PUYALLUP HIGH SCHOOL
SCIENCE CLASSROOM TI 2026
105 7TH ST SW, PUYALLUP, WA 98371

PROJECT INFOMATION

TAX ID ADDRESS:	105 7TH ST SW Puyallup, WA 98371
OCCUPANCY GROUP:	E
ZONING:	PF-PUBLIC FACILITIES
TYPE OF CONSTRUCTION:	BUILDING-01: VN (UBC, EXISTING)
BUILDING-01 SF): LEVEL 1 46,332 SF LEVEL 2 39,702 SF LEVEL 3 32,384 SF TOTAL SF: 118,418 SF	NOTE: NO CHANGE IN SF
PROPERTY SIZE:	365,033 SF (8.38 ACRES)
PARCEL NUMBERS:	5870000151

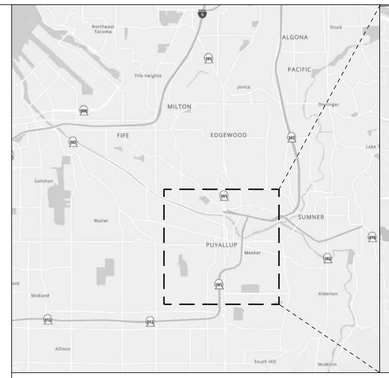
LEGAL DESCRIPTION:

Section 28 Township 20 Range 04 Quarter 42 MILLERS A J TO PUYALLUP PUYALLUP HIGH SCHOOL PROP L 1 THRU 8 B 5, L 1 THRU 12 B 6 INCL 2ND AVE VAC TOG/W POR MAIN ST ABUTT VAC BY ORD 2582 TOG/W MAPLEWOOD ADD L 1 THRU 17 B 1, L 1 THRU 17 B 6, L 1 THRU 17 B 7 INCL MEEKER & ALLEY VAC TOG/W POR MAIN ST ABUTT VAC BY ORD 2582 APPROVED COMB BY CY OF PUYALLUP PLANNING DEPT 2/13/09 COMB OF 015-0 & 550500-001-0 & 024-0 SEG 2009-0561 JU 2/24/09JU

GOVERNING CODES:

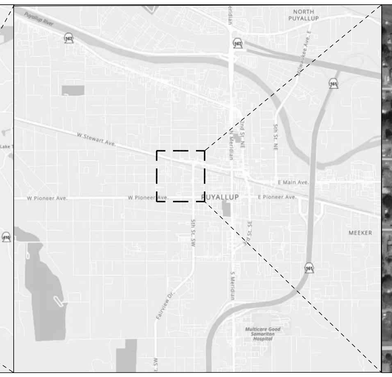
1. AUTOMATIC FIRE DETECTION & SUPPRESSION SYSTEMS ORDINANCE NO. 1902-92
2. IBC, 2021 EDITION WITH WA AMENDMENTS
3. ACCESSIBLE AND USABLE BUILDINGS & FACILITIES, ANSI A117.1-2017 WITH WA AMENDMENTS
4. INTERNATIONAL FIRE CODE (IFC), 2021 EDITION WITH WA AMENDMENTS
5. INTERNATIONAL MECHANICAL CODE (IMC), 2021 EDITION WITH WA AMENDMENTS
6. NATIONAL ELECTRIC CODE (NEC), 2021 EDITION WITH WA AMENDMENTS
7. UNIFORM PLUMBING CODE (UPC), 2021 EDITION WITH WA AMENDMENTS
8. INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2021 EDITION WITH WA AMENDMENTS
9. PIERCE COUNTY DESIGN & CONSTRUCTION STANDARDS & SPECIFICATIONS
10. PIERCE COUNTY STORMWATER MANAGEMENT MANUAL

LOCATION MAPS



REGION MAP

NORTH



NEIGHBORHOOD MAP

NORTH

VICINITY MAP

NORTH

PERMIT SET

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GENERAL NOTES

1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND COORDINATE THE WORK OF ALL TRADES INVOLVED IN THE PROJECT AS PART OF THIS CONTRACT.
2. CONTRACTOR SHALL VERIFY CONDITIONS AT THE SITE AND REPORT ALL DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE AND PROPER EXECUTION OF THE WORK AS INDICATED ON ALL DRAWINGS. IF ANY ERROR BETWEEN ARCHITECTURAL, STRUCTURAL, MECHANICAL, ELECTRICAL, CIVIL OR LANDSCAPE DRAWINGS IS FOUND, CONTACT THE ARCHITECT IMMEDIATELY BEFORE PROCEEDING.
4. REGULATIONS, STANDARDS, CONSTRUCTION, MATERIALS AND REQUIREMENTS FOR INSTALLATION OF MATERIALS SHALL CONFORM TO AND BE GOVERNED BY THE EDITION OF THE CODE IDENTIFIED IN THE CODES SECTION OF THIS SHEET.
5. REFERENCING DRAWINGS IS FOR CONVENIENCE ONLY AND DOES NOT LIMIT APPLICATION OF DRAWINGS OR DETAILS.
6. N.I.C. EQUIPMENT IS FURNISHED AND INSTALLED BY OTHERS. CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION AND PERFORMING WORK AS REQUIRED BY DETAILS OR SPECIFICATIONS FOR EQUIPMENT INSTALLATION.
7. OFCI EQUIPMENT IS OWNER FURNISHED AND CONTRACTOR INSTALLED AS PART OF THIS WORK. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE WORK AS REQUIRED FOR INSTALLATION.
8. DO NOT SCALE DRAWINGS: CONTACT ARCHITECT FOR ANY NEEDED CLARIFICATIONS.

INDEX OF DRAWINGS

Sheet No.	Sheet Name
GENERAL	
G-000	GENERAL PROJECT INFORMATION
G-001	PROJECT INFORMATION
ARCHITECTURAL SITE PLAN	
AS100	ARCHITECTURAL SITE PLAN
ARCHITECTURAL DEMOLITION (BUILDING 01)	
AD01-101	OVERALL 1ST LEVEL DEMO FLOOR PLAN BUILDING 50-01
AD01-102	OVERALL 2ND LEVEL DEMO FLOOR PLAN BUILDING 50-01
AD01-103	OVERALL 3RD LEVEL DEMO FLOOR PLAN BUILDING 50-01
AD01-151	OVERALL 1ST LEVEL DEMO RCP BUILDING 50-01
AD01-152	OVERALL 2ND LEVEL DEMO RCP BUILDING 50-01
AD01-153	OVERALL 3RD LEVEL DEMO RCP BUILDING 50-01
AD01-711	ENLARGED DEMO PLANS AND INTERIOR ELEVATIONS
ARCHITECTURAL (BUILDING 01)	
A01-101	OVERALL 1ST LEVEL FLOORPLAN BUILDING 50-01
A01-102	OVERALL 2ND LEVEL FLOORPLAN BUILDING 50-01
A01-103	OVERALL 3RD LEVEL FLOORPLAN BUILDING 50-01
A01-104	OVERALL ROOF PLAN BUILDING 50-01
A01-151	OVERALL 1ST LEVEL RCP BUILDING 50-01
A01-152	OVERALL 2ND LEVEL RCP BUILDING 50-01
A01-153	OVERALL 3RD LEVEL RCP BUILDING 50-01
A01-711	ENLARGED PLANS AND INTERIOR ELEVATIONS
MECHANICAL (BUILDING 01)	
M01-100	MECHANICAL LEGEND, SCHEDULES AND DETAILS
M01-101	MECHANICAL SPECIFICATIONS
M01-102	MECHANICAL SPECIFICATIONS
M01-103	MECHANICAL SPECIFICATIONS
M01-104	MECHANICAL SPECIFICATIONS
M01-105	MECHANICAL SPECIFICATIONS
MD01-203	OVERALL 3RD FLOOR MECH DEMO FLOOR PLAN BUILDING 50-01
MD01-731	ENLARGED MECHANICAL DEMOLITION PLANS BUILDING 50-01
M01-203	OVERALL 3RD FLOOR MECH DEMO FLOOR PLAN BUILDING 50-01
M01-731	ENLARGED MECHANICAL PLANS BUILDING 50-01
ELECTRICAL (BUILDING 01)	
E01-001	ELECTRICAL LEGEND AND DRAWING INDEX
E01-002	ELECTRICAL ABBREVIATIONS AND GENERAL NOTES E01-003 - ELECTRICAL DRAWING SPECIFICATIONS
E01-102	OVERALL 2ND FLOOR ELECTRICAL FLOORPLAN BUILDING 50-01
E01-103	OVERALL 3RD FLOOR ELECTRICAL FLOORPLAN BUILDING 50-01
E01-901	ELECTRICAL ONE-LINE DIAGRAM
E01-1001	ELECTRICAL PANEL SCHEDULES

Approval of submitted plans is not an approval of omissions or oversights by this office or non compliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable codes and regulations of the local government.

The approved construction plans, documents, and all engineering must be posted on the job at all inspections in a visible and readily accessible location.

Full sized legible color plans are required to be provided by the permitee on site for inspection.

Separate Electrical Permit is required with the Washington State Department of Labor & Industries.
https://lni.wa.gov/licensing-permits/electrical/electrical-permits-fees-and-inspections
or call for Licensing Information:
1-800-647-0982

City of Puyallup Development & Permitting Services ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic

City of Puyallup Planning Division APPROVED
See permit conditions.
NComstock
07/09/2026
10:41:11 AM

City of Puyallup Building REVIEWED FOR COMPLIANCE
SKinnear
07/08/2026
9:08:00 AM

DEFERRED SUBMITTALS

PROJECT TEAM

OWNER
Puyallup School District
323 12th St NW
Puyallup, WA 98371
P: (253) 381-9174
Agent: Larry Vandeberg

ARCHITECT
Studio Meng Strazzara
2001 Western Ave
Suite #200
Seattle, WA 98121
P: (206) 587-3797
PIC: Steve Lee
Project Manager: Robert Landa

MECHANICAL ENGINEER
BCE Engineers, Inc.
6021 12th St E, Suite #200
Fife, WA 98424
P: (253) 922-0446
PIC: Jeff Hardwick
Project Engineer: Alma Castro

ELECTRICAL ENGINEER
Hargis Engineers, Inc.
1201 Third Ave, Suite #600
Seattle, WA 98101
P: (206) 436-0457
PIC: Brendon Inman
Project Engineer: Taylor Vanderkley

PROJECT SCOPE OF WORK

THE WORK WILL BE, BUT NOT LIMITED TO A LIMITED TENANT IMPROVEMENT TO CONVERT CLASSROOM 01-322 INTO A CHEMISTRY LAB AND MINOR MODIFICATIONS TO ROOM 324 BIOLOGY CLASSROOM. ROOM 322 SCOPE INCLUDES ADDING 7 STUDENT LAB STATIONS FOR 26 STUDENTS, 1 TEACHER DEMONSTRATION STATION, 1 CLEAN UP/HAND WASH SINK, INSTALLING A NEW FUME HOOD, PURGE FAN, INSTALLING A COMBINATION EMERGENCY SHOWER/EYEWASH, AND CASEWORK DEMOLITION & REPLACEMENT. ROOM 324 SCOPE INCLUDES REPLACING THE EXISTING CLEANUP/HANDWASH SINK AND CABINET WITH AN ADA ACCESSIBLE VERSION, AND ADDING A TEACHER DEMONSTRATION STATION WITH SINK. TEACHER DEMONSTRATION STATIONS AND STUDENT LAB STATIONS TO HAVE WATER SERVICE ONLY, NO GAS OR AIR SUPPLY REQUIRED.

PERMIT REVIEWER STAMP

ARCHITECT
studio MENG STRAZZARA
2001 WESTERN AVE, STE# 200, SEATTLE, WA 98121
www.studioms.com | P: 206.587.3797

CONSULTANT

CLIENT/OWNER
PUYALLUP SCHOOL DISTRICT
A Tradition of Excellence

PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
GENERAL INFORMATION SHEET

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

G000

ABBREVIATIONS

&	and
<	angle
@	at
#	number,pounds
[	channel
ABV	above
AC	air conditioning, acoustic
ACC	access
ACP	acoustic ceiling panel
ACT	acoustic ceiling tile
ADD	addendum
ADJ	adjust, adjustable
AFF	above finish floor
AL	aluminum
ALT	alternate, alternative
ALUM	aluminum
ANOD	anodized
APPR	approximate
ARCH	architect, architectural
AVG	average
BB	board & batten
BD	board
BF	barrier free
BLDG	building
BLK	block, blocking
BLW	below
BM	beam
BS	both sides
BSBL	building setback line
BSMT	basement
BTM	bottom
BTWN	between
BW	both ways
CAB	cabinet
CB	catch basin
CFCI	contractor furnished-contractor installed
CFM	cubic feet per minute
CFR	chamfer
CFT	cubic feet
CIP	cast in place
CJ	control joint
CL	centerline
CLG	ceiling
CLR	clear, clearance, clear finish
CMU	concrete masonry units
COL	column
CONC	concrete
CONST	construction
CONT	continuous
CONTR	contractor, contract
CORR	corrugated
CR	corrosion resistant
CSMT	casement
CT	ceramic tile, changing table
CYD	cubic yards
D	deep, depth
DBL	double
DD	deck drain
DF	drinking fountain
DIA	diameter
DIAG	diagonal
DIM	dimension, dimensional
DIV	divide, division
DN	down
DR	door
DS	downspout
DT	drain tile
DTL	detail
DW	dishwasher
DWG	drawing
DWR	drawer
E	east
(E)	existing
EA	each
EF	exhaust fan
EG	existing grade
EJ	expansion joint
EL	elevation
ELEC	electrical
ELEV	elevator
EMER	emergency
ENCL	enclosure, enclose
EQ	equal
EQP	equipment
EST	estimate, estimated
EXH	exhaust
EXP	expose, exposed
EXST	existing
EXT	exterior
FCB	fiber-cement board
FCT	fiber-cement trim
FD	floor drain
FDC	fire department connection
FE	fire extinguisher (wall hung)
FEC	fire extinguisher cabinet
FF	finish floor, frost free, factory finish
FG	finished grade
FIN	finish, finished
FJ	finish joint
FLR	floor
FLSH	flash, flashing
FLX	flexible
FND	foundation
FO	face of
FP	fireplace, fireproof
FR	fire resistant
FS	full size
FSK	floor sink
FST	folding shower seat
FT	foot, feet
FTG	footing
FUR	furring
GA	gage, gauge
GB	grab bar
GC	general contractor
GBR	grab bar rear
GBS	grab bar side
GBV	grab bar vertical
GF	ground face
GLAZ	glazing
GLB	glassblock
GLV	galvanize, galvanized
GL	glass, glaze, glazing
GRD	grade
GSKT	gasket
GWB	gypsum wallboard
GYP	gypsum
H	high, height
HB	hose bibb
HD	heavy duty
HDR	header
HDW	hardware
HEX	hexagonal
HJ	head joint
HM	hollow metal
HORIZ	horizontal
HT	height
HWD	hardwood
HWT	hot water tank/heater
HVAC	heating, ventilation & air conditioning
HZ	horizontal
ICC	international code council
ID	inner diameter
INCL	include, included
INSUL	insulate, insulation
INST	install, installed
INT	interior
JST	joist
JT	joint
KO	knockout
KPL	kickplate
L	left, long, length
LAM	laminate, laminated
LAV	lavatory
LBL	label
LH	left hand
LT	ligth
LW	lightweight
MAS	masonry
MATL	material
MAX	maximum
MB	marker board
MBR	member
MDF	medium density fiberboard
MDO	medium density overlay
MECH	mechanical
MED	medium
MFR	manufacturer
MH	mop hook
MIN	minimum
MIR	mirror
MISC	miscellaneous
MO	masonry opening
MOD	modify, modified
MR	moisture-resistant
MST	metal spankrete panel
MT	mount
MTL	metal
N	north
NAT	natural
NI	nickel
NIC	not in contract
NMT	non-metallic
NO	number
NOM	nominal
NRC	noise reduction coefficient
NTS	not to scale
OA	overall
OC	on center
OD	outer diameter
OFCI	owner furnished-contractor installed
OFOI	owner furnished-owner installed
OH	overhead
OPG	opening
OPP	opposite
OPQ	opaque
PAV	pave, pavers, pavement
PCF	pounds per cubic foot
PED	pedestal
PERF	perforate
PFB	prefabricated
PFN	prefinished
PKG	parking
PL	plate
PLAM	plastic laminate
PLF	pounds per linear foot
PLL	parallel
PLY	plywood
PNL	panel
PNT	paint
POLY	polyethyline
PR	pair
PROP	property line
PSF	pounds per square foot
PSI	pounds per square inch
PT	paint
PTD	paper towel dispenser
PVC	poly vinyl cloride
R	radius, risers
R&S	rod and shelf
RA	return air
RAD	radius
RBB	reverse board & batten
RD	roof drain
REF	reference, refrigerator
REINF	reinforce, reinforcement
RF	roof
RFL	reflected
RH	right hand, robe hook
RM	room
RMV	remove
RO	rough opening
ROW	right of way
RVS	reverse
S	south
SAM	self-adhesive membrane
SBK	setback
SC	solid core
SCD	seat cover dispenser
SCHED	schedule
SCR	shower curtain rod
SD	smoke detector, soap dispenser
SECT	section
SF	square feet, store front
SFTY	safety
SHT	sheet
SIM	similar
SJ	seismic joint
SLNT	sealant
SND	sanitary napkin dispenser
SNR	sanitary napkin receptacle
SOG	slab on grade
SP	sound proof
SQ	square
SS	stainless steel
SSS	stainless steel shelf
STD	standard
STL	steel
STOR	store, storage
STRUCT	structural
SYM	symmetric
SYN	synthetic
SYS	system
T	tempered
T&G	tongue & groove
TB	towel bar
TEL	telephone
THK	thickness
TO	top of
TOL	tolerance
TOP	top of parapet
TOW	top of wall
TPD	toilet paper dispenser
TTD	toilet tissue dispenser
TV	television
TYP	typical
UNO	unless noted otherwise
UL	Underwriters Laboratory
VB	vapor barrier
VCT	vinyl composite tile
VERT	vertical
VG	vertical grain
VIF	verify in field
VIN	vinyl
VJ	v-joint
VTO	vent to outside
W	west,wide, width
WC	water closet
WD	wood
W/D	washer/dryer
WH	wall hung
WIC	walk-in closet
WIN	window
W/O	without
WP	waterproof
WPC	waterproofing consultant
WR	water resistant
WRB	weather-resistive barrier
WTW	wall to wall

SYMBOLS

DRAWING REFERENCE
1 / A001 — DRAWING REFERENCE, SHEET NUMBER, ENLARGED DRAWING BUBBLE

DRAWING TITLES
TITLE — DRAWING NAME
SCALE: 1/8" = 1'-0" — SCALE
REFERENCE

NORTH ARROW
POINT OF ARROW INDICATES NORTH DIRECTION

SECTION REFERENCE
1 / A001

BUILDING HEIGHT MARKER
elevation
XXX.X'

SPOT ELEVATION
elevation
XXX.X'

INTERIOR ELEVATIONS
#A, #B, #C, #D, A-###
ELEVATION REFERENCE
SHEET NUMBER

MATCH LINE

EXTERIOR ELEVATION
1 / A001
ELEVATION REFERENCE
SHEET NUMBER

WALL TYPE
K, Fo, W, Fi, H
SUBSTRATE MODIFIER
WALL TYPE
INSIDE MODIFIER
WALL HEIGHT
OUTSIDE MODIFIER

ROOM AND FINISH TAG

LOBBY	ROOM NAME
100	ROOM NUMBER
III	FINISH TYPE

ROOM AND OCCUPANCY TAG

LOBBY	ROOM NAME
###	ROOM NUMBER
###	ROOM AREA
##	LOAD FACTOR
##	OCCUPANT LOAD

EGRESS DOOR WIDTH TAG
146 | 88"
15 | 22"
OF OCCUPANTS
AVAILABLE DOOR OPENING WIDTH
MINIMUM REQUIRED DOOR OPENING WIDTH
WIDTH FACTOR INCH PER OCCUPANT REQUIRED

EGRESS DOOR WIDTH TAG
22
TOTAL OCCUPANTS EXITING
NOTE: INCLUDES ADDED OCCUPANTS FROM CONTRIBUTING SPACES DIVIDED BY QUANTITY OF EXITS

EGRESS DOOR WIDTH TAG
PATH OF EGRESS

GRID LINE AND GRID NUMBER
XG

DATUM POINT

DOOR NUMBER
Door ###

RELITE NUMBER
R####

WINDOW TAG
XX

ACCESSORY TAG
3

REVISION NUMBER
1
REVISION TAG
REVISION CLOUD

ILLUMINATED EXIT SIGN
EXIT

SECURITY CAMERA

FEC

FE

TOILET
(E)

LAVATORY
(E)

URINAL
(E)

CORNER GUARD
CORNER GUARD

BASKETBALL BACKSTOP

METER

EXHAUST FAN AND DUCT

WATER HEATER
HW

ELEC PANEL

WASHING MACHING OUTLET BOX

SLAB STEP

SLAB RAMP

DOWNSPOUT
DS

GENERAL NOTES

1. It is the responsibility of the contractor to ensure compliance and conformance with the various provisions within all applicable ordinances and codes for all of the work.

2. Safety: contractor shall be responsible for all required safety precautions and the methods, techniques, sequences, or procedures required to perform the work.

3. Changes:contractor initiated changes shall be submitted in writing to the architect and structural engineer for approval prior to fabrication or construction. Changes shown on shop drawings only will NOT satisfy this requirement.

4. Project drawings indicate general configuration of construction. Where conditions require specific detail information not included with these drawings, it is the Contractor's responsibility to confirm intent with the Architect before proceeding with construction.

5. N/A

6. Studio Meng Strazzara assumes no responsibility as to the physical characteristics of the soils.

7. Studio Meng Strazzara assumes no responsibility for, nor verifies the accuracy of, any engineering data supplied by others.

8. Contractor to verify and coordinate all dimensions among all drawings prior to construction. Written dimensions take precedence over scaled lengths and heights in all cases.

9. In the event of discrepancies or contradictory information in the drawings, notes, or specifications, it is the obligation of the contractor to notify the architect of same and to obtain clarification from the architect before proceeding with the work. Any work done by the contractor after discovery of such discrepancy shall be done at the contractor's risk.

10. All contract documents pertaining to this project are to be considered and interpreted for bidding and construction purposes as a complete whole. No part of the contract documents shall be distributed, considered, or used in any way independent of the complete set of documents.

11. The architect shall have final authority with regard to interpretation of the intent and spirit of the contract documents.

12. Bidder Design Systems, such as fire protection system, to be bidder designed. Sub-contractors designated to accomplish bidder design will be responsible for the preparation of drawings and applications for appropriate required permits (see applicable codes list).

13. N/A

14. See main floor plan or enlarged plans for dimensions, wall type references and fire extinguisher locations.

15. N/A

16. See electrical for exit signs and emergency egress light fixtures.

17. All dimensions are to face of framing unless noted otherwise.

18. Provide a surface mounted 5LB ABC type fire extinguisher in chemistry lab. All extinguisher locations to be located per code & Fire Marshall approval.

19. N/A

20. Application and installation of insulation and vapor barriers shall comply with current Washington State and International Energy Code thermal insulation standards.

21. Non-recirculating hot and cold water pipes located in unconditioned spaces shall be insulated to R-3 minimum. (WSEC sec. 503.11)

22. Storage and use of class I, II and IIIA liquids are prohibited except in approved quantities as necessary in classrooms for operation and maintenance.

23. N/A

24. N/A

25. N/A

26. Provide flashing as stated in specifications at all roof/wall intersections, roof/chimney intersections, and roof curbs. Provide said flashing at all horizontal interruptions of siding finishes. Flashing and waterproofing/ damp-proofing as shown in the waterproofing drawings (when provided) supersede that shown in the architectural drawings.

27. N/A

28. Fireblocking and draft stopping shall be installed in combustible locations in accordance with IBC Section 717. Fireblocking shall comply with Section 717.2. Draftstopping in floor/ceiling spaces and attic spaces shall comply with Section 717.3 and 717.4, respectively.

29. N/A

30. N/A

31. N/A

32. N/A

33. N/A

34. N/A

35. Grab bars, transfer seats, and other wall items to have solid blocking at connection points.

36. N/A

37. General contractor shall be responsible for coordinating all work including additional permits and subcontractor work.

38. Contractor shall be responsible for coordinating all building inspections with local jurisdiction in authority.

39. Contractor shall clean all surfaces prior to occupancy.

40. Contractor shall maintain a trash bin in an area designated by the owner's representative for the collection of all construction debris. Contractor shall dispose of all debris and remove trash bin prior to occupancy.

41. Contractor and sub-contractors shall mark drawings for as Mechanical, electrical, plumbing, and fire drawings to be revised for as-built conditions by their respective authors. Submit final as-built reproducible drawings to owner's representative.

42. All exterior joints shall be sealed, caulked, gasketed, weather-stripped to limit air leakage in the following locations, per State Energy Code.

a. windows and door frames
b. openings between walls and foundations
c. between walls and roof
d. openings at penetration of utility services
e. all other openings in the building envelope

43. NA

44. NA

45. N/A

46. N/A

47. See mechanical and roof plan for roof penetrations. No penetrations are permitted within 4'-0" of fire wall.

48. Architect shall review all deferred submittals and verify compliance with the design concept and code requirements relating to:

a. Automatic sprinkler system design drawings.
b. Manual and automatic fire alarm drawings.
c. Installation details of acoustical ceiling suspension system.
d. Installation details of membrane and through-penetration fire stops, and fire-resistive joint systems
e. Design details and structural calculation for the seismic anchorage and bracing of each piece of floor mounted and roof mounted mechanical and other equipment weighing 400 pounds or more.

49. N/A

50. All approved manual and automatic fire alarms shall be installed as specified in the fire code; visible alarms complying with WSBC section 1106.15.2 shall be installed in all common-use areas, assembly areas, toilet rooms, hallways, lobbies and corridors.

51. A program of protection for all through penetrations and membrane penetrations of fire and smoke rated assemblies shall be required. This program shall apply an "F" rating equal to the fire resistive rating of the component being penetrated as demonstrated by the manufacturer of the penetration protection system through recognized testing. All penetrations through all fire rated assemblies shall be protected in this manner.

52. At joints between fire resistive assemblies a fire resistive joint system shall be provided. Submit manufacturer's literature describing fire rating testing and specific detail requirements for the installation of the system. If required to comply with manufacturer's requirements, surrounding construction shall be modified, only with prior approval of the Architect, to allow for the installation of the proposed system.

53. Interior wall and ceiling finishes shall meet or exceed IBC chapter 8 and table 803.5 for flame spread and smoke development requirements.

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ARCHITECT
studio MENG STRAZZARA
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www.studioms.com | P: 206.587.3797

CONSULTANT

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PUYALLUP SCHOOL DISTRICT
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City of Puyallup Development & Permitting Services
ISSUED PERMIT
Building | Planning
Engineering | Public Works
Fire | Traffic
PRCT20260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

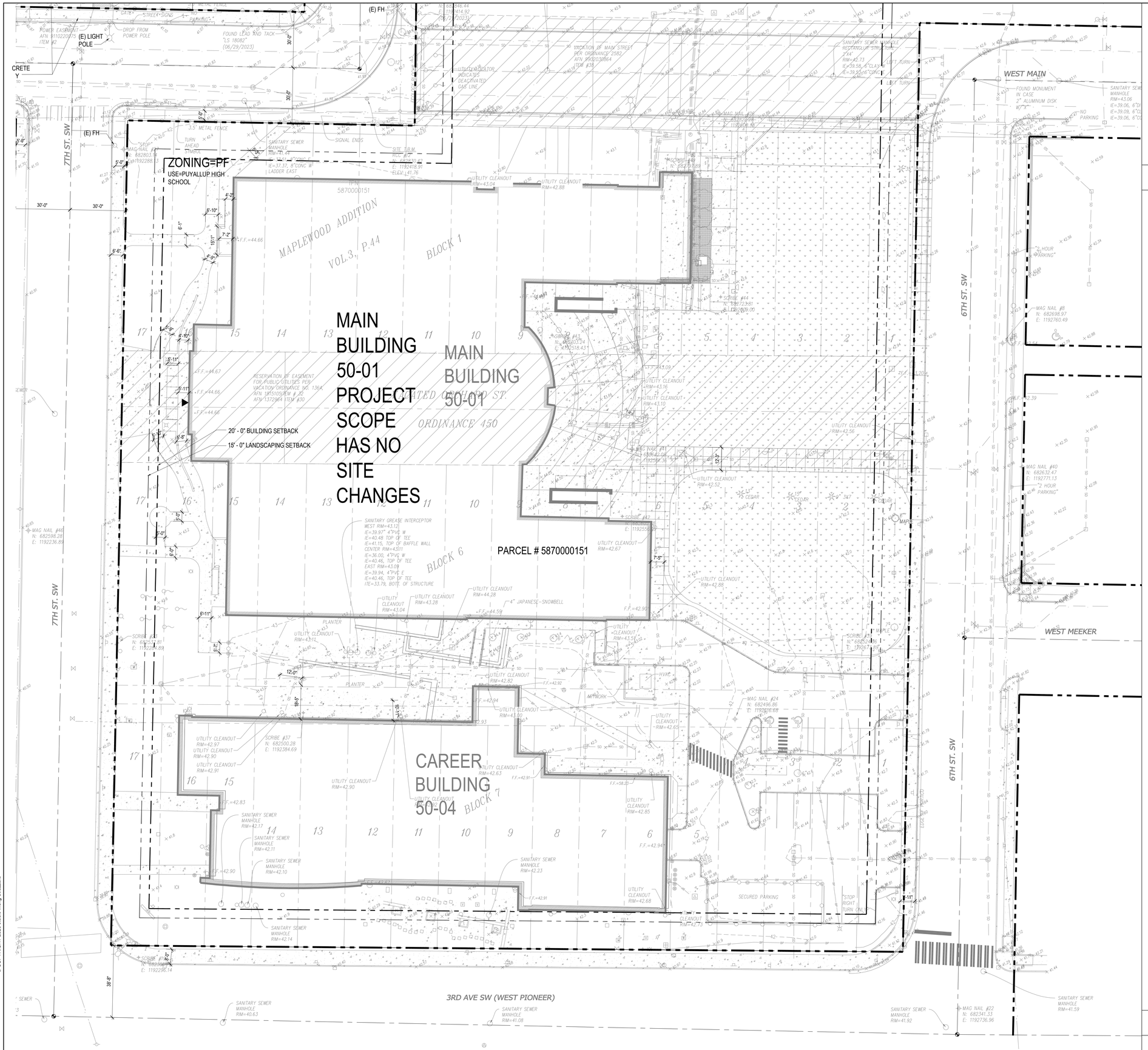
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
PROJECT INFORMATION

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

G001



1 PUYALLUP HIGH SCHOOL ARCHITECTURAL SITE PLAN
SCALE: 1" = 20'

0 20' 40' 80'

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PUYALLUP HIGH SCHOOL SCIENCE CLASSROOM TI 2026

105 7TH AVE SW
PUYALLUP, WA 98371

PROJECT INFORMATION

PARCEL NUMBERS:
5870000151
LEGAL DESCRIPTION

Tax Description
Section 28 Township 20 Range 04 Quarter 42 MILLERS A J TO PUYALLUP PUYALLUP HIGH SCHOOL PROP L 1 THRU 8 B 5, L 1 THRU 12 B 6 INCL 2ND AVE VAC TOG/W POR MAIN ST ABUTT VAC BY ORD 2582 TOG/W MAPLEWOOD ADD L 1 THRU 17 B 1, L 1 THRU 17 B 6, L 1 THRU 17 B 7 INCL MEEKER & ALLEY VAC TOG/W POR MAIN ST ABUTT VAC BY ORD 2582 APPROVED COMB BY CY OF PUYALLUP PLANNING DEPT 2/13/09 COMB OF 015-0 & 550500-001-0 & 024-0 SEG 2009-0561 JU 2/24/09JU

Area:
8.380 ACRES (365,033 SF)

ZONING
PF (PUBLIC FACILITIES)

PERMIT REVIEWER STAMP

ARCHITECT
studio MENG STRAZZARA
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ISSUED PERMIT
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Engineering | Public Works
Fire | Traffic
PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

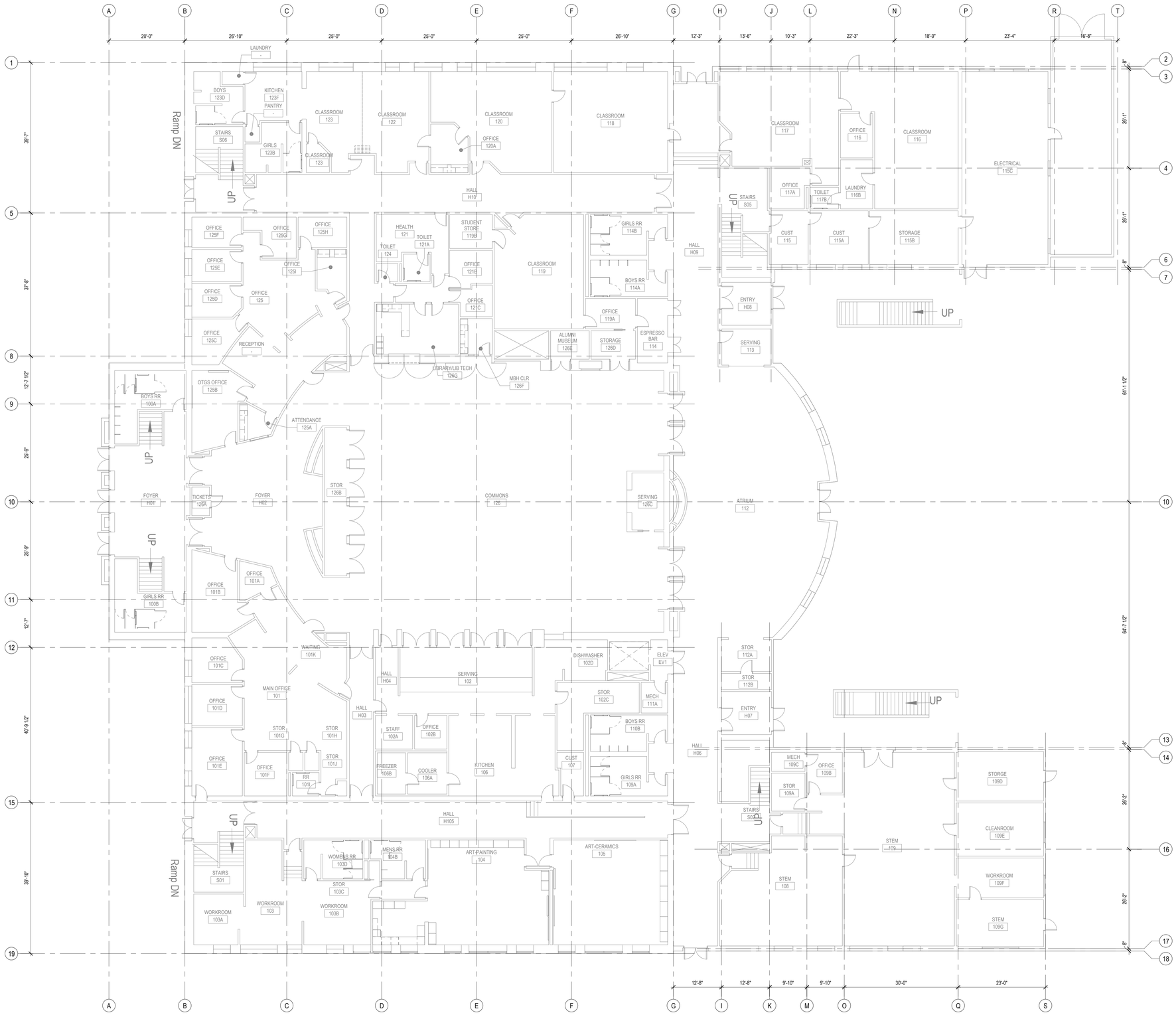
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

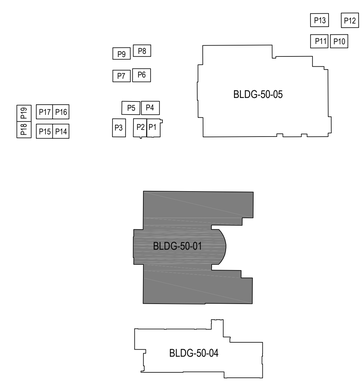
SHEET TITLE
SITE PLAN

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

AS100



1 OVERALL 1ST LEVEL DEMOLITION FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

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Fire | Traffic

PRCTI20260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP

6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

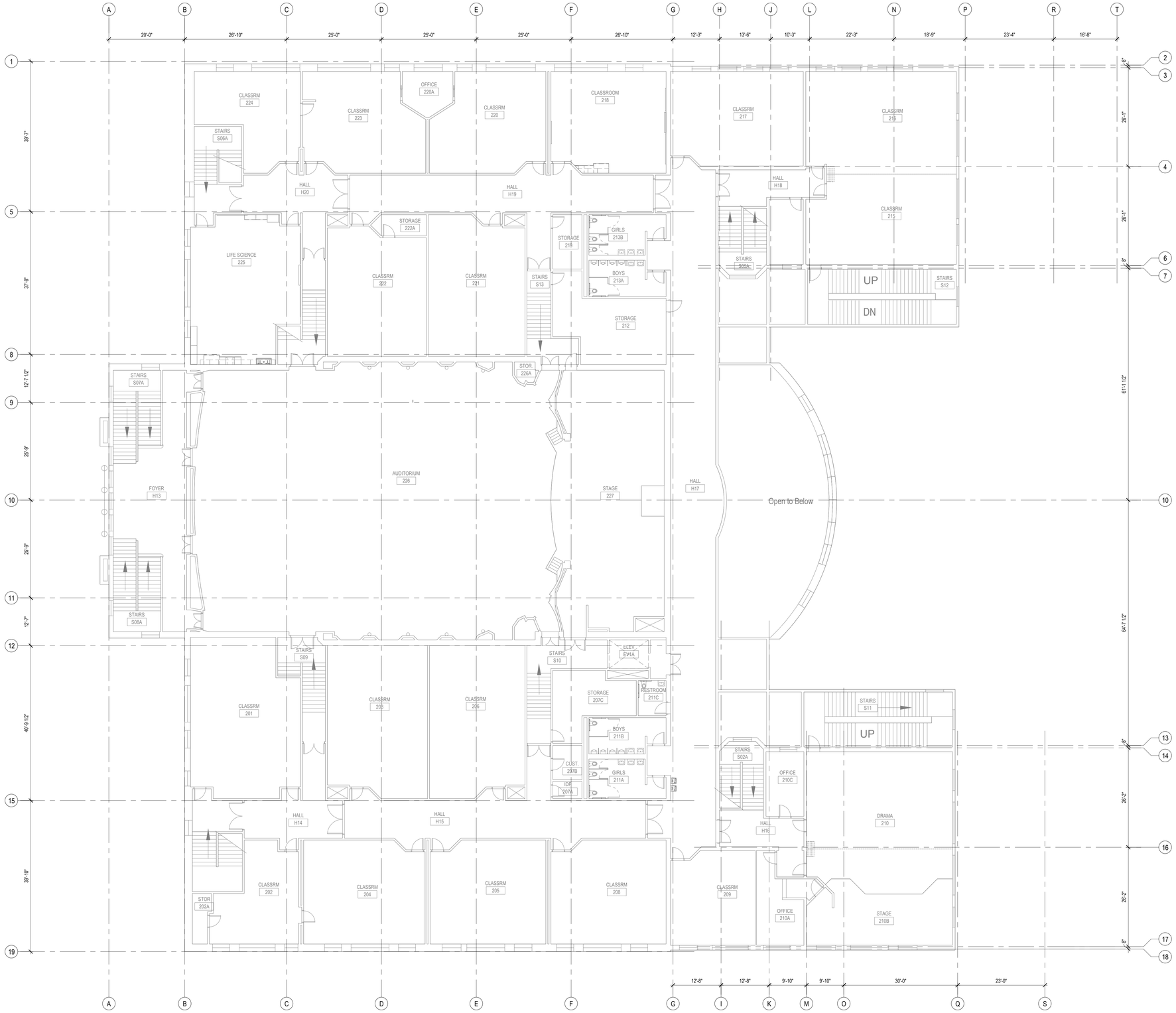
ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

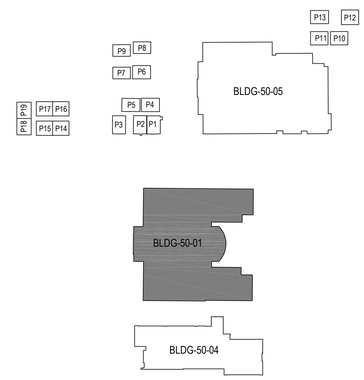
OVERALL 1ST LEVEL DEMO FLOORPLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

AD01-101



1 OVERALL 2ND LEVEL DEMOLITION FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

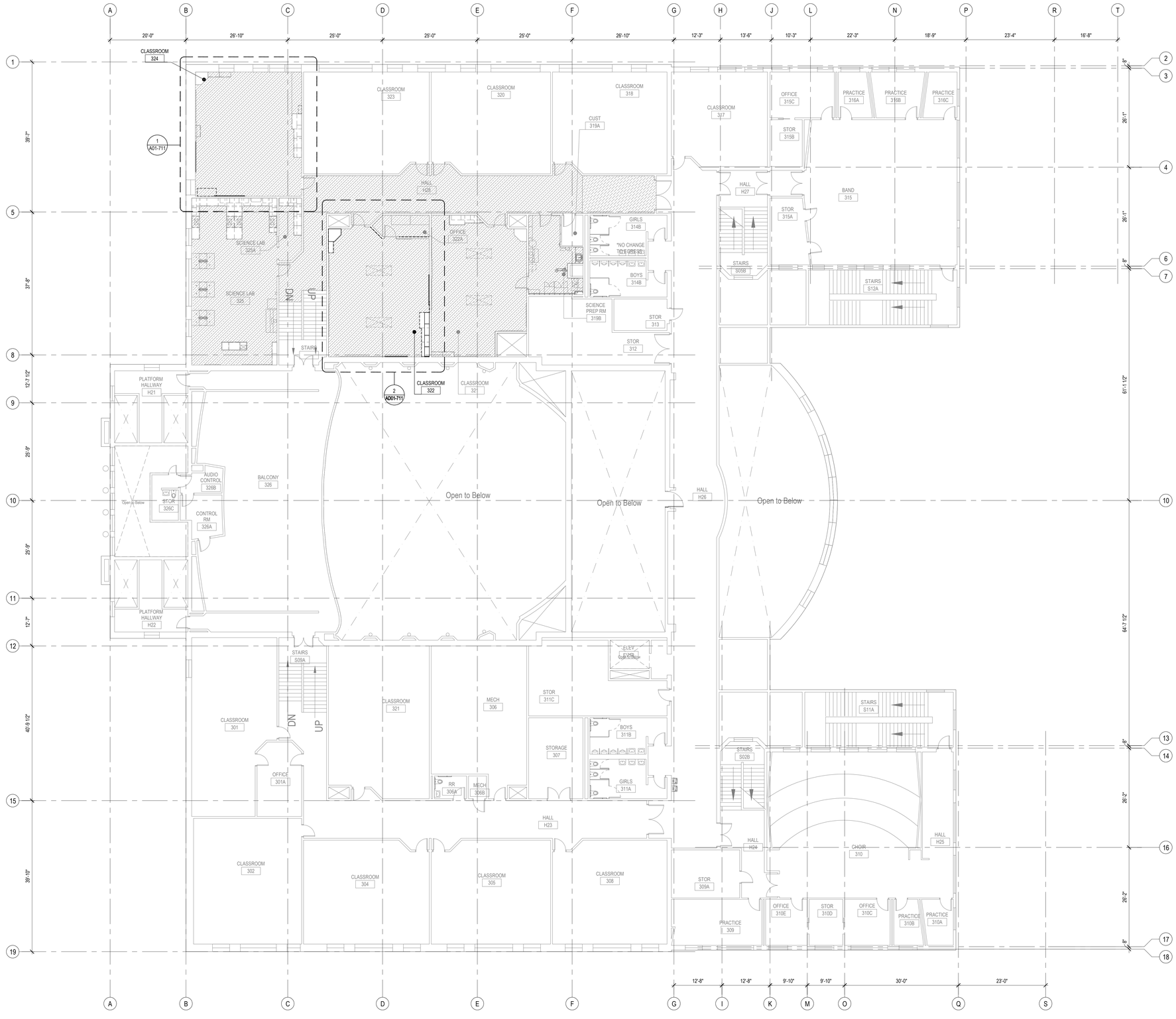
SHEET TITLE
OVERALL 2ND LEVEL DEMO FLOOR PLAN BUILDING 50-01

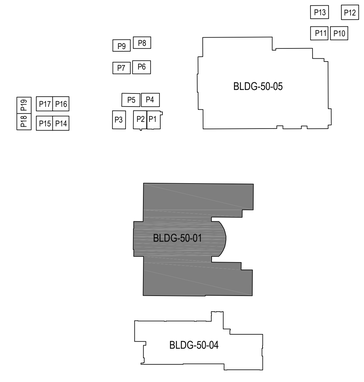
Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

AD01-102

OVERALL ARCHITECTURAL DEMO LITION FLOOR PLAN GENERAL NOTES

1. OVERALL DEMOLITION PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON AD01-7## SERIES DWGS FOR PLAN INFORMATION.
2. NO ARCHITECTURAL DEMOLITION WORK SCOPE AT BUILDING 05-01 FLOORS 2 & 3 EXCEPT FOR MEP SCOPE. REFER TO MEP SHEETS FOR MORE INFORMATION.





2 PHS CAMPUS KEY PLAN
SCALE: NTS

1 OVERALL 3RD LEVEL DEMOLITION FLOORPLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
OVERALL 3RD LEVEL DEMO FLOOR PLAN BUILDING 50-01

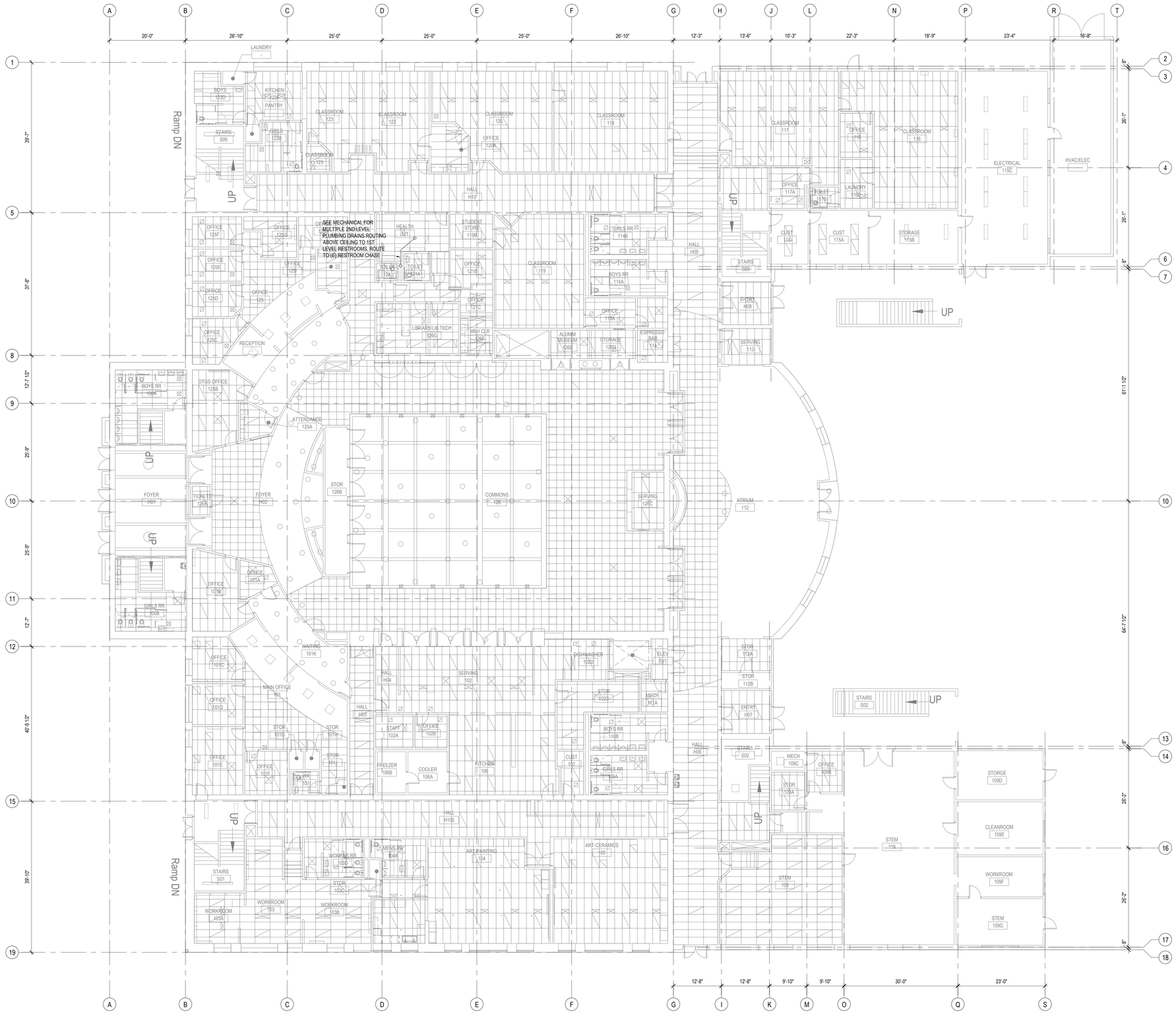
Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

AD01-103

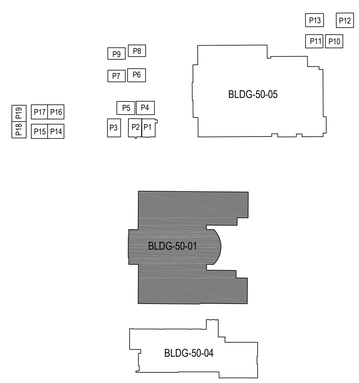
REFLECTED CEILING PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A07 SERIES DWGS AND MECH/ELEC DRAWINGS FOR PLAN INFORMATION.
2. PROVIDE PATCH AND REPAIR OF WALLS AT FLOORS 1&2 FOR PLUMBING AND ELECTRICAL CONDUIT ROUTING. REFER TO MEP SHEETS FOR MORE INFORMATION. CONTRACTOR TO PROPOSED ROUTING OF PLUMBING AND ELECTRICAL CONDUITS AND REVIEW WITH OWNER, ARCHITECT, AND ENGINEERS PRIOR TO INSTALLATION.
3. CONTRACTOR TO PROVIDE ESCUTCHEON TRIMS AT PIPE/CONDUIT PENETRATIONS AND AND FUME HOOD PENETRATIONS THROUGH FINISHED CEILINGS.
4. AT WALL & FLOOR PENETRATION PROVIDE ACOUSTICAL SEALANTS. IF SURFACE IS PAINTED PROVIDE PAINTABLE ACOUSTICAL SEALANTS AROUND PENETRATIONS. SEE WALL RATING FOR LOCATIONS OF RATED WALLS REQUIRING A FIRE RATED ACOUSTICAL SEALANT.
5. CONTRACTOR TO REPAIR FINISHES SIMILAR TO ADJACENT EXISTING FINISHES.

SEE MECHANICAL FOR MULTIPLE 2ND LEVEL PLUMBING DRAINS ROUTING ABOVE CEILING TO 1ST LEVEL RESTROOMS, ROUTE TO (E) RESTROOM CHASE



1 OVERALL 1ST LEVEL DEMOLITION REFLECTED CEILING PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

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Engineering | Public Works
Fire | Traffic

PRCT20260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP

6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

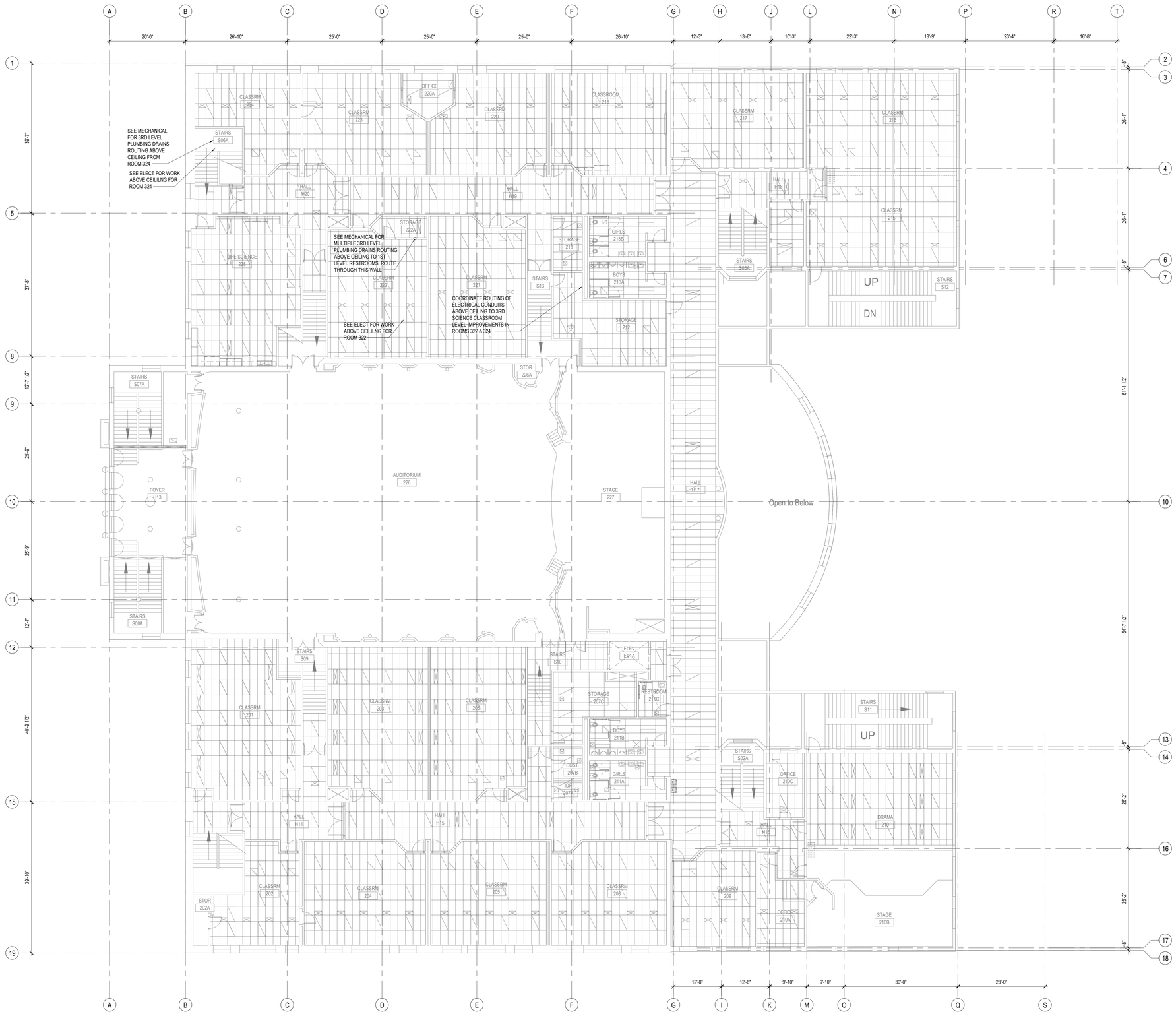
OVERALL 1ST LEVEL DEMO RCP BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

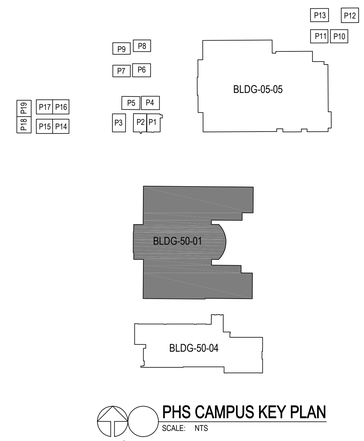
AD01-151

REFLECTED CEILING PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON AD7 SERIES DWGS AND MECH/ELEC DRAWINGS FOR PLAN INFORMATION.
2. PROVIDE PATCH AND REPAIR OF WALLS AT FLOORS 1&2 FOR PLUMBING AND ELECTRICAL CONDUIT ROUTING. REFER TO MEP SHEETS FOR MORE INFORMATION. CONTRACTOR TO PROPOSED ROUTING OF PLUMBING AND ELECTRICAL CONDUITS AND REVIEW WITH OWNER, ARCHITECT, AND ENGINEERS PRIOR TO INSTALLATION.
3. CONTRACTOR TO PROVIDE ESCUTCHEON TRIMS AT PIPE/CONDUIT PENETRATIONS AND AND FUME HOOD PENETRATIONS THROUGH FINISHED CEILINGS.
4. AT WALL & FLOOR PENETRATION PROVIDE ACOUSTICAL SEALANTS. IF SURFACE IS PAINTED PROVIDE PAINTABLE ACOUSTICAL SEALANTS AROUND PENETRATIONS. SEE WALL RATING FOR LOCATIONS OF RATED WALLS REQUIRING A FIRE RATED ACOUSTICAL SEALANT.
5. CONTRACTOR TO REPAIR FINISHES SIMILAR TO ADJACENT EXISTING FINISHES.



1 OVERALL 2ND LEVEL REFLECTED CEILING PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



PHS CAMPUS KEY PLAN
SCALE: NTS

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Engineering | Public Works
Fire | Traffic
PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

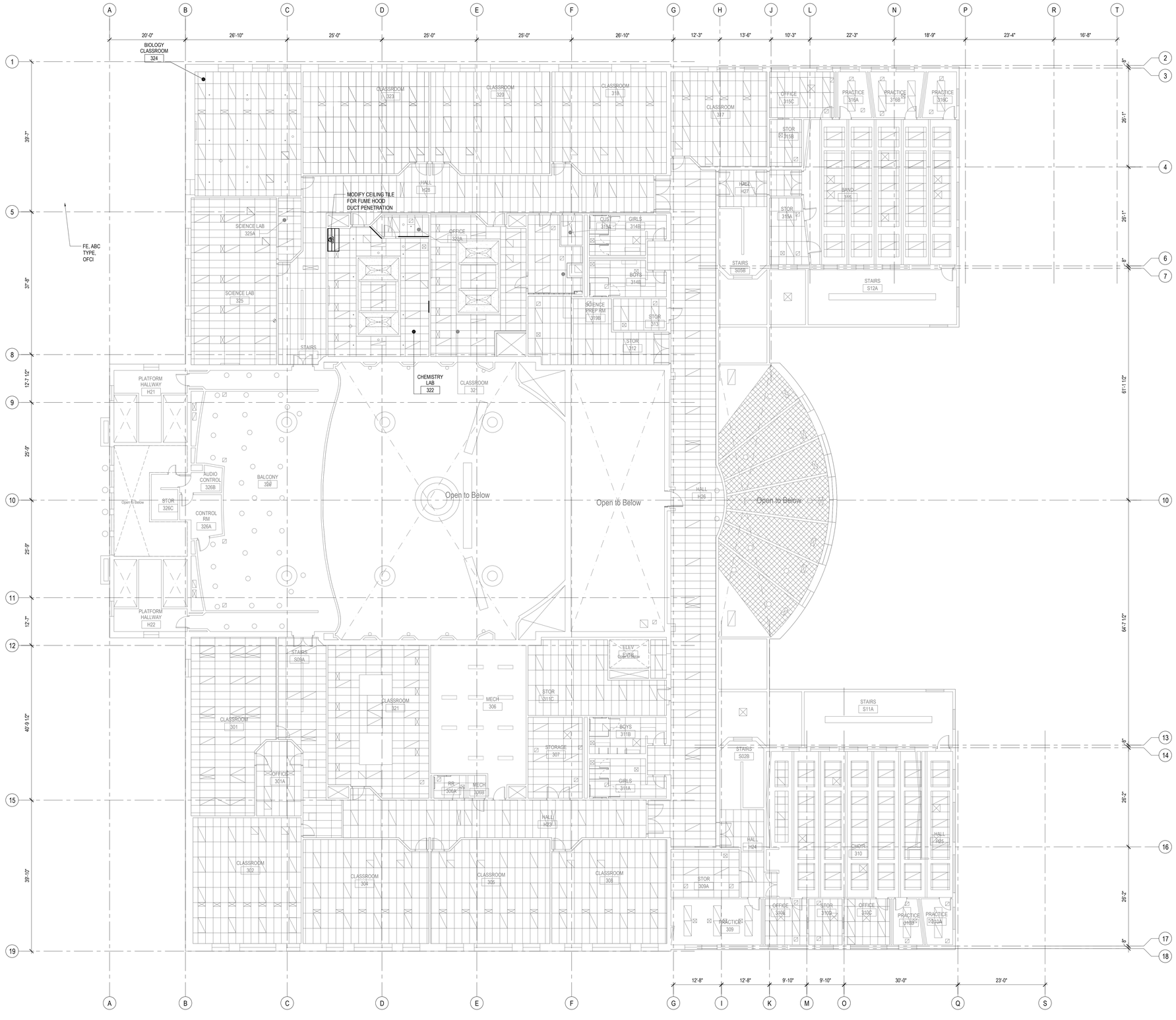
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

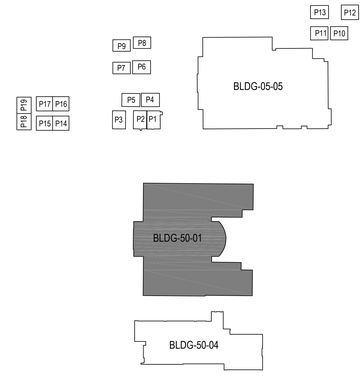
SHEET TITLE
OVERALL 2ND LEVEL REFLECTED CEILING PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

AD01-152



1 OVERALL 3RD LEVEL DEMOLITION REFLECTED CEILING PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

REFLECTED CEILING PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A07 SERIES DWGS AND MECH/ELEC DRAWINGS FOR PLAN INFORMATION.
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3. CONTRACTOR TO PROVIDE ESCUTCHEON TRIMS AT PIPE/CONDUIT PENETRATIONS AND AND FUME HOOD PENETRATIONS THROUGH FINISHED CEILINGS.
4. AT WALL & FLOOR PENETRATION PROVIDE ACOUSTICAL SEALANTS. IF SURFACE IS PAINTED PROVIDE PAINTABLE ACOUSTICAL SEALANTS AROUND PENETRATIONS. SEE WALL RATING FOR LOCATIONS OF RATED WALLS REQUIRING A FIRE RATED ACOUSTICAL SEALANT.
5. CONTRACTOR TO REPAIR FINISHES SIMILAR TO ADJACENT EXISTING FINISHES.

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Engineering	Public Works
Fire	Traffic

PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

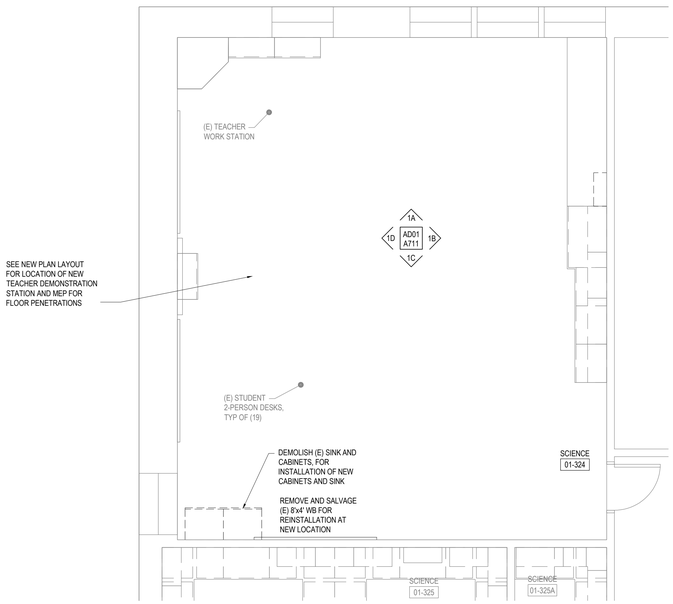
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

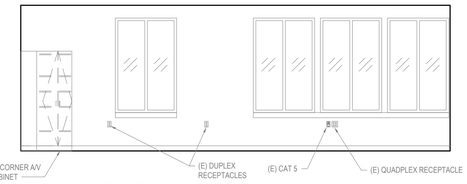
SHEET TITLE
OVERALL 3RD LEVEL DEMO RCP BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

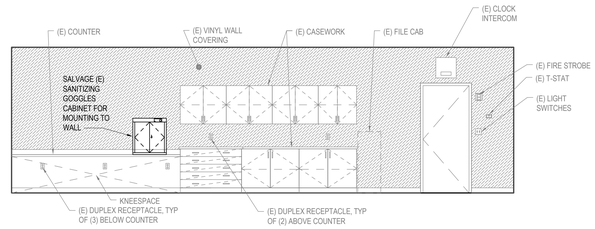
AD01-153



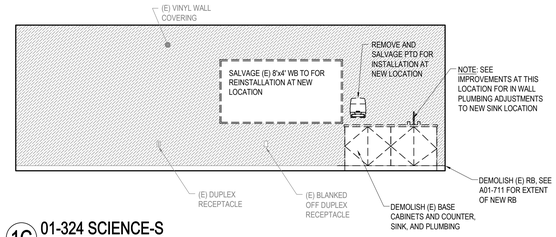
1 **01-324 SCIENCE CLASSROOM DEMOLITION FLOOR PLAN**
SCALE : 1/4" = 1'-0"



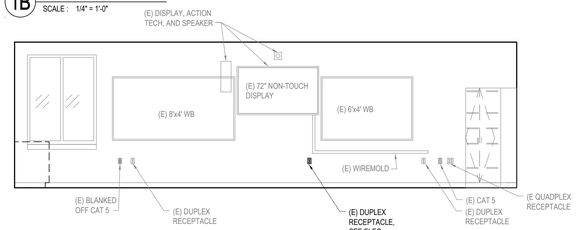
1A **01-324 SCIENCE -N**
SCALE : 1/4" = 1'-0"



1B **01-324 SCIENCE -E**
SCALE : 1/4" = 1'-0"



1C **01-324 SCIENCE-S**
SCALE : 1/4" = 1'-0"



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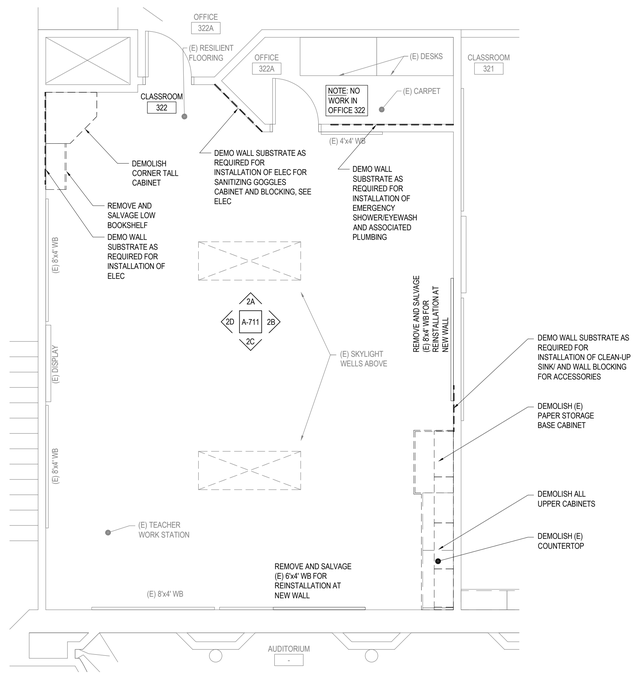
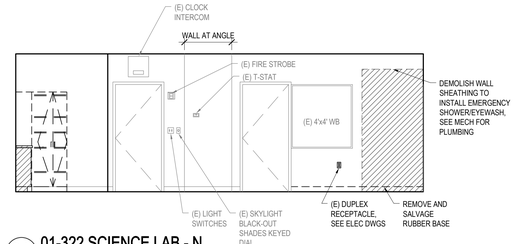
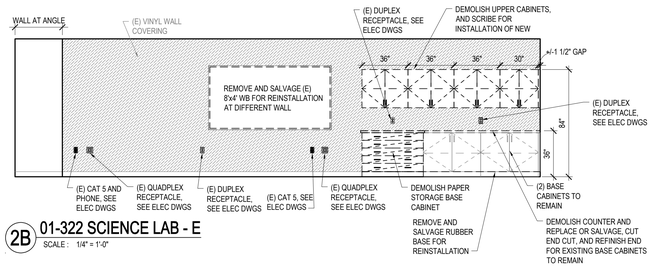
SCALE : 1/4" = 1'-0"



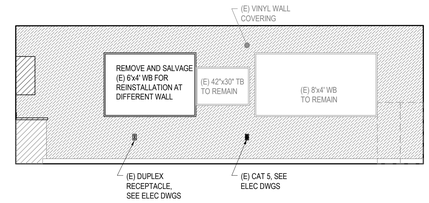
2 **01-322 CLASSROOM ENLARGED DEMOLITION FLOOR PLAN**
SCALE : 1/4" = 1'-0"



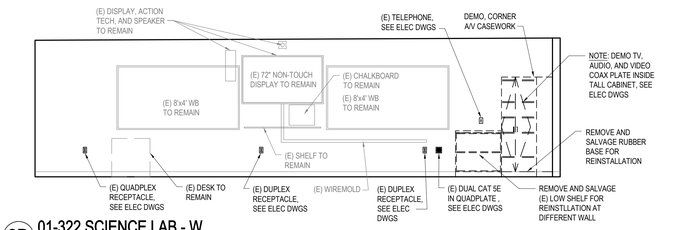
2A **01-322 SCIENCE LAB - N**
SCALE : 1/4" = 1'-0"



2B **01-322 SCIENCE LAB - E**
SCALE : 1/4" = 1'-0"



2C **01-322 SCIENCE LAB - S**
SCALE : 1/4" = 1'-0"



2D **01-322 SCIENCE LAB - W**
SCALE : 1/4" = 1'-0"

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City of Puyallup Development & Permitting Services
ISSUED/ REVIEWED BY:
Building | Planning
Engineering | Public Works
Fire | Traffic

PRCT120260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP

6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

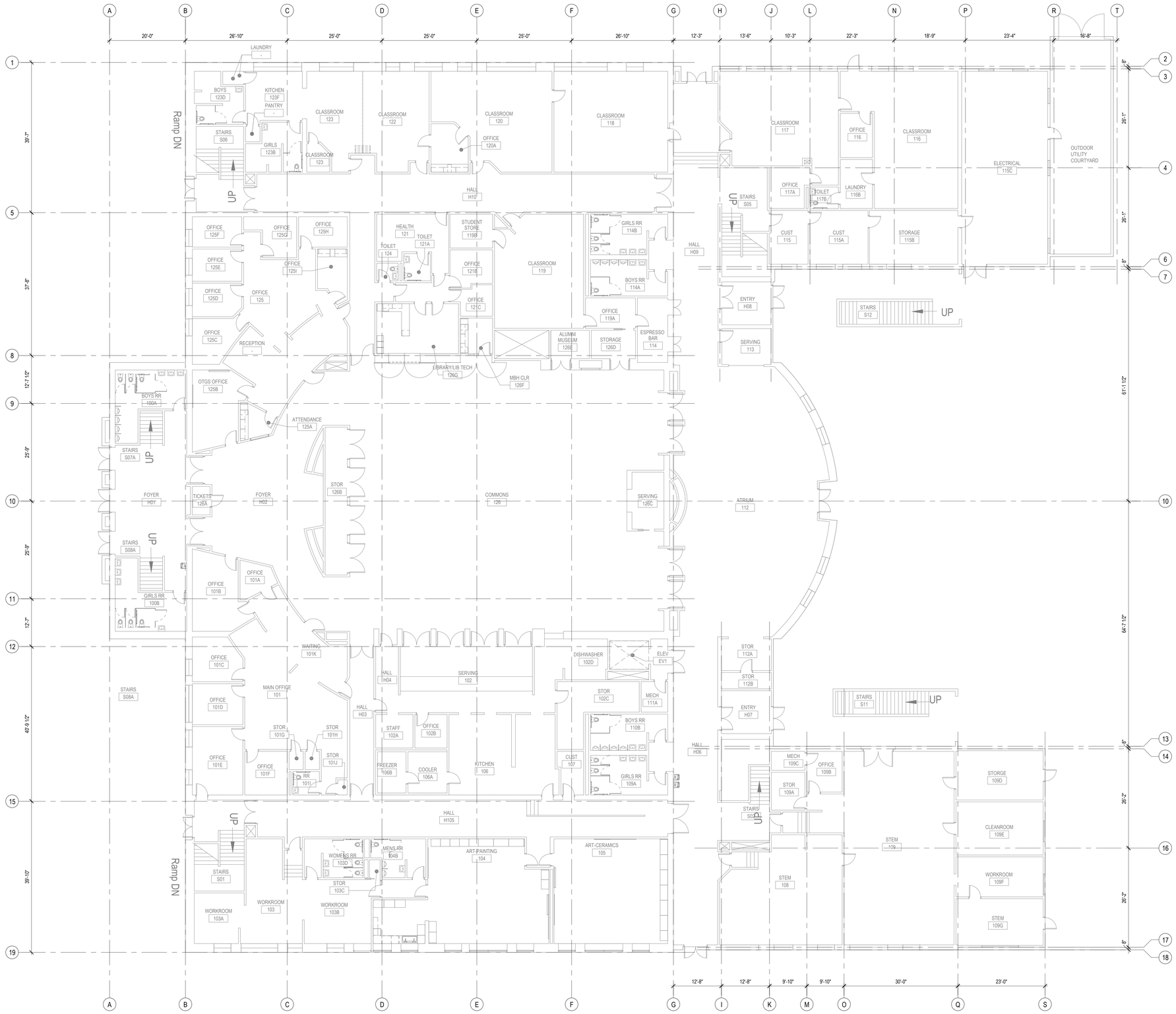
ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

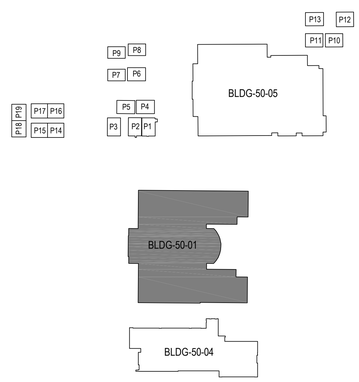
ENLARGED DEMOLTION PLANS AND INTERIOR ELEVATIONS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL/EMV
Checked By	RL

AD01-711



1 OVERALL 1ST LEVEL FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

OVERALL ARCHITECTURAL FLOOR PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A01-7## SERIES DWGS FOR PLAN INFORMATION.
2. NO ARCHITECTURAL WORK SCOPE AT BUILDING 05-01 FLOORS 2 & 3 EXCEPT FOR MEP SCOPE. REFER TO MEP SHEETS FOR MORE INFORMATION.
3. EXISTING FLOORING IS MANNINGTON BIOSPEC MD. COORDINATE W/ OWNER FLOORING INSTALLER FOR SPLICING IN MISSING FLOORING AT CASEWORK DEMOLITION OR DEMOLITION REQUIRED FOR NEW MEP. THE CONTRACTOR SHALL PRESERVE EXISTING RESILITINT FLOORING BY INSTALLING ESCUTCHEON RINGS OR CONCEALING NEW PENETRATIONS UNDER NEW CASEWORK.

LEVEL 1 CODE SUMMARY

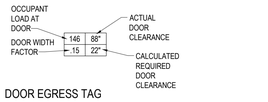
EXISTING BUILDING PREVIOUSLY CONSTRUCTED TO:
1991 UBC - BUILDING, FIRE, AND MECH
1990 WA STATE ENERGY CODE, CHAPTER 4

PER PREVIOUS 1991 UBC CONTRUCTION TYPES:
TYPE OF CONSTRUCTION: BUILDING 1: TYPE VN, WEST OF GRID P, NORTH OF GRID 9
TYPE OF CONSTRUCTION: BUILDING 2: TYPE V, WEST OF GRID P, BETWEEN GRID 9&15
TYPE OF CONSTRUCTION: BUILDING 3: TYPE VN, WEST OF GRID P, SOUTH OF GRID 15
TYPE OF CONSTRUCTION: BUILDING 4: TYPE II, EAST OF GRID P
(SCOPE OF WORK IS ENTIRELY IN BUILDING 1: AREA LISTED ABOVE)

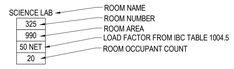
LEVEL 1 TOTAL SF: 46,332 SF

NO CHANGES TO EGRESS AT LEVEL 1

EGRESS LEGEND



DOOR EGRESS TAG



ROOM OCCUPANT TAG

OCCUPANT EGRESS LOAD

COMMON PATH OF TRAVEL

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Engineering | Public Works
Fire | Traffic
PRCT20260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
OVERALL 1ST LEVEL FLOOR PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

A01-101

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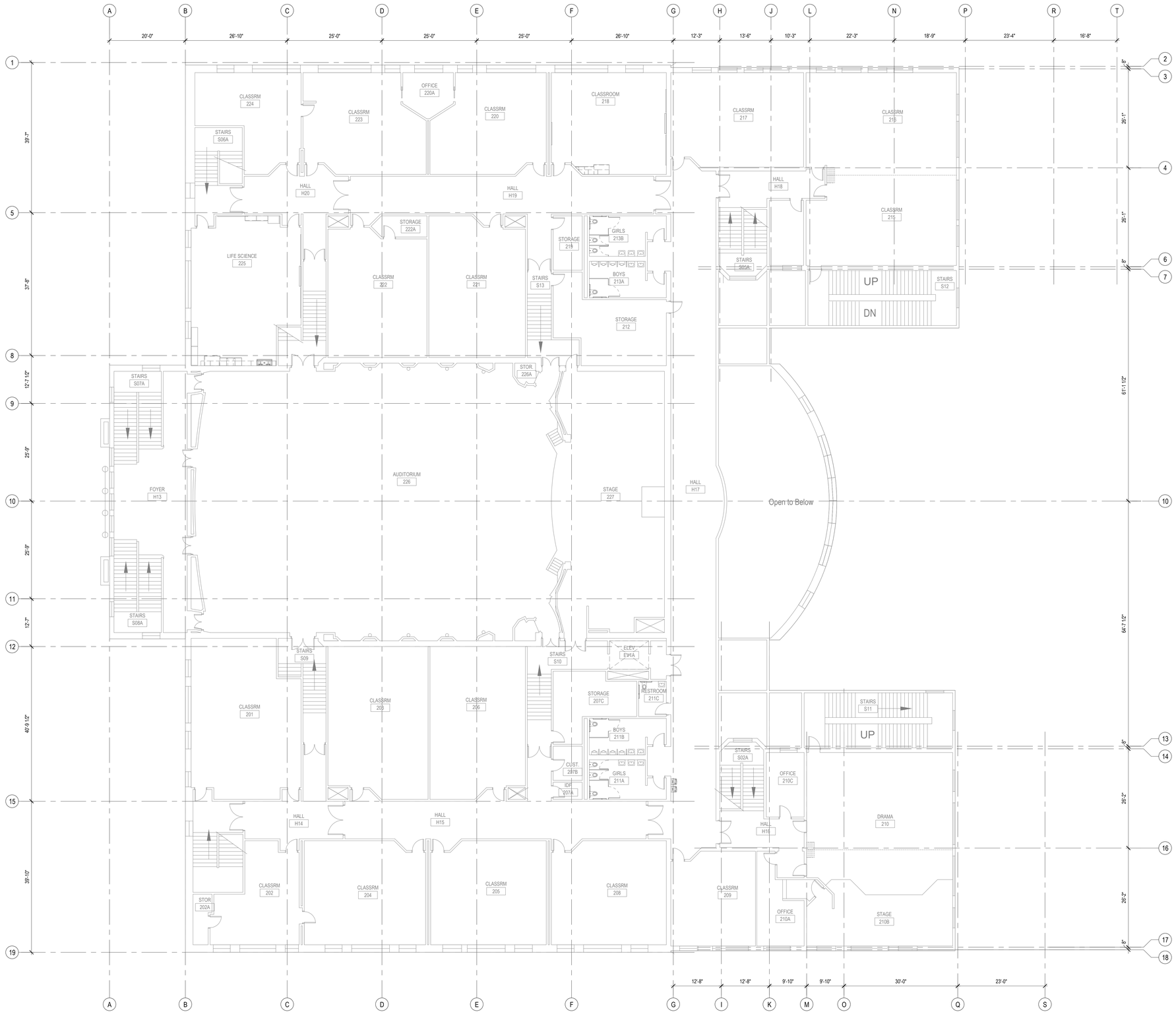

1 OVERALL 2ND LEVEL FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"

OVERALL ARCHITECTURAL FLOOR PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A01-7## SERIES DWGS FOR PLAN INFORMATION.
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LEVEL 2 CODE SUMMARY

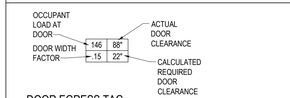
EXISTING BUILDING PREVIOUSLY CONSTRUCTED TO:
1991 UBC - BUILDING, FIRE, AND MECH
1990 WA STATE ENERGY CODE, CHAPTER 4

PER PREVIOUS 1991 UBC CONTRUCTION TYPES:
TYPE OF CONSTRUCTION: BUILDING 1: TYPE VN, WEST OF GRID P, NORTH OF GRID 9
TYPE OF CONSTRUCTION: BUILDING 2: TYPE V, WEST OF GRID P, BETWEEN GRID 9&15
TYPE OF CONSTRUCTION: BUILDING 3: TYPE VN, WEST OF GRID P, SOUTH OF GRID 15
TYPE OF CONSTRUCTION: BUILDING 4: TYPE II, EAST OF GRID P
(SCOPE OF WORK IS ENTIRELY IN BUILDING 1: AREA LISTED ABOVE)

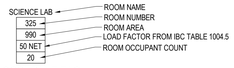
LEVEL 2 TOTAL SF: 39,702 SF

NO CHANGES TO EGRESS AT LEVEL 2

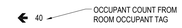
EGRESS LEGEND



DOOR EGRESS TAG

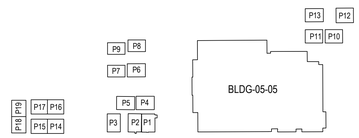


ROOM OCCUPANT TAG



OCCUPANT EGRESS LOAD

COMMON PATH OF TRAVEL



PHS CAMPUS KEY PLAN
SCALE: NTS

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Engineering | Public Works
Fire | Traffic
PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

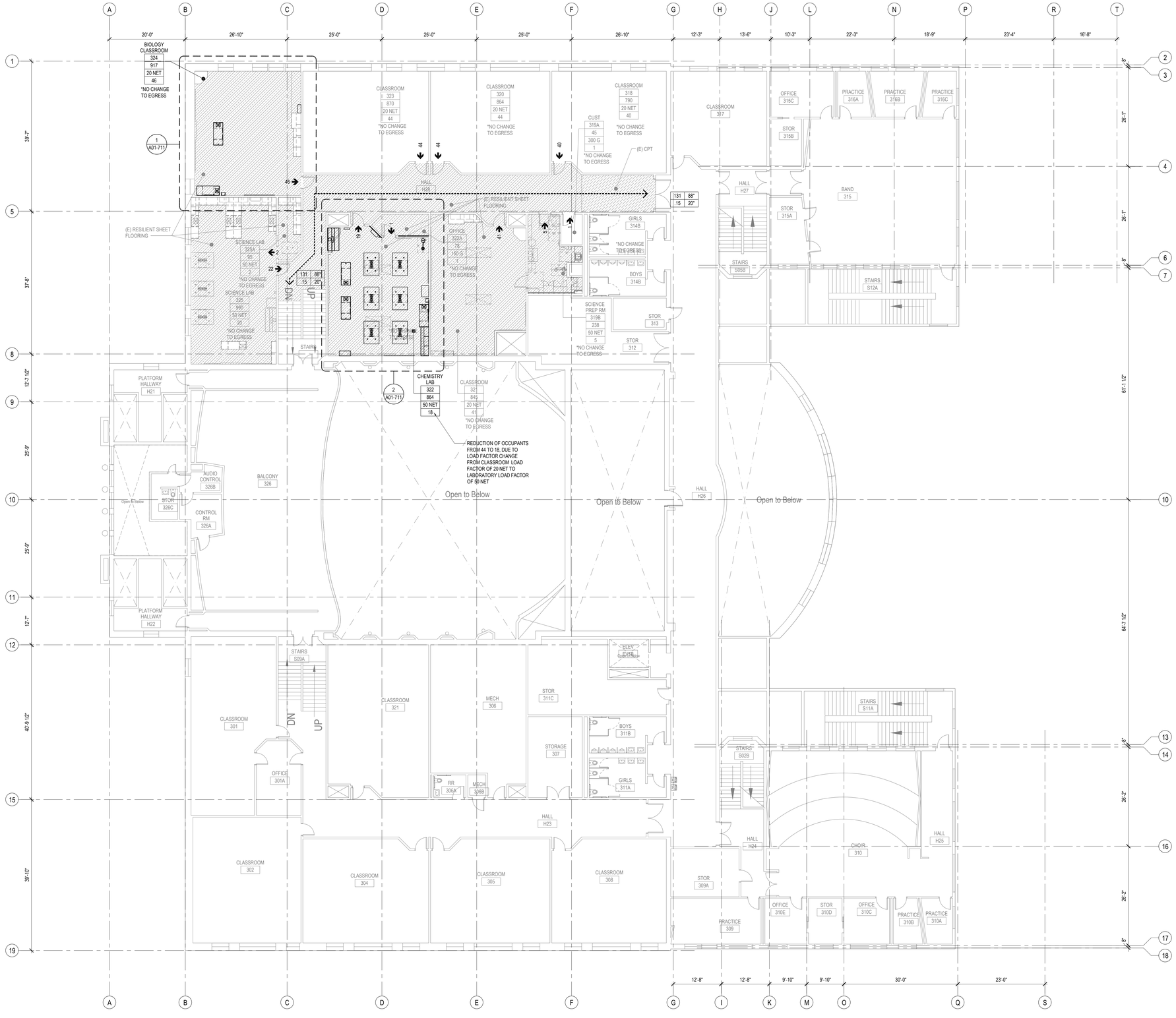
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

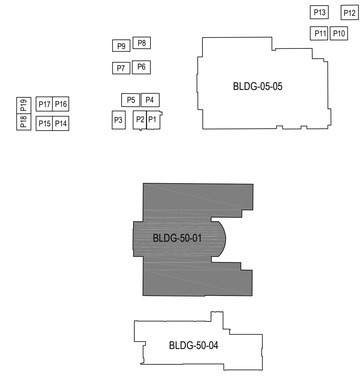
SHEET TITLE
OVERALL 2ND LEVEL FLOOR PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

A01-102



1 OVERALL 3RD FLOOR FLOORPLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

OVERALL ARCHITECTURAL FLOOR PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A01-7## SERIES DWGS FOR PLAN INFORMATION.
2. NO ARCHITECTURAL WORK SCOPE AT BUILDING 05-01 FLOORS 2 & 3 EXCEPT FOR MEP SCOPE. REFER TO MEP SHEETS FOR MORE INFORMATION.
3. EXISTING FLOORING IS MANNINGTON BIOSPEC MD. COORDINATE W/ OWNER FLOORING INSTALLER FOR SPLICING IN MISSING FLOORING AT CASEWORK DEMOLITION OR DEMOLITION REQUIRED FOR NEW MEP. THE CONTRACTOR SHALL PRESERVE EXISTING RESILITNT FLOORING BY INSTALLING ESCUTCHEON RINGS OR CONCEALING NEW PENETRATIONS UNDER NEW CASEWORK.

LEVEL 3 CODE SUMMARY

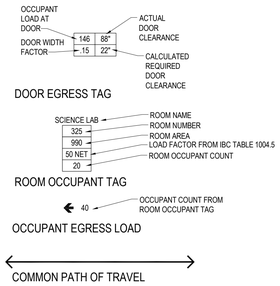
EXISTING BUILDING PREVIOUSLY CONSTRUCTED TO:
1991 UBC - BUILDING, FIRE, AND MECH
1990 WA STATE ENERGY CODE, CHAPTER 4

PER PREVIOUS 1991 UBC CONSTRUCTION TYPES:
TYPE OF CONSTRUCTION: BUILDING 1: TYPE VN, WEST OF GRID P, NORTH OF GRID 9
TYPE OF CONSTRUCTION: BUILDING 2: TYPE V, WEST OF GRID P, BETWEEN GRID 9&15
TYPE OF CONSTRUCTION: BUILDING 3: TYPE VN, WEST OF GRID P, SOUTH OF GRID 15
TYPE OF CONSTRUCTION: BUILDING 4: TYPE II, EAST OF GRID P
(SCOPE OF WORK IS ENTIRELY IN BUILDING 1; AREA LISTED ABOVE)

LEVEL 3 TOTAL SF: 32,384 SF

EGRESS COMPLIES WITH 2021 IBC REQUIREMENTS, LIMITED CODE ANALYSIS OF SCIENCE CORRIDOR, NO CHANGES TO OTHER SPACES. TOTAL EGRESS DECREASE OF 26 OCCUPANTS FROM GENERAL CLASSROOM TO CHEMISTRY LAB CONVERSION. NO CHANGE IN OCCUPANT LOAD AT GENERAL CLASSROOM TO SCIENCE CLASSROOM IN ROOM 324, THIS ROOM WILL IS PLANNED TO BE USED AS A CLASSROOM ONLY FOR LIFE SCIENCE/BIOLOGY.

EGRESS LEGEND



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PRCT12026089 9

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP

6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
DD SET	MAY 20, 2026

SHEET TITLE

OVERALL 3RD FLOOR PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

A01-103

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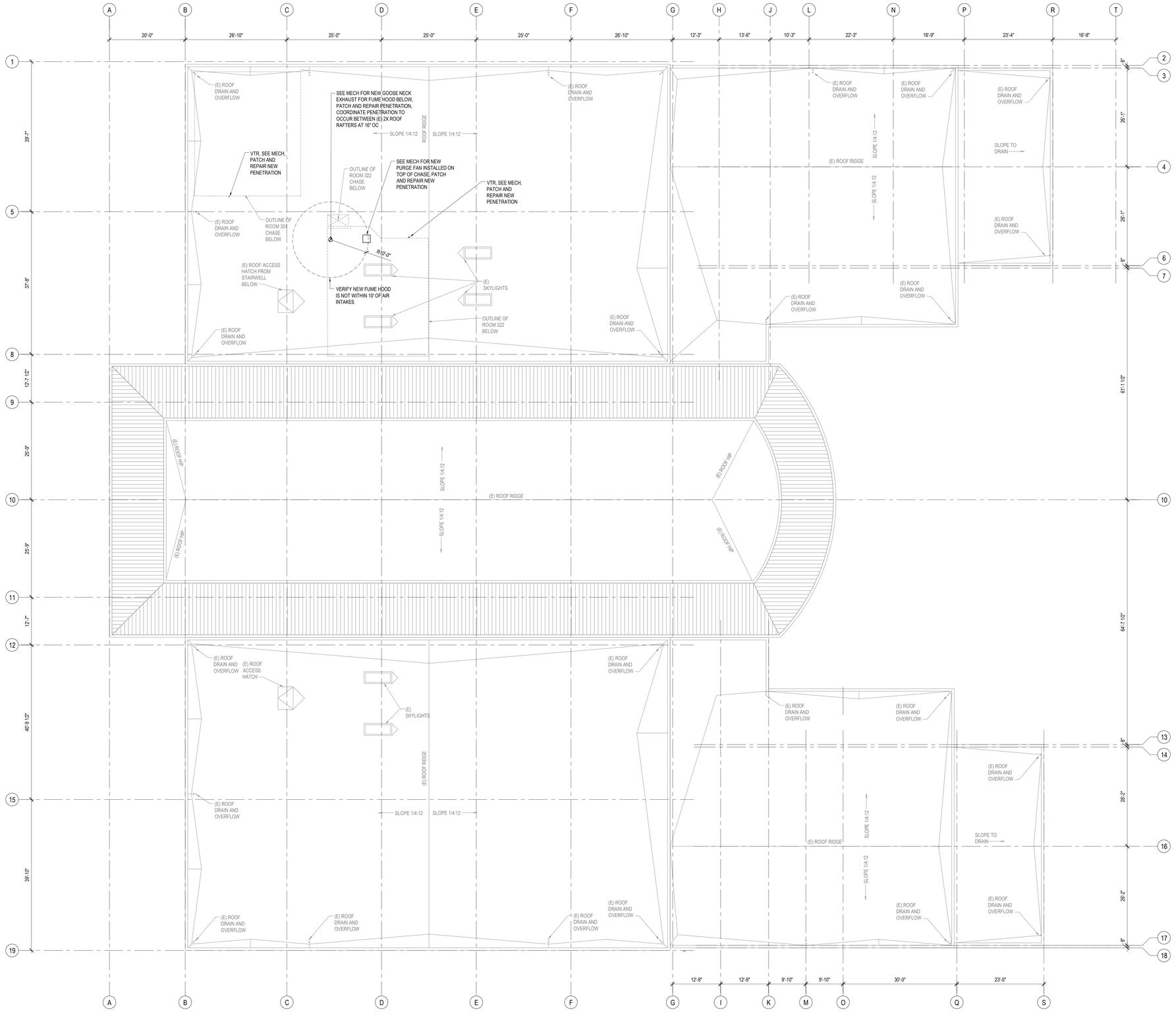
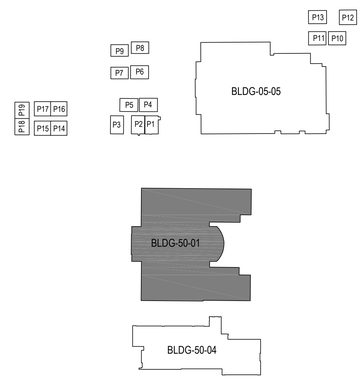
OVERALL ARCHITECTURAL FLOOR PLAN GENERAL NOTES

1. PATCH AND REPAIR NEW MECHANICAL ROOF PENETRATIONS AND EQUIPMENT TO EXISTING ROOFING, SEE MECHANICAL FOR DETAILS.
2. EXISTING ROOFING IS EXPECTED TO BE LOW-SLOPE ELASTOMERIC SHEET ROOFING AND FLASHINGS OVER INSULATION COVER BOARD, 2 LAYERS RIGID INSULATION, 6MIL POLYETHYLENE VAPOR BARRIER OVER (E) ROOF SHEATHING, OVER 2x WD FRAMING @ 16" OC, CONTRACTOR TO VERIFY EXISTING CONDITIONS AND PATCH AND REPAIR TO MATCH EXISTING ASSEMBLIES
3. SEAL PENETRATION OPENING FROM BELOW WITH 1HR RATED FIRE CAULKING.



1 OVERALL ROOF RPLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

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Engineering | Public Works
Fire | Traffic

PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
DD SET	MAY 20, 2026

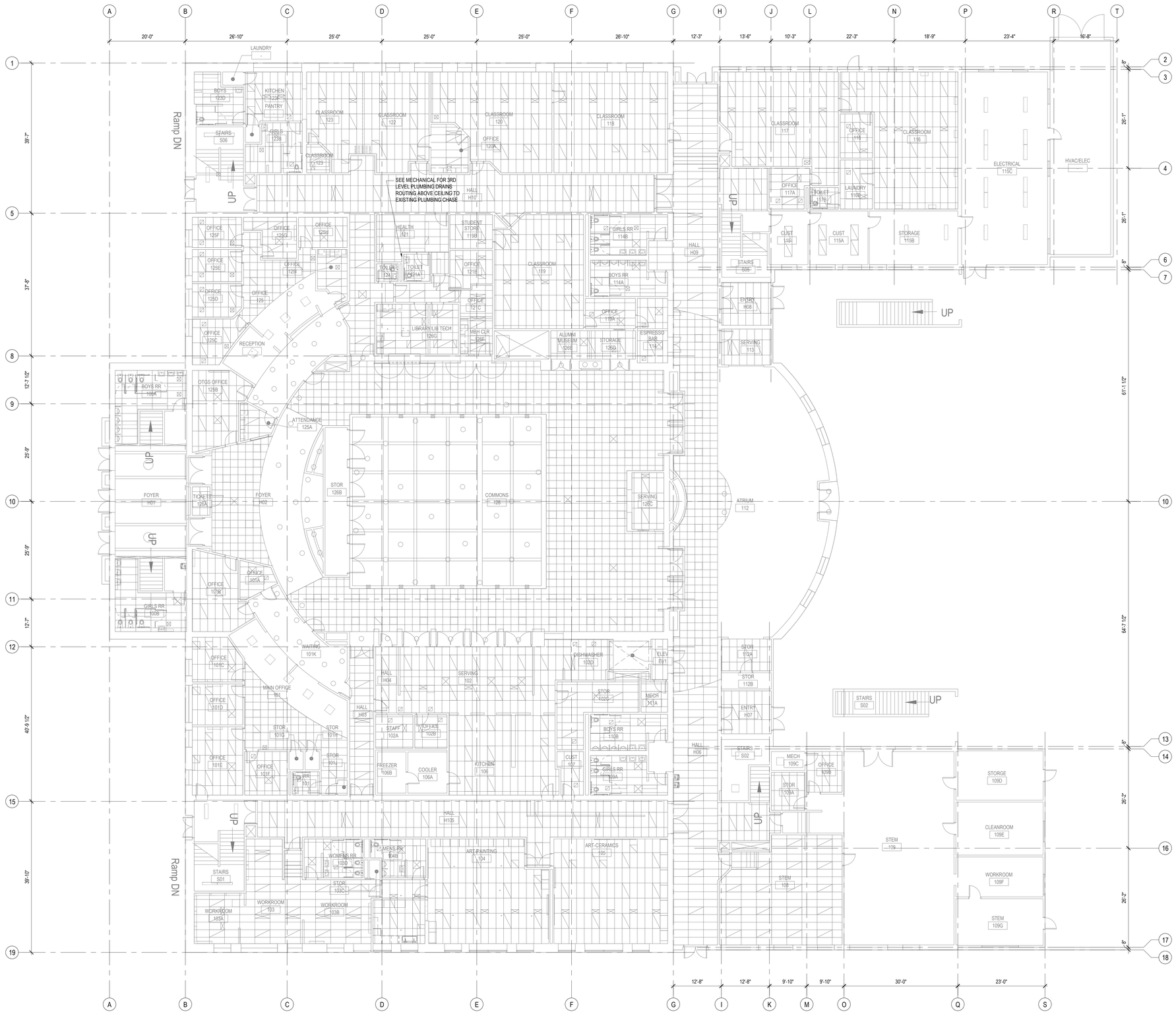
SHEET TITLE
OVERALL 3RD ROOF PLAN BUILDING 50-01

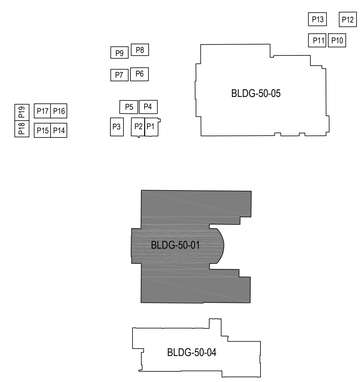
Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

A01-104

REFLECTED CEILING PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A07 SERIES DWGS AND MECH/ELEC DRAWINGS FOR PLAN INFORMATION.
2. PROVIDE PATCH AND REPAIR OF WALLS AT FLOORS 1&2 FOR PLUMBING AND ELECTRICAL CONDUIT ROUTING. REFER TO MEP SHEETS FOR MORE INFORMATION. CONTRACTOR TO PROPOSED ROUTING OF PLUMBING AND ELECTRICAL CONDUITS AND REVIEW WITH OWNER, ARCHITECT, AND ENGINEERS PRIOR TO INSTALLATION.
3. CONTRACTOR TO PROVIDE ESCUTCHEON TRIMS AT PIPE/CONDUIT PENETRATIONS AND AND FUME HOOD PENETRATIONS THROUGH FINISHED CEILINGS.
4. AT WALL & FLOOR PENETRATION PROVIDE ACOUSTICAL SEALANTS. IF SURFACE IS PAINTED PROVIDE PAINTABLE ACOUSTICAL SEALANTS AROUND PENETRATIONS. SEE WALL RATING FOR LOCATIONS OF RATED WALLS REQUIRING A FIRE RATED ACOUSTICAL SEALANT.
5. CONTRACTOR TO REPAIR FINISHES SIMILAR TO ADJACENT EXISTING FINISHES.





2 PHS CAMPUS KEY PLAN
SCALE: NTS

1 OVERALL 1ST LEVEL REFLECTED CEILING PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"

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ISSUED/ REVIEW
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Engineering | Public Works
Fire | Traffic

PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

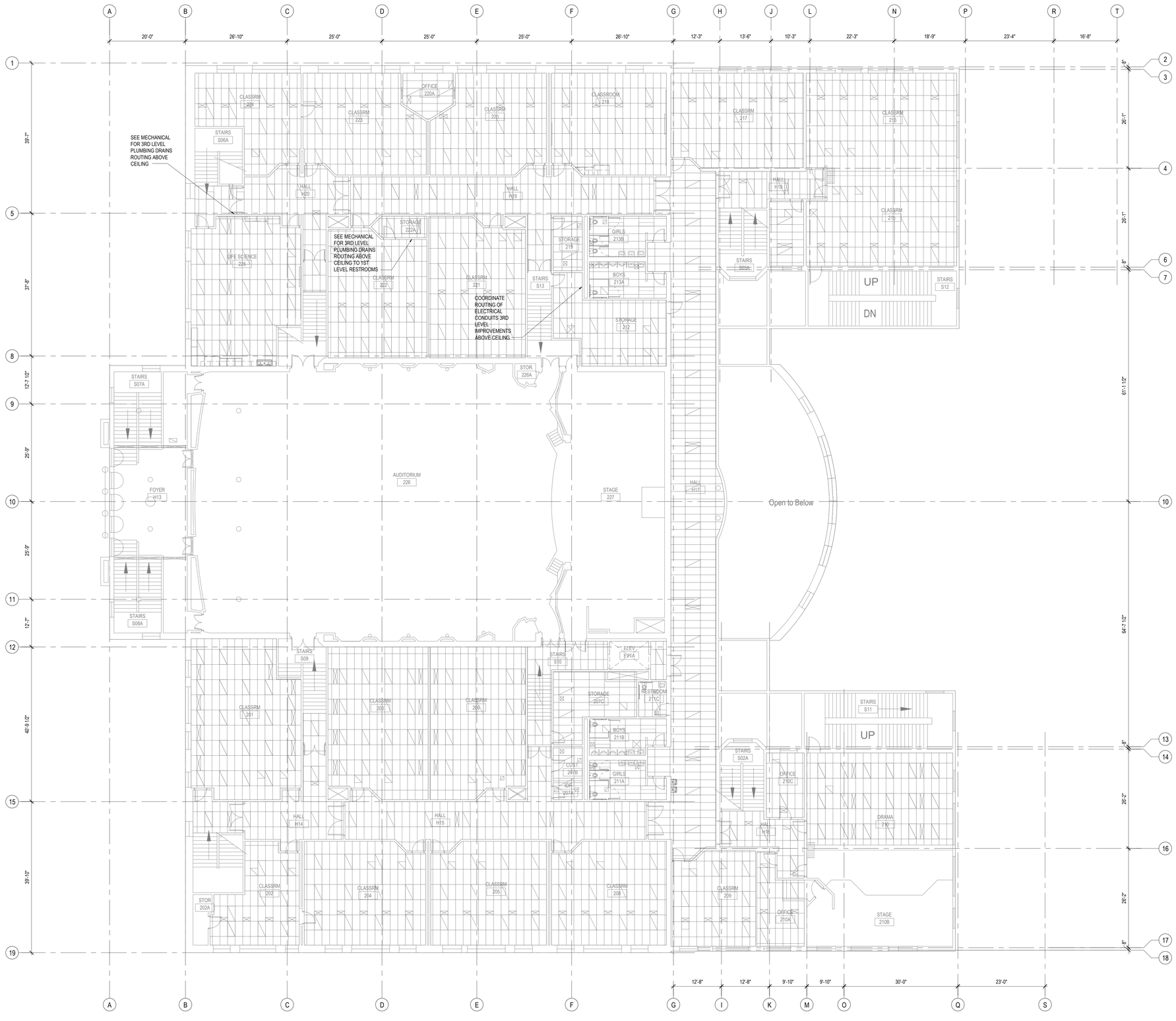
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
OVERALL 1ST LEVEL REFLECTED CEILING PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

A01-151



1 OVERALL 2ND LEVEL REFLECTED CEILING PLAN BUILDING 50-01

SCALE: 3/32" = 1'-0"

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REFLECTED CEILING PLAN GENERAL NOTES

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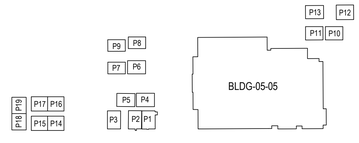

PHS CAMPUS KEY PLAN

SCALE: NTS

ARCHITECT

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ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

PRCT120260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP

6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
DD SET	MAY 20, 2026

SHEET TITLE

OVERALL 2ND LEVEL REFLECTED CEILING PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	ST, RL
Checked By	RL

01-A152

REFLECTED CEILING PLAN GENERAL NOTES

1. OVERALL PLANS ARE PROVIDED FOR PLAN REFERENCE ONLY. REFER TO ENLARGE ROOM PLANS AND INTERIOR ELEVATIONS FOR MORE INFORMATION. SEE ENLARGED PLANS ON A07 SERIES DWGS AND MECH/ELEC DRAWINGS FOR PLAN INFORMATION.
2. PROVIDE PATCH AND REPAIR OF WALLS AT FLOORS 1&2 FOR PLUMBING AND ELECTRICAL CONDUIT ROUTING. REFER TO MEP SHEETS FOR MORE INFORMATION. CONTRACTOR TO PROPOSED ROUTING OF PLUMBING AND ELECTRICAL CONDUITS AND REVIEW WITH OWNER, ARCHITECT, AND ENGINEERS PRIOR TO INSTALLATION.
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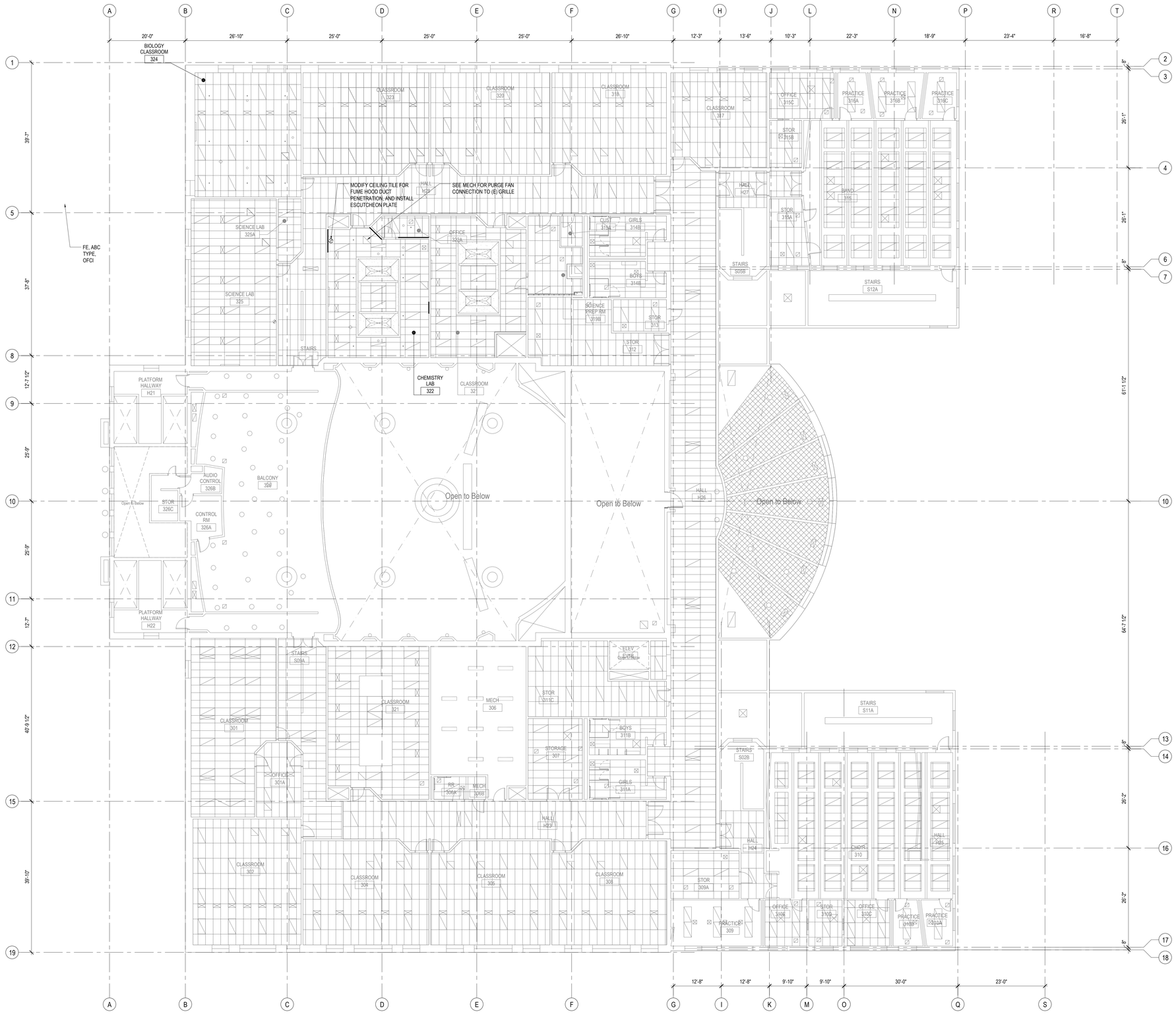

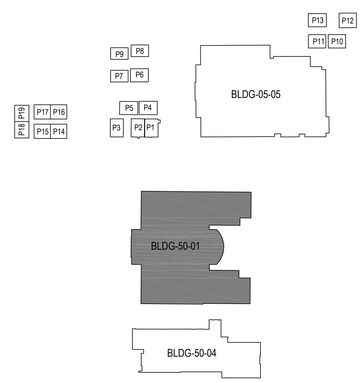

1 OVERALL 3RD LEVEL REFLECTED CEILING PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"

2 PHS CAMPUS KEY PLAN
SCALE: NTS

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PRCTI20260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

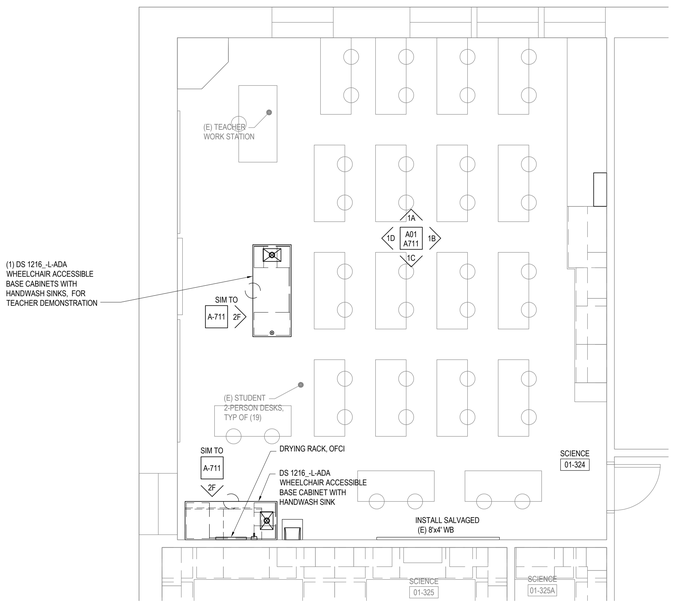
STAMP
6181 REGISTERED ARCHITECT
CHARLES STRAZZARA
STATE OF WASHINGTON

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

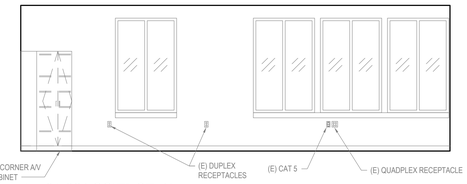
SHEET TITLE
OVERALL 3RD LEVEL RELFECTED CEILING PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL
Checked By	RL

A01-153



1 01-324 SCIENCE CLASSROOM
SCALE : 1/4" = 1'-0"



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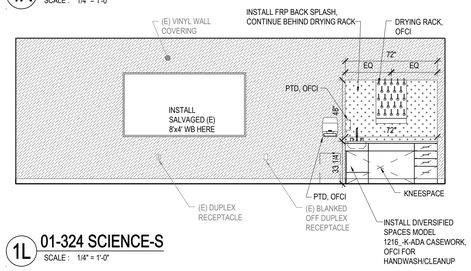

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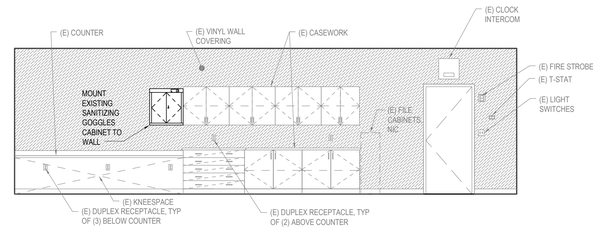

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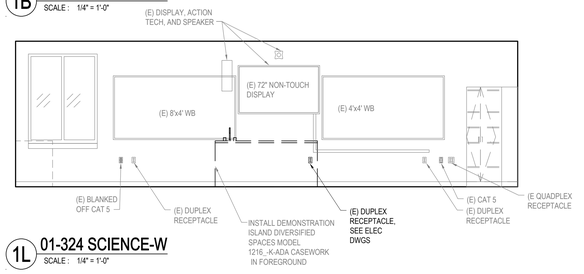
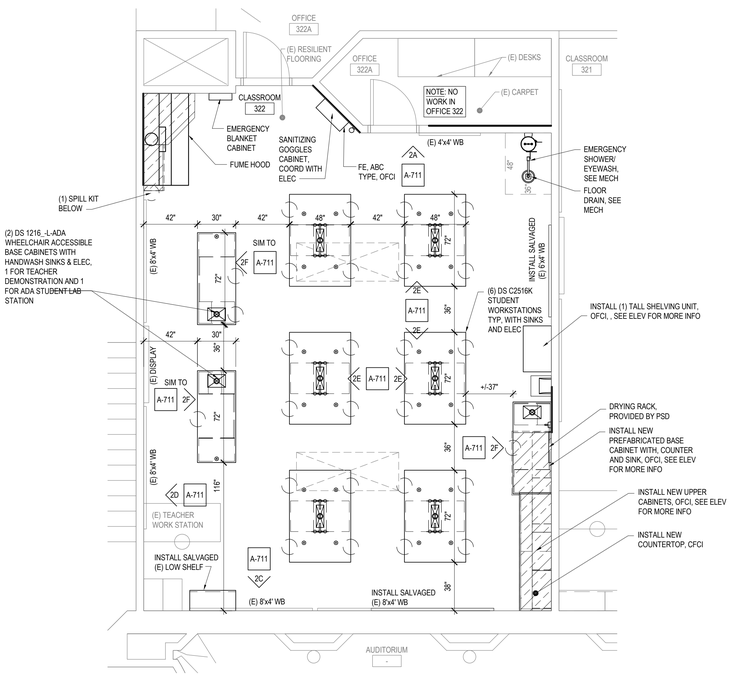
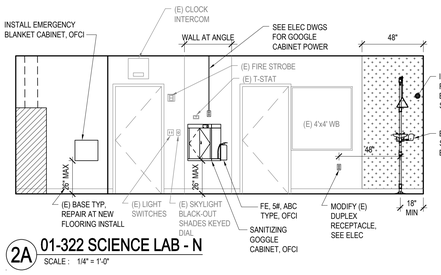


1L 01-324 SCIENCE-W
SCALE : 1/4" = 1'-0"

CONTRACTOR NOTE
Laboratory shall be as defined in the Washington State Mechanical Code, Section 510.1 and shall fall under the exception under 510.2.



2 01-322 SCIENCE LAB ENLARGED FLOOR PLAN
SCALE : 1/4" = 1'-0"



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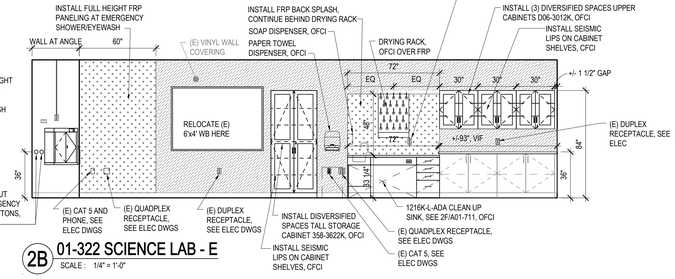

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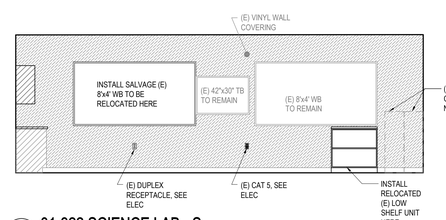

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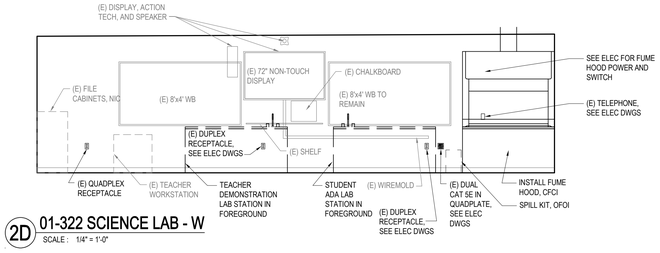

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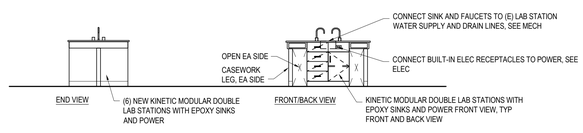
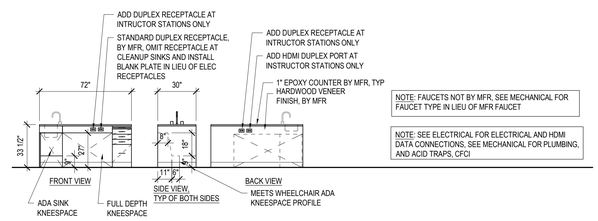


2E 01-322 SCIENCE-TYP NEW STUDENT LAB STATION
SCALE : 1/4" = 1'-0"
DIVERSIFIED SPACES C2516K "LAB STATION" UNIT, OFCI. TYPICAL AT (6) STUDENT LAB STATIONS STATIONS, NO GAS OR AIR TURRETS



2F 01-322 SCIENCE-TYP NEW STUDENT LAB STATION
SCALE : 1/4" = 1'-0"
DIVERSIFIED SPACES 1216K-L-ADA "INSTRUCTOR" UNIT, OFCI. TYPICAL AT (2) TEACHER DEMONSTRATION STATIONS, (2) CLEANUP SINK LOCATIONS, AND (1) STUDENT ADA LAB STATION, NO GAS OR AIR TURRETS IN PROJECT.

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PRCT120260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA 98371

STAMP

6181 REGISTERED ARCHITECT JAMES STRAZZARA STATE OF WASHINGTON

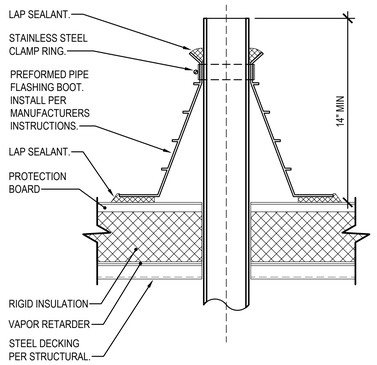
ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

ENLARGED PLANS AND INTERIOR ELEVATIONS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	RL/EMV
Checked By	RL

A01-711

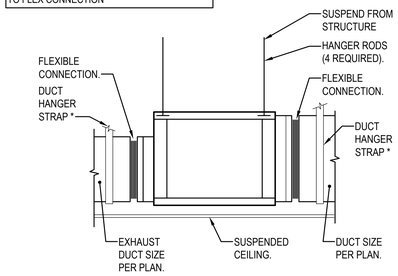


1 PIPE PENETRATION AT EPDM MEMBRANE

SCALE: DIAGRAMMATIC

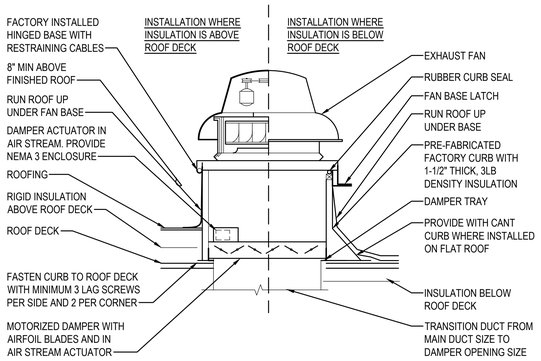
NOTE:
MAINTAIN ACCESS CLEARANCE ON BOTH SIDES FOR SERVICE OF BLOWER

* INSTALL DUCT HANGER STRAPS ADJACENT TO FLEX CONNECTION



2 TYPICAL PURGE FAN INSTALLATION DETAIL

SCALE: DIAGRAMMATIC



3 TYPICAL ROOF MOUNT EXHAUST FAN INSTALLATION DETAIL

SCALE: DIAGRAMMATIC

NOTES

1. REFER TO ARCHITECTURAL PLANS FOR LOCATION OF INSULATION AT ROOF.
2. IN THE CASE WHERE THE FLASHING PORTION OF THIS DETAIL CONFLICTS WITH ARCHITECTURAL, THE ARCHITECTURAL FLASHING DETAIL SHALL PREVAIL.
3. PROVIDE WITH 14" TALL(MINIMUM) CURB.
4. PROVIDE CURB ADAPTER WHEN INSTALLING A NEW EXHAUST FAN ON AN EXISTING CURB.
5. COORDINATE WITH ELECTRICAL CONTRACTOR AND GENERAL CONTRACTOR FOR INSTALLATION OF FLEXIBLE CONDUIT TO ALLOW FOR FAN TO BE HINGED OPEN.

MECHANICAL LEGEND

HVAC

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	SUPPLY DUCT UP		RECTANGULAR DUCT SQUARE ELBOW UP
	SUPPLY DUCT DOWN		RECTANGULAR DUCT, RADIUS ELBOW UP
	RETURN, RELIEF, TRANSFER, OSA DUCT UP		RECTANGULAR DUCT, SQUARE ELBOW DOWN
	RETURN, RELIEF, TRANSFER, OSA DUCT DOWN		RECTANGULAR DUCT, RADIUS ELBOW DOWN
	EXHAUST DUCT UP		ROUND DUCT ELBOW UP
	EXHAUST DUCT DOWN		ROUND DUCT ELBOW DOWN
XØ	ROUND DUCT		FLEXIBLE DUCT
			BACKDRAFT DAMPER (BDD)

PLUMBING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AV	ACID VENT		DOMESTIC COLD WATER (CW)
AW	ACID WASTE		DOMESTIC HOT WATER (HW)
NP	NON POTABLE		DOMESTIC HOT WATER CIRCULATING (HWC)
	GATE VALVE (GV)	W	SOIL, WASTE (S, W)
	GLOBE VALVE		VENT (V), OR HIDDEN BELOW WASTE
	BUTTERFLY VALVE		WASTE OR VENT UP
	BALL VALVE		WALL CLEANOUT
	BALANCING COCK (BC)		FLUSH CLEANOUT (FCO/SCO)
	PIPE DOWN		CLEAN OUT (CO)
	PIPE UP		IN LINE WASTE CONNECTION
	BRANCH-TOP CONNECTION		P-TRAP
	BRANCH-BOTTOM CONNECTION		BRANCH PIPE DOWN
	BRANCH-SIDE CONNECTION		BRANCH PIPE UP
	FLOW DIRECTION		TEE & UP
OR	VALVE IN RISER / DROP		TEE
	FLOOR DRAIN		ELBOWS, 90° & 45°
	CROSSING LINES, NON CONNECTING		CAP
	PIPE CONTINUATION		TRAP PRIMER
MC	MECHANICAL CONTRACTOR	POC	POINT OF CONNECTION
EC	ELECTRICAL CONTRACTOR	BFF	BELOW FINISHED FLOOR
GC	GENERAL CONTRACTOR	AFF	ABOVE FINISHED FLOOR

PLUMBING FIXTURE SCHEDULE

UNIT NO	FIXTURE	MOUNTING	MANUFACTURER AND MODEL NUMBERS		W	V	HW	CW	REMARKS
P-1	LAB STATION	FLOOR	STATION/FAUCET/SINK:	DIVERSIFIED SPACES KINETIC MODULAR DOUBLE LAB STATION W/ EPOXY SINK (C2716K)	2" (AW)	1-1/2" (AV)	1/2"	1/2"	SET MAXIMUM HOT WATER DELIVERY TEMPERATURE AT 105°F. PROVIDE MIXING VALVE WITH MOUNTING BRACKET, BRADLEY MODEL S45-2456. SINK AND FAUCET BY OTHERS. STOPS, TRAP, AND FITTINGS BY MC.
			SUPPLIES:	MCGUIRE LFBV2165CC					
			TRAP:	ZURN Z9A-PPTRAP					
			MIXING VALVE:	BRADLEY S59-4000					
P-1A	LAB STATION	FLOOR	STATION/FAUCET/SINK:	DIVERSIFIED SPACES KINETIC ADA LAB STATION W/ EPOXY SINK (1216K-L-ADA)	2" (AW)	1-1/2" (AV)	1/2"	1/2"	SET MAXIMUM HOT WATER DELIVERY TEMPERATURE AT 105°F. PROVIDE MIXING VALVE WITH MOUNTING BRACKET, BRADLEY MODEL S45-2456. SINK AND FAUCET BY OTHERS. STOPS, TRAP, AND FITTINGS BY MC.
			SUPPLIES:	MCGUIRE LFBV2165CC					
			TRAP:	ZURN Z9A-PPTRAP					
			MIXING VALVE:	BRADLEY S59-4000					
P-2	EMERGENCY SHOWER AND EYE/FACEWASH	FLOOR	UNIT:	STINGRAY T5515	-	-	1"	1"	BARRIER-FREE, WITH INTEGRATED MIXING VALVE SET TO 85°F
FD	FLOOR DRAIN	FLOOR	UNIT:	JR SMITH 2005	*	*	-	-	*SEE PLANS FOR WASTE AND VENT CONNECTION SIZE

PURGE FAN SCHEDULE

UNIT NO	MANUFACTURER	MODEL	LOCATION	ACTUAL PERFORMANCE							INTERLOCK	MOTOR SPECIFICATIONS									REMARKS
				MAX CFM	MIN CFM	TOTAL EXTERNAL SP (IN. WG)	FAN RPM	POWER (HP)	DBA	SONE S		SIZE (HP)	VOLT	HZ	PH	ENC	RPM	EC MOTOR	MOTOR STARTER	DISCONNECT FURNISHED BY	
PF-1	GREENHECK	G-120-VG	ROOFTOP	1700	450	0.3	1526	0.31	66	14	EMCS	1/2	115	60	1	ODP	1725	VARIGREEN	NO	EC	1, 2, 3, 4, 5

NOTES

1. SPEED CONTROL VIA MOTOR 0-10V INPUT (0-1.9V: OFF COMMAND, 2-10V: 20% OF NOMINAL RPM TO MAX SET RPM).
2. PROVIDE WITH SINGLE POINT POWER CONNECTION.
3. FAN SPEED SHALL VARY TO MAINTAIN A NEGATIVE PRESSURE OF 0.05" W.G. IN RELATION TO THE ADJACENT CORRIDOR AS SENSED BY A SPACE MOUNTED PRESSURE SENSOR.
4. OPEN MOTORIZED DAMPER AND CONFIRM VIA END SWITCH PRIOR TO STARTING FAN. WHEN FAN SHUTS OFF, CLOSE THE MOTORIZED DAMPER.
5. PROVIDE DAMPER AND FAN STATUS AT OPERATOR'S TERMINAL.

ELECTRONIC TRAP PRIMER SCHEDULE

UNIT NO	MANUFACTURER	MODEL	LOCATION	NUMBER OF TRAPS SERVED	ELECTRICAL		REMARKS
					VOLTS	PH	
TP-1	PRECISION PLUMBING PRODUCTS	MP-500-115V	P-2 FLOOR DRAIN	1	120	1	1

NOTES

1. LOCATE POWER DISCONNECT ADJACENT TO TRAP PRIMER.

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PRCTI20260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP

JEFFREY ROBERT HARDWICK — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER

06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

MECHANICAL LEGEND, SCHEDULES AND DETAILS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

M01-100

PUYALLUP HS SCIENCE CLASSROOM TI 2026
GFT PROJECT NO. A0002179.000

NOTICE:
THE FOLLOWING LIST OF SPECIFICATIONS AND DRAWINGS REPRESENTS THOSE DOCUMENTS THAT WERE PREPARED UNDER THE PROVISIONS OF THE REVISED CODE OF WASHINGTON RCW 18.43, BY BCE ENGINEERS, INC. OF TACOMA, WASHINGTON. THE SEALING OF THIS SPECIFICATION AND DRAWINGS LIST IS PROVIDED IN ACCORDANCE WITH WASHINGTON ADMINISTRATIVE CODE WAC196-23-020.

TABLE OF CONTENTS

SECTION DESCRIPTION

DIVISION 20 – MECHANICAL SPECIFICATIONS
20 00 00 GENERAL MECHANICAL REQUIREMENTS

DIVISION 22 - PLUMBING SPECIFICATIONS
22 05 17 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING
22 05 23 GENERAL-DUTY VALVES FOR PLUMBING PIPING
22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT
22 07 19 PLUMBING PIPING INSULATION

DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (HVAC) SPECIFICATIONS
23 05 29 HANGERS AND SUPPORTS FOR DUCTWORK
23 05 53 MECHANICAL IDENTIFICATION FOR HVAC EQUIPMENT ABOVE THE CEILING
23 05 93 AIR SYSTEM TESTING AND BALANCING
23 07 13 DUCTWORK INSULATION
23 31 13 STEEL DUCTWORK
23 37 00 AIR TERMINALS
23 90 00 MECHANICAL DEMOLITION

END OF TABLE OF CONTENTS

SECTION 20 00 00 GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL

A. INCLUDES, BUT NOT LIMITED TO, FURNISHING LABOR, MATERIALS, AND EQUIPMENT FOR COMPLETION OF WORK UNLESS INDICATED OR NOTED OTHERWISE. SEE DIVISION 1 FOR SEQUENCE OF WORK.

B. WORK INDICATED ON THE MECHANICAL PLANS AND IN THE SPECIFICATIONS THAT WILL NOT BE PERFORMED BY THIS MECHANICAL CONTRACTOR (I.E. DUCT AND PIPE BLOCK-OUTS, PENETRATIONS THROUGH WALLS, FLOORS, AND ATTIC, WALL PATCHING, WORK INDICATED TO BE PERFORMED BY OTHER CONTRACTORS, ETC.) SHALL BE COORDINATED WITH THE GENERAL CONTRACTOR PRIOR TO BID. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING QUANTITY, SIZE, AND TYPE OF WORK WITH THE GENERAL CONTRACTOR. WORK NOT COORDINATED WILL BE THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR AND SHALL NOT BE CHARGED AS ADDITIONAL COST TO THE OWNER.

C. ALL WORK INCLUDED IN DIVISION 23 SHALL BE THE RESPONSIBILITY OF A SINGLE MECHANICAL SUBCONTRACTOR.

D. THIS CONTRACTOR SHALL OBTAIN AND PAY FOR ALL PERMITS REQUIRED BY STATE AND LOCAL AUTHORITIES GOVERNING THE INSTALLATION OF THE MECHANICAL WORK. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT ALL UTILITY ORGANIZATIONS SERVING THE BUILDING, PRIOR TO BID, AND TO INCLUDE ALL CHARGES FOR INSPECTIONS, INSTALLATION OF MATERIALS, EQUIPMENT, AND CONNECTION OF ALL REQUIRED UTILITIES.

E. PUT HEATING, AND EXHAUST SYSTEMS INTO FULL OPERATION AND CONTINUE THEIR OPERATION DURING EACH WORKING DAY OF TESTING AND BALANCING.

F. MAKE CHANGES IN MECHANICAL DRIVE SYSTEMS (PULLEYS, BELTS, VFD'S, MOTOR SPEED, ETC.) AND DAMPERS OR ADD DAMPERS AS REQUIRED FOR CORRECT BALANCE AS RECOMMENDED BY SECTION 23 05 93 AND AT NO ADDITIONAL COST TO OWNER. ALL EQUIPMENT SHALL BE PROVIDED WITH A SINGLE POINT ELECTRICAL CONNECTION, UNLESS OTHERWISE INDICATED.

G. THE DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY AND WHAT IS CALLED FOR IN EITHER IS BINDING AS IF CALLED FOR IN BOTH.

H. THE DUCTWORK AND ACCESSIBILITY TO HVAC EQUIPMENT SHALL TAKE PRECEDENCE OVER ALL OTHER EQUIPMENT IN THE CEILING INTERSTITIAL SPACES OR OTHER MECHANICAL AREAS INCLUDING, BUT NOT LIMITED TO, SPRINKLER PIPING, HEATING PIPING, DOMESTIC WATER PIPING, AND ELECTRICAL CONDUIT (EXCEPT FIRE PUMP ROOMS WHERE FIRE SPRINKLER EQUIPMENT TAKES PRECEDENCE).

1.02 RELATED SECTIONS

A. GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 APPLY TO THIS SECTION.

1.03 QUALITY ASSURANCE

A. REQUIREMENTS OF REGULATORY AGENCIES:

1. PERFORM WORK IN ACCORDANCE WITH APPLICABLE CODES.
2. IN CASE OF DIFFERENCES BETWEEN BUILDING CODES, STATE LAWS, LOCAL ORDINANCES, UTILITY COMPANY REGULATIONS, AND CONTRACT DOCUMENTS, THE MOST STRINGENT SHALL GOVERN.

B. PRODUCT APPROVALS: SEE PARAGRAPHS ELSEWHERE IN THIS SPECIFICATION.

C. WARRANTIES:

1. IN ADDITION TO GUARANTEE SPECIFIED IN GENERAL CONDITIONS, GUARANTEE HEATING, COOLING, AND PLUMBING SYSTEMS TO BE FREE FROM NOISE IN OPERATION THAT MAY DEVELOP FROM FAILURE TO CONSTRUCT SYSTEM IN ACCORDANCE WITH CONTRACT DOCUMENTS.
2. IN ORDER TO BE PROTECTED, SECURE PROPER GUARANTEES FROM SUPPLIERS AND SUBCONTRACTORS.
3. PROVIDE CERTIFICATES OF WARRANTY FOR EACH PIECE OF EQUIPMENT. CLEARLY RECORD "START-UP" DATE OF EACH PIECE OF EQUIPMENT ON CERTIFICATE. INCLUDE CERTIFICATES AS PART OF OPERATION & MAINTENANCE MANUAL.

D. MANUFACTURE: USE DOMESTIC MADE PIPE, PIPE FITTINGS, AND MOTORS ON PROJECT.

E. IDENTIFICATION: MOTOR AND EQUIPMENT NAME PLATES AS WELL AS APPLICABLE UL AND AGA LABELS SHALL BE IN PLACE WHEN PROJECT IS TURNED OVER TO OWNER.

1.04 CODES AND STANDARDS

A. CODES AND AGENCIES HAVING JURISDICTIONAL AUTHORITY OVER MECHANICAL INSTALLATION.

1. WASHINGTON STATE ENERGY CODE -- LATEST APPROVED EDITION
2. INTERNATIONAL BUILDING CODE -- LATEST APPROVED EDITION
3. INTERNATIONAL FIRE CODE - LATEST APPROVED EDITION
4. INTERNATIONAL MECHANICAL CODE -- LATEST APPROVED EDITION
5. STATE AND COUNTY DEPARTMENT OF HEALTH
6. LOCAL FIRE MARSHAL
7. PUGET SOUND AIR POLLUTION CONTROL
8. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
9. WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT (WISHA)
10. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

B. 1.06 SYSTEMS DESCRIPTION

A. SITE INSPECTION:

1. EXAMINE PREMISES AND UNDERSTAND THE CONDITIONS WHICH MAY AFFECT PERFORMANCE OF WORK OF THIS DIVISION BEFORE SUBMITTING PROPOSALS FOR THIS WORK.
2. NO SUBSEQUENT ALLOWANCE FOR TIME OR MONEY WILL BE CONSIDERED FOR ANY CONSEQUENCE RELATED TO FAILURE TO EXAMINE SITE CONDITIONS.

1.05 DESIGN DRAWINGS

A. MECHANICAL DRAWINGS ARE NOT SHOP DRAWINGS AND ARE INTENDED TO SHOW GENERAL ARRANGEMENT OF PIPING, DUCTWORK, EQUIPMENT, ETC. FOLLOW AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.

B. CONSIDER ARCHITECTURAL AND ELECTRICAL DRAWINGS PART OF THIS WORK IN SO FAR AS THESE DRAWINGS FURNISH INFORMATION RELATING TO DESIGN AND CONSTRUCTION OF BUILDING. ARCHITECTURAL DRAWINGS TAKE PRECEDENCE OVER MECHANICAL DRAWINGS.

C. BECAUSE OF SMALL SCALE OF MECHANICAL DRAWINGS, IT IS NOT POSSIBLE TO INDICATE ALL OFFSETS, FITTINGS, AND ACCESSORIES WHICH MAY BE REQUIRED. THE MECHANICAL CONTRACTOR SHALL INCLUDE IN THE BID A SUFFICIENT QUANTITY OF OFFSETS, FITTINGS, AND ACCESSORIES FOR THE SIZE OF THE PROJECT, BASED UPON THE CONTRACTOR'S EXPERIENCE, NECESSARY TO FACILITATE MECHANICAL UTILITY INSTALLATION. NO ADDITIONAL COSTS SHALL BE CHARGED FOR ADDITIONAL OFFSETS, FITTINGS, AND ACCESSORIES REQUIRED FOR INSTALLATION OF THE MECHANICAL UTILITIES SHOWN ON THE DESIGN DRAWINGS. INVESTIGATE STRUCTURAL AND FINISH CONDITIONS AFFECTING THIS WORK AND ARRANGE WORK ACCORDINGLY, PROVIDING SUCH FITTINGS, VALVES, AND ACCESSORIES REQUIRED IN MEETING THE DESIGN CONDITIONS.

1.06 PRE-CONSTRUCTION COORDINATION MEETING

A. THIS CONTRACTOR IS RESPONSIBLE TO PARTICIPATE IN COORDINATION MEETINGS WITH THE GENERAL CONTRACTOR, FIRE PROTECTION CONTRACTOR, AND OTHER SUBCONTRACTORS NEEDING TO COORDINATE SPECIAL REQUIREMENTS (SUCH AS ELECTRICAL CONTRACTOR, HVAC CONTRACTOR, PLUMBING CONTRACTOR, ETC.)

B. COORDINATION MEETINGS SHALL CONSIDER ELEVATIONS, REQUIRED CLEARANCES, AND ROUTINGS OF ALL TRADES TO ASSURE THAT ALL TRADES CAN BE INSTALLED WITHOUT CONFLICT.

C. THE OUTCOME OF THIS COORDINATION SHALL ALLOW EACH SYSTEM (MECHANICAL, FIRE PROTECTION, PLUMBING, ELECTRICAL, ETC.) TO BE INSTALLED WITHOUT FURTHER CONFLICTS FOR SPACE OR LOCATIONS.

D. FAILURE TO COORDINATE WITH OTHER TRADES AND/OR EXISTING CONDITIONS THAT RESULT IN THE REMOVAL AND RE-INSTALLATION OF SYSTEMS SHALL NOT BE CHARGED AS ADDITIONAL COSTS.

1.07 COORDINATION DRAWINGS

A. DEVELOP COORDINATION DRAWINGS, AND OTHER PRE-INSTALLATION COORDINATION METHODS AS NECESSARY TO COORDINATE LAYOUTS PRIOR TO INSTALLATION. COORDINATION DRAWINGS SHALL CONSIST OF OVERLAY DRAWINGS, OR OTHER SIMILAR METHODS TO GRAPHICALLY INDICATE PLUMBING, FIRE PROTECTION, HVAC, ELECTRICAL, AND OTHER SIMILAR ELEMENTS IN A SINGLE LOCATION IN ORDER TO IDENTIFY CONFLICTS. ALL ELEMENTS SHALL BE DRAWN TO SCALE. COORDINATION DRAWINGS ARE NOT REQUIRED TO BE SUBMITTED FOR APPROVAL, EXCEPT WHERE INDICATED OTHERWISE IN THE SPECIFICATION. HOWEVER, A MINIMUM OF ONE HARD COPY OF COORDINATION DRAWINGS SHALL BE PRESENT ON SITE AT ALL TIMES AND MADE AVAILABLE TO THE ARCHITECT/ENGINEER (A/E) REPRESENTATIVE UPON REQUEST. IF COORDINATION DRAWINGS ARE NOT ON FILE, OR IF SYSTEMS ARE NOT INSTALLED PER COORDINATION DRAWINGS, COSTS AND DELAYS OF REQUIRED RE-ENGINEERING, REPLACEMENT, AND OTHER WORK REQUIRED TO CORRECT CONFLICTS SHALL BE SOLELY THE CONTRACTOR'S.

1. CONTRACTOR SHALL HAVE THE UNDERGROUND COORDINATION DRAWINGS AVAILABLE UPON REQUEST BY A/E REPRESENTATIVE WITHIN 60 DAYS AFTER NOTICE TO PROCEED.
2. CONTRACTOR SHALL HAVE THE ABOVEGROUND COORDINATION DRAWINGS AVAILABLE UPON REQUEST BY A/E REPRESENTATIVE WITHIN 90 DAYS AFTER NOTICE TO PROCEED.

B. COORDINATION DRAWINGS SHALL CONSIST OF:

1. DRAWING SHEETS DEVELOPED SEQUENTIALLY BY EACH TRADE WITH ALL COMPONENTS DRAWN TO SCALE AND COLOR CODED TO REPRESENT EACH TRADE.

C. WHERE COORDINATION DRAWINGS, OR OTHER PREINSTALLATION COORDINATION METHODS SHOW THAT AVAILABLE SPACE IS INADEQUATE OR THAT MODIFICATIONS WILL AFFECT ARCHITECTURAL ELEMENTS, REQUEST INFORMATION FROM THE ARCHITECT BEFORE PROCEEDING WITH WORK. NO ADDITIONAL PAYMENT WILL BE MADE FOR INSTALLATION CONFLICTS WHICH COULD HAVE BEEN IDENTIFIED BY COORDINATION DRAWINGS OR OTHER PRE-INSTALLATION COORDINATION METHODS.

D. MAKE RUNS PARALLEL WITH LINES OF BUILDING. UTILIZE SPACE EFFICIENTLY TO MAXIMIZE ACCESSIBILITY FOR OTHER INSTALLATIONS, FOR MAINTENANCE, AND FOR REPAIRS.

E. EACH SUBCONTRACTOR SHALL:

1. INDICATE THE EXACT NAME, LOCATION, AND DIMENSION OF EACH ELEMENT TO BE PROVIDED BY THAT SUBCONTRACTOR.
2. ARRANGE COMPONENTS AS NECESSARY TO AVOID CONFLICT WITH NEW AND EXISTING CONDITIONS AND THE WORK OF OTHER SUBCONTRACTORS AS DIRECTED BY THE GENERAL CONTRACTOR.
3. NOTE REQUIREMENTS FOR SLEEVES, BLOCK-OUTS, CUTTING, PATCHING, ACCESS DOORS, BLOCKING, SUPPORTS, INSERTS, AND OTHER SIMILAR ITEMS.
4. NOTIFY THE GENERAL CONTRACTOR OF CONFLICTS.
5. APPROVE THE COORDINATION DRAWINGS WHEN ALL CONFLICTS ARE RESOLVED AND AN ACCEPTABLE LAYOUT IS OBTAINED.

F. THE GENERAL CONTRACTOR SHALL COORDINATE THE LAYOUTS INDICATED ON THE COORDINATION DRAWINGS AND RESOLVE ANY CONFLICTS PRIOR TO COMMENCEMENT OF SUBJECT PORTIONS OF THE WORK.

1.08 PRODUCT HANDLING AND PROTECTION

A. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL MATERIAL, EQUIPMENT AND APPARATUS PROVIDED UNDER THIS SECTION FROM DAMAGE, WATER, CORROSION, FREEZING AND DUST, BOTH IN STORAGE AND WHEN INSTALLED, UNTIL FINAL PROJECT ACCEPTANCE.

1.09 DEFINITIONS

A. FINISHED SPACES: SPACES USED FOR HABITATION OR OCCUPANCY WHERE ROUGH SURFACES ARE PLASTERED, PANELED, OR OTHERWISE TREATED TO PROVIDE A PLEASING APPEARANCE.

B. UNFINISHED SPACES: SPACES USED FOR STORAGE OR WORK AREAS, SUCH AS FAN ROOMS, MECHANICAL ROOMS, ETC., WHERE APPEARANCE IS NOT A FACTOR.

C. CONCEALED SPACES: SPACES OUT OF SIGHT. FOR EXAMPLE, ABOVE CEILINGS; BELOW FLOORS; BETWEEN DOUBLE WALLS; FURRED-IN AREAS; PIPE AND DUCT SHAFTS; AND SIMILAR SPACES.

D. EXPOSED: OPEN TO VIEW. FOR EXAMPLE, PIPE RUNNING THROUGH A ROOM AND NOT COVERED BY OTHER CONSTRUCTION.

E. OUTSIDE: OPEN TO VIEW UP TO 5 FEET BEYOND THE EXTERIOR SIDE OF WALLS, ABOVE THE ROOF, AND UNEXCAVATED OR CRAWL SPACES.

F. CONDITIONED SPACE: AN AREA, ROOM, OR SPACE NORMALLY OCCUPIED AND BEING HEATED OR COOLED FOR HUMAN HABITATION BY ANY EQUIPMENT AS DEFINED BY THE EXTENT OF THE BUILDING ENVELOPE INSULATION.

G. REPLACE: EXISTING MECHANICAL EQUIPMENT AND COMPONENTS SHALL BE DEMOLISHED AND DISCARDED FROM THE PROJECT SITE OR AS DIRECTED OTHERWISE. NEW MECHANICAL EQUIPMENT AND COMPONENTS SHALL BE INSTALLED IN THE AREA WHERE THE EXISTING MECHANICAL EQUIPMENT AND COMPONENTS WERE DEMOLISHED OR AS INDICATED ON THE CONTRACT DOCUMENTS.

H. REMOVED: EXISTING MECHANICAL EQUIPMENT AND COMPONENTS IDENTIFIED ON THE CONTRACT DOCUMENTS SHALL BE TAKEN APART, TAKEN DOWN, AND DISCARDED FROM THE PROJECT SITE UNLESS DIRECTED OTHERWISE ON PLAN. REMOVED ITEMS SHALL NOT BE BROUGHT BACK TO THE PROJECT SITE FOR USE OR REINSTALLATION.

I. REINSTALL: EXISTING MECHANICAL EQUIPMENT AND COMPONENTS IDENTIFIED ON THE CONTRACT DOCUMENTS THAT NEED TO BE TAKEN DOWN AND INSTALLED IN THE SAME OR NEW LOCATION.

1.10 ABBREVIATIONS

A. A/E ARCHITECT/ENGINEER
B. AMCA AIR MOVING & CONDITIONING ASSOCIATION
C. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
D. ASHRAE AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS
E. ASME AMERICAN SOCIETY OF MECHANICAL ENGINEERS
F. CFM CUBIC FEET PER MINUTE
G. IAPMO INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS
H. IAQ INDOOR AIR QUALITY
I. MSS MANUFACTURERS STANDARDIZATION SOCIETY
J. PER IN ACCORDANCE WITH
K. SMACNA SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
L. UL UNDERWRITER'S LABORATORIES
M. ADDITIONAL ABBREVIATIONS ARE AS LISTED ON THE DRAWINGS OR ELSEWHERE IN THESE SPECIFICATIONS.

1.11 SCHEDULE OF VALUES

A. GENERAL: PROVIDE SCHEDULE OF VALUES PER DIVISION 1 AND RELATED PROJECT REQUIREMENTS:

1. DIVISION 23 BREAKDOWN: PROVIDE SCHEDULE OF VALUES FOR EACH BUILDING, BROKEN DOWN INTO LABOR AND MATERIALS PER SPECIFICATION SECTION AT A MINIMUM. FURTHER BREAKDOWN INTO SUBCATEGORIES IS AT THE OPTION OF THE CONTRACTOR, EXCEPT AS NOTED BELOW:
   a. SECTION 20 00 00 - GENERAL MECHANICAL REQUIREMENTS: PROVIDE A SUBCATEGORY FOR "MECHANICAL PUNCHLIST, CLOSEOUT AND OWNER TRAINING". THE DOLLAR VALUE FOR THIS SUBCATEGORY SHALL BE NO LESS THAN 2.25% OF THE TOTAL DOLLAR VALUE OF THE DIVISION 23 WORK (OR AS INDICATED IN DIVISION 1, WHICHEVER IS HIGHER). THE CONTRACTOR SHALL RECEIVE PAYMENT UPON COMPLETION OF ALL MECHANICAL PUNCHLIST AND CLOSEOUT ITEMS AND OWNER TRAINING.
   b. SECTION 20 00 00 - GENERAL MECHANICAL REQUIREMENTS: PROVIDE A SUBCATEGORY FOR "PRE-CONSTRUCTION COORDINATION MEETING." THE DOLLAR VALUE FOR THIS SUBCATEGORY SHALL BE NO LESS THAN 1% OF THE TOTAL DOLLAR VALUE OF THE DIVISION 23 WORK. CONTRACTOR SHALL SUBMIT THE MEETING'S SIGN IN SHEET TO THE ENGINEER FOR REVIEW. THE SIGN IN SHEET SHALL INCLUDE THE PRINTED AND SIGNED NAMES OF THE GENERAL AND ALL SUBCONTRACTORS WHO ATTENDED THE MEETING. THE CONTRACTOR SHALL RECEIVE PAYMENT ONCE THE SIGN-IN SHEET HAS BEEN VERIFIED TO MEET THE PRE-INSTRUCTION COORDINATION REQUIREMENTS OF THIS SECTION.
   c. SECTION 20 00 00 - GENERAL MECHANICAL REQUIREMENTS: PROVIDE A SUBCATEGORY FOR "COORDINATION DRAWINGS". THE DOLLAR VALUE FOR THIS SUBCATEGORY SHALL BE NO LESS THAN 1% OF THE TOTAL DOLLAR VALUE OF THE DIVISION 23 WORK. THE CONTRACTOR SHALL RECEIVE PAYMENT UPON ENGINEER'S VERIFICATION OF COORDINATION DRAWING COMPLETION, IN ACCORDANCE WITH THE REQUIREMENTS OF THIS SECTION.
   d. THE CONTRACTOR IS ADVISED THAT IN ADDITION TO PAYMENTS HELD OUT FOR RETAINAGE AND PROJECT FINAL COMPLETION (I.E. "MECHANICAL PUNCHLIST, CLOSEOUT, AND OWNER TRAINING"), AS SPECIFIED ABOVE AND IN DIVISION 1, THE OWNER RESERVES THE RIGHT TO WITHHOLD 10% OF THE FUNDS FOR ANY OF THE ABOVE CATEGORIES UNTIL THE SYSTEMS (OF THAT CATEGORY) HAVE BEEN PROVEN TO OPERATE AS SPECIFIED AND HAVE BEEN COMPLETELY TESTED, ADJUSTED, AND BALANCED.

1.12 SUBMITTAL PROCEDURES

A. ALL MATERIAL USED ON THE PROJECT SHALL BE NEW AND FREE OF DEFECTS. THE ARCHITECT AND/OR ENGINEER RESERVE THE RIGHT TO REJECT ANY MATERIAL, THE APPEARANCE OF WHICH HAS BEEN DAMAGED ON THE SITE OR IN SHIPMENT. THE MATERIAL SHALL BE OF PRE-APPROVED EQUAL QUALITY TO THAT WHICH IS SPECIFIED. SHOULD THE MAKE AND TYPE OF MATERIAL DIFFER FROM THAT SPECIFIED, THE CONTRACTOR MAY BE REQUIRED TO SUBMIT CATALOG AND ENGINEERING DATA (SAMPLES IF REQUESTED) NECESSARY TO MAKE A COMPARISON AND DETERMINE ITS SUITABILITY. THE CONTRACTOR SHALL ALSO BEAR THE COST OF ALL CHANGES TO ANY ASPECT OF THE PROJECT (ELECTRICAL, MECHANICAL, BUILDING, ETC.) MADE NECESSARY BY ANY APPROVED SUBSTITUTIONS. APPROVED SUBSTITUTIONS INCLUDE THOSE LISTED AS APPROVED MANUFACTURERS OR APPROVED SUBSTITUTIONS. TENTATIVE APPROVAL OF SUBSTITUTE MATERIAL AND EQUIPMENT WILL BE MADE PRIOR TO BID ONLY. SUCH REQUEST FOR APPROVAL SHALL BE MADE TWO WEEKS IN ADVANCE OF THE BID OPENING TO ALLOW TIME TO ASSESS ITS SUITABILITY. FAILURE TO OBTAIN APPROVAL PRIOR TO BID SHALL REQUIRE THE SUCCESSFUL BIDDER TO FURNISH MATERIALS AND EQUIPMENT ONLY AS SPECIFIED HEREIN (SEE PARAGRAPH 2.01, THIS SPECIFICATION).

B. EQUIPMENT SUBMITTALS SHALL BE SUBMITTED PER ONE OF THE FOLLOWING PROCESSES AS SELECTED BY THE ARCHITECT/ENGINEER REPRESENTATIVE AND/OR OWNER:

1. ELECTRONIC SUBMITTAL PROCESS:
   a. THE CONTRACTOR SHALL UPLOAD ONE COMPLETE PDF FILE OF THE ELECTRONIC SUBMITTAL PACKAGE TO THE ARCHITECT'S SHAREPOINT SITE FOR APPROVAL. THE ELECTRONIC SUBMITTAL PACKAGE SHALL INCLUDE THE FOLLOWING:
      1) ALL REQUIRED SUBMITTALS (I.E. EQUIPMENT CUT SHEETS, SHOP DRAWINGS, ETC.) PER EACH SPECIFICATION SECTION.
      2) TABLE OF CONTENTS IDENTIFYING EACH SPECIFICATION SECTION, SUBMITTAL REQUIREMENT OF EACH SPECIFICATION, AND THE MANUFACTURER NAME AND MODEL NUMBER OF EACH ITEM SUBMITTED.
      3) INDEX SHEET FOR EACH SPECIFICATION SECTION.
      4) SUBMISSION OF PDF FILES OF INDIVIDUAL SPECIFICATIONS OR EQUIPMENT CUTS WILL BE AUTOMATICALLY REJECTED.
      5) THE CONTRACTOR SHALL COMPLETE AND UPLOAD A SUBMITTAL INFORMATION FORM, IN MICROSOFT WORD FORMAT, FOR THE A/E TEAM TO REVIEW. THE EQUIPMENT SUBMITTAL WILL NOT BE CONSIDERED "RECEIVED" NOR WILL A REVIEW BE PROVIDED UNTIL BOTH THE ELECTRONIC SUBMITTAL PACKAGE AND SUBMITTAL INFORMATION FORM HAVE BEEN UPLOADED.
      6) IF THE ELECTRONIC SUBMITTAL PROCESS IS NOT FEASIBLE FOR A PARTICULAR SUBMITTAL SECTION (I.E. SAMPLES, CERTAIN SHOP DRAWINGS, RECORDED VIDEOS, CD'S, ETC.), THE CONTRACTOR SHALL SUBMIT A REQUEST IN WRITING TO THE A/E REPRESENTATIVE TO DEVIATE FROM THE ELECTRONIC SUBMITTAL PROCESS. IF ACCEPTABLE BY THE A/E REPRESENTATIVE THE CONTRACTOR SHALL FOLLOW THE HARD COPY SUBMITTAL PROCESS FOR THE SUBMISSION.
2. HARD COPY SUBMITTAL PROCESS:
   a. THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT, FOR APPROVAL, COMPLETE INFORMATION ON ALL EQUIPMENT AND MATERIALS TO BE PROVIDED ON THE PROJECT. PROVIDE COPIES AS SPECIFIED BY DIVISION 1 AND AT A MINIMUM PROVIDE SIX (6) COPIES OF THE MANUFACTURER'S CATALOG AND ENGINEERING DATA, SHOP DRAWINGS OF SHOP FABRICATED EQUIPMENT, AND INSTRUCTION DATA FOR EACH ITEM INCLUDED UNDER THIS SECTION OF THE SPECIFICATIONS. THE CONTRACTOR SHALL SUBMIT A TYPED, SIGNED LIST INCLUDING ALL ITEMS TO BE FURNISHED ON THE PROJECT. THE SIGNATURE ON THE AFOREMENTIONED LIST SHALL INDICATE THAT THE CONTRACTOR HAS EXAMINED THE SUITABILITY OF ALL MATERIAL AND EQUIPMENT WITH RESPECT TO COMPLIANCE WITH THESE SPECIFICATIONS. THE CONTRACTOR'S APPROVAL SHALL ALSO INDICATE THAT PHYSICAL DIMENSIONS OF THE EQUIPMENT HAVE BEEN VERIFIED WITH THE INSTALLATION REQUIREMENTS AND WERE FOUND TO CAUSE NO INTERFERENCE THEREWITH.
   b. FURNISH SUBMITTALS IN A HARD-BACK, THREE-RING BINDER. THE BINDER SHALL HAVE TABS WHICH ARE INDEXED WITH A TABLE OF CONTENTS. THE TABLE OF CONTENTS SHALL CORRELATE AN INDEX NUMBER FOR EACH INDIVIDUAL SPECIFICATION NUMBER. IF THE EQUIPMENT SUBMITTAL IS NOT BOUND TO THE ENGINEER'S SATISFACTION, IT MAY BE REJECTED.
3. REVIEW OF SUBMITTAL DATA BY THE ENGINEER OR ARCHITECT DOES NOT RELIEVE THE CONTRACTOR OF RESPONSIBILITY FOR QUANTITIES, MEASUREMENTS, AND COMPLIANCE WITH THE INTENT OF ALL CONTRACT DOCUMENTS.
4. FURNISH SUBMITTALS GENERALLY ACCORDING TO THE LIST BELOW. INDIVIDUAL SECTIONS MAY CONTAIN MORE SPECIFIC SUBMITTAL LISTING OF THE PARTICULAR SECTION LABELED "SUBMITTAL REQUIREMENTS." FURNISH ON EACH PARTICULAR SECTION AND THE FOLLOWING EQUIPMENT:
   a. AIR TERMINALS
   b. TEMPERATURE CONTROL EQUIPMENT AND SHOP DRAWINGS
   c. AIR BALANCE CONTRACTOR
   d. FIRE MARSHAL STAMPED AND APPROVED SHOP DRAWINGS FOR FIRE SPRINKLER SYSTEM
   e. ANY MATERIAL FOUND TO BE INSTALLED WITHOUT PRIOR APPROVAL WILL BE REQUIRED TO BE REMOVED AND REPLACED WITH ONLY SPECIFIED MATERIAL AT CONTRACTOR'S COST.
   f. MECHANICAL DRAWINGS FOR THE PROJECT HAVE BEEN DEVELOPED BY THE ENGINEER USING AUTOCAD™ REVISION 2018 SOFTWARE. THESE DRAWING FILES WILL BE MADE AVAILABLE TO THE CONTRACTOR FOR DEVELOPMENT OF SHOP DRAWINGS AND/OR "AS-BUILTS" FOR A FEE OF $30.00 PER SHEET. FULL PAYMENT TO BE MADE PRIOR TO RELEASE OF DRAWING FILES.

1.13 WARRANTY

A. ALL WARRANTY INFORMATION SHALL BE SUBMITTED AS PART OF THE "OPERATION AND MAINTENANCE MANUAL FOR MECHANICAL SYSTEMS" IN THIS SECTION.

B. ALL WARRANTIES FOR MECHANICAL AND PLUMBING EQUIPMENT SHALL START UPON TURNOVER TO OWNER.

1.14 AS-BUILT DRAWINGS

A. THE CONTRACTOR SHALL MAINTAIN, IN ADDITION TO COORDINATION DRAWINGS, AN AS-BUILT SET OF PRINTS THAT CLEARLY IDENTIFY ALL DEVIATIONS FROM THE ORIGINAL DESIGN. THE AS-BUILT DRAWINGS SHALL BE DRAFTED PER ONE OF THE FOLLOWING METHODS:

1. DRAFT ALL REVISIONS ON A SEPARATE DARK LAYER, ON THE COORDINATION DRAWING SET. THE CONTRACTOR SHALL MAINTAIN A COPY OF THE ORIGINAL COORDINATION DRAWING SET.
2. DRAFT ALL REVISIONS ON THE DESIGN DRAWINGS WITH A RED COLOR PENCIL.

B. THIS RED LINED SET SHALL IDENTIFY ALL DRAWING REVISIONS INCLUDING ADDENDA ITEMS, CHANGE ORDERS, AND CONTRACTOR REVISIONS.

C. DRAWINGS SHALL SHOW LOCATIONS OF ALL UNDERGROUND PIPE AND DUCT INSTALLED BY THIS CONTRACTOR. UNDERGROUND PIPES AND DUCTS SHALL BE SHOWN WITH CROSS SECTION ELEVATIONS. ALL PIPE, RACEWAY, MANHOLES, OR LINES OF OTHER TRADES SHALL BE INCLUDED.

D. THE CONTRACTOR SHALL UPDATE ALL REFERENCES TO SPECIFIC PRODUCTS TO INDICATE PRODUCTS ACTUALLY INSTALLED ON PROJECT.

1. UPON COMPLETION OF THE DIVISION 23 WORK, THE CONTRACTOR SHALL DELIVER THE RED LINED DRAWINGS AND ONE SET OF NEATLY DRAFTED AS-BUILT DRAWINGS ON ELECTRONIC MEDIA IN ACAD 2015 FORMAT AND PDF FILES TO THE ENGINEER FOR TRANSMITTAL THROUGH THE ENGINEER TO THE OWNER.

PART 2 - PRODUCTS

2.01 APPROVED MANUFACTURERS

A. ANY REFERENCE TO THE SPECIFICATIONS OR ON THE DRAWINGS TO ANY ARTICLE, DEVICE, PRODUCT, MATERIAL, FIXTURE, FORM, OR TYPE OF CONSTRUCTION BY MANUFACTURER, NAME, MAKE, OR CATALOG NUMBER SHALL BE INTERPRETED AS ESTABLISHING A STANDARD OF QUALITY AND SHALL NOT BE CONSTRUED AS LIMITING COMPETITION.

B. THE MANUFACTURERS LISTED AS APPROVED MANUFACTURERS ARE APPROVED TO BID THE PROJECT FOR THE ITEMS INDICATED WITHOUT OBTAINING PRIOR APPROVAL. OTHER MANUFACTURERS DESIRING TO BID THE PROJECT REQUIRE PRIOR APPROVAL.

C. THE LISTING OF A MANUFACTURER AS AN APPROVED MANUFACTURER DOES NOT NECESSARILY MEAN THAT THE PRODUCTS OF THAT MANUFACTURER ARE EQUAL TO THOSE SPECIFIED. THE LISTING IS ONLY AN INDICATION OF THOSE MANUFACTURERS WHICH MAY BE CAPABLE OF MANUFACTURING, OR HAVE IN THE PAST MANUFACTURED, ITEMS EQUAL TO THOSE SPECIFIED, AND IS INTENDED TO AID THE CONTRACTOR IN IDENTIFYING MANUFACTURERS.

D. PRODUCTS PROVIDED BY APPROVED MANUFACTURERS SHALL BE EQUAL TO OR SUPERIOR TO THE SPECIFIED MANUFACTURER'S ITEM IN FUNCTION, APPEARANCE, AND QUALITY, AND SHALL FULFILL ALL REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. THE ARCHITECT/ENGINEER SHALL BE THE FINAL JUDGE AS TO WHETHER AN ITEM MEETS THESE REQUIREMENTS OR NOT. IF A MANUFACTURER IS NOT CERTAIN THAT HIS PRODUCT MEETS THESE REQUIREMENTS OR NOT, THEN THE MANUFACTURER SHALL SUBMIT DATA AS REQUIRED TO OBTAIN THE DESIGN CONSULTANT'S APPROVAL PRIOR TO BID OPENING.

E. THE APPROVAL OF A MANUFACTURER APPLIES TO THE MANUFACTURER ONLY AND DOES NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY OF MEETING ALL APPLICABLE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS.

F. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO OTHER TRADES AND ALL REVISIONS REQUIRED IN ACCOMMODATING ANY PRODUCTS WHICH ARE DIFFERENT FROM THOSE SPECIFIED OR SHOWN.

G. IN REVIEWING A MANUFACTURER FOR ACCEPTANCE, FACTORS CONSIDERED INCLUDE THE FOLLOWING: ENGINEERING DATA SHOWING ITEM'S PERFORMANCE, PROPER LOCAL REPRESENTATION OF MANUFACTURER,

K. PIPE INSTALLATION: INSTALL PIPING IN LONGEST REASONABLE LENGTHS. THE USE OF SHORT LENGTHS OF PIPE WITH MULTIPLE COUPLINGS WHERE A SINGLE LENGTH OF PIPE COULD HAVE BEEN USED IS NOT ACCEPTABLE.

3.08 ADJUSTMENT AND CLEANING

A. CLEAN EXPOSED PIPING, DUCTWORK, EQUIPMENT, AND FIXTURES, REMOVE DEBRIS FROM SITE. REPAIR ALL DAMAGED FINISHES AND LEAVE EVERYTHING IN WORKING ORDER.

B. REMOVE STICKERS FROM EQUIPMENT.

3.09 PAINTING

A. PAINT ALL EXPOSED PIECES OF EQUIPMENT IF NOT FACTORY FINISHED OR PAINTED UNDER THE ARCHITECTURAL SECTION OF THESE SPECIFICATIONS. PAINT SHALL BE ONE COAT PRIMER AND TWO COATS ENAMEL COLOR AS DIRECTED BY THE ARCHITECT.

3.11 REQUESTS FOR INFORMATION (RFI)

A. IT IS OUR INTENT TO PROVIDE A TIMELY RESPONSE FOR RFIS REGARDING DIVISION 23 WORK. TO FURTHER EXPEDITE THIS PROCESS, IF A SUGGESTION CAN BE DETERMINED OR DERIVED AT BY THE INITIATOR OF THE RFI, IT IS REQUIRED THIS SUGGESTION BE SUPPLIED WITH THE SUBMITTED RFI. IF NO SUGGESTION IS GIVEN WHERE ONE IS POSSIBLE, THE RFI WILL BE RETURNED AS INCOMPLETE. RFI'S WILL BE RETURNED TO THE CONTRACTOR WITHIN SEVEN (7) BUSINESS DAYS FROM THE TIME RECEIVED BY THE ARCHITECT/ENGINEER REPRESENTATIVE. ALL MECHANICAL RFIS SHALL BE WRITTEN ON THE FORM PROVIDED AT THE BACK OF THIS SECTION.

END OF SECTION 20 00 00

SECTION 20 05 17 SLEEVES AND SLEEVE SEALS FOR PLUMBING PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. PIPE SLEEVES

B. PIPE SLEEVE-SEALS

1.02 RELATED REQUIREMENTS

A. SECTION 07 84 00 - FIRESTOPPING

1.03 REFERENCE STANDARDS

A. ASTM C592 - STANDARD SPECIFICATION FOR MINERAL FIBER BLANKET INSULATION AND BLANKET-TYPE PIPE INSULATION (METAL-MESH COVERED) (INDUSTRIAL TYPE); 2016

B. ASTM E814 - STANDARD TEST METHOD FOR FIRE TESTS OF PENETRATION FIRESTOP SYSTEMS; 2013A (REAPPROVED 2017)

1.04 SUBMITTALS

A. SEE SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS FOR SUBMITTAL PROCEDURES

B. SEALS

1.05 QUALITY ASSURANCE

A. CLEAN EQUIPMENT, PIPES, VALVES, AND FITTINGS OF GREASE, METAL CUTTINGS, AND SLUDGE THAT MAY HAVE ACCUMULATED FROM THE INSTALLATION AND TESTING OF THE SYSTEM.

PART 2 - PRODUCTS

2.01 PIPE SLEEVES

A. VERTICAL PIPING:

1. SLEEVE LENGTH: 1 INCH ABOVE FINISHED FLOOR
2. PROVIDE SEALANT FOR WATERTIGHT JOINT.
3. BLOCKED OUT FLOOR OPENINGS: PROVIDE 1-1/2-INCH ANGLE SET IN SILICON ADHESIVE AROUND OPENING.
4. DRILLED PENETRATIONS: PROVIDE 1-1/2-INCH ANGLE RING OR SQUARE SET IN SILICONE ADHESIVE AROUND PENETRATION.

B. SHEET METAL: PIPE PASSING THROUGH INTERIOR WALLS, PARTITIONS, AND FLOORS, UNLESS STEEL OR BRASS SLEEVES ARE SPECIFIED BELOW.

C. PIPE PASSING THROUGH BELOW GRADE EXTERIOR WALLS:

1. ZINC COATED OR CAST-IRON PIPE
2. PROVIDE WATERTIGHT SPACE WITH LINK RUBBER OR MODULAR SEAL BETWEEN SLEEVE AND PIPE ON BOTH PIPE ENDS.

D. PIPE PASSING THROUGH CONCRETE BEAM FLANGES, EXCEPT WHERE BRASS PIPE SLEEVES ARE SPECIFIED:

1. GALVANIZED STEEL PIPE OR BLACK IRON PIPE WITH ASPHALT COATING.
2. CONNECT SLEEVE WITH FLOOR PLATE EXCEPT IN MECHANICAL ROOMS.

E. PIPE PASSING THROUGH MECHANICAL, LAUNDRY, AND KITCHEN ABOVE BASEMENT:

1. GALVANIZED STEEL PIPE OR BLACK IRON PIPE WITH ASPHALT COATING.
2. CONNECT SLEEVE WITH FLOOR PLATE EXCEPT IN MECHANICAL ROOMS.

F. PENETRATIONS IN CONCRETE BEAM FLANGES ARE PERMITTED BUT ARE PROHIBITED THROUGH RIBS OR BEAMS WITHOUT PRIOR APPROVAL FROM THE ARCHITECT.

G. CLEARANCES:

1. PROVIDE ALLOWANCE FOR INSULATED PIPING.
2. WALL, FLOOR, PARTITIONS, AND BEAM FLANGES: 0.5 INCH GREATER THAN EXTERNAL/PIPE DIAMETER.
3. ALL RATED OPENINGS: CAULKED TIGHT WITH FIRE STOPPING MATERIAL COMPLYING WITH ASTM E814 IN ACCORDANCE WITH SECTION 07 84 00 TO PREVENT THE SPREAD OF FIRE, SMOKE, AND GASES.

2.02 PIPE-SLEEVE SEALS

A. MANUFACTURERS:

1. FLEXICRAFT INDUSTRIES; PIPESEAL
2. GPT THUNDERLINE; LINK-SEAL

B. MODULAR/MECHANICAL SEAL:

1. PROVIDE WATERTIGHT SEAL BETWEEN PIPE AND WALL/CASING OPENING.

PART 3 - EXECUTION

3.01 PREPARATION

A. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN END FERROUS PIPE.

B. REMOVE SCALE AND FOREIGN MATERIAL, FROM INSIDE AND OUTSIDE, BEFORE ASSEMBLY.

3.02 INSTALLATION

A. ROUTE PIPING IN ORDERLY MANNER, PLUMB AND PARALLEL TO BUILDING STRUCTURE. MAINTAIN GRADIENT.

B. INSTALL PIPING TO CONSERVE BUILDING SPACE, TO NOT INTERFERE WITH USE OF SPACE AND OTHER WORK.

C. INSTALL PIPING AND PIPE SLEEVES TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.

D. STRUCTURAL CONSIDERATIONS:

E. PROVIDE SLEEVES WHEN PENETRATING FOOTINGS, FLOORS, WALLS, PARTITIONS, AND SIMILAR ELEMENTS. SEAL PIPE INCLUDING SLEEVE PENETRATIONS TO ACHIEVE FIRE RESISTANCE EQUIVALENT TO FIRE SEPARATION REQUIRED.

1. ABOVEGROUND PIPING:
   a. PACK SOLID USING MINERAL FIBER COMPLYING WITH ASTM C592.
   b. FILL SPACE WITH AN ELASTOMER CAULK TO A DEPTH OF 0.50 INCH WHERE PENETRATIONS OCCUR BETWEEN CONDITIONED AND UNCONDITIONED SPACES.
2. ALL RATED OPENINGS: CAULK TIGHT WITH FIRE STOPPING MATERIAL CONFORMING TO ASTM E814 IN ACCORDANCE WITH SECTION 07 84 00 TO PREVENT THE SPREAD OF FIRE, SMOKE, AND GASES.
3. CAULK EXTERIOR WALL SLEEVES WATERTIGHT WITH MECHANICALLY EXPANDABLE CHLOROPRENE INSERTS WITH MASTIC-SEALED COMPONENTS.

F. MANUFACTURED SLEEVE-SEAL SYSTEMS:

1. INSTALL MANUFACTURED SLEEVE-SEAL SYSTEMS IN SLEEVES LOCATED IN GRADE SLABS AND EXTERIOR CONCRETE WALLS AT PIPING ENTRANCES INTO BUILDING.
2. PROVIDE SEALING ELEMENTS OF THE SIZE, QUANTITY, AND TYPE REQUIRED FOR THE PIPING AND SLEEVE INNER DIAMETER OR PENETRATION DIAMETER.
3. LOCATE PIPING IN CENTER OF SLEEVE OR PENETRATION.
4. INSTALL FIELD ASSEMBLED SLEEVE-SEAL SYSTEM COMPONENTS IN ANNULAR SPACE BETWEEN SLEEVE AND PIPING.
5. TIGHTEN BOLTING FOR A WATER-TIGHT SEAL.
6. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

G. WHEN INSTALLING MORE THAN ONE PIPING SYSTEM MATERIAL, ENSURE SYSTEM COMPONENTS ARE COMPATIBLE AND JOINED TO ENSURE THE INTEGRITY OF THE SYSTEM. PROVIDE NECESSARY JOINING FITTINGS. ENSURE FLANGES, UNIONS, AND COUPLINGS FOR SERVICING ARE CONSISTENTLY PROVIDED.

H. INSULATION SHALL RUN CONTINUOUS THROUGH SLEEVES IN NON-FIRE RATED ELEMENTS. INSULATION SHALL NOT RUN CONTINUOUS THROUGH SLEEVES IN FIRE RATED ELEMENTS UNLESS THE FIRE SEALANT SYSTEM USED IS UL ACCEPTED FOR USE WITH INSULATED PIPES.

I. DO NOT PLACE SLEEVES AROUND SOIL, WASTE, VENT, OR ROOF DRAIN LINES PASSING THROUGH CONCRETE FLOORS ON GRADE.

END OF SECTION 22 05 17

SECTION 22 05 23 GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. ANGLE VALVES

B. BALL VALVES

1.02 RELATED REQUIREMENTS

A. SECTION 20 00 00 - GENERAL MECHANICAL REQUIREMENTS

B. SECTION 22 05 48 - VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT

C. SECTION 22 05 53 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

D. SECTION 22 07 19 - PLUMBING PIPING INSULATION

E. SECTION 22 10 05 - PLUMBING PIPING

1.03 ABBREVIATIONS AND ACRONYMS

A. CWP: COLD WORKING PRESSURE

B. EPDM: ETHYLENE PROPYLENE COPOLYMER RUBBER

C. NBR: ACRYLONITRILE-BUTADIENE, BUNA-N, OR NITRILE RUBBER

D. NRS: NON-RISING STEM

E. OS&Y: OUTSIDE SCREW AND YOKE

F. PTFE: POLYTETRAFLUOROETHYLENE

G. RS: RISING STEM

H. TFE: TETRAFLUOROETHYLENE

1.04 REFERENCE STANDARDS

A. ASME B1.20.1 - PIPE THREADS, GENERAL PURPOSE (INCH); 2013

B. ASME B16.1 - GRAY IRON PIPE FLANGES AND FLANGED FITTINGS: CLASSES 25, 125, AND 250; 2015

C. ASME B16.5 - PIPE FLANGES AND FLANGED FITTINGS NPS 1/2 THROUGH NPS 24 METRIC/INCH STANDARD; 2017

D. ASME B16.10 - FACE-TO-FACE AND END-TO-END DIMENSIONS OF VALVES; 2017

E. ASME B16.18 - CAST COPPER ALLOY SOLDER JOINT PRESSURE FITTINGS; 2012

F. ASME B16.34 - VALVES - FLANGED, THREADED AND WELDING END; 2017

G. ASME B31.9 - BUILDING SERVICES PIPING; 2014

H. ASME BPVC-IX - BOILER AND PRESSURE VESSEL CODE, SECTION IX - WELDING, BRAZING, AND FUSING PROCEDURES; WELDERS; BRAZERS; AND WELDING, BRAZING AND FUSING OPERATORS; 2017

I. ASTM A48/A48M - STANDARD SPECIFICATION FOR GRAY IRON CASTINGS; 2003 (REAPPROVED 2016)

J. ASTM A126 - STANDARD SPECIFICATION FOR GRAY IRON CASTINGS FOR VALVES, FLANGES, AND PIPE FITTINGS; 2004 (REAPPROVED 2014)

K. ASTM A536 - STANDARD SPECIFICATION FOR DUCTILE IRON CASTINGS; 1984 (REAPPROVED 2014)

L. ASTM B61 - STANDARD SPECIFICATION FOR STEAM OR VALVE BRONZE CASTINGS; 2015

M. ASTM B62 - STANDARD SPECIFICATION FOR COMPOSITION BRONZE OR OUNCE METAL CASTINGS; 2017

N. AWWA C606 - GROOVED AND SHOULDERED JOINTS; 2015

O. MSS SP-45 - BYPASS AND DRAIN CONNECTIONS; 2003 (REAFFIRMED 2008)

P. MSS SP-72 - BALL VALVES WITH FLANGED OR BUTT-WELDING ENDS FOR GENERAL SERVICE; 2010A

Q. MSS SP-80 - BRONZE GATE, GLOBE, ANGLE AND CHECK VALVES; 2013

R. MSS SP-85 - CAST IRON GLOBE & ANGLE VALVES, FLANGED AND THREADED ENDS; 2011

S. MSS SP-110 - BALL VALVES THREADED, SOCKET-WELDING, SOLDER JOINT, GROOVED AND FLARED ENDS; 2010

T. NSF 61 - DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS; 2017

U. NSF 372 - DRINKING WATER SYSTEM COMPONENTS - LEAD CONTENT; 2016

1.05 SUBMITTALS

A. PRODUCT DATA: PROVIDE DATA ON VALVES INCLUDING MANUFACTURER'S CATALOG INFORMATION. SUBMIT PERFORMANCE RATINGS, ROUGH-IN DETAILS, WEIGHTS, SUPPORT REQUIREMENTS, AND PIPING CONNECTIONS.

B. OPERATION AND MAINTENANCE DATA: INCLUDE MANUFACTURER'S DESCRIPTIVE LITERATURE, OPERATING INSTRUCTIONS, MAINTENANCE AND REPAIR DATA, AND PARTS LISTINGS.

1.06 QUALITY ASSURANCE

A. MANUFACTURER:

1. OBTAIN VALVES FOR EACH VALVE TYPE FROM SINGLE MANUFACTURER.
2. COMPANY MUST SPECIALIZE IN MANUFACTURING PRODUCTS SPECIFIED IN THIS SECTION, WITH NOT LESS THAN THREE YEARS OF DOCUMENTED EXPERIENCE.

B. DOMESTIC WATER FITTINGS, JOINING MATERIALS, AND ALL OTHER APPURTENANCES IN CONTACT WITH POTABLE WATER SHALL BE LEAD-FREE EXCEPT THOSE SPECIFICALLY EXEMPTED IN SECTION 3874 OF THE SAFE WATER DRINKING ACT.

1. LEAD-FREE SHALL MEAN:
   a. NOT CONTAINING MORE THAN 0.2% LEAD WHEN USED WITH RESPECT TO SOLDER AND FLUX; AND
   b. NOT MORE THAN A WEIGHTED AVERAGE OF 0.25% WHEN USED WITH RESPECT TO THE WETTED SURFACES OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES

1.07 DELIVERY, STORAGE, AND HANDLING

A. PREPARE VALVES FOR SHIPPING AS FOLLOWS:

1. MINIMIZE EXPOSURE OF OPERABLE SURFACES BY SETTING PLUG BALL VALVES TO OPEN POSITION.
2. PROTECT VALVE PARTS EXPOSED TO PIPED MEDIUM AGAINST RUST AND CORROSION.
3. PROTECT VALVE PIPING CONNECTIONS SUCH AS GROOVES, WELD ENDS, THREADS, AND FLANGE FACES.

B. USE THE FOLLOWING PRECAUTIONS DURING STORAGE:

1. MAINTAIN VALVE END PROTECTION AND PROTECT FLANGES AND SPECIALTIES FROM DIRT.
   a. PROVIDE TEMPORARY INLET AND OUTLET CAPS.
   b. MAINTAIN CAPS IN PLACE UNTIL INSTALLATION.
2. STORE VALVES IN SHIPPING CONTAINERS AND MAINTAIN IN PLACE UNTIL INSTALLATION.
   a. STORE VALVES INDOORS IN DRY ENVIRONMENT.
   b. STORE VALVES OFF THE GROUND IN WATERTIGHT ENCLOSURES WHEN INDOOR STORAGE IS NOT AN OPTION.

C. EXERCISE THE FOLLOWING PRECAUTIONS FOR HANDLING:

1. HANDLE LARGE VALVES WITH SLING, MODIFIED TO AVOID DAMAGE TO EXPOSED PARTS.
2. AVOID THE USE OF OPERATING HANDLES OR STEMS AS RIGGING OR LIFTING POINTS.

PART 2 - PRODUCTS

2.01 APPLICATIONS

A. SEE DRAWINGS FOR SPECIFIC VALVE LOCATIONS.

B. LISTED PIPE SIZES SHOWN USING NOMINAL PIPE SIZES (NPS) AND NOMINAL DIAMETER (DN).

C. PROVIDE THE FOLLOWING VALVES FOR THE APPLICATIONS IF NOT INDICATED ON DRAWINGS:

1. SHUTOFF: BALL

D. SUBSTITUTIONS OF VALVES WITH HIGHER CWP CLASSES OR WSP RATINGS FOR SAME VALVE TYPES ARE PERMITTED WHEN SPECIFIED CWP RATINGS OR WSP CLASSES ARE NOT AVAILABLE.

E. REQUIRED VALVE END CONNECTIONS FOR NON-WAFER TYPES:

1. STEEL PIPE:
   a. 2 INCH AND SMALLER: THREADED ENDS
   b. 2-1/2 INCH TO 4 INCH: GROOVED OR FLANGED ENDS EXCEPT WHERE THREADED VALVE-END OPTION IS INDICATED IN VALVE SCHEDULES BELOW
   c. 5 INCH AND LARGER: GROOVED OR FLANGED ENDS
   d. GROOVED-END COPPER TUBING AND STEEL PIPING: GROOVED
2. COPPER TUBE:
   a. 2 INCH AND SMALLER: THREADED ENDS EXCEPT WHERE SOLDER-JOINT VALVE-END OPTION IS INDICATED IN VALVE SCHEDULES BELOW
   b. 2-1/2 INCH TO 4 INCH: GROOVED OR FLANGED ENDS EXCEPT WHERE THREADED VALVE-END OPTION IS INDICATED IN VALVE SCHEDULES BELOW
   c. 5 INCH AND LARGER: GROOVED OR FLANGED ENDS

F. DOMESTIC, HOT AND COLD WATER VALVES:

1. 2 NPS AND SMALLER:
   a. BALL: ONE PIECE, FULL PORT, BRONZE WITH BRONZE TRIM

2.02 GENERAL REQUIREMENTS

A. VALVE PRESSURE AND TEMPERATURE RATINGS: NO LESS THAN RATING INDICATED; AS REQUIRED FOR SYSTEM PRESSURES AND TEMPERATURES.

B. VALVE SIZES: MATCH UPSTREAM PIPING UNLESS OTHERWISE INDICATED.

C. VALVE ACTUATOR TYPES:

1. HANDWHEEL: VALVES OTHER THAN QUARTER-TURN TYPES
2. HAND LEVER: QUARTER-TURN VALVES 6 NPS AND SMALLER

D. VALVES IN INSULATED PIPING: WITH 2 NPS STEM EXTENSIONS AND THE FOLLOWING FEATURES:

1. BALL VALVES: EXTENDED OPERATING HANDLE OF NON-THERMAL-CONDUCTIVE MATERIAL, AND PROTECTIVE SLEEVE THAT ALLOWS OPERATION OF VALVE WITHOUT BREAKING THE VAPOR SEAL OR DISTURBING INSULATION.
2. MEMORY STOPS: FULLY ADJUSTABLE AFTER INSULATION IS INSTALLED

E. VALVE-END CONNECTIONS:

1. THREADED END VALVES: ASME B1.20.1
2. FLANGES ON IRON VALVES: ASME B16.1 FOR FLANGES ON IRON VALVES
3. PIPE FLANGES AND FLANGED FITTINGS 1/2 INCH THROUGH 24 INCHES: ASME B16.5
4. SOLDER JOINT CONNECTIONS: ASME B16.18
5. GROOVED END CONNECTIONS: AWWA C606

F. GENERAL ASME COMPLIANCE:

1. FERROUS VALVE DIMENSIONS AND DESIGN CRITERIA: ASME B16.10 AND ASME B16.34
2. SOLDER-JOINT CONNECTIONS: ASME B16.18
3. BUILDING SERVICES PIPING VALVES: ASME B31.9

G. VALVE MATERIALS FOR POTABLE WATER: NSF 61 AND NSF 372

H. BRONZE VALVES:

1. FABRICATE FROM DEZINCIFICATION-RESISTANT MATERIAL.
2. COPPER ALLOYS CONTAINING MORE THAN 15 PERCENT ZINC ARE NOT PERMITTED.

I. VALVE BYPASS AND DRAIN CONNECTIONS: MSS SP-45

J. SOURCE LIMITATIONS: OBTAIN EACH VALVE TYPE FROM A SINGLE MANUFACTURER.

2.03 BRONZE, BALL VALVES

A. GENERAL:

1. FABRICATE FROM DEZINCIFICATION-RESISTANT MATERIAL.
2. COPPER ALLOYS CONTAINING MORE THAN 15 PERCENT ZINC ARE NOT PERMITTED.

B. ONE PIECE, REDUCED PORT WITH BRONZE TRIM:

1. COMPLY WITH MSS SP-110
2. WSP RATING: 400 PSI
3. CWP RATING: 600 PSI
4. BODY: BRONZE
5. END CONNECTIONS: PIPE PRESS
6. SEATS: PTFE

C. TWO PIECE, FULL PORT WITH STAINLESS STEEL TRIM:

1. COMPLY WITH MSS SP-110
2. WSP RATING: 150 PSI
3. WOG RATING: 600 PSI
4. BODY: FORGED BRONZE OR DEZINCIFIED-BRASS ALLOY
5. ENDS CONNECTIONS: PIPE THREAD OR SOLDER
6. SEATS: PTFE OR TFE
7. STEM: BRONZE, BLOWOUT PROOF
8. BALL: STAINLESS STEEL, VENTED
9. MANUFACTURERS:
   a. NIBCO
   b. STOCKHAM
   c. APOLLO
   d. JOMAR

D. THREE PIECE, FULL PORT WITH STAINLESS STEEL TRIM:

1. COMPLY WITH MSS SP-110
2. WSP RATING: 150 PSI
3. CWP RATING: 600 PSI
4. BODY: BRONZE
5. END CONNECTIONS: PIPE THREAD OR PRESS
6. SEATS: PTFE OR TFE
7. STEM: STAINLESS STEEL
8. BALL: STAINLESS STEEL, VENTED
9. MANUFACTURERS:
   a. NIBCO
   b. STOCKHAM
   c. APOLLO
   d. JOMAR

PART 3 - EXECUTION

3.01 EXAMINATION

A. DISCARD ALL PACKING MATERIALS AND VERIFY THAT VALVE INTERIOR, INCLUDING THREADS AND FLANGES IS COMPLETELY CLEAN WITHOUT SIGNS OF DAMAGE OR DEGRADATION THAT COULD RESULT IN LEAKAGE.

B. VERIFY VALVE PARTS TO BE FULLY OPERATIONAL IN ALL POSITIONS FROM CLOSED TO FULLY OPEN.

C. CONFIRM GASKET MATERIAL TO BE SUITABLE FOR THE SERVICE, TO BE OF CORRECT SIZE, AND WITHOUT DEFECTS THAT COULD COMPROMISE EFFECTIVENESS.

D. SHOULD VALVE BE DETERMINED TO BE DEFECTIVE, REPLACE WITH NEW VALVE.

3.02 INSTALLATION

A. PROVIDE UNIONS OR FLANGES WITH VALVES TO FACILITATE EQUIPMENT REMOVAL AND MAINTENANCE WHILE MAINTAINING SYSTEM OPERATION AND FULL ACCESSIBILITY FOR SERVICING.

B. PROVIDE SEPARATE VALVE SUPPORT AS REQUIRED AND LOCATE VALVE WITH STEM AT OR ABOVE CENTER OF PIPING, MAINTAINING UNIMPEDED STEM MOVEMENT.

END OF SECTION 22 05 23

SECTION 22 05 53 IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. NAMEPLATES

B. TAGS

C. STENCILS

D. PIPE MARKERS

1.02 RELATED REQUIREMENTS

A. SECTION 09 91 23 - INTERIOR PAINTING: IDENTIFICATION PAINTING

1.03 REFERENCE STANDARDS

A. ASME A13.1 - SCHEME FOR THE IDENTIFICATION OF PIPING SYSTEMS; 2015

1.04 SUBMITTALS

A. SEE SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS FOR SUBMITTAL PROCEDURES

B. LIST: SUBMIT LIST OF WORDING, SYMBOLS, LETTER SIZE, AND COLOR CODING FOR MECHANICAL IDENTIFICATION.

C. OPERATION AND MAINTENANCE DATA:

1. VALVE DIAGRAM: PROVIDE AN UNLAMINATED COPY OF THE VALVE DIAGRAM.
2. VALVE TAG SCHEDULE: PROVIDE AN UNLAMINATED COPY OF THE VALVE TAG SCHEDULE.
3. CONCEALED ITEMS LEGEND: PROVIDE A COLOR LEGEND LISTING THE COLORS USED TO LABEL EQUIPMENT ABOVE THE CEILING.

D. PROJECT RECORD DOCUMENTS: RECORD ACTUAL LOCATIONS OF TAGGED VALVES.

PART 2 - PRODUCTS

2.01 NAMEPLATES

A. MANUFACTURERS:

1. BRIMAR INDUSTRIES, INC
2. KOLBI PIPE MARKER CO
3. SETON IDENTIFICATION PRODUCTS

B. DESCRIPTION: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED LETTERS

1. LETTER COLOR: WHITE
2. LETTER HEIGHT: 1/4 INCH
3. BACKGROUND COLOR: BLACK
4. PLASTIC: CONFORM TO ASTM D709

2.02 TAGS

A. MANUFACTURERS:

1. ADVANCED GRAPHIC ENGRAVING
2. BRADY CORPORATION
3. BRIMAR INDUSTRIES, INC
4. KOLBI PIPE MARKER CO
5. SETON IDENTIFICATION PRODUCTS

B. PLASTIC TAGS: LAMINATED THREE-LAYER PLASTIC WITH ENGRAVED BLACK LETTERS ON LIGHT CONTRASTING BACKGROUND COLOR. TAG SIZE MINIMUM 1-1/2-INCH DIAMETER.

C. METAL TAGS: BRASS WITH STAMPED LETTERS; TAG SIZE MINIMUM 1-1/2-INCH DIAMETER WITH SMOOTH EDGES.

D. VALVE TAG CHART: TYPEWRITTEN LETTER SIZE LIST HARD LAMINATED.

2.03 STENCILS

A. MANUFACTURERS:

1. BRADY CORPORATION
2. KOLBI PIPE MARKER CO
3. SETON IDENTIFICATION PRODUCTS

B. STENCILS: WITH CLEAN CUT SYMBOLS AND LETTERS OF FOLLOWING SIZE:

C. STENCIL PAINT: AS SPECIFIED IN SECTION 09 91 23, SEMI-GLOSS ENAMEL, COLORS CONFORMING TO ASME A13.1.

2.04 PIPE MARKERS

A. MANUFACTURERS:

1. BRADY CORPORATION
2. BRIMAR INDUSTRIES, INC
3. KOLBI PIPE MARKER CO
4. SETON IDENTIFICATION PRODUCTS

B. COMPLY WITH ASME A13.1.

C. PLASTIC PIPE MARKERS: FACTORY FABRICATED, FLEXIBLE, SEMI- RIGID PLASTIC, PREFORMED TO FIT AROUND PIPE OR PIPE COVERING; MINIMUM INFORMATION INDICATING FLOW DIRECTION ARROW AND IDENTIFICATION OF FLUID BEING CONVEYED.

D. PLASTIC TAPE PIPE MARKERS: FLEXIBLE, VINYL FILM TAPE WITH PRESSURE SENSITIVE ADHESIVE BACKING AND PRINTED MARKINGS.

E. UNDERGROUND PLASTIC PIPE MARKERS: BRIGHT COLORED CONTINUOUSLY PRINTED PLASTIC RIBBON TAPE, MINIMUM 6 INCHES WIDE BY 4 MIL THICK, MANUFACTURED FOR DIRECT BURIAL SERVICE.

F. IDENTIFICATION SCHEME, ASME A13.1:

1. PRIMARY: EXTERNAL PIPE DIAMETER, UNINSULATED OR INSULATED
2. SECONDARY: COLOR SCHEME PER FLUID SERVICE
   a. WATER; POTABLE, COOLING, BOILER FEED, AND OTHER: WHITE TEXT ON GREEN BACKGROUND

G. COLOR CODE ASSIGNMENTS SHALL BE VERIFIED WITH THE OWNER PRIOR TO ORDERING. COLOR CODE AS FOLLOWS:

1. POTABLE DOMESTIC COLD, HOT, AND HOT RECIRCULATION WATER: GREEN WITH WHITE LETTERS
2. FIRE QUENCHING FLUIDS: RED WITH WHITE LETTERS
3. NON-POTABLE COLD, HOT, AND HOT RECIRCULATION WATER: ORANGE WITH BLACK LETTERS WITH ADDED WORDS STATING "CAUTION: NON-POTABLE, DO NOT DRINK"
4. ALTERNATE WATER SOURCES: PURPLE WITH BLACK LETTERS.
   a. GRAY WATER SYSTEMS SHALL BE MARKED WITH WORDS STATING "CAUTION: NON-POTABLE GRAY WATER, DO NOT DRINK" IN BLACK LETTERS.
   b. RECLAIMED (RECYCLED) WATER SYSTEMS SHALL BE MARKED WITH WORDS STATING "CAUTION: NON-POTABLE RECLAIMED (RECYCLED) WATER, DO NOT DRINK" IN BLACK LETTERS.
   c. ON-SITE TREATED WATER SYSTEMS SHALL BE MARKED WITH WORDS STATING "CAUTION: ON-SITE TREATED NON-POTABLE WATER, DO NOT DRINK" IN BLACK LETTERS.
5. FLAMMABLE FLUIDS: YELLOW WITH BLACK LETTERS
6. COMPRESSED AIR: BLUE WITH WHITE LETTERS

2.05 VALVE TAG SCHEDULES

A. PROVIDE A VALVE TAG SCHEDULE FOR EACH PIPING SYSTEM, TYPEWRITTEN, AND REPRODUCED ON 8-1/2" X 11" BOND PAPER, HARD LAMINATED. TABULATE VALVE NUMBER, PIPING SYSTEM, SYSTEM ABBREVIATION (AS SHOWN ON TAG), LOCATION OF VALVE (ROOM OR SPACE), AND VARIATIONS FOR IDENTIFICATION (IF ANY). MARK VALVES WHICH ARE INTENDED FOR EMERGENCY SHUT-OFF AND SIMILAR SPECIAL USES, BY SPECIAL "FLAGS", IN MARGIN OF SCHEDULE.

2.06 VALVE DIAGRAM

A. PROVIDE A VALVE DIAGRAM SHOWING THE LOCATION OF ALL VALVES RELATIVE TO THE FLOOR PLAN OF THE BUILDING. EACH VALVE DIAGRAM SHALL BE 11X17, HARD LAMINATED SHEETS. EACH PIPING SYSTEM SHALL BE IN A UNIQUE COLOR AND A LEGEND NOTING THE SYSTEM COLORS SHALL BE PLACED ON THE FIRST PAGE.

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
JEFFREY ROBERT HADWICK — STATE OF WASHINGTON — 13509 — REGISTERED PROFESSIONAL ENGINEER
06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
MECHANICAL SPECIFICATIONS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

M01-102

PART 3 - EXECUTION

3.01 PREPARATION

A. DEGREASE AND CLEAN SURFACES TO RECEIVE IDENTIFICATION PRODUCTS.

3.02 INSTALLATION

A. INSTALL FLEXIBLE NAMEPLATES WITH CORROSIVE-RESISTANT MECHANICAL FASTENERS, OR ADHESIVE. APPLY WITH SUFFICIENT ADHESIVE TO ENSURE PERMANENT ADHESION AND SEAL WITH CLEAR LACQUER.

B. INSTALL TAGS IN CLEAR VIEW AND ALIGN WITH AXIS OF PIPING.

C. INSTALL PLASTIC PIPE MARKERS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

D. INSTALL PLASTIC TAPE PIPE MARKER AROUND PIPE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

E. INSTALL UNDERGROUND PLASTIC PIPE MARKERS 6 TO 8 INCHES BELOW FINISHED GRADE, DIRECTLY ABOVE BURIED PIPE.

F. LOCATE CEILING TACKS TO LOCATE VALVES OR DAMPERS ABOVE LAY-IN PANEL CEILINGS. LOCATE IN CORNER OF PANEL CLOSEST TO EQUIPMENT.

3.03 PIPE MARKERS AND COLOR BANDS

A. LOCATE PIPE MARKERS AND COLOR BANDS AS FOLLOWS WHEREVER PIPING IS EXPOSED TO VIEW IN OCCUPIED SPACE, MACHINE ROOMS, ACCESSIBLE MAINTENANCE SPACES AND EXTERIOR NON-CONCEALED LOCATIONS OR IN ACCESSIBLE CEILING SPACES.

1. NEAR EACH VALVE AND CONTROL DEVICE
2. NEAR EACH BRANCH, EXCLUDING SHORT TAKE-OFFS FOR FIXTURES AND TERMINAL UNITS; MARK EACH PIPE AT BRANCH WHERE THERE COULD BE QUESTION OF FLOW PATTERN
3. NEAR LOCATIONS WHERE PIPES PASS THROUGH WALLS OR FLOOR/CEILINGS, OR ENTER NON-ACCESSIBLE ENCLOSURES
4. AT ACCESS DOORS, MANHOLES, AND SIMILAR ACCESS POINTS WHICH PERMIT VIEW OF CONCEALED PIPING
5. NEAR MAJOR EQUIPMENT ITEMS AND OTHER POINTS OF ORIGINATION AND TERMINATION

3.04 PLUMBING EQUIPMENT IDENTIFICATION

A. INSTALL ENGRAVED PLASTIC LAMINATE SIGN ON OR NEAR EACH MAJOR ITEM OF PLUMBING EQUIPMENT AND EACH OPERATION DEVICE. PROVIDE SIGNS FOR THE FOLLOWING GENERAL CATEGORIES OF EQUIPMENT AND OPERATIONAL DEVICES. PROVIDE SIGNS OR SUSPENDED CEILING TILE BELOW MECHANICAL EQUIPMENT LOCATED ABOVE CEILING.

1. PUMPS AND SIMILAR MOTOR-DRIVEN UNITS
2. TANKS AND PRESSURE VESSELS

3.05 NON-POTABLE DOMESTIC SYSTEMS

A. FURNISH AND INSTALL LABEL READING "CAUTION: NON-POTABLE WATER, DO NOT DRINK" AT EACH FIXTURE SERVED BY A NON-POTABLE SYSTEM.

3.06 CONCEALED ITEMS

A. ITEMS CONCEALED ABOVE ACCESSIBLE CEILINGS REQUIRING ACCESS, SHALL HAVE THE CEILING MARKED TO INDICATE SUCH ITEM'S LOCATION. THE MARKING SYSTEM SHALL CONSIST OF COLORED PHENOLIC PLATES WITH ½" TALL ENGRAVED LETTERING SPECIFYING THE ITEM CONCEALED; PLATE SHALL BE APPLIED TO CEILING T-BAR FRAMING WITH RIVETS OR OTHER OWNER APPROVED METHOD BELOW THE CONCEALED ITEM. COLORS USED SHALL BE VERIFIED WITH OWNER, AND UNLESS DIRECTED OTHERWISE, SHALL BE:

1. FIRE PROTECTION SYSTEM COMPONENTS: RED
2. DOMESTIC PLUMBING SYSTEM COMPONENTS: GREEN

3.07 VALVE TAG SCHEDULE

A. PROVIDE THE HARD LAMINATED VALVE TAG SCHEDULE IN THE MECHANICAL/JANITORS ROOM.

3.08 VALVE DIAGRAM

A. PROVIDE THE HARD LAMINATED VALVE DIAGRAM IN THE MECHANICAL/JANITORS ROOM.

END OF SECTION 22 05 53

SECTION 22 07 19 PLUMBING PIPING INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. CELLULAR GLASS INSULATION
B. FLEXIBLE ELASTOMERIC CELLULAR INSULATION
C. FLEXIBLE REMOVABLE AND REUSABLE BLANKET INSULATION
D. GLASS FIBER INSULATION
E. HYDROUS CALCIUM SILICATE INSULATION
F. JACKETING AND ACCESSORIES

1.02 RELATED REQUIREMENTS

A. SECTION 07 84 00 - FIRESTOPPING

1.03 REFERENCE STANDARDS

A. ASTM A666 - STANDARD SPECIFICATION FOR ANNEALED OR COLD-WORKED AUSTENITIC STAINLESS-STEEL SHEET, STRIP, PLATE, AND FLAT BAR; 2015
B. ASTM C177 - STANDARD TEST METHOD FOR STEADY-STATE HEAT FLUX MEASUREMENTS AND THERMAL TRANSMISSION PROPERTIES BY MEANS OF THE GUARDED-HOT-PLATE APPARATUS; 2013
C. ASTM C195 - STANDARD SPECIFICATION FOR MINERAL FIBER THERMAL INSULATING CEMENT; 2007 (REAPPROVED 2013)
D. ASTM C449 - STANDARD SPECIFICATION FOR MINERAL FIBER HYDRAULIC-SETTING THERMAL INSULATING AND FINISHING CEMENT; 2007 (REAPPROVED 2013)
E. ASTM C518 - STANDARD TEST METHOD FOR STEADY-STATE THERMAL TRANSMISSION PROPERTIES BY MEANS OF THE HEAT FLOW METER APPARATUS; 2017
F. ASTM C533 - STANDARD SPECIFICATION FOR CALCIUM SILICATE BLOCK AND PIPE THERMAL INSULATION; 2013
G. ASTM C534/C534M - STANDARD SPECIFICATION FOR PREFORMED FLEXIBLE ELASTOMERIC CELLULAR THERMAL INSULATION IN SHEET AND TUBULAR FORM; 2016
H. ASTM C547 - STANDARD SPECIFICATION FOR MINERAL FIBER PIPE INSULATION; 2017
I. ASTM C552 - STANDARD SPECIFICATION FOR CELLULAR GLASS THERMAL INSULATION; 2016A
J. ASTM C553 - STANDARD SPECIFICATION FOR MINERAL FIBER BLANKET THERMAL INSULATION FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS; 2013
K. ASTM C795 - STANDARD SPECIFICATION FOR THERMAL INSULATION FOR USE IN CONTACT WITH AUSTENITIC STAINLESS STEEL; 2008 (REAPPROVED 2013)
L. ASTM C1695 - STANDARD SPECIFICATION FOR FABRICATION OF FLEXIBLE REMOVABLE AND REUSABLE BLANKET INSULATION FOR HOT SERVICE; 2010 (REAPPROVED 2015)
M. ASTM E84 - STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS; 2017
N. ASTM E96/E96M - STANDARD TEST METHODS FOR WATER VAPOR TRANSMISSION OF MATERIALS; 2016
O. UL 723 - STANDARD FOR TEST FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS; CURRENT EDITION, INCLUDING ALL REVISIONS

1.04 SUBMITTALS

A. SEE SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS FOR SUBMITTAL PROCEDURES
B. PRODUCT DATA: PROVIDE PRODUCT DESCRIPTION, THERMAL CHARACTERISTICS, LIST OF MATERIALS AND THICKNESS FOR EACH SERVICE, AND LOCATIONS.

1.05 QUALITY ASSURANCE

A. APPLICATOR QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING THE TYPE OF WORK SPECIFIED IN THIS SECTION WITH MINIMUM 5 YEARS OF DOCUMENTED EXPERIENCE

1.06 DELIVERY, STORAGE, AND HANDLING

A. ACCEPT MATERIALS ON SITE, LABELED WITH MANUFACTURER'S IDENTIFICATION, PRODUCT DENSITY, AND THICKNESS.

1.07 FIELD CONDITIONS

A. MAINTAIN AMBIENT CONDITIONS REQUIRED BY MANUFACTURERS OF EACH PRODUCT.
B. MAINTAIN TEMPERATURE BEFORE, DURING, AND AFTER INSTALLATION FOR MINIMUM OF 24 HOURS.

PART 2 - PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. SURFACE BURNING CHARACTERISTICS: FLAME SPREAD INDEX/SMOKE DEVELOPED INDEX OF 25/50, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E84 OR UL 723

2.02 GLASS FIBER INSULATION

A. MANUFACTURERS:
1. CERTAINTEED CORPORATION
2. JOHNS MANVILLE CORPORATION
3. KNAUF INSULATION
4. OWENS CORNING CORPORATION; FIBERGLAS PIPE INSULATION ASJ
5. MANSON INSULATION

B. INSULATION: ASTM C547 AND ASTM C795; RIGID MOLDED, NONCOMBUSTIBLE
1. K VALUE: ASTM C177, 0.24 AT 75 DEGREES F
2. MAXIMUM SERVICE TEMPERATURE: 850 DEGREES F
3. MAXIMUM MOISTURE ABSORPTION: 0.2 PERCENT BY VOLUME
4. MAXIMUM FLAME/SMOKE SPREAD DEVELOPED: 25/50

C. VAPOR BARRIER JACKET: WHITE KRAFT PAPER WITH GLASS FIBER YARN, BONDED TO ALUMINIZED FILM; MOISTURE VAPOR TRANSMISSION WHEN TESTED IN ACCORDANCE WITH ASTM E96/E96M OF 0.02 PERM-INCHES
D. VAPOR BARRIER LAP ADHESIVE: COMPATIBLE WITH INSULATION
E. INSULATING CEMENT/MASTIC: ASTM C195; HYDRAULIC SETTING ON MINERAL WOOL
F. OUTDOOR VAPOR BARRIER MASTIC: VINYL EMULSION TYPE ACRYLIC OR MASTIC, COMPATIBLE WITH INSULATION, BLACK COLOR
G. OUTDOOR BREATHER MASTIC: VINYL EMULSION TYPE ACRYLIC OR MASTIC, COMPATIBLE WITH INSULATION, BLACK COLOR
H. INSULATING CEMENT: ASTM C449

2.03 FLEXIBLE REMOVABLE AND REUSABLE BLANKET INSULATION

A. INSULATION: ASTM C553 TYPE V; FLEXIBLE, NONCOMBUSTIBLE
1. COMPLY WITH ASTM C1695
2. K VALUE: 0.37 AT 100 DEGREES F, WHEN TESTED IN ACCORDANCE WITH ASTM C177 OR ASTM C518
3. MINIMUM SERVICE TEMPERATURE: 32 DEGREES F
4. MAXIMUM SERVICE TEMPERATURE: 500 DEGREES F
5. MAXIMUM WATER VAPOR ABSORPTION: LESS THAN 5.0 PERCENT BY WEIGHT

2.04 CELLULAR GLASS INSULATION

A. MANUFACTURERS:
1. PITTSBURGH CORNING CORPORATION

B. INSULATION: ASTM C552, TYPE II
1. K VALUE: 0.35 AT 100 DEGREES F
2. SERVICE TEMPERATURE RANGE: FROM 250 DEGREES F TO 800 DEGREES F
3. WATER VAPOR PERMEABILITY: 0.005 PERM INCH MAXIMUM PER INCH
4. WATER ABSORPTION: 0.5 PERCENT BY VOLUME, MAXIMUM

2.05 HYDROUS CALCIUM SILICATE INSULATION

A. MANUFACTURERS:
1. JOHNS MANVILLE CORPORATION

B. INSULATION: ASTM C533 AND ASTM C795; RIGID MOLDED, ASBESTOS FREE, GOLD COLOR
1. K VALUE: 0.40 AT 300 DEGREES F WHEN TESTED IN ACCORDANCE WITH ASTM C177 OR ASTM C518
2. MAXIMUM SERVICE TEMPERATURE: 1,200 DEGREES F
3. DENSITY: 15 PCF

C. TIE WIRE: 0.048-INCH STAINLESS STEEL WITH TWISTED ENDS ON MAXIMUM 12-INCH CENTERS
D. INSULATING CEMENT: ASTM C449

2.06 FLEXIBLE ELASTOMERIC CELLULAR INSULATION

A. MANUFACTURER:
1. AEROFLEX USA, INC
2. ARMACELL LLC; AP ARMAFLEX
3. K-FLEX USA LLC; INSUL-TUBE
4. DURKFLEX

B. INSULATION: PREFORMED FLEXIBLE ELASTOMERIC CELLULAR RUBBER INSULATION COMPLYING WITH ASTM C534/C534M GRADE 1; USE MOLDED TUBULAR MATERIAL WHEREVER POSSIBLE.
1. MINIMUM SERVICE TEMPERATURE: MINUS 40 DEGREES F
2. MAXIMUM SERVICE TEMPERATURE: 220 DEGREES F
3. CONNECTION: WATERPROOF VAPOR BARRIER ADHESIVE
4. K" VALUE: 0.25 BTU-IN PER HOUR PER SQUARE FOOT °F AT 75 DEGREES F
5. MAXIMUM FLAME/SMOKE SPREAD DEVELOPED: 25/50
6. MAXIMUM WATER VAPOR PERMEABILITY, WET CUP, PERM-IN 0.10
7. FIBER FREE, FORMALDEHYDE-FREE, AND LOW VOC'S
8. INSTALL WITH FITTING COVERS OR INSTALLERS SHALL HAVE TRAINING THROUGH ARMACELL QUALIFIED INSTALLER PROGRAM (AQIP) OR EQUIVALENT.
9. PROVIDE BLACK COLOR IN ALL CASES EXCEPT PROVIDE WHITE COLOR IF EXPOSED TO VIEW OR SPECIFICALLY CALLED OUT ON THE PLANS.

C. ELASTOMERIC FOAM ADHESIVE: AIR DRIED, CONTACT ADHESIVE, COMPATIBLE WITH INSULATION

2.07 JACKETING AND ACCESSORIES

A. PVC PLASTIC:
1. MANUFACTURERS:
a. JOHNS MANVILLE CORPORATION; ZESTON 2000
2. JACKET: ONE-PIECE MOLDED TYPE FITTING COVERS AND SHEET MATERIAL, GLOSS WHITE COLOR.
a. MINIMUM SERVICE TEMPERATURE: 0 DEGREES F
b. MAXIMUM SERVICE TEMPERATURE: 150 DEGREES F
c. MOISTURE VAPOR PERMEABILITY: 0.002 PERM INCH, MAXIMUM, WHEN TESTED IN ACCORDANCE WITH ASTM E96/E96M
d. THICKNESS: 10 MIL, 0.010 INCH
e. CONNECTIONS: PRESSURE SENSITIVE COLOR MATCHING VINYL TAPE

B. CANVAS JACKET: UL LISTED 6 OZ/SQ YD PLAIN WEAVE COTTON FABRIC TREATED WITH DILUTE FIRE-RETARDANT LAGGING ADHESIVE
1. LAGGING ADHESIVE: COMPATIBLE WITH INSULATION

C. ALUMINUM JACKET: ASTM B209 (ASTM B209M) FORMED ALUMINUM SHEET
1. THICKNESS: 0.016-INCH SHEET
2. FINISH: EMBOSSED
3. JOINING: LONGITUDINAL SLIP JOINTS AND 2-INCH LAPS
4. FITTINGS: 0.016-INCH-THICK DIE SHAPED FITTING COVERS WITH FACTORY ATTACHED PROTECTIVE LINER
5. METAL JACKET BANDS: 3/8 INCH WIDE; 0.015-INCH-THICK ALUMINUM

D. STAINLESS STEEL JACKET: ASTM A666, TYPE 304 STAINLESS STEEL
1. THICKNESS: 0.010 INCH
2. FINISH: SMOOTH
3. METAL JACKET BANDS: 3/8 INCH WIDE; 0.010-INCH-THICK STAINLESS STEEL

PART 3 - EXECUTION

3.01 EXAMINATION

A. VERIFY THAT PIPING HAS BEEN TESTED BEFORE APPLYING INSULATION MATERIALS.
B. VERIFY THAT SURFACES ARE CLEAN AND DRY, WITH FOREIGN MATERIAL REMOVED.

3.02 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. EXPOSED PIPING: LOCATE INSULATION AND COVER SEAMS IN LEAST VISIBLE LOCATIONS.
C. NEATLY FINISH INSULATION AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS.
D. INSULATED PIPES CONVEYING FLUIDS BELOW AMBIENT TEMPERATURE: INSULATE ENTIRE SYSTEM INCLUDING FITTINGS, VALVES, UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, PUMP BODIES, AND EXPANSION JOINTS.
E. GLASS FIBER INSULATED PIPES CONVEYING FLUIDS BELOW AMBIENT TEMPERATURE:
1. PROVIDE VAPOR BARRIER JACKETS, FACTORY-APPLIED OR FIELD-APPLIED. SECURE WITH SELF-SEALING LONGITUDINAL LAPS AND BUTT STRIPS WITH PRESSURE-SENSITIVE ADHESIVE. SECURE WITH OUTWARD CLINCH EXPANDING STAPLES AND VAPOR BARRIER MASTIC.
2. INSULATE FITTINGS, JOINTS, AND VALVES WITH MOLDED INSULATION OF LIKE MATERIAL AND THICKNESS AS ADJACENT PIPE. FINISH WITH GLASS CLOTH AND VAPOR BARRIER ADHESIVE OR PVC FITTING COVERS.
F. FOR HOT PIPING CONVEYING FLUIDS 140 DEGREES F OR LESS, DO NOT INSULATE FLANGES AND UNIONS AT EQUIPMENT, BUT BEVEL AND SEAL ENDS OF INSULATION.
G. GLASS FIBER INSULATED PIPES CONVEYING FLUIDS ABOVE AMBIENT TEMPERATURE:
1. PROVIDE STANDARD JACKETS, WITH OR WITHOUT VAPOR BARRIER, FACTORY-APPLIED OR FIELD-APPLIED. SECURE WITH SELF-SEALING LONGITUDINAL LAPS AND BUTT STRIPS WITH PRESSURE SENSITIVE ADHESIVE.
2. INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATION OF LIKE MATERIAL AND THICKNESS AS ADJOINING PIPE. FINISH WITH GLASS CLOTH AND ADHESIVE OR PVC FITTING COVERS.
H. INSULATED PIPE SUPPORTS AND SHIELDS:
1. INSTALL IN PLACE AT EACH HANGER AND SUPPORT AS REQUIRED BY SECTION 22 10 05 PLUMBING PIPING PRIOR TO INSULATING.
2. APPLICATION: PIPING 1-1/2 INCHES DIAMETER OR LARGER
3. SHIELDS: GALVANIZED STEEL OR PVC AS FOLLOWS:
a. 20 GAUGE (18 GAUGE FOR PIPE LARGER THAN 3 INCHES) GALVANIZED STEEL BETWEEN PIPE HANGERS OR PIPE HANGER ROLLS AND INSULATED PIPE SUPPORTS. SHIELD SHALL COVER A MINIMUM OF 40% OF THE INSULATION WHERE THE PIPE IS SUPPORTED FROM THE BOTTOM AND 100% OF THE INSULATION WHERE THE PIPE IS CLAMPED.
b. PVC SHIELD THE FULL DIAMETER OF THE PIPE INSULATION WITH 20-GAUGE GALVANIZED STEEL SHIELD RIVETED TO THE PVC.
c. UTILIZE THE ARMACELL INSULGUARD PIPE SHIELD SYSTEM.
4. INSULATED PIPE SUPPORTS LOCATION: BETWEEN SUPPORT SHIELD AND PIPING AND UNDER THE FINISH JACKET
5. INSULATED PIPE SUPPORT CONFIGURATION: MINIMUM 6 INCHES LONG, OF SAME THICKNESS AND CONTOUR AS ADJOINING INSULATION. PROVIDE 9 INCHES (230 MM) LONG INSULATED PIPE SUPPORT AND 18-GAUGE GALVANIZED STEEL SHIELD FOR PIPES LARGER THAN 3 INCHES.
6. INSERT MATERIAL: SEE SECTION 22 10 05 PLUMBING PIPING.
I. CONTINUE INSULATION THROUGH WALLS, SLEEVES, PIPE HANGERS, AND OTHER PIPE PENETRATIONS EXCEPT WHERE PROHIBITED BY CODE. FINISH AT SUPPORTS, PROTRUSIONS, AND INTERRUPTIONS. AT FIRE SEPARATIONS, REFER TO FIRE STOP SPECIFICATION SECTION 07 84 00.
J. PIPE EXPOSED IN MECHANICAL EQUIPMENT ROOMS OR FINISHED SPACES (LESS THAN 10 FEET ABOVE FINISHED FLOOR): FINISH WITH PVC JACKET AND FITTING COVERS.
K. EXPOSED WORK: FINISH WITH PVC JACKET AND FITTING COVERS APPLIED AFTER PIPE INSULATION IS INSTALLED. A PRE-CUT "HI-LO TEMP" INSULATION INSERT, CONFORMING TO THE UL 25/50 RATING, SHALL BE SNUGLY TUCKED AROUND THE FITTING MAKING SURE THE FITTING IS COVERED WITH THE FULL THICKNESS OF INSULATION.
1. ALL OTHERS PROVIDE COVERING IN PAD FORM, CONSTRUCTED AS FOLLOWS: USE 1-INCH-THICK OWENS-CORNING FIBERGLAS TIW GLASS WOOL, TYPE I, NON-OILED, FULLY ENCLOSED ON ALL SIDES AND EDGES WITHIN TIGHT-WEAVE CANVAS JACKET. ATTACH BERGEN HOOKS AROUND EDGES OF PAD. FIT PAD TO DEVICE WITH EDGES TIGHTLY BUTTED AND SECURE WITH COPPER WIRE LACED BETWEEN HOOKS. PROVIDE VAPOR SEAL WHERE VAPOR SEAL IS REQUIRED FOR ADJACENT INSULATION.
L. EXTERIOR APPLICATIONS: PROVIDE VAPOR BARRIER JACKET. INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATION OF LIKE MATERIAL AND THICKNESS AS ADJOINING PIPE, AND FINISH WITH GLASS MESH REINFORCED VAPOR BARRIER CEMENT. COVER WITH ALUMINUM JACKET WITH SEAMS LOCATED ON BOTTOM SIDE OF HORIZONTAL PIPING.
M. INSTALLATION OF BELOW GROUND DOMESTIC HOT WATER PIPING INSULATION: ALL PIPING SHALL BE INSULATED WITH CELLULAR GLASS WITH HEAT SEALED "PITTWRAP" OR PRE-INSULATED PIPE SYSTEM WITH TYPE K COPPER CARRIER (SEE SECTION 23 07 19 - HVAC PIPING INSULATION) WITH SCHEDULE 80 PVC OR HDPE JACKET.
N. GAUGE LINES: INSULATE TO THE GAUGE SHUTOFF VALVE.
O. HEAT TRACED PIPING: INSULATE FITTINGS, JOINTS, AND VALVES WITH INSULATION OF LIKE MATERIAL, THICKNESS, AND FINISH AS ADJOINING PIPE. SIZE LARGE ENOUGH TO ENCLOSE PIPE AND HEAT TRACER. COVER WITH ALUMINUM JACKET WITH SEAMS LOCATED ON BOTTOM SIDE OF HORIZONTAL PIPING.
P. ELASTOMERIC INSULATION INSTALLATION:
1. FOR PEX PIPING INSTALLATION, ELASTOMERIC INSULATION SHALL BE INSTALLED CONTINUOUS THROUGH STUD FRAMING AND ALL PENETRATION LOCATIONS THROUGH WALLS, FLOORS, AND CEILINGS.
2. ELASTOMERIC INSULATION WITH WALL THICKNESSES GREATER THAN 1" SHALL NOT BE INSTALLED IN AIR PLENUMS UNLESS SPECIFICALLY UL723 LISTED FOR USE IN A PLENUM.
3. ALL ELASTOMERIC FOAM AND SHEET SEAMS SHALL BE SEALED WITH ADHESIVE PER THE INSULATION MANUFACTURER'S RECOMMENDATIONS.
4. INSTALL ELASTOMERIC INSULATION ON ALL PEX DOMESTIC HOT WATER AND RECIRCULATION WATER PIPING.

3.03 PIPE HANGERS

A. DO NOT ALLOW PIPES TO COME IN CONTACT WITH HANGERS.

3.04 SCHEDULES

A. PLUMBING SYSTEMS:
1. DOMESTIC HOT WATER SUPPLY:
a. GLASS FIBER INSULATION:
i. FOR PIPE SIZE RANGE OF 1/2 TO 1-1/4 INCH, PROVIDE INSULATION THICKNESS OF: 1 INCH.
ii. FOR PIPE SIZE RANGE OF 1-1/2 INCH AND GREATER, PROVIDE INSULATION THICKNESS OF: 1-1/2 INCH.
b. FLEXIBLE ELASTOMERIC CELLULAR INSULATION (PEX ONLY): FOR ALL PIPE SIZES, PROVIDE INSULATION THICKNESS OF: 1 INCH.
2. RECIRCULATED DOMESTIC HOT WATER (SUPPLY AND RETURN):
a. GLASS FIBER INSULATION:
i. FOR PIPE SIZE RANGE OF 1/2 TO 1-1/4 INCH, PROVIDE INSULATION THICKNESS OF: 2 INCH.
ii. FOR PIPE SIZE RANGE OF 1-1/2 INCH AND GREATER, PROVIDE INSULATION THICKNESS OF: 2-1/2 INCH.
b. FLEXIBLE ELASTOMERIC CELLULAR INSULATION (PEX ONLY):
i. FOR PIPE SIZE RANGE OF 1/2 TO 1-1/4 INCH, PROVIDE INSULATION THICKNESS OF: 2 INCH.
ii. FOR PIPE SIZE RANGE OF 1-1/2 INCH AND GREATER, PROVIDE INSULATION THICKNESS OF: 2-1/2 INCH.
3. DOMESTIC COLD WATER:
a. GLASS FIBER: FOR ALL PIPE SIZES ON METAL PIPE, PROVIDE INSULATION THICKNESS OF: 1 INCH.
b. FLEXIBLE ELASTOMERIC CELLULAR INSULATION (PEX PIPE): NOT REQUIRED.

END OF SECTION 22 07 19

SECTION 22 10 05 PLUMBING PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. SANITARY WASTE PIPING, ABOVE GRADE
B. DOMESTIC WATER PIPING, ABOVE GRADE

1.02 RELATED REQUIREMENTS

A. SECTION 22 05 53 - IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

1.03 SUBMITTALS

A. PRODUCT DATA: PROVIDE DATA ON PIPE MATERIALS, PIPE FITTINGS, VALVES, AND ACCESSORIES. PROVIDE MANUFACTURERS CATALOG INFORMATION. INDICATE VALVE DATA AND RATINGS.
B. SHOP DRAWINGS: FOR NON-PENETRATING ROOFTOP SUPPORTS, SUBMIT DETAILED LAYOUT DEVELOPED FOR THIS PROJECT, WITH DESIGN CALCULATIONS FOR LOADINGS AND SPACINGS.
C. MAINTENANCE MATERIALS: FURNISH THE FOLLOWING FOR OWNER'S USE IN MAINTENANCE OF PROJECT.
1. SEE SECTION 01 60 00 - PRODUCT REQUIREMENTS FOR ADDITIONAL PROVISIONS.
D. OPERATION AND MAINTENANCE DATA:
1. DOMESTIC WATER STERILIZATION TEST
2. DOMESTIC WATER PRESSURE TESTS

1.04 QUALITY ASSURANCE

A. PERFORM WORK IN ACCORDANCE WITH APPLICABLE CODES.
B. VALVES: MANUFACTURER'S NAME AND PRESSURE RATING MARKED ON VALVE BODY.
C. IDENTIFY PIPE WITH MARKING INCLUDING SIZE, ASTM MATERIAL CLASSIFICATION, ASTM SPECIFICATION, POTABLE WATER CERTIFICATION, WATER PRESSURE RATING.
D. DOMESTIC WATER FITTINGS, JOINING MATERIALS, AND ALL OTHER APPURTENANCES IN CONTACT WITH POTABLE WATER SHALL BE LEAD-FREE EXCEPT THOSE SPECIFICALLY EXEMPTED IN SECTION 3874 OF THE SAFE WATER DRINKING ACT.
1. LEAD-FREE SHALL MEAN:
a. NOT CONTAINING MORE THAN 0.2% LEAD WHEN USED WITH RESPECT TO SOLDER AND FLUX; AND
b. NOT MORE THAN A WEIGHTED AVERAGE OF 0.25% WHEN USED WITH RESPECT TO THE VETTED SURFACES OF PIPES, PIPE FITTINGS, PLUMBING FITTINGS, AND FIXTURES

1.05 DELIVERY, STORAGE, AND HANDLING

A. PROVIDE TEMPORARY END CAPS AND CLOSURES ON PIPING AND FITTINGS. MAINTAIN IN PLACE UNTIL INSTALLATION.
B. PROTECT PIPING SYSTEMS FROM ENTRY OF FOREIGN MATERIALS BY TEMPORARY COVERS, COMPLETING SECTIONS OF THE WORK, AND ISOLATING PARTS OF COMPLETED SYSTEM.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. POTABLE WATER SUPPLY SYSTEMS: PROVIDE PIPING, PIPE FITTINGS, AND SOLDER AND FLUX (IF USED), THAT COMPLY WITH NSF 61 AND NSF 372 FOR MAXIMUM LEAD CONTENT; LABEL PIPE AND FITTINGS.
B. PLENUM-INSTALLED ACID WASTE PIPING: FLAME-SPREAD INDEX EQUAL OR BELOW 25 AND SMOKE-SPREAD INDEX EQUAL OR BELOW 50 ACCORDING TO ASTM E84 OR UL 723 TESTS.

2.02 SANITARY WASTE AND VENT PIPING, ABOVE GRADE

A. CAST IRON PIPE: CONFORM TO CISPI 301, HUBLESS PIPE AND FITTINGS.
1. MANUFACTURERS:
a. AB&I
b. CHARLOTTE
c. TYLER
B. JOINTS: CISPI 310, NEOPRENE GASKETS AND STAINLESS-STEEL CLAMP-AND-SHIELD ASSEMBLIES. COUPLINGS SHALL BE CONSTRUCTED OF 300 SERIES TYPE STAINLESS STEEL. THERE SHALL BE 2 BANDS FOR PIPE SIZES UP TO 4" AND A MINIMUM OF 4 BANDS FOR PIPE SIZES 5" AND LARGER. SEALING BANDS SHALL REQUIRE A MINIMUM OF 60-INCH LBS. TORQUE PER BAND. NEOPRENE GASKET SHALL MEET ASTM C 564.
1. MANUFACTURERS:
a. THERMAFIT REGULAR DUTY
b. TYLER STANDARD NO-HUB
c. CLAMP-ALL HI-TORQ 80
d. HUSKY 2000
e. ANACO
f. IDEAL POW'R GEAR
g. MIFAB MI-QHUB
C. FLASHING: LEAD FLASHING, 4 LBS. PER SQ. FT. OF SHEET LEAD FLASHING. FLASHING SKIRT RADIUS FROM THE INSERTED PIPE OF AT LEAST 8 INCHES OR 2-FOOT SQUARE.
1. MANUFACTURERS:
a. ELMDOR STONEMAN
D. VENT CAP: VANDAL RESISTANT. CAST IRON. MINIMUM OF 2 TO 1 OPEN AREA COMPARED TO THE CROSS-SECTIONAL AREA OF THE VENT PIPE
1. MANUFACTURERS:
a. ELMDOR STONEMAN
E. PVC PIPE: ASTM D2665, SCHEDULE 40, DWV, SOLID CORE PIPE
1. FITTINGS: PVC
2. JOINTS: ASTM D2564
a. MECHANICAL JOINTS: MECHANICAL JOINTS ON DRAINAGE PIPE SHALL BE MADE WITH AN ELASTOMERIC SEAL CONFORMING TO ASTM C 1173, ASTM D 3212 OR CSA CAN/CSA-B602. MECHANICAL JOINTS SHALL NOT BE INSTALLED IN ABOVE-GROUND SYSTEMS, UNLESS OTHERWISE APPROVED. JOINTS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
b. SOLVENT CEMENTING: JOINT SURFACES SHALL BE CLEAN AND FREE FROM MOISTURE. A PURPLE PRIMER THAT CONFORMS TO ASTM F 656 SHALL BE APPLIED. SOLVENT CEMENT NOT PURPLE IN COLOR AND CONFORMING TO ASTM D 2564, CSA CAN/CSA-B137.3, CSA CAN/CSA-B181.2 OR CSA CAN/CSA-B182.1 SHALL BE APPLIED TO ALL JOINT SURFACES. THE JOINT SHALL BE MADE WHILE THE CEMENT IS WET AND SHALL BE IN ACCORDANCE WITH ASTM D 2855. SOLVENT-CEMENT JOINTS SHALL BE PERMITTED ABOVE OR BELOW GROUND.
c. THREADED JOINTS: THREADS SHALL CONFORM TO ASME B1.20.1. SCHEDULE 80 OR HEAVIER PIPE SHALL BE PERMITTED TO BE THREADED WITH DIES SPECIFICALLY DESIGNED FOR PLASTIC PIPE. APPROVED THREAD LUBRICANT OR TAPE SHALL BE APPLIED ON THE MALE THREADS ONLY.
3. MANUFACTURERS:
a. CHARLOTTE
b. MUELLER INDUSTRIES
c. CRESLINE

2.03 CHEMICAL RESISTANT WASTE PIPING

A. PP PIPE: POLYPROPYLENE, FLAME RETARDANT FOR ABOVE GROUND PIPE. MATERIAL SHALL CONFORM TO ASTM D4101. PIPE SHALL BE GROOVED FOR MECHANICAL JOINT SYSTEMS AND PLAIN END FOR SOCKET FUSION SYSTEMS.
1. FITTINGS: SCHEDULE 40 POLYPROPYLENE.
2. JOINTS:
a. MECHANICAL JOINTS: PIPE AND FITTINGS SHALL BE JOINED BY THE USE OF MECHANICAL JOINT HAVING A CORROSION RESISTANCE EQUAL TO THE PIPE AND FITTINGS. THE MECHANICAL JOINT SYSTEM SHALL INCORPORATE A CUT GROOVE FOR AXIAL RESTRAINT.
b. FUSION JOINTS: ALL JOINTS TO BE MADE BY MANUFACTURER'S RECOMMENDED HEAT TOOL TO PRODUCE HERMETICALLY SEALED JOINT WHICH ENCOMPASSES HEAT JOINING OF PIPE AND FITTING STANDARDS AND PRACTICES TO MEET ASTM D2657.
3. MANUFACTURERS OF COMPLETE SYSTEM:
a. ENFIELD
b. FUSEAL II
c. ORION
d. ZURN

2.04 DOMESTIC WATER PIPING, ABOVE GRADE

A. COPPER TUBE: ASTM B88 (ASTM B88M), TYPE L (B), HARD DRAWN
1. FITTINGS: ASME B16.18, CAST COPPER ALLOY OR ASME B16.22, WROUGHT COPPER AND BRONZE
2. JOINTS: ASTM B32, ALLOY SN95 SOLDER, LEAD FREE CONFORMING TO UPC STANDARDS FOR SOLDER AND ALL LOCAL CODE REQUIREMENTS.
a. MANUFACTURERS:
i. CANFIELD
ii. J.W. HARRIS
iii. AQUA-CLEAN
3. MECHANICAL PRESS SEALED FITTINGS: DOUBLE PRESSED TYPE, NSF 61 AND NSF 372 APPROVED OR CERTIFIED, UTILIZING EPDM, NONTOXIC SYNTHETIC RUBBER SEALING ELEMENTS.
a. MANUFACTURERS:
i. GRINNELL PRODUCTS, A TYCO BUSINESS
ii. VIEGA LLC
iii. NIBCO
4. MECHANICAL COUPLINGS ON PIPE 2.5" AND LARGER: NSF 61
a. MANUFACTURERS:
i. VICTAULIC
ii. GRUVLOK

B. CROSS-LINKED POLYETHYLENE (PEX) PIPE: ASTM F876 OR ASTM F877. PIPE SHALL BE NSF 61 AND NSF 14 CERTIFIED.
1. MANUFACTURERS:
a. UPONOR, INC
b. VIEGA LLC
c. ZURN INDUSTRIES, LLC
d. WATTS
e. REHAU
f. MR. PEX
g. HEAT LINK

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2. PPI TR-4 PRESSURE DESIGN BASIS:
   a. 100 PSIG AT MAXIMUM 180 DEGREES F
3. FITTINGS: BRASS AND ENGINEERED POLYMER (EP) ASTM F1960
4. JOINTS: MECHANICAL COMPRESSION FITTINGS
5. JOINTS: ASTM F1960 COLD-EXPANSION FITTINGS

C. STAINLESS STEEL PIPE: ASTM A269/A269M, GRADE TP304 ALLOY WELDED AND SEAMLESS
1. MECHANICAL PRESS SEALED FITTINGS DOUBLE PRESSED TYPE, NSF 61 AND NSF 372 APPROVED OR CERTIFIED, UTILIZING EPDM, NON-TOXIC SYNTHETIC RUBBER SEALING ELEMENTS.
   a. MANUFACTURERS:
   i. GRINNELL PRODUCTS, A TYCO BUSINESS
   ii. VIEGA LLC
   iii. VICTAULIC
   iv. NIBCO
2. MECHANICAL COUPLINGS ON PIPE 2.5" AND LARGER: NSF 61
   a. MANUFACTURERS:
   i. VICTAULIC
   ii. GRUVLOK

2.05 FLANGES, UNIONS, AND COUPLINGS

A. UNIONS FOR PIPE SIZES 3 INCHES AND UNDER:
1. FERROUS PIPE: CLASS 150 MALLEABLE IRON THREADED UNIONS
2. COPPER TUBE AND PIPE: CLASS 150 BRONZE UNIONS WITH SOLDERED JOINTS

B. FLANGES FOR PIPE SIZE OVER 1 INCH:
1. FERROUS PIPE: CLASS 150 MALLEABLE IRON THREADED OR FORGED STEEL SLIP-ON FLANGES; PREFORMED NEOPRENE GASKETS
2. COPPER TUBE AND PIPE: CLASS 150 SLIP-ON BRONZE FLANGES; PREFORMED NEOPRENE GASKETS

C. MECHANICAL COUPLINGS FOR GROOVED AND SHOULDERED JOINTS: TWO OR MORE CURVED HOUSING SEGMENTS WITH CONTINUOUS KEY TO ENGAGE PIPE GROOVE, CIRCULAR C-PROFILE GASKET, AND BOLTS TO SECURE AND COMPRESS GASKET.
1. DIMENSIONS AND TESTING: IN ACCORDANCE WITH AWWA C606
2. HOUSING MATERIAL: PROVIDE ASTM A47/A47M MALLEABLE IRON OR DUCTILE IRON, GALVANIZED.
3. GASKET MATERIAL: NITRILE RUBBER SUITABLE FOR OPERATING TEMPERATURE RANGE FROM MINUS 20 DEGREES F TO 180 DEGREES F.
4. BOLTS AND NUTS: HOT DIPPED GALVANIZED OR ZINC-ELECTROPLATED STEEL.
5. WHEN PIPE IS FIELD GROOVED, PROVIDE COUPLING MANUFACTURER'S GROOVING TOOLS.
6. MANUFACTURERS:
   a. GRINNELL PRODUCTS, A TYCO BUSINESS
   b. VICTAULIC
   c. GRUVLOK

D. DIELECTRIC CONNECTIONS: UNION WITH GALVANIZED OR PLATED STEEL THREADED END, COPPER SOLDER END, WATER IMPERVIOUS ISOLATION BARRIER

2.06 PIPE HANGERS AND SUPPORTS

A. PROVIDE HANGERS AND SUPPORTS THAT COMPLY WITH MSS SP-58.
1. IF TYPE OF HANGER OR SUPPORT FOR A PARTICULAR SITUATION IS NOT INDICATED, SELECT APPROPRIATE TYPE USING MSS SP-58 RECOMMENDATIONS.
2. HANGER RODS: THREADED HOT ROLLED STEEL, ELECTRO-GALVANIZED OR CADMIUM PLATED. HANGER RODS SHALL BE SIZED SO THAT THE TOTAL LOAD (INCLUDING PIPE OR DUCT, INSULATION, HANGERS, AND FLUID) DOES NOT EXCEED THE FOLLOWING:
   a. 610 POUNDS FOR 3/8" DIAMETER RODS
   b. 1130 POUNDS FOR 1/2" DIAMETER RODS
3. OVERHEAD SUPPORTS: INDIVIDUAL STEEL ROD HANGERS ATTACHED TO STRUCTURE OR TO TRAPEZE HANGERS.
   a. COLD AND HOT PIPE SIZES 6 INCH AND LARGER: DOUBLE HANGERS.
4. TRAPEZE HANGERS: WELDED STEEL CHANNEL FRAMES ATTACHED TO STRUCTURE
5. VERTICAL PIPE SUPPORT: STEEL RISER CLAMP, EPOXY COATED
6. STEEL: PROVIDE STRUCTURAL STEEL PER ASTM A36/A36M.
7. WOOD: SHALL BE FIRE TREATED
8. ROOFTOP SUPPORTS FOR LOW-SLOPE ROOFS: STEEL PEDESTALS WITH BASES THAT REST ON TOP OF ROOFING MEMBRANE, NOT REQUIRING ANY ATTACHMENT TO THE ROOF STRUCTURE AND NOT PENETRATING THE ROOFING ASSEMBLY, WITH SUPPORT FIXTURES AS SPECIFIED; AND AS FOLLOWS:
   a. BASES: HIGH-DENSITY POLYPROPYLENE
   b. BASE SIZES: AS REQUIRED TO DISTRIBUTE LOAD SUFFICIENTLY TO PREVENT INDENTATION OF ROOFING ASSEMBLY
   c. STEEL COMPONENTS: STAINLESS STEEL OR CARBON STEEL HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123/A123M
   d. ATTACHMENT/SUPPORT FIXTURES: AS RECOMMENDED BY MANUFACTURER, SAME TYPE AS INDICATED FOR EQUIVALENT INDOOR HANGERS AND SUPPORTS; CORROSION-RESISTANT MATERIAL
   e. HEIGHT: PROVIDE MINIMUM CLEARANCE OF 6 INCHES UNDER PIPE TO TOP OF ROOFING.
   f. MANUFACTURERS:
   i. PDH
   ii. ELCEN
   iii. GRINNEL
   iv. B-LINE
   v. MIRO INDUSTRIES, INC
   vi. UNISTRUT
   vii. CADDY
   viii. TOLCO

B. PLUMBING PIPING - DRAIN, WASTE, AND VENT:
1. HANGERS FOR PIPE SIZES 1/2 INCH TO 1-1/2 INCHES: MALLEABLE IRON, ADJUSTABLE SWIVEL, SPLIT RING
2. HANGERS FOR PIPE SIZES 2 INCHES AND OVER: CARBON STEEL, ADJUSTABLE, CLEVIS
3. WALL SUPPORT FOR PIPE SIZES TO 3 INCHES: CAST IRON HOOK
4. WALL SUPPORT FOR PIPE SIZES 4 INCHES AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP
5. COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPPER PLATED

C. PLUMBING PIPING - WATER:
1. HANGERS FOR PIPE SIZES 1/2 INCH TO 1-1/2 INCHES: MALLEABLE IRON, ADJUSTABLE SWIVEL, SPLIT RING
2. HANGERS FOR COLD PIPE SIZES 2 INCHES AND OVER: CARBON STEEL, ADJUSTABLE, CLEVIS
3. HANGERS FOR HOT PIPE SIZES 2 INCHES TO 4 INCHES: CARBON STEEL, ADJUSTABLE, CLEVIS
4. HANGERS FOR HOT PIPE SIZES 6 INCHES AND OVER: ADJUSTABLE STEEL YOKE, CAST IRON PIPE ROLL, DOUBLE HANGER
5. WALL SUPPORT FOR PIPE SIZES TO 3 INCHES: CAST IRON HOOK
6. WALL SUPPORT FOR PIPE SIZES 4 INCHES AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP
7. WALL SUPPORT FOR HOT PIPE SIZES 6 INCHES AND OVER: WELDED STEEL BRACKET AND WROUGHT STEEL CLAMP WITH ADJUSTABLE STEEL YOKE AND CAST-IRON PIPE ROLL
8. COPPER PIPE SUPPORT: CARBON STEEL RING, ADJUSTABLE, COPPER PLATED

D. HANGER FASTENERS: ATTACH HANGERS TO STRUCTURE USING APPROPRIATE FASTENERS, AS FOLLOWS:
1. CONCRETE WEDGE EXPANSION ANCHORS: COMPLYING WITH ICC-ES AC193
2. MASONRY WEDGE EXPANSION ANCHORS: COMPLYING WITH ICC-ES AC01
3. CONCRETE SCREW TYPE ANCHORS: COMPLYING WITH ICC-ES AC193
4. MASONRY SCREW TYPE ANCHORS: COMPLYING WITH ICC-ES AC106
5. CONCRETE ADHESIVE TYPE ANCHORS: COMPLYING WITH ICC-ES AC308
6. OTHER TYPES: AS REQUIRED
7. MANUFACTURERS:
   a. POWERS FASTENERS, INC
   b. RAWPLUG
   c. PHILLIPS
   d. HILTI
   e. CADDY

E. INSULATED PIPE INSERTS AND INSULATION SHIELDS:
1. INSULATED PIPE INSERT SHALL HAVE NO MORE THAN 5% DEFORMATION AT 100 PSI AND A THERMAL CONDUCTIVITY NO MORE THAN 0.38 BTU/HR./SQ. FT./DEGREE F/1-INCH THICK AT 75°F.
2. INSULATED PIPE INSERT SHALL BE SAME THICKNESS AS ADJOINING PIPE INSULATION AND SIZED TO MATCH PIPE IN WHICH IT IS USED ON. SEE SECTION 22 07 19 FOR INSULATION SIZES.
3. WHERE ELASTOMERIC INSULATION IS BEING USED, PIPE INSERTS MAY BE OMITTED.
4. PROVIDE SHIELD PER SECTION 22 07 19 PLUMBING PIPING INSULATION.
5. MANUFACTURERS:
   a. TPS THERMAL PIPE SHIELDS
   b. B-LINE
   c. CLEMENT SUPPORT SERVICES
   d. SNAPPITZ

F. PEX PIPE HANGERS AND SUPPORTS:
1. PROVIDE CONTINUOUS STEEL CHANNEL PIPE SUPPORTS AT ALL HORIZONTAL PEX PIPE RUNS GREATER THAN 6'-0" IN LENGTH.
   a. STEEL CHANNEL PIPE SUPPORTS:
   i. 23-GAUGE, GALVANIZED STEEL CHANNEL WITH A COPPER TUBE SIZE CONTROLLED OUTSIDE DIAMETER
   ii. STEEL CHANNEL PIPE SUPPORTS SHALL BE AVAILABLE IN LENGTHS UP TO 9'-0" FOR PIPE SIZES ½" - 3 ½".
   iii. SECURE PIPE TO CHANNEL SUPPORT WITH STAINLESS STEEL STRAPS RATED FOR 300-POUND TENSILE STRENGTH.
2. MANUFACTURERS:
   a. UPONOR PEX-A PIPE, OR APPROVED EQUIVALENT
3. ALL HORIZONTAL PEX PIPE SHALL UTILIZE STEEL BRACKETS, CLEVIS, J-HANGERS, OR TRAPEZE STYLE HANGERS.

2.07 PIPE SLEEVE-SEAL SYSTEMS

A. MANUFACTURERS:
1. THE METRAFLEX COMPANY; METRASEAL
2. LINK SEAL

B. MODULAR/MECHANICAL SEAL:
1. ELASTOMER-BASED INTERLOCKING LINKS CONTINUOUSLY FILL ANNULAR SPACE BETWEEN PIPE AND WALL-SLEEVE, WALL OR CASING OPENING.
2. WATERTIGHT SEAL BETWEEN PIPE AND WALL-SLEEVE, WALL OR CASING OPENING.
3. SIZE AND SELECT SEAL COMPONENT MATERIALS IN ACCORDANCE TO SERVICE REQUIREMENTS.
4. GLASS REINFORCED PLASTIC PRESSURE END PLATES.

PART 3 - EXECUTION

3.01 EXAMINATION

A. VERIFY THAT EXCAVATIONS ARE TO REQUIRED GRADE, DRY, AND NOT OVER-EXCAVATED.

3.02 PREPARATION

A. REAM PIPE AND TUBE ENDS. REMOVE BURRS. BEVEL PLAIN END FERROUS PIPE.
B. REMOVE SCALE AND DIRT, ON INSIDE AND OUTSIDE, BEFORE ASSEMBLY.
C. PREPARE PIPING CONNECTIONS TO EQUIPMENT WITH FLANGES OR UNIONS.

3.03 GENERAL INSTALLATION

A. FURNISH AND INSTALL COMPLETE SYSTEM OF PIPING, VALVED AS INDICATED OR AS NECESSARY TO COMPLETELY CONTROL ENTIRE APPARATUS. PIPE DRAWINGS ARE DIAGRAMMATIC AND INDICATE GENERAL LOCATION AND CONNECTIONS. PIPING MAY HAVE TO BE OFFSET, LOWERED, OR RAISED AS REQUIRED OR DIRECTED AT SITE. THIS DOES NOT RELIEVE THIS DIVISION FROM RESPONSIBILITY FOR PROPER ERECTION OF SYSTEMS OF PIPING IN EVERY RESPECT. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. PROVIDE NON-CONDUCTING DIELECTRIC CONNECTIONS WHEREVER JOINTING DISSIMILAR METALS.
C. ROUTE PIPING IN ORDERLY MANNER AND MAINTAIN GRADIENT. ROUTE PARALLEL AND PERPENDICULAR TO WALLS.
D. CONSULT ALL DRAWINGS FOR LOCATION OF PIPE SPACES, DUCTS, ELECTRICAL EQUIPMENT, CEILING HEIGHTS, DOOR OPENINGS, WINDOW OPENINGS, AND OTHER DETAILS AND REPORT DISCREPANCIES OR POSSIBLE CONFLICTS TO ARCHITECT/ENGINEER BEFORE INSTALLING PIPE.
E. ALLOW SUFFICIENT CLEARANCES FOR INSTALLATION OF PIPE INSULATION IN THICKNESS SPECIFIED. IF INTERFERENCES OCCUR, REROUTE PIPING TO ACCOMMODATE INSULATION.
F. INSTALL PIPING TO MAINTAIN HEADROOM, CONSERVE SPACE, AND NOT INTERFERE WITH USE OF SPACE, REMOVAL OF OTHER EQUIPMENT, DUCTS, OR DEVICES, OR BLOCK ACCESS TO DOORS, WINDOWS, OR ACCESS OPENINGS.
G. GROUP PIPING WHENEVER PRACTICAL AT COMMON ELEVATIONS.
H. INSTALL PIPING TO ALLOW FOR EXPANSION AND CONTRACTION WITHOUT STRESSING PIPE, JOINTS, OR CONNECTED EQUIPMENT.
I. PROVIDE CLEARANCE IN HANGERS AND FROM STRUCTURE AND OTHER EQUIPMENT FOR INSTALLATION OF INSULATION AND ACCESS TO VALVES AND FITTINGS.
J. PROVIDE ACCESS WHERE VALVES AND FITTINGS ARE NOT EXPOSED.
K. WHERE PIPE SUPPORT MEMBERS ARE WELDED TO STRUCTURAL BUILDING FRAMING, SCRAPE, BRUSH CLEAN, AND APPLY ONE COAT OF ZINC RICH PRIMER TO WELDING.
L. PROVIDE SUPPORT FOR UTILITY METERS IN ACCORDANCE WITH REQUIREMENTS OF UTILITY COMPANIES.
M. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL, NOT INVERTED. REFER TO SECTION 22 05 23.
N. INSTALL WATER PIPING TO ASME B31.9.
O. SLEEVE PIPES PASSING THROUGH PARTITIONS, WALLS AND FLOORS.
P. DO NOT USE REDUCING BUSHINGS, STREET ELBOWS, OR CLOSE NIPPLES.
Q. T-DRILL PROCEDURE FOR CONNECTING PIPES WILL NOT BE ALLOWED.
R. ALL PIPING IN FINISHED AREAS SHALL BE INSTALLED CONCEALED UNLESS SPECIFICALLY NOTED OTHERWISE.
S. PROVIDE ESCUTCHEONS WHERE PIPE PASSES THROUGH WALLS, FLOORS, OR CEILINGS.
T. INSTALL ALL EXPOSED PIPING PARALLEL TO THE CLOSEST WALL AND IN A NEAT, WORKMANLIKE MANNER.
U. STRAINERS: INSTALL STRAINERS AS INDICATED. PROVIDE PLUGGED GATE OR BALL VALVE IN BLOW-OFF CONNECTION ON STRAINERS, VALVE SHALL BE SAME SIZE AS BLOW-OFF TAPPING. FINAL BLOW-OFF SHALL HAVE A HOSE CONNECTION FITTING.
V. COPPER PIPE AND TUBE: MAKE SOLDERED JOINTS IN ACCORDANCE WITH ASTM B828, USING SPECIFIED SOLDER, AND FLUX MEETING ASTM B813; IN POTABLE WATER SYSTEMS USE FLUX ALSO COMPLYING WITH NSF 61 AND NSF 372.
W. PVC PIPE: MAKE SOLVENT-WELDED JOINTS IN ACCORDANCE WITH ASTM D2855.
X. INSERTS:
1. PROVIDE INSERTS FOR PLACEMENT IN CONCRETE FORMWORK.
2. PROVIDE INSERTS FOR SUSPENDING HANGERS FROM REINFORCED CONCRETE SLABS AND SIDES OF REINFORCED CONCRETE BEAMS.
3. PROVIDE HOOKED ROD TO CONCRETE REINFORCEMENT SECTION FOR INSERTS CARRYING PIPE OVER 4 INCHES.
4. WHERE CONCRETE SLABS FORM FINISHED CEILING, LOCATE INSERTS FLUSH WITH SLAB SURFACE.
Y. PIPE HANGERS AND SUPPORTS:
1. INSTALL IN ACCORDANCE WITH ASME B31.9.
2. SUPPORT HORIZONTAL PIPING AS INDICATED.
3. INSTALL HANGERS TO PROVIDE MINIMUM 1/2-INCH SPACE BETWEEN FINISHED COVERING AND ADJACENT WORK.
4. PLACE HANGERS WITHIN 12 INCHES OF EACH HORIZONTAL ELBOW.
5. USE HANGERS WITH 1-1/2-INCH MINIMUM VERTICAL ADJUSTMENT. DESIGN HANGERS FOR PIPE MOVEMENT WITHOUT DISENGAGEMENT OF SUPPORTED PIPE.
6. SUPPORT VERTICAL PIPING AT EVERY OTHER FLOOR. SUPPORT RISER PIPING INDEPENDENTLY OF CONNECTED HORIZONTAL PIPING.
7. WHERE SEVERAL PIPES CAN BE INSTALLED IN PARALLEL AND AT SAME ELEVATION, PROVIDE MULTIPLE OR TRAPEZE HANGERS.
8. PROVIDE COPPER PLATED HANGERS AND SUPPORTS FOR COPPER PIPING.
9. PROVIDE HANGERS ADJACENT TO MOTOR-DRIVEN EQUIPMENT WITH VIBRATION ISOLATION; SEE SECTION 22 05 48.
10. SUPPORT CAST IRON DRAINAGE PIPING AT EVERY JOINT.
Z. MANUFACTURED SLEEVE-SEAL SYSTEMS:
1. INSTALL MANUFACTURED SLEEVE-SEAL SYSTEMS IN SLEEVES LOCATED IN GRADE SLABS AND EXTERIOR CONCRETE WALLS AT PIPING ENTRANCES INTO BUILDING.
2. PROVIDE SEALING ELEMENTS OF THE SIZE, QUANTITY, AND TYPE REQUIRED FOR THE PIPING AND SLEEVE INNER DIAMETER OR PENETRATION DIAMETER.
3. LOCATE PIPING IN CENTER OF SLEEVE OR PENETRATION.
4. INSTALL FIELD ASSEMBLED SLEEVE-SEAL SYSTEM COMPONENTS IN ANNULAR SPACE BETWEEN SLEEVE AND PIPING.
5. TIGHTEN BOLTING FOR A WATERTIGHT SEAL.
6. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

AA. WHEN INSTALLING MORE THAN ONE PIPING SYSTEM MATERIAL, ENSURE SYSTEM COMPONENTS ARE COMPATIBLE AND JOINED TO ENSURE THE INTEGRITY OF THE SYSTEM. PROVIDE NECESSARY JOINING FITTINGS. ENSURE FLANGES, UNION, AND COUPLINGS FOR SERVICING ARE CONSISTENTLY PROVIDED.

3.04 SOIL, WASTE, AND VENT DRAIN SYSTEMS

A. PLACE CLEANOUTS AS FOLLOWS:
1. WHERE SHOWN ON PLANS AND NEAR BOTTOM OF EACH STACK AND RISER.
2. AT EVERY 90 DEGREES CHANGE OF DIRECTION FOR HORIZONTAL LINES.
3. EVERY 100 FEET OF HORIZONTAL RUN.
4. EXTEND CLEANOUT TO ACCESSIBLE SURFACE. DO NOT PLACE CLEANOUTS IN CARPETED FLOORS. IN SUCH LOCATIONS, USE WALL TYPE CLEANOUTS.

B. VENT ENTIRE WASTE SYSTEM TO ATMOSPHERE. DISCHARGE VENT PIPE MINIMUM 14 INCHES ABOVE ROOF. JOIN LINES TOGETHER IN LEAST PRACTICABLE NUMBER BEFORE PROJECTING ABOVE ROOF. SET BACK VENT LINES SO THEY WILL NOT PIERCE ROOF NEAR EDGE OR VALLEY. INSTALL VENT PIPING PENETRATING ROOFED AREAS TO MAINTAIN INTEGRITY OF ROOF ASSEMBLY.
C. USE TORQUE WRENCH TO OBTAIN PROPER TENSION IN CINCH BANDS ON ABOVE GROUND HUBLESS CAST IRON PIPE. BUTT ENDS OF PIPE AGAINST CENTERING FLANGE OF COUPLING.
D. FLASH PIPES PASSING THROUGH ROOF (OR AS SHOWN ON THE PLAN) FITTED SNUGLY AROUND PIPES AND CAULK BETWEEN FLASHING AND PIPE WITH FLEXIBLE WATERPROOF COMPOUND. PROVIDE COUNTERFLASHING FITTING WITH VANDAL RESISTANT SCREWS. EXTEND LEAD UP AND TURN IN A MINIMUM OF 1" INTO THE PIPE. FLASHING BASE SHALL BE AT LEAST 24 INCHES SQUARE (OR 8-INCH RADIUS).
E. INSTALL AN EXPANSION JOINT IN EACH VERTICAL STRAIGHT RUN OF PVC OR POLYPROPYLENE SOIL, WASTE, VENT, AND DRAIN PIPE AT INTERVALS IN EXCESS OF 30 FEET. INSTALL AND ANCHOR PIPE PER EXPANSION JOINT MANUFACTURER'S INSTRUCTIONS. PROVIDE ACCESS PANEL AS REQUIRED FOR SERVICING THE EXPANSION JOINT.
F. INSTALL VERTICAL WASTE PIPE TO COMPLY WITH STANDARD INSTALLATION PRACTICES FOR SUDS CONTROL.
G. PROVIDE HUBLESS CAST IRON FOR THE FIRST 20 FEET DOWNSTREAM OF DRAINS LOCATED IN THE KITCHEN AND BOILER ROOM.
H. REDUCING SIZE OF PIPE IN THE DIRECTION OF FLOW IS PROHIBITED.
I. INSTALL DRAINAGE PIPING AT THE FOLLOWING MINIMUM SLOPES UNLESS OTHERWISE INDICATED:
1. BUILDING SOIL AND WASTE DRAIN: 2 PERCENT DOWNWARD IN THE DIRECTION OF FLOW UNLESS INDICATED OTHERWISE ON THE PLANS
J. FIELD QUALITY CONTROL:
1. TEST FORCE-MAIN PIPING ACCORDING TO PROCEDURES OF AUTHORITIES HAVING JURISDICTION OR, IN ABSENCE OF PUBLISHED PROCEDURES, AS FOLLOWS:
   a. LEAVE UNCOVERED AND UNCONCEALED NEW, ALTERED, EXTENDED, OR REPLACED FORCE-MAIN PIPING UNTIL IT HAS BEEN TESTED AND APPROVED. EXPOSE WORK THAT WAS COVERED OR CONCEALED BEFORE IT WAS TESTED.
   b. CAP AND SUBJECT PIPING TO STATIC-WATER PRESSURE OF 50 PSIG ABOVE OPERATING PRESSURE, WITHOUT EXCEEDING PRESSURE RATING OF PIPING SYSTEM MATERIALS. ISOLATE TEST SOURCE AND ALLOW TO STAND FOR FOUR HOURS. LEAKS AND LOSS IN TEST PRESSURE CONSTITUTE DEFECTS THAT MUST BE REPAIRED.
   c. REPAIR LEAKS AND DEFECTS WITH NEW MATERIALS AND RETEST PIPING, OR PORTION THEREOF, UNTIL SATISFACTORY RESULTS ARE OBTAINED.
   d. PREPARE REPORTS FOR TESTS AND REQUIRED CORRECTIVE ACTION.
K. PROTECT DRAINS DURING REMAINDER OF CONSTRUCTION PERIOD TO AVOID CLOGGING WITH DIRT AND DEBRIS AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

3.05 ACID WASTE SYSTEM

A. VENT ALL ACID RESISTANT SYSTEMS WITH ACID RESISTANT PIPING CONTINUOUS TO THROUGH ROOF VENT.
B. ALL INSTALLATION OF ACID WASTE SYSTEM SHALL BE PERFORMED PER MANUFACTURER'S RECOMMENDATIONS BY CONTRACTORS TRAINED AND CERTIFIED BY THE MANUFACTURER OF THE SUBMITTED BRAND.
C. ABOVE GROUND PIPE MAY HAVE MECHANICAL JOINTS OR FUSED JOINTS.

3.06 CROSS-LINKED POLYETHYLENE (PEX) PIPE

A. PROVIDE STAINLESS STEEL INSERTS AT COMPRESSION STOP VALVES.
B. ALL COUPLINGS, ELBOWS, TEES, REDUCING TEES, ADAPTERS, AND ANY OTHER CONNECTING DEVICES SHALL BE OF THE SAME MANUFACTURER AS THE PEX PIPING.
C. KINKED TUBING SHALL BE REFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION OR CUT OUT AND REPLACED.
D. 90-DEGREE DIRECTION TURNS AND WALL PENETRATIONS SHALL BE PROVIDED WITH A BEND SUPPORT OR ELBOW FITTING.
E. COPPER SWEATED AND THREADED CONNECTIONS ARE TO BE MADE PRIOR TO PEX CONNECTIONS.
F. TRANSITION PEX TO COPPER AT FIRE WALLS. PROVIDE FIRE STOP SEALANTS AT FIRE RATED WALLS.
G. PEX TUBING SHALL BE FULLY SEATED AGAINST SHOULDER OF FITTING.
H. HORIZONTAL PIPING SHALL BE SUPPORTED EVERY 32".
I. VERTICAL PIPING SHALL BE SUPPORTED EVERY 4'.
J. ALLOW 1/8" TO 3/16" OF SLACK PER FOOT OF RUN FOR EXPANSION AND CONTRACTION.
K. PEX TUBING SHALL BE INSTALLED TO ALLOW FOR EXPANSION AND CONTRACTION. DO NOT RIGIDLY ATTACH TO STRUCTURE.
L. PROVIDE SLEEVES WHERE PEX PIPING PASSES THROUGH MASONRY WALLS.
M. PROTECT TUBING FROM NAIL/SCREW DAMAGE WITH SUITABLE STEEL PLATE PROTECTORS.
N. THE MINIMUM BEND RADIUS OF PEX TUBING IS SIX TIMES ITS DIAMETER. SMALLER RADIUS TURNS SHALL BE PROVIDED WITH AN ELBOW.
O. PROVIDE INSULATORS WHERE PEX PIPING PASSES THROUGH METAL STUDS.
P. SUPPLY STOPS SHALL BE PROVIDED WITH A PIPE BRACKET SUPPORT FROM ADJACENT STRUCTURE, A PIPE CLAMP, TUBE TALON, AND A PLASTIC OR METAL BEND SUPPORT. (SIOUX CHIEF UNIVERSAL SLIDER BRACKET OR APPROVED EQUAL).
Q. INSULATION DOES NOT HAVE TO BE CONTINUOUS AT HANGING BRACKETS AND CLAMPS.
R. PLASTIC SPEED CLIPS MAY BE USED FOR CONNECTION TO STRUCTURE. SPEED CLIPS SHALL BE LISTED FOR USE ON PEX PIPING.

3.07 APPLICATION

A. INSTALL UNIONS DOWNSTREAM OF VALVES AND AT EQUIPMENT OR APPARATUS CONNECTIONS.
B. PROVIDE FLOW CONTROLS IN WATER RECIRCULATING SYSTEMS WHERE INDICATED.

3.08 TOLERANCES

A. DRAINAGE PIPING: ESTABLISH INVERT ELEVATIONS WITHIN 1/2 INCH VERTICALLY OF LOCATION INDICATED AND SLOPE TO DRAIN AT MINIMUM OF 1/4 INCH PER FOOT SLOPE.
B. WATER PIPING: SLOPE AT MINIMUM OF 1/32 INCH PER FOOT AND ARRANGE TO DRAIN AT LOW POINTS.

3.09 DOMESTIC WATER PIPING TESTS

A. TESTS: AS THE WORK PROGRESSES EACH SECTION OF THE WATER SYSTEM SHALL BE TESTED UNDER A 100PSI HYDROSTATIC TEST HELD FOR 2 HOURS WITHOUT REDUCTION OF PRESSURE (A PRESSURE FLUCTUATION OF +/- 1 PSI IS ACCEPTABLE). IF ANY LEAKS OCCUR OR PIPING OR VALVES ARE FOUND TO BE DEFECTIVE, SAME SHALL BE REMOVED AND NEW MATERIAL INSTALLED, AND THE TEST MADE ON THAT SECTION AGAIN UNTIL ALL MATERIAL IS FOUND TO BE SATISFACTORY. SUCH TEST SHALL BE MADE IN THE PRESENCE OF THE OWNER'S REPRESENTATIVE.
B. PROVIDE WRITTEN TEST DOCUMENTATION IN THE OPERATION AND MAINTENANCE MANUAL.

3.10 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. PRIOR TO STARTING WORK, VERIFY SYSTEM IS COMPLETE, FLUSHED, AND CLEAN.
B. ENSURE ACIDITY (PH) OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING ALKALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC).
C. INJECT DISINFECTANT, FREE CHLORINE IN LIQUID, POWDER, TABLET, OR GAS FORM THROUGHOUT SYSTEM TO OBTAIN 50 TO 80 MG/L RESIDUAL.
D. BLEED WATER FROM OUTLETS TO ENSURE DISTRIBUTION AND TEST FOR DISINFECTANT RESIDUAL AT MINIMUM 15 PERCENT OF OUTLETS.
E. MAINTAIN DISINFECTANT IN SYSTEM FOR 24 HOURS.
F. IF FINAL DISINFECTANT RESIDUAL TESTS LESS THAN 25 MG/L, REPEAT TREATMENT.
G. FLUSH DISINFECTANT FROM SYSTEM UNTIL RESIDUAL EQUAL TO THAT OF INCOMING WATER OR 1.0 MG/L.
H. TAKE SAMPLES NO SOONER THAN 24 HOURS AFTER FLUSHING, FROM 10 PERCENT OF OUTLETS AND FROM WATER ENTRY, AND ANALYZE IN ACCORDANCE WITH AWWA C651.
I. PROVIDE TEST RESULTS IN THE OPERATION AND MAINTENANCE MANUAL.

3.11 SERVICE CONNECTIONS

A. PROVIDE NEW SANITARY SEWER SERVICES. BEFORE COMMENCING WORK, CHECK INVERT ELEVATIONS REQUIRED FOR SEWER CONNECTIONS, CONFIRM INVERTS AND ENSURE THAT THESE CAN BE PROPERLY CONNECTED WITH SLOPE FOR DRAINAGE AND COVER TO AVOID FREEZING.
B. PROVIDE NEW WATER SERVICE COMPLETE WITH APPROVED REDUCED PRESSURE BACKFLOW PREVENTER AND WATER METER WITH BY-PASS VALVES, PRESSURE REDUCING VALVE, AND SAND STRAINER.
1. PROVIDE SLEEVE IN WALL FOR SERVICE MAIN AND SUPPORT AT WALL WITH REINFORCED CONCRETE BRIDGE. CAULK ENLARGED SLEEVE AND MAKE WATERTIGHT WITH PLIABLE MATERIAL. ANCHOR SERVICE MAIN INSIDE TO CONCRETE WALL.

3.12 SCHEDULES

A. PIPE HANGER SPACING:
1. METAL PIPING:
   a. PIPE SIZE: 1/2 INCH TO 1-1/4 INCH:
   i. MAXIMUM HANGER SPACING: 6.5 FT
   ii. HANGER ROD DIAMETER: 3/8 INCHES
   b. PIPE SIZE: 1-1/2 INCH TO 2 INCH:
   i. MAXIMUM HANGER SPACING: 10 FT
   ii. HANGER ROD DIAMETER: 3/8 INCH
   c. PIPE SIZE: 2-1/2 INCH TO 3 INCH:
   i. MAXIMUM HANGER SPACING: 10 FT
   ii. HANGER ROD DIAMETER: 1/2 INCH
   d. PIPE SIZE: 4 INCH TO 6 INCH:
   i. MAXIMUM HANGER SPACING: 10 FT
   ii. HANGER ROD DIAMETER: 5/8 INCH
   e. PIPE SIZE: 8 INCH TO 12 INCH:
   i. MAXIMUM HANGER SPACING: 14 FT
   ii. HANGER ROD DIAMETER: 7/8 INCH
   f. PIPE SIZE: 14 INCH AND OVER:
   i. MAXIMUM HANGER SPACING: 20 FT
   ii. HANGER ROD DIAMETER: 1 INCH
2. PLASTIC PIPING:
   a. ALL SIZES:
   i. MAXIMUM HANGER SPACING: 6 FT
   ii. HANGER ROD DIAMETER: 3/8 INCH

END OF SECTION 22 10 05

SECTION 22 10 06 PLUMBING PIPING SPECIALTIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. UNIONS
B. FLEXIBLE CONNECTORS
C. TRAP PRIMERS
D. CLEANOUTS
E. WATER HAMMER ARRESTORS
F. MIXING VALVES

1.02 REFERENCE STANDARDS

A. ASME A112.6.4 - ROOF, DECK, AND BALCONY DRAINS; 2008 (REAFFIRMED 2012)
B. ASSE 1011 - PERFORMANCE REQUIREMENTS FOR HOSE CONNECTION VACUUM BREAKERS; 2004, WITH ERRATA
C. ASSE 1012 - PERFORMANCE REQUIREMENTS FOR BACKFLOW PREVENTERS WITH AN INTERMEDIATE ATMOSPHERIC VENT; 2009
D. ASSE 1013 - PERFORMANCE REQUIREMENTS FOR REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTERS AND REDUCED PRESSURE PRINCIPLE FIRE PROTECTION BACKFLOW PREVENTERS; 2011
E. ASSE 1019 - PERFORMANCE REQUIREMENTS FOR WALL HYDRANT WITH BACKFLOW PROTECTION AND FREEZE RESISTANCE; 2011 (REAFFIRMED 2016)
F. NSF 61 - DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS; 2017
G. NSF 372 - DRINKING WATER SYSTEM COMPONENTS - LEAD CONTENT; 2016
H. PDI-WH 201 - WATER HAMMER ARRESTERS; 2010

1.03 SUBMITTALS

A. SEE SECTION 01 30 00 - ADMINISTRATIVE REQUIREMENTS FOR SUBMITTAL PROCEDURES
B. PRODUCT DATA: PROVIDE COMPONENT SIZES, ROUGH-IN REQUIREMENTS, SERVICE SIZES, AND FINISHES.
C. MANUFACTURER'S INSTRUCTIONS: INDICATE MANUFACTURER'S INSTALLATION INSTRUCTIONS. INDICATE ASSEMBLY AND SUPPORT REQUIREMENTS.
D. MAINTENANCE DATA: INCLUDE INSTALLATION INSTRUCTIONS, SPARE PARTS LISTS, EXPLODED ASSEMBLY VIEWS, ETC. FOR THE FOLLOWING:
1. TRAP PRIMERS
2. THERMOSTATIC MIXING VALVES
3. BACKFLOW PREVENTION DEVICES

1.04 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS: COMPANY SPECIALIZING IN MANUFACTURING THE PRODUCTS SPECIFIED IN THIS SECTION WITH NOT LESS THAN THREE YEARS DOCUMENTED EXPERIENCE.

1.05 DELIVERY, STORAGE, AND HANDLING

A. ACCEPT SPECIALTIES ON SITE IN ORIGINAL FACTORY PACKAGING. INSPECT FOR DAMAGE.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. SPECIALTIES IN POTABLE WATER SUPPLY SYSTEMS: PROVIDE PRODUCTS THAT COMPLY WITH NSF 61 AND NSF 372 FOR MAXIMUM LEAD CONTENT.

2.02 UNIONS

A. DIELECTRI

a. MANUFACTURERS:
i. JR SMITH
ii. SIOUX CHIEF MANUFACTURING
iii. MIFAB
iv. PRECISION PLUMBING PRODUCTS

2. AUTOMATIC TRAP PRIMERS (ELECTRONICALLY ACTIVATED): UP TO 30 TRAP PRIMERS MAY BE SERVED BY A SINGLE ELECTRONIC TRAP PRIMER ASSEMBLY. ELECTRONIC TRAP PRIMER ASSEMBLIES SHALL BE PROVIDED PREASSEMBLED WITH AN ATMOSPHERIC VACUUM BREAKER, PRESET 24-HOUR CLOCK, MANUAL OVERRIDE SWITCH/TEST BUTTON, CALIBRATED MANIFOLD PROVIDING EQUAL WATER DISTRIBUTION, AND A RECESSED WALL BOX WITH A LOCKING STAINLESS STEEL ACCESS PANEL. MC TO COORDINATE ELECTRICAL CONNECTIONS WITH EC.
a. MANUFACTURERS:
i. JR SMITH
ii. PRECISION PLUMBING PRODUCTS

3. TRAP PRIMER TAILPIECES: 17 GA CHROME PLATED. TO BE INSTALLED ON LAVATORIES AND HAND SINKS ONLY. ONE TRAP MAY BE SERVED BY A SINGLE TAILPIECE TRAP PRIMER. PROVIDE WITH STAINLESS STEEL BRAIDED PRIMER HOSE AND ESCUTCHEON.
a. MANUFACTURERS:
i. JR SMITH
ii. WATTS
iii. ZURN

2.05 CLEANOUTS

A. MANUFACTURERS:
1. JAY R. SMITH MANUFACTURING COMPANY
2. JOSAM COMPANY
3. MIFAB, INC: WWW.MIFAB.COM/#SLE
4. WATTS
5. ZURN INDUSTRIES, LLC

B. CLEANOUTS AT EXTERIOR SURFACED AREAS:
1. ROUND CAST NICKEL BRONZE ACCESS FRAME AND NON-SKID COVER.

C. CLEANOUTS AT INTERIOR FINISHED FLOOR AREAS:
1. LACQUERED CAST IRON BODY WITH ANCHOR FLANGE, REVERSIBLE CLAMPING COLLAR, THREADED TOP ASSEMBLY, AND ROUND GASKETED SCORED COVER IN SERVICE AREAS AND ROUND GASKETED DEPRESSED COVER TO ACCEPT FLOOR FINISH IN FINISHED FLOOR AREAS.

D. CLEANOUTS AT INTERIOR FINISHED WALL AREAS:
1. LINE TYPE WITH LACQUERED CAST IRON BODY AND ROUND EPOXY COATED GASKETED COVER, AND ROUND STAINLESS-STEEL ACCESS COVER SECURED WITH MACHINE SCREW.

2.06 WATER HAMMER ARRESTORS

A. MANUFACTURERS:
1. JAY R. SMITH MANUFACTURING COMPANY
2. SIOUX CHIEF; 650 SERIES
3. WATTS REGULATOR COMPANY, A PART OF WATTS WATER TECHNOLOGIES: WWW.WATTSREGULATOR.COM/#SLE
4. WADE; WP5-100
5. ZURN INDUSTRIES, LLC; 1250 XL

B. WATER HAMMER ARRESTORS:
1. PISTON-TYPE WITH SIZED IN ACCORDANCE WITH PDI-WH 201, SUFFICIENT VOLUME OF AIR TO DISSIPATE THE CALCULATED KINETIC ENERGY GENERATED IN THE PIPING SYSTEM
2. ARRESTORS SHALL BE EFFECTIVE WHEN INSTALLED AT ANY ANGLE.
3. PROVIDE ISOLATION VALVE FOR SERVICE.
4. MAXIMUM WORKING TEMPERATURE OF 250 DEGREES F
5. MAXIMUM WORKING PRESSURE 350 PSIG
6. PERFORMANCE PER ANSI/ASSE 1010-2004 STANDARD

2.07 MIXING VALVES

A. THERMOSTATIC MIXING VALVES:
1. MANUFACTURERS:
a. LEONARD VALVE COMPANY
b. BRADLEY
c. APOLLO CONBRACO
d. LAWLER
e. POWERS
f. ACORN
g. ARMSTRONG
2. RECIRCULATION STATION: RECIRCULATION STATION SHALL CONSIST OF THERMOSTATIC MIXING VALVE IN COMBINATION WITH PIPING ASSEMBLY, INLET/OUTLET SHUTOFF VALVES, PRESSURE/TEMPERATURE GAUGES, CIRCULATION PUMP (SEE PUMP SCHEDULE), CIRCUIT SETTER BALANCING VALVE, ETC. ALL COMPONENTS PRE-ASSEMBLED TO ENAMEL COATED STRUT AND TESTED BY MANUFACTURER.
3. THERMOSTATIC MIXING VALVES: THE THERMOSTATIC WATER MIXING VALVE (TMV) SHALL CONSIST OF A LIQUID-FILLED THERMAL MOTOR CONTROL MECHANISM WITH A POSITIVE SHUT-OFF OF HOT WATER WHEN COLD WATER SUPPLY IS LOST. THE TMV SHALL ALLOW A RESTRICTED COLD FLOW IN THE EVENT OF LOSS OR INTERRUPTION OF THE HOT WATER SUPPLY. ALL FLOW IS SHUT OFF IN THE EVENT OF THERMOSTAT FAILURE. THE TMV SHALL BE CONSTRUCTED OF BRONZE BODIES WITH CORROSION RESISTANT COMPONENTS AND SHALL BE EQUIPPED WITH INTEGRAL CHECKSTOPS, THERMOMETER, OUTLET TEMPERATURE GAUGE, AND REMOVABLE STRAINERS. THE TMV SHALL CONTROL THE TEMPERATURE TO WITHIN +/- 3 DEGREES FROM LOW FLOW TO THE MAXIMUM FLOW RATE SCHEDULED.
4. ELECTRONIC MIXING VALVES: THE MIXING VALVE SHALL CONSIST OF AN ELECTRONIC ACTUATED MIXING VALVE. SELF-BALANCING, DAILY SELF-CLEANING MAINTENANCE SWEEP FEATURE, HOLDS +/- 2°F TEMPERATURE ACCURACY, STANDARD SERVICEABLE INTEGRAL CHECK VALVES ON ALL MODELS. SELF-DIAGNOSTIC DIGITAL ELECTRONIC CONTROL BOX WITH LCD DISPLAY, PROGRAMMABLE TEMPERATURE SETPOINTS, SIMPLE SETUP/SIMPLE ERROR CODING AND UPON POWER FAILURE, HOLDS LAST SET TEMPERATURE TO AVOID THERMAL SHOCK. PROVIDE A 2-HOUR BATTERY BACKUP IF CALLED FOR ON THE EQUIPMENT SCHEDULE.
5. CABINET: 16-GAUGE, 0.0598 INCH PRIME-COATED STEEL, FOR RECESSED MOUNTING WITH KEYED LOCK.

B. THERMOSTATIC MIXING VALVES FOR EMERGENCY EYEWASHES, SHOWERS, AND COMBINATION EYEWASH/SHOWERS:
1. MANUFACTURERS:
a. BRADLEY
b. APOLLO CONBRACO
c. ACORN
2. THE MIXING VALVE SHALL BE MANUFACTURED SPECIFICALLY FOR EMERGENCY FIXTURE APPLICATIONS AND BE COMPLIANT WITH ANSI 358-1.
3. THE MIXING VALVE SHALL HAVE SOLID BIMETAL THERMOSTAT DIRECTLY LINKED TO VALVE PORTING TO CONTROL THE INTAKE OF HOT AND COLD WATER AND COMPENSATE FOR SUPPLY TEMPERATURE AND PRESSURE FLUCTUATIONS.
4. PROVIDE A LOCKING TYPE TEMPERATURE REGULATOR TO PREVENT ACCIDENTAL MOVEMENT, SET TEMPERATURE AT 80 DEGREES F.
5. THE MIXING VALVE SHALL CLOSE DOWN ON FAILURE OF COLD-WATER SUPPLY.
6. SHALL HAVE INTERNAL COLD-WATER BYPASS CAPABLE FULL FLOW UPON FAILURE OF HOT WATER SUPPLY.
7. PROVIDE OUTLET DIAL THERMOMETER, INTEGRAL WALL SUPPORT, UNION ANGLE CHECK STOPS ON INLETS, AND RECESSED OR SURFACE MOUNTED CABINET WITH LOCKING ACCESS PANEL.
8. MIXING VALVES FOR EYEWASHES SHALL BE CAPABLE OF 4 GPM, INCLUDING COLD WATER BYPASS. MIXING VALVES FOR SHOWERS AND COMBINATION EYEWASH SHOWERS SHALL BE CAPABLE OF 20 GPM, INCLUDING COLD WATER BYPASS.

PART 3 - EXECUTION

3.01 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. UNIONS: INSTALL UNIONS IN PIPE CONNECTIONS TO CONTROL VALVES, COILS, REGULATORS, REDUCERS, ALL EQUIPMENT, AND WHERE IT MAY BE NECESSARY TO DISCONNECT THE EQUIPMENT OR PIPING FOR REPAIRS OR MAINTENANCE; AND AS INDICATED.

C. INSTALL (1) PISTON TYPE WATER HAMMER ARRESTOR AT EACH QUICK ACTING VALVE FOR BRANCH SUPPLY LINES UP TO 20' IN LENGTH SERVING PLUMBING FIXTURE GROUPS. INSTALL WATER HAMMER ARRESTOR BETWEEN LAST TWO FIXTURES, FOR BRANCH SUPPLY LINES EXCEEDING 20' IN LENGTH, SERVING PLUMBING FIXTURE GROUPS. SIZE PER MANUFACTURERS INSTRUCTIONS.

D. THERMOSTATIC MIXING VALVES: INSTALL IN ACCORDANCE WITH INSTALLATION DETAIL AND THE MANUFACTURER'S RECOMMENDATIONS.

E. EXTEND CLEANOUTS TO FINISHED FLOOR OR WALL SURFACE. LUBRICATE THREADED CLEANOUT PLUGS WITH MIXTURE OF GRAPHITE AND LINSEED OIL. ENSURE CLEARANCE AT CLEANOUT FOR RODDING OF DRAINAGE SYSTEM.

F. ENCASE EXTERIOR CLEANOUTS IN CONCRETE FLUSH WITH GRADE.

G. INSTALL FLOOR CLEANOUTS AT ELEVATION TO ACCOMMODATE FINISHED FLOOR.

H. INSTALL APPROVED POTABLE WATER PROTECTION DEVICES ON PLUMBING LINES WHERE CONTAMINATION OF DOMESTIC WATER MAY OCCUR; ON BOILER FEED WATER LINES, JANITOR ROOMS, FIRE SPRINKLER SYSTEMS, PREMISE ISOLATION, IRRIGATION SYSTEMS, FLUSH VALVES, AND INTERIOR AND EXTERIOR HOSE BIBBS.

I. PIPE RELIEF FROM BACKFLOW PREVENTER TO NEAREST DRAIN.

J. INSTALL WATER HAMMER ARRESTORS COMPLETE WITH ACCESSIBLE ISOLATION VALVE ON HOT AND COLD-WATER SUPPLY PIPING TO FAST ACTING VALVES SUCH AS WATER CLOSET FLUSH VALVES, WASHER MACHINES, ETC.

K. INSTALL AN APPROVED TRAP PRIMER AT EACH FLOOR DRAIN, FUNNEL DRAIN, SHOWER DRAIN, JANITOR MOP SINK, AND FLOOR SINK.

L. FOR PLUMBING SYSTEMS WITHOUT FLUSH VALVES, PROVIDE ELECTRONICALLY ACTIVATED TRAP PRIMER OR TAILPIECE TRAP PRIMER.

END OF SECTION 22 10 06

SECTION 22 30 00 PLUMBING EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. ACID-EFFLUENT NEUTRALIZERS

1.02 RELATED REQUIREMENTS

A. SECTION 22 05 48 - VIBRATION AND SEISMIC CONTROLS FOR PLUMBING PIPING AND EQUIPMENT
B. SECTION 23 05 13 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT
C. SECTION 26 05 83 - WIRING CONNECTIONS: ELECTRICAL CHARACTERISTICS AND WIRING CONNECTIONS

1.03 REFERENCE STANDARDS

A. ABMA STD 9 - LOAD RATINGS AND FATIGUE LIFE FOR BALL BEARINGS; 2015
B. ABMA STD 11 - LOAD RATINGS AND FATIGUE LIFE FOR ROLLER BEARINGS; 2014
C. ANSI Z21.10.1 - GAS WATER HEATERS - VOLUME I - STORAGE WATER HEATERS WITH INPUT RATINGS OF 75,000 BTU PER HOUR OR LESS; 2014
D. ASME BPVC-VIII-1 - BOILER AND PRESSURE VESSEL CODE, SECTION VIII, DIVISION 1 - RULES FOR CONSTRUCTION OF PRESSURE VESSELS; 2017
E. NEMA 250 - ENCLOSURES FOR ELECTRICAL EQUIPMENT (1000 VOLTS MAXIMUM); 2014
F. NSF 372 - DRINKING WATER SYSTEM COMPONENTS - LEAD CONTENT; 2016
G. NSF 61 - DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS; 2017
H. UL 174 - STANDARD FOR HOUSEHOLD ELECTRIC STORAGE TANK WATER HEATERS; CURRENT EDITION, INCLUDING ALL REVISIONS
I. UL 778 - STANDARD FOR MOTOR-OPERATED WATER PUMPS; CURRENT EDITION, INCLUDING ALL REVISIONS

1.04 SUBMITTALS

A. PRODUCT DATA:
1. PROVIDE DIMENSIONAL DRAWINGS OF WATER HEATERS INDICATING COMPONENTS AND CONNECTIONS TO OTHER EQUIPMENT AND PIPING.
2. INDICATE PUMP TYPE, CAPACITY, AND POWER REQUIREMENTS.
3. PROVIDE CERTIFIED PUMP CURVES SHOWING PUMP PERFORMANCE CHARACTERISTICS WITH PUMP AND SYSTEM OPERATING POINT PLOTTED. INCLUDE NPSH CURVE WHEN APPLICABLE.
4. PROVIDE ELECTRICAL CHARACTERISTICS AND CONNECTION REQUIREMENTS.

B. PROJECT RECORD DOCUMENTS: RECORD ACTUAL LOCATIONS OF COMPONENTS.

C. OPERATION AND MAINTENANCE DATA: INCLUDE OPERATION, MAINTENANCE, AND INSPECTION DATA, REPLACEMENT PART NUMBERS AND AVAILABILITY, AND SERVICE DEPOT LOCATION AND TELEPHONE NUMBER. INCLUDE PUMP PERFORMANCE CURVES WITH PUMP.

D. WARRANTY DOCUMENTATION: SUBMIT MANUFACTURER WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.

1.05 QUALITY ASSURANCE

A. CERTIFICATIONS:
1. PRODUCTS REQUIRING ELECTRICAL CONNECTION: LISTED AND CLASSIFIED BY UNDERWRITERS LABORATORIES INC., AS SUITABLE FOR THE PURPOSE SPECIFIED AND INDICATED

B. IDENTIFICATION: PROVIDE PUMPS WITH MANUFACTURER'S NAME, MODEL NUMBER, AND RATING/CAPACITY IDENTIFIED BY PERMANENTLY ATTACHED LABEL.

C. PERFORMANCE: ENSURE PUMPS OPERATE AT SPECIFIED SYSTEM FLUID TEMPERATURES WITHOUT VAPOR BINDING AND CAVITATION, ARE NON-OVERLOADING IN PARALLEL OR INDIVIDUAL OPERATION, AND OPERATE WITHIN 25 PERCENT OF MIDPOINT OF PUBLISHED MAXIMUM EFFICIENCY CURVE.

1.06 DELIVERY, STORAGE, AND HANDLING

A. PROVIDE TEMPORARY INLET AND OUTLET CAPS. MAINTAIN CAPS IN PLACE UNTIL INSTALLATION.

1.07 WARRANTY

A. PROVIDE FIVE-YEAR MANUFACTURER WARRANTY FOR DOMESTIC WATER STORAGE TANKS. PROVIDE ONE YEAR MANUFACTURER WARRANTY FOR DOMESTIC WATER HEATER PARTS.

PART 2 - PRODUCTS

2.01 ACID-EFFLUENT NEUTRALIZERS

A. MANUFACTURERS:
1. ENFIELD
2. FUSESEAL
3. TOWN AND COUNTRY
4. ZURN
5. ORION

B. PERFORMANCE:
1. MAXIMUM LOW PH WATER FLOW RATE: _____ GPM
2. MEDIA CONSISTS OF CALCITE, LIMESTONE, OR _____ MINERAL MEDIA

C. ACID NEUTRALIZER TANK: ACID NEUTRALIZATION TANK SHALL BE MANUFACTURED FROM HIGH DENSITY POLYETHYLENE. TANK SHALL BE SEAMLESS CONSTRUCTION WITH FLANGE TOP AND BOLT DOWN COVER.

PART 3 - EXECUTION

3.01 INSTALLATION

A. INSTALL PLUMBING EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AS REQUIRED BY CODE, AND COMPLYING WITH CONDITIONS OF CERTIFICATION, IF ANY.

END OF SECTION 22 30 06

SECTION 22 40 00 PLUMBING FIXTURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. SINKS
B. UNDER-LAVATORY PIPE SUPPLY COVERS
C. EMERGENCY EYE WASH
D. EMERGENCY SHOWERS
E. FLOOR DRAINS
F. CORROSIVE, RESISTANT, FLOOR DRAINS

1.02 REFERENCE STANDARDS

A. ADA STANDARDS - AMERICANS WITH DISABILITIES ACT (ADA) STANDARDS FOR ACCESSIBLE DESIGN; 2010
B. ASTM D3222 - STANDARD SPECIFICATION FOR UNMODIFIED POLY(VINYLIDENE FLUORIDE) (PVDF) MOLDING EXTRUSION AND COATING MATERIALS; 2005 (REAPPROVED 2015)
C. ASHRAE STD 18 - METHODS OF TESTING FOR RATING DRINKING-WATER COOLERS WITH SELF-CONTAINED MECHANICAL REFRIGERATION; 2013
D. ASME A112.6.1M - SUPPORTS FOR OFF-THE-FLOOR PLUMBING FIXTURES FOR PUBLIC USE; 1997 (REAFFIRMED 2017)
E. ASME A112.18.1 - PLUMBING SUPPLY FITTINGS; 2012
F. ASME A112.19.2 - CERAMIC PLUMBING FIXTURES; 2013
G. ASME A112.19.4M - PORCELAIN ENAMELED FORMED STEEL PLUMBING FIXTURES; 1994 (R2009)
H. ASME A112.19.14 - SIX LITER WATER CLOSETS EQUIPPED WITH DUAL FLUSHING DEVICE; 2013
I. ASSE 1014 - PERFORMANCE REQUIREMENTS FOR BACKFLOW PREVENTION DEVICES FOR HAND-HELD SHOWERS; 2005
J. ASSE 1070 - PERFORMANCE REQUIREMENTS FOR WATER TEMPERATURE LIMITING DEVICES; 2015
K. ASTM C177 - STANDARD TEST METHOD FOR STEADY-STATE HEAT FLUX MEASUREMENTS AND THERMAL TRANSMISSION PROPERTIES BY MEANS OF THE GUARDED-HOT-PLATE APPARATUS; 2013
L. ASTM C1822 - STANDARD SPECIFICATION FOR INSULATING COVERS ON ACCESSIBLE LAVATORY PIPING; 2015
M. ASTM E84 - STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS; 2017
N. ASTM G21 - STANDARD PRACTICE FOR DETERMINING RESISTANCE OF SYNTHETIC POLYMERIC MATERIALS TO FUNGI; 2015
O. ISFA 2-01 - CLASSIFICATION AND STANDARDS FOR SOLID SURFACING MATERIAL; 2013
P. NEMA LD 3 - HIGH-PRESSURE DECORATIVE LAMINATES; 2005
Q. NSF 61 - DRINKING WATER SYSTEM COMPONENTS - HEALTH EFFECTS; 2017
R. NSF 372 - DRINKING WATER SYSTEM COMPONENTS - LEAD CONTENT; 2016

1.03 SUBMITTALS

A. PRODUCT DATA: PROVIDE CATALOG ILLUSTRATIONS OF FIXTURES, SIZES, ROUGH-IN DIMENSIONS, UTILITY SIZES, TRIM, AND FINISHES.

B. MANUFACTURER'S INSTRUCTIONS: INDICATE INSTALLATION METHODS AND PROCEDURES.

C. MAINTENANCE DATA: INCLUDE FIXTURE TRIM EXPLODED VIEW AND REPLACEMENT PARTS LISTS.

D. WARRANTY: SUBMIT MANUFACTURER WARRANTY AND ENSURE FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.

1.04 QUALITY ASSURANCE

A. MANUFACTURER QUALIFICATIONS: COMPANY SPECIALIZING IN MANUFACTURING THE TYPE OF PRODUCTS SPECIFIED IN THIS SECTION, WITH MINIMUM THREE YEARS OF DOCUMENTED EXPERIENCE.

1.05 DELIVERY, STORAGE, AND HANDLING

A. ACCEPT FIXTURES ON SITE IN FACTORY PACKAGING. INSPECT FOR DAMAGE.

B. PROTECT INSTALLED FIXTURES FROM DAMAGE BY SECURING AREAS AND BY LEAVING FACTORY PACKAGING IN PLACE TO PROTECT FIXTURES AND PREVENT USE.

1.06 WARRANTY

A. PROVIDE FIVE-YEAR MANUFACTURER WARRANTY FOR ELECTRIC WATER COOLERS.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. POTABLE WATER SYSTEMS: PROVIDE PLUMBING FITTINGS AND FAUCETS THAT COMPLY WITH NSF 61 AND NSF 372 FOR MAXIMUM LEAD CONTENT; LABEL PIPE AND FITTINGS.

2.02 SINKS

A. SINK MANUFACTURERS:
1. JUST
2. ELKAY
3. FRANKE
4. ACORN

B. SINGLE COMPARTMENT BOWL: ASME A112.19.3; 18 GAGE, 0.0359 INCH (0.91 MM) THICK, TYPE 304 STAINLESS STEEL, SELF RIMMING AND UNDERCOATED, WITH LEDGE BACK DRILLED FOR TRIM
1. DRAIN: 3-1/2-INCH CRUMB CUP AND TAILPIECE
2. VERIFY AMOUNT OF HOLE PUNCHES REQUIRED FOR EACH SINK PRIOR TO ORDERING.

C. DOUBLE COMPARTMENT BOWL: ASME A112.19.3; 18 GAGE, 0.0359 INCH (0.91 MM) THICK, TYPE 304 STAINLESS STEEL, SELF RIMMING AND UNDERCOATED, WITH LEDGE BACK DRILLED FOR TRIM
1. DRAIN: 3-1/2-INCH CRUMB CUP AND TAILPIECE
2. VERIFY AMOUNT OF HOLE PUNCHES REQUIRED FOR EACH SINK PRIOR TO ORDERING.

2.03 UNDER-LAVATORY PIPE SUPPLY COVERS

A. MANUFACTURERS:
1. PLUMBEREX SPECIALTY PRODUCTS, INC
2. PROWRAP

B. GENERAL:
1. INSULATE EXPOSED DRAINAGE PIPING INCLUDING HOT, COLD AND TEMPERED WATER SUPPLIES UNDER LAVATORIES OR SINKS PER ADA STANDARDS.
2. ADHESIVES, SEWING THREADS AND TWO-PLY LAMINATED MATERIALS ARE PROHIBITED.
3. EXTERIOR SURFACES: SMOOTH NONABSORBENT WITH NO FINGER RECESSED INDENTATIONS FOR EASY CLEANING.
4. CONSTRUCTION: 1/8-INCH PVC WITH ANTIMICROBIAL, ANTIFUNGAL AND UV RESISTANT PROPERTIES.
a. PROVIDE ONE PIECE INJECTED MOLDED DESIGN WITH INTERNAL BRIDGE AT TOP OF J-BEND TO PREVENT SEPARATING.
b. COMPLY WITH ASTM C1822 TYPE III FOR COVERS ON ACCESSIBLE LAVATORY PIPING.
c. THERMAL RESISTANCE: R VALUE OF 0.504 OR LOWER WHEN TESTED BY ASTM C177
d. MICROBIAL AND FUNGAL RESISTANCE FOR INTERIOR AND EXTERIOR: COMPLY WITH ASTM G21

C. UNDER-LAVATORY COVERS WITH SNAP-LOCK FASTENERS:
1. MANUFACTURERS:
a. PLUMBEREX SPECIALTY PRODUCTS, INC: PLUMBEREX PRO-EXTREME
2. CONSTRUCTION: PVC WITH ANTIMICROBIAL, ANTIFUNGAL, AND UV-RESISTANT PROPERTIES, ONE PIECE INJECTED MOLDED DESIGN WITH INTERNAL BRIDGE AT TOP OF J-BEND TO PREVENT SEPARATING.
3. FASTENERS: REUSABLE, SNAP-LOCKING FASTENERS WITH NO SHARP OR ABRASIVE EXTERNAL SURFACES. NO CABLE TIES ALLOWED.
4. MAINTENANCE: VALVE AND SUPPLY COVER SHALL BE ACCESSIBLE FOR MAINTENANCE WITHOUT REMOVAL AND WITH REMOVABLE, REUSABLE ACCESS CAP.
5. PROVIDE WITH WEEP HOLE FOR CONDENSATION DRAINAGE AND VENTILATION.
6. VANDAL RESISTANCE: INTERNAL LINE GROOVES FOR TRIMMING NOT EASILY TORN BY HAND. ALL TRIM LINE GROOVES SHALL REQUIRE TOOL CUTTING ONLY.
7. COLOR: HIGH GLOSS WHITE

2.04 EMERGENCY EYE WASH

A. EMERGENCY WASH MANUFACTURERS:
1. HAWS CORPORATION
2. STINGRAY SYSTEMS
3. GUARDIAN
4. BRADLEY
5. SPEAKMAN
6. ACORN

B. EMERGENCY WASH: ANSI Z358.1; WALL-MOUNTED, SELF-CLEANING, NON-CLOGGING EYE WASH WITH QUICK OPENING, FULL-FLOW VALVES, ABS EYE WASH RECEPTOR, TWIN EYE WASH HEADS, ABS DUST CAPS, COPPER ALLOY CONTROL VALVE AND FITTINGS, STAINLESS STEEL PUSH HANDLE ACTIVATOR.

C. 4.9 GPM @ 30PSI FLOW

2.05 EMERGENCY SHOWERS

A. EMERGENCY SHOWER MANUFACTURERS:
1. HAWS CORPORATION
2. STINGRAY SYSTEMS
3. GUARDIAN
4. BRADLEY
5. SPEAKMAN
6. ACORN

B. EMERGENCY SHOWER: ANSI Z358.1; FREE STANDING, SELF- CLEANING, NON-CLOGGING 8-INCH DIAMETER PLASTIC DELUGE SHOWER HEAD WITH ELBOW, 1-1/4 INCH FULL FLOW VALVE WITH PULL CHAIN AND 8 INCH DIAMETER RING, ONE INCH INTERCONNECTING FITTINGS.

C. 20 GPM @ 30PSI FLOW. PROVIDE RESTRICTOR FOR HIGHER PRESSURES.

D. POWDER COATED YELLOW, ALUMINUM TRIANGULAR PULL ROD ACTIVATOR WITH ADA EXTENSION

E. IPS GALVANIZE STEEL PIPING STANCHION & FITTINGS

2.06 FLOOR DRAINS (FD)

A. CAST IRON BODY, HEAVY DUTY FLOOR DRAIN, WITH 5" NICKEL BRONZE ADJUSTABLE STRAINER HEAD, VANDAL PROOF SCREWS, AND TRAP PRIMER CONNECTIONS. SIZE OUTLET TO MATCH PIPE SIZE SHOWN ON DRAWINGS. WHERE USED FOR SHOWER DRAIN, PROVIDE WITH CHROME PLATED STRAINER. FURNISH WITH 6" DIAMETER STRAINER AND FUNNEL WHERE INDICATED.

B. CAST IRON BODY, HEAVY DUTY FLOOR DRAIN, WITH TYPE 'N' 7" DIAMETER, NICKEL BRONZE GRATE, VANDAL PROOF SCREWS, AND TRAP PRIMER CONNECTIONS. SIZE OUTLET TO MATCH PIPE SIZE SHOWN ON DRAWINGS. USE IN MECHANICAL ROOMS AND UTILITY SPACES.

C. FLOOR DRAINS LABELED MEDIUM DUTY, LIGHT DUTY, OR COMMERCIAL DUTY ARE NOT ALLOWED.

D. MANUFACTURERS:
1. J.R. SMITH
2. JOSAM
3. ZURN
4. WADE
5. MIFAB
6. WATTS

2.07 CORROSIVE RESISTANT FLOOR DRAINS

A. FLOOR DRAIN SHALL BE MANUFACTURED FROM PVFD MATERIAL CONFORMING TO ASTM D3222. GRATE, PLUG, AND COVERS ARE TO BE MADE FROM FIBER-FILLED PVFD.

B. MANUFACTURERS:
1. ENFIELD
2. FUSEAL
3. ORION
4. ZURN

2.08 EXAMINATION

A. VERIFY THAT WALLS AND FLOOR FINISHES ARE PREPARED AND READY FOR INSTALLATION OF FIXTURES.

B. VERIFY THAT ELECTRIC POWER IS AVAILABLE AND OF THE CORRECT CHARACTERISTICS.

C. CONFIRM THAT MILLWORK IS CONSTRUCTED WITH ADEQUATE PROVISION FOR THE INSTALLATION OF COUNTER TOP LAVATORIES AND SINKS.

2.09 PREPARATION

A. ROUGH-IN FIXTURE PIPING CONNECTIONS IN ACCORDANCE WITH MINIMUM SIZES INDICATED IN FIXTURE ROUGH-IN SCHEDULE FOR PARTICULAR FIXTURES.

2.10 INSTALLATION

A. INSTALL EACH FIXTURE WITH A REMOVABLE TRAP TO BE EASILY REMOVABLE FOR SERVICING AND CLEANING.

B. PROVIDE CHROME PLATED RIGID SUPPLIES TO FIXTURES WITH LOOSE KEY STOPS, REDUCERS, AND ESCUTCHEONS.

C. INSTALL COMPONENTS LEVEL AND PLUMB.

D. MAKE FIXTURE FLOOR CONNECTIONS WITH APPROVED BRAND OF CAST IRON FLOOR FLANGE, SOLDERED OR CAULKED SECURELY TO WASTE PIPE.

E. MAKE JOINTS BETWEEN FIXTURES AND FLOOR FLANGES TIGHT WITH APPROVED FIXTURE SETTING COMPOUND OR GASKETS.

F. CAULK BETWEEN FIXTURES AND WALL AND FLOOR WITH WHITE BUTYL RUBBER NON-ABSORBENT CAULKING COMPOUND. POINT EDGES.

G. INSTALL AND CONNECT ALL KITCHEN FIXTURES. PROVIDE CHROME PLATED BRASS WASTE, "JUST" OR EQUAL.

H. PROVIDE CONCEALED ARM SUPPORTS FOR WALL MOUNTED CHINA LAVATORIES.

I. ALL EXPOSED METAL SHALL BE CHROME-PLATED BRASS.

J. PROVIDE FLOOR-MOUNT FIXTURE SUPPORT WITH CONCEALED HEAVY STEEL STANCHION AND SUPPORTING PLATE FOR LAVATORIES AND URINALS.

K. PROVIDE FLOOR-MOUNT FIXTURE SUPPORT FOR WALL-HUNG WATER CLOSETS, AND WITH 2" NO-HUB AUXILIARY INLET AT EACH LOCATION OF BACK-TO-BACK WATER CLOSET AND URINAL.

L. PROVIDE FLUSH VALVE SUPPLY SUPPORT ON ALL WC AND URINAL CARRIERS.

M. PROVIDE REAR ANCHOR SUPPORT FOR ALL HEAVY-DUTY WC CARRIERS.

N. PROVIDE TRAP PRIMER AND CONNECTION TO P-TRAP OF SHOWERS, FLOOR SINKS, FLOOR DRAINS, AND SERVICE SINKS.

O. ADA SHOWERS SHALL BE INSTALLED WITH ENTRANCE LIP FLUSH WITH FINISH FLOOR.

P. ON ADA WATER CLOSETS, PROVIDE FLUSH VALVE HANDLE OR TANK HANDLE ON SIDE FACING WHEELCHAIR TURN AROUND.

Q. ALL ADA LAVATORY P-TRAP AND ANGLE STOP ASSEMBLIES SHALL BE INSULATED WITH INSTITUTIONAL A.D.A. INSULATOR KIT AS MANUFACTURED BY E.B.C. OR EQUAL. ABRASION RESISTANT EXTERIOR COVER SHALL BE SMOOTH AND HAVE 1/8" WALL MINIMUM OVER CUSHIONED FOAM INSERT. FASTENERS SHALL REMAIN SUBSTANTIALLY OUT OF SIGHT. USE PART 500RHS ON OFFSET P-TRAP IF REQUIRED.

R. SENSOR TYPE FIXTURES: MECHANICAL CONTRACTOR TO COORDINATE WITH ELECTRICAL CONTRACTOR FOR INSTALLATION OF ALL INFRA-RED SENSOR TYPE FIXTURES. TRANSFORMER KIT PROVIDED AND INSTALLED BY MECHANICAL CONTRACTOR, ALL ELECTRICAL CONNECTORS, WIRE CONNECTIONS, AND TESTING BY ELECTRICAL CONTRACTOR.

S. HOSE BIBB: INSTALL ONE (1) HOSE BIBB IN EACH TOILET ROOM WITH 2 OR MORE WATER CLOSETS, URINALS OR A COMBINATION THEREOF, MOUNT AT 18" UNDER ONE LAVATORY.

T. WALL HYDRANT: INSTALL AT 18" ABOVE FINISHED GRADE, UNLESS OTHERWISE INDICATED.

2.11 INTERFACE WITH WORK OF OTHER SECTIONS

A. REVIEW MILLWORK SHOP DRAWINGS. CONFIRM LOCATION AND SIZE OF FIXTURES AND OPENINGS BEFORE ROUGH-IN AND INSTALLATION.

2.12 ADJUSTING

A. ADJUST STOPS OR VALVES FOR INTENDED WATER FLOW RATE TO FIXTURES WITHOUT SPLASHING, NOISE, OR OVERFLOW.

2.13 CLEANING

A. CLEAN PLUMBING FIXTURES AND EQUIPMENT.

B. POLISH CHROME FINISH AT COMPLETION OF PROJECT.

C. REMOVE ALL MANUFACTURERS' LABELS TAGS, AND PROTECTIVE PLASTIC.

D. POLISH FLOOR DRAIN COVERS.

2.14 PROTECTION

A. PROTECT INSTALLED PRODUCTS FROM DAMAGE DUE TO SUBSEQUENT CONSTRUCTION OPERATIONS.

B. REPAIR OR REPLACE DAMAGED PRODUCTS BEFORE DATE OF SUBSTANTIAL COMPLETION.

2.15 MOUNTING HEIGHTS

A. FIXTURE HEIGHTS: INSTALL FIXTURES TO HEIGHTS ABOVE FINISHED FLOOR AS INDICATED ON THE ARCHITECTURAL ELEVATION DRAWINGS. ARCHITECTURAL ELEVATION DIMENSIONS TAKE PRECEDENT OVER THE FOLLOWING HEIGHTS:
1. EMERGENCY EYE WASH:
a. SEE INSTALLATION DETAIL ON PLANS FOR COMBINATION EYEWASH/SHOWER.
2. EMERGENCY SHOWER:
a. SEE INSTALLATION DETAIL ON PLANS.

END OF SECTION 22 40 00

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
JEFFREY ROBERT HAMBURGER — STATE OF WASHINGTON — 22020 — REGISTERED PROFESSIONAL ENGINEER
06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

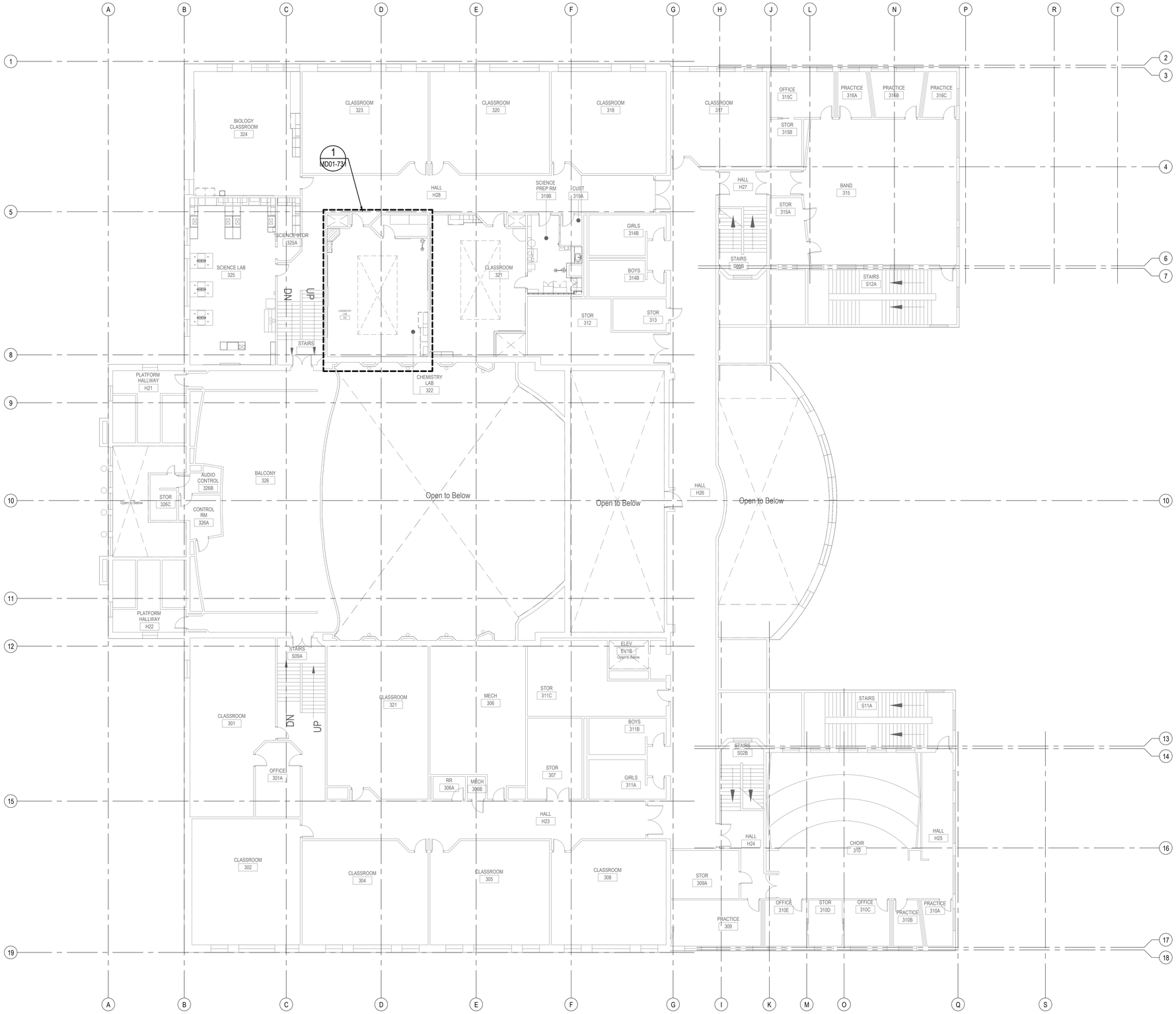
SHEET TITLE
MECHANICAL SPECIFICATIONS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

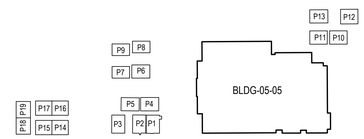
M01-105

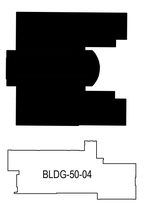
GENERAL NOTES

1. THIS SHEET INCLUDED FOR REFERENCE ONLY.



1 OVERALL 3RD FLOOR MECH DEMO FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"





2 PHS CAMPUS KEY PLAN
SCALE: NTS

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TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP

JEFFREY ROBERT HAMMOND — STATE OF WASHINGTON — 23833 — REGISTERED PROFESSIONAL ENGINEER

06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

OVERALL 3RD FLOOR MECH DEMO FLOOR PLAN BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

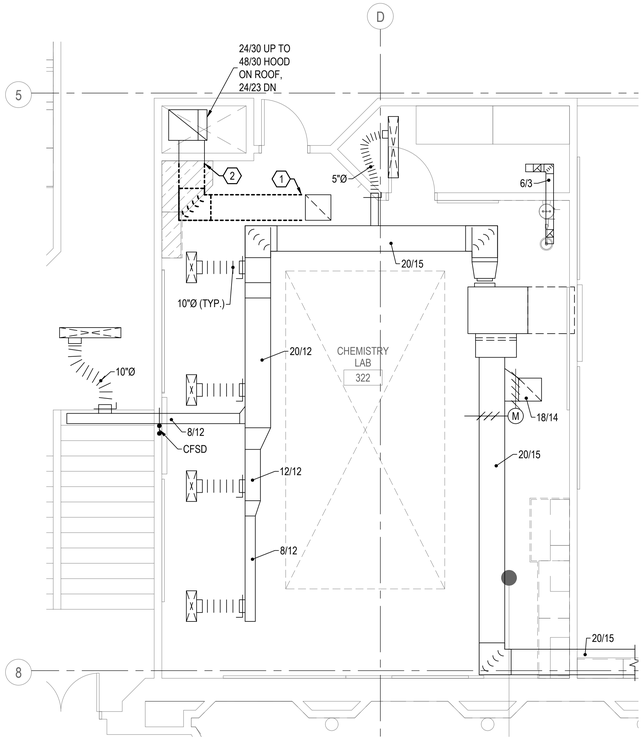
MD01-203

GENERAL NOTES

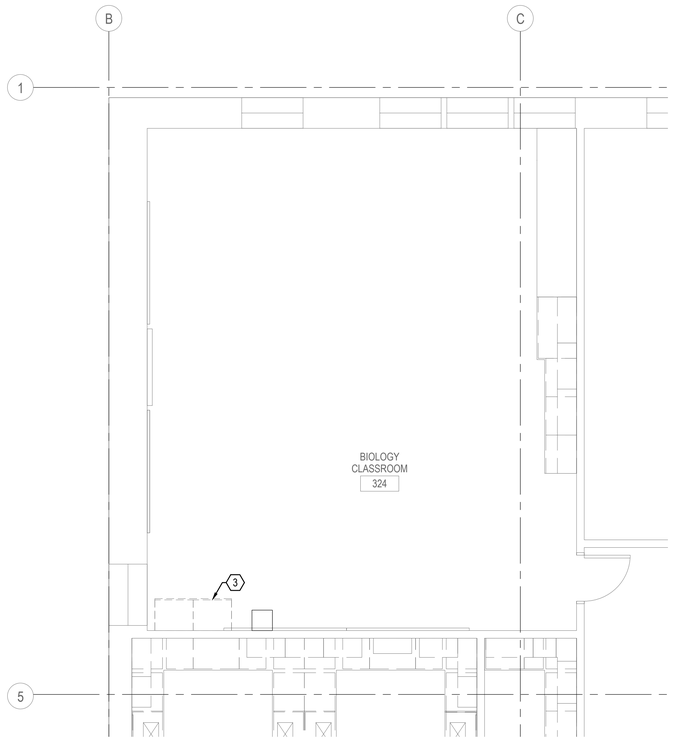
1. DRAWING IS DIAGRAMMATIC. CONTRACTOR TO FIELD VERIFY ALL EQUIPMENT LOCATIONS AND SIZES.
2. ITEMS SHOWN LIGHT ARE EXISTING TO REMAIN.
3. COORDINATE FLOOR REPAIR WITH GC.
4. ANY SIZES SHOWN ARE FROM AS-BUILTS AND FOR REFERENCE ONLY.

(#) DEMOLITION NOTES

1. EXTENT OF DEMOLITION.
2. CAP DUCT AT WALL.
3. REMOVE SINK AND APPURTENANCES.



1 O1- 322 CLASSROOM ENLARGED MECHANICAL DEMOLTION FLOOR PLAN
SCALE: 1/4" = 1'-0"



2 O1- 324 CLASSROOM ENLARGED MECHANICAL DEMOLTION FLOOR PLAN
SCALE: 1/4" = 1'-0"

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JEREMY ROBERT HARDWICK — STATE OF WASHINGTON — 13329 — REGISTERED PROFESSIONAL ENGINEER

06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

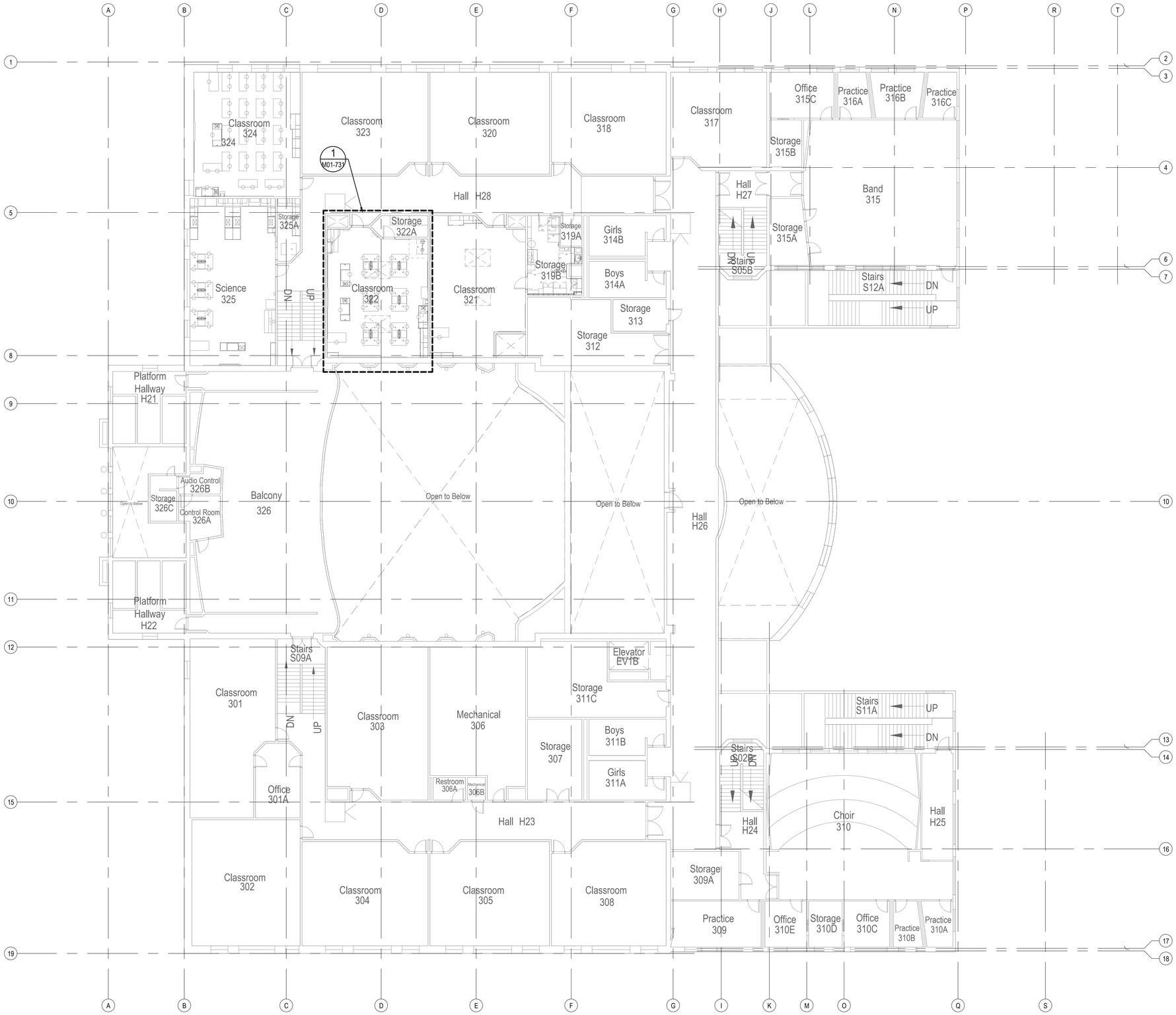
ENLARGED MECHANICAL DEMOLITION PLANS BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

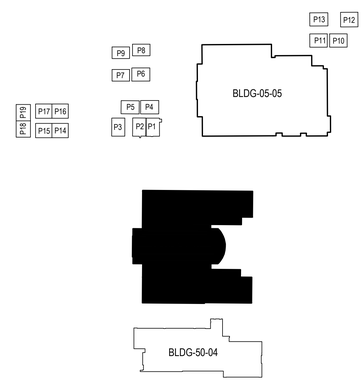
MD01-731

GENERAL NOTES

1. THIS SHEET INCLUDED FOR REFERENCE ONLY.



1 OVERALL 3RD FLOOR MECH DEMO FLOOR PLAN BUILDING 50-01
SCALE: 3/32" = 1'-0"



2 PHS CAMPUS KEY PLAN
SCALE: NTS

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105 7TH ST SW
PUYALLUP, WA
98371

STAMP

JEFFREY ROBERT HADDOCK
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

06-05-2026

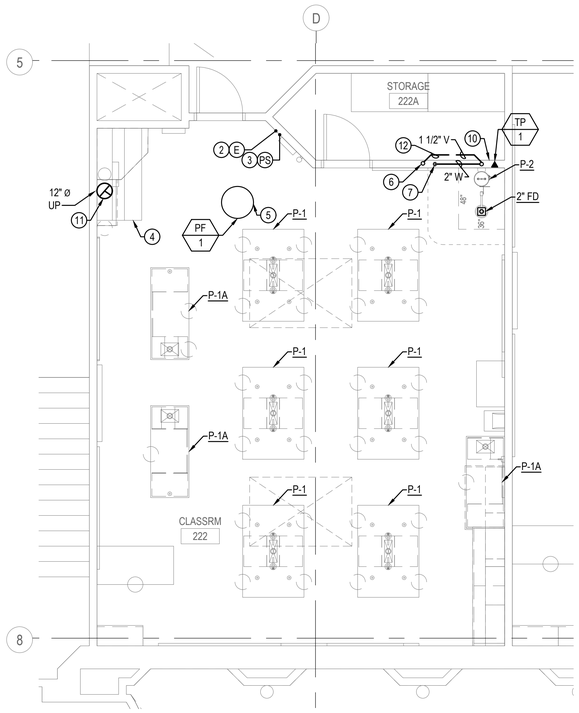
ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE

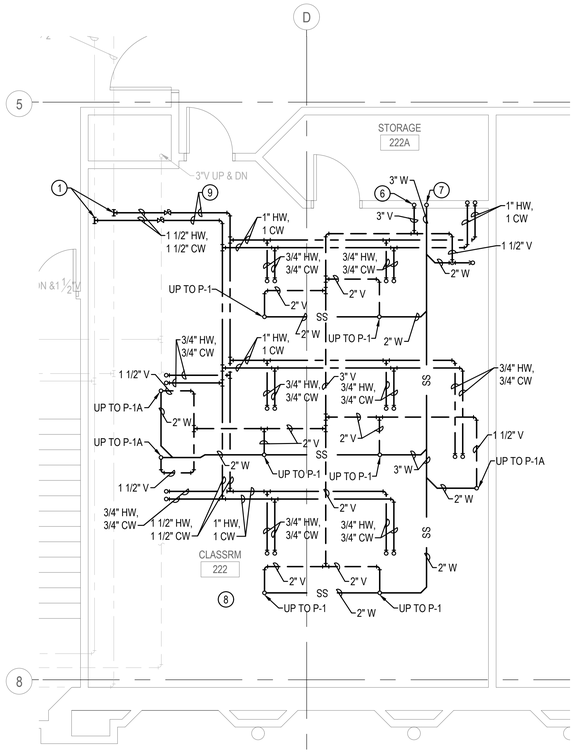
OVERALL
3RD FLOOR MECH
DEMO FLOOR PLAN
BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

M01-203



1 01- 322 CLASSROOM ENLARGED MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"



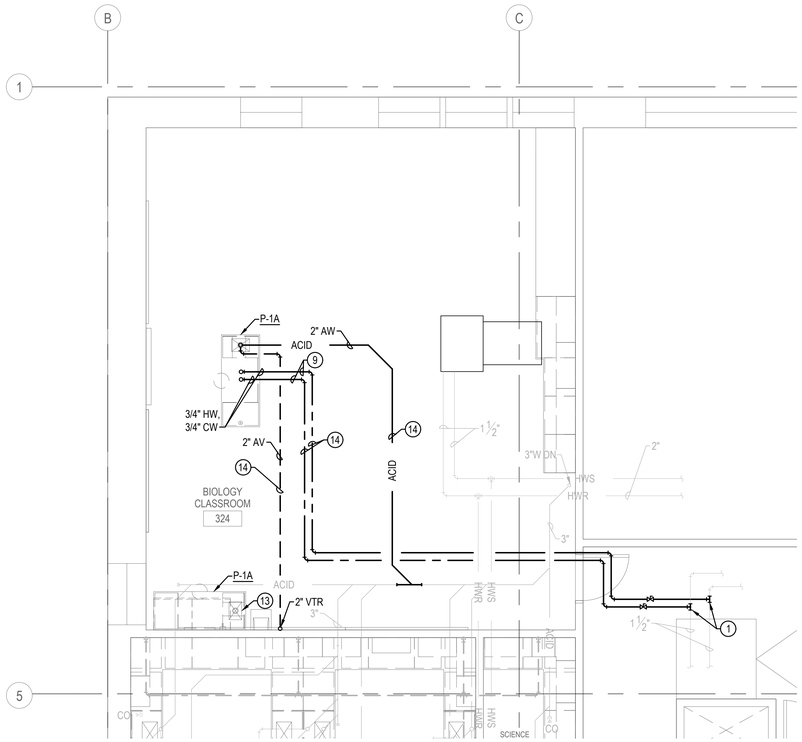
2 01- 222 CLASSROOM ENLARGED PLUMBING FLOOR PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. DUCTWORK MAY BE SHOWN OFFSET FOR CLARITY. PROVIDE ADDITIONAL OFFSETS AS REQUIRED TO FACILITATE INSALLATION.
2. DUCT SIZE REPRESENTS INNER DIMENSIONS OF THE DUCT.
3. ITEMS IN LIGHT ARE EXISTING AND SHOWN FOR REFERENCE ONLY.
4. PIPE SIZES SHOWN ON EXISTING PIPING ARE FOR REFERENCE ONLY.

CONSTRUCTION NOTES

1. POINT OF CONNECTION TO EXISTING PIPING.
2. PROVIDE NEW PUSHBUTTON FOR 100% VENTILATION AIR. PUSHBUTTON SHALL BE ILLUMINATED TYPE.
3. PRESSURE SENSOR INTERLOCKED WITH PF-1.
4. FUME HOOD SHALL OPERATE VIA PUSHBUTTON. PUSHBUTTON TO BE PROVIDED BY EC.
5. PF-1 ON ROOF TO CONNECT TO EXISTING RELIEF AIR DUCTWORK ABOVE CLASSROOM 322 CEILING.
6. VENT TO ROOF.
7. WASTE TO CONNECT TO RESTROOM PIPE CHASE ON FIRST FLOOR
8. COORDINATE NEW PIPING WITH EXISTING DUCTWORK.
9. TO PLUMBING FIXTURES. CW AND HW ARE SHOWN OFFSET FOR CLARITY. ROUTE PIPING UP WITHIN CASEWORK CHASE TO PLUMBING CONNECTIONS.
10. TRAP PRIMER ACCESS PANEL SHALL BE ACCESSED INSIDE OF STORAGE 322A.
11. NEW EXHAUST DUCTWORK UP TO GOOSENECK WITH BIRDSCREEN ON ROOF. SHOWN OFFSET FOR CLARITY. CONTRACTOR SHALL FIELD VERIFY EXHAUST IS A MINIMUM 10' AWAY FROM ANY INTAKE PRIOR TO INSTALLATION. DUCTWORK SHALL BE WELDED STAINLESS.
12. ROUTE VENT INSIDE THE WALL. SHOWN OFFSET FOR CLARITY.
13. EXTEND EXISTING PLUMBING UTILITIES TO NEW SINK.
14. AW, AV, HW, AND CW SHOWN IN CLASSROOM 324 ARE ABOVE THE CEILING OF THE SECOND FLOOR BELOW. SHOWN ON THIS PLAN FOR REFERENCE ONLY.



3 01- 324 CLASSROOM ENLARGED MECHANICAL FLOOR PLAN
SCALE: 1/4" = 1'-0"

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

105 7TH ST SW
PUYALLUP, WA
98371

STAMP
DARREL ROBERT HAMOVICH
STATE OF WASHINGTON
21615
REGISTERED
PROFESSIONAL ENGINEER
06-05-2026

ISSUED:	DATE:
PERMIT SET	JUN 4, 2026

SHEET TITLE
ENLARGED MECHANICAL PLANS BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	--
Checked By	--

M01-731

GENERAL

- EXISTING ELECTRICAL TO BE REMOVED
- EXISTING ELECTRICAL TO REMAIN
- NEW ELECTRICAL WORK
- MATCHLINE OR PROPERTY LINE
- ENLARGED PLAN BOUNDARY
- 1 / E1.1 — DETAIL/PLAN IDENTIFIER
- A / E1.1 — SECTION IDENTIFIER
- A / E1.1 — ELEVATION IDENTIFIER
- REVISION DEFINITION AREA, AREA ENCIRCLED CONTAINS CHANGES MADE SUBSEQUENT TO PREVIOUS ISSUE
- REVISION CALLOUT
- FLAG NOTE TAG
- DEMOLITION NOTE TAG
- EQUIPMENT TAG
- AHU-01 — MECHANICAL EQUIPMENT TAG
- NORTH ARROW
- LOCATION WHERE PICTURE WAS TAKEN AND DIRECTION

POWER

- SWITCHBOARD/SWITCHGEAR
- PANELBOARD, FLUSH-MOUNTED
- PANELBOARD, SURFACE-MOUNTED
- (FRONT) TRANSFORMER
- MOTOR CONNECTION
- DISCONNECT SWITCH, NON-FUSED
- DISCONNECT SWITCH, FUSED
- ENCLOSED CIRCUIT BREAKER
- VFD — VARIABLE FREQUENCY DRIVE
- S_M — MANUAL MOTOR STARTER WITH THERMAL OVERLOADS
- COMBINATION STARTER/DISCONNECT
- MAGNETIC STARTER
- EQUIPMENT CONNECTION - CONFIRM CONNECTION WITH EQUIPMENT MANUFACTURER
- F/S — FIRE/SMOKE DAMPER
- PUSHBUTTON CONTROLLER (SINGLE OR MULTIPLE BUTTONS)
- EMERGENCY POWER OFF PUSHBUTTON

RECEPTACLES

- P1A-12 / +42 GF — DEVICE SUBSCRIPTS (CIRCUIT NUMBER) (AC,CR,D,EM,GB,GF,IG,SB,TP,USB,WP OR OTHER SUBSCRIPT) (NON-STANDARD MOUNTING HEIGHT OR AC)
- SPECIAL RECEPTACLE
- DUPLEX RECEPTACLE
- FOURPLEX RECEPTACLE
- SPLIT WIRED DUPLEX RECEPTACLE
- SIMPLEX RECEPTACLE
- CORD DROP CORD RECEPTACLE
- RETRACTABLE CORD REEL RECEPTACLE

RACEWAYS AND BOXES

- J — JUNCTION BOX
- J_F — FURNITURE WALL FEED OUTLET BOX
- PB XX — PULL BOX (WHERE INDICATED, SUBSCRIPT INDICATES PULL BOX TYPE)
- HH XX — HANDHOLE (WHERE INDICATED, SUBSCRIPT INDICATES VAULT TYPE)
- XX — VAULT (WHERE INDICATED, SUBSCRIPT INDICATES VAULT TYPE)
- A — FLOORBOX (WHERE INDICATED, SUBSCRIPT INDICATES FLOOR BOX TYPE)
- A — POKE-THRU (WHERE INDICATED, SUBSCRIPT INDICATES POKE-THRU TYPE)
- POWER POLE, FLOOR TO CEILING
- SURFACE METAL RACEWAY
- RACEWAY CONCEALED IN WALL OR IN CEILING (EXPOSED IN UNFINISHED AREAS)
- RACEWAY RUN BELOW FLOOR OR BELOW GRADE
- FLEXIBLE RACEWAY
- RACEWAY (CIRCLE DENOTES VERTICAL TRANSITION)
- RACEWAY CONTINUATION
- RACEWAY STUB WITH BUSHING
- RACEWAY SLEEVE WITH BUSHING
- FIRE STOPPING SLEEVE
- CABLE TRAY, 12"W x 4"H OVERHEAD, UNLESS OTHERWISE NOTED
- CABLE TRAY, OVERHEAD LADDER TYPE
- HA-3 — HOMERUN TO PANEL (INDICATES PANEL DESIGNATION AND CIRCUIT NUMBER)
- #10 — (GAUGE OF WIRE OTHER THAN AWG#12) NUMBER OF CONDUCTORS (GROUND CONDUCTOR) (PHASE CONDUCTORS) (NEUTRAL CONDUCTOR)

ONE-LINE DIAGRAM

- EQUIPMENT ENCLOSURE
- BUS
- WIRE
- TERMINAL / LUG
- CONNECTION
- DELTA
- WYE
- CURRENT TRANSFORMER
- TRANSFER SWITCH
- CIRCUIT BREAKER, FIXED
- CIRCUIT BREAKER, DRAWOUT
- DISCONNECT SWITCH
- FUSED SWITCH
- FUSE
- FUSED CUTOUTS
- GF — CIRCUIT BREAKER WITH GROUND FAULT PROTECTION
- ST — CIRCUIT BREAKER WITH SHUNT TRIP OPERATOR
- K — CIRCUIT BREAKER WITH KIRK KEY
- GF — FUSED SWITCH WITH GROUND FAULT PROTECTION
- MOTOR CONNECTION
- G — GENERATOR
- X — METERING DEVICE (M = METER) (WH = WATT HOUR METER) (A = AMMETER) (V = VOLTMETER)
- ST — SHUNT TRIP
- GF — GROUND FAULT PROTECTION
- EPM — ELECTRONIC POWER METER
- SPD — SURGE PROTECTIVE DEVICE
- GROUND
- 12,241 — AVAILABLE FAULT CURRENT (SYMMETRICAL) TAG
- 225 — FEEDER TAG
- PAD-MOUNT TRANSFORMER
- 480V / 208Y 120V — TRANSFORMER
- PANELBOARD - MAIN LUGS ONLY
- PANELBOARD - MAIN CIRCUIT BREAKER

GROUNDING

- G — GROUNDING CONDUCTOR
- GROUND ROD
- GROUNDING BUSBAR
- EQUIPMENT GROUNDING CONNECTION
- GROUNDING STRAP

NOT ALL SYMBOLS MAY APPEAR ON THE DRAWINGS

DRAWING INDEX

E01-001	ELECTRICAL LEGEND AND DRAWING INDEX
E01-002	ELECTRICAL ABBREVIATIONS AND GENERAL NOTES
E01-003	ELECTRICAL DRAWING SPECIFICATIONS
E01-102	OVERALL 2ND FLOOR ELECTRICAL FLOORPLAN BUILDING 50-01
E01-103	OVERALL 3RD FLOOR ELECTRICAL FLOORPLAN BUILDING 50-01
E01-901	ELECTRICAL ONE-LINE DIAGRAM
E01-1001	ELECTRICAL PANEL SCHEDULES

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TITLE

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STAMP

TAYLOR S. VANDEKAREY — STATE OF WASHINGTON — 20111166 — REGISTERED PROFESSIONAL ENGINEER

06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

ELECTRICAL LEGEND AND DRAWING INDEX

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-001

GENERAL NOTES

1. PERFORM WORK IN ACCORDANCE WITH APPLICABLE NATIONAL AND STATE CODES AS AMENDED LOCALLY AND ENFORCED BY THE AHJ.
2. OBTAIN AND PAY FOR PERMITS REQUIRED FOR INSTALLATION OF WORK. ARRANGE AND SCHEDULE REQUIRED INSPECTIONS.
3. COORDINATE WITH UTILITY COMPANIES FURNISHING SERVICES TO PROJECT. INSTALLATION OF UTILITY SERVICES SHALL BE IN ACCORDANCE WITH UTILITY REQUIREMENTS. VERIFY APPLICABLE INSTALLATION STANDARDS AND REQUIREMENTS. PROVIDE AND SUBMIT ELECTRICAL DRAWINGS TO UTILITY FOR APPROVAL PRIOR TO ROUGH-IN AND PRIOR TO ORDERING EQUIPMENT.
4. DEVICE LOCATIONS ARE APPROXIMATE. COORDINATE DEVICE LOCATIONS AND ELEVATIONS WITH APPROPRIATE DOCUMENTS INCLUDING CASEWORK SHOP DRAWINGS AND ARCHITECT'S INTERIOR ELEVATIONS PRIOR TO ROUGH-IN.
5. COORDINATE ELECTRICAL WORK WITH THAT OF OTHER TRADES. REFER TO MECHANICAL, ARCHITECTURAL, STRUCTURAL, CIVIL, AND LANDSCAPE DRAWINGS AND SPECIFICATIONS. COORDINATION SHALL OCCUR PRIOR TO FABRICATION, PURCHASE, AND INSTALLATION OF WORK.
6. COORDINATE LOCATION OF LIGHT FIXTURES AND CEILING-MOUNTED DEVICES WITH ARCHITECTURAL REFLECTED CEILING PLANS AND ELEVATIONS.
7. PROVIDE RATED ENCLOSURES AROUND ALL LIGHT FIXTURES PENETRATING RATED CEILINGS. COORDINATE WITH ARCHITECTURAL.
8. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR LOCATIONS OF EXPANSION/SEISMIC JOINTS. PROVIDE RACEWAY EXPANSION/SEISMIC JOINTS FOR RACEWAYS CROSSING BUILDING EXPANSION/SEISMIC JOINTS.
9. DEMOLISH EXISTING SYSTEMS AS INDICATED ON PLANS OR AS REQUIRED FOR INSTALLATION OF NEW WORK. MATERIAL SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED OF OFF SITE UNLESS OTHERWISE DIRECTED. RETURN ITEMS TO OWNER IN EXISTING CONDITION WHEN DIRECTED BY OWNER.
10. COMPLETION OF WORK SHALL BE EXECUTED IN ACCORDANCE WITH THE PROJECT SCHEDULE. SCHEDULE INSTALLATION WITH OTHER TRADES TO ENSURE PROJECT MILESTONES ARE MET.
11. DRAWINGS ARE DIAGRAMMATIC AND DO NOT SHOW ALL COMPONENTS REQUIRED FOR A COMPLETE INSTALLATION. PROVIDE COMPONENTS REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS INCLUDING RACEWAYS, CONDUCTORS, BOXES, SUPPORTS AND SIMILAR ITEMS.
12. BRANCH CIRCUIT HOMERUNS ARE SHOWN TO INDICATE CIRCUIT PROPERTIES AND CONFIGURATION. SINGLE-CIRCUIT HOMERUNS SERVED FROM THE SAME PANELBOARD MAY BE COMBINED IN ACCORDANCE WITH THE DIVISION 26 SPECIFICATIONS, UNLESS INDICATED OTHERWISE. EXTEND AND CONNECT BRANCH CIRCUIT RACEWAY AND WIRING FROM HOMERUN TO DEVICES AND EQUIPMENT WITH CIRCUIT NUMBERS INDICATED. CONDUCTOR QUANTITIES AND SIZES ARE INDICATED AT HOMERUNS ONLY. SHOW ACTUAL RACEWAY ROUTING AND CIRCUITING ON RECORD DRAWINGS. MINIMUM CONDUCTOR SIZE #12 AWG.
13. LIGHT FIXTURES MOUNTED IN CONTINUOUS ROWS SHALL BE THROUGH-WIRED VIA FIXTURE INTERNAL WIREWAYS. CIRCUITS AS INDICATED ON DRAWINGS. FIXTURES NOT LISTED FOR THROUGH WIRING SHALL BE WIRED VIA SEPARATE RACEWAY AND WIRING SYSTEM EXTERNAL TO THE FIXTURES. PROVIDE RACEWAYS, WIRING AND CONNECTIONS FOR A COMPLETE AND OPERATIONAL SYSTEM.
14. LOCATIONS OF RACEWAY, PATHWAY AND SIMILAR ITEMS ARE SHOWN SCHEMATICALLY. COORDINATE INSTALLATION, INCLUDING BUT NOT LIMITED TO CABLING, TELECOMMUNICATION PATHWAYS AND SPACES, AND EXACT LOCATION OF HORIZONTAL AND BACKBONE CABLING WITH LOCATIONS OF FIXED CASEWORK AND BUILDING CONDITIONS AFFECTING THE WORK OF THIS CONTRACT.

NON-STRUCTURAL ELECTRICAL NOTES

1. THE FOLLOWING ITEMS ARE TAKEN DIRECTLY FROM THE 2021 INTERNATIONAL BUILDING CODE AND FROM THE AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) STANDARD 7. THE CONTRACTOR SHALL REFER TO THE ABOVE FOR ADDITIONAL INFORMATION, EXCEPTIONS, AND FURTHER DESCRIPTIONS. THE CONTRACTOR SHALL ADHERE TO REQUIREMENTS AND AS SUCH, SHALL BE INCLUDED WITHIN BID. ALSO REFER TO SPECIFICATIONS.
2. 2021 IBC, 1613.1, SCOPE: ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND NON-STRUCTURAL COMPONENTS THAT ARE PERMANENTLY ATTACHED TO STRUCTURES AND THEIR SUPPORTS AND ATTACHMENTS SHALL BE DESIGNED AND CONSTRUCTED TO RESIST THE EFFECTS OF EARTHQUAKE MOTIONS IN ACCORDANCE WITH CHAPTERS 11, 12, 13, 15, 17 AND 18 OF ASCE 7.
3. ASCE 7 CONTRACTOR RESPONSIBILITY:
   THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONSTRUCTION OF A SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM, OR COMPONENT LISTED IN THE QUALITY ASSURANCE PLAN SHALL SUBMIT A WRITTEN CONTRACTOR'S STATEMENT OF RESPONSIBILITY TO THE REGULATORY AUTHORITY HAVING JURISDICTION AND TO THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL INCLUDE THE FOLLOWING:
   A. ACKNOWLEDGMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE QUALITY ASSURANCE PLAN;
   B. ACKNOWLEDGMENT THAT CONTROL WILL BE EXERCISED TO OBTAIN CONFORMANCE WITH THE CONSTRUCTION DOCUMENTS APPROVED BY THE AUTHORITY HAVING JURISDICTION;
   C. PROCEDURES FOR EXERCISING CONTROL WITHIN THE CONTRACTOR'S ORGANIZATION, THE METHOD AND FREQUENCY OF REPORTING AND THE DISTRIBUTION OF THE REPORTS; AND
   D. IDENTIFICATION AND QUALIFICATIONS OF THE PERSON(S) EXERCISING SUCH CONTROL AND THEIR POSITION(S) IN THE ORGANIZATION.
4. DIVISION 26 RESPONSIBILITIES:
   A. HANGERS AND SEISMIC BRACING FOR ELECTRICAL SYSTEMS SHALL BE DESIGNED AND SPECIFIED BY DIVISION 26. DIVISION 26 SHALL REFER TO THE ELECTRICAL DRAWINGS FOR LOCATIONS OF EQUIPMENT AND ELECTRICAL EQUIPMENT, RACEWAYS, AND OTHER COMPONENTS.
   B. DIVISION 26 SHALL COORDINATE THE SUPPORT SYSTEMS AND DESIGN LOADS FOR HUNG RACEWAYS AND OTHER ELECTRICAL SYSTEMS (INCLUDING COMBINED MULTIPLE RACEWAY RUNS) WITH THE GENERAL CONTRACTOR AND THE STEEL AND WOOD JOIST MANUFACTURERS IN ADDITION TO OTHER TRADES THAT MAY BE IMPACTED.

ENERGY CODE NOTES

1. RECORD DRAWINGS: SUBMIT TO THE BUILDING OWNER PER ENERGY CODE ENFORCED BY THE LOCAL AHJ.
2. OPERATION AND MAINTENANCE MANUALS: SUBMIT TO THE BUILDING OWNER PER ENERGY CODE ENFORCED BY THE LOCAL AHJ.
3. THIS BUILDING AND ITS ENERGY SYSTEMS HAVE BEEN DESIGNED TO COMPLY WITH ENERGY CODE ENFORCED BY THE LOCAL AHJ. CONTRACTOR IS RESPONSIBLE FOR CORRECT INSTALLATION OF ENERGY CONSERVATION MEASURES.
4. LIGHTING CONTROL SYSTEMS COMMISSIONING AND COMPLETION REQUIREMENTS: TEST SYSTEMS TO ENSURE THAT BUILDING SYSTEMS HAVE BEEN INSTALLED AND FUNCTION PROPERLY AND EFFICIENTLY, AND CAN BE MAINTAINED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND OPERATIONAL REQUIREMENTS PER ENERGY CODE ENFORCED BY THE AHJ. REFER TO SPECIFICATIONS FOR ADDITIONAL COMMISSIONING REQUIREMENTS.

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING; ALTERNATING CURRENT; ABOVE COUNTER
AF	AMP FUSE; AMP FRAME
AFC	AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AG	ABOVE GRADE
AHJ	AUTHORITIES HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CURRENT
AL	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
AS	AMP SWITCH
AT	AMP TRIP
ATM	ASYNCHRONOUS TRANSFER MODE
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BATT	BATTERIES
BIL	BASIC IMPULSE INSULATION LEVEL
BKBD	BACKBOARD
BKR	BREAKER
BLDG	BUILDING
C	CONDUIT; DEGREES CELSIUS
CAB	CABINET
CAT	CATEGORY
CATV	COMMUNITY ANTENNA TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CLG	CEILING
CM	CEILING-MOUNTED
CO	CONDUIT ONLY
COW	COMPUTER ON WHEELS
CR	CONTROLLED RECEPTACLE
CT	CURRENT TRANSFORMER
CU	COPPER
D	DEDICATED
DDC	DIRECT DIGITAL CONTROL
DEMARC	DEMARCATION POINT
DISC	DISCONNECT
DIST	DISTRIBUTION
DSL	DIGITAL SUBSCRIBER LINE
DWG	DRAWING
(E)	EXISTING
EA	EACH
EF	EXHAUST FAN
EIA	ELECTRONIC INDUSTRIES ASSOCIATION
ELEV	ELEVATION
EM	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPM	ELECTRONIC POWER METER
EPO	EMERGENCY POWER OFF
EQUIP	EQUIPMENT
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
F	FUSE; DEGREES FAHRENHEIT
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OWNER
FC	FOOT-CANDLE
FOIC	FURNISHED BY OWNER INSTALLED BY CONTRACTOR
FOIO	FURNISHED BY OWNER INSTALLED BY OWNER
FSD	FIRE SMOKE DAMPER
G	GROUND
GB	GROUND FAULT CIRCUIT BREAKER
GF	GROUND FAULT CIRCUIT INTERRUPTER
GFP	GROUND FAULT PROTECTION
GND	GROUND
GRS	GALVANIZED RIGID STEEL
HC	HORIZONTAL CROSS CONNECT
HID	HIGH INTENSITY DISCHARGE
HP	HORSEPOWER
HTR	HEATER
Hz	HERTZ
IBC	INTERNATIONAL BUILDING CODE
IC	INTERMEDIATE CROSS CONNECT
IDF	INTERMEDIATE DISTRIBUTION FRAME
IEEE	INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
IG	ISOLATED GROUND
IMC	INTERMEDIATE METALLIC CONDUIT
ISDN	INTEGRATED SERVICES DIGITAL NETWORK
J	JUNCTION
K	KIRK KEY
KCMIL	THOUSAND CIRCULAR MILS
kVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
LAN	LOCAL AREA NETWORK
LCP	LIGHTING CONTROL PANEL
LEC	LOCAL EXCHANGE CARRIER
LT	LIGHT
LTG	LIGHTING
M	METER
MAN	METROPOLITAN AREA NETWORK
M	METER
MAN	METROPOLITAN AREA NETWORK
MAX	MAXIMUM
MC	MAIN CROSS CONNECT; METAL CLAD (CABLE)
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDF	MAIN DISTRIBUTION FRAME
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MM	MULTIMODE
MPOE	MAIN POINT OF ENTRY
MPOP	MAIN POINT OF PRESENCE
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
N	NEUTRAL
NAC	NOTIFICATION APPLIANCE CIRCUIT
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NF	NON-FUSED
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
OFC	OPTICAL FIBER CABLE
OHL	OVERHEAD LINE
OL	OVERLOAD
OS	OCCUPANCY SENSOR
OSP	OUTSIDE PLANT
P	POLE
PBX	PRIVATE BRANCH EXCHANGE
PF	POWER FACTOR
PH	PHASE
PIR	PASSIVE INFRARED
PIV	POST INDICATING VALVE
PNL	PANEL
PP	PATCH PANEL
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RC	ROOM CONTROLLER
RCP	REFLECTED CEILING PLAN
REC	RECEPTACLE
REF	REFER TO
REV	REVISION
RM	ROOM
RTRC	REINFORCED THERMORESETTING RESIN CONDUIT
RU	RACK UNIT
SB	STANDBY
SHT	SHEET
SLC	SIGNALING LINE CIRCUIT
SM	SINGLEMODE
SMFC	SURFACE-MOUNTED OPTICAL FIBER CABINET
SMR	SURFACE METAL RACEWAY
SONET	SYNCHRONOUS OPTICAL NETWORK
SP	SERVICE PROVIDER
SPD	SURGE PROTECTIVE DEVICE
SPEC	SPECIFICATIONS
SPST	SINGLE POLE SINGLE THROW
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
SVGA	SUPER VIDEO GRAPHICS ARRAY
SW	SWITCH
SWBD	SWITCHBOARD
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TEL	TELEPHONE
TELCO	TELEPHONE COMPANY
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TP	TAMPERPROOF
TR	TELECOMMUNICATIONS ROOM
TTB	TELEPHONE TERMINAL BOARD
TV	TELEVISION
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSION
TYP	TYPICAL
UG	UNDERGROUND
UL	UNDERWRITERS LABORATORIES
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
USB	UNIVERSAL SERIAL BUS
UTP	UNSHIELDED TWISTED PAIR
UV	UNIT VENTILATOR
V	VOLTS
VA	VOLT AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT; WIRE
W/	WITH
W/O	WITHOUT
WA	WORKSTATION AREA
WAN	WIDE AREA NETWORK
WG	WIRE GUARD
WH	WATT HOUR METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
Y	WYE
Z	IMPEDANCE

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TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP
TAYLOR S. VANDERLEEST · STATE OF WASHINGTON · 20111166 · REGISTERED PROFESSIONAL ENGINEER
06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

ELECTRICAL ABBREVIATIONS AND GENERAL NOTES

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-002

DIVISION 26 - ELECTRICAL
SECTION 260510
GENERAL ELECTRICAL PROVISIONS

A. GENERAL REQUIREMENTS

1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, INCIDENTALS AND DETAILS NECESSARY TO PROVIDE COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS. PROVIDE ALL WORK NOT SPECIFICALLY NOTED AS BEING BY THE OWNER. CLOSELY COORDINATE THE ENTIRE INSTALLATION WITH OWNER. FURNISH AND INSTALL EQUIPMENT THAT IS RATED FOR AVAILABLE FAULT CURRENT LEVELS.

2. UNLESS SPECIFICALLY NOTED OTHERWISE, MATERIALS, PRODUCTS, AND EQUIPMENT, INCLUDING ALL COMPONENTS THEREOF, SHALL BE NEW, UNDERWRITERS LABORATORIES LISTED AND LABELED AND SIZED IN CONFORMITY WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES, WHICHEVER IS MORE STRINGENT.

3. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO SUPPLEMENT EACH OTHER AND ANY MATERIAL OR LABOR CALLED FOR IN ONE SHALL BE PROVIDED EVEN THOUGH NOT SPECIFICALLY MENTIONED IN BOTH. ANY MATERIAL OR LABOR WHICH IS NEITHER SHOWN ON THE DRAWINGS NOR CALLED FOR IN THE SPECIFICATIONS, BUT WHICH IS OBVIOUSLY NECESSARY TO COMPLETE THE WORK OR WHICH IS USUALLY INCLUDED IN WORK OF SIMILAR CHARACTER, SHALL BE PROVIDED AS PART OF CONTRACT.

4. WHERE THE DRAWINGS OR SPECIFICATIONS CALL FOR ITEMS WHICH EXCEED CODES OR THE OWNER'S REQUIREMENTS, THE CONTRACTOR IS RESPONSIBLE FOR FURNISHING AND INSTALLING THE SYSTEM WITH THE MORE STRINGENT REQUIREMENTS AS DESIGNED AND DESCRIBED ON THESE DRAWINGS, UNLESS NOTED OTHERWISE.

5. ALL WORK SHALL BE INSTALLED SO AS TO BE READILY ACCESSIBLE FOR OPERATING, SERVICING, MAINTAINING AND REPAIRING. THIS CONTRACTOR IS RESPONSIBLE FOR PROVIDING SUFFICIENT SERVICE ACCESS TO ALL EQUIPMENT.

6. PROVIDE ALL CUTTING, CHASING, OR CHANNELING AND PATCHING REQUIRED FOR ANY WORK UNDER THIS DIVISION. CUTTING SHALL HAVE PRIOR APPROVAL BY OWNER. PATCHING IS TO MATCH SURROUNDING SURFACES.

7. PROVIDE DEMOLITION OF ALL EQUIPMENT AND DEVICES NOT SCHEDULED FOR REVISE. REMOVE WIRING BACK TO POINT OF SUPPLY.

8. MAKE ALL FINAL ELECTRICAL CONNECTIONS AS REQUIRED FOR A COMPLETE AND OPERATING SYSTEM.

B. TEMPORARY LIGHT AND POWER

1. NOT REQUIRED.

C. CODES

1. ALL WORK SHALL BE PERFORMED IN A NEAT AND PROFESSIONAL MANNER AND CONFORM TO THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, OWNER'S REQUIREMENTS, THE STATE'S, COUNTY'S, CITY'S AND LOCAL CODES AND ORDINANCES, SAFETY AND HEALTH CODES, NFPA CODES, ENERGY CODES, AND ALL OTHER APPLICABLE CODES AND REQUIREMENTS. INQUIRE INTO AND COMPLY WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. INCLUDE ANY CHANGES REQUIRED BY CODES IN THE BID AND IF THESE CHANGES ARE NOT INCLUDED IN THE BID, THEY MUST BE QUALIFIED AS A SEPARATE LINE ITEM IN THE BID. AFTER CONTRACT IS ISSUED, NO ADDITIONAL COST DUE TO CODE ISSUES SHALL BE REIMBURSED BY THE OWNER TO THE CONTRACTOR.

D. LICENSES, PERMITS, INSPECTIONS & FEES

1. OBTAIN AND PAY FOR ALL LICENSES, PERMITS, INSPECTIONS, AND FEES REQUIRED OR RELATED TO HIS WORK.

2. FURNISH TO OWNER ALL CERTIFICATES OF INSPECTION AND FINAL INSPECTION APPROVAL AT COMPLETION OF PROJECT.

E. TRADE NAMES, MANUFACTURERS AND SHOP DRAWINGS

1. WHERE TRADE NAMES AND MANUFACTURERS ARE USED ON THE DRAWINGS OR IN THE SPECIFICATIONS, THE EXACT EQUIPMENT SHALL BE USED AS A MINIMUM FOR THE BASE BID. ALL SUBSTITUTIONS ARE SUBJECT TO APPROVAL IN WRITING, THROUGH SHOP DRAWINGS PROCESS, BY THE OWNER/ARCHITECT PRIOR TO ACCEPTANCE. THE OWNER RESERVES THE RIGHT TO REJECT ANY PROPOSED SUBSTITUTIONS. THE USE OF ANY UNAUTHORIZED EQUIPMENT SHALL BE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

F. GUARANTEE

1. GUARANTEE ALL MATERIALS AND WORK PROVIDED AND MAKE GOOD, REPAIR OR REPLACE AT YOUR OWN EXPENSE, ANY DEFECTIVE WORK, MATERIAL, OR EQUIPMENT WHICH MAY BE DISCOVERED WITHIN A PERIOD OF 12 MONTHS FROM THE DATE OF ACCEPTANCE. PROVIDE WRITTEN GURANTEE IN FORMAT ACCEPTABLE TO OWNER.

G. RECORD DRAWINGS

1. MAINTAIN ONE COPY OF DRAWINGS ON THE JOB SITE TO RECORD DEVIATIONS FROM CONTRACT DRAWINGS, SUCH AS:
   A. LOCATION OF JUNCTION BOXES AND RECEPTACLES.
   B. REVISIONS, ADDENDUMS, AND CHANGE ORDERS
   C. DEVIATIONS MADE NECESSARY BY FIELD CONDITIONS, APPROVED EQUIPMENT SUBSTITUTIONS, AND CONTRACTOR'S COORDINATION WITH OTHER TRADES.

2. AT COMPLETION OF PROJECT AND BEFORE FINAL APPROVAL, MAKE ANY FINAL CORRECTIONS TO DRAWINGS AND CERTIFY THE ACCURACY OF EACH PRINT BY SIGNATURE THEREON. ONE COPY OF DRAWINGS STAMPED SHALL BE PLACED "DO NOT REMOVE" IN DRAWING TUBE LOCATED NEXT TO THE ELECTRICAL PANELS.

H. DISCREPANCIES IN DOCUMENTS

1. DRAWINGS (PLANS, SPECIFICATIONS, AND DETAILS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION AND INTENT OF THE ELECTRICAL SYSTEMS. WHERE DRAWINGS, EXISTING SITE CONDITIONS, SPECIFICATIONS OR OTHER TRADES CONFLICT OR ARE UNCLEAR, ADVISE THE OWNER/ARCHITECT IN WRITING PRIOR TO SUBMITTAL OF BID. OTHERWISE, THE OWNER/ARCHITECT'S INTERPRETATION OF CONTRACT DOCUMENTS OR CONDITIONS SHALL BE FINAL WITH NO ADDITIONAL COMPENSATION PERMITTED.

2. THE LOCATION OF OUTLETS AND EQUIPMENT SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SCHEMATIC IN NATURE. THE OWNER SHALL HAVE THE RIGHT TO RELOCATE ANY OUTLETS OR FIXTURES BEFORE THEY ARE INSTALLED WITHOUT ADDITIONAL COST.

I. HANGERS

1. HANGERS SHALL INCLUDE ALL MISCELLANEOUS STEEL SUCH AS ANGLE IRON, WIRE, UNISTRUT, C-CLAMPS WITH RETAINING CLIPS, CHANNELS, HANGER RODS, ETC., NECESSARY FOR THE INSTALLATION OF WORK.

2. HANGERS SHALL BE FASTENED TO BUILDING STEEL, CONCRETE, OR MASONRY, BUT NOT TO OTHER CONDUIT OR PIPING. HANGERS UPPER ATTACHMENT MUST BE SUPPORTED FROM THE TOP OF THE BAR JOIST. HANGING FROM METAL DECK IS NOT PERMITTED. WHERE INTERFERENCES OCCUR, IN ORDER TO SUPPORT CONDUIT, THE CONTRACTOR MUST INSTALL TRAPEZE TYPE HANGERS OR SUPPORTS WHICH SHALL BE LOCATED WHERE THEY DO NOT INTERFERE WITH ACCESS TO FIRE DAMPERS, VALVES, JUNCTION BOXES, ACCESS DOORS, OTHER EQUIPMENT SERVICE REQUIREMENTS AND/OR OTHER TRADES. HANGER TYPES AND INSTALLATION METHODS ARE SUBJECT TO OWNER'S REQUIREMENTS.

DIVISION 26 - ELECTRICAL
SECTION 260500
BASIC ELECTRICAL MATERIALS AND METHODS

A SCOPE OF WORK

1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, SERVICES, TOOLS, TRANSPORTATION, AND FACILITIES NECESSARY FOR, REASONABLY IMPLIED AND INCIDENTAL TO, THE FURNISHING, INSTALLATION, COMPLETION AND TESTING OF ALL THE WORK FOR THE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS, CALLED FOR IN THE SPECIFICATIONS, AND AS REQUIRED BY JOB CONDITIONS, TO INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING:
   A. A COMPLETE ELECTRICAL DISTRIBUTION SYSTEM INCLUDING PANELBOARDS, TRANSFORMER, FEEDERS, BRANCH CIRCUITS, JUNCTION BOXES, OUTLET BOXES, WIRING DEVICES, COVERPLATES, CONDUITS, ETC.
   B. THE WIRING OF MECHANICAL EQUIPMENT AS OUTLINED ON THE BID SET DRAWINGS AND IN THE SPECIFICATIONS. WORK SHALL INCLUDE WIRING OF ALL STARTERS, DISCONNECTS, AND POWER WIRING OF MECHANICAL EQUIPMENT EXCEPT AS SPECIFICALLY NOTED OTHERWISE.

B. CONDUIT

1. PROVIDE CONDUITS SERVING ALL EQUIPMENT, INCLUDING BUT NOT LIMITED TO, LIGHTING, RECEPTACLES, HEATING, AIR CONDITIONING, PLUMBING EQUIPMENT, TELEPHONE, DATA, SPEAKERS, SECURITY, CCTV AND ELECTRICAL EQUIPMENT.

2. ALL CONDUITS SHALL BE GALVANIZED RIGID IMC OR EMT UNLESS OTHERWISE NOTED. CONDUIT SHALL BE UL LABELED. EMT CONNECTORS SHALL BE STEEL COMPRESSION OR SET SCREW TYPE. CONDUIT UNDER SLAB ON GRADE SHALL BE RIGID STEEL, OR SCHEDULE 40 PVC WITH RIGID STEEL ELLS WHERE PERMITTED BY OWNER OR CODE.

3. CONTRACTOR MAY NOT USE METAL CLAD IN LIEU OF EMT.

4. MINIMUM SIZE OF CONDUIT SHALL BE 3/4" C.

5. SUPPORT ALL CONDUIT, INCLUDING SEISMIC AND SWAY BRACING, IN ACCORDANCE WITH THE NEC AND LOCAL CODES.

6. GENERALLY, ALL CONDUIT SHALL BE CONCEALED EXCEPT FOR UNFINISHED AREAS, SUCH AS EQUIPMENT ROOMS. EXPOSED CONDUIT SHALL BE ALLOWED ONLY AS NOTED ON PLAN AND AS APPROVED BY THE OWNER.

7. FLEXIBLE METAL CONDUIT:
   A. FLEXIBLE CONDUIT SHALL BE USED FOR THE FOLLOWING APPLICATIONS ONLY:
      1. FINAL CONNECTIONS TO MOTORS
      2. FINAL CONNECTIONS INTO AND OUT OF THE TRANSFORMER
      3. FINAL CONNECTIONS TO VIBRATING EQUIPMENT
   B. FLEXIBLE METAL CONDUIT SHALL BE THE SAME SIZE AS THE IMC OR EMT CONDUIT TO WHICH IT IS CONNECTED. BOTH THE FLEXIBLE METAL CONDUIT AND IT'S FITTINGS ARE TO BE LISTED FOR GROUNDING. A GREEN GROUNDING CONDUCTOR SHALL BE INSTALLED. ALL CONNECTORS ARE TO BE OF A NEMA APPROVED TYPE.
   C. THE USE OF ROMEX, BX, ETC IS NOT PERMITTED.
   D. CONNECTION TO OUTDOOR EQUIPMENT MUST BE WEATHERPROOF, I.E LIQUIDTIGHT OR SEALTIGHT.

8. PROVIDE PULL-WIRE IN ALL EMPTY CONDUITS.

9. HOME RUNS AND MAIN CONDUIT RUNS ARE TO BE HELD TIGHT TO STRUCTURE ABOVE OR AS REQUIRED TO ALLOW PROPER SERVICE ACCESS AND OTHER TRADES WORK. CONDUIT MUST BE TRAPEZOID TO ALLOW 3 FEET MINIMUM CLEARANCE ABOVE CEILING.

10. ALL CONDUITS MUST BE SIZED PER NEC AND LOCAL CODES.

C. OUTLET BOXES

1. ALL OUTLET BOXES SHALL BE GALVANIZED PRESSED STEEL OF THE STANDARD KNOCKOUT TYPE. NO ROUND OUTLET BOXES SHALL BE PERMITTED, EXCEPT AS SPECIFICALLY NOTED ON DRAWINGS. CONCEALED BOXES SHALL NOT BE LESS THAN 4" SQUARE AND 1-1/2" DEEP, WITH PLASTER RINGS.

2. ALL KNOCKOUT BOXES, UPON WHICH LIGHTING FIXTURES ARE TO BE INSTALLED, SHALL BE EQUIPPED WITH 3/8" FIXTURE STUDS.

3. EXTERIOR BOXES SHALL BE CAST RUST-RESISTING METAL WITH GASKETED COVERS.

4. INSTALL BOXES RIGIDLY FROM BUILDING STRUCTURE AND SUPPORT INDEPENDENTLY OF THE CONDUIT SYSTEM. ALSO PROVIDE SUITABLE BOX EXTENSIONS TO EXTEND BOXES TO FINISHED FACES OF FLOORS, CEILINGS, WALLS ETC. ALL OUTLET BOXES TO BE PROVIDED WITH CADDY "QUICK-MOUNT BOX SUPPORT" TO MINIMIZE THE DEFLECTION THAT OCCURS WHEN PLUGGING/UNPLUGGING INTO THESE DEVICES.

5. UNLESS OTHERWISE NOTED ON DRAWINGS OR OTHERWISE REQUIRED BY THE NATIONAL ELECTRICAL CODE, HANDICAP CODES OR LOCAL CODES, OUTLET HEIGHTS SHALL BE AS FOLLOWS:
   A. SWITCH HEIGHT 48" FROM FINISHED FLOOR TO CENTERLINE OF OUTLET.
   B. CONVENIENCE OUTLETS: SALES & NON-SALES: 18" FROM FINISHED FLOOR TO CENTERLINE OF OUTLET
   C. TELEPHONE OUTLETS SHALL BE LOCATED AS NOTED ON DRAWINGS.

D. JUNCTION AND PULL BOXES

1. THE PLANS INDICATE ONLY SCHEMATIC ROUTINGS FOR CONDUIT RUNS. PROVIDE ADDITIONAL BOXES WHERE REQUIRED BY FIELD CONDITIONS OR BY CODE.

2. BOXES AND COVERS SHALL BE GALVANIZED STEEL OF CODE GAUGE SIZE.

3. INSTALL BOXES RIGIDLY SUPPORTED FROM THE BUILDING STRUCTURE AND SUPPORTED INDEPENDENT OF THE CONDUIT SYSTEM.

4. ARRANGE CIRCUITS TO AVOID THE USE OF JUNCTION BOXES IN INACCESSIBLE LOCATIONS. THE USE OF JUNCTION BOXES ABOVE DRYWALL CEILINGS SHOULD BE IN LOCATIONS NEAR ACCESS FRAMES USED FOR DIFFUSERS AND RETURN AIR GRILLES OR ACCESS PANELS AS LOCATED ON PLANS.

5. JUNCTION AND PULL BOXES SHALL BE LABELED WITH CIRCUIT NUMBER IDENTIFICATION AND SYSTEM TYPE ON COVER.

E. WIRING

1. CONDUCTORS FOR FEEDERS AND BRANCH CIRCUITS SHALL BE COPPER AND THE AWG SIZE AND TYPE AS SHOWN ON DRAWINGS. MINIMUM WIRE SIZE #12. THE CONDUCTORS SHALL BE 600 VOLT INSULATION, TYPE THHN/THWN DUAL RATED.

4. CONDUCTORS SHALL BE STRANDED FOR SIZES #10 AWG AND LARGER. CONDUCTORS SIZE #12 SHALL BE SOLID OR STRANDED.

5. ALUMINUM CONDUCTORS ARE NOT PERMITTED.

6. ALL WIRING SHALL BE IN CONDUIT, UNLESS SPECIFICALLY NOTED OTHERWISE (IE LOW VOLTAGE PLENUM RATED WIRE).

7. THE USE OF SHARED NEUTRALS IS REQUIRED FOR LIGHTING CIRCUITS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND LOCAL CODES.

8. THE USE OF ROMEX, BX, ETC IS NOT PERMITTED.

9. WIRE CONNECTORS SHALL "SCOTCH LOCK" FOR #8 AWG WIRE AND SMALLER AND SHALL BE T & B "LOCKTIGHT" FOR #6 AWG AND LARGER.

10. ALL WIRING TO BE COLOR-CODED AS FOLLOWS:

120/208 VOLT SYSTEM	277/480 VOLT SYSTEM
NEUTRAL - WHITE	NEUTRAL - GRAY
PHASE A OR L1 - BLACK	PHASE A OR L1-BROWN
PHASE B OR L2 - RED	PHASE B OR L2-ORANGE
PHASE C OR L3 - BLUE	PHASE C OR L3-YELLOW
GROUND - GREEN	GROUND - GREEN WITH YELOW TRACER

F. SAFETY AND DISCONNECT SWITCHES

1. SAFETY AND DISCONNECT SWITCHES SHALL BE HEAVY DUTY TYPE, QUICK-MAKE, QUICK-BREAK, W/REJECTION TYPE FUSE CLIPS, FUSED OR NON-FUSIBLE WITH RATINGS AND SIZES AS NOTED ON PLANS AND REQUIRED BY CODES. ALL FUSES SHALL BE RK-1 REJECTION TYPE WITH TIME DELAY RATED AT 200K AMPERES RMS SYMMETRICAL. FUSE MANUFACTURER AND FUSE TYPE IN INDIVIDUAL EQUIPMENT'S FUSES SHALL BE MANUFACTURED BY BUSSMAN, LITTLE, OR GOULD-SHAWMUT

2. SWITCHES SHALL BE WEATHERPROOF IN OUTDOOR LOCATIONS OR AS REQUIRED BY LOCAL CODES. DISCONNECT SWITCHES THAT ARE INSTALLED AT HEATING, VENTILATING AND AIR CONDITIONING (HVAC) EQUIPMENT SHALL BE FUSED IF NOT PROTECTED WITH A "HACR" BREAKER IN ACCORDANCE WITH THE EQUIPMENT'S NAMEPLATE AND MANUFACTURER'S REQUIREMENTS PER THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES.

3. AT SERVICE ENTRANCE, DISCONNECT SHALL BEAR THE MANUFACTURER'S LABEL INDICATING THE EQUIPMENT IS UL RATED FOR APPLICATION IN ACCORDANCE WITH ALL CODES.

G. GROUNDING

1. FURNISH AND INSTALL COMPLETE WIRED GROUNDING CONDUCTOR SYSTEM, SIZED AND INSTALLED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE NATIONAL ELECTRICAL CODE, STATE AND LOCAL CODES, THE OWNER'S REQUIREMENTS AND AS NOTED IN THE SPECIFICATIONS AND AS INDICATED ON THE DRAWINGS.

2. ALL CONDUIT, INCLUDING FLEXIBLE CONDUIT, SHALL BE GROUNDED.

3. ALL POWER CIRCUITS SHALL INCLUDE AN EQUIPMENT GROUND CONDUCTOR. #12 AWG MINIMUM. GREEN ISULATION.

4. GROUNDING CONNECTIONS MADE TO THE WATER PIPING SYSTEM SHALL BE COORDINATED WITH THE PLUMBING CONTRACTOR AND A BONDING JUMPERS INSTALLED AROUND WATER METER PER CODES AND AS INDICATED ON DRAWINGS.

5. ALL DEVICES SHALL BE BONDED TO THE CONDUIT SYSTEM. USE A BONDING JUMPER BETWEEN THE OUTLET BOX AND THE DEVICE GROUNDING TERMINAL. METAL-TO-METAL CONTACT BETWEEN THE DEVICE YOKE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES. ALL JUNCTION BOXES, OUTLET BOXES, AND PULL BOXES SHALL BE BONDED TO THE CONDUIT SYSTEM.

6. RUN A SEPARATE ISOLATED GROUNDING CONDUCTOR, #12 AWG MINIMUM, IN EACH CONDUIT SERVING ISOLATED GROUND RECEPTACLES.

7. FOR PANEL FEEDERS, BOND THE GROUNDING CONDUCTOR TO THE CONDUIT, WHERE ENTERING AND LEAVING THE CONDUIT. THE GROUNDING CONDUCTOR SHALL BE COPPER WITH GREEN IDENTIFICATION AND SIZED PER N.E.C.

8. ALL ENCLOSURES AND NON-CURRENT CARRYING METAL PARTS ARE TO BE GROUNDED CONDUIT SYSTEM IS TO BE ELECTRICALLY CONTINUOUS. ALL LOCKNUTS MUST CUT THROUGH ENAMELED OR PAINTED SURFACES ON ENCLOSURES WHERE ENCLOSURES AND NON- CURRENT CARRYING METAL PARTS ARE ISOLATED FROM THE CONDUIT SYSTEM, USE BONDING JUMPERS WITH APPROVED CLAMPS. ALL GROUND CLAMPS SHALL BE "PENN-UNION" "GPL" TYPE.

9. SYSTEM GROUND NOT TO EXCEED 25 OHMS PER NEC.

10. SIZE MAIN GROUNDING SYSTEM PER NEC, WAC AND LOCAL CODES. PROVIDE CONDUIT TO PROTECT GROUND WIRE FROM DAMAGE TO MAIN DISTRIBUTION PANEL.

11. INSTALL GROUND CONDUCTORS IN NON-METLLIC CONDUIT.

12. INSPECT GROUNDING AND BONDING SYSTEM CONDUCTORS AND CONNECTIONS FOR TIGHTNESS AND PROPER INSTALLATION.

END OF SECTION 260000

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PRCT120260899

TITLE
PUYALLUP HS
SCIENCE
CLASSROOM TI 2026

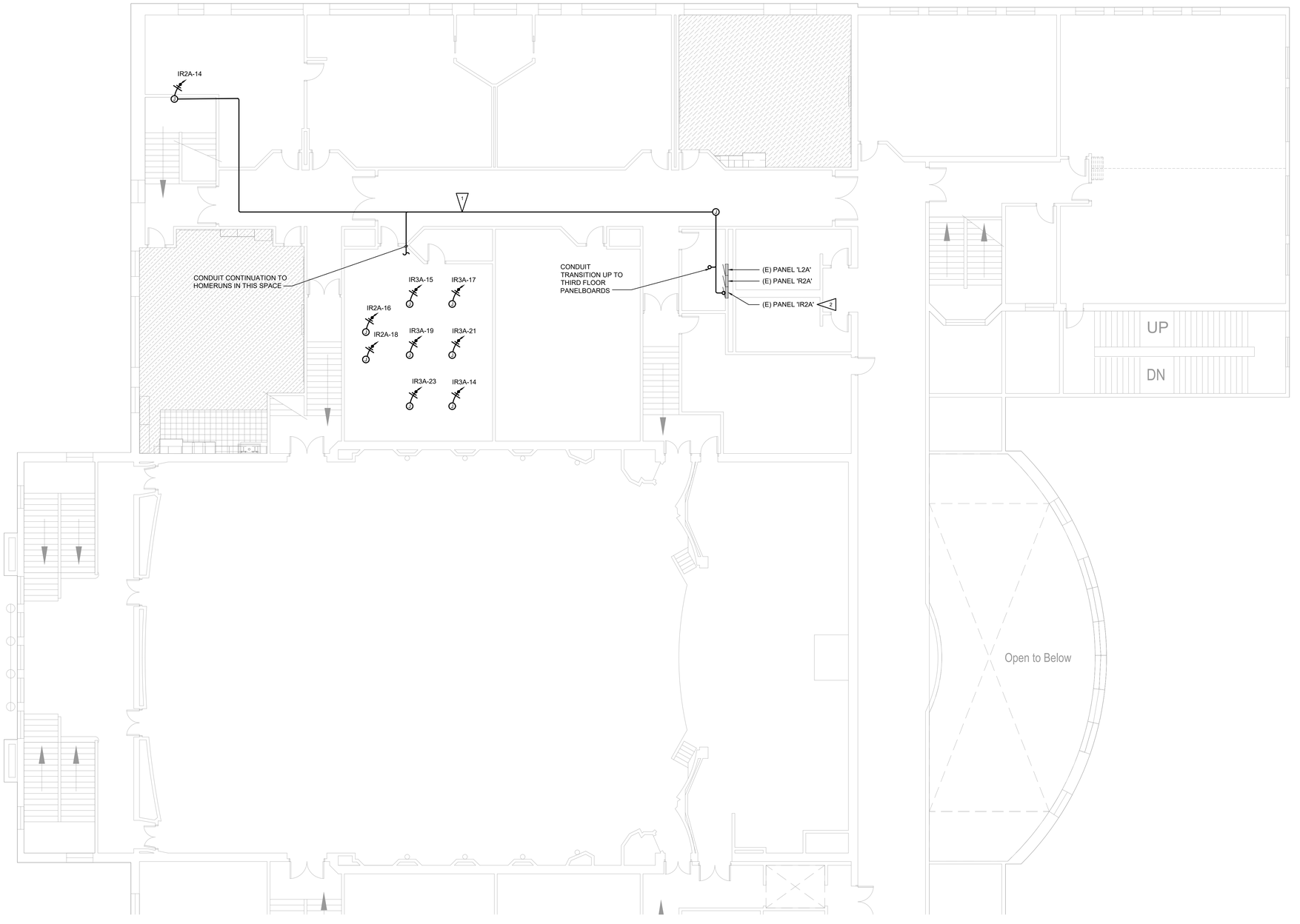
STAMP
JAMES S. VANDALEN
STATE OF WASHINGTON
20111166
REGISTERED
PROFESSIONAL ENGINEER
06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

ELECTRICAL
DRAWING
SPECIFICATIONS

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-003



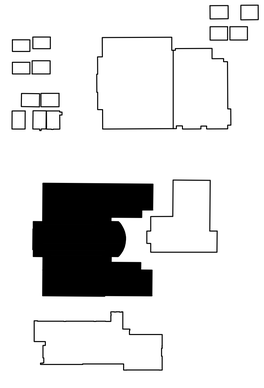
1 OVERALL 2ND FLOOR FLOORPLAN BUILDING 50-01
SCALE: 1/8" = 1'-0"

SHEET NOTES

1. ELECTRICAL ITEMS SHOWN ARE DIAGRAMMATIC BASED ON AVAILABLE RECORD DRAWINGS AND SITE WALKS DURING THE DESIGN PERIOD. NOT ALL SYSTEM COMPONENTS ARE SHOWN. FIELD VERIFY DEVICE LOCATIONS AND QUANTITIES PRIOR TO COMMENCING WORK. REROUTE EXISTING-TO-REMAIN DEVICE CONDUIT AND WIRING AS REQUIRED TO SUPPORT REMODEL ACTIVITIES.
2. SEE DRAWING SPECIFICATIONS ON SHEET E01-003 FOR ADDITIONAL INFORMATION.
3. SEE PANEL SCHEDULES, AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
4. ALL NEW RECEPTACLES INDICATED ON THIS SHEET SHALL BE TAMPER RESISTANT TYPE.
5. PROVIDE ADHESIVE BROTHER LABEL WITH CIRCUIT IDENTIFICATION AT ALL NEW RECEPTACLES E.G. IR3A-22.

FLAG NOTES

1. PROVIDE CONDUIT ROUTED ABOVE ACCESSIBLE CEILING SPACE. EXPOSED CONDUIT IS NOT ALLOWED WITHOUT PRIOR APPROVAL FROM A/E.
2. COORDINATE CUTTING AND PATCHING OF EXISTING WALL TO ACCOMMODATE INSTALLATION OF NEW HOMERUN CONDUITS WITH DIVISION 09 CONTRACTOR.



PHS CAMPUS KEY PLAN
SCALE: NTS

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ARCHITECT

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PRCT120260899

TITLE

PUYALLUP HS
SCIENCE
CLASSROOM TI 2026

STAMP

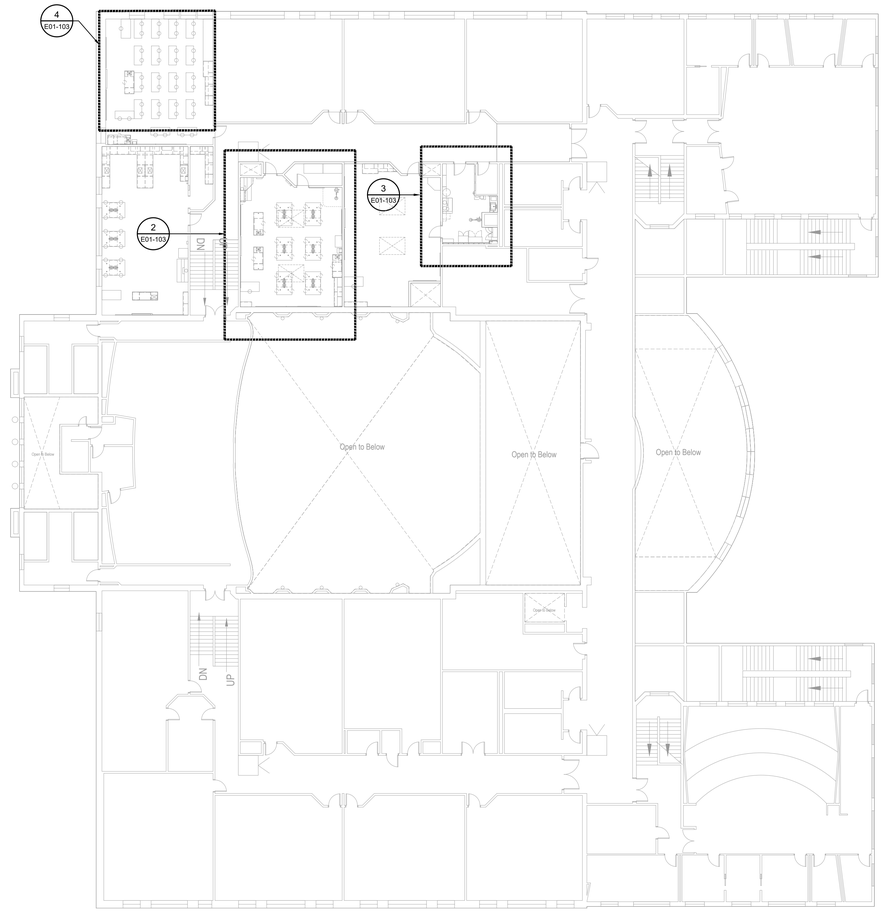
TAYLOR S. VANDERKLEY
STATE OF WASHINGTON
20111166
REGISTERED
PROFESSIONAL ENGINEER
06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

OVERALL
2ND FLOOR
ELECTRICAL
FLOORPLAN
BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-102



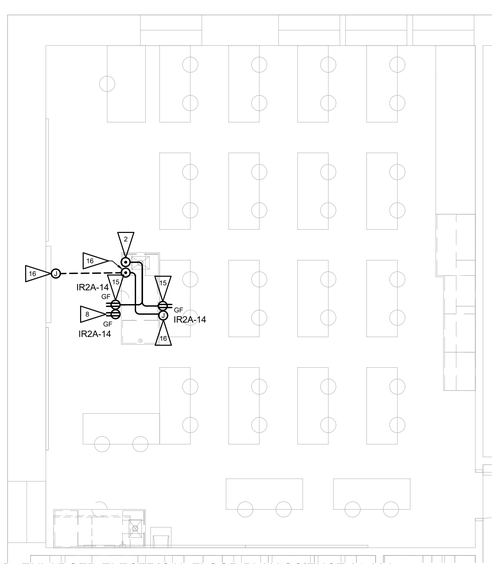
1 OVERALL 3RD FLOOR FLOORPLAN BUILDING 50-01
SCALE: 1/16" = 1'-0"

SHEET NOTES

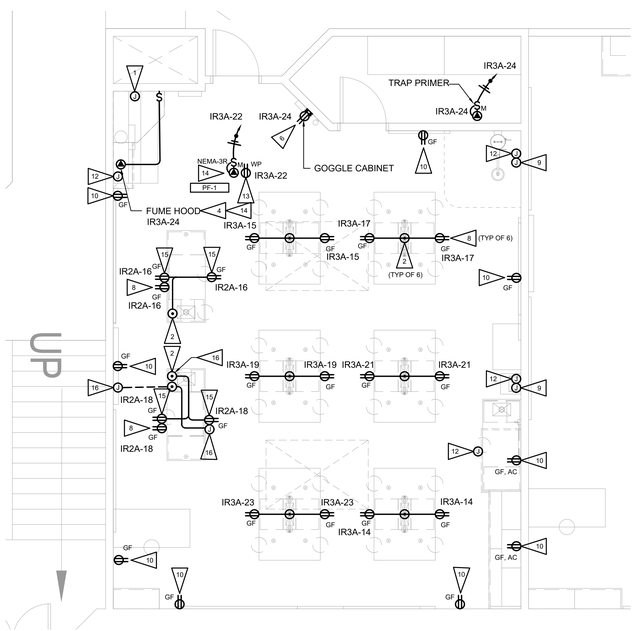
1. ELECTRICAL ITEMS SHOWN ARE DIAGRAMMATIC BASED ON AVAILABLE RECORD DRAWINGS AND SITE WALKS DURING THE DESIGN PERIOD. NOT ALL SYSTEM COMPONENTS ARE SHOWN. FIELD VERIFY DEVICE LOCATIONS AND QUANTITIES PRIOR TO COMMENCING WORK. REROUTE EXISTING-TO-REMAIN DEVICE CONDUIT AND WIRING AS REQUIRED TO SUPPORT REMODEL ACTIVITIES.
2. SEE DRAWING SPECIFICATIONS ON SHEET E01-003 FOR ADDITIONAL INFORMATION.
3. SEE PANEL SCHEDULES, AND ONE-LINE DIAGRAM FOR ADDITIONAL INFORMATION.
4. ALL NEW RECEPTACLES INDICATED ON THIS SHEET SHALL BE TAMPER RESISTANT TYPE.
5. PROVIDE ADHESIVE BROTHER LABEL WITH CIRCUIT IDENTIFICATION AT ALL NEW RECEPTACLES E.G. IR3A-22.
6. WHERE HOMERUNS ARE SHOWN ON THIS SHEET, ROUTE CONDUITS IN THIRD FLOOR ACCESSIBLE CEILING SPACE. SEE SECOND FLOOR PLAN FOR HOMERUNS TO BE ROUTED IN THE SECOND FLOOR ACCESSIBLE CEILING SPACE.

FLAG NOTES

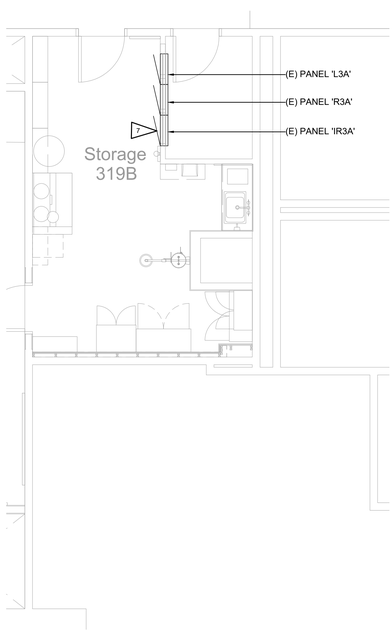
1. REMOVE EXISTING TV RECEPTACLE AND PROVIDE BLANK COVER. PROVIDE WIRE NUTS AND SPLICES REQUIRED TO MAINTAIN EXISTING CIRCUITING.
2. PROVIDE FLEXIBLE CONDUIT FROM POKE THROUGH DEVICE (WIREMOLD 6AT OR APPROVED) TO JUNCTION BOX MOUNTED TO UNDERSIDE OF CASEWORK AND TRANSITION TO MC CABLE WITHIN CASEWORK. PROVIDE HOMERUN FROM POKE THRU DEVICE TO PANELBOARD ON FLOOR BELOW. HOMERUN SHALL BE ROUTED THROUGH ACCESSIBLE CEILING ON FLOOR BELOW. SEE SHEET E01-102 FOR ADDITIONAL INFORMATION.
3. INTERCEPT EXISTING BRANCH CIRCUIT CONDUCTORS AND PROVIDE V700 WIREMOLD AND CONDUCTORS BETWEEN EXISTING ROUGH-IN LOCATION TO NEW RECEPTACLE LOCATION ABOVE COUNTER INDICATED. MAINTAIN EXISTING CIRCUITING.
4. PROVIDE CONDUIT, CONDUCTORS, AND APPURTENANCES REQUIRED FOR A COMPLETE AND FUNCTIONAL FUME HOOD SYSTEM. PROVIDE CONDUIT AND CONDUCTORS TO CONNECT SALVAGED FUME HOOD TO EXISTING PANELBOARD. PROVIDE SURFACE-MOUNTED TOGGLE SWITCH INSTALLED IN SMR. PROVIDE CONDUCTORS FROM NEW SWITCH LOCATION TO EXISTING FUME HOOD CONTROLS AND ROOFTOP EXHAUST FAN. WHERE RACEWAYS ARE EXPOSED ON WALL PROVIDE V700 WIREMOLD.
5. NOT USED.
6. SEE ARCHITECTURAL ELEVATIONS FOR GOGGLE CABINET HEIGHT. LOCATE RECEPTACLE 6" ABOVE TOP OF GOGGLE CABINET FROM TO THE BOTTOM OF THE RECEPTACLE AND LOCATE CENTERED BETWEEN CABINETS. PROVIDE V700 SMR VERTICALLY TO ABOVE ACCESSIBLE CEILING AND TRANSITION TO CONDUIT BACK TO EXISTING PANELBOARD.
7. COORDINATE CUTTING AND PATCHING OF EXISTING WALL TO ACCOMMODATE INSTALLATION OF NEW HOMERUN CONDUITS WITH DIVISION 09 CONTRACTOR.
8. UNINSTALL CASEWORK FURNISHED GFCI RECEPTACLE AND PROVIDE BLACK GFCI WIRING DEVICE.
9. REMOVE EXISTING RECEPTACLE AND PROVIDE BLANK COVER. PROVIDE WIRE NUTS AND SPLICES REQUIRED TO MAINTAIN EXISTING CIRCUITING.
10. PROVIDE REPLACEMENT TAMPER-RESISTANT GFCI TYPE RECEPTACLE AT EXISTING LOCATION. FIELD VERIFY EXISTING RECEPTACLE CONFIGURATION PRIOR TO ROUGH-IN.
11. PROVIDE FLEXIBLE CONDUIT OR MC CABLE WITHIN CASEWORK AND HORIZONTALLY MOUNT RECEPTACLE FLUSH WITH FACE OF CASEWORK.
12. REMOVE EXISTING DEVICE AND PROVIDE BLANK COVER.
13. CONNECT NEW RECEPTACLE TO LINE SIDE OF DISCONNECT. INSTALL RECEPTACLE MOUNTED DIRECTLY TO EQUIPMENT CURB.
14. PROVIDE CONDUIT AND CABLING REQUIRED TO INTERLOCK THE FUME HOOD WITH ROOFTOP EXHAUST FAN.
15. CUT IN NEW DEVICE LOCATION WITHIN SCIENCE ROOM CASEWORK. PROVIDE FLEXIBLE CONDUIT FROM POKE THROUGH DEVICE TO JUNCTION BOX MOUNTED TO UNDERSIDE OF CASEWORK AND TRANSITION TO MC CABLE WITHIN CASEWORK.
16. PROVIDE ROUGH-IN FOR HDMI DEVICE IN FRONT OF CASEWORK. PROVIDE 1-1'2" FLEXIBLE CONDUIT WITHIN CASEWORK TO POKE THRU LOCATION. PROVIDE CONTINUOUS CONDUIT PATHWAY IN 2ND FLOOR CEILING SPACE TO TEACHING WALL AND PROVIDE ROUGH-IN ADJACENT TO RECEPTACLE CENTERED ON TEACHING WALL FOR FUTURE HDMI LOCATION FOR DISPLAY. PROVIDE BLANK PLATE FOR INITIAL CONSTRUCTION.



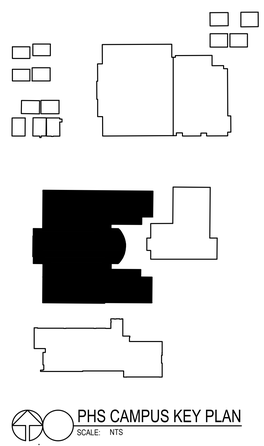
4 ENLARGED ELECTRICAL FLOOR PLAN SCIENCE 01-324
SCALE: 1/4" = 1'-0"



2 ENLARGED ELECTRICAL FLOOR PLAN SCIENCE 01-322
SCALE: 1/4" = 1'-0"



3 ENLARGED ELECTRICAL FLOOR PLAN STORAGE 319B
SCALE: 1/4" = 1'-0"



PHS CAMPUS KEY PLAN
SCALE: NTS

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PRCT12026O899

TITLE
PUYALLUP HS
SCIENCE
CLASSROOM TI 2026

STAMP
TAYLOR S. VANDERVALEY
STATE OF WASHINGTON
20111166
REGISTERED
PROFESSIONAL ENGINEER
06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

OVERALL
3RD FLOOR
ELECTRICAL
FLOORPLAN
BUILDING 50-01

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-103

SHEET NOTES:

1. NEW BREAKERS SHALL MATCH EXISTING PANEL MANUFACTURER AND AIC RATING.
2. AVAILABLE FAULT CURRENT AT MDP-2 IS BASED UPON RECORD DRAWINGS.

PUYALLUP HS 600A PRIMARY SWITCH DEMAND CALCULATION:

EXISTING 600A SWITCH:
12-MONTH PEAK DEMAND = 517.2 kW
517.2 kW @ .90 POWER FACTOR = 574.7 kVA
574.7 kVA X 125% = 718.4 kVA

REVISED 600A SWITCH:
ADJUSTED DEMAND = 718.4 kVA
ADDED DEMAND = 6.3 kVA
TOTAL DEMAND = ADJUSTED + ADDED = 724.7 kVA
724.7 kVA/(12,470V x SQRT(3)) = 33.6 A

NEW CALCULATED DEMAND DOES NOT EXCEED THE AMPACITY OF THE FEEDERS OR BUS SUPPLYING POWER TO THESE LOADS.

PUYALLUP HS 15KV 200A SWITCH DEMAND CALCULATION:

EXISTING 200A SWITCH:
12-MONTH PEAK DEMAND = 517.2 kW
517.2 kW @ .90 POWER FACTOR = 574.7 kVA
574.7 kVA X 125% = 718.4 kVA

REVISED 200A SWITCH:
ADJUSTED DEMAND = 718.4 kVA
ADDED DEMAND = 6.3 kVA
TOTAL DEMAND = ADJUSTED + ADDED = 724.7 kVA
724.7 kVA/(12,470V x SQRT(3)) = 33.6 A

NEW CALCULATED DEMAND DOES NOT EXCEED THE AMPACITY OF THE FEEDERS OR BUS SUPPLYING POWER TO THESE LOADS.

PUYALLUP HS XFMR T1 DEMAND CALCULATION:

EXISTING 2000KVA TRANSFORMER:
12-MONTH PEAK DEMAND = 517.2 kW
517.2 kW @ .90 POWER FACTOR = 574.7 kVA
574.7 kVA X 125% = 718.4 kVA

REVISED 2000KVA TRANSFORMER:
ADJUSTED DEMAND = 718.4 kVA
ADDED DEMAND = 6.3 kVA
TOTAL DEMAND = ADJUSTED + ADDED = 724.7 kVA

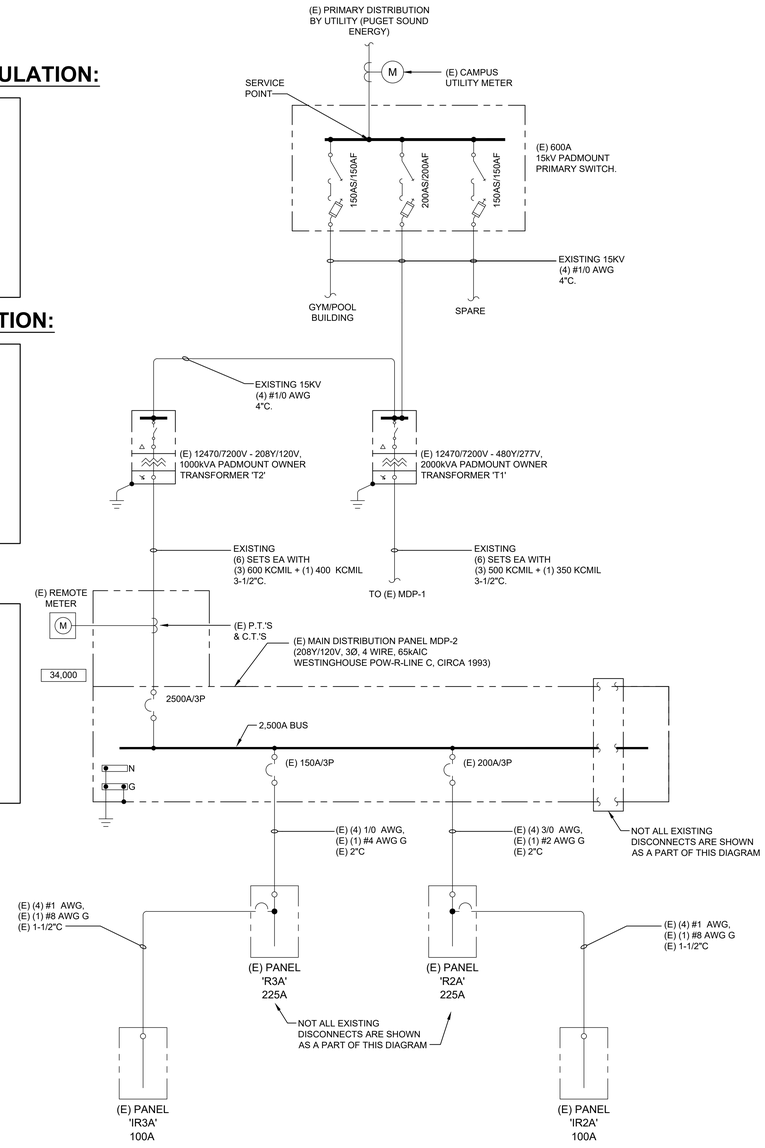
NEW CALCULATED DEMAND DOES NOT EXCEED THE AMPACITY OF THE FEEDERS OR BUS SUPPLYING POWER TO THESE LOADS.

PUYALLUP HS MDP-2 DEMAND CALCULATION:

EXISTING 2500A SWITCHBOARD:
12-MONTH PEAK DEMAND = 517.2 kW
517.2 kW @ .90 POWER FACTOR = 574.7 kVA
574.7 kVA X 125% = 718.4 kVA

REVISED 2500A SWITCHBOARD:
ADJUSTED DEMAND = 718.4 kVA
ADDED DEMAND = 6.3 kVA
TOTAL DEMAND = ADJUSTED + ADDED = 724.7 kVA
724.7 kVA/(208V x SQRT(3)) = 2,012 A

NEW CALCULATED DEMAND DOES NOT EXCEED THE AMPACITY OF THE FEEDERS OR BUS SUPPLYING POWER TO THESE LOADS.



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PRCT120260899

TITLE
PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP
TAYLOR S. VANDERKLEY — STATE OF WASHINGTON — 20111166 — REGISTERED PROFESSIONAL ENGINEER
06/04/2026

ISSUED:	DATE:
PERMIT SET	JUNE 04 2026

ELECTRICAL ONE-LINE DIAGRAM

Building Permit #:	-
Site Permit #:	-
Owner's Project #:	50-08-26
Architect's Project #:	2026104
Drawn By	TSV
Checked By	BMI

E01-901

PANEL SCHEDULE : 05/29/2026 — **(E) PANEL 'R2A'** — **PROJECT: Puyallup HS Science Classroom T.I. 2026**

CLASSIFICATION: NORMAL | VOLTAGE: 208Y/120V 3Ø, 4-WIRE | SECTION: 1 OF 1 | LOCATION: ROOM 219
FED FROM: (E) DIST. PANEL 'MDP-2' | MAINS: 225A MAIN LUGS ONLY | TYPE: WESTINGHOUSE POW-R-LINE C PRL1 (CIRCA 1
MOUNTING: SURFACE | NEUTRAL: 100% RATED | AIC: 10K | ENCLOSURE: NEMA 1

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	RECEPTACLES ROOM 2007 - 2011	1	20	1	720	A	4140	60	3	2	(E) PANEL 'IR2A'	
	RECEPTACLES ROOM 2005	3	20	1	720	B	4140	-	-	4	-	
	RECEPTACLES ROOM 2005	5	20	1	900	C	3600	-	-	6	-	
	RECEPTACLES ROOM 2004	7	20	1	720	A		50	2	8	SPARE	
	RECEPTACLES ROOM 2004	9	20	1	720	B		-	-	10	-	
	RECEPTACLES ROOM 2002	11	20	1	1080	C	1500	20	1	12	DISWASHER ROOM 2015	
	RECEPTACLES ROOM 2002	13	20	1	900	A	500	20	1	14	REFRIGERATOR ROOM 2015	
	RECEPTACLES ROOM 2001	15	20	1	720	B	540	20	1	16	RECEPTACLES ROOM 2040	
	RECEPTACLES ROOM 2001	17	20	1	720	C	540	20	1	18	RECEPTACLES ROOM 2040	
	RECEPTACLES 2015	19	20	1	900	A	720	20	1	20	RECEPTACLES ROOM 2041,2043	
	RECEPTACLES 2015	21	20	1	900	B	900	20	1	22	RECEPTACLES ROOM 2041,2043	
	RECEPTACLES 2013A	23	20	1	900	C	720	20	1	24	RECEPTACLES ROOM 2039, 2043	
	RECEPTACLES 2013A	25	20	1	900	A	900	20	1	26	RECEPTACLES ROOM 2039, 2043	
	RECEPTACLES ROOM 2012	27	20	1	900	B	720	20	1	28	RECEPTACLES ROOM 2039, 2043	
	RECEPTACLES ROOM 2012	29	20	1	900	C	1080	20	1	30	RECEPTACLES 2040, 2041	
	RECEPTACLES ROOM 2007-2009	31	20	1	720	A	720	20	1	32	RECEPTACLES CORRIDOR & STAIRS	
	RANGE HOOD	33	20	1	1000	B	1200	20	2	34	HP2-21	
	LIGHTING	35	20	1	940	C	1200	-	-	36	-	
	LIGHTING	37	20	1	180	A	10440	150	3	38	(E) PANEL 'R2D'	
	DISWASHER BOOSTER	39	20	1		B	9900	-	-	40	-	
	-	41	20	1		C	8280	-	-	42	-	

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS:	-	125%	-
EQUIPMENT & MISCELLANEOUS:	4900	100%	4900
LIGHTING:	28840	125%	36050
LARGEST MOTOR:	-	125%	-
MOTORS:	-	100%	-
RECEPTACLE:	10000	100%	10000
RECEPTACLES OVER 10kVA:	22940	50%	11470
APPLIANCE:	500	100%	500
TOTALS:	**67,180**		**62,920**

LOAD SUMMARY

TOTAL CONNECTED LOAD **AMPS**
PHASE A: 22,460 VA 187 A
PHASE B: 22,360 VA 186 A
PHASE C: 22,360 VA 186 A

TOTAL CALCULATED LOAD: 62,920 VA
TOTAL CALCULATED AMPS: 175 A

NOTES:
1. PROVIDE NEW BREAKER IN AVAILABLE SPACE
2.
3.
4.
5.

HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101
PH. (206) 448-3376
FAX. (206) 448-4450

PANEL SCHEDULE : 12/20/2023 — **(E) PANEL 'R3A'** — **PROJECT: Puyallup HS Science Classroom T.I. 2026**

CLASSIFICATION: NORMAL | VOLTAGE: 208Y/120V 3Ø, 4-WIRE | SECTION: 1 OF 1 | LOCATION: ROOM 319B
FED FROM: (E) DIST. PANEL 'MDP-2' | MAINS: 225A MAIN LUGS ONLY | TYPE: WESTINGHOUSE POW-R-LINE C PRL1 (CIRCA 1
MOUNTING: SURFACE | NEUTRAL: 100% RATED | AIC: 10K | ENCLOSURE: NEMA 1

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	RECEPTACLES ROOM 3006-3011	1	20	1	900	A	4320	100	3	2	(E) PANEL 'IR3A'	
	RECEPTACLES ROOM 3004	3	20	1	900	B	4920	-	-	4	-	
	RECEPTACLES ROOM 3004	5	20	1	900	C	3880	-	-	6	-	
	RECEPTACLES ROOM 3003	7	20	1	900	A	2120	60	3	8	(E) PANEL 'R3S'	
	RECEPTACLES ROOM 3003	9	20	1	720	B	1800	-	-	10	-	
	RECEPTACLES ROOM 3002	11	20	1	900	C	2690	-	-	12	-	
	RECEPTACLES ROOM 3002	13	20	1	900	A	720	20	1	14	RECEPATACLES ROOMS 3040-30	
	RECEPTACLES ROOM 3001	15	20	1	720	B	900	20	1	16	RECEPATACLES ROOMS 3040-30	
	RECEPTACLES ROOM 3001	17	20	1	360	C	720	20	1	18	RECEPATACLES ROOMS 3040-30	
	RECEPTACLES ROOM 3001	19	20	1	540	A	720	20	1	20	RECEPATACLES ROOMS 3040-30	
	RECEPTACLES ROOM 3013A	21	20	1	900	B	900	20	1	22	RECEPTACLES ROOMS 3037-3039	
	RECEPTACLES ROOM 3013A	23	20	1	720	C	900	20	1	24	RECEPTACLES ROOMS 3037-3039	
	RECEPTACLES ROOM 3012	25	20	1	900	A	720	20	1	26	RECEPTACLES ROOMS 3037-3039	
	RECEPTACLES ROOM 3012	27	20	1	720	B	1000	20	2	28	SKYLIGHT SHADE	
	RECEPTACLES ROOM 3006	29	20	1	900	C	1000	-	-	30	-	
	EF3-1	31	20	1	1180	A	1500	20	1	32	PF-01	
	HP3-12	33	20	2	1450	B	540	20	1	34	RECEPTACLES ROOM 3039	
	-	35	-	-	1450	C	540	20	1	36	RECEPTACLES ROOF	
	HP3-21	37	20	2	1300	A	750	20	1	38	HEAT TRACE	
	-	39	-	-	1300	B	1180	20	1	40	EF3-11	
	FUME HOOD	41	20	1	500	C	500	20	1	42	TRAP PRIMER & GOGGLE CABINET	

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS:	-	125%	-
EQUIPMENT & MISCELLANEOUS:	4050	100%	4050
LIGHTING:	-	125%	-
LARGEST MOTOR:	2900	125%	3625
MOTORS:	9960	100%	9960
RECEPTACLE:	10000	100%	10000
RECEPTACLES OVER 10kVA:	24380	50%	12190
TOTALS:	**51,290**		**39,825**

LOAD SUMMARY

TOTAL CONNECTED LOAD **AMPS**
PHASE A: 17,470 VA 146 A
PHASE B: 17,950 VA 150 A
PHASE C: 15,870 VA 132 A

TOTAL CALCULATED LOAD: 39,825 VA
TOTAL CALCULATED AMPS: 111 A

NOTES:
1.
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HARGIS ENGINEERS, INC.
1201 THIRD AVENUE, SUITE 600
SEATTLE, WA 98101
PH. (206) 448-3376
FAX. (206) 448-4450

PANEL SCHEDULE : 05/29/2026 — **(E) PANEL 'IR2A'** — **PROJECT: Puyallup HS Science Classroom T.I. 2026**

CLASSIFICATION: NORMAL | VOLTAGE: 208Y/120V 3Ø, 4-WIRE | SECTION: 1 OF 1 | GROUND: ISOLATED
FED FROM: (E) PANEL 'R2A' | MAINS: 100A MAIN LUGS ONLY | LOCATION: ROOM 219
MOUNTING: FLUSH | NEUTRAL: 100% RATED | AIC: 10K | TYPE: WESTINGHOUSE POW-R-LINE C PRL1 (CIRCA 1

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	RECEPTACLES ROOM 2005	1	20	1	900	A		30	3	2	SPD	
	RECEPTACLES ROOM 2004	3	20	1	900	B		-	-	4	-	
	RECEPTACLES ROOM 2004	5	20	1	360	C		-	-	6	-	
	RECEPTACLES ROOM 2002	7	20	1	900	A	900	20	1	8	RECEPTACLES ROOM 2040	
	RECEPTACLES ROOM 2001	9	20	1	900	B	900	20	1	10	RECEPTACLES ROOM 2041	
	RECEPTACLES ROOM 2001	11	20	1	900	C	900	20	1	12	RECEPTACLES ROOM 2039	
	RECEPTACLES ROOM 2015	13	20	1	900	A	**540**	20	1	14	**RECEPTACLES ROOM 324**	**1**
	RECEPTACLES ROOM 2013a	15	20	1	900	B	**540**	20	1	16	**RECEPTACLES ROOM 322**	**1**
	RECEPTACLES ROOM 2012	17	20	1	900	C	**540**	20	1	18	**RECEPTACLES ROOM 322**	**1**
	SPACE	19	-	-		A		-	-	20	SPACE	
	SPACE	21	-	-		B		-	-	22	SPACE	
	SPACE	23	-	-		C		-	-	24	SPACE	

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS:	-	125%	-
EQUIPMENT & MISCELLANEOUS:	-	100%	-
LIGHTING:	-	125%	-
LARGEST MOTOR:	-	125%	-
MOTORS:	-	100%	-
RECEPTACLE:	10000	100%	10000
RECEPTACLES OVER 10kVA:	1880	50%	940
TOTALS:	**11,880**		**10,940**

LOAD SUMMARY

TOTAL CONNECTED LOAD **AMPS**
PHASE A: 4,140 VA 35 A
PHASE B: 4,140 VA 35 A
PHASE C: 3,600 VA 30 A

TOTAL CALCULATED LOAD: 10,940 VA
TOTAL CALCULATED AMPS: 30 A

NOTES:
1. NEW LOAD ON EXISTING SPARE BREAKER
2. PROVIDE NEW BREAKER IN AVAILABLE SPACE
3.
4.
5.

HARGIS ENGINEERS, INC.
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FAX. (206) 448-4450

PANEL SCHEDULE : 05/29/2026 — **(E) PANEL 'IR3A'** — **PROJECT: Puyallup HS Science Classroom T.I. 2026**

CLASSIFICATION: NORMAL | VOLTAGE: 208Y/120V 3Ø, 4-WIRE | SECTION: 1 OF 1 | GROUND: ISOLATED
FED FROM: (E) PANEL 'R3A' | MAINS: 100A MAIN LUGS ONLY | LOCATION: ROOM 319B
MOUNTING: FLUSH | NEUTRAL: 100% RATED | AIC: 10K | TYPE: WESTINGHOUSE POW-R-LINE C PRL1 (CIRCA 1

NOTE	ITEM DESCRIPTION	CKT NO.	BREAKER AMPS	POLE	LOAD (VA)	Ø	LOAD (VA)	BREAKER AMPS	POLE	CKT NO.	ITEM DESCRIPTION	NOTE
	RECEPTACLES ROOM 3004	1	20	1	900	A		30	3	2	SPD	
	RECEPTACLES ROOM 3003	3	20	1	900	B		-	-	4	-	
	RECEPTACLES ROOM 3002	5	20	1	900	C		-	-	6	-	
	RECEPTACLES ROOM 3001	7	20	1	900	A	900	20	1	8	RECEPTACLES ROOMS 3037-3042	
	RECEPTACLES ROOM 3015	9	20	1	900	B	900	20	1	10	RECEPTACLES ROOMS 3037-3042	
	RECEPTACLES ROOM 3013a	11	20	1	1080	C	180	20	1	12	RECAPTACLES ROOM 3043	
	RECEPTACLES ROOM 3012	13	20	1	900	A	**360**	20	1	14	**RECEPTACLES ROOM 322**	**1**
1	**RECEPTACLES ROOM 322**	15	20	1	**360**	B		30	3	16	SPARE	
1	**RECEPTACLES ROOM 322**	17	20	1	**360**	C		-	-	18	-	
1	**RECEPTACLES ROOM 322**	19	20	1	**360**	A		-	-	20	-	
1	**RECEPTACLES ROOM 322**	21	20	1	**360**	B	**1500**	**20**	**1**	22	**PF-1**	**2**
2	**RECEPTACLES ROOM 322**	23	**20**	**1**	**360**	C	**1000**	**20**	**1**	24	**GOGGLE CAB, FUME HOOD, TRAP PRIMER**	**2**

LOAD CALCULATIONS

LOAD DESCRIPTION	CONN. (VA)	DEMAND FACTOR	CALC. (VA)
MISCELLANEOUS CONTINUOUS:	-	125%	-
EQUIPMENT & MISCELLANEOUS:	1000	100%	1000
LIGHTING:	-	125%	-
LARGEST MOTOR:	1500	125%	1875
MOTORS:	-	100%	-
RECEPTACLE:	10000	100%	10000
RECEPTACLES OVER 10kVA:	620	50%	310
TOTALS:	**13,120**		**13,185**

LOAD SUMMARY

TOTAL CONNECTED LOAD **AMPS**
PHASE A: 4,320 VA 36 A
PHASE B: 4,920 VA 41 A
PHASE C: 3,880 VA 32 A

TOTAL CALCULATED LOAD: 13,185 VA
TOTAL CALCULATED AMPS: 37 A

NOTES:
1. NEW LOAD ON EXISTING SPARE BREAKER
2. PROVIDE NEW BREAKER IN AVAILABLE SPACE
3.
4.
5.

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ARCHITECT

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City of Puyallup Development & Permitting Services: ISSUED PERMIT
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PRCT120260899

TITLE

PUYALLUP HS SCIENCE CLASSROOM TI 2026

STAMP

TAYLOR S. VANDEKAMP — STATE OF WASHINGTON — 20111166 — REGISTERED PROFESSIONAL ENGINEER

06/04/2026

ISSUED: DATE:

PERMIT SET JUNE 04 2026

ELECTRICAL PANEL SCHEDULES

Building Permit #: -
Site Permit #: -
Owner's Project #: 50-08-26
Architect's Project #: 2026104
Drawn By TSV
Checked By BMI

E01-1001