Derivi Castellanos Architects

Serving California for Over Forty Years

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408.320.4871

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3031 W MARCH LN, STE 334
STOCKTON, CA 95219
209.462.2873

Addendum No. 1

Date Issued:	Monday, April 18, 2022
From:	Derivi Castellanos Architects (DCA) 3031 West March Lane, Suite #334 Stockton, CA 95219 (209) 204-4188 Contact: Kim Johnson kjohnson@dcaaia.com
Project:	Portable Sink Addition Greer Elementary School DSA Application No. Non-DSA Project Dated October 06, 2021
Owner:	Galt Joint Union Elementary School District

To: **All contract bidders, Owner, and other organizations concerned with this Project.**

GENERAL

The following changes, additions or deletions for the above project shall be made to the Contract Documents; all other conditions shall remain the same. This Addendum forms part of the Contract Documents and modifies them as follows:

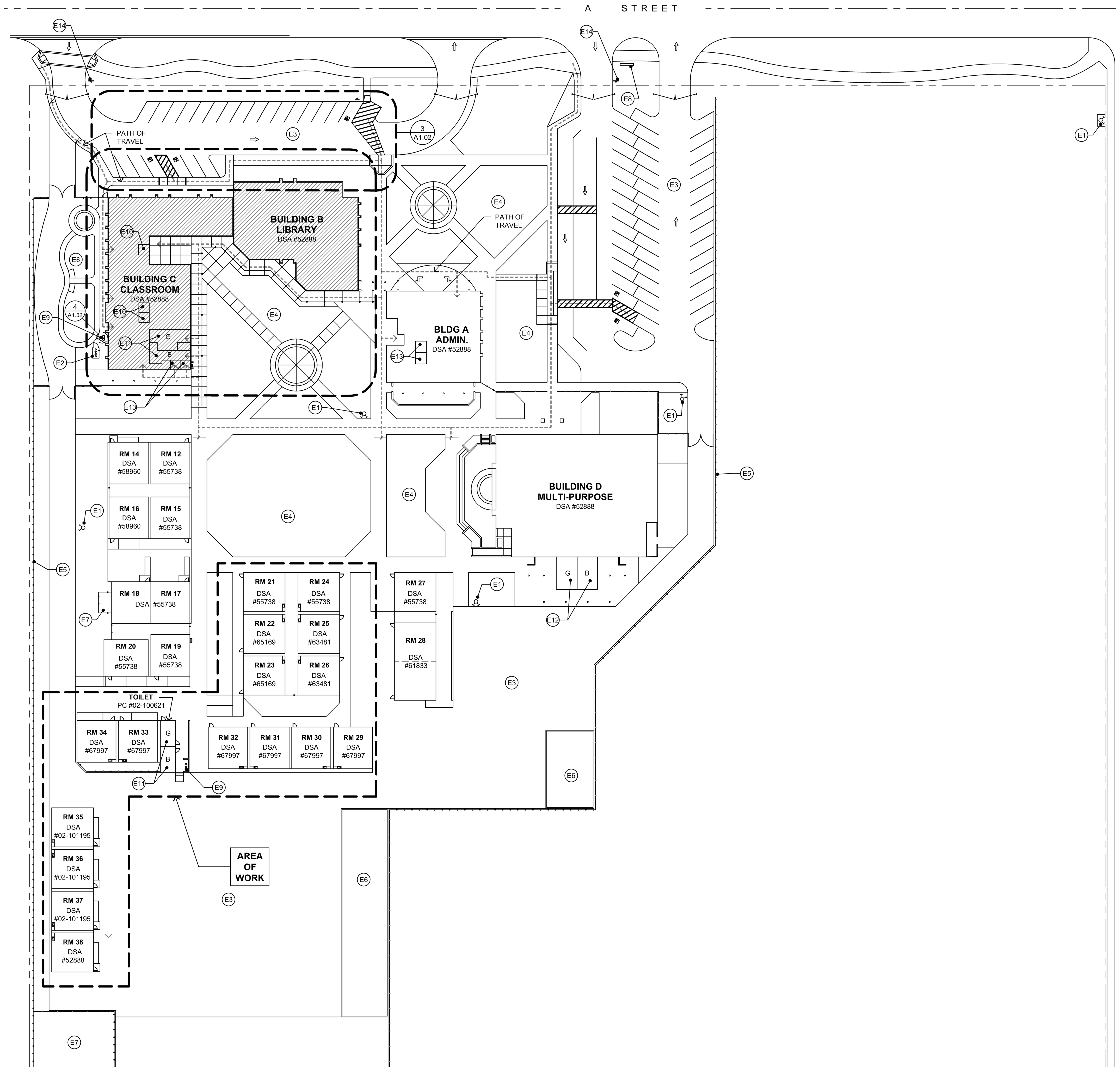
INFORMATION

1. Bid due date has been changed to April 28, 2022, at 10:00 am.
2. Contractor will need to field investigate with cameras to determine where and which direction the sewer and water lines run.

DRAWINGS

3. Architectural Drawings:
   Replace existing architectural sheets A1.01 and A5.70 with revised architectural sheets A1.01 and A5.70.
4. Civil Drawings:
   Replace existing civil sheets C1.1 and C1.2 with revised civil sheets C1.1 and C1.2.
5. Plumbing Drawings:
   Replace existing plumbing sheets P0.01, P0.02, P0.03, P0.04, P0.05, P1.01, P2.01 and P5.01 with revised plumbing sheets P0.01, P0.02, P0.03, P0.04, P0.05, P1.01, P2.01 and P5.01.

End Addendum No. 1



1 SITE PLAN

SCALE: 1" = 40'-0"

0' 20' 40' 80' GRAPHIC SCALE (FEET)

N

KEYNOTES

"E" EXISTING-FOR REFERENCE ONLY
- E1 - EXISTING FIRE HYDRANT
- E2 - EXISTING BACKFLOW PREVENTOR
- E3 - EXISTING A.C. PAVING
- E4 - EXISTING TURF
- E5 - EXISTING CHAIN LINK FENCE
- E6 - EXISTING PLAY AREA
- E7 - EXISTING UTILITY ENCLOSURE
- E8 - EXISTING SCHOOL SIGN
- E9 - EXISTING HI-LO PEDESTAL DRINKING FOUNTAIN 2 LOCATIONS
- E10 - EXISTING KINDERGARTEN RESTROOM
- E11 - EXISTING STUDENT ACCESSIBLE RESTROOM
- E12 - EXISTING STUDENT NON-ACCESSIBLE RESTROOM
- E13 - EXISTING STAFF ACCESSIBLE RESTROOM
- E14 - EXISTING TOW-AWAY SIGN

PATH OF TRAVEL

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT: THE POT IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR THE PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT.

NOTE:
ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE, OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM AND SLIP RESISTANT. CROSS SLOPE SHALL NOT BE STEEPER THAN 1:48 AND SLOPE IN THE DIRECTION OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL AND ABOVE 27" AND LESS THAN 80". ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

BUILDING SUMMARY

BUILDING IDEN.	BUILDING DESCRIPTION	SQUARE FOOTAGE	CONSTRUCTION TYPE	OCCUPANCY
A	ADMINISTRATION	4,850 SF	VN	B
B	LIBRARY	6,717 SF	VN	E
C	CLASSROOMS	8,848 SF	VN	E
D	MULTI-PURPOSE	11,954 SF	VN	A3
PORTABLE BUILDINGS				
RM 12	CLASSROOM	960 SF	VN	E
RM 14	CLASSROOM	960 SF	VN	E
RM 15	CLASSROOM	960 SF	VN	E
RM 15	CLASSROOM	960 SF	VN	E
RM 16	CLASSROOM	960 SF	VN	E
RMS 17 - 18	CLASSROOM	1,920 SF	VN	E
RM 19	CLASSROOM	960 SF	VN	E
RM 20	CLASSROOM	952 SF	VN	E
RM 21	CLASSROOM	960 SF	VN	E
RM 22	CLASSROOM	960 SF	VN	E
RM 23	CLASSROOM	960 SF	VN	E
RM 24	CLASSROOM	960 SF	VN	E
RM 25	CLASSROOM	960 SF	VN	E
RM 26	CLASSROOM	960 SF	VN	E
RM 27	CLASSROOM	960 SF	VN	E
RM 28	CLASSROOM	1,893 SF	VN	E
RM 29	CLASSROOM	960 SF	VN	E
RM 30	CLASSROOM	960 SF	VN	E
RM 31	CLASSROOM	960 SF	VN	E
RM 32	CLASSROOM	960 SF	VN	E
RM 33	CLASSROOM	960 SF	VN	E
RM 34	CLASSROOM	960 SF	VN	E
RM 35	CLASSROOM	960 SF	VN	E
RM 36	CLASSROOM	960 SF	VN	E
RM 37	CLASSROOM	960 SF	VN	E
RM 38	CLASSROOM	960 SF	VN	E

LEGEND

- STRUCTURAL GRID
- KEYNOTE REFERENCE
- FIRE HYDRANT
- BACK FLOW PREVENTOR (BFP)

FOR CONSTRUCTION

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LICENSED ARCHITECT CRAIG ALLAN SCOTT C-14508 FEB 28, 2023 RENEWAL DATE STATE OF CALIFORNIA

GALT JOINT UNION ELEMENTARY SCHOOL DISTRICT

VERNON E GREER ELEMENTARY SCHOOL

PORTABLE SINK ADDITION

248 W. A STREET
GALT, CA 95632

SHEET TITLE: **SITE PLAN**

SCALE: AS SHOWN

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022
2		
3		
4		
5		

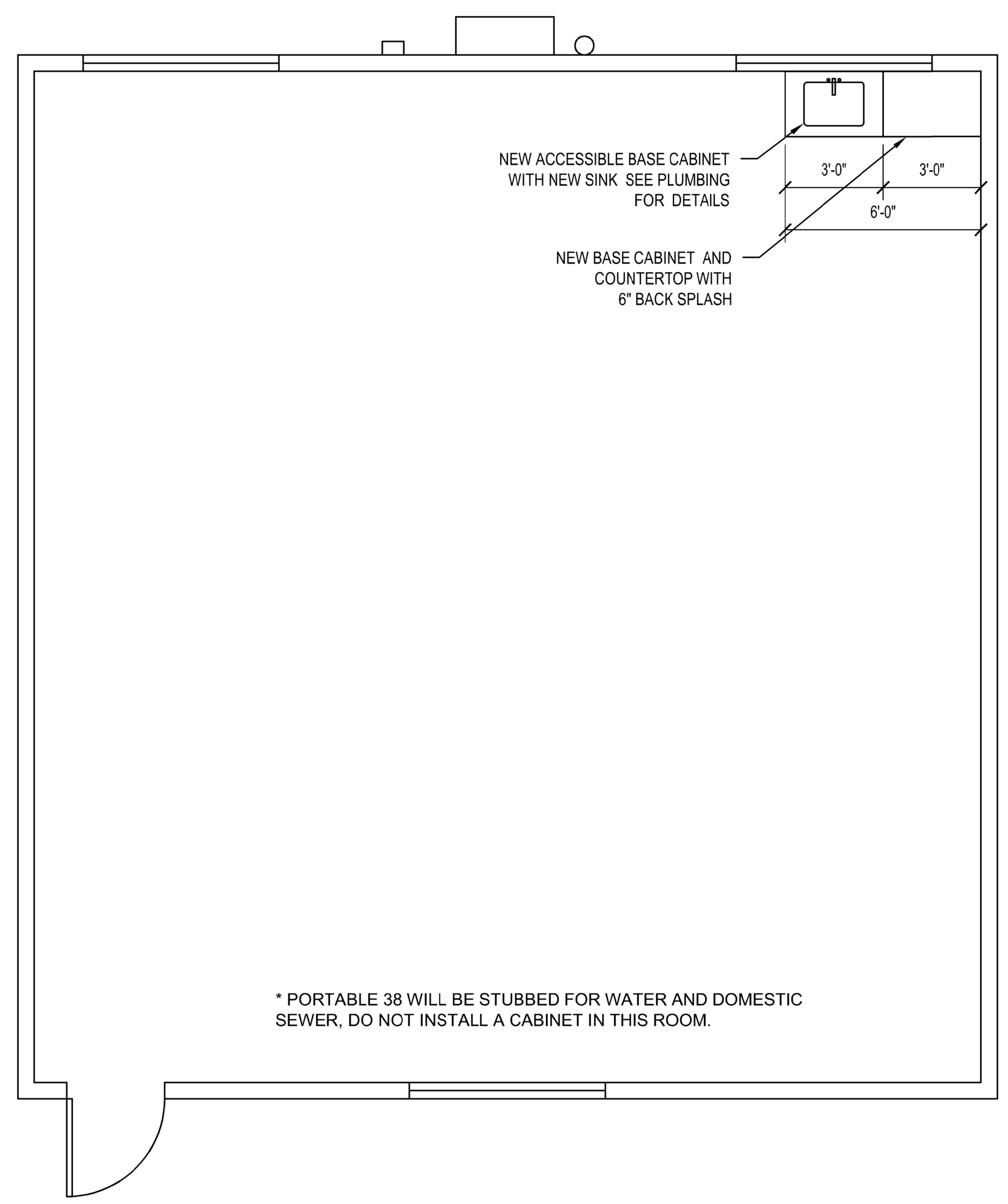
Drawn By: KJ

Checked By: KJ

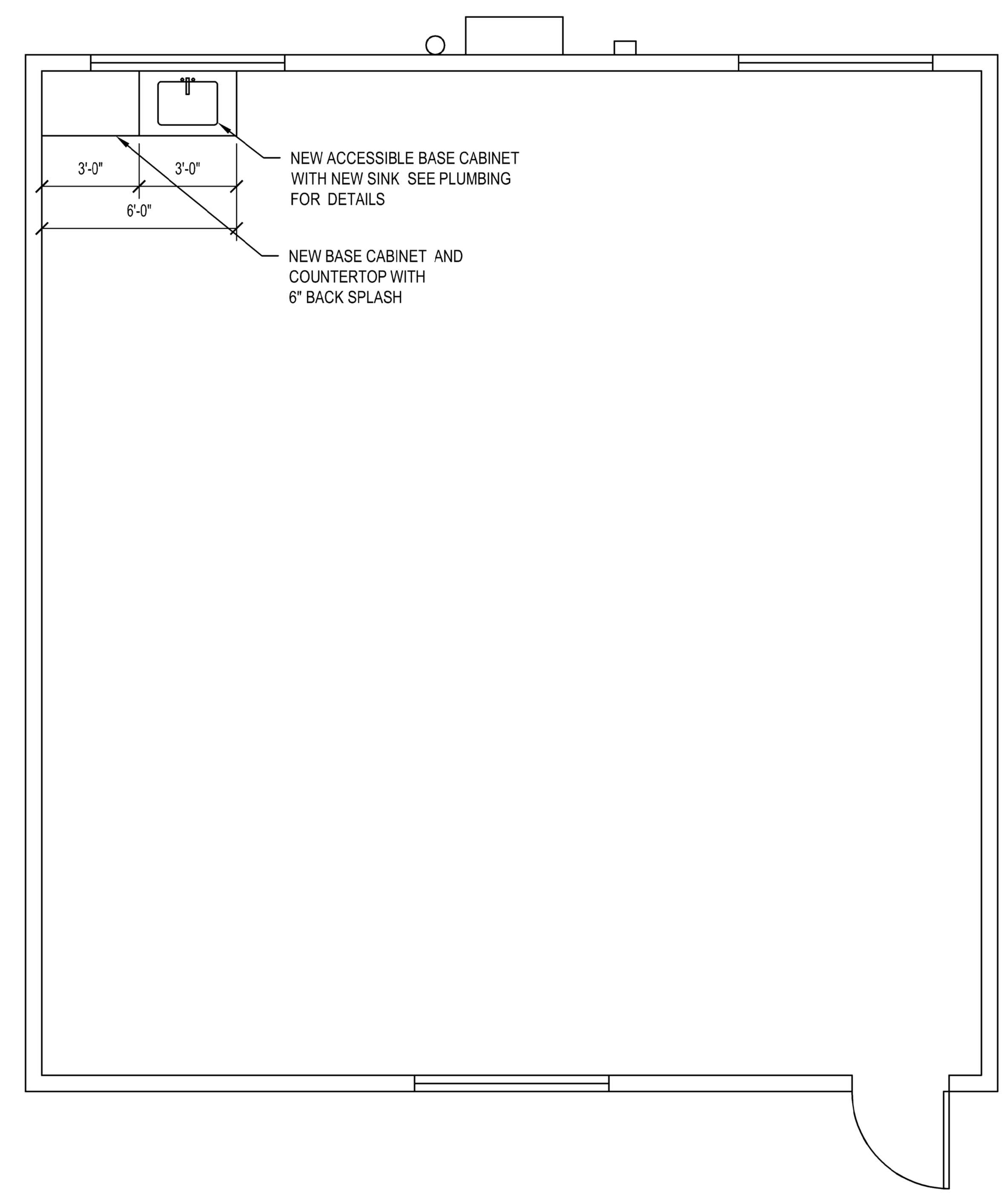
JOB NO. 21.023

DATE 10-08-2021

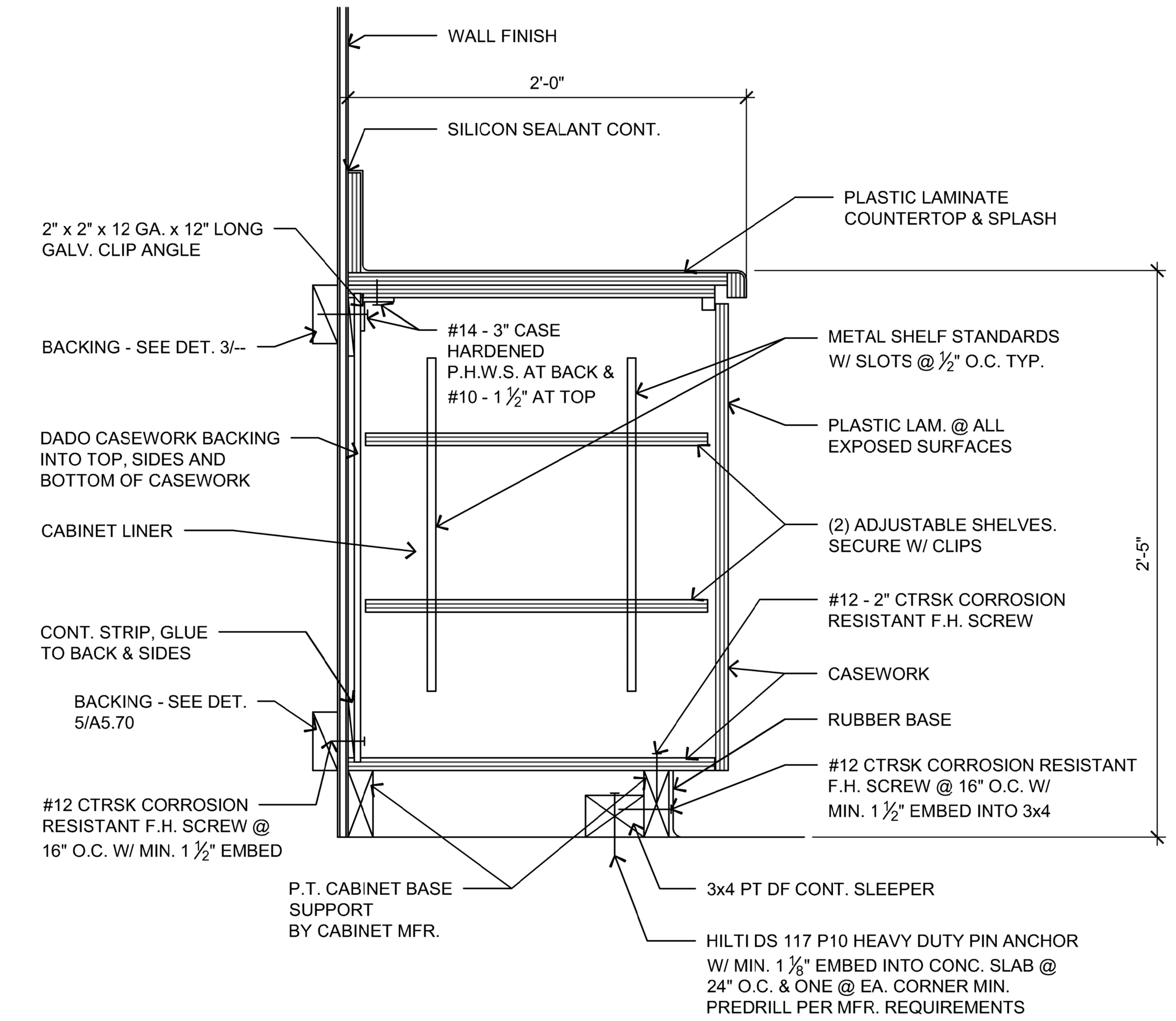
SHEET NUMBER **A1.01**



FLOOR PLAN - PORTABLES; 21, 24, 25, 36, 38 | 1/4" = 1'-0" | 8

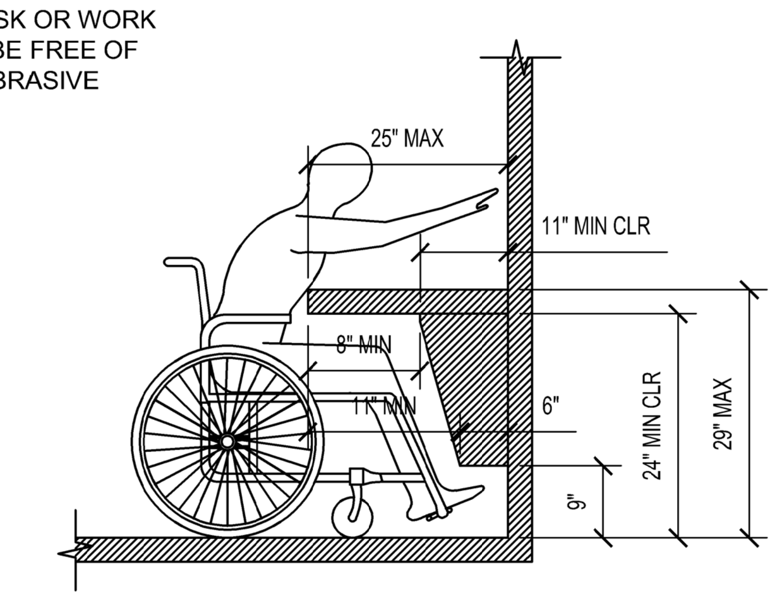


FLOOR PLAN - PORTABLES; 23, 30, 32 | 1/4" = 1'-0" | 6



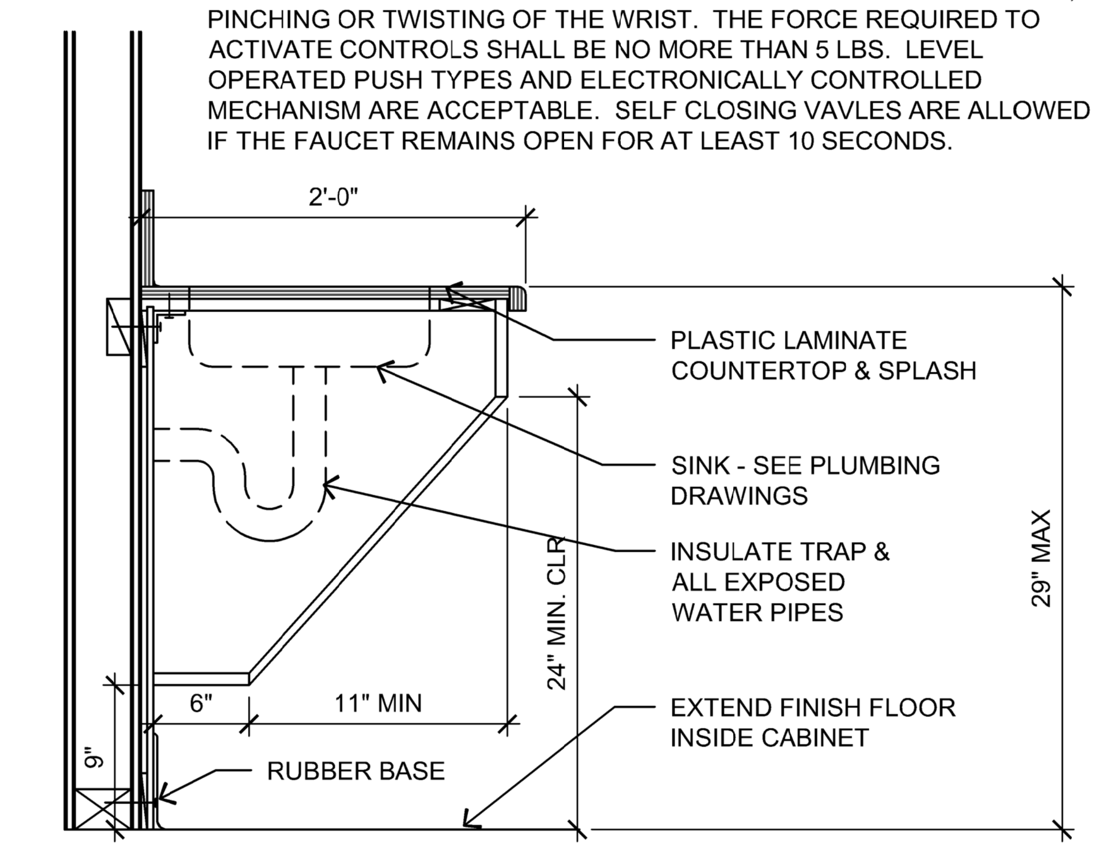
BASE CABINET | 1-1/2" = 1'-0" | 1

NOTES:
1. MUST BE LOCATED ADJACENT TO AN ACCESSIBLE PATH.
2. WIDTH OF APPROACH AND AREA UNDER OBSTRUCTION SHALL BE MIN 30" CLEAR.
3. VERTICAL REACH RANGES FOR ACCESSIBLE CONTROLS SHALL BE BETWEEN 15" MIN AND 48" MAX ABOVE FINISH FLOOR.
4. AREA UNDER DESK OR WORK SURFACE SHALL BE FREE OF SHARP AND/OR ABRASIVE SURFACES.

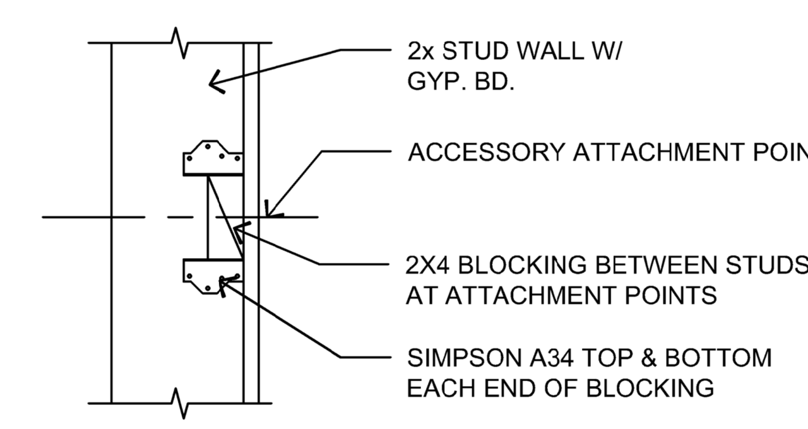


ACCESSIBLE COUNTER, ETC. | NO SCALE | 4

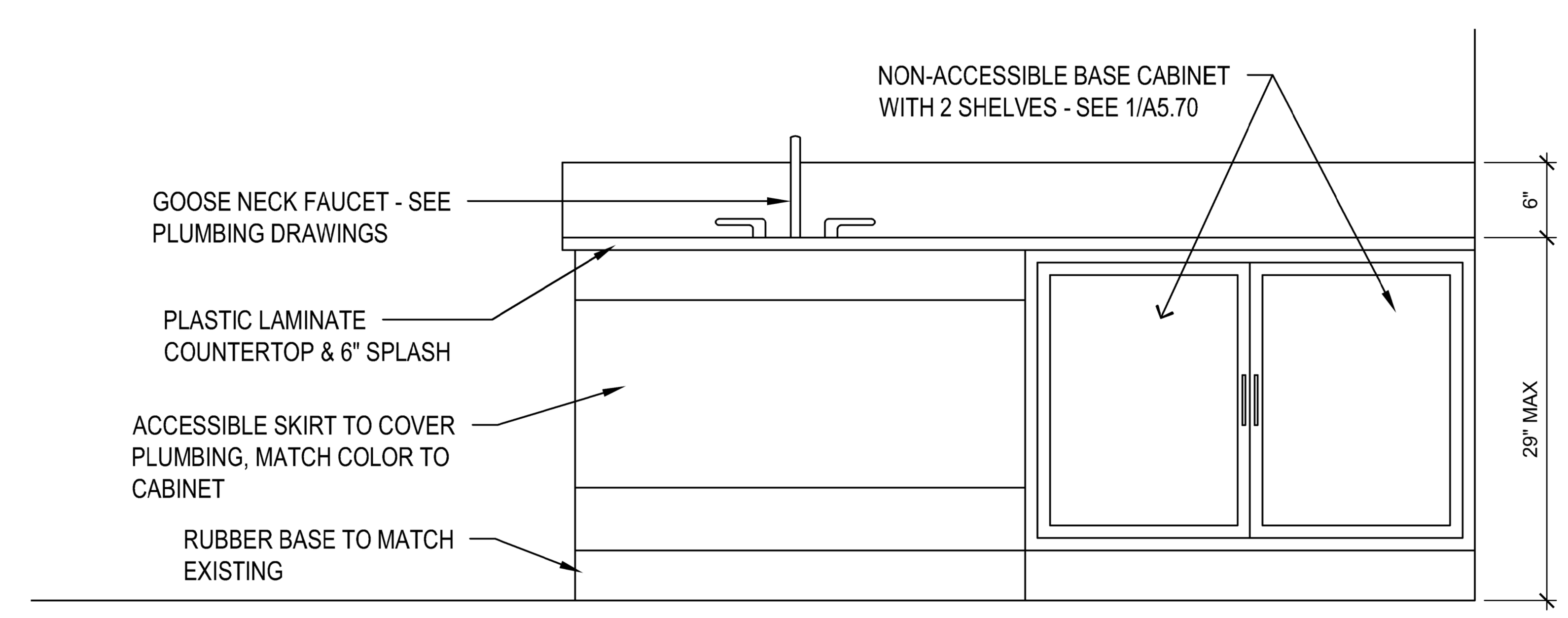
NOTE:
FAUCET CONTROLS AND OPERATING MECHANISMS SHALL BE OPERABLE WITH ONE HAND & SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO MORE THAN 5 LBS. LEVEL OPERATED PUSH TYPES AND ELECTRONICALLY CONTROLLED MECHANISM ARE ACCEPTABLE. SELF CLOSING VAVLES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.



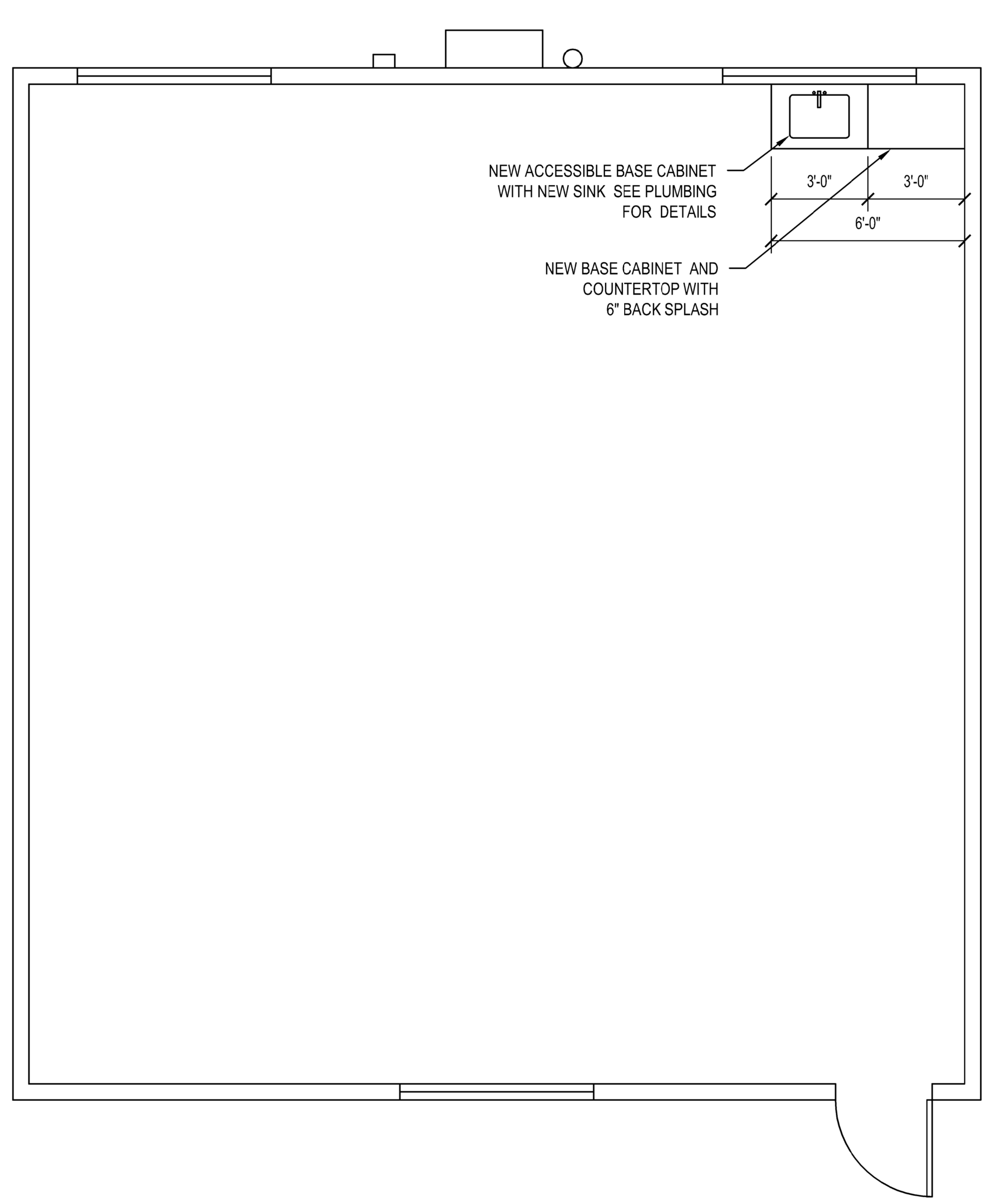
ACCESSIBLE CABINET W/ SINK | 1" = 1'-0" | 2



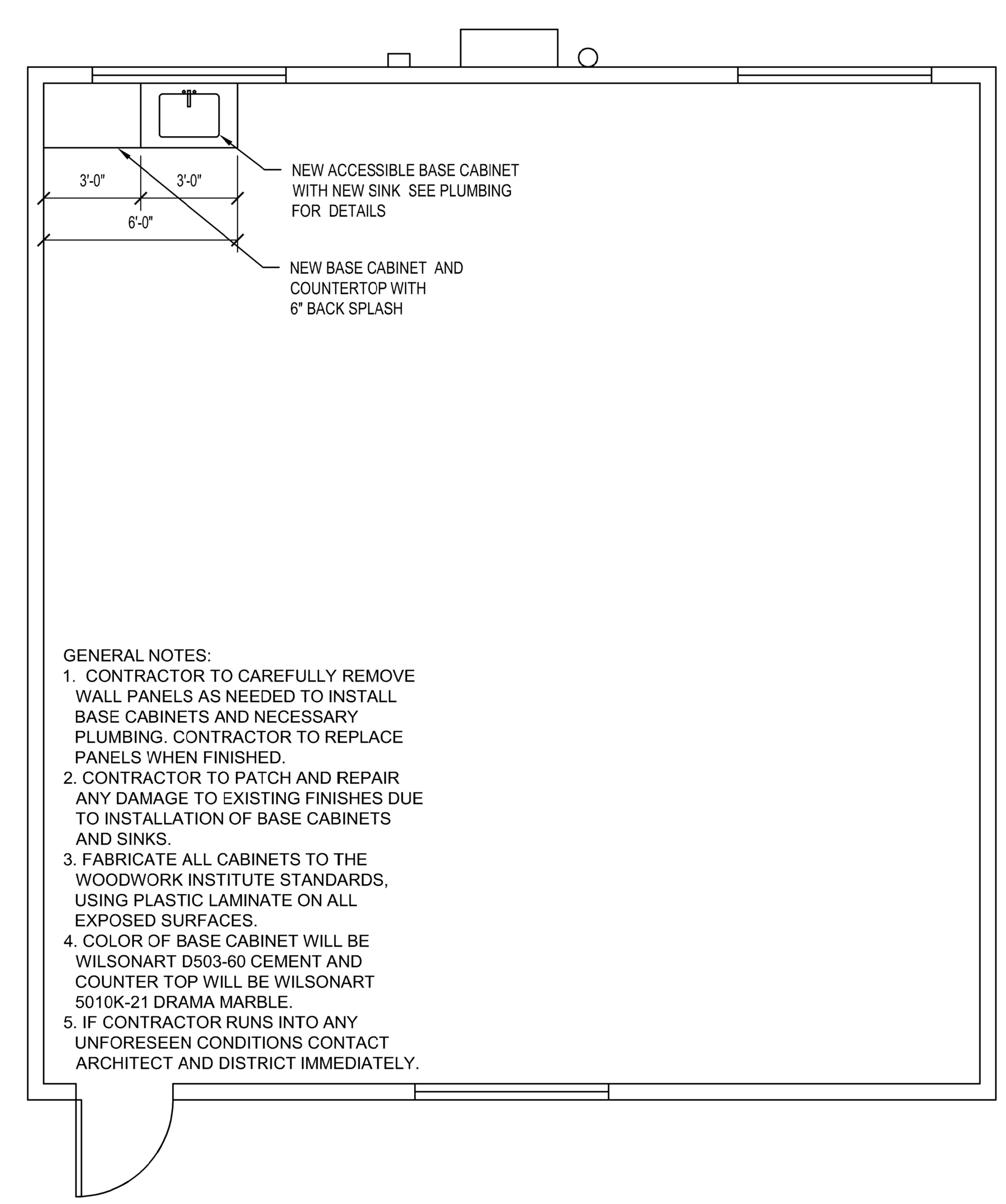
TYPICAL WALL BACKING/BLOCKING | 1 1/2" = 1'-0" | 5



ELEVATION | 1" = 1'-0" | 3



FLOOR PLAN - PORTABLE; 22, 26, 29, 31, 33 | 1/4" = 1'-0" | 9



GENERAL NOTES:
1. CONTRACTOR TO CAREFULLY REMOVE WALL PANELS AS NEEDED TO INSTALL BASE CABINETS AND NECESSARY PLUMBING. CONTRACTOR TO REPLACE PANELS WHEN FINISHED.
2. CONTRACTOR TO PATCH AND REPAIR ANY DAMAGE TO EXISTING FINISHES DUE TO INSTALLATION OF BASE CABINETS AND SINKS.
3. FABRICATE ALL CABINETS TO THE WOODWORK INSTITUTE STANDARDS, USING PLASTIC LAMINATE ON ALL EXPOSED SURFACES.
4. COLOR OF BASE CABINET WILL BE WILSONART D503-60 CEMENT AND COUNTER TOP WILL BE WILSONART 5010K-21 DRAMA MARBLE.
5. IF CONTRACTOR RUNS INTO ANY UNFORESEEN CONDITIONS CONTACT ARCHITECT AND DISTRICT IMMEDIATELY.

FLOOR PLAN - PORTABLE; 34, 35, 37 | 1/4" = 1'-0" | 7

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Professional Seals

GALT JOINT UNION ELEMENTARY SCHOOL DISTRICT
VERNON E GREER ELEMENTARY SCHOOL
PORTABLE SINK ADDITION
248 W. A STREET
GALT, CA 95632

SHEET TITLE:
DETAILS
SCALE: AS SHOWN

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022
2		
3		
4		
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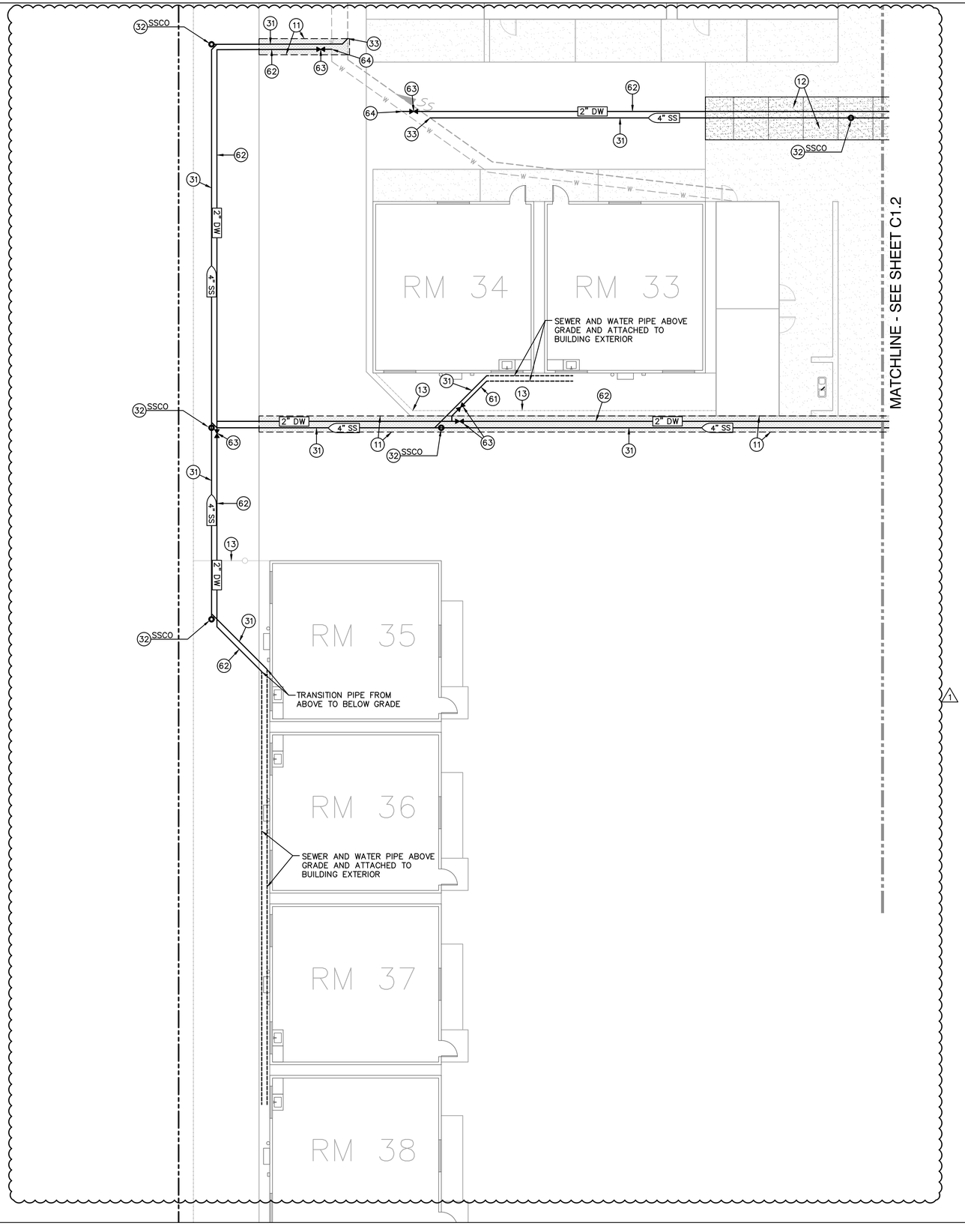
Drawn By: KJ
Checked By: KJ

JOB NO. 21.023
DATE 10-08-2021
SHEET NUMBER **A5.70**
3 of 19



JOINT TRENCH NOTE

1. PROPOSED SEWER AND WATER UTILITIES MAY BE JOINT TRENCHED PER DETAIL — 6 / C2.1

CONSTRUCTION NOTES

11. SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVING, BASE MATERIAL AND SOIL AS REQUIRED TO ALLOW FOR PIPE PLACEMENT. PATCH BACK WITH 3"AC OVER 12"AB.

12. SAWCUT, REMOVE AND DISPOSE OF EXISTING CONCRETE PAVING, BASE MATERIAL AND SOIL TO ALLOW FOR PIPE PLACEMENT. SAWCUTS SHALL BE MADE TO NEAREST CONTROL/EXPANSION JOINT.

FOLLOWING PIPE PLACEMENT AND BACKFILL, PROVIDE 5"PCC WITH #4 REBAR AT 24"O.C.E.W. ON 12"AB. — 1 / C2.1

1 13. TEMPORARILY REMOVE EXISTING FENCE AS REQUIRED TO ALLOW FOR UTILITY INSTALL. PLACE BACK WHEN COMPLETED.

SEWER NOTES

31. PLACE 4" PVC SDR35 SEWER PER — 2 / C2.1

32. CONSTRUCT SEWER CLEANOUT PER — 3 / C2.1

33. CONNECT TO EXISTING SEWER. FIELD VERIFY EXACT DEPTH AND LOCATION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

34. CONNECT TO BUILDING SEWER SERVICE. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

WATER NOTES

61. PLACE 1" WATER, SCH 80 PVC PER — 4 / C2.1

62. PLACE 2" WATER, SCH 80 PVC PER — 4 / C2.1

63. PLACE BRONZE GATE VALVE AND VALVE BOX. SIZE TO MATCH LINE SIZE. — 5 / C2.1

64. CONNECT TO EXISTING DOMESTIC WATER LINE. FIELD VERIFY EXACT DEPTH AND LOCATION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

65. CONNECT TO BUILDING DOMESTIC WATER SERVICE. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

1

ABOVE GROUND PIPING

1. ANY PORTIONS OF THE NEW SEWER ABOVE GROUND SHALL BE MADE USING NO-HUB CAST IRON SOIL PIPE, USING NO-HUB FITTINGS AND COUPLINGS. THE TRANSITION FROM PVC TO CAST IRON SHALL BE MADE BELOW GRADE.
2. ABOVE GROUND WATER PIPE SHALL BE INSULATED.
3. ABOVE GROUND WATER/SEWER PIPING SHALL BE SUPPORTED USING UNISTRUT AND THE APPROPRIATE PIPE STRAP. UNISTRUT SHALL BE FASTENED TO THE BUILDING STRUCTURES WOOD FRAME. UNITSTRUT SHALL BE FASTENED TO THE STRUCTURE USING 2- 3/8" X3" LAG BOLTS. SPACING SHALL BE PER PLUMBING CODE FOR PIPE TYPE AND SIZE.

GRAPHIC SCALE

10' 0 5' 10' 20'

(IN FEET) 1 inch = 10 feet

NORTH

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

WARREN CONSULTING ENGINEERS, INC.
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Professional Seals

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NO. C74696
STATE OF CALIFORNIA

GALT JOINT UNION ELEMENTARY SCHOOL DISTRICT

VERNON E GREER ELEMENTARY SCHOOL

PORTABLE SINK ADDITION

248 W. A STREET
GALT, CA 95632

SHEET TITLE:

PARTIAL UTILITY PLAN

SCALE:

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022
2		
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Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER C1.1 of 24

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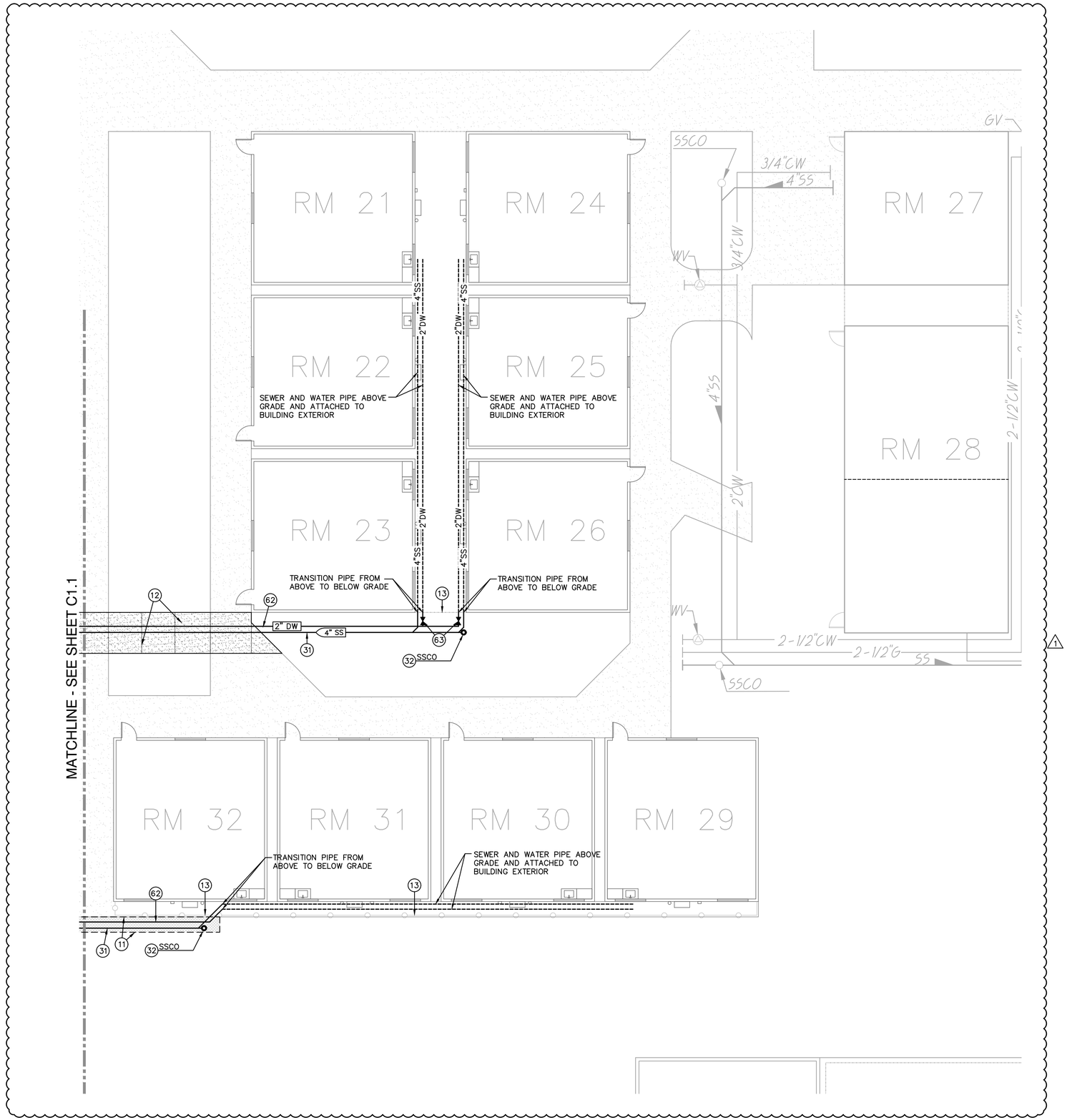

JOINT TRENCH NOTE

1. PROPOSED SEWER AND WATER UTILITIES MAY BE JOINT TRENCHED PER DETAIL — 6/C2.1

CONSTRUCTION NOTES

11. SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVING, BASE MATERIAL AND SOIL AS REQUIRED TO ALLOW FOR PIPE PLACEMENT. PATCH BACK WITH 3"AC OVER 12"AB.

12. SAWCUT, REMOVE AND DISPOSE OF EXISTING CONCRETE PAVING, BASE MATERIAL AND SOIL TO ALLOW FOR PIPE PLACEMENT. SAWCUTS SHALL BE MADE TO NEAREST CONTROL/EXPANSION JOINT.

FOLLOWING PIPE PLACEMENT AND BACKFILL, PROVIDE 5"PCC WITH #4 REBAR AT 24"O.C.E.W. ON 12"AB. — 1/C2.1

1 13. TEMPORARILY REMOVE EXISTING FENCE AS REQUIRED TO ALLOW FOR UTILITY INSTALL. PLACE BACK WHEN COMPLETED.

SEWER NOTES

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32. CONSTRUCT SEWER CLEANOUT PER — 3/C2.1

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34. CONNECT TO BUILDING SEWER SERVICE. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

WATER NOTES

61. PLACE 1" WATER, SCH 80 PVC PER — 4/C2.1

62. PLACE 2" WATER, SCH 80 PVC PER — 4/C2.1

63. PLACE BRONZE GATE VALVE AND VALVE BOX. SIZE TO MATCH LINE SIZE. — 5/C2.1

64. CONNECT TO EXISTING DOMESTIC WATER LINE. FIELD VERIFY EXACT DEPTH AND LOCATION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.

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GRAPHIC SCALE

10' 0 5' 10' 20'

(IN FEET) 1 inch = 10 feet

THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

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FILENAME: I: \21-130\CIVIL\DWG\21-130-C11-C12.DWG

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SHEET TITLE:

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SCALE:

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022
2		
3		
4		
5		

Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER **C1.2**

of 24

MAX. FIXTURE UNIT LOADING FOR WASTE PIPE

NOMINAL PIPE SIZE (INCHES)	2"Ø	3"Ø	4"Ø	6"Ø
FIXTURE UNITS (VERTICAL)	16*	48	256	1380
FIXTURE UNITS (HORIZONTAL)	8*	35	216	720

NOTES:
1. PIPE SIZES TO BE PER CALIFORNIA PLUMBING CODE, TABLE 7-5.
2. SLOPE ALL HORIZONTAL WASTE PIPE AT 1/4" PER FOOT.

* EXCEPT SIX-UNIT TRAPS OR WATER CLOSETS.

MAX. FIXTURE UNIT LOADING FOR VENT PIPE

NOMINAL PIPE SIZE (INCHES)	2"Ø	3"Ø	4"Ø	6"Ø
FIXTURE UNITS (VERTICAL)	16*	48	256	1380
FIXTURE UNITS (HORIZONTAL)	8*	35	216	720

NOTES:
1. PIPE SIZES TO BE PER CALIFORNIA PLUMBING CODE, TABLE 7-5.
2. SLOPE ALL HORIZONTAL WASTE PIPE AT 1/4" PER FOOT.

MAX. FIXTURE UNIT LOADING FOR WATER PIPE

NOMINAL PIPE SIZE (INCHES)	3/4"Ø	1"Ø	1 1/4"Ø	1 1/2"Ø	2"Ø	2 1/2"Ø	3"Ø	4"Ø
FIXTURE UNITS (WITHOUT FLUSH VALVES)	6	10	21	34	127	245	431	875
FIXTURE UNITS (WITH 1 OR MORE FLUSH VALVES)	-	5	10	20	48	124	295	850

NOTES:
1. USE ABOVE DATA ONLY WHEN PIPE SIZES ARE NOT OTHERWISE SIZED ON THE DRAWINGS.
2. FIXTURE UNITS ARE AS LISTED FOR PUBLIC USE IN THE CALIFORNIA PLUMBING CODE.

PLUMBING GENERAL NOTES

1. MECHANICAL AND PLUMBING DETAILS APPLY TO ALL BUILDINGS WHETHER REFERENCED OR NOT.
2. PROVIDE FIRE STOPPING ASSEMBLY PROTECTION FOR PIPE PENETRATIONS OF RATED ASSEMBLIES. FIRE STOP RATING SHALL MATCH RATED ASSEMBLY BEING PENETRATED.
3. PLUMBING AND FIRE SPRINKLER PIPING SHALL OFFSET OVER OR UNDER DUCTS. COORDINATE WITH HEATING CONTRACTOR.
4. PLUMBING CONTRACTOR TO OFFSET PIPING AROUND SKYLIGHTS.
5. PLUMBING CONTRACTOR TO OFFSET PIPING AROUND ROOF ACCESS LADDERS.
6. PIPING SHALL NOT PENETRATE INTO, OVER, OR THROUGH IT CLOSETS OR ELECTRICAL ROOMS UNLESS IT SERVES THAT SPECIFIC ROOM.
7. DRAWINGS SHALL BE CONSIDERED DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO SHOW EVERY OFFSET, FITTING, OR STRUCTURAL DIFFICULTY THAT MAY BE ENCOUNTERED DURING INSTALLATION OF WORK. THE CONTRACTORS SHALL COORDINATE LOCATION OF ALL PLUMBING PIPING WITH ALL OTHER TRADES ON THIS PROJECT. LOCATION OF ALL ITEMS NOT DEFINITELY FIXED BY DIMENSIONS ARE APPROXIMATE ONLY. EXACT LOCATIONS NECESSARY TO SECURE BEST CONDITIONS AND RESULTS MUST BE DETERMINED AT THE JOB SITE AND SHALL HAVE THE APPROVAL OF THE ARCHITECT BEFORE BEING INSTALLED.
8. ALL VALVES SHALL BE FULL LINE SIZES UNLESS NOTED OTHERWISE.
9. PROVIDE WALL CLEANOUT AT ALL SINKS, LAVATORIES, AND URINALS.
10. PIPING SHALL BE SUPPORTED IN ACCORDANCE TO SMACNA "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL AND PLUMBING PIPING SYSTEMS".
11. ALL NEW SANITARY WASTE PIPING SHALL HAVE A MINIMUM BURRY DEPTH OF 18" AND BE SLOPED AT 1/4" PER FOOT MINIMUM UNLESS OTHERWISE NOTED. PIPING SHALL BE UNIFORMLY SLOPED BETWEEN UPPER TERMINAL OF PIPE AND THE POINT OF CONNECTION TO THE SITE PIPING (AS INDICATED ON CIVIL PLANS) TO ACHIEVE MAXIMUM SLOPE POSSIBLE.
12. ACCESS PANELS SHALL BE PROVIDED AS NECESSARY TO PROPERLY ACCESS THE PLUMBING SYSTEM INCLUDING VALVES, EQUIPMENT, HOPPER DRAINS, AND INDIRECT DRAINS IN WALLS.
13. HVAC EQUIPMENT IS SHOWN FOR THE COORDINATION OF UTILITIES ONLY. REFER TO "M" SHEETS FOR ADDITIONAL INFORMAITON.
14. PROVIDE WATER HAMMER ARRESTORS (WHA) AT ALL FIXTURES AS INDICATED IN THE SPECIFICAITONS/NOTES. WHA SHALL BE SIZED AND PER THE PLUMBING & DRAINAGE INSTITUTE (PDI). WHA SHALL BE INSTALLED IN WALLS (NOT ABOVE CEILINGS).
15. REFERENCE ARCHITECTURAL DRAWINGS FOR BUILDING DIMENSIONS, EXACT LOCATIONS OF PLUMBING FIXTURES, AND PLUMBING FIXTURE MOUNTING HEIGHTS.
16. CONCEAL ALL PIPING IN WALL FURRINGS, PARTITIONS, ABOVE CEILINGS, EXCEPT IN MECHANICAL ROOMS OR WHERE NOTED OTHERWISE.
17. PROVIDE A TRAP PRIMER AT ALL FLOOR DRAINS AND FLOOR SINKS.

APPLICABLE CODES

ALL WORK PERFORMED UNDER THIS CONTRACT IS TO CONFIRM TO THE FOLLOWING CODES AND REGULATIONS:

1. CALIFORNIA CODE OF REGULATIONS - TITLE 24
2. CALIFORNIA BUILDING CODE, 2019
3. CALIFORNIA MECHANICAL CODE, 2019
4. CALIFORNIA PLUMBING CODE, 2019
5. CALIFORNIA FIRE CODE, 2019
6. CALIFORNIA ELECTRICAL CODE, 2019
7. CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS, 2019

THE ABOVE CODES AND REGULATIONS REFER TO THE LATEST EDITION OR REVISION IF FORCE ON THE DATE OF THE CONTRACT, UNLESS OTHERWISE STATED. NOTHING ON THE DRAWINGS IS TO BE CONSTRUED AS REQUIRING OR PERMITTING WORK THAT IS CONTRARY TO THE LISTED CODES AND REGULATIONS, OR OTHER LOCAL, STATE OR FEDERAL CODES OR REGULATIONS WHICH MAY BE APPLICABLE.

ANCHORAGE / BRACING NOTES

ALL MECHANICAL AND PLUMBING COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONTRACT DOCUMENTS. WHERE NO DETAIL IS INDICATED, THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC, SECTION 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16, CHAPTERS 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS, OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTION EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONET IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.
4. MOVABLE EQUIPMENT WHICH IS STATIONED IN ONE PLACE FOR MORE THAN 8 HOURS AND HEAVIER THAN 400 POUNDS OR HAS A CENTER MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT ARE REQUIRED TO BE ANCHORED WITH TEMPORARY ATTACHMENTS.

THE FOLLOWING MECHANICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK AND PIPING. FLEXIBLE CONNECTION MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS.

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.

B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING AND DUCTWORK SYSTEM BRACING NOTE:
PIPING AND DUCTWORK SHALL BE BRACED TO COMPLY THE FORCE AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25, AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENT TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE APPROVED INSTALLATION GUIDE (E.G. SMACNA OR OSHPD OPM), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

PLUMBING PIPING (PP),
_ PP - OPTION 1:
DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTED AND DETAILS.

X PP - OPTION 2:
SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM#), MASON OPM-0043-13 SEISMIC RESTRAINT SYSTEMS GUIDELINE.

PLUMBING LEGEND

ABBREVIATIONS

ABC	ABOVE CEILING	FT	FEET	PRV	PRESSURE REDUCING VALVE
AD	ACCESS DOOR	FU	FIXTURE UNITS	PS	PRESSURE SWITCH
AFF	ABOVE FINISHED FLOOR	G	NATURAL GAS	PSI	POUNDS PER SQUARE INCH
AFG	ABOVE FINISHED GRADE	GCO	GRADE CLEAN OUT	PSIG	POUNDS PER SQUARE INCH GAUGE
AP	ACCESS PANEL	GD	GARBAGE DISPOSER	PT	PLUGGED TEE
AQ	AQUASTAT	GLV	GLOBE VALUE	R	RISE / RISER
ARCH	ARCHITECT	GM	GAS METER	RD	ROOF DRAIN
AV	ACID VENT	GPH	GALLONS PER HOUR	RET	RETURN
AVTR	ACID VENT THRU ROOF	GPM	GALLONS PER MINUTE	RIO	ROUGH IN ONLY
AW	ACID WASTE	GPR	GAS PRESSURE REGULATOR	RM	ROOM
BFF	BELOW FINISHED FLOOR	GSCK	GAS COCK	RO	REVERSE OSMOSIS WATER
BFP	BACKFLOW PREVENTER	GSV	GAS SEISMIC VALVE	RV	RELIEF VALVE
BFV	BUTTERFLY VALVE	GV	GATE VALVE	RWL	RAINWATER LEADER
BG	BELOW GRADE	GW	GREASE WASTE PIPING	SCD	SECONDARY CONDENSATE DRAIN
BLV	BALL VALVE	HB	HOSE BIBB	SCH	SCHEDULE
CA	COMPRESSED AIR	HD	HOPPER DRAIN	SCW	COLD SOFT WATER
CAP	CAPACITY	HPG	HIGH PRESSURE NATURAL GAS	SD	STORM DRAIN
CB	CATCH BASIN	HW	DOMESTIC HOT WATER	SH	SHOWER
CBV	CALIBRATED BALANCE VALVE	HWR	DOMESTIC HOT WATER RETURN	SHT	SHEET
CD	CONDENSATE DRAIN	ICW	INDUSTRIAL COLD WATER	SHW	HOT SOFT WATER
CFH	CUBIC FEET PER HOUR	IHW	INDUSTRIAL HOT WATER	SHWR	HOT SOFT WATER RETURN
CI	CAST IRON	IHWR	INDUSTRIAL HOT WATER RETURN	SK	SINK
CKV	CHECK VALUE	ID	INSIDE DIAMETER	SMS	SHEET METAL SCREW
CL	CENTER LINE	IE	INVERT ELEVATION	SOV	SHUT OFF VALVE
CLG	CEILING	IW	INDIRECT WASTE	SS	STAINLESS STEEL
CMP	CORRUGATED METAL PIPE	LA	LABORATORY AIR	STD	STANDARD
CO	CLEANOUT	LAV	LAVATORY	STR	STRAINER
CO2	CARBON DIOXIDE	LBS	POUNDS	TA	TO ABOVE
COP	CAP ON END OF PIPE	LG	LABORATORY GAS	TB	TO BELOW
COTF	CLEANOUT TO FLOOR	LP	LOW PRESSURE	TEMP.	TEMPERATURE
COTG	CLEANOUT TO GRADE	LWT	LEAVING WATER TEMPERATURE	TH	THERMOMETER
CP	CIRCULATING PUMP	MA	MEDICAL AIR	TMV	THERMOSTATIC MIXING VALVE
CR	CONCENTRIC REDUCER	MAX	MAXIMUM	TP	TRAP PRIMER
CSK	CLINIC SINK	MFR	MANUFACTURER	TYP	TYPICAL
CV	CONTROL VALVE	MGC	MEDICAL GAS COLUMN	TW	TEMPERED WATER
CW	DOMESTIC COLD WATER	MIN	MINIMUM	UC	UNDER COUNTER
D	DROP	MISC	MISCELLANEOUS	UF	UNDER FLOOR
DCW	DOMESTIC COLD WATER	MPG	MEDIUM PRESSURE NATURAL GAS	UG	UNDERGROUND
DD	DECK DRAIN	(N)	NEW	UN	UNION OR FLANGE
DET	DETAIL	N2	NITROGEN	UNO	UNLESS NOTED OTHERWISE
DF	DRINKING FOUNTAIN	N2O	NITROUS OXIDE	UR	URINAL
DHW	DOMESTIC HOT WATER	NC	NORMALLY CLOSED	V	SANITARY VENT
DHWR	DOMESTIC HOT WATER RETURN	NIC	NOT IN CONTRACT	VB	VALVE BOX
DI	DEIONIZED WATER	NO	NORMALLY OPEN	VAC	MEDICAL VACUUM
DN	DOWN	NTS	NOT TO SCALE	VR	VENT RISER
DWG	DRAWING	O2	OXYGEN	VTR	VENT THRU ROOF
(E)	EXISTING	OC	ON CENTER	W	SANITARY WASTE
EWH	ELECTRIC WATER HEATER	OFCI	OWNER FURNISHED CONTRACTOR INSTALLED	WD	WASTE DROP
EWT	ENTERING WATER TEMPERATURE	ORD	OVERFLOW ROOF DRAIN	WI	WITH
FA	FROM ABOVE	ORWL	OVERFLOW RAIN WATER LEADER	W/O	WITHOUT
FB	FROM BELOW	OH	OVERHEAD	WAGD	WASTE ANESTHESIA GAS DISPOSAL
FC	FLEXIBLE CONNECTION	P&TRV	PRESSURE & TEMPERATURE RELIEF VALVE PIPING	WC	WATER CLOSET
FCO	FLOOR CLEAN OUT	P/L	PROPERTY LINE	WCO	WALL CLEAN OUT
FD	FLOOR DRAIN	PAN	PIPE ANCHOR	WD	WASTE DROP
FHC	FIRE HOSE RACK & CABINET	PG	PRESSURE GAUGE	WH	WALL HYDRANT
FLR	FLOOR	PL	PLATE	WHA	WATER HAMMER ARRESTER
FPM	FEET PER MINUTE	PLBG	PLUMBING	WM	WATER METER
FSH	FIRE SPRINKLER HEAD	POC	POINT OF CONNECTION	WSP	WET STANDPIPE
FS	FLOOR SINK	POD	POINT OF DISCONNECT		
FSP	FIRE SPRINKLER PIPE				

SYMBOLS

DOMESTIC COLD WATER LINE
SOIL OR WASTE LINE BELOW GRADE
RISER UP (ELBOW)
GATE VALVE
Ø DIAMETER
COTG CLEANOUT TO GRADE
ROOM NAME
ROOM NAME AND NUMBER

PLUMBING FIXTURE SCHEDULE

FIXTURE	GENERAL DISCRIPTION	BASE FIXTURE	VALVE / FAUCET	TRIM	WHA REQUIRED AT FIXTURE	NOTES	FIXTURE UNITS				PLUMBING PIPE BRANCH SIZE SERVING FIXTURE							
							WASTE	VENT	CW	HW	VENT	WASTE		COLD WATER		HOT WATER		
												BRANCH	OUTLET	BRANCH	OUTLET	BRANCH	OUTLET	
S-1	CLASSROOM SINK | COUNTER MOUNTED | STAINLESS STEEL | CW ONLY | MANUAL FAUCET @ 1.5 GPM | ADA |	JUST MODEL CRA-ADA-1928-A-GR COUNTER MOUNTED SINK FIXTURE TO BE AS FOLLOWS: · 18 GAUGE TYPE 304 18-8 STAINLESS STEEL · SINK TO BE 28" (LEFT-TO-RIGHT) x 19" (FRONT TO BACK) · SINGLE BOWL 19"(LEFT-TO RIGHT) x 16" (FRONT TO BACK) x 6" DEEP · SINGLE HOLE PUNCH AT LEFT MIDDLE FOR FAUCET · DRAIN TO BE AT CENTER REAR · ADA	CHICAGO MODEL 350-E35-317XKABCP CW ONLY MANUAL FAUCET FAUCET TO BE AS FOLLOWS: · CW WITH 8" GOOSENECK SPOUT · 4" WRIST BLADE HANDLE. · CHROME PLATED FINISH · 1.5 GPM VANDAL PROOF AERATOR · ADA COMPLIANT	PROVIDE WITH GRID DRAIN WITH OFFSET AND P-TRAP	⚠1 YES	MOUNT AT HEIGHT AS INDICATED ON ARCHITECTURAL DRAWINGS.	2.0	2.0	1.0	0	1 1/2"	2"	2"	3/4"	1/2"	-	-	

NOTES:
1. USE PIPE SIZE TABLE FOR SIZING ALL BRANCH WATER, WASTE, & VENT BRANCH PIPES.
2. REFERENCE ARCHITECTURAL DRAWINGS FOR FIXTURE MOUNTING HEIGHT.
3. WATER BRANCH LINES WHERE LESS THAN 10'-0" LONG MAY BE SAME SIZE AS OUTLETS SCHEDULED ABOVE.
4. AT ALL SINKS INSULATE COLD WATER, AND AND WASTE PIPING BELOW FIXTURE WITH "TRUEBRO" LAV GUARD PROTECTIVE MOLDED CLOSED CELL VINYL PIPE COVERS, WITH VANDAL RESISTANT SNAP-CLIP FASTENERS, AND AN ASTM E-84 SMOKE TEST RATING OF 0.
5. PROVIDE WALL CLEANOUT AT ALL SINKS WITH DIRECT CONNECTIONS.
6. PROVIDE WATER HAMMER ARRESTOR FOR CW BRANCH LINES AT ALL FIXTURES PER SPECIFICATION SECTION 22 05 23
7. WHERE FIXTURES ARE NOTED AS BEING "ADA", INSTALLATION TO MEET ADA REQUIREMENTS AND CBC REQUIREMENTS.

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STATE OF CALIFORNIA

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SHEET TITLE: PLUMBING - LEGENDS, SCHEDULES & NOTES
SCALE:

REVISIONS

No.	Issue Description	Date
⚠1	ADDENDUM REVISED DRAWINGS	04/18/2022
⚠2		
⚠3		
⚠4		
⚠5		

Drawn By:
Checked By:

JOB NO. 21.023
DATE

SHEET NUMBER
P0.01
of 24

SECTION 22.00.00 - PLUMBING GENERAL CONDITIONS

1.1 SUMMARY

A. This Section specifies the Division 22 Work coordination requirements with general work provisions.

B. For convenience and reference the Specifications are separated into Divisions and Sections. Such separations shall not operate to make the Engineer an arbitrator to establish subcontract limits between the Prime Contractor and his Subcontractors. In any case, the Prime Contractor is responsible to the owner for a complete job.

C. This section consists of General Requirements and Standard Specifications covering certain parts of work under Division 22 and is supplemented by other Division 22 sections covering additional work, requirements, and materials specifically applicable to the work of each section.
1. Requirements of subsequent sections of the specifications, if in conflict with these General Requirements, shall govern.

D. No material installed as part of this WORK shall contain asbestos in any form.

1.2 CONDITIONS OF THE CONTRACT

A. The Conditions of the Contract (General, Supplementary, and other Conditions) and the General Requirements (Sections of Division 1) are hereby made a part of this Section.

B. This section is a Division_22 Basic Materials and Methods section and is a part of each Division _22 section.

1.3 DESCRIPTION OF REQUIREMENTS

A. Provide finished work, tested and ready for operation including apparatus, appliances, materials, and work. Provide incidental accessories necessary to make the work complete and ready for operation without additional expense to the Owner.

B. Before beginning work or ordering materials, consult Architect for clarification of discrepancies between, or questionable intent, of the Contract Documents.

C. Contractor shall visit the site and field survey the existing site conditions prior to bid. Any site conditions which may cause significant deviation from the design drawings shall be brought to the attention of the Owner's representative for clarification prior to bid.

1.4 REQUIREMENTS OF REGULATORY AGENCIES:

A. Provide work and materials in full accordance with the latest rules and regulations of the following:
1. California Code of Regulations _ Title 24 _ Parts 2, 3, 4,5, and 9
2. California Code of Regulations _ Title 22 _ Chapter 7
3. California Building Code, 2019
4. California Mechanical Code, 2019
5. California Plumbing Code, 2019
6. California Electric Code, 2019
7. California Fire Code, 2019
8. California Building Energy Efficiency Standards 2019
9. California Green Building Standards 2019
10. California Energy Code 2019
11. National Fire Protection Association
12. CAL_OSHA
13. Occupational Safety and Health Administration
14. State Fire Marshal, Title 19 CCR
15. Other applicable state laws

B. Nothing in Drawings or specifications shall be construed to permit work not conforming to these codes.

C. Conform to State of California Energy Conservation Standards for all systems, equipment, and construction.

D. The above Codes and Standards define minimum requirements required for the project. Where Contract Documents differ from governing codes, furnish and install higher standard.

1.5 FEES, PERMITS, AND UTILITY SERVICES:

A. Arrange for required inspections and permits required in installation of the work.

B. The Owner will pay charges for permits required.

C. Arrange for utility connections and pay charges incurred, including excess service charges, if any.

D. Obtain the first permits to operate any compressed air tanks that are required to be furnished under this work, pay all costs, and perform all tests required to obtain permits. Post permits under glass in a conspicuous place on or near the tanks, as required by these authorities.

1.6 SITE EXAMINATION:

A. Examine site, verify dimensions and locations against Drawings, and inform self of conditions under which work is to be done before submitting proposal. No allowance will be made for extra expense on account of error.

B. Information shown relative to existing services is based upon available records and data but is approximate only. Make minor deviations found necessary to conform with actual locations and conditions without extra cost. Verify location and elevation of utilities prior to commencement of excavation for new piping or its installation.

C. Exercise care in excavating near existing utilities to avoid any damage thereto. This Contractor is responsible for any damage caused by his operations.

1.7 ACTION SUBMITTALS / MATERIAL LIST AND SUBSTITUTIONS:

A. Prior to commencement of work, and within 35 days after award of Contract, submit to Architect for review electronic copies of a complete list of equipment and materials to be furnished, including all substitutions. All submittals to be in electronic format as follows:
1. Submittals to be in PDF Format.
2. Individual PDF cut sheets shall be inserted into a single file for review.
3. All sheets to be "unprotected" and "writable".

B. Provide submittal information for all materials proposed for use as part of this project. Provide standard items on specified equipment at no extra cost to the contract regardless of disposition of submittal data. Other material or methods shall not be used unless approved in writing by the Architect. The Architect's review will be required even though "or equal" or synonymous terms are used.

C. It is the responsibility of the Contractor to assume all costs incurred because of additional work and/or changes required to incorporate the proposed substitute into the project including possible extra compensation due to the Architect. Refer to Division 1 for complete instructions.

D. Contractor to provide complete Submittal packages for all plumbing items clearly separated by system. At a maximum, submittals to be broken into the following packages:
1. Plumbing - Fixtures, Trim, Piping, Equipment, Accessories, etc.
   a. When required by schedule, a separate Plumbing Underground submittal package will be reviewed upon request.
   b. Incomplete submittals or submittals broken down by spec section shall be returned un-reviewed.

E. Identify each item by manufacturer, brand, trade name, model number, size, rating, or whatever other data is necessary to properly identify and review materials and equipment.
1. Where submittal sheets indicate more than one product, Contractor to clearly identify product being submitted. Contractor to cross-out information not being submitted for review.
2. Submittals that do not clearly identify submitted item will be returned to the Contractor un-reviewed.

F. Identity each submitted item by reference to specification section number and paragraph in which item is specified. Cross reference submittals by equipment ID where applicable.

G. Quantities are the Contractor's responsibility and will not be reviewed.

H. If Contractor desires to make a substitution, he shall submit complete information or catalog data to show equality of equipment or material offered to that specified.
1. Only one request for substitution will be considered on each item of material or equipment. No substitutions will be considered thereafter.
2. Scheduled Products and first named manufacturer/product forms basis of design. All other manufacturers' products are substitutions.
3. No substitutions will be allowed unless requested and reviewed in writing.
4. The Architect shall review and take appropriate action on shop Drawings, product data, samples, and other submittals required by the Contract Documents. Such review shall be only for general conformance with the design concept and general compliance with the information given in the Contract Documents. It shall not include review of quantities, dimensions, weights or gauges, fabrication processes, construction methods, coordination with the work of other trades, or construction safety precautions, all of which are the sole responsibility of the Contractor.
5. Review of a specific item shall not indicate acceptance of an assembly of which the item is a component. The Architect shall not be required to review and shall not be responsible for any deviations from the Contract Documents not clearly noted by the Contractor, nor shall the Architect be required to review partial submissions or those for which submissions for correlated items have not been received. Architect reserves right to require originally specified item.
6. Named non-basis-of-design manufacturer does not guarantee approval of equipment submittals. Manufacturers must comply with all the performance and features as specified within the specifications and as indicated on the design documents.

I. Installation of reviewed substitution is Contractor's responsibility. Any changes required for installation of reviewed substituted equipment must be made without additional cost to the owner. Review by the Architect of the substituted equipment and/or dimensional Drawings do not waive these requirements.

1.8 CLOSEOUT SUBMITTALS / MAINTENANCE AND OPERATING INSTRUCTIONS:

A. Instruct the Owners' authorized representatives in the operation, adjustment, and maintenance of all mechanical equipment and systems. Provide 3 copies of certificate signed by Owner's representatives attesting to their having been instructed.

B. Furnish Architect with three complete sets of operating and maintenance (O&M) instructions.
1. O&M manuals to be bound in hardboard binder and indexed.
2. O&M manuals to include: descriptive literature, catalog cuts, and diagrams covering all items of operation and maintenance for each and every mechanical system and piece of equipment furnished under these specifications.
3. Include in each set a copy of the air balance test report specified hereinafter.

C. Contractor must start compiling the above data (including obtaining operating and maintenance instruction data and catalog cuts and diagrams from the manufacturer of the reviewed equipment) immediately upon review of his list of materials, so as not to delay the final installation of the work.

D. Bind and index each set in a durable, hardboard binder. Final observation will not be made until booklets are submitted and have been reviewed by the Architect.

E. O&M manuals to incorporate the following:
1. Complete operating instructions for each item of plumbing equipment.
2. Test data and system balancing reports as specified.
3. Manufacturer's bulletins with parts numbers, instructions, etc. for each item of equipment. Remove information not applicable to project.
4. Typewritten maintenance instructions for each item of equipment listing in detail the lubricants to be used, frequency of lubrications, inspections required, adjustment, etc.
5. A complete list and/or schedule of all major valves giving the valve ID, location of valve, and the rooms or area controlled by the valve.
6. Provide copies of start-up reports for each piece of equipment provided as part of this work.
7. Name, address, and phone number of contractors involved in work under this Division.
8. Detailed step-by-step instructions for starting, summer operation, winter operation, and shutdown of each system.
9. Detailed maintenance instructions for starting, summer operation, winter operation, and shutdown of each system.
10. Spare parts list.
11. Full size Record as built shop drawings in hard copies and in AutoCad 2013 CAD files.
    a. Contractor to incorporate field mark-ups into record drawings. Mark-up shop drawings not acceptable.

1.9 COORDINATION SHOP DRAWINGS

A. General:
1. Prepare and submit for review coordination drawings where work by separate entities requires fabrication of products and materials which must accurately interface or for which space provided is limited.
2. Coordination drawings shall indicate how the work will interface and installation will be sequenced. It is the intent of this provision to find, bring forth, and resolve potential constructability problems prior to actual construction, thereby allowing for the resolution of issues before construction cost and schedule are impacted.

B. The General Contractor shall oversee preparation of coordination drawings, assign priority space, and bring to the attention of the Architect any conflicts or interferences of an unresolved nature found during preparation of coordination drawings. Expedite conflict or interferences and submit solutions/ recommendations for approval review.

C. Drawings: Shop drawings shall include but are not necessarily limited to the following:
1. Submit 1/4" = 1'-0" minimum scale, a combined, comprehensive mechanical coordination drawing. Coordination drawing shall include all plumbing piping, HVAC ductwork, mechanical piping, sprinkler systems, and ceiling systems overlaid on structural frame and architectural plan. Shop drawings are to be coordinated with all electrical and Telecom systems.
2. Criteria: Plumbing Piping, Ductwork, mechanical piping, and sprinkler system components shall be sized as shown on Drawings. Seismic restraints shall be shown where required.
   a. Nonconforming Mechanical work installed within designated coordination areas is subject to removal and replacement by the installing contractor at no additional cost to Owner.
3. Provide sections for congested areas.
4. Identify typical areas, start preparation of coordination drawings for such areas first.

D. Coordination drawings shall be signed and dated by individual trade contractors. By act of signature and submittal of singular combined coordination drawing, each trade contractor acknowledges their coordinated portion of the work with all other mechanical, electrical, telecom, architectural, and structural work contractors.

E. After completion of coordination shop drawings signed by individual trade contractors. Submit copies to the architect for review. Once approved, provide copy at the job site for reference. No work shall be performed without the complete coordination shop drawings.

F. No request for information regarding the routing of pipes and placement of equipment will be reviewed and responded to without a completed shop drawings.

1.10 SITE CONDITIONS

A. Information of the drawings relative to existing conditions is approximate only. Deviations found necessary during progress of construction to conform to actual conditions as approved by the Architect shall be made without additional cost to the Owner. The Contractor shall be held responsible for any damage caused to existing services. Promptly notify the Architect if services are found which are not shown on the Drawings.

1.11 WARRANTY

A. Be responsible for work done and material installed under these plans and specifications. Repair or replace, as may be necessary, any defective work, material, or part which may show damage to itself or other materials, furnishing, equipment, or premises caused by such defects during this period, if in the opinion of the Architect said defect is due to imperfection of material or workmanship. Provide all such work and materials at no cost to Owner.

B. Be responsible for damage to any part of premises during guarantee period caused by leaks or breaks in work furnished and/or installed under this section. Replace refrigerant, lubricants, or gasses lost as result of defects, breaks, or leaks in work.

C. Provide manufacturer's written warranties covering defects in material and workmanship of products and equipment utilized for the project.

D. Warranties shall be for a period of year from the date of substantial completion unless more stringently specified within individual Sections of this Division.

PART 2 - PRODUCTS

2.1 GENERAL:

A. Mention herein or on Drawings requires that this Contractor provide each item listed of quality noted or equal. Refer to subsequence division 22 specification sections for specific equipment and system materials and accessories.

B. All material shall be new, full weight, standard in all respects, and in first_ class condition.

C. Provide materials of the same brand or manufacture throughout for each class of material or equipment wherever possible.

D. The grade or quality of materials desired is indicated by the trade names or catalog numbers stated herein.

E. Dimensions, sizes, and capacities shown are a minimum and shall not be changed without permission of the Architect.

F. Conform to the State Energy Conservation Standards for all material and equipment.

2.2 MATERIALS FURNISHED:

A. Identify all materials and equipment by manufacturer's name and model number. Remove unidentified materials and equipment from site.

B. Equipment specified by manufacturer's number shall include all accessories, controls, etc. listed in catalog as standard with equipment. Furnish optional or additional accessories as specified.

C. Equipment or material damaged during transportation, installation, or operation is considered as totally damaged. Replace with new equipment. Variance from this permitted only with written consent of the Architect.

D. Deliver, Protection, and Care:
1. Deliver materials or equipment to the Project in the manufacturer's original, unopened, labeled containers.
2. Added costs associated with reordering, expediting orders, or project delays due to rejected materials shall be borne by the Contractor.
3. Protect from damage which may be caused by theft, weather, and building operations. Failure to protect materials and apparatus adequately shall be sufficient cause for rejection of any damaged material or equipment.
4. Close pipe and equipment openings to prevent intrusion of obstructions and damage.
5. Owner or Architect will require removal and replacement of such material or work from the premises which is not in accordance with Contract Documents. Replace unsatisfactory work without delay, at no additional cost to the Owner.
6. All material and equipment shall be protected against moisture, dirt and damage. Protective coverings shall be provided for bearings, open connections to pumps and tanks, coils, ducts, pipes and similar equipment that is vulnerable to grit and dirt.
7. The interior of the pipes and ducts shall be kept clean at all times.

PART 3 - EXECUTION

3.1 GENERAL:

A. General arrangement and location of piping, equipment, etc. are shown on Drawings or herein specified. Carefully examine other work that may conflict with this work. Install this work in harmony with other crafts and at proper time to avoid delay of work. Provide all offsets as required to avoid other trades at no additional cost to the owner.

B. In advance of construction, work out minor changes and relocations to suit actual conditions and work of other trades to avoid conflict therewith. This shall not be cause for additional cost.

C. Execute any work or apparatus shown on the Drawings and not mentioned in the specifications, or vice versa, the same as if specifically mentioned by both. Omission from Drawings or specifications of any minor details of construction, installation, materials, or essential specialties does not relieve this Contractor from furnishing same in place complete.

D. Furnish and install any incidental work not shown or specified which can reasonably be inferred as part of the work and necessary to provide a complete and workable system.
1. Minor piping associated with instrumentation and control is generally not shown. Interconnection of sensors, transducers, control devices, instrumentation panels, is the responsibility of the contractor. Small piping associated with water cooling, drips, drains and other minor piping may not be shown to avoid confusion in the plan presentation but shall be provided as part of contract work. Drains shall be piped to the nearest floor drains.

E. Furnish materials and work at proper time to avoid delay of the work.

F. Coordinate with testing and balancing contractor to review drawings for proposed additional balancing components required for proper system testing and balancing.

3.2 ACCESS:

A. Continuously check Architectural Drawings for clearance and accessibility of equipment specified herein to be placed. No allowance of any kind will be made for negligence on part of Contractor to foresee means of installing his equipment into proper position.

3.3 CLOSING IN OF UNINSPECTED WORK:

A. Do not allow or cause work installed to be covered up or enclosed before it has been inspected and tested. Should work be enclosed or covered up before it has been inspected and tested, uncover work at own expense. After it has been inspected and tested, make repairs necessary to restore work of other contractors to condition in which it was found at time of cutting.

3.4 PROJECT MODIFICATIONS:

A. During the progress of construction, if such conditions arise that require revisions, modifications, or relocations to any mechanical equipment or materials incorporated in this project, such alterations shall be immediately called to the attention of the Architect. Contractor shall then prepare necessary Drawings showing proposed changes. Submit proposed changes for review by the Architect prior to actual revision work in the field.

B. Two sets of Drawings showing all revisions shall be immediately presented to Architect for his records. Maintain additional copies on the project as necessary to comply with "RECORD DRAWINGS" requirement of the General Requirements.

C. Incorporate all revisions into record Drawings.

3.5 FORMING, CUTTING AND PATCHING:

A. Coordinate with other contractors as necessary to provide any special forming, recesses, chases, etc., and provide wood blocking, backing, and grounds as necessary for proper installation of mechanical work.

B. If this Contractor fails to coordinate with other contractors at proper time or fails to locate items properly, resulting in extra work, then this Contractor is responsible.

C. This Contractor is responsible for proper placement of pipe sleeves, hangers, inserts, and supports for work.

D. Cutting, patching, and repairing of existing (old) construction to permit installation of piping, etc. is responsibility of this Contractor. Repair or replace damage to existing work with skilled mechanics for each trade involved in first_class manner.

E. Cut existing construction in a neat and workmanlike manner by the use of a concrete saw. Use of pneumatic devices will not be allowed.

F. Core openings through existing construction as required for the passage of new piping and conduits. Cut holes of the minimum diameter to suit size of pipe installed and associated insulation.

3.6 DEMOLITION AND SALVAGE:

A. Provide demolition of mechanical work under this SECTION as indicated on Drawings.

B. Removed materials which will not be re-used and which are not claimed by the owner shall become the property of the Contractor and shall be removed from the premises. Consult Owner before removing any material from the premises. Carefully remove materials claimed by the owner to prevent damage. Coordinated delivery of such items to owner.

C. Removed materials which are to be reused are to be removed, cleaned, and stored in a safe location. If such items are lost or damaged by the Contractor, item shall be replaced with new item at no added cost to owner. If item is found to be damaged prior to removal, inform Architect prior to removal so that item may be examined by Architect and owner for further instructions.

3.7 WELDING FOR MECHANICAL WORK

A. All mechanical welding and inspection requirement shall be in accordance with the California Mechanical Code.

B. Qualify welding procedures, welders and operators shall be in accordance with ASME Boiler and Pressure Vessel Code, Section IX, welding and brazing qualifications. Welding procedures and testing shall comply with ANSI standard B31.9 - Standard Code for Pressure Piping, and the American Welding Society (AWS) welding handbook.

C. Soldering and brazing procedures shall conform to ANSI B9.1 standard safety code and NFPA 99.

D. All welders shall be certified by a state approved welding bureau. Fabricator shall have current and valid certificated registration by the building official for the types of welds required by the project. Prior to start of the project, the fabricator shall submit a copy of certificate of registration for approval. Prior to project close out, the fabricator shall submit a certificate of compliance that the work was performed in accordance with the approved plans and specifications to the building official and to the Engineer or Architect of record.

3.8 EXISTING SERVICES:

A. Provide and install all required connections to existing systems as required by the Drawings and specifications.

B. Integrate existing systems with all new work to provide a complete working system.

C. Provide minimum 72 hour notice to Owner of service interruptions. All service interruptions shall be kept to the minimum possible time. When requested by Owner service interruptions shall occur outside of normal working hours at no additional cost to owner.

3.9 ASBESTOS ABATEMENT:

A. Existing systems within the area of this scope of work may have asbestos_bearing materials. Testing, encapsulation, removal, treatment, or correction of existing asbestos_bearing materials is not a part of this scope of work and is not the responsibility of the mechanical contractors.

3.10 STRUCTURAL DESIGN OF EQUIPMENT AND SEISMIC RESTRAINTS:

A. All mechanical equipment supports shall be designed by a licensed Structural Engineer and shall comply with the 2019 California Building Code, Section 1616A.1.18 through 1616A.1.26 and ASCE 7-16. Chapters 13, 26, and 30.

B. All mechanical equipment supports shall be designed by a licensed Structural Engineer and shall comply with the 2019 California Building Code, Section 1616A.1.18 through 1616A.1.26 and ASCE 7-16. Chapters 13, 26, and 30.

C. Provide seismic sway bracing for all suspended piping and ductwork in accordance with the OSHPD anchorage pre_approval OPM-0043-13 the "Mason West Inc. Seismic Restraint Guidelines for Suspended Piping, Ductwork, and Electrical Systems".
1. Badger, B-Line, Superstrut, or equal systems bearing current OPA numbers shall also be acceptable.

3.11 START-UP PROVISIONS FOR MECHANICAL WORK

A. General: Major equipment (such as booster pumps) start-up shall be performed by the equipment manufacturer or authorized representative.

B. Adjusting and Aligning Equipment: Adjust all equipment. Check all motors for proper rotation.

C. Lubrication:
1. Extend grease fittings on bearings to points of ready and easy accessibility.
2. Lubricate fan bearings, etc., before operation of any equipment.
3. Provide a final lubrication to equipment immediately before turning over to Owner.

D. Provide training and orientation of Owners operating staff in proper care and operation of equipment, systems and controls.

E. During test period, make final adjustments and balancing of equipment, systems, controls, and circuits so that all are placed in first_class operating condition.

F. Mark final positions of balancing valves after balancing is complete.

G. Final observation will not be made until all of the above have been completed and a preliminary copy of the balance report has been submitted and reviewed.

3.12 PLUMBING RECORD AS-BUILT DRAWINGS:

A. During the course of Project Construction, Mechanical Contractor shall maintain recorded "AS-built" information by distinctively marking up approved shop drawings prints to depict all actual work installed on a daily basis form but not limited to field conditions, addendums, architectural supplemental instructions (ASIs), instruction bulletins (IBs), change orders (COs), responses to Request For Information (RFIs), and approved product substitutions.

B. The marked-up shop drawings will be made available at the Construction Site to the Architect upon request, at any time.

C. The marked-up shop drawings with the recorded information shall then be used to create Record As-built drawings at the completion of the project. Contractor shall submit the Record As-built drawings in full-size hard copies and also in PDF format.
1. Provide 2 complete sets of full-size drawings on 20 pound white bond paper.
2. Provide 1 CD (compact disc) or Thumb Drive with Record drawings in PDF format. Files to be names the same as sheets.
3. Record as-built drawings are to be full size drawings (same size as Contract Documents) and all plans are to be to standard engineering scale. The minimum drawing scale to match those provided within the Contract Documents.

D. Record As-built drawings shall include the followings:
1. Work on Record As-built drawings shall be provided with horizontal and vertical dimensions. Underground work shall be provided with invert elevations. All dimensions shall be references to permanent building fixed points and/or column lines.
2. Provide sufficient details and sections to depict actual installations.
3. Equipment identifications and system labeling nomenclatures shall match the Project Design Documents.
4. Identification of main shut-off valves shall be based on the approved valve tag list and as actually installed in field.
5. Piping mains and branches, size and location with pipe elevation information and invert elevations for underground piping. All risers shall be clearly identified.
6. Location of plumbing fixtures, including but not limited to clean outs, floor drains, floor sinks, storm drains, catch basins, valve boxes and equipment connections.
7. Locations of all manual and automatic valves, pipe strainers, backflow preventers, water hammer arrestors, expansion joints and compensators, pipe guides and anchor points.
8. Equipment locations with dimensions from prominent building lines and requires service access.
9. Seismic bracing information for plumbing system, piping and equipment

3.13 CLEANING UP:

A. Remove tools, scaffolding, surplus materials, barricades, temporary walks, debris, and rubbish from the Project promptly upon completion of the work of each Section. Leave the area of operations completely clean and free of these items.

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SHEET TITLE:

PLUMBING - SPECIFICATIONS

SCALE:

REVISIONS

No.	Issue Description	Date
1		
2		
3		
4		
5		

Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER

P0.02

of 24

SECTION 22.05.00 - COMMON WORK FOR PLUMBING

1.1 SUMMARY

A. This section includes general mechanical materials and methods required within the project. Items included within this specification section include:
1. Piping Supports
2. Access Doors
3. Valve Boxes
4. Roof Flashing
5. Dielectric Unions
6. Pipe and Equipment Identification
7. Fireproofing
8. Painting
9. Concrete
10. Excavating And Backfill
11. Commissioning and preliminary operational tests

1.1 ACTION SUBMITTALS

A. Product data: submit complete data of materials proposed including:
1. Manufacturer and model number
2. Clearly indicate all options, trim, and accessories.
3. Cross reference manufacturer's cut sheet to fixture callout ID on submittal sheet.

1.2 CLOEOUT SUBMITTALS

A. Warranty: Submit executed warranty.
B. Certification: Submit Contractors Certification
C. Operation and Maintenance Data: submit complete O&M data including:
1. Maintenance data and parts lists for each component.
2. Provide "trouble_ shooting" maintenance guide
3. Include this data within maintenance manual

A. Operation and Maintenance Data: where applicable, submit complete O&M data including:
1. Maintenance data and parts lists for each component.
2. Provide "trouble_ shooting" maintenance guide
3. Include this data within maintenance manual

1.3 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of plumbing piping systems products, of types, materials, and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Contractor's Qualifications: Firm with at least 5 years of successful installation experience on projects with piping systems work similar to that required of project.

1.4 WARRENTY

A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's warranty for all plumbing valves and accessories against defects in materials and workmanship. Warranty shall cover replacement of product plus labor to install.

PART 2 - PRODUCTS

2.1 **PIPING SUPPORTS:**

A. All mechanical equipment supports shall be designed by a licensed Structural Engineer and shall comply with the 2019 California Building Code, Section 1616A.1.18 through 1616A.1.26 and ASCE 7-16, chapters 13, 16, and 30.

B. Mechanical equipment supports shall be designed by a licensed Structural Engineer.

C. Provide seismic sway bracing for all suspended piping and ductwork in accordance with the Seismic Restraint System Guidelines, OPM-0043-13 by Mason.

D. Acceptable Manufacturer:
1. Mason
2. B-Line
3. Or Equal

E. Vertical Piping:
1. Support vertical piping risers securely with riser clamps, B-Line B3373, or equal. Attach clamps to the pipe above each concrete floor slab, with the arms of the clamp resting on the slab or the structural supports. Provide Superstrut B3373C, or equal clamp when used on copper piping.
2. Support pipe lines passing up through the building at each floor of the building.

F. Horizontal Piping:
1. Use B-Line B3100, or equal, steel strap hanger for uninsulated steel or cast_iron pipe through 8_inch size, and for insulated steel or cast_iron pipe through 4_inch size.
2. Use Superstrut C-710 or equal, steel hanger in pipe sizes where suitable. Use saddle shield as specified for insulated pipes.
3. For uninsulated copper tubing, use B-Line B3100F, or equal, felt lined hanger.

G. Pipe Saddles:
1. Use B-Line B3153, or equal, protective insulation shield with "loc" tabs.

H. Concrete Inserts: Provide B-Line B2500, or equal, concrete inserts.

2.2 **VALVE BOXES:**

A. Provide at each valve or cock in ground a Christy, Brooks, or equal valve box with cover marked for service.

B. Valve boxes in traffic areas: Provide Christy No. G5 traffic valve box, 10-3/8" inside diameter with extensions to suit conditions, with cast iron locking cover.

C. Valve Boxes in non-traffic areas: Provide Christy No F22, 8" inside diameter by 30" long with cast iron locking cover. Cut bottom of plastic body for operation of valve as required.

D. Extension Handles
1. Handle to be Alhambra Foundry Co., or equal, model A-3008 extension handle.
2. Furnish 2 extension handles per project for underground valves.

2.3 **ACCESS DOORS:**

A. Where floors, walls, or ceilings must be penetrated for access to mechanical equipment, provide access doors, 14_inch by 14_inch minimum size in usable opening. Where entrance of a serviceman may be required, provide 18_inch by 24_inch minimum usable opening
1. All access doors less than 7'-0" above finished floors and exposed to public access shall have keyed locks.

B. Access doors shall match those supplied in Division 8 in all respects, except as noted herein.

C. Where panels are located on ducts or plenums, provide neoprene gaskets to prevent air leakage, and use frames to set door out to flush with insulation.

D. Provide insulated doors where located in internally insulated ducts or casings.

E. Where specific information or details relating to access panels different from the above is shown or given on the Drawings or other Divisions of work, then that information shall supersede this specification.

F. Do not locate access doors in highly visible public areas such as lobbies, waiting areas, and primary entrance areas. Coordinate with the architect when access is required within these areas.

G. Available Manufacturers:
1. Milcor
2. Karp
3. Nystrom
4. Cesco

H. Access doors to be equivalent to the following Milcor access doors:
1. Style M (plaster)
2. Style A (A/C tile, gypsum board)
3. Style M (Masonry)
4. Style "Fire Rated" where required.

2.4 **ROOF FLASHING:**

A. Flashings in metal deck or membrane type roofing:
1. Flashing for penetrations of the roof for mechanical items such as flues, ducts, and pipes will be furnished and installed under other sections of these specifications. The work of this section shall include layout, sizing, and coordination of penetrations required for the mechanical work.
2. Furnish and install counterflashings above each flashing required in the mechanical work. Flues and ducts shall have 24_gauge galvanized sheet metal storm collar securely clamped to the flue or duct above the flashing.
3. Sewer vents and other piping extending through roof structure shall have flashing provided and installed as part of the roofing work. This contractor shall coordinate his Work accordingly.

B. Flashing in built-up roofing assemblies:
1. Where flashing is not provided and installed as part of other Work, furnish and install a waterproof flashing and counterflashing for pipe, duct, and flue passing through roof. The flashing shall extend a minimum of 9 inches in all directions from the outside of the pipe, flue, or duct.
2. Sewer vents and other piping extending through roof structure shall have four_pound sheet lead flashings and Semco, Smith, or equal to Semco #1100_4. counterflashing sleeves installed as detailed.
a. Provide Hydroseal at underside of counterflashings as recommended in Semco installation instructions.
3. Flues shall have 24_gauge galvanized steel flashings on all roofs. Securely clamp a storm collar (counterflashing) around the flue above the flashing. Storm collars shall be of same material as flashing.
4. Seal all pipes, flues, or ducts passing through exterior walls in an approved, watertight manner.

2.5 **DIELECTRIC UNIONS:**

A. Furnish and install dielectric unions at all locations described herein, whether shown on Drawings or not, and except as noted herein. Construct couplings and flanges so that the two pipes being connected are completely insulated from each other with no metal_to_metal contact. Heavily line the couplings with a hard, insulating, phenolic plastic threaded in standard pipe sizes. Make up the flanges with insulating components consisting of a hard, phenolic gasket, bolt sleeves, and bolt washers. Supplement the insulating gasket with neoprene faces to form a seal.

B. Acceptable Manufacturers:
1. Watts Regulator Co.
2. Eclipse, Inc.
3. Perfection Corp.

2.6 **PIPING AND EQUIPMENT IDENTIFICATION:**

A. Pipe Identification:

1. Each piping system furnished and installed under this work shall be identified and the direction of flow indicated by a prefabricated coiled plastic colored label.

2. Labels shall comply with ASME A13.1 with regard to color, letter height, and marker size. The labels shall have black or white lettering and flow arrows on colored backgrounds and shall not require adhesive. The background colors shall conform to the color schedule shown in this Article.

3. For use indoors use 20 mil vinyl labels, MSI model MS-970, or equal. For piping with an outside diameter greater than 6 inches provide the label manufacturers nylon straps to secure label to piping.

4. For use outdoors use Polyester/Tedlar laminated material, MSI model MS-977, or equal. For piping with OD greater than 6" provide the label manufacturers stainless steel straps to secure label to piping.

5. The size of the lettering and label shall be such that the lettering can be easily read from the floor and the colors easily discernible.

6. Acceptable Manufacturers:
a. Marking Services Incorporated (MSI)
b. Idento Metal Products Co., Idento Bands
c. Setmark

B. Equipment Identification:

1. Provide white lamacoid plate for each and every piece of equipment installed in this work.
a. Lettering on plate shall be black, with size of lettering to suit equipment.
b. Lettering shall be minimum of 3/8_inch in height.
c. Plates shall be riveted or bolted to equipment.

2. Equipment to include, but not limited to:
a. Pumps
b. Water Heaters
c. Air Compressors
d. Vacuum Pumps
e. Etc.

C. Acceptable Manufacturers:
1. Marking Services Incorporated, (MSI)
2. LEM Products
3. Seton
4. Craftmark

2.7 **FIREPROOFING**

A. Fireproofing to be installed at all pipe and duct penetrations of rated assemblies.

B. Fireproofing to be UL Rated fire stop material.

C. Acceptable Manufacturers:
1. Hilti
2. 3M Pro-Set
3. Or Equal

PART 3 - EXECUTION

3.1 **INSTALLATION OF HANGERS AND SUPPORTS:**

A. Fasten all piping securely to structure with hangers, supports, guides, anchors, or sway braces to maintain pipe alignment, to prevent any sagging, and to prevent noise or excessive strain on the piping due to uncontrolled movement under operating conditions. Relocate hangers as necessary to correct unsatisfactory conditions that may become evident when system is put into operation.

B. Follow drawing requirements and details where special pipe support requirements are detailed on the Drawings.

C. Do not support piping by perforated tape, wire, rope, wood, nails, or other makeshift devices.

D. Design hangers and supports to support the weight of the pipe, weight of fluid, and weight of the pipe insulation with a minimum factor of safety of five based on the ultimate tensile strength of the material used.

E. Burning or welding on any structural member under load shall not be attempted. Field welding not called for on the Drawings or reviewed shop Drawings may only be done with consent and advice of the Architect and after proper provisions have been made to relieve the stress on the member. The boring of holes in beam flanges or narrow members will not be allowed.

F. Install hanger on insulated piping in a manner which will not produce damage to insulation. Provide steel pipe saddles as required to protect pipe covering. Install pipe hangers on piping covered with insulation on the outside of the insulation and not in contact with the pipe.

G. Fasten hanger rods to concrete structural members with concrete inserts set flush with surface. Install a reinforcing rod through the opening provided in the concrete inserts. Fasten hanger rods to structural members with suitable beam clamps, and provide beam clips to lock clamp securely to beam.

H. Use of powder_actuated fasteners will not be permitted for the support of any overhead piping.

I. Turnbuckles, if used, shall have a load_carrying capacity at least equal to that of the pipe hanger with which they are being used.

J. All threaded parts of pipe hanger assemblies shall have full length of thread in service while in use.

K. Hanger material shall be reviewed by the Architect before installation.

L. Pipe Hanger or Support Spacing:
1. Provide pipe hangers or supports at 6_foot maximum spacing on steel pipe 3/4_inch diameter and smaller and for copper pipe 1_1/2 inches and smaller.
2. Support steel piping 1" and larger and copper larger than 1_1/2 inches at 10_foot maximum spacing.
3. Support steel piping used for gas at the following lengths:
a. 1/2-inch diameter at 6-feet maximum
b. 3/4-inch and 1-inch at 8-feet maximum
c. 1-1/4-inch and larger at 10-feet maximum spacing

M. Provide continuous support channel for all polypropylene piping, and provide 6_foot maximum spacing for hangers, with a minimum of one hanger per length of pipe.

N. Provide hangers or supports for horizontal and vertical cast_iron drainage pipe at every other joint, except that when the developed length between hangers or supports exceeds 4 feet, provide hangers or supports at each joint. Provide adequate sway bracing to prevent shear.

3.2 **ACCESS DOORS:**

A. Access doors shall be furnished and installed wherever valves, balance valves, damper operating mechanisms, air terminal boxes, fans, and similar items normally requiring adjustment or servicing are installed in concealed or inaccessible spaces. Coordinate with access doors shown on architectural Drawings.

B. Comply with manufacturer's instructions for installation of access doors.

C. Where access panels are detailed on architectural or mechanical Drawings, sizes indicated thereon shall be used.

D. Keyed access doors shall be keyed alike.
1. Provide owner with 4 copies of keys for access doors.

3.3 **VALVE BOXES:**

A. Provide valve box for all buried valves. Install per manufacturer's written instructions with top of box flush with finished grade.

B. Clean all valve boxes of debris.

3.4 **ROOF FLASHING:**

A. Provide pipe flashings as noted on the Drawings.

B. Flue and duct flashings and storm collars shall be securely clamped around flue or duct storm collar or counterflashing, above flashing.

3.5 **DIELECTRIC UNIONS:**

A. Install dielectric unions in the following locations:
1. In all metallic water and gas service connections into the building within 5 feet of the building wall. Install adjacent to the shut_off valve or cock and above ground where possible.
2. At points of connections where copper water lines connect to steel domestic water heater tanks and other equipment.
3. At points in piping where dissimilar metal pipes are connected together.
4. Any special applications shown on the Drawings.
5. Where steel or cast_iron pipe in the ground connects to copper or brass piping above the ground, the transition from steel or cast_ iron pipe to the copper or brass pipe shall be made above ground in all cases and in an accessible location where practicable.
6. Where copper or brass piping is connected to steel or cast_iron piping and the connection is buried in the ground, the connection shall be covered with coal tar protective tape extending outward a minimum of 5 feet on all pipes, from the point of connection. The tape shall have a minimum thickness of 10 mils and a maximum thickness of 12 mils and shall be applied so as to provide at least two full thicknesses of the tape over the piping. A primer, specifically designed for use with the tape, shall be used. The piping shall be thoroughly cleaned before any tape or primer is applied.

3.6 **PIPE AND EQUIPMENT IDENTIFICATION:**

A. Identification shall be applied to all piping, except piping located in furred spaces without access to permit entrance of personnel, and piping buried in the ground or concrete.

B. Underground pipe identification shall consist of a buried, continuous, preprinted, bright colored, plastic ribbon cable marker provided for each underground pipe.

C. The legend and flow arrow shall be applied at the following locations:
1. All valve locations,
2. All points where piping enters or leaves a wall, partition, cluster of piping, or similar obstruction
3. All exposed locations
4. At approximately 20_foot intervals on pipe runs.

D. Practical variations or changes in locations and spacing may be made with the specific approval of the Architect to meet specific conditions.

E. Wherever two or more pipes run parallel, the printed legend and other markings shall be applied in the same relative location so that all piping is easily identified.

F. The marking shall be located so as to be readily conspicuous at all times from any reasonable point of vantage.

G. Where different equipment, such as fire sprinklers, are supplied from a common main, such as domestic water, the main should be identified as "Domestic Water" and each respective branch takeoff as "Fire Water," etc.

H. The non_potable water plumbing piping shall be marked with the legend "Danger _ Unsafe Water". This legend shall be applied to both hot and cold water systems along the length of the pipe in fluorescent orange at a maximum of five foot intervals.

I. Lettering size and label colors are to be per ASME/ANSI A13.1 Pipe Marking Standards.

3.7 **FIREPROOFING:**

A. Pack the annular space between the pipe sleeves and the pipe and between duct openings and ducts through all floors and walls with UL listed fire stop.

B. Fireproofing system to be installed in strict accordance with manufacturer's written instructions and details.

3.8 **PAINTING:**

A. Perform all priming and painting on the equipment and materials as specified herein.

B. Exposed piping and unfinished portions of equipment to be painted shall be cleaned of grease, oil, rust, or dirt in preparation for painting.

C. Where applicable, remove pipe clamps prior to painting so that entire pipe is painted. Provide temporary support as required. Re-install clamps after priming/painting is complete.

D. Priming:

1. Contractor to prime all exposed ferrous metals, including piping, which are not galvanized or factory-finished.
a. Black steel pipe exposed to weather shall be cleaned and primed with one coat of Rust-Oleum, or equal, #1069 primer. Color to be Grey.

E. See Painting Section for detailed requirements.

3.9 **CONCRETE**

A. Where specifically indicated on the Drawings or specified as part of Mechanical Work, this Contractor shall furnish and install concrete work, such as thrust blocks or spring isolator bases.

B. Concrete and reinforcing steel shall be equal to that specified for General Construction.

C. Except as noted above, concrete work will be furnished and installed under General Work. This Contractor shall coordinate requirements accordingly.

3.10 **EXCAVATING AND BACKFILL**

A. Perform all excavating required for work of this Section. Do excavating required for installation of piping and service lines and other work that applies as indicated on Drawings. Verify location and elevation of all existing utilities prior to excavation for installation of new piping. Provide the services of a pipe/cable locating service prior to excavating activates to determine location of existing utilities

B. Excavations shall be of open vertical construction of sufficient width to provide free working space at both sides of trench and around pipe as required for caulking, joining, backfilling, and compacting. Unless shown otherwise, provide a minimum of 2'-6" cover above top of pipe to finished grade for all service piping unless otherwise noted. Trim trench bottom by hand or provide a minimum of 4" deep sand bed to provide a uniform grade and firm support throughout entire length of pipe. For PE gas pipe, bed the pipe in a 4" sand bed.

C. Dig trenches straight and true to line and grade with holes for bells for bell_and_spigot pipe. Evenly support piping for its entire length upon outside periphery of lower one_third of pipe. Where rock is encountered, undercut trenches 3 inches and fill with well_tamped, clean sand and pea gravel to correct pipe elevation.

D. After pipe lines in excavation have been installed and tested, backfill excavation to point 6 inches above pipe using sand, fine earth, or other materials free of rocks and large lumps. Proceed evenly on both sides of pipe and continuously tamp. Except as hereinafter noted, backfill above 6 inches above top of pipe shall be made by using earth from excavation placed in layers of 8_inch maximum depth. Compaction of each successive layer will be made with mechanical compactor.

E. Take special care in backfilling over wrapped piping to prevent damage to protective wrapping.

F. Bed sewers under pavements, wrapped piping, and PVC piping in sand prior to backfilling. Backfill to point 6 inches above pipe with sand.

G. This Contractor shall replace sod, concrete, asphalt paving, curbs, pavement, walks, and any other type of existing work or surface disturbed by excavation, using workmen skilled in trade involved.

H. When pipe or underground conduit with a protective wrapping is to be placed in the trench, sand only shall be used for bedding the pipe or conduit. The sand used shall be certified to have a minimum resistance of 5000 ohms per cubic centimeter when wetted to any moisture content with distilled water and shall consist of clean, natural, washed_sand, hard, and durable particles varying from fine particles to particles of such size that all will pass through a 3/8_inch screen, not less than 90 percent will pass through a 1/4_inch screen, and not more than 25 percent will pass through a No. 50 screen.

I. Any backfill placed under this contract which subsides or settles below the adjacent finished grade or paving level during the guarantee period shall be brought to grade by the Contractor by adding compacted backfill or additional paving in paved areas.

3.11 **DEMOLITION**

A. Refer to Division 1 sections for general demolition requirements and procedures.

B. Disconnect, dismantle, and remove plumbing systems, equipment, and components indicated to be removed. Coordinate with all other trades
1. Piping to be removed: Remove portion of piping indicated to be removed. Cap or plug remaining piping with same or compatible piping material.
2. Piping to be abandoned in Place: Drain piping and cap or plug piping to remain with same or compatible piping material. Refrigerant system to be evacuated per EPA requirements.
3. Equipment to be removed: Drain down and cap remaining services and remove equipment.
4. Equipment to be removed and re-installed: Disconnect and cap services and remove, clean, and store equipment. When appropriate, re-install, reconnect, and make equipment operational
a. If existing equipment which is to be re-installed is damage, contact architect prior to removal. Contractor to take pictures of any damaged equipment prior to its removal and submit pictures to Architect.
b. Equipment damaged during removal, storage, or re-installation shall be the Contractor's responsibility and is to be replaced with new at no additional cost to the owner.
5. Equipment to be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, removed damaged or unserviceable portions and replace with new products of equal capacity and quality.

D. Non-Destructive Testing Of Existing Concrete Slabs:
1. When drilling or saw cutting existing reinforced concrete, use care and caution to avoid cutting or damaging the existing reinforcing bars, conduit, or tendons. Use a non_destructive method to locate metals poured into the slab prior to doing any work.

3.12 **CARE AND CLEANING:**

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work. Leave entire work in condition satisfactory to Architect. At completion, carefully clean and adjust equipment, fixtures, and trim that are installed as part of this work. Leave systems and equipment in satisfactory operating condition.

B. Drain and flush piping to remove grease and foreign matter. Thoroughly clean out flush valves, traps, strainers, and pressure_reducing valves.

C. Keep the interior of all ductwork free of dirt, dust, loose insulation, and other foreign materials at all times.

D. Clean out and remove surplus materials and debris resulting from the work, including surplus excavated material.

3.13 **OPERATION TEST:**

A. Test each piece of equipment to show that it will operate in accordance with indicated requirements.

3.14 **CLEANING UP:**

A. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

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SHEET TITLE:
PLUMBING - SPECIFICATIONS

SCALE:

REVISIONS

No.	Issue Description	Date
1		
2		
3		
4		
5		

Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER
P0.03
of 24

SECTION 22.05.23 - VALVES AND ACCESSORIES FOR PLUMBING

1.1 SUMMARY

A. This section includes plumbing accessories including the following:
1. Valves
2. Miscellaneous piping products
3. Hose Bibbs and Hydrants
4. Backflow Preventers
5. Thermostatic Mixing Valves
6. Roof Drains
7. Miscellaneous Drains
8. Cleanouts
9. Floor Drains and Floor Sinks
10. Interceptors

1.2 REFERENCES AND STANDARDS

A. Requirements of Regulatory Agencies: Contractor to conform to the publications listed below. Requirements of these publications are to be considered as a minimum standard. If details and specifications which require more stringent work are indicated within project, Contractor to provide the more stringent.
1. California Plumbing Code (CPC) Compliance: Comply with applicable portions of the California Plumbing Code pertaining to selection and installation of plumbing materials and products. Fabricate and install natural gas systems in accordance with CPC.
2. ANSI Compliance: Fabricate and install natural gas piping in accordance with ANSI B21.2, *Fuel Gas Piping*.
3. NFPA Compliance: Fabricate and install natural gas systems in accordance with latest edition of NFPA 54, *National Fuel Gas Code*.
4. Utility Compliance: Fabricate and install natural gas systems in accordance with local gas utility company requirements.
5. ASME B31.9 for building services piping valves.
6. NSF Compliance: NSF 61 for valve materials for potable-water service

B. All plumbing components intended to dispense water for human consumption shall comply with requirements of California Assembly Bill AB1953. Components to include (but not limited to): piping, faucets, angle stops, valves, bubblers, drinking fountains, piping, etc.

1.3 ACTION SUBMITTALS

A. Product data: submit complete data of materials proposed including:
1. Manufacturer and model number
2. Clearly indicate all options, trim, and accessories.
3. Cross reference manufacturer's cut sheet to fixture callout ID on submittal sheet.

1.4 CLOSEOUT SUBMITTALS

A. Warranty: Submit executed warranty.
B. Certification: Submit Contractors Certification
C. Operation and Maintenance Data: submit complete O&M data including:
1. Maintenance data and parts lists for each component.
2. Provide "trouble_ shooting" maintenance guide
3. Include this data within maintenance manual

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of plumbing piping systems products, of types, materials, and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Contractor's Qualifications: Firm with at least 5 years of successful installation experience on projects with piping systems work similar to that required of project.

1.6 WARRANTY

A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's warranty for all plumbing valves and accessories against defects in materials and workmanship. Warranty shall cover replacement of all such valves or accessories plus labor to install.

PART 2 - PRODUCTS

2.1 VALVES

A. General:

1. Similar valves to be by the same manufacturer.

2. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

3. Bronze Valves: 2"Ø and smaller with threaded ends, unless otherwise indicated.

4. Ferrous Valves: 2 ½"Ø and larger with flanged ends, unless otherwise indicated.

5. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

6. Valve Sizes: Same as upstream piping unless otherwise indicated.

7. Valve Actuator Types:
a. Handwheel: For valves other than quarter-turn types.
b. Hand-lever: For quarter-turn valves 6"Ø and smaller, except for plug valves.
c. Wrench: For plug valves with square heads.
1) Furnish Owner with 1 wrench for every 5 plug valves, for each size square plug-valve head.
d. Chainwheel: Device for attachment to valve handwheel, stem, or other actuator; of size and with chain for mounting height, as indicated in the "Valve Installation" Article.

8. Valve-End Connections:
a. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
b. Grooved: With grooves according to AWWA C606.
c. Valve solder-joint connections are common in smaller sizes of plumbing piping. Soldering and brazing methods used to achieve required pressure-temperature ratings may damage internal valve parts. Special installation requirements for soldered valves may make threaded valves more cost-effective.
d. Threaded: With threads according to ASME B1.20.1.
e. Valve Bypass and Drain Connections: MSS SP-45.

B. Acceptable Manufacturers:

1. Ball, gate, butterfly, and check valves:
a. Nibco
b. Apollo
c. Milwaukee

2. Plug Valves:
a. Rockwell
b. Homestead
c. Nordstrom Valves, Inc

3. Balance Valves:
a. Bell and Gosset Circuit Setter
b. Armstrong
c. Nibco

4. Gas Pressure Reducing Valves:
a. American Meter Company
b. Fisher
c. Or equal

5. Seismic Valve
a. Koso/California Seismic Valves
b. Or equal

C. Ball Valves - ≤ 3"Ø:
1. Two-Piece, Full-Port, Lead Free Bronze Ball Valves with Stainless-Steel Trim:
2. NIBCO Model S-585-66-LF or equal.
a. Pressure Rating: 600 PSI non-shock cold working pressure
b. Maximum pressure / Temperature: 100 PSI AT 300°F
c. Body Design: Two piece steel with threaded body packnut design (no threaded stem designs allowed) with adjustable stem packing.
d. Body Material: Bronze ASTM B 584 Alloy C844.
e. Ends: Threaded or Solder.
f. Seats: PTFE or TFE.
g. Stem: Stainless.
h. Ball: Stainless steel, vented.
i. Port: Full.

D. Gate Valves- ≤ 3"Ø:
1. Screw in Bonnet, Rising Stem, Silicon Bronze Gate Valve
2. NIBCO Model T-111-LF or equal.
a. SWP Rating: 150 psig
b. Maximum Pressure / Temperature: 100 PSI at 300 degree F
c. Body Material: Silicon Bronze ASTM B584
d. Wedge Material: Silicon Bronze ASTM B584
e. Bonnet Material: Silicon Bronze ASTM B584
f. Packing Material: Bronze ASTM B62 or ASTM B584 or Brass ASTM B16
g. Packing nut: Bronze ASTM B62 or ASTM B584 or Brass ASTM B16
h. Handwheel: Malleable Iron ASTM A 47
i. End Connections: Threaded

E. Gate Valves- 3"Ø and larger:
1. Bolted Bonnet, Non-Rising Stem, Solid Wedge, Class 125 Iron Body Gate Valve
2. NIBCO Model F-619 or equal for above ground use, Model F-619-SON for below grade use.
a. SWP Rating: 125 psig
b. CWP Rating: 200 psig
c. Stem Material: Brass ASTM B16 Alloy C36000
d. Bonnet Material: Cast Iron ASTM A 126 Class B
e. Body Material: Cast Iron ASTM A 126 Class B
f. Wedge Material: Cast Iron ASTM A 126 Class B
g. Packing Material: Synthetic Fibers with graphite
h. Hand-wheel: Cast Iron ASTM A 126 Class B
i. End Connections: Flanged
j. Provide with square operating nut for use below grade
k. Provide with 1 operating wrench per nut sizes.

F. Check Valves - - ≤ 3"Ø:
1. Horizontal Swing, Regrinding type, Y-patter, Renewable seat and disc bronze check valve
2. NIBCO Model T-413 or equal.
a. SWP Rating: 125 psig
b. CWP Rating: 200 psig
c. Body Material: Bronze ASTM B 62.
d. Ends: Threaded
e. Seats: Buna-N.
f. Hinge: Bronze ASTM B140 Alloy

G. Check Valves - ≤ 2"Ø:
1. Inline lift type bronze ring check valve
2. NIBCO Model T-480 or equal.
a. WWP Rating: 250 psig
b. Body Material: Bronze ASTM B 584.
c. Stem: Stainless Steel
d. Spring: Stainless Steel
e. Disc Holder: Stainless Steel
f. Disc: Buna-N

H. Butterfly Valves- 4"Ø and larger:
1. Extended neck, geometric drive, molded-in seat liner, lead free, lug style butterfly valve.
2. NIBCO Model LD-2000 or equal
3. Valves shall be lug body style manufactured in accordance with MSS-SP67;
a. CWP Rating: 200 psig
b. Body: Ductile Iron ASTM A536
c. Disc Aluminum Bronze ASTM B148 Alloy 954/955
d. Stem: Stainless Steel
e. Stem and Body Seal: EPDM Rubber

I. Plug Valves:
1. Screwed Gland-Type Iron Plug Valve.
2. Nordstrom Figure 114 or equal - for sizes up to 2 ½"
3. Nordstrom Figure 115 or equal - for sizes 3" to 4"
4. Valves to be as follows:
a. CWP Rating: 200 psig
b. Body: Steel Body
c. Lubricated Type Plug valve

2.2 MISCELLANEOUS PIPING PRODUCTS

A. Water Hammer Arrestors
1. Water Hammer Arrestors to be provided on both hot and cold water branch piping severing ALL plumbing fixtures (not just flush valves).
2. Provide water branch lines at single fixtures with a manufactured water hammer arrestor. Water hammer arrestors shall be sized per Plumbing Drainage Institute Standard PDI-WH201 "Water Hammer Arrestors."
3. Water hammer arrestor to be with nesting type bellows contained within a casing having sufficient displacement volume to dissipate the calculated kinetic energy generated in piping system. Both casing and bellows constructed of Type 304 stainless steel. Arrestor to have a threaded connection.
4. Where multiple fixtures are located in a row or battery a single or multiple water hammer arrestors, as required, may be used. Multiple fixture installations shall have the arrestor sized and located per standard PDI-WH201 and the manufacturer's installation instructions.
a. Provide Access door for water hammer arrestors in restrooms containing more than 1 flush valve type fixture.
5. All water hammer arrestors shall have male pipe thread connections.
6. Water hammer arrestor to be a Zurn model Z1700 or equal.
7. Acceptable Manufacturers:
a. Zurn
b. J.R. Smith
c. Wade
d. Amtrol Inc.

B. Piping Escutcheons:
1. Provide chrome plated brass pipe escutcheons with inside diameter closely fitting pipe outside diameter or outside of pipe insulation where pipe is insulated.
2. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, ceilings, or pipe sleeve extension, if any.
3. Furnish pipe escutcheons with nickel or chrome finish and screw or spring clamping device with concealed hinge

C. Pipe Sleeves:
1. Where pipes pass through concrete floors or walls, install galvanized metal or plastic sleeves having not less than 1/2_inch or more than 1_inch clearance around sides of the pipe or pipe covering for the full thickness of the concrete.
2. After piping has been installed, fill annular space with fireproof safeing.
3. Acceptable Manufacturers:
a. Adjustocrete
b. Sperzel "Crete_Sleeve"
c. Or equal

D. Sleeve Seals:
1. Provide sleeve seals for sleeves located in foundation walls below grade or in exterior walls as follows:
a. Foundations: Lead and oakum, caulked between sleeve opening and pipe.
b. Walls Below Grade: Modular_mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
2. Acceptable Manufacturers:
a. Link-Seal Corporation
b. Or equal

2.3 CLEANOUTS

A. Provide cleanouts of same diameter as pipe shall be installed in all horizontal soil and waste lines where indicated and at all points of change in direction. Cleanouts shall be located a minimum of 18" from building construction so as to provide sufficient space for rodding.

B. Cleanouts shall have cast iron ferrules and bronze plugs.

C. Cleanouts extending to floor level shall be provided with membrane flange and clamping collar, bronze raised head plug, and nonslip scoriated top.

D. Cleanouts to be as follows:

1. Cleanouts in cast_iron soil or waste lines: Zurn Z_1440A-BP.
2. Cleanouts in walls: Zurn Z_1446-A-BP with stainless steel access cover.
3. Cleanouts on exterior of building: Zurn Z_1440.
a. Provide stainless steel cover and vandal-proof screw where located in wall. Zurn Z_1446-A
b. Where located at grade, provide 18_ by 18_ by 6_inch concrete pad and Zurn Z_1474 heavy duty cover. Provide Z_1440-A cleanout.
4. Cleanouts in floor to be a Zurn ZN_1400 with the following options:
a. Where located in terrazzo floor, provide -T, square top option.
b. Where located in carpet, provide -T square top option and -CM carpet marker option.
c. Where located in vinyl tile, provide -TX square top recessed for tile option.

E. Acceptable Manufacturers:
1. Zurn
2. J.R. Smith
3. MiFab

PART 3 - EXECUTION

3.1 INSTALLATION OF VALVES:

A. Valve Applications:

1. Domestic Water:
a. Shut off valves above grade: Ball Vales
b. Shut off valves below grade: Gate Valve

B. General:
1. Install valves with stems upright or horizontal. Valves stem position to be arranged to allow access for maintenance.
2. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
3. Operate valves in positions from fully open to fully closed prior to installing within system.
4. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
5. Locate valves for easy access and provide separate support where necessary.
6. Install valves in horizontal piping with stem at or above center of pipe.
7. Install valves in position to allow full stem movement.
8. Install valves where required for proper operation of piping and equipment, including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
9. Provide union at each connection to equipment and downstream of each valve. Provide unions at both ends of valves when valves can not be turned due to an obstruction.

10. After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspect each valve for possible leaks. Adjust or replace packing to stop leaks; replace valve if leak persists.
11. Tag each valve and provide a complete listing of valve locations and functions.

12. Provide additional tag at each valve noted below. Tag shall be black plastic with white lettering, 3-ply, 125 mil thick, Minimum 3" square.

VALVE FUNCTIONLOCATIONTAG TEXT Main Domestic Water shut-offMain water supply entrance to building."MAIN DOMESTIC WATER SHUT-OFF"
13. Provide half scale floorplans highlighting location of all valves. Cross reference valve list with floorplans and valve tags.

3.2 PIPE ESCUTCHEONS:

A. Install pipe escutcheons on each pipe penetration through floors, walls, partitions, and ceilings where penetration is exposed to view and on exterior of building.

B. Tighten escutcheon to pipe or insulation so escutcheon covers penetration hole and is flush with adjoining surface.

3.3 SLEEVES:

A. Secure sleeves to metal or wood forms in such a manner that they will not become displaced during pouring of concrete. Fill sleeves on deck with sand.

B. After forms have been removed from concrete, the sleeves shall be removed from the openings.

C. Core drill properly sized holes in the concrete to replace metal sleeves that are crushed or knocked out of position during pouring of concrete.

D. Provide piping passing through concrete fire walls with sleeves of standard black steel pipe nominally one size larger than pipe enclosed, but in the case of insulated pipe, large enough for insulation to pass through. Caulk space between pipe and sleeve with fire_rated wicking, and provide metal retainer plates at both sides of the wall.

E. Sleeve Seals: Install in accordance with the following:
1. Lead and Oakum: Fill and pack annular space between sleeve opening and pipe with oakum; caulk with lead on both sides.
2. Mechanical Sleeve Seals: Loosely assemble rubber links around pipe with bolts and pressure plates located under each bolt head and nut. Push into sleeve opening and center. Tighten bolts until links have expanded to form watertight seal.

3.4 CARE AND CLEANING:

A. Repair or replace broken, damaged, or otherwise defective parts, materials, and work.

B. At completion of work, carefully clean and adjust equipment and trim installed as part of this work.

C. Leave systems and equipment in satisfactory operating condition.

3.5 OPERATION TEST:

A. Test each piece of equipment to show that it will operate in accordance with indicated requirements.

SECTION 22.11.00 - FACILITY WATER DISTRIBUTION

1.1 SUMMARY

A. This section includes piping for the facility water distribution system.

1.2 REFERENCES AND STANDARDS

A. Requirements of Regulatory Agencies: Contractor to conform to the publications listed below. Requirements of these publications are to be considered as a minimum standard. If details and specifications which require more stringent work are indicated within project, Contractor to provide the more stringent.
1. California Plumbing Code (CPC) Compliance: Comply with applicable portions of the California Plumbing Code pertaining to selection and installation of plumbing materials and products.

B. Soldering and Brazing materials and labor shall comply with ASME Code and applicable state labor regulations.

C. Supports to be in accordance with SMACNA's Seismic Restraint Manual Second Edition 2008.

D. All plumbing components intended to dispense water for human consumption shall comply with requirements of California Assembly Bill AB1953. Components to include (but not limited to): piping, faucets, angle stops, valves, bubblers, drinking fountains, piping, etc.

1.3 ACTION SUBMITTALS

A. Submit manufacturer's catalog cut sheets, specifications, installation instructions, and dimensioned drawings for each type of pipe, support, anchor, and seal indicated within this section that is applicable to the project. Clearly indicate item being submitted.
1. Indicate pipe schedules, pressure classes, etc.
2. Indicate all options being submitted.

B. Provide Brazing Certifications. Submit reports as required for piping work applicable to the project.
1. Brazers that do not have current Certifications shall not be permitted to braze on the project.

1.4 CLOSEOUT SUBMITTALS

A. Warranty: Submit executed warranty.
B. Certification: Submit Contractors Certification
C. Operation and Maintenance Data: submit the following items in O&M data including:
1. Domestic Water System Sterilization Report.

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of plumbing piping systems products, of types, materials, and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Contractor's Qualifications: Firm with at least 5 years of successful installation experience on projects with piping systems work similar to that required of project.

1.6 WARRANTY

A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's warranty for all domestic water piping and accessories against defects in materials and workmanship. Warranty shall cover replacement of piping or accessories plus labor to install.

PART 2 - GENERAL

2.1 GENERAL:

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure and temperature ratings, and capacities as indicated. Materials and products to comply with the California Plumbing Code.

B. Where more than one type of material is indicated, selection is the Contractors option.
1. Contractor to provide submittal information on material which is to be installed.
2. Where more than one material is indicated, the Contractor shall only install one material per system and materials shall not be mixed within the same system.

C. Soldering Materials: Joints in copper tubing for all installations shall be made with brazing alloy sil_fos, or equal. Clean surfaces to be jointed shall be free of oil, grease, rust, and oxides.
1. Harris Stay_Safe 50 solder, or equal, may be permitted on plumbing lines above slab or ground only with prior review for piping sizes 2 inches and smaller only. Solders used shall contain no lead.

D. Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials.

2.2 PIPING AND FITTINGS:

A. Domestic Water Piping (cold water, hot water, tempered water, and hot water return):

1. Copper Tube: ASTM B 88, Type L, hard_drawn temper, except as otherwise indicated.

2. Interior Water Piping:
a. Copper tube, Type L, hard-drawn temper, wrought copper fittings.
b. Pipe sizes 2" and smaller to have solder joints.
c. Pipe sizes 2 ½" and larger to have brazed joints.

3. Under Slab Water Piping:
a. Pipe sizes 1 ½" and smaller: Type K, soft Copper tubing with smoothly formed bends. Runs to be made without joints except where runs are longer than the standard length of tubing role.
b. Pipe sizes 2" and larger: Same as exterior water piping.

4. Exterior Water Piping:
a. Copper tube, Type L, hard-drawn temper, wrought copper fittings.
b. All pipe sizes to have brazed joints.

B. Industrial Water Piping (cold water, hot water, tempered water, and hot water return):

1. Interior Water Piping:
a. Copper tube, Type L, hard-drawn temper, wrought copper fittings.
b. Pipe sizes 2" and smaller to have solder joints.
c. Pipe sizes 2 ½" and larger to have brazed joints.

2. Under Slab Water Piping:
a. Pipe sizes 1 ½" and smaller: Soft Copper tubing with smoothly formed bends. Runs to be made without joints except where runs are longer than the standard length of tubing role.
b. Pipe sizes 2" and larger: Same as exterior water piping.

C. Pressure and temperature relief valve discharge piping:
1. Provide materials as specified for domestic water piping.

PART 3 - EXECUTION

3.1 GENERAL

A. Examine areas and conditions under which plumbing piping systems are to be installed. Do not proceed with Work until unsatisfactory conditions have been corrected in manner acceptable to Contractor.

B. Comply with ANSI B31 Code for Pressure Piping.

C. Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently leak-proof piping systems, capable of performing each indicated service without piping failure. Install each run with minimum joints and couplings but with adequate and accessible unions for disassembly and maintenance/replacement of valves and equipment. Reduce sizes where indicated by use of reducing fittings. Align piping accurately at connections, within 1/16_inch misalignment tolerance.

D. Locate piping runs, unless detailed otherwise, vertically and horizontally (pitched to drain). Install piping parallel and perpendicular to adjacent building walls/structure and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations. Hold piping close to walls, overhead construction, columns, and other structural and permanent_enclosure elements of building; limit clearance to 1/2_inch where furring is shown for enclosure or concealment of piping; locate insulated piping for 1" clearance outside insulation. Wherever possible in finished and occupied spaces, conceal piping from view by locating in column enclosures, in hollow wall construction, or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated.

E. Electrical Equipment Spaces: Do not run piping through transformer vaults, elevator equipment rooms, Data closets or other electrical or electronic equipment spaces or enclosures.

F. Should structural difficulties or work of other contractors prevent the running of pipes or the setting of equipment at the points shown, Contractor to make the necessary deviations to the piping system, as determined by the Contractor, with the Architect's review, without additional cost to Owner.

G. Inspect each piece of pipe and each fitting to see that there is no defective workmanship on pipe or obstructions in pipes and fittings.

3.2 INSTALLATION OF WATER PIPING:

A. Run all water piping generally level, free of traps or unnecessary bends, arranged to conform to the building requirements, and to suit clearance for other mechanical work such as ducts, flues, conduits, and other work. No piping shall be installed so as to cause unusual noise from the flow of water therein under normal conditions.

B. Water lines shall not be installed in the same trench with non_ metallic sewer lines unless the bottom of the water pipe at all points is at least 12 inches above the top of the sewer line and the water line is placed on a solid shelf excavated at one side of the common trench.

C. Where water and waste piping cross, the pipes shall have no fittings within 10 feet of the crossing, and the water line shall be run above the waste line. Comply with any local codes or requirements.

D. Close open ends of water piping each day to prevent contamination or foreign matter entering pipe during construction. Thoroughly flush out piping to remove any dirt or foreign matter. Remove and clean all aerators at end of project and prior to sterilization.

3.3 DOMESTIC WATER SYSTEM STERILIZATION:

A. Water line disinfections are to be performed by a licensed contractor with training in potable water line disinfections or a D-1 water operator licensed by the state of California and trained in water line disinfections.

B. Water lines shall be cleaned by following guidelines provided by the AWWA standard C-651 for water mains and guidelines provided by DP Disinfection for building water lines.

C. Prior to system sterilization, provide warning signs at all outlets while chlorinating the system. Provide sign at all outlets, which reads "Water Sterilization in Progress - Do not operate". Remove signs at conclusion of test.

D. Disinfection Procedures / 3 Hour Disinfection (Chemical pump Method / Building side of Double Check Valve Assembly):

1. Clean and disinfect all hot and cold water systems connected to the domestic water system in accordance with AWWA Standard C-651 for water mains, DP Disinfection guide lines for building water lines, and as prescribed by the local Building and Health department codes. This procedure shall be performed by a Licensed Contractor trained in the disinfection of water systems or by a state certified Water Operator with a minimum of a D-1 license.

2. Preliminary Preparation:
a. Locate the injection point. Install an injection hose bib to the system at a point within 10'-0" of its junction with the water supply line. When the project is complete, with all the fixtures connected and operable and ready for use and when, by test, the system is proved to be free from leaks, it shall be thoroughly flushed by fully opening every outlet and operating every fixture until clear water flows from all of them. Take a Sample, test for Free chlorine content and record it on the work sheet.
b. Use (LR) Low Range Disinfection test strips. A Normally reading will be 2mg/L or less. This is the "Bench Mark" reading.

3. Disinfecting Agent:
a. The chlorine shall be a registered product with Cal-EPA for use in California in potable water lines, such as Bacticide, Cal-EPA Registration No. 37982-20001. Use liquid Sodium Hypochlorite conforming to ANSI/AWWA B300.

4. Disinfecting Procedure (Chemical Pump Method):
a. Connect the chemical pump to the injection hose bibb. If the existing pressure exceeds 50psi use a DP Disinfection Backflow / Regulator Injection Assembly.
b. With system completely full of water and supply valve open, adjust every faucet of system so that a trickle of water flows from each. Find the furthest fixture and trickle at a higher rate until you obtain your first reading. Then work backwards.
c. Inject disinfectant until a test at each branch outlet shows a chlorine residual concentration of 200 parts per million (ppm).
d. Close all outlets and valves. Shut down the pump. Close the valve connected to the fresh water supply line. Close the injection hose bib. Maintain condition for 3 hours at 200ppm.
e. When the above procedure has been completed, flush out entire system with fresh water until a test at any outlet shows a residual of not more than the original "Bench Mark" reading taken in the preliminary preparation.
1) When flushing, pay attention to any special requirements. Never flush highly chlorinated water into storm drains, creeks, rivers or septic tanks. De-chlorinate the discharge water with Ascorbic Acid.

E. Disinfection Procedures / 24 Hour Disinfection (Chemical pump Method / Building side of Double Check Valve Assembly):

1. Clean and disinfect all hot and cold water systems connected to the domestic water system in accordance with AWWA Standard C-651 for water mains, DP Disinfection guide lines for building water lines, and as prescribed by the local Building and Health department codes. This procedure shall be performed by a Licensed Contractor trained in the disinfection of water systems or by a state certified Water Operator with a minimum of a D-1 license.

2. Preliminary Preparation:
a. Locate the injection point. Install an injection hose bib to the system at a point within 10'-0" of its junction with the water supply line. When project is complete, with all fixtures connected and operable and ready for use and when, by test, the system is proved to be free from leaks, it shall be thoroughly flushed by fully opening every outlet and operating every fixture until clear water flows from all of them. Take a Sample, test for Free chlorine content and record it on the work sheet.
1) Use a L/R (low range) Disinfection test strip or a chlorine meter. A Normally reading will be 2mg/L or less. This is the "Bench Mark" reading.

3. Disinfecting Agent:
a. The chlorine shall be a registered product with Cal-EPA for use in California in potable water lines, such as Bacticide, Cal-EPA Registration No. 37982-20001. Use liquid Sodium Hypochlorite conforming to ANSI/AWWA B300.

4. Disinfecting Procedure (Chemical Pump Method):
a. Connect the chemical pump to the injection hose bib. If existing pressure exceeds 50psi use a DP Disinfection Backflow / Regulator Injection Assembly.
b. With system completely full of water and supply valve open, adjust every faucet of system so that a trickle of water flows from each.. Find the furthest fixture and trickle at a higher rate of speed until you obtain your first reading. Then work backwards.
c. Inject disinfectant until a test at each branch outlet shows a chlorine residual concentration of 50 parts per million (ppm).
d. Close all outlets and valves. Close Fresh water hose bib. Shut off pump. Close injection hose bib. Maintain condition for 24 hours and chlorine residual of at least 25 ppm must be retained in system for this 24 hour period. If, after 24 hours, tests indicate that chlorine residual concentration has decreased below 25ppm. The disinfection procedure must be repeated until an approved result is obtained.
e. When the above procedure has been completed, flush out entire system with fresh water until a test at any outlet shows a residual of not more than the original "Bench Mark" readings taken in the preliminary preparation.
1) When flushing, pay attention to any special requirements. Don't flush highly chlorinated water into storm drains, creeks, rivers or septic tanks. De-chlorinate the discharge water with Ascorbic Acid.

F. Chemical and bacteriological tests shall be conducted by a state-certified laboratory and approved by the local authorities having jurisdiction.

G. Submit written report to Health Department as required by State Regulations. Provide a copy of report to Architect prior to completion of project.

3.4 PIPING SYSTEM JOINTS:

A. General: Provide joints of type indicated in each piping system.

B. Cut all steel pipe and hard copper tubing by power hacksaw, a circular cutting machine using an abrasive wheel or in square end vise by means of hand hacksaw. Wheel cutters may be used for steel pipe provided that pipe shall have ends reamed to full inside diameter and beveled before being made up into fittings. Pipe shall have round edges or burrs removed so that a smooth and unobstructed flow will be obtained.

C. Thread pipe in accordance with ANSI B2.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint compound, Rector_ Seal #5, on male threads at each joint and tighten joint to leave not more than 3 threads exposed. Teflon tape may be used on piping smaller than 2 inches.

D. Braze copper tube_and_fitting joints where indicated, in accordance with ASME B32.

E. Solder copper tube and fitting joints where indicated, in accordance with recognized industry practice. Cut tube ends squarely, ream to full inside diameter, and clean outside of tube ends and inside of fittings. Apply solder flux to joint areas of both tubes and fittings. Insert tube full depth into fitting, and solder in manner which will draw solder full depth and circumference of joint. Solder shall be 95 percent tin, 5 percent antimony and shall be used above grade only. Wipe excess solder from joint before it hardens.

F. Flanged Joints: Match flanges within piping system and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.

3.5 TEST OF PIPING:

A. Test piping at completion of roughing in, in accordance with the following schedule. Show no loss in pressure or visible leaks after a minimum duration of 4 hours at the test pressures indicated. Tests to be verified by Inspector of Record.

system testedtest pressure psigtest withHot, Cold, Tempered, and Hot Water Return Piping150 lbs. rough_in 100 lbs. after equipment connectionWater
B. Testing equipment, materials, and labor shall be furnished by this Contractor.

C. Repair piping systems sections which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage. Do not use chemicals, stop_leak compounds, mastics, or other temporary repair methods.

D. Drain test water from piping systems after testing and repair work has been completed.

3.6 CLEANING UP:

A. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

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SHEET TITLE:
PLUMBING - SPECIFICATIONS
SCALE:

REVISIONS

No.	Issue Description	Date
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Drawn By:
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SECTION 22.13.00 - FACILITY SANITARY SEWERAGE

1.1 SUMMARY

A. This section includes piping required for the Sanitary Sewage system.

1.2 REFERENCES AND STANDARDS

A. Requirements of Regulatory Agencies: Contractor to conform to the publications listed below. Requirements of these publications are to be considered as a minimum standard. If details and specifications which require more stringent work are indicated within project, Contractor to provide the more stringent.

1. California Plumbing Code (CPC) Compliance: Comply with applicable portions of the California Plumbing Code pertaining to selection and installation of plumbing materials and products.

B. Supports to be in accordance with SMACNA's Seismic Restraint Manual Second Edition 2008.

1.3 ACTION SUBMITTALS

A. Submit manufacturer's catalog cut sheets, specifications, installation instructions, and dimensioned drawings for each type of pipe, support, anchor, and seal indicated within this section that is applicable to the project. Clearly indicate item being submitted.
1. Indicate pipe schedules, pressure classes, etc.
2. Indicate all options being submitted

1.4 CLOSEOUT SUBMITTALS

A. Warranty: Submit executed warranty.

B. Certification: Submit Contractors Certification

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacturer of plumbing piping systems products, of types, materials, and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

B. Contractor's Qualifications: Firm with at least 5 years of successful installation experience on projects with piping systems work similar to that required of project

1.6 WARRANTY

A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's warranty for all sanitary sewage piping and accessories against defects in materials and workmanship. Warranty shall cover replacement of all such piping systems or accessories plus labor to install.

PART 2 - GENERAL

2.1 GENERAL:

A. Provide piping materials and factory fabricated piping products of sizes, types, pressure and temperature ratings, and capacities as indicated. Materials and products to comply with the California Plumbing Code.

B. Where more than one type of material is indicated, selection is the Contractors option.
1. Contractor to provide submittal information on material which is to be installed.
2. Where more than one material is indicated, the Contractor shall only install one material per system and materials shall not be mixed within the same system.

C. Soldering Materials: Joints in copper tubing for all installations shall be made with brazing alloy sil_fos, or equal. Clean surfaces to be jointed shall be free of oil, grease, rust, and oxides.
1. Harris Stay_Safe 50 solder, or equal, may be permitted on plumbing lines above slab or ground only with prior review for piping sizes 2 inches and smaller only. Solders used shall contain no lead.

2.2 PIPING AND FITTINGS:

A. Sanitary Sewer Piping:

1. Cast iron, no-hub soil pipe. Provide with neoprene sleeve gaskets and stainless steel 4 band couplings.

2. Cast Iron Hub and Spigot Soil Pipe and Fittings: CISPI Standard 301 (Latest Edition) and ASTM A 74.

3. Sanitary Sewer couplings to be super-duty type in conformance with Factory Mutual Standard 1680, Class I and/or ASTM C 1540.
   a. Couplings to be as follows: "Husky" SD4000, Orange Shield coupling as manufactured by Husky Technologies, or equal. Minimum Shield thickness to be 0.015".
   b. No-Hub Cast-Iron Soil Pipe Couplings: Couplings for use in connection with no-hub Cast Iron Soil Pipe and Fittings shall comply with CISPI 310. Shield and clamp assembly shall consist of a 300 series stainless steel corrugated shield, stainless steel bands (4-bands minimum), and sealing sleeve in conformance with ASTM C564.

4. At Contractor's option, Type DWV hard drawn copper tubing with cast bronze solder joint fittings and lead free solder may be used above ground in lieu of cast iron drainage fittings. Provide test tees as specified.

5. Acceptable manufacturer's
   a. Tyler pipe
   b. AB&I
   c. Or Equal

B. Sanitary Vent Piping:

1. Cast iron, no-hub soil pipe. Provide with neoprene sleeve gaskets and stainless steel 4 band couplings.

2. Vent Couplings to be heavy-duty type in conformance with Factory Mutual Standard 1680, Class I and/or ASTM C 1540.
   a. Couplings to be as follows: "Husky" HD2000, White Shield coupling as manufactured by Husky Technologies, or equal. Minimum Shield thickness to be 0.010".
   b. No-Hub Cast-Iron Soil Pipe Couplings: Couplings for use in connection with no-hub Cast Iron Soil Pipe and Fittings shall comply with CISPI 310. Shield and clamp assembly shall consist of a 300 series stainless steel corrugated shield, stainless steel bands (4-bands minimum), and sealing sleeve in conformance with ASTM C564.

3. At Contractor's option, Type DWV hard drawn copper tubing with cast bronze solder joint fittings and lead-free solder may be used above ground in lieu of cast iron drainage fittings. Provide test tees as specified.

PART 3 - EXECUTION

3.1 GENERAL

A. Examine areas and conditions under which plumbing piping systems are to be installed. Do not proceed with Work until unsatisfactory conditions have been corrected in manner acceptable to Contractor.

B. Install pipes and pipe fittings in accordance with recognized industry practices which will achieve permanently leak-proof piping systems, capable of performing each indicated service without piping failure. Install each run with minimum joints and couplings but with adequate and accessible unions for disassembly and maintenance/replacement of valves and equipment. Reduce sizes where indicated by use of reducing fittings. Align piping accurately at connections, within 1/16_inch misalignment tolerance.

C. Locate piping runs, unless detailed otherwise, vertically and horizontally (pitched to drain). Install piping parallel and perpendicular to adjacent building walls/structure and avoid diagonal runs wherever possible. Orient horizontal runs parallel with walls and column lines. Locate runs as shown or described by diagrams, details and notations. Hold piping close to walls, overhead construction, columns, and other structural and permanent_enclosure elements of building; limit clearance to 1/2_inch where furring is shown for enclosure or concealment of piping; locate insulated piping for 1" clearance outside insulation. Wherever possible in finished and occupied spaces, conceal piping from view by locating in column enclosures, in hollow wall construction, or above suspended ceilings; do not encase horizontal runs in solid partitions, except as indicated.

D. Electrical Equipment Spaces: Do not run piping through transformer vaults, elevator equipment rooms, Data closets or other electrical or electronic equipment spaces or enclosures.

E. Should structural difficulties or work of other contractors prevent the running of pipes or the setting of equipment at the points shown, Contractor to make the necessary deviations to the piping system, as determined by the Contractor, with the Architect's review, without additional cost to Owner.

F. Inspect each piece of pipe and each fitting to see that there is no defective workmanship on pipe or obstructions in pipes and fittings.

3.2 INSTALLATION OF SANITARY DRAINAGE SYSTEMS:

A. Make joints between PVC pipe and cast iron pipe or fittings using cast iron adapter fittings, installed as recommended by the manufacturer.

B. Sewer Piping: Run all horizontal sanitary drain piping inside of building on a uniform grade of not less than 1/4_inch per foot, unless otherwise noted on the plans. Piping shall have invert elevations as shown and slope uniformly between given elevations.

C. Run all drainage piping as straight as possible and provide easy bends with long turns; make all offsets at an angle of 45 degrees or less.

D. Grade all vent piping so as to free itself quickly of any water condensation.

E. Hubless Cast_Iron Joints: Comply with coupling manufacturer's installation instructions and in accordance with CISPI Pamphlet No. 310, latest edition.

F. Cleanouts: Install in piping as indicated, as required by California Plumbing Code, at each change in direction of piping greater than 45 degrees, at minimum intervals of 50 feet for piping 4 inches and smaller and 100 feet for larger piping, and at base of each conductor.

G. Flashing Flanges: Install flashing flange and clamping device with each cleanout passing through waterproof membrane.

H. Install drains in accordance with manufacturer's written instructions and in locations indicated. Unless detailed otherwise, install floor drains and floor sinks with lip of drain slightly below finished floor to ensure drainage. Coordinate with other Contractors to ensure that floor slopes to drain.

3.3 TEST OF PIPING:

A. Test piping at completion of roughing in, in accordance with the following schedule. Show no loss in pressure or visible leaks after a minimum duration of 4 hours at the test pressures indicated. Tests to be verified by Inspector of Record.

system testedtest pressure psigtest withAll Soil, Waste Drain & Vent Piping;
All Storm Drains Within Buildings.
Minimum height of standpipe shall be 10 feet above piping being tested.Fill with water to top of highest vent.Water

B. Testing equipment, materials, and labor shall be furnished by this Contractor.

C. Repair piping systems sections which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage. Do not use chemicals, stop_leak compounds, mastics, or other temporary repair methods.

D. Drain test water from piping systems after testing and repair work has been completed.

3.4 CLEANING UP:

A. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

SECTION 22.40.00 PLUMBING FIXTURES

1.1 SUMMARY

A. This submittal section describes plumbing fixtures and trim.

1.2 REFERENCES AND STANDARDS

A. Plumbing Fixture Standards: Comply with applicable portions of the following codes and requirements for all work in this section:
1. California Plumbing Code - CPC
2. American National Standards Institute - ANSI
3. Federal Standards _ F.S.

B. All plumbing components within the waterways shall comply with the Safe Drinking Water Act (SDWA) "No-Lead" restrictions of ANSI/NSF Standard 61 Section 9.

C. All plumbing components intended to dispense water for human consumption shall comply with requirements of California Assembly Bill AB1953. Components to include (but not limited to): piping, faucets, angle stops, valves, bubblers, drinking fountains, piping, etc.

1.3 ACTION SUBMITTALS

A. Product data: submit complete data of materials proposed including:
1. Manufacturer and model number
2. Clearly indicate all options, trim, and accessories.
3. Cross reference manufacturer's cut sheet to fixture callout ID on submittal sheet.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: submit complete O&M data including:
1. Maintenance data and parts lists for each type of fixture.
2. Provide "trouble_ shooting" maintenance guide
3. Include this data within maintenance manual

1.5 WARRANTY

A. Manufacturer: In addition to the Contractor's Standard Guarantee, furnish Owner with manufacturer's warranty for all plumbing valves and accessories against defects in materials and workmanship. Warranty shall cover replacement of all such valves or accessories plus labor to install.

PART 2 - PRODUCTS

2.1 GENERAL

A. All fixtures shall be first class in every respect. Accurately line up finished plumbing. Take special care with the roughing_ in and finished plumbing where batteries of fixtures occur.

B. Consult Architectural Drawings, as well as Plumbing Drawings, for locations, dimensions and mounting height of plumbing fixtures.
1. Take location and mounting heights for roughing_in from Architectural Drawings.

C. Follow Plumbing fixture rough-in schedule on Drawings for roughing_in connections. Set roughing_in for all fixtures exactly as per measurements furnished by the manufacturers of the fixtures used.

D. Roughing_in for sinks and lavatories shall be brought in through the wall under the centerline of the drain from the fixture wherever possible and as close to the fixture as possible.

E. Provide all water supplies to fixtures with compression shut_off stops. Stops to be as follows:
1. IPS inlets with threaded brass nipples at pipe connection
2. Lock shield_loose key.
3. Lead Free
4. Provide combination fixtures with compression stop on each water supply fitting.
   a. Provide loose key handle for each stop.

F. Provide 1/2 inch chrome plated rigid risers for all fixtures, unless otherwise noted. Rigid risers to be chrome plated copper tub with brass compression nuts.

G. Riser to have brass barbs, stainless steel Ferrules, Brass nut, and rubber washer.

H. Unless noted otherwise, all finish for exposed metal trim on fixture shall be polished chromium plated.
1. This also applies to wall flanges, nuts, and washers.
2. Trim exposed under sinks shall be considered exposed and to be chromium plated.
3. Handles on all faucets and stops shall be all_metal chromium plated.

I. Make connection between fixtures and flanges on soil pipe gastight and watertight with neoprene_type gaskets (wall_hung fixtures) or bowl wax (floor outlet fixtures).
1. Rubber gaskets or putty will not be permitted.

J. P-Traps
1. Provide fixtures not having integral traps with chromium plated P-trap connected to concealed waste within wall and sanitary fittings. Trap to be:
   a. Cast Brass
   b. 17-gauge
2. Provide ADA fixtures waste offsets.
3. Acceptable Manufacturers:
   a. McGuire Manufacturing
   b. Dearborn Brass
   c. Or equal

K. Unions on waste pipes on fixture side of traps may be slip or flange joints with soft rubber or lead gaskets.

2.2 PLUMBING FIXTURES

A. Provide fixtures per the plumbing fixture schedule.

B. Provide stops for all concealed supplies.

C. Insulate domestic hot water, cold water, and waste piping below ADA plumbing fixtures with Provide ADA Sinks and Lavatories with protective covers "Truebro" Lav Guard Protective Pipe Covers. Protective covers to be:
1. Molded closed cell vinyl pipe covers,
2. Have vandal resistant snap-clip fasteners
3. ASTM E-84 smoke test rating of 0.

D. Similar fixtures to be by same manufacturer.

E. Acceptable Manufacturers to be as follows:

1. Stainless Steel Sinks:
   a. Just
   b. Elkay
   c. Or equal

2. Manual Faucets:
   a. Chicago
   b. Moen Commercial
   c. Delta Commercial
   d. Speakman

3. Bubblers
   a. Haws
   b. Elkay
   c. Halsey Taylor

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION

A. Examine roughing_in work of domestic water and waste piping systems to verify actual locations of piping connections prior to installing fixtures. Also examine floors, substrates, and conditions under which fixture work is to be accomplished. Correct any incorrect locations of piping and other unsatisfactory conditions for installation of plumbing fixtures. Do not proceed with work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install plumbing fixtures of types indicated where shown and at mounting height indicated on Architectural Drawings in accordance with fixture manufacturer's written instructions, roughing_in Drawings, and with recognized industry practices. Ensure that plumbing fixtures comply with requirements and serve intended purposes. Comply with applicable requirements of the Uniform Plumbing Code pertaining to installation of plumbing fixtures.

B. In all cases where plumbing fixtures are mounted on or against building walls of concrete or other materials having relatively rough or non_planar surfaces, it shall be the responsibility of this Contractor to provide any necessary grout or backing materials required to facilitate fixture mounting and eliminate void spaces between fixtures and wall to ensure adequate bearing contact.

C. On completion of installation, provide silicone sealer at all points of fixture contact with walls or floors.

D. Any fixture broken, cracked, or otherwise damaged during installation must be replaced by Contractor at his own expense.

3.3 TRAPPING AND VENTING OF FIXTURES

A. Trap and vent all plumbing fixtures in accordance with Uniform Plumbing Code adopted by the Western Plumbing Officials Association and local plumbing codes, whether or not shown on Drawings. Strictly adhere to any local codes. Only exceptions to above will be those fixtures which are specially noted herein or on Drawings to be provided with special wastes.

B. No vent shall intersect another vent at a point less than 6" above extreme overflow level of highest fixture served.

C. Take vents off top half of horizontal runs and grade so as to free vents quickly of any water or condensation.

3.4 ADJUSTMENT OF PLUMBING PIPING SYSTEM

A. Test and adjust fixtures so that each fixture receives the proper amount of water.
1. Adjust flush valves so that each fixture receives the proper amount of water.
2. Regulate all faucets, drinking fountains, etc. to the approval of the Architect so that the entire system is left in first_class condition.
3. Adjust all slow-off valves to turn off between 12-15 seconds.
4. Adjust sensitivity of sensor faucets to the satisfaction of the owner.

3.5 CLEAN AND PROTECT

A. Clean plumbing fixtures of dirt and debris upon completion of installation.

B. Protect installed fixtures from damage during the remainder of the construction period.

C. Clean fixtures, equipment, and materials installed under this contract. Remove cement, plaster, paint and/or rust, etc. Also remove all manufacturers' stickers.
1. Dirt, rubbish, paint spots, or grease on walls or fixtures for which this Contractor is responsible must be removed by him.

D. Fixtures to not be used by Contractors during construction.

3.6 FIELD QUALITY CONTROL

A. Upon completion of installation of plumbing fixtures and after units are water pressurized, test fixtures to demonstrate capability and compliance with requirements.

1. When possible, correct malfunctioning units at site, then retest to demonstrate compliance; otherwise, remove and replace with new units and proceed with retesting.

B. Inspect each installed unit for damage to finish. If damaged, cracked, or dented, remove fixture and replace with new unit.

3.7 OPERATION TEST

A. Test each piece of equipment to show that it will operate in accordance with indicated requirements.

3.8 EXTRA STOCK

A. Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to Owner with receipt. Furnish one device for every 10 units.

3.9 TRAINING

A. Train owner on operation and adjustment of all sensor valves.

3.10 CLEANING UP

A. After installation and testing but prior to acceptance, Contractor to clean fixtures with mild detergent and water solution, rinse with clean water, and wipe dry.

B. Upon completion of Work remove materials, equipment, apparatus, tools, and the like, and leave premises clean, neat, and orderly.

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SHEET TITLE:

PLUMBING - SPECIFICATIONS

SCALE:

REVISIONS

No.	Issue Description	Date
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Drawn By:

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DATE

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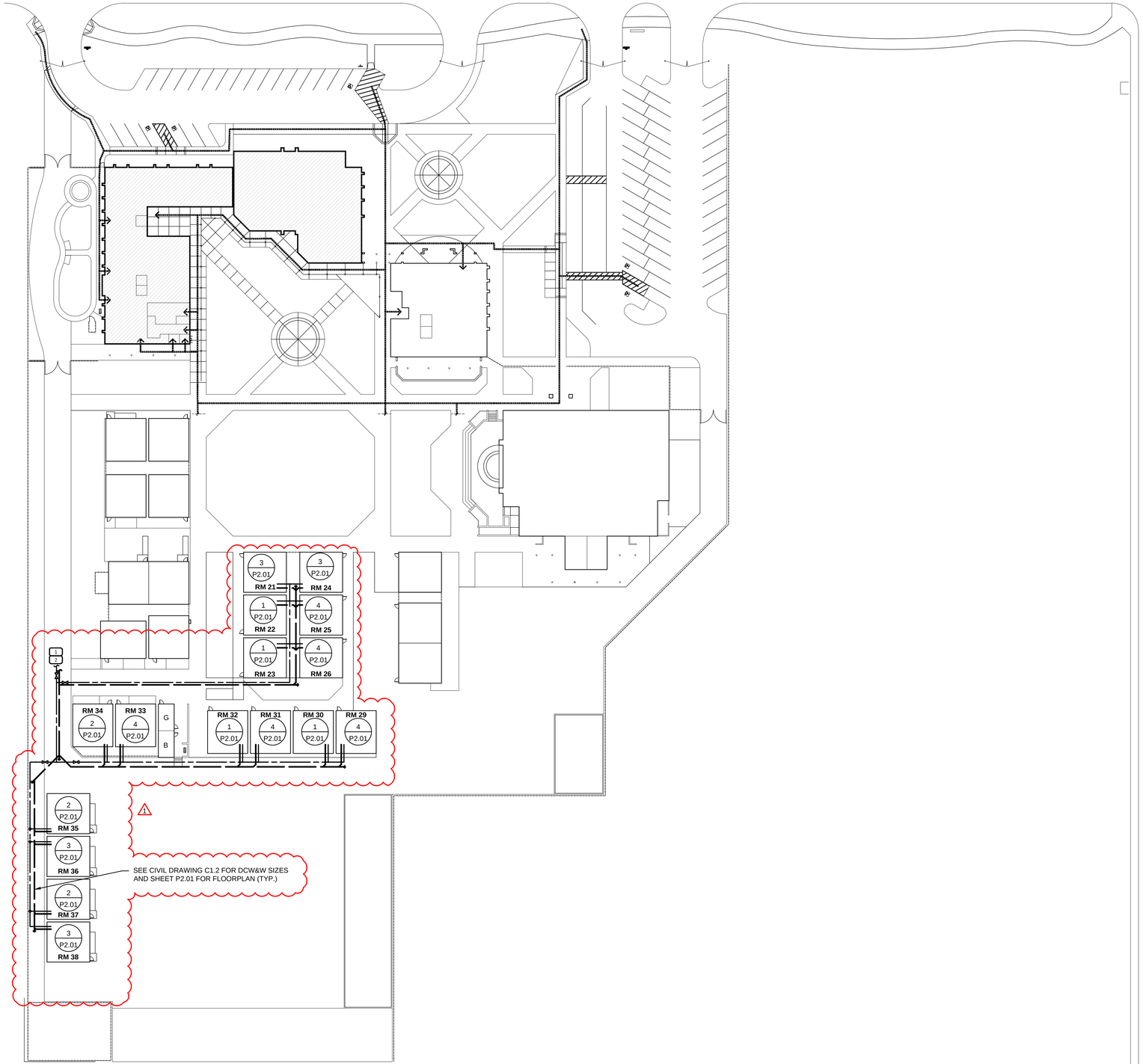

KEYNOTES

1	4" WASTE LINE. SEE CIVIL DRAWING C1.2 FOR CONTINUATION
2	2" CW LINE - PROVIDE WITH SOV IN VALVE BOX. SEE CIVIL DRAWING C1.2 FOR CONTINUATION

GENERAL NOTES:

1. PROVIDE 2-WAY CLEANOUTS AT ALL WASTE CONNECTIONS TO CIVIL. SEE FLOOR PLANS FOR CLEANOUTS
2. PROVIDE SOV IN VALVE BOX

PLUMBING - SITE PLAN

SCALE: 1"=40'-0"

1 P1.01

N

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SHEET TITLE: PLUMBING - SITE PLAN

SCALE:

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022

Drawn By:

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JOB NO. 21.023

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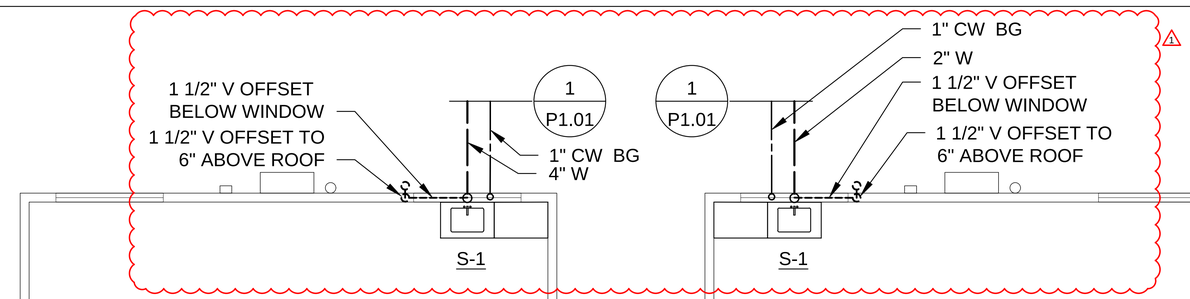


NOTES:

OFFSET PIPING IN THE WALL AS REQUIRED TO AVOID CONFLICT WITH THE WINDOW

4" W BELOW FINISHED FLOOR TRANSITION TO 2" W 6" INSIDE OF THE BUILDING.

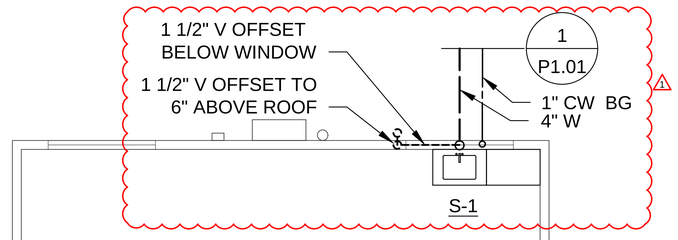
PLUMBING FLOOR PLANS
SCALE: 1/8"=1'-0"
4 P2.01

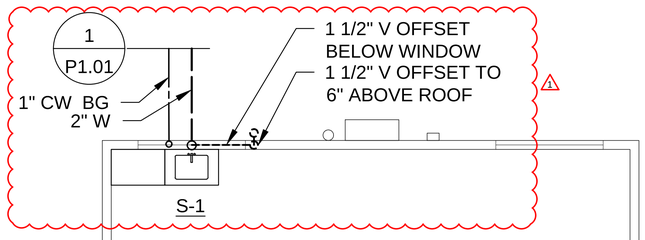
NOTES:

OFFSET PIPING IN THE WALL AS REQUIRED TO AVOID CONFLICT WITH THE WINDOW

4" W BELOW FINISHED FLOOR TRANSITION TO 2" W 6" INSIDE OF THE BUILDING.

PLUMBING FLOOR PLANS
SCALE: 1/8"=1'-0"
2 P2.01





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4" W BELOW FINISHED FLOOR TRANSITION TO 2" W 6" INSIDE OF THE BUILDING.

PLUMBING FLOOR PLANS
SCALE: 1/8"=1'-0"
3 P2.01

NOTES:

OFFSET PIPING IN THE WALL AS REQUIRED TO AVOID CONFLICT WITH THE WINDOW

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PLUMBING FLOOR PLANS
SCALE: 1/8"=1'-0"
1 P2.01

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STATE OF CALIFORNIA

GALT JOINT UNION ELEMENTARY SCHOOL DISTRICT

VERNON E GREER ELEMENTARY SCHOOL

PORTABLE SINK ADDITION

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GALT, CA 95632

WESTON & ASSOCIATES
MECHANICAL ENGINEERS
601 UNIVERSITY AVE, SUITE 260 | SACRAMENTO, CA 95825
WESTON & ASSOCIATES #21-056

SHEET TITLE:
PLUMBING FLOORPLANS

SCALE:

REVISIONS

No.	Issue Description	Date
1	ADDENDUM REVISED DRAWINGS	04/18/2022
2		
3		
4		
5		

Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER
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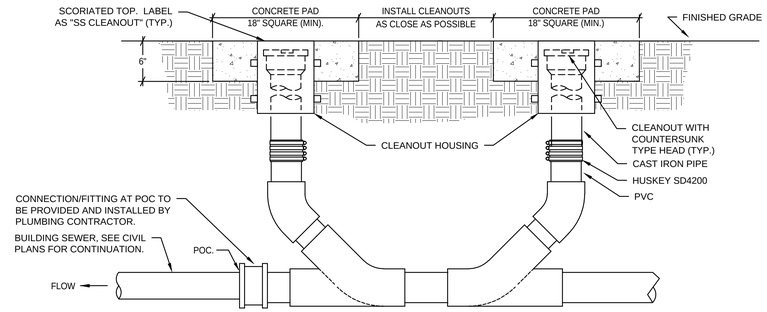
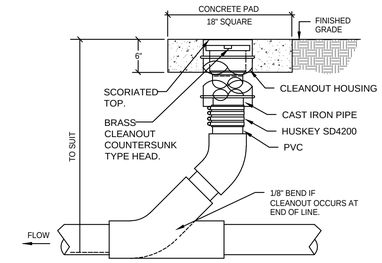
of 24



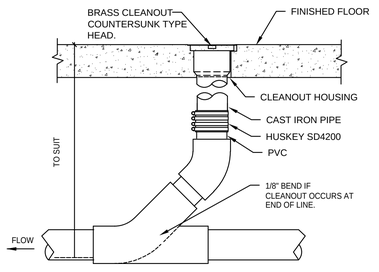
NOTES:

1. PROVIDE TWO WAY CLEANOUT AT ALL SANITARY SEWER AND STORM DRAIN POINTS OF CONNECTION WITH SITE PIPING SYSTEM.
2. PROVIDE ALL FITTINGS AND TRANSITIONS AS REQUIRED.

2-WAY CLEANOUT / DOUBLE CLEANOUT
(TO BE PROVIDED AT ALL CONNECTIONS TO SITE PIPING)



CLEANOUT TO GRADE

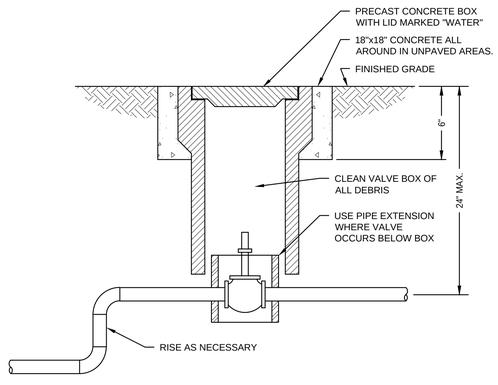


CLEANOUT TO GRADE

CLEANOUT DETAILS

NTS

1 P5.01



SHUT-OFF VALVE IN BOX DETAIL

NTS

2 P5.01

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SHEET TITLE:
PLUMBING - DETAILS

SCALE:

REVISIONS

No.	Issue Description	Date
1		
2		
3		
4		
5		

Drawn By:

Checked By:

JOB NO. 21.023

DATE

SHEET NUMBER
P5.01
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