

**ABBREVIATIONS:**

ALUM(AL)	ALUMINUM
AB	ANCHOR BOLT
&	AND
L	ANGLE
ARCH	ARCHITECT
9	ATM
1	BOTTOM
BOC	BOTTOM OF CONCRETE
CB	CENTER BRACING
CTR	CENTERLINE
C	CLEAR
CL	COLUMN
COL	CONCRETE
CONC	CONCRETE MASONRY UNIT
CMU	CONCRETE MASONRY UNIT
CONT	CONTINUOUS
CUT	CONTROL JOINT
DIA	DIAMETER
DIA, Ø	DIAMETER
EF	EACH FACE
EW	EACH WAY
ELEV (EL)	ELEVATION (HEIGHT)
EQ	EQUAL
EXP	EXPANSION
EXT	EXTERIOR
FT	FEET
FD	FLOOR DRAIN
GALV	GALVANIZED
H	HIGH
HP	HIGH POINT
HORZ(HOR)	HORIZONTAL
ID	INSIDE DIAMETER
I	INSIDE FACE
INSUL	INSULATION
JOINT	JOINT
LONG	LONG POINT
LS	LONG POINT
MFR	MANUFACTURER
MAS	MASONRY
MAX	MAXIMUM
MIN	MINIMUM
MOD	MODULAR OPENING
MID	MOUNTED
MIG	MOUNTING
NIS	NOT TO SCALE
NO	NUMBER
OP	OPENING
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
PERM	PERMETER
P	PLATE
POUND	POUND
PROU	PROCESS
REIN	REINFORCING
REIN	REINFORCING
REIN	REINFORCING
REIN	REINFORCING
SCHED(GSH)	SCHEDULE
SECT	SECTION
SHT	SHEET
SL	SIMILAR
SL	SLOPE
SP	SPECIFICATION
SP	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STL	STRUCTURAL
STRUCT	STRUCTURAL
SYM	SYMMETRICAL
THK	THICKNESS
T & B	TOP & BOTTOM
TOG	TOP OF CONCRETE
TOM	TOP OF GROUT
TOM	TOP OF MASONRY
T	TREAD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
WS	WATERSTOP
WWF	WELDED WIRE FABRIC
W	WIDE
W/O	WITHOUT
W/O	WITHOUT
W/O	WITHOUT

**STRUCTURAL NOTES:**

- CONCRETE NOTES:
1. REINFORCED CONCRETE SHALL CONFORM TO THE FOLLOWING:
    - ACI 318 / 318R-02 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY
    - ACI 350 / 350R-01 CODE REQUIREMENTS FOR ENVIRONMENTAL CONCRETE STRUCTURES AND COMMENTARY
  2. MINIMUM CONCRETE STRENGTH AT 28 DAYS:
    - STRUCTURAL CONCRETE  $f'_c = 4,000$  PSI
    - CONCRETE FILL  $f'_c = 3,000$  PSI
  3. REINFORCING STEEL SHALL BE NEW BILLET STEEL CONFORMING TO ASTM SPECIFICATION A615 GRADE 60 DEFORMED BARS.
  4. REINFORCING STEEL FABRICATION SHALL BE IN ACCORDANCE WITH THE USRI CODE OF PRACTICE FOR REINFORCING STEEL SHALL HAVE THE FOLLOWING CLEAR CONCRETE COVER UNLESS OTHERWISE NOTED:
    - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3-IN.
    - ALL OTHER CONCRETE SURFACE: 2-IN.
  5. SPICED BARS SHALL HAVE A CLASS B TOP BAR TENSION LAP SPICE UNLESS OTHERWISE NOTED. SPICED BARS SHALL HAVE THE FOLLOWING MINIMUM SPICE LENGTHS UNLESS OTHERWISE NOTED:
    - #4 - 1'-8"
    - #5 - 2'-0"
    - #6 - 2'-5"
    - #8 - 4'-0"
    - #9 - 5'-0"
    - #10 - 6'-0"
  6. CONSTRUCTION JOINTS SHALL NOT BE PLACED AT LOCATIONS OTHER THAN SHOWN ON THE DRAWINGS UNLESS REVIEWED AND NO EXCEPTIONS TAKEN BY THE ENGINEER.
  7. ALL EXPOSED CORNERS AND EDGES OF CONCRETE TO HAVE 3/4" MINIMUM CHAMFER UNLESS OTHERWISE NOTED.
  8. REINFORCING BARS SHALL EXTEND 12 BAR DIAMETERS BUT NOT LESS THAN 12" BEYOND BEND UNLESS OTHERWISE NOTED.
  9. ALL EXPOSED CORNERS AND EDGES OF CONCRETE TO HAVE 3/4" MINIMUM CHAMFER UNLESS OTHERWISE NOTED.
  10. REINFORCING BARS SHALL EXTEND 12 BAR DIAMETERS BUT NOT LESS THAN 12" BEYOND BEND UNLESS OTHERWISE NOTED.
  11. CUT NO BARS AND OMIT NO BARS BECAUSE OF SLEEVE OR DUCT OPENINGS IN SLABS OR WALLS. BARS MAY BE MOVED ASIDE WITHOUT CHANGING THE DISTANCE FROM FACE OF CONCRETE, GENERALLY, NOT MORE THAN 1/2 BAR SPACING. FIELD BENDING OF REINFORCING STEEL IS NOT ALLOWED.
  12. FIELD BENDING OF REINFORCING STEEL IS NOT ALLOWED.
  13. PROVIDE A MINIMUM 4" THICK REINFORCED CONCRETE PAD BELOW ALL EQUIPMENT, PIPE SUPPORTS, STANCHIONS, CONTROL PANELS, TANKS, ETC. UNLESS OTHERWISE NOTED.

**MASONRY:**

1.  $f_m = 1350$  PSI - INSPECTED
2. MORTAR SHALL BE ASTM C270 TYPE S WITH 28 DAY COMPRESSIVE STRENGTH OF 1800 PSI.
3. CMU SHALL BE ASTM C90 TYPE N-1 WITH A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
4. GROUT SHALL BE ASTM C476 FINE GROUT WITH MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
5. VERTICAL AND HORIZONTAL DEFORMED REINFORCEMENT SHALL BE ASTM A615 GRADE 60.
6. GROUT SOLID CMU AT EXPANSION ANCHOR LOCATIONS.

**METALS:**

1. STRUCTURAL STEEL SHALL BE ASTM A36.
2. STEEL BOLTS SHALL BE ASTM A307.
3. ANCHOR BOLTS SHALL BE ASTM A307.
4. STEEL BOLTS SHALL BE ASTM A325 N UNLESS OTHERWISE NOTED.
5. ALUMINUM MEMBERS SHALL BE ASTM B208-84 ALLOY 6061-T6 UNLESS OTHERWISE NOTED.
6. STAINLESS STEEL FASTENERS SHALL CONFORM TO ASTM F993 AND ASTM F594.

**GENERAL NOTES:**

1. DETAILS AND SECTIONS SHOWN FOR REMOVING OR MODIFYING ARE BASED ON EXISTING CONTRACT DRAWINGS. IF CONDITIONS DIFFER FROM THOSE AS SHOWN ON CONTRACT DRAWINGS, CONTRACTOR SHALL NOTIFY ENGINEER.
2. THE TREATMENT FACILITY WILL REMAIN IN OPERATION DURING THE CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL COORDINATE THE DEMOLITION AND CONSTRUCTION WITH THE OWNER'S REQUIREMENTS TO MAINTAIN PLANT OPERATION.
3. ALL ITEMS TO BE DEMOLISHED SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED. THE OWNER RESERVES THE RIGHT TO RETAIN ANY EQUIPMENT OR MATERIALS. THE CONTRACTOR SHALL PROTECT SUCH ITEMS IN A MANNER ACCEPTABLE TO THE OWNER AND THE ENGINEER.
4. USE OF HEAVY DUTY PNEUMATIC HAMMERS ARE NOT PERMITTED TO REMOVE THE EXISTING STRUCTURE. UNLESS OTHERWISE PERMITTED, LINE DRILLING, SAW CUTTING OR CORE DRILLING SHALL BE REQUIRED IN CUTTING EXISTING STRUCTURE. CONTRACTOR SHALL USE CAUTION NOT TO DAMAGE EXISTING CONCRETE WALLS AND SLABS TO REMAIN.
5. CORING SHALL BE PERFORMED WITH AN APPROVED NON-IMPACT ROTARY TOOL WITH DIAMOND CORE DRILLS. SIZE OF HOLES SHALL BE SUITABLE FOR PIPE CONDUIT, SLEEVES OR MECHANICAL CONNECTIONS. ALL EXISTING EQUIPMENT SHALL BE PROTECTED FROM DAMAGE CAUSED BY THE DRILLING OPERATION.
6. PROVIDE ALL TEMPORARY BRACING REQUIRED AND SUPPORT ALL ITEMS AND EQUIPMENT MOUNTED TO THE WALL WHICH ARE DESIGNATED TO BE REMOVED. REINSTALL ALL ITEMS AFTER THE NEW WALLS ARE COMPLETED.
7. REMOVE, REINSTALL OR REPLACE ALL MISCELLANEOUS ITEMS MOUNTED TO THE WALLS DESIGNATED TO BE REMOVED OR RENOVATED.
8. PROTECT ALL EXISTING ITEMS AND EQUIPMENT ADJACENT TO THE WORK AREA. ALL EXISTING ITEMS, EQUIPMENT AND MATERIALS DAMAGED OR EFFECTED AS A RESULT OF THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED OR REPLACED AT NO ADDITIONAL COST TO THE OWNER.
9. PATCH, REPAIR AND REFINISH ALL EXISTING SURFACES AFFECTED BY THE WORK, TO THE SATISFACTION OF THE ENGINEER.
10. ALL WALL AND/OR FLOOR PENETRATIONS REMAINING AFTER THE REMOVAL OF PIPING, CONDUIT OR ANCHOR BOLTS ARE TO BE PATCHED AND FINISHED FLUSH TO MATCH EXISTING SURFACES.
11. ALL INTERIOR AND EXTERIOR MASONRY WALLS SHALL HAVE HORIZONTAL JOINT REINFORCING AT 1'-4" OC.
12. NEW MASONRY ADJUTING EXISTING MASONRY AND CONCRETE SHALL BE ANCHORED WITH CORRUGATED WALL TIES Ø1-4" OC. SIMILAR DETAIL F ON DRAWING S-4.
13. ALL MASONRY OPENINGS (NOTS) AND ROUGH OPENINGS (RO) ARE NOMINAL. COORDINATE ALL MASONRY OPENINGS AND ROUGH OPENINGS WITH THE ITEMS AND EQUIPMENT TO BE INSTALLED.
14. PROVIDE MASONRY OPENINGS FOR THE DUCTWORK PENETRATING THE CMU WALLS. REFER TO THE MECHANICAL DRAWINGS AND COORDINATE WITH THE OTHER DISCIPLINES.
15. COORDINATE WITH ALL OTHER DRAWINGS, DISCIPLINES AND TRADES FOR THE LOCATION OF PIPE SLEEVES AND ITEMS BUILT INTO OR ANCHORED TO THE CMU WALLS.
16. GROUT THE CMU SOLID AT AREAS WHERE ANCHORS ARE TO BE INSTALLED. CHECK ALL DRAWINGS AND COORDINATE WITH ALL DISCIPLINES FOR ITEMS ANCHORED TO THE CMU WALLS.
17. EXPANSION ANCHORS ARE TO HAVE A MINIMUM OF 4" EMBEDMENT UNLESS INDICATED OTHERWISE.
18. USE A PIPE SLEEVE AT ALL WALL PENETRATIONS IN THE MASONRY AND CONCRETE WALLS. REFER TO PROCESS DRAWINGS FOR THE TYPICAL PIPE SLEEVE DETAILS.
19. THE FOLLOWING AREAS ARE TO BE TREATED AS FIRE RATED ASSEMBLIES:
  - HYPOCHLORITE BUILDING:
    - CHEMICAL FEED ROOM C102, 2 HR FIRE RESISTANT
    - STORAGE ROOM C101, 2 HR FIRE RESISTANT
  - THE CHEMICAL FEED ROOM C102 AND STORAGE ROOM C101, ARE A BOCA/1999 H-4 USE GROUP CLASSIFICATION AND SHALL HAVE A SPRINKLER SYSTEM.
20. SEAL ALL PENETRATIONS THROUGH FIRE WALLS AND CEILING WITH THE REQUIRED BLOCKING, FIRESTOPPING AND FIRE RATED SEALANT. SEE SPECIFICATION SECTION 07270 - FIRESTOPPING.
21. ALL MISCELLANEOUS METALS AND STEEL ITEMS (SUCH AS DOOR FRAMES) IN CONTACT WITH CONCRETE OR MASONRY SHALL RECEIVE AN EPOXY PRIMER APPLIED TO THE SURFACES IN CONTACT. TREAT GALVANIZED SURFACES AS PER MANUFACTURERS RECOMMENDATIONS FOR APPLICATION OF AN EPOXY PRIMER.
22. SEE PROCESS, MECHANICAL AND ELECTRICAL DRAWINGS FOR PIPE SLEEVES, CONDUITS OR OTHER ITEMS TO BE EMBEDDED OR PASSED THROUGH THE CONCRETE.

**MATERIALS LEGEND**

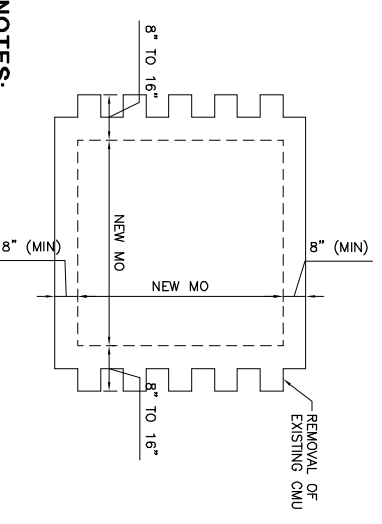
	CONCRETE MASONRY UNIT (CMU)
	BRICK
	CONCRETE
	EARTH
	GYPSTUM WALLBOARD (GWB)
	GROUT AND SAND
	RIGID INSULATION
	ALUMINUM
	BATT INSULATION
	PLYWOOD
	DIMENSION LUMBER OR WOOD BLOCKING
	FINISH WOOD
	METAL
	METAL (SMALL SCALE)
	EXISTING ITEMS TO BE REMOVED
	EXISTING ITEMS TO REMAIN

**SYMBOLS LEGEND**

	SECTION NUMBER
	BUILDING SECTION
	DRAWING NUMBER
	WALL OR PARTIAL SECTION
	DETAIL DESIGNATION
	DATUM
	INTERIOR ELEVATION SYMBOL
	EXTERIOR ELEVATION SYMBOL

**DOOR AND WINDOW LEGEND**

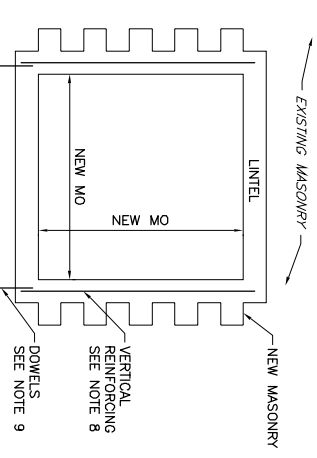
	DOOR NUMBER
	WINDOW TYPE
	ROOM NUMBER
	DEMOLITION NOTE
	RENOVATION NOTE
	EQUIPMENT PAD
	CAULKING (FIRE RATED WHERE SEALANT APPLICABLE)
	LABORATORY FURNITURE



**NOTES:**

1. THIS DETAIL APPLIES TO ALL NEW OPENINGS 16" OR GREATER IN WIDTH.
2. BRACE THE EXISTING WALL AND PROTECT THE STRUCTURE FROM DAMAGE.
3. REMOVE EXISTING MASONRY TO ALLOW NEW CMU TO BE "TOOTHED IN".
4. REMOVE EXISTING MASONRY AT THE HEAD OF THE NEW OPENINGS AS REQUIRED FOR THE INSTALLATION OF THE NEW LINTEL.
5. FOR ADJACENT CONCRETE REMOVAL, SEE THE STRUCTURAL DRAWINGS.

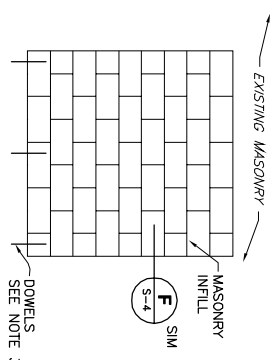
**TYPICAL DEMOLITION FOR OPENING IN EXISTING MASONRY WALL**



**NOTES:**

1. THIS DETAIL APPLIES TO ALL NEW OPENINGS 16" OR GREATER IN WIDTH.
2. PROVIDE A NEW FINISHED MASONRY OPENING APPROPRIATE FOR THE ITEM TO BE INSTALLED IN THE OPENING.
3. NEW MASONRY SHALL MATCH THE EXISTING.
4. PROVIDE A LINTEL AT ALL OPENINGS.
5. PROVIDE #5 BAR VERTICAL REINFORCING SHOWN AT ALL EXTERIOR WALLS, ALL LOAD BEARING WALLS AND AT ALL DOORWAYS.
6. PROVIDE #5 DOWELS, 12" LONG AT NEW OPENINGS THAT EXTEND TO THE FINISHED FLOOR OR TOP OF CONCRETE, SUCH AS DOORS.

**TYPICAL NEW OPENING IN EXISTING MASONRY WALL**



**NOTES:**

1. NEW MASONRY SHALL MATCH THE EXISTING.
2. PROVIDE HORIZONTAL JOINT REINFORCING, INCLUDING CAVITY WALL REINFORCING, AT 1'-4" OC AS REQUIRED.
3. PROVIDE #5 DOWELS 12" LONG @ 2'-8" OC. (MIN OF 2) AT ALL WALLS.

**TYPICAL INFILL DETAIL**

NO	REVISIONS	APP'D	DATE	PROGRESS PRINTS
1				ISSUED FOR REVIEW: 12-15-04
2				ISSUED FOR BIDDING: 2-18-05
				WALL LOCATION: _____
				LAST WORKED ON: _____
				FILENAME: _____

DRAWN BY RAO
CHECKED BY WJF/PFB
DATE 2-18-05
APPROVED BY WJF/PFB
DATE 2-18-05
BOOK NO. _____
PROJECT NO. 10301C
SCALE AS NOTED

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DECHLORINATION SYSTEMS UPGRADE

ABBREVIATIONS, LEGENDS, NOTES, DETAILS

DWG S-1  
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