LIVONIA PUBLIC SCHOOLS

STEVENSON HIGH SCHOOL
POOL FILTRATION PROJECT

LIVONIA, MICHIGAN
PROJECT NO. 2024-081

02/19/2025 BIDS

FRENCH

LIST OF DRAWINGS

ARCHITECTURAL

A0.00 ARCHITECTURAL REFERENCE SHEET
A0.02 CODE PLAN

POOL

AQ0.0 POOL REFERENCE PLAN
AQ0.1 POOL MECHANICAL ROOM DEMOLITION PLANS
AQ0.2 POOL MECHANICAL ROOM RENOVATION PLANS
AQ0.3 POOL MECHANICAL ROOM EXISTING CONDITIONS
AQ0.4 POOL MECHANICAL ROOM EXISTING CONDITIONS

AQ1.0 POOL MECHANICAL ROOM PLANS
AQ1.1 POOL MECHANICAL DETAILS
AQ1.2 POOL MECHANICAL DETAILS
AQ1.3 POOL MECHANICAL DETAILS

AQ2.0 POOL SYSTEMS DETAILS

MECHANICAL

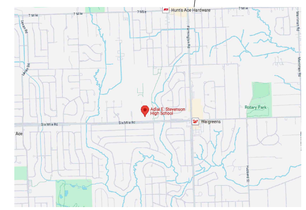
M0.00 MECHANICAL GENERAL INFORMATION
PD2.10K PLUMBING LOWER LEVEL DEMOLITION PLAN - UNIT K
P2.10K PLUMBING LOWER LEVEL NEW WORK PLAN - UNIT K

ELECTRICAL

E0.00 ELECTRICAL GENERAL INFORMATION
EPD2.10K ELECTRICAL POWER LOWER LEVEL DEMOLITION PLAN - UNIT K
EP2.10K ELECTRICAL POWER LOWER LEVEL NEW WORK PLAN - UNIT K
EP2.11K ELECTRICAL POWER FIRST FLOOR NEW WORK PLAN - UNIT K
EP4.11K ENLARGED ELECTRICAL POWER PLANS - POOL MECHANICAL ROOM
E5.00 ELECTRICAL DETAILS AND PANEL SCHEDULES
E7.00 ELECTRICAL ONE-LINE DIAGRAMS

REFERENCE LOCATION MAP

33500 W. SIX MILE ROAD, LIVONIA, MI 48152



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ORIGINAL DRAWINGS PRINTED IN FULL COLOR

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

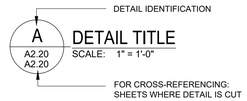
MATERIAL LEGEND

- SOIL
- ASPHALT AGGREGATE
- GRANULAR FILL
- STONE/GRAVEL
- CONCRETE
- CONCRETE MASONRY UNIT
- BRICK
- GLAZED HOLLOW CMU
- STRUCTURAL GLAZED TILE
- LIMESTONE
- MARBLE
- FINISH WOOD
- COMPOSITION/PLYWOOD
- CONTINUOUS WOOD BLOCKING
- BLOCKING OR SHIMS
- BATT INSULATION
- RIGID INSULATION
- PREMOLDED EXPANSION JOINT/ COMPRESSIBLE FILLER STRIP
- PLASTER OR GYPSUM BOARD
- CERAMIC OR QUARRY TILE
- TERRAZZO
- ACOUSTICAL PANEL OR ACOUSTICAL TILE
- EXISTING MATERIAL (IN SECTION)
- EXISTING MATERIAL (IN PLAN)
- DEMOLITION - TO BE REMOVED

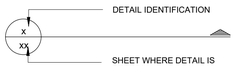
ABBREVIATIONS

AC	AIR CONDITIONING
ACOUST	ACOUSTICAL
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICANS WITH DISABILITIES ACT
ADJ	ADJUSTABLE
AFF	ABOVE FINISHED FLOOR
AGG	AGGREGATE
ALT	ALTERNATE
AL/ALUM	ALUMINUM
ANOD	ANODIZED
APC	ARCHITECTURAL PRECAST LINTEL
APPROX	APPROXIMATE
ARCH	ARCHITECT(URAL)
ASPH	ASPHALT
AV	AUDIO/VISUAL
L	ANGLE
B CMU	BURNISHED CMU
BIT	BITUMINOUS
BD	BOARD
BF	BARRIER FREE
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BENCH MARK/BEAM
BOT	BOTTOM
BRG	BEARING
BUR	BUILT-UP ROOF
CAB	CABINET
CUH	CABINET UNIT HEATER
CB	CHALKBOARD/CATCH BASIN
CEM	CEMENT
CER	CERAMIC
CFM	CUBIC FEET PER MINUTE
CJ	CONTROL JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
COMP	COMPACTED
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS/CONTINUE
CONTR	CONTRACTOR
CORR	CORRUGATED
CPL	CEMENT PLASTER
CPT	CARPET
CT	CERAMIC TILE
CU	CONDENSING UNIT
CUSP	CUSPIDOR
CWF	CURTAINWALL FRAMING
D	DEPTH/DEEP
°	DEGREE
DC	DISPLAY CASE
DEMO	DEMOLISH/DEMOLITION
DTL	DETAIL
DF	DRINKING FOUNTAIN
DIA/Ø	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DS	DOWNSPOUT
DWG	DRAWING
EA	EACH
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRIC(AL)
ELEV	ELEVATOR
EQ	EQUAL
EQUIP	EQUIPMENT
EIFS	EXTERIOR INSULATION FINISH
EWC	ELECTRIC WATER COOLER
EXH	EXHAUST
EX/EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FF	FORCED FLOW CABINET HEATER
FHC	FIRE HOSE CABINET
FIN	FINISH
FIN FL	FINISH FLOOR
FLR	FLOOR
FOUND	FOUNDATION
FT/'	FEET
FTG	FOOTING
FRP	FIBERGLASS REINFORCED POLYESTER
GA	GAUGE
GALV	GALVANIZE(D)
GB	GRAB BARS
GHT	GLAZED HOLLOW TILE
GL	GLASS
GLCMU	GLAZED CMU
GLZD	GLAZED
GYP	GYPSUM
H/HGT	HEIGHT
HB	HOSE BIB
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HIGH POINT
HR	HOUR
HVAC	HEATING/VENTILATING/AIR CONDITIONING
ID	INSIDE DIAMETER
IN/"	INCH
INCL	INCLUDE(D),(ING)
INSUL	INSULATION/INSULATE(D)
INT	INTERIOR
KIT	KITCHEN
JST	JOIST
JT	JOINT
L	LENGTH
LAM	LAMINATE(D)
LAV	LAVATORY
LB/#	POUND
LGF	LIGHT GAUGE FRAMING
LIN	LINOLEUM
LKR	LOCKER
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LMC	LINEAR METAL CEILING
LOC	LOCATION(S)
LP	LOW POINT
MANUF	MANUFACTURER
MAR	MARBLE THRESHOLD
MB	MARKER BOARD
MAS	MASONRY
MAT	MATERIAL/MAT
MAU	MAKE UP AIR UNIT
MAZ	MAXIMUM
MECH	MECHANICAL
MEZZ	MEZZANINE
MIN	MINIMUM/MINUTE
MISC	MISCELLANEOUS
ML	MASONRY LINTEL
MP	METAL PANEL
MWP	METAL WALL PANEL
MO	MASONRY OPENING
MET/MTL	METAL
MSF	METAL STUD FRAMING
MT	METAL THRESHOLD
NIC	NOT IN CONTRACT
NO/#	NUMBER
NOM	NOMINAL
NSF	NON-SLIP FINISH
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OHD	OVERHEAD DOOR
OPNG	OPENING
OPP	OPPOSITE
OS	OVERFLOW SUMP
PART	PARTICLE
PART'N	MOVABLE PARTITION
PC	PRECAST CONCRETE
PL	PLATE/PROPERTY LINE
PLAS	PLASTER
PLAM	PLASTIC LAMINATE
PLYWD	PLYWOOD
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PTD	PAINTED
PVC	POLYVINYL CHLORIDE
QT	QUARRY TILE
R	RISER/RADIUM
RB	RESILIENT WALL BASE/RUBBER BASE
RBF	RUBBER FLOORING
RC	RAIN CONDUCTOR
RES	RESILIENT
RS	ROOF SUMP
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCING
REQ'D	REQUIRED
REV	REVISION(S)
RF	ROOF EXHAUST FAN
RM	REMOVABLE MULLION/ROOM
RO	ROUGH OPENING
RWO	RIGHT OF WAY
RTU	ROOF TOP UNIT
RV	ROOF VENT
S	SINK
SAAC	SPRAY APPLIED ACOUSTICAL COATING
SCHED	SCHEDULE
SEAL	CONCRETE SEALER
SEC	SECTION
SFF	STOREFRONT FRAMING
SHT	SHEET
SIM	SIMILAR
SPEC(S)	SPECIFICATIONS
SP CMU	SPLIT FACE CMU
SPI	SPORTS IMPACT FLOORING
SPKR	SPEAKER
SQ	SQUARE
SS	SERVICE SINK/STAINLESS STEEL
SSM	SOLID SURFACE MATERIAL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
SUSP	SUSPENDED
SVT	SOLID VINYL TILE
SV	SHEET VINYL
T	TREAD
T&B	TOP AND BOTTOM
TB	TACK BOARD
TC	TOP OF CURB
TEMP	TEMPERED
TER	TERRAZZO
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TS	TUBE STEEL
TV	TELEVISION
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
VCT	VINYL COMPOSITION TILE
VCG	VINYL COVERED GYPSUM BOARD
VERT	VERTICAL
VIF	VERIFY IN FIELD
VUV	VERTICAL UNIT VENTILATOR
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WD	WOOD
WDSC	WOOD SOUND CONTROL
WH	WATER HEATER
WP	WORKING POINT / WATERPROOF
WWF	WELDED WIRE FABRIC

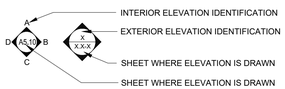
SYMBOL LEGEND



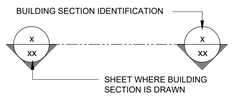
DRAWING SYMBOL



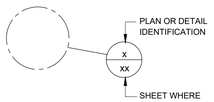
DETAIL LOCATOR



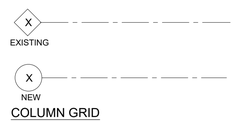
ELEVATION SYMBOL



BUILDING SECTION LOCATOR

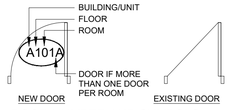


PLAN OR DETAIL BLOW-UP

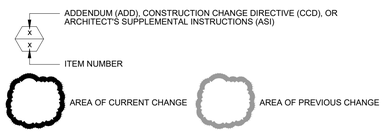


COLUMN GRID

ROOM NAME AND NUMBER

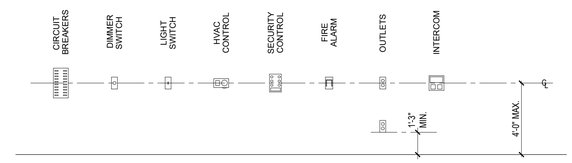


DOOR NUMBER AND SYMBOLS

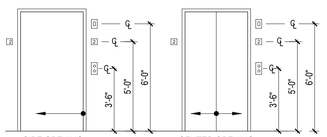


MISCELLANEOUS SYMBOLS

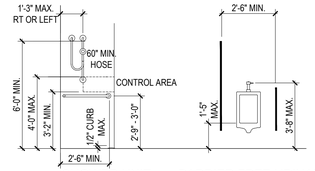
MOUNTING HEIGHTS



CONVENIENCE CONTROLS AND OUTLETS

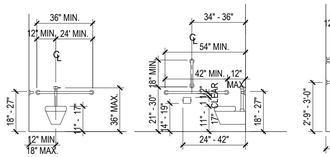


ELEVATORS

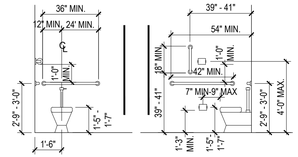


SHOWER UNIT

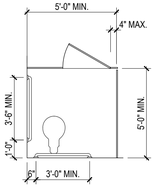
BARRIER FREE URINAL



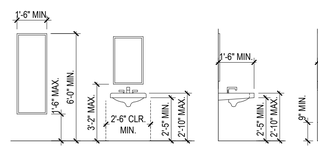
BARRIER FREE WATER CLOSET MOUNTING HEIGHTS FOR CHILDREN



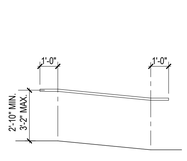
BARRIER FREE WATER CLOSET



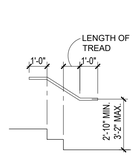
STALL LAYOUT



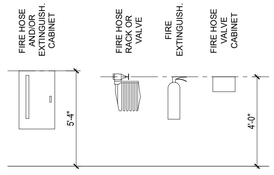
BARRIER FREE LAVATORIES AND MIRRORS



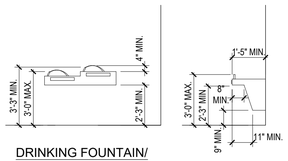
RAMP HANDRAIL



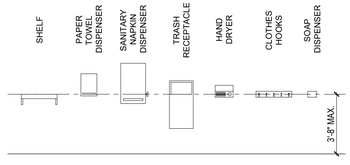
STAIR HANDRAIL



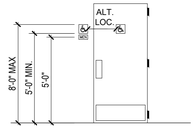
FIRE EXTINGUISHER EQUIPMENT



DRINKING FOUNTAIN/ ELECTRIC WATER COOLER

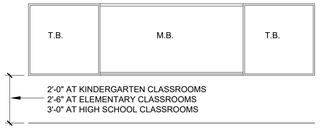


TOILET ROOM ACCESSORIES



TOILET ROOM SIGNAGE

NOTE: HEIGHT ABOVE FLOOR TO BASELINE OF CHARACTER TO COMPLY WITH ICC/ANSI A117.1-2009 TABLE 703.2.4



TACK BOARDS AND MARKER BOARDS

INTERACTIVE PANEL MOUNTING

KEY PLAN

ISSUE DATE	ISSUED FOR
02/19/2025	BIDS
DRAWN	AMN
CHECKED	AMN
APPROVED	DCJ

FRENCH
2851 High Meadow Circle | Suite 100
Auburn Hills | MI 48326
248.656.1377

PROJECT

Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

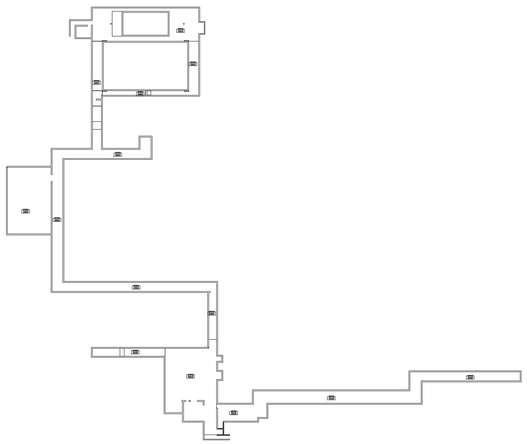
SHEET

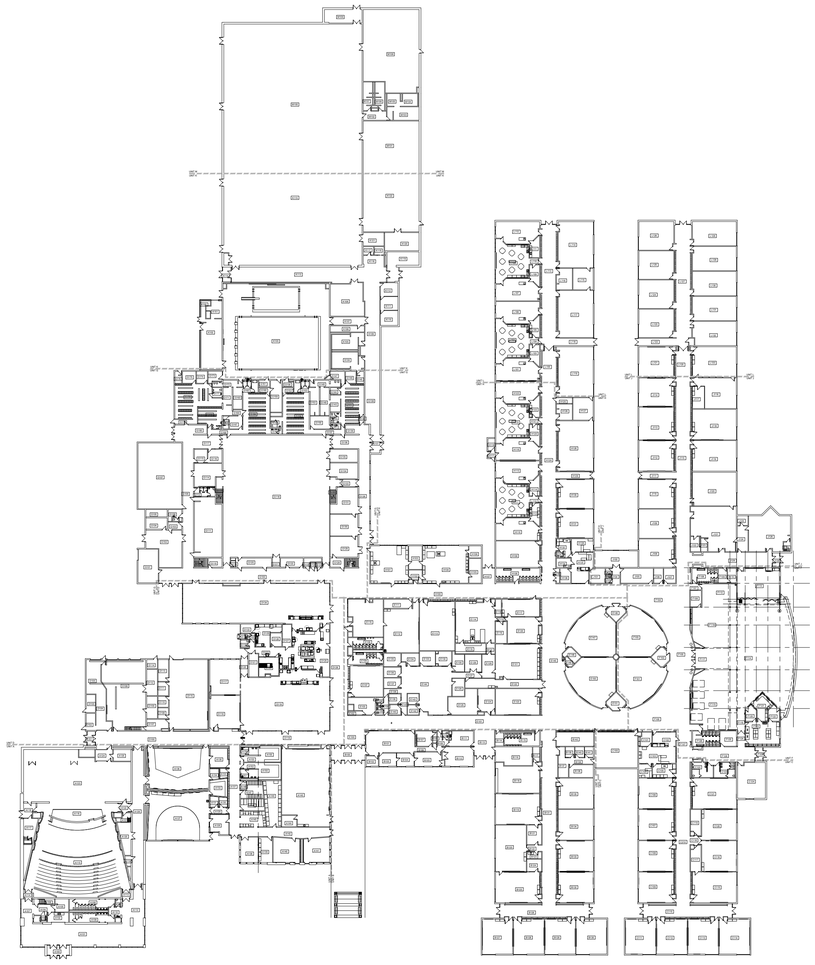
PROJECT NUMBER

2024-081

SHEET NUMBER

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT





CODE PLAN INFORMATION

Cleveland Elementary School Renovation

1) Design Codes
   a)2015 Michigan Rehabilitation Code (Existing Building)
   b)2016 School Fire Safety Rules
   c)NFPA 101 Life Safety Code 2012 edition
   d)2021 Michigan Plumbing Code
   e)2021 Michigan Mechanical Code
   f) 2015 Michigan Uniform Energy Code
   g)2023 Michigan Electrical Code Rules, Part 8
   h)2023 National Electrical Code (NFPA 70)
   i) 2009 ICC A117.1 Accessible and Usable Buildings & Facilities

2) Design Professional in Responsible Charge (106.6)
   a)A representative of French Associates will be the Design Professional in Responsible Charge.

3) Existing Building information
   a)1 story, 1st floor = 318,492 square feet.
   Mezzanine floor = 15,200 square feet.
   Total = 333,692 square feet.
   b)The building is not sprinkled, except for the performance arts center.
   c)Type of Construction is IIB (II-000 from School Fire Safety Rules)
   d)Use Group is Occupancy E (Education)

4) Compliance Method (Chapter 3)
   a)Work Area Compliance Method (301.1.2) - The work shall comply with the applicable requirements of Chapters 5 through 11.

5) Classification of Work (Chapter 5)
   a)As defined by the Michigan Rehabilitation Code, the work includes Level 1 Alterations and Level 2 Alterations. The Work Area does not exceeds 50% of the Building Area.
   b)There is no change of occupancy.
   c)There is no addition.
   d)Under the School Fire Safety Rules, the scope of work in the Level 1 Alterations is the replacement of existing finishes and systems. As a result, the Level 1 Alteration areas do NOT qualify as remodeling.
   e)The Level 2 Alteration areas are being remodeled as defined by the School Fire Safety Rules. The Level 2 Alteration area is less than 50% of the building area so we are NOT required to bring the whole building into compliance.

6) Chapter 7- Alterations- Level 1
   a)Section 702.1- New interior finishes will comply with Chapter 8 of the Michigan Building Code.
   i) From Table 803.9- Corridors are Class B finishes, Rooms are Class C finishes
   b)Interior floor finishes shall comply with Section 804 of MBC.

9) NFPA 101 Life Safety Code, Chapter 11, Existing Educational Occupancies
   a)The spaces being remodeled (Level 2 Alterations) are designed to comply with the requirements of Chapter 11, Existing Educational Occupancies.
   b)11-2.2 through 11-2.5- Existing Means of Egress components comply.
   c)11-2.6 travel Distance to Exits- Existing exit travel distances are being maintained. In locations where the travel distance to an exit is being changed by the Addition, the rooms have an Exit Travel Distance of less than 200'.
   d)11-2.8 through 11-2.10- New light fixtures, emergency lighting and exit signs are part of the work and will comply.
   e)11-3.2- The existing Boiler Room is separated from the rest of the building by a 1 hour fire barrier.
   f) 11-3.3- Interior finishes of Corridors are Class B, minimum. All other locations are Class C, minimum.
   g)The existing fire alarm system is being maintained.
   h)11-3-6- We are not remodeling the corridors or most classroom spaces, just replacing ceilings, lights and finishes as indicated. In locations where we are remodeling, the corridor wall is being maintained as existing.
   i) 11-3.7- The existing building is sub-divided into existing fire areas.

BUILDING INFORMATION

EXISTING BUILDING AREA: FIRST FLOOR 318,492 SF.
MEZZANINE FLOOR = 15,200 SF.
TOTAL = 333,692 SF.

STUDENT POPULATION IS NOT CHANGING

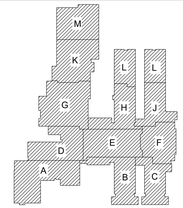
WORK AREA COMPLIANCE METHOD: LEVEL 1 ALTERATIONS

NO CHANGE OF USE

EXISTING BUILDING IS NOT SPRINKLED.

ALTERATION LEVEL 1 DESCRIPTION:
- REPLACEMENT AND UPGRADING OF EXISTING POOL EQUIPMENT SYSTEMS.

KEY PLAN



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PROJECT
Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET
COMPOSITE
CODE PLAN

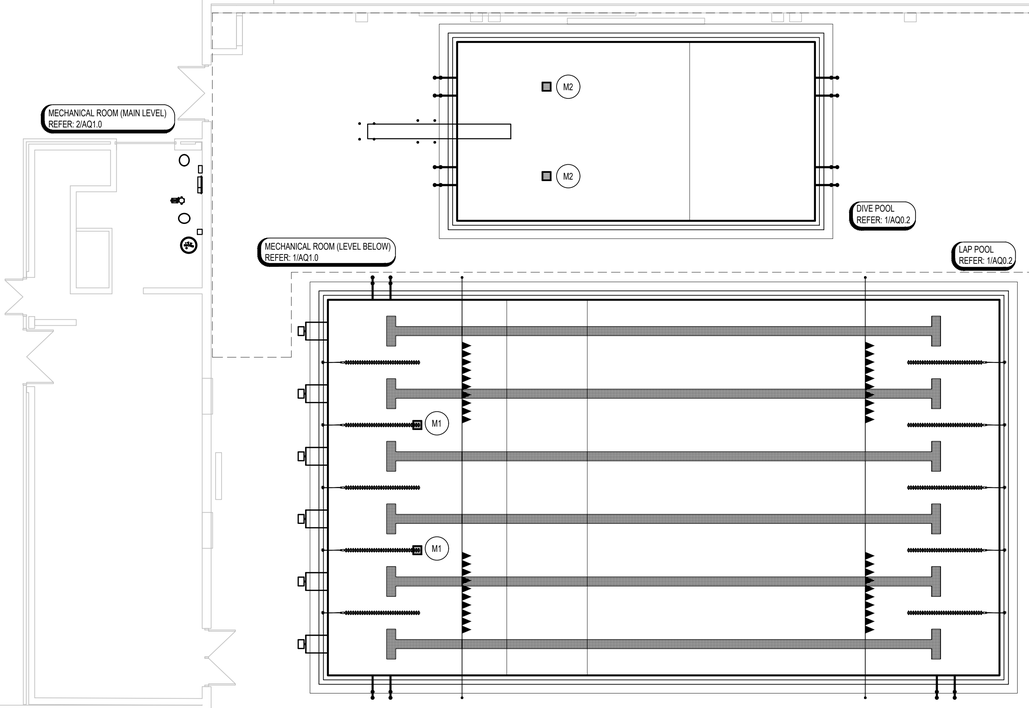
PROJECT NUMBER
2024-081

SHEET NUMBER
A0.02

COMPOSITE TUNNEL CODE PLAN
SCALE: 1/16"=1'-0"

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

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



1 AQ0.0 POOL RENOVATION REFERENCE PLAN

1/8" = 1'-0"

DESIGN DATA

	UNITS	LAP POOL	DIVE POOL
LENGTH	FT.	75'-1"	40'-0"
WIDTH	FT.	42'-0"	20'-0"
WATER SURFACE AREA	SQ. FT.	3,154	800
PERIMETER	FT. IN.	158'-6"	120'-0"
VOLUME	GALLONS	135,500	59,500
RECIRCULATION SYSTEM			
POOL TURNOVER RATE	HOURS	6.00	
RECIRCULATION RATE	GPM	542	
SURGE CAPACITY	GALLONS	5,984	
SEWER CAPACITY	GPM	REFER TO PLUMBING	

MAIN DRAIN SCHEDULE

ID	DESCRIPTION	SIZE	QTY	DESIGN FLOW (GPM)	DESIGN VELOCITY (FPS)	MFG ALLOWABLE FLOW @ EACH COVER (GPM)	MODEL	MANUFACTURER
M1	LAP POOL	12"X12"	2	375	0.74	365	MLD-FGD-1212	NEPTUNE-BENSON
M2	DIVE POOL	12"X12"	2	167	0.33	365	MLD-FGD-1212	NEPTUNE BENSON

NOTE:
1. MAIN DRAIN SUMP AND GRATE MUST BE MANUFACTURED BY NEPTUNE BENSON, DALDORADO, AQUASTAR, PADDOCK OR APPROVED EQUAL.
2. MAXIMUM FACE VELOCITY MUST NOT EXCEED 1.5 FEET PER SECOND.
3. OPEN AREA IS BASED ON MANUFACTURER'S DATA.
4. THE INSTALLED LIFE OF THE MAIN DRAIN COVER MUST BE A MINIMUM OF 10 YEARS.
5. FASTEN MAIN DRAIN COVER TO SUMP WITH S/S TAMPER PROOF FASTENERS AT A SPACING NO GREATER THAN 24" O.C. REFER TO SUMP AND GRATE MANUFACTURER'S INSTALLATION INSTRUCTIONS.

GENERAL POOL NOTES

1. ⌖ DENOTES WATER DEPTH FROM WATER LEVEL.
2. POOL FINISH TO RECEIVE ACID WASHING AND REGROUT. REFER TO SPECIFICATION 131100.
3. TYPICAL POOL DIMENSIONS SHOWN ARE FROM INSIDE FINISHED POOL WALL.
4. ALL PROPRIETARY NAMES MENTIONED ARE TO DESIGNATE PERFORMANCE STANDARDS. EQUIVALENT PRODUCTS MUST BE SUBMITTED FOR APPROVAL.
5. ALL POOL REINFORCING STEEL, METAL FITTINGS, EQUIPMENT WITHIN 5'-0" OF POOL EDGE AND ANY METAL PARTS OF POOL EQUIPMENT IN CONTACT WITH POOL RECIRCULATION SYSTEM MUST BE BONDED PER NEC 680. REFER: 11/AQ1.1

DRAWING INDEX

SHEET	DESCRIPTION
AQ0.0	POOL REFERENCE PLAN
AQ0.1	POOL MECHANICAL ROOM DEMOLITION PLANS
AQ0.2	POOL MECHANICAL ROOM RENOVATION PLANS
AQ0.3	POOL MECHANICAL ROOM EXISTING CONDITIONS
AQ0.4	POOL MECHANICAL ROOM EXISTING CONDITIONS
AQ1.0	POOL MECHANICAL ROOM PLANS
AQ1.1	POOL MECHANICAL DETAILS
AQ1.2	POOL MECHANICAL DETAILS
AQ1.3	POOL MECHANICAL DETAILS
AQ2.0	POOL SYSTEMS SCHEMATIC

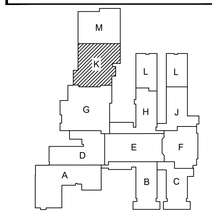
CONTRACTOR SUPPLIED POOL CHEMICALS

DESCRIPTION	AMOUNT
CO2	FULL BULK TANK(S) : 750 LBS
NOTE: OWNER TO RENT BULK CO2 STORAGE TANK FROM LOCAL SUPPLIER.	

POOL ALTERNATES

PROVIDE UNIT PRICING PER 100 SF FOR REGROUTING TILE WITHIN THE POOL SHELL AND ON THE POOL DECK. CONDITIONS WILL BE EVALUATED ONCE THE POOL IS DRAINED AND FOLLOWING ACID WASHING. GROUT JOINTS TO BE REMEDIATED SHALL HAVE EXISTING MATERIAL REMOVED FOR THE FULL DEPTH OF THE TILES AND REPLACED WITH CEMENTITIOUS-BASED GROUT.

KEY PLAN



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SHEET

POOL
REFERENCE
PLAN

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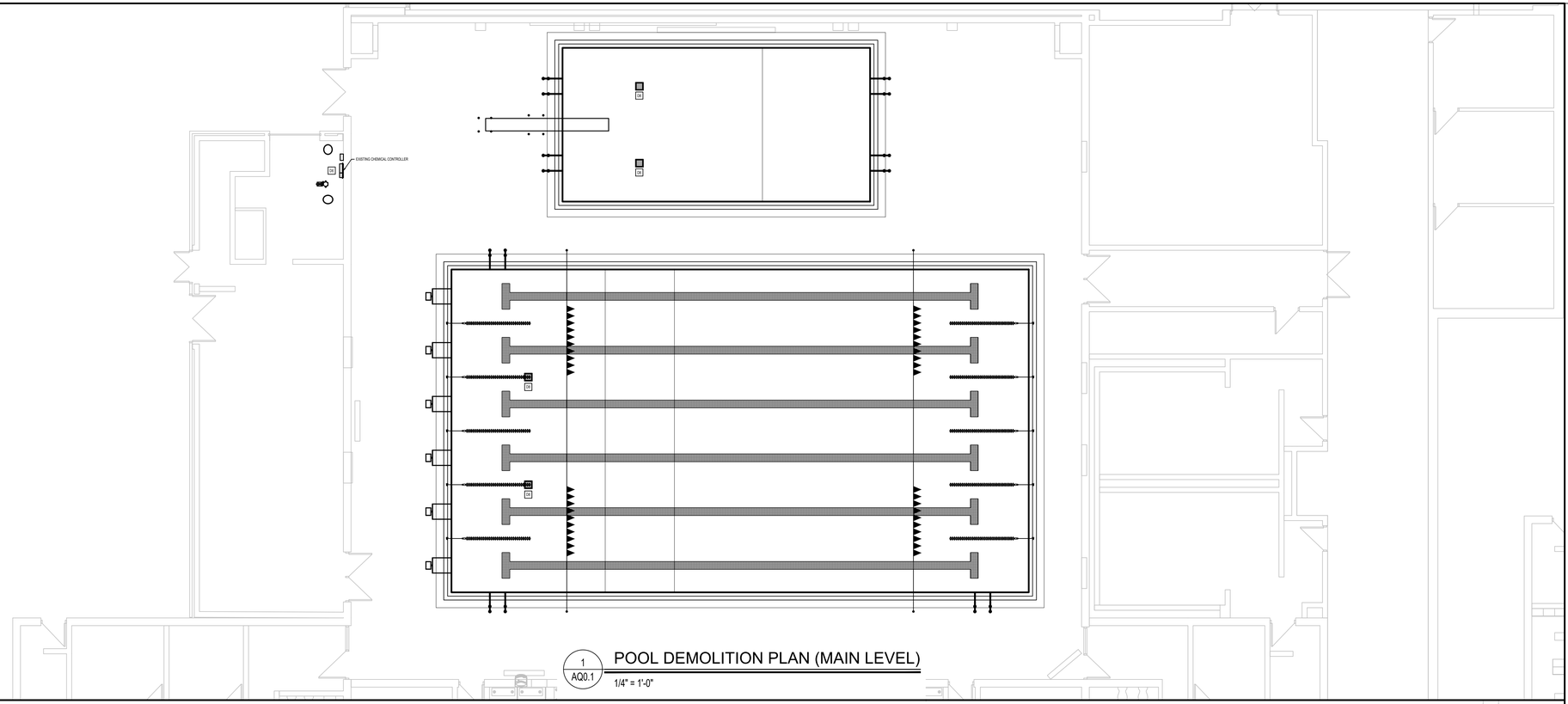
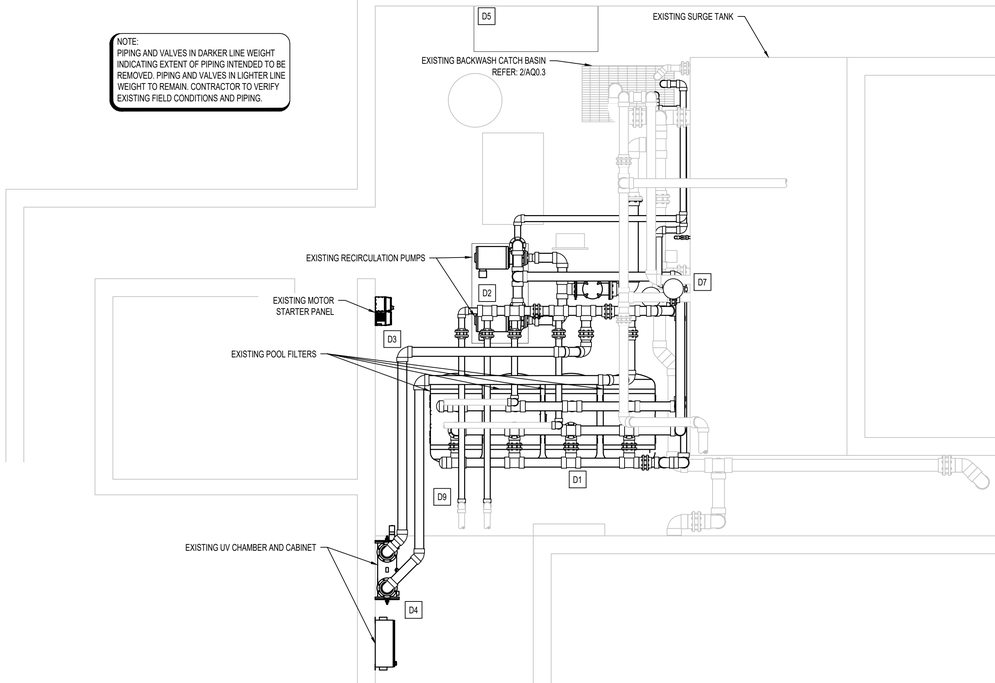


1 AQ0.1 POOL DEMOLITION PLAN (MAIN LEVEL)

1/4" = 1'-0"

NOTE:
PIPING AND VALVES IN DARKER LINE WEIGHT INDICATING EXTENT OF PIPING INTENDED TO BE REMOVED. PIPING AND VALVES IN LIGHTER LINE WEIGHT TO REMAIN. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS AND PIPING.



2 AQ0.1 POOL DEMOLITION PLAN (LEVEL BELOW)

1/4" = 1'-0"

GENERAL POOL DEMOLITION AND RENOVATION NOTES

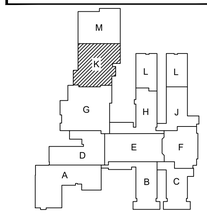
1. COORDINATE ALL DEMOLITION PLANS AND WORK WITH ARCHITECT AND CONSTRUCTION DOCUMENTS PRIOR TO THE START OF DEMOLITION.
2. REVIEW RECORD DOCUMENTS OF EXISTING CONSTRUCTION PROVIDED BY THE OWNER. NEITHER THE OWNER NOR ENGINEER MAKES ANY GUARANTEE THAT THE EXISTING CONDITIONS REFLECT THOSE INDICATED IN THE RECORD DOCUMENTS. CONTRACTOR TO PROVIDE NOTIFICATION OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND THE CONTRACT DOCUMENTS BEFORE PROCEEDING WITH DEMOLITION.
3. CONTRACTOR TO SURVEY EXISTING CONDITIONS AND CORRELATE WITH REQUIREMENTS INDICATED IN THE CONTRACT DOCUMENTS TO DETERMINE THE EXTENT OF DEMOLITION REQUIRED. CONTRACTOR TO RECORD EXISTING CONDITIONS WITH DETAILED PRECONSTRUCTION PHOTOGRAPHS.
4. UNLESS OTHERWISE INDICATED, DEMOLITION WASTE BECOMES PROPERTY OF THE CONTRACTOR.
5. EXCEPT FOR ITEMS OR MATERIALS INDICATED TO BE RECYCLED, REUSED, SALVAGED, REINSTALLED, OR OTHERWISE INDICATED TO REMAIN OWNER'S PROPERTY, REMOVE DEMOLISHED MATERIALS FROM PROJECT SITE AND LEGALLY DISPOSE OF THEM. OWNER HAS THE FIRST RIGHT OF REFUSAL ON ALL DEMOLITION MATERIALS.
6. IF HAZARDOUS MATERIALS ARE ENCOUNTERED, DO NOT DISTURB. IMMEDIATELY NOTIFY THE OWNER AND ENGINEER.
7. INDICATE RECEIPT AND ACCEPTANCE OF ANY HAZARDOUS WASTES BY A LANDFILL FACILITY LICENSED TO ACCEPT SUCH HAZARDOUS WASTES.
8. MAINTAIN EXISTING UTILITIES TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE DURING DEMOLITION OPERATIONS. REFER TO OTHER TRADES FOR COORDINATION.
9. ELECTRICIAN MUST VERIFY EXISTING BOND GRID. ALL NEW EMBEDS AND MECHANICAL EQUIPMENT MUST BE BONDED PER NEC ARTICLE 680.
10. PROTECT ALL EXISTING POOL FINISHES, GUTTERS, MAIN DRAINS, AND ANY OTHER POOL RELATED APPURTENANCES DURING CONSTRUCTION.
11. THE CONTRACTOR MUST BE RESPONSIBLE FOR CONTINUOUSLY MONITORING GROUNDWATER LEVELS ON THE SITE DURING ANY AND ALL PERIODS WHEN THE SWIMMING POOL IS NOT FULL OF WATER. PROTECTION OF THE EXISTING POOL STRUCTURE FROM DAMAGE DUE TO HYDROSTATIC PRESSURE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
12. CONTRACTOR TO PROVIDE AND EXECUTE APPROVED DUST CONTROL PLAN.
13. ALL AREAS OF WORK MUST HAVE DOUBLE CONTAINMENT AND DEDICATED EXHAUST INDEPENDENT OF HVAC.
14. CLEAN ADJACENT STRUCTURES AND IMPROVEMENTS OF DUST, DIRT, AND DEBRIS FOLLOWING DEMOLITION OPERATIONS. CONTRACTOR TO RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE THE START OF DEMOLITION OPERATIONS.

POOL DEMOLITION KEYNOTES

COORDINATE ALL DEMOLITION PLANS WITH ARCHITECT AND CONSTRUCTION DOCUMENTS PRIOR TO DEMOLITION

D1	REMOVE EXISTING SAND FILTERS. REFER: 4/AQ0.3
D2	REMOVE EXISTING RECIRCULATION PUMPS AND STRAINER. REFER: 3/AQ0.3
D3	REMOVE EXISTING MOTOR STARTER PANEL. REFER: 5/AQ0.3
D4	REMOVE EXISTING UV CHAMBER AND CABINET. REFER: 8/AQ0.3
D5	REMOVE EXISTING YELLOW GRATING SHELF AGAINST MECHANICAL ROOM WALL. REFER: 6/AQ0.3
D6	REMOVE EXISTING CHEMICAL CONTROLLER. REFER: 2/AQ0.4
D7	REMOVE TWO EXISTING FISHER VALVES. REFER: 9 & 10/AQ0.3
D8	REMOVE THE EXISTING VGB COVERS AT THE FOUR (4) DRAIN SUMPS. REFER: 3 & 4/AQ0.4
D9	REMOVE EXISTING FLOW METER SENSORS REFERS: 7/AQ0.3

KEY PLAN



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LIVONIA,
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SHEET

POOL
MECHANICAL
ROOM
DEMOLITION
PLANS

PROJECT NUMBER

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SHEET NUMBER

AQ0.1

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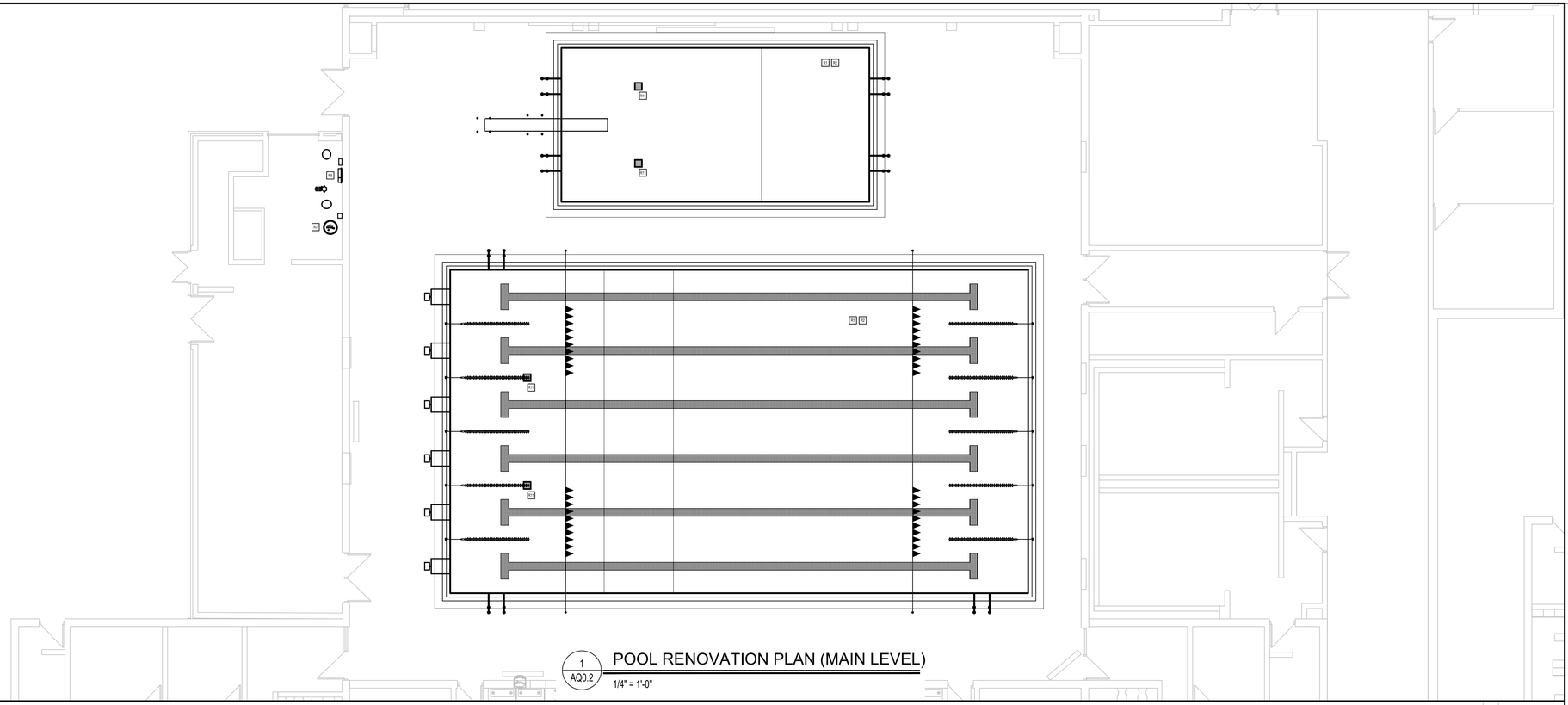
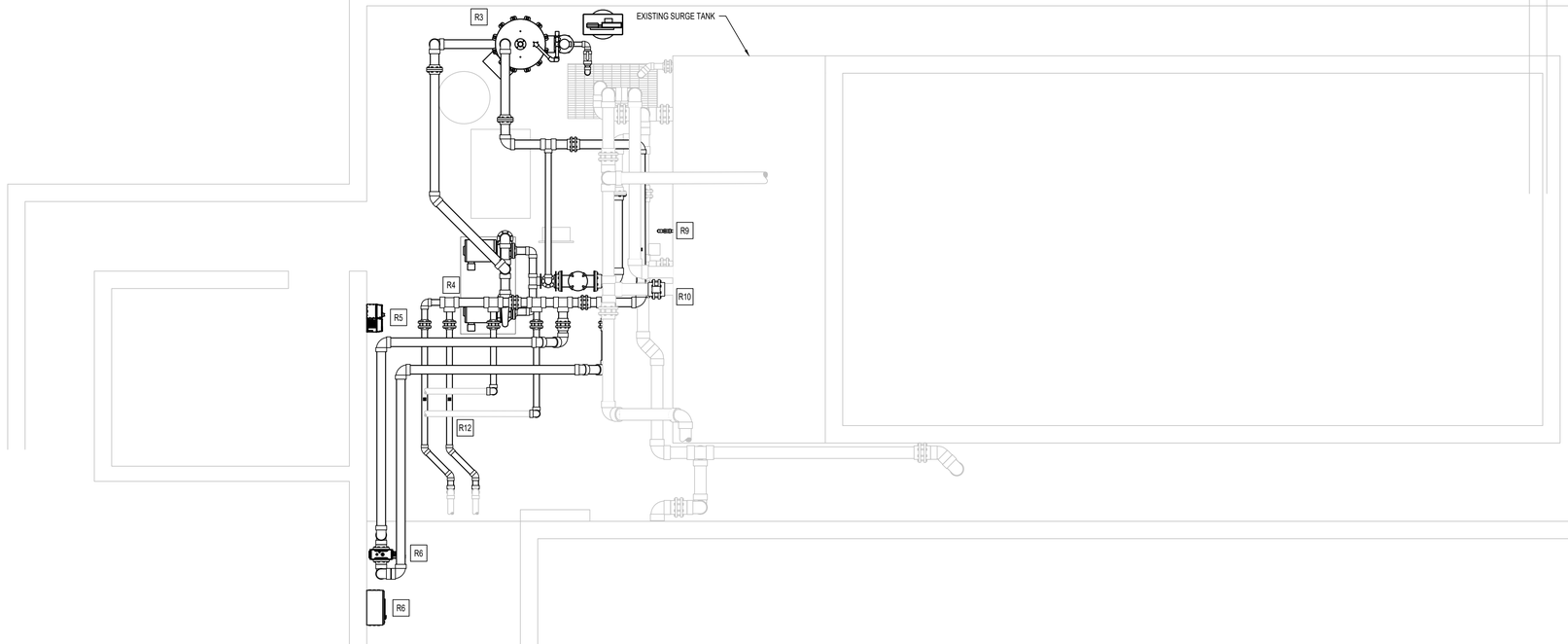
2024-081 24 STEVENSON HIGH SCHOOL POOL FILTRATION PROJECT.RVT



1 AQ0.2 POOL RENOVATION PLAN (MAIN LEVEL)

1/4" = 1'-0"



2 AQ0.2 POOL RENOVATION PLAN (LEVEL BELOW)

1/4" = 1'-0"

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GENERAL POOL DEMOLITION AND RENOVATION NOTES

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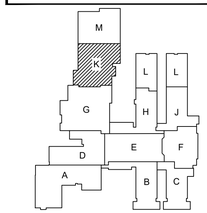
POOL RENOVATION KEYNOTES

COORDINATE ALL DEMOLITION PLANS WITH ARCHITECT AND CONSTRUCTION DOCUMENTS PRIOR TO DEMOLITION

R1	PERFORM ACID WASH ON EXISTING POOL TILE FINISH TO REMOVE THE CURRENT STAINING AND SURFACE CORROSION.
R2	INSTALL NEW GROUT BETWEEN THE TILES OF THE POOL FINISH. GROUT TO MATCH CONSISTENCY OF EXISTING MATERIAL. REFER TO SPECIFICATIONS.
R3	INSTALL REGENERATIVE MEDIA FILTER. REFER: 1/AQ1.2
R4	INSTALL NEW RECIRCULATION PUMPS AND STRAINER. REFER: 1/AQ1.1
R5	INSTALL VARIABLE FREQUENCY DRIVE AND BYPASS FOR NEW PUMPS.
R6	INSTALL NEW UV CHAMBER AND CABINET. REFER: 5/AQ1.1
R7	INSTALL BULK CO2 AND CO2 CONTROLLER. REFER: 3/AQ1.1
R8	INSTALL NEW CHEMICAL CONTROLLER. REFER: 2/AQ1.1
R9	INSTALL NEW WATER LEVEL CONTROLLER. REFER: 10/AQ1.1
R10	INSTALL ELECTRICALLY ACTUATED VALVES. REFER: 8/AQ1.2 & 1/AQ2.0
R11	INSTALL NEW VGB COVERS AT THE FOUR (4) MAIN DRAIN SUMPS. REFER: 9/AQ1.2
R12	INSTALL NEW FLOW SENSORS. REFER: 7/AQ1.1

KEY PLAN



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Pool Filtration Project

LIVONIA,
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SHEET

POOL
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ROOM
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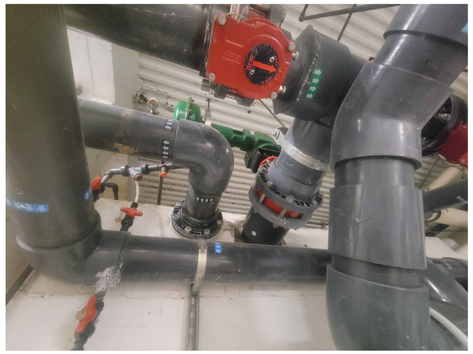
SHEET NUMBER

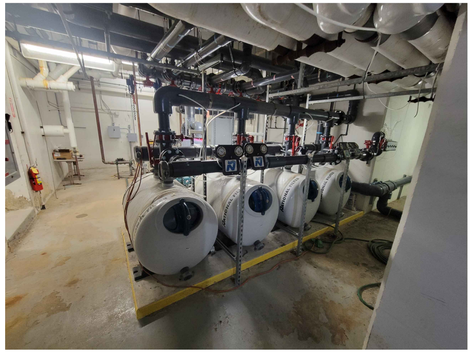
AQ0.2

2024-081 STEVENSON HIGH SCHOOL POOL FILTRATION PROJECT.rvt



10 AQ0.3 EXISTING GUTTER FISHER VALVE
NTS

7 AQ0.3 EXISTING FLOW METER SENSORS
NTS



4 AQ0.3 EXISTING SAND FILTERS
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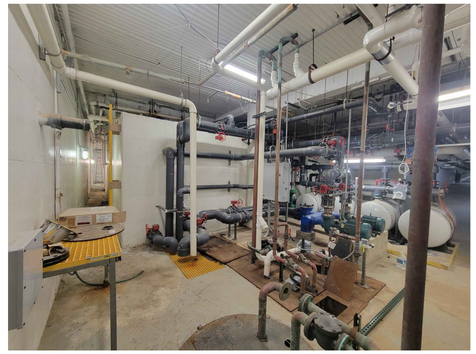
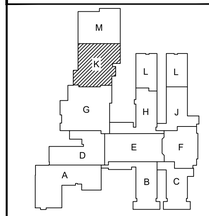


1 AQ0.3 OVERALL MECHANICAL ROOM (LEVEL BELOW)
NTS

KEY PLAN



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11 AQ0.3 EXISTING CHEMICAL INJECTIONS
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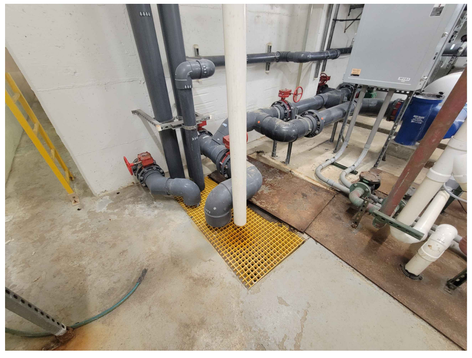
8 AQ0.3 EXISTING UV CHAMBER & CABINET
NTS

5 AQ0.3 EXISTING PUMP MOTOR STARTER
NTS



2 AQ0.3 EXISTING BACKWASH CATCH BASIN TO REMAIN
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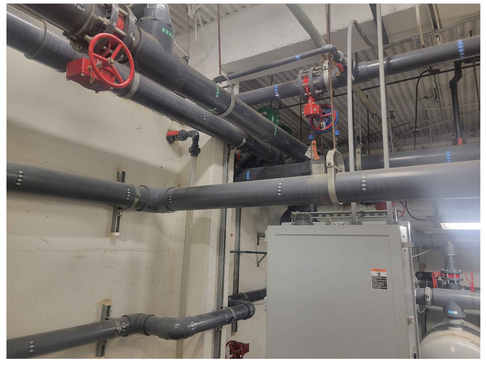

12 AQ0.3 EXISTING WATER LEVEL PIPE FOR NEW SENSORS
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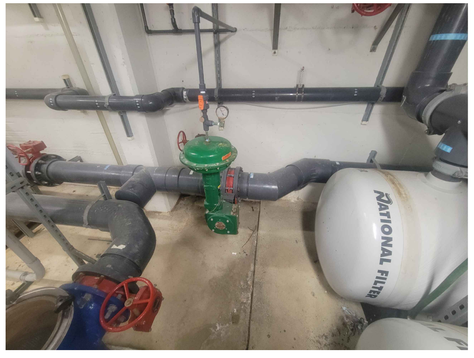

9 AQ0.3 EXISTING MAIN DRAIN FISHER VALVE
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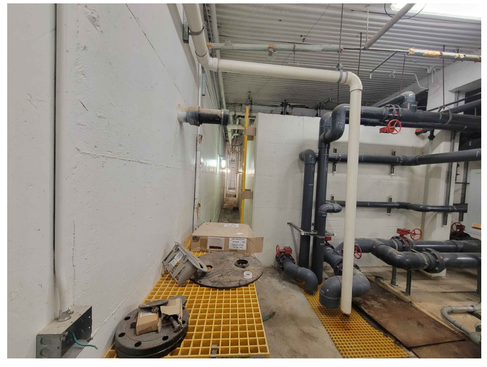

6 AQ0.3 EXISTING YELLOW GRATING SHELF
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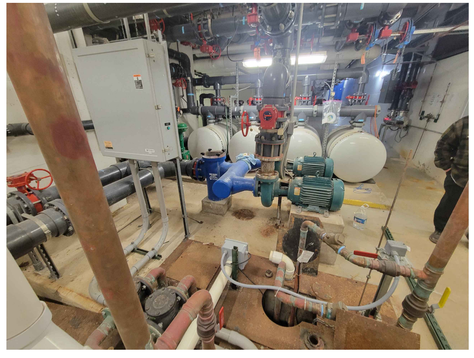

3 AQ0.3 EXISTING RECIRCULATION PUMPS & STRAINER
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SHEET

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EXISTING
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AQ0.3

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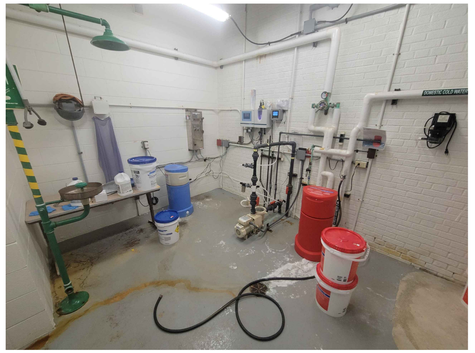
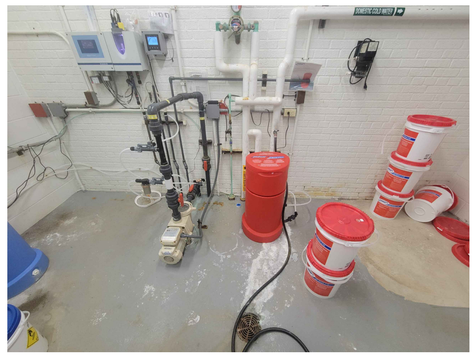
4 AQ0.4 EXISTING DIVE POOL MAIN DRAIN COVERS

NTS



1 AQ0.4 OVERALL MECHANICAL ROOM (MAIN LEVEL)

NTS



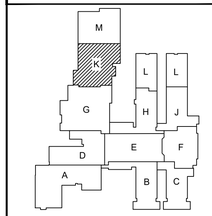
2 AQ0.4 EXISTING CHEMICAL CONTROLLER

NTS

3 AQ0.4 EXISTING LAP POOL MAIN DRAIN COVERS

NTS

KEY PLAN



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PROJECT

Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET

POOL
MECHANICAL
ROOM
EXISTING
CONDITIONS

PROJECT NUMBER

2024-081

SHEET NUMBER

AQ0.4

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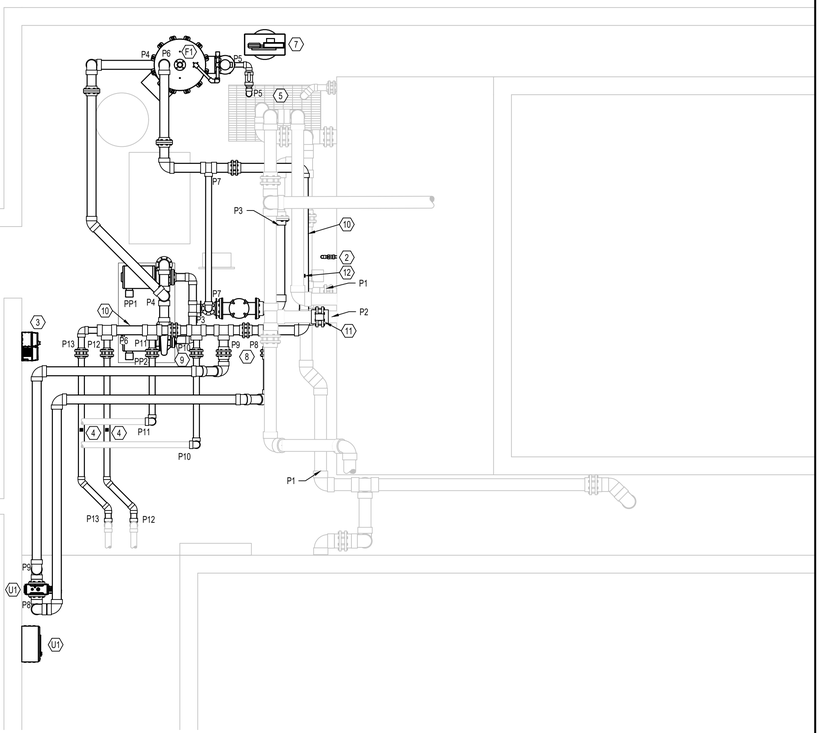
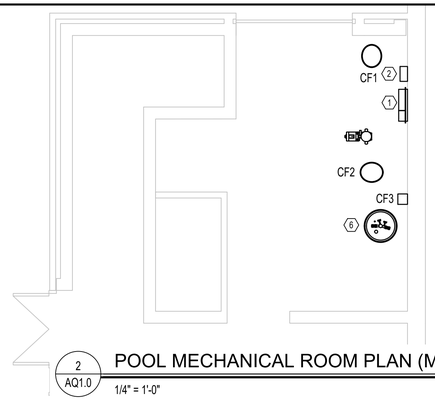


1 AQ1.0 POOL MECHANICAL ROOM PLAN (LEVEL BELOW)

1/4" = 1'-0"



2 AQ1.0 POOL MECHANICAL ROOM PLAN (MAIN LEVEL)

1/4" = 1'-0"

PIPE SCHEDULE

ID	DESCRIPTION
P1	8" FROM M1 & M2 TO SURGE TANK
P2	8" FROM GUTTER LAP/DIVE POOL DROPOUTS TO SURGE TANK
P3	8" FROM SURGE TANK TO PP1 & PP2
P4	6" FROM PP1 & PP2 TO F1
P5	3" FROM F1 TO BACKWASH CATCH BASIN
P6	6" FROM F1 TO P12 & P13
P7	4" PRECOAT LINE FROM P6 TO PP1 & PP2
P8	6" FROM P7 TO U1
P9	6" FROM U1 TO P7
P10	4" FROM P7 TO EXISTING HEATER
P11	4" FROM EXISTING HEATER TO P7
P12	4" FROM P7 TO DIVE POOL INLETS
P13	4" FROM P7 TO LAP POOL INLETS

EQUIPMENT SCHEDULE

ID	ITEM
1	CHEMICAL CONTROLLER REFER: 2/AQ1.1
2	WATER LEVEL CONTROLLER REFER: 10/AQ1.1
3	VARIABLE FREQUENCY DRIVE AND BYPASS PANEL
4	IMPACT FLOW METER REFER: 8/AQ1.1
5	EXISTING BACKWASH CATCH BASIN REFER: 2/AQ0.3
6	CO2 TANK REFER: 3/AQ1.1
7	AIR COMPRESSOR
8	UV TEE REFER: 10/AQ1.2
9	HEATER TEE REFER: 10/AQ1.2
10	CHEMICAL TAP REFER: 6/AQ1.1
11	ELECTRICALLY ACTUATED VALVE REFER: 8/AQ1.2
12	FLOW METER SENSOR REFER: 7/AQ1.1

GENERAL POOL MECHANICAL ROOM NOTES

1. THE FOLLOWING INFORMATION MUST BE LAMINATED AND POSTED IN THE POOL MECHANICAL ROOM: BACKWASH PROCEDURE, POOL FILLING & DRAINING, VALVE REFERENCE CHART, POOL MECHANICAL ROOM PLAN, POOL PIPING SCHEMATICS & POOL SYSTEMS SCHEMATICS.

PIPING

1. MINIMUM 7'-0" CLEARANCE BENEATH ALL OVERHEAD PIPING.
2. PROVIDE AND SUPPORT OVERHEAD AND VERTICAL PIPING PER SPECIFICATION REQUIREMENTS.
3. LABEL AND IDENTIFY ALL PIPING IN COMPLIANCE WITH THE SPECIFICATIONS.
4. ALL FLOW METERS MUST BE SIZED TO MATCH THE PIPE ON WHICH IT IS INSTALLED. PROVIDE PRESSURE GAUGES ON INFLUENT AND EFFLUENT SIDE OF EACH FILTRATION SYSTEM AND A FULL LINE SIZE FLOW METER ON FILTER RETURN.
5. REFER TO DETAILS 2-7/AQ1.2 FOR INSTALLATION OF PIPE SUPPORTS.
6. ALL VALVE HARDWARE MUST BE 316L STAINLESS STEEL AND MEET ANSI HARDWARE INSTALLATION GUIDELINES. REFER: 9/AQ1.1

CHEMICAL TREATMENT

1. CHEMICAL FEED REQUIREMENTS - REFER TO THE POOL SYSTEMS SCHEMATIC(S) ON AQ2.0.
2. INTERLOCK POOL RECIRCULATION PUMP(S) WITH ITS CORRESPONDING WATER CHEMISTRY CONTROLLER, CHEMICAL FEED PUMP(S), AND HEATER(S).
3. PROVIDE SIGNAGE ON CHEMICAL ROOM DOORS IN COMPLIANCE WITH THE STATE FIRE CODE. REFER: 1/AQ1.3
4. SECURE CHEMICAL METERING PUMP FEED LINES TO WALL AND/OR OVERHEAD WITH CLIPS OR DEVICES THAT DO NOT CRIMP, DISTORT OR ALLOW HIGH AND LOW AREAS IN TUBING RUNS. PROVIDE CHECK VALVE AND SHUT-OFF VALVE BEFORE LINES ENTER POOL RETURN PIPING.
5. WATER CHEMISTRY CONTROLLERS SHALL CONTROL THE SANITIZING SYSTEM AND PH CONTROL SYSTEM AND SHUT THEM DOWN UPON LOSS OF SAMPLE STREAM FLOW.
6. THE CHEMICAL CONTROL SYSTEM BYPASS LINE SHALL SAMPLE WATER AFTER THE FILTERS AND BEFORE THE HEATER BYPASS LINE.
7. INSTALL SANITIZER INJECTION POINT DOWNSTREAM OF PH BUFFER INJECTION POINT ON FILTERED WATER RETURN PIPE. CHEMICAL INJECTION POINTS SHALL BE LOCATED DOWNSTREAM OF ALL OTHER EQUIPMENT/SYSTEMS IN THE POOL MECHANICAL ROOM AT A MAXIMUM HEIGHT OF 7'-0" ABOVE FINISHED FLOOR. REFER: 6/AQ1.1

ELECTRICAL

1. GFCI'S PROVIDED AT OUTLETS. REFER TO ELECTRICAL.
2. CONDUIT SHALL BE ROUTED OVERHEAD OR BELOW GRADE.

FILTER SCHEDULE

ID	POOL	MANUFACTURER	FILTER MODEL	QTY.	FILTRATION TYPE	MAXIMUM FILTRATION RATE (GPM/SQ. FT)	DESIGN FILTRATION RATE (GPM/SQ.FT.)	REQUIRED FILTRATION AREA (SQ. FT.)	DESIGN FILTRATION AREA (SQ. FT.)	FILTER TANK VOLUME (GAL)	DRAIN FLOW RATE PER FILTER (GPM)
F1	LAP/DIVE	DEFENDER	SP-33-48-732	1	RMF	1.3	0.95	416.9	572.0	250	300

NOTE:
1. DRAIN METHOD MUST BE MANUAL.
2. ALL FILTER SUPPORTS MUST BE SEISMICALLY RATED FOR THE SEISMIC ZONE IN WHICH IT IS INSTALLED IN ACCORDANCE WITH LOCAL AND/OR STATE REQUIREMENTS.
3. FILTER MANUFACTURER MUST CERTIFY FILTER MEDIA.
4. THE DRAIN PIPING MUST TERMINATE NO CLOSER THAN 6" ABOVE THE FLOOD RIM OF THE DRAIN BASIN OR TWICE THE PIPE DIAMETER, WHICHEVER IS GREATER.
5. FILTER TANK ASSEMBLIES MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL FOR A MAXIMUM FLOW RATE 20 GPM PER SQUARE FOOT OF FILTER MEDIA.
6. THE BACKWASH THROTTLING VALVE(S) HANDLE MUST BE REMOVED AND TURNED OVER TO THE OWNER ONCE THE BACKWASH FLOW RATE(S) HAVE BEEN TESTED, ADJUSTED AND BALANCED.
7. PROVIDE 1" DIAMETER, SCHEDULE 80 PIPE FROM THE AUTOMATIC AIR VENT ON EACH OF THE FILTER VESSEL TO THE NEAREST FLOOR DRAIN OR BACKWASH CATCH BASIN. THE VENT PIPE MUST BE SLOPED TO THE DRAIN.
8. FILTER TANK ASSEMBLIES MUST BEAR THE NATIONAL SANITATION FOUNDATION SEAL OF APPROVAL FOR A MAXIMUM FLOW RATE OF 1.6 GPM PER SQUARE FOOT OF FILTER MEDIA.
9. PROVIDE HARD PLUMBED SCHEDULE 80 PIPE FROM BOTTOM OF THE FILTER TANK TO DRAIN BASIN IN ORDER TO DRAIN TANK AND MEDIA ON AN NEEDED BASIS. PIPE SLOPED FROM FILTER TANK TO WASTE PIT. VALVES MUST BE PROVIDED TO DRAIN EACH FILTER INDEPENDENTLY.
10. PROVIDE NON-HAZARDOUS, NON-TOXIC, FILTER MEDIA, PARTICLE SIZE MUST HAVE MEDIAN PORE SIZE OF NO GREATER THAN 20 MICRONS.
11. REFER: 1/AQ1.2

PUMP SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	SIZE	GPM	TDH	HP	NPSHR	HAIR/LINT MAKE
PP1	LAP/DIVE POOL RECIRCULATION PUMP 1 REFER: 1/AQ1.1	AURORA	3801	4"X3"	542	73	15.0	8.3	MER-MADE
PP2	LAP/DIVE POOL RECIRCULATION PUMP 2 REFER: 1/AQ1.1	AURORA	3801	4"X3"	542	73	15.0	8.3	MER-MADE

NOTE:
1. THE MANUFACTURER INDICATED IS BASIS OF DESIGN. PUMP MANUFACTURERS: GRISWOLD, HERBORNER, PACO OR AURORA MUST BE CONSIDERED EQUAL PROVIDED THEY MEET SPECIFICATIONS AS INDICATED IN BID DOCUMENTS.
2. POOL PUMPS AND STRAINERS MUST BE INSTALLED ON HOUSEKEEPING PADS.
3. PROVIDE INFLUENT AND EFFLUENT GAUGES FOR EACH PUMP. PRESSURE GAUGES HAVE A RANGE OF 0-60 PSI. COMPOUND GAUGES HAVE A RANGE OF 0-30 HG / 0-60 PSI.
4. PROVIDE WITH 460 VOLT, 3 PHASE, 60HZ, 1800 RPM MOTOR.
5. PROVIDE WITH CHECK VALVE.
6. PROVIDE VARIABLE FREQUENCY DRIVE & BYPASS.

UV TREATMENT SYSTEMS SCHEDULE

ID	POOL	MODEL NUMBER	CALCULATED 60 MJ/CM2 (GPM)	LAMPS	POWER (KW)	VOLTAGE (V) WITH BREAKER SIZE (50 OR 60 HZ)
U1	LAP/DIVE	WF-125-6-N	616	1 @ 2.5KW	2.5	208 V (1Φ)-30A 220 V (1Φ)-30A 230 V (1Φ)-30A 240 V (1Φ)-30A

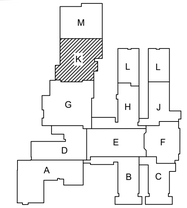
NOTE:
1. THE BASIS OF DESIGN MANUFACTURER IS ETS.
2. INTERLOCK UV SYSTEM WITH CHEMICAL CONTROLLER OR RECIRCULATION PUMP.
3. REFER: 5/AQ1.1

CHEMICAL FEED SCHEDULE

ID	DESCRIPTION	MANUFACTURER	MODEL	FLOW	NOTES
CF1	EXISTING CHLORINATION BOOSTER PUMP TO REMAIN	PULSAR	PRECISION 30	36 LBS/DAY	N/A
CF2	EXISTING ACID FEED PUMP TO REMAIN	PULSAR	ACID PLUS	60 LBS/DAY	N/A
CF3	CO2 FEED REFER: 3/AQ1.1	PROMINENT	CO2-200	20-200 SCFH	1,2,3,4

NOTE:
1. THE MANUFACTURER INDICATED IS BASIS OF DESIGN. ALTERNATE MANUFACTURER: BECS, EKO3 OR APPROVED EQUAL.
2. PROVIDE WITH 120 VOLT, SINGLE PHASE, ADJUSTABLE FEED.
3. INTERLOCK WITH POOL RECIRCULATION PUMP.
4. INTERLOCK CHEMICAL FEED PUMP WITH FILTER TO PREVENT FEEDING DURING PRE-COAT CYCLE.

KEY PLAN



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LIVONIA,
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SHEET

POOL
MECHANICAL
ROOM
PLANS

PROJECT NUMBER

2024-081

SHEET NUMBER

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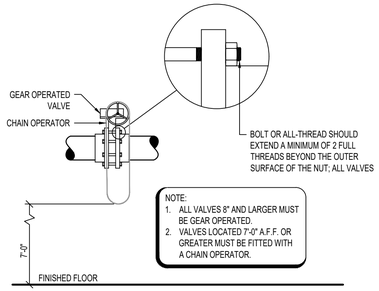
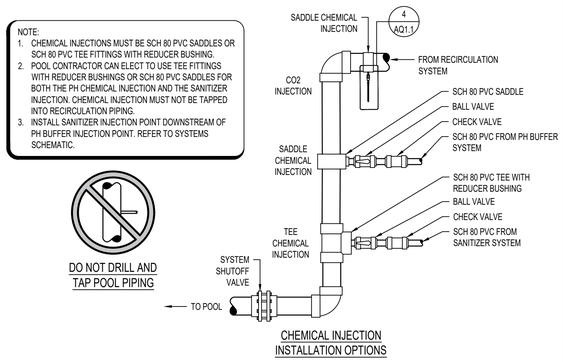
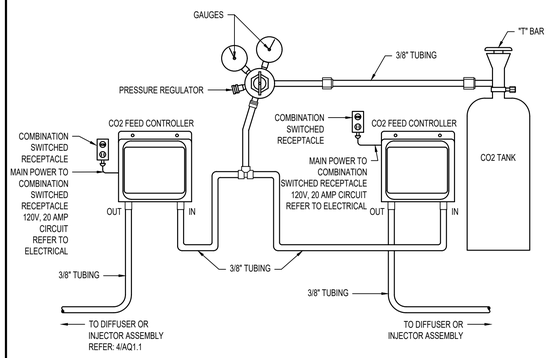
2024-081 STEVENSON HIGH SCHOOL POOL FILTRATION PROJECT



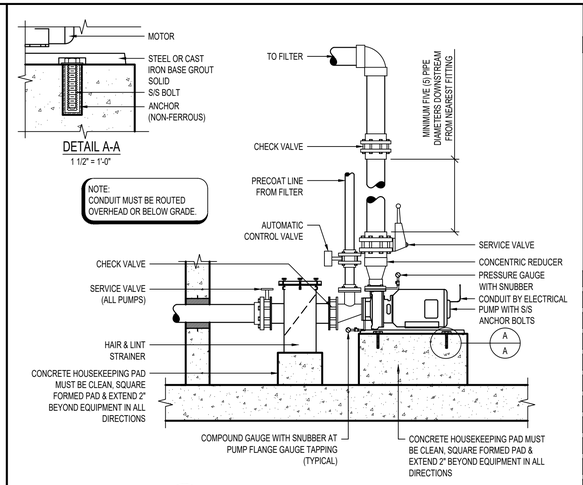
9 AQ1.1 VALVE
1/2" = 1'-0"



6 AQ1.1 CHEMICAL INJECTION
1/2" = 1'-0"

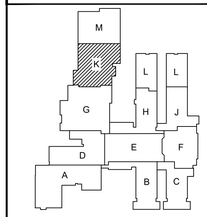


3 AQ1.1 CO2 STORAGE REGULATION
1/2" = 1'-0"



1 AQ1.1 TYPICAL PUMP DETAIL
1/2" = 1'-0"

KEY PLAN



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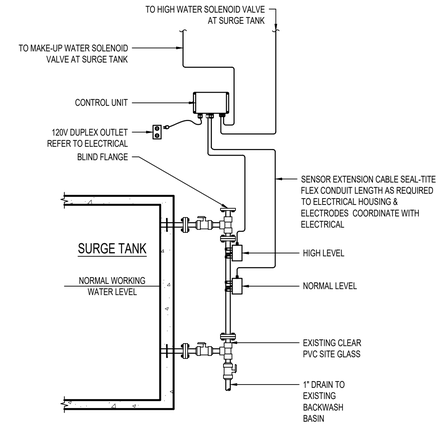
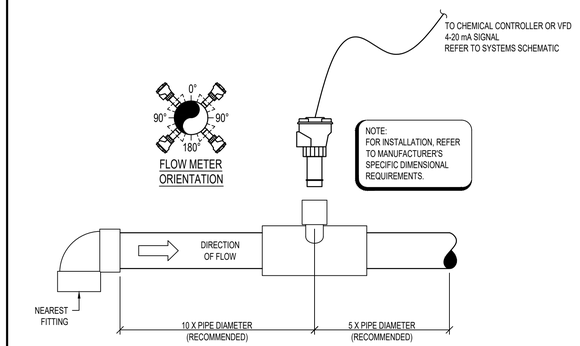


10 AQ1.1 WATER LEVEL CONTROLLER
3/4" = 1'-0"



7 AQ1.1 FLOW METER SENSOR
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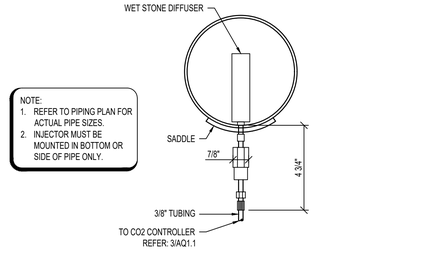
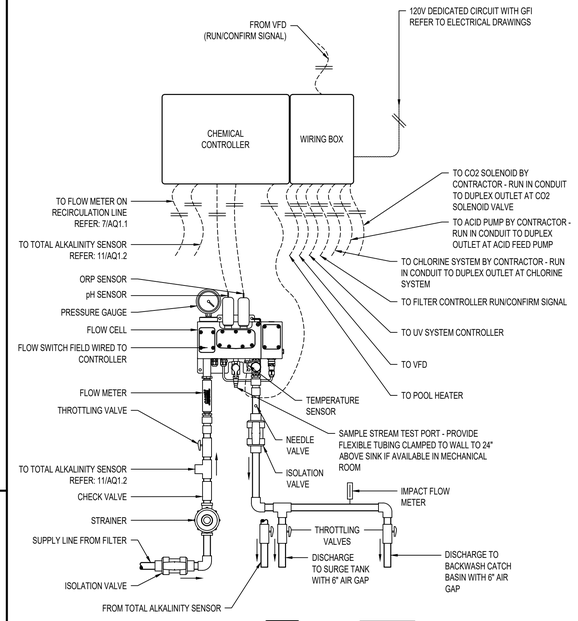
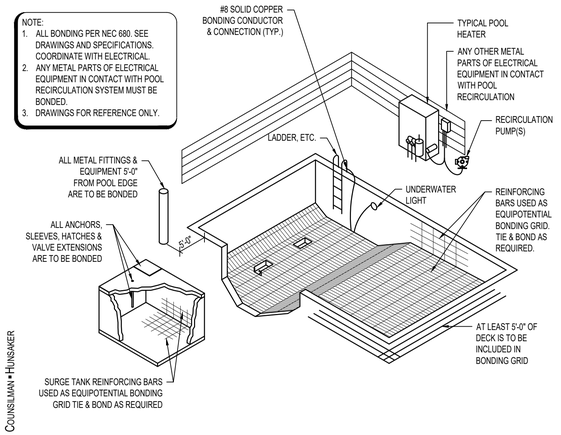


4 AQ1.1 CO2 DIFFUSER
3" = 1'-0"



NOTES:
1. INTERLOCK WITH RECIRCULATION PUMP OCCURS INSIDE THE WIRING BOX ON BECS CONTROLLERS. CONTRACTOR TO PROVIDE FIELD WIRE INTERLOCK EXTERNAL TO THE CONTROLLER IF A BECS CONTROLLER IS NOT USED.
2. DRAWING IS FOR REFERENCE ONLY. REFER TO THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
3. PIPE RUN FROM RECIRCULATION PIPE TO SAMPLE CELL TO BE 50 FEET OR LESS.
4. SAMPLE FEED PIPING TO/FROM THE RECIRCULATION SYSTEM TO THE WATER CHEMISTRY CONTROLLER MUST BE SADDLED OR TEED. NO TAPPING OR DRILLING INTO THE PIPING WILL BE ALLOWED.
5. PROVIDE ETHERNET CONNECTION FOR REMOTE ACCESS TO ALL WATER CHEMISTRY CONTROLLERS AND COORDINATE INTERFACE TO BUILDING MANAGEMENT SYSTEM. REFER TO ELECTRICAL AND/OR CONTROLS CONSULTANT.
6. TO ALLOW THE FILTER CONTROLLER TO TURN OFF/ON THE RECIRCULATION PUMP, ROUTE THE "VFD (START/STOP SIGNAL)" THROUGH THE FILTER CONTROLLER PRIOR TO THE VFD.
7. TO ALLOW THE FILTER CONTROLLER TO TURN OFF/ON THE POOL HEATER, ROUTE THE "TO POOL HEATER" SIGNAL THROUGH THE FILTER CONTROLLER PRIOR TO THE POOL HEATER.

2 AQ1.1 CHEMICAL CONTROLLER
NTS



11 AQ1.1 TYPICAL POOL BONDING DETAIL
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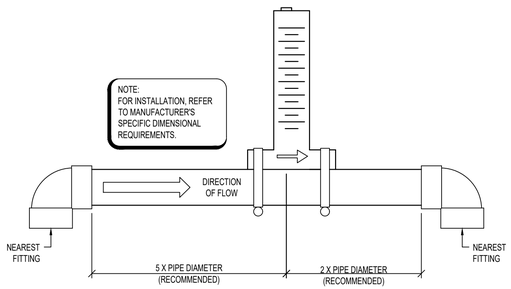
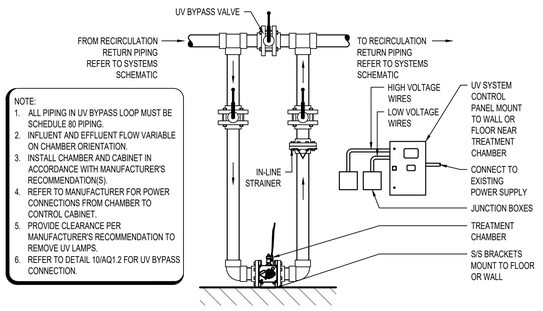


8 AQ1.1 IMPACT FLOW METER
3/4" = 1'-0"



5 AQ1.1 UV TREATMENT SYSTEM
1/2" = 1'-0"

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PROJECT
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Pool Filtration Project

LIVONIA,
MICHIGAN

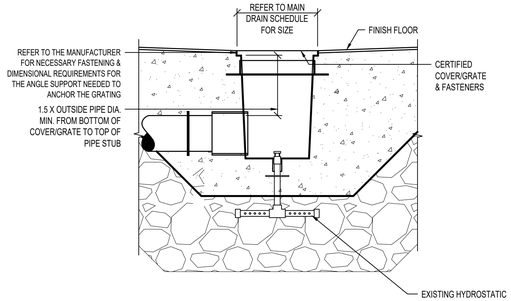
SHEET
POOL
MECHANICAL
DETAILS

PROJECT NUMBER
2024-081

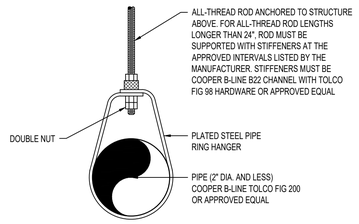
SHEET NUMBER
AQ1.1

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

NOTE:
1. CONTRACTOR TO REPLACE MAIN DRAIN GRATING ONLY. VERIFY EXISTING INSTALLED CONDITIONS ONCE THE POOL IS DRAINED INCLUDING ANGLE SUPPORTS FOR THE DRAIN COVERS, SEPARATION OF THE SUCTION LINE FROM THE UNDERSIDE OF THE COVER, AND PROPER OPERATION OF THE HYDROSTATIC RELIEF VALVES.
2. ALL MAIN DRAINS MUST BE CONSTRUCTED TO COMPLY WITH THE VIRGINIA GRAEME BAKER ACT AND ASME ANSI/APSP-16-2017.
3. MAIN DRAINS MAY USE MULTIPLE VGB COMPLIANT GRATES SECURELY FASTENED PER MANUFACTURER RECOMMENDATIONS.



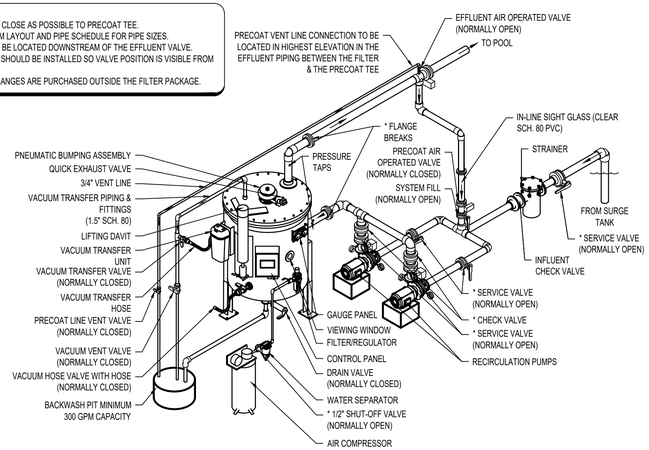
9 AQ1.2 MAIN DRAIN
3/4" = 1'-0"



NOTE:
1. BASIS OF DESIGN: COOPER B-LINE. ALTERNATE MANUFACTURER GRINELL OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.

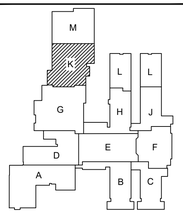
6 AQ1.2 SWIVEL RING PIPE HANGER
1 1/2" = 1'-0"

NOTE:
1. INSTALL EFFLUENT VALVE AS CLOSE AS POSSIBLE TO PRECOAT TEE.
2. REFER TO MECHANICAL ROOM LAYOUT AND PIPE SCHEDULE FOR PIPE SIZES.
3. AUXILIARY EQUIPMENT MUST BE LOCATED DOWNSTREAM OF THE EFFLUENT VALVE.
4. ALL PNEUMATIC ACTUATORS SHOULD BE INSTALLED SO VALVE POSITION IS VISIBLE FROM FLOOR.
5. * - INDICATED VALVES AND FLANGES ARE PURCHASED OUTSIDE THE FILTER PACKAGE.



1 AQ1.2 REGENERATIVE MEDIA SCHEMATIC
NTS

KEY PLAN



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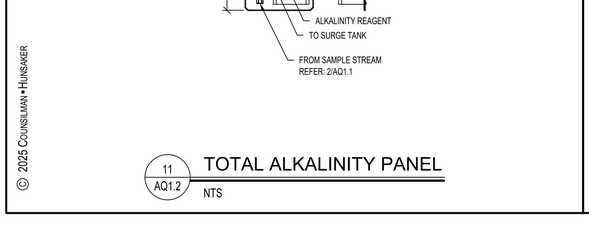


NOTE:
INSTALL TEES IN A HORIZONTAL OR A DOWNWARD VERTICAL DIRECTION. TEES MUST NOT BE ORIENTED IN AN UPWARD DIRECTION.

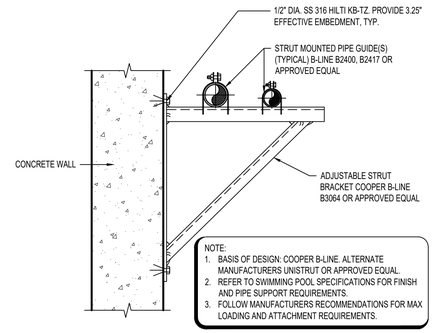
10 AQ1.2 PIPING BYPASS
1/2" = 1'-0"

NOTE:
1. BASIS OF DESIGN: COOPER B-LINE OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.
4. WHERE ADJUSTABLE SUPPORT IS NOT REQUIRED, STANDARD SUPPORT ASSEMBLY B-LINE B3088 AND B3090 OR APPROVED EQUAL.

7 AQ1.2 FLOOR MOUNTED PIPE SUPPORT
3" = 1'-0"

NOTE:
1. BASIS OF DESIGN: COOPER B-LINE. ALTERNATE MANUFACTURERS UNISTRUT OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.

4 AQ1.2 TRAPEZE HANGER
3" = 1'-0"



NOTE:
1. BASIS OF DESIGN: COOPER B-LINE. ALTERNATE MANUFACTURERS UNISTRUT OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.

2 AQ1.2 ADJUSTABLE STRUT BRACKET
3" = 1'-0"

11 AQ1.2 TOTAL ALKALINITY PANEL
NTS

NOTE:
ELECTRICALLY ACTUATED BUTTERFLY VALVE MUST BE OPEN DURING TYPICAL POOL OPERATION AND INTERLOCKED WITH THE POOL RECIRCULATION PUMP VFD. VALVE MUST AUTOMATICALLY CLOSE WHEN THE RECIRUCALTION PUMP IS TURNED OFF OR THERE IS A LOSS OF POWER. WHEN POWER IS RESTORED TO THE PUMP AND IT IS RUNNING AGAIN VALVE MUST OPEN AND RESUME NORMAL OPERATION. VALVE MUST HAVE BATTERY BACKUP. REFER TO ELECTRICAL.

8 AQ1.2 ELECTRICALLY ACTUATED VALVE
1" = 1'-0"

NOTE:
1. BASIS OF DESIGN: COOPER B-LINE. ALTERNATE MANUFACTURER UNISTRUT OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.

5 AQ1.2 FLOOR MOUNTED ADJUSTABLE STRUT BRACKET
3" = 1'-0"

NOTE:
1. BASIS OF DESIGN:COOPER B-LINE. ALTERNATE MANUFACTURER GRINELL OR APPROVED EQUAL.
2. REFER TO SWIMMING POOL SPECIFICATIONS FOR FINISH AND PIPE SUPPORT REQUIREMENTS.
3. FOLLOW MANUFACTURERS RECOMMENDATIONS FOR MAX LOADING AND ATTACHMENT REQUIREMENTS.

3 AQ1.2 CLEVIS PIPE HANGER
1 1/2" = 1'-0"

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PROJECT
Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET
POOL
MECHANICAL
DETAILS

PROJECT NUMBER
2024-081

SHEET NUMBER
AQ1.2

2024-081 | PSFS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

CALCIUM HYPOCHLORITE

SODIUM BICARBONATE

CARBON DIOXIDE

RATING EXPLANATION GUIDE

RATING	HEALTH HAZARD	FLAMMABILITY HAZARD	INSTABILITY HAZARD
4	CAN BE LETHAL	BELOW 73 DEGREES F	MAY EXPLODE AT NORMAL TEMPERATURES & PRESSURES
3	CAN CAUSE SERIOUS OR PERMANENT INJURY	ABOVE 73 DEGREES, BELOW 100 DEGREES F	MAY EXPLODE AT HIGH TEMPERATURE OR SHOCK
2	CAN CAUSE TEMPORARY INCAPACITATION OR RESIDUAL INJURY	ABOVE 100 DEGREES F, BELOW 200 DEGREES F	VIOLENT CHEMICAL CHANGE AT HIGH TEMPERATURES OR PRESSURES
1	CAN CAUSE SIGNIFICANT IRRITATION	ABOVE 200 DEGREES F	NORMALLY STABLE, HIGH TEMPERATURES MAKE UNSTABLE
0	NO HAZARD	WILL NOT BURN	STABLE

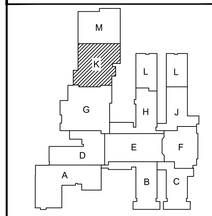
CONFIRM SIGNAGE WITH LOCAL FIRE MARSHAL AND/OR BUILDING CODES PRIOR TO INSTALLATION.

1
AQ1.3

HAZARD SIGNAGE

NTS

KEY PLAN



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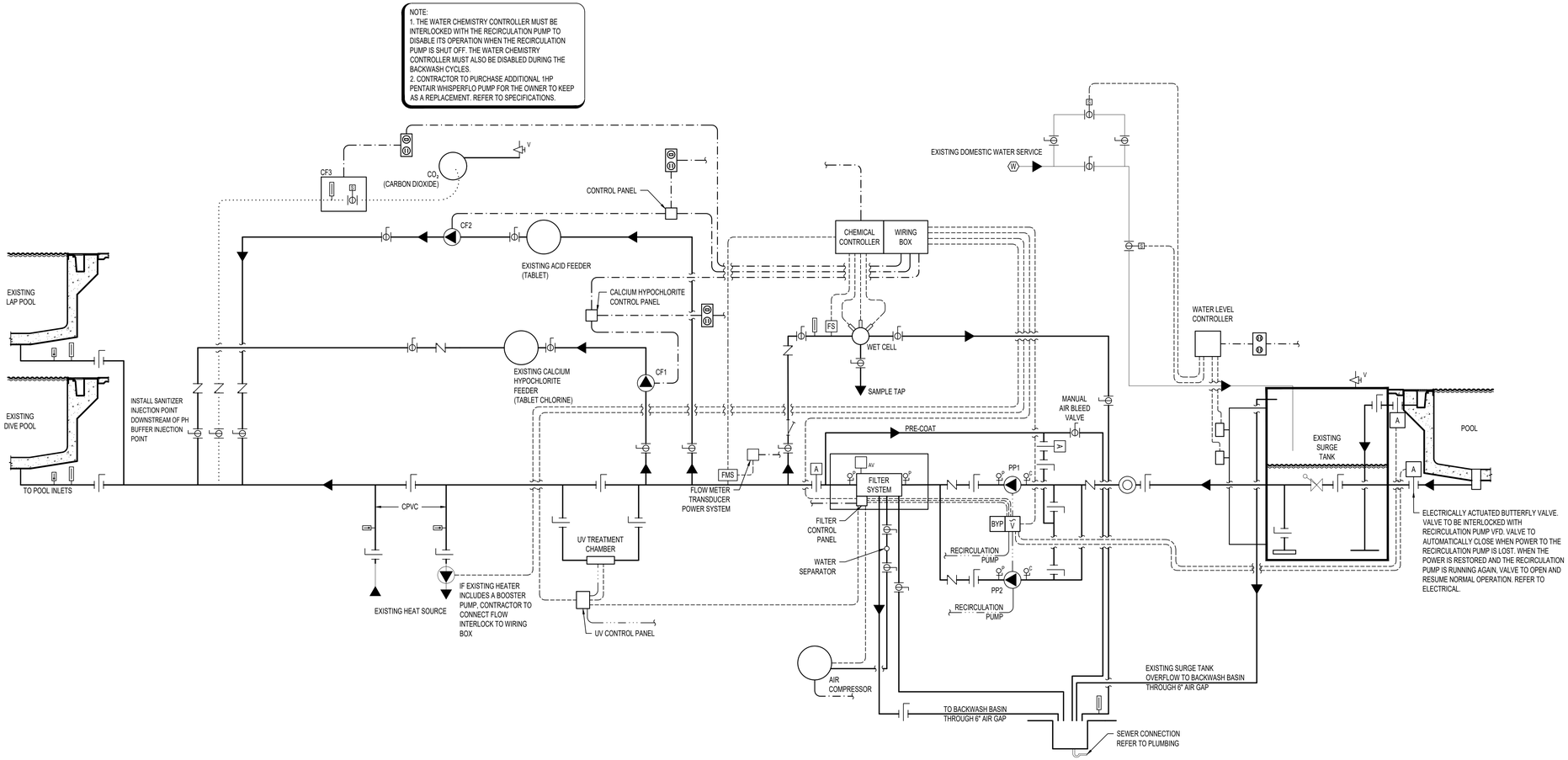
2024-081 LPS Stevenson HS Pool 20250219.pln 2/19/2025 7:47:14 PM

NOTE:
1. THE WATER CHEMISTRY CONTROLLER MUST BE INTERLOCKED WITH THE RECIRCULATION PUMP TO DISABLE ITS OPERATION WHEN THE RECIRCULATION PUMP IS SHUT OFF. THE WATER CHEMISTRY CONTROLLER MUST ALSO BE DISABLED DURING THE BACKWASH CYCLES.
2. CONTRACTOR TO PURCHASE ADDITIONAL 1HP PENTAIR WHISPERFLO PUMP FOR THE OWNER TO KEEP AS A REPLACEMENT. REFER TO SPECIFICATIONS.

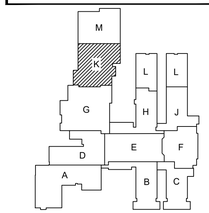


1 AQ2.0 POOL SYSTEMS SCHEMATIC
NTS

SCHEMATIC LEGEND

LEGEND	ITEM
	FLOW DIRECTION
	BUTTERFLY VALVE
	BALL VALVE
	MODULATING FLOAT VALVE
	SOLENOID VALVE
	CHECK VALVE
	THREE WAY VALVE
	PUMP
	HAIR AND LINT STRAINER
	"Y" STRAINER
FMS	FLOW METER SENSOR
FS	FLOW SWITCH
	IMPACT FLOW METER
	VENTURI FLOW METER
W	WATER METER
AV	AUTOMATIC AIR VENT
V	AIR VENT
I	AIR INLET
P	PRESSURE GAUGE AND PETCOCK
C	COMPOUND GAUGE AND PETCOCK
	DIGITAL TEMP SENSOR
	THERMOMETER
A	PNEUMATIC ACTUATOR
	FLOW CONTROL VALVE
	COMBINATION SWITCH/RECEPTACLE
	DUPLEX OUTLET
APSC	AUTOMATIC PUMP SHUT-OFF DEVICE
V	VARIABLE FREQUENCY DRIVE
R	REMOTE START/STOP
E	EMERGENCY STOP
BYP	VARIABLE FREQUENCY DRIVE BYPASS
CMS	CONTACT MOTOR SELECTOR
T	ELECTRONIC FLOCCULATION SIGNAL TAG
T	15 MINUTE TIMER SWITCH
	LOW VOLTAGE CONTROL
	WATER LINE
	1 PHASE POWER
	3 PHASE POWER
	CO_2 LINE
N	NETWORK LINE BY ELECTRICAL
G	GAS LINE

KEY PLAN



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LIVONIA,
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MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
AAV	AUTOMATIC AIR VENT / AIR ADMITTANCE VALVE
AD	ACCESS DOOR
AE	AIR EXTRACTOR
AFF	ABOVE FINISHED FLOOR
APD	AIR PRESSURE DROP
ASR	AUTOMATIC SPRINKLER RISER
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
BWV	BACKWATER VALVE
CAP	CAPACITY
CAV	CONSTANT AIR VOLUME
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CIRC	CIRCULATING
CLG	COOLING
CO	CLEAN OUT
CONT	CONTINUATION OR CONTINUED
CONV	CONVECTOR
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
DB	DRY BULB TEMPERATURE
DEG	DEGREES
DDC	DIRECT DIGITAL CONTROL
DN	DOWN
DTC	DRAIN TILE CONNECTION
DWH	DOMESTIC WATER HEATER
(E)	EXISTING
EA/EXH	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EDB	ENTERING DRY BULB TEMPERATURE
EF	EXHAUST FAN
EJ	EXPANSION JOINT
EL	ELEVATION
ELECT	ELECTRICAL
EMS	ENERGY MANAGEMENT SYSTEM
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWC	ELECTRIC WATER COOLER
°F	DEGREES FAHRENHEIT
FA	FACE AREA (COIL) / FREE AREA (LOUVER)
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FHR	FIRE HOSE RACK
FHV	FIRE HOSE VALVE
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FFD	FUNNEL FLOOR DRAIN
FFE	FINISHED FLOOR ELEVATION
FS	FLOOR SINK
FT	FEET
FURN	FURNISHED
FV	FACE VELOCITY
FVC	FIRE VALVE CABINET
GAL	GALLON
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HB	HOSE BIBB
HO	HUB OUTLET
HP	HORSEPOWER

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
HR	HOUR
HTG	HEATING
HYD	HYDRANT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCHES
INST	INSTALLED
INV	INVERT
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LAV	LAVATORY
LBS/HR	POUNDS PER HOUR
LDB	LEAVING DRY BULB TEMPERATURE
LRA	LOCKED ROTOR AMPS
LWB	LEAVING WET BULB TEMPERATURE
MAV	MANUAL AIR VENT
MAX	MAXIMUM
MBH	1000 BRITISH THERMAL UNITS PER HOUR
MCA	MINIMUM CIRCUIT AMPACITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MOD	MOTOR OPERATED DAMPER (AUTOMATIC)
MOP	MAXIMUM OVER-CURRENT PROTECTION
N.C.	NOISE CRITERIA
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
OBD	OPPOSED BLADE DAMPER
OC	ON CENTER / CENTER TO CENTER
OD	OUTSIDE DIAMETER
OED	OPEN ENDED DUCT
ORS	OVERFLOW ROOF SUMP
OS&Y	OUTSIDE SCREW AND YOKE
PD	PRESSURE DROP (FEET OF WATER)
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
PT	PRESSURE / TEMPERATURE PORT
RA	RETURN AIR
RH	RELATIVE HUMIDITY
REQD	REQUIRED
REL.A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
RPZ	REDUCED PRESSURE ZONE
RS	ROOF SUMP
SA	SUPPLY AIR
SH	SHOWER
SP	STATIC PRESSURE
SqFt / SF	SQUARE FOOT/SQUARE FEET
SS	SERVICE SINK
TC	TEMPERATURE CONTROL
T & P	TEMPERATURE AND PRESSURE
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UG	UNDERGROUND
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UNO	UNLESS NOTED OTHERWISE

MECHANICAL ABBREVIATIONS

ABBREV.	DESCRIPTION
UR	URINAL
VD	VOLUME DAMPER (MANUALLY ADJUSTABLE)
VTR	VENT THRU ROOF
W	WASTE
W&V	WASTE AND VENT
WB	WET BULB TEMPERATURE
WC	WATER CLOSET
WG	WATER GAUGE
WH	WALL HYDRANT

MECHANICAL PIPING SYMBOLS

ABBREV.	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	PIPE TEE DOWN
	DIRECTION OF FLOW
	UNION
	STRAINER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	EXPANSION JOINT
	FLEXIBLE CONNECTION
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CAP OR PLUG
	ISOLATION VALVE
	CIRCULATING PUMP
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	ANGLE VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
	PLUG VALVE
	NEEDLE VALVE
	OUTSIDE SCREW AND YOKE VALVE (OS&Y)
	PRESSURE REGULATING VALVE
	SOLENOID VALVE
	CONTROL VALVE (2-WAY / 3-WAY)
	CENTRIFUGAL FAN
	AUTOMATIC GAS SHUT-OFF VALVE
	TRAP (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN / FUNNEL FLOOR DRAIN (ELEVATION)
	ROOF SUMP
CO	CLEAN OUT (IN FLOOR)
CO	CLEAN OUT (IN LINE)
WCO	CLEAN OUT (WALL)
BFP	BACKFLOW PREVENTER
M	WATER METER ASSEMBLY
	HOSE BIBB, WALL HYDRANT
	DIRECTION OF PIPE PITCH
	SPRINKLER HEAD (UPRIGHT)
	SPRINKLER HEAD (SIDEWALL)
FS	FLOW SWITCH
	SIAMESE CONNECTION (YARD)
	SIAMESE CONNECTION (WALL MOUNTED)
	FIRE HYDRANT
	FLOW MEASURING DEVICE
	BALANCING VALVE
	COMBINATION FLOW MEASURING AND BALANCING DEVICE
AAV	AUTOMATIC AIR VALVE
MAV	MANUAL AIR VALVE

MECHANICAL SYMBOLS

ABBREV.	DESCRIPTION
	RECTANGULAR TAKE-OFF (SINGLE LINE)
	RECTANGULAR TAKE-OFF (DOUBLE LINE)
	ROUND TAKE-OFF (SINGLE LINE)
	ROUND TAKE-OFF (DOUBLE LINE)
	SPIN-IN FITTING (WITH VOLUME DAMPER)
	ELBOW (WITH TURNING VANES)
	RADIUS RECTANGULAR ELBOW
	RADIUS ROUND ELBOW
	RECTANGULAR ELBOW UP
	ROUND ELBOW UP
	RECTANGULAR ELBOW DOWN
	ROUND ELBOW DOWN
	CONCENTRIC TRANSITION (DOUBLE LINE)
	CONCENTRIC TRANSITION (SINGLE LINE)
	ECCENTRIC TRANSITION (DOUBLE LINE)
	ECCENTRIC TRANSITION (SINGLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (DOUBLE LINE)
R	INCLINED RISE IN DIRECTION OF AIR FLOW (SINGLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (DOUBLE LINE)
D	INCLINED DROP IN DIRECTION OF AIR FLOW (SINGLE LINE)
	FLEXIBLE CONNECTION
	FLEXIBLE DUCT CONNECTION TO SUPPLY DIFFUSER
	SUPPLY DIFFUSER
	LINEAR SLOT DIFFUSER
	RETURN OR EXHAUST GRILLE
	TRANSFER GRILLE
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
	EXISTING FIRE DAMPER (HORIZONTAL)
	NEW FIRE DAMPER (HORIZONTAL)
	EXISTING FIRE DAMPER (VERTICAL)
	NEW FIRE DAMPER (VERTICAL)
	EXISTING SMOKE DAMPER
	NEW SMOKE DAMPER
	EXISTING COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (VERTICAL)
	EXISTING COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	NEW COMBINATION FIRE/SMOKE DAMPER (HORIZONTAL)
	VOLUME DAMPER (MANUALLY ADJUSTABLE)
M	MOTORIZED DAMPER
SD	SMOKE DETECTOR
CO2	CO2 SENSOR
T	THERMOSTAT OR TEMPERATURE SENSOR
H	HUMIDISTAT OR HUMIDITY SENSOR
	RETURN OR EXHAUST / SUPPLY AIR FLOW

PIPING LEGEND

ABBREV.	DESCRIPTION
CA	COMPRESSED AIR PIPING
CD	CONDENSATE DRAIN PIPING
DT	DRAIN TILE
F	FIRE PROTECTION PIPING
FOR	FUEL OIL RETURN PIPING
FOS	FUEL OIL SUPPLY PIPING
G	NATURAL GAS PIPING
BCW	BOOSTED-DOMESTIC COLD WATER PIPING
BHW	BOOSTED-DOMESTIC HOT WATER PIPING
CW	DOMESTIC COLD WATER PIPING
NPCW	NON POTABLE COLD WATER PIPING
TW	TEMPERED WATER PIPING
HW	DOMESTIC HOT WATER PIPING
HW(140°F)	DOMESTIC 140°F HOT WATER PIPING
HWR	DOMESTIC HOT WATER RETURN PIPING
SAN	SANITARY WASTE PIPING
PSAN	PUMPED SANITARY PIPING
V	VENT PIPING
ST	STORM SEWER PIPING
PST	PUMPED STORM PIPING
RC	RAIN CONDUCTOR PIPING
ORC	OVERFLOW RAIN CONDUCTOR PIPING
CHWR	CHILLED WATER RETURN PIPING
CHWS	CHILLED WATER SUPPLY PIPING
CWR	CONDENSER WATER RETURN PIPING
CWS	CONDENSER WATER SUPPLY PIPING
HHWR	HEATING HOT WATER RETURN PIPING
HHWS	HEATING HOT WATER SUPPLY PIPING
HPLR	HEAT PUMP LOOP RETURN PIPING
HPLS	HEAT PUMP LOOP SUPPLY PIPING
RL	REFRIGERANT LIQUID PIPING
RS	REFRIGERANT SUCTION PIPING
HGB	HOT GAS BY-PASS PIPING
GXHR	GEO HEAT EXCHANGE RETURN
GXHS	GEO HEAT EXCHANGE SUPPLY
STM	STEAM PIPING
HPS	HIGH PRESSURE STEAM PIPING
LPS	LOW PRESSURE STEAM PIPING
CR	STEAM CONDENSATE RETURN PIPING
PCR	PUMPED STEAM CONDENSATE RETURN PIPING
LPC	LOW PRESSURE CONDENSATE PIPING
HPC	HIGH PRESSURE CONDENSATE PIPING
MA	MEDICAL AIR PIPING
N	NITROGEN GAS PIPING
O2	OXYGEN GAS PIPING
VAC	VACUUM PIPING

DRAWING INDEX

SHT NO	DESCRIPTION
M0.00	MECHANICAL GENERAL INFORMATION
PD2.10K	PLUMBING LOWER LEVEL DEMOLITION PLAN - UNIT K
P2.10K	PLUMBING LOWER LEVEL NEW WORK PLAN - UNIT K

DRAWING NOTATION

SYMBOL	DESCRIPTION
1	NEW WORK KEY NOTE NO. 1
1	DEMOLITION KEY NOTE NO. 1
AHU-1	EQUIPMENT TAG
S-1 12x12 150-2	AIR TERMINAL TAG: IE: DIFFUSER TYPE = S-1 NECK SIZE = 12x12 CFM = 150 (TYPICAL FOR 2)
	S = SUPPLY R = RETURN E = EXHAUST T = TRANSFER
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	POINT OF NEW CONNECTION

APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN REHABILITATION CODE FOR EXISTING BUILDINGS
2021	MICHIGAN PLUMBING CODE
2021	MICHIGAN MECHANICAL CODE
2015	MICHIGAN UNIFORM ENERGY CODE
2015	INTERNATIONAL FUEL GAS CODE
2012	NFPA 101 WITH BFS AMENDMENTS

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LIVONIA,
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MECHANICAL GENERAL INFORMATION

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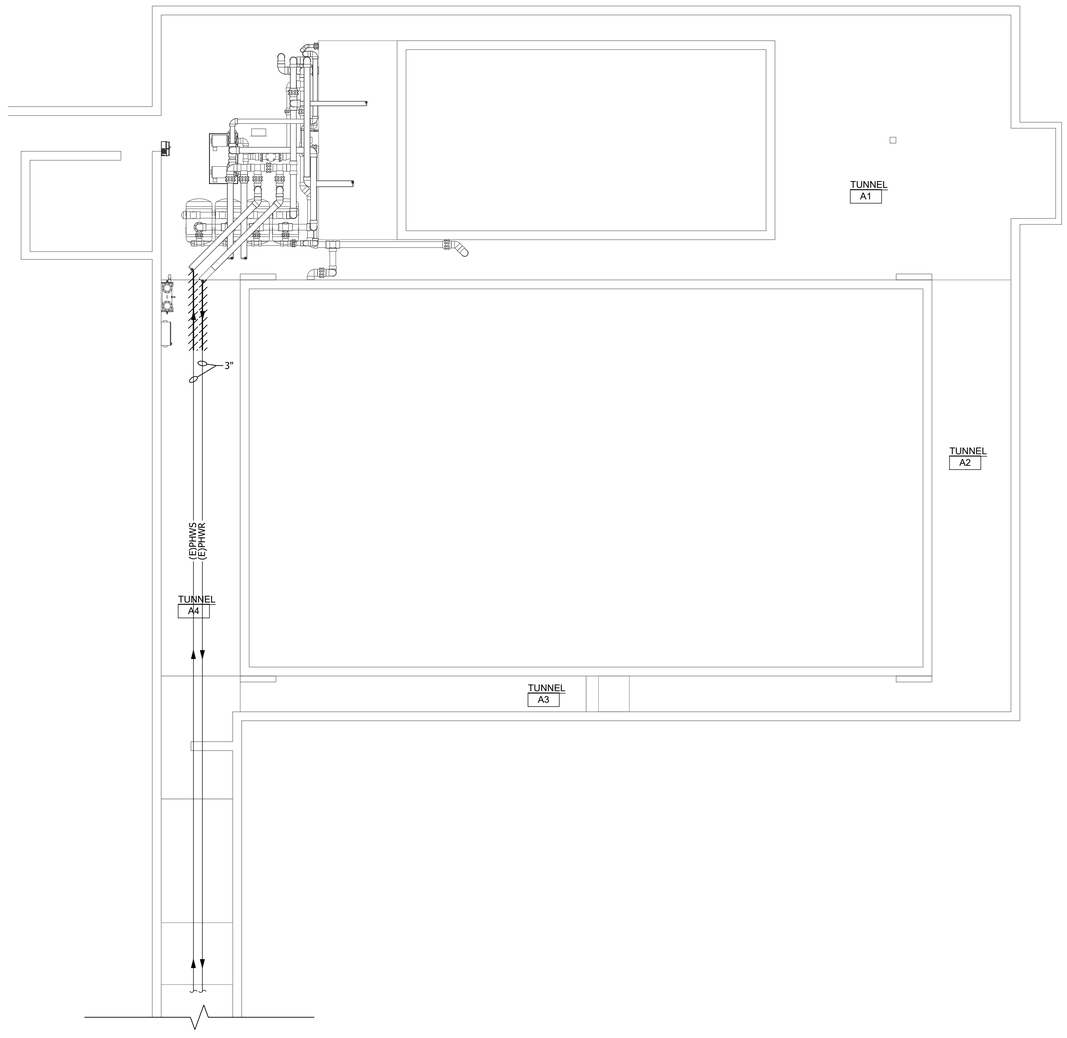


PLUMBING LOWER LEVEL DEMOLITION PLAN - UNIT K
SCALE: 1/8" = 1'-0"

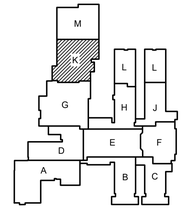
GENERAL DEMOLITION NOTES

A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION, PRIOR TO STARTING WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.

DEMOLITION KEYED NOTES

1	REMOVE POOL HEATING WATER SUPPLY AND RETURN PIPING TO POINT INDICATED. TERMPORARILY CAP PIPING AND PREPARE FOR NEW CONNECTION.

KEY PLAN



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LIVONIA,
MICHIGAN

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PLUMBING LOWER LEVEL DEMOLITION PLAN - UNIT K

PROJECT NUMBER
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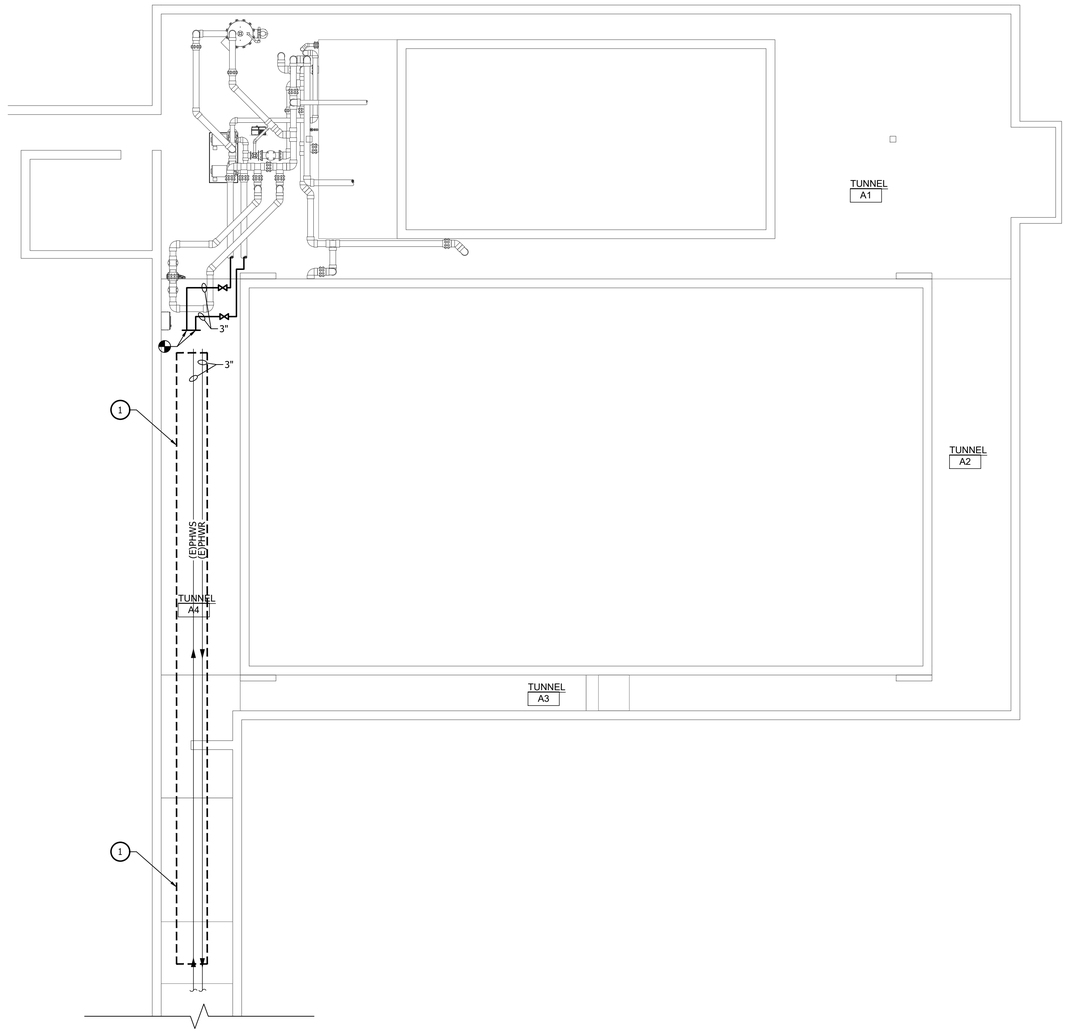
SHEET NUMBER
PD2.10K

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



PLUMBING LOWER LEVEL NEW WORK PLAN - UNIT K
SCALE: 1/8" = 1'-0"

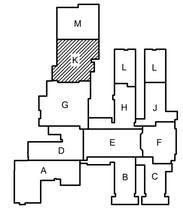
PLUMBING GENERAL NOTES

A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTILITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD, INCLUDING POINTS OF CONNECTION PRIOR TO STARTING WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.
J	INSTALL ALL SANITARY AND STORM PIPING 2 1/2" OR LESS AT 1/4" PER FOOT AND 3" AND LARGER PIPING AT 1/8" PER FOOT MINIMUM UNLESS NOTED OTHERWISE. MINIMUM UNDERGROUND PIPE SIZE SHALL BE 3".

(X) NEW WORK KEYED NOTES

1	PROVIDE ADDITIONAL HANGERS IN TUNNEL (QTY:15) TO RESOLVE SAGGING OF EXISTING POOL HEATING PIPING. PROVIDE ADDITIONAL AS NECESSARY.

KEY PLAN



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UBS PROJECT 029.24.17

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PROJECT
Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET
PLUMBING LOWER LEVEL NEW WORK PLAN - UNIT K

PROJECT NUMBER
2024-081

SHEET NUMBER
P2.10K

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

LUMINAIRE SCHEDULE

FIXTURE SYMBOL	FIXTURE TAG	DESCRIPTION	MANUFACTURER(S)	LAMP SOURCE	WATTS
	A1	17.2"x4' ALUMINUM LED FIXTURE WITH TRIM SUITABLE FOR WET LOCATIONS. CLEAR GLASS LENS, HIGH EFFICIENCY LAMBERTIAN OPTIC. LENGTH AS SHOWN ON PLANS. 4000K, 80 CRI, MVOLT, 0-10V DIMMING. PENDENT HUNG AND WITH WET LOCATION FITTINGS	1. LITHONIA FEM LED FEM L48 3000LM LPACL WD MVOLT GZ10 40K 80CRI MHCH 36 WLFEND2 2. COOPER LIGHTING 3. COLUMBIA LIGHTING	80CRI 3000 LUMENS	51.2
	A2	SAME AS ABOVE EXCEPT SURFACE MOUNTED	1. LITHONIA FEM LED FEM L48 3000LM LPACL WD MVOLT GZ10 40K 80CRI FEMSMB WLFEND2 2. COOPER LIGHTING 3. COLUMBIA LIGHTING	80CRI 3000 LUMENS	51.2
	A3	17.2"x2' ALUMINUM LED FIXTURE WITH TRIM SUITABLE FOR WET LOCATIONS. CLEAR GLASS LENS, HIGH EFFICIENCY LAMBERTIAN OPTIC. LENGTH AS SHOWN ON PLANS. 4000K, 80 CRI, MVOLT, 0-10V DIMMING. WITH WALL MOUNTED ANGLE BRACKETS AND WET LOCATION FITTINGS	1. LITHONIA FEM LED FEM L24 4000LM LPACL WD MVOLT GZ10 40K 80CRI ANGBKT WLFEND2 2. COOPER LIGHTING 3. COLUMBIA LIGHTING	80CRI 4000 LUMENS	40.2
	#E	SAME AS TYPE # EXCEPT THIS FIXTURE WILL BE CONNECTED THROUGH EXISTING EMERGENCY GENERATOR SYSTEM CIRCUIT IN THE AREA. PROVIDE GENERATOR TRANSFER SWITCH (GTS) IN ALL ROOMS			

POWER SYMBOL LIST

SYMBOL	DESCRIPTION
	CONDUIT DOWN
	CONDUIT UP
C	CONTACTOR
	DISCONNECT SWITCH - NON FUSED
	DISCONNECT SWITCH - FUSED
	DISCONNECT SWITCH - COMB. MOTOR STARTER
	ELECTRICAL PANEL - 208/240 VOLTS
	ELECTRICAL PANEL - 480 VOLTS
	GROUNDING ROD
	GROUND
	GROUNDING BAR
J	JUNCTION BOX
J	JUNCTION BOX WITH HARDWIRED CONNECTION
M	METER
	MOTOR - SINGLE PHASE
	MOTOR - THREE PHASE
$_{M}$	MOTOR RATED SWITCH
	POWER RECEPTACLE - SIMPLEX TYPE
	POWER RECEPTACLE - DUPLEX TYPE
	POWER RECEPTACLE - DUPLEX 6" ABOVE COUNTER
USB	POWER RECEPTACLE - USB/DUPLEX COMBO. DEVICE
	POWER RECEPTACLE - QUADRUPLEX TYPE
	POWER RECEPTACLE - RECESSED FLOOR TYPE
	POWER RECEPTACLE - SPECIALTY TYPE
SPD	SURGE PROTECTION DEVICE
TC	TIME CLOCK
T	TRANSFORMER (REFER TO SCHEDULES FOR INFO)
VSD	VARIABLE SPEED DRIVE

NOTES:
1. ALL DEVICE RATINGS/SIZES SHALL BE COORDINATED WITH PLANS AND SCHEDULES.

AUXILIARY SYST. SYMBOL LIST

SYMBOL	DESCRIPTION
	CAMERA
CR	CARD READER
	COMMUNICATIONS DEVICE - 6" ABOVE COUNTER
	COMMUNICATIONS DEVICE - FLOOR
	COMMUNICATIONS DEVICE - WALL
DH	MAGNETIC DOOR HOLDER
	PUSH BUTTON
S	SPEAKER
	WALL CLOCK - SINGLE FACE
	WALL CLOCK - DOUBLE FACE
S	WALL CLOCK AND SPEAKER UNIT

NOTES:
1. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BOX AND CONDUIT FOR ALL DEVICES INDICATED.
2. LOW VOLTAGE CONTRACTOR SHALL PROVIDE EXACT SPECIFICATIONS AND LOCATIONS OF ALL DEVICES.

FIRE ALARM SYMBOL LIST

SYMBOL	DESCRIPTION
S	DETECTION DEVICE
S	DETECTION DEVICE - DUCT MOUNTED
FS	DETECTION DEVICE - FLOW SWITCH
TS	DETECTION DEVICE - TAMPER SWITCH
FAA	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FD	FIRE DEPARTMENT COMMUNICATION OUTLET
F	MANUAL DEVICE - PULL STATION
F	NOTIFICATION DEVICE - WALL MOUNTED
F	NOTIFICATION DEVICE - CEILING MOUNTED

NOTES:
1. DRAWINGS INDICATE DESIGN INTENT ONLY, FINAL LOCATIONS AND DEVICE SPECIFICATIONS SHALL BE PROVIDED BY FIRE ALARM MANUFACTURER. REFER TO PROJECT SPECIFICATIONS FOR APPROVED MANUFACTURERS.

ELECTRICAL ABBREVIATIONS

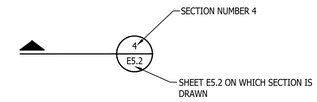
ABBREV.	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
A	AMPERE
AF	AMPERE FUSE/AMPERE FRAME
AWG	AMERICAN WIRE GAUGE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AIC	AVAILABLE INTERRUPTING CURRENT (AMPS)
C	CONDUIT OR CEILING MOUNTED
CB	CIRCUIT BREAKER
CU	COPPER
CT	CURRENT TRANSFORMER
DIA	DIAMETER
DISC	DISCONNECT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
EPO	EMERGENCY POWER OFF
(E)	EXISTING ELECTRICAL EQUIPMENT OR WORK
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
F	FUSE
G/GRD	GROUND
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
IG	ISOLATED GROUND
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LP	LIGHTING PANEL
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MLO	MAIN LUG ONLY
MAX	MAXIMUM
MIN	MINIMUM
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
N/NEU	NEUTRAL
NF	NON-FUSIBLE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NIC	NOT IN CONTRACT
OF/CI	OWNER FURNISHED / CONTRACTOR INSTALLED
OF/OI	OWNER FURNISHED / OWNER INSTALLED
PH. OR Ø	PHASE
P	POLE
PF	POWER FACTOR
PVC	POLYVINYL CHOLRIDE (PLASTIC)
(R)	RELOCATED EXISTING ELECTRICAL EQUIPMENT
(RR)	REMOVE AND REINSTALL
RMC	RIGID METALLIC CONDUIT
RP	RECEPTACLE PANEL
SPEC/SPECS	SPECIFICATIONS
TBB	TELEPHONE BACKBOARD
TYP.	TYPICAL
UC	UNDER COUNTER
UL	UNDERWRITERS LABORATORIES
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
V	VOLT
VA	VOLT AMPERE
W	WATT
WG	WIRE GUARD
WP	WEATHERPROOF
XFMR	TRANSFORMER

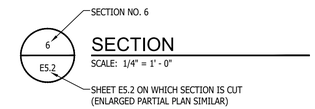
DRAWING INDEX

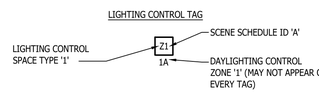
SHT NO	DESCRIPTION
E0.00	ELECTRICAL GENERAL INFORMATION
EPD2.10K	ELECTRICAL POWER LOWER LEVEL DEMOLITION PLAN - UNIT K
EP2.10K	ELECTRICAL POWER LOWER LEVEL NEW WORK PLAN - UNIT K
EP2.11K	ELECTRICAL POWER FIRST FLOOR NEW WORK PLAN - UNIT K
EP4.11K	ENLARGED ELECTRICAL POWER PLANS - POOL MECHANICAL ROOM
E5.00	ELECTRICAL DETAILS AND PANEL SCHEDULES
E7.00	ELECTRICAL ONE-LINE DIAGRAMS

DRAWING NOTATION

SYMBOL	DESCRIPTION
LA	LIGHTING FIXTURE TAG
1	CONSTRUCTION KEY NOTE NUMBER 1
1	DEMOLITION KEY NOTE NUMBER 1
1	FEEDER SIZE TAG (REFER TO FEEDER SCHEDULE ON THIS SHEET)
EF-1	EQUIPMENT DESIGNATION, (I.E. EXHAUST FAN NUMBER 1)
	EXISTING DEVICES OR EQUIPMENT
	NEW OR MODIFIED DEVICES OR EQUIPMENT
	NEW OR MODIFIED UNDERGROUND WIRING
	EXISTING SYSTEM COMPONENT TO BE REMOVED







APPLICABLE CODES AND REGULATIONS

YEAR	CODE
2015	MICHIGAN BUILDING CODE
2015	MICHIGAN ENERGY CODE
2023	MICHIGAN ELECTRICAL CODE RULES, PART 8
2023	NATIONAL ELECTRICAL CODE (NFPA 70)
2013	NFPA 20
2013	NFPA 72
2012	NFPA 101
2013	NFPA 110
2009	ICC A117.1 ACCESSIBLE AND USABLE BUILDINGS & FACILITIES

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Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
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SHEET
ELECTRICAL GENERAL INFORMATION

PROJECT NUMBER
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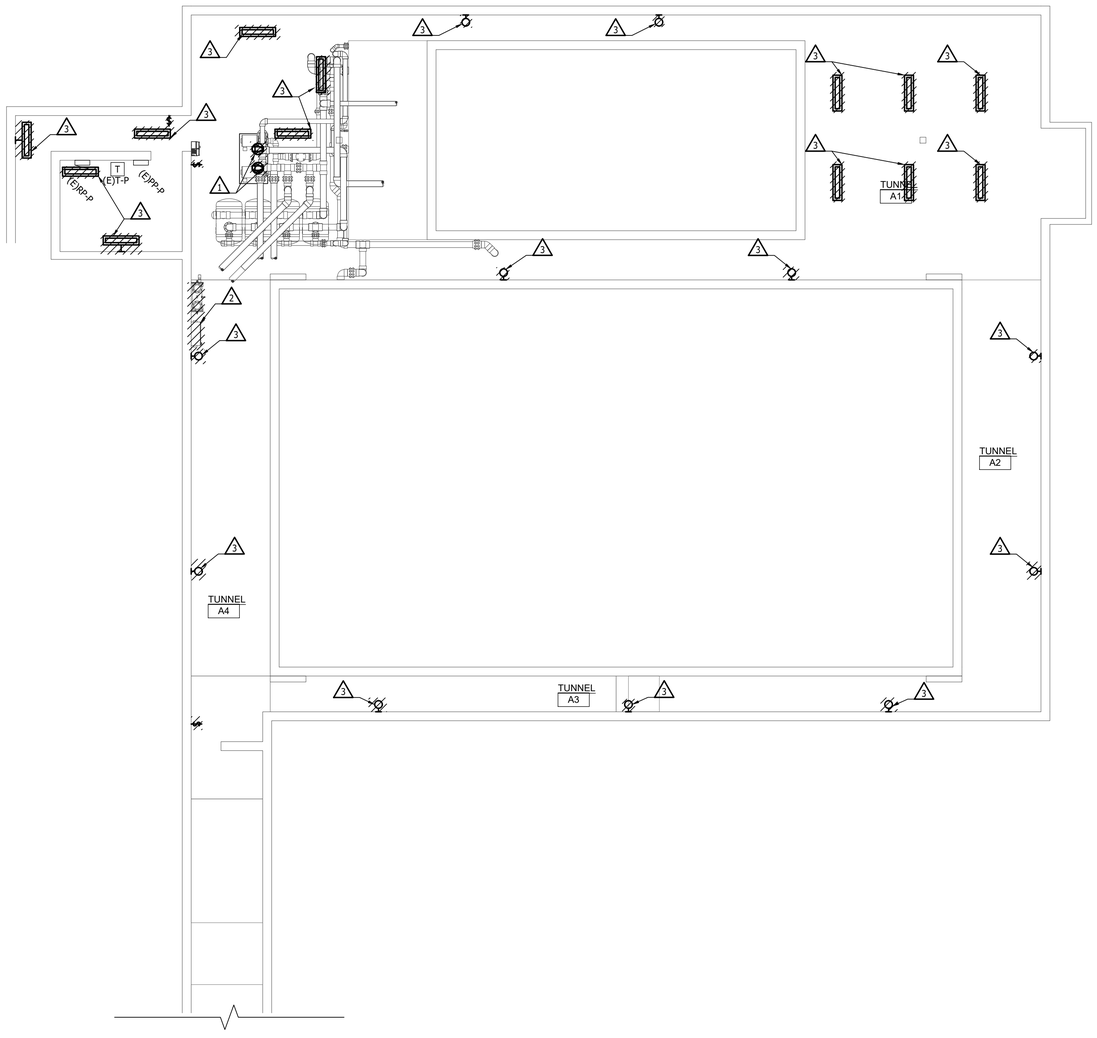
2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



ELECTRICAL POWER LOWER LEVEL DEMOLITION PLAN - UNIT K
SCALE: 1/8" = 1'-0"

GENERAL DEMOLITION NOTES

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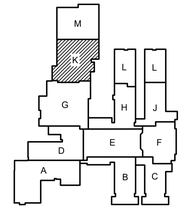
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD. INCLUDING POINTS OF CONNECTION PRIOR TO STARTING WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.

DEMOLITION KEYED NOTES

1	POOL CIRCULATION PUMPS REMOVED BY OTHERS. EC TO DISCONNECT AND MAKE SAFE. PREP CIRCUIT FOR RECONNECTION TO NEW EQUIPMENT. REFER TO NEW WORK PLANS.
2	POOL PUMP UV CONTROL PANEL REMOVED BY OTHERS. PREP CIRCUIT FOR RECONNECTION TO NEW EQUIPMENT. REFER TO NEW WORK PLANS.
3	EXISTING LIGHT FIXTURES TO BE REMOVED COMPLETE. REMOVE CONDUIT AND WIRING BACK TO SOURCE. EXISTING CIRCUIT TO BE RE-USED FOR NEW LIGHTING. REFER TO NEW LIGHTING PLAN.

KEY PLAN



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Livonia Public Schools
Stevenson High School
Pool Filtration Project

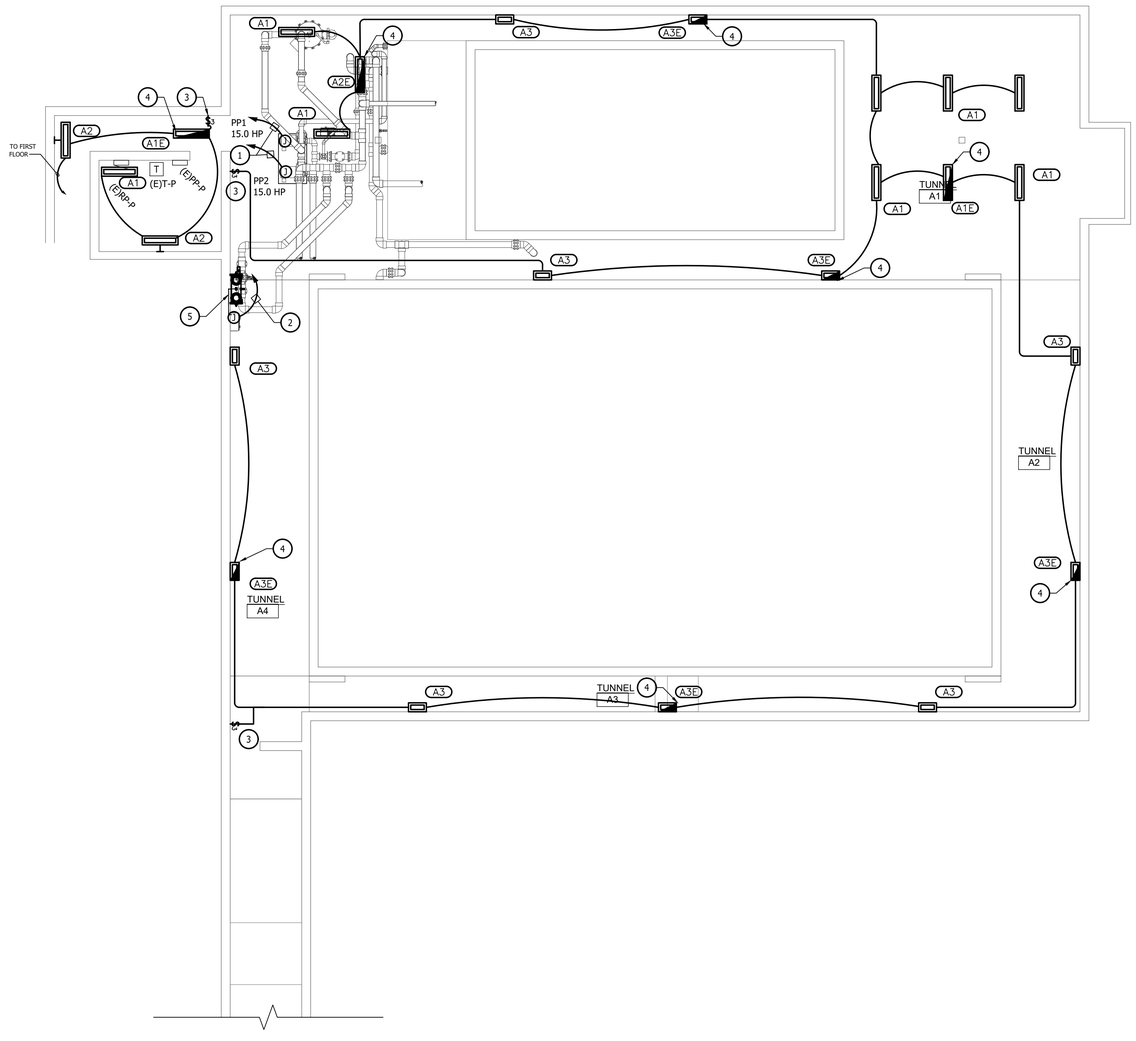
LIVONIA,
MICHIGAN

SHEET
ELECTRICAL POWER
LOWER LEVEL
DEMOLITION PLAN -
UNIT K

PROJECT NUMBER
2024-081

SHEET NUMBER
EPD2.10K

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



ELECTRICAL POWER LOWER LEVEL NEW WORK PLAN - UNIT K

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

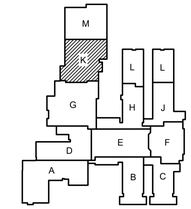
POWER GENERAL NOTES

A	THESE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL EXTENT OF THE WORK TO BE PERFORMED. PROVIDE AND EXECUTE ALL HVAC SYSTEMS PER ENGINEER'S SPECIFICATION, AND LOCAL APPLICABLE CODES INCLUDING AMENDMENTS, BULLETINS, ETC; AS WELL AS THE STANDARDS OF INSTALLATION AND EQUIPMENT ESTABLISHED FOR THE BUILDINGS, AND REQUIREMENTS OF THE OWNER.
B	EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD IN ACCORDANCE WITH ALTERNATES OF OPTIONS AS STATED HEREINAFTER, ALL WORK MUST BE IN FULL ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SYSTEMS ARE TO BE COMPLETE, EFFICIENT, AND SATISFACTORY OPERATION WHEN PROJECT IS DELIVERED TO THE OWNER.
D	CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM GOVERNING AUTHORITIES, FILE NECESSARY FORMS, PAY ALL INSPECTION FEES.
E	ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
F	ELECTRICAL EQUIPMENT AND WIRING SHALL BE NEW AND SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
G	WIRING SHALL BE IN CONDUIT. CONDUIT SHALL BE 3/4" CONDUIT MINIMUM. CONDUITS IN FINISHED AREAS SHALL BE CONCEALED.
H	NEW WIRES SHALL BE TYPE THHN. MINIMUM SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO EQUIPMENT, FURNISHED AND INSTALLED BY OTHERS, SHALL BE PROVIDED BY THIS CONTRACTOR.
J	ALL P.A. AND SPEAKER SCOPE BY OTHERS. REFER TO TECH DRAWINGS FOR FURTHER INFORMATION.

(X) NEW WORK KEYED NOTES

1	NEW POOL CIRCULATION PUMP AND VFD PROVIDED BY OTHERS. RECONNECT TO EXISTING CIRCUIT. EXTEND EXISTING CONDUIT AND WIRING AS REQUIRED.
2	NEW POOL UV TREATMENT SYSTEM PROVIDED BY OTHERS. RECONNECT TO EXISTING CIRCUIT. EXTEND EXISTING CONDUIT AND WIRING AS REQUIRED.
3	NEW LED FIXTURES IN THIS AREA TO REPLACE EXISTING. PROVIDE NEW CONTROL SENSORS AND LV SWITCHING AS SHOWN, CONNECT TO EXISITING CIRCUIT AVAILABLE AS A RESULT OF DEMOLITION IN THE AREA. ALL WIRING AND CONDUIT SHALL BE NEW. CIRCUIT NUMBER INDICATES NEW CIRCUITING FROM EXISTING PANEL AND BREAKER. VERIFY CIRCUIT NUMBER IN THE FIELD AND UPDATE PANEL SCHEDULES.
4	ALL NEW EMERGENCY LIGHTING INDICATED BY HATCHED FIXTURES SHALL BE CONNECTED TO EXISTING EMERGENCY LIGHTING CIRCUIT THRU GENERATOR BACK-UP AND ATS SYSTEM. PROVIDE A GENERATOR TRANSFER SWITCH.
5	NEW UV LAMP FOR BHAMBER PROVIDED BY OTHER. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

KEY PLAN



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SHEET

ELECTRICAL POWER LOWER LEVEL NEW WORK PLAN - UNIT K

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2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

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E	ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
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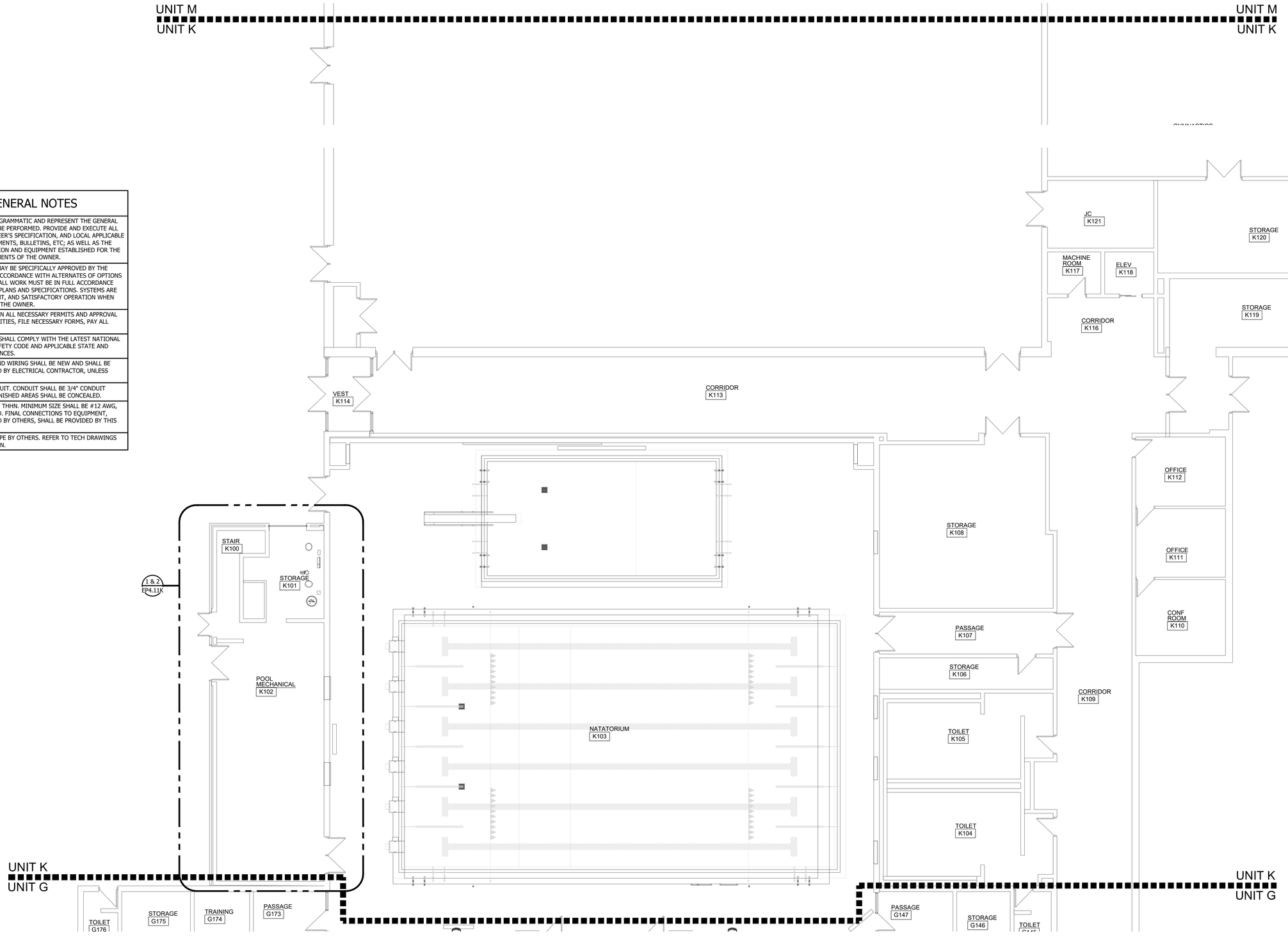
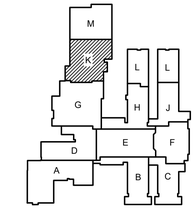
H	NEW WIRES SHALL BE TYPE THHN. MINIMUM SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO EQUIPMENT, FURNISHED AND INSTALLED BY OTHERS, SHALL BE PROVIDED BY THIS CONTRACTOR.
J	ALL P.A. AND SPEAKER SCOPE BY OTHERS. REFER TO TECH DRAWINGS FOR FURTHER INFORMATION.



ELECTRICAL POWER FIRST FLOOR NEW WORK PLAN - UNIT K
SCALE: 1/8" = 1'-0"

KEY PLAN



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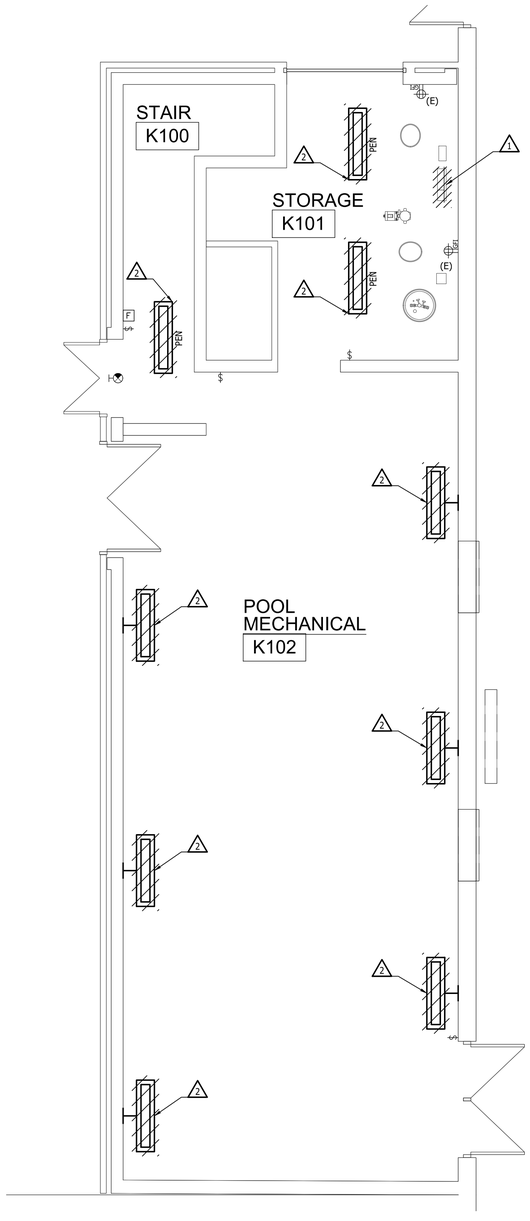
EP2.11K

2024-081 PS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



1 EP2.11K — ENLARGED POWER NEW WORK PLAN - POOL MECHANICAL K102

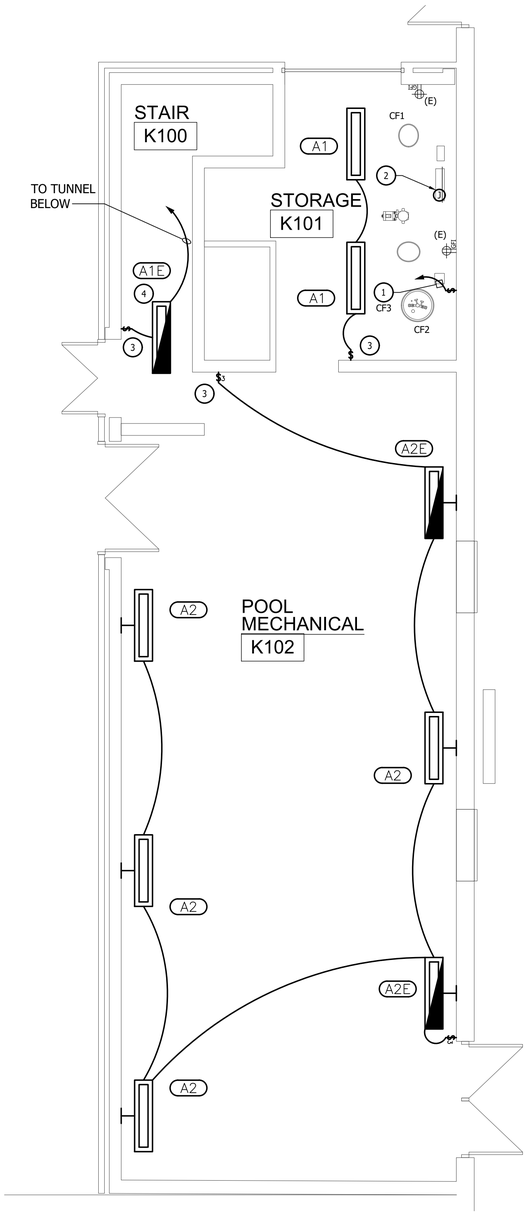
SCALE: 1/4" = 1'-0"

GENERAL DEMOLITION NOTES

A	THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK TO BE PERFORMED. THE EXACT EXTENT OF DEMOLITION SHALL BE DETERMINED BY THE NEW WORK.
B	ANY INTERRUPTIONS OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED IN ADVANCE BY OWNER'S REPRESENTATIVE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING'S OPERATION.
C	PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH EXISTING SITE CONDITIONS, SYSTEMS, AND UTLITIES. NOTIFY DESIGN PROFESSIONAL OF ANY INTERFERENCES OR DISCREPANCIES.
D	ALL ITEMS INDICATED WITH CROSS-HATCHING SHALL BE REMOVED COMPLETELY WITH ALL RELATED ITEMS INCLUDING HANGERS, SUPPORTS, INSULATION, CONTROLS, ETC. CAP ALL OPEN-ENDED PIPES AND DUCTS.
E	THE OWNER SHALL HAVE FIRST RIGHT OF REFUSAL ON ALL EQUIPMENT BEING REMOVED. ALL ITEMS REMOVED SHALL BE LEGALLY DISPOSED OF. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXISTING RELOCATED AND OWNER-PROVIDED EQUIPMENT.
F	VERIFY DEPTH, SIZE, LOCATIONS, AND CONDITIONS OF EXISTING UTILITIES IN THE FIELD. INCLUDING POINTS OF CONNECTION PRIOR TO STARTING WORK.
G	ALL ITEMS ON DEMOLITION PLAN SHALL BE CONSIDERED EXISTING UNLESS OTHERWISE NOTED. ALL WORK INDICATED ON PLANS HAS BEEN LOCATED PER EXISTING DRAWINGS AND/OR FIELD OBSERVATION AND REQUIRES FIELD VERIFICATION.
H	ALL EXISTING WORK TO REMAIN SHALL BE PROTECTED FROM DAMAGE. WHERE DUCT WORK PIPE INSULATION HAS BEEN DAMAGED DURING DEMOLITION, THE CONTRACTOR SHALL REPAIR INSULATION AS REQUIRED TO MATCH EXISTING.

DEMOLITION KEYED NOTES

1	CHEMICAL CONTROLLER TO BE REMOVED COMPLETE BY POOL TRADES. EC TO DISCONNECT AND MAKE SAFE. PREP EXISTING CIRCUIT FOR RECONNECT TO NEW EQUIPMENT. REFER TO NEW WORK PLANS.
2	EXISTING LIGHT FIXTURES TO BE REMOVED COMPLETE. REMOVE CONDUIT AND WIRING BACK TO SOURCE. EXISTING CIRCUIT TO BE RE-USED FOR NEW LIGHTING. REFER TO NEW LIGHTING PLAN.



1 P2.10K — ENLARGED POWER NEW WORK PLAN - POOL MECHANICAL K102

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

POWER GENERAL NOTES

A	THESE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE GENERAL EXTENT OF THE WORK TO BE PERFORMED. PROVIDE AND EXECUTE ALL HVAC SYSTEMS PER ENGINEER'S SPECIFICATION, AND LOCAL APPLICABLE CODES INCLUDING AMENDMENTS, BULLETINS, ETC; AS WELL AS THE STANDARDS OF INSTALLATION AND EQUIPMENT ESTABLISHED FOR THE BUILDINGS, AND REQUIREMENTS OF THE OWNER.
B	EXCEPT FOR CHANGES AS MAY BE SPECIFICALLY APPROVED BY THE ENGINEER OF RECORD IN ACCORDANCE WITH ALTERNATES OF OPTIONS AS STATED HEREINAFTER, ALL WORK MUST BE IN FULL ACCORDANCE WITH THE INTENT OF THE PLANS AND SPECIFICATIONS. SYSTEMS ARE TO BE COMPLETE, EFFICIENT, AND SATISFACTORY OPERATION WHEN PROJECT IS DELIVERED TO THE OWNER.
D	CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND APPROVAL FROM GOVERNING AUTHORITIES, FILE NECESSARY FORMS, PAY ALL INSPECTION FEES.
E	ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
F	ELECTRICAL EQUIPMENT AND WIRING SHALL BE NEW AND SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
G	WIRING SHALL BE IN CONDUIT. CONDUIT SHALL BE 3/4" CONDUIT MINIMUM. CONDUITS IN FINISHED AREAS SHALL BE CONCEALED.
H	NEW WIRES SHALL BE TYPE THHN. MINIMUM SIZE SHALL BE #12 AWG, UNLESS OTHERWISE NOTED. FINAL CONNECTIONS TO EQUIPMENT, FURNISHED AND INSTALLED BY OTHERS, SHALL BE PROVIDED BY THIS CONTRACTOR.

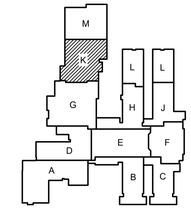
LIGHTING GENERAL NOTES

A	REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF ALL LIGHTING FIXTURES UNLESS OTHERWISE NOTED.
B	ANY 120 VOLT BRANCH CIRCUIT FEEDER LONGER THAN 120'-0" TO LAST DEVICE SHALL BE SIZED TO THE NEXT LARGER STANDARD AWG SIZE. E.C. SHALL FIELD VERIFY ALL LENGTHS OF FEEDERS
C	SEE LIGHT FIXTURE SCHEDULE SHEET E00. ALL ELECTRICAL DEVICES ON THIS SHEET SHALL BE NEW UNLESS OTHERWISE NOTED.
D	WHERE MORE THEN ONE LIGHT SWITCH IS INDICATED TO BE INSTALLED AT THE SAME LOCATION, THEY SHALL BE GROUPED UNDER ONE COMMON FACEPLATE.
E	ELECTRICAL CONTRACTOR SHALL COMPLY WITH THE LATEST NATIONAL ELECTRICAL CODE, LIFE SAFETY CODE AND APPLICABLE STATE AND LOCAL CODES AND ORDINANCES.
F	ELECTRICAL EQUIPMENT AND WIRING SHALL BE NEW AND SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR, UNLESS OTHERWISE NOTED.
G	WIRING SHALL BE IN CONDUIT. CONDUIT SHALL BE 3/4" C ONDUIT MINIMUM. CONDUITS IN FINISHED AREAS SHALL BE CONCEALED

(X) NEW WORK KEYED NOTES

1	CO2 FEED PROVIDED BY OTHERS. RUN CIRCUIT TO EXISTING SPARE 20A BREAKER FROM EXISTING RP-6 IN POOL MECHANICAL ROOM DIRECTLY BELOW.
2	CHEMICAL CONTROLLER PROVIDED BY OTHERS. PROVIDE ALL FINAL CONNECTIONS. CONNECT TO EXISTING CIRCUIT MADE AVAILABLE FROM DEMOLITION.
3	NEW LED FIXTURES IN THIS AREA TO REPLACE EXISTING. PROVIDE NEW CONTROL SENSORS AND LV SWITCHING AS SHOWN, CONNECT TO EXISITING CIRCUIT AVAILABLE AS A RESULT OF DEMOLITION IN THE AREA. ALL WIRING AND CONDUIT SHALL BE NEW. CIRCUIT NUMBER INDICATES NEW CIRCUITING FROM EXISTING PANEL AND BREAKER. VERIFY CIRCUIT NUMBER IN THE FIELD AND UPDATE PANEL SCHEDULES.
4	ALL NEW EMERGENCY LIGHTING INDICATED BY HATCHED FIXTURES SHALL BE CONNECTED TO EXISTING EMERGENCY LIGHTING CIRCUIT THRU GENERATOR BACK-UP AND ATS SYSTEM. PROVIDE A GENERATOR TRANSFER SWITCH.

KEY PLAN



ISSUE DATE	ISSUED FOR
02/19/2025	BIDS
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APPROVED	FAA

UNIFIED BUILDING SYSTEMS ENGINEERING
69 S. GRATIOT AVE.
MT. CLEMENS, MI 48043
UBS PROJECT 029.24.17

FRENCH
2851 High Meadow Circle | Suite 100
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248.656.1377

PROJECT

Livonia Public Schools
Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET

ENLARGED ELECTRICAL POWER PLANS - POOL MECHANICAL ROOM

PROJECT NUMBER

2024-081

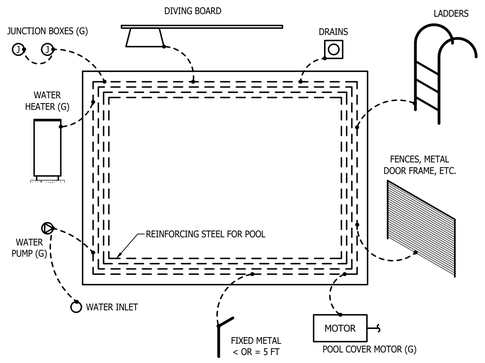
SHEET NUMBER

EP4.11K

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT

NOTES:
"G" = ALSO REQUIRED TO BE GROUNDED

PARTS SPECIFIED IN 680(B)(1) - (B)(7)
TO BE BONDED TOGETHER USING:
SOLID COPPER CONDUCTORS, INSULATED COVERED, OR BARE, NOT SMALLER THAN 8 AWG
RIGID METAL CONDUIT OF BRASS OR OTHER IDENTIFIED CORROSION-RESISTANT METAL



POOL BONDING DETAIL

NO SCALE

Panel Designation:	**(E)RP-P**				**Main:**	100					**P-P Voltage:**	208			
Panel Location:	POOL TUNNEL				**Bussing:**	100					**P-N Voltage:**	120			
Fed From:	EXISTING				**Ground Bus:**	STANDARD					**Phase:**	3			
Feeder Size:	EXISTING				**Mounting:**	SURFACE					**Wire:**	4			
					Neutral:	100%					**Min SC Interrupting Rating:**	EXISTING			

Remarks	Light Load	Recept Load	Cont Load	nonC Load	OC Prot	CKT	Ø A	Ø B	Ø C	CKT	OC Prot	nonC Load	Cont Load	Recept Load	Light Load	Remarks
(E) UH-1 & UH-2, 103			1920		20	1	X			2	20		1000			**CO2 PUMP**
(E) EF-12, 101			1000		20	3		X		4	20					(E)SPARE
(E) BMCS, 103			1920		20	5			X	6	20					(E)SPARE
(E) RECEPT, 001, 101, EXTERIOR		1000			20	7	X			8	20					(E)SPARE
(E) RECEPT 103 ROOF		1000			20	9		X		10	20					(E)SPARE
(E) RECEPT 103 ROOF		1000			20	11			X	12	20					(E)SPARE
(E) CHEMICAL CONTROLER, ACID			1000		20	13	X			14	20					(E)SPARE
(E) LIGHTING 001, 002, 101, 102, 103	1000				20	15		X		16	20					(E)SPARE
(E) SUMP PUMP				1000	20	17			X	18	20					(E)SPARE
(E) RECPT FILTER PUMP ROOM		1000			20	19	X			20						(E)SPACE
(E) SPACE						21		X		22						(E)SPACE
(E) SPACE						23			X	24						(E)SPACE
(E) SPACE						25	X			26						(E)SPACE
(E) SPACE						27		X		28						(E)SPACE
(E) SPACE						29			X	30						(E)SPACE
(E) SPACE						31	X			32						(E)SPACE
(E) SPACE						33		X		34						(E)SPACE
(E) SPACE						35			X	36						(E)SPACE
(E) SPACE						37	X			38						(E)SPACE
(E) SP-2			1000		20	39		X		40						(E)SPACE
			1000			41			X	42						(E)SPACE

	Connected Load				Demand	Demand Load			
Load Description	**ØA**	**ØB**	**ØC**	**Total**	**Factor**	**ØA**	**ØB**	**ØC**	**Total**
Lighting or Continous Load (Volt-Amps)	0	1000	0	1000	1.00	0	1000	0	1000
180VA Receptacle Load (Volt-Amps)	2000	1000	1000	4000	1.00 (First 10kVA)	2000	1000	1000	4000
	Amount over 10kVA			0	0.50 (> 10kVA)	0	0	0	0
Continuous Load (Volt-Amps)	3920	2000	2920	8840	1.00	3920	2000	2920	8840
Non-Continuous Load (Volt-Amps)	0	0	1000	1000	1.00	0	0	1000	1000
Total Load (kVA)	5.92	4.00	4.92	14.84	**125% of Light/Cont and Recept**	5.92	4.00	4.92	14.84
Total Ampacity (Amps)	49.3	33.3	41.0	41.2	**(<10kVA) load plus other load**	49.3	33.3	41.0	41.2
Minimum Feeder Sizing (Amps)	53.5	37.5	43.1	44.7	**<---- per NEC Article 215.2 ---->**	53.5	37.5	43.1	44.7

Receptacle Demand Factor per Article 220.44 of the National Electrical Code.

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PROJECT
Livonia Public Schools
Stevenson High School
Pool Filtration Project

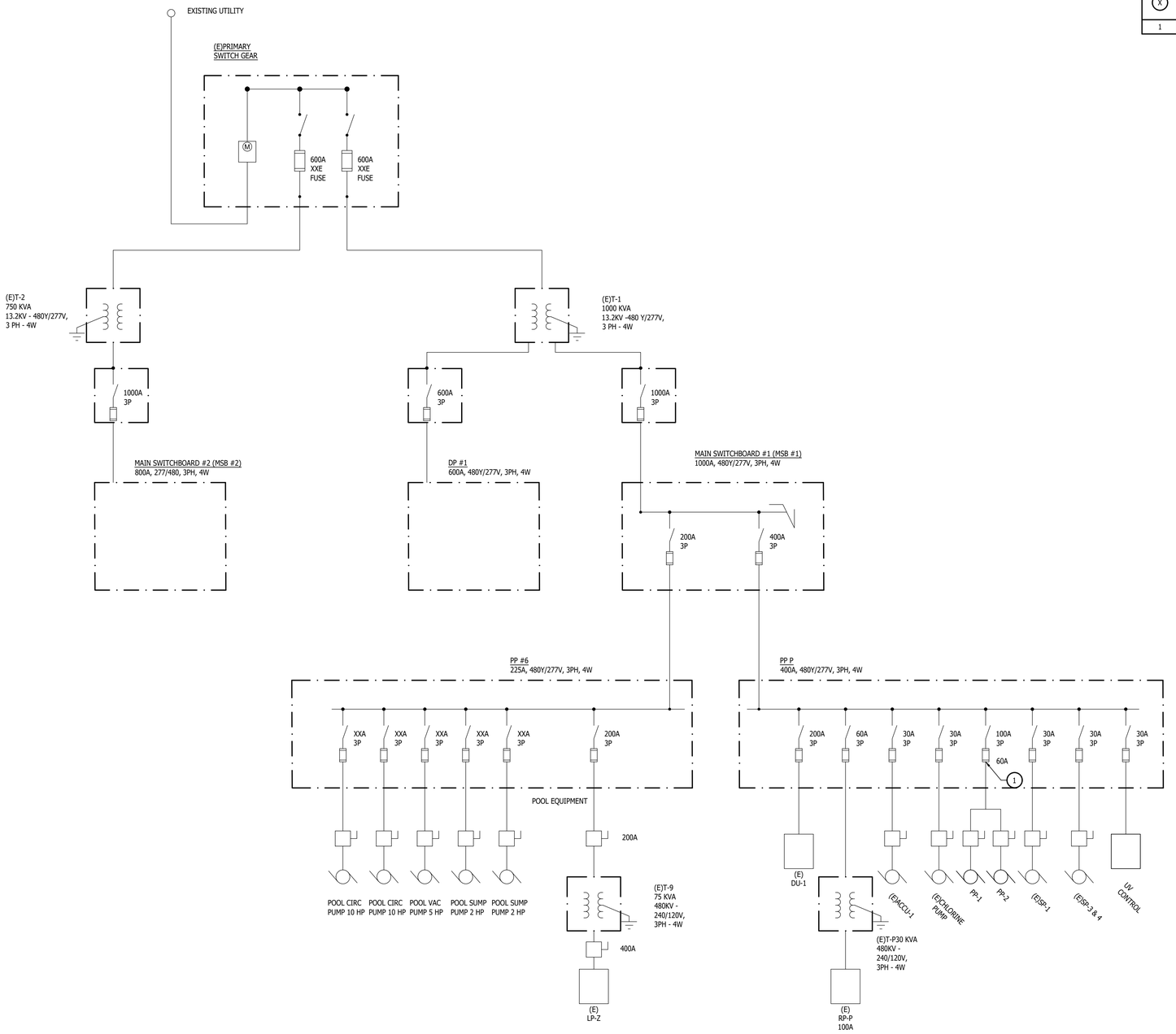
LIVONIA,
MICHIGAN

SHEET
ELECTRICAL DETAILS
AND PANEL SCHEDULES

PROJECT NUMBER
2024-081

SHEET NUMBER
E5.00

2024-081 LPS STEVENSON HIGH SCHOOL - POOL FILTRATION PROJECT



X	NEW WORK KEYED NOTES
1	UPDATE EXSTING SWITCH TO BE FUSED DOWN AS SHOWN

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Stevenson High School
Pool Filtration Project

LIVONIA,
MICHIGAN

SHEET

ELECTRICAL ONE-LINE DIAGRAMS

PROJECT NUMBER

2024-081

SHEET NUMBER

E7.00

2024-081 PS LIVONIA HIGH SCHOOL - POOL FILTRATION PROJECT