

ADDENDUM

Project Name: Recreation Authority of Roseville and Eastpointe
Recreation Authority Center
Addition and Renovation **Addendum No: Two (2)**

Project Number: 13-162 Issue Date: June 16, 2014

Project Location: Roseville, Michigan

This Addendum forms a part of the above described Contract Documents and supersedes supplements or clarifies parts thereof to the extent defined by the terms set forth in this Addendum.

This addendum consists of (5) typed page and the following attachments:

- Specifications: 003100 - BID FORM (3 pages)
087100 - DOOR HARDWARE (15 pages)
121660 – TELESCOPING STANDS (5 pages)
101400 – SIGNAGE schedule (1 page)
283111 – DIGITAL, ADDRESSABLE
FIRE ALARM SYSTEM (10 pages)
- Sketches: SKA-1, SKA-2, SKA-3
- Drawings: Architectural: T1-01,
Structural: S2-01,
- Reference Documents: Pre-Bid Sign - in Sheet 06-11-2014 (1 page)
Geotechnical Investigation Report (15 pages)

SPECIFICATIONS:

- ITEM SP1** Pre-bid Meeting / Walkthrough Attendance Record from June 11, 2014 is attached.
- ITEM SP2** Geotechnical Investigation Report dated march 14, 2014 is attached for reference.
- ITEM SP3** Specification Section 003100 BID FORM: (reissued)
A. (B) Revised bid form reissued to include revised bid date and information.
B. (C) Alternate 10.
C. (D) Schedule for phased delivery.

- ITEM SP4** Specification Section 012300 ALTERNATES (revised but not re-issued)
- A. Revised 3.1 SCHEDULE OF ALTERNATES to include Alternate 10.
- “J Alternate No. 10: NEW MOTOR CONTROL CENTER IN MEZZANINE.
1. Base Bid: Provide and install reconditioned new parts for the existing motor control center located on the mechanical mezzanine.
 2. Alternate: Provide Replace the existing Motor Control Center with new 200A-208Y/120V, 3 phase, and 4W panel with HACR type breakers with ratings as indicated on the documents.
- B. D. Alternate No. 4. Add the following areas for flooring replacement with VCT finish; E141, E142, E143.
- ITEM SP5** Specification Section 087100 DOOR HARDWARE: (issued with this addendum)
- A. Specification section 087100 DOOR HARDWARE issued in its entirety with this addendum.
- B. Refer to “DOOR/HARDWARE INDEX” issued with the hardware specification section.
- ITEM SP6** Specification Section 088000 GLAZING: (revised but not re-issued)
- A. 2.10 LAMINATED FIRE RATED GLASS UNITS: fire rated glass and aluminum
1. Framing system and glazing in clerestory windows above doors A106, and A111 to be laminated fire glass with 120 minute fire rating when tested as a wall per ASTM E-119.
 2. Glass lights adjacent to the glass units above doors a106, and A111 to be laminated fire glass with a 60 minute fire rating when tested as a wall per ASTM E-119.
 3. Basis of design system is “Fireframes Curtain Wall Series” by Technical Glass Products. (800) 426-0279.
- ITEM SP7** Specification Section 096566 SHEET VINYL SPORT FLOORING: (revised but not re-issued)
- A. PART 2- PRODUCTS, 2.1, SHEET VINYL SPORT FLOORING: flooring to be TaraFlex Multi Use 6.2 by Gerflor.
- B. 2.2 INSTALLATION MATERIALS B. Adhesive to have enhanced water resistance for higher humidity concrete floor substrates “Dry Tex System “
- ITEM SP8** Specification Section 099113 EXTERIOR PAINTING: (revised but not re-issued)
- A. 3.3 C. Standing seam metal roof refinishing system. CORAFLOX ADS by PPG including existing metal roofing substrate preparation and pre-coating repairs and primer coating as recommended by the manufacturer.

- ITEM SP9** Specification Section 101400 SIGNAGE: (revised but not re-issued)
- A. Refer to signage schedule issued with this addendum for room panel signs. Location for sign mounting, room names, and room titles to be determined as part of the shop drawing process.
 - B. Refer to sketches SKA-1, SKA-2, and SKA-3, (issued with this addendum) for sign type layout and requirements.
- ITEM SP10** Specification Section 122413 ROLLER SHADES: (revised but not re-issued)
- A. 2.3, B.1: All blind operation to be by Bead Chain.
 - B. Dual roller shade with room darkening shade is required in room Multi-Purpose A106 with recessed mounting in gyp board soffit construction. Include prefinished closure trim.
 - C. Remainder of roller shades to be single shade with 5% sunscreen shade.
- ITEM SP11** Specification Section 126600 TELESCOPING STANDS: (issued with this addendum)
- A. Specification section 126600 Telescoping Stands is issued in its entirety with this addendum.
 - B. Telescoping Stand specification is part of Alternate No. 2.
- ITEM SP12** Specification Section 283111 DIGITAL, ADDRESSABLE FIRE ALARM SYSTEM: (revised but not re-issued)
- A. 2.1, A.: approved manufacturers to be National Time and Signal for extension of fire alarm signal and system modifications. .
 - B. Refer to revised specification section 283111 DIGITAL, ADDRESSABLE FIRE –ALARM SYSTEMS reissued in its entirety.

ARCHITECTURAL DRAWINGS:

- Item A1** Drawing A0-03; OPENING SCHEDULE DOOR / FRAME TYPES (revised but not re-issued)
- A. STORE FRONT FRAME TYPES: Two store front frame types SF-9 to be 2 hour fire rated assemblies with LG-11 glass and framing. Store front frames to be set in clerestory window above doors A109 and A111.
 - B. STORE FRONT FRAME TYPE: Store front frame type SF-11 to have 60 min fire rated glass and frame. Frame to be set adjacent to the SF-9 fire rated window assembly set in clerestory west elevation.
 - C. Attached and issued with this addendum is the door hardware index listing the hardware set to be included with the scheduled opening on drawing A0-03. Refer to door hardware specification issued with this addendum.

- Item A2** Drawing A0-04; ROOM FINISH SCHEDULE (revised but not re-issued)
A. Room Finish Schedule to read VCT for the floor finish in rooms E141, E142, and E143.
B. Room Finish Schedule General Notes: revise as follows.
A. Dash in area/wall columns indicates existing finishes to remain.
B. Protect existing finishes to remain.
C. Patch existing finished damaged during demo/construction to match existing.
D. Refer to Demolition plans/details, new work plans and details for miscellaneous areas of restoration and refinishing required to complete work.
- Item A3** Drawing A1-01; Demolition floor Plan (revised but not re-issued)
A. Detail indication at column line 2 between column lines E and F to read 4 / A6-10.
- Item A4** Drawing A3-01; Floor Plan Area A (revised but not re-issued) (reissued) (issued with this addendum)
A. Add key note 51 to read “New laminated safety wall mirror refer to spec and interior elevation.
B. Tag new key note to east wall surface of room A105 FITNESS CENTER.
C. Add key note 39 to rooms E156, and E157 for coordination with metal toilet partition replacement.
D. Delete new floor construction indication in north east corner of room E155.
E. Revise key note 41 to read: “New electric cabinet heater, refer to mechanical. Provide matching infill masonry with lintel to install the new mechanical unit. Coordinate the semi recessed unit to not interfere with the adjacent door swing.”
- Item A5** Drawing A3-02; FLOOR PLAN –AREA B (revised but not re-issued)
A. Add revised key note 41 to west side of Vestibule E134.
- Item A6** Drawing A3-20; ROOF PLAN (revised but not re-issued)
A. Provide insulated galvanized sheet metal closure at air intake louver in east wall of mechanical mezzanine. Paint galvanized closure flat black prior to installation. Seal closure weather tight.
- Item A7** Drawing A5-01; EXTERIOR ELEVATIONS (revised but not re-issued)
A. Elevation 10 is to be attributed with new work for Alternate No. 7.
- Item A8** Drawing T1-01; TECHNOLOGY PLAN - AREAS A&B (issued with this addendum)
A. Technology plan including equipment requirements issued in its entirety with this addendum.
B. Coordinate electrical power and outlet location with electrical drawings and specifications.
C. Coordinate new and existing data components to be reused and or modified.

STRUCTURAL DRAWINGS:

- Item S1** Drawings S2-01; Roof Framing Plan (revised and re-issued with this addendum)
- A. Be Advised: Partial Roof Framing Plan Note 3 requires a minimum #5 reinforcing bar in masonry wall construction at 32" on center, typical Unless Noted Otherwise. This should include 6" masonry walls. Refer to other structural specifications and drawings for additional requirements.
 - B. Refer to revised Roof Framing Plan for coordinating location of existing HVAC-1.

MECHANICAL DRAWINGS:

- Item M1** Drawings MD1-02; MEZZ DEMOLITION FLOOR PLAN MECHANICAL (revised but not re-issued)
- A. Key note 7: existing concrete pads for air handling units to remain.
- Item M2** Drawings M1-01, M1-02: (revised but not re-issued)
- A. Gas piping indicated is to utilize threaded connections where exposed on roof and if running through the interior and over 2" diameter to be welded.
- Item M3** Drawings M2-01; FLOOR PLAN - HVAC (revised but not re-issued)
- A. Provide combination smoke fire damper in lieu of fire damper in ductwork penetrating north wall of game room A110.

ELECTRICAL DRAWINGS:

- Item E1** Drawing E2-01; MAIN LEVEL FLOOR PLAN–POWER AREA A (revised but not re-issued)
- A. Provide separate circuit 120v for heat trace wire in canopy drain line.
- Item E2** Drawing E3-01; ELECTRICAL RISER DIAGRAM (revised but not re-issued)
- A. New Electrical Riser Diagram: provide recondition components for MCC modifications as base bid.
 - B. New Electrical Riser Diagram: Provide new MCC cost as part of Alternate 10. Refer to Alternates specification section 012300.

****END OF ADDENDUM****

BID FORM (REVISED)

BID PROPOSAL FOR: **RECREATION AUTHORITY CENTER - ADDITION AND RENOVATION**

BID TO: City of Roseville
City Clerk's Office
Attn: Paul Van Damme, City Purchasing Agent
29777 Gratiot
Roseville, MI 48066

BID DUE DATE: June 20, 2014; 11:00 AM

BIDDERS NAME: _____

We have examined the Contract Documents for the proposed **RECREATION AUTHORITY CENTER - ADDITION AND RENOVATION** project as prepared by PARTNERS in Architecture, PLC.

In accordance therewith, the undersigned proposes to furnish all labor and materials for construction as set forth in the Contract Documents, including the following Addenda, if any (fill in the addenda number, thus confirming receipt):

Addendum Number _____ Addendum Number _____

Addendum Number _____ Addendum Number _____

1. Accompanying the proposal is a bid security for work required to be furnished by the Contract Documents, the same being subject to forfeiture in the event of default by the undersigned.
2. I agree to complete the Project, by the dates listed in Specification Section 011000 – Summary; provided that a notice to proceed is issued within thirty (30) days.
3. I understand that the Owner reserves the right to reject any or all bids, and it is agreed that this bid may not be withdrawn for a period of ninety (90) days from the opening thereof.
5. Attached herewith are the documents requested in the Supplementary Instructions to Bidders, Specification Section 001100, paragraph 4.3.5.

A. BASE BID: (Insert a base bid amount in the blank provided).

_____ Dollars \$_____

B. ALTERNATES: Refer to section 012300 for a complete description:

1. Alternate No. 1: REPLACE EXISTING BUILDING ROOFING

Add \$ _____

2. Alternate No. 2: REPLACE GYMNASIUM BLEACHER SYSTEM

Add \$ _____

3. Alternate No. 3: REPLACE CEILING AND LIGHTING IN SELECT AREAS

Add \$ _____

4. Alternate No. 4: REPLACE EXISTING FLOORING IN SELECT AREAS

Add \$ _____

5. Alternate No. 5: GLAZED BRICK AT MAIN ENTRANCE

Add \$ _____

6. Alternate No. 6: PAINT EXISTING STANDING SEAM METAL ROOFING

Add \$ _____

7. Alternate No. 7: SOUTH CLERESTORY WINDOWS

Add \$ _____

8. Alternate No. 8: WIRE CEILING TILE IN FITNESS CENTER A105

Add \$ _____

9. Alternate No. 9: NEW FLOOR TILE & BASE IN E127, E128 & E129

Add \$ _____

10. Alternate No. 10: NEW MOTOR CONTROL CENTER IN MEZZANINE

Add \$ _____

C. UNIT PRICES: Refer to section 012200 for a complete description:

1. Unit Price No. 1: UNDERCUTTING

\$ _____ / Cu. Yd.

D. SCHEDULE: Fill in anticipated project completion date. Refer to Specification Section 011000 for schedule requirements.

Phase 1: Gymnasium E166 _____
Phase 2: Structural repair E125, E124 and surrounding areas _____
Phase 3: Balance of building renovation and addition _____
Phase 4: All site work _____

E. BIDDERS INFORMATION:

Company Name: _____

Contact Name: _____

Signature: _____ Title _____

Address: _____

Email: _____

Phone Number: _____ Cell Number: _____

Fax Number: _____ Date: _____

END OF BID FORM

PART 1 - GENERAL

- 1.1 Refer to "General and Special Conditions", and "Instructions to Bidders", Division 1 of Specifications. Requirements of these Sections and the project drawings shall govern work in this section.
- 1.2 Work Included:
- A. Furnish all items of Finish Hardware specified, scheduled, shown or required herein except those items specifically excluded from this section of the specification.
 - B. Related work:
 - 1. Division 00 00 00 – Procurement and Contracting Requirements
 - 2. Division 01 00 00 – General Requirements
 - 3. Division 06 00 00 – Wood, Plastics, and Composites
 - 4. Division 08 00 00 – Openings
 - 5. Division 10 00 00 – Specialties
 - 6. Division 11 00 00 – Equipment
 - 7. Division 26 00 00 – Electrical
 - 8. Division 27 00 00 – Communications
 - 9. Division 28 00 00 – Electronic Safety and Security
 - C. Specific Omissions: Hardware for the following is specified or indicated elsewhere, unless specifically listed in the hardware sets:
 - 1. Cabinet Hardware.
 - 2. Signs, except as noted.
 - 3. Folding partitions, except cylinders where detailed.
 - 4. Sliding aluminum doors
 - 5. Chain link and wire mesh doors and gates
 - 6. Access doors and panels
 - 7. Overhead and Coiling doors
- 1.3 Quality Assurance
- A. Requirements of Regulatory Agencies:
 - 1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
 - 2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
 - 3. Provide hardware for fire-rated openings in compliance with NFPA 80 and state and local building code requirements. Provide only hardware that has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

B. Hardware Supplier:

1. Shall be an established firm dealing in contract builders' hardware. He must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant (AHC).

C. Electrified Door Hardware Supplier:

1. Shall be an experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.
2. Shall prepare data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
3. Shall have experience in providing consulting services for electrified door hardware installations.

D. Pre-installation Meeting:

1. Before hardware installation, General Contractor/Construction Manager will request a hardware installation meeting be conducted on the installation of hardware; specifically that of locksets, closers, exit devices, overhead stops and coordinators. Manufacturer's representatives of the above products, in conjunction with the hardware supplier for the project, shall conduct the meeting. Meeting to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Meeting to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.
2. When any electrical or pneumatic hardware is specified this meeting shall also include the following trades/installers: Electrical, Security, Alarm systems and Architect.
3. Convene one week or more prior to commencing work of this Section.
4. The Hardware Supplier shall include the cost of this meeting in his proposal.

E. Manufacturer:

1. Obtain each type of hardware (latch and locksets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
2. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated.

1.4 Submittals:

A. Hardware Schedule

1. Submit number of Hardware Schedules as directed in Division 1.
2. Follow guidelines established in Door & Hardware Institute Handbook (DHI) Sequence and Format for the Hardware Schedule unless noted otherwise.
3. Schedule will include the following:
 - a. Door Index including opening numbers and the assigned Finish Hardware set.

- b. Preface sheet listing category only and manufacturer's names of items being furnished as follows:

CATEGORY	SPECIFIED	SCHEDULED
Hinges	Manufacturer A	Manufacturer B
Lock sets	Manufacturer X	Manufacturer X
Kick Plates	Open	Manufacturer Z

- c. Hardware Locations: Refer to Article 3.1 B.2 Locations.
d. Opening Description: Single or pair, number, room locations, hand, active leaf, degree of swing, size, door material, frame material, and UL listing.
e. Hardware Description: Quantity, category, product number, fasteners, and finish.
f. Headings that refer to the specified Hardware Set Numbers.
g. Scheduling Sequence shown in Hardware Sets.
h. Product data of each hardware item, and shop drawings where required, for special conditions and specialty hardware.
i. Electrified Hardware system operation description.
j. "Vertical" scheduling format only. "Horizontal" schedules will be returned "Not Approved."
k. Typed Copy.
l. Double-Spacing.
m. 8-1/2 x 11 inch sheets
n. U.S. Standard Finish symbols or BHMA Finish symbols.

B. Product Data:

1. Submit, in booklet form Manufacturers Catalog cut sheets of scheduled hardware.
2. Submit product data with hardware schedule.

C. Samples:

1. Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample, if required, of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule.
2. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

D. Key Schedule:

1. Submit detailed schedule indicating clearly how the Owner's final keying instructions have been followed.
2. Submit as a separate schedule.

E. Electrified Hardware Drawings:

1. Submit elevation drawings showing relationship of all electrical hardware components to door and frame. Indicate number and gage of wires required.
 - a. Include wiring drawing showing point to point wire hook up for all components.
 - b. Include system operations descriptions for each type of opening; describe each possible condition.

- F. Submit to General Contractor/Construction Manager, the factory order acknowledgement numbers for the various hardware items to be used on the project. The factory order acknowledgement numbers shall help to facilitate and expedite any service that may be required on a particular hardware item. General Contractor/Construction Manager shall keep these order acknowledgement numbers on file in the construction trailer.

1.5 Product Delivery, Storage, and Handling:

- A. Label each item of hardware with the appropriate door number and Hardware Schedule heading number, and deliver to the installer so designated by the contractor.

1.6 Existing Conditions:

- A. All existing hardware shall be field verified by the supplying distributor to confirm compatibility and determine required preparations. Where any incompatibility is discovered, the supplying distributor shall notify the architect immediately and provide the suggested solution based on industry standard business practices.

1.7 Warranties:

- A. Refer to Division 1 for warranty requirements.
- B. During the warranty period, replace defective work, including labor, materials and other costs incidental to the work. Replace work found to be defective as defined in the General Conditions.

PART 2 - PRODUCT

- 2.1 Furnish each category with the products of only one manufacturer unless specified otherwise; this requirement is mandatory whether various manufacturers are listed or not.

- 2.2 Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, it is understood that this is the owner's Building Standard and "no substitution" is allowed.

- A. Hinges:

- 1. Furnish hinges of class and size as listed in sets.
 - 2. Numbers used are Ives (IVE).
 - 3. Products of a BHMA member are acceptable.

- B. Continuous Gear Hinge:

- 1. 6063-T6 aluminum alloy, anodized finish (cap on entire hinge painted if specified). Manufacture to template, uncut hinges non-handed, pinless assembly, three interlocking extrusions, full height of door and frame, lubricated polyacetal thrust bearing, fasteners 410 stainless steel plated and hardened. All hinge profiles to be manufactured to template bearing locations, with standard duty

bearing configurations at 5-1/8" spacing with a minimum of 16 bearings; and heavy duty at 2-9/16" spacing with a minimum of 32 bearings. Anodizing of material shall be done after fabrication of components so that all bearing slots are anodized.

2. Length: 1" less than door opening height. Fastener 12-24 x 1/2" #3 Phillips keen form stainless steel self-tapping at aluminum and hollow metal doors, 12- 1/2" #3 Philips, flathead full thread at wood doors.
3. Furnish fire rated hinges "FR" at labeled openings.
4. Numbers used are Ives.
 - a. For Wood and Hollow Metal frames;
 - 1) Ives 224HD
 - 2) Equal products by Hager & Select will also be accepted.
 - b. For Aluminum frames;
 - 1) Ives 112HD
 - 2) Equal products by Hager & Select will also be accepted.

C. Flush Bolts:

1. Automatic - metal doors:
 - a. Ives FB30 Series
 - b. Equal product of any B.H.M.A. member.
2. Automatic - wood doors:
 - a. Ives FB40 Series
 - b. Equal product of any B.H.M.A. member.
3. Constant Latching: metal doors:
 - a. Ives FB50 Series
 - b. Equal product of any B.H.M.A. member.
4. Constant Latching: wood doors:
 - a. Ives FB60 Series
 - b. Equal product of any B.H.M.A. member.
5. Manual – wood and metal doors:
 - a. Ives FB458 Series
 - b. Equal product of any B.H.M.A. member.
6. Dust Proof Strikes - furnish with all flush bolts, except at openings having thresholds:
 - a. Ives DP2
 - b. Equal product of any B.H.M.A. member.

D. Locksets and Latchsets - Mortise Type:

1. Locksets shall be manufactured from heavy gauge steel, minimum lockcase thickness 1/8", containing components of steel with a zinc dichromate plating for corrosion resistance.
2. Locks are to have a standard 2 3/4" backset with a full 3/4" throw two-piece stainless steel mechanical anti-friction latchbolt. Deadbolt shall be a full 1" throw, constructed of stainless steel.
3. Lockcase shall be easily handed without chassis disassembly by removing handing screw on lockcase and installing in opposite location on reverse side. Changing of door hand bevel from standard to reverse hand shall be done by removing the lockcase scalp plate, and pulling and rotating the latchbolt 180 degrees.
4. Lock trim shall be through-bolted to the door to assure correct alignment and proper operation. Lever trim shall have external spring cage mechanism to assist in support of the lever weight. Thumb turns shall have "EZ" thumbturn equal to Schlage L583-363.
5. Function numbers are Schlage.
 - a. Schlage L9000

- b. Corbin-Russwin ML2000
- c. Best 45
- 6. Provide strikes with extended lips where required to protect trim from being marred by latch bolt. Provide strike lips that do not project more than 1/8" beyond door frame trim at single doors and have 7/8" lip to center at pairs of 1-3/4" doors.

E. Exit Devices

- 1. All exit devices shall meet ANSI A156.3, 1994, Grade 1 test standards.
- 2. Devices shall be push through type with stainless steel touch pad design.
- 3. Center Case: Shall be interchangeable with all functions.
- 4. Mechanism End Cap: Shall be a stamped or forged metal. Plastic end caps will not be acceptable.
- 5. Trim: Shall be heavy-duty type.
- 6. The following manufacturers will be acceptable providing they meet the above criteria for exit devices:
 - a. Falcon 25 Series
 - b. Dorma 9300 Series
 - c. Von Duprin 98 Series
- 7. Trim:
 - a. As specified in sets.
 - b. Levers to match lockset design where specified.

F. Removable Mullion:

- a. Interior/Exterior, mullion is removable only through the use of building keys.
 - 1) Provide same manufacturer as exit devices.

G. Push and Pull Hardware:

- 1. Push-Pull Units: One inch round rod. Push: Straight push bar, Pull: 90 degree offset, 12 inch centers. Attach top post of pull back to back with latch stile end of push bar, bottom post of pull and hinge stile end of push bar with end caps.
- 2. Pull, Offset: One inch round rod, 90 degree offset, 12 inch centers.
- 3. Vandal Resistant Pulls: Ives VR800 Series. Stainless steel construction 0.120 inches thick.
- 4. Manufacturer: Provide push and pull hardware from any member of B.H.M.A.

H. Coordinator – Frame Stop Mounted:

- 1. Door coordinator shall prevent the active door from closing before inactive door. Stop mounted channel 1-5/8" x 5/8" steel tubing x length to suit door opening. Coordinator shall be UL listed. Furnish filler bars to fill gap between end of coordinator and inactive door frame. Furnish mounting brackets for all stop mounted hardware such as exit device strikes, door closer PA shoes, etc. Coordinators shall be prepared (cutout) at the factory for surface applied or concealed vertical rod panic devices if required.
- 2. Furnish with carry bar CB1 when required for proper operation.
 - a. Ives COR x length to suit.
 - b. Equal products of any BHMA manufacturer

I. Closers

1. Refer to door and frame details and furnish accessories such as drop plates, panel adapters, spacers and supports as required to correctly install door closers. State degree of door swing in the hardware schedule.
2. Acceptable manufacturers and types:
 - a. Falcon as listed in sets.
 - b. Equal products from Stanley & Sargent are acceptable.

J. Overhead Holders and Stops:

1. Type, function and fasteners must be same as Glynn-Johnson specified. Size per manufacturer's selector chart. Plastic end caps, hold open mechanisms and shock blocks are not allowed. End caps must be finished same as balance of unit.
2. Manufacture products using base material of Brass/Bronze for US3, US4, & US10B finished products and 300 Stainless Steel for US32 & US32D finished products.
3. Type, function, and fasteners must be the same as Glynn-Johnson specified. Size per manufacturer's selector chart.
 - a. Glynn-Johnson

K. Kick Plates:

1. Furnish .050 inches thick, beveled four sides, countersunk fasteners, 10" high x door width less 2" at single doors and less 1" at pairs. Where glass or louvers prevent this height, supply with height equal to height of bottom rail less 2".
2. Any BHMA manufacturing product meeting above is acceptable.

L. Wall Stops:

1. Length to exceed projection of all other hardware. Provide with threaded studs and expansion shields for masonry wall construction.
 - a. Ives WS447
 - b. BHMA L12011 or L12021

M. Thresholds:

1. 1/2" high - 5" wide. Cope at jambs.
2. Furnish full wall opening width when frames are recessed.
3. Cope in front of mullions if thresholds project beyond door faces.
4. Furnish with non-ferrous Stainless Steel Screws and Lead Anchors.
 - a. National Guard as listed in sets
 - b. Equal of Zero or Reese

N. Door Sweeps:

1. Surface Sweeps:
 - a. National Guard as listed in sets
 - b. Equal by Zero or Reese

O. Weather-stripping:

1. Apply to head and jamb stops.
2. Solid Bar stock all sides

- a. National Guard as listed in sets
- b. Equal by Zero or Reese

P. Miscellaneous:

- 1. Furnish items not categorized in the above descriptions but specified by manufacturer's names in Hardware Sets.

Q. Fasteners:

- 1. Furnish fasteners of the proper type, size, quantity and finish. Use machine screws and expansion shields for attaching hardware to concrete or masonry, and wall grip inserts at hollow wall construction. Furnish machine screws for attachment to reinforced hollow metal doors and frames and reinforced aluminum doors and frames. Furnish full thread wood screws for attachment to solid wood doors and frames. "TEK" type screws are not acceptable.
- 2. **Sex bolts will not be permitted on reinforced metal doors or wood doors where blocking is specified.**

2.3 Finishes:

- A. Generally, Dull Chrome, US26D / BHMA 626. Provide finish for each item as indicated in sets.

2.4 Templates and Hardware Location:

- A. Furnish hardware made to template. Supply required templates and hardware locations to the door and frame manufacturers.
- B. Furnish metal template to frame/door supplier for continuous hinge.
- C. Refer to Article 3.1 B.2, Locations, and coordinate with templates.

2.5 Cylinders and Keying:

- A. All cylinders for this project will be supplied by one supplier regardless of door type and location.
- B. The Finish Hardware supplier will meet with Architect and/or Owner to finalize keying requirements and obtain keying instructions in writing.
 - 1. Supplier shall include the cost of this service in his proposal.
- C. Provide a cylinder for all hardware components capable of being locked.
- D. Provide cylinders master and grand master keyed to existing system according to Owner's instructions. Provide change keys, master keys and grand master keys as required by Owner.
- E. Provide cylinders with construction cores or keying for use during the construction period. When so directed, and in the presence of the Owner's security department or representative, convert construction cores or keying to the final system.
 - 1. Supplier shall include the cost of this service in his proposal.

PART 3 - EXECUTION

3.1 Installation

A. General:

1. Install hardware according to manufacturers installations and template dimensions. Attach all items of finish hardware to doors, frames, walls, etc. with fasteners furnished and required by the manufacture of the item.
2. Provide blocking/reinforcement for all wall mounted Hardware.
3. Reinforced hollow metal doors and frames and reinforced aluminum door and frames will be drilled and tapped for machine screws.
4. Solid wood doors and frames: full thread wood screws. Drill pilot holes before inserting screws.
5. Continuous gear hinges attached to hollow metal doors and frames and aluminum doors and frames: 12-24 x 1/2" #3 Phillips Keenform self-tapping. Use #13 or 3/16 drill for pilot.
6. Continuous Gear Hinges require continuous mortar guards of foam or cardboard 1/2" thick x frame height, applied with construction adhesive.
7. Install weather-strip gasket prior to parallel arm closer bracket, rim exit device or any stop mounted hardware. Gasket to provide a continuous seal around perimeter of door opening. Allow for gasket when installing finish hardware. Door closers will require special templating. Exit devices will require adjustment in backset.

B. Locations:

1. Dimensions are from finish floor to center line of items.
2. Include this list in Hardware Schedule.

CATEGORY

DIMENSION

Hinges	Door Manufacturer's Standard
Flush Bolt Levers	72" and 12"
Levers	Door Manufacturer's Standard
Exit Device Touchbar	Per Template
Push-Pull Units	42" to centerline of Pull
Offset Pulls	Suitable for Exit Devices
Wall Stops/Holders	At Head

C. Field Quality Inspection:

1. Inspect material furnished, its installation and adjustment, and instruct the Owner's personnel in adjustment, care and maintenance of hardware.
2. Locksets and exit devices shall be inspected after installation and after the HVAC system is in operation and balanced, to insure correct installation and proper operation.
3. Closers shall be inspected and adjusted after the HVAC system is in operation and balanced, to insure correct installation and proper operation.
4. A written report stating compliance, and also locations and kinds of noncompliance shall be forwarded to the Architect with copies to the Contractor, hardware distributor, hardware installer and building owner.

D. Technical and Warranty Information:

PARTNERS 13-162
DOOR HARDWARE
087100 - 10

1. At the completion of the project, the technical and warranty information coalesced and kept on file by the General Contractor/Construction Manager shall be given to the Owner or Owner's Agent. In addition to both the technical and warranty information, all factory order acknowledgement numbers supplied to the General Contractor/Construction Manager during the construction period shall be given to the Owner or Owner's Agent. The warranty information and factory order acknowledgement numbers shall serve to both expedite and properly execute any warranty work that may be required on the various hardware items supplied on the project.
2. Submit to General Contractor/Construction Manager, two copies each of parts and service manuals and two each of any special installation or adjustment tools. Include for locksets, exit devices, door closers and any electrical products.

3.2 Hardware Sets:

HARDWARE SET NO. 01

EACH TO HAVE:

1	EA	CYLINDER	(AS REQUIRED)	613
			BALANCE OF HDWE PROVIDED BY THE DOOR MFR	

HARDWARE SET NO. 02

EACH TO HAVE:

HDWE PROVIDED BY THE DOOR MFR

HARDWARE SET NO. 03

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
			(MOUNT PULL SIDE)		
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 04

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	OFFICE/ENTRY LOCK	L9050L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 05

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	OH STOP	450S	652	GLY

HARDWARE SET NO. 06

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	CONST LATCHING BOLT	FB62	630	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	COORDINATOR	COR X FL	628	IVE
1	EA	MOUNTING BRACKET	MB	689	IVE
1	EA	OH STOP	450S	652	GLY
2	EA	SURFACE CLOSER	SC71 RW/PA (MOUNT PULL SIDE)	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 07

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	KEYED FIRE RATED REMOVABLE MULLION	KRF4023	USP	FAL
2	EA	FIRE EXIT HARDWARE	F-25-R-L-510-SUT-SNB	626	FAL
3	EA	CYLINDER	(AS REQUIRED)	626	
2	EA	SURFACE CLOSER	SC71 HDPA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 08

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	KEYED FIRE RATED REMOVABLE MULLION	KRF4023	USP	FAL
2	EA	FIRE EXIT HARDWARE	F-25-R-L-510-SUT-SNB	626	FAL
3	EA	CYLINDER	(AS REQUIRED)	626	
2	EA	SURFACE CLOSER	SC71 DS	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE

PARTNERS 13-162
DOOR HARDWARE
087100 - 12

HARDWARE SET NO. 09

EACH TO HAVE:

1	EA	CONT. HINGE	224HD	628	IVE
1	EA	PANIC HARDWARE	25-R-NL-OP	626	FAL
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	DOOR PULL	VR810 NL	630	IVE
1	EA	SURFACE CLOSER	SC71 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	700NA	CL	NGP
1	EA	DOOR SWEEP	600A	CL	NGP
1	EA	THRESHOLD	425HD	AL	NGP

HARDWARE SET NO. 10

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	SET	CONST LATCHING BOLT	FB62	630	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	MOUNTING BRACKET	MB	689	IVE
2	EA	SURFACE CLOSER	SC71 DS	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE

HARDWARE SET NO. 11

EACH TO HAVE:

HDWE PROVIDED BY THE DOOR MFR

HARDWARE SET NO. 12

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	SURFACE CLOSER	SC71 DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE

HARDWARE SET NO. 13

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
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PARTNERS 13-162
DOOR HARDWARE
087100 - 13

1	EA	PRIVACY W/DB & IND	L9496L OCCUPIED/VACANT 03A L583-363	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	SURFACE CLOSER	SC71 RW/PA (MOUNT PULL SIDE)	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 14

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 15

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/DB & IND	L9496L OCCUPIED/VACANT 03A L583-363	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	OH STOP	450S	652	GLY
1	EA	SURFACE CLOSER	SC71 RW/PA (MOUNT PULL SIDE)	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE

HARDWARE SET NO. 16

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	L9070L 03A	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	SURFACE CLOSER	SC71 HDPA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 17

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	FIRE EXIT HARDWARE	F-25-C-L-BE-LBR-510-SUT	626	FAL
2	EA	SURFACE CLOSER	SC71 HDPA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS447	626	IVE

PARTNERS 13-162
DOOR HARDWARE
087100 - 14

HARDWARE SET NO. 18

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	L9010 03A	626	SCH
1	EA	SURFACE CLOSER	SC71 RW/PA (MOUNT PULL SIDE)	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS447	626	IVE

HARDWARE SET NO. 19

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/DB & IND	L9496L OCCUPIED/VACANT 03A L583-363	626	SCH
1	EA	CYLINDER	(AS REQUIRED)	626	
1	EA	SURFACE CLOSER	SC71 DS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE

HARDWARE SET NO. 20.E

EACH TO HAVE:

1	EA	RE-LEVER KIT	RW3XX	626	FAL
			BALANCE OF EXISTING HDWE TO REMAIN		

PROVIDE RE-LEVER KIT COMPATIBLE WITH EXISTING LOCK MANUFACTURER AND FUNCTION.
FIELD VERIFY THE EXISTING DOOR, LOCK AND CONDITIONS FOR COMPATIBILITY WITH THE SPECIFIED HARDWARE.
COORDINATE WITH THE ARCHITECT, THE OWNER AND ALL RELATED TRADES.

HARDWARE SET NO. 21

EACH TO HAVE:

2	EA	CONT. HINGE	112HD	710	IVE
2	SET	PUSH/PULL BAR	9190HD-12"-NO	613	IVE
1	EA	SURFACE CLOSER	SC71 DS	695	FAL
1	EA	SURFACE CLOSER	SC71 HDPA	695	FAL
1	EA	WALL STOP	WS447	613	IVE

HARDWARE SET NO. 22

EACH TO HAVE:

2	EA	CONT. HINGE	112HD	710	IVE
1	EA	KEYED REMOVABLE MULLION	KR4023	USP	FAL
1	EA	PANIC HARDWARE	25-R-EO	313	FAL
1	EA	PANIC HARDWARE	25-R-NL-OP	313	FAL
2	EA	CYLINDER	(AS REQUIRED)	613	
2	EA	90 DEG OFFSET PULL	8190HD 12" O	613	IVE
1	EA	SURFACE CLOSER	SC71 HDPA	695	FAL
1	EA	SURFACE CLOSER	SC71 SS	695	FAL
1	SET	WEATHER SEAL	(PROVIDED BY THE DOOR MFR)		
1	EA	MULLION SEAL	5100	BLK	NGP
2	EA	DOOR SWEEP	600	DKB	NGP
1	EA	THRESHOLD	425HD	DKB	NGP

END OF SECTION

SYMBOLS LEGEND:

OWNER NAME: T.B.D. - COORDINATE ROOM NUMBERS AND NAMES WITH OWNER

SYMBOLS: (M) - PROVIDE MALE ANSI FIGURE; (F) - PROVIDE FEMALE ANSI FIGURE; (H) - PROVIDE HANDICAP ANSI FIGURE

SECTION 126600 - TELESCOPING STANDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Wall-attached telescoping stands.
2. Plastic seat modules for fixed installation onto concrete risers in gymnasium.

1.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design telescoping stands, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Telescoping stands shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ICC 300 and NFPA 102.

1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For telescoping stands in both stacked and extended positions. Include plans, elevations, sections, details, and attachments to other work.
1. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified, 6-inch- (150-mm-) square in size.
- D. Delegated-Design Submittal: For telescoping stands indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- E. Welding certificates.
- F. Operation and maintenance data.

1.4 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel," and AWS D1.3, "Structural Welding Code - Sheet Steel."
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

- C. Standard: Provide telescoping stands to comply with ICC 300 and NFPA 102.
- D. Regulatory Requirements: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.
- E. Preinstallation Conference: Conduct conference at Project site.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Wood:
 - 1. Lumber: Kiln dried, surfaced four sides; southern pine complying with SPIB's "Standard Grading Rules for Southern Pine Lumber" for B&B Finish (B and better) grade-of-finish requirements.
 - 2. Plywood: APA-grade trademarked, DOC PS 1.
- B. Steel:
 - 1. Structural-Steel Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Galvanized-Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation.
 - 3. Uncoated Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold-rolled commercial steel), or ASTM A 1011/A 1011M, Designation CS (hot-rolled commercial steel).
 - 4. Tubing: ASTM A 500, cold formed; ASTM A 501, hot formed; or ASTM A 513, mechanical.
- C. Extruded Aluminum: **ASTM B 221** (**ASTM B 221M**), alloy as standard for manufacturer.
- D. Polyethylene Plastic: High-density polyethylene; molded, color-pigmented, textured, impact-resistant, structural formulation.

2.2 TELESCOPING STANDS

- A. General: Operable systems of multiple-tiered seating on interconnected folding platforms that close, without being dismantled, into a nested stack for storing. Stand units permit opening and closing of adjacent rows, allow individual and collective rows to be locked open for use, and close with vertical faces of upper skirts on the same vertical plane.
- B. Wall-Attached Telescoping Stands: Forward-folding system, in which the bleachers open in the forward direction by initially moving the front row away from the stack to the fully extended position, and the rear of bleacher understructure is permanently attached to wall construction.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide "Interkal LLC, closed deck telescopic bleacher" or comparable product by one of the following:
 - a. Hussey Seating Company.
 - b. Irwin Telescopic Seating Company.

2. Operation: Automatic, friction-type, integral power unit
 - a. Limit Switches: Automatically stop integral power system when telescoping stands reach fully opened or closed positions.
 - b. Motion Monitor: Flashing light with self-contained warning horn, rated at 85 dB at **10 feet (3 m)**, mounted under telescoping seating for audio and visual warning during integral power operation.
 - c. Transformer: As required to coordinate current characteristics of motor and control station with building electrical system.
 - d. Remote Control: Portable pendant control system.
3. Description: On south wall of Gymnasium E155 provide 7 rows of bleachers in modules indicated on drawings with aisle, safety rails, barrier free seating positions indicated. Dimensions shown are for total maximum module width including end aisle safety rails and end closures.

2.3 COMPONENTS

A. Benches: Seats and skirts.

1. Material: Molded polyethylene plastic with contour surfaces.
 - a. Color: As selected by Architect from manufacturer's standard.
2. Bench Height: **Not less than 16 inches (406 mm) or more than 18 inches (457 mm).**
3. Bench Depth: **10 inches (254 mm).**
4. Bench width: 18 inches.
5. Each module shall have two longitudinal and five transverse internal ribs to provide additional structural integrity and resistance to impact.
6. Each module shall have a full ½" interlock to the adjacent module both around the perimeter and along the internal ribs to eliminate pinching and assure proper alignment.
7. A steel-to-steel attachment of each module to a minimum 13 gauge galvanized steel nose beam shall be provided for maximum rigidity. All such mounting hardware shall be concealed.
8. End caps shall be provided at the ends of each bank (section, if manual) of seating as well as each aisle.
9. Each module shall have a recessed area for seat numbering.
10. Seat modules to be mounted onto precast concrete shall have an unexposed concealed bracket attachment.

B. Wheelchair-Accessible Seating: Provide manufacturer's standard recoverable notchout (36" wide) to provide wheelchair-accessible seating at locations indicated on Drawings. Notchouts to be one row deep or as required to meet applicable accessibility standard.

1. Equip tiers adjacent to wheelchair-accessible seating with front rails as required by referenced safety standard.

C. Deck: **Plywood, 3/4 inch (19 mm) thick**

1. Finish: **Polyethylene textured overlay bonded to substrate with exterior glue.**
 - a. Color: **As selected by Architect from manufacturer's standard colors.**
- D. Risers: Steel sheet with manufacturer's standard, rust-inhibiting coating or hot-dip galvanized finish.
- E. Safety Rails: Structural steel, finished with manufacturer's standard powder coat system.
 1. **Self-storing** mid-aisle handrails located at centerline of each vertical aisle with seating on both sides.
 2. End rails (guards) that are **telescoping and self-storing.**
 3. **Removable** front rails (guards) along front of units where required by referenced safety standard.
 4. **Removable** rails around accessible seating cutouts and truncations.
 5. Color: **Black.**
- F. Understructure: Structural steel.
 1. Finish: **Manufacturer's standard** rust-inhibiting finish.
 2. Color: **Manufacturer's standard.**
- G. Support Column Wheels: Nonmarring, soft, rubber-face wheel assembly under each support column.
 1. Include wheels of size, number, and design required to support stands and operate smoothly without damaging the flooring surface, but no fewer than four per column or less than **3-1/2 inches (89 mm)** in diameter and **1 inch (25.4 mm)** wide.
- H. Fasteners: Vibration proof, in manufacturer's standard size and material.

2.4 ACCESSORIES

- A. Steps:
 1. Slip-resistant, abrasive tread **nosings** and **surfaces** at vertical aisles.
 2. Intermediate aisle steps, fully enclosed, at each vertical aisle.
 3. Transitional top step, fully enclosed, at each vertical aisle where last row of telescoping stands is adjacent to a cross aisle.
 4. Removable front steps, fully enclosed, at each vertical aisle, that engage with front row to prevent accidental separation or movement and are equipped with a minimum of four skid-resistant feet.
- B. Closure Panels and Void Fillers:
 1. Aisle closures at foot level that produce flush vertical face at aisles when system is stored.
 2. End panels covering exposed ends of stands in the stored position.
 3. Back panels covering rear of freestanding units. Panels extend full height and width of unit.
 4. Panels at cutouts and truncations for accessible seating.
 5. Rear fillers including supports for closing openings between top row and rear wall of adjoining construction.
 6. Gap fillers for closing openings between stand units or between stand units and adjoining construction.

2.5 FABRICATION

- A. Fabricate understructure from structural-steel members in size, spacing, and form required to support design loads specified in referenced safety standard.
- B. Weld understructure to comply with applicable AWS standards.
- C. Round corners and edges of components and exposed fasteners to reduce snagging and pinching hazards.
- D. Form exposed sheet metal with flat, flush surfaces, level and true in line, and without cracking and grain separation.
- E. Seating Supports: Fabricate supports to withstand, without damage to components, the forces imposed by use of stands without failure or other conditions that might impair the usefulness of seating units.
 - 1. Cantilever bench seat supports to produce toe space uninterrupted by vertical bracing.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install telescoping stands to comply with referenced safety standard and manufacturer's written instructions.
- B. On completion of installation, lubricate, test, and adjust each telescoping stand unit so that it operates according to manufacturer's written operating instructions.
- C. Clean installed telescoping stands on exposed and semi exposed surfaces. Touch up shop-applied finishes or replace components as required to restore damaged or soiled areas.

3.2 DEMONSTRATION

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

END OF SECTION 126600

SECTION 283111 - DIGITAL, ADDRESSABLE FIRE-ALARM SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fire-alarm control unit.
 - 2. Manual fire-alarm boxes.
 - 3. System smoke detectors.
 - 4. Notification appliances.
 - 5. Remote annunciator.
 - 6. Addressable interface device.
 - 7. Digital alarm communicator transmitter.

1.2 SYSTEM DESCRIPTION

- A. Noncoded, addressable system, with multiplexed signal transmission, dedicated to fire-alarm service only.
- B. Acceptable by the Authority Having Jurisdiction.
- C. No devices are shown on plan except panels.

1.3 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Fire-alarm control unit and raceways shall withstand the effects of earthquake motions.
 - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces."

1.4 SUBMITTALS

- A. General Submittal Requirements:
 - 1. Submittals shall be approved by authorities having jurisdiction prior to submitting them to Architect.
 - 2. Shop Drawings shall be prepared by persons with the following qualifications:
 - a. Trained and certified by manufacturer in fire-alarm system design, NICET certified.
 - 3. Submit complete design layouts to the Architect for review including locations of equipment and wiring.
- B. Product Data: For each type of product indicated.

- C. Shop Drawings: For fire-alarm system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Comply with recommendations in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72.
 - 2. Include voltage drop calculations for notification appliance circuits.
 - 3. Include battery-size calculations.
 - 4. Include performance parameters and installation details for each detector, verifying that each detector is listed for complete range of air velocity, temperature, and humidity possible when air-handling system is operating.
 - 5. Include floor plans to indicate final outlet locations showing address of each addressable device. Show size and route of cable and conduits. All wiring to be in conduit.
- D. Delegated-Design Submittal: For smoke detectors indicated to comply with performance requirements and design criteria, including analysis data.
 - 1. Drawings showing the location of each smoke and heat detector, ratings of each, and installation details as needed to comply with listing conditions of the detector.
 - 2. Design Calculations: Calculate requirements for selecting the spacing and sensitivity of detection, complying with NFPA 72.
 - 3. System layout shall be the responsibility of the Contractor. Required devices are not shown on Engineers Drawings.
- E. Qualification Data: For qualified Installer.
- F. Field quality-control reports.
- G. Operation and Maintenance Data: For fire-alarm systems and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
 - 1. Comply with the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 - 2. Manufacturer's required maintenance related to system warranty requirements.
 - 3. Abbreviated operating instructions for mounting at fire-alarm control unit.
- H. Software and Firmware Operational Documentation:
 - 1. Software operating and upgrade manuals.
 - 2. Device address list.
 - 3. Printout of software application and graphic screens.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

- B. Source Limitations for Fire-Alarm System and Components: Obtain fire-alarm system from single source from single manufacturer. Components shall be compatible with, and operate as, an extension of existing system.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.6 SOFTWARE SERVICE AGREEMENT

- A. Comply with UL 864.
- B. Technical Support: Beginning with Substantial Completion, provide software support for two years.
- C. Upgrade Service: Update software to latest version at Project completion. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
 - 1. Provide 60 days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade computer equipment if necessary.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by National Time and Signal.

2.2 SYSTEMS OPERATIONAL DESCRIPTION

- A. Fire-alarm signal initiation shall be by one or more of the following devices:
 - 1. Manual stations.
 - 2. Smoke detectors.
 - 3. Duct smoke detectors.
 - 4. Automatic sprinkler system water flow and tamper switches.
- B. Fire-alarm signal shall initiate the following actions:
 - 1. Continuously operate alarm-notification appliances.
 - 2. Identify alarm at the fire-alarm control unit and remote annunciators.
 - 3. Transmit an alarm signal to the remote alarm receiving station.
 - 4. Release fire and smoke doors held open by magnetic door holders.
 - 5. Record events in the system memory.
- C. Supervisory signal initiation shall be by one or more of the following devices and actions:
 - 1. Valve supervisory switch.

2. Sprinkler system flow switches.

D. System trouble signal initiation shall be by one or more of the following devices and actions:

1. Open circuits, shorts, and grounds in designated circuits.
2. Opening, tampering with, or removing alarm-initiating and supervisory signal-initiating devices.
3. Loss of primary power at fire-alarm control unit.
4. Ground or a single break in fire-alarm control unit internal circuits.
5. Abnormal ac voltage at fire-alarm control unit.
6. Break in standby battery circuitry.
7. Failure of battery charging.
8. Abnormal position of any switch at fire-alarm control unit or annunciator.

E. System Trouble and Supervisory Signal Actions: Initiate notification appliance and annunciate at fire-alarm control unit and remote annunciators.

2.3 FIRE-ALARM CONTROL PANEL

A. General Requirements for Fire-Alarm Control Unit:

1. Field-programmable, microprocessor-based, modular, power-limited design with electronic modules, complying with UL 864 and listed and labeled by an NRTL.
 - a. System software and programs shall be held in flash electrically erasable programmable read-only memory (EEPROM), retaining the information through failure of primary and secondary power supplies.
 - b. Include a real-time clock for time annotation of events on the event recorder and printer.
2. Addressable control circuits for operation of mechanical equipment.

B. Alphanumeric Display and System Controls: Arranged for interface between human operator at fire-alarm control unit and addressable system components including annunciation and supervision. Display alarm, supervisory, and component status messages and the programming and control menu.

1. Annunciator and Display: Liquid-crystal type, of 80 characters, minimum.

C. Circuits:

1. Initiating Device, Notification Appliance, and Signaling Line Circuits: NFPA 72, Class B.
 - a. Initiating Device Circuits: Style B.
 - b. Notification Appliance Circuits: Style W.
 - c. Signaling Line Circuits: Style 4.
 - d. Install no more than 80% of addressable devices on each signaling line circuit.

D. Notification Appliance Circuit: Operation shall sound in a slow woop/temporal.

E. Door Controls: Door hold-open devices that are controlled by smoke detectors at doors in smoke barrier walls shall be connected to fire-alarm system.

- F. Transmission to Remote Alarm Receiving Station: Automatically transmit alarm, supervisory, and trouble signals to a remote alarm station.
- G. Primary Power: 24-V dc obtained from 120-V ac service and a power-supply module. Initiating devices, notification appliances, signaling lines, trouble signals, and supervisory and digital alarm communicator transmitters shall be powered by 24-V dc source.
 - 1. Alarm current draw of entire fire-alarm system shall not exceed 80 percent of the power-supply module rating.
- H. Secondary Power: 24-V dc supply system with batteries, automatic battery charger, and automatic transfer switch.
 - 1. Batteries: Sealed lead calcium.
- I. Instructions: Computer printout or typewritten instruction card mounted behind a plastic or glass cover in a stainless-steel or aluminum frame. Include interpretation and describe appropriate response for displays and signals. Briefly describe the functional operation of the system under normal, alarm, and trouble conditions.

2.4 MANUAL FIRE-ALARM BOXES

- A. General Requirements for Manual Fire-Alarm Boxes: Comply with UL 38. Boxes shall be finished in red with molded, raised-letter operating instructions in contrasting color; shall show visible indication of operation; and shall be mounted on recessed outlet box. If indicated as surface mounted, provide manufacturer's surface back box.
 - 1. Single-action mechanism, pull-lever type. With integral addressable module arranged to communicate manual-station status (normal, alarm, or trouble) to fire-alarm control unit.
 - 2. Station Reset: Key- or wrench-operated switch.
 - 3. Indoor Protective Shield: Factory-fabricated clear plastic enclosure hinged at the top to permit lifting for access to initiate an alarm. Lifting the cover actuates an integral battery-powered audible horn intended to discourage false-alarm operation.

2.5 SYSTEM SMOKE DETECTORS

- A. General Requirements for System Smoke Detectors:
 - 1. Comply with UL 268; operating at 24-V dc, nominal.
 - 2. Detectors shall be two-wire type.
 - 3. Base Mounting: Detector and associated electronic components shall be mounted in a twist-lock module that connects to a fixed base. Provide terminals in the fixed base for connection to building wiring.
 - 4. Self-Restoring: Detectors do not require resetting or readjustment after actuation to restore them to normal operation.
- B. Photoelectric Smoke Detectors:

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).

C. Duct Smoke Detectors: Photoelectric type complying with UL 268A.

1. Detector address shall be accessible from fire-alarm control unit and shall be able to identify the detector's location within the system and its sensitivity setting.
2. An operator at fire-alarm control unit, having the designated access level, shall be able to manually access the following for each detector:
 - a. Primary status.
 - b. Device type.
 - c. Present average value.
 - d. Present sensitivity selected.
 - e. Sensor range (normal, dirty, etc.).
3. Weatherproof Duct Housing Enclosure: NEMA 250, Type 4X; NRTL listed for use with the supplied detector.
4. Each sensor shall have multiple levels of detection sensitivity.
5. Sampling Tubes: Design and dimensions as recommended by manufacturer for specific duct size, air velocity, and installation conditions where applied.
6. Relay Fan Shutdown: Rated to interrupt fan motor-control circuit.

2.6 HEAT DETECTORS

- A. General Requirements for Heat Detectors: Comply with UL 521.
- B. Heat Detector, addressable to a temperature of 190 deg F (88 deg C) (programmable).

2.7 NOTIFICATION APPLIANCES

- A. General Requirements for Notification Appliances: Connected to notification appliance signal circuits, zoned as indicated, equipped for mounting as indicated and with screw terminals for system connections.
 1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly, equipped for mounting as indicated and with screw terminals for system connections.
- B. Chimes, Low-Level Output: Vibrating type, 75-dBA minimum rated output.
- C. Chimes, High-Level Output: Vibrating type, 81-dBA minimum rated output.

- D. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Comply with UL 464. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet (3 m) from the horn, using the coded signal prescribed in UL 464 test protocol.
- E. Visible Notification Appliances: Xenon strobe lights comply with UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch- (25-mm-) high letters on the lens.
 - 1. Rated Light Output:
 - a. Multi-candela adjustable, 15/30/75/110 cd, selectable in the field.
 - 2. Mounting: Wall mounted unless otherwise indicated.
 - 3. For units with guards to prevent physical damage, light output ratings shall be determined with guards in place. Provide guards for devices in gymnasium and similar areas.
 - 4. Flashing shall be in a temporal pattern, synchronized with other units.
 - 5. Strobe Leads: Factory connected to screw terminals.
 - 6. Mounting Faceplate: Factory finished, red or white to be selected by Architect.

2.8 MAGNETIC DOOR HOLDERS

- A. Description: Units are equipped for wall or floor mounting as indicated and are complete with matching doorplate. See Architectural Drawing for doors requiring holders.
 - 1. Electromagnet: Requires no more than 3 W to develop 25-lbf (111-N) holding force.
 - 2. Wall-Mounted Units: Flush mounted unless otherwise indicated.
 - 3. Rating: 24-V ac or dc.
 - 4. Rating: 120-V ac.
- B. Material and Finish: Match door hardware.

2.9 FIRE ALARM ANNUNCIATOR PANEL

- A. Description: Annunciator functions shall match those of fire-alarm control unit for alarm, supervisory, and trouble indications. Manual switching functions shall match those of fire-alarm control unit, including acknowledging, silencing, resetting, and testing and fire drill control.
 - 1. Mounting: Flush cabinet, NEMA 250, Type 1.
- B. Display Type and Functional Performance: Alphanumeric display and LED indicating lights shall match those of fire-alarm control unit. Provide controls to acknowledge, silence, reset, and test functions for alarm, supervisory, and trouble signals.

2.10 ADDRESSABLE INTERFACE DEVICE

- A. Description: Microelectronic monitor module, NRTL listed for use in providing a system address for alarm-initiating devices for wired applications with normally open contacts.

2.11 DIGITAL ALARM COMMUNICATOR TRANSMITTER

- A. Digital alarm communicator transmitter shall be acceptable to the remote central station and shall comply with UL 632 and be listed and labeled by an NRTL.
- B. Functional Performance: Unit shall receive an alarm, supervisory, or trouble signal from fire-alarm control unit and automatically capture telephone line(s) and dial a preset number for a remote central station. When contact is made with central station(s), signals shall be transmitted. If service on any line is interrupted for longer than 45 seconds, transmitter shall initiate a local trouble signal and transmit the signal indicating loss of telephone line to the remote alarm receiving station over the remaining line. Transmitter shall automatically report telephone service restoration to the central station. If service is lost on both telephone lines, transmitter shall initiate the local trouble signal.
- C. Local functions and display at the digital alarm communicator transmitter shall include the following:
 - 1. Verification that both telephone lines are available.
 - 2. Programming device.
 - 3. LED display.
 - 4. Manual test report function and manual transmission clear indication.
 - 5. Communications failure with the central station or fire-alarm control unit.
- D. Digital data transmission shall include the following (programmable):
 - 1. Address of the alarm-initiating device.
 - 2. Address or Zone of the supervisory signal.
 - 3. Address or Zone of the trouble-initiating device.
 - 4. Loss of ac supply or loss of power.
 - 5. Low battery.
 - 6. Abnormal test signal.
 - 7. Communication bus failure.
- E. Secondary Power: Integral rechargeable battery and automatic charger.
- F. Self-Test: Conducted automatically every 24 hours with report transmitted to central station.

PART 3 - EXECUTION

3.1 EQUIPMENT INSTALLATION

- A. Comply with NFPA 72 and all Authorities Having Jurisdiction for installation of fire-alarm equipment.
- B. Fire Alarm System design including number of devices, locations and power supplies shall be the responsibility of Fire Alarm System Contractor.
- C. Smoke- or Heat-Detector Spacing:
 - 1. Comply with NFPA 72, "Smoke-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for smoke-detector spacing.

2. Comply with NFPA 72, "Heat-Sensing Fire Detectors" Section in the "Initiating Devices" Chapter, for heat-detector spacing.
 3. Smooth ceiling spacing shall not exceed 30 feet (9 m).
 4. Spacing of detectors for irregular areas, for irregular ceiling construction, and for high ceiling areas shall be determined according to Appendix A or Appendix B in NFPA 72.
 5. HVAC: Locate detectors not closer than 3 feet (1 m) from air-supply diffuser or return-air opening.
- D. Duct Smoke Detectors: Comply with NFPA 72 and NFPA 90A. Install sampling tubes so they extend the full width of duct.
- E. Remote Status and Alarm Indicators: Install near each smoke detector and each sprinkler water-flow switch and valve-tamper switch that is not readily visible from normal viewing position.
- F. Audible Alarm-Indicating Devices: Install not less than 6 inches (150 mm) below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.
- G. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches (150 mm) below the ceiling or 80" above finished floor when possible or unless ceiling mounted (when permitted).
- H. Device Location-Indicating Lights: Locate in public space near the device they monitor.
- I. Fire-Alarm Control Unit: Surface mounted, with tops of cabinets not more than 72 inches (1830 mm) above the finished floor.
- J. Annunciator: Install with top of panel not more than 72 inches (1830 mm) above the finished floor.

3.2 CONNECTIONS

- A. For fire-protection systems related to doors in fire-rated walls and partitions and to doors in smoke partitions, comply with requirements in Division 08 Section "Door Hardware." Connect hardware and devices to fire-alarm system.
1. Verify that hardware and devices are NRTL listed for use with fire-alarm system in this Section before making connections.
- B. Make addressable connections with a supervised interface device to the following devices and systems. Install the interface device less than 3 feet (1 m) from the device controlled. Make an addressable confirmation connection when such feedback is available at the device or system being controlled.
1. Supervisory connections at valve supervisory switches.
- C. Interconnect with existing control panel in Middle School to indicate trouble at panel in both buildings.

3.3 IDENTIFICATION

- A. Identify system components, wiring, cabling, and terminals. Comply with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

- B. Install framed instructions in a location visible from fire-alarm control unit.

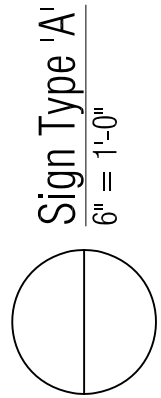
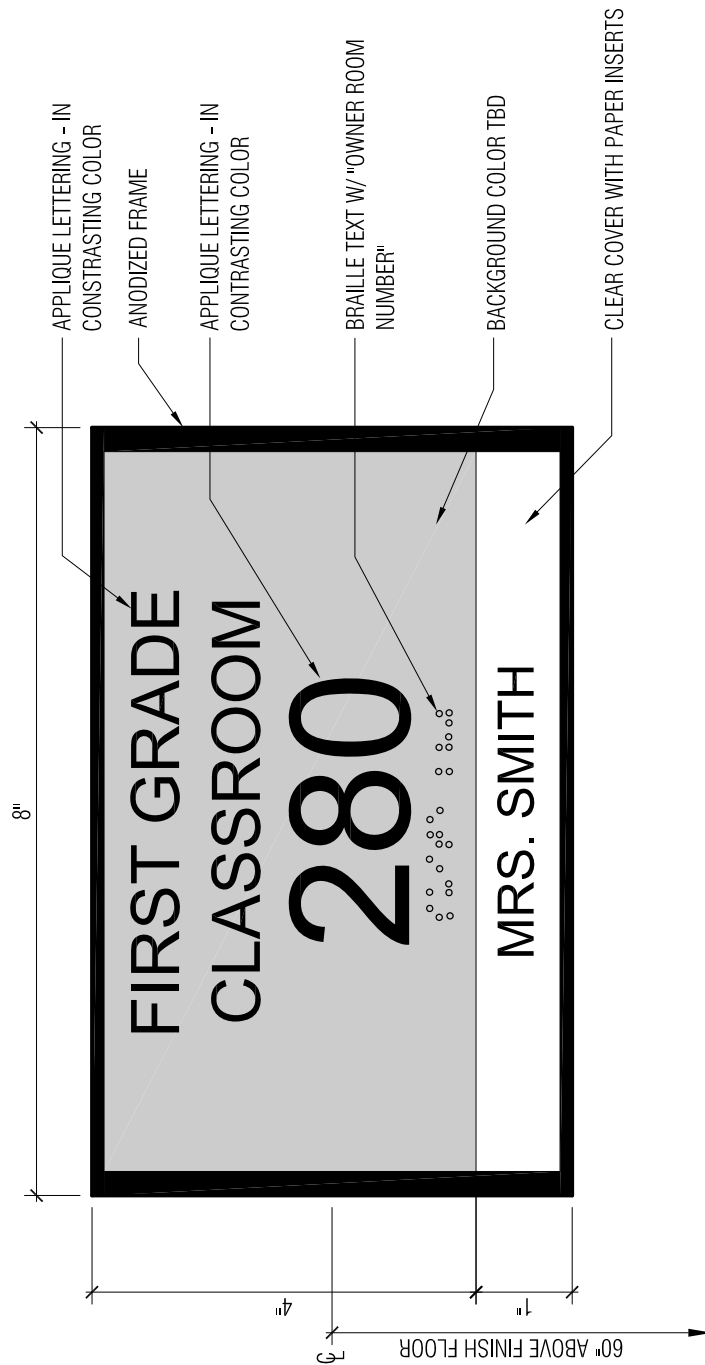
3.4 GROUNDING

- A. Ground fire-alarm control unit and associated circuits; comply with IEEE 1100. Install a ground wire from main service ground to new fire-alarm control unit.

3.5 FIELD QUALITY CONTROL

- A. Field tests shall be witnessed by Authorities Having Jurisdiction. Coordinate with Owner's representative.
- B. Tests and Inspections:
 - 1. Visual Inspection: Conduct visual inspection prior to testing.
 - a. Inspection shall be based on completed Record Drawings and system documentation that is required by NFPA 72 in its "Completion Documents, Preparation" Table in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter.
 - 2. System Testing: Comply with "Test Methods" Table in the "Testing" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
 - 3. Test audible appliances for the public operating mode according to manufacturer's written instructions.
 - 4. Test visible appliances for the public operating mode according to manufacturer's written instructions.
 - 5. Factory-authorized service representative shall prepare the "Fire Alarm System Record of Completion" in the "Documentation" Section of the "Fundamentals of Fire Alarm Systems" Chapter in NFPA 72 and the "Inspection and Testing Form" in the "Records" Section of the "Inspection, Testing and Maintenance" Chapter in NFPA 72.
- C. Reacceptance Testing: Perform reacceptance testing to verify the proper operation of added or replaced devices and appliances.
- D. Fire-alarm system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

END OF SECTION 283111



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PROJECT NUMBER: 13-162

PROJECT NAME:
**Recreation Authority of Roseville & Eastpointe
 Recreation Authority Addition & Renovation**

18185 Sycamore, Roseville, MI 48066

DRAWN BY: KJB

CHECKED BY: ACS

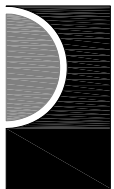
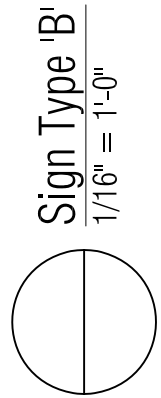
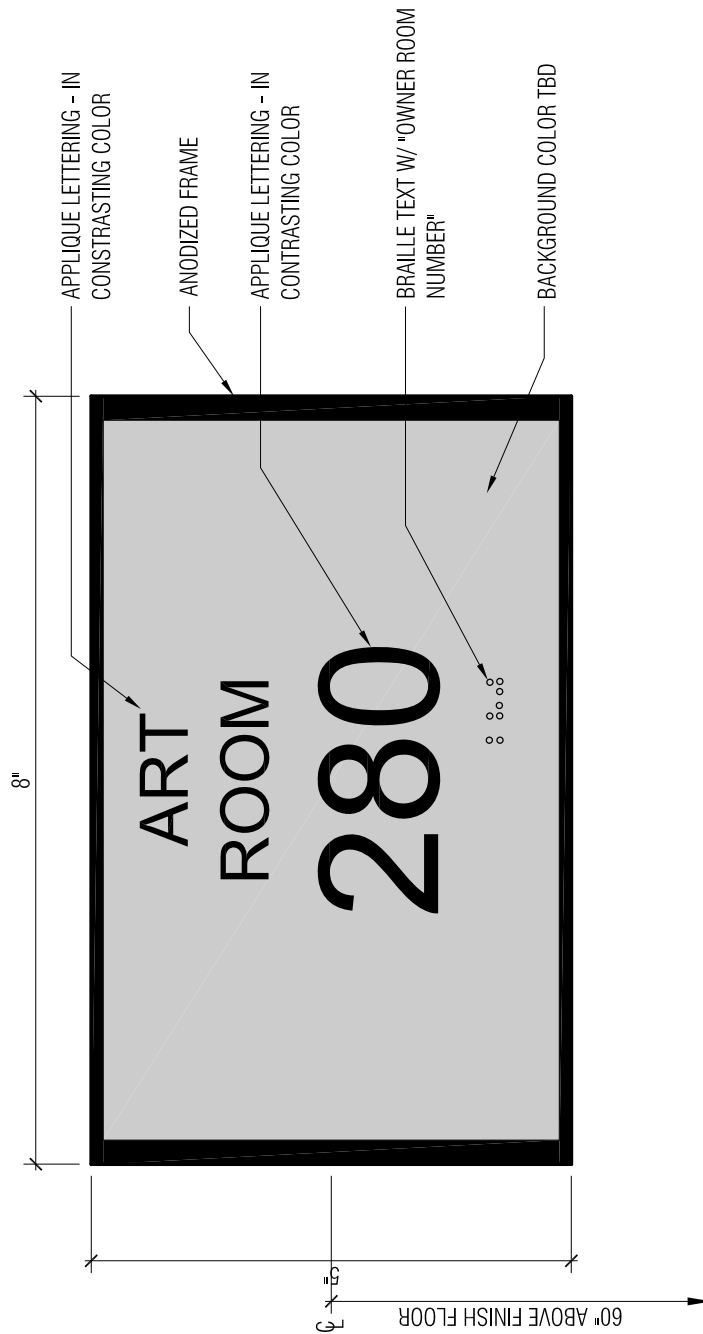
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DOC. ISSUE:
 ADD-2

DRAWING NO:
 SKA-01

DRAWING REF.:
 A3-01



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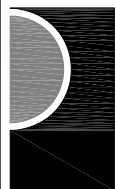
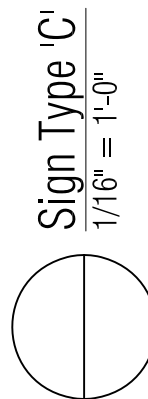
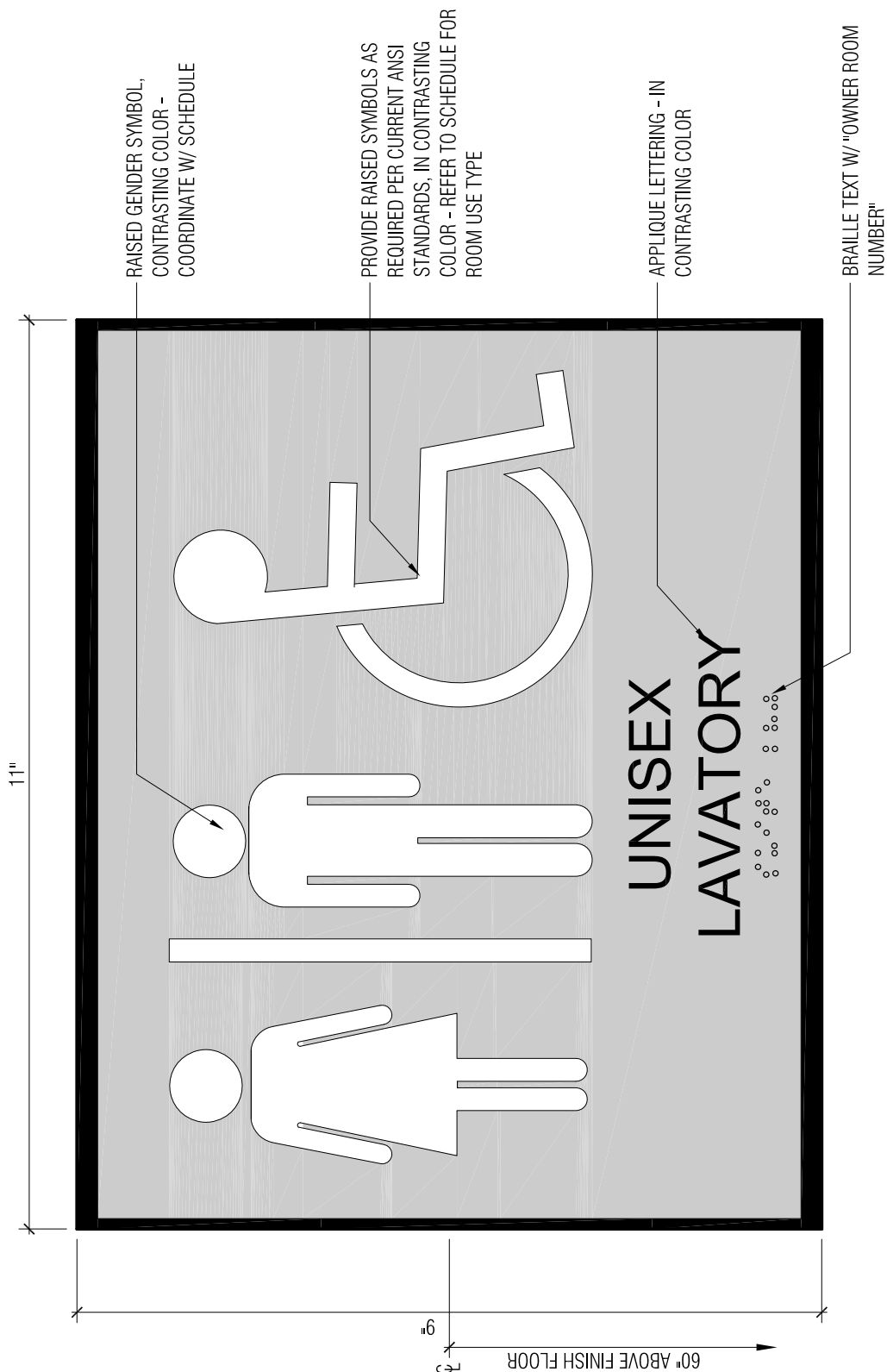
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REV: _____

DOC. ISSUE:
 ADD-2

DRAWING NO:
 SKA-02

DRAWING REF.:
 A3-01



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PROJECT NUMBER: 13-162

PROJECT NAME:

**Recreation Authority of Roseville & Eastpointe
 Recreation Authority Addition & Renovation**

18185 Sycamore, Roseville, MI 48066

DRAWN BY: KJB

CHECKED BY: ACS

DATE: 06-17-14

REV:

DOC. ISSUE:
ADD-2

DRAWING NO:
SKA-03

DRAWING REF.:
A3-01

MEETING ATTENDANCE RECORD - Pre Bid Meeting / Walk Through

PROJECT: Roseville / Eastpointe Rec Authority - Rec Center Add'n Renov. DATE: June 11, 2014

PROJECT NO: 13-162 FILE REF.: R10

MEETING LOCATION: Project Site Recreation Center.

ATTENDEE NAME	COMPANY NAME / ENTITY	TELEPHONE	EMAIL
BOB WALNY	Acme Enterprises	586 771 4800	rwalny@acme-enterprises.com
Brian Glutz	Acme Enterprises	1 1 1	bglutz@acme-enterprises.com
Michaelangelo Cereghino	Key & Assoc.	313.340.1688	mcereghino@keyassoc.com
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Report on Geotechnical Investigation

**Proposed Roseville/Eastpointe
Recreation Building Addition
18185 Sycamore Street
Roseville, Michigan**

Prepared for:

**PARTNERS in Architecture, PLC
65 Market Street
Mount Clemens, Michigan 48043**

**G2 Project No. 140111
March 14, 2014**



March 14, 2014

Mr. Andy Sowinski
PARTNERS in Architecture, PLC
65 Market Street
Mount Clemens, Michigan 48043

Re: Report of Geotechnical Investigation
Proposed Roseville/Eastpointe Recreation Building Addition
18185 Sycamore Street
Roseville, Michigan
G2 Project No. 140111

Dear Mr. Sowinski:

In accordance with your request, we have completed a geotechnical investigation for the proposed Roseville/Eastpointe Recreation Building addition in Roseville, Michigan. This report presents the results of our observations and analyses and our recommendations for subgrade preparation, foundation design, and construction considerations as they relate to the geotechnical conditions at the site.

We appreciate the opportunity to be of service to PARTNERS in Architecture, PLC and look forward to discussing our findings. In the meantime, if you have any questions regarding this report or any other matter pertaining to the project, please call us.

Sincerely,

G2 Consulting Group, LLC

Jeffrey M. Hayball, P. E.
Project Engineer

Noel J. Hargrave-Thomas, P.E.
Principal

Jason B. Stoops, P.E.
Project Manager

JMH/JBS/NJHT/ljv

Enclosures

Geotechnical & Geoenvironmental
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EXECUTIVE SUMMARY

We understand the proposed project consists of construction an addition at the existing Roseville/Eastpointe Recreation Center in Roseville, Michigan. The addition will be a single-story with a slab-on-grade floor and load bearing masonry walls ranging from 12 to 18 feet in height. The finished floor elevation for the proposed addition will match the finished floor elevation for the existing building of 613.85 feet.

Approximately 3 to 3-1/2 inches of bituminous concrete is present at the ground surface of the borings. A sandy gravel aggregate base course underlies the bituminous concrete and extends to depths ranging from 6 inches to 10 inches below grade. Medium compact silty sand fill with trace organic matter is present below the sandy gravel fill and extends to depths ranging from 1-1/2 to 3 feet below grade. Native granular soils, consisting of medium compact to compact sand and silty sand with occasional clay seams and layers, generally underlies the silty sand fill within the borings and extends to the explored depth of 20 feet. However, a strata of hard native silty clay is present below the silty sand fill of boring B-3 between 3 to 4 feet below grade and within the native sand of boring B-1 between 3 to 7 feet below grade. Groundwater was measured at depths ranging from 7 to 12 feet below grade within the borings during drilling operations. Upon completion of drilling operations, groundwater was measured at depths ranging from 12-1/2 to 14 feet below grade within the borings.

We understand the proposed finished floor elevation will match the existing finished floor elevation of 613.85 feet. Site grades within the proposed building footprint range in elevation from 611-1/2 to 612 feet. Therefore, we anticipate up to 2 feet of engineered fill will be required to raise site grades. Based on the finished floor elevation, we anticipate the silty sand fill, native silty clay, and native medium compact to compact sand will be present at conventional foundation depths. However, the existing silty sand fill is not suitable for support of foundations. Therefore, we recommend foundations extend through the existing silty sand fill and bear within the aforementioned native soils.

We recommend a net allowable soil bearing pressure of 3,000 psf be used in design of foundations supported within generally hard silty clay and medium compact to compact sand. Foundations must bear at a minimum of 3-1/2 feet below finished grade for protection against frost heave. However, we anticipate foundations will extend through the fill up to 5-1/2 feet below finished grades. Interior footings may bear at shallower depths provided suitable native soils are available for support. We recommend G2 be on site during construction to observe the excavation and verify the adequacy of the bearing soils.

Care should always be exercised when excavating near existing building or utilities to avoid undermining. In no case should excavations extend below the level of the adjacent foundations unless underpinning is planned. Any existing utilities present within the location of the proposed addition footprints must be relocated if they interfere with or lie beneath the proposed addition.

Do not consider this summary separate from the entire text of this report, with all the conclusions and qualifications mentioned herein. Details of our analysis and recommendations are discussed in the following sections and in the Appendix of this report.



PROJECT DESCRIPTION AND PURPOSE

We understand the proposed project consists of construction an addition at the existing Roseville/Eastpointe Recreation Center in Roseville, Michigan. The addition will be a single-story with a slab-on-grade floor and load bearing masonry walls ranging from 12 to 18 feet in height. The finished floor elevation for the proposed addition will match the existing building finished floor elevation of 613.85 feet.

We understand wall loads will range from 1.3 to 1.5 kips per linear foot and interior column loads will range from 25 to 30 kips. If our assumptions regarding loading conditions and finished grades differ, G2 Consulting Group, LLC (G2) must be notified so that we can review the recommendations provided within this investigation.

The purpose of the exploration is to determine and evaluate the general subsurface conditions at the site and develop related foundation recommendations for support of the proposed addition and construction considerations related to the proposed development.

SCOPE OF SERVICES

The field operations, laboratory testing, and engineering report preparation were performed under the direction and supervision of a licensed professional engineer. Our services were performed according to generally accepted standards and procedures in the practice of geotechnical engineering in this area. Our scope of services for this project consists of the following specific items:

1. We performed a total of three (3) soil borings. Soil borings B-1 through B-3 were performed within the footprint of the proposed addition and extended to a depth of 20 feet each.
2. We performed laboratory testing on representative samples obtained from the soil borings. Laboratory testing included soil classification, organic matter content, natural moisture content, and unconfined compressive strength determinations.
3. We prepared this engineering report. The report includes recommendations regarding foundation types, allowable bearing capacity, estimated settlement, pavement design, and construction considerations related to foundation construction and associated development.

FIELD INVESTIGATION

PARTNERS in Architecture, PLC, in conjunction with G2 Consulting Group, LLC, selected the number, depth, and location of the soil borings. The soil borings were located in the field by measuring from existing site features and landmarks using conventional taping methods. The approximate soil boring locations are shown on the Soil Boring Location Plan, Plate No. 1. Ground surface elevations were interpolated from spot elevations presented on the Topographic Survey prepared by Anderson, Eckstein, & Westrick, Inc., dated January 2014.

Soil borings were drilled using a truck-mounted rotary drilling rig. Continuous flight, 2-1/4-inch inside diameter, hollow-stem augers were used to advance the boreholes. Within each soil boring, soil samples were obtained at intervals of 2-1/2 feet within the upper 10 feet and at intervals of 5 feet below that depth.



These samples were obtained by the Standard Penetration Test method ASTM D 1586, which involves driving a 2-inch diameter split-spoon sampler into the soil with a 140-pound weight falling 30 inches. The sampler is generally driven three successive 6-inch increments with the number of blows for each increment recorded. The number of blows required to advance the sampler the last 12 inches is termed the Standard Penetration Resistance (N). The blow counts for each 6-inch increment and the resulting N-value are presented on the individual soil boring logs.

The soil samples were placed in sealed containers in the field and brought to the laboratory for testing and classification. During drilling operations, the drilling crew maintained logs of the encountered subsurface conditions, including changes in stratigraphy and observed groundwater levels to be used in conjunction with our analysis of the subsurface conditions. The final boring logs are based on the field logs and laboratory soil classification and testing. After completion of drilling operations, the boreholes were backfilled with excavated soil and capped with cold patch.

LABORATORY TESTING

Representative soil samples were subjected to laboratory testing to determine soil parameters pertinent to foundation design and site preparation. An experienced geotechnical engineer classified the samples in general conformance with the Unified Soil Classification System.

Laboratory testing included natural moisture content, organic matter content (loss-on-ignition), and unconfined compressive strength determinations. The organic matter content of representative samples was determined in accordance with ASTM Test Method D 2974, "Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils". The unconfined compressive strengths were determined by a spring-loaded hand penetrometer. The hand penetrometer estimates the unconfined compressive strength to a maximum of 4-1/2 tons per square foot (tsf) by measuring the resistance of the soil sample to the penetration of a calibrated spring-loaded cylinder.

The results of the moisture content, organic content, and unconfined compressive strength laboratory tests are indicated on the boring logs at the depths the samples were obtained. We will hold the soil samples for 60 days from the date of this report. If you would like the samples, please let us know.

SITE CONDITIONS

The proposed addition will be constructed on the east side of the existing building located at 18185 Sycamore Street in Roseville, Michigan. Bituminous concrete pavement, Portland cement concrete pavements, grass, and landscape islands are generally present at the ground surface within the footprint of the proposed addition. Site grades are generally flat and range in elevation ranging from approximately 611-1/2 to 612 feet within the footprint of the proposed addition.

Commercial properties are generally present to the west and south of the proposed site. Residential properties are generally present to the north and east of the proposed site. Sycamore Street bounds the property to the south.



SOIL CONDITIONS

Approximately 3 to 3-1/2 inches of bituminous concrete are present at the ground surface of the borings. Sandy gravel aggregate base course underlies the bituminous concrete and extends to depths ranging from 6 inches to 10 inches below grade. Silty sand fill with trace organic matter is present below the sandy gravel aggregate base and extends to depths ranging from 1-1/2 to 3 feet below grade. Native granular soils, consisting of sand and silty sand with occasional clay seams and layers, generally underlie the silty sand fill and extend to the explored depth of 20 feet. However, a strata of native silty clay is present below the silty sand fill of boring B-3 between 3 and 4 feet below grade and between the approximate depths of 3 and 7 feet below grade within soil boring B-1.

The silty sand fill is medium compact with a Standard Penetration Test (SPT) N-value of 15 blows per foot (bpf) and organic matter contents of 1.8 and 3.4 percent. The native granular soils are medium compact to compact with SPT N-values ranging from 11 to 40 bpf. The native silty clay within soil boring B-1 is hard in consistency with a natural moisture content of 12 percent and an unconfined compressive strength of 9,000 pounds per square foot (psf).

The stratification depths shown on the soil boring logs represent the soil conditions at the boring locations. Variations may occur between borings. Additionally, the stratigraphic lines represent the approximate boundaries between soil types. The transitions may be more gradual than what are shown. We have prepared the boring logs on the basis of laboratory classification and testing as well as field logs of the soils encountered.

The Soil Boring Location Plan, Plate No. 1, and Soil Boring Logs, Figure Nos. 1 through 3, are presented in the Appendix. General Notes defining the nomenclature used on the soil boring logs and elsewhere in this report are presented on Figure No. 4.

GROUNDWATER CONDITIONS

Groundwater observations were made during and upon completion of drilling operations. Groundwater was measured at depths ranging from 7 to 12 feet below grade during drilling operations. Upon completion of drilling operations, groundwater was measured at depths ranging from 12-1/2 to 14 feet below grade. Fluctuations in perched and long term groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation.

SITE PREPARATION

We understand the proposed finished floor elevation will match the existing finished floor elevation of 613.85 feet. Site grades within the proposed building footprint range in elevation from 611-1/2 to 612 feet. Therefore, we anticipate up to 2 feet of engineered fill will be required to raise site grades. Based on the finished floor elevation, we anticipate the silty sand fill, native silty clay, and native medium compact to compact sand will be present at conventional foundation depths. However, the existing silty sand fill is not suitable for support of foundations. Therefore, we recommend foundations extend through the existing silty sand fill and bear within the aforementioned native soils.

We anticipate earthwork operations will consist of removing the existing bituminous concrete pavements and Portland cement concrete pavements, stripped the site of topsoil, removing abandoned utilities,



backfilling abandoned utility excavations with engineered fill, proof rolling the existing subgrade soils, placing and compacting fill to raise site grades, excavating for foundations and utilities, and preparing the site for floor slab support. We recommend all earthwork operations be performed in accordance with comprehensive specifications and be properly monitored in the field by qualified personnel under the direction of a licensed engineer.

At the start of earthwork operations, the existing bituminous concrete, Portland cement concrete pavements, and topsoil present within the footprint of the proposed building addition should be removed in their entirety. Any existing utilities within the footprint of the proposed addition should be completely removed and backfilled with engineered fill. Existing utilities outside the proposed building addition can be removed or abandoned in place and completely filled with grout.

Prior to placement of any engineered fill, the exposed subgrade soils should be thoroughly proof-compacted with a vibratory roller and visually evaluated for instability and/or unsuitable soil conditions. Vibratory roller vibration should be turned off when within 25 feet of the existing building. Any unstable or unsuitable areas noted should be removed and replaced with engineered fill.

Engineered fill should be free of organic matter, frozen soil, clods, or other harmful material. The fill should be placed in uniform horizontal layers, not more than 9 inches in loose thickness. The engineered fill should be compacted to achieve a density of at least 95 percent of the maximum dry density as determined by the Modified Proctor compaction test (ASTM D 1557). All engineered fill material should be placed and compacted at approximately the optimum moisture content. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

FOUNDATION RECOMMENDATIONS

Based on the existing subsurface conditions and anticipated structural loads, we recommend the proposed building be supported on conventional spread and/or strip footing foundations. Given the assumed finish floor elevation, existing site grades, and presence of silty sand fill within the proposed building footprint, foundations must extend through the existing fill where present and bear within the hard native silty clay and medium compact to compact native sand.

We recommend a net allowable soil bearing pressure of 3,000 psf be used in design of foundations supported within generally hard silty clay and medium compact to compact sand. Foundations must bear at a minimum of 3-1/2 feet below finished grade for protection against frost heave. However, we anticipate foundations will extend through the fill up to 5-1/2 feet below finished grades. Interior footings may bear at shallower depths provided suitable native soils are available for support. We recommend G2 be on site during construction to observe the excavation and verify the adequacy of the bearing soils.

Any foundations installed immediately adjacent to the existing building should bear at the same elevation as the adjacent building foundations. If required to construct foundations at different levels, the foundations should be designed and constructed so the least lateral distance between the foundations is equivalent to or more than the difference in their bearing levels. If native material is not encountered at the base of the existing foundations G2 should be notified to review our recommendations.

To achieve a change in the level of a strip footing, the footing should be gradually stepped at a grade no steeper than two units horizontal to one unit vertical. Continuous wall or strip footings should be at least



16 inches in width and isolated spread footings should be at least 30 inches in their least dimension. We recommend all strip footings be suitably reinforced to minimize the effects of differential settlements associated with local variations in subsoil conditions.

If the recommendations outlined in this report are adhered to, total and differential settlements for the completed structure should be within 1 inch and 1/2 inch, respectively. We expect settlements of these magnitudes are within tolerable limits for the type of building proposed.

FLOOR SLAB RECOMMENDATIONS

Provided some floor slab settlement can be tolerated, the existing silty sand fill can be used for support of the proposed building concrete floor slab following satisfactory completion of site preparation operations as described in the Site Preparation section of this report. Based on the existing conditions we anticipate very little settlement. However, if no floor slab settlement can be tolerated the existing fill must be completely removed and replaced with engineered fill. A subgrade modulus (k) of up to 90 pounds per cubic inch (pci) may be used in the design of floor slabs supported on the fill. Alternatively, if the fill soils are removed and replaced and the floor slab is supported on engineered fill, we recommend a k-value of 150 pounds per cubic foot (pci).

We recommend that at least 4 inches of clean coarse sand or pea gravel be placed between the subgrade and the bottom of the floor slab for use as a capillary break to reduce moisture transmission through the concrete floors and to reduce the potential for concrete curling. If moisture sensitive floor coverings are planned or if greater protection against vapor transmission is desired, a vapor barrier consisting of 10 mil plastic sheeting, or equivalent, may be placed on the sand layer beneath floor slabs. The floor slab should be isolated from the foundation system to allow for independent movement.

CONSTRUCTION CONSIDERATIONS

We anticipate foundation excavations will extend up to 5-1/2 feet below final grades and utility excavations will extend up to 8 feet below final grades. Groundwater was encountered within the borings at depths ranging from 7 to 12 feet below existing grades during drilling operations. Therefore, we anticipate groundwater may be encountered within utility excavations. However, any groundwater or surface run off encountered within shallow excavations should be controllable with normal pumping from properly constructed sumps. Greater dewatering effort will be required if excavations extend more than a foot below the encountered groundwater level.

Caving and/or sloughing of the silty sand fill, native sand, and granular engineered fill may occur during foundation and utility excavation operations. The contractor should be prepared to over-excavate and form footings, as necessary. The sides of the spread and/or strip footing foundations should be constructed straight and vertical to reduce the risk of frozen soil adhering to the concrete and raising the foundations.

We recommend a maximum slope of one and a half horizontal units to one vertical unit (1-1/2H:1V) for excavations within the medium compact granular soils, and 1H:1V within the hard silty clay for excavations that extend below a depth of 5 feet. All excavations should be safely sheeted, shored, sloped, or braced in accordance with MI-OSHA requirements. If material is stored or equipment is operated near an excavation, stronger shoring must be used to resist the extra pressure due to the superimposed loads.



Care should always be exercised when excavating near existing building or utilities to avoid undermining. In no case should excavations extend below the level of the adjacent foundations unless underpinning is planned and designed by a professional engineer.

GENERAL COMMENTS

We have formulated the evaluations and recommendations presented in this report relative to site preparation and foundations on the basis of data provided to us relating to the location, type, and grade for the proposed site. Any significant change in this data should be brought to our attention for review and evaluation with respect to the prevailing subsurface conditions. If changes occur in the design, location, or concept of the project, the conclusions and recommendations contained in this report are not valid unless G2 Consulting Group, LLC reviews the changes. G2 Consulting Group, LLC will then confirm the recommendations presented herein or make changes in writing.

The scope of the present investigation was limited to evaluation of subsurface conditions for the support of the proposed building addition foundations and other related aspects of the development. No chemical, environmental, or hydrogeological testing or analyses were included in the scope of this investigation.

We have based the analyses and recommendations submitted in this report upon the data from soil borings performed at the approximate locations shown on the Soil Boring Location Plan, Plate No. 1. This report does not reflect variations that may occur between the actual soil boring locations and the actual structure locations. The nature and extent of any such variations may not become clear until the time of construction. If significant variations then become evident, it may be necessary for us to re-evaluate our report recommendations.

Soil conditions at the site could vary from those generalized on the basis of soil borings made at specific locations. It is, therefore, recommended that G2 Consulting Group, LLC be retained to provide soil engineering services during the site preparation, excavation, and foundation construction phases of the proposed project. This is to observe compliance with the design concepts, specifications, and recommendations. Also, this allows design changes to be made in the event that subsurface conditions differ from those anticipated prior to the start of construction.

APPENDIX

Soil Boring Location Plan

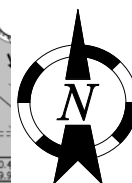
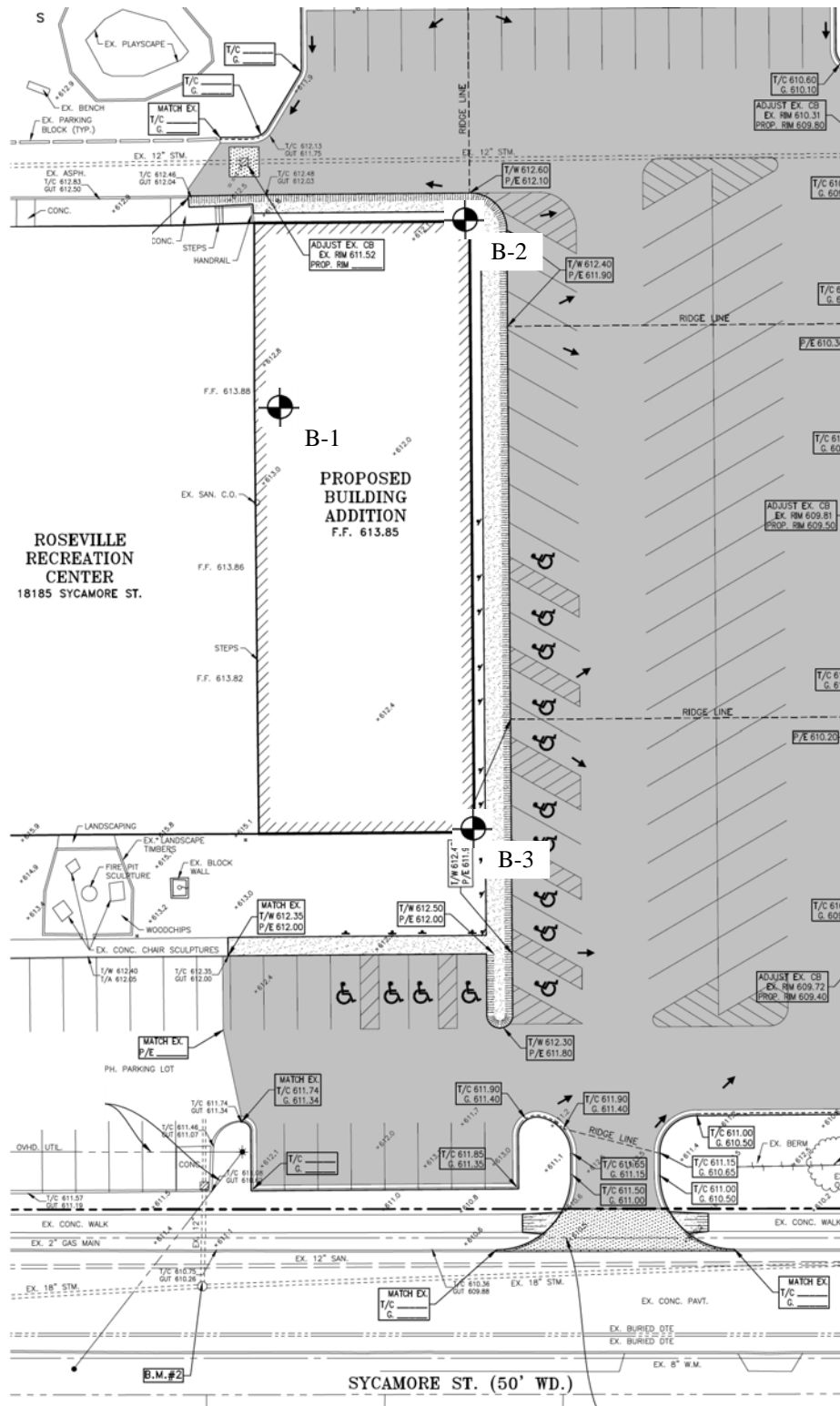
Plate No. 1

Soil Boring Logs

Figure Nos. 1 through 3

General Notes

Figure No. 4



Legend



Soil Borings Performed by Strata Drilling, Inc.
on March 3, 2014

Soil Boring Location Plan

Proposed Roseville/Eastpointe Recreation
Building Addition
18185 Sycamore Street
Roseville, Michigan



CONSULTING GROUP
1866 Woodslee Street
Troy, Michigan 48063

Project No. 140111

Drawn by: JMH

Date: 3/13/14

Scale: NTS

Plate
No. 1

Project Name: Proposed Roseville/Eastpointe Recreation Building Addition

Project Location: 18185 Sycamore Street
Roseville, Michigan

G2 Project No. 140111

Latitude: N/A

Longitude: N/A



Soil Boring No. **B-1**

Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 612.0 ft ±	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Bituminous Concrete (3-1/2 inches)	0.3						
		Fill: Brown Sandy Gravel (Aggregate Base, 6-1/2 inches)	0.8						
		Fill: Dark Brown Silty Sand with trace organic matter (Organic Matter Content = 3.4%)	1.7	S-1	14 15 15	30	19.2		
		Medium Compact Brown Sand with trace silt and gravel	3.0						
607.0		Hard Brown Silty Clay with trace sand and gravel	5	S-2	5 9 11	20	11.6		9000*
			7.0	S-3	10 17 19	36			
602.0		Medium Compact to Compact Brown Sand with trace silt and gravel	10	S-4	7 9 12	21			
			11.0						
597.0		Medium Compact Gray Silty Sand with trace gravel and occasional clay seams and layers	15	S-5	8 10 15	25			
592.0			20.0	S-6	5 6 7	13			
		End of Boring @ 20ft							
587.0			25						

Total Depth: 20ft
Drilling Date: March 4, 2014
Inspector:
Contractor: Strata Drilling, Inc.
Driller: B. Sienkiewicz

Water Level Observation:
11 feet during drilling operations; 14 feet upon completion of drilling operations

Notes:
* Calibrated Hand Penetrometer

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Figure No. 1

SOIL / PAVEMENT BORING 140111.GPJ G2 CONS.GDT 3/14/14

Project Name: Proposed Roseville/Eastpointe Recreation Building Addition
 Project Location: 18185 Sycamore Street
 Roseville, Michigan

G2 Project No. 140111

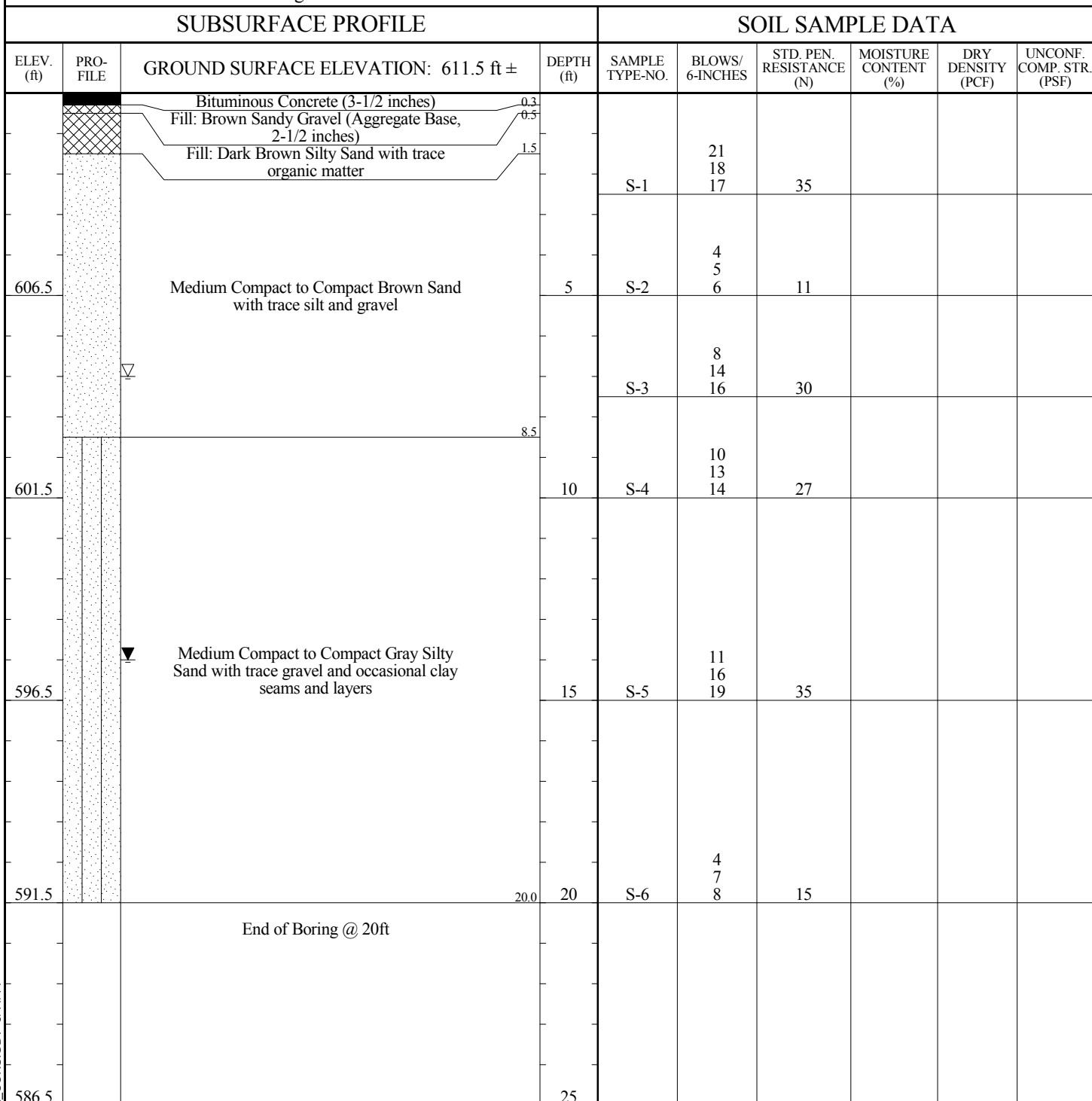
Latitude: N/A

Longitude: N/A



Soil Boring No. **B-2**

Consulting Group, LLC



Total Depth: 20ft
 Drilling Date: March 4, 2014
 Inspector:
 Contractor: Strata Drilling, Inc.
 Driller: B. Sienkiewicz

Water Level Observation:
 7 feet during drilling operations; 14 feet upon completion of drilling operations

Excavation Backfilling Procedure:
 Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
 2-1/4 inch inside diameter hollow-stem augers

Figure No. 2

Project Name: Proposed Roseville/Eastpointe Recreation Building Addition

Project Location: 18185 Sycamore Street
Roseville, Michigan

G2 Project No. 140111

Latitude: N/A

Longitude: N/A



Soil Boring No. **B-3**

Consulting Group, LLC

SUBSURFACE PROFILE				SOIL SAMPLE DATA					
ELEV. (ft)	PRO- FILE	GROUND SURFACE ELEVATION: 611.5 ft ±	DEPTH (ft)	SAMPLE TYPE-NO.	BLOWS/ 6-INCHES	STD. PEN. RESISTANCE (N)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	UNCONF. COMP. STR. (PSF)
		Bituminous Concrete (3 inches)	0.3						
		Fill: Brown Sandy Gravel (Aggregate Base, 5 inches)	0.7						
		Fill: Medium Compact Dark Brown Silty Sand with trace organic matter (Organic Matter Content = 1.8%)		S-1	12 8 7	15	19.3		
			3.0						
		Brown Silty Clay with trace sand and gravel	4.0		6 6 7	13			
606.5			5	S-2					
		Medium Compact to Compact Brown Sand with trace silt and gravel and occasional clay layers			7 14 18	32			
			7.5	S-3					
601.5			10	S-4	12 19 21	40			
		Medium Compact to Compact Gray Silty Sand with trace gravel and occasional clay seams and layers			9 15 17	32			
596.5			15	S-5					
					8 11 12	23			
591.5			20	S-6					
		End of Boring @ 20ft							
586.5			25						

Total Depth: 20ft
Drilling Date: March 4, 2014
Inspector:
Contractor: Strata Drilling, Inc.
Driller: B. Sienkiewicz

Water Level Observation:
12 feet during drilling operations; 12-1/2 feet upon completion of drilling operations

Excavation Backfilling Procedure:
Borehole backfilled with auger cuttings and capped with cold patch

Drilling Method:
2-1/4 inch inside diameter hollow-stem augers

Figure No. 3

GENERAL NOTES TERMINOLOGY

Unless otherwise noted, all terms herein refer to the Standard Definitions presented in ASTM 653.

PARTICLE SIZE		CLASSIFICATION	
Boulders	- greater than 12 inches	The major soil constituent is the principal noun, i.e. clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:	
Cobbles	- 3 inches to 12 inches		
Gravel	- Coarse	Second Major Constituent (percent by weight)	Minor Constituent (percent by weight)
	- Fine		
Sand	- Coarse	Trace - 1 to 12%	Trace - 1 to 12%
	- Medium	Adjective - 12 to 35%	Little - 12 to 23%
	- Fine	And - over 35%	Some - 23 to 33%
Silt	- No. 4 to 3/4 inches		
	- No. 10 to No. 4		
	- No. 40 to No. 10		
	- No. 200 to No. 40		
Silt	- 0.005mm to 0.074mm		
Clay	- Less than 0.005mm		

COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modifier, i.e. sandy clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils, i.e. silty clay, trace sand, little gravel.

Consistency	Unconfined Compressive	
	Strength (psf)	Approximate Range of (N)
Very Soft	Below 500	0 - 2
Soft	500 - 1,000	3 - 4
Medium	1,000 - 2,000	5 - 8
Stiff	2,000 - 4,000	9 - 15
Very Stiff	4,000 - 8,000	16 - 30
Hard	8,000 - 16,000	31 - 50
Very Hard	Over 16,000	Over 50

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

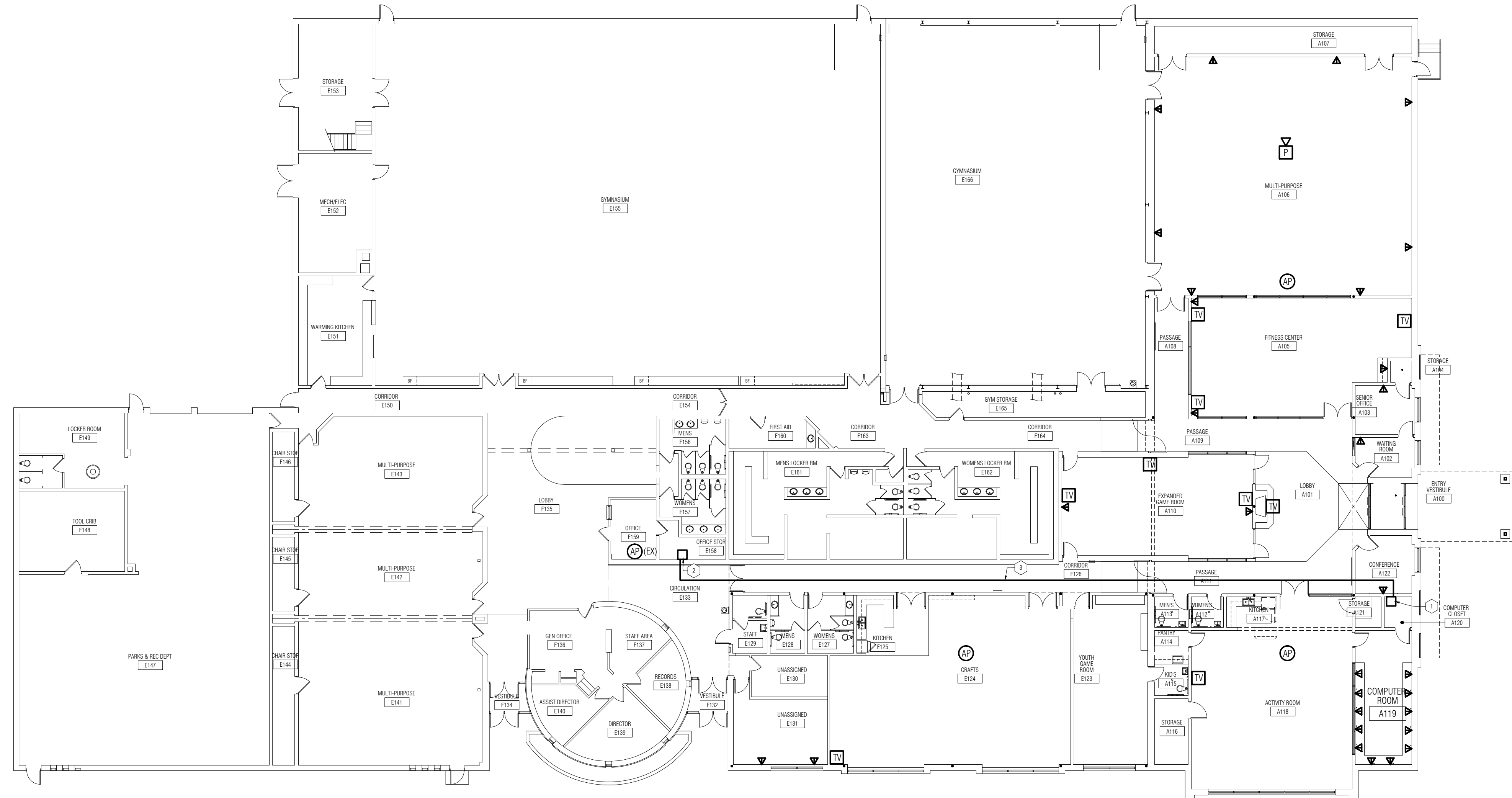
COHESIONLESS SOILS		
Density Classification	Relative Density %	Approximate Range of (N)
Very Loose	0 - 15	0 - 4
Loose	16 - 35	5 - 10
Medium Compact	36 - 65	11 - 30
Compact	66 - 85	31 - 50
Very Compact	86 - 100	Over 50

Relative Density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.






SAMPLE DESIGNATIONS

AS -	Auger Sample – Cuttings directly from auger flight
BS -	Bottle or Bag Samples
S -	Split Spoon Sample - ASTM D 1586
LS -	Liner Sample with liner insert 3 inches in length
ST -	Shelby Tube sample - 3 inch diameter unless otherwise noted
PS -	Piston Sample - 3 inch diameter unless otherwise noted
RC -	Rock Core - NX core unless otherwise noted

STANDARD PENETRATION TEST (ASTM D 1586) - A 2.0 inch outside-diameter, 1-3/8 inch inside-diameter split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the final 12 inches of penetration is the Standard Penetration Resistance (N).



1 Main Level Technology Plan
1/16" = 1'-0"

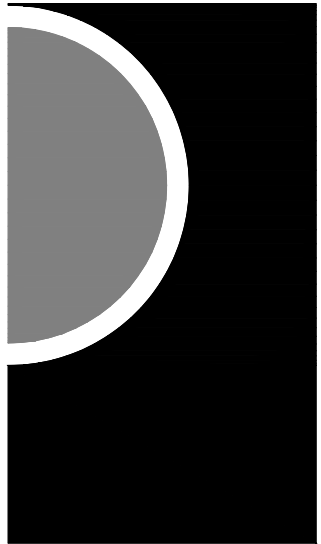
LEGEND	
 (DTV) TYPE	DATA COMMUNICATIONS DROP (1-DATA TYPICAL U.N.O.)
 AP	WIRELESS ACCESS POINT (CEILING MTD) (1) DATA DROP
 (EX)	EXISTING WIRELESS ACCESS POINT
 TV	TV OUTLET - PROVIDE (1) COAX TYPE "F" JACK AND CABLE DROP BACK TO COMPUTER CLOSET A120
 P	PROJECTOR (CEILING MTD) (1) DATA DROP AND (1) COAX TYPE "F" JACK AND CABLE DROP BACK TO COMPUTER CLOSET A120

NEW WORK TECHNOLOGY GENERAL NOTES:

- CONTRACTOR TO VERIFY EXISTING CONDITIONS.
- B. CONTRACTOR SHALL PROTECT EXISTING BUILDING AND SITE FROM DAMAGE CAUSED BY CONSTRUCTION OR CONSTRUCTION TRAFFIC. CONTRACTOR SHALL REPAIR ALL DAMAGED AREAS (IDENTIFIED BY OWNER OR ARCHITECT) AT NO ADDITIONAL COST.
- C. DO NOT SCALE DRAWINGS. USE DIMENSIONS PROVIDED. IF A CONFLICT IS ENCOUNTERED OR A REQUIRED DIMENSION IS NOT PROVIDED, REQUEST A CLARIFICATION FROM THE ARCHITECT.
- D. CABLEING SHALL BE [COLOR: BLUE] CAT 5e COMPLIANT AND WILL BE INSTALLED ACCORDING TO THE EIA / TIA 568B COMMERCIAL TELECOMMUNICATIONS CABLEING STANDARD. CABLE RUNS SHALL BE MACHINE Labeled WITHIN 12" OF EACH TERMINATION.
- E. UTP DATA OUTLET JACKS SHALL BE [COLOR: ORANGE] RJ-45 MODULAR, 8-POSITION, 8-CONDUCTOR, CATEGORY 5e COMPLIANT. DESIGNED TO TERMINATE 22-26 AWG SOLID ON INSULATION DISPLACEMENT 110-STYLE CONNECTORS. MANUFACTURERS: SYSTIMAX, ORNITHONS OR LEVITON.
- F. ALL CABLEING IS TO BE THROUGH EXISTING CEILING SPACES. PROVIDE & INSTALL J-HOOK HANGERS (BRIDAL RINGS ARE NOT ALLOWED). ALL EXPOSED WIRING BELOW CEILING IS TO BE IN WIRE-MOLD AS SPECIFIED. CONTRACTOR WILL BE RESPONSIBLE TO REMOVE AND REINSTALL CEILING AS REQUIRED FOR INSTALLATION OF ENTIRE SYSTEM.
- G. COMMUNICATION CABLE AND INFRASTRUCTURE SHALL BE INDEPENDENTLY SUPPORTED. DO NOT SUPPORT OR TIE-WRAP ANY CABLES TO DUCTWORK, PLUMBING LINES, FIRE SUPPRESSION, ELECTRICAL CONDUITS, MECHANICAL SYSTEMS, OR CEILING SYSTEM.
- H. DATA CABLE IN RETURN AIR PLENUMS SHALL BE RATED AND CODE APPROVED FOR PLENUM USE. CABLE RUNS IN PLENUMS SHALL BE NEATLY INSTALLED AND SUPPORTED IN A WORKMANLIKE MANNER.
- I. CABLE INSTALLATION IS SUBJECT TO THE SOLE APPROVAL OF OWNERS REPRESENTATIVE. CABLE DEEMED AS NOT ACCEPTABLE TO THE OWNER SHALL BE RE-WORKED AT ADDITIONAL COST. NO CABLES SHALL BE SPLICED UNLESS AS SHOWN ON PLANS OR APPROVED BY OWNER.
- J. ALL EQUIPMENT SHOWN ON DRAWINGS ARE IN APPROXIMATE LOCATIONS - COORDINATE EXACT LOCATIONS WITH ARCHITECT PRIOR TO INSTALLATION.
- K. ROUTING OF WIRING IS TO BE DONE SO AS TO MINIMIZE THE OVERALL LENGTH OF THE RUN. DATA CABLES SHALL BE RUPTED SO AS TO NOT EXCEED 90 METERS IN LENGTH.
- L. CONTRACTOR SHALL SPLY NEATLY BUNDLED SLACK LOOPS OF LENGTH 10 FEET FOR ALL CABLEING IN TELECOMMUNICATIONS SPACES.
- M. CONTRACTOR SHALL FURNISH AND INSTALL FACEPLATES ON ALL WALL BOXES AND RACEWAYS.
- N. UPON COMPLETION OF CABLE SYSTEM AND CONNECTORS, CONTRACTOR SHALL PERFORM COMPLETE CERTIFICATION TESTS AND SUBMIT FINAL, CERTIFIED TEST REPORTS IN BOUND BOOKLET AND ELECTRONIC MEDIA FOR ALL CABLE SYSTEMS. CABLES THAT DO NOT MEET THE MINIMUM PERFORMANCE CRITERIA ESTABLISHED BY THE STANDARDS OR MANUFACTURER SHALL BE CORRECTED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER. INCLUDE SIGNED AND DATED REPORTS CERTIFYING THE TEST RESULTS.
- O. LABELING AND IDENTIFIER ASSIGNMENT SHALL MEET THE REQUIREMENTS OF IEC 969 AND CONFORM TO THE TIA / EIA-606 STANDARD AND AS APPROVED BY OWNERS REPRESENTATIVE BEFORE INSTALLATION. LABEL COLORS SHALL CONFORM TO TIA / EIA-606 STANDARD. PROVIDE PERMANENT AND MACHINE PRINTED LABELS. HAND WRITTEN LABELS ARE NOT PERMITTED.
- P. USE LOGICAL AND SYSTEMATIC DESIGNATIONS FOR FACILITY'S ARCHITECTURAL ARRANGEMENT AND NOMENCLATURE. AND A CONSISTENT COLOR-CODE IDENTIFICATION OF INDIVIDUAL CONDUCTORS. ALL RACK FIELDS, DEVICES, COMPONENTS, ETC. SHALL BE TAGGED WITH APPROPRIATE DESIGNATIONS ON THE FRONT AND REAR OF THE EQUIPMENT. ALL DEVICES ARE TO BE INSTALLED AND LABELED IN A SEQUENTIAL, LOGICAL ORDER. ADHESIVE LABELS SHALL MEET THE LEGIBILITY, DURENCEMENT, AND ADHESION REQUIREMENTS SPECIFIED IN UL969 FOR INDOOR USE. CABLE LABELS SHALL HAVE A DURABLE SUBSTRATE, SUCH AS VINYL, SUITABLE FOR WRAPPING. LABELING PRACTICES SHALL BE CONSISTENT ACROSS THE INSTALLATION.
- Q. PROVIDE PULL STRINGS IN CONDUITS FOR FUTURE INSTALLATIONS.
- R. PROVIDE ONE (1) CAT5E PATCH CORD FOR EACH DATA OUTLET.
- S. CONTRACTOR IS RESPONSIBLE FOR PATCHING TO ALL SWITCHES. SWITCHES ARE EXISTING, OR WILL BE PROVIDED BY OTHERS, TO THE NUMBER OF DATA PORTS. PROVIDE PATCH CABLES IN THE MINIMUM LENGTHS NECESSARY TO PATCH ONE FOR-ONE WHILE UTILIZING THE WIRE MANAGEMENT. QUANTITY SHALL MATCH THE TOTAL NUMBER OF DATA CABLES INSTALLED.

NEW WORK TECHNOLOGY KEY NOTES:

- 1 WALL MOUNTED RELAY RACK FOR DATA EQUIPMENT - REFER TO ELEVATION THIS SHEET. PROVIDE PAINTED FIRE RETARDANT BACKBOARD FOR RACK MOUNTING. 48" x 60" SHEET OF 3/4" A/C PLYWOOD MOUNTED WITH TOP EDGE AT 96" AFF.
- 2 EXISTING RELAY RACK WITH EXISTING NETWORK EQUIPMENT TO REMAIN
- 3 PROVIDE CROSS CONNECT FROM EXISTING PATCH PANEL TO NEW PATCH PANEL. CONNECT TO PORT-48 OF PATCH PANEL.



PARTNERS in Architecture, PLC

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MOUNT CLEMENS, MI 48043
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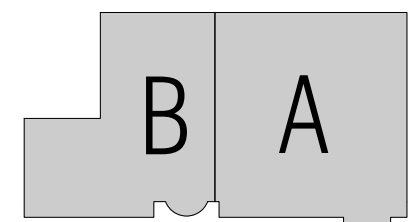
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CONSULTANT

KEY PLAN



OWNER

Recreation Authority of
Roseville & Eastpointe

PROJECT NAME

Recreation Authority Addition and Renovation

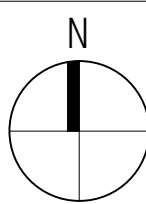
18185 Sycamore
Roseville, MI 48066

PROJECT NO.

13-162

ISSUES / REVISIONS

Bidding - Construction	05/28/14
Addendum - 02	06/16/14



DRAWN BY

FGM

CHECKED BY
ACS

APPROVED BY
DWG

SHEET NAME

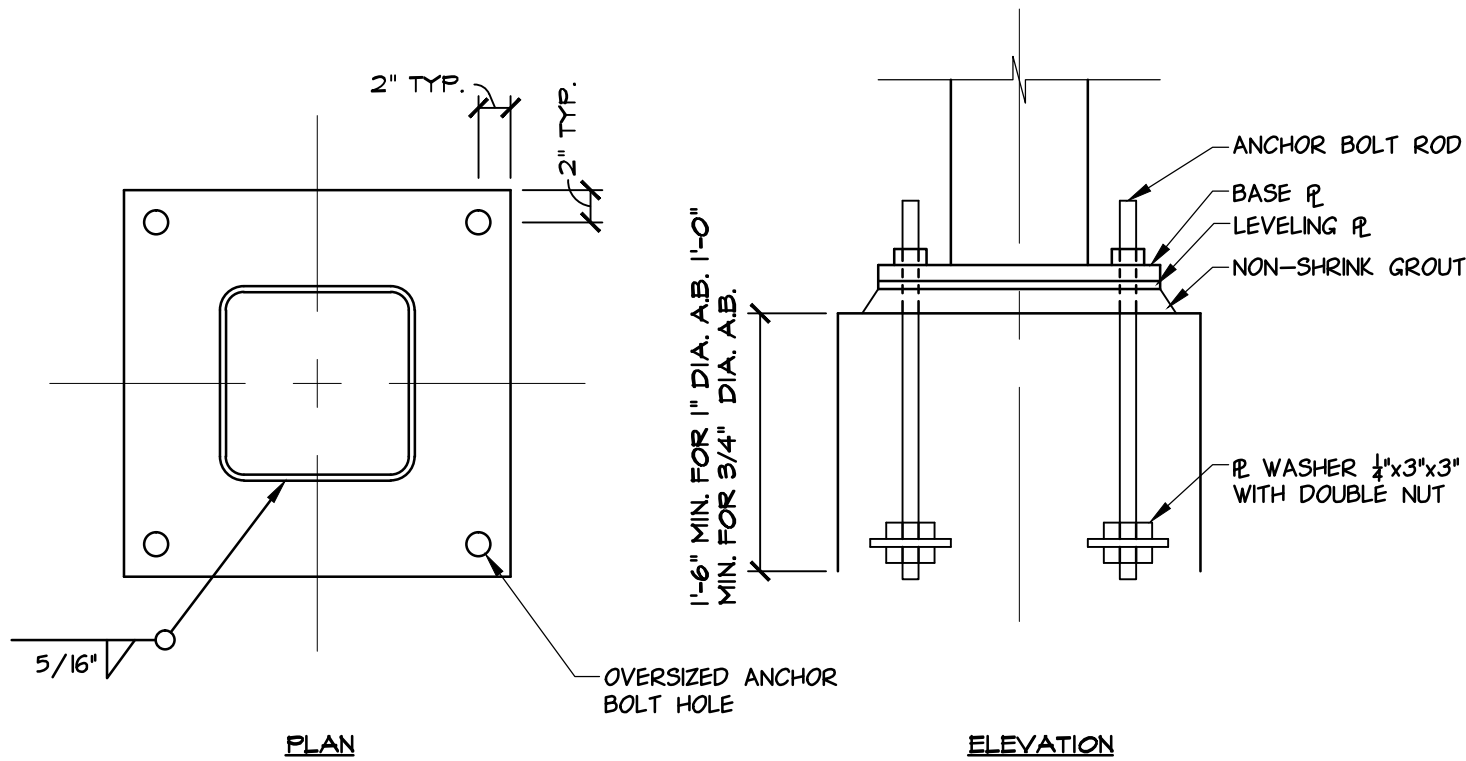
TECHNOLOGY PLAN AREAS 'A' & 'B'

SHEET NO

T1-01

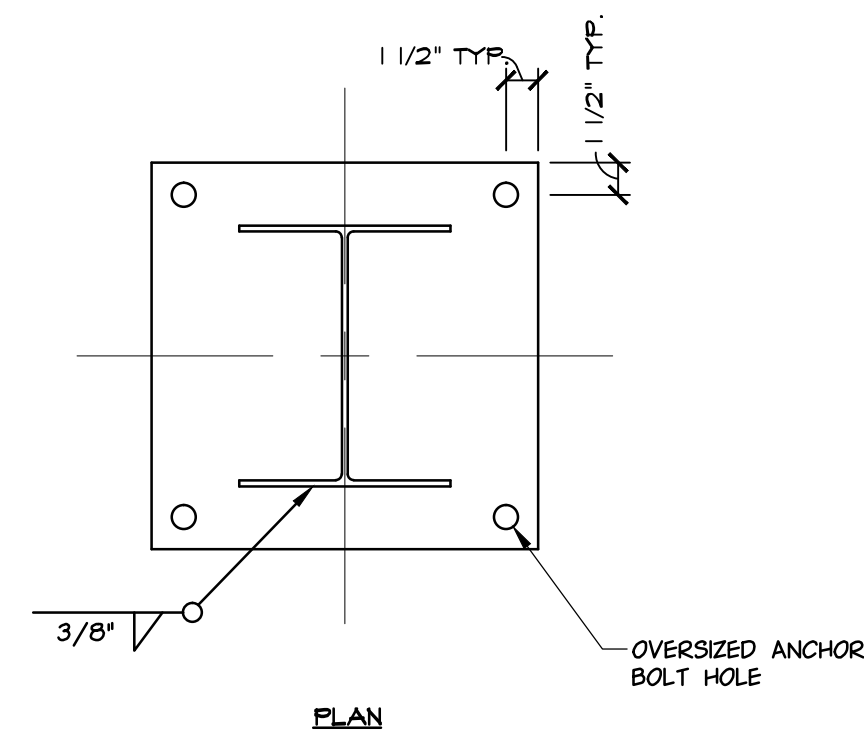
COLUMN SCHEDULE

MARK	COLUMN SIZE	BASE PL. SIZE	BASE PL. TYPE	BASE PL. ELEV.	ANCHOR BOLTS	NOTES
C1	HSS4x4x1/2	3/4"x12"x12"	1	97'-11"	4-1" DIA	
C2	HSS4x4x5/16	3/4"x12"x12"	1	97'-11"	4-1" DIA	
XC1	W8x31	3/4"x14"x14"	2	97'-11"	4-3/4" DIA	
XC2	W8x31	3/4"x14"x14"	2	98'-7" - C2 97'-11" - C2A	4-3/4" DIA	
XC3	W8x31	3/4"x14"x14"	2	97'-11"	4-3/4" DIA	
XC4A	4" DIA	3/4"x8"x14"	3	98'-7"	4-3/4" DIA	
XC5	4" DIA	5/8"x6"x15"	3	99'-4"	4-3/4" DIA	



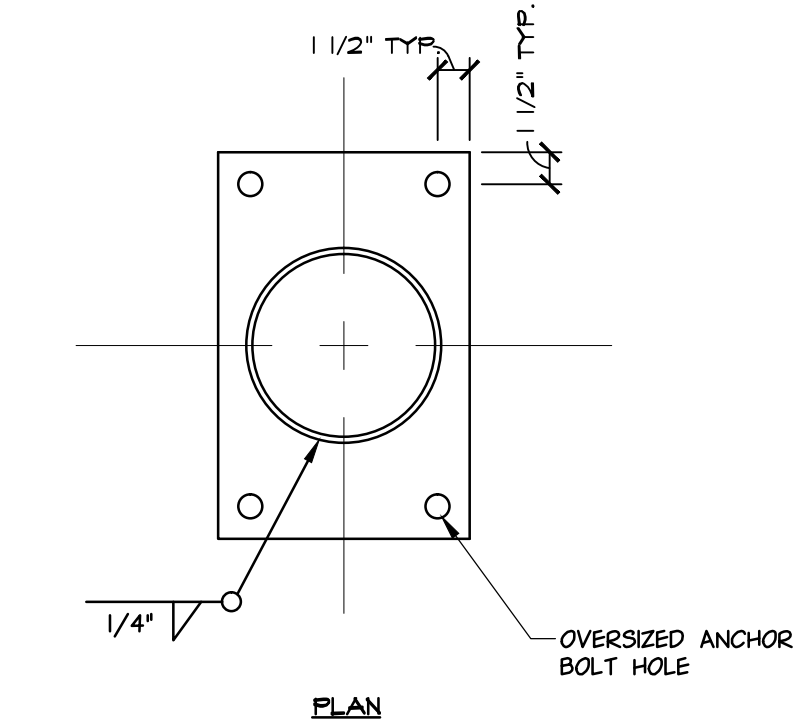
BASE PLATE TYPE 1

SCALE: NOT TO SCALE



BASE PLATE TYPE 2

SCALE: NOT TO SCALE



BASE PLATE TYPE 3

SCALE: NOT TO SCALE

