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Moorhead Area Public Schools
Grades 5-6 Addition at Horizon Campus
Bid Group II
Moorhead, MN

Project No. 15-024
Date: May 13, 2016

ADDENDUM NUMBER 3

BID DATE & TIME: **Tuesday, May 17, 2016 at 2:30 pm local time**
Probstfield Center for Education - Board Room
2410 Fourteenth Street South
Moorhead, Minnesota

The following additions, clarifications, deletions and/or changes shall be made to the SPECIFICATIONS:

Section 08 1416 - Flush Wood Doors

1. Paragraph 2.04.A: Delete entire paragraph and replace with the following:
   A. Veneer Facing for Transparent Finish: Cherry, premium grade in accordance with quality standard indicated, plain sliced (flat cut), with slip match between leaves of veneer, balance match of spliced veneer leaves assembled on door or panel face.
   1. Vertical Edges: Same species as face veneer.
   2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet of each other when doors are closed.

The following additions, deletions and/or changes shall be made to the DRAWINGS:

Drawing A3.10: First Level Floor Plan - Area "A"

1. Drawing revised for mechanical room door locations.

Drawing A3.11: First Level Floor Plan - Area "B"

1. Drawing revised for mechanical room door locations.

Drawing A3.12: First Level Floor Plan - Area "C"

1. Drawing revised for mechanical room door locations.

Drawing A3.20: Second Level Floor Plan - Area "A"

1. Drawing revised for mechanical room door locations.

Drawing A3.21: Second Level Floor Plan - Area "B"

1. Drawing revised for mechanical room door locations.

Drawing A3.81 - Door & Hollow Metal Frame Schedule

1. First Floor Area “A” Door 576 - Add E.A.C. designation and change Hardware Group to 49.
2. Second Floor Area “B” Door 617 - Add E.A.C. designation and change Hardware Group to 49.

END OF ARCHITECTUAL ADDENDUM NUMBER 3

See attached Mechanical and Electrical Addendum No. 3 drawing and specification items.

ADDENDUM – M03

Date	5/13/2016
Project #	2015226
Project Name	MAPS Grades 5-6 Addition at Horizon
Project Location	3601 12th Ave. S., Moorhead, Minnesota

NOTICE TO BIDDERS: This Addendum is prepared to supplement information presented in the Drawings and Project Manual for the above referenced project. All additions, changes, omissions and conditions listed herein shall become an integral part of the Contract Documents.

DRAWINGS

ITEM NO. 1 Sheet M2.04

A. The 15” storm drain exiting the building underneath the serving kitchen 21’-6” off of the corner of the vestibule shall be at an invert elevation of 94’-6”.

ITEM NO. 2 Sheet M4.21

A. AHU-4 assembly shall be in the following order from left to right: mixing box, combination heat and cooling coils, fan array, supply air plenum. The incorrect model was inserted in to the plans. All chilled water and heating water coil connections shall be adjusted as required for proper AHU access and coil connections.

ITEM NO. 3 Sheet M4.24

A. The chilled water supply and return piping running in between gridlines N and P shall be 6” in lieu of 4” as indicated at the drop in the kitchen serving area soffit.
B. The chilled water supply and return pipes dropping in the east gym corridor shall be 8” in diameter in lieu of 4” in diameter.

ITEM NO. 4 Sheet M4.31

A. Two-way motorized control valves shall be provided in heating water supply branches from boilers B-1, B-2, B-3, and B-4.
B. Three-way control valves shall be provided at dual coils HC-1, HC-2, HC-4, and HC-5. Refer to detail 5/M6.03.
C. There shall be one glycol drum with self-priming glycol pump in lieu of two.

ITEM NO. 5 Sheet M4.32

A. Three-way control valves shall be provided at dual coils CC-1, CC-2, CC-4, and CC-5. Refer to detail 5/M6.03.
B. There shall be one glycol drum with self-priming glycol pump in lieu of two.

C. All chilled water piping shown in the chilled water plant schematic prior to being sent out to the cooling coils shall be 8" in lieu of 6".
D. The flow measuring device in the 8" chilled water return shall be 1100 gpm in lieu of 420 gpm.
E. The ice storage tank system shall show 9 total ice storage tanks provided in 3 manifolds of 3 tanks each. Each 3 tank manifold shall be piped in parallel to one another and isolation valves shall be provided for each manifold. Isolation valves shall also isolate the entire ice storage system and the 3-way control valve from the chilled water system. The chiller and ice storage tank system shall be installed in accordance with the manufacturer's instructions.

ITEM NO. 6 Sheet M5.11

A. Connect 12x10 exhaust air branch ducts to exhaust grilles in rooms 572 and 573. The exhaust duct going up in the chase shall be 16x12.
B. A transfer duct and return grille shall be provided on the east side of LSS room 577 in addition to the return grille and transfer duct on the west side.
C. The intake louver shall be LVR-1 in lieu of LVR-4.

ITEM NO. 7 Sheet M5.12

A. The following changes to be made to view "1/M5.12 – First Floor Plan Area C – Ventilation":
   1. The transfer duct above staff lounge room 500L shall transfer air to hall H5.6 in lieu of the main corridor.
   2. No fire damper shall be provided on the relief air ductwork from RF-3.
   3. V3-9 shall serve meeting room 500G-2 and lactation room 500H. V3-10 shall be the VAV box serving the file room 500F and hall room H5.6. V3-10 currently shown in meeting room 500G-2 shall be deleted.
   4. There shall be no fire damper in the return air duct for AHU-3.
   5. There shall a transfer duct transferring air from LSS Suite 556 and the main corridor.
   6. The transfer air ducts for EBD rooms 553 and 554 shall penetrate in to the main corridor.
   7. There shall be transfer ducts for the purpose of transferring air from the main area c corridor to the main area B corridor. A transfer duct shall utilize the plenum space of the counselor room 550 for routing. Fire dampers shall be provided in accordance with IBC section 717 on all ductwork penetrating the 2 hour fire wall between room 552 and room 550.
   8. The 24x20 supply duct in between gridlines L and P shall route through the ceiling space of counselor room 550 so that only one 2-hour fire partition is penetrated in lieu of two.
   9. V2-25 shall tap off of the supply main in room 550 as to avoid penetrating the fire wall.
   10. Fire dampers shall be provided in accordance with IBC section 717 on ductwork penetrating the 2-hour fire wall. Fire Dampers shall be installed in the following penetrations:
       a. The 14x14 exhaust duct penetration for BEF-9 in main level area C.
       b. The 24x20 supply duct penetration for AHU-2 in between rooms 550 and 552
       c. The 26x18 transfer duct penetration in between rooms 550 and 552
   11. Dryer exhaust duct work shall be provided from assisted toilet room 556 to the exterior wall.
B. The following changes are to be made to view "2/M5.12 – First Floor Plan Area F – Ventilation":
   1. Individual high efficiency boiler exhaust venting shall be provided for B-1, B-2, B-3, and B-4 per the manufacturer's written instructions.

2. Boiler combustion air intakes shall be provided for B-1, B-2, B-3, and B-4 per the manufacturer's written instructions.
3. All venting shall be provided for the water heaters per the manufacturer's instructions.
4. TF-2 shall transfer air from electrical room 407 to storage space 408 and operate based on a temperature sensor located in the electrical room. The supply grille indicated as S-7 on the north side of the electrical room shall connect to a transfer duct to be stubbed in to the corridor space in lieu of being ducted to V7-14. The transfer will provide tempered make up air to the electrical room as the transfer fans exhausts above-setpoint air created by the heat rejected from the transformer. All grille locations shall be coordinated with the electrical contractor prior to installation. The 10x10 transfer duct in the northeast of the room shall be deleted. Fire dampers shall be provided in accordance with IBC section 717 for the 1-hour fire barriers surrounding boiler room 406 and electrical room 407.
5. Air terminals in the boiler room shall be type S-8.
6. Fire dampers shall be provided in accordance with IBC section 717 for ductwork penetrating the 2-hour fire wall running along the west wall of the receiving room 404 and up the corridor on the east side of the gym.
7. A fire damper shall be installed at the 16x14 supply duct penetration above the double doors to the north of room 408 in area F.
8. V7-15 shall be installed on the other side of the adjacent receiving room wall as to avoid crossing the 2-hour fire wall.
9. The room 408 12x10 transfer duct shall transfer air to the corridor to the north to avoid the need for a fire damper.
10. The transfer duct penetrating the fire wall above the double doors to the north of room 408 shall be 18x14 in lieu of 14x12. The 18x14 duct shall be installed with a fire damper.

ITEM NO. 8 Sheet M5.13

A. A transfer duct and return grille shall be provided on the east side of LSS room 519 in addition to the return grille and transfer duct on the west side.

ITEM NO. 9 Sheet M5.14

A. Return grilles R-1 shall be provided in rooms 411, 411A, 414, 415A, 415, 404, and 403.
B. Return grilles R-2 shall be provided in each corridor.
C. The 80x24 supply main from H4.3 to H4.4 shall have a fire damper at the 2-hour fire wall.
D. The 18x12 duct serving V7-8 shall have a fire damper at the 2-hour fire wall.
E. The 12x12 duct serving V7-10 and V7-11 shall have a fire damper at the 2-hour fire wall.
F. The 14x14 transfer duct serving room 415 shall have a fire damper at the 2-hour fire wall.
G. The 56x24 return air main serving AHU-7 shall have a fire damper at the 2-hour fire wall.
H. The 10x8 transfer duct serving room 415A shall have a fire damper at the 2-hour fire wall.

ITEM NO. 10 Sheet M5.15

A. Exhaust air ductwork and diffusers shall be provided in 3D art room 417. Exhaust fan and ductwork system shall be similar to that found in 3D art room 421.

B. The dryer located in auditorium storage room 418 shall be relocated to room 114. Dryer venting shall be provided.
C. The transfer air duct for the scene shop room 420 shall be 16x12.
D. Provide a 30x20 transfer air duct for 3D art room 421.
E. Provide an 8x8 transfer air duct in art storage room 417B.
F. Provide a 24x16 transfer air duct in 2D art room 417.
G. Provide a 16x14 transfer air duct in auditorium room 418.
H. Kilns shall be directly connected to an "Envirovent 2" exhaust fan provided by others. Provide all ductwork and connections to exhaust fan and kiln.
I. All supply diffusers in rooms 417 and 421 shall be S-2 in lieu of S-8.
J. Transfer air ducts serving rooms 418 and 420 shall be provided with fire dampers.

ITEM NO. 11 Sheet M5.21

A. The return air ductwork stubbing in to the west classroom cluster shall all be 62x20 and no 54x54 RA up to RF-4 shall be provided. The relief for this air handler is achieved by utilizing RF-4A and RF-4B in the locker areas 687 and 670. Both branches of each RF-4A and RF-4B shall elbow prior to transitioning to a bell mouth opening in order to reduce the transmitting sound of the exhaust fan. Ductwork branches shall stub through the soffit that separates the ceilings from the corridor to the locker areas. A 16x16 transfer duct shall also penetrate the soffits and a return grille R-2 shall be provided in each locker bay.
B. The 38x80 relief air duct from AHU-1 shall elbow to the west and route in the ceiling space as required for the connection of RF-1A and RF-1B ductwork. RF-1A and RF-1B shall provide the powered relief for AHU-1.
C. A transfer duct and return grille shall be provided on the east side of LSS room 678 in addition to the return grille and transfer duct on the west side.

ITEM NO. 12 Sheet M5.22

A. Provide a 34x20 transfer air duct for the supply air provided by V4-27 and V4-28. The transfer air duct shall transfer air from the media center room 650 to the main corridor.
B. Provide a 12x10 transfer duct from work room 650A to the corridor.
C. Provide two return grilles R-2 to on the north side of Testing/PD room 650D.
D. Provide a 40x20 transfer air duct from Testing/PD room 650D to the main area B corridor. The transfer duct shall route across the IT room 652. A fire damper shall be provided at the 2-hour fire wall.
E. A 14x14 transfer duct shall be provided to transfer the air from V5-24 to the common ceiling space of area B. A fire damper shall be provided at the 2-hour fire wall.
F. The 26x24 supply duct serving AHU shall route through the ceiling space of IT room 652 in order to avoid needing multiple fire dampers. A fire damper shall be provided at the 2-hour fire wall in between rooms 652 and 650D.

ITEM NO. 13 Sheet M5.23

A. The return air ductwork stubbing in to the west classroom cluster shall all be 62x20 and no 54x54 RA up to RF-5 shall be provided. The relief for this air handler is achieved by utilizing RF-5A and RF-5B in the locker areas 611 and 628. Similar to area A, both branches of each RF-5A and RF-5B shall elbow prior to transitioning to a bell mouth opening in order to reduce the transmitting sound of the exhaust fan. Ductwork branches shall stub through the soffit that separates the ceilings from the corridor to the locker areas. A 16x16 transfer duct shall also penetrate the soffits and a return grille R-2 shall be provided in each locker bay.
B. The 54x54 relief air duct from AHU-2 shall elbow to the west and route in the ceiling space as required for the connection of RF-2A and RF-2B ductwork. RF-1A and RF-1B shall provide the powered relief for AHU-2.
C. A transfer duct and return grille shall be provided on the east side of LSS room 619 in addition to the return grille and transfer duct on the west side.
D. The 20x18 duct up to BEF-8 shall move to the east to be a minimum of 10’ from the roof edge.

ITEM NO. 14 Sheet M5.24

A. The six southern-most supply diffusers in the gymnasium shall be type S-10.
B. The return air ductwork main from AHU-7 shall transition immediately after the 24x96 duct penetration as required to provide a sufficient path to maneuver between AHU-7 and AHU-8.

ITEM NO. 15 Sheet M5.25

A. The following changes to be made to view “1/M5.25 – Second Floor Plan Area E – Ventilation”:
   1. A fire damper shall be provided at the 26x20 supply air duct 2-hour fire wall penetration serving Lobby room 425.
   2. A fire damper shall be provided at two (2) 34x16 return air duct 2-hour fire wall penetrations serving Lobby room 425
B. The following changes to be made to view “2/M5.25 – Tech Plan – Ventilation”:
   1. Provide birdscreens on AHU-9 return air openings.
   2. EF-14A shall be denoted as EF-15
   3. EF-14B shall be denoted as EF-14

ITEM NO. 16 Sheet M5.31

A. RF-4 and associated 54x54 roof penetration shall be deleted.
B. There shall be two roof mounted relief fans RF-1A and RF-1B in lieu of the single 54x54 opening indicating RF-1.
C. RF-4A shall be as scheduled on the Fan schedule. This is one of the relief fans for the area served by AHU-4, not a hood.
D. RF-4B shall be as scheduled on the Fan schedule. This is one of the relief fans for the area served by AHU-4, not a hood.
E. All plumbing VTRs shall be a minimum of 36” away from parapet walls.

ITEM NO. 17 Sheet M5.32

A. The following changes to be made to view "3/M5.32 – Roof Plan Area G – Mechanical":
   1. There shall be a roof drain serving the new secure entry addition on the east side of the plan.
B. The following changes to be made to view "3/M5.32 – Roof Plan Area G – Mechanical":
   1. There shall be boiler high efficiency exhaust and gooseneck intake installed for boilers B-1, B2, B3, and B4. Intake and exhaust shall be sized and installed per the manufacturer's written instructions.
   2. There shall be water heater venting sized and installed per the manufacturer's written instructions.
   3. All plumbing VTRs shall be a minimum of 36" away from parapet walls.

ITEM NO. 18 Sheet M5.33

A. RF-5 and associated 54x54 roof penetration shall be deleted.
B. There shall be two roof mounted relief fans RF-2A and RF-2B in lieu of the single 54x54 opening indicating RF-2.
C. RF-5A shall be as scheduled on the fan schedule. This is one of the relief fans for the area served by AHU-5 and shall be located over the west locker area.
D. RF-5B shall be as scheduled on the fan schedule. This is one of the relief fans for the area served by AHU-5 and shall be located over the east locker area.
E. BEF-8 shall be a minimum of 10ft away from the roof edge.
F. All plumbing VTRs shall be a minimum of 36" away from parapet walls.

ITEM NO. 19 Sheet M5.34

A. The exhaust fan serving the kitchen staff toilet shall be indicated as BEF-16.
B. All plumbing VTRs shall be a minimum of 36" away from parapet walls.

ITEM NO. 20 Sheet M5.35

A. EF-5 shall be located over the 3D art room 417.
B. BEF-14 and BEF-15 shall be located a minimum of 10 feet away from the roof edge.
C. All plumbing VTRs shall be a minimum of 36" away from parapet walls.

ITEM NO. 21 Sheet M6.02

A. Detail 1/M6.02 shall be deleted, the dishwasher provided by food service has an integral booster heater.
B. Detail 7/M6.02 is a standard detail, water heaters and all piping shall be installed per the manufacturer's written instructions.
C. Detail 8/M6.02 shall be modified to represent the conditions explained in Item No. 1 in Addendum – M01.
D. Detail 10/M6.02 shall be modified to represent a piping layout that allows for equal pressure drop through each water softener.
E. Detail 13/M6.02 shall indicate 2" thick Styrofoam insulation to be provided by mechanical contractor.

F. Detail 15/M6.02 shall indicate 2" thick 60psi Styrofoam insulation.

ITEM NO. 22 Sheet M7.01

A. Detail 2/M7.01 shall represent 3-way control valves on dual coils for both chilled water and heating water coils. Control point V-1 and V-2 shall be revised to indicate 3-way valves on AHUs 1, 2, 3, and 4. 2-way valves shall be provided on AHU-3.
B. Detail 4/M7.01 shall indicate a 2-way control valve.
C. Detail 7/M7.01 shall be removed.
D. Detail 8/M7.01 control device T-8 shall be renamed B-4 Supply Water Temperature in the point description.
E. Detail 1/M7.01 shall not include ice storage control and ice making control. This portion of the chiller / ice plant shall be controlled by the chiller manufacturer's chiller / ice plant control package, to be provided and installed by the chiller manufacturer. Refer to Item No. 33 in this addendum for information pertaining to chiller/ice plant control.

ITEM NO. 23 Sheet M7.02

A. Detail 2/M7.02 shall have control device ECM -2 removed and ECM-1 point description shall be renamed Pump 2 Speed Control.
B. Detail 1/M7.02 shall utilize a 2-way control valve in lieu of a 3-way control valve. The point description on control device V-2 shall be modified accordingly.
C. Detail 3/M7.02 shall utilize 2-way control valves in lieu of 3-way control valves.

ITEM NO. 24 Sheet M8.01

A. The following schedule shall be added to the plans:

WATER HEATER SCHEDULE

UNIT NO.	MANUFACTURER & MODEL NO.	FUEL TYPE	INPUT MBH	EWT	LWT	REC. GPH	STOR GAL	ELECTRICAL			DISC BY	NOTES
								AMPS	VOLTS	PH		
WH-1	A.O. SMITH BTH-500	NG	500.0	40	140	576	119	15	120	1	EC	1
WH-2	A.O. SMITH BTH-500	NG	500.0	40	140	576	119	15	120	1	EC	1
WH-3	A.O. SMITH BTH-500	NG	500.0	40	140	576	119	15	120	1	EC	1

NG NATURAL GAS
P PROPANE
E ELECTRIC
DISC DISCONNECT
MC MECHANICAL CONTRACTOR
EC ELECTRICAL CONTRACTOR

NOTES:
1. RECOVERY GPH BASED ON 100°F TEMPERATURE RISE

B. The following notes shall be added to the **Air Cooled Chiller Schedule**:
   1. (5.) Minimum IPLV = 17.4
   2. (6.) Provide with VFD speed modulated screw compressors.
   3. (7.) Provide factory mounted, calibrated, and wired flow switch capable of handling variable primary flow without nuisance trip outs.
   4. (8.) Provide with high efficiency quiet fans with EC variable speed motors.
   5. (9.) Provide with microchannel condenser coils.

C. The following notes shall be added to the **Air Handling Unit Schedule:**
   1. (3.) So long that 100% redundancy is met with one fan out of operation, fewer fans may be provided in the indicated fan array.
      a. This note applies to AHU-1, 2, 4, 5, 6, 7

ITEM NO. 25 Sheet M2.02

A. Provide 2" waste piping from the sink in Nurse room 500D to connect in to the 4" waste line routing north from the nurse room private toilet room.

ITEM NO. 26 Sheet M2.03

A. The 12" storm line exiting the building shall exit the building to the north in lieu of exiting the building to the south. The 12" storm line shall be 89'-7" off of the west wall of vestibule V5.5 to match the location designed and indicated by the civil engineer. All storm drain branch connections to the 12" line shall be modified as required. A floor clean out shall be provided in room 519 prior to the 12" line exiting the building.

ITEM NO. 27 Sheet M2.13

A. Provide plumbing fixture S-1 in Nurse room 500D. Fixture shall be in the casework on the east wall. Provide cold water and hot water connections routed from the piping mains in the area C corridor. Sizes shall be as specified in the plumbing fixture rough-in connection schedule. Provide shut-off valves at piping branches off of mains. Provide waste and vent piping connections to S-1. Vent piping shall route to the vent system in the nurse's toilet room.
B. Provide IMT-1 at the under-counter refrigerator in Nurse room 500D. Cold water supply shall be provided from the same cold water branch piping serving the sink S-1.
C. Provide IMT-1 at the under-counter refrigerator in Lact. room 500H. Cold water supply shall be provided from the same cold water branch piping serving the sink S-3.

ITEM NO. 28 Alternate #1 – Energy efficiency changes with existing chilled water system

A. Alternate #1 consists of the removal and replacement of the existing chilled water pumps. The pumps are currently fully redundant constant speed pumps. The replacement pumps shall be lead/lag operation similar to the new pumps provided in the 5-6 addition. The pumps to be provided in Alternate #1 can be found in a schedule below. Pumps shall be provided with VFDs to be mounted in the existing mechanical room. In addition to the removal and replacement of

chilled water pumps, this alternate includes the dilution of the chilled with from a 50% ethylene glycol/water solution to a 35% ethylene glycol/water solution.

PUMP SCHEDULE - ALTERNATE #1

UNIT NO.	MANUFACTURER & SERIES NO.	MODEL NO.	SERVICE	TYPE	GPM	HEAD (FT.)	MOTOR HP	MOTOR VOLT	MOTOR PH	MOTOR VFD	DISC BY	PUMP RPM	NOTES
CHWP-3	TACO TA	1548	CHW	HSC	1400	215	150	480	3	Y	MC	1750	1
CHWP-4	TACO TA	1548	CHW	HSC	1400	215	150	480	3	Y	MC	1750	1

HSC	HORIZONTAL SPLIT CASE
HES	HORIZONTAL END SUCTION
IL	IN LINE
DW	DOMESTIC WATER
FH	FLOOR HEAT
GHW	GLYCOL HOT WATER (50% EG)
CHW	CHILLED WATER (35% EG)
DHW	DOMESTIC HOT WATER
DISC	DISCONNECT
MC	MECHANICAL CONTRACTOR
EC	ELECTRICAL CONTRACTOR

NOTES:
1. VFDS PROVIDED BY DIV 25. VFD's MOUNTED AND WIRED BY DIV 26

SPECIFICATIONS

ITEM NO. 29 230700 – Heat Transfer - Add in the following section: **2.35 Underground Chilled Water Lines (Welded Steel) :**

A. UNDERGROUND CHILLED WATER LINES (welded steel):
1. General - All underground chilled water shall be similar to XTRU-THERM type, as manufactured by PERMA-PIPE. All straight sections, fittings, anchors and other accessories shall be factory fabricated to job dimensions and designed to minimize the number of field welds. Each system layout shall be computer analyzed by the piping system manufacturer to determine stress on the service pipe and anticipated thermal movement of the service pipe. The system design shall be in strict conformance with ANS1 B31.1, latest edition. Factory trained field technical assistance shall be provided for critical periods of installation; i.e., unloading, field joint instruction and testing.
2. Service Pipe - Internal piping shall be standard weight carbon steel. All joints shall be butt-welded for 2.5 inches and greater, and socket or butt-welded for 2 inches and below. Where possible, straight sections shall be supplied in 40-foot random lengths with piping exposed at each end for field joint fabrication.
3. Accessories - End seals, gland seals and anchors shall be designed and factory fabricated to prevent the ingress of moisture into the system.
4. Insulation - Service pipe insulation shall be spray applied nominal 2 lb/ft-cubed density, 0.16 initial k-factor, polyurethane foam for straight sections and preformed polyurethane foam all fittings. All polyurethane foam insulation shall be minimum 90% closed cell. Open cell foams

will not be allowed. To ensure no voids are present, all insulation shall be inspected by one of the following three methods: visually checked prior to application of the protective jacket, infrared inspection of the entire length, or x-ray inspection of the entire length. The insulation thickness shall not be less than one inch.

5. Protective Jacket – The outer jacket shall be seamless high density polyethylene (HDPE). PVC or tape materials not allowed. The minimum thickness shall be 0.125 in.
6. All fittings of the insulated piping system shall be prefabricated and pre-insulated.
7. Field Joints - The internal pipe shall be hydrostatically tested to 150 psig or 1.5 times the operating pressure, whichever is greater. Insulation shall then be poured in place into the field weld area. All field-applied insulation shall be placed only in straight sections. Field insulation of fittings shall not be acceptable. The installer shall seal the field joint area with a heat shrinkable adhesive-backed wrap. Backfilling shall not begin until the heat shrink-wrap has cured. All insulation and coating materials for making the field joints shall be furnished by PERMA-PIPE.
8. Backfill - A 4-inch layer of sand or fine gravel shall be placed and tamped in the trench to provide a uniform bedding for the pipe. The entire trench width shall be evenly backfilled with a similar material as the bedding in 6 inch compacted layers to a minimum height of 6 inches above the top of the insulated piping system. The remaining trench shall be evenly and continuously backfilled in uniform layers with suitable excavated soil.
9. Chilled water piping shall be installed 36” below grade.

ITEM NO. 30 220150 – 3.5B – Pipe Identification (Stenciled)

A. The following piping identification shall be included:
   1. 140° Hot Water denoted as “140° H.W.”
   2. 140° Recirculating Hot Water denoted as “140° R.H.W.”

ITEM NO. 31 230700

A. Delete section 2.32 Fin Radiation.

ITEM NO. 32 230800 – 2.1 – Package Air Handling Units

A. Add the following sentence to paragraph M:
   1. “At the contractors option, field installed VFDs may be provided in lieu of factory mounted”

ITEM NO. 33 230650 – Refrigeration – 2.4 Ice Storage Tank System - **Chiller / Ice Plant Control**:

A. **Chiller / Ice Plant Control Package:** The Chiller/ Ice plant controls provides stand-alone control or control from a higher level Building Automation system via Bacnet communication and provides start/stop and lead/lag/standby control for the variable flow chilled water pumps and controls the pump speed via the VFD speed control signal to maintain the chilled water system differential pressure setpoint (adj.); controls the chiller/ice plant modes of operation, and chiller/ice plant sequencing. The Chiller / Ice Plant controller also provides control for the Chiller Minimum Flow Bypass Valve and the ice making diverting valve to maintain minimum flow

through the chiller along with the appropriate flow to the building load for specific modes of operation. Chiller / Ice plant controls shall have a web enabled communication interface with system graphics and dash boards that reflect how the plant is operating and the strategies available to automatically minimize utility cost by changing modes of operation and based on weather forecasts or operator inputs for the different predicted weather events or schedules. Dashboard shall show daily and monthly estimated utility savings based on the usage of the plant and utility rate structure and monitoring KW demand and KWH usage from the devices connected to the chiller plant. System shall be enabled via communication from overall building automation contractor.

1. Chiller / Ice Plant controls basis of design is by Trane for the use with Calmac thermal storage (ice) tanks. Daikin, Carrier, and York's chiller / ice plant controls package are approved equals and must meet the requirements of this specification.

B. The Air-Cooled Chiller / Ice (Thermal Storage) Plant consists of the following:
   1. One (1) Air cooled screw chiller with:
      a. Chiller evaporator differential pressure transmitter
      b. Interface to chiller to monitor and control all modes of operation

   2. Field Build Up Ice Plant as drawn on plans or Ice completion module shall consist of the following :
      a. Two (2) manifolded primary pump with Variable Frequency Drive (VFD) (VFDs shall be provided by Building ATC contractor to match rest of the building VFDs)
      b. Chiller Minimum Flow Bypass Valve
      c. Ice making diverting valve
      d. Ice tank mixing valve
      e. Primary loop flow meter
      f. Chilled Water temperature sensors
         a. Chiller leaving supply temperature (matched sensor 1)
         b. Ice tank mixing valve leaving temperature (matched sensor 1)
         c. Ice tank supply temperature
         d. Secondary loop supply temperature (optional matched sensors 2)
         e. Secondary loop return temperature (optional matched sensors 2)
         f. Chiller entering return temperature
      g. Building Automation System (BAS) Controller
      h. Ice Tanks (quantity as scheduled) with inventory meter

C. Chiller / Ice Plant Control Enable:
   1. The BAS shall enable the system via calendar scheduling and operating strategy of Load Shift as determined by the Chiller/Ice Plant Control (CIPC) or the cooling mode on a call for optimal start, night setback or timed override operation of any system air handling unit. The CIPC shall determine the appropriate startup mode.
   2. Upon a call for plant operations the CIPC determines the startup mode of operation.

a. Temperature Based
    a. During utility OFF peak and occupied mode, the plant shall start in:
        i. The chiller only mode when the outdoor air temperature is above 60.0 deg. F (adj.)
        ii. The ice only mode when the outdoor air temperature is below 60.0 deg. F (adj.)
    b. During utility ON peak and occupied mode, the plant shall start in:
        i. The chiller & Ice mode when the outdoor air temperature is above 60.0 deg. F (adj.)
        ii. The ice only mode when the outdoor air temperature is below 60.0 deg. F (adj.)
b. Schedule Based
    a. The plant shall start in the mode scheduled, if no schedule exists, mode shall be determined by:
        i. Chiller / Ice Plant Sequencing:
            1. The Chiller/Ice Plant Control application shall enable the chiller, pumps, valves, based upon system load, on/off peak schedule, mode of operation, and operating conditions.
            2. The chiller unit control flow request binary output shall control the operation of the unit evaporator pump and call for flow when the chiller is enabled.
        ii. Chiller/Ice Plant Strategy:
            1. When enabled the Chiller/Ice Plant Control shall control cooling and/or ice charging or melting as determined by the ice strategy (adj.).
        iii. Load Shift Strategy:
            1. The chiller plant control system shall use ice storage and associated control system to minimize the recorded on-peak electric consumption (load shifting) of the facility and manage completely depleting the ice storage thermal storage capacity as efficiently as possible within the designed melt time period.

D. Sequences below are controlled by Chiller / Ice Plant controls on a request for chilled water from the Overall BAS contractor:
    1. Modes:
        a. Chiller Only
        b. Tank Discharge Only
        c. Simultaneous Chiller & Tank Discharge
        d. Make Ice
        e. Make Ice and Cool
        f. Off (tanks secured)

2. Chiller Only Mode:
    a. On a call for cooling from the Overall BAS, equipment cooling valves shall modulate to maintain occupancy comfort temperatures and signal the chiller plant ice control. The thermal storage valve shall fully bypass the thermal storage tanks, the ice making diverting valve shall open to the building load, the chiller and chilled water pumps shall be enabled to maintain the chilled water setpoint and the chilled water pump variable frequency drive shall be modulated to maintain the system differential pressure.
3. Tank Discharge Only Mode:
    a. On a call for cooling the Overall BAS shall control system equipment cooling valves to modulate to maintain occupancy comfort temperatures. The chiller shall be disabled, the chiller plant valves shall be modulated to use storage ice to supply 42.0 deg. F (adj.) chilled water to the building.
    b. If indications are that ice may be running out prior to the end of the on-peak period an alarm shall be generated and simultaneous chiller cooling and ice tank discharge shall be enabled.
4. Simultaneous Chiller & Tank Discharge Mode:
    a. On a call for cooling the Overall BAS shall control system equipment cooling valves to modulate to maintain occupancy comfort temperatures. The BAS shall enable both chiller and ice tank discharge control, the system pumps shall be enabled if not already enabled, and the Ice Tank mixing valve shall modulate to maintain 42.0 deg. F (adj.) to the building load. The BAS shall limit the chiller capacity to meet the Load Shift strategy. If the ice tank supply temperature reaches its high limit then the valve shall bypass the ice storage tanks and an alarm shall be generated.
5. Make Ice Mode:
    a. When building cooling is not required the Ice Making Diverting valve shall bypass the building loop and all load equipment valves shall be closed. The thermal storage tank valve shall modulate to full flow through the tanks, the pumps shall be enabled if not already enabled, the VFD set to ice making GPM, and once chiller flow is proven the chiller shall be enabled in its ice making mode.
    b. Note: Provisions shall be made to allow tank charging past the super cooling state during the initial 2 hours (Adj.). As with most glycol applications the low evaporator refrigerant temperature cutout setpoint may need to be set to 0.0 deg. F. The chiller shall operate in the ice making mode until the ice making period expires or the return temperature from the ice tank(s) drops below 27.0 deg. F (adj.) indicating the tanks are fully charged. Upon a call for cooling during the ice making mode the control shall switch to simultaneous chiller and ice mode.
6. Make Ice and Cool Mode:
    a. On a call for cooling during the Ice Making mode, the BAS shall control system equipment cooling valves to maintain occupancy comfort temperatures; control the Ice making diverting valve & chilled water bypass valve to control the temperature and amount of chilled water flow to the building loop in order to satisfy the call for cooling. The Ice Tank mixing valve shall modulate to full flow through the tanks, the

pumps shall be enabled, and the chiller shall be enabled in the ice making & cool mode.

b. If the ice making mode ends prior to full charge of thermal storage tanks an alarm shall be generated and the chiller shall continue to run. If during this mode no further building cooling is required the mode shall switch back to Ice Making only mode.

c. If both the ice making has completed and there is no call for building cooling the system shall switch to the off mode.

7. Off Mode (auto/standby):
   a. When building cooling is not required, and other modes have been satisfied the BAS shall disable the chiller plant. After 5 minutes (adj.) off delay the pumps shall be disabled, all building equipment valves shall close, the Ice Tank mixing valve shall bypass the tanks, Ice making diverting valve shall bypass the building load, and the chilled water bypass valve shall open to full flow to the chiller.
8. Chilled Water System Enable/Disable:
   a. The chilled water system shall be enabled on a contact closure from the chiller. When enabled, the BAS controller shall position the control valves and isolation valves to support the selected mode; the lead primary pump is enabled; after all statuses are proven the chiller is enabled.
   b. When the chilled water system is disabled, the chilled water pumps shall be off unless requested by the chiller.
9. Chilled Water Pump Start/Stop:
   a. The BAS controller shall start a chilled water pump through a contact closure of the pumps VFD run-enable contacts.
10. Chilled Water Pump Status:
    a. The BAS controller shall detect chilled water pump run status via a VFD current switch.
11. Chilled Water Pump Lead/Standby:
    a. The chilled water pump lead/standby sequence shall be determined automatically based on a weekly schedule. From the BAS or with Tracer TU an operator shall be able to manually change the lead/standby rotation sequence.
12. Chilled Water Pump Failure:
    a. If the pump start/stop relay is enabled and the current switch status is off for more than 15 seconds (adj.), the BAS controller shall annunciate a chilled water pump failure alarm to the BAS workstation, start the next pump in the sequence and disable the lead/standby functionality.
    b. After the alarm is acknowledged, the operator shall be able to reset the controller alarm failure as follows
        a. From a BAS
        b. Manually overriding the pump On, momentarily
        c. Using the Tracer TU service tool
    c. This shall re-enable the lead/standby sequence.
13. Chilled Water Pump Speed:
    a. The BAS controller shall monitor the chilled water system differential pressure sensor. When the pump VFD is enabled, the BAS controller shall control the analog

speed signal sent to the pump VFD to maintain the chilled water differential pressure setpoint of 50.0 psig (adj.).

14. Chilled Water Bypass Valve Control:

    a. The BAS controller shall monitor the differential pressure across the evaporator of the chiller to determine flow and shall modulate the Chiller Minimum Flow Bypass Valve to maintain flow above the manufacturer recommended minimum flow.

PRIOR APPROVALS

Section	Description of Equipment	Approved Manufacturer
220400-2.34	Sump Pump	Bell & Gossett
230800-2.1	Packaged Air Handling Units	VTS
230800-2.4	Steam Humidifier (Electric)	Neptronic
230650-2.4	Ice Storage Tank System	Fafco

END OF ADDENDUM

May 13th, 2016

Jim Cole
Zerr Berg Architects
510 4th Ave. N.
Fargo, ND 58102

RE: Horizon Middle School Addition
Addendum No. 3 – Electrical Items
MBN Project No. 15-214

Please include the following items in the next addendum issued for the project:

General Items:

1. Radio Booster System Clarification: Splitter/Tap noted in Addendum #1 shall be Wilson Electronics, #859906, 800-960 MHz, two way tap, N-Female Connector.

2. All card access and door monitoring wiring shall be in conduit to the assigned IT rooms or termination location, see Detail 2/E7.1. Assigned rooms are as follows:
    a. Sheet E4.10: IT Room 559.
    b. Sheet E4.11: IT Room 652
    c. Sheet E4.12: IT Room 559
    d. Sheet E4.13: Mechanical 402M
    e. Sheet E4.14: Mechanical Room 423M
    f. Sheet E4.15 Area F: Mechanical Room 402M
    g. Sheet E4.15 Area G: Existing Server/MDF Room.
    h. Sheet E4.20: IT Room 559
    i. Sheet E4.21: IT Room 652
    j. Sheet E4.22: IT Room 652
    k. Sheet E4.23: IT Room 652
    l. Sheet E4.24: Mechanical Room 423M.
3. The contractor shall provide the RS-485 twisted pair bus wiring between the Lenel card access panel locations in Rooms 559, 652, 402M, 423M, and the existing Server/MDF room. Wiring shall be in a separate ¾" conduit, and can be daisy chained between each location, originating in the existing Server/MDF room. Coordinate with the Owners card access system supplier for the exact wire type, wiring to be compatible with Lenel card access systems.

4. The exact layout of data racks, patch panels, fiber termination enclosures etc shall be coordinated with the Owner prior to installation of any racks or cabling. Coordinate all labeling with Owner prior to labeling and outlets or patch panels.

5. Add wireless clocks in the following rooms: 509, 537, 609, 627, 637, 650D, 668, 671, 686, 696. Provide 120V connection from nearest available circuit in each room, see Section 27-5150 for clock requirements.

6. New fiber optic backbone cabling: Provide j-hooks or caddy loops as necessary to support new fiber optic cabling above existing ceilings in the existing building for connections to the existing Server/MDF Room. Provide conduit sleeves as required through existing walls.

7. The new fire alarm system for the building additional shall be connected to the existing fire alarm panel so that trouble and alarm signals are annunciated by both systems.

8. The items added and revised in the addendums will be added to the plans and specifications and issued as a construction set in Bid Package 3.

Changes to the Specifications:

Section 27-1005 Telecommunications Cabling

1. Paragraphs 2.09.B.6 and 2.10.B.1.d: Delete rack mounted horizontal wire management.
2. Add the following UPS equipment to be installed at data rack locations, installer to coordinate with owner for exact layout within rooms and in racks prior to installation.
    a. Qty (7) Cyber Power UPS Model #OL8000RT3UPDUTF
    b. Qty (7) Cyber Power Model #RMCARD203
    c. Qty (7) Cyber Power Model #ENDVIROSENSOR
    d. Qty (14) Cyber Power Metered PDU Model #DU20M2F10R

Section 27-5125 Sound Reinforcement Systems

1. Paragraph 2.02.G Digital Signal Processor: Provide (2) EAW UX 3600 processors in lieu of the specified EAW UX 8600 processor for Auditorium speaker processing.
2. Paragraph 2.02.R.3: VGA connection not required, wallplate shall at a minimum have HDMI and audio inputs.
3. Paragraph 2.03 Gymnasium and Commons Sound System:
    a. Add (1) EAW UX 3600 Series Processor for Commons loudspeaker processing.
    b. Item C: Provide (2) Tesira Forte Digital Signal Processors for Gymnasium and Commons sound system, link with AVB connection.
4. Paragraph 2.04.B: Revise rack type to DWR Series in lieu of ERK Series.
5. Paragraph 2.08 Cable, add the following:
    a. HDMI Cable : Manufacturer: Cables to Go Rapid Run Series, optical modular cable, plenum rated, lengths as required. Provide with USB power supply where required for longer distances per manufacturer recommendation.

Changes to the Drawings:

SHEET E0.01

1. Luminaire Schedule – Fixture Type ‘N’ is to be provided with 0-10V dimming drivers.
2. Fixture Types ‘D3’, ‘V’, and ‘D’ located in Auditorium 423 are to have DMX drivers.
3. Luminaire Schedule – Revise fixture Type ‘B1’ to LED lamping.

SHEET E0.02

1. For the (6) wall mounted fixtures noted with plan note 9 at the south west corner of the building the replacement fixtures are to be (2) Type ‘R’ and (4) Type ‘R1’.

SHEET E2.10

1. Vestibule V5.3 - Add (3) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.
2. Vestibule V5.2 - Add (3) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.

SHEET E2.11

1. Vestibule V5.4 - Add (3) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.
2. Vestibule V5.5 - Add (3) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.

SHEET E2.12

1. Vestibule V5.1 – Revise the (4) fixtures from Type 'D1' to Type 'D3'.
2. Vestibule V5.1A – Revise the (2) fixtures from Type 'D1' to Type 'D2'. Also Add (4) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.

SHEET E2.13

1. Vestibule V4.1 - Add (3) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.
2. Vestibule V4.4 - Add (4) Type 'D2' fixtures in the canopy at the entrance. The fixtures in the canopy are to be circuited to the same circuit and control as the Type 'R' and 'R1' fixtures. The Type 'D2' fixtures are to be damp location rated at this location.
3. Rm. 400 – Add (3) low voltage Lighting control switches to be cable to Panel LRP1A. Add (2) 0-10V dimming switches for control of Type 'N' fixtures. Dimmers to be located in recessed control box as shown on sheet E3.13, note #16.

SHEET E2.14

1. Revise the homerun for exterior wall mounted Type 'R' fixtures from the homerun shown to Panel HLS1, circuit 7. Circuit to be homerun Via UL 924 relay located in Low Voltage Relay Panel LRP1A.
2. Add (2) Type E2 fixtures to Auditorium 423 near the front of the stage.
3. Rms. H4.9 and H4.10 – Revise the exit lights from Type 'E' to Type 'E2'.
4. Rm. 425T – Revise the (3) Type 'A' fixtures to (3) 1' x 4' versions of the Type 'A' fixture.
5. Rm. 425 – Add (2) low voltage switches for control of the Type 'D2' fixtures. One to be located on the north end of the lobby and (1) at the south end of the lobby.
6. Rm. 425 – Add (2) low voltage switches for control of the Type 'Q' fixtures. One to be located on the north end of the lobby and (1) at the south end of the lobby.
7. Note: Provide #10 conductors for all life safety circuiting.
8. Rm. 423 – The Type 'D' fixtures in this space are to have DMX drivers.

SHEET E2.20

1. Revise the (2) homeuns shown for the exterior wall mounted fixtures Type 'R' and 'R1' from the home run shown to Panel HLS1, circuit 9. Circuit to be homerun Via UL 924 relay located in Low Voltage Relay Panel LRP1A.

SHEET E2.21

1. Revise the (2) homeuns shown for the exterior wall mounted fixtures Type 'R' and 'R1' from the home run shown to Panel HLS1, circuit 11. Circuit to be homerun Via UL 924 relay located in Low Voltage Relay Panel LRP1A.

SHEET E2.24

1. In the Auditorium provide sloped ceiling adapters for the (22) Type 'D3' fixtures shown mounted in the clouds.
2. Rm. 423F – Add plan note #2 to homerun.
3. Rm. 423E – The (3) fixtures are to be Type 'A'.
4. Rm. 425 – Revise the plan note at the homerun for the Type 'Q' fixtures from #5 to #2.
5. Rm. 425 – Note: (2) of the Type 'D2' fixtures in each of the (4) clouds are to be wired through UL 924 relay in LRP2C. All of the circuit to HLS1-8. Provide #10 conductors.
6. The emergency fixtures on the second floor plan are to be circuited to HLS1 -8. Provide #10 conductors.
7. Catwalk Lighting Plan – Provide #10 conductors for all life safety circuiting.
8. Second Floor Plan Lighting – The Type 'D3', 'V' and 'D' fixtures provided in the auditorium are to have DMX drivers.

SHEET E3.10

1. Rm. 576 – Add (1) Nema 6-30 receptacle. Provide homerun to 30/2 breaker in Panel LEQ1 with #10 conductors.

SHEET E3.12

1. Rm. 559 – Provide (3) duplex receptacles with surface box located on wall near door access system power supplies. Each receptacle to have a plug and cord connection. The (3) SO cords are to be run in conduit from the surface boxes to the rack location. The plugs are to be plugged into the rack mounted UPS.
2. At the exterior door near Rm. 500L provide 120 volt connection form corridor receptacle circuit to power supply for door.
3. Rm. 500D – Add (1) duplex receptacle for undercounter refrigerator on east wall. Provide circuiting to spare 20/1 breaker in Panel L1J.

SHEET E3.14

1. Rms. 417 and 421 – Add connection from room receptacle circuit to the power supply at the exterior doors at the west wall of the room.
2. Rm. 425 – Provide 120 volt connection to Type 'L' speaker in the south west corner of lobby. Circuit to spare 20/1 breaker in panel L2F.

SHEET E3.15

1. Rm. 406 – Add starter/disconnect for irrigation pump connection.

SHEET E3.21

1. Rm. 617 Add (1) Nema 6-30 receptacle. Provide homerun to 30/2 breaker in Panel LEQ1 with #10 conductors.

SHEET E3.22

1. Rm. 652 – Provide (3) duplex receptacles with surface box located on wall near door access system power supplies. Each receptacle to have a plug and cord connection. The (3) SO cords are to be run in conduit from the surface boxes to the rack location. The plugs are to be plugged into the rack mounted UPS.

SHEET E3.23

1. Rm. 402M – Provide (3) duplex receptacles with surface box located on wall near door access system power supplies. Each receptacle to have a plug and cord connection. The (3) SO cords are to be run in conduit from the surface boxes to the rack location. The plugs are to be plugged into the rack mounted UPS. Provide (2) 4' x 8' painted plywood backboards at the rack location.

SHEET E3.24

1. Rm. 423F – Add (1) 4' x 8' painted plywood backboard at the rack location.
2. Rm. 423M – Provide (2) 4' x 8' painted plywood backboards at the west wall near the door.
3. Provide (3) duplex receptacles with surface box located on wall near door access system power supplies. Each receptacle to have a plug and cord connection. The (3) SO cords are to be run in conduit from the surface boxes to the rack location at control room below. The plugs are to be plugged into the rack mounted UPS.

SHEET E4.10

1. Room 576: Add 45 RU, two post data rack with 12 strand fiber to existing MDF Room, mount rack adjacent to door. Route all data cabling west of Room 576 to this rack, route cabling east of Room 576 to IT Room 559. Extend 12" cable tray into this room for supporting copper and fiber cabling. See Section 27-1005 for rack and fiber requirements.
2. Room 576: Add card reader and associated wiring and connections to electrified door hardware.

SHEET E4.11

1. Electrical Room 517: Extend 12" cable tray from corridor to below the 4" sleeves added to Electrical Room 617 in this addendum.
2. General Note #3 clarification: Route data cabling west of Electrical 517 up to new 2nd floor rack in Electrical 617. Cabling east of Electrical 517 shall be routed to IT Room 652 on 2nd Floor.

SHEET E4.12

1. Reception 500A: Delete Plan Note #4 and the associated pushbuttons and provide desktop mounted door release station equal to Security Door Controls TCC Series, sloped front, latching rocker switch with LED indicator lights. Lights shall be lit green while door is locked, red when lock is bypassed. Label each button for the door or group of doors being controlled, coordinate with owner prior to labeling. Provide shop drawings for door release station. The door release station shall latch and release electronic locks at the following doors:
    a. V5.1.1, V5.1.2, V5.1.3 as a group.
    b. V5.1.4
    c. 500S.1
    d. 500S.2
    e. V5.1.9, V5.1.10, V5.1.11, V5.1.12 as a group.
    f. V4.1.7

g. V4.1.8, V4.1.9, V4.1.10 as a group
h. V4.1.1, V4.1.2, V4.1.3, V4.1.4, V4.1.5 as a group
i. V4.1.6

b. An exterior door will be added at the north end of hallway adjacent to Staff Lounge 500L. Provide door position switch wiring at this door.
c. Plan Note #3: The lockdown pushbuttons shall lock all electric door hardware, release all magnetic hold opens, close the motorized coiling doors in office and ticket booth, and activate all blue strobes in the building addition. Provide quantity of (3) lockdown pushbuttons mounted to underside of countertop near computer workstations.

SHEET E4.14

1. Lobby 425: Type 'L' speaker is Renkus Heinz, IC8-R-II Series, digitally steerable line array, provide under Section 27-5125.
2. Provide j-hooks or Caddy loops for supporting fiber and copper data cabling above ceiling clouds in Lobby 425. Coordinate placement to be concealed by clouds.

SHEET E4.15

1. Room 99A: Delete (2) door release pushbuttons and provide desktop mounted door release station equal to Security Door Controls TCC Series, sloped front, latching rocker switch with LED indicator lights. Lights shall be lit green while door is locked, red when lock is bypassed. Label each button for the door or group of doors being controlled, coordinate with owner prior to labeling. Provide shop drawings for door release station. The door release station shall latch and release electronic locks at the following doors:
    a. V1.1.1
    b. V1.1.2, V1.1.3 V1.1.4, V1.1.5 as a group.
    c. V1.1.6.
    d. V1.1.7, V1.1.8, V1.1.9, V1.1.10 as a group.
2. The lockdown pushbuttons shall lock all electric door hardware, release all magnetic hold opens, and activate all blue strobes in the existing building. Provide quantity of (2) lockdown pushbuttons mounted to underside of countertop near computer workstations.

SHEET E4.20

1. General Note #3 clarification: Route data cabling west of Room 676 to new data rack in Room 576 on first floor below. Route data cabling east of Room 676 to IT Room 559 on first floor below.
2. Room 676: Extend 12" cable tray into room and down wall adjacent to door on east side. Add (3) 4" sleeves through floor to ceiling space of room 576 below for data cabling.

SHEET E4.21

1. Room 617: Add 45 RU, two post data rack with 12 strand fiber to existing MDF Room, mount rack adjacent to door. Route all data cabling west of Room 617 to this rack, route cabling east of Room 617 to IT 652. Extend 12" cable tray into this room for supporting copper and fiber cabling. Provide (3) 4" sleeves through floor to ceiling space below. See Section 27-1005 for rack and fiber requirements.
2. Room 617: Add card reader and associated wiring and connections to electrified door hardware.

SHEET E4.22

1. General Note #2: Revise assigned data room to IT Room 652.

SHEET E4.24

1. Add data outlet with (2) jacks adjacent to card reader panels, field coordinate exact location.
2. Move strobe on east wall in Mech 423M to Catwalk Circ 423J. Delete strobe shown in ceiling of Mech 423M.

SHEET E6.1

1. Existing Site Buildings Electrical Riser Diagram – Revise the 100 amp feeder between Existing Switchboard SBN and Panel HS1 from #3 conductors to #2 conductors.

SHEET E7.4

1. Detail 1/E7.4: Delay speaker S6 shall be wired in a biamp configuration similar to front speakers, use open channel on PA-3. Route processing through EAW speaker processor.

SHEET E8.04

1. Panel Schedule LEQ1 – Revise the (3) 20/2 breakers shown to (3) 30/2 breakers. Add (4) 30/2 spares and (8) 20/1 spare breakers.
2. Panel Schedule HLS1 – Add (6) 20/1 spare breakers.
3. Panel H2E – Provide (8) 20/1 spare breakers. Add (2) 20/3 spare breakers.

SHEET E8.05

1. Relay Panel LRP1A – Add (3) UL 924 relays and (3) spare relays.

APPROVALS

Section 27-5125 Sound Reinforcement Systems:

1. 2.04.C Mixing Console: Allen and Heath ZED 14 Series, with QSC GX5 Series two channel amplifier.
2. 2.04.R Control System and Digital Video Switching System:
    a. Switcher: Extron DTP Crosspoint 108 4K Series
    b. Wallplate: Extron DTP 4K 331D Series HDMI wallplate.
    c. Receiver: Extron DTP HDMI 4K TX/RX Series
    d. Fiber Optic Transmitter/Receiver: Extron HFX100 TX/RX Series Foxbox fiber optic HDMI extenders.
    e. Control Pad: Extron TLP Pro 720 Series
    f. Control System: Extron IPCP Pro 550 Series.

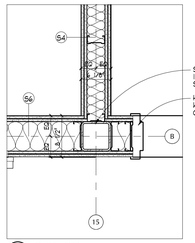
APPROVALS

Section 26 5100 – Interior Lighting and Section 26 5600 Exterior Lighting

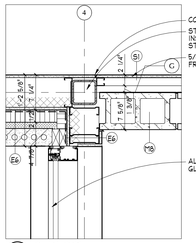
Type	Manufacturer	Series
A & A1	Columbia	LCA
B	Columbia	LJT
C	Columbia	LJT
D & D1	Prescolite	LF6
D2	Prescolite	LF8

Type	Manufacturer	Series
D3	Prescolite	LC8HL
E & E1	Dual-Lite	SE
E2	Dual-Lite	LE
F & F1	Columbia	KL
H	Columbia	LCL
J	Hubbell	12L-P
L	Columbia	RLA
M	Columbia	LLHV
T	Columbia	LCL
U	New Star	SNL2
V	Prescolite	MC10LED
X	Columbia	CS4
AA1-AA8	Hubbell	ASL
BB1	Hubbell	ASL

END OF ADDENDUM NO. 3



15 PLAN DETAIL
SCALE: 1" = 1'-0"



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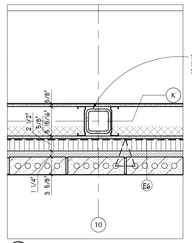
SCALE: 1" = 1'-0"



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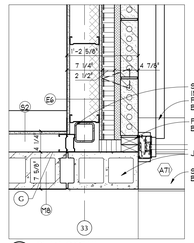
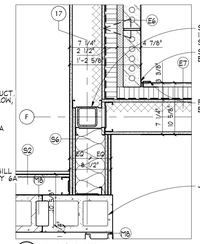
SCALE: 1" = 1'-0"



9 PLAN DETAIL
SCALE: 1" = 1'-0"



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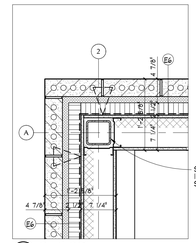

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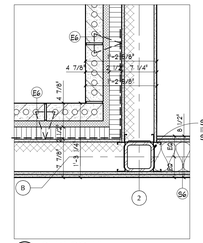

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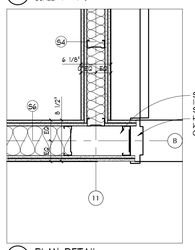

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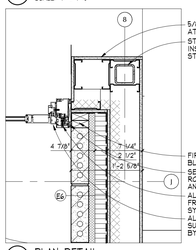

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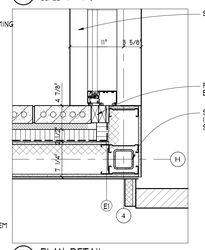

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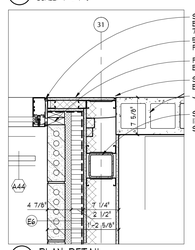

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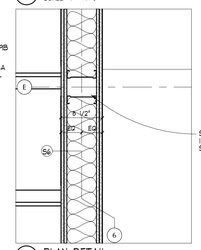

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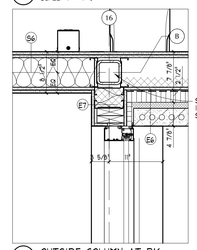
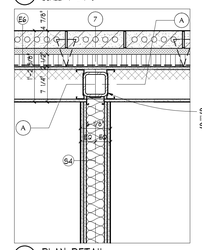


4 OUTSIDE COLUMN AT B16
SCALE: 1" = 1'-0"



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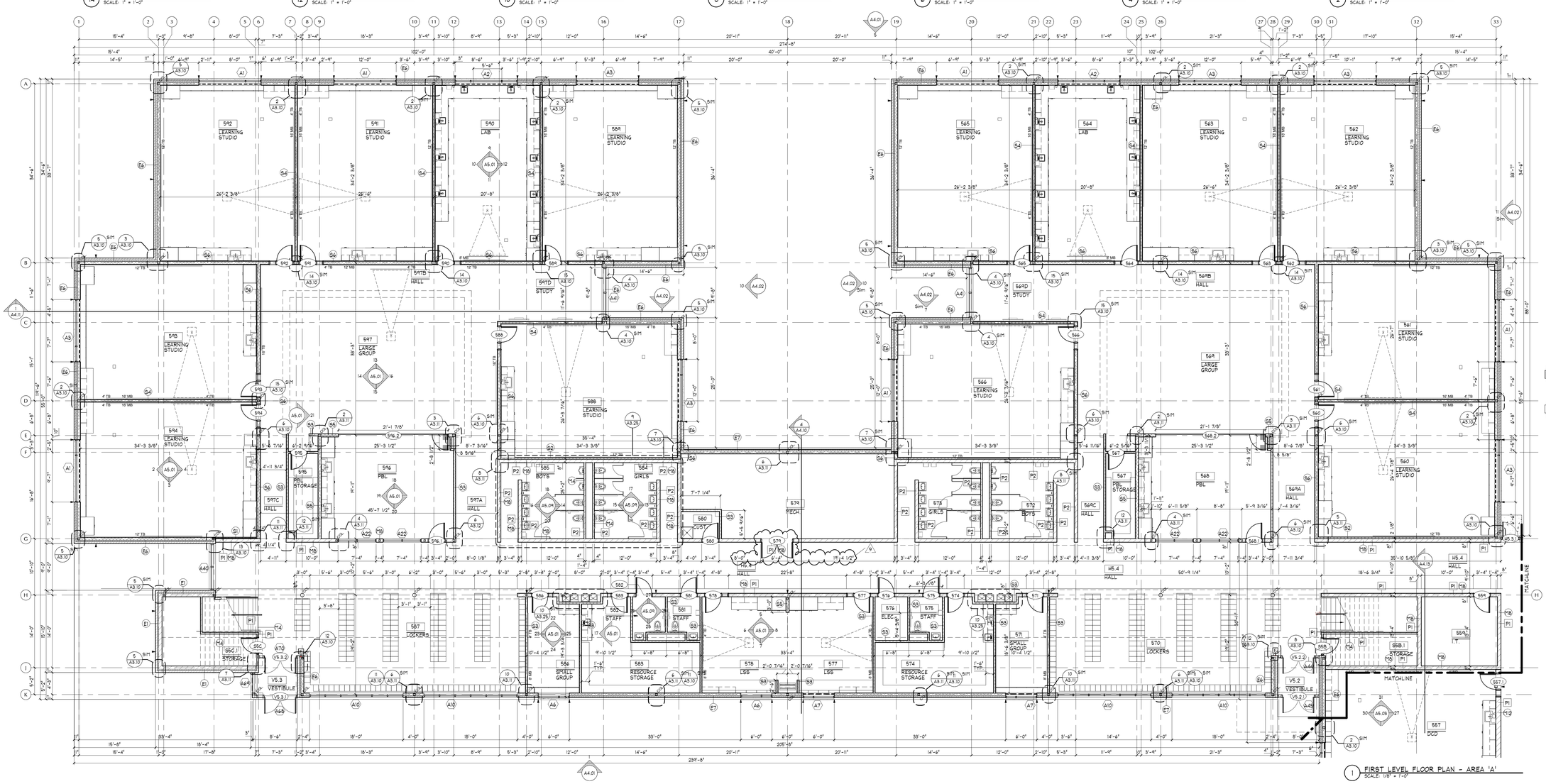


1 FIRST LEVEL FLOOR PLAN - AREA 'A'
SCALE: 1/8" = 1'-0"

ZERR BERG ARCHITECTS
510 NORTH 4TH AVENUE FARGO, ND 58102-4821
701-280-0187 - FAX 701-280-9021

gehrtz CONSTRUCTION SERVICES

GENERAL NOTES

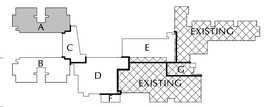
1. CONTRACTORS TO VISIT SITE AND FAMILIARIZE THEMSELVES WITH ALL EXISTING CONDITIONS.
2. CONTRACTORS TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
3. REFER TO DRAWING A0.5 & A0.6 FOR ALL EXTERIOR AND INTERIOR PARTITION TYPES, WALL PATTERNS AND DESCRIPTION NOTES.
   - WALL TYPES DESIGNATED "E" REFER TO EXTERIOR BUILDING ENVELOPE APPLICATIONS.
   - PARTITION TYPES DESIGNATED "P" REFER TO INTERIOR MASONRY WALL APPLICATIONS.
   - WALL TYPES DESIGNATED "S" REFER TO INTERIOR METAL STUD AND DRYWALL APPLICATIONS.
   - WALLS DESIGNATED "PR" REFER TO INTERIOR MASONRY AND DRYWALL PATTERNS
4. EACH CONTRACTOR OR TRADE TO SEAL ALL VERTICAL AND HORIZONTAL OPENING AND PENETRATIONS CASUED BY THEIR TRADE'S WORK. MULTIPLE TRADE SHARED OPENINGS TO BE COORDINATED WITH CONSTRUCTION MANAGER.
5. EACH CONTRACTOR OR TRADE IS RESPONSIBLE FOR PROVIDING FIRE RATED SEALANT, STOPPING AND RATED PENETRATIONS AT ALL FIRE RATED PENETRATIONS.
6. BID PACKAGE 6A TO PROVIDE AND INSTALL WOOD NAIR METAL BLOCKING AND/OR BACKING FOR ALL WALL AND CEILING MOUNTED EQUIPMENT INDICATED ON THE DRAWINGS. PROVIDE FOR EQUIPMENT OR CASEWORK THAT IS INCLUDED IN THE CONTRACT AND EQUIPMENT PROVIDEDED BY THE OWNER. REFER TO FLOOR PLANS AND INTERIOR ELEVATIONS FOR LOCATIONS.

FLOOR PLAN KEYNOTES

1. DENOTES 1 HOUR FIRE BARRIER CONSTRUCTION. EACH CONTRACTOR TO FIRESTOP AND SEAL ALL PENETRATIONS THROUGH RATED CONSTRUCTION.
2. DENOTES 2 HOUR FIRE WALL CONSTRUCTION. EACH CONTRACTOR TO FIRESTOP AND SEAL ALL PENETRATIONS THROUGH RATED CONSTRUCTION.
3. INDICATES MASONRY CONTROL JOINTS BY BID PACKAGE 4. SEE EXTERIOR ELEVATIONS AND FLOOR PLANS FOR LOCATIONS AND DETAILSON REFERENCE DRAWING A0.5.
4. WINDOW TREATMENTS BY BID PACKAGE 6A
5. DENOTES CORNER GUARD FROM TOP OF BASE (4") TO AN ELEVATION MATCHING THE TOP OF DOOR FRAMES (7'-2" TYPICAL) BY BID PACKAGE 6A.
6. INDICATED RECESSED FLOOR BOX BY BID PACKAGE 26. SEE ELECTRICAL FOR POWER, DATA, AND TELEPHONE ROUGH-IN REQUIREMENTS.
7. RECESS CONCRETE FLOOR SLAB BY BID PACKAGE 3A.
   - KITCHEN COOLER AREA RECESS 2 1/2" W/ SLAB TOLERANCE AT 1/8"/FT EACH DIRECTIONS. VERIFY WITH KITCHEN EQUIPMENT SCHEDULE
   - GYM FLOOR RECESSED 2 1/2", VERIFY.
   - LIFT FLOOR AREA RECESSED 3", VERIFY.
   - STAGE FLOORING AREA RECESSED 2 1/2", VERIFY.
9. INDICATES RECESSED ELECTRICAL PANEL, SEE ELECTRICAL FOR POWER ROUGH-IN REQUIREMENTS.
12. POWER ASSISTED DOOR AND ACTUATION PADS LOCATION BY BID PACKAGE 8E. POWER ROUGH-IN BY BID PACKAGE 26.
13. OWNER PROVIDED AND INSTALLED 8' OR 6' WIDE CEILING MOUNTED PROJECTION SCREEN. PROJECTOR MOUNT BY 6A WITH DATA AND POWER ROUGH-IN BY 26, SEE REFLECTED CEILING PLAN.

C.1 ACCESSIBLE ENTRANCE
C.2 ACCESSIBLE ENTRANCE WITH AUTOMATIC OPENER
C.3 FIRE ALARM CONTROL PANEL
C.4 FIRE DEPARTMENT CONNECTION
C.5 SPRINKLER VALVE ROOM
C.6 FIRE ALARM PULL STATION
C.7 HORIZONTAL EXIT

Revision Schedule		
2	04-01-2016	BG1 ADD. 2
5	05-05-2016	CONST. REV.
9	05-13-2016	BG2. ADD. 3



KEY PLAN
NTS NORTH

BID GROUP II

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.
Print Name: Timothy L. Zerr

Signature:

Date: 4-25-2016 Registration No. 16864

MOORHEAD AREA PUBLIC SCHOOLS

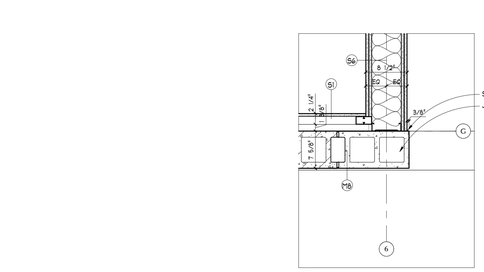
MAPS GRADES 5-6 ADDITION AT HORIZON CAMPUS

3601 12th AVE. S. MOORHEAD, MN

FIRST LEVEL FLOOR PLAN - AREA "A"

Project No.: 15-024
Date: 4-25-2016

A3.10



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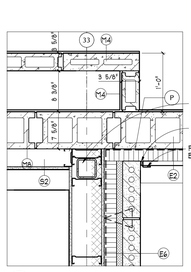
SCALE: 1" = 1'-0"



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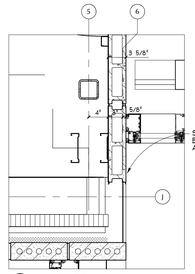
SCALE: 1" = 1'-0"



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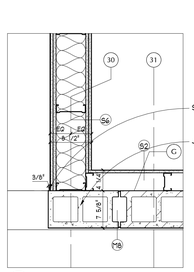

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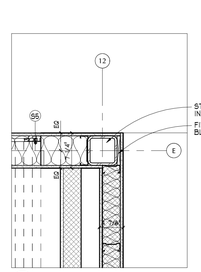

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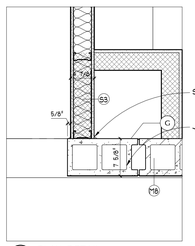

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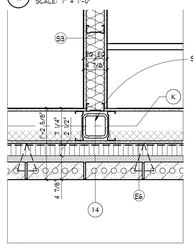

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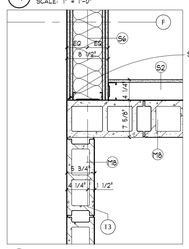

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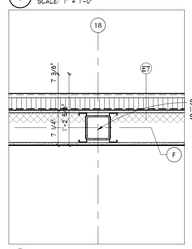

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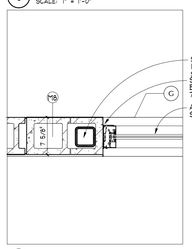

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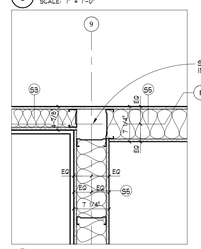

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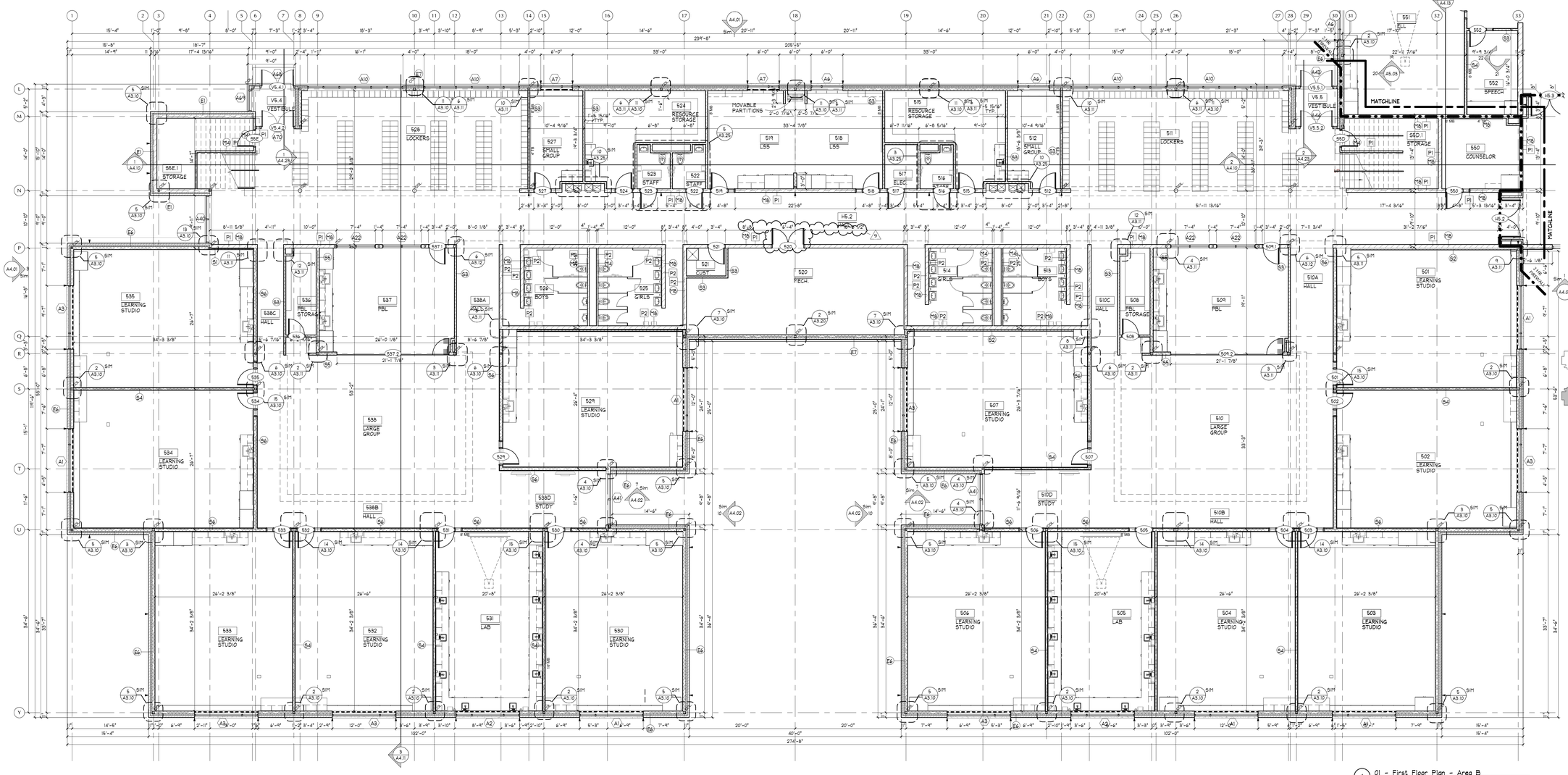

1 01 - First Floor Plan - Area B
SCALE: 1/8" = 1'-0"

GENERAL NOTES

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3. INDICATES MASONRY CONTROL JOINTS BY BID PACKAGE 4. SEE EXTERIOR ELEVATIONS AND FLOOR PLANS FOR LOCATIONS AND DETAILSON REFERENCE DRAWING A0.5.
4. WINDOW TREATMENTS BY BID PACKAGE 6A WHERE DASHED LINE (- - -) IS SHOWN AT WINDOW LOCATIONS.
5. DENOTES CORNER GUARD FROM TOP OF BASE (4') TO AN ELEVATION MATCHING THE TOP OF DOOR FRAMES (7'-0" TYPICAL) BY BID PACKAGE 6A.
6. INDICATED RECESSED FLOOR BOX BY BID PACKAGE 26. SEE ELECTRICAL FOR POWER, DATA, AND TELEPHONE ROUGH-IN REQUIREMENTS.
7. RECESS CONCRETE FLOOR SLAB BY BID PACKAGE 3A.
   - KITCHEN COOLER AREA RECESS 2 1/2" W/ SLAB TOLERANCE AT 1/8"/FT EACH DIRECTIONS. VERIFY WITH KITCHEN EQUIPMENT SCHEDULE
   - GYM FLOOR RECESSED 2 1/2", VERIFY.
   - LIFT FLOOR AREA RECESSED 3", VERIFY.
   - STAGE FLOORING AREA RECESSED 2 1/2", VERIFY.
9. INDICATES RECESSED ELECTRICAL PANEL, SEE ELECTRICAL FOR POWER ROUGH-IN REQUIREMENTS.
12. POWER ASSISTED DOOR AND ACTUATION PADS LOCATION BY BID PACKAGE 8E. POWER ROUGH-IN BY BID PACKAGE 26.
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C.2 ACCESSIBLE ENTRANCE WITH AUTOMATIC OPENER
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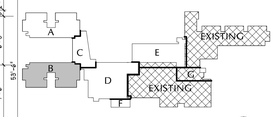
C.5 SPRINKLER VALVE ROOM
C.6 FIRE ALARM PULL STATION
C.7 HORIZONTAL EXIT

Revision Schedule		
2	04-01-2016	BG1 ADD. 2
5	05-05-2016	CONST. REV.
9	05-13-2016	BG2. ADD. 3



KEY PLAN
NTS NORTH

BID GROUP II

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.
Print Name: Timothy L. Zerr
Signature:
Date: 4-25-2016 Registration No. 16864

MOORHEAD AREA PUBLIC SCHOOLS

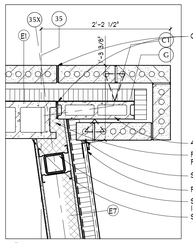
MAPS GRADES 5-6 ADDITION AT HORIZON CAMPUS

3601 12th AVE. S. MOORHEAD, MN

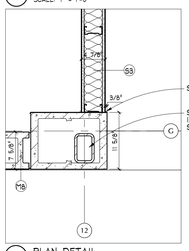
FIRST LEVEL FLOOR PLAN - AREA "B"

Project No.: 15-024
Date: 4-25-2016

A3.11



7 PLAN DETAIL
SCALE: 1" = 1'-0"



6 PLAN DETAIL
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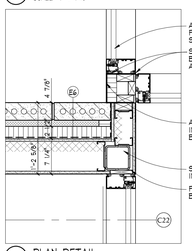

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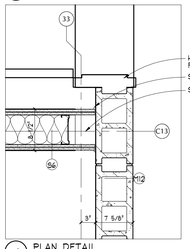

4 PLAN DETAIL
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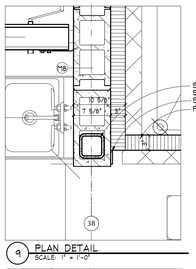
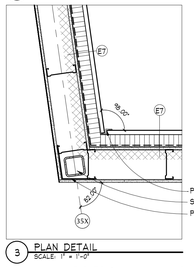


9 PLAN DETAIL
SCALE: 1" = 1'-0"



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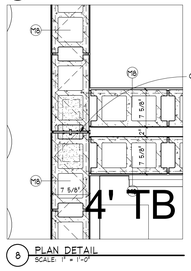
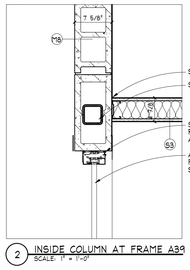
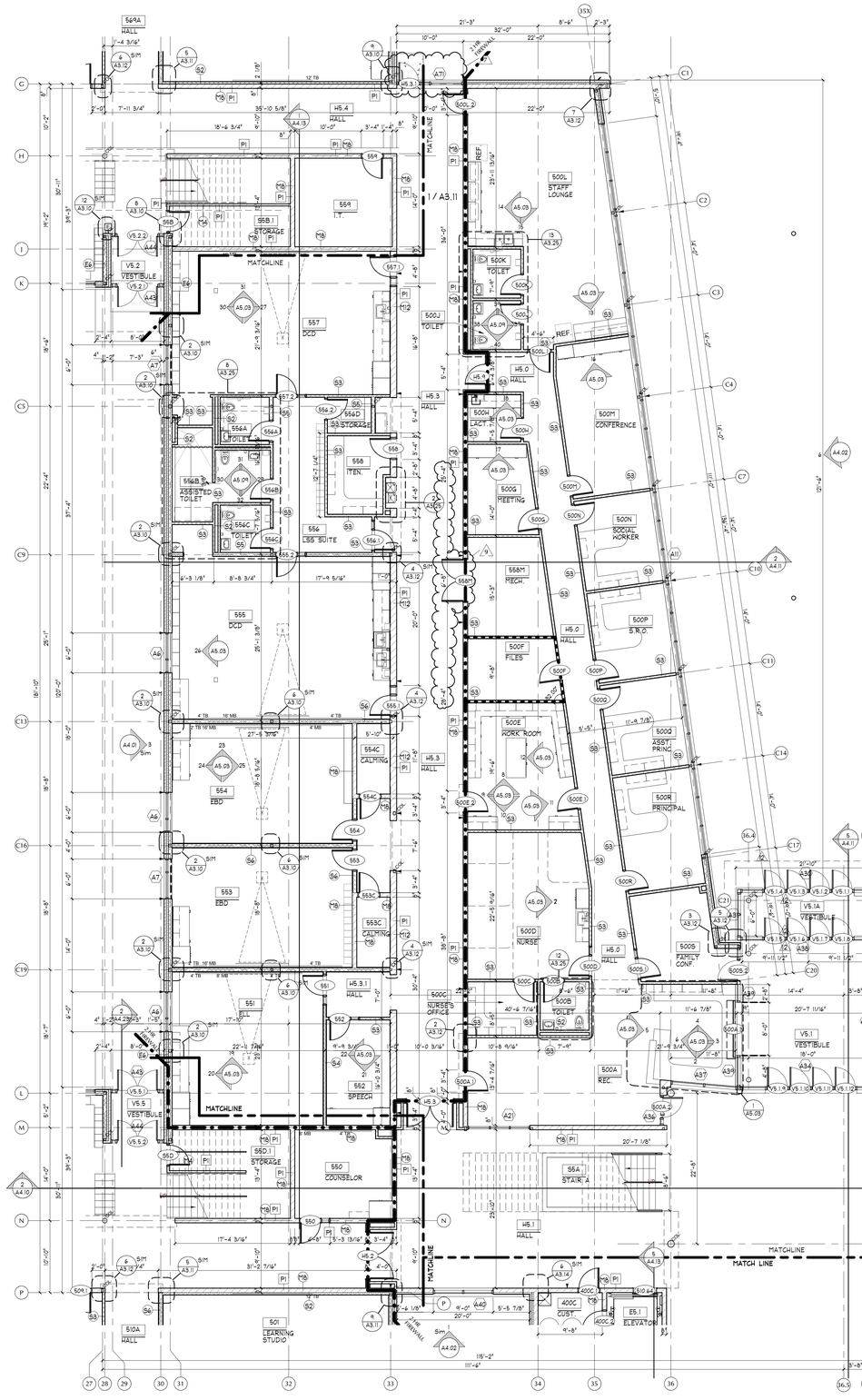
SCALE: 1" = 1'-0"



8 PLAN DETAIL
SCALE: 1" = 1'-0"



2 INSIDE COLUMN AT FRAME A39 & RM. 500C
SCALE: 1" = 1'-0"



1 MAIN LEVEL FLOOR PLAN - AREA C
SCALE: 1/8" = 1'-0"

ZERR BERG ARCHITECTS
510 NORTH 4TH AVENUE FARGO, ND 58102-4821
701-280-0187 - FAX 701-280-9021

gehrtz CONSTRUCTION SERVICES

GENERAL NOTES

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FLOOR PLAN KEYNOTES

1. DENOTES 1 HOUR FIRE BARRIER CONSTRUCTION. EACH CONTRACTOR TO FIRESTOP AND SEAL ALL PENETRATIONS THROUGH RATED CONSTRUCTION.
2. DENOTES 2 HOUR FIRE WALL CONSTRUCTION. EACH CONTRACTOR TO FIRESTOP AND SEAL ALL PENETRATIONS THROUGH RATED CONSTRUCTION.
3. INDICATES MASONRY CONTROL JOINTS BY BID PACKAGE 4. SEE EXTERIOR ELEVATIONS AND FLOOR PLANS FOR LOCATIONS AND DETAILSON REFERENCE DRAWING A0.5.
4. WINDOW TREATMENTS BY BID PACKAGE 6A WHERE DASHED LINE (- - -) IS SHOWN AT WINDOW LOCATIONS.
5. DENOTES CORNER GUARD FROM TOP OF BASE ("d") TO AN ELEVATION MATCHING THE TOP OF DOOR FRAMES ("I"-"J" TYPICAL) BY BID PACKAGE 6A.
6. INDICATED RECESSED FLOOR BOX BY BID PACKAGE 26. SEE ELECTRICAL FOR POWER, DATA, AND TELEPHONE ROUGH-IN REQUIREMENTS.
7. RECESS CONCRETE FLOOR SLAB BY BID PACKAGE 3A.
   - KITCHEN COOLER AREA RECESS 2 1/2" W/ SLAB TOLERANCE AT 1/8"/FT. EACH DIRECTIONS. VERIFY WITH KITCHEN EQUIPMENT SCHEDULE
   - GYM FLOOR RECESSED 2 1/2", VERIFY.
   - LIFT FLOOR AREA RECESSED 3", VERIFY.
   - STAGE FLOORING AREA RECESSED 2 1/2", VERIFY.
9. INDICATES RECESSED ELECTRICAL PANEL, SEE ELECTRICAL FOR POWER ROUGH-IN REQUIREMENTS.
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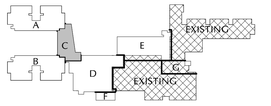
13. OWNER PROVIDED AND INSTALLED 9' OR 6' WIDE CEILING MOUNTED PROJECTION SCREEN. PROJECTOR MOUNT BY 6A WITH DATA AND POWER ROUGH-IN BY 26, SEE REFLECTED CEILING PLAN.

C.1 ACCESSIBLE ENTRANCE
C.2 ACCESSIBLE ENTRANCE WITH AUTOMATIC OPENER
C.3 FIRE ALARM CONTROL PANEL
C.4 FIRE DEPARTMENT CONNECTION
C.5 SPRINKLER VALVE ROOM
C.6 FIRE ALARM PULL STATION
C.7 HORIZONTAL EXIT

Revision Schedule		
2	04-01-2016	BG1 ADD. 2
6	05-09-2016	BG2. ADD. 1
7	05-13-2016	BG2. ADD. 2
9	05-13-2016	BG2. ADD. 3



KEY PLAN
NTS NORTH

BID GROUP II

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.
Print Name: Timothy L. Zerr

Signature:

Date: 4-25-2016 Registration No. 16864

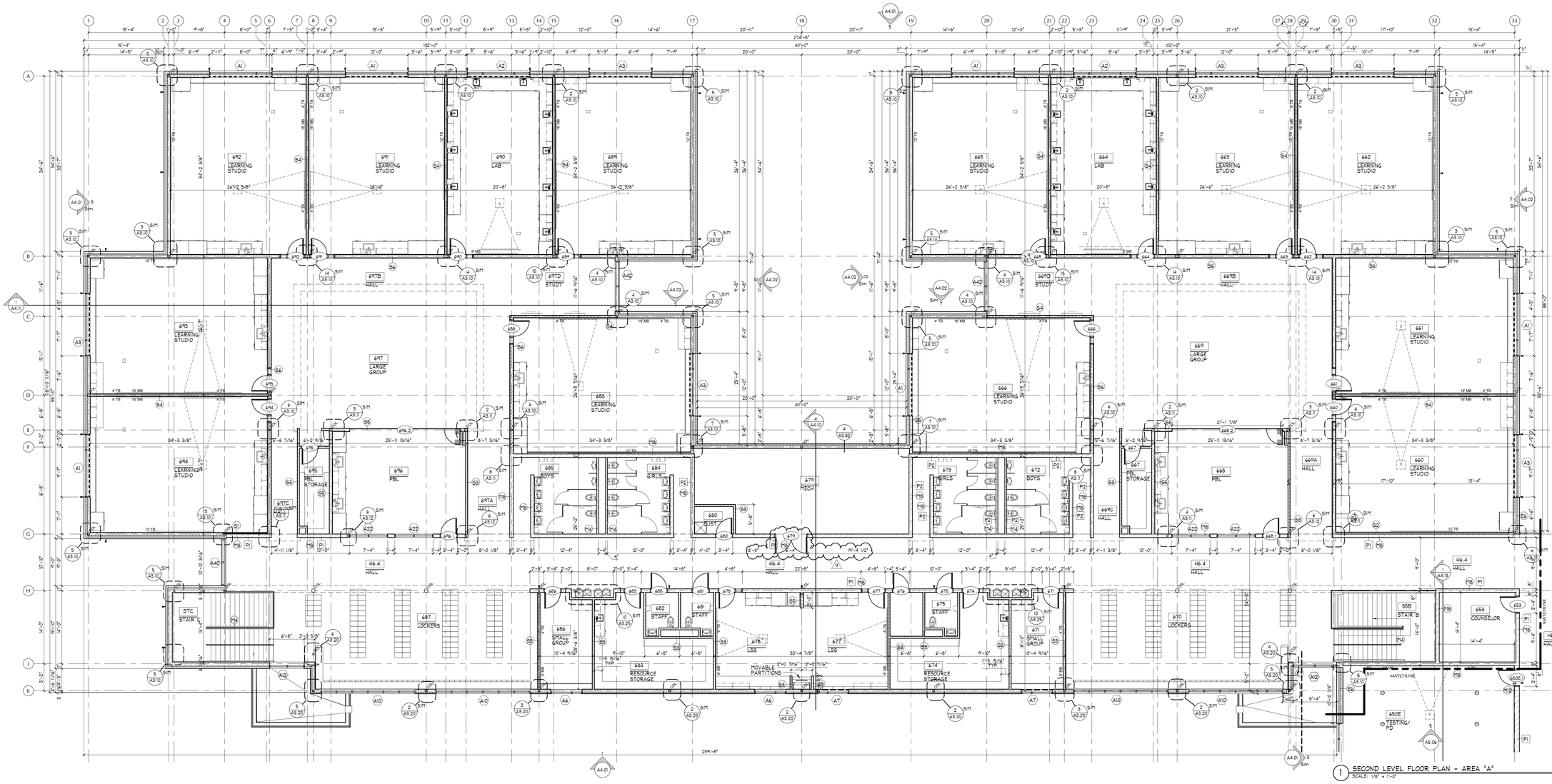
MOORHEAD AREA PUBLIC SCHOOLS

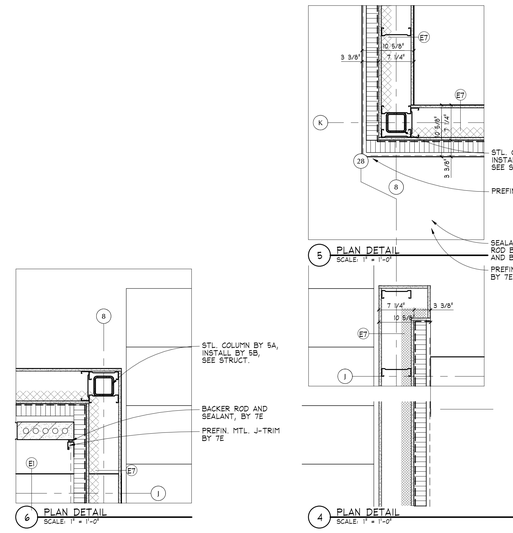
MAPS
GRADES 5-6
ADDITION AT
HORIZON CAMPUS
3601 12th AVE. S. MOORHEAD, MN

FIRST LEVEL FLOOR PLAN - AREA "C"

Project No.: 15-024
Date: 4-25-2016

A3.12





ZERR BERG ARCHITECTS
510 NORTH 4TH AVENUE FARGO, ND 58102-4821
701-280-0187 - FAX 701-280-9021

gehrtz CONSTRUCTION SERVICES

GENERAL NOTES

1. CONTRACTORS TO VISIT SITE AND FAMILIARIZE THEMSELVES WITH ALL EXISTING CONDITIONS.
2. CONTRACTORS TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO ANY CONSTRUCTION OR EXCAVATION.
3. REFER TO DRAWING A0.5 & A0.6 FOR ALL EXTERIOR AND INTERIOR PARTITION TYPES, WALL PATTERNS AND DESCRIPTION NOTES.
   - WALL TYPES DESIGNATED "E" REFER TO EXTERIOR BUILDING ENVELOPE APPLICATIONS.
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   -WALL TYPES DESIGNATED "S" REFER TO INTERIOR METAL STUD AND DRYWALL APPLICATIONS.
   -WALLS DESIGNATED "P" REFER TO INTERIOR MASONRY AND DRYWALL PATTERNS
4. EACH CONTRACTOR OR TRADE TO SEAL ALL VERTICAL AND HORIZONTAL OPENING AND PENETRATIONS CASUED BY THEIR TRADE'S WORK. MULTIPLE TRADE SHARED OPENINGS TO BE COORDINATED WITH CONSTRUCTION MANAGER.
5. EACH CONTRACTOR OR TRADE IS RESPONSIBLE FOR PROVIDING FIRE RATED SEALANT, STOPPING AND RATED PENETRATIONS AT ALL FIRE RATED PENETRATIONS.
6. BID PACKAGE 6A TO PROVIDE AND INSTALL WOOD NOR METAL BLOCKING AND/OR BACKING FOR ALL WALL AND CEILING MOUNTED EQUIPMENT INDICATED ON THE DRAWINGS. PROVIDE FOR EQUIPMENT OR CASEWORK THAT IS INCLUDED IN THE CONTRACT AND EQUIPMENT PROVIDEDED BY THE OWNER. REFER TO FLOOR PLANS AND INTERIOR ELEVATIONS FOR LOCATIONS.

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Revision Schedule		
1	03-30-2016	BG1 ADD. 1
5	05-05-2016	CONST. REV.
9	05-13-2016	BG2. ADD. 3

KEY PLAN
NTS NORTH

BID GROUP II

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Architect under the laws of the State of Minnesota.
Print Name: Timothy L. Zerr

Signature:

Date: 4-25-2016 Registration No. 16864

MOORHEAD AREA PUBLIC SCHOOLS

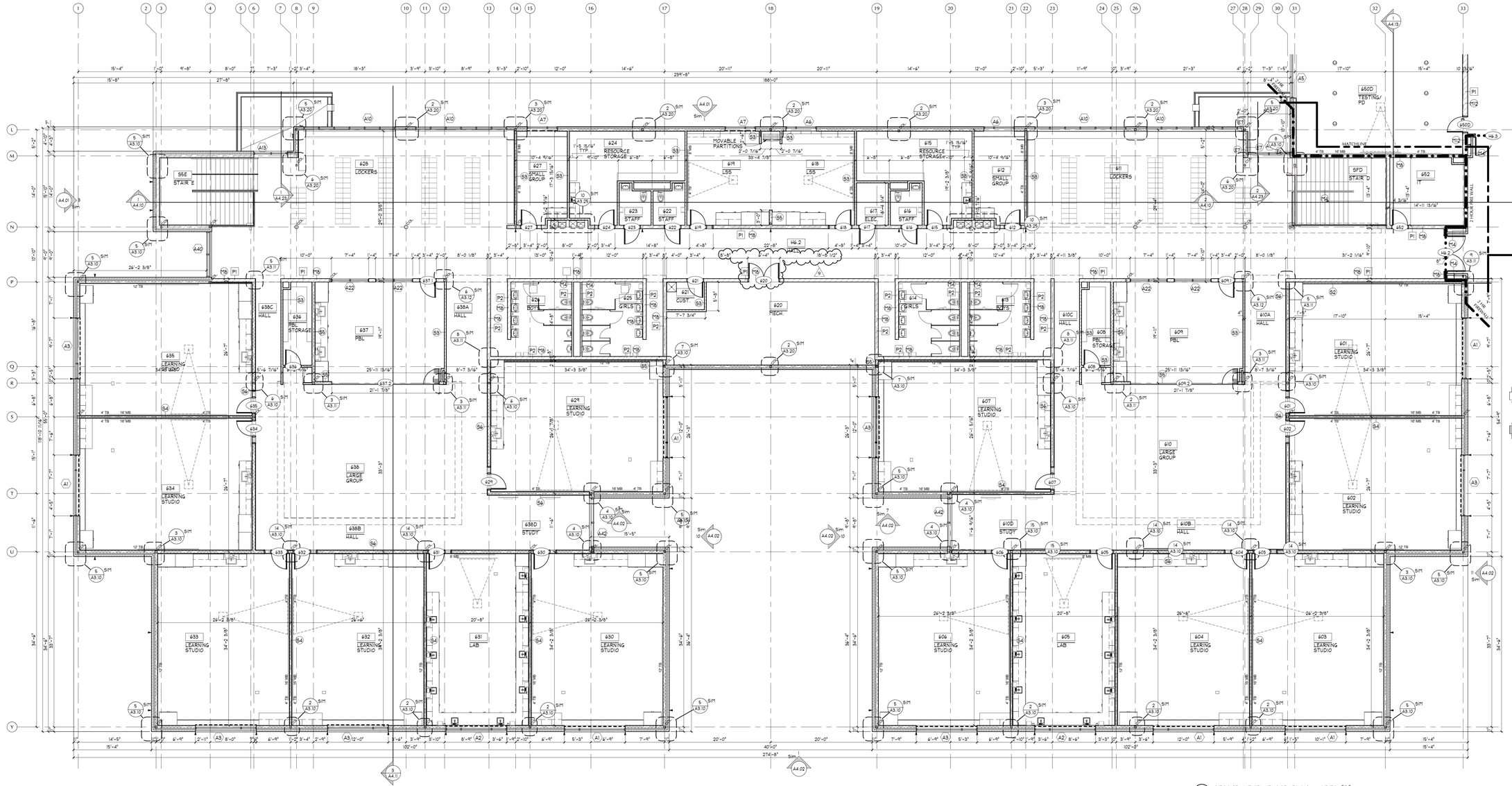
MAPS GRADES 5-6 ADDITION AT HORIZON CAMPUS

3601 12th AVE. S. MOORHEAD, MN

SECOND LEVEL FLOOR PLAN - AREA "A"

Project No.: 15-024
Date: 4-25-2016

A3.20



1 SECOND LEVEL FLOOR PLAN - AREA "B"
SCALE: 1/8" = 1'-0"

ZERR BERG ARCHITECTS
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701-280-0187 - FAX 701-280-9021

gehrtz CONSTRUCTION SERVICES

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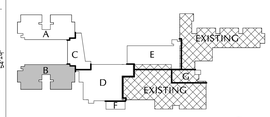
2	04-01-2016	BG1 ADD. 2
5	05-05-2016	CONST. REV.
9	05-13-2016	BG2. ADD. 3



KEY PLAN
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MOORHEAD AREA PUBLIC SCHOOLS

MAPS GRADES 5-6 ADDITION AT HORIZON CAMPUS

3601 12th AVE. S. MOORHEAD, MN

SECOND LEVEL FLOOR PLAN - AREA "B"

Project No.: 15-024
Date: 4-25-2016

A3.21