
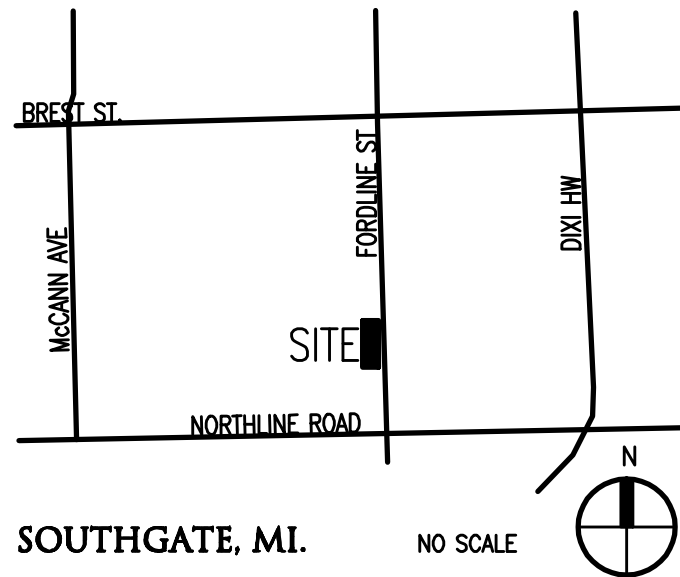
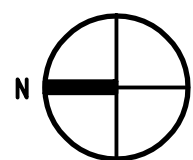
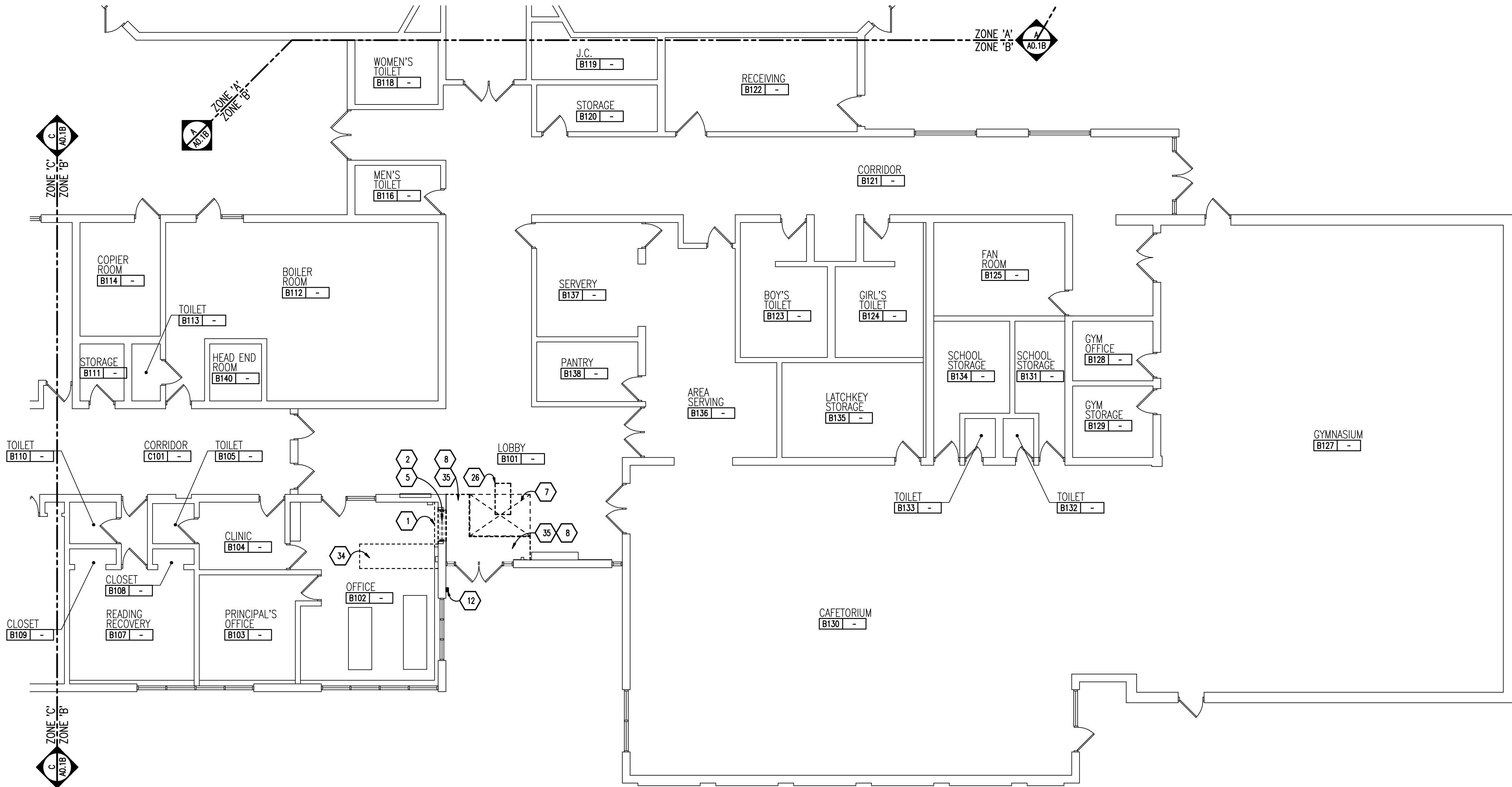


			<div><p>ARCHITECTURE</p><p>T M P ARCHITECTURE I N C</p><p>1191 WEST SQUARE LAKE ROAD · BLOOMFIELD HILLS · MICHIGAN · 48302</p><p>PH · 248.338.4561 FX · 248.338.0223 EM · INFO @TMP-ARCHITECTURE.COM</p></div>						
<div>SHELTERS ELEMENTARY SCHOOL REMODEL</div> <div>SOUTHGATE COMMUNITY SCHOOLS</div>									
			<div>SOUTHGATE, MI 48195</div> <div>PROJECT NUMBER 16012</div> <div>BIDS – BID PACKAGE 2</div>						
<div>CONSULTANTS:</div> <div>MECHANICAL ENGINEER</div> <div>PETER BASSO ASSOCIATES INC.</div> <div>CONSULTING ENGINEERS</div> <div>5145 LIVERNOIS ROAD, SUITE 100</div> <div>TROY, MICHIGAN 48068-3276</div> <div>PHONE: (248) 879-5666</div> <div>FAX: (248) 879-0007</div> <div>ELECTRICAL ENGINEER</div> <div>PETER BASSO ASSOCIATES INC.</div> <div>CONSULTING ENGINEERS</div> <div>5145 LIVERNOIS ROAD, SUITE 100</div> <div>TROY, MICHIGAN 48068-3276</div> <div>PHONE: (248) 879-5666</div> <div>FAX: (248) 879-0007</div>			<div>LIST OF DRAWINGS</div> <div>GENERAL INFORMATION</div> <div>TS.1 COVER SHEET</div> <div>TG.1 GENERAL INFORMATION</div> <div>ARCHITECTURAL</div> <div>AC1.1 COMPOSITE FLOOR PLAN</div> <div>AD1.1 DOOR AND FRAME SCHEDULE</div> <div>A0.1B FIRST LEVEL DEMOLITION PLAN – ZONE "B"</div> <div>A1.1B FIRST LEVEL FLOOR PLAN – ZONE "B"</div> <div>A2.1B FIRST LEVEL REFLECTED CEILING PLAN – ZONE "B"</div> <div>MECHANICAL</div> <div>M0.1 MECHANICAL STANDARDS AND DRAWING INDEX</div> <div>M0.3.1 HVAC PIPING DEMOLITION PLAN – ZONE "B"</div> <div>M3.1 HVAC PIPING NEW WORK PLAN – ZONE "B"</div> <div>M7.1 MECHANICAL DETAILS AND SCHEDULES</div> <div>M8.1 TEMPERATURE CONTROLS STANDARDS AND GENERAL NOTES</div> <div>ELECTRICAL</div> <div>E0.1 ELECTRICAL STANDARDS AND DRAWING INDEX</div> <div>E0.2 ELECTRICAL STANDARD SCHEDULES</div> <div>E0.3 ELECTRICAL COMPOSITE PLAN</div> <div>E1.1 PARTIAL ELECTRICAL PLANS</div> <div>E4.1 EMERGENCY LIGHTING CALCULATIONS</div>			<div>PROJECT DATA:</div> <div>LOCATION MAP</div> <div></div> <div>SOUTHGATE, MI.</div> <div>NO SCALE</div> <div>ADDRESS: SHELTERS ELEMENTARY SCHOOL</div> <div>12600 FORDLINE ST</div> <div>SOUTHGATE, MI 48195</div> <div>BUILDING:</div> <div>BUILDING AREA(S) = 40,915 SQ. FT. (EXISTING)</div> <div>700 SQ. FT. (EXISTING ALTERED)</div> <div>CODE:</div> <div>GOVERNING CODES::</div> <div>- 1999 SCHOOL FIRE SAFETY RULES</div> <div>(1997 Life Safety Code, plus amendments and policy letters)</div> <div>- 2012 MICHIGAN BUILDING CODE</div> <div>- 2012 MICHIGAN PLUMBING CODE</div> <div>- 2012 MICHIGAN MECHANICAL CODE</div> <div>- 2009 MICHIGAN UNIFORM ENERGY CODE</div> <div>(ANSI/ASHRAE/IESNA Standard 90.1-2007)</div> <div>- 2014 MICHIGAN ELECTRICAL RULES (2014 NEC, plus Part 8 Rules)</div> <div>- 2010 MICHIGAN ELEVATOR RULES</div> <div>(ASME A17.1-2010, ASME A18.1-2011)</div> <div>- MICHIGAN BARRIER FREE CODE</div> <div>(Michigan Building Code 2012 and ICC A117.1-2009)</div> <div>- 2013 MICHIGAN BOILER CODE RULES</div> <div>(ASME Boiler and Pressure Vessel Code, 2010 edition, plus 2011a addenda)</div> <div>(National Board Inspection Code [NBIC], 2011 edition)</div> <div>CONSTRUCTION CLASSIFICATION :</div> <div>HFPA II(000)</div> <div>M.B.C. 11B</div> <div>FIRE PROTECTION: NON – SPRINKLERED</div> <div>USE GROUP CLASSIFICATION: E (EDUCATION)</div> <div>.</div> <div>.</div> <div>04-04-2016</div> <div>BP NO. 2 – BIDS</div> <div>DATE</div> <div>ISSUED FOR:</div>			
<div>LICENSEE'S STATEMENT:</div> <div>This Document has been prepared under the supervision of the Architect, as the person in Responsible Charge with the firm of <b>TMP ARCHITECTURE, INC.</b> An original embossed or rubber stamp seal and original signature of the Architect is required and shall be affixed to any copy of this Document submitted to a governmental agency for approval or record. This is in conformance with the State of Michigan's PA 299, Article 20 and the General Rules of the Board of Architects.</div> <div>The Architect's seal provided hereon does not take responsibility for certain portions of the Documentation or project requiring the services of a licensed Professional Engineer or other design professional. An original embossed or rubber stamp seal and original signature of the Professional Engineer is required and shall be affixed to any copy of this or other Document submitted to a governmental agency for approval or record. The engineering firms associated with this document are listed above as Consultants.</div>			REGISTRATION SEALS				<div>COPYRIGHT</div> <div>© The "architectural work" displayed on these documents is owned exclusively by TMP Architecture, Inc. and may not be used for any purpose without their involvement or express written consent.</div>	<div>PROJECT TITLE</div> <div><b>Shelters Elementary</b></div> <div>PROJECT NO.</div> <div><b>16012</b></div> <div>DRAWING NO.</div> <div><b>TS.1</b></div>	







## DEMOLITION PLAN - ZONE 'B'

SCALE: 1/8" = 1'-0"

### GENERAL NOTES

1. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR RELATED AND ADDITIONAL DEMOLITION AND PATCHING WORK BY MECHANICAL AND ELECTRICAL TRADES.
2. REFER TO FOOD SERVICE EQUIPMENT (FSE) DRAWINGS FOR ADDITIONAL INFORMATION.
3. NOT USED.
4. SEE EXTERIOR ELEVATIONS FOR ADDITIONAL DEMOLITION AND PATCHING WORK AT EXTERIOR OF BUILDING, INCLUDING (BUT NOT LIMITED TO) DEMOLITION NOTES RELATED TO WINDOW REPLACEMENT.
5. WHERE REMOVAL OF CASEWORK, MILLWORK, CHALKBOARD, TACKBOARD, OR EQUIPMENT, IS INDICATED, FILL HOLES AND PATCH EXISTING WALLS, BASES AND CEILINGS WHICH ARE TO REMAIN EXPOSED.
6. UNLESS OTHERWISE INDICATED, TOOTH NEW MATERIAL INTO EXISTING WHEREVER INFILL REMAINS EXPOSED.
7. SEE SPECIFICATION SECTIONS 01731 AND 01732 FOR ADDITIONAL DEMOLITION AND PATCHING REQUIREMENTS.
8. REFER ALSO TO ARCHITECTURAL WALL SECTIONS FOR ADDITIONAL SELECTIVE DEMOLITION.

### DEMOLITION KEYNOTES

- 1 REMOVE MECHANICAL EQUIPMENT, REFER TO MECHANICAL DRAWINGS FOR ADDITIONAL NOTES AND DETAILS. PATCH, REPAIR AND/OR FILL EXPOSED ADJACENT SURFACES TO MATCH EXISTING (U.O.N.).
- 2 REMOVE ALUMINUM WINDOW ASSEMBLY, STONE SILL AND MARBLE WINDOW STOOL. SALVAGE AND TURN OVER TO OWNER IF REQUESTED.
- 3 REMOVE PORTIONS OF EXISTING CMU WALL TO ACCOMMODATE NEW OPENING. COORDINATE SIZE OF OPENING. REQUIRED WITH THE NEW WORK.
- 4 REMOVE PORTIONS OF EXISTING PARTIAL HEIGHT CMU WALL BELOW GLAZING TO ACCOMMODATE NEW OPENING. CMU TO BE TOOTHED IN AT JAMBS. COORDINATE SIZE OF OPENING. REQUIRED WITH THE NEW WORK.
- 5 REMOVE PORTIONS OF EXISTING CMU AND BRICK WALL TO ACCOMMODATE NEW OPENING. SAW CUT BRICK VERTICAL AND PLUMB OR SALVAGE BRICK AND TOOTH IN OPENING. CMU TO BE TOOTHED IN AT JAMBS. COORDINATE SIZE OF OPENING. REQUIRED WITH THE NEW WORK.
- 6 REMOVE EXTERIOR BRICK AND CMU FOR NEW OPENING. COORDINATE EXTENT WITH THE NEW WORK. SAVE THE EXISTING BRICK FOR PATCHING OF THE WALL.
- 7 REMOVE EXISTING CEILING IN ENTIRE ROOM OR AREA INDICATED REQUIRED TO ACCOMMODATE NEW WORK.
- 8 REMOVE PORTION OF EXISTING GYPSUM CEILING BULKHEAD TO ACCOMMODATE NEW WALL HEAD CONSTRUCTION. ONCE NEW PARTITION INSTALLED PATCH BULKHEAD AND REPAINT ENTIRE BULKHEAD.
- 9 REMOVE HOLLOW METAL FRAME, SIDELIGHTS & GLAZING, DOOR AND HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
- 10 REMOVE DOOR AND HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
- 11 REMOVE HARDWARE SPECIFIED AND PREPARE DOOR TO RECEIVE NEW HARDWARE. SALVAGE ELEMENTS NOTED FOR REINSTALLATION OR SCHEDULED TO BE TURNED OVER TO THE OWNER.
- 12 REMOVE INTERCOM AND SALVAGE FOR REINSTALLATION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 13 REMOVE EXISTING OVERHEAD DOOR OPERATOR AND RELATED CONTROLS, INCLUDING ACTUATORS AND SALVAGE FOR REINSTALLATION. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 14 REMOVE EXTERIOR ALUMINUM DOORS, FRAMING AND GLAZING, INCLUDING ADJACENT GLAZED-IN PANELS, ALUMINUM THRESHOLDS AND HARDWARE. SALVAGE FOR REINSTALLATION AS NOTED FOR NEW WORK.
- 15 REMOVE CONCRETE FLOOR SLAB TO EXTENT SHOWN.
- 16 REMOVE VCT FLOOR FINISH. PREPARE SUB FLOOR TO RECEIVE NEW FINISH.
- 17 REMOVE CARPET. PREPARE SUBFLOOR TO RECEIVE NEW FINISH.
- 18 REMOVE TERRAZZO BASE TO EXTENT REQUIRED TO ACCOMMODATE NEW DOOR OPENING.
- 19 VAT FLOORING TO BE ABATED BY OTHERS. PREPARE SUB FLOOR TO RECEIVE NEW FINISH.
- 20 REMOVE DISPLAY CASE, FRAMING, SHIELVING, LIGHTING AND GLAZING.
- 21 REMOVE CURTAIN TRACK AND CURTAIN (OR VERTICAL BLINDS). FILL, PATCH, REPAIR AND FINISH TO MATCH EXISTING.
- 22 REMOVE SHELVEING. PATCH AND FILL HOLES IN EXISTING WALLS.
- 23 BASE CABINETS AND COUNTERTOP TO REMAIN. TIE INTO NEW WORK AS DETAILED.
- 24 REMOVE COUNTERTOP(S) AND EXISTING BASE CABINET CASEWORK. SALVAGE BASE CABINET CASEWORK FOR REINSTALLATION WITH NEW COUNTERTOPS.
- 25 REMOVE COUNTERTOP AND METAL DESK BASE.
- 26 REMOVE LIGHT FIXTURE AND SALVAGE FOR REINSTALLATION, OR TO BE TURNED OVER TO OWNER. REFER TO ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 27 DISHWASHING EQUIPMENT TO BE REMOVED BY OWNER. REFER TO MECHANICAL AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFORMATION.
- 28 AQUARIUM AND BASE TO BE RELOCATED BY OWNER.
- 29 REMOVE AND SALVAGE FOR REINSTALLATION, EXISTING WALL MOUNTED MAIL CASEWORK UNIT.
- 30 NOT USED
- 31 NOT USED
- 32 NOT USED
- 33 NOT USED
- 34 REPOSITION EXISTING CASEWORK AND COUNTERTOP AS INDICATED ON FLOOR PLAN.
- 35 REMOVE EXISTING GYPSUM BOARD BULKHEAD ASSEMBLY WITHIN NEW VESTIBULE

### SALVAGED ITEMS

- DOORS AND HARDWARE.
- CASEWORK AS NOTED.
- INTERCOM CALL STATION EQUIPMENT.
- ELECTRIC STRIKES AS NOTED.
- 



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734 • 348.338-4541 TX • 348.338-0223  
EM • INFO@TMP-ARCHITECTURE.COM

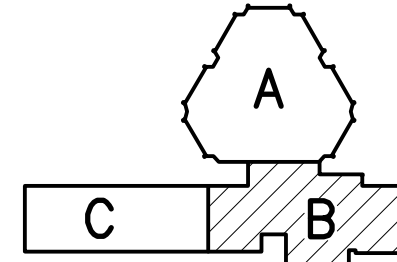
REGISTRATION SEAL

CONSULTANT

### PROJECT TITLE Shelters Elementary Remodel

Southgate Community Schools  
Southgate, Michigan

### DRAWING TITLE First Level Demolition Plan - Zone - 'B'



KEY PLAN  
NO SCALE

ISSUE DATES

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04-04-2016 BP NO 2 - BIDS

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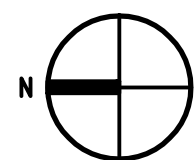
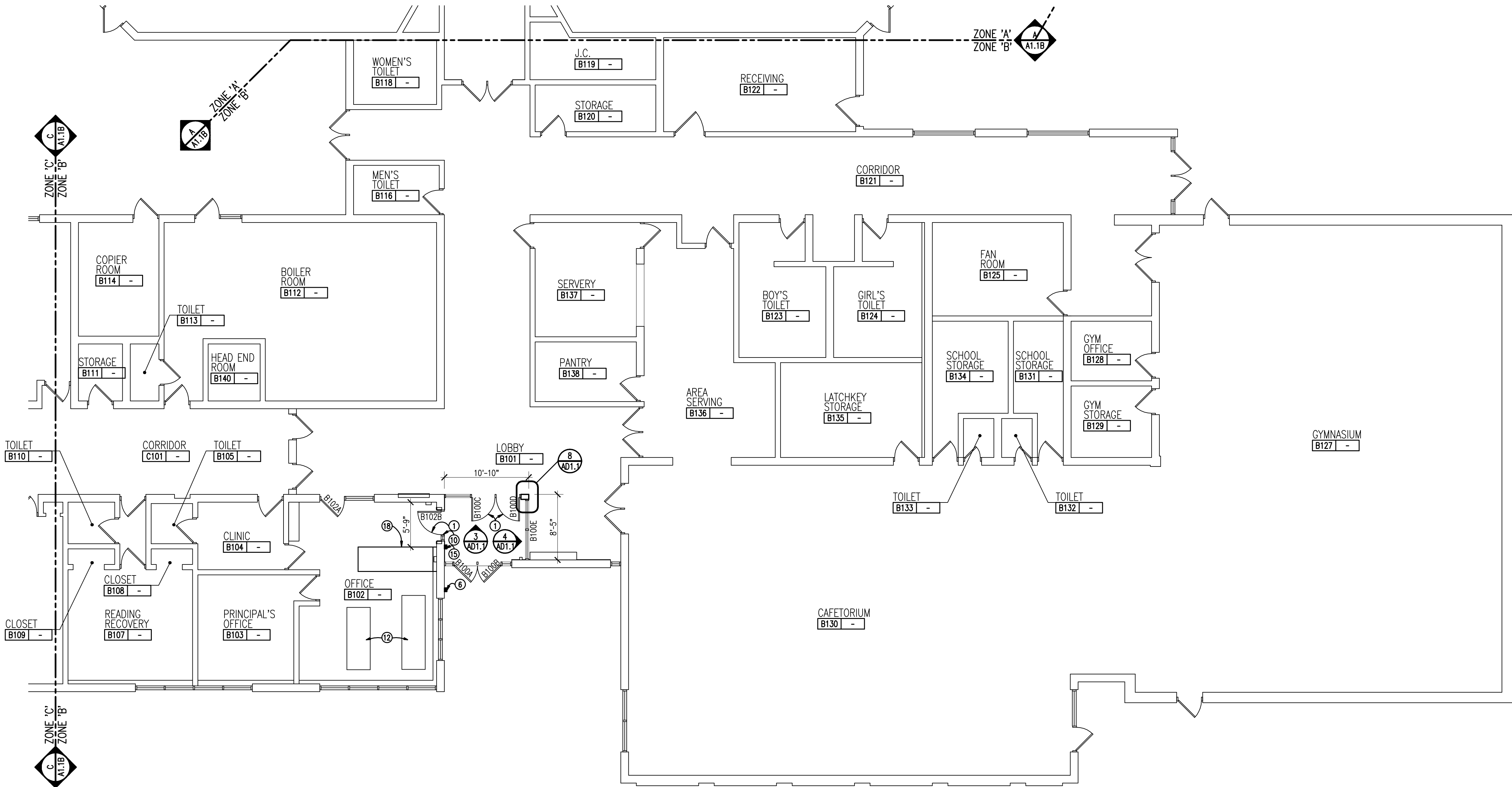
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PROJECT NO.

16012

DRAWING NO.

A0.1B



FIRST LEVEL FLOOR PLAN - ZONE 'B'  
SCALE: 1/8" = 1'-0"

WALL / PARTITION KEY	
	EXISTING WALL CONSTRUCTION
	METAL STUD PARTITION
	CONCRETE MASONRY UNIT WALL w/ HORIZONTAL JOINT REINFORCEMENT AT 16\"/>
	CAST-IN-PLACE CONCRETE WALL (REFER TO STRUCTURAL FOR REINFORCING REQUIREMENTS)
WALL / PARTITION LEGEND	
	3-5/8\"/>
<b>NOTE:</b> COORDINATE WITH THE REFLECTED CEILING PLANS FOR RATED WALLS, WALLS WHICH EXTEND UP TO THE STRUCTURE ABOVE AND WALLS WHICH EXTEND ONLY A MINIMUM OF 4\"/>	
<b>NOTE:</b> AT FIRE-RATED AND SMOKE-RESISTING WALLS (MASONRY OR GYPSUM BOARD), PROVIDE U.L. APPROVED, FIRE-RATED, HEAD-OF-WALL TERMINATIONS AS INDICATED. IF NOT INDICATED, PROVIDE \"BASIS OF DESIGN\" HEAD-OF-WALL FIRESTOP JOINT SYSTEM AS INDICATED IN SPECIFICATION SECTION 07842 (1 OR 2 HOUR AS APPROPRIATE). PROVIDE MINIMUM 1 HOUR TERMINATION AT SMOKE-RESISTING WALLS.	
<b>NOTE:</b> ALL CMU IS 8\"/>	
GENERAL NOTES	
1. COORDINATE SIZE AND LOCATION OF ALL CONCRETE HOUSEKEEPING TRAYS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURERS.	
2. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT ARE REQUIRED TO BE PROVIDED BY EACH TRADE. ALL LOCATIONS MUST BE COORDINATED AND APPROVED BY THE ARCHITECTS FIELD REPRESENTATIVE.	
3. CONTRACTORS SHALL VERIFY ALL EXISTING BUILDING DIMENSIONS, PARTITION AND WALL LOCATIONS, AND FLOOR ELEVATIONS IN THE FIELD AND NOTIFY THE ARCHITECTS REPRESENTATIVE OF ANY DISCREPANCIES BEFORE START OF WORK.	
4. FLOOR PLANS ARE DIMENSIONED TO NOMINAL WALL THICKNESS - TYPICAL.	
5. DIMENSIONS FOLLOWED BY ± SHOULD BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF AFFECTED WORK. NOTIFY ARCHITECTS REPRESENTATIVE IF DISCREPANCIES ARISE BEFORE PROCEEDING WITH THE WORK.	
6. PROVIDE INTERIOR CMU AND GYPSUM BOARD CONTROL JOINTS AT BOTH JAMBS OF DOORS, WINDOWS, AND OPENINGS. PROVIDE AT HEAD AND SILL OF WINDOWS AND PASS THRU OPENINGS.	
7. PROVIDE CONTROL JOINTS WHERE INTERIOR CMU (ON SLAB) ABUTS EXTERIOR/INTERIOR MASONRY (ON FOUNDATIONS OR FOOTINGS)	
8. VERIFY QUANTITY, SIZE, AND LOCATION OF ALL FLOOR, ROOF, AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR THE COMPLETION OF THE WORK. PROVIDE ALL UNTELS REQUIRED FOR THESE OPENINGS PER SPECIFICATIONS.	
9. REFER TO REFLECTED CEILING PLANS FOR EXTENSION OF PARTITION WALLS TO FLOOR OR ROOF CONSTRUCTION ABOVE AND WALL FIRE RESISTANCE RATING REQUIREMENTS.	
10. REFER TO A100... SERIES DRAWINGS FOR FLOOR FINISH PATTERNS AND ROOM FINISHES.	
11. VERIFY ALL DIMENSIONS IN FIELD.	
12. PROVIDE WOOD BLOCKING WITHIN STUD WALLS FOR WALL MOUNTED ITEMS I.E. GRAB BARS, TOWEL DISPENSERS, PENCIL SHARPENERS, WALL STOPS, ACCORDIAN PARTITION JAMBS, ETC. REFER ALSO TO A5... SERIES AND A6... SERIES DRAWINGS.	
PATCHING NOTES	
1. REFER TO DEMOLITION PLANS FOR ADDITIONAL PATCHING NOTES.	
2. FOR ALL FLOOR SURFACES RECEIVING NEW FLOOR FINISHES, PREPARE SUBSTRATE BY PROVIDING LEVELING AND PATCHING COMPOUNDS RECOMMENDED BY FINISH FLOORING MANUFACTURERS. CONTRACTOR'S BASE BID PROPOSAL SHALL ASSUME THAT ALL AREAS, INDICATED TO RECEIVE NEW FINISHES, WILL REQUIRE FLOOR PREPARATION.	
3. PATCH AND REPAIR ALL FLOOR AND WALL SURFACES LEFT DAMAGED OR INCOMPLETE FROM REMOVAL OF EXISTING PARTITIONS, MILLWORK, CASEWORK, CHALKBOARDS, TACKBOARDS, DISPLAY CASES OR OTHER DISPLAY EQUIPMENT WITH MATERIALS TO MATCH EXISTING, AS ACCEPTABLE TO THE ARCHITECT.	
4. MATCH EXISTING MASONRY COURSING ADJACENT IN EACH AREA AND TOOTH NEW WORK INTO EXISTING, UNLESS OTHERWISE INDICATED.	
5. AT EXISTING FLOOR FINISHES TO REMAIN, THAT BECOME SUBSTRATES FOR NEW FLOOR FINISHES, PATCH AND FILL EXISTING AS REQUIRED TO PREPARE FOR NEW FLOOR FINISH UNTIL ACCEPTABLE TO NEW FLOOR FINISH CONTRACTOR.	
6. TOOTH-IN MASONRY INTO EXISTING, U.O.N., INCLUDING JAMBS OF DOOR AND OTHER OPENINGS.	
CONSTRUCTION KEY NOTES	
1	INSTALL NEW DOORS, FRAMES, GLAZING AND HARDWARE. REFER TO DRAWING A01.1 FOR ADDITIONAL INFORMATION
2	NEW POWER DOOR OPERATOR ACTUATOR SWITCH
3	NEW KEYPAD/PROXIMITY READER
4	NEW PROXIMITY READER
5	EXISTING POWER DOOR OPERATOR ACTUATOR SWITCH TO REMAIN
6	PROVIDE STAINLESS STEEL COVER PLATE WITH TAMPER PROOF SCREWS TO BACK BOX FOR ABANDONED INTERCOM LOCATION (INTERCOM REMOVED FOR RELOCATION)
7	PROVIDE STAINLESS STEEL COVER PLATE WITH TAMPER PROOF SCREWS TO BACK BOX FOR ABANDONED OVERHEAD DOOR OPERATOR ACTUATOR SWITCH LOCATION ACTUATOR SWITCH REMOVED FOR RELOCATION)
8	EXISTING KEYPAD/PROXIMITY READER TO REMAIN
9	NEW PROXIMITY READER AND ELECTRONIC STRIKE
10	NEW ELECTRONIC STRIKE
11	PROVIDE NEW STRIKE TO DOOR FRAME, COORDINATED WITH EXISTING EXIT DEVICE.
12	EXISTING COUNTER AND BASE COUNTER TO REMAIN.
13	NEW COUNTERTOP AND SALVAGED BASE CABINET CASEWORK.
14	NEW MILLWORK UNIT WITH TRANSACTION COUNTER.
15	RELOCATED INTERCOM CALL STATION
16	RETAIN EXISTING FRAME IN OPENING.
17	PATCH ROOFING ASSEMBLY AROUND NEW CURB AT PENETRATIONS FOR MECHANICAL AND ELECTRICAL SERVICES AND PROVIDE MEMBRANE AND GALVANIZED FLASHINGS FOR CURB PROVIDED BY MECHANICAL CONTRACTOR.
18	REPOSITION EXISTING BASE CABINETS AND COUNTERTOP AS INDICATED.



TMP ARCHITECTURE INC  
1191 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH - 248.338.4561 FX - 248.338.0223  
EM - INFO@TMP-ARCHITECTURE.COM

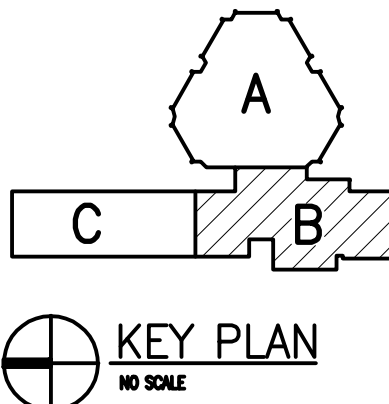
REGISTRATION SEAL

CONSULTANT

PROJECT TITLE  
**Shelters Elementary Remodel**

**Southgate Community Schools**  
**Southgate, Michigan**

DRAWING TITLE  
**First Level Floor Plan - Zone - 'B'**



ISSUE DATES


04-04-2016 BP NO. 2 - BIDS

DATE: ISSUED FOR:

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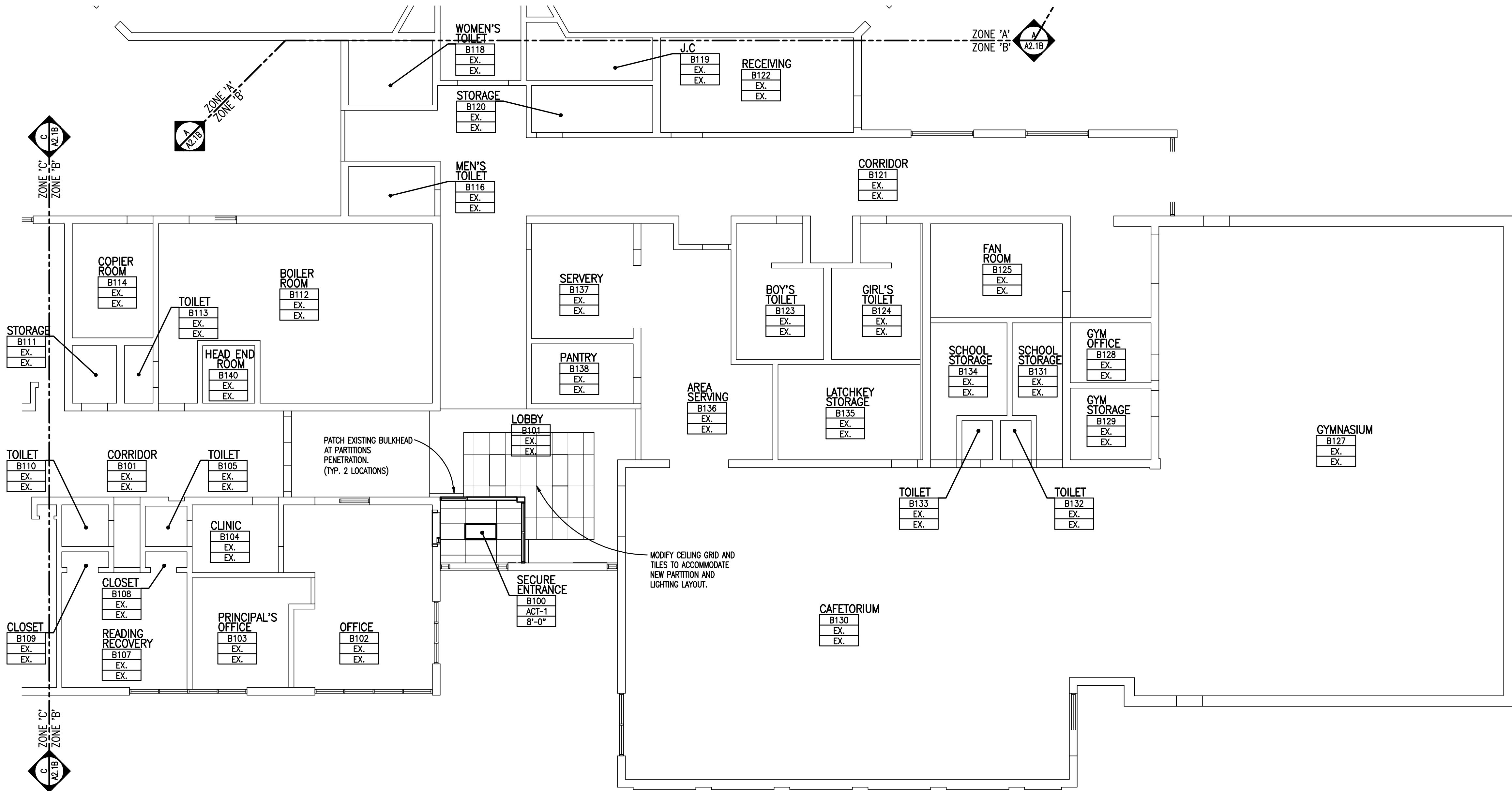
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DRAWING NO.

**A1.1B**





RECESSED FLUORESCENT TROFFER  
(2'x4' / 1'x4')

FLUORESCENT COVE LIGHTING

FLUORESCENT INDUSTRIAL FIXTURE

SURFACE MOUNTED FLUORESCENT FIXTURE

PENDANT MOUNTED FLUORESCENT LIGHT FIXTURE

RECESSED DOWNLIGHT

EXIT SIGN / LIGHT

SMOKE DETECTOR

CEILING MOUNTED CABINET UNIT HEATER

EXHAUST GRILLE

SUPPLY DIFFUSER

RETURN-AIR GRILLE

SPEAKER

PENDANT SPRINKLER HEAD (SEE MECHANICAL FOR TYPE)

SIDEWALL SPRINKLER HEAD

CEILING LEGEND

GYPSON DRYWALL OR  
SYNTHETIC VENEER PLASTER  
CEILING/SOFTIT

24" x 48" SUSPENDED  
LAY-IN ACOUSTICAL CEILING

24" x 24" SUSPENDED  
LAY-IN ACOUSTICAL CEILING

ALUMINUM PANEL SOFFIT

LINEAR PVC CEILING

EXPOSED OR EXISTING CONSTRUCTION  
TO REMAIN

CEILING FINISH KEY

ROOM NAME AND NUMBER PLUS GENERAL  
CEILING FINISH AND HEIGHT UNLESS  
NOTED OTHERWISE BY FINISH KEY

FINISH KEY

SPECIFIC FINISH  
INFORMATION WHERE VARIED  
FROM CEILING FINISH KEY

CLASSROOM

ROOM NAME

101

ROOM NUMBER

ACT

CEILING FINISH ABBREVIATION (SEE BELOW)

9'-0"

CEILING HEIGHT (A.F.F.)

ALUM

8'-10"

CEILING FINISH ABBREVIATIONS

ACT ACOUSTICAL LAY-IN CEILING TILE

ALUM ALUMINUM PANEL

AWP ACOUSTICAL WALL PANEL

AB ACOUSTICAL BAFFLE

EX EXISTING

EXP-P EXPOSED CONSTRUCTION - TO BE PAINTED

FB FABRIC BANNER

GYP-P GYPSON BOARD - TO BE PAINTED

GYP-EP GYPSON BOARD - TO BE EPOXY PAINTED

LP LINEAR PVC SYSTEM

PT PAINT

SVP SYNTHETIC VENEER PLASTER

UF (UNFINISHED)

NOTES

1. REFER TO FINISH PLANS FOR INFORMATION ON ROOM FINISHES.

2. REFER TO ARCHITECTURAL PLANS AND SPECIFICATIONS FOR ADDITIONAL  
INFORMATION ON MATERIALS AND CONSTRUCTION.

3. WHERE EXPOSED CONSTRUCTION IS INDICATED TO BE PAINTED, THIS SHALL  
INCLUDE ALL STRUCTURAL MEMBERS, ROOF/FLOOR DECK, DUCTWORK,  
DIFFUSERS, GRILLES, PIPING, SUSPENDED EQUIPMENT, CONDUITS, ETC. (U.O.N.)

REFLECTED CEILING PLAN WALL LEGEND

(ALL WALLS INDICATED WITH LINE TYPES BELOW CONTINUE TO FLOOR OR ROOF  
STRUCTURE ABOVE - ALL WALLS WITHOUT THESE INDICATIONS EXTEND A MINIMUM  
OF 4" ABOVE THE HIGHEST ADJACENT CEILING)

: 2-HOUR FIRE RATED HORIZONTAL EXIT

: 2-HOUR FIRE BARRIER

: SMOKE BARRIER WITH 1-HOUR FIRE RATING

: SMOKE BARRIER (NON-RATED) UNENCLOSED FLOOR OPENINGS

: 1-HOUR FIRE BARRIER FOR UNENCLOSED FLOOR OPENINGS

: 1-HOUR FIRE RATED EXIT/ELEVATOR SHAFT ENCLOSURE

: 1-HOUR FIRE BARRIER ENCLOSED VERTICAL SHAFTS

: 1-HOUR FIRE BARRIER FOR PROTECTION FROM HAZARDS

: SMOKE RESISTING PARTITION

: NON RATED WALLS TO STRUCTURE ABOVE

REFLECTED CEILING PLAN GENERAL NOTES

1. REFER TO ELECTRICAL DRAWINGS FOR FIXTURE TYPES. REFER TO ELECTRICAL  
AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION PERTAINING TO  
ELECTRICAL AND MECHANICAL WORK.

2. COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH TRADE  
REQUIRING THE SAME. ACCESS PANELS ARE SPECIFIED ARCHITECTURALLY BUT  
ARE REQUIRED TO BE PROVIDED BY TRADE. SPOT ALL LOCATIONS WITHIN  
FIXED GYPSON BOARD CEILINGS AND RECEIVE APPROVAL FROM THE  
ARCHITECT'S FIELD REPRESENTATIVE BEFORE PLACEMENT.

3. COORDINATE CEILING SUSPENSION SYSTEMS WITH OTHER CEILING  
SPACE EQUIPMENT SUPPORTS.

4. ALL SMOKE BARRIER PARTITIONS, HORIZONTAL EXIT ENCLOSURES AND FIRE  
RATED PARTITIONS WHICH EXTEND TO THE DECK ABOVE SHALL BE MARKED  
EVERY 20'-0" HORIZONTALLY WITHIN THE CEILING SPACE: "FIRE AND  
SMOKE BARRIER - PROTECT ALL OPENINGS"

5. ALL GYPSON BOARD FASCIAE @ SOFFITS, ADJACENT TO LAY-IN  
CEILINGS, SHALL EXTEND 4" MINIMUM ABOVE LAY-IN CEILINGS.

6. PROVIDE WOOD BLOCKING, ABOVE GYPSON BOARD CEILINGS, AS REQUIRED  
FOR MISCELLANEOUS SUSPENDED ITEMS (e.g. CURTAIN TRACKS, WINDOW  
SHADES, ACOUSTICAL BAFFLES, ETC.)

7. REFER TO DRAWING A2.1 FOR TYPICAL DETAILS PERTAINING TO  
WALL TERMINATIONS AT STRUCTURE ABOVE.

8. REFER TO LIFE SAFETY PLANS FOR DAMPENING REQUIREMENTS

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734-348-3384 FAX - 348-338-0223  
EM - INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT

PROJECT TITLE  
**Shelters Elementary  
Remodel**

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE  
**First Level  
Reflected Ceiling Plan -  
Zone - 'B'**

KEY PLAN  
NO SCALE

ISSUE DATES


04-04-2016 BP NO. 2 - BIOS

DATE: ISSUED FOR:

DRAWN: AKW

CHECKED: ...

APPROVED: ...

PROJECT NO.

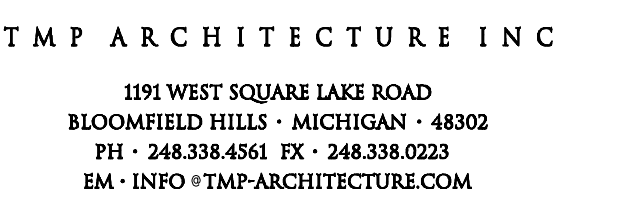
**16012**

DRAWING NO.

**A2.1B**

**FIRST LEVEL REFLECTED CEILING PLAN - ZONE 'B'**

SCALE: 1/8" = 1'-0"



REGISTRATION SEAL

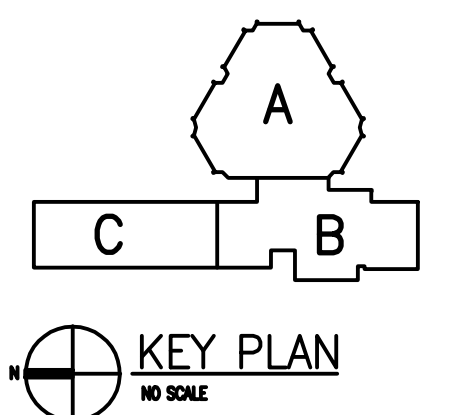
CONSULTANT

PROJECT TITLE

## Shelters Elementary Remodel

**Southgate Community Schools**  
**Southgate, Michigan**

DRAWING TITLE  
First Level  
Composite Floor Plan



## ISSUE DATES

[illegible]

04-04-2016	BP NO. 2 - BIDS
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DATE: ISSUED FOR:

DRAWN AKW

**CHECKED**      **\*\*\***

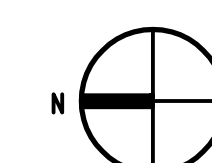
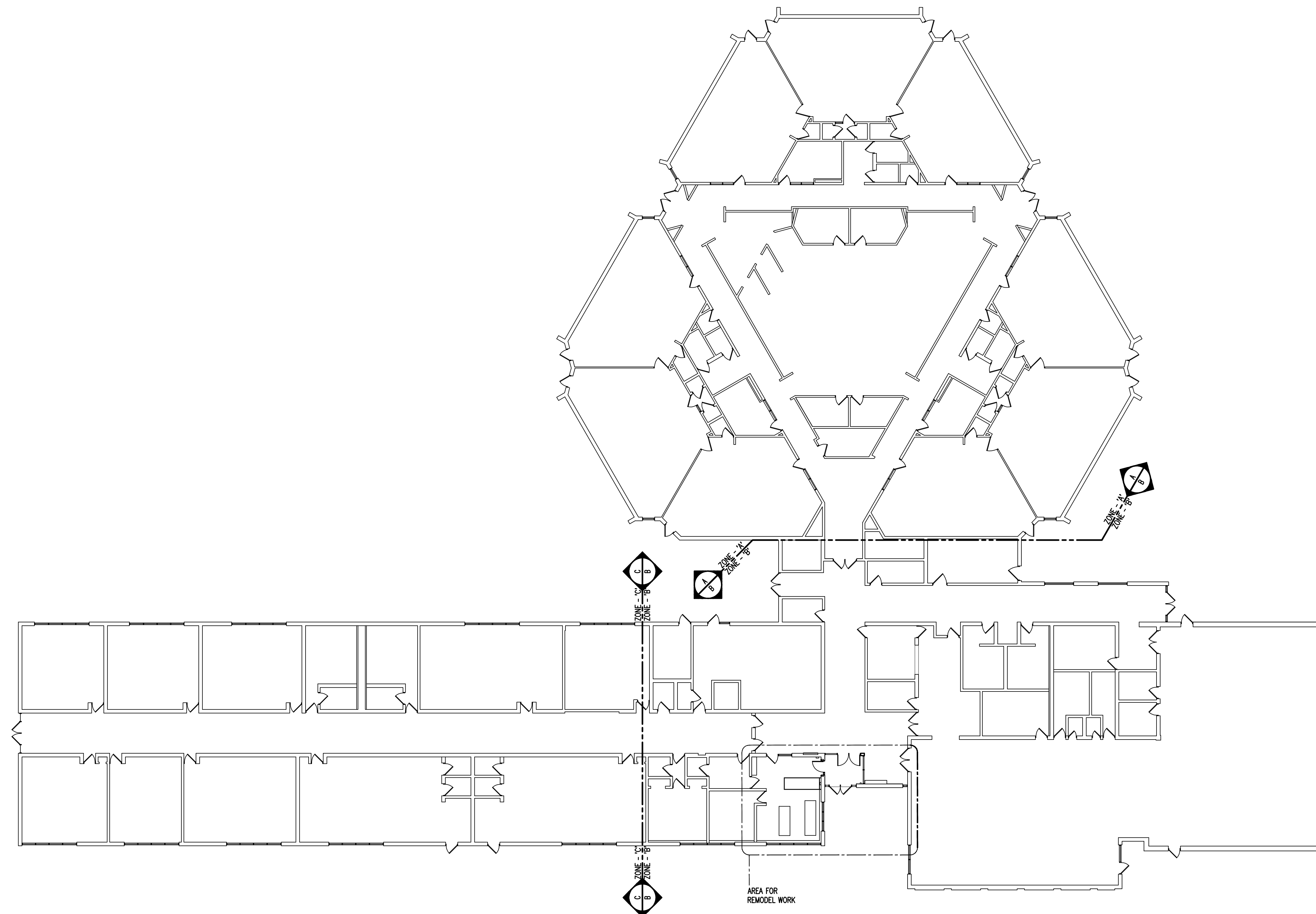
APPROVED ...

PROJECT NO.

16012

DRAWING NO.

## AC1.1



FIRST LEVEL COMPOSITE FLOOR PLAN  
SCALE: 1/16" = 1'-0"



DOOR & FRAME SCHEDULE																
Opening		Door				Frame				Details			Threshold	U.L. Label	Hdwe. Set	Remarks
No.	Opening Size (Width x Height)	Type	Material	Finish	Glass	Type	Material	Finish	Glass	Head	Jamb	Sill				
Lower Level - Zone 'A'																
B100A	EXISTING	C	EX. FRP	EX.	-	EX	EX. AL	EX.	-	-	-	-	-	-	-	(2)
B100B	EXISTING	C	EX. FRP	EX.	-	EX	EX. AL	EX.	-	-	-	-	-	-	-	-
B100C	3'-0"x 7'-0"	C	H.M.	PTD	GL-1	3/AD1.1	H.M.	PTD	GL-1	5/AD1.1	8, 9/AD1.1	-	-	-	-	-
B100D	3'-0"x 7'-0"	C	H.M.	PTD	GL-1	3/AD1.1	H.M.	PTD	GL-1	5/AD1.1	8, 9/AD1.1	-	-	-	-	-
B100E	7'-9 1/4"x 7'-2"		SCREEN WALL			4/AD1.1	H.M.	PTD	GL-1	5/AD1.1	8, 9/AD1.1	-	-	-	-	-
B102A	EXISTING	B	EX. WD	EX.	-	EX.	EX. H.M.	EX.	-	-	-	-	-	-	-	-
B102B	3'-0"x 7'-0"	B	WD	PFN	GL-1	2/AD1.1	H.M.	PTD	GL-2	6/AD1.1	7/AD1.1	11/AD1.1	-	45	-	-

(REFER TO SPECIFICATIONS FOR ADDITIONAL DOOR INFORMATION)

AL	ALUMINUM
ALGL	ALUMINUM AND GLASS
HM	HOLLOW METAL
WD	SOLID CORE HARDWOOD
PFN	PREFINISHED BY MANUFACTURER
PTD	PAINTED
MAR	SYNTHETIC MARBLE THRESHOLD
MET	METAL THRESHOLD
LAM	PLASTIC LAMINATE CLAD
FRP	FIBERGLASS REINFORCED POLYESTER
STSTL	STAINLESS STEEL
STL	STEEL

1. GALVANIZED METAL TO BE PROVIDED FOR HOLLOW METAL DOOR AND/OR FRAME AT EXTERIOR LOCATION.
2. DOORS ARE 1-3/4" THICK UNLESS OTHERWISE NOTED.
3. DETAIL NUMBERS NOTED SIM. REFER TO DETAILS SHOWING HEAD, JAMB, AND/OR SILL DETAILS THAT REPRESENT CONDITIONS SIMILAR TO THOSE NOTED.
4. HOLLOW METAL FRAMES SET IN MASONRY WALLS ARE 5 3/4" WIDE (U.O.N.).
5. HOLLOW METAL FRAMES, SET IN GYPSUM BD., METAL STUD PARTITIONS, SHALL BE "DOUBLE BACK-BEND" FRAMES WITH A THROAT DIMENSION EQUAL TO THE PARTITION THICKNESS PLUS 9/16" RETURNS ON EACH SIDE OF THE PARTITION. PROVIDE EIGHT RABBETS.
6. AN ASTERISK (\*) CALLS ATTENTION TO THE REMARKS COLUMN OF THE SCHEDULE.

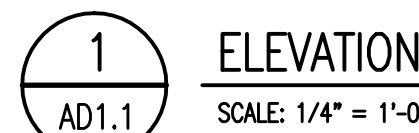
U.L. LABEL**	MIN. OPENING PROTECTION ASSEMBLY
180	3 HR. FIRE RATING
90	1-1/2 HR. FIRE RATING
60	1 HR. FIRE RATING
45	3/4 HR. FIRE RATING
20	1/3 HR. FIRE RATING

\*\* ALL FIRE RATED DOORS SHALL BE SMOKE AND DRAFT CONTROL LABELED IN ADDITION TO U.L. LABELS INDICATED.

1. INSTALL SALVAGED ELECTRIC STRIKE
2. CONNECT STRIKE TO FIRE ALARM SYSTEM



## DOOR TYPES

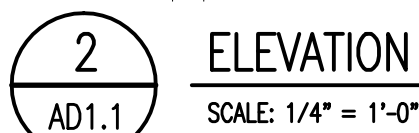


## FRAME TYPES



3  
AD1 1

ELEVATION  
SCALE: 1/4" = 1'-0"



4  
AD1 1

ELEVATION  
SCALE: 1/4" = 1'-0"



10  
AD1.1

WALL SECTION

SCALE: 1 1/2" = 1'-0"



12  
AD1.1

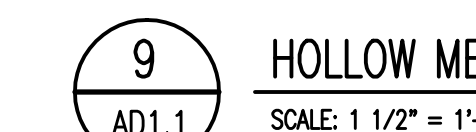
SILL DETAIL  
SCALE: 3" = 1'-0"



11  
AD1.1

SILL DETAIL

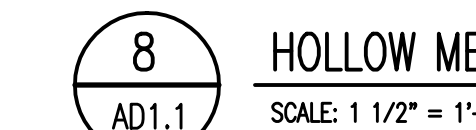
SCALE: 1 1/2" = 1'



9  
AD1.1

HOLLOW ME

SCALE: 1 1/2" = 1'



8  
AD1.1

HOLLOW ME

SCALE: 1 1/2" = 1'



7  
AD1.1

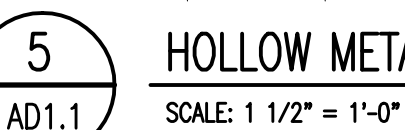
HOLLOW METAL  
SCALE: 1 1/2" = 1'-0"



6  
AD1.1

HOLLOW METAL

SCALE: 1 1/2" = 1'-0"



5  
AD1.1

HOLLOW METAL  
SCALE: 1 1/2" = 1'-0"

(REFER TO SPECIFICATIONS FOR ASSEMBLIES)	
GL-1	1/4" CLEAR TEMPERED MONOLITHIC GLASS
GL-2	45 MIN. FIRE RATED CLEAR GLASS

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1191 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

## REGISTRATION SEAL

## CONSULTANT

## Shelters Elementary Remodel

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE  
**Door & Frame Schedule**

## ISSUE DATES

*	*
*	*
*	*
*	*
*	*
*	*
*04-04-2016	BP NO. 2 – BIDS
DRAWN:	ISSUED FOR:
DRAWN	AKW
CHECKED	...
APPROVED	...

## PROJECT NO.

16012

## DRAWING NO.

## AD1.1

g:\2016\2016-0071-00\CA0\2016-0071-ED-IND.dwg, E0.1, 3/31/2016 2:59:19 PM, Brandon Mumm, None, 0.98741, Peter Basso Associates Inc.

ELECTRICAL SYMBOL LIST (NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT)

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
FX	FIXTURE TYPE	TWC	TWO-WAY COMMUNICATION SYSTEM CALL STATION	CP	CONTROL PANEL	SC	SECURITY CAMERA
[ ]	LIGHTING FIXTURE	TWC2	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER	[ ]	MOTOR	MD	MOTION DETECTOR
[ ]	DIRECT/INDIRECT LIGHTING FIXTURE	TWC4	TWO-WAY COMMUNICATION SYSTEM ANNUNCIATOR & COMMUNICATION PANEL	[ ]	VARIABLE FREQUENCY CONTROLLER	[ ]	SECURITY KEY SWITCH
[ ]	EMERGENCY FIXTURE	TWCP	TWO-WAY COMMUNICATION SYSTEM POWER SUPPLY WITH BATTERY BACK-UP	[ ]	MANUAL CONTROLLER	[ ]	DOOR CONTACT
FX-NL	NIGHT LIGHTING FIXTURE	TWCP2	TWO-WAY COMMUNICATION SYSTEM AUTO DIALER POWER SUPPLY WITH BATTERY BACK-UP	[ ]	MAGNETIC CONTROLLER	[ ]	KEY PAD
[ ]	LIGHTING FIXTURE	RGP	REMOTE GENERATOR ANNUNCIATOR PANEL	[ ]	COMBINATION MAGNETIC CONTROLLER	[ ]	ACCESS CONTROL STATION
[ ]	EMERGENCY FIXTURE	ATS	AUTOMATIC TRANSFER SWITCH	[ ]	NON-FUSIBLE DISCONNECT SWITCH	[ ]	DURESS PUSH BUTTON STATION
[ ]	WALL MOUNTED LIGHTING FIXTURE	UPS	UN-INTERRUPTABLE POWER SUPPLY	[ ]	FUSIBLE DISCONNECT SWITCH	[ ]	DELAYED EGRESS
[ ]	LIGHTING FIXTURE	CSX	LOW VOLTAGE CONTROL STATION *X* INDICATES TYPE	[ ]	ENCLOSED CIRCUIT BREAKER	[ ]	REQUEST TO EXIT STATION
[ ]	EMERGENCY FIXTURE	[ ]	SINGLE RECEPTACLE	[ ]	PUSH BUTTON STATION	[ ]	CIRCUIT BREAKER
[ ]	DIRECTIONAL LIGHTING FIXTURE	[ ]	DUPLEX RECEPTACLE	[ ]	JUNCTION BOX	[ ]	DRAWOUT CIRCUIT BREAKER MANUALLY OPERATED
[ ]	PENDANT LIGHTING FIXTURE	[ ]	QUAD RECEPTACLE	[ ]	HARD WIRE POWER CONNECTION	[ ]	DRAWOUT CIRCUIT BREAKER ELECTRICALLY OPERATED
[ ]	WALL SCONCE	[ ]	ABOVE COUNTER DUPLEX RECEPTACLE (SIMILAR FOR TAMPER RESISTANT, QUADS, EMERGENCY AND GFI RECEPTACLES)	[ ]	AUTOMATIC DOOR CONTROLLER	[ ]	SWITCH
[ ]	LIGHTING TRACK	[ ]	DUPLEX RECEPTACLE-GROUND FAULT CIRCUIT INTERRUPTER	[ ]	AUTOMATIC DOOR PUSH PAD OPERATOR	[ ]	AUTOMATIC OR MANUAL TRANSFER SWITCH
[ ]	TRACK LIGHTING FIXTURE	[ ]	DUPLEX EMERGENCY RECEPTACLE	[ ]	GROUND ROD	[ ]	FUSE
[ ]	POLE MOUNTED LIGHTING FIXTURE	[ ]	TAMPER RESISTANT RECEPTACLE	[ ]	GROUND CONNECTION	[ ]	TRANSFORMER
[ ]	POLE MOUNTED LIGHTING FIXTURE - POST TOP	[ ]	QUAD TAMPER RESISTANT RECEPTACLE	[ ]	CONDUIT SLEEVE WITH BUSHINGS LENGTH AS REQUIRED *X* INDICATES CONDUIT SIZE	[ ]	CURRENT TRANSFORMER
[ ]	BOLLARD LIGHTING FIXTURE	[ ]	DUPLEX UPS RECEPTACLE	[ ]	CONDUIT UP	[ ]	POTENTIAL TRANSFORMER
[ ]	EMERGENCY LIGHTING UNIT	[ ]	USB RECEPTACLE	[ ]	CONDUIT DOWN	[ ]	LIGHTNING ARRESTOR
[ ]	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	[ ]	4 PORT USB CHARGING STATION	[ ]	EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET	[ ]	PANELBOARD
[ ]	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS (SHADED AREA INDICATES FACE)	[ ]	CEILING MOUNTED DUPLEX RECEPTACLE	[ ]	ABOVE COUNTER EMPTY BOX FOR FUTURE TELECOMMUNICATION OUTLET	[ ]	*X* INDICATES PANELBOARD NAME
[ ]	EXIT LIGHTING FIXTURE - WALL MOUNTED	[ ]	POWER POLE	[ ]	EMPTY BOX FOR FUTURE CEILING MOUNTED TELECOMMUNICATION OUTLET *X* INDICATES TYPE	[ ]	GROUND
[ ]	EMERGENCY LOAD TRANSFER DEVICE	[ ]	MULTI-OUTLET RACEWAY	[ ]	TELECOMMUNICATION CEILING MOUNTED OUTLET *X* INDICATES TYPE	[ ]	STRESS CONE TERMINATION
S	SINGLE POLE TOGGLE SWITCH	[ ]	MULTI-SERVICE DROP SEE ELECTRICAL DETAILS AND DIAGRAMS SHEET *X* INDICATES TYPE	[ ]	TELECOMMUNICATION GROUNDING BUS BAR	[ ]	SECURITY KEY INTERLOCK
S2	TWO POLE TOGGLE SWITCH	[ ]	POKE THRU SERVICE FITTING *X* INDICATES TYPE	[ ]	TELECOMMUNICATION MAIN GROUNDING BUS BAR	[ ]	ENGINE GENERATOR
S3	3 WAY TOGGLE SWITCH	[ ]	FLOOR BOX SERVICE FITTING *X* INDICATES TYPE	[ ]	INTEROOM OUTLET	[ ]	UTILITY METER
S4	4 WAY TOGGLE SWITCH	[ ]	ACCESS FLOOR SERVICE FITTING *X* INDICATES TYPE	[ ]	SPEAKER	[ ]	ELECTRONIC METERING UNIT
K	KEY OPERATED SWITCH	[ ]	CORD REEL *X* INDICATES TYPE	[ ]	MICROPHONE	[ ]	AMMETER
K3	3 WAY KEY OPERATED SWITCH	[ ]	DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	[ ]	VOLUME CONTROL/STATION SELECTOR	[ ]	VOLTMETER
K4	4 WAY KEY OPERATED SWITCH	[ ]	3-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	[ ]	SIGNALING BELL	[ ]	AMMETER SWITCH
D	DIMMER SWITCH	[ ]	4-WAY DUAL SWITCHING FOR INNER/OUTER LAMPS OF FLUORESCENT LIGHT FIXTURES	[ ]	SINGLE FACE CLOCK - CEILING MOUNTED	[ ]	VOLTMETER SWITCH
D3	3 WAY DIMMER SWITCH	[ ]	DIGITAL TIME SWITCH	[ ]	SINGLE FACE CLOCK - WALL MOUNTED	[ ]	SURGE PROTECTIVE DEVICE
Do	DIMMER OCCUPANCY SENSOR SWITCH	[ ]	ILLUMINATED TOGGLE SWITCH FOR CONTROL OF LIGHTING ON CRITICAL POWER-ILLUMINATED WHEN SWITCH IS IN "OFF" POSITION	[ ]	DOUBLE FACE CLOCK - CEILING MOUNTED	[ ]	CONTROL RELAY
DL	LOW VOLTAGE DIMMER SWITCH	[ ]	LOW VOLTAGE SWITCH	[ ]	DOUBLE FACE COMBINATION CLOCK/SPEAKER CEILING MOUNTED	[ ]	TIME DELAY RELAY
Sp	PILOT SWITCH	[ ]	OCCUPANCY SENSOR REFER TO ELECTRICAL STANDARD SCHEDULES	[ ]	DOUBLE FACE COMBINATION CLOCK/SPEAKER WALL MOUNTED	[ ]	THERMAL OVERLOAD RELAY
		[ ]	OCCUPANCY SENSOR *X* INDICATES TYPE	[ ]	TIME CLOCK	[ ]	NORMALLY OPEN CONTACTS
		[ ]		[ ]	CONTRACTOR	[ ]	NORMALLY CLOSED CONTACTS
		[ ]		[ ]	PHOTOCELL	[ ]	N.O. PUSH BUTTON SINGLE CIRCUIT
		[ ]		[ ]	TWIST TIMER	[ ]	N.C. PUSH BUTTON SINGLE CIRCUIT
		[ ]		[ ]		[ ]	CABLE VAULT
		[ ]		[ ]		[ ]	*X-X* INDICATES TYPE
		[ ]		[ ]		[ ]	BRANCH CIRCUIT PANELBOARD
		[ ]		[ ]		[ ]	MOTOR CONTROL CENTER
		[ ]		[ ]		[ ]	TRANSFORMER
		[ ]		[ ]		[ ]	DISTRIBUTION PANEL
		[ ]		[ ]		[ ]	GROUND BUS
		[ ]		[ ]		[ ]	PLUG IN BUSWAY
		[ ]		[ ]		[ ]	FEEDER BUSWAY

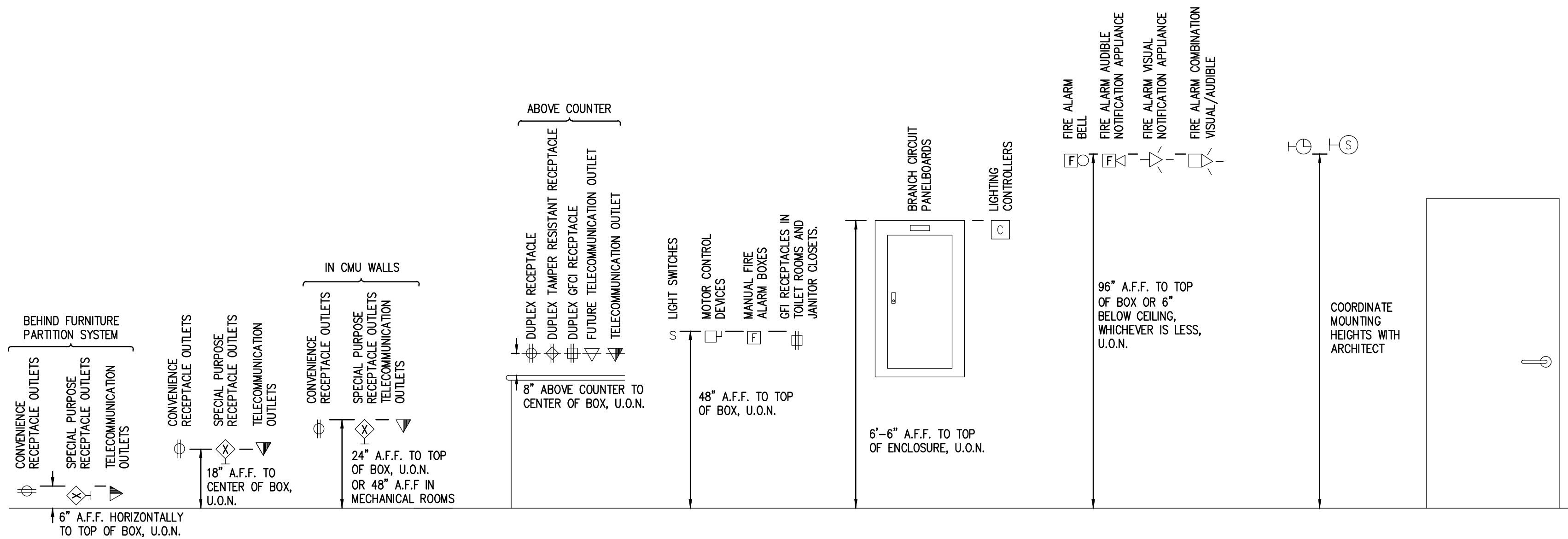
ELECTRICAL DRAWING INDEX

SHEET NO.	SHEET TITLE
E0.1	ELECTRICAL STANDARDS AND DRAWING INDEX
E0.2	ELECTRICAL STANDARD SCHEDULES
E0.3	ELECTRICAL COMPOSITE PLAN
E1.1	PARTIAL ELECTRICAL PLANS
E4.1	EMERGENCY LIGHTING CALCULATIONS

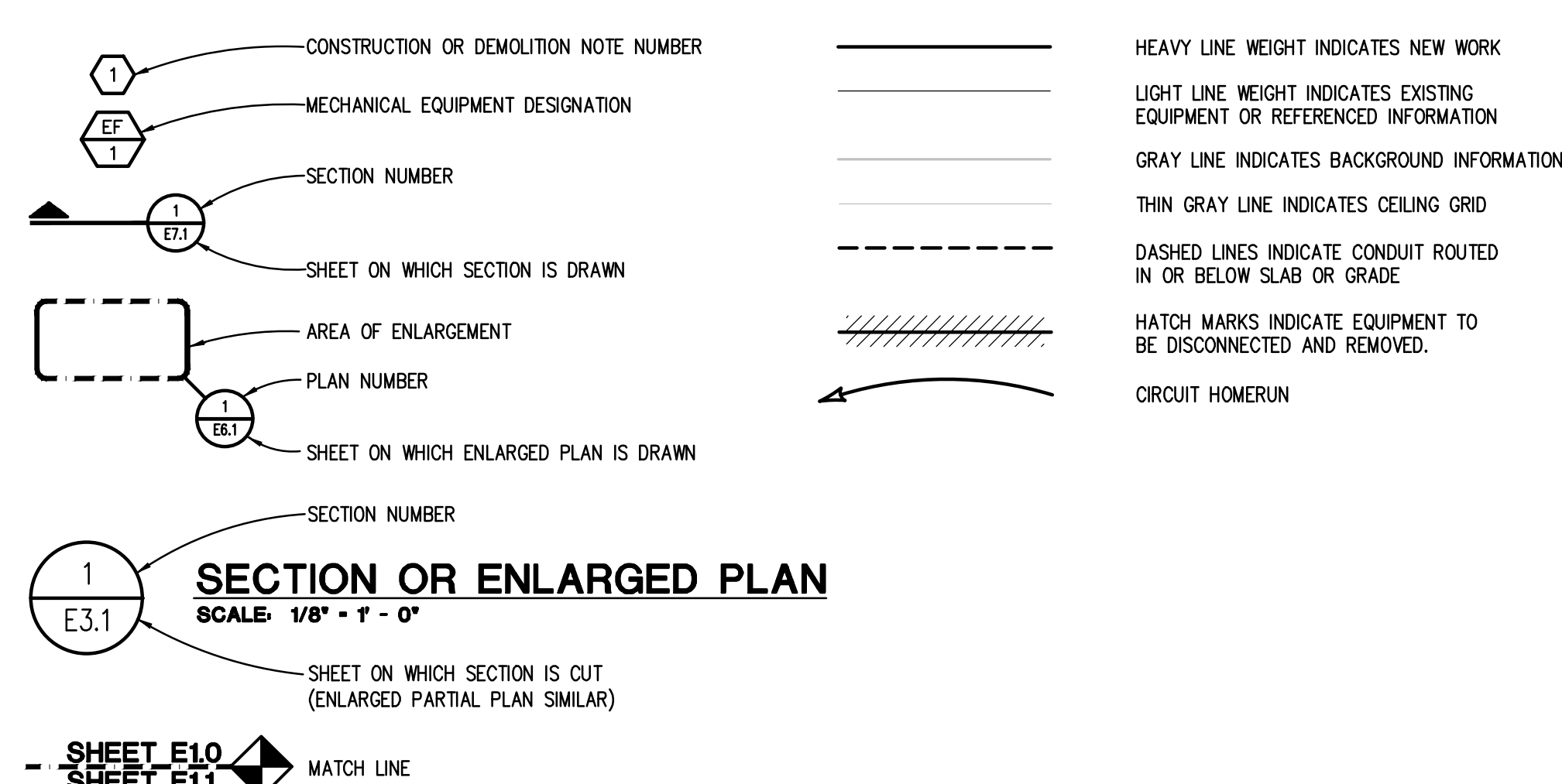
ELECTRICAL ABBREVIATION LIST


ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	AMPERES	G/GRO/EG	GROUND	OC	ON CENTER
AF	AMPERES FRAME (BREAKER RATING)	GFCI	GROUND FAULT CIRCUIT INTERRUPTER	OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
A.F.F.	ABOVE FINISH FLOOR	GFP	GROUND FAULT PROTECTION	OFCH	OWNER FURNISHED, OWNER INSTALLED
AIC	AMPS INTERRUPTING CAPACITY	HOA	HAND-OFF-AUTO		
AL	AUDIENCE LEFT	HP	HORSEPOWER	P	POLE
AR	AUDIENCE RIGHT	HV	HIGH VOLTAGE	PB	PUSHBUTTON STATION
AT	AMPERES TRIP (BREAKER SETTING)	HZ	HERTZ	PH	PHASE
ATS	AUTOMATIC TRANSFER SWITCH	IG	ISOLATED GROUND	PT	POTENTIAL TRANSFORMER
AUX	AUXILIARY	JB	JUNCTION BOX	PDP	POWER DISTRIBUTION PANEL
BKR	BREAKER	KV	KILOVOLT	RECEPT.	RECEPTACLE
BPS	BOLTED PRESSURE SWITCH	KVA	KILOVOLT - AMPERES	RDP	RECEPTACLE DISTRIBUTION PANEL
C	CONDUIT	KW	KILOWATT	RP	RECEPTACLE PANEL
CB	CIRCUIT BREAKER	KWH	KILOWATT - HOURS	RSC	RIGID STEEL CONDUIT
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	LA	LIGHTNING ARRESTOR	SCHED	SCHEDULE
CKT	CIRCUIT	LP	LIGHTING PANEL	SW	SWITCH
CT	CURRENT TRANSFORMER	LDP	LIGHTING DISTRIBUTION PANEL	SWB	SWITCHBOARD
DEMO	DEMOLITION	MAX	MAXIMUM	SWGR	SWITCHGEAR
DM	DIMENSION	MCB	MAIN CIRCUIT BREAKER	TB	TERMINAL BOX
DISC	DISCONNECT	MCC	MOTOR CONTROL CENTER	TELECOM	TELECOMMUNICATIONS
DP	DISTRIBUTION PANEL	MDP	MAIN DISTRIBUTION PANEL	TR	TAMPER RESISTANT
DS	DOWNSTAGE	MECH	MECHANICAL	TTB	TELEPHONE TERMINAL BACKBOARD
DWG	DRAWING	MIN	MINIMUM	TYP	TYPICAL
EBU	EMERGENCY BATTERY UNIT	MISC.	MISCELLANEOUS	U.O.N.	UNLESS OTHERWISE NOTED
EC	ELECTRICAL CONTRACTOR	MLO	MAIN LUGS ONLY	US	UPSTAGE
ELEC	ELECTRICAL	MTD	MOUNTED	V	VOLTS
EM/ EMERG	EMERGENCY	MTG	MOUNTING	W	WIRE
EMT	ELECTRICAL METALLIC TUBING	MTR	MOTOR	WP	WEATHERPROOF
EPO	EMERGENCY POWER OFF	N	NEUTRAL	WFR	WATERPROOF
ENC	ELECTRIC WATER COOLER	NC	NORMALLY CLOSED	XP	EXPLOSION PROOF
EXIST	EXISTING	NEC	NATIONAL ELECTRICAL CODE	(E)	EXISTING
FA	FIRE ALARM	NF	NON-FUSIBLE	(R)	RELOCATED
FLA	FULL LOAD AMPS	NIC	NOT IN CONTRACT		
FLR	FLOOR	NL	NIGHT LIGHT		
FOH	FRONT OF HOUSE	NO	NORMALLY OPEN		
FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR	NTS	NOT TO SCALE		
FU	FUSE				

STANDARD MOUNTING HEIGHTS




STANDARD METHODS OF NOTATION





T M P ARCHITECTURE INC  
1191 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL



Peter Basso Associates Inc  
CONSULTING ENGINEERS  
5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
PBA Project No: 2016.0071

PROJECT TITLE  
**Shelters Elementary Remodel**

Southgate Community Schools  
Southgate, Michigan

DRAWING TITLE  
**ELECTRICAL STANDARDS AND DRAWING INDEX**

ISSUE DATES  


04-04-16	BP No. 2-BIDS
DATE:	ISSUED FOR:
DRAWN SC	
CHECKED GJZ	
APPROVED GJZ	

PROJECT NO.  
**16012**

DRAWING NO.  
**E0.1**



LIGHTING FIXTURE SCHEDULE			
TYPE	DESCRIPTION	MANUFACTURERS	LAMPS
L1E VESTIBULE	LED 6 INCH APERTURE RECESSED DOWN LIGHT FIXTURE: WARM WHITE LED SOURCE WITH MAXIMUM COLOR TEMPERATURE DIFFERENTIATION OF ± 100K. VENTILATED DIE CAST ALUMINUM HEAT SINK, SELF FLANGED REFLECTOR WITH MATTE FINISH. MULTI VOLT AC INPUT, CLASS P, SOLID STATE DRIVER, RATED FOR MINIMUM 50,000 HOURS OF OPERATION. 5 YEAR WARRANTY.  PROVIDE WITH INTEGRAL EMERGENCY BATTERY BALLAST WITH MIN 1200 LUMENS OUTPUT FOR 90 MINUTES OF OPERATION.	PORTFOLIO L06 SERIES GOTHAM EVO SERIES PRESCOLITE LFL6LED SERIES	LED 4100K WHITE 15 WATTS 1000 DELIVERED LUMENS 80 CRI
X	EXIT LIGHT SHALL BE MOUNTED AS INDICATED ON PLAN. THERMOPLASTIC WHITE HOUSING. HIGH OUTPUT LED DIFFUSE LIGHT PANEL. SINGLE STENCIL WHITE FACE. MULTI VOLT (FUSED) OPERATION. PROVIDE DIRECTIONAL ARROW AS INDICATED ON PLAN. UNIT SHALL BE COMPLETELY SELF-CONTAINED WITH SEALED MAINTENANCE FREE BATTERY CAPABLE OF PROVIDING 90 MINUTE FULL LIGHT OPERATION. UNIT SHALL HAVE AUTOMATIC CONSTANT CURRENT SERIES CHARGER, TRANSFER CIRCUIT AND TEST SWITCH. WARRANTY FOR 3 YEARS WITH AN ADDITIONAL 3 YEAR PRO RATA WARRANTY ON THE BATTERY.	LITHONIA QUANTUM SERIES SURLITE LPX SERIES DUAL-LITE EVE SERIES LIGHTALARMS GRANDE SERIES	HIGH OUTPUT LED LIGHT PANEL

FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE - GENERAL PURPOSE						
OVERCURRENT DEVICE RATING (AMPERES)	WIRE SIZE (AWG OR KCMIL)		CONDUIT SIZE			
	PHASE & NEUTRAL	GROUND	COPPER CONDUCTORS			
			SINGLE PHASE 2 WIRE+G (1PH, 1N, 1G)	SINGLE PHASE 3 WIRE+G (2PH, 1N, 1G)	THREE PHASE 3 WIRE+G (3PH, 1G)	THREE PHASE & NEUTRAL 4 WIRE+G (3PH, 1N, 1G)
15-20	12	12	3/4"	3/4"	3/4"	3/4"
25-30	10	10	3/4"	3/4"	3/4"	3/4"
35-40	8	10	3/4"	3/4"	3/4"	3/4"
45-50	8 (6)	10	3/4"	3/4"	3/4"	3/4"
60	6 (4)	10	3/4" (1")	3/4" (1")	3/4" (1")	3/4" (1")
70	4	8	1"	1 1/4"	1 1/4"	1 1/4"
80	4 (3)	8	1"	1 1/4"	1 1/4"	1 1/4"
90-100	3 (2)	8	1 1/4"	1 1/4"	1 1/4"	1 1/4"
110	2 (1)	6	-	1 1/4"	1 1/4"	1 1/4" (1 1/2")
125	1 (1/0)	6	-	1 1/4" (1 1/2")	1 1/4" (1 1/2")	1 1/2"
150	1/0	6	-	1 1/2"	1 1/2"	1 1/2"
175	2/0	6	-	2"	2"	2"
200	3/0	6	-	2"	2 1/2"	2 1/2"
225	4/0	4	-	2"	2"	2 1/2"
250	250	4	-	2 1/2"	2 1/2"	2 1/2"
300	350	4	-	2 1/2"	2 1/2"	3"
350	500	3	-	3"	3"	3"
400	500	3	-	3"	3"	3"
450	2-4/0	2-2	-	2-2"	2-2"	2-2 1/2"
500	2-250	2-2	-	2-2 1/2"	2-2 1/2"	2-2 1/2"
600	2-350	2-1	-	2-2 1/2"	2-2 1/2"	2-3"
700	2-500	2-1/0	-	2-3"	2-3"	2-3"
800	2-500	2-1/0	-	2-3"	2-3"	2-3 1/2"
1000	3-400	3-2/0	-	3-3"	3-3"	3-3"
1200	3-600	3-3/0	-	3-3 1/2"	3-3 1/2"	3-3 1/2"
1600	4-600	4-4/0	-	4-3 1/2"	4-3 1/2"	4-3 1/2"
2000	5-600	5-250	-	5-3 1/2"	5-3 1/2"	5-3 1/2"

\* = SEE NOTE 4

NOTES:

- CONTRACTOR TO SIZE FEEDERS AND BRANCH CIRCUITS BASED ON THIS SCHEDULE AND OVER CURRENT DEVICE SIZE, UNLESS NOTED OTHERWISE.
- CONTRACTOR MAY COMBINE 20A CIRCUITS AS NOTED IN SPECIFICATION.
- CONDUCTORS ARE BASED ON THHN/THWN UP TO AND INCLUDING #4/0. LARGER THAN #4/0 ARE BASED ON TYPE XHHW.
- CONDUCTORS ARE BASED ON 90°C, 600V, INSULATED COPPER WIRE APPLIED AT 75°C FOR TERMINATION RATED 60/75°C OR 75°C. FOR TERMINATION RATED AT 60°C, USE CONDUCTORS AND CONDUIT SIZES INDICATED IN PARENTHESES.
- CONDUIT SIZES ARE VALID FOR EMT OR RGS. CONDUIT SIZES SHALL BE ADJUSTED AS REQUIRED FOR OTHER TYPES OF CONDUIT.
- ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR AND PROVIDE REQUIRED WIRE SIZES TO ACCOMMODATE MECHANICAL EQUIPMENT LUG SIZES.
- SIZE OF DISCONNECT SWITCH LOCATED AT EQUIPMENT SHALL BE SIZED BASED UPON OVERCURRENT PROTECTION OF THAT DEVICE.
- PRIOR APPROVAL FROM ENGINEER SHALL OCCUR IF A DIFFERENT SIZE/NUMBER OF CONDUCTORS IS TO BE USED. AMPACITY SHALL BE EQUAL OR GREATER.

MOTOR CIRCUIT SIZING SCHEDULE (208V, 3 PHASE)				
MOTOR HP	SWITCH/FUSE	CIRCUIT BREAKER	STARTER SIZE/TYPE	MOTOR DISCONNECT (NOTE 3)
1/2	30/6A	15A	1	30A
3/4	30/6A	15A	1	30A
1	30/10A	15A	1	30A
1 1/2	30/10A	15A	1	30A
2	30/10A	15A	1	30A
3	30/20A	20A	1	30A
5	30/25A	35A	1	30A
7 1/2	60/40A	50A	1	60A
10	60/50A	60A	2	60A
15	60/60A	90A	3	60A
20	100/80A	100A	3	100A
25	100/100A	110A	3	100A
30	200/125A	125A	4	200A
40	200/175A	175A	4	200A
50	200/200A	200A	5	200A
60	400/250A	250A	5	400A
75	400/300A	300A	5	400A
100	400/400A	400A	6	400A
125	600/500A	600A	6	600A
150	600/600A	600A	6	600A

RACEWAY APPLICATION SCHEDULE																			
		AC/MC CABLE	ALUMINUM RIGID CONDUIT	ELECTRICAL METALLIC TUBING (EMT)	SURFACE RACEWAY	ELECTRICAL NONMETALLIC TUBING (ENT)	FLEXIBLE METAL CONDUIT (FMC)	GENERAL-USE OPTICAL FIBER/COMMUNICATION CABLE RACEWAY	INTERMEDIATE METAL CONDUIT (IMC)	LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)	LIQUIDTIGHT FLEXIBLE NONMETAL CONDUIT (LFNC)	PLENUM-TYPE OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY	RIGID STEEL CONDUIT	RISER-TYPE OPTICAL FIBER/COMMUNICATIONS CABLE RACEWAY	RIGID NONMETALLIC CONDUIT (RNC) TYPE EPC-40	RIGID NONMETALLIC CONDUIT (RNC) TYPE EPC-80	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 40	HIGH DENSITY POLYETHYLENE (HDPE) SCHEDULE 80	KEYED NOTES
OUTDOOR	EXPOSED								X				X						
	CONCEALED (ABOVE GROUND)								X				X						
	UNDERGROUND												X		X	X	X		
	CONNECTED TO VIBRATING EQUIPMENT								X										EQUIPMENT INCLUDING: TRANSFORMERS, HYDRAULIC PNEUMATIC, ELECTRIC SOLENOID, MOTOR DRIVEN EQUIPMENT
	EXPOSED NOT SUBJECT TO PHYSICAL DAMAGE - UNFINISHED SPACES		X																
	EXPOSED NOT SUBJECT TO PHYSICAL DAMAGE - FINISHED SPACES			X															
	EXPOSED SUBJECT TO SEVERE PHYSICAL DAMAGE								X				X						RIGID STEEL CONDUIT UP TO 10'-0" AFF. LOCATIONS INCLUDE: LOADING DOCKS, CORRIDORS USED FOR TRAFFIC OF MECHANIZED CARTS AND PALLET HANDLING UNITS, MECHANICAL ROOMS
	CONCEALED IN CEILINGS, INTERIOR WALL AND PARTITIONS	X	X																NOT TO EXCEED 6'-0" IN CEILING SPACE
	CONNECTED TO VIBRATING EQUIPMENT					X			X										EQUIPMENT INCLUDING: TRANSFORMERS, HYDRAULIC PNEUMATIC, ELECTRIC SOLENOID, MOTOR DRIVEN EQUIPMENT USE LFMC IN DAMP/WET LOCATIONS
	DAMP AND WET LOCATIONS									X				X			X	X	
APPLICATIONS	BELOW SLAB IN GRADE														X	X			
	EMBEDDED IN CONCRETE ABOVE GRADE												X		X	X			
	OPTICAL FIBER OR COMMUNICATIONS CABLE IN SPACES USED FOR ENVIRONMENTAL AIR		X								X								
	CONCEALED GENERAL PURPOSE DISTRIBUTION OF OPTICAL FIBER OR COMMUNICATION CABLE		X	X		X					X	X	X						
	MRI		X																
	NATATORIUMS/FOUNTAINS		X																USE COMPRESSION FITTINGS. PAINTED WITH CORROSION RESISTANT PAINT BY PAINTING CONTRACTOR.

- "X" INDICATES ACCEPTABLE SELECTION.
- REFER TO "CONDUCTORS AND CABLES" SPECIFICATION FOR APPLICATION LIMITATIONS OF AC/MC CABLE.

BRANCH CIRCUIT VOLTAGE DROP WIRING SCHEDULE FOR SINGLE PHASE CIRCUITS						
BRANCH CKT RATING (A)	WIRE SIZE (AWG)	MAXIMUM BRANCH CIRCUIT LENGTH (IN FEET)				
		120V	208V	240V	277V	480V
20A	12	83	143	165	191	331
	10	128	222	236	295	511
	8	201	348	402	464	804
	6	313	542	625	721	1250
30A	10	85	148	170	197	341
	8	134	232	268	309	536
	6	208	361	417	481	833
	4	313	542	625	721	1250

NOTES:

- THE ABOVE TABLE VALUES ARE BASED ON COPPER CONDUCTORS, IN STEEL CONDUIT, WITH A LOAD POWER FACTOR OF 0.85 PER NEC CHAPTER 9, TABLE 9.
- PROVIDE BRANCH CIRCUIT CONDUCTORS AS INDICATED IN THE TABLE ABOVE FOR ALL LIGHTING AND RECEPTACLE BRANCH CIRCUITS. WHERE BRANCH CIRCUITS SERVE DEDICATED EQUIPMENT, THE CONTRACTOR MAY PERFORM VOLTAGE DROP CALCULATIONS BASED ON ACTUAL EQUIPMENT CONNECTED LOAD AND PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO A MAXIMUM OF 3%.
- CONDUCTOR SIZES ARE BASED ON MAXIMUM OF 9 CURRENT CARRYING CONDUCTORS IN A SINGLE CONDUIT.
- LIMITS FOR CONDUCTOR LENGTHS SHOWN ARE BASED ON A MAXIMUM BRANCH CIRCUIT LOADING OF 64% OF THE BRANCH BREAKER RATING AND A MAXIMUM OF 3 PERCENT VOLTAGE DROP TO COMPLY WITH ASHRAE/IES 90.1 - 1999 AND THE NEC. FOR CIRCUITS LOADED GREATER THAN 64% OF BRANCH BREAKER RATING, THE CONTRACTOR SHALL PROVIDE CONDUCTORS APPROPRIATELY SIZED TO LIMIT VOLTAGE DROP TO 3%.

OCCUPANCY SENSOR LEGEND	
TYPE	DESCRIPTION
[OS]A	360° CEILING MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
[OS]B	90° CEILING/WALL MOUNTED DUAL TECHNOLOGY OCCUPANCY SENSOR
[OS]C	360° CEILING MOUNTED PASSIVE INFRARED OCCUPANCY SENSOR
[OS]D	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR
[OS]E	360° CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR -- CORRIDOR OPTIMIZED
So	WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR
So2	WALL SWITCH PASSIVE INFRARED OCCUPANCY SENSOR -- DUAL LEVEL SWITCHING
Do	WALL DIMMER SWITCH INFRARED OCCUPANCY SENSOR

NOTE: SOME SYMBOLS AND ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.



T M P ARCHITECTURE INC

1391 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT



Peter Basso Associates Inc  
CONSULTING ENGINEERS

5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
PBA Project No.: 2016.0071

PROJECT TITLE

Shelters Elementary  
Remodel

Southgate Community Schools  
Southgate, Michigan

DRAWING TITLE

ELECTRICAL STANDARD  
SCHEDULES

ISSUE DATES

04-04-16 BP No. 2-BIDS

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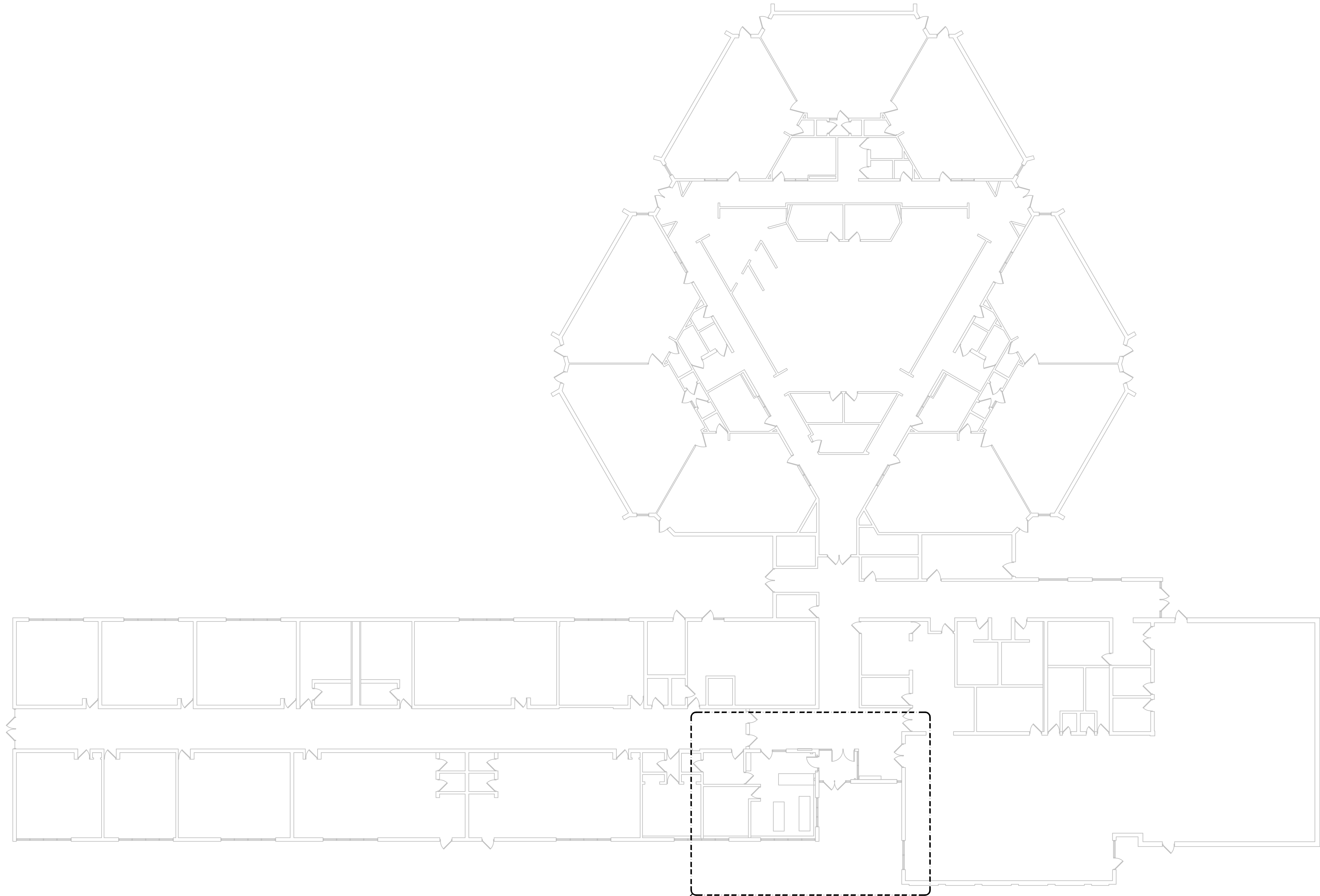
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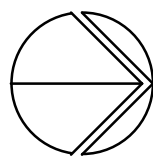
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THE FOLLOWING DIMENSION EQUALS  
ONE INCH WHEN PRINTED TO SCALE.

1"



AREA OF WORK



**ELECTRICAL COMPOSITE PLAN**  
SCALE: 3/32" = 1' - 0"



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BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

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**Peter Basso Associates Inc**  
CONSULTING ENGINEERS  
5145 Livernois, Suite 100  
Troy, Michigan 48098-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
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PROJECT TITLE  
**Shelters Elementary  
Remodel**

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE  
**ELECTRICAL COMPOSITE  
PLAN**

ISSUE DATES

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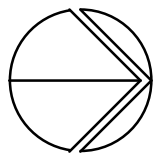
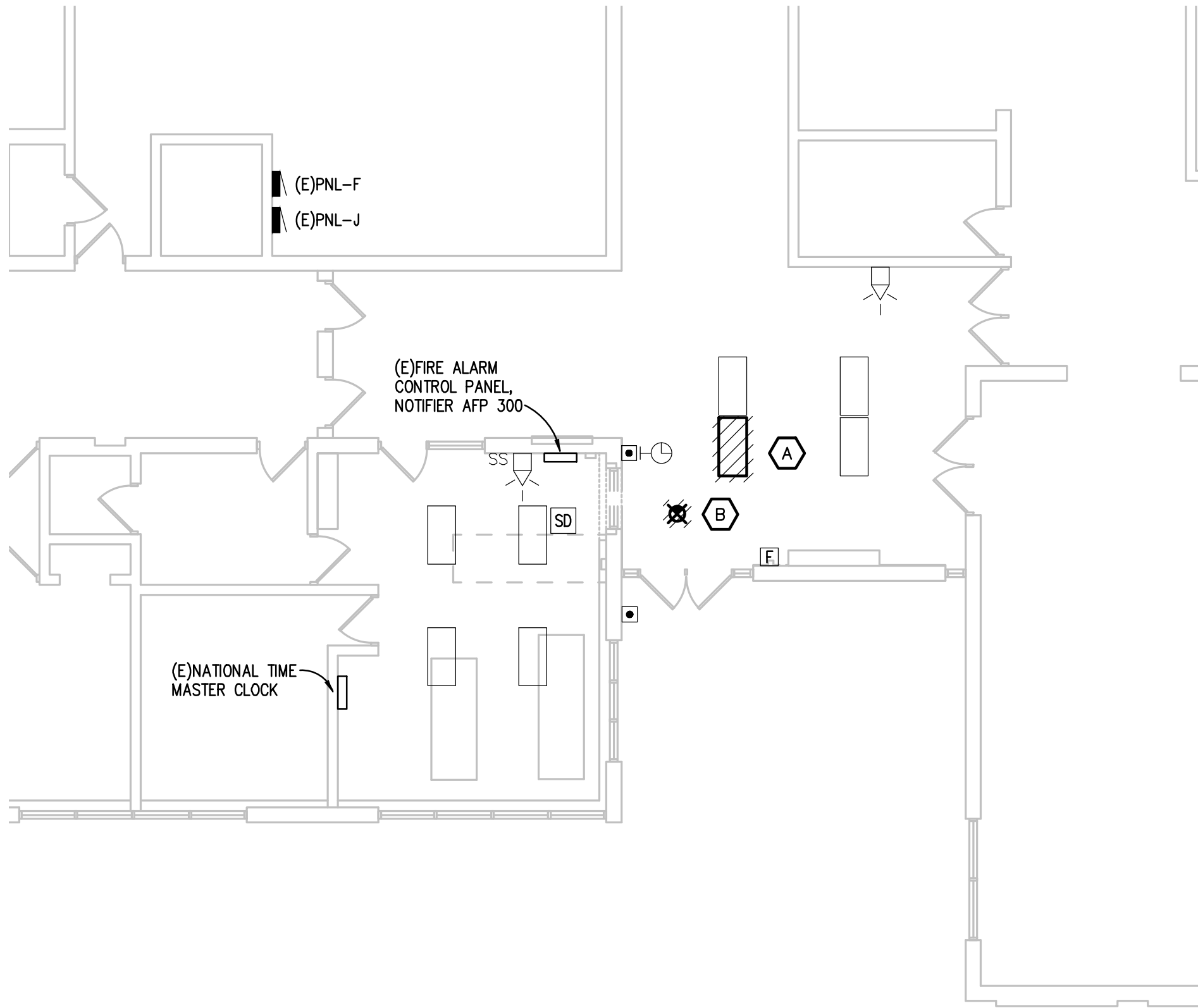
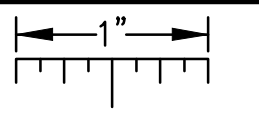
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THE FOLLOWING DIMENSION EQUALS  
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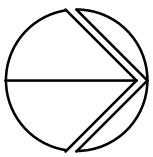
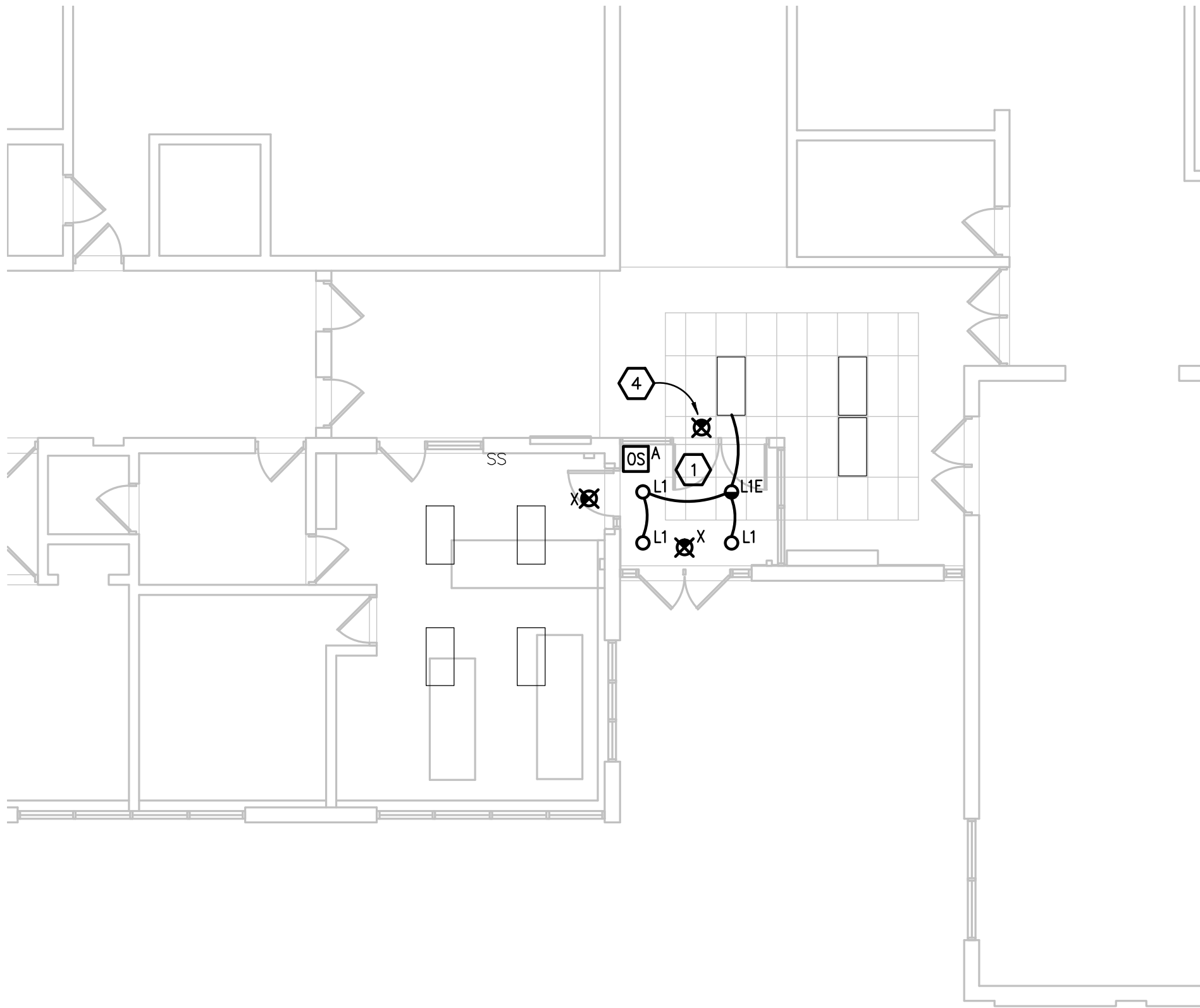
**PARTIAL ELECTRICAL DEMOLITION PLAN**  
SCALE: 1/8" = 1' - 0"

**GENERAL NOTES:**

- VISIT THE SITE PRIOR TO SUBMISSION OF BID TO EXAMINE THE EXISTING CONDITIONS AND THE EXTENT OF DEMOLITION WORK.
- EXAMINE THE DRAWINGS OF OTHER TRADES AND BE FAMILIAR WITH THE DEMOLITION REQUIRED BY OTHER TRADES. PERFORM ALL INCIDENTAL ELECTRICAL DEMOLITION AND/OR RELOCATION REQUIRED TO FACILITATE THE DEMOLITION WORK OF OTHER TRADES, WHETHER OR NOT SPECIFICALLY INDICATED.
- REMOVE LIGHTING FIXTURES AND ELECTRICAL DEVICES AS INDICATED ON PLAN WITH CROSS HATCHING. DEMOLITION SHALL INCLUDE, BUT NOT BE LIMITED TO, THOSE DEVICES SHOWN.
- COORDINATE WITH NEW WORK PLANS, ONE LINE DIAGRAMS AND RISER DIAGRAMS FOR EXTENT OF DEMOLITION WORK.
- PROVIDE PROPER SUPPORT FOR EXISTING TO REMAIN CONDUITS AND BOXES WHERE EXISTING SUPPORT IS TO BE REMOVED. RE-ROUTE BRANCH CIRCUIT CONDUITS AND RELOCATE JUNCTION BOXES AS REQUIRED TO FACILITATE INSTALLATION OF NEW EQUIPMENT AND SYSTEMS IN CEILING SPACES.
- REMOVE ALL CONDUIT AND WIRE BACK TO THE SOURCE OR NEAREST UPSTREAM DEVICE REMAINING IN SERVICE.
- MAINTAIN ELECTRICAL SERVICE TO ALL LIGHTING FIXTURES, DEVICES AND EQUIPMENT THAT ARE TO REMAIN. EXTEND CONDUIT AND WIRE AS REQUIRED WHERE DEMOLITION WORK AFFECTS ELECTRICAL SERVICE TO DOWNSTREAM LOADS THAT ARE TO REMAIN.
- DISPOSE OF ALL MATERIALS OFF SITE AND INCLUDE ALL COSTS FOR DISPOSAL IN BID. ALL MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS, INCLUDING TCLP TESTING, PROPER DISPOSAL AND/OR RECYCLING OF FLUORESCENT LAMPS.
- PROVIDE BLANK COVER PLATES WHERE SWITCHES AND DEVICES ARE REMOVED BUT EXISTING WALLS REMAIN INTACT.
- RING OUT AND TAG ALL CIRCUITS AFFECTED BY THIS ALTERATION AT BOTH ENDS. MARK ALL UNUSED CIRCUIT BREAKERS "SPARE".
- PROVIDE UPDATED TYPED-IN DIRECTORIES FOR ALL PANELS AFFECTED BY THIS ALTERATION.
- VERIFY ALL UNDERGROUND AND IN SLAB UTILITY LOCATIONS PRIOR TO SAW-CUTTING OR PENETRATING ANY FLOOR SLAB.
- COORDINATE ANY SHUT DOWN OF EXISTING SERVICES AND EQUIPMENT THAT ARE REMAINING IN USE WITH THE OWNER'S REPRESENTATIVE. WHERE EXISTING BUILDING SERVICE IS REQUIRED TO BE SHUT DOWN, INCLUDE ALL ASSOCIATED OVERTIME COSTS TO PERFORM THIS WORK DURING WEEKENDS AND EVENINGS INCLUDE ALL COSTS FOR PROVIDING TEMPORARY POWER WHERE SHUT DOWNS MUST OCCUR FOR PERIODS LONGER THAN THESE HOURS. COORDINATE ELECTRICAL SHUT DOWNS WITH THE OWNER 72 HOURS PRIOR TO SHUT DOWN.

**DEMOLITION NOTES:**

- REMOVE LIGHT FIXTURE COMPLETE.
- REMOVE AND RELOCATE EXIT LIGHT.



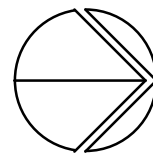
**PARTIAL LIGHTING NEW WORK PLAN**  
SCALE: 1/8" = 1' - 0"

**GENERAL NOTES:**

- THESE DRAWINGS REPRESENT THE GENERAL EXTENT AND ARRANGEMENT OF SYSTEMS, BUT ARE NOT TO BE CONSIDERED FABRICATION DRAWINGS. COORDINATE WITH OTHER TRADES, AND PROVIDE EACH SYSTEM COMPLETE, INCLUDING ALL NECESSARY COMPONENTS, FITTINGS, AND OFFSETS.
- INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
- COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHAFT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
- PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
- MOTOR CIRCUIT PROTECTION SHALL BE SIZED IN ACCORDANCE WITH MOTOR CIRCUIT SIZING SCHEDULES SHOWN ON "ELECTRICAL STANDARD SCHEDULES DRAWING" UNLESS OTHERWISE NOTED.
- COORDINATE THE MOUNTING HEIGHTS OF DEVICES WITH ARCHITECTURAL ELEVATIONS AND THE TRADES INSTALLING THE WORK.
- COORDINATE EXACT LOCATIONS OF ALL FLOOR BOXES WITH FINAL FURNITURE LAYOUT DRAWINGS.
- REFER TO MECHANICAL SCHEDULE SHEETS FOR ELECTRICAL REQUIREMENTS FOR MECHANICAL EQUIPMENT, PROVIDE ALL CONNECTIONS, STARTERS, DISCONNECTS, ETC. AS REQUIRED BY SCHEDULES AND WHERE NOTED ELSEWHERE. VERIFY REQUIREMENTS OF ALL MECHANICAL EQUIPMENT WITH SHOP DRAWINGS SUBMITTALS. NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN EQUIPMENT SUBMITTALS AND ELECTRICAL DRAWINGS, WHERE CIRCUIT SIZES ARE SHOWN ON THE ELECTRICAL DRAWINGS THAT DIFFER FROM WHAT IS INDICATED ON THE MECHANICAL SCHEDULES, PROVIDE THE CIRCUIT OF HIGHER AMPACITY.
- PROVIDE THE DESIGN AND INSTALLATION FOR A COMPLETE AND FUNCTIONAL FIRE ALARM SYSTEM IN ACCORDANCE WITH SPECIFICATIONS, DRAWINGS, AND ALL APPLICABLE CODES. THE FIRE ALARM VENDOR SHALL PROVIDE LAYOUT DRAWINGS INDICATING THE REQUIRED QUANTITIES AND LOCATIONS OF MANUAL PULL STATIONS, NOTIFICATION APPLIANCES, SMOKE AND HEAT DETECTORS, CONTROL MODULES, INTERFACE MODULES, MODULES FOR SPRINKLER FLOW AND TAMPER SWITCHES, ALL CONTROL PANELS, POWER SUPPLIES, ADDITIONAL DEVICES AND EQUIPMENT REQUIRED. COORDINATE LOCATIONS OF DEVICES WITH ARCHITECTURAL FINISHES AND REFLECTED CEILING PLANS, INCLUDING ADDITIONAL SMOKE AND HEAT DETECTORS REQUIRED FOR NON-SMOOTH CEILING APPLICATIONS. INCLUDE ALLOWANCES FOR ADJUSTMENT OF DEVICES BY THE ARCHITECT AT THE TIME OF SUBMITTAL TO COORDINATE WITH BUILDING FINISHES AND OTHER CEILING ELEMENTS.
- CIRCUIT EXIT LIGHTS AND AND EMERGENCY LIGHTS TO UN-SWITCHED HOT LEG OF ADJACENT LIGHT FIXTURE.

**CONSTRUCTION KEY NOTES:**

- CIRCUIT LIGHTING TO MAINTAINED BRANCH CIRCUIT. MODIFY SWITCH LEG AS REQUIRED FOR EMERGENCY AND OCCUPANCY SENSOR. EXTEND CIRCUITING AS REQUIRED. PROVIDE GROUND WIRE PER NEC.
- PROVIDE SYNC MODULE SO THAT ALL VISIBLE STROBES ARE IN SYNC.
- PROVIDE 1/2" CONDUIT INTO DOOR FRAME FROM ACCESSIBLE CEILING FOR ELECTRIC DOOR STRIKE. COORDINATE WIRING REQUIREMENTS WITH DOOR HARDWARE CONTRACTOR. EXTEND 120V CIRCUIT FROM EXISTING ADA DOOR TO JUNCTION BOX IN CEILING SPACE ABOVE DOOR FOR DOOR CONTROLS. WIRING TO DOOR CONTROLS BY OTHERS.
- RELOCATED EXIT LIGHT. EXTEND EXISTING CIRCUITING AS REQUIRED.
- PROVIDE NEW 30A-1P BREAKER IN EXISTING 208/102V PANELBOARD FOR NEW CIRCUITING AS INDICATED.



**PARTIAL POWER NEW WORK PLAN**  
SCALE: 1/8" = 1' - 0"



T M P ARCHITECTURE INC  
1391 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT



Peter Basso Associates Inc  
CONSULTING ENGINEERS  
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Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
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PROJECT TITLE

**Shelters Elementary  
Remodel**

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE

**PARTIAL ELECTRICAL  
PLANS**

ISSUE DATES


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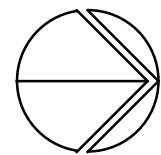
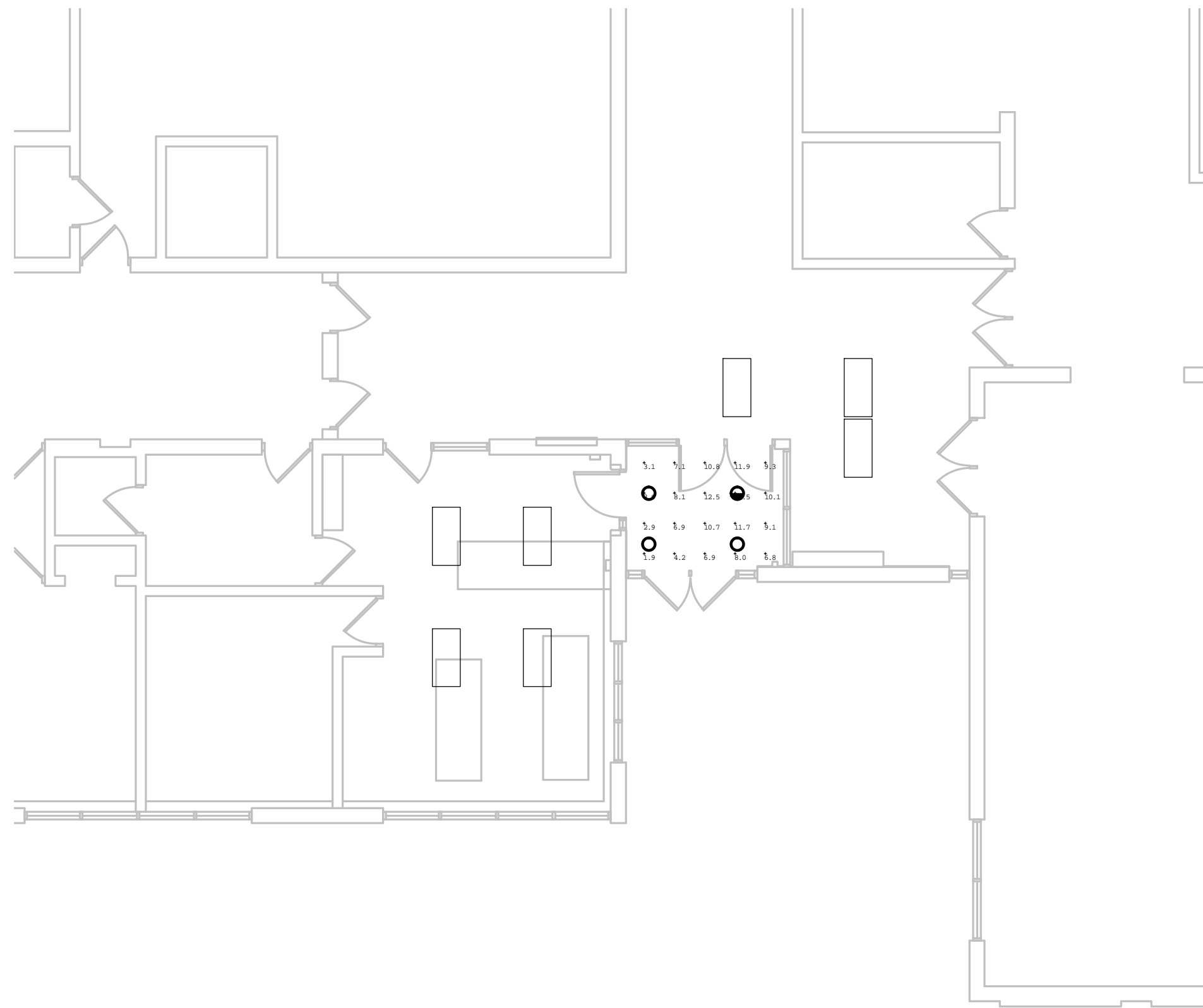
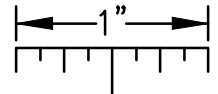
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**EMERGENCY LIGHTING CALCULATIONS**

SCALE: 1/8" = 1' - 0"

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Secure Entrance A100_Floor	Illuminance	Fc	7.96	13.5	1.9	4.19	7.11



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Peter Basso Associates Inc  
CONSULTING ENGINEERS  
5145 Livernois, Suite 100  
Troy, Michigan 48098-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
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DRAWING TITLE  
**EMERGENCY LIGHTING  
CALCULATIONS**

ISSUE DATES

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ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A	COMPRESSED AIR	FD	FLOOR DRAIN	O	OXYGEN
A(—#)	COMPRESSED AIR (SPECIFIC PSIG)	FDC	FURNEL FLOOR DRAIN	OA	OUTSIDE AIR
ACC	AUTOMATIC AIR VENT	FDI	FIRE DRAIN	OAT	OUTSIDE AIR TEMPERATURE
ACCU	AIR COOLED CONDENSER	FHD	FIRE HOSE CABINET	OB	OUTSIDE BLADE DAMPER
ACCU	AIR COOLED CONDENSING UNIT	FHR	FIRE HOSE RACK	OC	ON CENTER/CENTER TO CENTER
AD	ACCESS DOOR	FHV	FIRE VALVE	OD	OUTSIDE DIAMETER
AE	AREA DRAIN	FLA	FIRE LOSS ASPECT	OFI	OWNER FURNISHED, CONTRACTOR INSTALLED
AE	AIR EXTRACTOR	FLR	FLOOR	OFIO	OWNER FURNISHED, OWNER INSTALLED
AFF	ABOVE FINISHED FLOOR	FLM	FLOOR MEASURING DEVICE	OL	OVERLOAD
AHU	AIR HANDLING UNIT	FLN	FLOOR MEASURING STATION	OLC	OVERFLOW RAIN CONDUCTOR
ALT	ALTERNATE	FTM	FEET PER MINUTE	OR	OVERFLOW ROOF
AMP	AMPERE	FRP	FIRE RUMP	OS&Y	OUTSIDE SCREW AND YOKE
APD	AIR PRESSURE DROP	FTTU	FAN POWERED (AIR) TERMINAL UNIT	OV	OUTLET VELOCITY
AR	ARGON	FS	FLOOR SIGN	PAU	PACKAGED AIR CONDITIONING UNIT
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS	FSEC	FOOD SERVICE EQUIPMENT CONTRACTOR	PC	PACKED BLADE DAMPER
ASR	AUTOMATIC SPRINKLER RISER	FT	FINNED TUBE RADIATION	PC	PUMPED CONDENSATE
AUX	AUXILIARY	FV	FACE VELOCITY	PCW	PROCESS COOLING WATER
ACV	ACID VENT	G	NATURAL GAS	PCW	PROCESS COOLING WATER RETURN
AVTR	ACID VENT THROUGH ROOF	G	GAUGE	PCWS	PROCESS COOLING WATER SUPPLY
AW	ACID WASTE	GAL	GALLON	PD	PRESSURE DROP (FEET OF WATER)
BAS	BUILDING AUTOMATION SYSTEM	GRH	GRAVITY RELIEF HOOD	PH	PERIMETER HEAT
BCU	BLOWER COIL UNIT	GRH	GALLONS PER HOUR	PHR	PERIMETER HEAT RETURN
BDD	BACDRAFT DAMPER	GM	GALLONS PER MINUTE	PHS	PERIMETER HEAT SUPPLY
BFT	BELOW FINISHED FLOOR	H	HYDROGEN	PNL	PANEL
BFP	BACKFLOW PREVENTER	HB	HOBSE BHB	PPM	PARTS PER MILLION
BHP	BRAKE HORSEPOWER	HC	HEATING COIL	PRESS	PRESSURE
BOD	BOTTOM OF DECK	HD	HOT DECK	PRV	PRESSURE REDUCING VALVE
BOB	BOTTOM OF PIPE	HEA	HIGH EFFICIENCY PARTICULATE ARRESTANCE	PSAN	PUMPED SANITARY
BTU	BRITISH THERMAL UNIT	HHP	HOT HIGH EFFICIENCY PARTICULATE ARRESTANCE	PS	PUMPED STORAGE
BW	BACKWATER VALVE	HHR	HOUR	PSIA	POUNDS PER SQUARE INCH — ABSOLUTE
C	COMMON	HA	HAND/OFF/AUTO	PSIG	POUNDS PER SQUARE INCH — GAUGE
CA	CAPACITY	HP	HOT PUMP	PW	PURIFIED WATER
CAV	CONSTANT AIR VOLUME	HP	HORSEPOWER	PW	PURIFIED WATER RETURN
CBS	CATCH BASIN	HPW	HIGH PRESSURE DOMESTIC COLD WATER	PWS	PURIFIED WATER SUPPLY
CC	COOLING COIL	HPW	HIGH PRESSURE DOMESTIC HOT WATER	(R)	RELOCATED
CD	COLD DECK	HPL	HEAT PUMP LOOP	RG	RETURN GRILLE OR REGISTER
CDI	CONDENSATE DRAIN	HPLR	HEAT PUMP LOOP RETURN	RA	RETURN AIR
CF	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED	HPLS	HEAT PUMP LOOP SUPPLY	RA	RETURN AIR TEMPERATURE
CFI	CUBIC FEET PER HOUR	HR	HOUR	RC	RAIN CONDUCTOR
CH	CUBIC FEET PER MINUTE	HTE	HEATING	RC	RADIANT CEILING PANEL
CH	CHILLER	HV	HEATING VENTILATING	RD	ROOF DRAIN
CHW	CHILLED WATER	HVAC	HEATING, VENTILATING, AIR CONDITIONING	REQD	REQUIRED
CHW	CHILLED WATER RETURN	HWH	HOT WATER HEATING	REF	REF EXHAUST FAN
CHWS	CHILLED WATER SUPPLY	HWH	HOT WATER HEATING RETURN	RF	RETURN FAN
CLS	COOLING	HWH	HOT WATER HEATING SUPPLY	RH	RELATIVE HUMIDITY
CND	CONDENSATE	HW	DOMESTIC HOT WATER	RL	REFRIGERANT LIQUID
CND (—#)	CONDENSATE (SPECIFIC PSIG)	HW(—)	DOMESTIC HOT WATER (SPECIFIC TEMP °F)	RLE	RELIEF AIR
CO	CLEAN OUT	HWH	DOMESTIC HOT WATER RETURN	RPM	REVOLUTIONS PER MINUTE
CO2	CARBON DIOXIDE	HX	HEAT EXCHANGER	RS	REFRIGERANT SUCTION
CONT	CONTINUATION OR CONTINUED	HZ	HERTZ	RTU	ROOFTOP UNIT
CONTR	CONTRACTOR	IAQ	INDOOR AIR QUALITY	S	SOUND AIR DIFFUSER OR GRILLE
CONV	CONVECTOR	IND	INDSIDE DAMPER	SA	SUPPLY ATTENUATOR
COP	COEFFICIENT OF PERFORMANCE	INT	INVERT ELEVATION	SA	SUPPLY AIR
COS	CENTRAL OPERATOR STATION	INT	INTAKE HOOD	SAN	SANITARY WASTE
CP	CIRCULATING PUMP	IN	INCHES	SAT	SUPPLY AIR TEMPERATURE
CR	CENTRAL RETURN UNIT	INT	INDIRECT HEATER	SCOT	SECTION
CSS	CLINICAL SERVICE SINK	IR	INDIRECT WASTE	SF	SUPPLY FAN
CT	COOLING TOWER	J	JANITOR'S CLOSET	SH	SHOWER
CUBH	CABINET UNIT HEATER	J	JOCKEY PUMP	SINK	SINK
CW	DOMESTIC COLD WATER	KW	KILOWATT	SMR	SNOW MELT RETURN
CWR	CONDENSER WATER RETURN	KW	KILOWATT-HOUR	SMS	SNOW MELT SUPPLY
CWS	CONDENSER WATER SUPPLY	KW	KILOWATT-HOUR	SP	STATIC PRESSURE
D&T	DRIP AND TRAP	LWT	LEAVING WATER TEMPERATURE	SPEC	SPECIFICATION
DA	DISCHARGE AIR	LAB	LABORATORY	SPR	SPRINKLER
DAT	DISCHARGE AIR TEMPERATURE	LAV	LAVATORY	SQT	SQUARE FOOT/SQUARE FEET
DB	DRY BULB	LVS	POUNDS	ST	START/STOP
DDC	DIRECT DIGITAL CONTROL	LBS	POUNDS	SS	SERVICE SINK
DEB	DEBRIS	LD	LEAVING DRY BULB	ST	STORM
DFU	DRAINAGE FIXTURE UNITS	LL	LOW LIMIT	STD	STANDARD
DIA	DIAMETER	LPC	LOW PRESSURE CONDENSATE	STK	STACK
DMP	DAMPER	LPS	LOW PRESSURE STEAM	STM	STEAM
D/N	DAY/NIGHT	LPS	LOW PRESSURE STEAM	STM(—#)	STEAM (SPECIFIC PSIG)
DN	DOWN	LRS	LOCKED ROTOR AMPS	S/W	SUMMER/WINTER
DND	DOWNSPOUT NOZZLE	LWB	LEAVING WET BULB	SW	SWITCH
DS	DUCT SILENCER	LWT	LEAVING WATER TEMPERATURE	T	TRANSFER GRILLE
DT	DRAIN TILE	MA	MIXED AIR	TC	TEMPERATURE CONTROL
DT	DRAIN TILE CONNECTION	MIXED	MIXED AIR TEMPERATURE	TC	TEMPERATURE CONTROL
DWH	DOMESTIC WATER HEATER	MA	MIXED-UP AIR UNIT	TOP	

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CARBON DIOXIDE SENSOR		OCCUPANCY SENSOR
	CARBON MONOXIDE SENSOR		PRESSURE TRANSMITTER
	DIFFERENTIAL PRESSURE TRANSMITTER		STATIC PRESSURE SENSOR OR PROBE
	FLOW METER		VALVE - 2 WAY CONTROL VALVE
	GUARD FOR STAT OR SENSOR		VALVE - 3 WAY CONTROL VALVE
	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)		THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)

PIPING SYMBOLS		DUCTWORK SYMBOLS	
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	AIR VENT - AUTOMATIC		AIR TERMINAL UNIT
	AIR VENT - MANUAL		AIR TERMINAL UNIT WITH HEATING COIL
	BACKFLOW PREVENTER		LABORATORY AIR TERMINAL UNIT
	CATCH BASIN		LABORATORY AIR TERMINAL UNIT WITH HEATING COIL
	CIRCULATING PUMP		DAMPER - HORIZONTAL FIRE (EXISTING, NEW)
	CLEAN OUT - IN FLOOR		DAMPER - HORIZONTAL FIRE / SMOKE (EXISTING, NEW)
	CLEAN OUT - FLANGE		DAMPER - SMOKE (EXISTING, NEW)
	DIRECTION OF FLOW		DAMPER - VERTICAL FIRE (EXISTING, NEW)
	DIRECTION OF PITCH - DOWN		DAMPER - VERTICAL FIRE / SMOKE (EXISTING, NEW)
	FINNED TUBE RADIATION		DAMPER - BACK DRAFT
	FIRE PROTECTION - SIAMESE CONNECTION - FREE STANDING		DAMPER - MOTORIZED
	FIRE PROTECTION - SIAMESE CONNECTION - WALL MOUNTED		DAMPER - VOLUME (MANUALLY ADJUSTABLE)
	FIRE PROTECTION - SPRINKLER HEAD, CONCEALED		DIFFUSER - BLANK OFF
	FIRE PROTECTION - SPRINKLER HEAD, PENDANT		DIFFUSER - LINEAR SLOT
	FIRE PROTECTION - SPRINKLER HEAD, UPRIGHT		DIFFUSER - SQUARE OR RECTANGULAR
	FIRE PROTECTION - SPRINKLER HEAD, SIDEWALL		DUCT CROSS SECTION - SUPPLY
	FLOOR DRAIN		DUCT CROSS SECTION - RETURN OR EXHAUST
	FLOOR DRAIN - ELEVATION		DUCT CROSS SECTION - EXHAUST
	FLOOR DRAIN - FUNNEL		DUCT - FLEXIBLE CONNECTION
	FLOOR DRAIN - FUNNEL, ELEVATION		DUCT - FLEXIBLE DUCT
	FLOW MEASURING DEVICE		DUCT TAKE-OFF - ROUND CONICAL
	FLOW SWITCH		DUCT TAKE-OFF - RECTANGULAR WITH SHOE TAP
	HOSE BIBB		ELBOW - RECTANGULAR WITH TURNING VANES
	MANHOLE		ELBOW - RECTANGULAR/ROUND SMOOTH RADIUS
	OPEN SITE DRAIN		ELBOW DOWN - RECTANGULAR
	PIPE - ANCHOR		ELBOW DOWN - ROUND
	PIPE - CAP OR PLUG		ELBOW UP - RECTANGULAR
	PIPE - ELBOW DOWN		ELBOW UP - ROUND
	PIPE - ELBOW UP		FAN - AXIAL
	PIPE - EXPANSION JOINT OR COMPENSATOR		FAN - CENTRIFUGAL (ELEVATION)
	PIPE - FLANGE		HEATING COIL
	PIPE - HOSE AND BRAID FLEXIBLE CONNECTION		INCLINED DROP IN DIRECTION OF AIRFLOW
	PIPE - RUBBER FLEXIBLE CONNECTION		INCLINED RISE IN DIRECTION OF AIRFLOW
	PIPE - GUIDE		INTAKE OR RELIEF HOOD
	PIPE - TEE DOWN		REGISTER - RETURN OR EXHAUST
	PIPE - TEE UP		REGISTER - RETURN WITH BOOT
	PIPE - UNION		REGISTER - TRANSFER GRILLE
	PRESSURE AND TEMPERATURE TEST PLUG		ROOF EXHAUST FAN
	PRESSURE GAUGE AND COCK		TRANSITION - CONCENTRIC
	REDUCER - CONCENTRIC		TRANSITION - ECCENTRIC
	REDUCER - ECCENTRIC		UNIT HEATER - HORIZONTAL THROW
	ROOF/OVERFLOW DRAIN		UNIT HEATER - VERTICAL THROW
	STEAM TRAP - FLOAT AND THERMOSTATIC		
	STEAM TRAP - BUCKET		
	STRAINER		
	STRAINER WITH BLOW-OFF		
	THERMOMETER		
	TRAP		
	VALVE - ANGLE		
	VALVE - BALL		
	VALVE - BUTTERFLY		
	VALVE - BALANCE (i.e. BALANCE VALVE TO 0.5 GPM)		
	VALVE - COMBINATION BALANCE & FLOW MEASURING (i.e. BALANCE VALVE TO 0.5 GPM)		
	VALVE - CHECK		
	VALVE - SPRING CHECK		
	VALVE - GAS (MANUAL)		
	VALVE - GLOBE		
	VALVE - ISOLATION		
	VALVE - NEEDLE		
	VALVE - OS&Y		
	VALVE - PLUG		
	VALVE - PRESSURE REGULATING		
	VALVE - PRESSURE REDUCING		
	VALVE - PRESSURE RELIEF		
	VALVE - PRESSURE & TEMPERATURE RELIEF		
	VENT THROUGH ROOF		
	WALL HYDRANT		

**DOUBLE LINE DUCTWORK SYMBOLS**

# M0.1

**Peter Basso Associates Inc**  
CONSULTING ENGINEERS

5145 Livernois, Suite 100  
Troy, Michigan 48068-3276

Tel: 248-879-5666

Fax: 248-879-0007

www.PeterBassoAssociates.com

PBA Project No.: 2016.0071

# PROJECT TITLE

## Shelters Elementary Remodel

Southgate Community Schools  
Southgate, Michigan

# DRAWING TITLE

## MECHANICAL STANDARDS AND DRAWING INDEX

S-1	SUPPLY DIFFUSER WITH SCHEDULE TAG "1",
10ø	10" DIAMETER NECK SIZE
350-4	350 CFM TYPICAL FOR 4
R-1	RETURN REGISTER WITH SCHEDULE TAG "1",
22x22	22" x 22" NECK SIZE
640-2	640 CFM TYPICAL FOR 2
	EXHAUST REGISTER E DESIGNATION SIMILAR.

AIR TERMINAL UNIT WITH HEATING COIL NO. 101  
WITH SERVICE CLEARANCE SHOWN

LABORATORY AIR TERMINAL WITH HEATING COIL NO. 101  
WITH SERVICE CLEARANCE SHOWN

PIPE DIAMETER NOTATION  
ALL SIZES IN INCHES

DUCT SIZE NOTATION  
ALL SIZES IN INCHES

OVAL DUCT  
RECTANGULAR DUCT

CONSTRUCTION NOTE NUMBER

EQUIPMENT DESIGNATION.  
(i.e. EXHAUST FAN NUMBER 1)

PIPING RISER DESIGNATION  
(i.e. HOT WATER RISER NUMBER 1)

NEW SYSTEM COMPONENT  
EXISTING SYSTEM COMPONENT TO REMAIN

SECTION OR PLAN NUMBER

SHEET WHERE SECTION IS DRAWN

AREA OF ENLARGEMENT

PLAN NUMBER

SHEET WHERE ENLARGED PLAN IS DRAWN

SECTION OR PLAN NUMBER

## SECTION OR ENLARGED PLAN

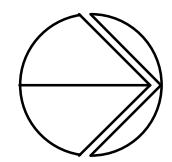
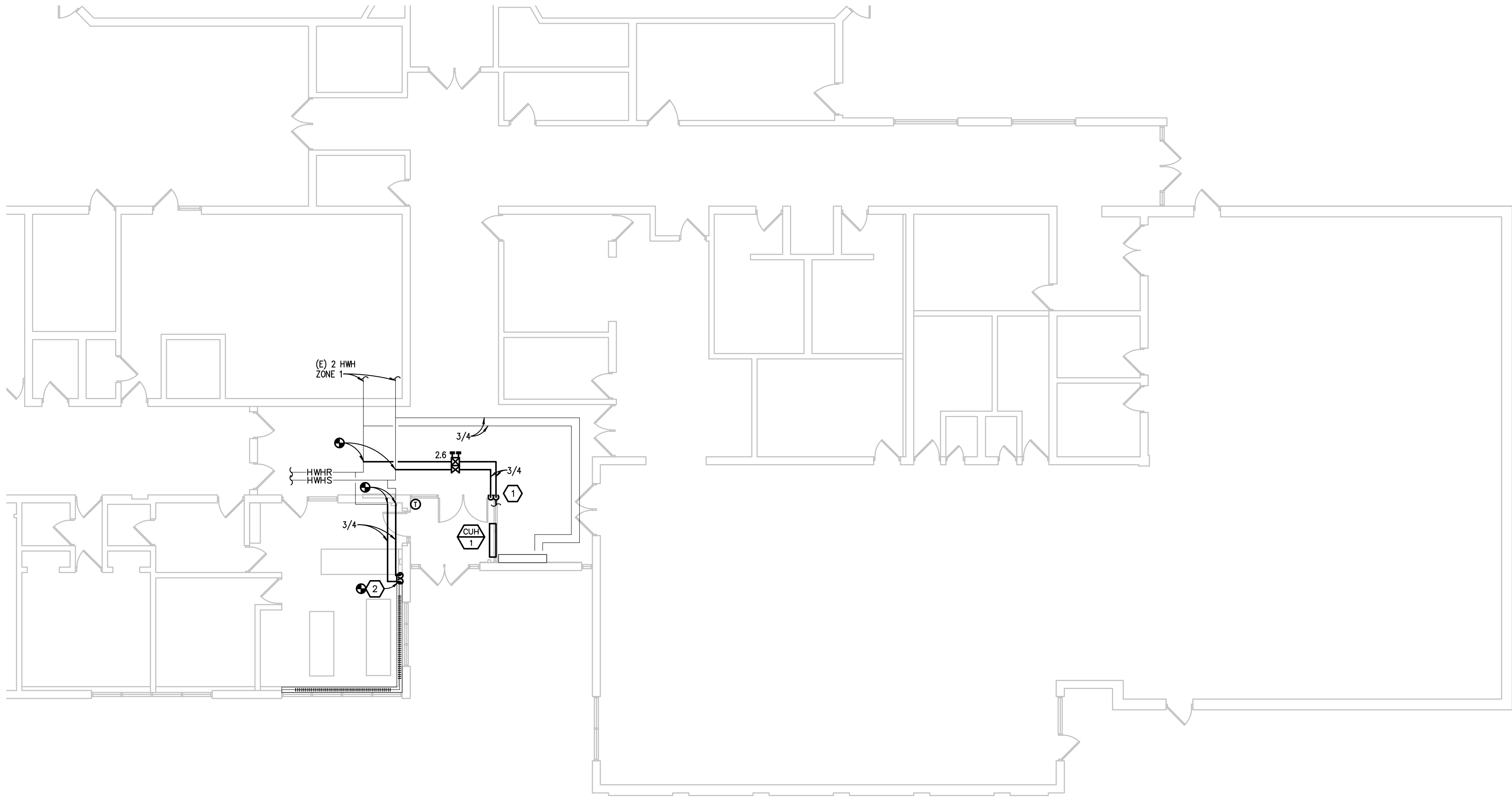
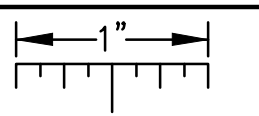
SCALE: 1/8" = 1'-0"

SCALE: 1/8" = 1' - 0"

NOTE: SOME SYMBOLS AND ABBREVIATIONS  
SHOWN MAY NOT APPLY TO THIS PROJECT.

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THE FOLLOWING DIMENSION EQUALS  
ONE INCH WHEN PRINTED TO SCALE.



**HVAC PIPING NEW WORK PLAN - ZONE 'B'**

SCALE: 1/8" = 1' - 0"

**HVAC PIPING GENERAL NOTES:**

1. THESE DRAWINGS ARE DIAGRAMMATIC, AND REPRESENT THE GENERAL INTENT AND ARRANGEMENT OF SYSTEMS. THEY ARE NOT TO BE CONSIDERED FABRICATION/COORDINATION/SHOP DRAWINGS. COORDINATION WITH OTHER TRADES IS REQUIRED. PROVIDE THE ADDITIONAL FITTINGS AND OFFSETS THAT WILL BE REQUIRED TO COMPLETE EACH SYSTEM AND TO AVOID INTERFERENCES WITH ALL OTHER SYSTEMS INCLUDING THE STRUCTURE, SHEET METAL, OTHER PIPING SYSTEMS, ELECTRICAL, CONDUITS, BUS DUCTS, CABLE TRAY, LIGHT FIXTURES, ETC. AND/OR OTHER SPACE CONSTRAINTS.
2. INSTALL SYSTEMS SUCH THAT REQUIRED CLEARANCE AND SERVICE ACCESS SPACE IS PROVIDED AROUND ALL MECHANICAL AND ELECTRICAL EQUIPMENT, AND AROUND ANY COMPONENTS WHICH REQUIRE SERVICE ACCESS.
3. PIPING AND DUCTWORK SHALL NOT BE INSTALLED ABOVE ELECTRICAL TRANSFORMERS, SWITCHBOARDS, PANELBOARDS OR MOTOR CONTROL CENTERS.
4. COORDINATE AND PROVIDE ACCESS DOORS WITHIN INACCESSIBLE CEILING, SHUTT, AND CHASE AREAS FOR ALL COMPONENTS WHICH REQUIRE SERVICE ACCESS. REFER TO ARCHITECTURAL DRAWINGS FOR CEILING TYPES.
5. PROVIDE SUPPLEMENTARY STEEL AS REQUIRED FOR THE PROPER SUPPORT OF ALL SYSTEMS.
6. SUBMIT PROPOSED METHODS OF ANCHORING AND GUIDING PIPING SYSTEMS TO STRUCTURAL ENGINEER FOR APPROVAL.
7. COORDINATE LOCATION OF DUCT-MOUNTED HYDRONIC DEVICES WITH SHEET METAL TRADES.
8. BRANCH PIPING SERVING TERMINAL UNIT HEATING COILS OR RADIANT CEILING PANELS SHALL BE 3/4" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING MORE THAN ONE TERMINAL UNIT HEATING COIL SHALL BE 1" UNLESS OTHERWISE NOTED. BRANCH PIPING SERVING HOT WATER UNIT HEATERS AND CABINET UNIT HEATERS SHALL BE 1" UNLESS OTHERWISE NOTED.
9. MOUNT THERMOSTATS 48" A.F.F. UNLESS OTHERWISE NOTED. LOCATE AS CLOSE AS POSSIBLE TO DOOR WHEN INDICATED NEAR DOOR. COORDINATE EXACT LOCATION WITH ALL OTHER TRADES.

**CONSTRUCTION KEY NOTES:**

1. ROUTE HWH/S/ R PIPING DOWN IN NEW WALL. ROUTE HORIZONTALLY THRU STUDS BELOW WINDOW TO CUH.
2. REFER TO FINNED TUBE RADIATION PIPING DETAIL ON SHEET M7.1.



T M P A R C H I T E C T U R E I N C

1191 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT



**Peter Basso Associates Inc**  
CONSULTING ENGINEERS

5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
PBA Project No: 2016.0071

PROJECT TITLE

**Shelters Elementary  
Remodel**

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE

**HVAC PIPING NEW WORK  
PLAN - ZONE 'B'**

ISSUE DATES

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

04-04-16

BP No. 2-BIDS

DATE:

ISSUED FOR:

DRAWN

JRM

CHECKED

RNR

APPROVED

DJE

PROJECT NO.

**16012**

DRAWING NO.

**M3.1**

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ABOVEGROUND HVAC PIPING & VALVE APPLICATION SCHEDULE																			
PIPE SIZE (INCHES)	MATERIAL					CONNECTION							ISOLATION VALVES						
	SOFT COPPER TYPE K	HARD COPPER TYPE L	HARD COPPER TYPE M	CARBON STEEL (SCHED. 40)	CARBON STEEL (SCHED. 80)	CARBON STEEL (STD.)	COPPER TYPE DWV	SOLDERED	BRAZED	WELDED	THREADED	FLANGED	GROOVED	PRESSURE SEAL	MECHANICALLY FORMED TEE	BALL	GENERAL SERVICE BUTTERFLY	IN-PERF BUTTERFLY	GATE
HEATING HOT WATER SUPPLY & RETURN - MIN. WORKING PRESS. & TEMP., 125 PSIG AT 200 DEG F																			
UP TO 2		X							X	X					X	X	X		
GENERAL NOTES																			

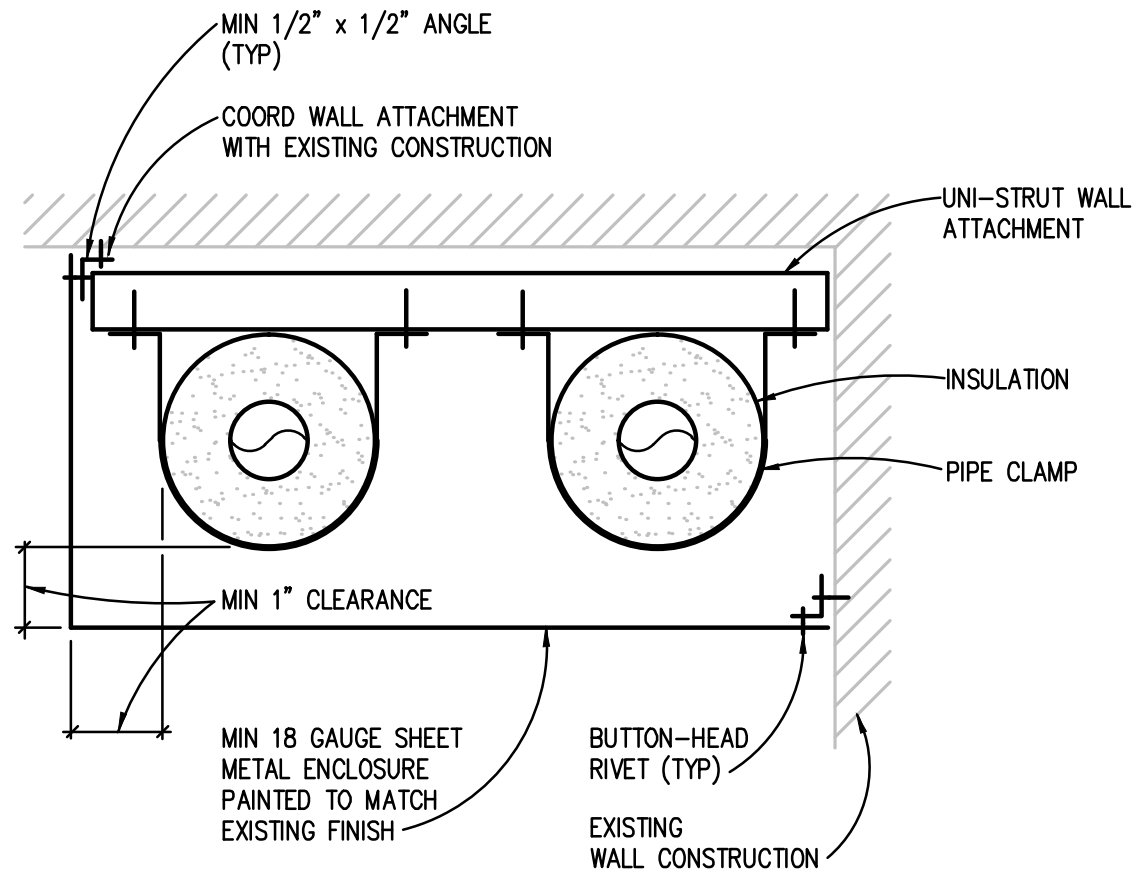
1. "X" INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED FOR A PIPING SYSTEM, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. DISSIMILAR-METAL PIPING JOINTS: CONSTRUCT JOINTS USING DIELECTRIC FITTINGS COMPATIBLE WITH BOTH PIPING MATERIALS. IF A BRONZE VALVE CONNECTS THE DISSIMILAR METALS NO FURTHER DIELECTRIC ISOLATION IS REQUIRED.
- a. NPS 2 AND SMALLER: USE BRASS COUPLING, NIPPLE, OR UNION.
- b. NPS 2-1/2 AND LARGER: USE DIELECTRIC FLANGE KITS.
3. USE UNIONS OR FLANGES AT VALVE AND EQUIPMENT CONNECTIONS.
4. HVAC EQUIPMENT DRAINS, VENTS, SAFETY VALVE PIPING, BLOWDOWN PIPING AND THE LIKE SHALL BE SAME PIPING MATERIAL AS ASSOCIATED PIPING SYSTEM.
5. GROOVED END VALVES MAY BE USED WITH GROOVED PIPING.

- KEYED NOTES
- A. GROOVED FITTINGS, JOINTS, AND COUPLINGS, IF INDICATED AS AN ACCEPTABLE SELECTION, MAY BE USED IN ACCESSIBLE LOCATIONS FOR THIS PIPING SYSTEM ONLY.
- B. BALL VALVE WITH 250 PSIG STEAM TRIM.
- C. BALL VALVE WITH 150 PSIG STEAM TRIM.
- D. GROOVED FITTINGS, JOINTS AND COUPLINGS MAY BE USED IN MECHANICAL ROOMS ONLY.

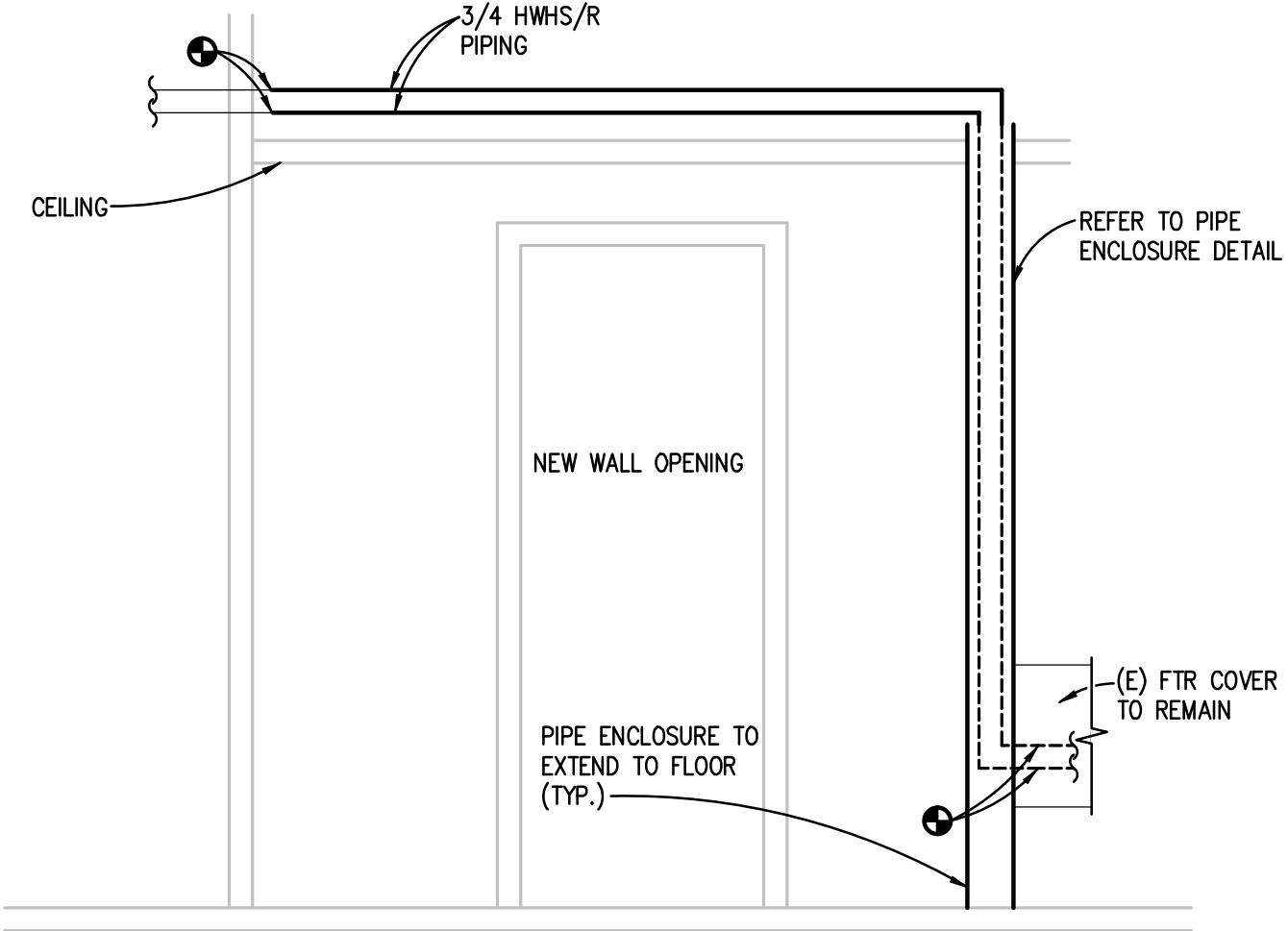
HORIZONTAL PIPING AND SUPPORT APPLICATION SCHEDULE									
	HANGER OR SUPPORT TYPE				SHIELD TYPE				
	MSS TYPE 1 CLEMS HANGER	MSS TYPE 10 SWIVEL RING BAND HANGER	MSS TYPE 41 DOUBLE ROD PIPE ROLLER	MSS TYPE 43 SINGLE ROD ROLLER HANGER	MSS TYPE 44 PIPE ROLLER & STAND	MSS TYPE 46 ADJUSTABLE PIPE ROLL STAND			
METAL PIPE TYPE & SIZE									
INSULATED SINGLE HOT PIPES									
UP TO 2 INCH	X	X					X	X	A, C
GENERAL NOTES									

1. "X" INDICATES APPROVED HANGER OR SUPPORT ELEMENTS. IF MORE THAN ONE HANGER OR SUPPORT ELEMENT IS INDICATED, SELECTION FROM APPROVED ELEMENTS IS CONTRACTOR'S OPTION.
2. REFER TO HANGER AND SUPPORT SECTION FOR APPROVED MANUFACTURERS.
3. HANGERS AND SUPPORTS USED FOR FIRE PROTECTION SERVICES SHALL BE UL LISTED OR FMG APPROVED.
4. HANGER ELEMENTS IN CONTACT WITH BARE COPPER PIPE SHALL BE COPPER PLATED, PLASTIC COATED, FELT LINED, OR USE MANUFACTURED COPPER TUBE ISOLATORS.
5. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR HANGER SPACING.
6. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING U-BOLTS OR STRUT CLAMPS AND THERMAL HANGER SHIELDS. REFER TO KEYED NOTE A.
7. MULTIPLE PARALLEL COLD PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD HANGER ELEMENTS INDICATED FOR SINGLE COLD PIPES.
8. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM BELOW USING ROLLER ELEMENTS AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEYED NOTES B AND C.
9. MULTIPLE PARALLEL HOT PIPES MAY BE TRAPEZE SUPPORTED FROM ABOVE USING STANDARD ROLLER HANGERS INDICATED AND THERMAL HANGER SHIELD OR INSULATION PROTECTION SADDLE. REFER TO KEY NOTES B AND C.
10. REFER TO INDIVIDUAL PIPING SPECIFICATION SECTIONS FOR ADDITIONAL SYSTEM SPECIFIC HANGER APPLICATIONS.

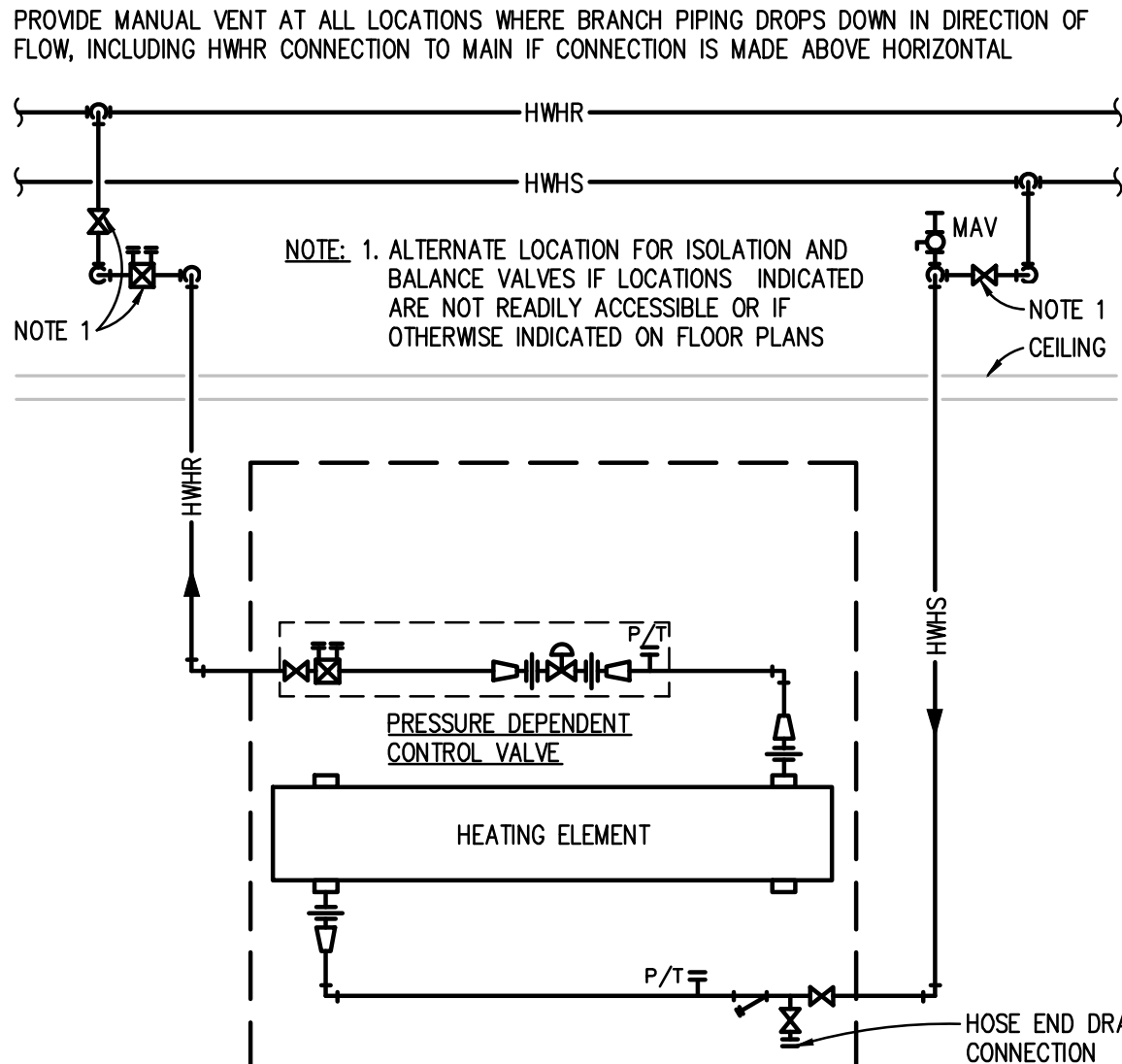
- KEYED NOTES
- A. USE THERMAL HANGER SHIELD ON TRAPEZE SUPPORTED INSULATED PIPE TO PREVENT CRUSHING OF INSULATION.
- B. USE THERMAL HANGER SHIELD DESIGNED FOR USE ON ROLLER SUPPORTS FOR INSULATED HOT PIPE.
- C. USE TYPE 39 PROTECTION SADDLES IF INSULATION WITHOUT VAPOR BARRIER IS INDICATED. FILL INTERIOR VOIDS WITH INSULATION MATCHING ADJOINING INSULATION.



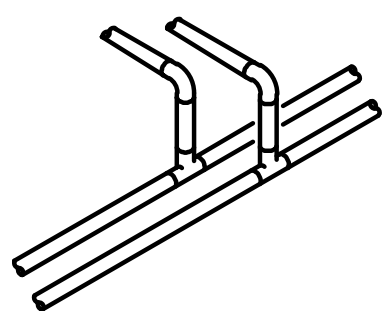
PIPE ENCLOSURE DETAIL  
NO SCALE



FIN TUBE RADIATION PIPING DETAIL  
NO SCALE

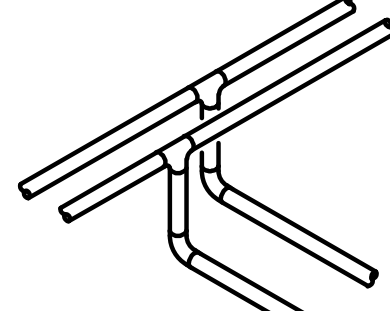


DOWNFEED CONV. OR CUH WITH TWO-WAY  
CONTROL VALVE PIPING DIAGRAM  
NO SCALE



BRANCH CONNECTION OFF TOP

- APPLIES TO THE FOLLOWING SYSTEMS:
- DOMESTIC WATER
  - STEAM & CONDENSATE
  - LABORATORY GASES
  - LABORATORY VACUUM
  - COMPRESSED AIR
  - NATURAL GAS



BRANCH CONNECTION OFF BOTTOM

- APPLIES TO THE FOLLOWING SYSTEMS:
- HOT WATER HEATING
  - CHILLED WATER
  - CONDENSER WATER
  - ENERGY RECOVERY
  - PROCESS COOLING WATER

NOTE: BOTTOM AS INDICATED OR SIDE CONNECTION IS ACCEPTABLE. CONNECTION ABOVE CENTERLINE OF MAINS IS NOT ACCEPTABLE.

TYPICAL BRANCH TAKE-OFF  
CONNECTION PIPING DETAIL  
NO SCALE

ABOVEGROUND HVAC PIPE & ACCESSORY INSULATION APPLICATION SCHEDULE														
	INSULATION MATERIAL & THICKNESS (INCHES)							FIELD-APPLIED JACKET MATERIAL						
	FLEXIBLE ELASTOMERIC	FIBERGLASS	MINERAL WOOL	POLYISOCYANURATE	PHENOLIC	CELLULAR GLASS	CALCIUM SULFATE	ALUMINUM	STAINLESS STEEL	PVC	SELF-ADHESIVE (FOR OUTDOOR APPLICATIONS)	PDOC (INDOOR)	PDOC (OUTDOOR)	KEYED NOTES
INDOOR PIPE SYSTEM AND SIZE (INCHES)														
HEATING HOT WATER SUPPLY & RETURN 200 DEG F AND LOWER														
3 AND SMALLER		1						X		X				A
GENERAL NOTES														

1. "X" OR THICKNESS IN INCHES INDICATES ACCEPTABLE SELECTION. IF MORE THAN ONE SELECTION IS INDICATED, CONTRACTOR MAY SELECT FROM THOSE INDICATED SELECTIONS.
2. INSULATE PIPING WITHIN AIR HANDLING EQUIPMENT THE SAME AS INDOOR PIPING. PROVIDE ALUMINUM OR STAINLESS STEEL JACKET.

- KEYED NOTES
- A. PROVIDE FIELD APPLIED JACKET FOR PIPING EXPOSED IN EQUIPMENT ROOMS, STORAGE ROOMS, JANITORS CLOSETS, RECEIVING ROOMS, TEST AREAS, ORCULATION AREAS AND SUCH AREAS SUBJECT TO DAMAGE WITHIN 10 FEET (3 METERS) OF FINISHED FLOOR.
- B. PROVIDE MANUFACTURER'S RECOMMENDED PROTECTIVE COATING FOR FLEXIBLE ELASTOMERIC THERMAL INSULATION.
- C. STEAM AND CONDENSATE PIPING JACKET SHALL BE STUCCO EMBOSSED.
- D. PIPING WITHIN ENERGY RECOVERY UNITS SHALL BE TYPE 304 STAINLESS STEEL, SMOOTH; 0.010 INCH THICK. SEAMS AND JOINTS CAULKED WITH CHEMICALLY RESISTANT SEALER.

HOT WATER CABINET UNIT HEATER SCHEDULE																							
UNIT IDENTIFICATION	CAPACITY MBH	AIR			FAN		WATER				CONTROL VALVE W.P.D. FT. HEAD	DIMENSIONS			RECESS DEPTH INCHES	FILTER		MODULATION/CONTROL TYPE	ELECTRICAL			MODEL NUMBER	REMARKS
		AIRFLOW CFM	E.D.B. °F	L.D.B. °F	HP	RPM	FLOW GPM	E.W.T. °F	L.W.T. °F	MAXIMUM W.P.D. FT. HEAD		LENGTH INCHES	HEIGHT INCHES	DEPTH INCHES		TYPE	AREA SQ. FT.		VOLTS	PHASE	OPTIONS/ACCESSORIES		
CUH-1	26.3	420	60.0	118.0	1/25	900	2.6	180.0	160.0	0.8	11.55	50.2	26.5	10.0	3	THROW AWAY	2.3	AUTO	120	1	B	RW-310-04	

- NOTE:
1. REFER TO SCHEDULES GENERAL NOTES.
2. MODEL NUMBERS ARE RITTLING UNLESS OTHERWISE NOTED.

## SCHEDULES GENERAL NOTES:

TYPICAL FOR ALL SCHEDULE SHEETS:

- REFER TO ELECTRICAL STANDARD SCHEDULES, ONE LINE DIAGRAM AND PANEL SCHEDULES FOR ADDITIONAL ELECTRICAL INFORMATION
- PROVIDE THE FOLLOWING FACTORY-WIRED ELECTRICAL OPTIONS/ACCESSORIES WHERE INDICATED IN SCHEDULE:
  - A - NON-FUSED DISCONNECT SWITCH
  - B - UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS
  - C - SERVICE RECEPTACLE
  - D - FUSED DISCONNECT SWITCH
  - E - COMBINATION STARTER
  - F - UNIT SHALL HAVE (2) SINGLE POINT CONNECTIONS WITH FACTORY INSTALLED DISCONNECTING MEANS AND ALL REQUIRED STARTERS AND CONTROLS. (1) CONNECTION SHALL BE FOR CONDENSING SECTION AND (1) CONNECTION SHALL BE FOR THE REMAINDER OF THE UNIT.
- FOR MODULATION/CONTROL TYPE COLUMN, "VFC" INDICATES VARIABLE FREQUENCY CONTROLLERS. "AUTO" INDICATES AUTOMATIC OPERATION (CONTROLLED BY TEMPERATURE CONTROLS OR SELF-CONTAINED CONTROLS). "MANUAL" INDICATES HAND OPERATION.
- IF VARIABLE FREQUENCY CONTROLLERS ARE INDICATED TO BE PROVIDED AND ARE NOT INSTALLED INTEGRAL TO THE UNIT, VARIABLE FREQUENCY CONTROLLERS SHALL BE SUPPLIED BY THE MECHANICAL CONTRACTOR (UNLESS OTHERWISE NOTED) AND INSTALLED BY THE ELECTRICAL CONTRACTOR INCLUDING THE LINE SIDE AND LOAD SIDE WIRING TO THE MOTOR AND INCLUDING MISCELLANEOUS STEEL REQUIRED FOR THE SUPPORT AND MOUNTING OF THE VFC. REFER TO FLOOR PLANS FOR LOCATION.
- WHERE EQUIPMENT IS INDICATED TO HAVE A SINGLE POINT ELECTRICAL CONNECTION, THAT EQUIPMENT SHALL COME COMPLETE WITH FACTORY INSTALLED STARTERS, MOTOR OVERLOAD PROTECTION, CONTACTORS, FUSING AND ALL NECESSARY INTERNAL WIRING AND CONTROLS. PROVIDE A FACTORY MOUNTED UNIT DISCONNECTING MEANS WHERE THE ELECTRICAL CONTRACTOR SHALL MAKE SINGLE POINT CONNECTION. INSTALL PACKAGED EQUIPMENT SUCH THAT THE ELECTRICAL CONNECTION AND CONTROLS ARE ACCESSIBLE AND HAVE CLEARANCES MEETING THE NATIONAL ELECTRICAL CODE.
- WHERE PACKAGED EQUIPMENT IS PROVIDED, NAMEPLATE MUST INDICATE MAXIMUM OVERCURRENT PROTECTION BY HACR RATED CIRCUIT BREAKERS OR FUSES. IF FUSE PROTECTION ONLY IS INDICATED, PROVIDE A FUSIBLE DISCONNECT AND FUSES WITH THE UNIT.
- WHERE EQUIPMENT IS DESIGNATED BY MANUFACTURER AND MODEL NUMBER, THIS IS THE BASIS OF DESIGN. IF THE CONTRACTOR ELECTS TO PROVIDE EQUIPMENT BY OTHER SPECIFIED MANUFACTURERS OR PROPOSED ALTERNATE EQUIPMENT BY THE BASIS OF DESIGN MANUFACTURER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REVISIONS TO ELECTRICAL REQUIREMENTS, STRUCTURAL LOADING, OR ARCHITECTURAL APPOINTANCES AND SHALL INCLUDE THE COST OF SUCH REVISIONS IN HIS BID.
- WHERE EQUIPMENT IS SCHEDULED TO INCLUDE A SERVICE RECEPTACLE, PROVIDE A FACTORY MOUNTED SERVICE RECEPTACLE WITH APPROPRIATE FUSES AND TRANSFORMERS CONNECTED ON THE LINE SIDE OF THE UNIT DISCONNECT. PROVIDE A NAMEPLATE ON THE DISCONNECT SWITCH INDICATING THE PRESENCE OF LIVE POWER TO THE SERVICE RECEPTACLE WHEN THE UNIT DISCONNECT IS IN THE OFF POSITION.
- SIZE ALL EQUIPMENT FEEDERS BASED ON THE LISTED MOP (MAXIMUM OVERCURRENT PROTECTION). REFER TO THE FEEDER AND BRANCH CIRCUIT SIZING SCHEDULE ON THE ELECTRICAL STANDARD SCHEDULES SHEET.



T M P A R C H I T E C T U R E I N C

1391 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
E-MAIL: TMP@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT



5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
PBA Project No.: 2016.0071

PROJECT TITLE

Shelters Elementary  
Remodel

Southgate Community Schools  
Southgate, Michigan

DRAWING TITLE

MECHANICAL DETAILS  
AND SCHEDULES

ISSUE DATES

04-04-16 BP No. 2-BIDS

DRAWN JRM

CHECKED RNR

APPROVED DJE

PROJECT NO.

16012

DRAWING NO.

M7.1



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TEMPERATURE CONTROL - SYMBOLS LIST

SCHEMATIC SYMBOLS	
SYMBOL	DESCRIPTION
	AIR FLOW CONTROLLER
	AQUASTAT, STRAP ON BULB
	CARBON DIOXIDE SENSOR - WALL MOUNTED
	CARBON DIOXIDE SENSOR - DUCT MOUNTED
	CURRENT SWITCH
	CURRENT TRANSMITTER
	DAMPER - OPPOSED BLADE
	DAMPER - PARALLEL BLADE
	DAMPER MOTOR
	DIFFERENTIAL PRESSURE TRANSMITTER
	DIFFERENTIAL PRESSURE SWITCH
	FIRE ALARM SYSTEM, ADDRESSABLE CONTROL MODULE
	FIRE ALARM SYSTEM, ADDRESSABLE INTERFACE MODULE
	FLOW MEASURING STATION
	FLOW METER
	FLOW SWITCH
	FREEZESTAT
	GAUGE - FLOW
	GAUGE - PRESSURE
	GAUGE - TEMPERATURE
	GUARD FOR STAT OR SENSOR
	HUMIDIFIER
	HUMIDISTAT OR HUMIDITY SENSOR (AS DEFINED ON TC DRAWINGS)
	HUMIDITY SENSOR, DUCT MOUNTED
	LEVEL SWITCH OR TRANSMITTER
	LIMIT SWITCH
	LINE - ELECTRIC
	LINE - INSTRUMENT AIR
	MAIN CONTROL AIR SUPPLY
	MOTOR STARTER
	OCCUPANCY SENSOR
	PILOT LIGHT OR BEACON R - RED LENS A - AMBER LENS B - BLUE LENS G - GREEN LENS
	PRESSURE TRANSMITTER
	RELAY, ELECTRIC
	SELECTOR SWITCH, (N=NUMBER OF POSITIONS)
	SIGNAL - DDC/BAS, ANALOG INPUT
	SIGNAL - DDC/BAS, ANALOG OUTPUT
	SIGNAL - DDC/BAS, DIGITAL INPUT
	SIGNAL - DDC/BAS, DIGITAL OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG INPUT
	SIGNAL - PACKAGED EQUIPMENT, ANALOG OUTPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL INPUT
	SIGNAL - PACKAGED EQUIPMENT, DIGITAL OUTPUT

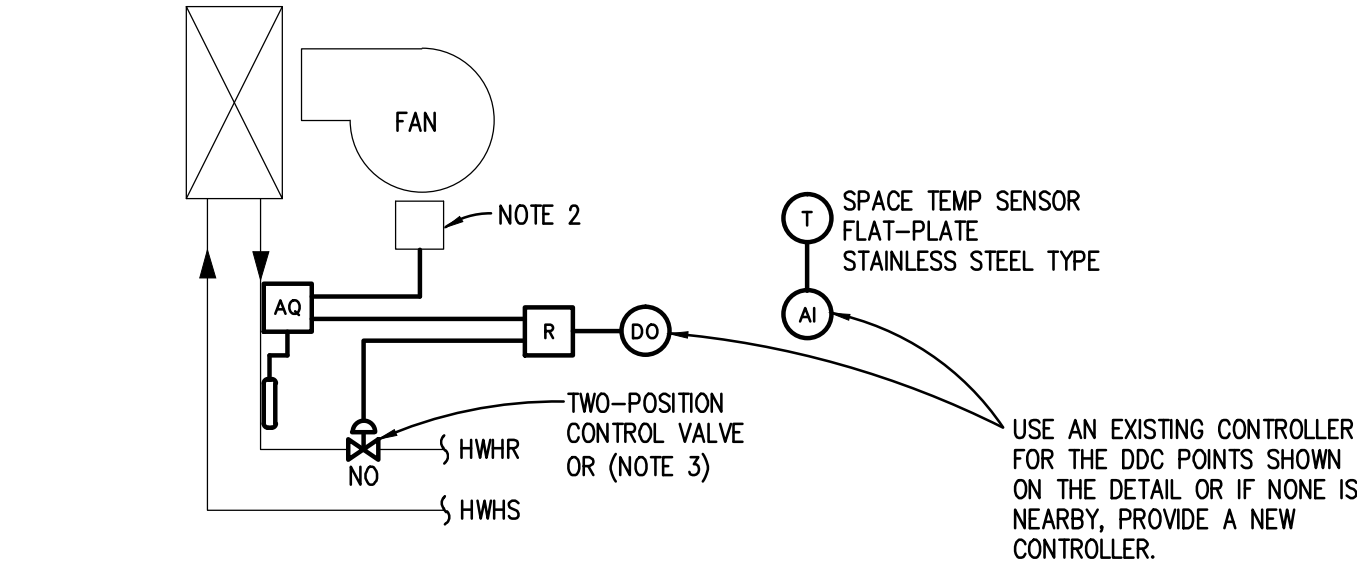
SCHEMATIC SYMBOLS (CONT.)	
SYMBOL	DESCRIPTION
	SMOKE DETECTOR - DUCT MOUNTED
	SMOKE DETECTOR - SPACE MOUNTED
	START/STOP RELAY
	STATIC PRESSURE TRANSMITTER
	STATIC PRESSURE SENSOR OR PROBE
	SWITCH
	TEMPERATURE SENSOR - RIGID ELEMENT IN WELL
	TEMPERATURE SENSOR - STRAP ON BULB
	TEMPERATURE SENSOR - DUCT MOUNTED AVG ELEMENT
	TEMPERATURE SENSOR - DUCT MOUNTED RIGID ELEMENT
	THERMOSTAT OR TEMPERATURE SENSOR (AS DEFINED ON TC DRAWINGS)
	THERMOSTAT FOR NIGHT SETBACK
	TRANSFORMER
	VALVE - 2 WAY CONTROL VALVE
	VALVE - 3 WAY CONTROL VALVE
	VARIABLE FREQUENCY CONTROLLER
	VELOCITY SENSOR
	VIBRATION SWITCH
	VOLTAGE SENSOR

WIRING SYMBOLS	
SYMBOL	DESCRIPTION
	AUDIBLE DEVICE (AS DEFINED ON TC DRAWINGS)
	COIL - MOTOR STARTER CONTACTOR
	COIL - RELAY
	COIL - TIME DELAY RELAY
	COIL - VARIABLE FREQUENCY CONTROLLER CONTACTOR
	COIL - EP OR SOLENOID VALVE
	CONTACT - INSTANT OPERATING, NO
	CONTACT - INSTANT OPERATING, NC
	CONTACT - TIMED AFTER COIL IS ENERGIZED, NOTC
	CONTACT - TIMED AFTER COIL IS ENERGIZED, NCTO
	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NOTO
	CONTACT - TIMED AFTER COIL IS DE-ENERGIZED, NCTC
	GROUND
	MOTOR, SINGLE PHASE
	PILOT LIGHT OR BEACON R - RED LENS A - AMBER LENS B - BLUE LENS G - GREEN LENS
	PILOT LIGHT, WITH PUSH-TO-TEST
	PUSH BUTTON - MOMENTARY CONTACT, NO
	PUSH BUTTON - MOMENTARY CONTACT, NC
	PUSH BUTTON - MOMENTARY CONTACT, NO & NC
	PUSH BUTTON - MOMENTARY, NO (MUSHROOM HEAD)
	PUSH BUTTON - MOMENTARY, NC (MUSHROOM HEAD)

WIRING SYMBOLS (CONT.)	
SYMBOL	DESCRIPTION
	SWITCH - 2 POSITION SELECTOR
	SWITCH - 3 POSITION SELECTOR HAND/OFF/AUTO
	SWITCH - FLOW (AIR, WATER, ETC.), NO
	SWITCH - FLOW (AIR, WATER, ETC.), NC
	SWITCH - LIMIT, NO
	SWITCH - LIMIT, NO, HELD CLOSED
	SWITCH - LIMIT, NC
	SWITCH - LIMIT, NC, HELD OPEN
	SWITCH - LIQUID LEVEL, NO
	SWITCH - LIQUID LEVEL, NC
	SWITCH - MANUAL SPST, NO
	SWITCH - MANUAL DPDT, NO
	SWITCH - MANUAL SPST, NC
	SWITCH - MANUAL DPDT, NC
	SWITCH - MANUAL SPDT
	SWITCH - MANUAL DPDT
	SWITCH - PRESSURE & VACUUM, NO
	SWITCH - PRESSURE & VACUUM, NC
	SWITCH - TEMPERATURE ACTUATED, NO
	SWITCH - TEMPERATURE ACTUATED, NC
	THERMAL OVERLOAD, SINGLE PHASE
	THERMAL OVERLOAD CONTACTS - 3 PHASE
	TRANSFORMER
	WIRE TERMINATION AT DEVICE
	WIRE TO WIRE TERMINATION
	WIRING NOT CONNECTED

WIRING TERMS	
ABBREVIATION	DESCRIPTION
SPST	SINGLE POLE SINGLE THROW
SPDT	SINGLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
NO	NORMALLY OPEN
NC	NORMALLY CLOSED
NOTO	NORMALLY OPEN TIMED OPEN
NOTC	NORMALLY OPEN TIMED CLOSED
NCTO	NORMALLY CLOSED TIMED OPEN
NCTC	NORMALLY CLOSED TIMED CLOSED

NOTE: SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT.



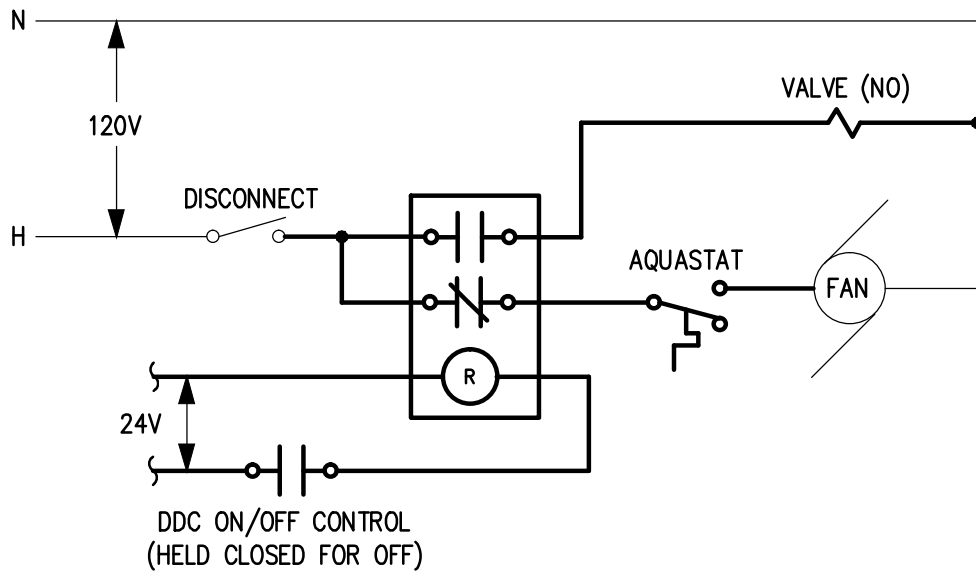
HWH CUH CONTROL

TYPICAL NOTES:

- REFER TO FLOOR PLANS FOR QUANTITY AND LOCATION OF UNITS.
- AQUASTAT SHALL BE WIRED IN SERIES WITH FAN CONTROL WIRING CIRCUIT.
- PROVIDE PRESSURE DEPENDENT CHARACTERIZED CONTROL VALVES FOR HEATING COILS. SELECT VALVES TO ACHIEVE THE SCHEDULED FLOW RATE.

SEQUENCE OF OPERATION:

- DDC SHALL ENABLE/DISABLE FAN CIRCUIT AND OPEN/CLOSE HEATING VALVE AS REQUIRED TO MAINTAIN SPACE TEMP SETPOINT OF 68°F DURING BLDG OCCUPANCY AND 55°F DURING BLDG UNOCCUPANCY. FAN SHALL ACTIVATE UPON PROOF OF HWH FLOW BY AQUASTAT.
- DDC SHALL PROVIDE 2°F DEADBAND AT SETPOINTS FOR CONTROL.
- DDC SHALL PROVIDE ALARM TO BAS IF SPACE TEMPERATURE GOES LOWER THAN 50°F.



HWH CUH WIRING

TYPICAL

TC GENERAL NOTES

- THESE GENERAL NOTES SHALL BE APPLICABLE FOR ALL TEMPERATURE CONTROL DRAWINGS.
- "PROVIDE" AS USED THROUGHOUT DRAWINGS IS DEFINED AS "FURNISH AND INSTALL".
- TO CONTRACTOR SHALL BE RESPONSIBLE TO COMPLY WITH ALL APPLICABLE CODES AND STANDARDS.
- ALL DETAILED INFORMATION IDENTIFIED WITH HEAVY LINE WEIGHT SHALL BE FURNISHED AND/OR INSTALLED BY TC CONTRACTOR. ALL OTHER INFORMATION IDENTIFIED WITH LIGHT LINE WEIGHT IS EXISTING.
- ALL CONTROL SCHEMATICS AND WIRING DIAGRAMS ARE FOR THE CLARIFICATION OF EQUIPMENT INTERLOCKING FUNCTIONS AND THE INTERFACE OF VARIOUS CONTRACTORS' WORK AND SHALL NOT BE MISTAKEN AS SHOP DRAWINGS FOR ACTUAL INSTALLATION. FIELD VERIFY EXISTING CONDITIONS AS REQUIRED.
- TC CONTRACTOR SHALL PROVIDE DDC CONTROLLERS AS REQUIRED TO MEET INTENT OF DESIGN DOCUMENTS. REFER TO THE PLANS FOR THE DDC FUNCTIONS THAT APPLY TO EACH MECHANICAL SYSTEM.
- ALL TC PROVIDED COMPONENTS, AND ALL TO CONTRACTOR INSTALLED PANELS, COMPONENTS AND WIRING SHALL BE LABELED PER SPECIFICATIONS.
- ALL WIRING AND SYSTEM CONTROL VOLTAGES SHALL BE IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATION AND THE SPECIFICATIONS.
- ALL DDC AND CONTROL INTERLOCK WIRING SHALL BE BY TC CONTRACTOR. TC CONTRACTOR SHALL FIELD VERIFY EXISTING MOTOR STARTERS FOR INTERFACE WIRING REQUIREMENTS AND TERMINATION POINTS AS REQUIRED.
- ALL DDC SIGNAL WIRING BETWEEN COMPONENTS SHALL BE INSTALLED WITHOUT INTERMEDIATE STOPS. WIRE SPLICING AT INTERMEDIATE TERMINAL STRIPS IS NOT ACCEPTABLE.
- ALL ELECTRICAL WIRING AND RACEWAY SYSTEMS SHALL COMPLY WITH LOCAL CODE REQUIREMENTS. WHERE RACEWAY IS REQUIRED, TWO SEPARATE ELECTRICAL RACEWAY SYSTEMS SHALL BE PROVIDED: ONE FOR 120V WIRING AND THE OTHER FOR 24V WIRING.
- ALL 120V WIRING SHALL BE INSTALLED IN CONDUIT OR EMT. SIZE SHALL BE 2" MINIMUM.
- ALL 24V CONTROL WIRING IN MECHANICAL ROOMS SHALL BE INSTALLED IN CONDUIT OR EMT. PLENUM RATED CABLE IS ACCEPTABLE ABOVE CEILINGS AND SHALL BE SECURED EVERY FIVE FT AND BE INSTALLED PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR STRUCTURAL MEMBERS. AT TRANSITION FROM RACEWAY TO EXPOSED PLENUM CABLE, CONDUIT SLEEVES OR CONDS ARE TO BE FITTED WITH PLASTIC BUSHINGS TO PREVENT DAMAGE TO CONDUCTORS.
- ALL 24V CONTROL WIRING SHALL BE CONCEALED IN WALLS AND ABOVE CEILINGS IN FINISHED AREA WHERE POSSIBLE. EXPOSED WORK IN NON-MECHANICAL ROOM AREAS SHALL BE INSTALLED IN SURFACE METAL RACEWAY PERPENDICULAR OR PARALLEL TO WALLS, CEILINGS, OR STRUCTURAL MEMBERS.
- TC CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER SUPPLIES REQUIRED FOR TC SYSTEM UNLESS OTHERWISE NOTED.
- POWER SUPPLIES (120VAC) REQUIRED FOR NEW TC COMPONENTS SHALL BE FROM EXISTING PANELBOARDS. SPARE CIRCUIT BREAKERS MAY BE USED WHEN AVAILABLE. IN PANELBOARDS THAT DO NOT HAVE SPARE CIRCUIT BREAKERS, NEW BREAKERS TO MATCH EXISTING SHALL BE INSTALLED IN BLANKED OUT SPACES WHERE AVAILABLE. CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE WITH PROPER INTERRUPTING RATING. PANEL AND CIRCUIT NUMBERS USED SHALL BE INDICATED WITHIN ENCLOSURE AT DEVICE WHERE POWER SUPPLY IS USED.
- TC CONTRACTOR SHALL VERIFY EXACT LOCATION OF ALL FIELD MOUNTED COMPONENTS.
- NEW SPACE TEMPERATURE SENSORS SHALL BE MOUNTED 4'-0" ABOVE FINISHED FLOOR, FOR EXISTING SPACE TEMPERATURE SENSOR REPLACEMENTS, TC CONTRACTOR SHALL MOUNT NEW SENSORS AT SAME LOCATION REGARDLESS OF HEIGHT REQUIREMENT.
- TC CONTRACTOR SHALL PROVIDE GUARDS FOR TEMPERATURE SENSORS FOR CORRIDOR AND GENERAL PUBLIC USE AREAS AS NOTED.
- TC CONTRACTOR SHALL PROVIDE AUXILIARY PANELS FOR REQUIRED PANEL MOUNTED EQUIPMENT SUCH AS RELAYS, TRANSDUCERS, CONTROL TRANSFORMERS, ETC. AUXILIARY PANELS SHALL BE LOCATED NEXT TO ASSOCIATED DDC PANEL.
- REMOTELY MOUNTED FIELD DEVICES SUCH AS RELAYS, CONTROL TRANSFORMERS, ETC., SHALL BE HOUSE IN AN ENCLOSURE PROVIDED BY THE TC CONTRACTOR.
- CONTROL TRANSFORMERS WHEN REQUIRED SHALL BE SIZED FOR 150% OF ACTUAL LOAD.
- NEW FREEZESTATS, WHERE REQUIRED, SHALL BE MOUNTED WHERE INDICATED ON CONTROL DETAILS. FREEZESTAT QUANTITY SHALL BE ONE PER 20 SQ FT OF GROSS SECTIONAL AREA.
- CURRENT SWITCHES USED FOR OPERATIONAL STATUS SHALL HAVE CURRENT THRESHOLD SETPOINT ADJUSTED TO INDICATE BELT OR DRIVE FAILURE.
- ALL NEW CONTROL VALVES IDENTIFIED ON TC DRAWINGS SHALL BE FURNISHED BY TC CONTRACTOR.
- TC CONTRACTOR MAY REUSE THERMOWELLS FOR EXISTING DDC SYSTEM COMPONENT REPLACEMENTS WHERE COMPATIBLE WITH NEW CONTROL COMPONENTS; OTHERWISE, TC CONTRACTOR SHALL PROVIDE NEW THERMOWELLS FOR APPLICATION. TC CONTRACTOR SHALL FIELD VERIFY EXISTING SIZES AND THREADED CONNECTIONS AS REQUIRED.
- TC CONTRACTOR SHALL COORDINATE WITH MECHANICAL CONTRACTOR TO INSTALL ALL CONTROL VALVES AND THERMOWELLS FURNISHED BY THE TC CONTRACTOR. ALL PIPE PENETRATIONS AND BASIC FITTINGS REQUIRED FOR SENSOR INSTALLATIONS SHALL BE PROVIDED BY MECHANICAL SUBCONTRACTOR.

- NOTES:
- SOME SYMBOLS & ABBREVIATIONS SHOWN MAY NOT APPLY TO THIS PROJECT
  - REFER TO MECHANICAL STANDARDS ON DRAWING M0.1 FOR ADDITIONAL SYMBOLS & ABBREVIATIONS THAT MAY BE USED ON TEMPERATURE CONTROL DRAWINGS.



T M P ARCHITECTURE INC  
1391 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

REGISTRATION SEAL

CONSULTANT



Peter Basso Associates Inc  
CONSULTING ENGINEERS  
5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
PBA Project No: 2016.0071

PROJECT TITLE  
**Shelters Elementary  
Remodel**

Southgate Community Schools  
Southgate, Michigan

DRAWING TITLE  
**TEMPERATURE  
CONTROLS, STANDARDS,  
AND GENERAL NOTES**

ISSUE DATES

04-04-16 BP No. 2-BIDS

DATE: ISSUED FOR:

DRAWN: JRM

CHECKED: RNR

APPROVED: DJE

PROJECT NO.

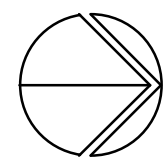
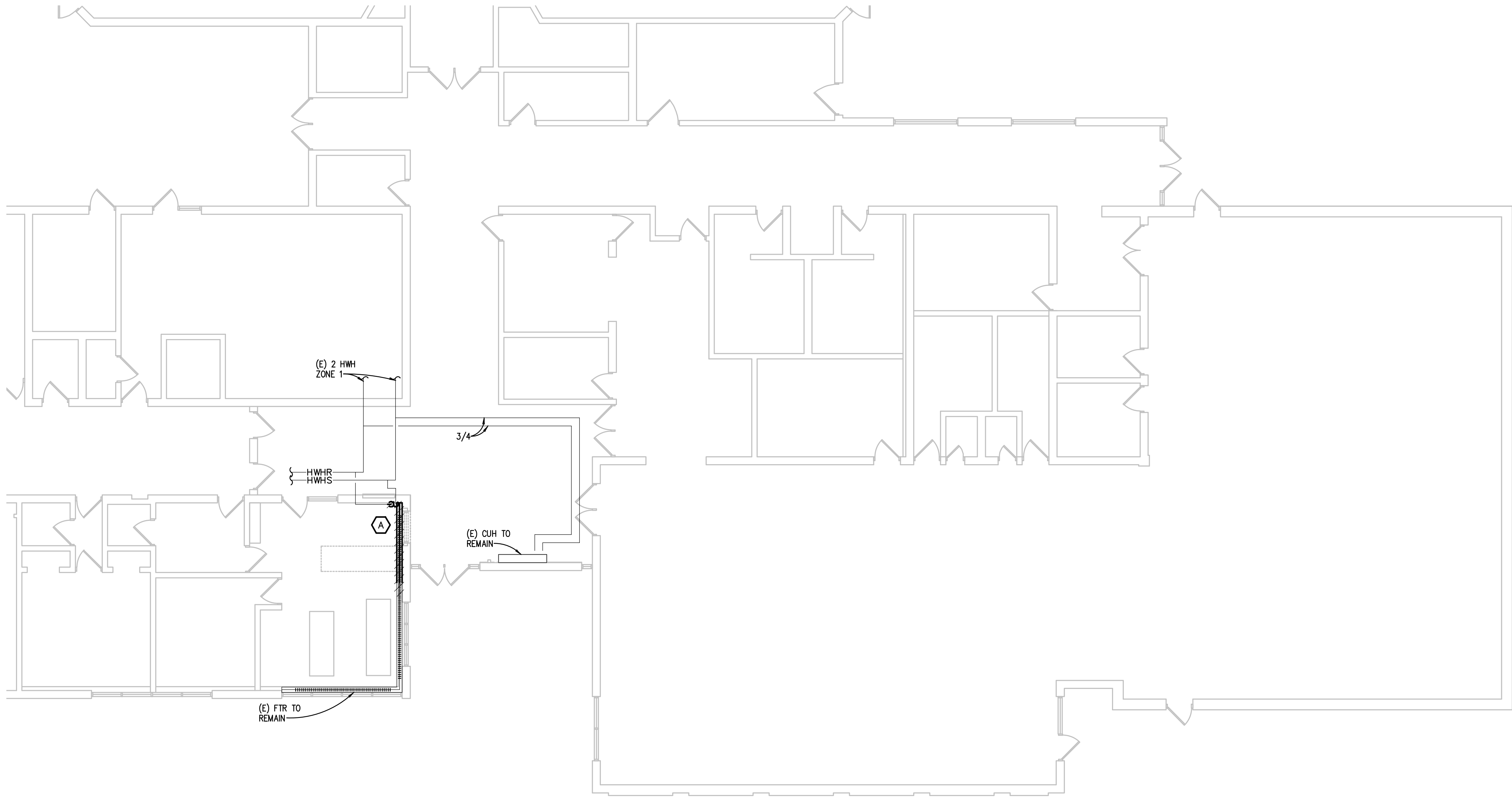
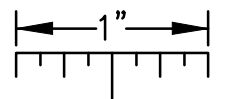
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**M8.1**

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THE FOLLOWING DIMENSION EQUALS  
ONE INCH WHEN PRINTED TO SCALE.



**HVAC PIPING DEMOLITION PLAN - ZONE 'B'**  
SCALE: 1/8" = 1' - 0"

**MECHANICAL GENERAL DEMOLITION NOTES:**

1. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY THE OWNER'S REPRESENTATIVE.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. ACTUAL ROUTING AND SIZES OF EXISTING PIPING AND DUCTWORK MIGHT DIFFER TO A LIMITED EXTENT FROM WHAT IS SHOWN. MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND ACTUAL EXISTING CONDITIONS SHALL BE REPORTED TO THE ENGINEER.
3. THE EXACT EXTENT OF DEMOLITION SHALL BE AS REQUIRED BY THE NEW WORK.
4. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE, INCLUDING ALL RELATED ITEMS SUCH AS HANGERS, SUPPORTS, CONTROLS, ETC. CAP ALL OPEN ENDED PIPES AND DUCTWORK.

**DEMOLITION KEY NOTES:**

- A. REMOVE FINNED TUBE AND FINNED TUBE COVER. PREPARE PIPING FOR NEW CONNECTION.



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1191 WEST SQUARE LAKE ROAD  
BLOOMFIELD HILLS • MICHIGAN • 48302  
PH • 248.338.4561 FX • 248.338.0223  
EM • INFO@TMP-ARCHITECTURE.COM

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**Peter Basso Associates Inc**  
CONSULTING ENGINEERS

5145 Livernois, Suite 100  
Troy, Michigan 48068-3276  
Tel: 248-879-5666  
Fax: 248-879-0007  
www.PeterBassoAssociates.com  
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PROJECT TITLE

**Shelters Elementary  
Remodel**

**Southgate Community Schools  
Southgate, Michigan**

DRAWING TITLE

**HVAC PIPING DEMOLITION  
PLAN - ZONE 'B'**

ISSUE DATES

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**MD3.1**