LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

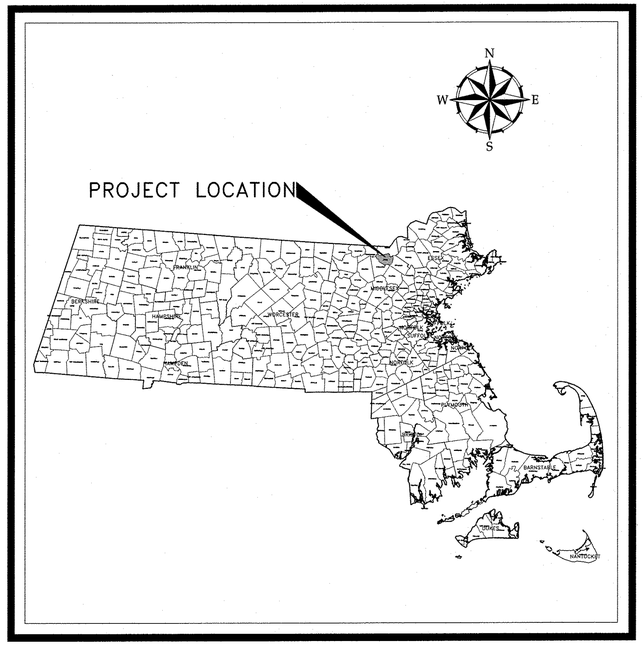
MASONRY FILED SUB-BIDS FOR

WATER SYSTEM IMPROVEMENTS

IFB #15-77

DEP PROJECT NO. DWSRF-3531
CONTRACT NO. 2
PROJECT NO. 224802.20

APRIL 2015



PROJECT LOCATION MAP

50 0 50 100
scale mile

SHEET INDEX

S-001	STRUCTURAL LEGEND, ABBREVIATIONS, & NOTES
S-101	RAW WATER PUMP STATION BUILDING ELEVATIONS - 1
S-102	RAW WATER PUMP STATION BUILDING ELEVATIONS - 2
S-103	RAW WATER PUMP STATION PLANS, SECTIONS, & DETAILS
S-106	RAW WATER PUMP STATION SCHEDULES & DETAILS

COMMONWEALTH OF MASSACHUSETTS
ROBERT C. CHAPELL
SANITARY
No. 35048
REGISTERED PROFESSIONAL ENGINEER

3/3/15

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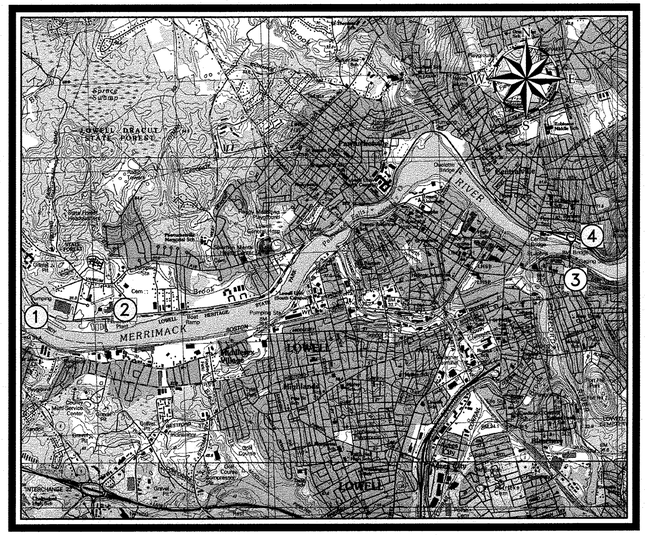

PROJECT LOCATIONS

1 RAW WATER PUMP STATION

SITE LOCATION MAP

SCALE: 1:31250

SOURCE
U.S.G.S. QUADRANGLE, LOWELL, MA,
PHOTO REVISED 1987, 15 MINUTE SERIES

ISSUE FOR BID

\\wc\shared\Projects\224802 Lowell MA - Water System Improvement PEF 2011\wip\Drawings\General\224802-COVER.dwg, Mar 02, 2015 - 6:49am

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1:1

ABBREVIATIONS

&	AND
L	ANGLE
@	AT
[	CHANNEL
ø	DIAMETER
#	NUMBER
AC	ACOUSTICAL CEILING
ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICANS WITH DISABILITIES ACT
ADD	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE/ALTERNATING
APPROX	APPROXIMATELY
ARCH	ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERING
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BLDG	BUILDING
BM	BEAM
BOC	BOTTOM OF CONCRETE
BOF	BOTTOM OF FOOTING
BOP	BOTTOM OF PIPE
BOT	BOTTOM
C/C	CENTER TO CENTER
CL/℄	CENTER LINE
CF	COLUMN FOOTING
CIRC	CIRCULAR/CIRCUMFERENCE
CJ	CONSTRUCTION JOINT
CLR	CLEAR
CO	CLEAN OUT
COL	COLUMN
CONC	CONCRETE
CONT	CONTINUOUS–CONTINUE
COR	CORNER
C/S	CURE AND SEAL COMPOUND
D	DEEP
DBS/DI	DOWEL BAR SPLICERS/DOWEL INSERT
DBC	DISTANCE BETWEEN CENTERS
DEG/°	DEGREE
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIR	DIRECTION
DN	DOWN
DWG(S)	DRAWING(S)
E–W	EAST–WEST
EA	EACH
EF	EACH FACE
EIFS	EXTERIOR INSULATION AND FINISH SYSTEM
EL/ELEV	ELEVATION
ELEC	ELECTRICAL
EMBED	EMBEDDED
EQ	EQUAL(LY)
EQUIP	EQUIPMENT
EW	EACH WAY
EXG	EXISTING
EXP	EXPANSION OR EXPOSED
EXT	EXTERIOR
FD	FLOOR DRAIN
FE	FIRE EXTINGUISHER
FF	FINISHED FLOOR
FIN	FINISH(ED)
FL	FLOOR/FLANGED
FND	FOUNDATION
FRP	FIBERGLASS REINFORCED POLYESTER
FSR	FLEXIBLE SHEET ROOFING
FT	FOOT, FEET
FTG	FOOTING
GA	GAUGE
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GB	GYPSUM BOARD
H	HEIGHT
HDW	HARDWARE
HM	HOLLOW METAL
HOR	HORIZONTAL
HP	HIGH POINT
HR	HOUR
ID	INTERIOR DIAMETER
IJ	ISOLATION JOINT
IN	INCH(ES)
INT	INTERIOR
INV	INVERT
JT	JOINT
L	LONG
LB(S)	POUND(S)
LG	LONG
LLV	LONG LEG VERTICAL
LP	LOW POINT
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MID	MIDDLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MPH	MILES PER HOUR
MR	MOISTURE RESISTANT
MWP	METAL WALL PANELS
N–S	NORTH–SOUTH
NO	NUMBER
NTS	NOT TO SCALE
OC	ON CENTER
OCEF	ON CENTER EACH FACE
OCEW	ON CENTER EACH WAY
OD	OUTSIDE DIAMETER
OE	OPEN END
OH	OVERHEAD
OPNG	OPENING
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
P	COLUMN PEDESTAL
PAF	POWDER ACTUATED FASTENER
PE	PLAIN END
PED	PEDESTAL
PEN	PENETRATION
PL/℘	PLATE
PROJ	PROJECTION
PSF	POUNDS PER SQUARE FEET
PSI	POUNDS PER SQUARE INCH
PTD	PAINTED
PVC	POLYVINYL CHLORIDE PLASTIC
R	RISERS
RAD	RADIUS
REF	REFERENCE
REINF	REINFORCE, REINFORCING
REQ'D	REQUIRED
RFD	RECESSED FLOOR DRAIN
RO	ROUGH OPENING
SCH	SCHEDULE
SCJ	SLAB CONSTRUCTION JOINT
SHT	SHEET
SJ	SAWED JOINT
SLR	SEALER
SP	SUPPORT PLATE
SPA	SPACED
SPEC	SPECIFICATION, SPECIFIED
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURE, STRUCTURAL
STUCCO	EXTERIOR INSULATION AND FINISH SYSTEM (EIFS)
T	TREADS
T&B	TOP AND BOTTOM
THD	THREAD
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
W	WIDTH, WIDE
W/	WITH
WCJ	WALL CONSTRUCTION JOINT
WP	WORK POINT
WS	WATERSTOP
WTH	WIDTH

NOTE: THIS IS A GENERAL LIST OF SYMBOLS AND ABBREVIATIONS. NOT ALL ITEMS SHOWN HERE APPEAR ON THE CONTRACT DOCUMENTS

MATERIALS

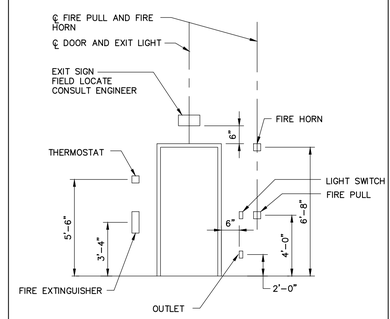
- EARTH, SOIL
- CRUSHED STONE
- STRUCTURAL FILL/GRAVEL
- BRICK
- CONCRETE MASONRY UNIT
- PRECAST CONCRETE
- CONC CAST IN PLACE
- WOOD–BLOCKING
- WOOD–FINISH
- PLYWOOD
- RIGID INSULATION
- BLANKET INSULATION
- STEEL
- ALUMINUM
- GROUT
- CAULK
- GLASS
- STRUCTURAL MEMBER

SYMBOLS

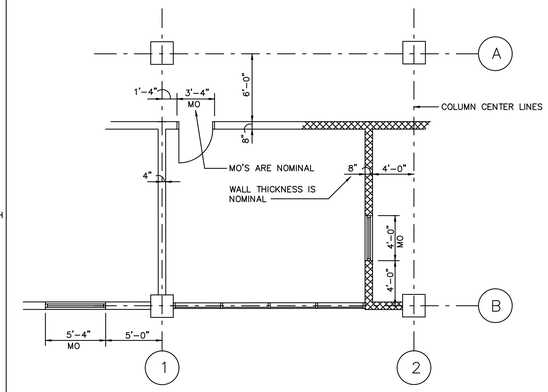
- 1 / S–101 — SECTION NO / DWG NO — SECTION
- A / S–101 — DETAIL NO / DWG NO — PLAN OR SECTION DETAIL
- E — COLUMN CENTER LINE
- 01 — ROOM NUMBER

OPENINGS

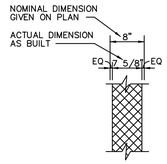
- D–01 — DOOR NUMBER



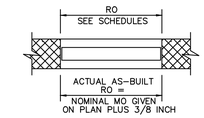
TYPICAL MOUNTING HEIGHTS



MODULAR DIMENSIONING SYSTEM
(USED ON SMALL SCALE PLANS ONLY)



AS–BUILT DIMENSIONS



WINDOW OR LOUVER OPENING IN PLAN

GENERAL NOTES:

A. SITE CONDITIONS AND EXCAVATION:

1. EXCAVATION WORK MAY ENCOUNTER MATERIALS THAT MAY UNDERGO SUBSTANTIAL STRENGTH LOSS WHEN SUBJECTED TO CONSTRUCTION TRAFFIC AND EXCAVATION ACTIVITIES, ESPECIALLY IN THE PRESENCE OF PERIODS OF PRECIPITATION AND HIGH GROUNDWATER LEVELS.
2. CARE MUST BE EXERCISED DURING CONSTRUCTION TO MINIMIZE DISTURBANCE OF THE BEARING SOILS.
3. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, DISTURBED AREAS SHOULD BE OVER–EXCAVATED AND BACKFILLED WITH STRUCTURAL FILL AS SPECIFIED.
4. KEEP EXCAVATION DRY AND STABLE BY SUMPING AND PUMPING OF SEEPAGE WATER.

B. REINFORCED CONCRETE:

1. COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS – 4000 PSI; AIR CONTENT 6%± 1.5%; W/C RATIO 0.45 MAXIMUM; SLUMP VARIES (SEE SPECIFICATION). SUBMIT TEST RESULTS TO THE ENGINEER.
2. CONCRETE DESIGN AS PER ACI 318 BUILDING CODE. ALL CONCRETE SHALL BE DESIGNED, PLACED, AND CURED (MIN. 7 DAYS) AS PER ALL APPLICABLE SECTIONS OF THE ACI CODE.
3. REINFORCEMENT: ASTM A615 GRADE 60 – ALL SPLICES CLASS B (U.N.O.). REINFORCEMENT SHALL BE DETAILED, FABRICATED, AND PLACED AS PER ACI 315 DETAILING MANUAL.
4. PROVIDE 3/4" CHAMFER ON EXPOSED EDGES OF CONCRETE, U.N.O.
5. CONCRETE TESTING OF SLUMP, AIR CONTENT AND TEMPERATURE SHALL BE PERFORMED AS SPECIFIED.
6. SLAB FINISH: STEEL TROWEL FINISH IN ACCORDANCE WITH ACI 302.1R TO A TOLERANCE OF 1/4" IN 10 FEET FLATNESS. FOR EXTERIOR SLABS, TEXTURE WITH STIFF BRISTLE BROOM DRAGGED IN THE DIRECTION OF SLAB SLOPE.
7. FLOOR FINISH:
   INT. FLOOR/COVER SLABS – STEEL TROWEL FINISH
   EXT. SLABS – BROOM FINISH WITH SLOPE
8. CURING/SEALING COMPOUND FOR ALL INTERIOR AND EXTERIOR CONCRETE (UNLESS NOTED OTHERWISE): PROVIDE CLEAR VINYL TOLUENE ACRYLIC SILANE POLYMER BLEND EQUAL TO "CERTI–VEX GUARD CLEAR" BY VEXCON CHEMICALS, A ONE–STEP CURE AND PENETRATING WATER REPELLENT SEALER MEETING ASTM C–1315, TYPE 1, CLASS A, NCHRP–244. APPLY FIRST COAT SHORTLY AFTER CONCRETE FINISHING AS DIRECTED. APPLY A SECOND COAT NEAR FINAL COMPLETION AFTER CLEANING SLAB SURFACE OF ALL CONSTRUCTION–RELATED CONTAMINANTS. APPLICATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS. THIS SHALL APPLY TO ALL NEW CONCRETE WALLS, SLABS, PADS, TOPPINGS, AND REPAIRS.

C. MASONRY:

1. ALL MASONRY MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ACI 530.
2. CONCRETE MASONRY UNITS SHALL BE ASTM C90. JOINT REINFORCING SHALL BE ASTM A82. PORTLAND CEMENT SHALL BE ASTM C150 TYPE I OR II. GROUT SHALL BE ASTM C476 TYPE 1. MORTAR SHALL BE ASTM C270 TYPE S. MORTAR SHALL NOT BE USED WHERE GROUT IS SPECIFIED.
3. ALL REINFORCING SHALL BE ASTM A615 WITH 60,000 PSI YIELD STRENGTH.
4. MASONRY SHALL BE LAID IN RUNNING BOND, UNLESS NOTED OTHERWISE, AND SHALL HAVE CORNER AND END BLOCKS AT CORNERS, ENDS, AND OPENINGS. JOINTS SHALL BE TOOLED CONCAVE.
5. HORIZONTAL JOINT REINFORCING SHALL BE GALVANIZED LADDER TYPE REINFORCING WITH W1.7 WIRES. JOINT REINFORCING SHALL BE INSTALLED IN EVERY OTHER COURSE JOINT. PROVIDE JOINT REINFORCING IN TWO ADJACENT COURSES ABOVE AND BELOW ALL WALL OPENINGS. CORNERS AND INTERSECTIONS SHALL HAVE PREFABRICATED UNITS. END LAPS SHALL BE 6".
6. FILL CONCRETE CORES WITH GROUT AT BEAM, JOIST AND LINTEL BEARING.
7. BRICK: ASTM C 216, GRADE SW, TYPE FBS, STANDARD MODULAR SIZE (4" X 8" X 2 2/3" HIGH NOMINAL); COLOR, TEXTURE AND APPEARANCE OF BRICK AND MORTAR JOINTS SHALL MATCH THAT OF EXISTING BUILDING, AS APPROVED BY THE ENGINEER AND OWNER PRIOR TO BEGINNING THE WORK. PROVIDE SAMPLES TO OWNER ON SITE FOR REVIEW AND APPROVAL PRIOR TO ORDERING MATERIALS.

D. EMBEDDED CONDUITS AND PIPES:

1. ALL ELECTRICAL AND INSTRUMENTATION CONDUIT EMBEDDED IN CONCRETE SHALL BE INSTALLED, ARRANGED, AND SPACED AS PER THE REQUIREMENTS OF ACI 318, SECTION 6.3. REQUIREMENTS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
2. CONDUITS SHALL HAVE A NOMINAL INSIDE DIAMETER NOT OVER 2 INCHES AND ARE SPACED NOT BE LESS THAN 3 DIAMETERS ON CENTER. PROVIDE ADDED LENGTHS AS NEEDED TO ROUTE CONDUIT IN A MANNER THAT MINIMIZES CROSSING OF DIFFERENT CONDUIT RUNS. WHERE CONDUITS CROSS, PROVIDE A MINIMUM VERTICAL SEPARATION OF 1 1/2" BETWEEN CONDUITS.
3. CONDUITS SHALL HAVE A MINIMUM OF 3 INCHES OF CONCRETE COVER.
4. CONDUITS SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/3 THE OVERALL THICKNESS OF THE OVERALL THICKNESS OF THE SLAB OR WALL IN WHICH THEY ARE EMBEDDED. EMBEDMENT LONGITUDINALLY WITHIN BEAMS SHALL NOT BE PERMITTED.
5. PROVIDE ADDITIONAL REINFORCEMENT AROUND ALL GROUPS OF CONDUITS WHICH STUB UP THROUGH SLABS OR PENETRATE WALLS AS PER STANDARD STRUCTURAL DETAILS FOR OPENINGS IN SLABS OR WALLS.
6. CONDUIT PLACEMENT SHALL NOT IMPAIR SIGNIFICANTLY THE STRENGTH OF THE CONSTRUCTION, AS APPROVED BY THE ENGINEER.

E. PENETRATIONS AND EQUIPMENT PADS:

1. CONTRACTOR TO VERIFY THE NUMBER, SIZE, AND LOCATIONS OF ALL EQUIPMENT PADS AND PENETRATIONS THROUGH FLOOR SLABS, WALLS, CEILINGS AND ROOF PRIOR TO CONCRETE PLACEMENT (REFER TO MECHANICAL, HVAC, PLUMBING, AND ELECTRICAL DRAWINGS). ALL PENETRATIONS AND EQUIPMENT PADS ARE NOT SHOWN ON THE STRUCTURAL DRAWINGS.
2. PROVIDE WATERTIGHT SEAL FOR ALL PIPE PENETRATIONS IN WALLS AND FLOORS.
3. PROVIDE ADDITIONAL REINFORCEMENT AT WALL AND SLAB OPENINGS PER STANDARD DETAILS.
4. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND SEALING PENETRATIONS WHICH ARE 4" DIAMETER/4"X4" SQUARE OR LARGER, INCLUDING PENETRATIONS REQUIRED BY FILED SUB–BID WORK.

F. ALL STAINLESS STEEL FOR THIS PROJECT SHALL BE U.S.–MADE, 316 STAINLESS STEEL UNLESS OTHERWISE NOTED.

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COMMONWEALTH OF MASSACHUSETTS
JAMES P. STURDIS
STRUCTURAL
No. 45,777
REGISTERED PROFESSIONAL ENGINEER
12-27-15

REV.	DESCRIPTION	DATE
A	ISSUE FOR BID	3/11/15
B	FOR MASSDEP REVIEW	07/18/14

DESIGNED BY: JPS
DRAWN BY: DMB
CHECKED BY: JPS
224802-S-001.DWG

STRUCTURAL LEGEND
ABBREVIATIONS, & NOTES

LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

WATER SYSTEM IMPROVEMENTS

JOB NO.: 224802.20
DATE: MARCH 2015
SCALE: AS NOTED
SHEET: 10 OF 51

S-001

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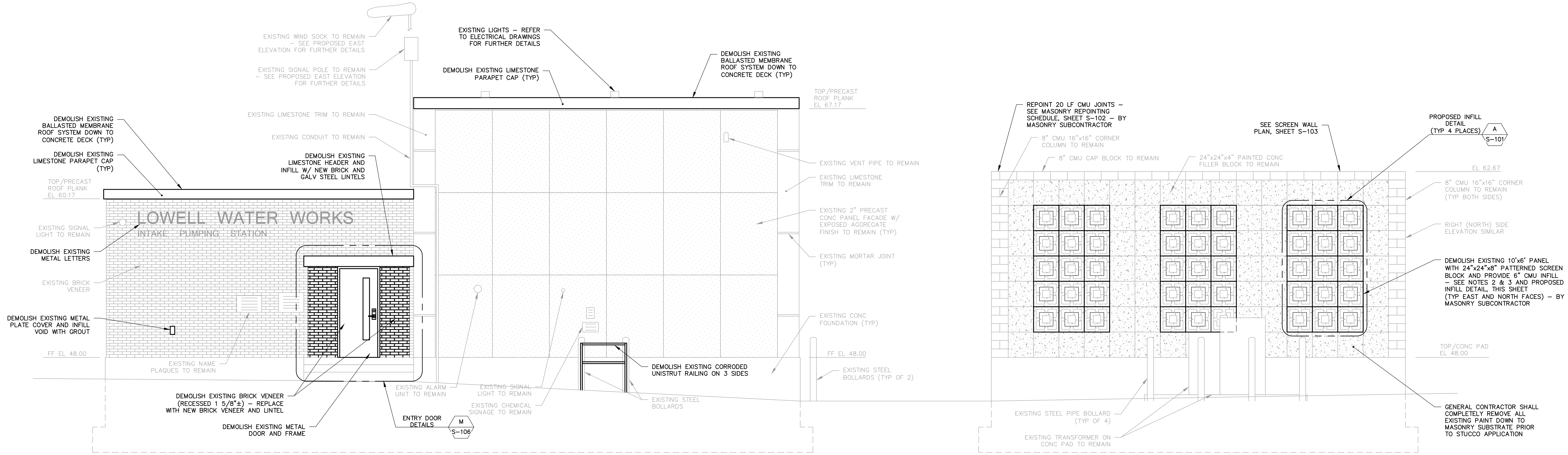
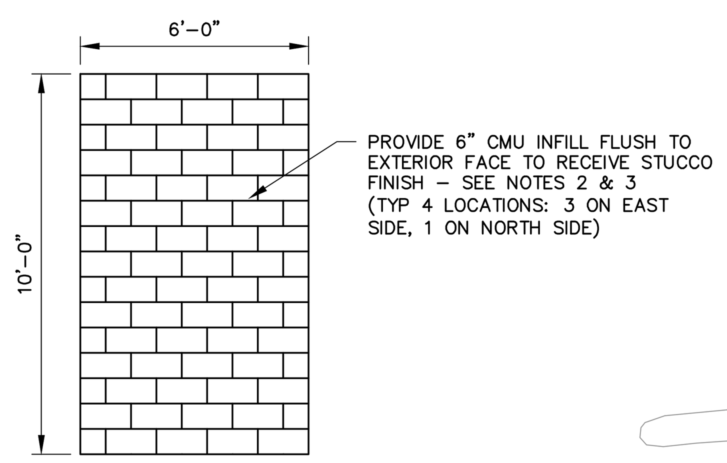


EXISTING EAST ELEVATION

SCALE: 1/4" = 1'–0"

6' 4' 2' 0 4' 8'

BAR SCALE
1/4" = 1'–0"
CHECK GRAPHIC SCALE BEFORE USING



A S–101 PROPOSED INFILL DETAIL

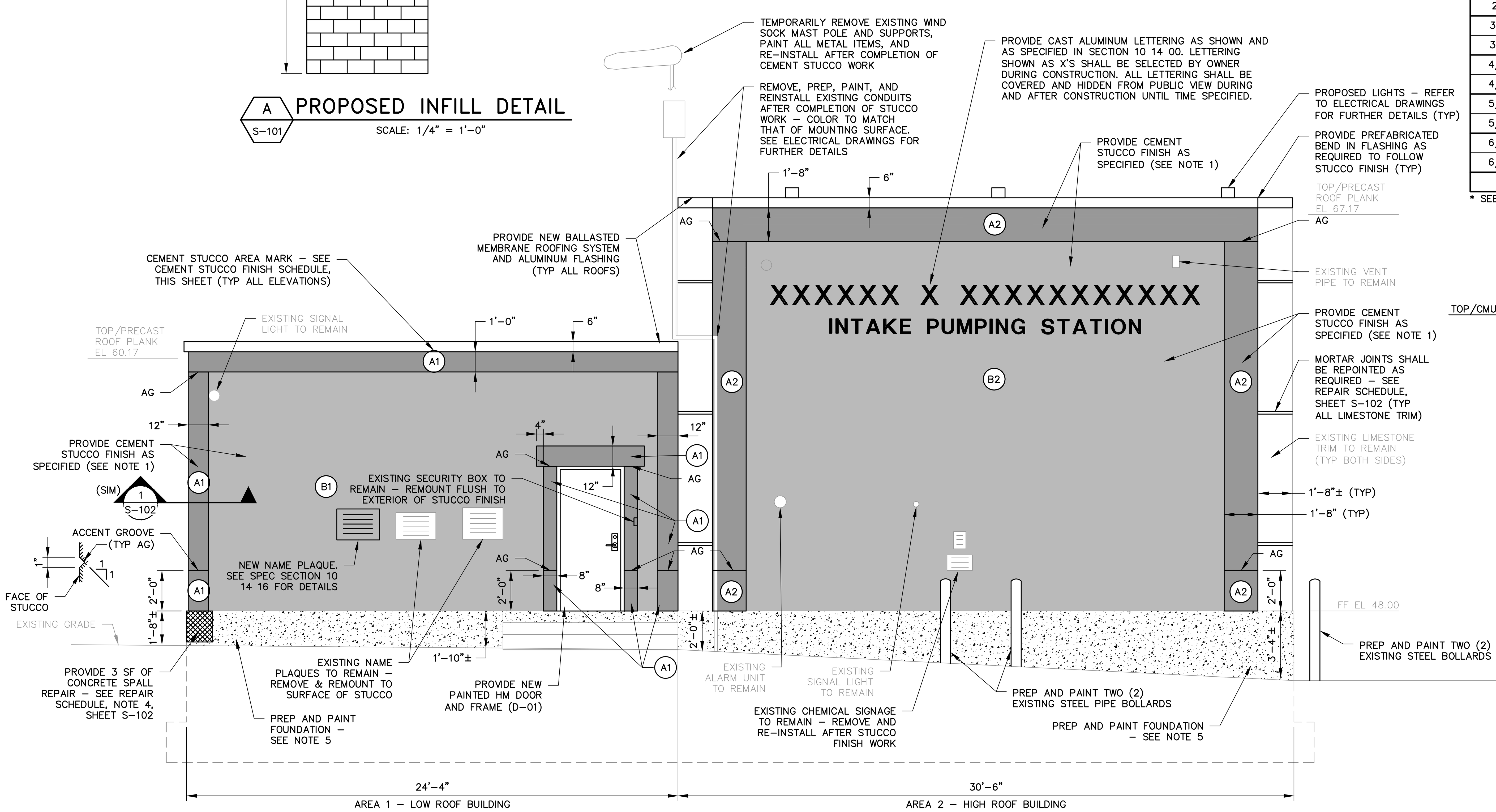
SCALE: 1/4" = 1'–0"

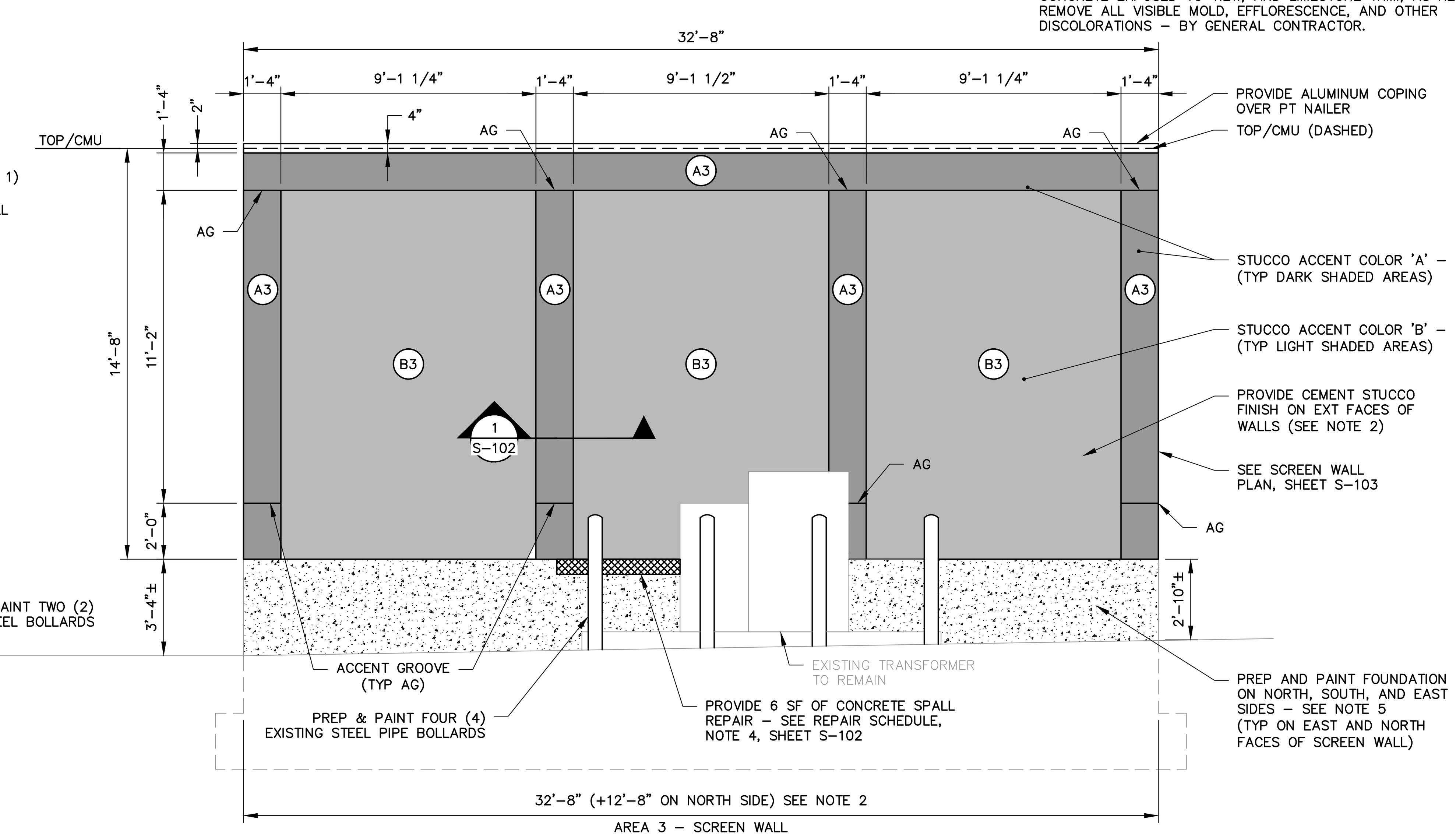
CEMENT STUCCO FINISH SCHEDULE					
AREA/ ELEV	MARK	COLOR	PROFILE	SF	REMARKS
1/EAST	A1	A – DARKER	+1–1/2"	63	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
1/EAST	B1	B – LIGHTER	+0"	225	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
2/EAST	A2	A – DARKER	+1–1/2"	106	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
2/EAST	B2	B – LIGHTER	+0"	432	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
3/EAST*	A3	A – DARKER	+1–1/2"	166	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
3/EAST*	B3	B – LIGHTER	+0"	492	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
4/NORTH	A4	A – DARKER	+1–1/2"	66	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
4/NORTH	B4	B – LIGHTER	+0"	122	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
5/SOUTH	A5	A – DARKER	+1–1/2"	79	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
5/SOUTH	B5	B – LIGHTER	+0"	326	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
6/SOUTH	A6	A – DARKER	+1–1/2"	69	CREATE 1–1/2" PROFILE W/ WOOD BLOCKING
6/SOUTH	B6	B – LIGHTER	+0"	185	APPLY DIRECTLY TO MASONRY (NO BLOCKING)
TOTAL SF FOR UNIT PRICE BID ITEM				2331	

* SEE NOTE 2

NOTES:

1. UNIT PRICE BID ITEM: MASONRY SUBCONTRACTOR SHALL PROVIDE CEMENT STUCCO FINISH ON AREAS 1, 2, 3, 4, 5, AND 6 AS SHOWN BUILDING ELEVATIONS. REFER TO STUCCO FINISH SCHEDULE, THIS SHEET, AND SPECIFICATION SECTION 09 24 23. STUCCO COLOR SELECTION SHALL BE MADE BY THE OWNER. PROVIDE MIN 10' x 10' MOCK–UP PANEL. SEE TYPICAL STUCCO CEMENT SECTION 1, SHEET S–102.
2. ELEVATION AND STUCCO UPGRADES SHOWN FOR AREA 3 SHALL EXTEND 12'–8" AROUND NORTHEAST CORNER TO NORTH ELEVATION. PROVIDE STUCCO FINISH ON THE FRONT FACES OF SCREEN WALL; BACK FACE AND ALL OTHER EXPOSED SURFACES SHALL BE PAINTED AS SPECIFIED IN DIVISION 09.
3. PATTERNED BLOCK DEMOLITION IN SCREEN WALL: MASONRY SUBCONTRACTOR SHALL BE RESPONSIBLE FOR SHORING/TEMPORARILY SUPPORTING MASONRY ABOVE AND AROUND DEMOLITION AREA TO PROTECT WALL FROM DAMAGE. IF NECESSARY, MASONRY SUBCONTRACTOR SHALL REMOVE AND REPLACE MASONRY DIRECTLY ABOVE DEMOLITION AREA. ALL WORK SHALL BE PERFORMED AS SPECIFIED IN SECTION 04 20 00.
4. WALL–MOUNTED ITEMS SUCH AS NAME PLAQUES, SECURITY BOXES, SIGNAGE, CONDUITS, LIGHTS, ETC, SHALL BE REMOVED AND RE–INSTALLED BY GENERAL CONTRACTOR (EXCEPT ELECTRICAL ITEMS ARE BY ELECTRICAL SUBCONTRACTOR) AFTER STUCCO FINISH WORK IS COMPLETE. NOT ALL ITEMS ARE SHOWN – CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY PRIOR TO BIDDING.
5. FOUNDATION COATING: SEE NOTE 6 FOR CLEANING REQUIREMENTS. PROVIDE COATING ON ALL FOUNDATION WALLS ABOVE–GROUND AS SHOWN ON THE DRAWINGS AND AS SPECIFIED IN DIVISION 09 – BY PAINTING SUBCONTRACTOR.
6. PRESSURE–WASH OR OTHERWISE CLEAN ALL BUILDING EXTERIOR SURFACES TO RECEIVE CEMENT STUCCO FINISH, FOUNDATION CONCRETE EXPOSED TO VIEW, AND LIMESTONE TRIM, AS REQUIRED TO REMOVE ALL VISIBLE MOLD, EFFLORESCENCE, AND OTHER DISCOLORATIONS – BY GENERAL CONTRACTOR.





PROPOSED EAST ELEVATION

SCALE: 1/4" = 1'–0"

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COMMONWEALTH OF MASSACHUSETTS
JAMES P. STURGIS
STRUCTURAL
No. 43268
REGISTERED PROFESSIONAL ENGINEER
2-27-15

REV	DESCRIPTION	DATE
B	ISSUE FOR BID	3/11/15
A	FOR MASSDEP REVIEW	07/18/14

DESIGNED BY: JPS
CHECKED BY: JPS
DRAWN BY: DMB
224802–S–101.DWG

RAW WATER PUMP STATION
BUILDING ELEVATIONS - 1

LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

WATER SYSTEM IMPROVEMENTS

JOB NO.: 224802.20
DATE: MARCH 2015
SCALE: AS NOTED
SHEET: 11 OF 51

S-101

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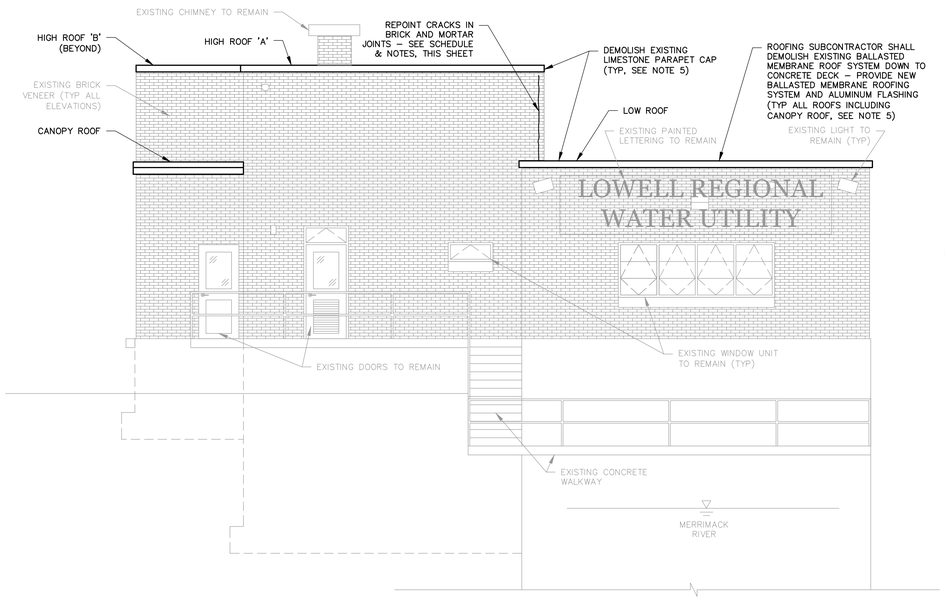
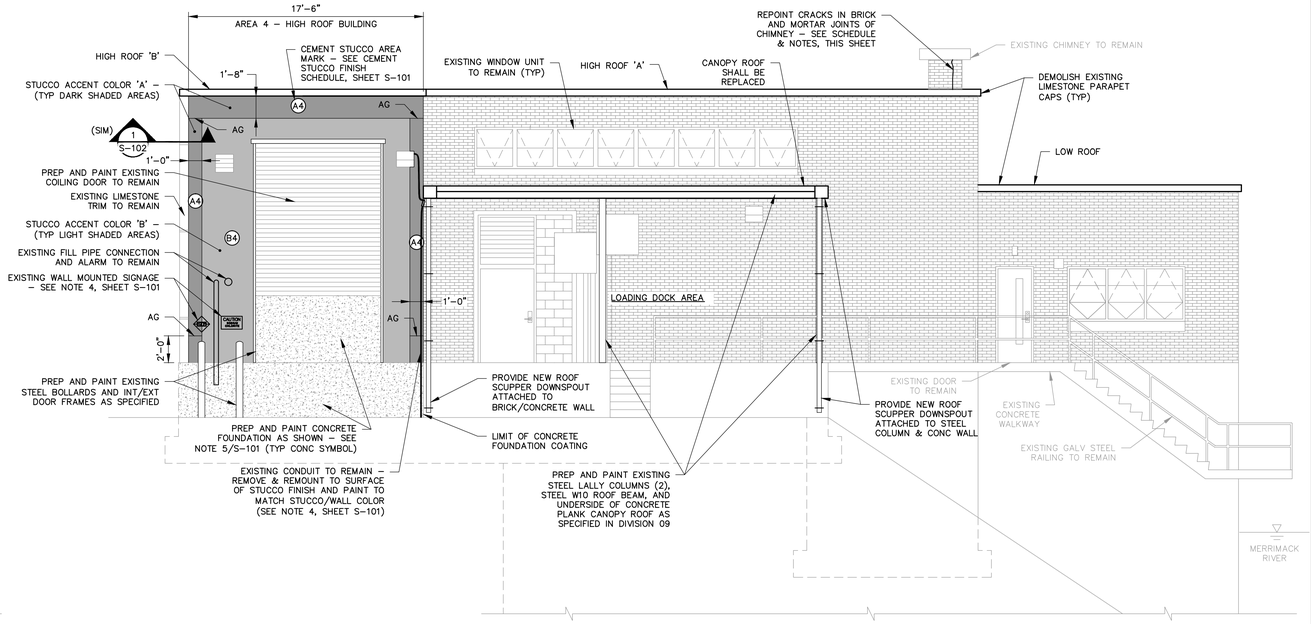


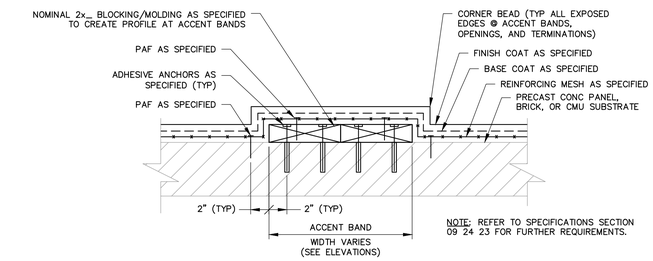
PROPOSED WEST ELEVATION

SCALE: 3/16" = 1'-0"



PROPOSED NORTH ELEVATION

SCALE: 3/16" = 1'-0"

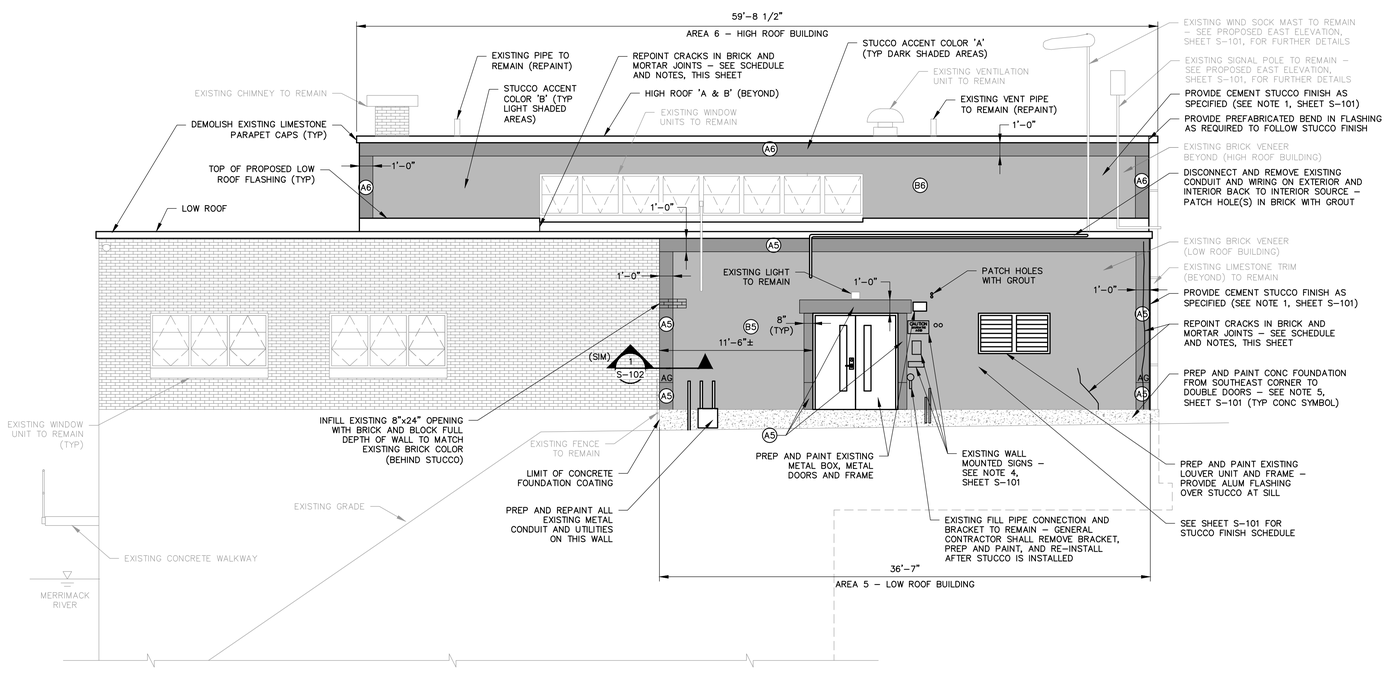


NOTE: REFER TO SPECIFICATIONS SECTION 09 24 23 FOR FURTHER REQUIREMENTS.

TYPICAL CEMENT STUCCO SECTION

SCALE: NTS

1 / S-101 / S-102



PROPOSED SOUTH ELEVATION

SCALE: 3/16" = 1'-0"

6' 4' 2' 0 4' 8'

BAR SCALE
3/16" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

MASONRY REPOINTING SCHEDULE

BUILDING	ELEVATION	SURFACE	QUANTITY	REMARKS
LOW ROOF	SOUTH	BRICK	13 LF	NEAR SOUTHEAST CORNER
LOW ROOF	SOUTH	BRICK	5 LF	SOUTHEAST OF LOUVER
HIGH ROOF	SOUTH	BRICK	5 LF	BELOW WEST CORNER OF WINDOWS
HIGH ROOF	WEST	BRICK	8 LF	NEAR SOUTHWEST CORNER
HIGH ROOF	NORTH	BRICK	4 LF	CHIMNEY ON WEST EDGE
HIGH ROOF	EAST	LIMESTONE	10 LF	REPOINT DETERIORATED JOINTS
SCREEN WALL	EAST	CMU	20 LF	CMU CAP AND CORNER COLUMN
MISC	MISC	MISC	35 LF	FIELD DETERMINE
–	–	–	100 LF	TOTAL ESTIMATED QUANTITY

CONSTRUCTION NOTES:

1. MASONRY REPOINTING: ALL BRICK AND CMU REPOINTING SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE REPOINTING APPENDIX OF C-270, BRICK INDUSTRY ASSOCIATION (BIA) TECH NOTE #7F, AND SPECIFICATION SECTION 04 20 00. REPOINTED JOINTS SHALL MATCH EXISTING PROFILE (FLUSH FOR CMU/BRICK CRACKS, AND TOOLED FOR MORTAR JOINTS) AND MORTAR COLOR SHALL MATCH EXISTING, AS APPROVED BY THE ENGINEER. CRACKS IN FACE OF CMU/BRICK SHALL BE ROUTED AND REPOINTED. PAYMENT SHALL BE MADE ON A UNIT-PRICE BASIS AS LISTED IN THE BID FORM – BY MASONRY SUBCONTRACTOR.
2. PRE-CONSTRUCTION SURVEY – MASONRY SUBCONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY IN THE PRESENCE OF THE ENGINEER TO IDENTIFY AND DELINEATE THE CRACKS AND JOINTS TO BE REPOINTED.
3. MASONRY SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL MASONRY-RELATED WORK AND REPOINTING AS SHOWN ON THE DRAWINGS AND AS SPECIFIED.
4. CONCRETE SPALL REPAIR: WHERE SHOWN, PROVIDE CONCRETE REPAIR TO FOUNDATION WALLS. SAW-CUT PERIMETER OF REPAIR AREA TO A MINIMUM DEPTH OF 1/4" AND REMOVE ALL CRACKED, DELAMINATED, UNSOUND CONCRETE WITHIN SAWCUT TO A MINIMUM DEPTH OF 1/2" AS PER SPECIFICATION SECTION 03 01 05. PROVIDE 3/16" x 3 1/4" TAPCON SCREWS @ 4" OC WITH MIN 2" COVER OVER REPAIR AREA AND 2" MIN EMBEDMENT FOR MECHANICAL ATTACHMENT TO EXISTING SUBSTRATE. ASSUMED QUANTITY IS 25 SF AT AN AVERAGE REPAIR DEPTH OF 2". PAYMENT SHALL BE MADE ON A UNIT-PRICE BASIS AS LISTED IN THE BID FORM. ALL CONCRETE SPALL REPAIR WORK SHALL BE THE GENERAL CONTRACTOR'S RESPONSIBILITY.
5. REPLACE ROOFING SYSTEM: ROOFING SUBCONTRACTOR SHALL DEMOLISH EXISTING BALLASTED MEMBRANE ROOFING SYSTEM AND LIMESTONE PARAPET COPING STONES DOWN TO PRECAST HOLLOW-CORE CONCRETE ROOF PLANK DECK. PROVIDE PARAPET UPGRADES, NEW TAPERED RIGID INSULATION, MEMBRANE ROOFING SYSTEM, AND ASSOCIATED FLASHING AS SPECIFIED AND AS SHOWN ON SHEET S-103.

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COMMONWEALTH OF MASSACHUSETTS
JAMES P. STUROS
STRUCTURAL
No. 47264
REGISTERED PROFESSIONAL ENGINEER
12-21-15

REV.	DESCRIPTION	DATE
B	ISSUE FOR BID	3/11/15
A	FOR MASSDEP REVIEW	07/18/14

DESIGNED BY: JPS
DRAWN BY: DMB
CHECKED BY: JPS
224802-S-102.DWG

RAW WATER PUMP STATION
BUILDING ELEVATIONS - 2

LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

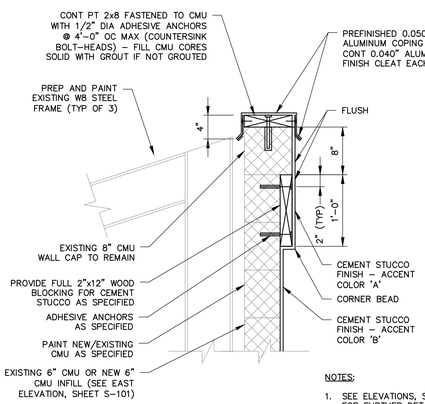
WATER SYSTEM IMPROVEMENTS

JOB NO.: 224802.20
DATE: MARCH 2015
SCALE: AS NOTED
SHEET: 12 OF 51

S-102

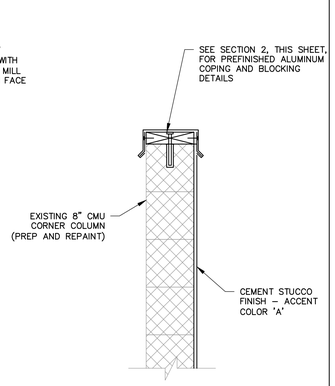
\\wc\shared\Projects\224802 lowell mo - water system improvement pef 2011\wip\Drawings\Structural\224802-S-102.dwg, Mar 02, 2015 - 4:21pm

24x36 SHEET
1:1



SECTION 2/S-103

SCALE: 1" = 1'-0"

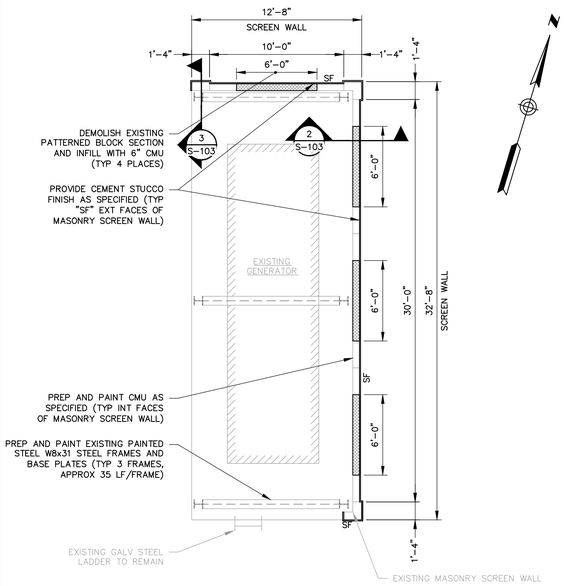


SECTION 3/S-103

SCALE: 1" = 1'-0"

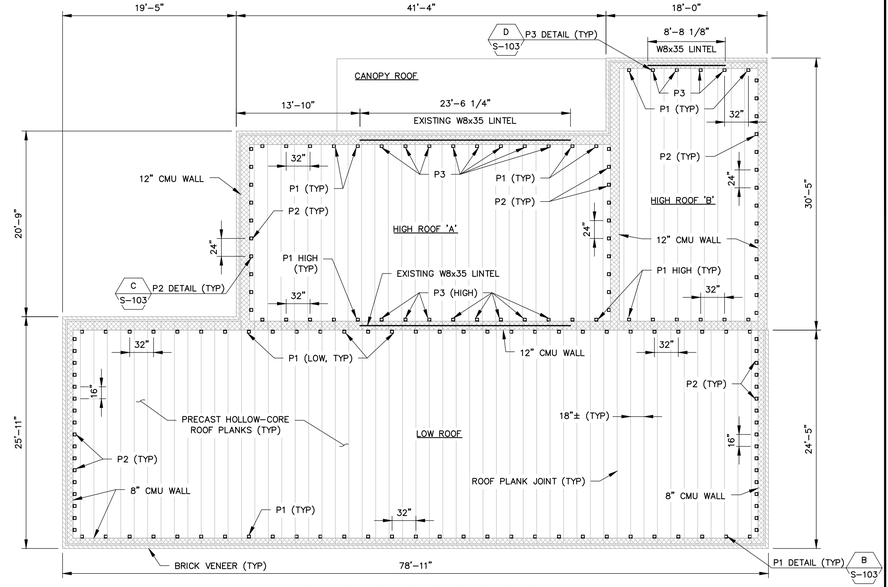
NOTES:

1. SEE ELEVATIONS, SHEET S-101, FOR FURTHER DETAILS.
2. SEE TYPICAL CEMENT STUCCO SECTION 1, SHEET S-102, FOR FURTHER DETAILS.
3. REFER TO SPECIFICATION SECTION 09 24 23 FOR FURTHER REQUIREMENTS.



SCREEN WALL PLAN

SCALE 3/16" = 1'-0"



ROOF REINFORCEMENT PLAN

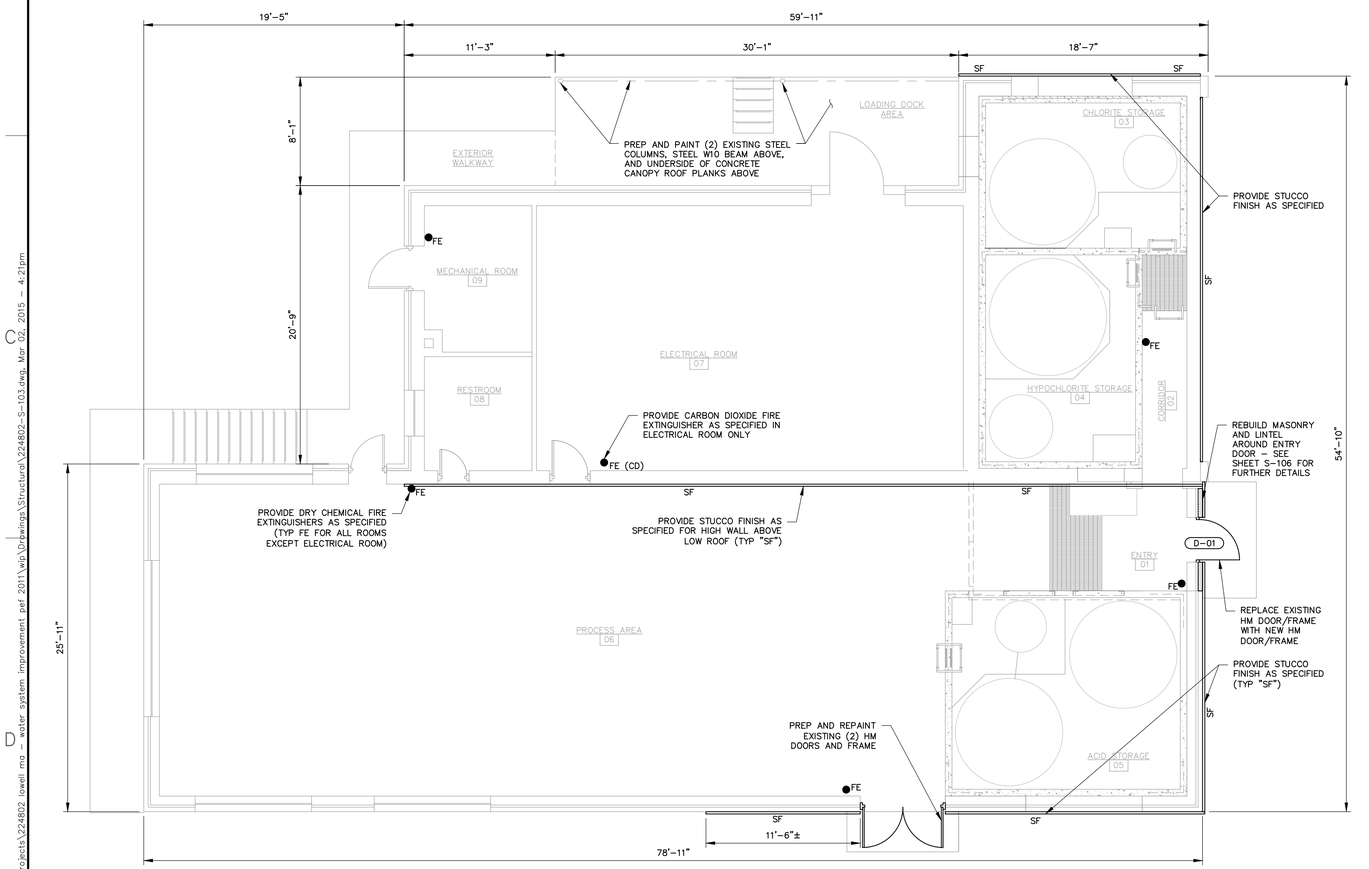
SCALE 1/8" = 1'-0"

REINFORCEMENT PLATE SCHEDULE

MARK	DESCRIPTION	MATERIAL	REMARKS
P1	L6x4x1/4x4" LG (LLV)	PAINTED STEEL	ROOF PLANK TO CMU WALL/ALONG PLANK BEARING ENDS
P2	L6x6x1/4x4" LG	PAINTED STEEL	ROOF PLANK TO CMU WALL/PARALLEL TO PLANK SPAN
P3	PLATE 1/4x4x4	PAINTED STEEL	ROOF PLANK TO W8x35 LINTEL

NOTES:

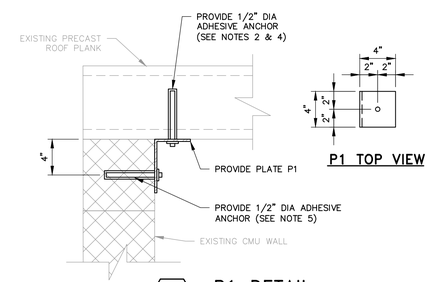
1. PROVIDE REINFORCEMENT PLATES ALONG UNDERSIDE OF PRECAST ROOF PLANKS AS SHOWN ON THE PLAN AND SCHEDULE, THIS SHEET. REINFORCEMENTS ARE PROVIDED TO STRUCTURALLY UPGRADE THE ROOF IN ACCORDANCE WITH IEBC 2009 AND MASSACHUSETTS STATE BUILDING CODE EIGHTH EDITION.
2. PLATE P1 SHALL BE LOCATED/ADJUSTED AS REQUIRED TO ENSURE THAT THE ANCHOR PENETRATES PLANK WITHIN A CORE AND NOT IN THE CONCRETE BETWEEN THE CORES, TO AVOID DAMAGE TO PRESTRESSED STRANDS.
3. PLATE P2 HAS TWO BOLT HOLES IN HORIZ LEG. PROVIDE AN ADHESIVE ANCHOR IN ONLY 1 OF THE 2 HOLES, AS REQUIRED TO ENSURE THAT THE ANCHOR PENETRATES PLANK WITHIN A CORE AND NOT IN THE CONCRETE BETWEEN THE CORES, TO AVOID DAMAGE TO PRESTRESSED STRANDS.
4. PRECAST ROOF PLANK ADHESIVE ANCHORS: PROVIDE 1/2" DIA SS THREADED ROD AND HARDWARE FOR USE WITH HILTI HIT-HY 70 ADHESIVE AND HIT-IC INTERNALLY THREADED INSERTS WITH 3 1/8" EMBEDMENT.
5. MASONRY WALL ADHESIVE ANCHORS: PROVIDE 1/2" DIA SS THREADED ROD AND HARDWARE FOR USE WITH HILTI HIT-HY 70 ADHESIVE AND HIS-N INSERTS.
6. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE INTERIOR ACCESS TO UNDERSIDE OF ROOF DECK AS REQUIRED TO INSTALL ALL REINFORCEMENT PLATES AND TO WORK AROUND EXISTING EQUIPMENT AND UTILITIES. PLATE SPACING MAY BE MODIFIED, IF NECESSARY, TO AVOID CONFLICTS (AS APPROVED BY ENGINEER).
7. ALL ROOF REINFORCEMENT PLATES SHALL BE FURNISHED BY METALS SUBCONTRACTOR UNDER SPECIFICATION DIVISION 5. GENERAL CONTRACTOR SHALL PROVIDE ALL PLATE FASTENERS AND SHALL BE RESPONSIBLE FOR INSTALLATION OF ALL PLATES AND FASTENERS, INCLUDING FIELD WELDING BY AWS-CERTIFIED WELDERS.



FLOOR PLAN

SCALE: 3/16" = 1'-0"

BAR SCALE
3/16" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

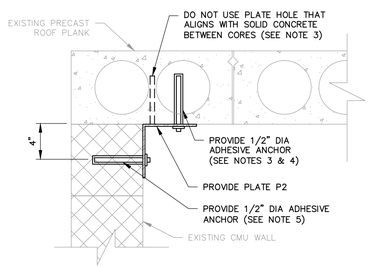


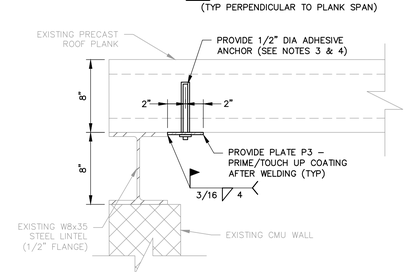
P1 TOP VIEW

P1 DETAIL

B S-103 SCALE: 1 1/2" = 1'-0"

(TYP PERPENDICULAR TO PLANK SPAN)

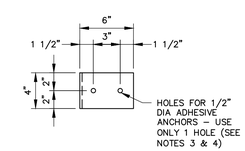




P3 DETAIL

D S-103 SCALE: 1 1/2" = 1'-0"

(TYP @ W8x35 LINTEL)



P2 TOP VIEW

P2 DETAIL

C S-103 SCALE: 1 1/2" = 1'-0"

(TYP PARALLEL TO PLANK SPAN)

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COMMONWEALTH OF MASSACHUSETTS
JAMES P. STUROS
STRUCTURAL
No. 45704
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12-21-15

REV.	DESCRIPTION	DATE
B	ISSUE FOR BID	3/11/15
A	FOR MASSDEP REVIEW	07/18/14

DESIGNED BY: JPS
DRAWN BY: DMB
CHECKED BY: JPS
224802-S-103.DWG

RAW WATER PUMP STATION
PLANS, SECTIONS, & DETAILS

LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

WATER SYSTEM IMPROVEMENTS

JOB NO.: 224802.20
DATE: MARCH 2015
SCALE: AS NOTED
SHEET: 13 OF 51

S-103

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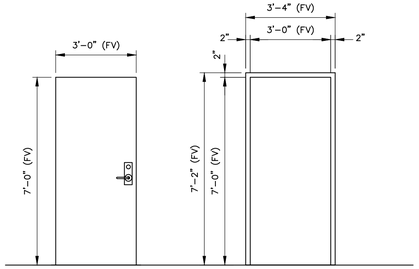
24x36 SHEET
1:1

DOOR SCHEDULE

DOOR #	ROOM NAME	DOORS			FRAME TYPE	HDW SET	DETAILS			REMARKS
		TYPE	WIDTH	HEIGHT			HEAD	JAMB	SILL	
D-01	PROCESS AREA	D1	3'-0"	7'-0"	F1	1	SEE ENTRY DOOR DETAILS			SEE PROPOSED ELEVATION, THIS SHEET

DOOR HARDWARE SCHEDULE

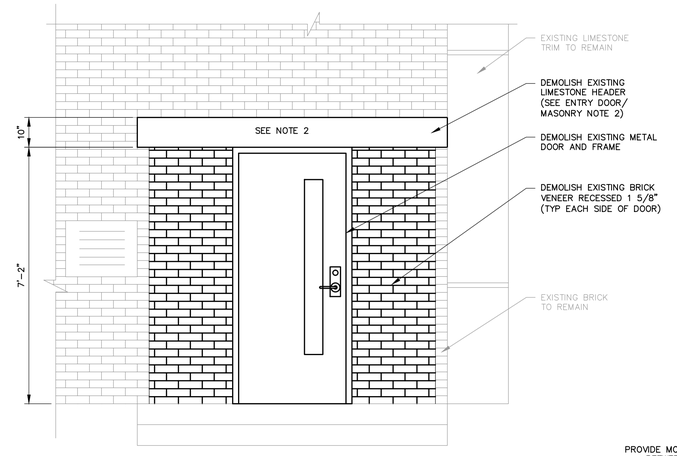
HARDWARE SET #	EXTERIOR DOOR	HINGES (S.S.)	LOCKSET (S.S.)	LOCK FUNCTION	CLOSER	WEATHER STRIPPING	SWEEP	THRESHOLD	KICKPLATE
1	X	3	X	CLASSROOM	X	X	X	X	X



DOOR & FRAME TYPES

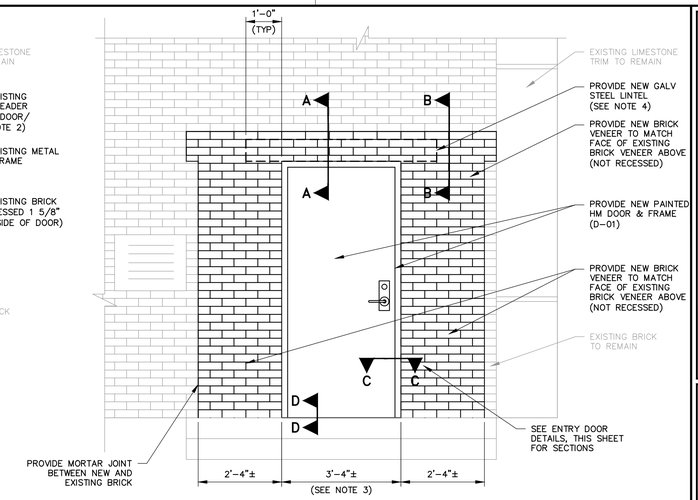
DOOR & HARDWARE NOTES:

1. ALL DOORS SHALL BE 1 3/4" THICK, FLUSH DOORS WITH STAINLESS STEEL HARDWARE.
2. ALL DOOR HARDWARE AND ACCESSORIES SHALL MEET ALL APPLICABLE CODE REQUIREMENTS FOR HANDICAP ACCESSIBILITY.
3. ALL EXTERIOR DOORS SHALL BE INSULATED.
4. EXTERIOR DOORS AND PENETRATIONS SHALL HAVE FLASHING AND WEATHER STRIPPING AS SPECIFIED, AND AS RECOMMENDED BY THE DOOR SUPPLIER.
5. THE SPECIFIED DOOR AND HARDWARE SETS SHALL BE FIELD VERIFIED FOR EACH OPENING PRIOR TO SUBMITTAL PREPARATION AND MATERIAL SHIPMENT. CONTRACTOR SHALL BE RESPONSIBLE TO ENSURE THAT ALL DOOR AND HARDWARE COMPONENTS ARE COMPATIBLE WITH EXISTING CONDITIONS.
6. FIELD VERIFY ALL DOOR AND FRAME SIZES WITH EXISTING OPENING DIMENSIONS PRIOR TO FABRICATION. DOOR AND FRAME SIZES SHOWN MAY REQUIRE ADJUSTMENT.
7. PROVIDE ALL HARDWARE DENOTED BY 'X'.
8. ALL DOOR CLOSERS SHALL HAVE INTEGRAL "HOLD-OPEN" FEATURE.
9. ELECTRICAL LOCKSETS ARE NOT REQUIRED.
10. ALL LOCKS SHALL BE KEYED AS SPECIFICALLY DIRECTED BY OWNER.



EXISTING ELEVATION

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



PROPOSED ELEVATION

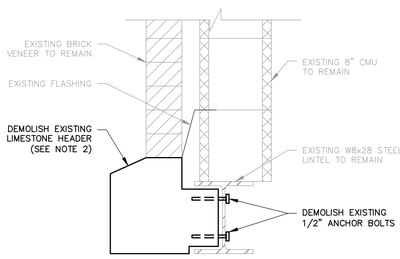
SCALE: 1/2" = 1'-0"
(PRIOR TO STUCCO APPLICATION)

ENTRY DOOR/MASONRY NOTES:

1. PRIOR TO STUCCO APPLICATION, THE ENTRY AREA SHALL BE RECONSTRUCTED BY MASONRY SUBCONTRACTOR TO DEMOLISH THE EXISTING DAMAGED/DISLODGED LIMESTONE HEADER, DEMOLISH THE RECESSED BRICK VENEER, AND TO REBUILD THIS AREA TO RESULT IN A NEW BRICK VENEER (WITH NEW STEEL ANGLE LINTEL) THAT IS FLUSH WITH THE EXISTING NON-RECESSED BRICK VENEER. ONCE REPAIRS ARE COMPLETE, STUCCO FINISH SHALL BE APPLIED AS SHOWN ON SHEET S-101.
2. SHORING NOTE TO MASONRY SUBCONTRACTOR: DURING DEMOLITION OF LIMESTONE HEADER, MASONRY SUBCONTRACTOR SHALL PROVIDE TEMPORARY SUPPORT TO ALL MASONRY ABOVE ENTRY AREA. TEMPORARY SUPPORT MEASURES SHALL REMAIN IN PLACE UNTIL NEW STEEL LINTEL AND NEW VENEER ARE INSTALLED AND CURED.
3. MASONRY OPENING FOR NEW DOOR: MASONRY SUBCONTRACTOR SHALL COORDINATE WITH STUCCO CONTRACTOR TO LEAVE THE PROPER MASONRY OPENING FOR NEW DOOR, SO AS TO ALLOW FOR THICKNESS OF STUCCO TO RETURN AROUND OPENING CORNERS TO DOOR FRAME. NO BRICK SHALL BE EXPOSED-TO-VIEW WITHIN DOOR OPENING.
4. NEW GALVANIZED STEEL LINTEL SHALL BE FURNISHED BY METALS SUBCONTRACTOR UNDER SPECIFICATION DIVISION 5. LINTEL SHALL BE INSTALLED AND ALL OTHER MASONRY WORK SHALL BE PROVIDED BY MASONRY SUBCONTRACTOR UNDER SPECIFICATION DIVISION 4.

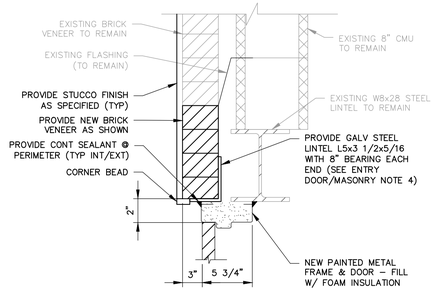
M / S-101 **ENTRANCE DETAIL**

SCALE: VARIES



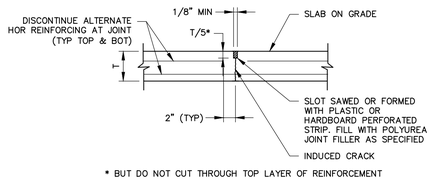
EXISTING SECTION A-A

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



PROPOSED SECTION A-A

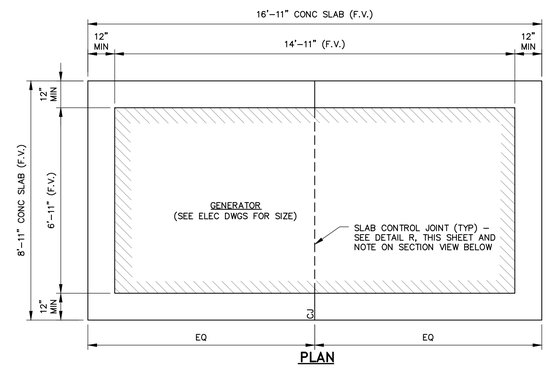
SCALE: 1 1/2" = 1'-0"



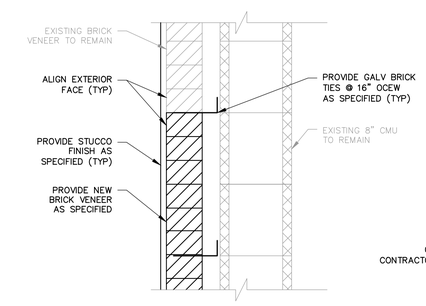
* BUT DO NOT CUT THROUGH TOP LAYER OF REINFORCEMENT

L / S-106 / S-301 **SLAB CONTROL JOINT DETAIL**

SCALE: N.T.S.

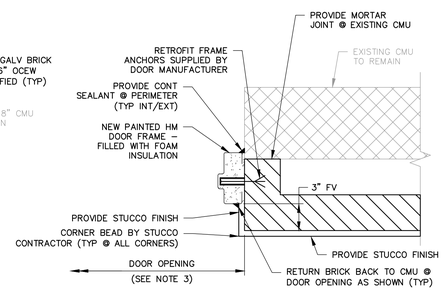


PLAN



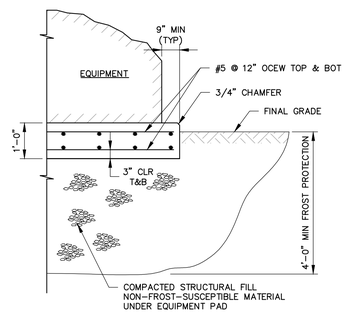
PROPOSED SECTION B-B

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



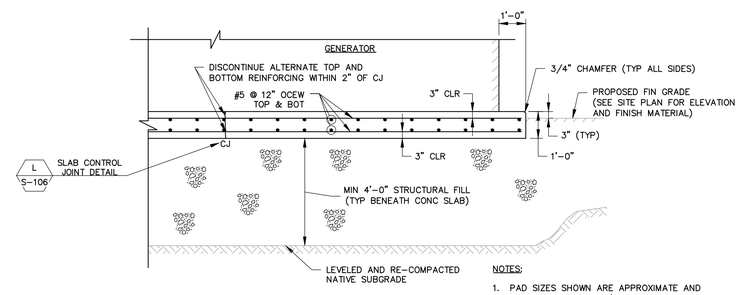
PROPOSED SECTION C-C

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



Q / C-302 **EXTERIOR EQUIPMENT PAD DETAIL**

SCALE: N.T.S.



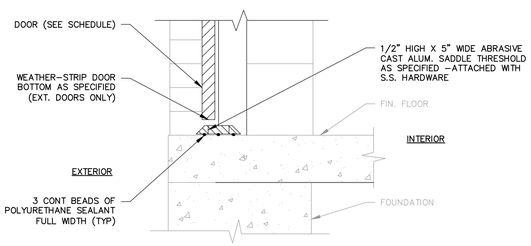
SECTION

NOTES:

1. PAD SIZES SHOWN ARE APPROXIMATE AND SHALL BE CONFIRMED/ADJUSTED PRIOR TO CONSTRUCTION BASED ON APPROVED EQUIPMENT SHOP DRAWINGS OR FIELD VERIFICATION OF EQUIPMENT SIZE.

P / E-301 / C-302 **GENERATOR CONCRETE PAD DETAILS**

SCALE: 3/8" = 1'-0"



PROPOSED SECTION D-D

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

N / S-101 **ENTRY DOOR DETAILS**

SCALE: VARIES

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COMMONWEALTH OF MASSACHUSETTS
JAMES P. STUROS
STRUCTURAL
No. 45755
REGISTERED PROFESSIONAL ENGINEER
12-21-15

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DRAWN BY: DMB
CHECKED BY: JPS
224802-S-106.DWG

RAW WATER PUMP STATION
SCHEDULES & DETAILS

LOWELL REGIONAL WATER UTILITY
LOWELL, MASSACHUSETTS

WATER SYSTEM IMPROVEMENTS

JOB NO.:224802.20
DATE: MARCH 2015
SCALE: AS NOTED
SHEET: 16 OF 51

S-106

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