MULTI | 5000K, 80CRI , 10,562L | |
| OL6 | LED POLE MOUNTED SITE LIGHTING FIXTURE:<br>POLE TOP CONFIGURATION AS SHOWN ON PLAN. TYPE (4) DISTRIBUTION. FULLY GASKETED ALUMINUM HOUSING WITH INTEGRAL WEATHER TIGHT ELECTRONIC LED DRIVER THAT IS U.L. LISTED FOR WET LOCATIONS.<br>POLE SHALL HAVE APPROPRIATE MOUNTING BRACKETS WITH CONFIGURATION AS SHOWN ON PLAN, 12'-0" TALL (4") SQUARE STEEL STRAIGHT, POWDER COAT FINISH WITH SQUARE BOLT COVER AND HAND HOLE. COLOR SHALL MATCH FIXTURE.<br>FINISH BY ARCHITECT | 1. LITHONIA D SERIES SIZE 1<br>2.COOPER GALLEON 2 SERIES<br>3.NLS NV-1 SERIES | 68 | MULTI | 5000K, 80CRI,, 9,187L | |
| EBU | LED EMERGENCY LIGHT:<br>IMPACT RESISTANT THERMOPLASTIC HOUSING , SELF CONTAINED SEALED, MAINTANANCE FREE BATTERY WITH 90 MINS BACKUP AND INTEGRAL TEST SWITCH. | 1. LITHONIA EU2C SERIES<br>2.ISOLITE BUG SERIES<br>3.DUAL- LITE EVHC SERIES | 1.8 | MULTI | (2)LED HEADS | |
| X | LED EXIT LIGHT:<br>QUANTUM LED THERMOPLASTIC SIGN ALUMINUM HOUSING, HIGH OUTPUT LED DIFFUSE LIGHT PANEL, SINGLE STENCIL BRUSHED ALUMINUM FACE WITH RED LETTERS, PROVIDE DOUBLE FACED WHERE INDICATED ON PLAN. REFER TO PLANS FOR MOUNTING TYPES AND DIRECTIONAL ARROWS. | 1.EVENLITE TELESIS TLX SERIES<br>2.COMPASS CE SERIES<br>3.SURE LITES-LPX SERIES | 5 | MULTI | HIGH OUTPUT LED LIGHT PANEL | |

GENERAL NOTES:

1. REFER TO ARCHITECTUREAL FOR CEILING TYPES.
2. WATTAGE LISTED IS FROM THE BASIS OF DESIGN MANUFACTURER.
3. FINISH TO BE APPROVED BY INTERIOR DESIGNER, ARCHITECT OR CLIENT.
4. ALL LUMINAIRES TO BE AS SPECIFIED OR EQUAL APPROVED BY PBA AND/OR ILLUMINART PRIOR TO BIDS.

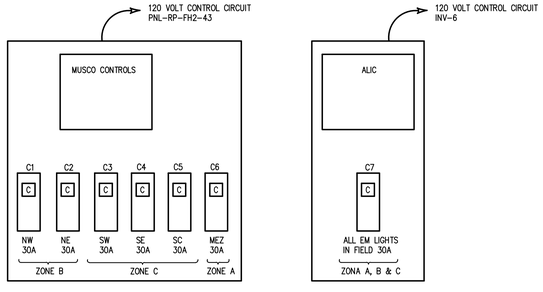
## CONTACTOR SCHEDULE

| POLE | CIRCUIT | CONTACTOR SIZE | CONTACTOR ID |
|---|---|---|---|
| FIELD -NW | 20A-3P CIRCUIT BREAKER | 30A | C1 |
| FIELD -NE | 20A-3P CIRCUIT BREAKER | 30A | C2 |
| FIELD -SW | 20A-3P CIRCUIT BREAKER | 30A | C3 |
| FIELD -SE | 20A-3P CIRCUIT BREAKER | 30A | C4 |
| FIELD -SC | 20A-3P CIRCUIT BREAKER | 30A | C5 |
| FIELD -MEZ | 20A-3P CIRCUIT BREAKER | 30A | C6 |
| FIELD -EM | 20A-3P CIRCUIT BREAKER | 30A | C7 |

## FIELDHOUSE LIGHTING CONTROLLER DETAIL

NO SCALE

NOTE: PROVIDE MUSCO "CONTROL LINK" WIRELESS REMOTE CONTROLS AND MUSCO'S 25 YEAR WARRANTY AND MAINTENANCE PROGRAM.








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PBA Project No.: 2025.0327


PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

LUMINAIRE SCHEDULES AND DETAILS

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM NO. 1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-2026 | OWNER REVIEW |
| 01-23-2026 | 90% CONSTRUCTION DOCUMENTS |
| 12-19-2025 | DESIGN DEVELOPMENT |

DATE: ISSUED FOR:

| | |
|---|---|
| DRAWN | STP |
| CHECKED | DMN |
| APPROVED | DMN |

PROJECT NO.

25026E

DRAWING NO.

E7.11


g:\2025\2025-0327-00\CAD\2025-0327-E7-SH.dwg, E7.11, 3/18/2026 10:58:38 AM, Tonya L. Cavanaugh, None .0,09448, Peter Basso Associates Inc.

## COMMUNICATION SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| 1 | THIS SYMBOL WITH A NUMBER INSIDE REFERS TO KEYNOTES. REFER TO NOTES ON THE SHEET OR WITHIN THE DETAIL FOR ADDITIONAL INFORMATION |
| A | EQUIPMENT SCHEDULE. THIS SYMBOL WITH LETTERS INSIDE REFERS EQUIPMENT SCHEDULES, SEE DETAILS AND EQUIPMENT SCHEDULES ON TC101, TC301, TC501 AND TC701. |
| 1 | CABLE SCHEDULE. THIS SYMBOL WITH NUMBERS INSIDE REFERS EQUIPMENT SCHEDULES, SEE DETAILS AND EQUIPMENT SCHEDULES ON TC101, TC301, TC501 AND TC701. |
| 1 XXXX | DATA COMMUNICATIONS OUTLET CONNECTIVITY CODE. X IS A 1 THRU 99. SEE TC1XX SHEETS FOR SPECIFIC REQUIREMENTS. XXXX NOTES THAT THE CABLE IS FOR A SPECIFIC USE |
| 1 12:08 | SINGLE SIDED DIGITAL CLOCK. SEE CONNECTIVITY CODE FOR CLOCK TYPE. MAY BE LARGE CLOCKS WITH 4" TALL DIGITS AND 6 DIGITS TO INCLUDE SECONDS. SEE DRAWINGS |

## ABBREVIATIONS

| ABBREV. | DESCRIPTION | ABBREV. | DESCRIPTION |
|---|---|---|---|
| 2G | TWO-GANG BOX - PROVIDED BY EC | NIC | NOT IN CONTRACT |
| AC | ABOVE COUNTER - INSTALL BACKBOX SAME HEIGHT AS OTHER ELECTRICAL OUTLETS ABOVE THE COUNTER. | PBO | PROVIDED BY OTHERS |
| AFF | ABOVE FINISHED FLOOR | PCO-1 | PATCH CORD ORGANIZER - 1 UNIT HIGH |
| AFG | ABOVE FINISHED GROUND | PCO-2 | PATCH CORD ORGANIZER - 2 UNITS HIGH |
| AWG | AMERICAN WIRE GAUGE | PET | PROTECTED ENTRANCE TERMINAL |
| EMT | EMT TYPE CONDUIT | QTY | QUANTITY |
| EC | ELECTRICAL CONTRACTOR | | |

## COMMUNICATION EQUIPMENT SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| A | 4-POST ADJUSTABLE RACK. TAPPED SCREW HOLES. EQUIP WITH TWO 6" VERTICAL ORGANIZERS. SHALL HAVE STANDARD SCREW HOLES FOR MOUNTING 19" RACK COMPONENTS. EQUIP WITH CABLE LADDER AS PER SPECS AND DETAILS. | ORTRONICS | 19-84-T4SDA2132 |
| B | POWER STRIP, VERTICAL, FOR BACK OF EACH RACK. SALL HAVE (14) NEMA 5-15/20R RECEPTACLES. PLUG INTO WALL OUTLET. SHALL HAVE L5-20P PLUG AND 15' CORD.ATTACH TO THE RACK OR VERTICAL CABLE LADDER OF EACH RACK. | EATON | PDUMV20-36 |
| C | VERTICAL ORGANIZER, 6" WIDE, MOUNT TO SIDE OF RACKS AND IN BETWEEN RACKS WHEN THERE ARE MULTIPLE RACKS IN A ROW | RXL | 3326-BK06 |
| D | TELECOMMUNICATIONS GROUND BAR (TGB). 1/4"x4"x10" EQUIPPED WITH INSULATED STAND-OFFS. | HUBBELL | HBBB14210A |
| E | SINGLE RACK UNIT PATCH CORD ORGANIZER (PCO-1) WITH HINGED COVER. | HUBBELL | HS13C |
| F | PATCH PANEL-24 PORT, EQUIPPED WITH 8-PIN MODULAR JACKS TO MATCH THE CABLE COLOR AND CABLE TYPE BEING TERMINATED. PROVIDE ONE MODULAR JACK FOR EACH CABLE BEING TERMINATED. SEE SPEC AND DRAWINGS FOR COLORS. EQUIP WITH REAR CABLE ORGANIZER | HUBBELL | PANEL:HPJ24 ORGANIZER:ECMBR3 |
| G | RACK MOUNT FIBER PANEL. USE WHEN TERMINATING 24 OR LESS FIBER STRANDS. PROVIDE EACH FIBER PANEL WITH "SC" SIX OR 12 PACKS AS REQUIRED FOR TERMINATION OF ALL FIBERS. PROVIDE SPLICE TRAY AND SHELF FOR FUSION SPLICES TO PIGTAILS. | HUBBELL | FPR3SP |
| H | FIBER OPTIC CABLE STOWAGE RING. WALL MOUNTED. 12" OR 24". PROVIDE AND INSTALL TO SUPPORT BEND RADIUS REQUIREMENTS OF THE FIBER CABLE' | LEVITON | 12" #48900-IFR / 24" #48900-OFR |
| J | RACK MOUNT SHELF. MESH BASE WITH 14" DEPTH MINIMUM | MIDDLE ATLANTIC | UFA-14.5 |

## CABLE SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| 1 | CAT-6 UTP CABLES FOR DATA COMMUNICATIONS SHALL BE BLUE IN COLOR | MOHAWK | M58281 |
| 2 | CAT-6 UTP CABLES FOR SECURITY CAMERAS SHALL BE GREEN IN COLOR | MOHAWK | M58286 |
| 3 | CAT-6A UTP CABLES FOR WIRELESS ACCESS POINTS SHALL BE YELLOW IN COLOR | MOHAWK | M59148 |
| 4 | CAT-6 UTP CABLES FOR INTERCOMS SHALL BE PURPLE IN COLOR | MOHAWK | M58290 |
| 5 | LONG-DISTANCE UTP CABLE. PLENUM RATED | PAIGE | SEE SPECS |
| 6 | CAT-6 UTP CABLES FOR CLOCK/PAGING CONNECTIVITY SHALL BE BROWN IN COLOR | MOHAWK | M58756 |
| 7 | 24 STRAND SINGLEMODE, INDOOR/OUTDOOR FIBER CABLE, PLENUM RATED | OCC | DZ024TSLA9YP |
| 8 | CAT-6 OUTDOOR RATED, SHIELDED CABLE | BELDEN | OSP6F |

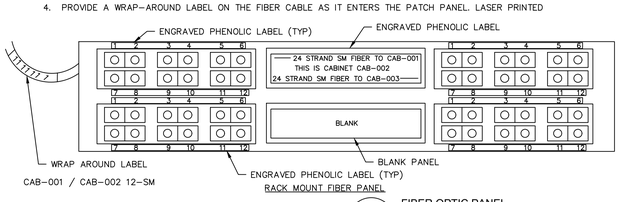
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## IP CLOCK EQUIPMENT SCHEDULE

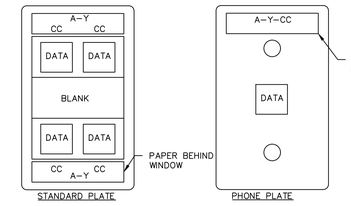
| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| TA | DIGITAL CLOCK, 2.5" RED DIGITS, WALL MOUNT. | SAPLING | SBP-31S-254-OG |
| TB | DIGITAL, "LARGE CLOCK", 4" RED DIGITS, 6 DIGITS WITH SECONDS WALL MOUNT. | SAPLING | SBP-31S-406-OG |

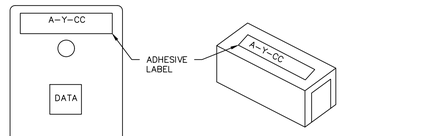
NOTES

1. THE FIBER PANELS AT THE RACK AND AT THE EXTERIOR CABINETS SHALL BE LABELED TO IDENTIFY THE FIBER.
2. LABELS IDENTIFYING THE FIBER CABLES SHALL BE ENGRAVED LABELS WITH BLACK BACKGROUND AND WHITE LETTERS.
3. SIZE THE LABELS TO MATCH THE SIZE OF THE PANEL. PROVIDE A SAMPLE TO THE OWNER AND ENGINEER PRIOR TO PURCHASING.
4. PROVIDE A WRAP-AROUND LABEL ON THE FIBER CABLE AS IT ENTERS THE PATCH PANEL. LASER PRINTED




4 TC103 FIBER OPTIC PANEL LABELING DETAIL — NOT TO SCALE

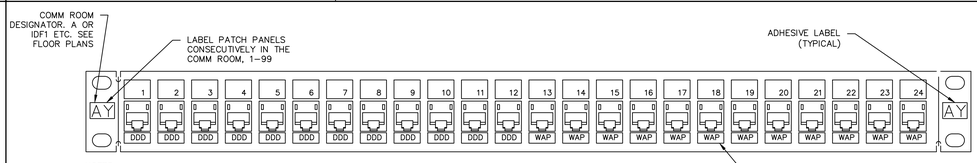



NOTES:
1. INSTALL A PAPER LABEL BEHIND THE PLASTIC WINDOW IN STANDARD PLATES THAT ARE EQUIPPED WITH THE WINDOWS.
2. PROVIDE ADHESIVE LABELS ON WALL PHONE PLATES & SURFACE MOUNT OUTLETS & PLATES WITHOUT LABELING WINDOWS.

DATA CABLE LABEL:
A = COMMUNICATIONS ROOM, A, B, ETC.
Y = PATCH PANEL IN THAT RACK OR CABINET 1-X
CC = PORT ON THAT PANEL FROM 01-24

1 TC101 TYPICAL FACEPLATE LABELING




NOTES:
1. INSTALL A LABEL TO EACH PATCH PANEL DETAILING THE COMM ROOM NUMBER AND PATCH PANEL NUMBER. EACH PANEL IS PRE-NUMBERED 01-24 ON EACH PANEL.
2. ALL LABELS ADDED TO THE PANEL SHALL BE LASER PRINTED AND CUT TO FIT. ALL NUMBERS SHALL EXACTLY ALIGN WITH THE LOCATION ON THE PATCH PANEL.
3. IF THE PANEL IS NOT PRE-LABELED 01-24 THEN THE CONTRACTOR SHALL INSTALL A LABEL FOR EACH PORT.
4. THE CABLES SHALL BE TERMINATED ON THE PATCH PANEL IN NUMERICAL ORDER. NO EXCEPTIONS.
5. ADD LABELS FOR CAMERA NUMBERS OR WAP NUMBERS DEPENDING UPON PATCH PANEL. SEE RACK LAYOUTS TO DETERMINE IF CAMERA AND WAP CABLES WILL BE ON SEPARATE OR SHARED PATCHPANELS

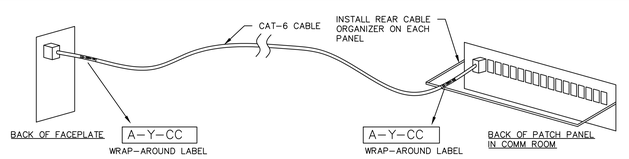
DATA CABLE LABELING A-Y-CC

A = COMMUNICATIONS ROOM NUMBER. A, B OR C ETC.
Y = PATCH PANEL IN THAT COMMUNICATIONS ROOM
CC = PORT NUMBER ON PATCH PANEL 1-24.

DDD = CAMERA NUMBER. MEET WITH OWNER AND SECURITY CONTRACTOR TO OBTAIN THIS NUMBER

WAP = WAP NUMBER. MEET WITH OWNER TO OBTAIN THIS NUMBER

5 TC101 CAMERA OR WIRELESS PANEL LABELING

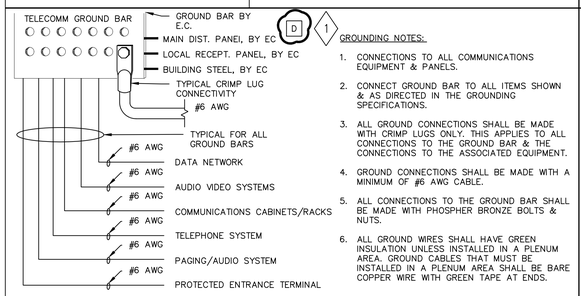



NOTES:
1. INSTALL A WRAP-AROUND LABEL AT EACH END OF EACH CABLE.
2. WRAP-AROUND LABELS SHALL BE LASER-PRINTED AND SHALL BE SELF-LAMINATING.

CABLE LABEL:

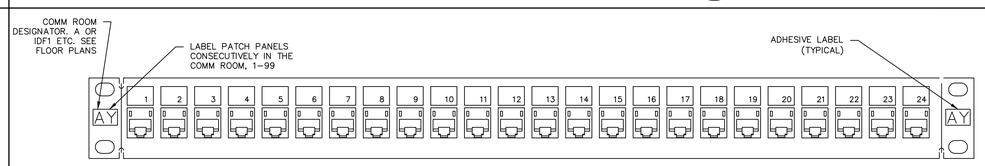
A = COMMUNICATIONS ROOM NUMBER. A, B OR C ETC.
Y = PATCH PANEL IN THAT COMMUNICATIONS ROOM
CC = PORT NUMBER ON PATCH PANEL 0-24.
DDD = CAMERA OR WAP NUMBER

2 TC101 TYPICAL CABLE LABELING AT FACEPLATE & PATCH PANEL




GROUNDING NOTES:
1. CONNECTIONS TO ALL COMMUNICATIONS EQUIPMENT & PANELS.
2. CONNECT GROUND BAR TO ALL ITEMS SHOWN & AS DIRECTED IN THE GROUNDING SPECIFICATIONS.
3. ALL GROUND CONNECTIONS SHALL BE MADE WITH CRIMP LUGS ONLY. THIS APPLIES TO ALL CONNECTIONS TO THE GROUND BAR & THE CONNECTIONS TO THE ASSOCIATED EQUIPMENT.
4. GROUND CONNECTIONS SHALL BE MADE WITH A MINIMUM OF #6 AWG CABLE.
5. ALL CONNECTIONS TO THE GROUND BAR SHALL BE MADE WITH PHOSPHER BRONZE BOLTS & NUTS.
6. ALL GROUND WIRES SHALL HAVE GREEN INSULATION UNLESS INSTALLED IN A PLENUM AREA. GROUND CABLES THAT MUST BE INSTALLED IN A PLENUM AREA SHALL BE BARE COPPER WIRE WITH GREEN TAPE AT ENDS.

7 TC101 COMMUNICATIONS GROUNDING DETAIL

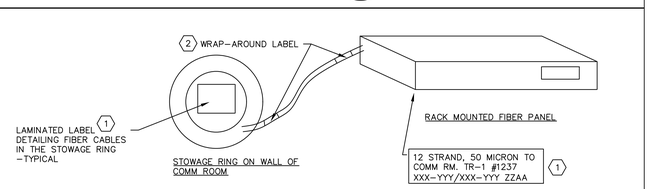



NOTES:
1. INSTALL A LABEL TO EACH PATCH PANEL DETAILING THE COMM ROOM NUMBER AND PATCH PANEL NUMBER. EACH PANEL IS PRE-NUMBERED 01-24 ON EACH PANEL.
2. ALL LABELS ADDED TO THE PANEL SHALL BE LASER PRINTED AND CUT TO FIT. ALL NUMBERS SHALL EXACTLY ALIGN WITH THE LOCATION ON THE PATCH PANEL.
3. IF THE PANEL IS NOT PRE-LABELED 01-24 THEN THE CONTRACTOR SHALL INSTALL A LABEL FOR EACH PORT.
4. INDIVIDUAL CABLES AT A SINGLE FACEPLATE SHALL BE LABELED IN SEQUENCE AS PER THE PATCH PANEL.
5. THE CABLES SHALL BE TERMINATED ON THE PATCH PANEL IN NUMERICAL ORDER. NO EXCEPTIONS.

DATA CABLE LABELING A-Y-CC

A = COMMUNICATIONS ROOM NUMBER. A, B OR C ETC.
Y = PATCH PANEL IN THAT COMMUNICATIONS ROOM
CC = PORT NUMBER ON PATCH PANEL 0-24.

6 TC101 CAT-6 DATA PANEL LABELING




KEYED NOTES:
1. PROVIDE ADHESIVE LABEL ON FRONT OF EACH FIBER PANEL FOR LABELING THE FIBER CABLES
2. INSTALL SELF-LAMINATING, WRAP-AROUND LABELS AT FIBER PANEL AND STOWAGE RING.

XXX-YYY/XXX-YYY ZZAA
WRAP-AROUND LABEL
XXX = CABINET OR BUILDING. CAB/ADM IN EXAMPLE
YYY = CABINET NUMBER OR BUILDING ROOM #
ZZ = FIBER STRAND COUNT
AA = MULTIMODE MM OR SINGLEMODE SM

3 TC101 FIBER OPTIC CABLE LABELING


TMP ARCHITECTURE

TMP ARCHITECTURE INC
1191 WEST SQUARE LAKE ROAD
BLOOMFIELD HILLS · MICHIGAN · 48302
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REGISTRATION SEAL

CONSULTANT


Commtech Design
6581 BELDING RD. NE STE. 101
ROCKFORD, MICHIGAN 49341
WWW.COMMTECHDESIGN.COM


PROJECT TITLE
# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE
## Cabling Legends, Schedules & Details

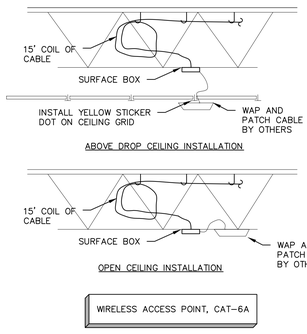
ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.
**25026E**

DRAWING NO.
**TC101**




10

PARTS

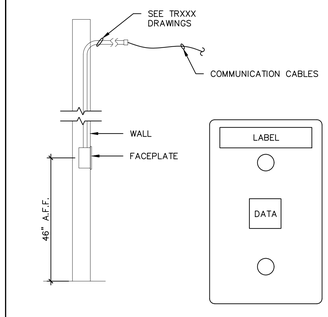
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6A CABLES-YELLOW | MOHAWK | M59148 |
| 1 | CAT-6A JACK | HUBBELL | HJ6AY |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE BUILDING STRUCTURE NEAR THE ACCESS POINT LOCATION.
2. INSTALL A LASER PRINTED CABLE LABEL ON THE CEILING WHERE THE CABLE TERMINATES. THIS WILL ALLOW THE FUTURE USER TO FIND THE CABLE TO EVENTUALLY INSTALL WIRELESS ACCESS POINT.

10 CONNECTIVITY CODE
TC102




5

PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | CAT-6 CABLE | MOHAWK | M58281 |
| 1 | TELEPHONE PLATE | HUBBELL | SP6F |

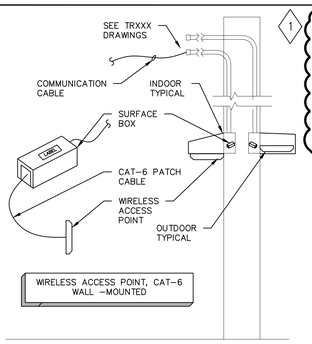
CONNECTIVITY CODE

5 CONNECTIVITY CODE
TC102

CONNECTIVITY CODE INSTALLATION NOTES:

1. REFER TO THESE NOTES FOR ALL CONNECTIVITY CODES. FOR SPECIALIZED NOTES SEE THE ACTUAL CONNECTIVITY CODE.
2. ROUTE ALL USER CABLES FROM THE RACK OR CABINET, THROUGH THE CABLE TRAY IF SO PROVIDED. IF NO CABLE TRAY IS SHOWN INSTALL CABLES THROUGH "J" HOOKS. PROVIDE ALL "J" HOOKS.
3. CABLES SHALL BE SUPPORTED NO LESS THAN EVERY 5 FEET.
4. PROVIDE A SMALL LOOP OF CABLE ABOVE THE CEILING PRIOR TO INSTALLING THE CABLE INTO THE USER CONDUIT OR RACEWAY.
5. ROUTE THE CABLE THROUGH THE CONDUIT OR RACEWAY AND TO THE WALLBOX, FLOORBOX OR SURFACE MOUNT BOX. PROVIDE ENOUGH EXTRA CABLE FOR TERMINATION AND MAINTENANCE.
6. TERMINATE ALL CABLES WITH THE CORRECT CONNECTORS.
7. ALL CONNECTORS SHALL BE INSERTED INTO THE KEYSTONE PLATES AND THEN THE KEYSTONE PLATES SHALL BE INSTALLED INTO THE FACEPLATES.
8. INSTALL FACEPLATES TO THE BOXES OR DIRECTLY TO THE WALL OR FURNITURE IN THE CASE OF SURFACE MOUNT BOXES.
9. EACH CABLE SHALL HAVE A LASER-PRINTED, SELF-LAMINATING WRAP-AROUND LABEL AT EACH END. SEE DETAILS ON TC101
10. OUTLETS SHALL BE AT 18" AFF UNLESS NOTED ON THE CONNECTIVITY CODE OR PLAN DRAWINGS.
11. LABEL EACH FACEPLATE WITH A LASER-PRINTED LABEL THAT IS INSTALLED BEHIND THE CLEAR PLASTIC LABEL STRIP. WHERE NO LABEL STRIP IS PROVIDED, THE CONTRACTOR SHALL INSTALL A LASER PRINTED ADHESIVE LABEL. WHERE SPECIFICALLY NOTED, THE CONTRACTOR SHALL INSTALL ENGRAVED LAMACOID LABELS.
12. AFTER INSTALLATION, ALL CABLES SHALL BE TESTED. SEE SPECIFICATIONS FOR TESTING REQUIREMENTS.
13. SEE DRAWINGS AND SPECS FOR DETAILS ON LABELING PLATES AND PANELS IN THE COMM ROOMS
14. PROVIDE FLEXIBLE CONDUIT FROM THE WALLBOX OR FLOORBOX TO THE FURNITURE RACEWAY WHERE CABLES ARE INSTALLED IN FURNITURE.

N CONNECTIVITY CODE MOHAWK NOTE
TC102




1

11

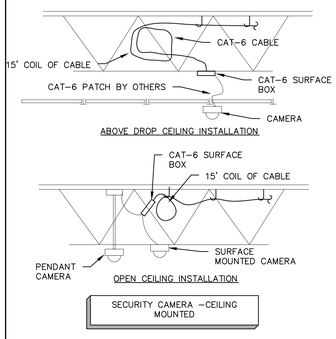
PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6A CABLES-YELLOW | MOHAWK | M59148 |
| 1 | CAT-6A JACK | HUBBELL | HJ6AY |
| INDOOR MOUNT | | | |
| 1 | RIGHT ANGLE AP MOUNT OBERON | | 1011-00-WH |
| OUTDOOR MOUNT | | | |
| 1 | RIGHT ANGLE AP MOUNT OBERON | | 1022 SERIES |

CONNECTIVITY CODE

NOTES:
1. IF NO CONDUIT EXISTS, FISH WALL.
2. INSTALL IN BACKBOX OR ABOVE CEILING.

11 CONNECTIVITY CODE
TC102




6

PARTS

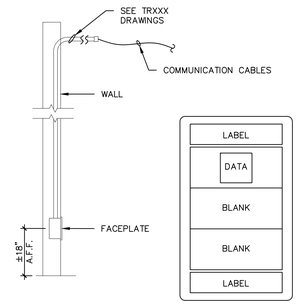
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6 CABLES-GREEN | MOHAWK | M58286 |
| 1 | CAT-6 JACK | HUBBELL | HXJ6GN |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE BUILDING STRUCTURE NEAR THE SECURITY CAMERA LOCATION.
2. SEE FLOORPLAN FOR LOCATION.
3. SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR TYPE

6 CONNECTIVITY CODE
TC102




1

PARTS

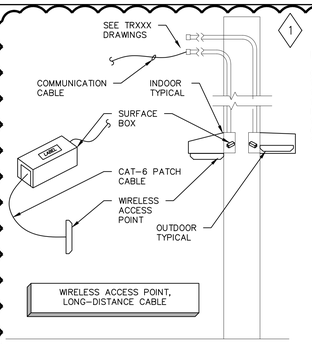
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | FACEPLATE | HUBBELL | IMF1OW |
| 1 | CAT-6 CABLES | MOHAWK | M58281 |
| 1 | CAT-6 JACK | HUBBELL | HXJ6OW |
| 1 | ONE-HOLE KEYSTONE | HUBBELL | IM1K1OW |
| 2 | 1 UNIT BLANK | HUBBELL | IMB1OW |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. SEE FLOORPLAN FOR LOCATION.
2. TERMINATE CABLES. LABEL CABLES AND FACEPLATE. SEE DETAILS AND SPECS FOR LABELING REQUIREMENTS

1 CONNECTIVITY CODE
TC102




1

12

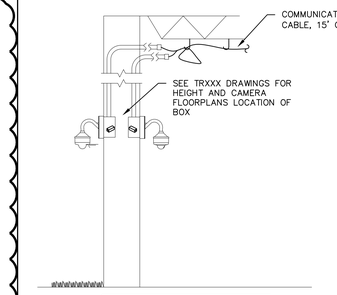
PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | LONG DISTANCE-YELLOW | PAIGE | SEE SPECS |
| 1 | CAT-6A JACK | HUBBELL | HJ6AY |
| INDOOR MOUNT | | | |
| 1 | RIGHT ANGLE AP MOUNT OBERON | | 1011-00-WH |
| OUTDOOR MOUNT | | | |
| 1 | RIGHT ANGLE AP MOUNT OBERON | | 1022 SERIES |

CONNECTIVITY CODE

NOTES:
1. IF NO CONDUIT EXISTS, FISH WALL.
2. INSTALL IN BACKBOX OR ABOVE CEILING.

12 CONNECTIVITY CODE
TC102




7

PARTS

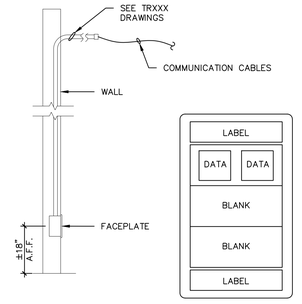
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6 CABLES-GREEN | MOHAWK | M58286 |
| 1 | CAT-6 JACK | HUBBELL | HXJ6GN |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE BACKBOX AT THE SECURITY CAMERA LOCATION.
2. SEE FLOORPLAN FOR INSTALLATION LOCATION. SEE TR RACEWAY DRAWINGS FOR HEIGHT OF CAMERA AND CABLING.

7 CONNECTIVITY CODE
TC102




2

PARTS

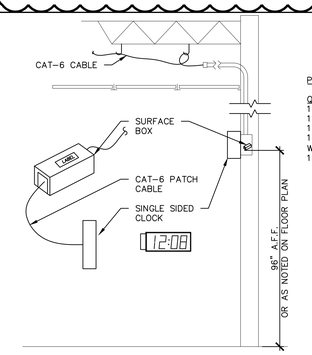
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | FACEPLATE | HUBBELL | IMF1OW |
| 2 | CAT-6 CABLES | MOHAWK | M58281 |
| 2 | CAT-6 JACK | HUBBELL | HXJ6OW |
| 1 | TWO-HOLE KEYSTONE | HUBBELL | IM2K1OW |
| 2 | 1 UNIT BLANK | HUBBELL | IMB1OW |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. SEE FLOORPLAN FOR LOCATION.
2. TERMINATE CABLES. LABEL CABLES AND FACEPLATE. SEE DETAILS AND SPECS FOR LABELING REQUIREMENTS

2 CONNECTIVITY CODE
TC102




13

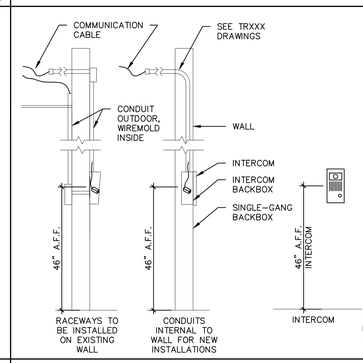
PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # | |
|---|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W | |
| 1 | CAT-6 CABLE-BLUE | MOHAWK | M58281 | |
| 1 | CAT-6 JACK-BLUE | HUBBELL | HXJ6BL | |
| 1 | IP CLOCK | SAPLING | SBP-31S-254-OG | TA |
| WHERE NOTED AS "LARGE CLOCK" PROVIDE: | | | | |
| 1 | IP CLOCK | SAPLING | SBP-31S-406-OG | TB |

CONNECTIVITY CODE

NOTES:
1. INSTALL THE DATA CABLE IN THE BACKBOX.
2. PROVIDE A PATCH CABLE TO CONNECT THE CLOCK DEVICE.
3. TEST CLOCK

13 CONNECTIVITY CODE
TC102




8

PARTS

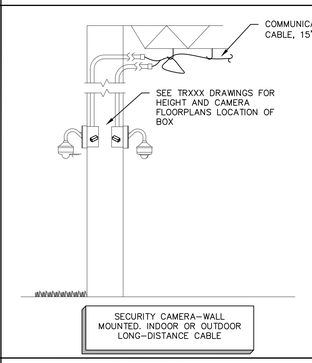
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6 CABLE-PURPLE | MOHAWK | M58290 |
| 1 | CAT-6 JACK-PURPLE-RACK | HUBBELL | HXJ6P |
| 1 | CAT-6 JACK-PURPLE-PLATE | HUBBELL | HXJ6P |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE BACKBOX AT THE INTERCOM LOCATION.
2. SEE FLOORPLAN FOR INSTALLATION LOCATION.
3. TERMINATE THE PURPLE CABLE WITH A PURPLE JACK AT BACKBOX AND AT COMM ROOM. CHOOSE LAST PORT ON A PATCH PANEL.

8 CONNECTIVITY CODE
TC102




3

PARTS

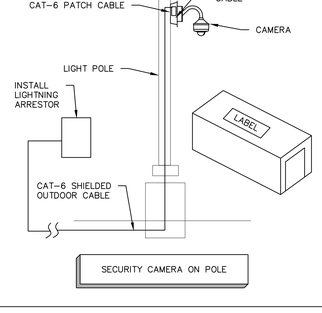
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | LONG DISTANCE | PAIGE | SEE SPECS |
| 1 | CAT-6 JACK | HUBBELL | HXJ6GN |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE BACKBOX AT THE SECURITY CAMERA LOCATION.
2. SEE FLOORPLAN FOR INSTALLATION LOCATION. SEE TR RACEWAY DRAWINGS FOR HEIGHT OF CAMERA AND CABLING.
3. UTILIZE LONG-DISTANCE CABLE AS THIS WILL BE FAR AWAY FROM THE COMM ROOM. TERMINATE CABLE WITH GREEN JACKS.

3 CONNECTIVITY CODE
TC102




14

PARTS

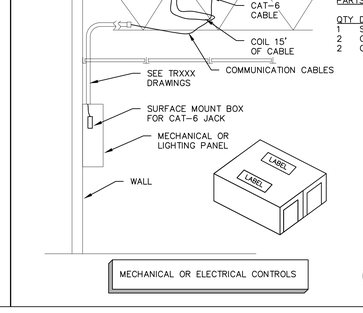
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6 CABLES | BELDEN | OSP6F |
| 1 | CAT-6 JACK | HUBBELL | SHIELDED |
| 1 | LIGHTNING ARRESTOR WITH POE PASS THRU | EMERSON/EDCO | CAT6-POE |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX IN THE CAMERA BACKBOX.
2. SEE SECURITY CAMERA ONE-LINE FOR ACTUAL ROUTING OF CABLES TO SERVE THE CAMERA.
3. INSTALL SHIELDED CAT-6 JACKS AT EACH END OF THE CABLE.
4. CONNECT TO LIGHTNING ARRESTOR AT THE BUILDING. CONNECT TO GROUND BAR IN COMM ROOM.

14 CONNECTIVITY CODE
TC102




9

PARTS

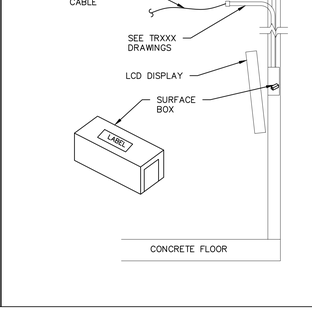
| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB2OW |
| 2 | CAT-6 CABLE | MOHAWK | M58281 |
| 2 | CAT-6 JACK | HUBBELL | HXJ6OW |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. PROVIDE A SURFACE MOUNT BOX TO THE INTERIOR SIDE OF THE MECHANICAL CONTROLS PANEL LOCATION.
2. SEE FLOOR PLANS FOR INSTALLATION LOCATION.
3. TERMINATE CABLE AT COMM ROOM IN A PATCH PANEL. PROVIDE MODULAR JACK AT PANEL.
4. COORDINATE LOCATION WITH MECHANICAL OR ELECTRICAL CONTRACTOR

9 CONNECTIVITY CODE
TC102




4 RACEWAY CODE

PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SURFACE BOX | HUBBELL | HSB10W |
| 1 | CAT-6 CABLES | MOHAWK | M58281 |
| 1 | CAT-6 JACK | HUBBELL | HXJ6OW |

CONNECTIVITY CODE

INSTALLATION NOTES:

1. LABEL CABLE AND SURFACE BOX WITH CABLE NUMBER
2. COIL DATA CABLE AND MOUNT SURFACE MOUNT BOX TO SIDE OF THE IN-WALL BACKBOX.

4 CONNECTIVITY CODE
TC102

TMP ARCHITECTURE

TMP ARCHITECTURE INC

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CONSULTANT

Commtech Design
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PROJECT TITLE

# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE

## Cabling Connectivity Codes

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

| DATE: | ISSUED FOR: |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

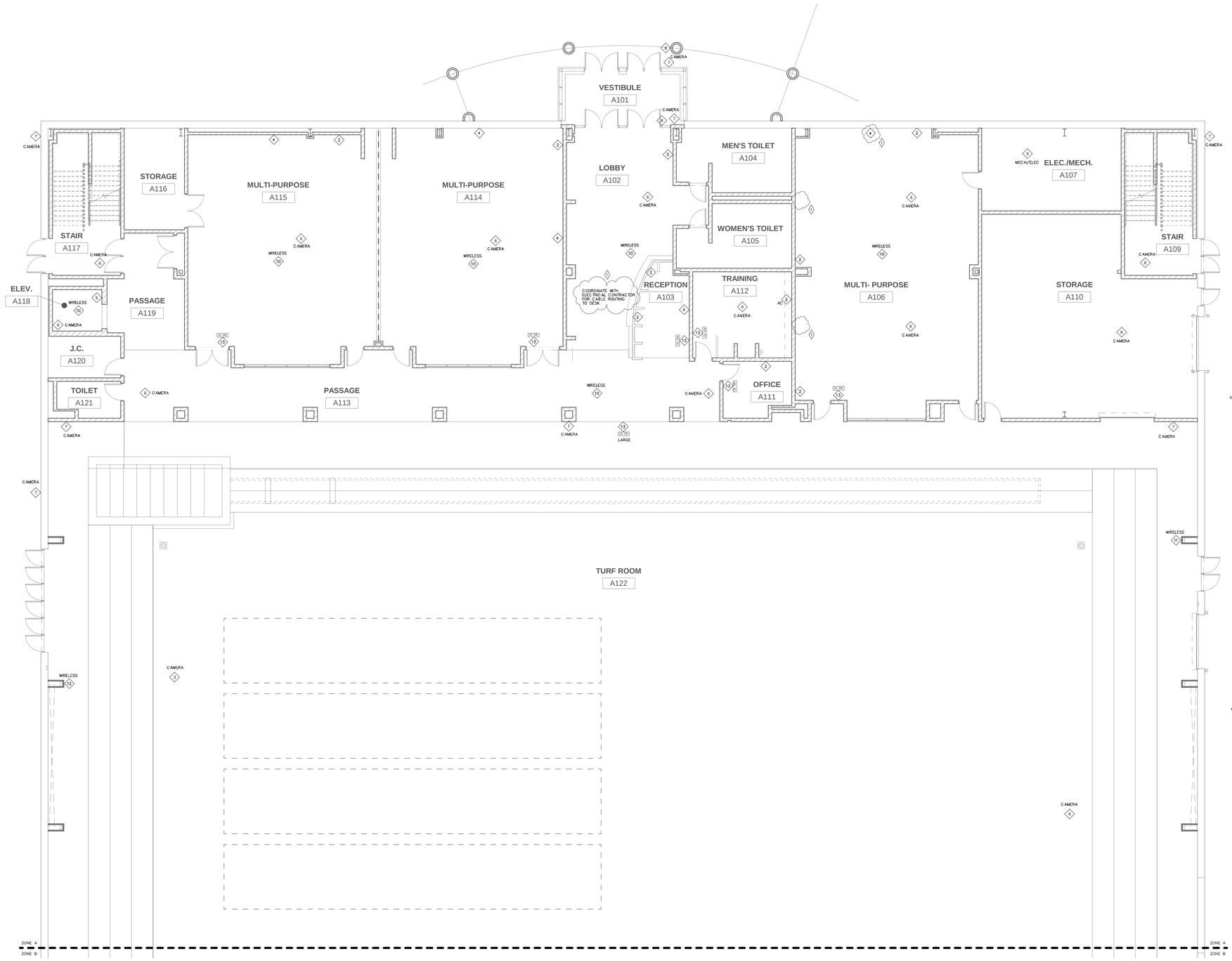
**25026E**

DRAWING NO.

**TC102**

## GENERAL CABLING NOTES

1. COMMUNICATIONS CONTRACTOR SHALL INSTALL ANY PASS-THRU'S REQUIRED FOR ROUTING CABLES AROUND THE BUILDING THAT ARE NOT SHOWN AS BEING INSTALLED AS PART OF THE "TR" SERIES DRAWINGS. SEE ATTACHED.
2. CONTRACTOR SHALL COMPLETE A WALK-THRU OF THE SITE DURING CONSTRUCTION AND SHALL VERIFY ALL CONDUITS AND PASS THRU'S ARE INSTALLED FOR CABLES.
3. ALL CABLES SHALL BE SUPPORTED ABOVE THE DROP CEILING BY J-HOOKS. HOOKS SHALL BE LOCATED NO LESS THAN EVERY 5 FEET.




1 CABLING FIRST FLOOR-ZONE A
1/8" = 1'-0"


TMP ARCHITECTURE

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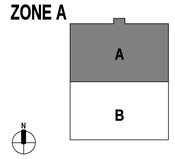

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY
SCHOOLS
DEXTER, MI

DRAWING TITLE

## FIRST FLOOR CABLING - ZONE A




KEY PLAN

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-26 | OWNER REVIEW |
| 01-23-26 | 90% CD DOCUMENTS |

| DATE: | ISSUED FOR: |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

DRAWING NO.

**TC201A**


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## COMMUNICATION SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| ⟨1⟩ | THIS SYMBOL WITH A NUMBER INSIDE REFERS TO KEYNOTES. REFER TO NOTES ON THE SHEET OR WITHIN THE DETAIL FOR ADDITIONAL INFORMATION |
| A | EQUIPMENT SCHEDULE. THIS SYMBOL WITH LETTERS INSIDE REFERS EQUIPMENT SCHEDULES, SEE DETAILS AND EQUIPMENT SCHEDULES ON TC101, TC301, TC501 AND TC701. |
| 1 | CABLE SCHEDULE. THIS SYMBOL WITH NUMBERS INSIDE REFERS EQUIPMENT SCHEDULES, SEE DETAILS AND EQUIPMENT SCHEDULES ON TC101, TC301, TC501 AND TC701. |
| ⟨X⟩ XXXX | AUDIO/VIDEO COMMUNICATIONS OUTLET. REFER TO THE ASSOCIATED AV SYSTEM DETAIL FOR REQUIREMENTS. ZZ REFERS TO HEIGHT OF OUTLET. 18" UNLESS OTHER WISE NOTED. |
| SEE TC3XX/X | AV SYSTEM DETAIL. REFER TO THIS SHEET AND DETAIL NUMBER FOR THE REQUIREMENTS OF THE AUDIO/VIDEO SYSTEM IN THIS ROOM |
| (S) ZZ X | SPEAKERS. SEE SPEAKER SCHEDULE ON TC301."X" REFERS TO SPEAKER TYPE. "ZZ" REFERS TO SPEAKER ZONE IF THIS IS A PAGING SPEAKER. |
| LCD XX" | LCD DISPLAY. WHERE XX IS THE DIAGONAL MEASUREMENT. INCLUDE A MOUNT. SEE AV SYSTEM DETAIL AND SPECS FOR SPECIFICS |

## ABBREVIATIONS

| ABBREV. | DESCRIPTION | ABBREV. | DESCRIPTION |
|---|---|---|---|
| 2G | TWO-GANG BOX - PROVIDED BY EC | NIC | NOT IN CONTRACT |
| AC | ABOVE COUNTER - INSTALL BACKBOX SAME HEIGHT AS OTHER ELECTRICAL OUTLETS ABOVE THE COUNTER. | PBO | PROVIDED BY OTHERS |
| AFF | ABOVE FINISHED FLOOR | PCO-1 | PATCH CORD ORGANIZER - 1 UNIT HIGH |
| AFG | ABOVE FINISHED GROUND | PCO-2 | PATCH CORD ORGANIZER - 2 UNITS HIGH |
| AWG | AMERICAN WIRE GAUGE | PET | PROTECTED ENTRANCE TERMINAL |
| EMT | EMT TYPE CONDUIT | QTY | QUANTITY |
| EC | ELECTRICAL CONTRACTOR | | |

## AUDIO EQUIPMENT SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| WA | CLASSROOM AUDIO SYSTEM INCLUDING SPEAKERS A | LIGHTSPEED | T25-FD |
| WB | WIRED MICROPHONE WITH 20' MIC CABLE | AUDIO | OM3 |
| WC | PLASTIC MESH CABLE PROTECTOR AND WRAP. SAMSUNG #HT4044 CABLE FLEXWRAP | TECH FLEX | F6NXX |
| WD | DRAWER FOR STORING MISCELLANEOUS AUDIO & VIDEO MATERIAL. 4 RU W/LOCK | LOWELL | UDEL-414 |
| WE | POWER STRIP | SURGEX | SX1120RT |
| WF | AUDIO MIXER AND DIGITAL SIGNAL PROCESSOR (DSP). INCLUDE ALL SOFTWARE REQUIRED FOR FULL SYSTEM USE AND REMOTE ACCESS THRU DATA NETWORK | QSC | CORE 8 FLEX |
| WG | NETWORK AUDIO AMPLFIIER. 4-Channel 500W/CH | QSC | CX-Q-2K4 |
| WH | NETWORK AUDIO AMPLFIIER. 4-Channel 1000W/CH | QSC | CX-Q-4K4 |
| WJ | NETWORK AUDIO AMPLFIIER. 4-Channel 2000W/CH | QSC | CX-Q-8K4 |
| WK | WIRELESS MICROPHONE WITH (HANDHELD) (LAVALIER) (HEADWORN) MIC | AUDIX | R42 RECEIVER HANDHELD MIC #H60 BODYPACK #B60 HEADWORN MIC #HT2 |
| WL | WIRELESS MIC ANTENNA EXTENDER. CABLE AND MOUNTS TO EXTEND ANTENNAS | AUDIX | ANTDA4161 |
| WM | NETWORK SWITCH. 26 PORTS | QSYS | NS26-480+ |
| WN | LINE LEVEL AUDIO TRANSMITTER VIA CAT-6 CABLE | RDL | TX-TPS1A |
| WO | LINE LEVEL AUDIO RECEIVER VIA CAT-6 CABLE. EQUIP WITH POWER SUPPLY | RDL | TX-TPR1A / PS-24AS |

## FLAT PANEL DISPLAY EQUIPMENT SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| XA | 65" FLAT PANEL. EQUIP WITH A MOUNT. VERIFY MOUNT PRIOR TO ORDERING. | SHARP | PN-ME652 |
| XB | 75" FLAT PANEL. EQUIP WITH A MOUNT. VERIFY MOUNT PRIOR TO ORDERING. | SHARP | PN-ME752 |
| XC | 86" FLAT PANEL. EQUIP WITH A MOUNT. VERIFY MOUNT PRIOR TO ORDERING. | SHARP | PN-ME862 |
| XD | 86" FLAT PANEL, TOUCH ENABLED. EQUIP WITH A MOUNT. VERIFY MOUNT PRIOR TO ORDERING. | NEWLINE | TT8625QELT |
| XE | TILT WALL MOUNT FOR FLAT PANEL 65" TO 75" DIAGONAL | CHIEF | LTM1U |
| XF | TILT WALL MOUNT FOR FLAT PANEL 86" TO 98" DIAGONAL | CHIEF | XTM1U |
| XG | PULL OUT MOUNT FOR FLAT PANEL 65" AND 75" | CHIEF | TS525TU |
| XH | LCD ROLLING MOUNT. | CHIEF | PFCUB |
| XJ | AT EACH DISPLAY WHERE THERE ARE DEVICES TO BE INSTALLED BEHIND THE FLAT PANEL DISPLAY, INSTALL A COMPONENT STORAGE PANEL | CHIEF | CSMP9X12 |
| XK | SINGLE GANG FACEPLATE FOR CONTROL OF LCD ON/OFF, VOLUME AND INPUT | KRAMER | RC-206 |
| XL | DIGITAL SIGNAGE PLAYER WITH RS-232 CONTROL | BRIGHTSIGN | HD1026 |

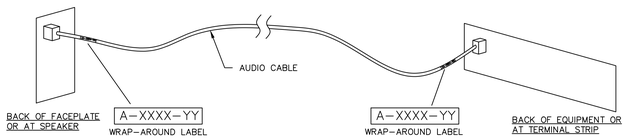
## SPEAKER SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| (S)1 | NOT USED | | |
| (S)2 | IN-CEILING SPEAKER, 6.5". INSTALL IN DROP CEILING OR DRYWALL CEILING. | ELECTROVOICE | C6.2-G2 |
| (S)3 | CLASSROOM AUDIO SPEAKER. DROP CEILING MOUNTED. CUSTOM CUT INTO CEILING | LIGHTSPEED | DRQ |
| (S)4 | MEZZANINE SPEAKER. EQUIP WITH YOKE AND SECURITY MOUNT | QSC | PL-DC26 WITH YM YOKE |
| (S)5 | FIELD SUSPENDED SPEAKER. COVER THE MAIN FIELD. EQUIP WITH YOKE AND SECURITY MOUNT | QSC | PL-CA-15 WITH YM YOKE |
| (S)6 | FIELD SUSPENDED SUBWOOFER. EQUIP WITH YOKE AND SECURITY MOUNT | QSC | PL-SUB18 WITH PL-LA12-AF MOUNT |

## VIDEO EQUIPMENT SCHEDULE

| MARK | DESCRIPTION | MANUFACTURER | PART NO. |
|---|---|---|---|
| VA | DIGITAL SIGNAGE PLAYER WITH RS-232 CONTROL | BRIGHTSIGN | HD1026 |
| VB | HDMI DISTRIBUTION AMPLIFIER 1-IN, 4-OUT | KEY DIGITAL | KD-DAx1X4 |
| VC | POWER STRIP | SURGEX | SX1120RT |
| VD | PATCH PANEL-24 PORT, EQUIPPED WITH 8-PIN MODULAR JACKS TO MATCH THE CABLE COLOR AND CABLE TYPE BEING TERMINATED. PROVIDE ONE MODULAR JACK FOR EACH CABLE BEING TERMINATED. SEE SPEC AND DRAWINGS FOR COLORS. EQUIP WITH REAR CABLE ORGANIZER | HUBBELL | PANEL: HPJ24 ORGANIZER: HPRCMB |

⟨1⟩

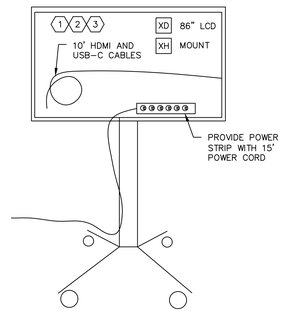



GENERAL NOTES:

1. INSTALL A WRAP-AROUND LABEL AT EACH END OF EACH CABLE.
2. WRAP-AROUND LABELS SHALL BE LASER-PRINTED AND SHALL BE SELF-LAMINATING.

A = AUDIO/VIDEO CABINET
XXXX = SPK FOR SPEAKER LINE
XXXX = LINE FOR LINE LEVEL
XXXX = MIC FOR MICROPHONE
XXXX = CTRL FOR CONTROL LINE
YY = AUDIO ZONE FOR SPEAKER
YY = FACEPLATE NUMBER FOR LINE AND MIC

3 TC301 — TYPICAL CABLE LABELING FOR AUDIO CABLES




NOTES:

1. CONTRACTOR SHALL PROVIDE ALL PATCH CABLES SHOWN BETWEEN THE DEVICES. ATTACH CABLES TO THE ROLLING MOUNT SO THEY DO NOT PULL OUT OF THE PC OR SWITCHER.
2. PROVIDE THE MOUNT AND THE LCD AND INSTALL AT THE SITE.
3. TEST THE SYSTEM WITH ONE OF THE OWNERS LAPTOPS AND CONNECTION TO NUMEROUS ROOM SYSTEMS.

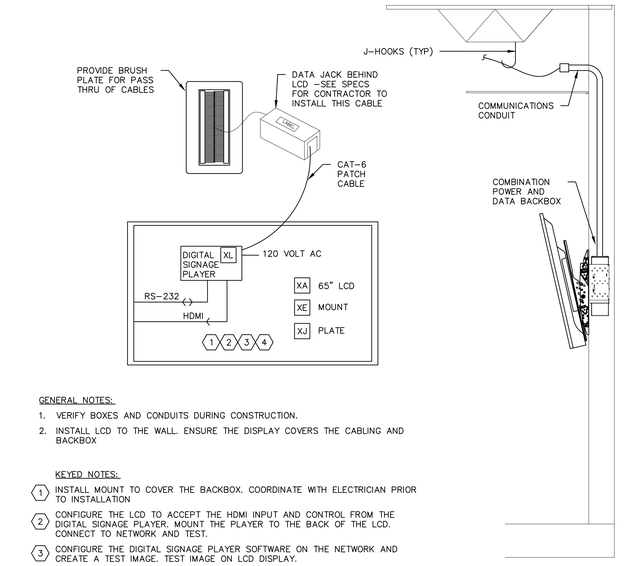
KEYED NOTES:

⟨1⟩ MOUNT THE LCD ON THE ROLLING CART. ATTACH POWER STRIP TO THE LCD MOUNT.

⟨2⟩ SECURELY ATTACH CABLES TO THE MOUNT AND LCD SO THEY WILL NOT PULL OUT OF THE LCD IF THE LAPTOP IS DROPPED ETC.

⟨3⟩ PROVIDE COIL OF CABLE AND WAY TO ATTACH COIL TO LCD MOUNT

2 TC301 — LCD ON ROLLING CART AUDIO/VIDEO CONNECTIVITY




GENERAL NOTES:

1. VERIFY BOXES AND CONDUITS DURING CONSTRUCTION.
2. INSTALL LCD TO THE WALL. ENSURE THE DISPLAY COVERS THE CABLING AND BACKBOX

KEYED NOTES:

⟨1⟩ INSTALL MOUNT TO COVER THE BACKBOX. COORDINATE WITH ELECTRICIAN PRIOR TO INSTALLATION

⟨2⟩ CONFIGURE THE LCD TO ACCEPT THE HDMI INPUT AND CONTROL FROM THE DIGITAL SIGNAGE PLAYER. MOUNT THE PLAYER TO THE BACK OF THE LCD. CONNECT TO NETWORK AND TEST.

⟨3⟩ CONFIGURE THE DIGITAL SIGNAGE PLAYER SOFTWARE ON THE NETWORK AND CREATE A TEST IMAGE. TEST IMAGE ON LCD DISPLAY.

⟨4⟩ SET SCHEDULE ON LCD ON/OFF THRU DIGITAL SIGNAGE PLAYER.

1 TC301 — WALL MOUNT DISPLAY LCD FOR DIGITAL SIGNAGE


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REGISTRATION SEAL

CONSULTANT

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PROJECT TITLE
**NEW FIELD HOUSE**

Dexter Community School District

DRAWING TITLE
**Audio/Video Legends, Schedules & Details**

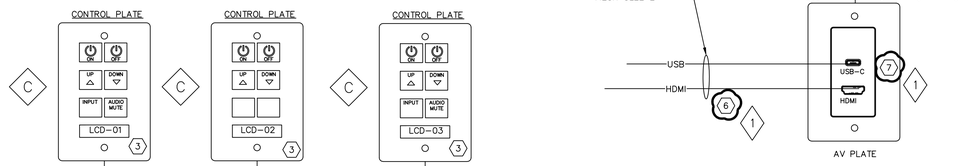
ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

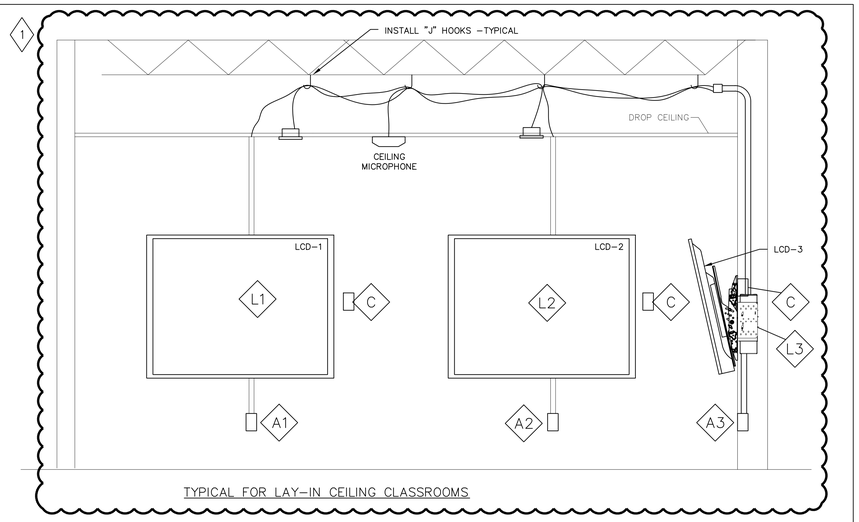
PROJECT NO.
**25026E**

DRAWING NO.
**TC301**




PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SINGLE GANG STAINLESS STEEL STYLE LINE PLATE | HUBBELL | SS26 |
| 1 | HDMI WITH FEMALE PIGTAIL AND USB-C 3.0 F-F KEYSTONE | COMPREHENSIVE | WPD-HD-U3C-AW |
| 1 | HDMI CABLE TO LCD | | |
| 1 | USB-C CABLE TO LCD | | |



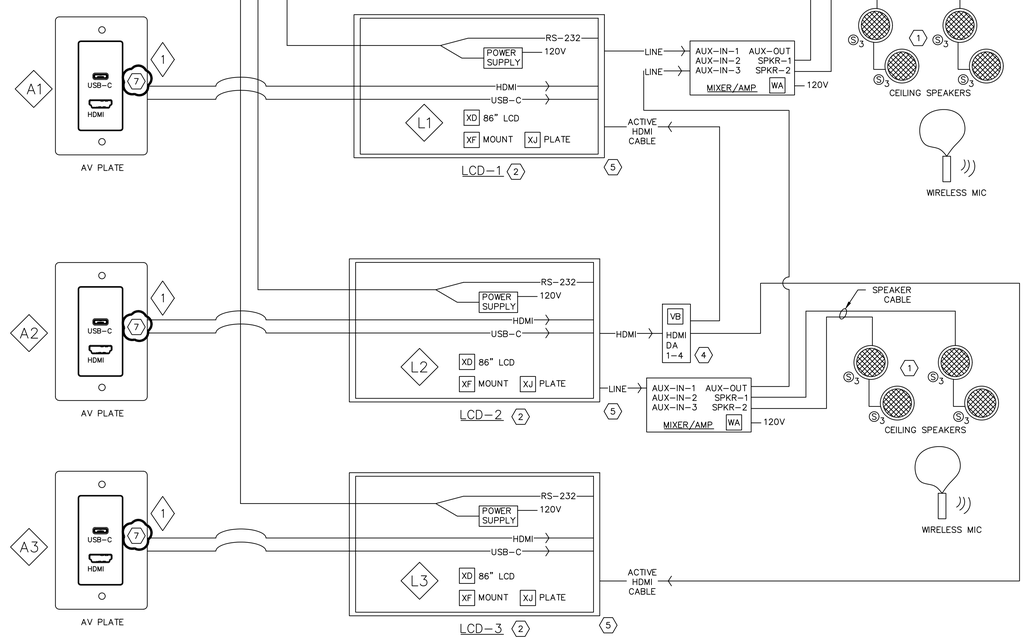

TYPICAL FOR LAY-IN CEILING CLASSROOMS

A/V NOTES:

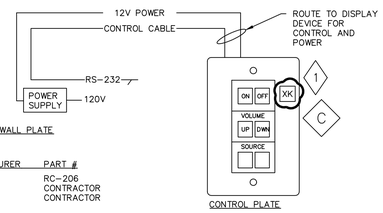
1. INSTALL ALL EQUIPMENT SHOWN. THE CONTRACTOR SHALL WALK THE BUILDING WITH THE OWNER PRIOR TO INSTALLATION TO IDENTIFY ACTUAL LOCATION OF ALL EQUIPMENT.
2. SPEAKERS SHALL BE INSTALLED WHERE SHOWN AND CONNECTED TO THE AUDIO SYSTEM THAT IS IN THE LECTERN.
3. ALL CABLES FROM THE WALL TO THE DESK SHALL BE INSTALLED INSIDE A NYLON MESH. TY/WRAP MESH AT EACH END TO SECURE BUNDLE.
4. INSTALL ALL PATCH CABLES SHOWN. CONNECT THE DEVICES AND FULLY TEST THE SYSTEM INCLUDING ALL AUDIO AND VIDEO INPUTS AND OUTPUTS.
5. WALK THE SITE TO CONFIRM ALL RACEWAYS ARE INSTALLED TO SUPPORT THE AV SYSTEM INSTALLATION. IF THE CONTRACTOR DOES NOT VERIFY ALL CONDUITS PRIOR TO THE DRYWALL GOING UP THEN THE CONTRACTOR SHALL INSTALL RACEWAY.
6. INSTALL ALL CABLES INCLUDING POWER CABLE FROM THE WALL TO THE DESK. ALL CABLES SHALL BE NO SHORTER THAN 10'
7. PROVIDE AND INSTALL ANY AND ALL BALUNS, ADAPTERS OR CABLES REQUIRED FOR CONNECTIVITY.
8. COMBINE AND UNCOMBINE THE AV SYSTEMS.
9. CREATE A LAMINATED SHEET AND ATTACH TO THE WALL AT ALL LCD'S TO DETAIL HOW TO COMBINE THE ROOMS AND HOW TO UNCOMBINE THE ROOMS
10. SETUP THE CONTROL PLATE AT LCD-1 TO INCLUDE AN AUDIO MUTE BUTTON. LABEL THE PLATES. WHEN ROOM IS COMBINED THE CONTRACTOR SHALL MUTE AUDIO COMING OUT OF LCD-1 TO THE MIXER.

KEYED NOTES:

1. PROVIDE SPEAKERS IN EACH CLASSROOM. CHECK TO SEE IF THEY ARE DROP CEILING OR OPEN CEILING PRIOR TO ORDERING. DISTRIBUTE THROUGHOUT THE ROOM TO COVER THE ENTIRE AREA.
2. INSTALL THE LCD AT THE OWNERS DIRECTION AND HEIGHT. COVER THE BACKBOX. INSTALL SO THAT IT DOES NOT COVER THE CONTROL PLATE.
3. INSTALL THE CONTROL PLATE AND CONNECT TO THE LCD. SETUP TO CONTROL VOLUME UP AND DOWN. ON CONTROL PANEL FOR LCD-1 AND LCD-3 CREATE AN AUDIO MUTE BUTTON. ON LCD-1 THIS WILL ALLOW THE AUDIO FROM LCD-2 AND TEACHER MIC TO WORK THRU THE AUDIO AMP ON LCD-1 AND WILL NOT MIX ADDITIONAL PROGRAM AUDIO FROM LCD-1
4. INSTALL AN HDMI 1/IN, 4/OUT DISTRIBUTION AMPLIFIER BEHIND THE LCD-2. INSTALL ACTIVE HDMI CABLE TO LCD-1 AND LCD-3
5. TEST CONNECTIVITY AS ONE ROOM AND TEST CONNECTIVITY AS TWO ROOMS. DEMONSTRATE HOW TO COMBINE AND UNCOMBINE TO THE OWNER. LAMINATE INSTRUCTION SHEET AND ATTACH TO EACH LCD WITH A STRING AND MOUNT ON BACK OF LCD.
6. INSTALL BLACK MESH AS YOU TRANSITION CABLES FROM THE PLATE TO DESK.
7. CUSTOMIZE THE FACEPLATE TO MATCH BACKBOX PROVIDED AND CABLES REQUIRED TO BE TERMINATED.




1 TC302 COMBINEABLE AV ROOM THREE LCD WITH AUDIO. -CONNECTIVITY




C CONTROL WALL PLATE

PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | CONTROL PLATE | KRAMER | RC-206 |
| 1 | RS-232 CABLE-PLENUM | | CONTRACTOR |
| 1 | POWER CABLE -PLENUM | | CONTRACTOR |

GENERAL NOTES:

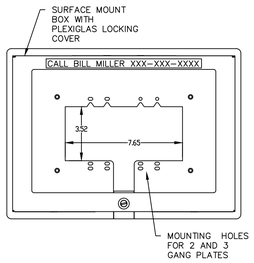
1. INSTALL THE PLATE AND CONFIGURE AND CUSTOM LABEL FOR THE CONTROLS REQUIRED.
2. AT A STANDARD LCD IT SHOULD BE FOR ON/OFF, VOLUME UP AND DOWN AND INPUT CONTROL
3. LABEL FACEPLATE WITH INPUT NAME OR NUMBER FROM THE DISTRIBUTION AMPLIFIER
4. TEST VIDEO FROM ALL INPUTS.

4 TC302 LCD CONTROL PLATE TYPICAL CONNECTIVITY

TP

PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | TOUCHPANEL | QSYS | TSC-101-G3 |
| 1 | CAT-6-ORANGE | MOHAWK | M58288 |
| 1 | COVERPLATE | FSR | WB-TCS-FM-10 |




GENERAL NOTES:

1. INSTALL CAT-6 CABLES TO THE PANEL IN THE AV ROOM/CABINET.
2. PROVIDE LOCK TO THE OWNER.
3. LABEL THE COVERPLATE WITH THE NAME AND PHONE NUMER OF THE PERSON TO CALL IN CASE OF AN ISSUE. SHALL BE ENGRAVED, PHENOLIC LABEL.

5 TC302 DUAL MICROHPONE PLATE AUDIO INPUT PLATE AND CABLING

M1

PARTS

| QTY | DESCRIPTION | MANUFACTURER | PART # |
|---|---|---|---|
| 1 | SINGLE-GANG GANG STAINLESS STEEL PLATE | NEUTRIK | CUSTOM |
| 2 | XLR INPUTS | | CONTRACTOR |
| 2 | MIC CABLES-PLENUM | CONTRACTOR | |



GENERAL NOTES:

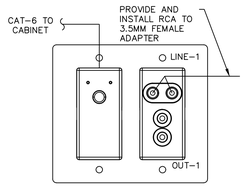
1. INSTALL PLENUM RATED MIC CABLES TO THE PANEL IN THE AV ROOM/CABINET.
2. LABEL THE PLATE WITH PHENOLIC, ENGRAVED LABELS DETAILING THE INPUT TO MATCH THE INPUT ON THE CONTROL PANEL.

3 TC302 DUAL MICROHPONE PLATE AUDIO INPUT PLATE AND CABLING

BT

PARTS

| QTY | DESCRIPTION | CONNECTIVITY CODE | MANUFACTURER | PART # |
|---|---|---|---|---|
| 1 | GFI TWO-HOLE | | HUBBELL | SS262 |
| 1 | CAT-6-ORANGE | | MOHAWK | M58288 |
| 1 | BLUETOOTH AND LINE LEVEL AUDIO TO DANTE | | QSYS | UND610-BT |




GENERAL NOTES:

1. INSTALL CAT-6 CABLES TO THE PANEL IN THE AV ROOM/CABINET.
2. SETUP THE BLUETOOTH PLATE TO ALLOW MULTIPLE USERS TO USE THE PLATE. REMEMBER USERS FOR EASY CONNECTIVITY.
3. LABEL THE PLATE WITH PHENOLIC, ENGRAVED LABELS DETAILING THE INPUT TO MATCH THE INPUT ON THE CONTROL PANEL.

2 TC302 BLUETOOTH AND LINE LEVEL AND MIC AUDIO INPUT PLATE AND CABLING


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REGISTRATION SEAL

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PROJECT TITLE

# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE

## Audio/Video Connectivity Details

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

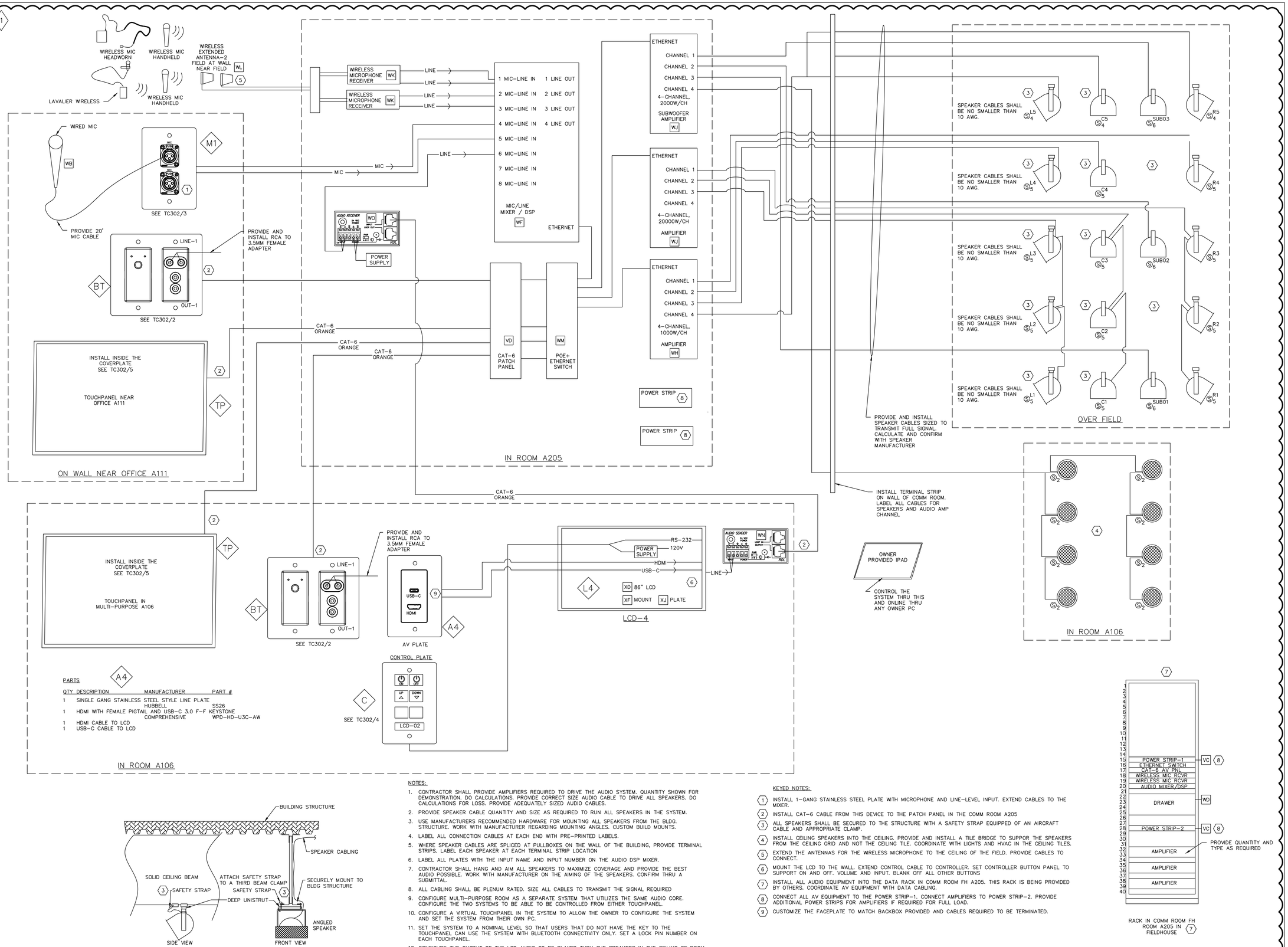
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| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

25026E

DRAWING NO.

TC302







OPEN CEILING SPEAKER MOUNT-ANGLED OR STRAIGHT DOWN

NOTES:

1. CONTRACTOR SHALL PROVIDE AMPLIFIERS REQUIRED TO DRIVE THE AUDIO SYSTEM. QUANTITY SHOWN FOR DEMONSTRATION. DO CALCULATIONS. PROVIDE CORRECT SIZE AUDIO CABLE TO DRIVE ALL SPEAKERS. DO CALCULATIONS FOR LOSS. PROVIDE ADEQUATELY SIZED AUDIO CABLES.
2. PROVIDE SPEAKER CABLE QUANTITY AND SIZE AS REQUIRED TO RUN ALL SPEAKERS IN THE SYSTEM.
3. USE MANUFACTURERS RECOMMENDED HARDWARE FOR MOUNTING ALL SPEAKERS FROM THE BLDG. STRUCTURE. WORK WITH MANUFACTURER REGARDING MOUNTING ANGLES. CUSTOM BUILD MOUNTS.
4. LABEL ALL CONNECTION CABLES AT EACH END WITH PRE-PRINTED LABELS.
5. WHERE SPEAKER CABLES ARE SPLICED AT PULLBOXES ON THE WALL OF THE BUILDING, PROVIDE TERMINAL STRIPS. LABEL EACH SPEAKER AT EACH TERMINAL STRIP LOCATION
6. LABEL ALL PLATES WITH THE INPUT NAME AND INPUT NUMBER ON THE AUDIO DSP MIXER.
7. CONTRACTOR SHALL HANG AND AIM ALL SPEAKERS TO MAXIMIZE COVERAGE AND PROVIDE THE BEST AUDIO POSSIBLE. WORK WITH MANUFACTURER ON THE AIMING OF THE SPEAKERS. CONFIRM THRU A SUBMITTAL.
8. ALL CABLING SHALL BE PLENUM RATED. SIZE ALL CABLES TO TRANSMIT THE SIGNAL REQUIRED
9. CONFIGURE MULTI-PURPOSE ROOM AS A SEPARATE SYSTEM THAT UTILIZES THE SAME AUDIO CORE. CONFIGURE THE TWO SYSTEMS TO BE ABLE TO BE CONTROLLED FROM EITHER TOUCHPANEL.
10. CONFIGURE A VIRTUAL TOUCHPANEL IN THE SYSTEM TO ALLOW THE OWNER TO CONFIGURE THE SYSTEM AND SET THE SYSTEM FROM THEIR OWN PC.
11. SET THE SYSTEM TO A NOMINAL LEVEL SO THAT USERS THAT DO NOT HAVE THE KEY TO THE TOUCHPANEL CAN USE THE SYSTEM WITH BLUETOOTH CONNECTIVITY ONLY. SET A LOCK PIN NUMBER ON EACH TOUCHPANEL.
12. CONFIGURE THE OUTPUT OF THE LCD AUDIO TO BE PLAYED THRU THE SPEAKERS IN THE CEILING OF ROOM A106.

KEYED NOTES:

1. INSTALL 1-GANG STAINLESS STEEL PLATE WITH MICROPHONE AND LINE-LEVEL INPUT. EXTEND CABLES TO THE MIXER.
2. INSTALL CAT-6 CABLE FROM THIS DEVICE TO THE PATCH PANEL IN THE COMM ROOM A205
3. ALL SPEAKERS SHALL BE SECURED TO THE STRUCTURE WITH A SAFETY STRAP EQUIPPED OF AN AIRCRAFT CABLE AND APPROPRIATE CLAMP.
4. INSTALL CEILING SPEAKERS INTO THE CEILING. PROVIDE AND INSTALL A TILE BRIDGE TO SUPPOR THE SPEAKERS FROM THE CEILING GRID AND NOT THE CEILING TILE. COORDINATE WITH LIGHTS AND HVAC IN THE CEILING TILES.
5. EXTEND THE ANTENNAS FOR THE WIRELESS MICROPHONE TO THE CEILING OF THE FIELD. PROVIDE CABLES TO CONNECT.
6. MOUNT THE LCD TO THE WALL. EXTEND CONTROL CABLE TO CONTROLLER. SET CONTROLLER BUTTON PANEL TO SUPPORT ON AND OFF, VOLUME AND INPUT. BLANK OFF ALL OTHER BUTTONS
7. INSTALL ALL AUDIO EQUIPMENT INTO THE DATA RACK IN COMM ROOM FH A205. THIS RACK IS BEING PROVIDED BY OTHERS. COORDINATE AV EQUIPMENT WITH DATA CABLING.
8. CONNECT ALL AV EQUIPMENT TO THE POWER STRIP-1. CONNECT AMPLIFIERS TO POWER STRIP-2. PROVIDE ADDITIONAL POWER STRIPS FOR AMPLIFIERS IF REQUIRED FOR FULL LOAD.
9. CUSTOMIZE THE FACEPLATE TO MATCH BACKBOX PROVIDED AND CABLES REQUIRED TO BE TERMINATED.

1 TC303 FIELDHOUSE AND WEIGHT ROOM AUDIO/VIDEO SYSTEM CONNECTIVITY

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PROJECT TITLE
# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE
Audio/Video Connectivity Details

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

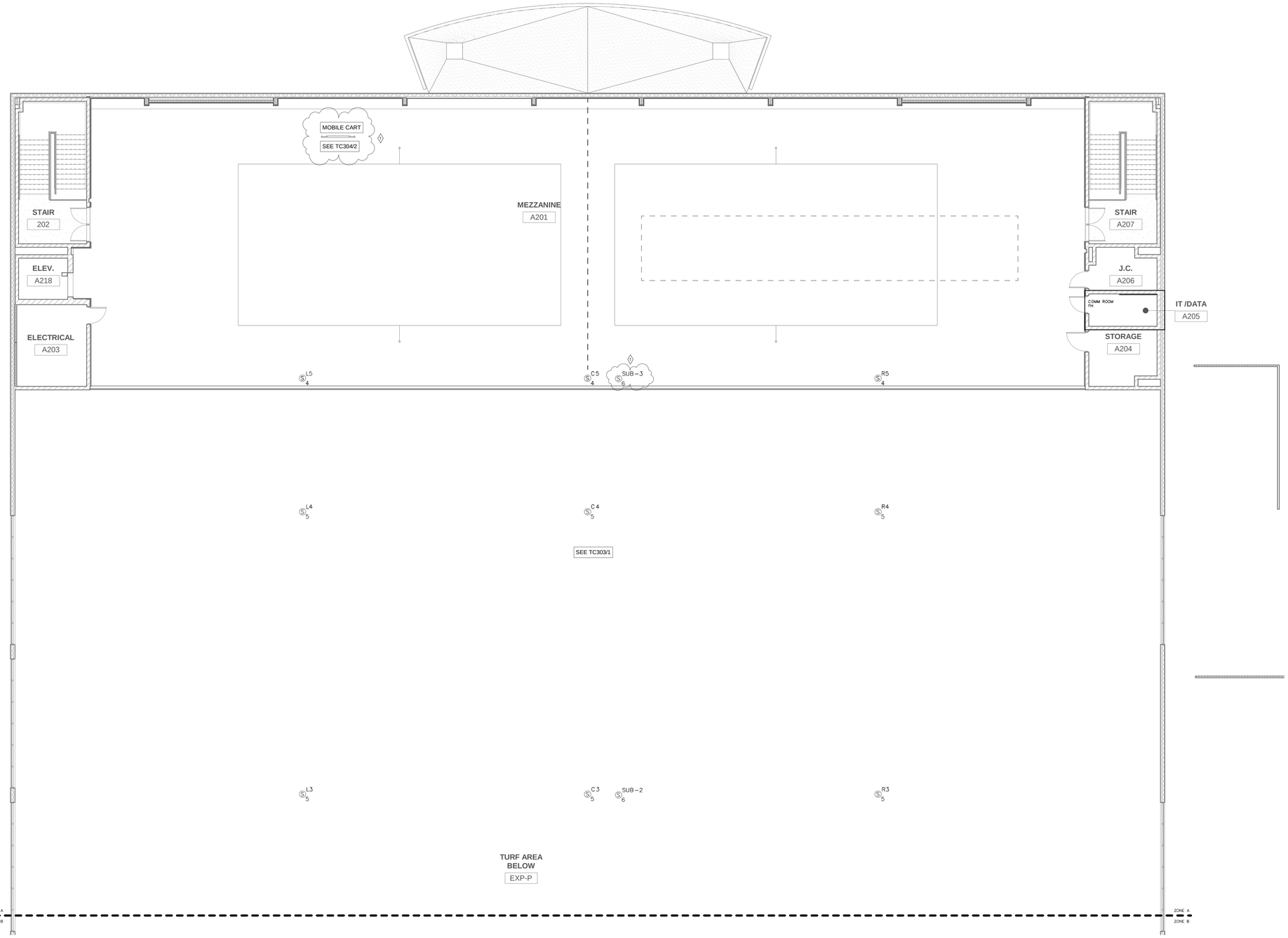
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|---|---|
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| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.
**25026E**

DRAWING NO.
**TC303**

## GENERAL AV NOTES

1. AV CONTRACTOR SHALL INSTALL ANY PASS-THRU'S REQUIRED FOR ROUTING CABLES AROUND THE BUILDING. FIRESTOP ALL PASS-THRU'S TO MEET APPLICABLE CODES.
2. CONTRACTOR SHALL COMPLETE A WALK-THRU OF THE SITE DURING CONSTRUCTION AND SHALL VERIFY ALL RACEWAYS ARE AS NOTED.
3. NOTE TO THE ELECTRICIAN ANY RACEWAYS REQUIRED THAT ARE NOT ON THE DRAWINGS OR INSTALLED
4. ALL CABLES SHALL BE SUPPORTED ABOVE THE DROP CEILING BY J-HOOKS. HOOKS SHALL BE LOCATED NO LESS THAN EVERY 5 FEET.




1 A/V SECOND FLOOR-ZONE A
1/8" = 1'-0"


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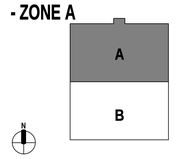

**PROJECT TITLE**

# NEW FIELD HOUSE

DEXTER COMMUNITY
SCHOOLS
DEXTER, MI

**DRAWING TITLE**

## SECOND FLOOR AUDIO/VIDEO - ZONE A




**KEY PLAN**

**ISSUE DATES**

| DATE: | ISSUED FOR: |
|---|---|
| 03-19-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-26 | OWNER REVIEW |
| 01-23-26 | 90% CD DOCUMENTS |

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|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

**PROJECT NO.**

**25026E**

**DRAWING NO.**

**TC402A**


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OPERATION SEQUENCE WHEN THE DOORS ARE LOCKED ENTERING FROM OUTSIDE –VALID ID CARD

1. IF THE PERSON PRESENTS A VALID CARD THEN THE LATCH SHALL RETRACT INSIDE THE EXTERIOR DOOR
.
2. THE SECURITY SYSTEM SHALL ALLOW THE EXTERIOR PUSH BUTTON TO BE ENERGIZED. ONCE THE PUSH BUTTON IS ENERGIZED THEN THE EXTERIOR DOOR SHALL BE OPENED OF THE BUTTON IS PUSHED.

3. THE EXTERIOR AUTO OPENER CONTROL BOARD SHALL COMMUNICATE TO THE CONTROL BOARD OF THE INTERIOR DOOR AND THAT DOOR SHALL OPEN.

OPERATION SEQUENCE WHEN THE DOORS ARE UNLOCKED ENTERING FROM OUTSIDE

1. THE LATCH BOLT MONITOR SHALL NOTE THAT THE LATCH IS RETRACTED AND SHALL COMMUNICATE THAT INFORMATION TO THE CONTROL BOARD IN THE AUTO OPENER.

2. THE CONTROL BOARD SHALL ALLOW THE EXTERIOR PUSH BUTTON TO BE ENERGIZED. ONCE THE PUSH BUTTON IS ENERGIZED THEN THE EXTERIOR DOOR SHALL BE OPENED OF THE BUTTON IS PUSHED.

3. THE EXTERIOR AUTO OPENER CONTROL BOARD SHALL COMMUNICATE TO THE CONTROL BOARD OF THE INTERIOR DOOR AND THAT DOOR SHALL OPEN.

OPERATION SEQUENCE WHEN THE DOORS ARE LOCKED ENTERING FROM OUTSIDE –NO CARD OR INVALID CARD

1. IF THE PERSON PUSHES THE EXTERIOR OPENER BUTTON THEN THE AUTO OPENER SHALL NOT ENGAGE BECAUSE THE OPENER BUTTON IS NOT ENERGIZED.

2. THE EXTERIOR OPENER BUTTON IS NOT ENERGIZED UNLESS THE LATCH BOLT MONITOR NOTES THAT THE LATCH IS RETRACTED.

OPERATION SEQUENCE WHEN THE DOORS ARE LOCKED, EXITING FROM INTERIOR

1. WHEN A PERSON PUSHES THE INTERIOR OPENER BUTTON THEN THAT SHALL COMMUNICATE WITH THE INTERIOR AUTO OPENER AND OPEN THAT DOOR.

2. THE CONTROL BOARD OF THE INTERIOR AUTO OPENER SHALL COMMUNICATE WITH THE CONTROL BOARD OF THE EXTERIOR AUTO OPENER AND NOTE THAT THE INTERIOR OPENER BUTTON HAS BEEN PRESSED.

3. THE CONTROL BOARD OF THE EXTERIOR AUTO OPENER SHALL COMMUNICATE WITH THE ACCESS CONTROL SYSTEM AND INSTRUCT IT TO RETRACT THE LATCH ON THE EXTERIOR DOOR.

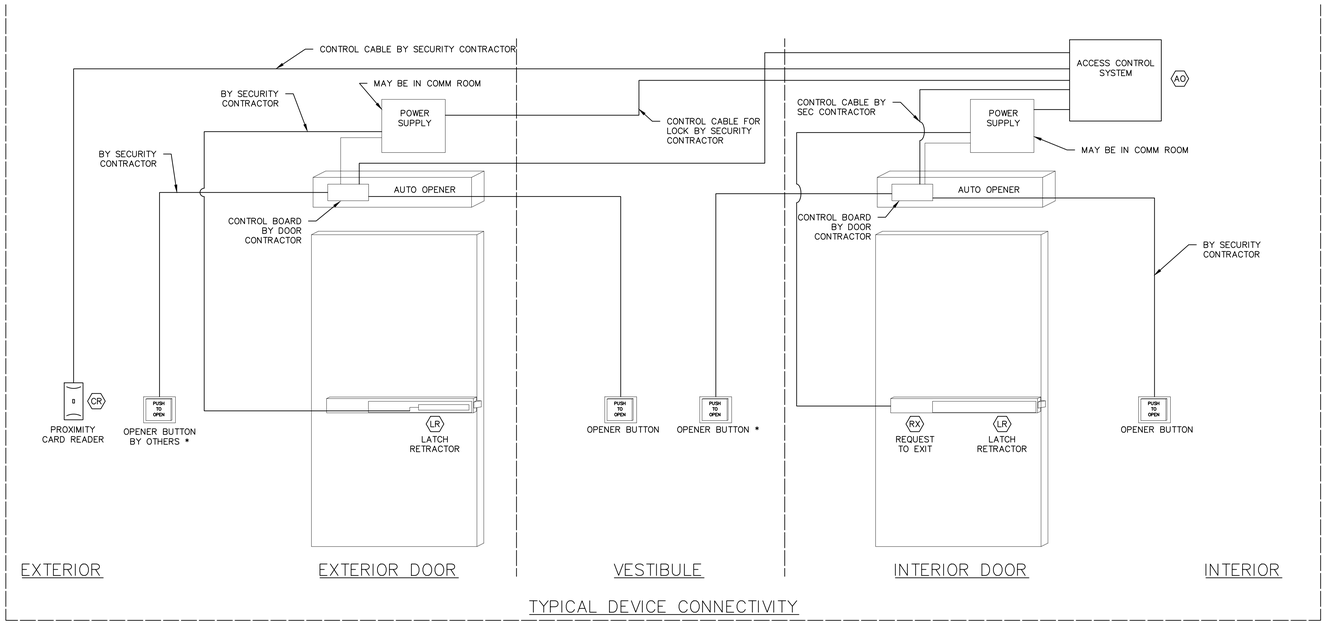
4. THE EXTERIOR CONTROL BOARD SHALL WAIT A SET NUMBER OF SECONDS AND THEN IT SHALL ENGAGE THE EXTERIOR AUTO OPENER TO OPEN THE EXTERIOR DOOR.

OPERATION SEQUENCE WHEN THE DOORS ARE LOCKED, EXITING FROM VESTIBULE

1. WHEN A PERSON PUSHES THE VESTIBULE OPENER BUTTON THEN THAT SHALL COMMUNICATE WITH THE INTERIOR AUTO OPENER AND OPEN THAT DOOR. IT SHALL ALSO COMMUNICATE WITH THE CONTROL BOARD OF THE EXTERIOR AUTO OPENER.

2. THE CONTROL BOARD OF THE EXTERIOR AUTO OPENER SHALL COMMUNICATE WITH THE ACCESS CONTROL SYSTEM AND INSTRUCT IT TO RETRACT THE LATCH ON THE EXTERIOR DOOR.

3. THE EXTERIOR CONTROL BOARD SHALL WAIT A SET NUMBER OF SECONDS AND THEN IT SHALL ENGAGE THE EXTERIOR AUTO OPENER TO OPEN THE EXTERIOR DOOR.
4.

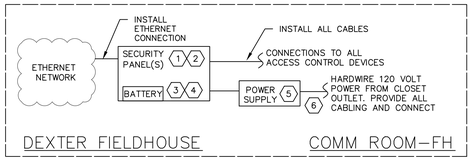



TYPICAL DEVICE CONNECTIVITY

GENERAL NOTE:

- THE OUTSIDE OPENER BUTTON WILL BE ENABLED & DISABLED BY THE ACCESS CONTROL SYSTEM. THE BUTTONS WILL BE ENABLED WHEN THE DOOR IS UNLOCKED.

1 / TC502 — ADA DOOR OPENER & ACCESS CONTROL INTEGRATION DIAGRAM




CONNECTIVITY NOTES:

1. PROVIDE THE QUANTITY OF EACH ITEM AS SHOWN ON THE DRAWINGS.
2. THE COMMUNICATIONS CONTRACTOR SHALL WORK WITH THE OWNER TO CONFIGURE THE SYSTEM TO MEET THE OWNERS REQUIREMENTS.
3. CABLES FOR CONNECTION FROM THE ACCESS CONTROL PANELS SHALL BE PLENUM RATED.
4. CONTRACTOR SHALL PROVIDE ALL CABLING FOR CONNECTION OF NEW SECURITY DEVICES. THE CABLES SHALL BE THE SAME COLOR. COORDINATE CABLE COLOR WITH OTHER CONTRACTORS SO THAT THE SECURITY CABLES ARE A UNIQUE COLOR.
5. ALL CABLES SHALL BE LABELED AT EACH END. LABEL THEM WITH THE DOOR NUMBER AND THEN FOR THE DEVICE TO WHICH THEY CONNECT. IN EXAMPLE: P124–DC.
6. THE CONTRACTOR SHALL INCLUDE SUFFICIENT TIME INTO THE PROJECT TO CUSTOM CONFIGURE THE ACCESS CONTROL SYSTEM TO INTERFACE AND CONTROL EACH SYSTEM SHOWN ON THE DIAGRAM AND DESCRIBED IN THE SPECIFICATIONS.
7. PROVIDE THE QUANTITY OF BADGES/FOBS/MOBILE CREDENTIALS AS NOTED. PRINT ALL PROXIMITY CARDS AS PER THE OWNERS DIRECTION.

KEYED NOTES:

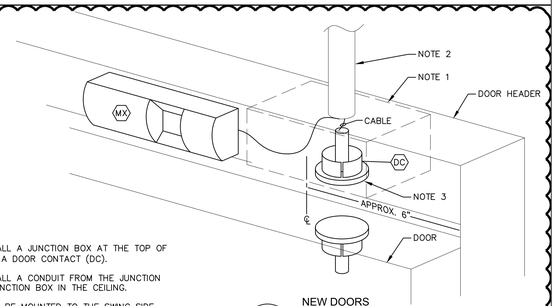
1. ACCESS CONTROL PANELS SHALL BE LOCATED WHERE SHOWN ON THE DRAWINGS. CONNECT ALL DEVICES TO THESE PANELS. ALSO PROVIDE CABLING TO CONNECT THE PANELS TO THE ETHERNET SWITCHES IN THE RACKS.
2. WHERE MORE THAN ONE PANEL IS AT THE SAME LOCATION, THE CONTRACTOR CAN CONNECT ONE PANEL TO THE ETHERNET NETWORK AND CONNECT THE OTHER PANELS TO THE ETHERNET CONNECTED PANEL.
3. THERE WILL BE PANELS IN ONE OR MORE COMMUNICATIONS ROOMS. SEE THE FLOORPLANS FOR SUGGESTED PANEL LOCATIONS. INSTALL PANELS AS NOTED AND AS REQUIRED FOR COMPLETE CONNECTIVITY. CONNECT TO THE DATA NETWORK AND OTHER ACCESS CONTROL PANELS.
4. INSTALL BATTERY BACKUP TO EACH PANEL TO SUPPORT DURING A SHORT POWER OUTAGE. SEE SPECIFICATIONS FOR BATTERY BACKUP REQUIREMENTS.
5. THE CONTRACTOR SHALL PROVIDE A POWER SUPPLY IN THE COMMUNICATIONS ROOM TO POWER ALL THE DOOR HARDWARE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR CONNECTING THE PANELS TO 120 VOLT POWER. CONNECT WITH A HARDWIRED CONNECTION. PROVIDE CABLING AND CONDUIT/BOXES FOR CONNECTIVITY

2 / TC502 — ACCESS CONTROL DIAGRAM

1

DC

MX




NOTES

1. EC SHALL INSTALL A JUNCTION BOX AT THE TOP OF THE DOOR FOR A DOOR CONTACT (DC).
2. EC SHALL INSTALL A CONDUIT FROM THE JUNCTION BOX TO THE JUNCTION BOX IN THE CEILING.
3. THE BOX SHALL BE MOUNTED TO THE SWING SIDE OF THE DOOR SO THAT IT IS DIRECTLY OVER THE DOOR WHEN THE DOOR IS CLOSED.

3 / TC502 — NEW DOORS DOOR CONTACT RACEWAY DETAIL

NO SCALE


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PROJECT TITLE

# NEW FIELD HOUSE

## Dexter Community School District

DRAWING TITLE

## Security Equipment Details

ISSUE DATES

| | |
|---|---|
| 03–18–2026 | D.R. 2 – ADDENDUM #1 |
| 02–26–2026 | D.R. 2 – CONSTRUCTION DOCUMENTS |

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| CHECKED | BVH |
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PROJECT NO.

**25026E**

DRAWING NO.

**TC502**

## ACCESS CONTROL READER DETAILS

| | |
|---|---|
| CR | CARD READER – INSTALL TO THE BACKBOX OR IN THE DOOR FRAME. COORDINATE IN FIELD PRIOR TO ORDERING. WIRE TO SECURITY SYSTEM |

## ACCESS CONTROL LOCK DETAILS

| | |
|---|---|
| LR | LATCH RETRACTION DEVICE – THIS DEVICE IS AN ELECTRONIC PUSHBAR ON THE SECURE SIDE OF THE DOOR. WIRE FROM THIS DEVICE, THROUGH THE DOOR HINGETO THE POWER SUPPLY IN THE COMMUNICATIONS ROOM. PROVIDE POWER SUPPLY |
| ES | ELECTRIC STRIKE – STRIKE IS PROVIDED AND INSTALLED BY DOOR CONTRACTOR. WIRE FROM THIS DEVICE TO SECURITY PANEL. PROVIDE POWER SUPPLY IN COMM ROOM. |

## INTERCOM / ASST. OPENER DETAILS

| | |
|---|---|
| IC | INTERCOM – INSTALL TO THE BOX OR SURFACE MOUNT TO THE WALL. WIRE TO THE COMM ROOM VIA CAT–6 CABLE. |
| BS | INTERCOM BASE SYSTEM – THIS DEVICE SHALL BE INSTALLED AT THE RECEPTION DESK. WIRE TO COMM ROOM VIA CAT–6 CABLE. |
| AO | ASSISTED OPENER – THIS MECHANICALLY OPENS A DOOR. IT IS INSTALLED BY THE DOOR HARDWARE CONTRACTOR. COORDINATE LOCKS AND ALARMS WITH THIS OPENER AND ASSOCIATED OPENER BUTTONS. SEE SPECS. CONFIGURE TO RELEASE LOCK AND WIRE TO RELEASE LOCK PRIOR TO ENGAGING ON EXTERIOR CONTROLLED DOORS |
| AB | ASSISTED OPENER BUTTON– THIS BUTTON IS BY THE DOOR CONTRACTOR. IT IS NOTED FOR LOCATION. ON INTERIOR BUTTONS. WIRE TO THIS BUTTON TO MOMENTARILY UNLOCK EXTERIOR DOOR PRIOR TO ENGAGING OPENER. |

## ACCESS CONTROL AT DOOR DETAILS

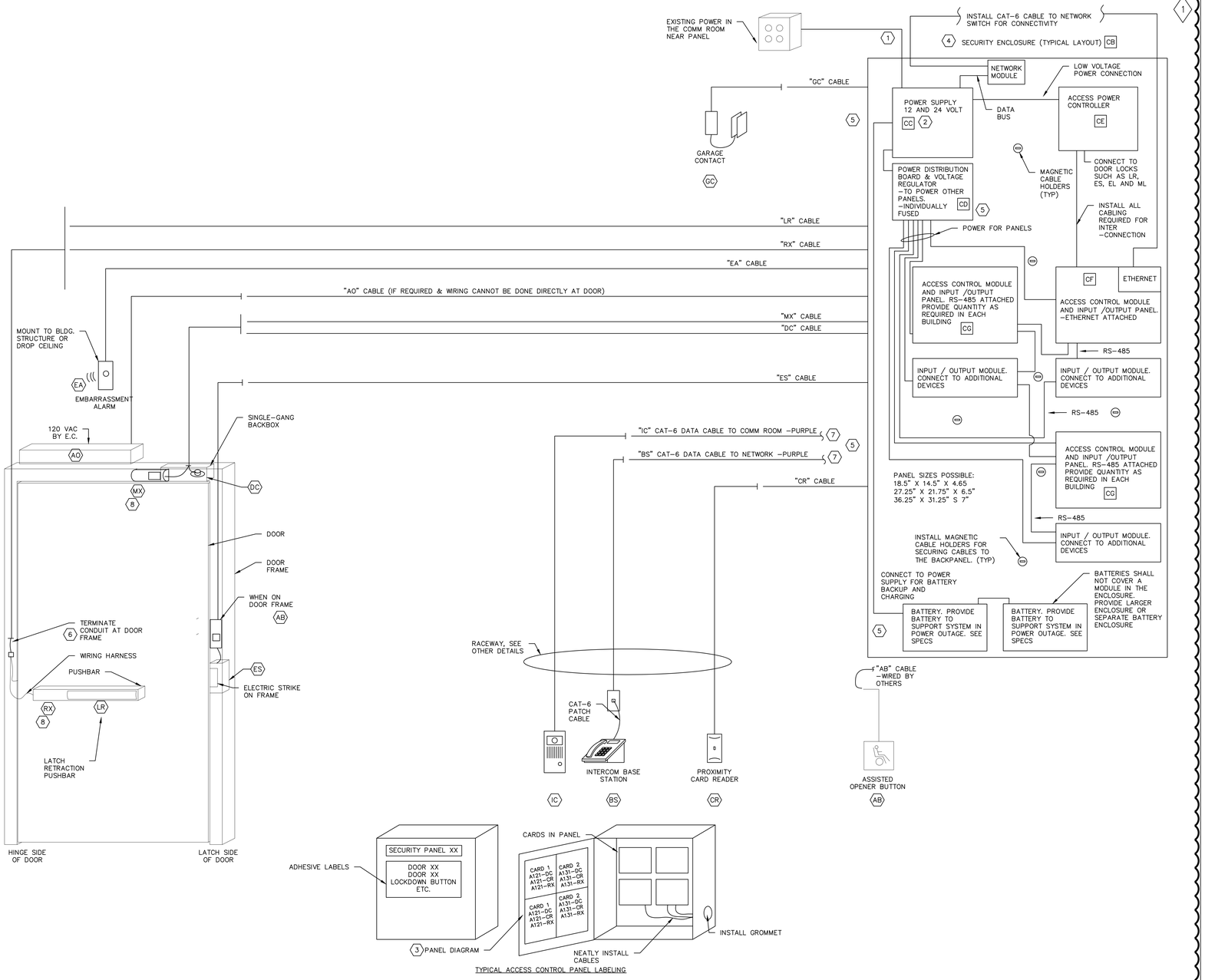
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|---|---|
| MX | MOTION SENSOR REQUEST TO EXIT – MOUNT ABOVE THE DOOR. WIRE TO SECURITY SYSTEM/ACCESS CONTROL SYSTEM TO SHUNT DOOR CONTACT WHEN EXITING BLDG. |
| RX | REQUEST TO EXIT IN LOCK – THIS IS A SWITCH THAT IS PROVIDED WITH THE DOOR LOCKING DEVICE. WIRE TO SECURITY PANEL TO SHUNT DOOR CONTACT WHEN EXITING BLDG. |
| DC | DOOR CONTACT – MOUNT ABOVE THE DOOR. WIRE TO SECURITY SYSTEM/INTRUSION DETECTION SYSTEM TO TRIGGER AN ALARM |
| GC | GARAGE CONTACT – INSTALL AN OVERHEAD DOOR CONTACT. WIRE TO SECURITY SYSTEM/INTRUSION DETECTION SYSTEM TO TRIGGER AN ALARM |
| EA | PIEZO EXIT / EMBARASSMENT ALARM – LOCATE TO BUILDING STRUCTURE OR INTO DROP CEILING. WIRE TO SECURITY SYSTEM/INTRUSION DETECTION SYSTEM TO TRIGGER AN AUDIBLE ALARM WHEN A DOOR IS OPEN. CONFIGURE ON A TIME SCHEDULE. |

GENERAL NOTES:

1. SEE OTHER DETAILS FOR RACEWAY REQUIREMENTS FOR ALL CABLING AND DEVICES. REFER TO THE PLAN DRAWINGS FOR THE SPECIFIC FIELD DEVICE AND WHERE IT IS TO BE INSTALLED.
2. AT SOME LOCATIONS THE CARD READER WILL HAVE TO BE INSTALLED INTO THE DOOR FRAME. PROVIDE A FRAME TYPE READER AT THESE LOCATIONS. VERIFY PRIOR TO ORDERING EQUIPMENT.
3. ALL SECURITY DEVICES SHALL BE WIRED DIRECTLY BACK TO THE SECURITY SYSTEM (ACCESS CONTROL) PANELS OR INTRUSION DETECTION PANEL. LOCATE PANELS ON THE WALLS OF COMMUNICATIONS ROOMS OR AS SHOWN ON THE FLOOR PLANS. SEE OTHER DETAILS FOR MOUNTING AND RACEWAY REQUIREMENTS FOR CABLING.
4. PROVIDE ALL SECURITY CABLES AND ALL SECURITY PANELS REQUIRED FOR CONNECTIVITY OF THE SYSTEM. SHALL BE PLENUM RATED IN PLENUM AREAS.
5. LABEL THE OUTSIDE OF THE PANEL FOR THE DOORS AND DEVICES THAT ARE CONNECTED INSIDE THE PANEL. PROVIDE A PANEL DIAGRAM INSIDE THE PANEL THAT SHOWS THE CARDS AND WHAT IS CONNECTED TO EACH PORT ON THE CARDS.
6. PROVIDE MAGNETIC CABLE SUPPORTS THROUGHOUT THE PANEL FOR SUPPORT OF CABLES AS THEY ROUTE BETWEEN CARDS IN THE PANEL.
7. INCLUDE NYLON OR PLASTIC GROMMETS IN THE PANELS WHERE CABLES ROUTE INTO THE PANELS.
8. CONNECT BATTERIES TO THE PANEL TO SUPPORT THE PANEL AND DEVICES FOR A SHORT POWER OUTAGE.

KEYED ACCESS CONTROL NOTES:

1. CONTRACTOR SHALL EXTEND POWER FROM EXISTING OUTLET TO THE POWER SUPPLIES ON THE WALL/IN THE PANEL. PROVIDE ALL RACEWAY AND WIRING FOR EXTENSION OF POWER. MAKE ALL CONNECTIONS
2. PROVIDE A POWER SUPPLY TO SUPPORT THE SECURITY PANELS AND ALL END USER DEVICES SUCH AS LOCKS, STROBES, REQUEST TO EXIT DEVICES, ALARMS ETC.
3. AFFIX A CUSTOM SHEET OF PAPER INSIDE THE PANEL DOOR THAT SHOWS WHAT DOORS OR DEVICES ARE CONNECTED TO EACH PANEL. LAMINATE OR INSTALL IN A PLASTIC SLEEVE.
4. CUT HOLE IN PANEL TO SUPPORT CABLE INSTALLATION. INSTALL A NYLON OR PLASTIC GROMMET IN THE PANEL.
5. CONNECT ALL CABLES AND DEVICES TO THE CONTROLLERS/BOARDS WITHIN THE PANEL THAT IS REQUIRED FOR CONNECTIVITY AND SYSTEM OPERATION. PROVIDE A COIL OF 5' OF CABLE ABOVE THE PANEL ON THE WALL.
6. FOR AN EL OR LR DEVICE THE DOOR HARDWARE SUPPLIER WILL PROVIDE A WIRING HARNESS FROM THE LOCK THROUGH THE HINGE AND INTO THE DOOR FRAME. SECURITY CONTRACTOR TO WIRE FROM PANEL OR POWER SUPPLY TO THE WIRING HARNESS.
7. INSTALL A CAT–6 CABLE FROM THIS LOCATION TO THE PATCH PANEL IN THE RACK IN THE COMM ROOM. CABLE AND JACKS SHALL BE PURPLE. TERMINATE WITH A CAT–6 MODULAR JACK AT EACH END.
8. CONNECT TO THE MOTION REQUEST TO EXIT (MX) OR REQUEST TO EXIT (RX) TO SHUNT ALARM. SHALL BE MOUNTED TO THE SECURE SIDE OF THE DOOR.







TYPICAL ACCESS CONTROL PANEL LABELING

1 DOOR HARDWARE & SECURITY EQUIPMENT CONNECTIVITY REQUIREMENTS
TC503


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REGISTRATION SEAL

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WWW.COMMTECHDESIGN.COM


PROJECT TITLE

# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE

## Access Control Diagram

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03–18–2026 | D.R. 2 – ADDENDUM #1 |
| 02–26–2026 | D.R. 2 – CONSTRUCTION DOCUMENTS |

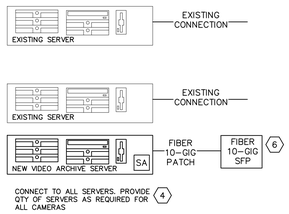
| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

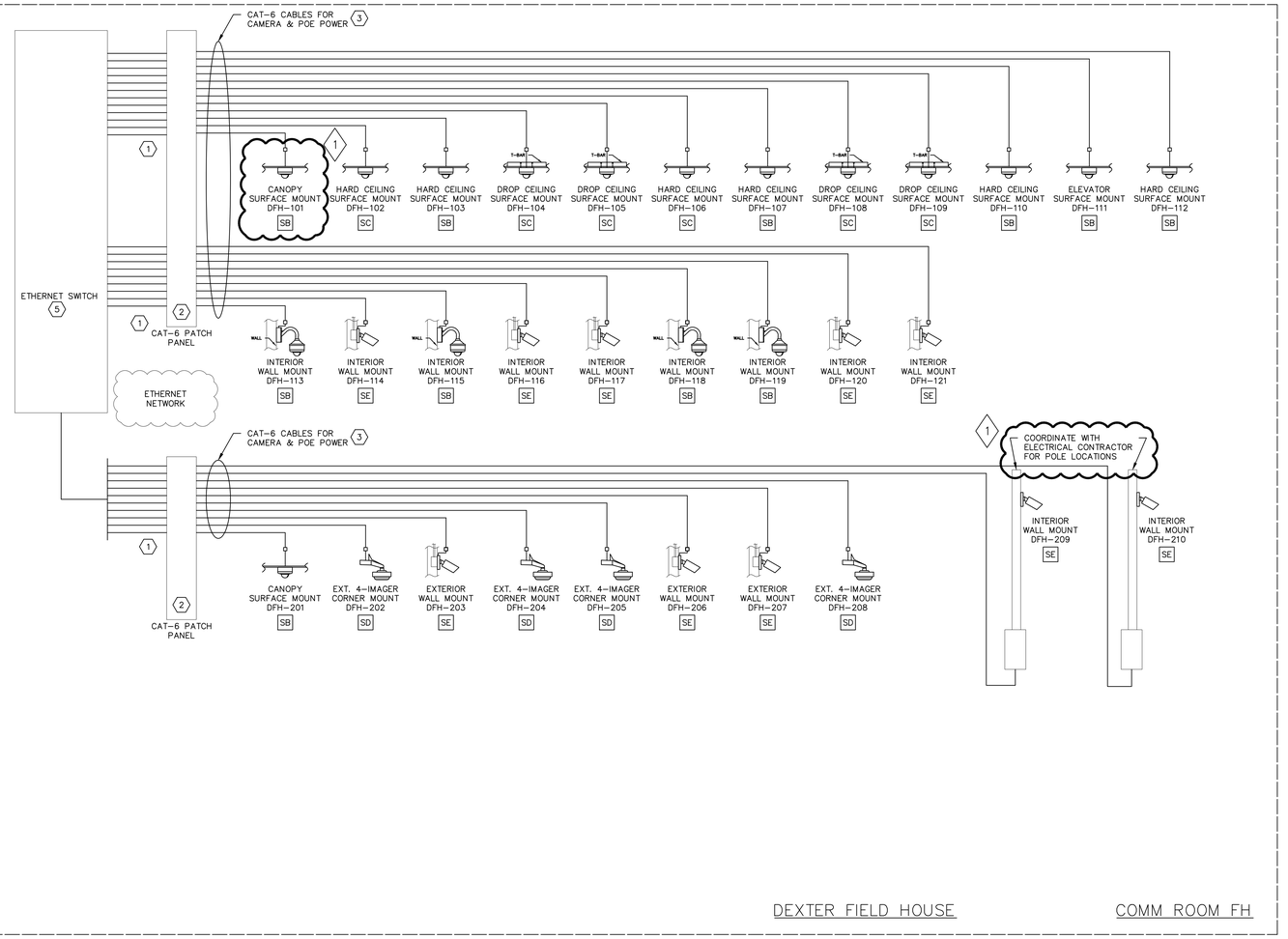
PROJECT NO.

**25026E**

DRAWING NO.

**TC503**




GENERAL VIDEO SECURITY NOTES:

1. CONTRACTOR SHALL PROVIDE ALL PATCH CABLES AT THE CAMERA AND AT THE COMM ROOM. MATCH COLOR OF CAMERA CABLE. 12" LONG AT SWITCH. 10' AT THE CAMERA
2. THE CONTRACTOR SHALL SUPPLY ANY & ALL BALUNS, COUPLERS ADAPTERS & CONVERTERS THAT ARE REQUIRED FOR THE INTER-CONNECTION OF ALL THE SECURITY COMPONENTS.
3. CONTRACTOR SHALL PROVIDE THE CORRECT CAMERA MOUNT BASED ON CAMERA LOCATION AND STRUCTURE AVAILABLE. VERIFY CAMERA LOCATION PRIOR TO ORDERING MOUNTS AND CAMERAS.
4. CAMERAS IN DROP CEILINGS SHALL BE RECESSED MOUNT. PROVIDE BACKPLATE OR T-BAR FOR SUPPORT FROM GRID, NOT JUST THE TILE.
5. WHERE THE CAMERA IS NOT INSTALLED INTO A DROP CEILING THE CONTRACTOR SHALL PROVIDE A MOUNT AND HOUSING. PROVIDE WEATHERPROOF MOUNTS ON EXTERIOR CAMERAS.
6. EXTERIOR CAMERAS SHALL BE RATED FOR OUTDOOR INSTALLATION AND SHALL PROVIDE THEIR OWN HEAT.
7. CONTRACTOR SHALL MEET WITH THE OWNER AND DETAIL ALL THE CAPABILITIES OF THE SYSTEM. THE CONFIGURATION OF THE RECORDER AND CAMERAS SHALL BE BASED ON THESE MEETINGS WITH THE OWNER. TAKE NOTES DURING THE MEETINGS. SUBMIT WITH AS-BUILTS
8. CONTRACTOR SHALL PROVIDE THE CORRECT LENS TO EACH CAMERA BASED ON THE INSTALLED LOCATION AND THE OWNERS REQUIREMENTS FOR THE FIELD OF VIEW. WORK WITH THE OWNER DURING INSTALLATION.
9. ALL CAMERAS SHALL CONNECT TO THE IP NETWORK SWITCH IN THE COMMUNICATIONS ROOM. CONTRACTOR SHALL WORK WITH THE OWNER ON CONFIGURATION OF THE ETHERNET SWITCH.
10. PRIOR TO CAMERA INSTALLATION THE CONTRACTOR SHALL CONDUCT A "GREEN-TAPE" WALK-THRU OF THE SITES WITH THE OWNER AND IDENTIFY ALL CAMERA LOCATIONS AND INSTALL TAPE AT EACH CAMERA LOCATION.
11. NETWORK VIDEO RECORDER(S) (NVR) SHALL BE PROVIDED BY THE CONTRACTOR. SEE SPECS FOR SIZING AND TYPE. SHALL BE DIGITAL WATCHDOG TO MATCH EXISTING.

KEYED VIDEO SECURITYNOTES:

1. PROVIDE ALL PATCH CABLES REQUIRED FOR CONNECTION OF ALL CAMERAS AT THE CAMERA AND AT THE NETWORK SWITCH. ALL PATCH CABLES SHALL BE MATCH CABLE COLOR
2. LABEL THE CAT-6 PATCH PANEL WITH THE CAMERA NUMBER THE CABLE CONNECTS TO. SHALL BE LASER PRINTED. SEE SPECS
3. SEE SPECIFICATIONS AND BID SCOPES TO DETERMINE WHICH CONTRACTOR IS TO INSTALL AND TERMINATE THE CAT-6 CABLES USED FOR SECURITY CAMERAS.
4. THE SERVER(S) SHALL BE LOCATED IN THE COMMUNICATIONS ROOM IN CREEKSIDE. CONTRACTOR SHALL PROVIDE A NEW SERVER OR SERVERS BASED ON THE SIZING REQUIRED IN THE SPECIFICATINS. LOAD ALL SOFTWARE REQUIRED TO RECORD AND MANAGE ALL CAMERAS THROUGHOUT THE BUILDING. PROVIDE THE QUANTITY OF SERVERS AND STORAGE AS REQUIRED TO RECORD AND VIEW ALL CAMERAS AS PER THE SPECIFICATIONS PLUS GROWTH SHOWN IN THE SPECIFICATIONS
5. THE SECURITY CONTRACTOR SHALL MEET WITH THE OWNER TO CONFIRM ALL NETWORK SPECIFICATION REQUIREMENTS FOR A VLAN OR OTHER QUALITY OF SERVICE SETTINGS FOR THE CAMERA SYSTEM
6. PROVIDE AN SFP MODULE FOR 10 GIGABIT CONNECTIVITY VIA FIBER CABLE INTO THE ETHERNET SWITCH

REFER TO THE PLANS FOR CAMERA LOCATIONS

1 / TC505 — VIDEO SECURITY DIAGRAM DEXTER FIELD HOUSE

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PROJECT TITLE

# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE

## Camera One-Line

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

DRAWING NO.

**TC505**

## ABBREVIATIONS

| ABBREV. | DESCRIPTION | ABBREV. | DESCRIPTION |
|---|---|---|---|
| 2G | TWO–GANG BOX – PROVIDED BY EC | NIC | NOT IN CONTRACT |
| AC | ABOVE COUNTER – INSTALL BACKBOX SAME HEIGHT AS OTHER ELECTRICAL OUTLETS ABOVE THE COUNTER. | PBO | PROVIDED BY OTHERS |
| AFF | ABOVE FINISHED FLOOR | PCO–1 | PATCH CORD ORGANIZER – 1 UNIT HIGH |
| AFG | ABOVE FINISHED GROUND | PCO–2 | PATCH CORD ORGANIZER – 2 UNITS HIGH |
| AWG | AMERICAN WIRE GAUGE | PET | PROTECTED ENTRANCE TERMINAL |
| EMT | EMT TYPE CONDUIT | QTY | QUANTITY |
| EC | ELECTRICAL CONTRACTOR | | |

## RACEWAY SYMBOL LEGEND

| SYMBOL | DESCRIPTION |
|---|---|
| (1) | THIS SYMBOL WITH A NUMBER INSIDE REFERS TO KEYNOTES. REFER TO NOTES ON THE SHEET OR WITHIN THE DETAIL FOR ADDITIONAL INFORMATION |
| X" | PASS THRU. CONDUIT WITH GROMMETS TO BE INSTALLED. SIZE AS NOTED. NO LESS THAN 1". SEE DETAILS ON TRXXX FLOOR PLANS AND DETAILS. SEAL PER UL REQUIREMENTS |
| X" | VERTICAL RISER CONDUIT WITH GROMMETS TO BE INSTALLED. SIZE AS NOTED. SEE DETAILS ON TRXXX FLOOR PLANS AND DETAILS. SEAL PER UL REQUIREMENTS |
| (E) | RACEWAY SYMBOL. SEE TRXXX SHEETS FOR DETAILS FOR RACEWAY REQUIREMENTS. |

## ACCESS CONTROL AT DOOR RACEWAY

| | |
|---|---|
| MX | MOTION SENSOR REQUEST TO EXIT – INSTALLED AT TOP OF DOOR FRAME ABOVE DOOR. INSTALL BACKBOX AT DOOR FRAME AND CONDUIT TO CEILING. |
| RX | REQUEST TO EXIT IN LOCK – SWITCH INSIDE PUSHBAR OR ELECTRIC LATCH. INSTALL CONDUIT TO HINGE SIDE OF DOOR |
| DC | DOOR CONTACT – INSTALLED AT TOP OF DOOR FRAME ABOVE DOOR. INSTALL BACKBOX AT DOOR FRAME AND CONDUIT TO CEILING. |
| GC | GARAGE CONTACT – INSTALL AN OVERHEAD DOOR CONTACT. CONDUIT AND BACKBOX INSTALLED AT 6'6" AFF |
| EA | EMBARASSMENT ALARM – MOUNT TO DROP OR HARD CEILING. INSTALL CONDUIT AND BACKBOX ON WALL AT 9' AFF IF NO CEILING IS INSTALLED |

## INTERCOM / ASST. OPENER RACEWAY

| | |
|---|---|
| IC | INTERCOM – DEVICE FOR AUDIO AND VIDEO CONNECTION TO UNSECURE SIDE OF DOOR. INSTALL CONDUITS AND BACKBOX. |
| BS | INTERCOM BASE SYSTEM – DEVICE FOR AUDIO AND VIDEO CONNECTION AT DESK. INSTALL CONDUITS AND BACKBOX TO UNDERSIDE OF DESK |
| AO | ASSISTED OPENER – THIS MECHANICALLY OPENS A DOOR. CONDUIT FROM OPENER TO CEILING. |
| AB | ASSISTED OPENER BUTTON– BUTTON TO TRIGGER ASSISTED OPENER. INSTALL CONDUIT AND BACKBOX AT 46" AFF TO CENTER. MATCH LIGHT SWITCH HEIGHT |

## ACCESS CONTROL READER RACEWAY

| | |
|---|---|
| CR | CARD READER – PROXIMITY DEVICE BESIDE A DOOR. PROVIDE BACKBOX AND CONDUIT. WHERE NOTED TO BE INSTALLED ON DOOR FRAME INSTALL CONDUIT TO DOOR FRAME |

## ACCESS CONTROL LOCK RACEWAY

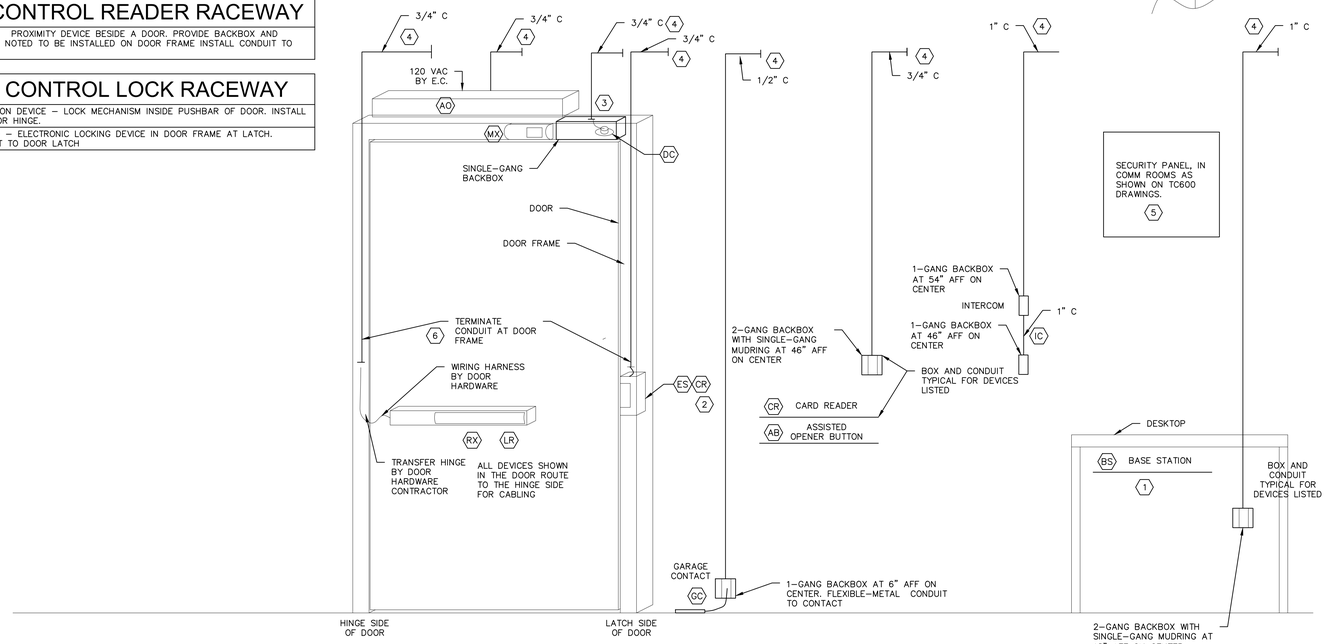
| | |
|---|---|
| LR | LATCH RETRACTION DEVICE – LOCK MECHANISM INSIDE PUSHBAR OF DOOR. INSTALL CONDUIT TO DOOR HINGE. |
| ES | ELECTRIC STRIKE – ELECTRONIC LOCKING DEVICE IN DOOR FRAME AT LATCH. INSTALL CONDUIT TO DOOR LATCH |

KEYED NOTES:

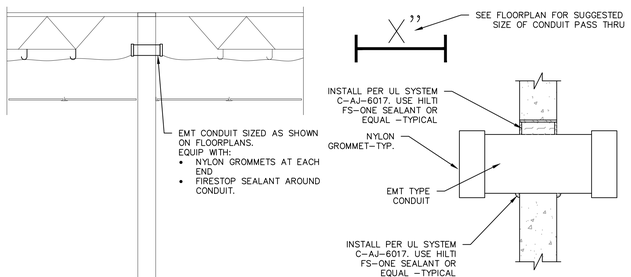
1. ONLY ONE CONDUIT AND BACKBOX IS REQUIRED WHERE THESE DEVICES ARE INSTALLED AT THE SAME DESK
2. WHEN THE "CR" IS SHOWN AS BEING ON A DOOR FRAME, DO NOT INSTALL A BACKBOX. INSTALL CONDUIT INTO THE DOOR FRAME
3. INSTALL BACKBOX FACING DOWN AT HEADER OF DOOR FOR DC AND RX. INSTALL CONDUIT TO CEILING AREA.
4. INSTALL A CONDUIT TO AN ACCESSIBLE CEILING AREA.
5. ACCESS CONTROL PANEL WILL BE INSTALLED IN THE COMM ROOM. PROVIDE POWER TO THE PANEL
6. COORDINATE LENGTH AND TERMINATION POINT OF CONDUIT WITH THE DOOR HARDWARE AND DOOR INSTALLER.

GENERAL NOTES:

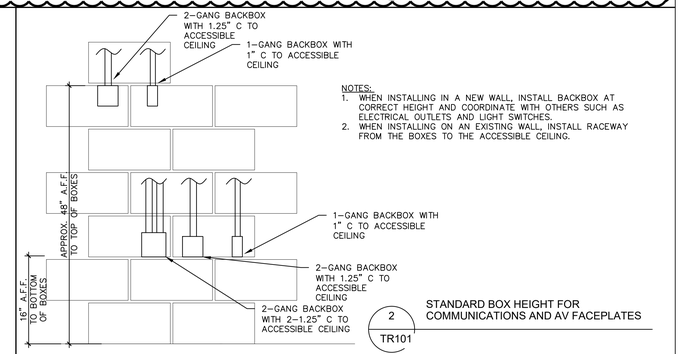
1. INSTALL RACEWAYS AND BACKBOXES AT DOORS AND DESKS FOR CONNECTION OF SECURITY AND ALARM DEVICES.
2. CONDUIT INSTALLER SHALL WORK WITH DOOR INSTALLER, DOOR HARDWARE CONTRACTOR AND SECURITY CONTRACTOR WHEN INSTALLING CONDUITS.



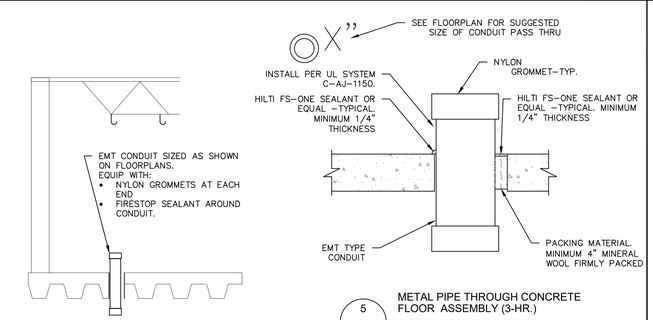

1 ACCESS CONTROL RACEWAY DETAIL — TR101



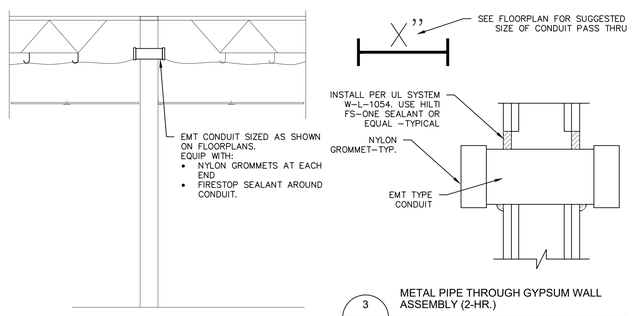

4 METAL PIPE THROUGH CONCRETE OR BLOCK WALL ASSEMBLY (2-HR.) — TR101




2 STANDARD BOX HEIGHT FOR COMMUNICATIONS AND AV FACEPLATES — TR101




5 METAL PIPE THROUGH CONCRETE FLOOR ASSEMBLY (3-HR.) — TR101




3 METAL PIPE THROUGH GYPSUM WALL ASSEMBLY (2-HR.) — TR101


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PROJECT TITLE

# NEW FIELD HOUSE

Dexter Community School District

DRAWING TITLE

## Raceway Legends, Schedules & Details

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03–18–2026 | D.R. 2 – ADDENDUM #1 |
| 02–26–2026 | D.R. 2 – CONSTRUCTION DOCUMENTS |

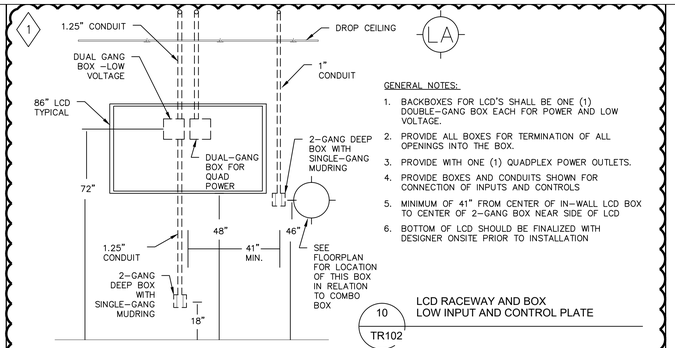
| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

DRAWING NO.

**TR101**

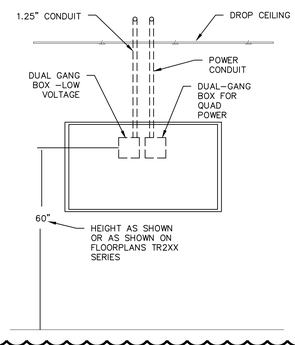



LA

GENERAL NOTES:

1. BACKBOXES FOR LCD'S SHALL BE ONE (1) DOUBLE-GANG BOX EACH FOR POWER AND LOW VOLTAGE.
2. PROVIDE ALL BOXES FOR TERMINATION OF ALL OPENINGS INTO THE BOX.
3. PROVIDE WITH ONE (1) QUADPLEX POWER OUTLETS.
4. PROVIDE BOXES AND CONDUITS SHOWN FOR CONNECTION OF INPUTS AND CONTROLS
5. MINIMUM OF 41" FROM CENTER OF IN-WALL LCD BOX TO CENTER OF 2-GANG BOX NEAR SIDE OF LCD
6. BOTTOM OF LCD SHOULD BE FINALIZED WITH DESIGNER ONSITE PRIOR TO INSTALLATION

10 TR102 — LCD RACEWAY AND BOX LOW INPUT AND CONTROL PLATE

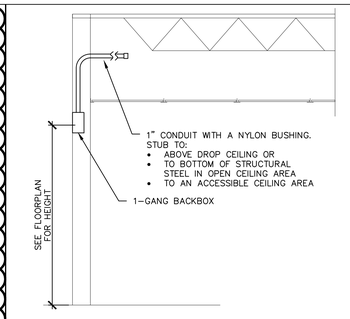



LB

GENERAL NOTES:

1. BACKBOXES FOR LCD'S SHALL BE ONE (1) DOUBLE-GANG BOX EACH FOR POWER AND LOW VOLTAGE.
2. PROVIDE ALL BOXES FOR TERMINATION OF ALL OPENINGS INTO THE BOX.
3. PROVIDE WITH ONE (1) QUADPLEX POWER OUTLET.
4. PROVIDE BOXES AND CONDUITS SHOWN FOR CONNECTION OF INPUTS AND CONTROLS
5. BOTTOM OF LCD SHOULD BE FINALIZED WITH DESIGNER ONSITE PRIOR TO INSTALLATION

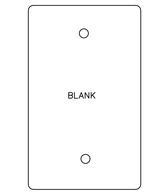
11 TR102 — LCD RACEWAY AND BOX -HUDDLE ROOM STAND ALONE



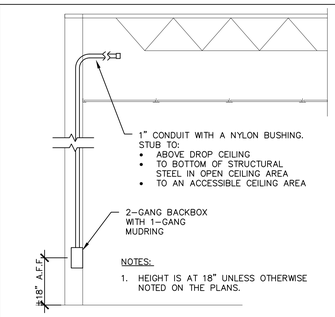

F

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |




6 TR102 — CONNECTIVITY CODE



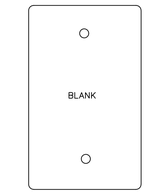

NOTES:

1. HEIGHT IS AT 18" UNLESS OTHERWISE NOTED ON THE PLANS.

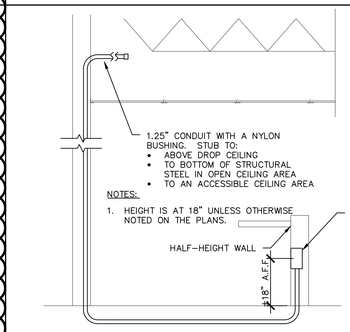
A

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |



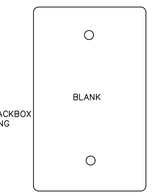

1 TR102 — RACEWAY CODE



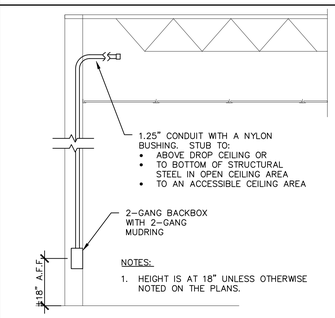

G

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |




7 TR102 — RACEWAY CODE



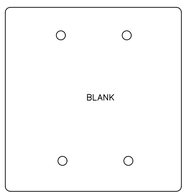

NOTES:

1. HEIGHT IS AT 18" UNLESS OTHERWISE NOTED ON THE PLANS.

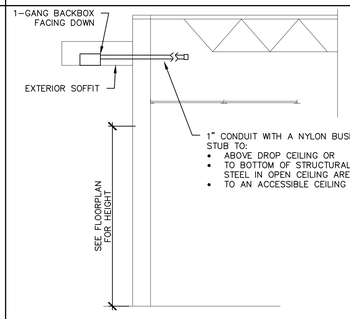
B

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | DOUBLE-GANG BLANK PLATE | STAINLESS STEEL |



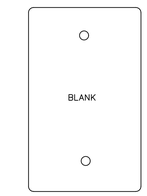

2 TR102 — RACEWAY CODE



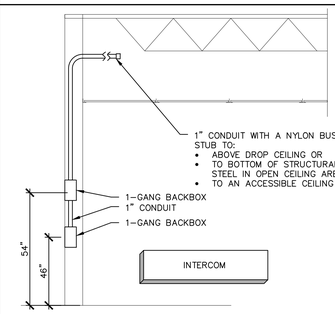

H

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |



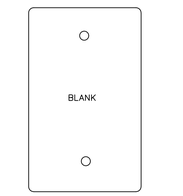

8 TR102 — CONNECTIVITY CODE




C

RACEWAY CODE

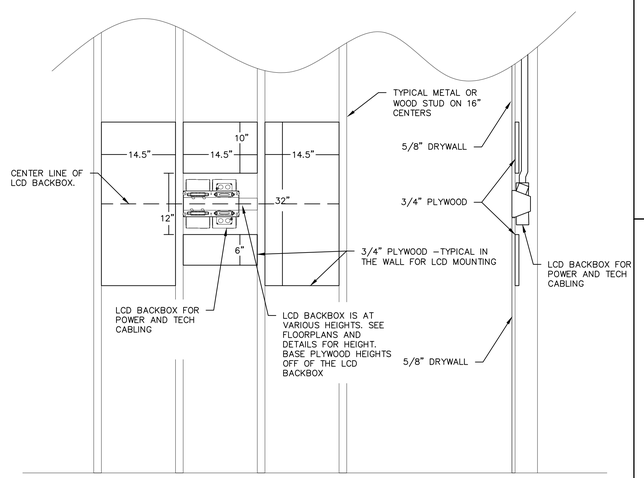
| QTY | DESCRIPTION | PART # |
|---|---|---|
| 2 | SINGLE-GANG BLANK PLATES | STAINLESS STEEL |



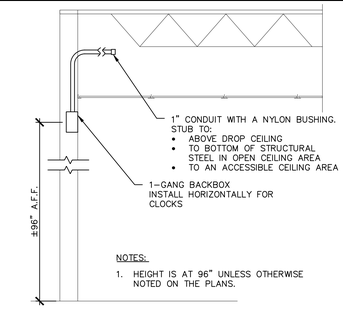

3 TR102 — RACEWAY CODE

GENERAL NOTES:

1. INSTALL 5/8" OR 3/4" PLYWOOD IN THE WALL FOR SUPPORT OF THE LCD DISPLAYS.
2. BACKBOXES FOR LCD'S ARE AT DIFFERENT HEIGHTS. SEE DETAILS AND FLOORPLANS FOR HEIGHTS.
3. INSTALL PLYWOOD AS SHOWN BETWEEN WALL STUDS. MOUNT TO THE STUDS ON EACH SIDE.
4. COORDINATE CONDUIT INSTALLATION AND DRYWALL TO PROVIDE A SMOOTH AND SUPPORTIVE INSTALLATION.
5. COORDINATE BACKBOXES AND POSSIBLE BOXES FOR INPUT AND CONTROL PLATES. INSTALL PLWOOD TO ALLOW IN-WALL BACKBOXES TO BE INSTALLED.




9 TR102 — LCD MOUNTING -TYPICAL IN-WALL BACKBOARD SUPPORT



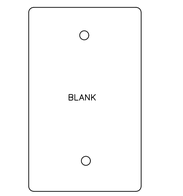

NOTES:

1. HEIGHT IS AT 96" UNLESS OTHERWISE NOTED ON THE PLANS.

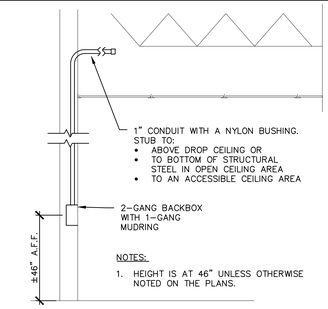
D

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |




4 TR102 — RACEWAY CODE -CLOCK



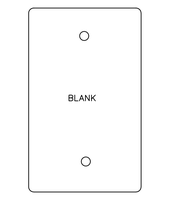

NOTES:

1. HEIGHT IS AT 46" UNLESS OTHERWISE NOTED ON THE PLANS.

E

RACEWAY CODE

| QTY | DESCRIPTION | PART # |
|---|---|---|
| 1 | SINGLE-GANG BLANK PLATE | STAINLESS STEEL |




5 TR102 — RACEWAY CODE

TMP ARCHITECTURE

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1191 WEST SQUARE LAKE ROAD
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REGISTRATION SEAL

CONSULTANT

Commtech Design
6581 BELDING RD. NE STE. 101
ROCKFORD, MICHIGAN 49341
WWW.COMMTECHDESIGN.COM

PROJECT TITLE

**NEW FIELD HOUSE**

**Dexter Community School District**

DRAWING TITLE

**New Door Access Control**

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

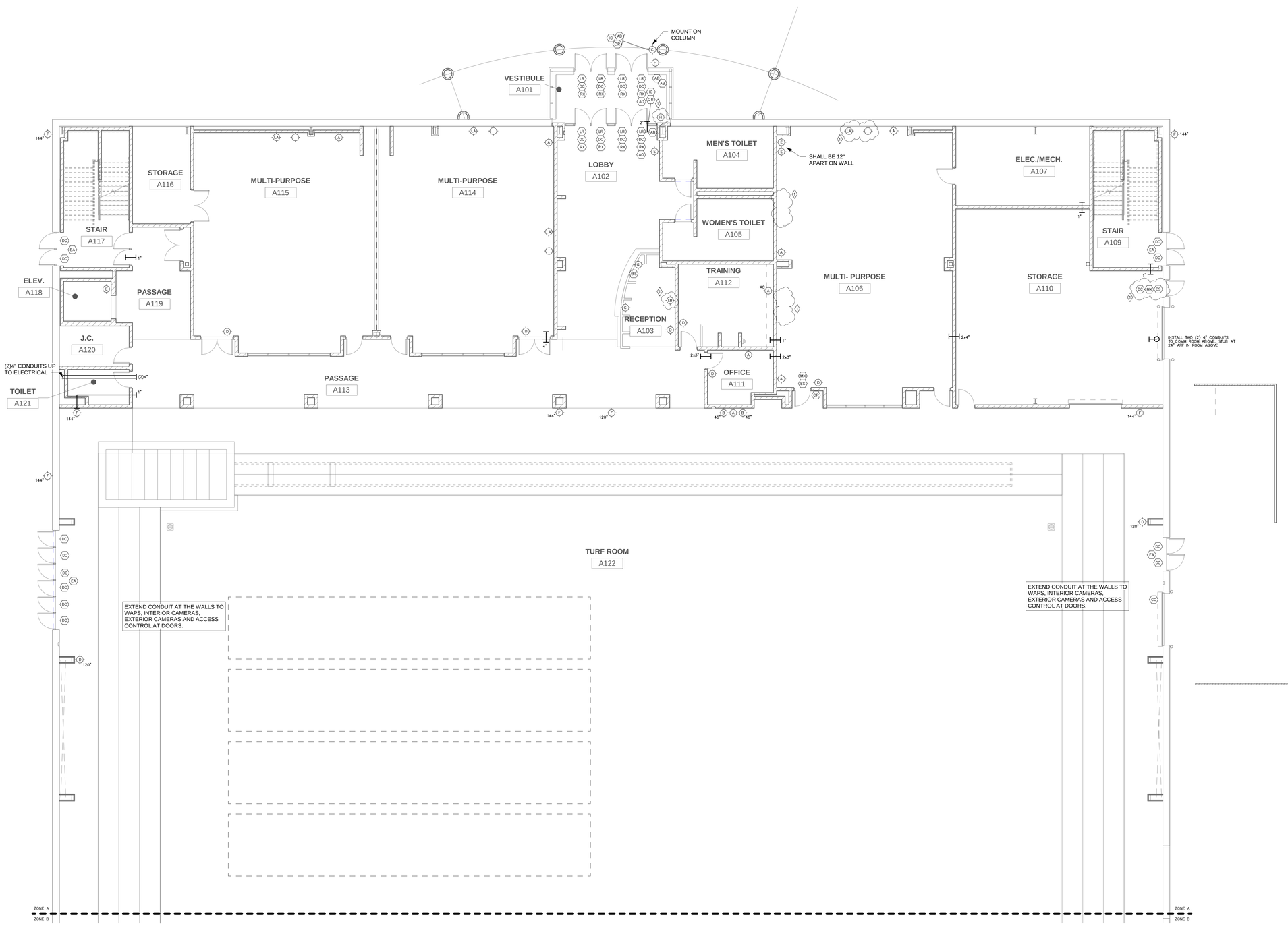
**25026E**

DRAWING NO.

**TR102**

## GENERAL RACEWAY NOTES

1. SEE THE SERIES FLOOR PLANS AND DETAILS FOR ALL TECHNOLOGY RACEWAYS.
2. FLOORBOXES ARE SHOWN ON THE ELECTRICAL DRAWINGS. SEE ELECTRICAL DETAILS FOR FLOORBOX TECHNOLOGY RACEWAYS.
3. FINAL COORDINATE HEIGHT OF ALL LCD BACKBOXES WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALL. CONDUCT A SITE WALK THRU AND MARKUP DRAWINGS. PROVIDE TO DESIGNER FOR REVIEW PRIOR TO INSTALLATION OF RACEWAYS.
4. SEE SHEETS TR1XX FOR RACEWAY AND FIRSTOP REQUIREMENTS.
5. SEE ELECTRICAL SPECIFICATIONS FOR RACEWAY TYPE REQUIREMENTS AND INSTALLATION STANDARDS




1 RACEWAY FIRST FLOOR-ZONE A
1/8" = 1'-0"


TMP ARCHITECTURE

TMP ARCHITECTURE INC
259 E. MICHIGAN AVENUE - SUITE 308
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REGISTRATION SEAL

CONSULTANT


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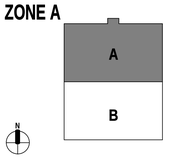

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## FIRST FLOOR RACEWAY - ZONE A




KEY PLAN

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-26 | OWNER REVIEW |
| 01-23-26 | 90% CD DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

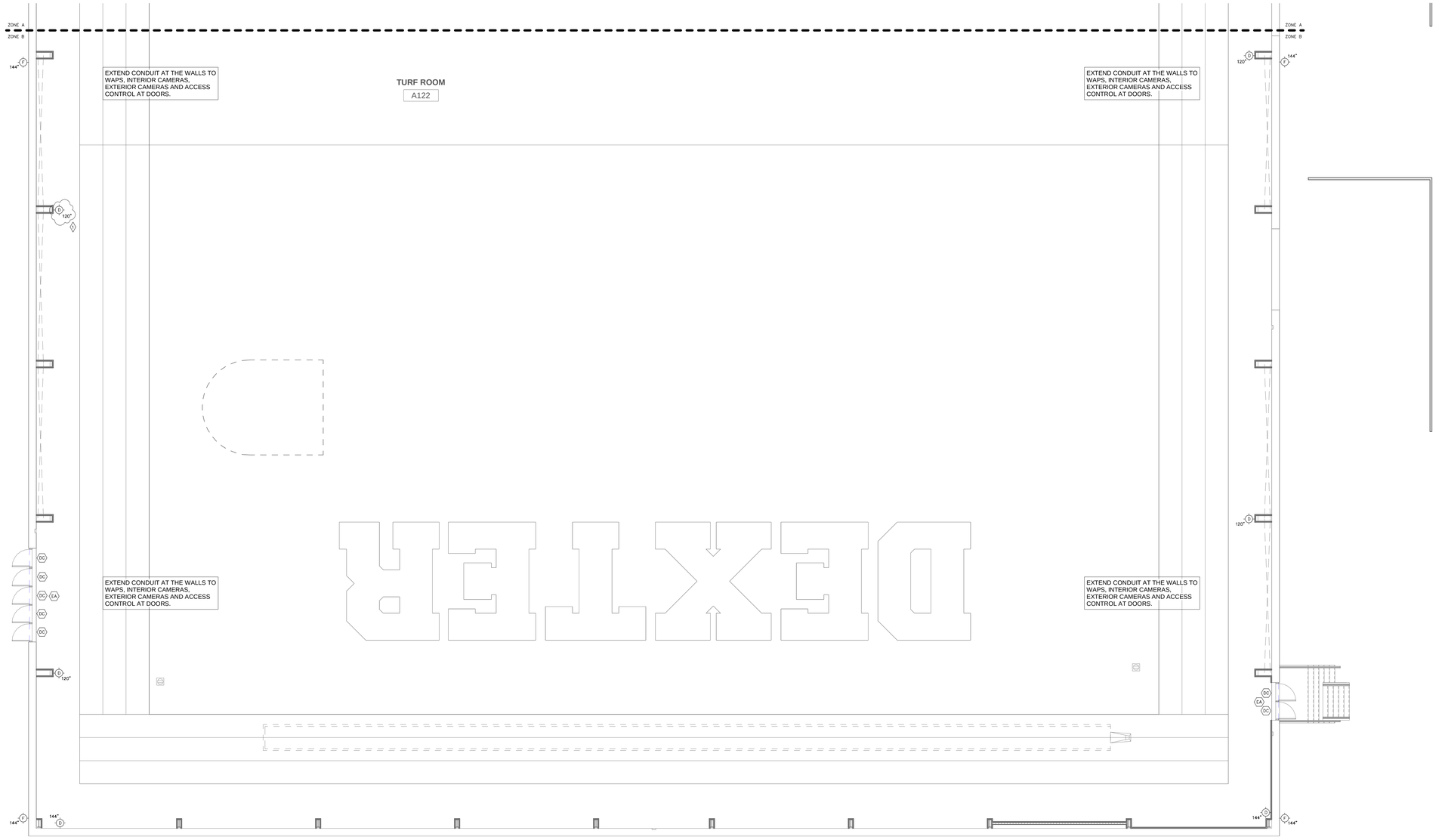
DRAWING NO.

**TR201A**


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## GENERAL RACEWAY NOTES

1. SEE THE SERIES FLOOR PLANS AND DETAILS FOR ALL TECHNOLOGY RACEWAYS.
2. FLOORBOXES ARE SHOWN ON THE ELECTRICAL DRAWINGS. SEE ELECTRICAL DETAILS FOR FLOORBOX TECHNOLOGY RACEWAYS.
3. FINAL COORDINATE HEIGHT OF ALL LCD BACKBOXES WITH THE TECHNOLOGY CONTRACTOR PRIOR TO INSTALL. CONDUCT A SITE WALK THRU AND MARKUP DRAWINGS. PROVIDE TO DESIGNER FOR REVIEW PRIOR TO INSTALLATION OF RACEWAYS.
4. SEE SHEETS TR1XX FOR RACEWAY AND FIRSTOP REQUIREMENTS.
5. SEE ELECTRICAL SPECIFICATIONS FOR RACEWAY TYPE REQUIREMENTS AND INSTALLATION STANDARDS




1 RACEWAY FIRST FLOOR-ZONE B
1/8" = 1'-0"


TMP ARCHITECTURE

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REGISTRATION SEAL

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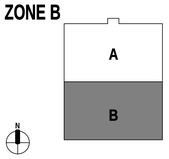

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## FIRST FLOOR RACEWAY - ZONE B




KEY PLAN

ISSUE DATES

| DATE: | ISSUED FOR: |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-26 | OWNER REVIEW |
| 01-23-26 | 90% CD DOCUMENTS |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

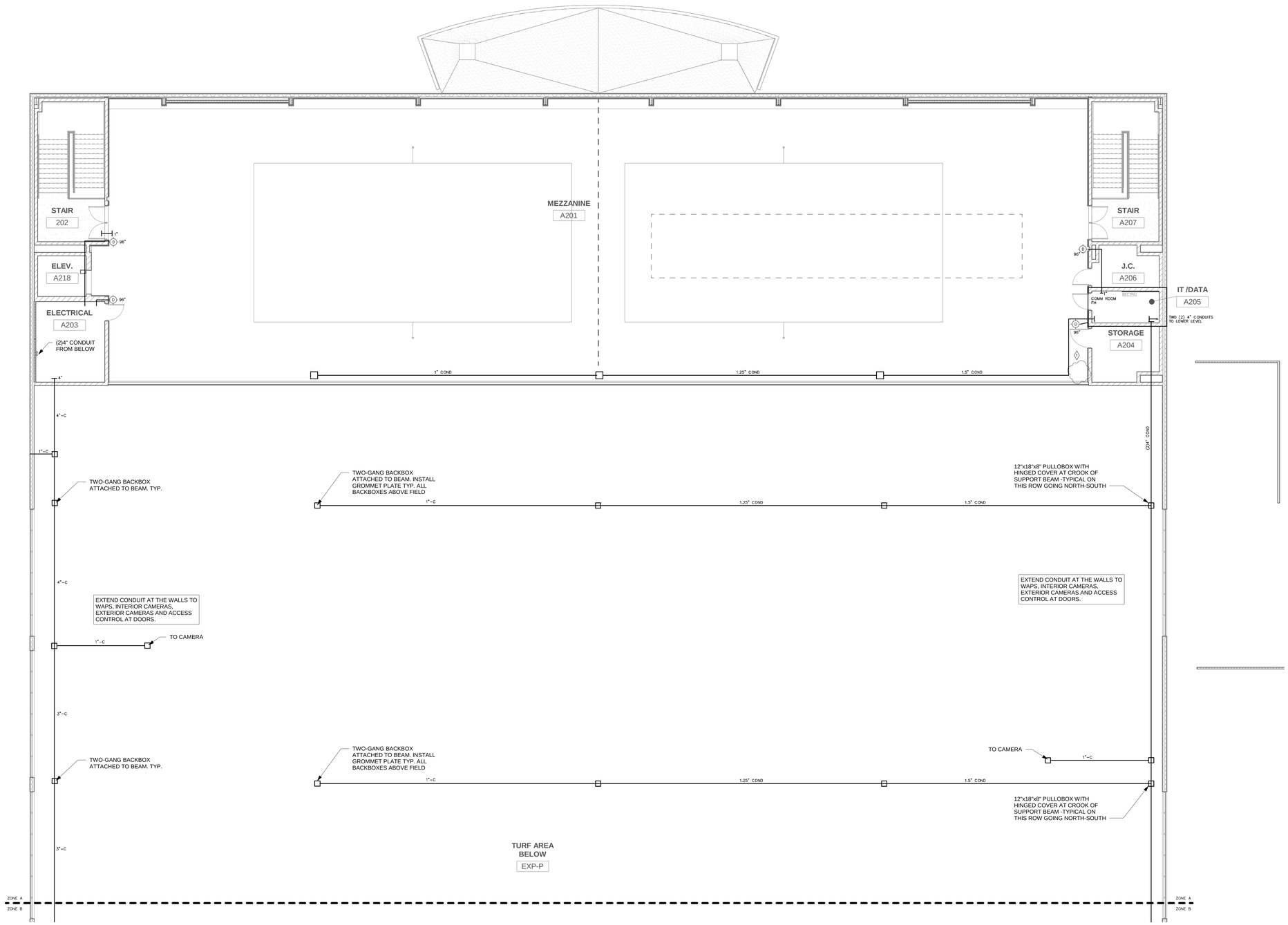
DRAWING NO.

**TR201B**


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## GENERAL RACEWAY NOTES

1. SEE THE SERIES FLOOR PLANS AND DETAILS FOR ALL TECHNOLOGY RACEWAYS.
2. FLOORBOXES ARE SHOWN ON THE ELECTRICAL DRAWINGS. SEE ELECTRICAL DETAILS FOR FLOORBOX TECHNOLOGY RACEWAYS.
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4. SEE SHEETS TR1XX FOR RACEWAY AND FIRSTOP REQUIREMENTS.
5. SEE ELECTRICAL SPECIFICATIONS FOR RACEWAY TYPE REQUIREMENTS AND INSTALLATION STANDARDS




1 RACEWAY SECOND FLOOR-ZONE A
1/8" = 1'-0"


TMP ARCHITECTURE

TMP ARCHITECTURE INC

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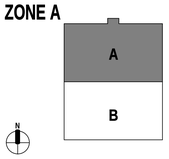

PROJECT TITLE

# NEW FIELD HOUSE

DEXTER COMMUNITY SCHOOLS
DEXTER, MI

DRAWING TITLE

## SECOND FLOOR RACEWAY - ZONE A




KEY PLAN

ISSUE DATES

| | |
|---|---|
| 03-18-2026 | D.R. 2 - ADDENDUM #1 |
| 02-26-2026 | D.R. 2 - CONSTRUCTION DOCUMENTS |
| 02-12-26 | OWNER REVIEW |
| 01-23-26 | 90% CD DOCUMENTS |
| DATE: | ISSUED FOR: |

| | |
|---|---|
| DRAWN | BVH |
| CHECKED | BVH |
| APPROVED | BWE |

PROJECT NO.

**25026E**

DRAWING NO.

**TR202A**


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