



ADDENDUM NO. 02

Date: February 07, 2024

To Drawings and Specifications dated **September 03, 2024.**

Project location

Nichols ES Modernization

1301 Crescent Avenue
Lodi, CA 95240



Prepared by: **PBK**
1110 Iron Point Road, Suite 200
Folsom, California 95630

PBK Project No.: 230170

- A. Receipt of this Addendum shall be acknowledged on the Bid Form.
- B. This Addendum forms part of the Contract documents for the above referenced project and shall be incorporated integrally therewith.
- C. Each bidder shall make necessary adjustments and submit this proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.
- D. Clarification:

VOLUME 1 – BIDDING AND CONTRACT REQUIREMENTS: N/A

None -

VOLUME 2 – SPECIFICATIONS:

None -

DRAWINGS:

- Item No. 01** Replace in its entirety General Drawing G0.10
- Item No. 02** Replace in its entirety Civil Drawing C1.1
- Item No. 03** Replace in its entirety Civil Drawing C2.1
- Item No. 04** Replace in its entirety Civil Drawing C3.1
- Item No. 08** Replace in its entirety Architectural Drawing D1.01
- Item No. 09** Replace in its entirety Architectural Drawing A1.01
- Item No. 10** Replace in its entirety Structural Drawing S0.01

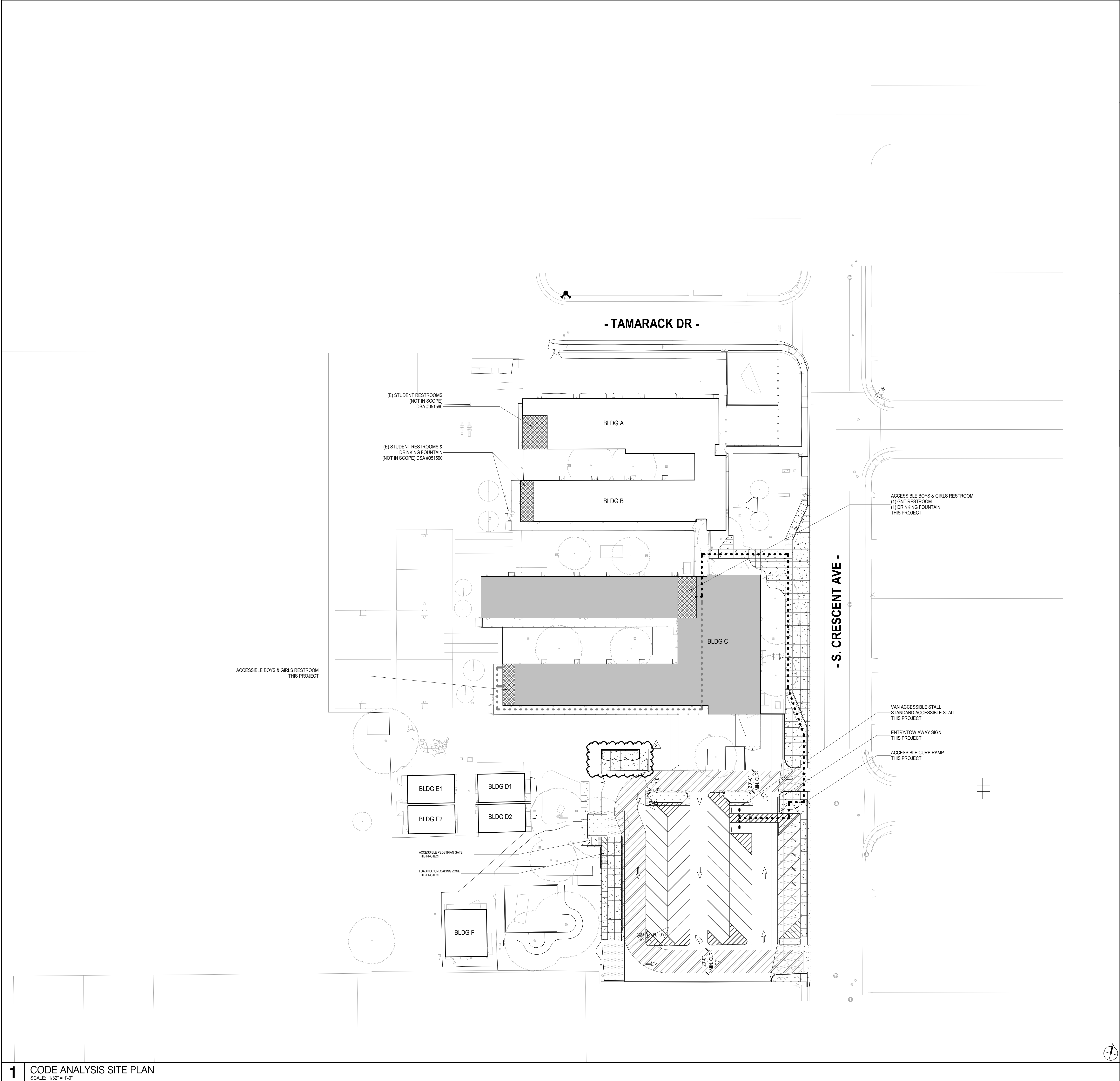
- Item No. 11** Replace in its entirety Structural Drawing S0.02
- Item No. 12** Replace in its entirety Structural Drawing S0.11
- Item No. 13** Replace in its entirety Structural Drawing S0.61
- Item No. 14** Replace in its entirety Structural Drawing S1.00
- Item No. 15** Replace in its entirety Structural Drawing S1.01
- Item No. 16** Replace in its entirety Structural Drawing S1.02
- Item No. 17** Replace in its entirety Structural Drawing S5.01
- Item No. 18** Replace in its entirety Structural Drawing S5.41A

RELOG:

None -

End of Addendum No. 01

END OF SECTION 00 00 74



(E) BUILDING NOT IN SCOPE

(E) BUILDING IN SCOPE

(E) FIRE ACCESS LANE

ACCESSIBLE TOILET ROOM

PROPERTY LINE

(E) PATH OF TRAVEL

(E) FIRE HYDRANT

ACCESSIBLE PATH OF TRAVEL (P.O.T.):
THE ACCESSIBLE PATH OF TRAVEL AS INDICATED ON PLAN IS A BARRIER-FREE ACCESS ROUTE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" 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 DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5% UNLESS OTHERWISE INDICATED.

ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL ABOVE 27" AND LESS THAN 80".

DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:
THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS MEETS THE REQUIREMENTS OF THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE (CBC) ACCESSIBILITY PROVISIONS FOR **PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS**. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT HAVE BEEN IDENTIFIED AND 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 P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE INDICATED IN THESE CONSTRUCTION DOCUMENTS.

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

PATH OF TRAVEL NOTES

PARKING CALCULATION

(E) PARKING LOT

STANDARD STALLS 40
VAN ACCESSIBLE STALLS 1
STD ACCESSIBLE STALLS 1
TOTAL 42

BUILDING INDEX

BLDG	DESCRIPTION	S.F.	OCC.	TYPE	DSA #
A	ADMIN / CLASSROOMS	11,642	E1	V-N	51590
B	CLASSROOMS	3,654	E1	V-N	51590
C	CLASSROOMS	19,400	E1	V-N	51590
D1	PORTABLE	960	E1	V-N	101570
D2	PORTABLE	960	E1	V-N	101570
E1	PORTABLE	960	E1	V-N	101570
E2	PORTABLE	960	E1	V-N	101570
F	PORTABLE	1,440	E1	V-N	101570

1

CODE ANALYSIS SITE PLAN
SCALE: 1/32" = 1'-0"

This document is for plan review only

ARCHITECT

PBK Architects, Inc.

FOLSOM
1110 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-355-9922

NOT FOR PERMITTING OR CONSTRUCTION

NICHOLS ES MODERNIZATION

LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 95240
DSA APP No. 02-121896

LICENSED ARCHITECT

LEONA M. KETTER
C-3923
REN. 09-30-25
STATE OF CALIFORNIA

CLIENT

LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
230170

DATE
02/07/2025

DRAWN BY: MG CHKE BY: LK

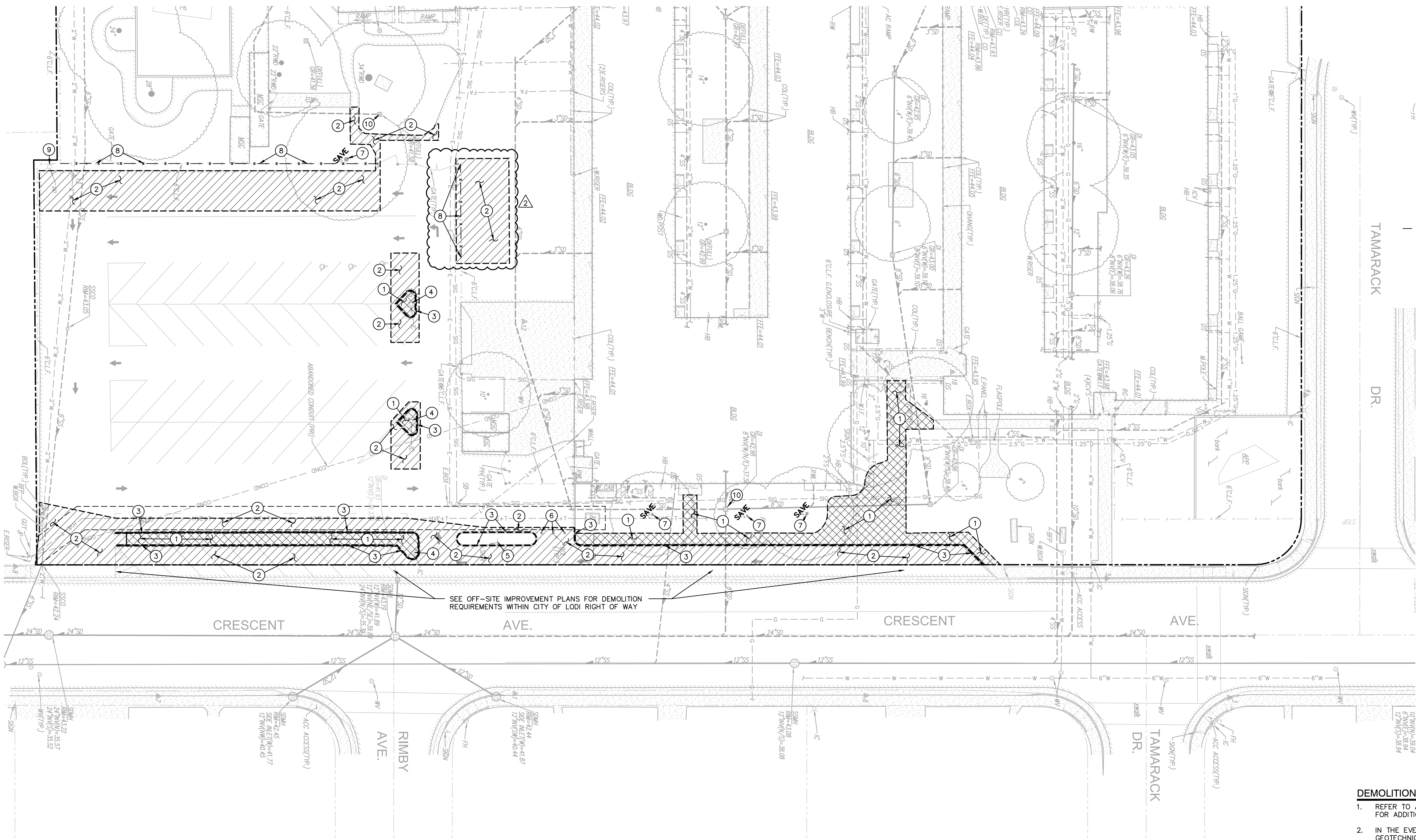
REVISIONS

#	DESCRIPTION	DATE
1	ADDENDUM 01	11/07/24
2	ADDENDUM 02	02/07/25

DSA APP No. 02-121896

SITE DATA & CODE REVIEW

G0.10



- DEMOLITION NOTES**
1. SDSAWCUT, REMOVE AND DISPOSE OF EXISTING CONCRETE PAVING AND ASSOCIATED AGGREGATE BASE. SAWCUT SHALL BE A NEAT STRAIGHT LINE, MAINTAIN CLEAN, STRAIGHT CUT EDGE UNTIL NEW PAVING IS PLACED.
 2. SAWCUT, REMOVE AND DISPOSE OF EXISTING ASPHALT PAVING AND ASSOCIATED AGGREGATE BASE. SAWCUT SHALL BE A NEAT STRAIGHT LINE, MAINTAIN CLEAN, STRAIGHT CUT EDGE UNTIL NEW PAVING IS PLACED.
 3. REMOVE AND DISPOSE OF EXISTING CONCRETE CURB TO EXTENT SHOWN.
 4. EXISTING LIGHT POLE AND FOOTING TO REMAIN.
 5. REMOVE AND DISPOSE OF EXISTING SIGN, POST AND ASSOCIATED FOOTING.
 6. REMOVE AND DISPOSE OF EXISTING BOLLARD AND ASSOCIATED FOOTING.
 7. EXISTING TREE TO REMAIN.
 8. REMOVE AND DISPOSE OF EXISTING CHAIN LINK FENCE, GATES, POSTS AND ASSOCIATED FOOTINGS TO EXTENTS SHOWN.
 9. PROTECT EXISTING POWER POLE IN PLACE.
 10. PROTECT EXISTING STORM DRAIN INLET IN PLACE.

TAMARACK DR.

CRESCENT AVE.

CRESCENT AVE.

CRESCENT AVE.

RIMBY AVE.

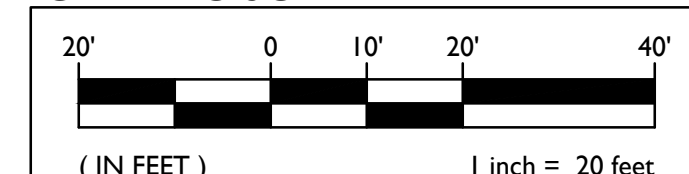
TAMARACK DR.

TAMARACK DR.

DEMOLITION GENERAL NOTES

1. REFER TO ARCHITECTURAL, LANDSCAPE, ELECTRICAL AND PLUMBING PLANS FOR ADDITIONAL DEMOLITION ITEMS.
2. IN THE EVENT THAT ANY UNUSUAL CONDITIONS NOT COVERED BY THE GEOTECHNICAL INVESTIGATION REPORT OR ARE ENCOUNTERED DURING GRADING OPERATIONS THE GEOTECHNICAL ENGINEER AND THE ARCHITECT SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTIONS.
3. ADDITIONAL DEMOLITION INFORMATION MAY BE SHOWN ON THE GRADING, DRAINAGE, AND UTILITY PLANS, AND THOSE PLANS PREPARED BY OTHER DISCIPLINES FOR THIS PROJECT.
4. ALL DEMOLISHED ITEMS SHALL BE DISPOSED OF OFFSITE AT A SUITABLE, LEGAL, DUMP SITE OR OTHER FACILITY.
5. ALL DISPOSED OF MATERIALS SHALL BE RECYCLED IF POSSIBLE.
6. THE SCHOOL DISTRICT SHALL HAVE SALVAGE RIGHTS TO ANY DEMOLISHED ITEMS SHOWN HEREON. THE CONTRACTOR SHALL GIVE THE DISTRICT NOTICE 7 DAYS PRIOR TO THE START OF DEMOLITION. THE DISTRICT SHALL MOVE ANY RETAINED ITEMS OUT OF THE CONTRACTORS WORK AREA, UNLESS ANOTHER ARRANGEMENT IS MADE WITH THE CONTRACTOR. ANY REMAINING ITEMS BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE. ANY ITEMS NOT SHOWN FOR REMOVAL SHALL REMAIN AND SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION TO A REASONABLE EXTENT.
7. EXISTING UTILITY STRUCTURES IN AREAS OF NEW PAVING SHALL BE REMOVED AND REPLACED WITH NEW BOX/COVER AT NEW GRADE UNLESS SPECIFICALLY NOTED OTHERWISE.
8. ITEMS OUTSIDE THE LIMITS OF DEMOLITION SHALL REMAIN AND BE PROTECTED FROM DAMAGE DURING CONSTRUCTION.
9. EXISTING UTILITY STRUCTURES AND PIPING NOT SHOWN ON DEMOLITION PLAN TO BE REMOVED SHALL REMAIN AND BE PROTECTED.
10. SAWCUTS AND SUBSEQUENT PATCH BACK OF CONCRETE WALKS, SHALL BE TO THE EXISTING CONCRETE JOINT BEYOND THE NEAREST LOCATION OF DEMOLITION AS SHOWN. A REASONABLE EFFORT HAS BEEN MADE TO LOCATE, SHOW AND COORDINATE WITH EXISTING JOINTS, HOWEVER IF FIELD CONDITIONS ARE OTHERWISE, IT IS UNDERSTOOD TO REMOVE AND PATCH BACK TO THE NEAREST JOINTS BEYOND DEMOLITION.
11. PRIOR TO THE START OF CONSTRUCTION, VERIFY AND POTHOLE ALL UTILITY POINTS OF CONNECTION FOR LOCATION, DEPTH, AND SIZE. IF CONFLICT IS FOUND, CONTACT THE ENGINEER IMMEDIATELY FOR DIRECTION.
12. WITHIN LANDSCAPE AREAS TO BE DEMOLISHED THERE MAY BE EXISTING IRRIGATION LINES NOT SHOWN ON THIS PLAN. CONTRACTOR SHALL REMOVE LATERAL LINES AND HEADS ENCOUNTERED. MAIN LINES AND CONTROL WIRES MAY ONLY BE REMOVED PROVIDED THAT ROUTING IS KNOWN AND REMOVAL WILL NOT DEACTIVATE AN IRRIGATION SYSTEMS INTENDED TO REMAIN. IF CONFLICT IS FOUND, CONTACT THE ENGINEER FOR DIRECTION.
13. COORDINATE REMOVAL OF LANDSCAPE ITEMS WITH LANDSCAPE PLANS.

GRAPHIC SCALE



THIS DRAWING MAY HAVE BEEN ENLARGED OR REDUCED.

FILENAME: I:\24-118\CIVIL\DWG\24-118-C11.DWG



ARCHITECT PBK Architects, Inc.
FOLSOM
1100 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-955-8622

WCE
WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 93240
DSA APP NO. 02-121896



KEY PLAN

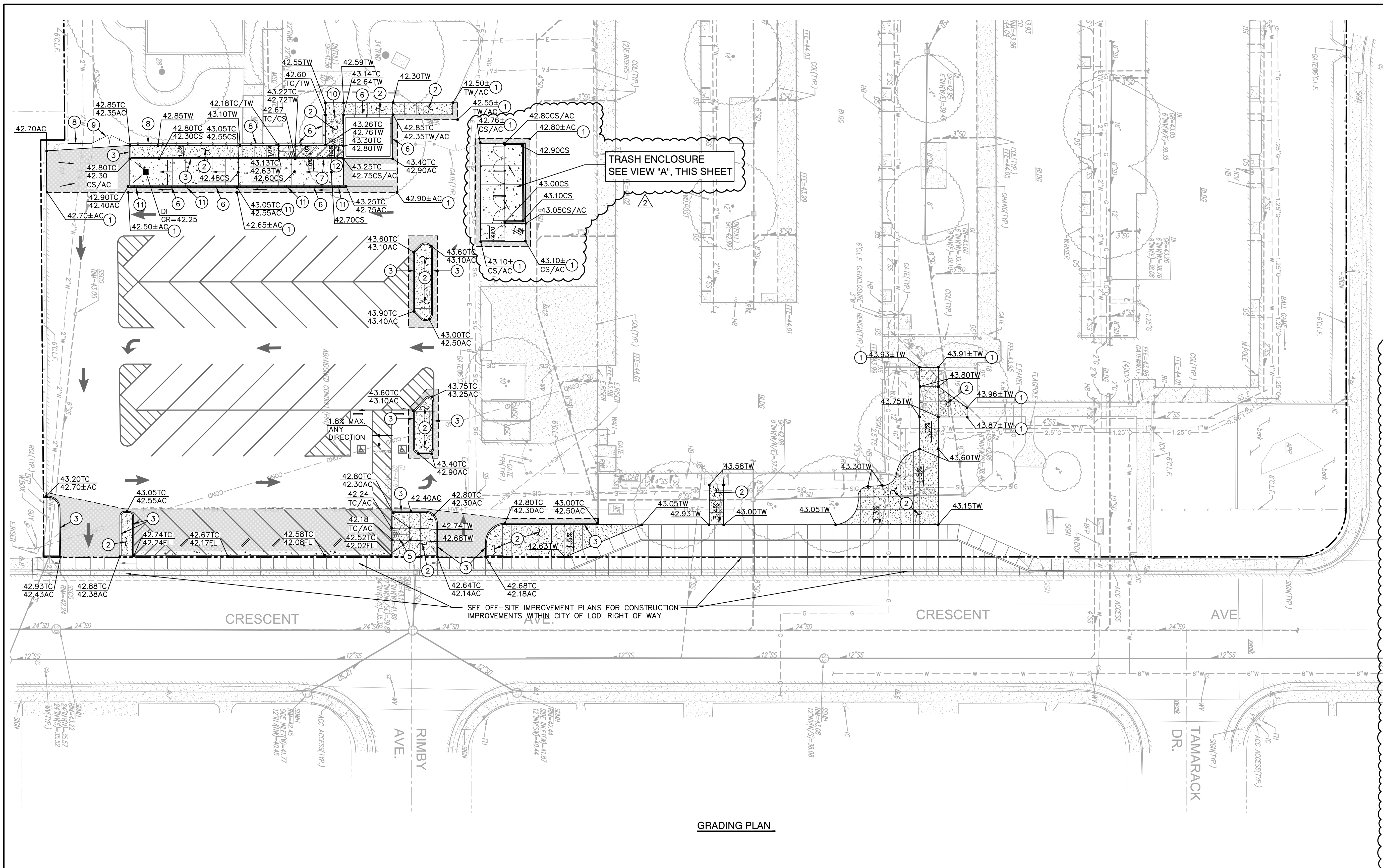


CLIENT		
LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER		
230170		
DATE	10/16/2024	
DRAWN BY: AT	CHKD BY: AT	
REVISIONS		
#	DESCRIPTION	DATE
2	Addendum 82	12/12/24
DSA APP No. 02-121896		

DSA APP No. 02-121896

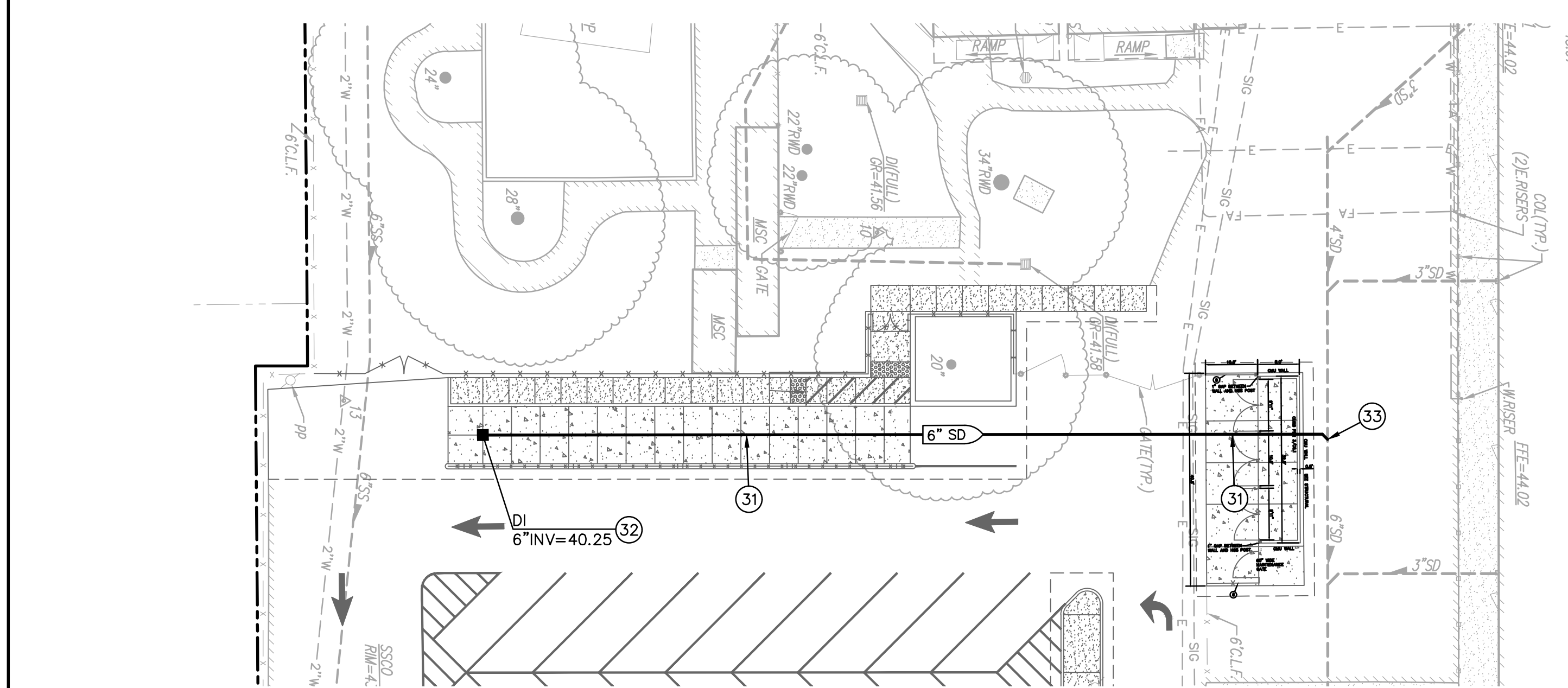
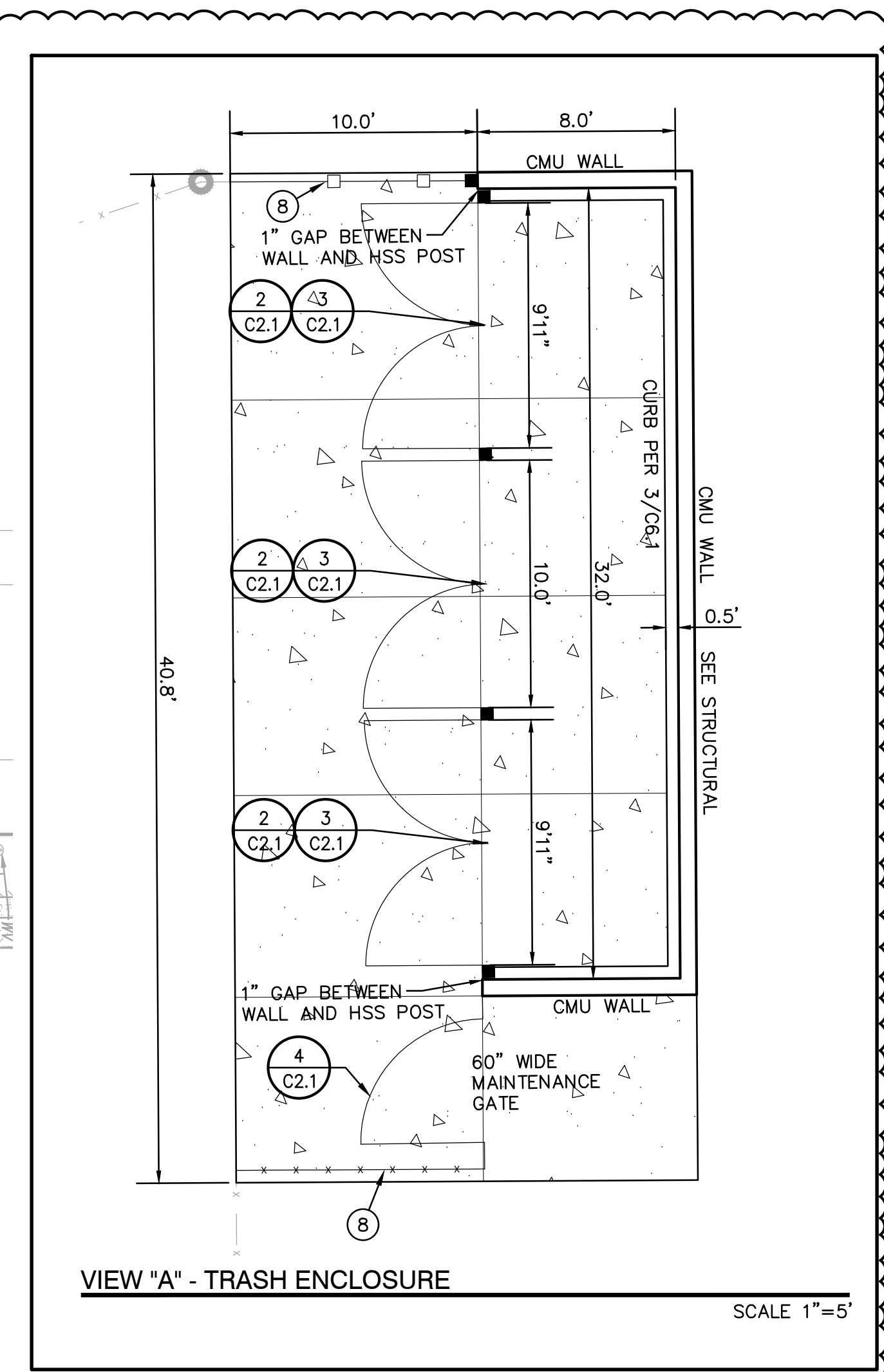
DEMOLITION PLAN

C1.1



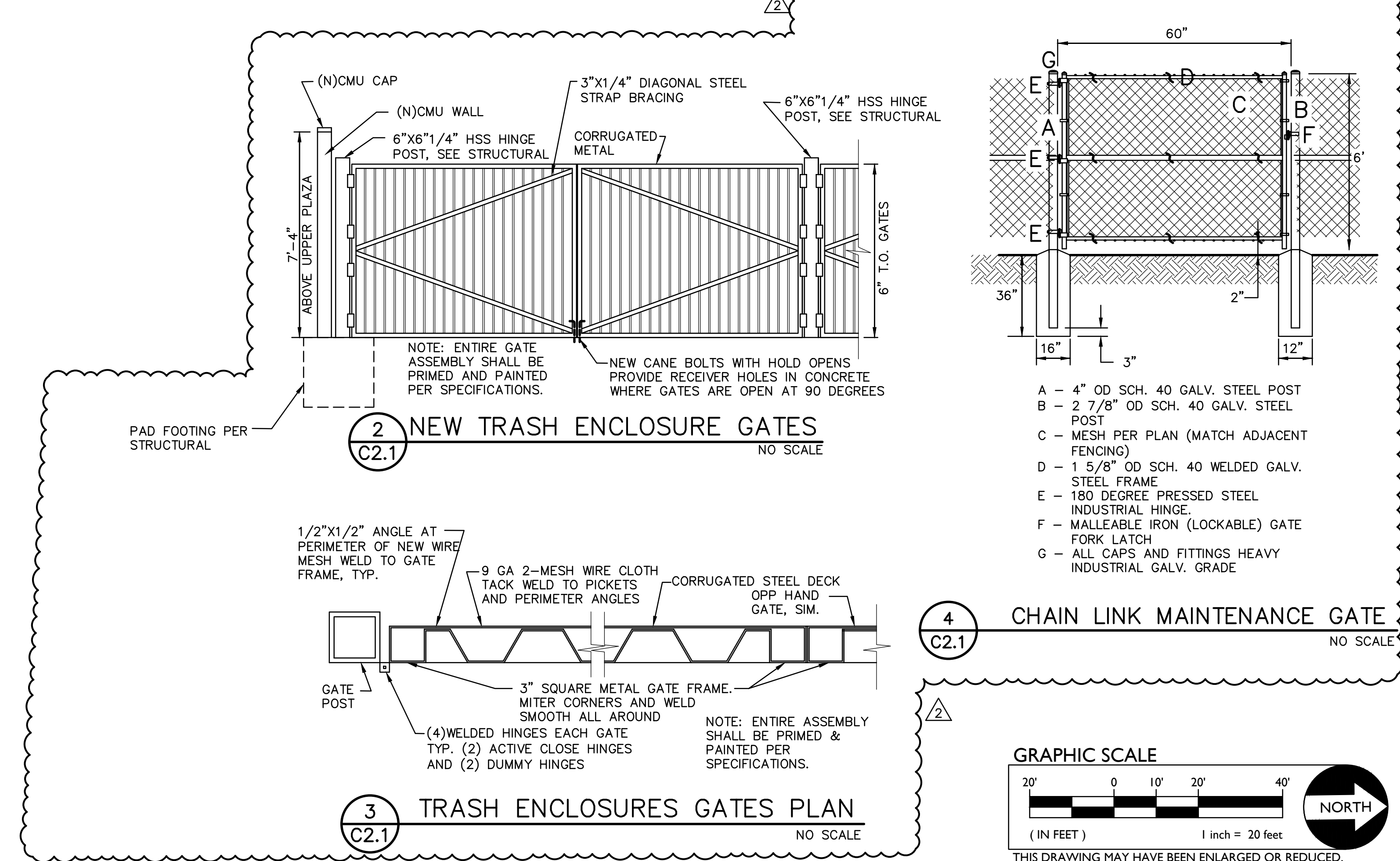
GRADING PLAN

- GRADING NOTES**
1. MATCH EXISTING GRADE/ELEVATION.
 2. CONSTRUCT CONCRETE SIDEWALK PER C6.1
 3. CONSTRUCT CONCRETE CURB PER C6.1
 4. CONSTRUCT CONCRETE CURB AND GUTTER PER C6.1
 5. CONSTRUCT ACCESSIBLE CURB RAMP PER C6.1
 6. CONSTRUCT 12" WIDE CONCRETE CURB WITH 4FT TALL CHAIN LINK FENCE PER C6.1
 7. CONSTRUCT 20" WIDE ACCESSIBLE LOADING/UNLOADING ZONE PER C6.1
 8. CONSTRUCT 6" CHAIN LINK FENCE PER C6.1
 9. CONSTRUCT 15" WIDE MAINTENANCE GATE PER C6.1
 10. CONSTRUCT 80" WIDE ACCESSIBLE GATE PER C6.1
 11. PLACE 12" WIDE OPENING IN CURB TO ALLEVIATE DRAINAGE.
 12. PLACE TRUNCATED DOMES PER C6.1



DRAINAGE PLAN

- DRAINAGE NOTES**
31. PLACE 6" STORM DRAIN PER C6.1
 32. CONSTRUCT DROP INLET PER C6.1
 33. CONNECT TO EXISTING STORM DRAIN. FIELD VERIFY EXACT DEPTH, LOCATION AND CONDITION PRIOR TO TRENCHING. PROVIDE ALL FITTINGS NECESSARY TO MAKE CONNECTION.



ARCHITECT
FOLSOM
1100 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-555-9622



WARREN CONSULTING ENGINEERS, INC.
1117 WINDFIELD WAY, SUITE 110
EL DORADO HILLS, CA 95762 | (916) 985-1870

NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 93240
DSA APP NO. 02-121896



KEY PLAN



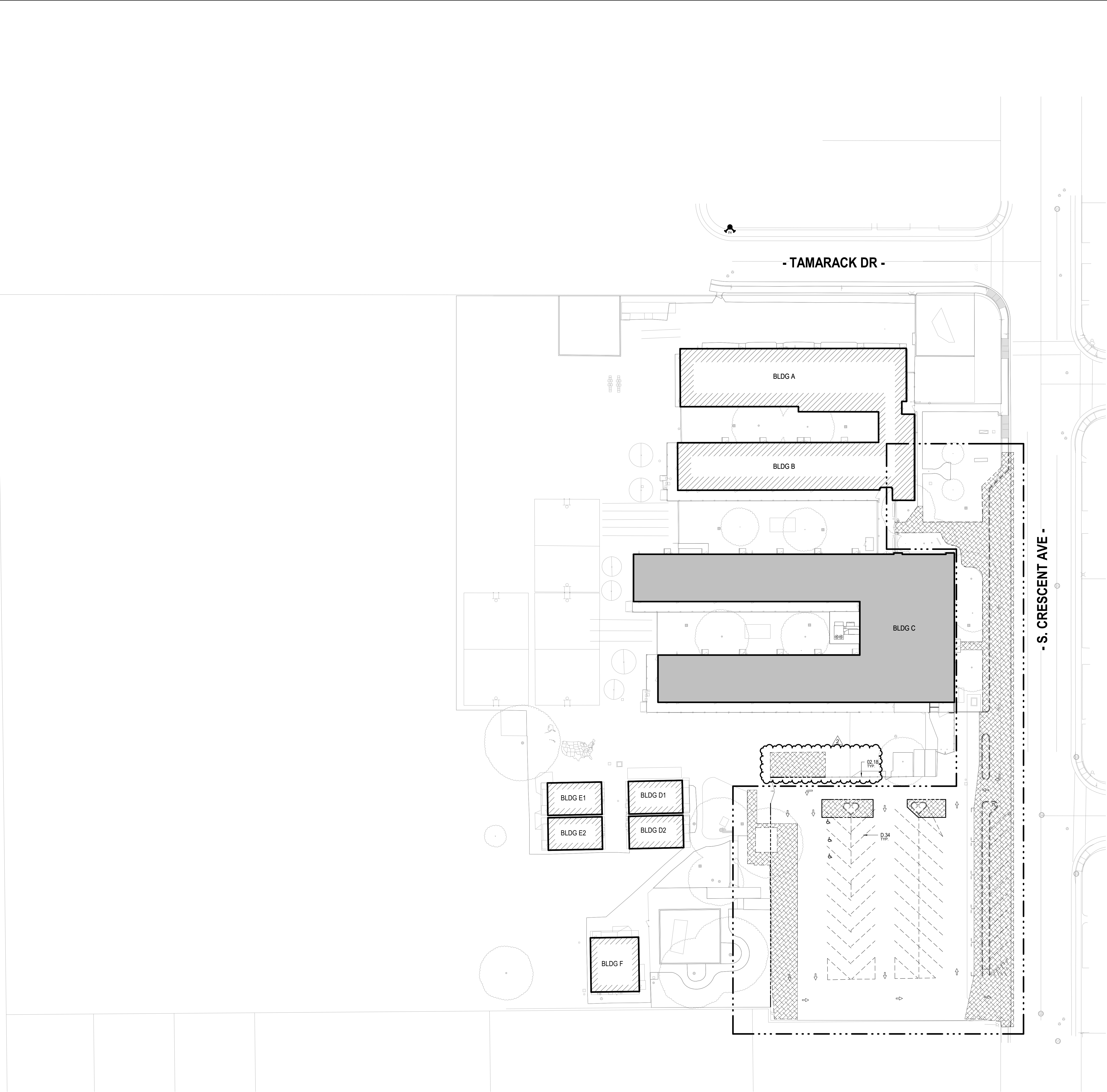
#	DESCRIPTION	DATE
2	Addendum 82	12/12/24

GRADING AND DRAINAGE PLAN

C2.1

1 DEMOLITION SITE PLAN

SCALE: 1" = 30'-0"



DEMOLITION NOTES

- DEMOLITION PLANS INDICATE SOME OF THE SCOPE-OF-WORK INVOLVED FOR THE DEMOLITION PHASE OF THIS PROJECT. CONTRACTOR SHALL REVIEW ALL SHEETS FOR ADDITIONAL DEMOLITION SCOPE.
- CONTRACTOR SHALL VERIFY EXISTING SITE AND BUILDING CONDITIONS AND DIMENSIONS IN THE FIELD PRIOR TO DEMOLITION ACTIVITIES AND WORK.
- CONTRACTOR SHALL NOTIFY ARCHITECT OF ANY DISCREPANCIES IN WRITING.
- CONTRACTOR SHALL NOTIFY ARCHITECT AND OWNER OF ANY POSSIBLE ASBESTOS CONTAINING MATERIALS DISCOVERED BEFORE PROCEEDING WITH WORK. PROTECT INTERIOR CONSTRUCTION TO REMAIN DURING DEMOLITION AND CONSTRUCTION.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS BEFORE COMMENCING WORK.
- AFTER AWARD OF THE CONTRACT, CHANGE ORDER REQUESTS FOR ADDITIONAL MONEY WILL NOT BE APPROVED IF THE WORK COULD HAVE BEEN ANTICIPATED DURING A SITE VISIT BY THE CONTRACTOR.
- CONTRACTOR SHALL NOT SCALE DRAWINGS.
- CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY SHORING, TEMPORARY BRACING, AND OR TEMPORARY SUPPORTS AS REQUIRED TO MAINTAIN STRUCTURAL INTEGRITY OF EXISTING STRUCTURE TO REMAIN AND OR EXISTING BUILDING ELEMENTS TO REMAIN.
- CONTRACTOR IS TO VERIFY THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO DEMOLITION ACTIVITIES AND WORK.
- CONTRACTOR SHALL REMOVE TRASH AND DEBRIS REGULARLY AS NECESSARY TO ELIMINATED INTERFERENCE WITH ROADS, STREET, WALKS, AND ALL OTHER ADJACENT FACILITIES.
- CONTRACTOR SHALL REMOVE TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.
- CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTION OF TEMPORARY DUST AND OR SOUND PARTITION BETWEEN CONSTRUCTION AREA AND AREAS NOT IN SCOPE AS NECESSARY. DEMOLITION ACTIVITIES SHALL BE PERFORMED SO AS TO PRODUCE MINIMAL DISTURBANCE TO EXISTING FACILITY AND OCCUPANTS (I.E. MINIMIZE EXCESSIVE AND PROLONGED NOISE LEVELS AND DUST).
- CONTRACTOR SHALL REPAIR, REPLACE, OR PATCH EXISTING BUILDINGS, DRIVEWAYS, SIDEWALKS, CANOPIES, AND OR PARKING AREAS DAMAGED, MODIFIED, AND OR DISTURBED BY DEMOLITION WORK AT NO COST TO THE OWNER.
- ALL EXISTING EQUIPMENT THAT REMAINS SHALL BE PROTECTED DURING DEMOLITION AND OR CONSTRUCTION TO PREVENT DAMAGE. ANY DAMAGE TO REMAINING EXISTING EQUIPMENT SUSTAINED DURING DEMOLITION AND OR CONSTRUCTION SHALL BE EQUIVALENTLY REPLACED OR EQUIVALENTLY REPAIRED AT NO COST TO THE OWNER.
- CONTRACTOR SHALL PROVIDE TRAFFIC HANDLING MEASURES TO PROTECT THE GENERAL PUBLIC AT ALL TIMES, AS NECESSARY AND AS REQUIRED BY AUTHORITIES HAVING JURISDICTION.
- DO NOT INTERRUPT EXISTING UTILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.
- WHEN UTILITY SERVICES ARE REQUIRED TO BE REMOVED, RELOCATED, OR ABANDONED, PROVIDE BYPASS CONNECTIONS TO MAINTAIN CONTINUITY OF SERVICE BEFORE PROCEEDING WITH DEMOLITION.
- CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES INCLUDING BUT NOT LIMITED TO THE FOLLOWING: ELECTRIC, GAS, WATER, TELEPHONE, STORM SEWER, AND SANITARY SEWER FOR FIELD LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITY LINES. PRIOR TO COMMENCEMENT OF ANY DEMOLITION WORK, CONTRACTOR SHALL IDENTIFY ALL ELECTRICAL CIRCUITS SERVICING THE AREA INVOLVED WITH THIS DEMOLITION. THOSE CIRCUITS SHALL THEN BE LOCKED OUT AND TAGGED OUT IF THEY DO NOT SERVICE ANY OF THE REMAINING BUILDING. THOSE CIRCUITS WHICH ARE IDENTIFIED TO SERVICE BOTH THE AREA TO BE DEMOLISHED AND THE REMAINING BUILDING SHALL BE SPLIT SO AS TO KILL ALL ELECTRICAL POWER TO THE AREA TO BE DEMOLISHED WHILE MAINTAINING POWER TO THE REMAINDER OF THE BUILDING.
- CONTRACTOR SHALL RELOCATE UTILITIES AND EQUIPMENT AS REQUIRED TO ACCOMMODATE NEW HVAC, ELECTRICAL, PLUMBING, AND TECHNOLOGY REQUIREMENTS FOR NEW WORK.
- PROTECT EXISTING SITE ELEMENTS AND EXISTING LANDSCAPING TO REMAIN. PROTECTION SHALL INCLUDE BUT NOT BE LIMITED TO EXISTING TREES AND OTHER EXISTING VEGETATION INDICATED TO REMAIN IN PLACE AGAINST UNNECESSARY CUTTING, BREAKING, OR SKINNING OF ROOTS, SKINNING OR BRUISING OF BARK, SMOTHERING OF TREES BY STOCKPILING CONSTRUCTION MATERIAL OR EXCAVATED MATERIAL WITHIN DRIP LINES.
- CONTRACTOR SHALL REGRADE AND HYDROMULCH AREAS AFFECTED BY DEMOLITION.
- OWNER HAS RIGHT OF FIRST REFUSAL OF ALL ITEMS REMOVED AS PART OF THE SCOPE OF WORK, WHETHER IDENTIFIED AS SALVAGE OR NOT.
- NOTIFY THE BUILDING OWNER OF ANY MATERIALS, FIXTURES, ETC. TO BE REMOVED THAT ARE DEEMED SALVAGEABLE. TURN OVER ANY REQUESTED ITEMS TO THE BUILDING OWNER IN GOOD AND CLEAN CONDITION.

DEMOLITION LEGEND

- LIMITS OF WORK
- EXISTING BUILDING IN SCOPE OF WORK
- EXISTING BUILDING NOT IN SCOPE OF WORK
- EXISTING ITEM TO BE DEMOLISHED
REFER TO CIVIL DRAWINGS
- EXISTING CHAIN LINK FENCING TO REMAIN
- DEMO EXISTING CHAIN LINK FENCE & GATE

KEYNOTE - DEMO SITE PLAN

- D.34 BLACK OUT EXISTING STRIPING, REFER TO CIVIL DRAWINGS

SHEET NOTES - DEMO SITE PLAN

- 02.18 EXISTING CHAIN LINK FENCE



ARCHITECT PBK Architects, Inc.
FOLSOM
1110 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-355-6922

NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 95240
DSA APP No. 02-121896



CLIENT		
LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER		
230170		
DATE		
02/07/2025		
DRAWN BY: MG		
CHKD BY: LK		
REVISIONS		
#	DESCRIPTION	DATE
1	ADDENDUM 01	11/07/24
2	ADDENDUM 02	02/07/25

DSA APP No. 02-121896

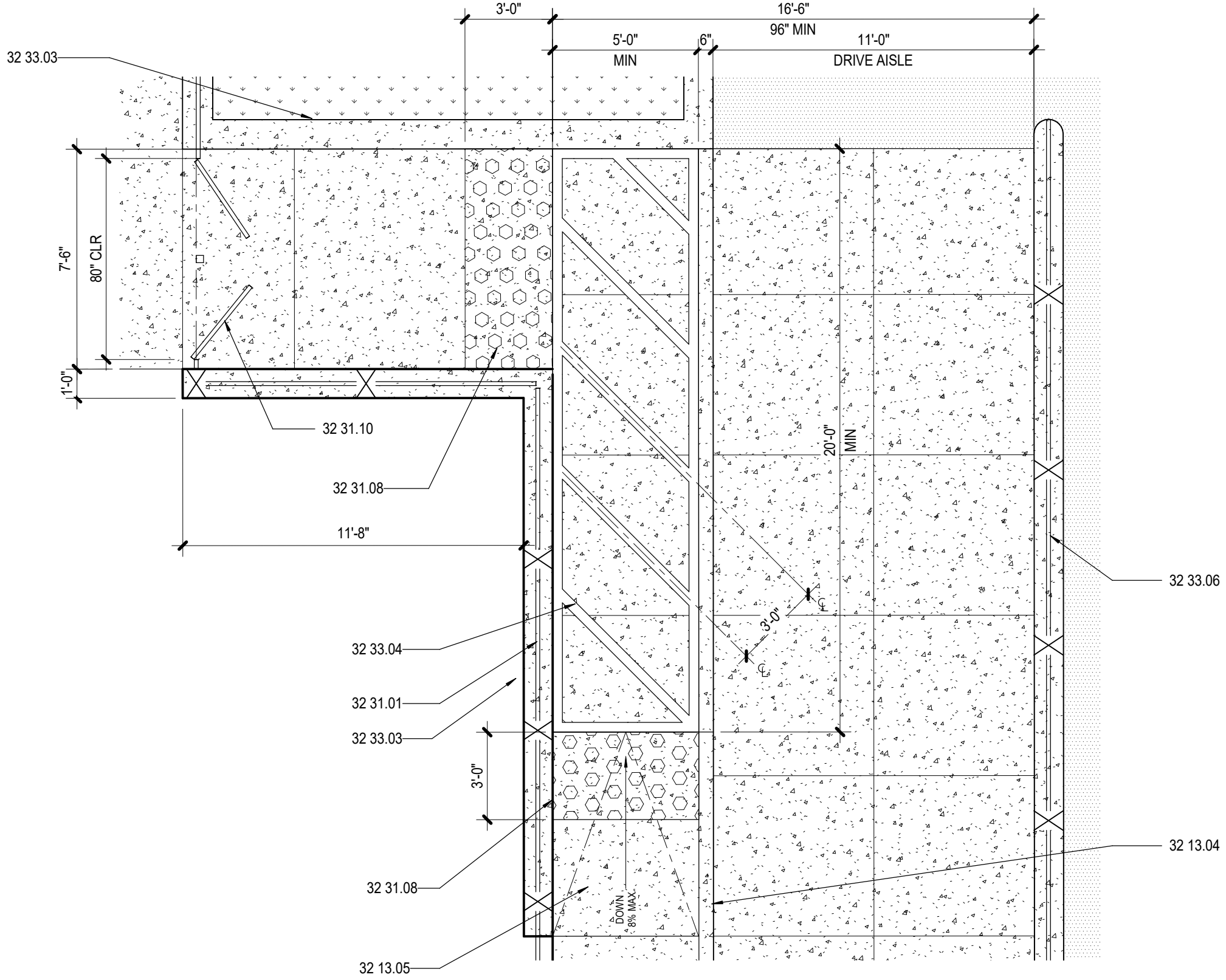
DEMOLITION SITE
PLAN

D1.01

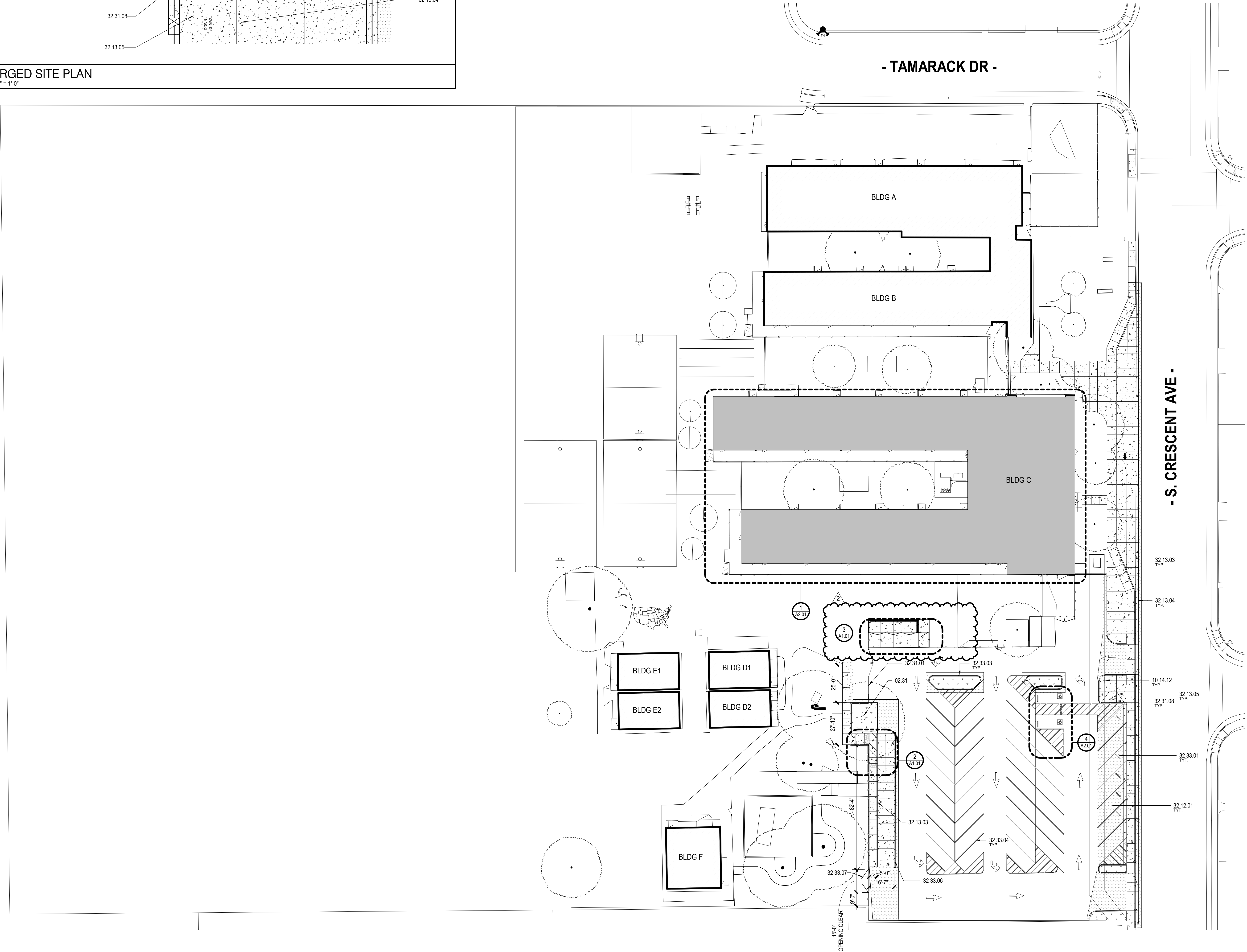
Not for permitting or construction

This document is for plan review only

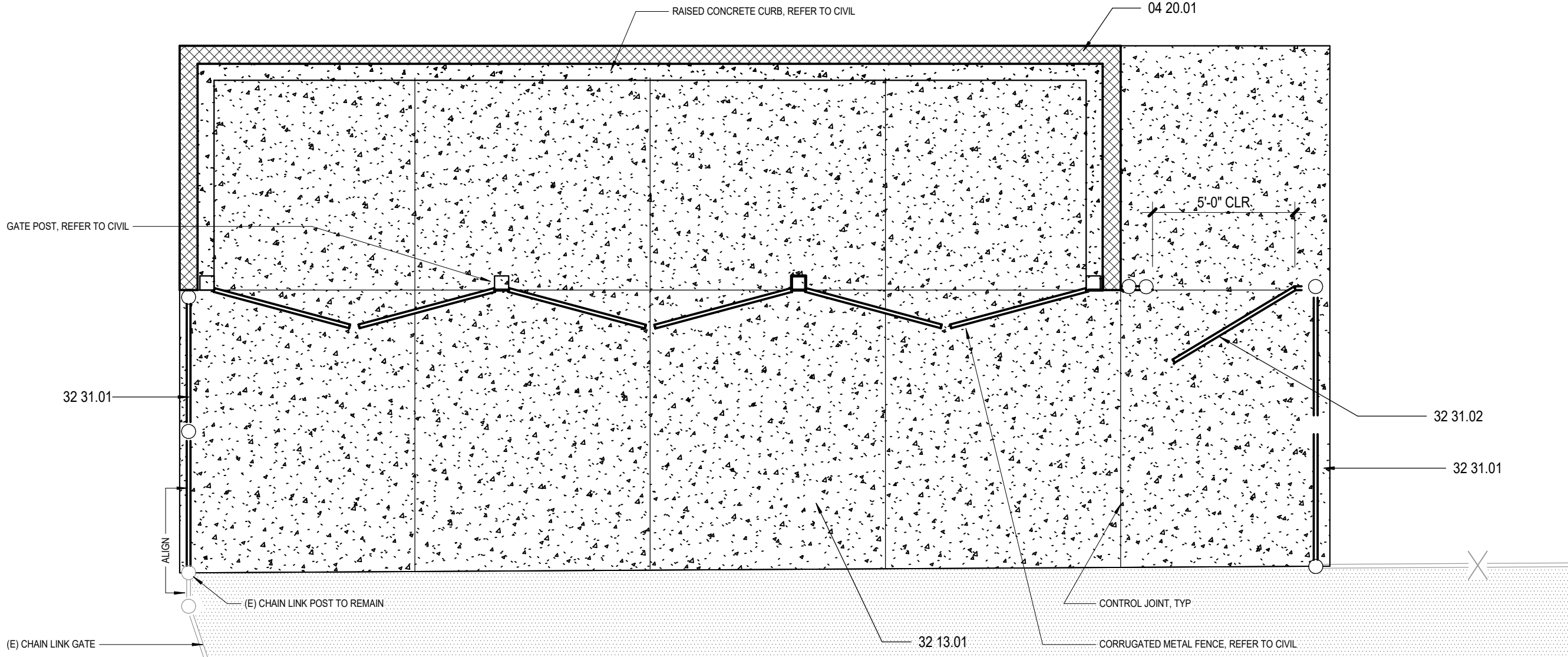
2 ENLARGED SITE PLAN
SCALE: 1/4" = 1'-0"



1 SITE PLAN
SCALE: 1" = 30'-0"



3 ENLARGED SITE PLAN
SCALE: 1/4" = 1'-0"



SITE PLAN NOTES

- REFER TO CIVIL DOCUMENTS
- COORD. ALL SPOT ELEVATIONS AND DIMENSIONS WITH CIVIL, LANDSCAPE, AND OR STRUCTURAL DOCUMENTS
- PROVIDE AND INSTALL POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS OF 1 % MINIMUM, 2 % MAXIMUM AT ALL EXTERIOR PAVED PEDESTRIAN AREAS, INCLUDING BUT NOT LIMITED TO SIDEWALKS, PATIOS, STAIRS, PAVING, U.N.O.
- PROVIDE AND INSTALL POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS OF 5 % FOR A HORIZ. DISTANCE OF 10 FEET AT ALL EXTERIOR NON-PAVED AREAS U.N.O.
- REFER TO CIVIL DOCUMENTS FOR CONCRETE SIDEWALK EXPANSION JOINTS AND CONCRETE SIDEWALK CONTROL JOINTS
- VERIFY AND CONFIRM ALL JOINT LAYOUTS AT ALL CONCRETE SIDEWALKS WITH ARCH. PRIOR TO POURING OF CONCRETE
- PROVIDE AND INSTALL CONCRETE SIDEWALK EXPANSION JOINTS AT AREAS NOT SPECIFICALLY INDICATED AT 50 FEET ON-CENTER MAX. U.N.O.
- PROVIDE AND INSTALL CONCRETE SIDEWALK CONTROL JOINTS AT AREAS NOT SPECIFICALLY INDICATED AT DISTANCES EQUIVALENT TO SIDEWALK WIDTH, BUT NOT TO EXCEED 10 FEET ON-CENTER MAX.
- VERIFY ALL SITE SIGNAGE LOCATIONS WITH ARCH. PRIOR TO INSTALLATION OF SITE SIGNAGE

SITE PLAN LEGEND

- PROPERTY LINE - - - - - ASSUMED PROPERTY LINE
- (E) BUILDING NOT IN SCOPE (E) FIRE HYDRANT
- (E) BUILDING IN SCOPE LANDSCAPED AREA
- CONCRETE PAVING ASPHALT PAVING

KEYNOTE LEGEND

- 02 21 EXISTING TREE TO REMAIN
- 04 20.01 CURB REFER TO CIVIL
- 10 14.12 TOW AWAY SIGNAGE REFER TO CIVIL
- 32 12.01 ASPHALT PAVING, REFER TO CIVIL
- 32 13.01 CONCRETE PAVING
- 32 13.03 CONCRETE SIDEWALK, REFER TO CIVIL. NO EPOXY SHEAR DOWELS REQUIRED FOR SITE FLATWORK. BATCH PLANT INSPECTION NOT REQUIRED FOR SITE FLATWORK PER CBC SECTION 1705A.3.2. TESTING OF REINFORCING BARS NOT REQUIRED FOR ITEMS GIVEN IN CBC SECTION 1910A.2 SUBJECT TO THE REQUIREMENTS AND LIMITATIONS IN THAT SECTION.
- 32 13.04 CONCRETE CURB AND GUTTER, REFER TO CIVIL
- 32 13.05 ACCESSIBLE CURB RAMP, REFER TO CIVIL
- 32 31.01 CHAIN LINK FENCING
- 32 31.02 CHAIN LINK SWING GATE
- 32 31.08 TACTILE WARNING SURFACE, REFER TO CIVIL
- 32 31.10 CHAIN LINK SWING GATE W/ PANIC HARDWARE, REFER TO CIVIL
- 32 33.01 CONCRETE WHEEL STOP, REFER TO CIVIL
- 32 33.03 CONCRETE CURB, REFER TO CIVIL
- 32 33.04 ACCESSIBLE STRIPING, REFER TO CIVIL
- 32 33.06 CONCRETE CURB W/ 4'-0" TALL CHAIN LINK FENCE, REFER TO CIVIL
- 32 33.07 CHAIN LINK GATE, REFER TO CIVIL

ABBREVIATIONS AND LEGEND

AB	ANCHOR BOLT	INT	INTERIOR
ABV	ABOVE	IOR	INSPECTOR OF RECORD
ADOL	ADDITIONAL	JST	JOIST
ASJL	ASSEMBLY	JT	JOINT
ALT	ABOVE FINISH FLOOR	KLF	KIPS PER LINEAR FOOT
AF	ALTERNATE	KSF	KIPS PER SQUARE FOOT
ARCH	ARCHITECT (URAL)	KSI	KIPS PER SQUARE INCH
BLDG	BUILDING	L	ANGLE
BLK	BLOCK	LD	DEVELOPMENT LENGTH
BLKG	BLOCKING	LPH	PARTIAL DEVELOPMENT LENGTH
BLW	BELOW	LFRS	LATERAL FORCE RESISTING SYSTEM
BM	BEAM	LLH	LONG LEG HORIZONTAL
BN	BOUNDARY NAILING	LLV	LONG LEG VERTICAL
B.O.	BOTTOM OF	LONG	LONGITUDINAL
BOTT	BOTTOM	LP	LOW POINT
BRB	BULKHEAD RESTRAINED BRACE	LS	LOAD SURFACE
BRG	BEARING	LWC	LIGHTWEIGHT CONCRETE
BS	BOTH SIDES	MAX	MAXIMUM
BTWN	BETWEEN	MB	MACHINE BOLT
C	CAMBER	ME	MECHANICAL
CG	CENTER OF GRAVITY	MFR	MANUFACTURER
CIP	CAST IN PLACE	MN	MINIMUM
CJ	CONTROL CONSTRUCTION JOINT	MTL	METAL
CJP	COMPLETE JOINT PENETRATION	NI	NEW
CL	CENTERLINE	NA	NEUTRAL AXIS
CLG	CEILING	NS	NEAR SIDE OR NON-SHRINK
CLR	CLEAR	NWC	NORMAL WEIGHT CONCRETE
CMU	CONCRETE MASONRY UNIT	NTS	NOT TO SCALE
CONC	CONCRETE	OC	ON CENTER
CONC	CONCRETE	OC	ON CENTER
CONN	CONNECTION	OD	OUTSIDE DIAMETER
CONT	CONTINUOUS	O.F.	OUTSIDE FACE
CSK	COUNTERSINK, COUNTERSUNK	OH	OPPOSITE HAND
CTRD	CENTERED	OPNG	OPENING
DL	DOUBLE	PDF	POWER-DRIVEN FASTENER
DEM	DEMOLITION	PJ	PANEL JOINT
DIA	DIAMETER	PJP	PERFORATED JOINT PENETRATION
DIAG	DIAGONAL	PLC(S)	PLACE(S)
DM	DIMENSION	PLF	POUNDS PER LINEAR FOOT
DIR	DIRECTION	PLYWD	PLYWOOD
DO	DITTO	PREFAB	PREFABRICATED
DWG	DRAWING	PSF	POUNDS PER SQUARE FOOT
E	EACH	PSI	POUNDS PER SQUARE INCH
EA	EACH	PT	PRESSURE TREATED OR POST TENSION
EF	EACH FACE	QTY	QUANTITY
EJ	EXPANSION JOINT	RAD. R	RADIUS
EMBED	EMBEDMENT	REF	REFERENCE
ELEC	ELECTRICAL	REINFC	REINFORCING
ELEV	ELEVATION OR ELEVATOR	REQD	REQUIRED
EN	EDGE NAILING	(S)	"USP" W/ EQUIVALENT THIRD PARTY EVALUATION VALUES
E.O.	EDGE OF	SB	SILL BOLT
EQ	EDGE OF DECK	SC	SAW CUT OR SUP-CRITICAL
EQ	EQUAL	SCHED	SCHEDULE
EQUIP	EQUIPMENT	SEOR	STRUCTURAL ENGINEER OF RECORD
ES	EACH SIDE OR EDGE SCREW	SHTG	SHEATHING
EW	EACH WAY	SM	SIMILAR
EXP	EXPANSION	SMS	STEEL METAL SCREW
EXT	EXTERIOR	SN	SILL NAIL
FIN	FINISH	SOG	SLAB ON GRADE
FLG	FLANGE	SQ	SQUARE
FND	FOUNDATION	SS	STAINLESS STEEL
F.O.	FACE OF	STD	STANDARD
FS	FAR SIDE OR FIELD SCREW	STGRD	STAGGERED
FRMG	FRAMING	STIFF	STIFFENER
FRP	FIBER REINFORCED POLYMER	STL	STEEL
FT	FOOT OR FEET	STRUC	STRUCTURAL
FTG	FOOTING	TAB	TOP & BOTTOM
Fy	YIELD STRESS	T&G	TONGUE AND GROOVE
G	GAGE	THK	THICK
GALV	GALVANIZED	THRD	THREADED
GB	GRADE BEAM	T.O.	TOP OF
GC	GENERAL CONTRACTOR	TOP OF	TOP OF
GLB	GLUED LAMINATED BEAM	TRANS	TRANSVERSE
HAB	HEADED ANCHOR BOLT	TYP	TYPICAL
HD	HOLDOWN	UNO	UNLESS NOTED OTHERWISE
HOG	HOT-DIPPED GALVANIZED	VERT	VERTICAL
HOR	HEADER	VIF	VERIFY IN FIELD
HGR	HANGER	WI	WITH
HK	HOOK	WO	WITHOUT
HORIZ	HORIZONTAL	WF, W	WIDE FLANGE
HP	HIGH POINT	WHS	WELDED HEADED STUD
HST	HIGH-STRENGTH	WLD	WELDED
HSS	HOLLOW STRUCTURAL SECTION	WO	WHERE OCCURS
HT	HEIGHT	WP	WORK POINT
ID	INSIDE DIAMETER	WT	WEIGHT
I.F.	INSIDE FACE	WWF	WELDED WIRE FABRIC
IN	INCH		

REFERENCE ELEVATION OR WORK POINT

LFRS

LFRS

INDICATES THAT A DETAIL OR PORTION OF FRAMING IS A PART OF THE LATERAL FORCE RESISTING SYSTEM AND IS SUBJECT TO ADDITIONAL REQUIREMENTS OUTLINED IN THE GENERAL NOTES AND SPECIFICATIONS

TYPICAL HATCH PATTERNS USED (UNLESS NOTED OTHERWISE):

CONCRETE

STEEL

SOIL/EARTH

MASONRY

GROUT/SAND

PLYWOOD/SHEATHING

EXISTING ELEMENTS ARE SHOWN AS HALFTONE, NEW ELEMENTS ARE SHOWN AS FULL TONE

UNO, EXAMPLE:

INDICATES A NEW ELEMENT

INDICATES AN EXISTING ELEMENT

SAWN LUMBER:

CONTINUOUS

BLOCKING

END OF MEMBER

REFERENCE OF SECTIONS, DETAILS & SYMBOLS

DETAIL REFERENCE SHOWN THIS:

2

S5.01

2

S5.01

DETAIL 2

BUILDING SECTION INDICATION SHOWN THIS:

2

S5.01

2

S5.01

DETAIL 2

ELEVATION INDICATION SHOWN THIS:

2

S5.01

2

S5.01

DETAIL 2

DETAIL NOTED IS SHOWN ON SHEET S5.01, DETAIL 2

CUT IS SHOWN ON SHEET S5.01, DETAIL 2

ELEVATION IS SHOWN ON SHEET S5.01, DETAIL 2

DETAIL TITLE SHOWN THIS:

2

S5.01

2

S5.01

DETAIL 2

DETAIL TITLE

SCALE

INDICATES THE TITLE, SCALE, AND DETAIL NUMBER ON SHEET

STRUCTURAL SUBMITTALS

1.

EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND- OR SEISMIC-FORCE-RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM OR A WIND- OR SEISMIC-RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT. THE CONTRACTOR'S STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

2.

THE FOLLOWING LIST SUMMARIZES REQUIRED STRUCTURAL SUBMITTALS FOR THIS PROJECT. REFER TO THE SPECIFICATIONS FOR A COMPLETE LIST AND ADDITIONAL REQUIREMENTS.

GENERAL

- QUALIFICATION DATA FOR APPROVED INSTALLERS AND FABRICATORS
- CERTIFICATES OF CONFORMANCE FOR PREFABRICATED MEMBERS
- SEISMIC JOINT AND EXPANSION JOINT COVER PRODUCT DATA

CONCRETE REINFORCEMENT

- MANUFACTURERS PRODUCT DATA, SPECIFICATIONS AND INSTALLATION PROCEDURES
- FOR PROPRIETARY MATERIALS AND REINFORCEMENT
- STEEL PRODUCER'S CERTIFICATES OF MILL ANALYSIS, TENSILE AND BEND TESTS
- SHOP DRAWINGS FOR FABRICATION, BENDING AND PLACEMENT

CAST-IN-PLACE CONCRETE

- DESIGN MIX FOR EACH CONCRETE MIX
- MATERIAL TEST REPORTS
- MATERIAL CERTIFICATES FOR CEMENT, AGGREGATES AND ADMIXTURES
- SHOP DRAWINGS FOR PROPOSED LOCATIONS OF ADDITIONAL CONSTRUCTION OR CONTROL JOINTS NOT SHOWN ON THE STRUCTURAL PLANS
- MINUTES FROM PREINSTALLATION CONFERENCE

STRUCTURAL STEEL

- MANUFACTURERS MILL CERTIFICATES
- MATERIAL TEST REPORTS
- SHOP DRAWINGS FOR FABRICATION AND ASSEMBLY OF MEMBERS
- ERECTION PLAN SEQUENCE AND PROCEDURES
- WELDING PROCEDURE SPECIFICATIONS (WPS)
- CERTIFICATES FOR ALL WELDERS VERIFYING CURRENT AWS QUALIFICATIONS
- TEST REPORTS FOR SHOP AND FIELD WELDED AND BOLTED CONNECTIONS

ROUGH CARPENTRY

- PRODUCT DATA FOR TREATMENTS AND PRESERVATIVES
- MATERIAL CERTIFICATES FOR DIMENSION LUMBER

UNIT MASONRY

- DESIGN MIX FOR GROUT
- MATERIAL TEST REPORTS

EXISTING CONDITIONS

1.

SEE "AS BUILT" DRAWINGS FOR EXISTING BUILDING ITEMS NOT SHOWN OR NOTED.

2.

FIELD VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO SHOP DRAWING PRODUCTION AND FABRICATION OF STRUCTURAL ELEMENTS.

3.

WHERE EXISTING CONDITIONS VARY FROM THOSE SHOWN ON THESE DRAWINGS, THE STRUCTURAL ENGINEER SHALL BE NOTIFIED PRIOR TO CONTINUED CONSTRUCTION RELATED TO SUBJECT CONDITIONS.

4.

SHORE ALL EXISTING CONSTRUCTION AS REQUIRED, INCLUDING WHERE WELDING TO EXISTING STEEL FRAMING, SHORING DESIGN IS BY OTHERS.

5.

ALL EXISTING CONCRETE SURFACES TO BE IN CONTACT WITH NEW CONCRETE SHALL BE CLEANED AND ROUGHENED TO 1/4" MINIMUM AMPLITUDE. USE BONDING AGENT BY DSA OR APPROVED EQUIVALENT ON EXISTING CONCRETE PRIOR TO PLACING NEW CONCRETE. PREPARE SURFACE AND APPLY IN ACCORDANCE WITH MANUFACTURERS SPECIFICATIONS.

6.

VERIFY LOCATION OF EXISTING REBAR BEFORE FABRICATION USING NON-DESTRUCTIVE TESTING. DO NOT DAMAGE EXISTING REBAR.

7.

THE GENERAL CONTRACTOR SHALL COORDINATE THE WEIGHT AND SPECIFIC LOCATION OF ALL EQUIPMENT WITH THE STRUCTURAL FRAMING. IF THE EQUIPMENT DEVIATES IN WEIGHT OR LOCATION FROM THOSE INDICATED IN THE DRAWINGS, THE STRUCTURAL ENGINEERS APPROVAL MUST BE OBTAINED PRIOR TO INSTALLATION OF THE UNITS.

8.

ALL EXISTING WOOD FRAMING MEMBERS SUPPORTING NEW MECHANICAL UNITS SHALL BE INSPECTED FOR DAMAGE AND DETERIORATION PRIOR TO INSTALLATION OF THE UNITS. NOTIFY THE STRUCTURAL ENGINEER IF DAMAGE OR DETERIORATION IS DISCOVERED.

STRUCTURAL TESTS AND SPECIAL INSPECTIONS

1.

THE OWNER SHALL EMPLOY ONE OR MORE DSA APPROVED SPECIAL INSPECTORS TO PROVIDE INSPECTIONS DURING CONSTRUCTION. THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF DSA, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

2.

SEE DSA FORM DSA 103 FOR ALL REQUIRED STRUCTURAL TESTS AND SPECIAL INSPECTIONS.

3.

ALL INSPECTIONS SHALL BE PERFORMED BY INDEPENDENT SPECIAL INSPECTORS. JOB SITE VISITS BY THE STRUCTURAL ENGINEER OR DSA DO NOT CONSTITUTE AND ARE NOT A SUBSTITUTE FOR INSPECTIONS BY A SPECIAL INSPECTOR.

4.

ALL INSPECTION REPORTS SHALL BE SUBMITTED TO DSA AND SEOR. AOR, CONTRACTOR AND SCHOOL DISTRICT. THE FINAL REPORT BY THE SPECIAL INSPECTOR(S) MUST CERTIFY THAT THE ENTIRE STRUCTURAL SYSTEM COMPLIES WITH THE APPROVED PLANS AND SPECIFICATIONS.

5.

IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT THESE INSPECTIONS ARE PERFORMED.

6.

WORK REQUIRING SPECIAL INSPECTION SHALL BE OBSERVED BY THE SPECIAL INSPECTOR WHO IS PRESENT IN THE AREA WHERE THE WORK IS PERFORMED AND AT THE COMPLETION OF WORK. CONTINUOUS INSPECTION CONSISTS OF FULL-TIME INSPECTION. PERIODIC INSPECTION CONSISTS OF PART-TIME OR INTERMITTENT INSPECTION.

STRUCTURAL OBSERVATIONS

1.

VISUAL OBSERVATIONS WILL BE PERFORMED AT THE DISCRETION OF THE OWNER, ARCHITECT, SEOR, AND AS REQUIRED BY THE BUILDING OFFICIAL IN ACCORDANCE WITH THE BUILDING CODE. VISUAL OBSERVATIONS SHALL NOT BE CONSIDERED AS A SUBSTITUTE FOR THE SPECIAL INSPECTION REQUIREMENTS.

2.

IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO NOTIFY THE SEOR AS TO WHEN EACH MAJOR PHASE OF CONSTRUCTION IS READY FOR OBSERVATION A MINIMUM OF FIVE BUSINESS DAYS IN ADVANCE.

3.

THE FOLLOWING MAJOR PHASES OF CONSTRUCTION REQUIRE A SITE VISIT AND STRUCTURAL OBSERVATION REPORT FROM THE SEOR:

- FOUNDATION REBAR AND ANCHORS - PRIOR TO FIRST POUR OF CONCRETE
- STRUCTURAL FRAMING - AFTER ERECTION AND PRIOR TO CLOSING IN
- RAISED FLOOR SLABS AND REBAR - PRIOR TO FIRST POUR OF CONCRETE
- ROOF NAILING - PRIOR TO INSTALLATION OF ROOFING AND CRICKETS
- COMPLETION OF THE STRUCTURAL SYSTEM

4.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT NAILING, REINFORCEMENT, WELDS, CONNECTIONS, ETC. ARE VISIBLE FOR OBSERVATION WHEN THE SEOR IS ON-SITE AND FOR ANY SCHEDULING DELAYS DUE TO NONCOMPLIANT ITEMS FOUND DURING THE OBSERVATION.

5.

AT THE CONCLUSION OF THE WORK INCLUDED IN THE PERMIT, THE STRUCTURAL OBSERVER SHALL SUBMIT TO THE BUILDING OFFICIAL A WRITTEN STATEMENT THAT THE SITE VISITS HAVE BEEN MADE AND IDENTIFY ANY REPORTED DEFICIENCIES THAT, TO THE BEST OF THE STRUCTURAL OBSERVER'S KNOWLEDGE, HAVE NOT BEEN RESOLVED.

PRODUCT REPORTS

1.

FOR ALL ITEMS IN THE CONSTRUCTION DOCUMENTS NOT NOTED WITH A SPECIFIC PRODUCT NAME OR MANUFACTURER, THE CONTRACTOR SHALL PROVIDE A PRODUCT SPECIFIED IN THE TABLE BELOW.

2.

THE FOLLOWING PRODUCTS SHALL BE INSTALLED PER THE REQUIREMENTS OF THE REFERENCED PRODUCT REPORTS, UNO.

3.

A PRODUCT MAY BE SUBSTITUTED FOR AN EQUIVALENT PRODUCT PER THE SCHEDULE BELOW IF APPROVED BY THE SEOR AND THE BUILDING OFFICIAL.

4.

PRODUCTS SPECIFIED BY TYPE ONLY MAY USE ANY PRODUCT FROM THE SCHEDULE BELOW.

TYPE	PRODUCT	ICD#	IAPMO#	LARR#
EXPANSION ANCHOR TO CONCRETE	HILTI KWIK BOLT T2Z	ESR-1917	-	25701
	HILTI KWIK BOLT T2Z	ESR-4266	-	-
	HILTI KWIK BOLT 1	-	0678	-
	MKT S2	ESR-3173	-	-
	SIMPSON STRONG-BOLT 2	ESR-3037	-	25891
	DEWALT POWER STUD - SD1	ESR-2016	-	25787
	DEWALT POWER STUD+ SD2/SD4/SD6	ESR-2602	-	25831
	HILTI HIT-HY 200	ESR-3187	-	25964
	HILTI HIT-HY 200 V3	ESR-4868	-	-
	HILTI HIT-RE 500 V3	ESR-3814	-	26028
ADHESIVE ANCHOR TO CONCRETE	HILTI HIT-RE 100	ESR-3820	-	26027
	HILTI HIT-HY 100	ESR-3572	-	-
	SIMPSON SET 3G	ESR-4057	-	-
	SIMPSON SET-XP	ESR-2508	-	-
	SIMPSON AT-XP	-	0263	-
	DEWALT PE1000+	ESR-2583	-	25849
	DEWALT AC208+	ESR-4027	-	-
	DEWALT PURE 110+	ESR-3298	-	26035
	HILTI KWIK HUS-E2	ESR-3027	-	25997
	SIMPSON TITEN HD	ESR-2713	-	-
SCREW ANCHOR TO CONCRETE	SIMPSON SS TITEN SCREW	-	0493	26125
	DEWALT SCREWBOLT+	ESR-3889	-	-
	SIMPSON SS TITEN 2	-	0449	-
	ITW BUILDEX TAPCON	ESR-2202	-	-
	DEWALT ULTRACON	ESR-3068	-	-
	SIMPSON TITEN TURBO (TNT)	-	0712	-
	HILTI LOW-VELOCITY	ESR-2269	-	25675
	ITW / RAMSET POWER-DRIVEN	ESR-1799	-	22668
	SIMPSON POWER-ACTUATED POPA	ESR-2138	-	25469
	DEWALT TRACK-IT CS	ESR-3275	-	25920
SHOTPIN (POWER DRIVEN FASTENER)	DEWALT POWER-DRIVEN	ESR-2024	-	25304
	HRC 365 HEADED BARS	ESR-2935	0177	25815
	LENTON TERMINATOR D14	-	0188	25893
	BAR SPLICE BUTTON HEAD	-	0331	25996
	DEXTRA BARTEC	ESR-2168	-	25884
	HRC 500 COUPLERS	ESR-2764	-	25347
	LENTON THREADED COUPLERS	-	0129	24507
	BAR SPLICE ZIP-SCREWLOK TYPE 2	ESR-3517	-	25366
	BAR SPLICE 895-GRIP XL	ESR-2299	-	25011
	DEXTRA BARTEC	ESR-1705	-	25615
CONCRETE REINFORCING MECHANICAL SPLICES	DAYTON SUPERIOR BAR-LOCK	ESR-2496	-	25342
	SIMPSON STRONG-TIE CLIPS	ESR-2523	-	-
	USP STRUCTURAL CONNECTORS	ESR-2685	-	-
	SIMPSON STRONG DRIVE SCREWS (SDS)	ESR-2236	-	25711
	SIMPSON SD TIMBER SCREWS (SDWS/SDWH)	-	0192	25906
	FASTENMASTER TIMBERLOK / HEADLOK / LEDGERLOK	ESR-1078	-	-
WOOD FRAMING CLIPS				
WOOD SCREWS				

FOOTNOTES:

* ANY CONCRETE REINFORCING HEADED END COMPLYING WITH ASTM A970 MAY BE USED.

** ANY SHEET METAL SCREW COMPLYING WITH ASTM C1513, SELF-DRILLING AND TAPPING TYPE, WITH HEAD TYPE APPROPRIATE TO THE APPLICATION, MAY BE USED.

*** AT TREATED LUMBER, PROVIDE GALVANIZED FASTENERS IN ACCORDANCE WITH PRODUCT REPORTS.

GENERAL

1.

REFER TO THE TYPICAL DETAIL SHEETS FOR TYPICAL DETAILS OF CONSTRUCTION. TYPICAL DETAILS APPLY TO ALL CONSTRUCTION UNLESS SPECIFICALLY NOTED OR SHOWN OTHERWISE. WHERE CONDITIONS REQUIRE MODIFICATIONS OF A TYPICAL DETAIL, THE CONTRACTOR SHALL SUBMIT MODIFIED DETAIL FOR APPROVAL BY THE SEOR PRIOR TO FABRICATION AND INSTALLATION. DETAILS OF CONSTRUCTION NOT SHOWN SHALL BE OF SAME NATURE AS THOSE SHOWN FOR SIMILAR CONSTRUCTION.

2.

CONTRACTOR SHALL CONSIDER THE PROJECT SPECIFICATIONS AS PART OF THE CONTRACT DOCUMENTS. WHERE INFORMATION IS CONFLICTING, SPECIFIC DETAILS SHALL GOVERN OVER TYPICAL DETAILS WHICH SHALL GOVERN OVER GENERAL NOTES WHICH SHALL GOVERN OVER SPECIFICATIONS.

3.

ALL DIMENSIONS ON STRUCTURAL DRAWINGS SHALL BE CHECKED AGAINST ARCHITECTURAL DIMENSIONS. DO NOT SCALE DRAWINGS. IF DIMENSIONS ARE OMITTED OR NOT CLEAR, CONTACT THE ARCHITECT OF RECORD OR SEOR. ALL DIMENSIONS RELATED TO EXISTING CONDITIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR. DIMENSIONS ARE TO THE FACE OF STUDES, AND TO THE CENTERLINE OF COLUMNS UNO.

4.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMMEDIATELY NOTIFY THE SEOR OF ANY CONFLICTS BETWEEN THE STRUCTURAL DRAWINGS AND OTHER DRAWINGS, OR EXISTING CONDITIONS NOT SHOWN OR DIFFERENT FROM THOSE SHOWN ON DRAWINGS, PRIOR TO COMMENCEMENT OF WORK. THE CONTRACTOR SHALL NOT ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE SCOPE THAT IS IN CONFLICT UNTIL THE CONFLICT IS RESOLVED WITH THE AFFECTED PARTIES.

5.

THE STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE, UNLESS OTHERWISE SHOWN. THEY DO NOT INDICATE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE CONSTRUCTION AND ALL ADJACENT PROPERTIES DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE BUT ARE NOT LIMITED TO BRACING, SHORING OF LOADS DUE TO CONSTRUCTION EQUIPMENT, ETC. OBSERVATION VISITS TO THE SITE BY THE ARCHITECT OR SEOR SHALL NOT INCLUDE OBSERVATION OF THE ABOVE ITEMS.

6.

SUBSTITUTION REQUESTS FOR MATERIALS AND PRODUCTS SPECIFIED ON THE STRUCTURAL DRAWINGS MAY BE CONSIDERED WITH MATERIALS AND PRODUCTS HAVING EQUIVALENT OR GREATER CAPACITY AND PERFORMANCE. CURRENT EVALUATION REPORTS AND PRODUCT INFORMATION SHALL BE PROVIDED TO THE SEOR DEMONSTRATING THE REQUIRED CAPACITY AND PERFORMANCE OF THE MATERIAL. TO BE SUBSTITUTED, WRITTEN APPROVAL FROM THE SEOR SHALL BE OBTAINED PRIOR TO THE SUBSTITUTION OF ANY MATERIAL OR PRODUCT SPECIFIED IN THE CONSTRUCTION DOCUMENTS.

7.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO COMPLY WITH THE "CONSTRUCTION SAFETY ORDERS" ISSUED BY THE STATE OF CALIFORNIA, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT. THE ARCHITECT, SEOR, AND THE OWNER DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONTRACTOR'S FAILURE TO COMPLY WITH THESE REQUIREMENTS.

8.

ALL WORK IS NEW (N) UNLESS INDICATED AS EXISTING (E).

9.

CONSTRUCTION MATERIALS SHALL BE DISTRIBUTED WHEN PLACED ON THE STRUCTURE, SUCH THAT LOADS DO NOT EXCEED DESIGN LIVE LOADS OR RESULT IN AN UNBALANCED CONDITION.

10.

SHOP DRAWINGS AND SUBMITTALS SHALL BE SUBMITTED ELECTRONICALLY TO THE SEOR FOR REVIEW PRIOR TO FABRICATION (ALLOW FOR A REVIEW DURATION OF 10 BUSINESS DAYS). REFER TO THE PROJECT SPECIFICATIONS FOR MORE INFORMATION. REVIEW OF SHOP DRAWINGS AND SUBMITTALS BY THE SEOR IS FOR GENERAL CONFORMANCE TO THE CONTRACT DOCUMENTS. REPRODUCTION OF STRUCTURAL PLANS AND DETAILS FOR SHOP DRAWINGS IS PROHIBITED. SUBCONTRACTOR/FABRICATOR IS TO PROVIDE INDEPENDENTLY CREATED DRAWINGS BASED ON THE STRUCTURAL PLANS AND DETAILS. SHOP DRAWINGS THAT ARE REPRODUCTIONS OF STRUCTURAL DRAWINGS WILL NOT BE REVIEWED. THE CONTRACTOR WILL REMAIN RESPONSIBLE FOR ALL ERRORS OF DETAILING AND FABRICATION, AND FOR CORRECT FITTING OF ALL STRUCTURAL MEMBERS, INCLUDING COORDINATION WITH OTHER TRADES. SHOP DRAWINGS AND SUBMITTALS DO NOT CONSTITUTE CHANGE ORDERS. ANY PROPOSED CHANGES TO THE STRUCTURAL DOCUMENTS MUST BE SUBMITTED IN WRITING AS A REQUEST FOR SUBSTITUTION TO THE ARCHITECT AND SEOR FOR APPROVAL.

11.

CORE DRILLS SHALL NOT CUT ANY REINFORCING. THE CONTRACTOR IS TO COORDINATE WORK OF ALL TRADES TO ENSURE COMPLIANCE. ALL CORE DRILLS ARE TO BE PRESENTED TO THE INSPECTOR OF RECORD (IOR) FOR VERIFICATION. THE IOR IS TO DOCUMENT CORES EXAMINED INDICATING AN ABSENCE OF REINFORCING.

12.

STRUCTURAL JOINT DIMENSIONS SHOWN ON PLANS (EXPANSION, SEISMIC, SEPARATION, ETC.) (WHERE OCCURS) INDICATE THE MINIMUM CLEAR DISTANCE REQUIRED. SEE PLANS, DETAILS, AND ARCHITECTURAL DRAWINGS FOR ADDITIONAL REQUIREMENTS.

STRUCTURAL DESIGN CRITERIA

1.

CODES:

ALL NEW WORK SHALL BE IN CONFORMANCE WITH THE CALIFORNIA BUILDING CODE (CBC) 2022 EDITION (TITLE 24, PART 2), INCLUDING ALL AMENDMENTS. ALL STANDARDS USED SHALL BE THE LATEST VERSION APPROVED BY THE CODE ENFORCEMENT AGENCY ON THE DATE OF THE PERMIT ISSUANCE UNLESS SPECIFICALLY NOTED OTHERWISE. THE PURPOSE OF THIS CODE IS TO, IN PART, ESTABLISH THE MINIMUM REQUIREMENTS TO SAFEGUARD THE PUBLIC HEALTH, SAFETY AND GENERAL WELFARE THROUGH STRUCTURAL STRENGTH AND STABILITY. STRUCTURES DESIGNED IN ACCORDANCE WITH THE CODE ARE LIKELY TO HAVE A LOW PROBABILITY OF COLLAPSE BUT MAY SUFFER SERIOUS STRUCTURAL AND NON-STRUCTURAL DAMAGE IF SUBJECTED TO THE DESIGN EARTHQUAKE.

2.

GRAVITY

LIVE LOADS (REDUCIBLE, UNO)

20 PSF

ROOF, UNIFORM

20 PSF

3.

RISK CATEGORY

III

4.

SEISMIC

IMPORTANCE FACTOR I_s

1.25

POST-INSTALLED ANCHOR TESTING

031000.000

031000.000

1.

ALL POST-INSTALLED ANCHORS ARE TO BE TENSION TESTED WITH THE EXCEPTION THAT TORQUE TESTING IS ALLOWED IF THE ANCHORS ARE SPECIFICALLY DESIGNED AS TORQUE CONTROLLED.

2.

TEST QUANTITY OF POST-INSTALLED ANCHORS AS NOTED BELOW:

APPLICATION	QUANTITY
SILL PLATES	10%
NON-STRUCTURAL (EQUIPMENT ANCHORAGE, ETC.)	50%
STRUCTURAL	100%

3.

APPLY PROOF TEST LOADS TO ANCHORS WITHOUT REMOVING THE NUT IF POSSIBLE. IF NOT, REMOVE NUT AND INSTALL A THREADED COUPLER TO THE SAME TIGHTNESS OF THE ORIGINAL NUT USING A TORQUE WRENCH AND APPLY LOAD.
4.

ALL TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE INSPECTOR.
5.

REACTION LOADS FROM TEST FIXTURES MAY BE APPLIED CLOSE TO THE ANCHOR BEING TESTED, PROVIDED THE ANCHOR IS NOT RESTRAINED FROM WITHDRAWING OR RESTRICTED FROM A CONCRETE SHEAR CONE TYPE FAILURE MECHANISM.
6.

TEST EQUIPMENT IS TO BE CALIBRATED BY AN APPROVED TESTING LABORATORY IN ACCORDANCE WITH STANDARD RECOGNIZED PROCEDURES.
7.

THE FOLLOWING CRITERIA APPLY FOR THE ACCEPTANCE OF INSTALLED ANCHORS:

a.

HYDRAULIC RAM METHOD: ANCHORS TESTED WITH A HYDRAULIC JACK OR SPRING LOADED DEVICES SHALL MAINTAIN THE TEST LOAD FOR A MINIMUM OF 15 SECONDS AND SHALL EXHIBIT NO DISCRETE MOVEMENT DURING THE TENSION TEST, E.G. AS EVIDENCED BY LOOSENING OF THE WASHER UNDER THE NUT.

b.

TORQUE WRENCH METHOD: ANCHORS TESTED WITH A CALIBRATED TORQUE WRENCH MUST ATTAIN THE MANUFACTURER RECOMMENDED TORQUE WITHIN 1/2 TURN OF THE NUT.

EXCEPTIONS:

i.

WEDGE OR SLEEVE TYPE: ONE-QUARTER TURN OF THE NUT FROM 3/8" SLEEVE ANCHOR ONLY.

ii.

THREADED TYPE: ONE-QUARTER TURN OF THE SCREW AFTER INTIAL SEATING OF THE SCREW HEAD.

8.

IF ANY ANCHOR FAILS TESTING, TEST ALL ANCHORS OF THE SAME TYPE NOT PREVIOUSLY TESTED UNTIL TWENTY CONSECUTIVE ANCHORS PASS, THEN RESUME THE INTIAL TEST FREQUENCY. IF THE ANCHORS ARE USED FOR THE SUPPORT AND BRACING OF NON-STRUCTURAL COMPONENTS (PIPE, DUCT OR CONDUIT), THE TWENTY SHALL BE ONLY THOSE ANCHORS INSTALLED BY THE SAME TRADE.

9.

RE-USE OF SCREW ANCHORS OR HOLES IS NOT PERMITTED.

10.

AN ACI-CRSI CERTIFIED ADHESIVE ANCHOR INSTALLER IS REQUIRED FOR THE INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL AND OVERHEAD CONDITIONS.

11.

TEST LOADS:

ANCHOR		TORQUE (FT-LBS)
TYPE	SIZE (IN)	
(S) STRONG-BOLT 2	3/8	30
(S) STRONG-BOLT 2	1/2	60

STRUCTURAL CONCRETE

031000.000

031000.000

1.

CONCRETE SHALL BE MIXED, PLACED AND CURED IN ACCORDANCE WITH ACI 318 AND ACI 301 AND PROJECT SPECIFICATIONS.

2.

CONCRETE SHALL NOT BE DROPPED THROUGH REINFORCING STEEL (AS IN WALLS) SO AS TO CAUSE SEGREGATION OF AGGREGATES. IN SUCH CASES, HOPPERS AND VERTICAL CHUTES OR TRUNKS SHALL BE USED. CHUTES OR TRUNKS SHALL BE OF VARIABLE LENGTHS SO THAT FREE UNCONFINED FALL OF CONCRETE DOES NOT EXCEED SIX FEET. A SUFFICIENT NUMBER OF CHUTES OR TRUNKS SHALL BE USED TO ENSURE THE CONCRETE IS KEPT LEVEL AT ALL TIMES.

3.

CONSTRUCTION JOINTS SHALL BE CLEANED AND ROUGHENED BY REMOVING THE ENTIRE SURFACE TO EXPOSE CLEAN AGGREGATE SOLIDLY EMBEDDED IN THE MORTAR MATRIX. LOCATIONS OF CONSTRUCTION JOINTS NOT SHOWN ON THESE PLANS SHALL BE SUBMITTED FOR APPROVAL TO THE SEOR PRIOR TO PLACING ANY CONCRETE.

4.

STRUCTURAL CONCRETE SHALL MEET THE FOLLOWING DESIGN CRITERIA:

LOCATION	MIN 28-DAY COMP STRENGTH	CONC TYPE	MAX AGGREGATE SIZE	MAX W/C RATIO
INTERIOR SLAB ON GRADE NOT EXPOSED TO WEATHER OR RECEIVING ADHERED FLOORING FINISH	4000 PSI	NWC	1"	0.50
ALL OTHER STRUCTURAL CONCRETE NOT NOTED ABOVE	3000 PSI	NWC	1"	0.50

a.

MAXIMUM AIR DRY UNIT WEIGHT OF LIGHTWEIGHT CONCRETE SHALL NOT EXCEED 115 PCF, UNLESS APPROVED BY SEOR.

b.

WHEN THE USE OF PLASTICIZER (ASTM C1017, TYPE I OR II) OR WATER REDUCER (ASTM C494, TYPE F OR G) IS USED, MAXIMUM SLUMP SHALL BE 4" PRIOR TO ADMIXTURE AND 8" INCLUDING ADMIXTURE AT THE POINT OF DELIVERY. IN THE ABSENCE OF PLASTICIZER AND WATER REDUCER, SLUMP AT THE POINT OF DELIVERY SHALL NOT EXCEED 4".

c.

W/C RATIO INDICATES WATER TO CEMENTITIOUS MATERIALS RATIO

d.

FOR INTERIOR SLABS ON GRADE AND ALL OTHER SLABS RECEIVING ADHERED FLOORING FINISHES, THE MAXIMUM W/C RATIO SHALL NOT EXCEED 0.46. CURING COMPOUNDS USED ON CONCRETE THAT IS TO RECEIVE FINISHES SHALL BE COMPATIBLE WITH THE ADHESIVES OR GROUTS IN ACCORDANCE WITH MANUFACTURERS DATA AND BE APPLIED BEFORE USE.

e.

SLABS ON GRADE, TOPPING SLABS, AND ELEVATED CONCRETE FLOORS SHALL HAVE A MAXIMUM SHRINKAGE RATE OF 0.04% AT 28 DAYS PER ASTM C157. CURING TEST SPECIMENS TO BE CONSISTENT WITH FIELD CONDITIONS, OR USING EMBEDDED VIBRATING WIRE STRAIN GAUGES. RESULTS OF TESTING SHALL BE SUBMITTED TO ENGINEER.

f.

SEE ACI 318 FOR ADDITIONAL REQUIREMENTS REGARDING MAXIMUM AGGREGATE SIZE. AGGREGATE GRADATION OF 3/8" MAXIMUM (PEA GRAVEL) SHALL NOT BE USED WHERE FINISHED CONCRETE SURFACE IS EXPOSED TO VIEW.

5.

CONCRETE MIX DESIGN AND TESTING SHALL MEET THE REQUIREMENTS OF THE BUILDING CODE AND SPECIFICATIONS. ALL CONCRETE MIXES SHALL BE DESIGNED PER 318 BY A RECOGNIZED TESTING LAB STAMPED AND SIGNED BY A LICENSED ENGINEER AND SUBMITTED TO THE SEOR FOR REVIEW PRIOR TO CONCRETE PLACEMENT.

6.

AGGREGATES IN NORMAL-WEIGHT CONCRETE SHALL CONFORM TO ASTM C33 (HARDROCK). AGGREGATES IN LIGHTWEIGHT CONCRETE SHALL CONFORM TO ASTM C330.

7.

COMPRESSIVE STRENGTH TEST REPORTS SHALL BE SUBMITTED TO THE BUILDING DEPARTMENT AND THE SEOR.

8.

PORLAND CEMENT SHALL BE TYPE I AND SHALL CONFORM TO ASTM C150. LOW ALKALI. MILL TESTS WITH CERTIFICATES OF COMPLIANCE SHALL BE SUBMITTED.

9.

FLY ASH OR OTHER POZZOLANS CONFORMING TO ASTM C618 CLASS F MAY BE USED AS A PARTIAL SUBSTITUTION FOR PORTLAND CEMENT UP TO A MAXIMUM OF 25% TOTAL CEMENTITIOUS MATERIALS BY WEIGHT IF THE MIX DESIGN IS PROPORTIONED BY FIELD EXPERIENCE OR TRIAL MIXTURES.

10.

CONCRETE MIXING OPERATIONS, ETC. SHALL CONFORM TO ASTM C94.

11.

LEAN CONCRETE, WHERE SPECIFICALLY INDICATED, SHALL CONTAIN 2 SACKS OF CEMENT PER CUBIC YARD OF CONCRETE.

12.

DRYPACK OR NONSHRINK GROUT SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI, AND CONSIST OF MASTERFLOW T13, EUCON NS GROUT, SAKA GROUT 212, OR APPROVED EQUAL. FOR THICK GROUT LAYERS FOLLOW MANUFACTURERS GUIDELINES TO ATTAIN THE REQUIRED STRENGTH, WHICH MAY INCLUDE THE ADDITION OF PEA GRAVEL FOR BASE PLATES LARGER THAN 6 SQUARE FEET, USE HI-FLOW GROUT OR MASTERFLOW 528.

13.

DO NOT USE ANY CONCRETE OR GROUT CONTAINING CHLORIDES.

14.

WATER USED IN MIX SHALL BE CLEAN AND POTABLE.

15.

PRIOR TO ERECTING ANY ELEMENTS THAT LOAD THE FOUNDATION, CONCRETE MUST REACH AN UNCONFINED COMPRESSIVE STRENGTH OF 2000 PSI MINIMUM AS DETERMINED BY TESTING OR PREVIOUSLY DOCUMENTED DATA FOR THE MIX DESIGN USED UNDER SIMILAR CONDITIONS, AND MUST CURE FOR A MINIMUM OF 3 DAYS.

16.

MAINTAIN CONCRETE ABOVE 50 DEGREES FAHRENHEIT AND IN A MOIST CONDITION FOR A MINIMUM OF 7 DAYS AFTER PLACEMENT UNLESS OTHERWISE ACCEPTED BY SEOR.

17.

SEE ARCHITECTURAL DRAWINGS FOR WALL OPENINGS, WALL OFFSETS, CHAMFERS, KERFS, DRIPS AND FOR EXTENT OF DEPRESSIONS, RAMPS, ETC.

18.

PROVIDE SLEEVES FOR ALL PIPES THROUGH CONCRETE WALLS AND FOOTINGS SHOWN ON THESE DRAWINGS. CORING IS NOT PERMITTED WITHOUT PRIOR APPROVAL BY THE SEOR.

19.

EXPOSED CORNERS OF SLABS, BEAMS, WALLS, COLUMNS, ETC. SHALL BE FORMED WITH 3/4" CHAMFER OR 1/2" RADIUS TOOLED EDGE, UNO.

NAILING SCHEDULE

031000.001

031000.001

COMMON NAILS SHALL BE USED FOR NAILING AT TYPICAL CONNECTIONS NOTED BELOW (UNO).

CONNECTION, NAIL TYPE	NAILING
JOISTS TO SILL OR GIRDER, TOENAIL	(3) 8d
JOISTS TO RIM JOIST, FACE NAIL	(3) 16d
BRIDGING TO JOIST, TOENAIL EACH END	(2) 8d
BLOCKING BETWEEN JOISTS/RAFTERS TO TOP PLATE, TOENAIL	(3) 8d
1" x 6" OR NARROWER SUBFLOOR TO EACH JOIST, FACE NAIL	(2) 8d
WIDER THAN 1" x 6" SUBFLOOR TO EACH JOIST, BLIND AND FACE NAIL	(3) 8d
1" SUBFLOOR TO JOIST OR GIRDER, BLIND AND FACE NAIL	(2) 16d
SILL PLATE TO JOIST OR BLOCKING, FACE NAIL	16d @ 16"OC
TOP PLATE TO STUD, END NAIL	(2) 16d, TYP. UNO (4) 16d @ 2x10 STUDS
STUD TO SILL PLATE	(4) 8d TOENAIL OR (2) 16d END NAIL, TYP. UNO (7) 8d TOENAIL OR (4) 16d END NAIL @ 2x10 STUDS...
DOUBLE STUDS, FACE NAIL	16d @ 24"OC
DOUBLE TOP PLATES, FACE NAIL	16d @ 16"OC
TOP PLATES, LAPS, FACE NAIL	(8) 16d, UNO
TOP PLATES AT INTERSECTIONS, FACE NAIL	(2) 16d
CONTINUOUS HEADER, TWO PIECES	16d @ 16"OC ALONG EA EDGE
CEILING JOISTS TO PLATE, TOENAIL	(3) 8d
CONTINUOUS HEADER TO STUD, TOENAIL	(4) 8d
CEILING JOISTS, LAPS OVER PARTITIONS, FACE NAIL	(3) 16d
CEILING JOISTS TO PARALLEL RAFTERS, FACE NAIL	(3) 16d
RAFTER TO PLATE, TOENAIL	(3) 8d
RIM JOIST TO TOP PLATE, TOENAIL	8d @ 6"OC
JACK RAFTER TO HIP, FACE NAIL	(2) 16d
1" BRACE TO EACH STUD & PLATE, FACE NAIL	(2) 8d
ROOF RAFTER TO 2x1 RIDGE BEAM, FACE NAIL	(2) 16d
1"x6" SHEATHING OR LESS TO EACH BEARING, FACE NAIL	(3) 8d
WIDER THAN 1"x6" SHEATHING TO EACH BEARING, FACE NAIL	(3) 8d
2" PLANKS	16d @ EA BEARING
BUILT-UP CORNER STUDS	16d @ 24"OC
BUILT-UP GIRDERS AND BEAMS	20d @ 32"OC @ TOP & BOTT & STORD (2) 20d @ ENDS & @ EA SPLICE (2) 16 @ EA BEARING

031000.001

031000.001

NAIL SCHEDULE (COMMON NAILS)		
SIZE	DIAMETER (IN)	LENGTH (IN)
8d	0.131	2 1/2
10d	0.148	3
12d	0.148	3 1/4
16d	0.162	3 1/2
20d	0.192	4

POST-INSTALLED ANCHORS AND DOWELS

031000.001

031000.001

UNLESS OTHERWISE NOTED ON THE DRAWINGS, THE FOLLOWING APPLIES TO ALL POST-INSTALLED ANCHORS INTO HARDENED CONCRETE OR MASONRY, WHICH INCLUDES TYPES SUCH AS EXPANSION, WEDGE, SLEEVE, ADHESIVE/EPPOXY, SHOT-PIV, SCREW AND UNDERCUT.

1.

INSTALL PER THE MANUFACTURERS PRINTED INSTALLATION INSTRUCTIONS (MPI) EXCEPT AS OTHERWISE STATED IN THE SPECIFIED PRODUCT REPORTS. USE INSTALLATION PROCEDURES FOR CRACKED CONCRETE CONDITIONS. DO NOT USE CORE DRILL BITS FOR ANCHOR HOLES WITHOUT PRIOR SEOR APPROVAL. COPIES OF INSTALLATION INSTRUCTIONS SHALL BE MAINTAINED ON SITE.

2.

CLEAN OUT ANCHOR HOLES AND SET ANCHORS PER THE PRODUCT'S THIRD PARTY EVALUATION REPORT FOR THE APPROPRIATE CONDITIONS. INSTALL UNDER SUPERVISION OF THE SPECIAL INSPECTOR WHERE REQUIRED.

3.

PROVIDE CARBON STEEL ANCHORS AT DRY INTERIOR LOCATIONS AND STAINLESS STEEL TYPE 304 OR 316 AT EXTERIOR LOCATIONS AND DAMP INTERIOR LOCATIONS.

4.

REINFORCING BARS TO RECEIVE CONCRETE COVER MAY BE UNLOCATED.

5.

ANCHORS SHALL BE CLEAN AND FREE OF DEBONDING SUBSTANCES.

6.

EMBEDMENT REFERS TO THE FINAL INSTALLED EFFECTIVE DEPTH "H"AS DEFINED IN THE PRODUCT REPORT. REQUIRED ANCHOR HOLE DEPTH FOR INSTALLATION MAY BE DEEPER.

7.

EXISTING REINFORCING SHALL BE AVOIDED WHERE DRILLING FOR POST-INSTALLED ANCHORS OR CONCRETE DOWELS.

8.

MAINTAIN A MINIMUM OF 2 INCHES FROM EXISTING CONDUIT AND POST-TENSIONING (WHERE OCCURS) PRIOR TO DRILLING, CORING, OR SHOOTING PINS INTO EXISTING CONCRETE OR MASONRY. USE NONDESTRUCTIVE TESTING TO LOCATE SUCH ITEMS.

9.

WHERE THE FULL ANCHOR EMBEDMENT DEPTH, SPACING OR EDGE DISTANCE CANNOT BE ACHIEVED, NOTIFY THE SEOR AND IOR.

10.

FILL ABANDONED HOLES WITH NON-SHRINK GROUT OR EPOXY. CLEAR DISTANCE BETWEEN NEW HOLES AND ABANDONED HOLES SHALL BE 2" OR TWO ANCHOR DIAMETERS, WHICHEVER IS GREATER, UNLESS OTHERWISE SPECIFIED BY SEOR. ANCHORS PENETRATING THROUGH WATERPROOFING OR VAPOR MEMBRANES SHALL BE SEALED OR FLASHED.

11.

INSTALL IN DRY CONCRETE OR MASONRY HAVING A MINIMUM AGE OF 21 DAYS.

12.

RE-USE OF SCREW ANCHORS AND SCREW ANCHOR HOLES IS NOT PERMITTED.

13.

AN ACH-CRSI CERTIFIED ADHESIVE ANCHOR INSTALLER IS REQUIRED FOR THE INSTALLATION OF ADHESIVE ANCHORS IN HORIZONTAL AND OVERHEAD CONDITIONS.

STRUCTURAL STEEL

031000.000

031000.000

1.

DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE SPECIFICATIONS AND STANDARDS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), AS CONTAINED IN THE "AISC MANUAL OF STEEL CONSTRUCTION". ALL WORK SHALL BE IN CONFORMANCE WITH THE TESTING, INSPECTION, QUALIFICATION, AND QUALITY ASSURANCE PROVISIONS AS REQUIRED BY THE BUILDING CODE AND ANY APPLICABLE STANDARDS. THESE STANDARDS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING: AISC 880 "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS"; AISC 303 "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; AISC 341 "SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS"; AWS D1.1 "STRUCTURAL WELDING CODE - STEEL"; AWS D1.8 "STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT"; AND AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". CONFORMANCE TO SUPPLEMENTS TO THESE STANDARDS, IF PUBLISHED ON OR BEFORE THE DATE OF PERMIT ISSUANCE, IS ALSO REQUIRED. ALTHOUGH THESE CONTRACT DOCUMENTS INCLUDE GENERAL REFERENCES TO CODES AND STANDARDS, AND REFERENCES TO OR INCLUSIONS OF SPECIFIED PROVISIONS, OMISSIONS OF ANY APPLICABLE CODE, STANDARD, OR PROVISION DOES NOT RELIEVE THE GENERAL CONTRACTOR FROM COMPLIANCE TO THE APPLICABLE REQUIREMENTS. COORDINATION OF QUALITY CONTROL, AND QUALITY ASSURANCE IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.

2.

ALL STRUCTURAL STEEL SHALL BE ERECTED PLUMB AND TRUE TO LINE. TEMPORARY BRACING SHALL BE INSTALLED AND SHALL BE LEFT IN PLACE UNTIL OTHER MEANS IS PROVIDED TO ADEQUATELY BRACE THE STRUCTURE.

3.

STRUCTURAL STEEL MATERIALS/GRADES, UNO:

SHAPE	MATERIAL / GRADE
WIDE FLANGE & TEES	ASTM A992
PLATES, ANGLES, CHANNELS, THREADED RODS (UNO)	ASTM A36
HIGH-STRENGTH PLATE (UNO)	ASTM A572, GRADE 50
HIGH-STRENGTH PLATE 4 1/4" AND THICKER	ASTM A572, GRADE 42
SQUARE OR RECTANGULAR HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE C (Fy = 50 KSI) OR ASTM A1085
ROUND HOLLOW STRUCTURAL SECTIONS (HSS)	ASTM A500, GRADE C (Fy = 46 KSI) OR ASTM A1085
PIPES	ASTM A63 TYPE E OR S, GRADE B (Fy = 35 KSI)
MACHINE BOLTS (MB)	ASTM A307
WELDED HEADED STUDS	ASTM A29
THREADED RODS FOR ANCHOR BOLTS	ASTM F1554, GRADE 55

a.

EXCEPT AS OTHERWISE NOTED, ALL BOLTS SHALL BE HIGH-STRENGTH BOLTS.

b.

WHERE WELDING TO GRADE 55 THREADED ANCHOR RODS IS REQUIRED, USE ASTM F1554 GRADE 55 WITH SUPPLEMENT S1.

4.

ALL CONNECTIONS NOT SHOWN SHALL CONFORM TO THE "AISC MANUAL OF STEEL CONSTRUCTION" AND SHALL BE SUBMITTED ON SHOP DRAWINGS FOR REVIEW BY SEOR PRIOR TO FABRICATION.

5.

ALL WELDED HEADED STUDS, THREADED STUDS, AND DEFORMED BARS SHALL BE NELSON, OR EQUIVALENT, AND WELDED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS BY CERTIFIED WELDERS SO AS TO FULLY DEVELOP THE TENSILE CAPACITY OF THE CONNECTOR.

6.

BOLTS WITH UPSET THREADS ARE NOT ALLOWED. USE THE APPROPRIATE NUT AND WASHER TYPE FOR THE SPECIFIED BOLT.

7.

ALL STEEL FABRICATION SHALL BE PERFORMED BY A LICENSED FABRICATOR.

8.

BEAMS NOT SPECIFIED WITH CAMBER SHALL HAVE MILL CAMBER PLACED IN UPWARD POSITION.

9.

ALL STRUCTURAL STEEL AND MISCELLANEOUS STEEL PERMANENTLY EXPOSED TO THE ELEMENTS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION UNLESS A WEATHERPROOF COATING IS SPECIFIED BY THE ARCHITECT. UNO. STAINLESS AND WEATHERING STEELS, WHERE SPECIFIED, ARE EXEMPT FROM THIS REQUIREMENT. GALVANIZED SURFACES SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE REPAIRED AS NECESSARY. ALL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10.

10.

SEE ARCHITECTURAL DRAWINGS FOR NAILER HOLES, WELDED STUDS OR OTHER ITEMS NOT SHOWN IN THESE DRAWINGS.

11.

WHERE STEEL IS EMBEDDED IN CONCRETE OR MASONRY, PROVIDE HOLES AS REQUIRED FOR PASSAGE OF CONTINUOUS REINFORCING BARS WHERE INDICATED ON DRAWINGS.

12.

DO NOT CUT HOLES IN STRUCTURAL STEEL WITHOUT APPROVAL OF THE SEOR.

13.

PLACE NON-SHRINK OR DRYPACK GROUT UNDER ALL BASEPLATES AND ALLOW TO CURE UNTIL SPECIFIED STRENGTH IS REACHED BEFORE APPLYING LOADS.

14.

WHERE AN HSS OR PIPE SECTION IS INSTALLED IN AN EXTERIOR CONDITION, PROVIDE CAP PLATE EACH END WITH SEAL WELD ALL AROUND.

031000.000

031000.000

NON-LOAD-BEARING STUDS, TOP PLATES, BLOCKING, FURRING AND BRACING	DF #2
JOISTS, RAFTERS, PURLINS, BEAMS & POSTS	DF #1 (UNO)
LOAD-BEARING STUDS (UNO)	
HEIGHT NOT EXCEEDING 15'-0"	DF #2
HEIGHT EXCEEDING 15'-0"	DF #1

WELDING

031000.000

031000.000

1.

WELDING PROCEDURES, ELECTRODES AND WELDER QUALIFICATIONS SHALL CONFORM TO AWS AND AISC REQUIREMENTS.

2.

ALL WELDERS SHALL HAVE EVIDENCE OF PASSING THE AWS STANDARD QUALIFICATION TESTS, AND SHALL BE CERTIFIED FOR THE WORK THEY ARE PERFORMING.

3.

PROJECT WELDING SHALL BE PERFORMED ONLY IN ACCORDANCE WITH WELDING PROCEDURE SPECIFICATIONS (WPS) SUBMITTED BY THE CONTRACTOR AND REVIEWED BY THE SEOR AND PROJECT WELDING INSPECTOR. THE WPS SHALL BE IN ACCORDANCE WITH THE APPLICABLE AWS.

4.

WELDING OF STRUCTURAL STEEL SHALL BE PERFORMED PER AWS D1.1 USING E70XX ELECTRODES UNLESS OTHERWISE NOTED.

5.

ALL FULL PENETRATION WELDS SHALL BE ULTRA-SONIC TESTED PER AWS D1.1 AND D1.8 REQUIREMENTS AS APPLICABLE.

6.

ALL GROOVE OR BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS, UNO. ALL EXPOSED BUTT WELDS SHALL BE GROUND SMOOTH.

7.

ALL EXPOSED BUTTS ON ARCHITECTURALLY EXPOSED STRUCTURAL STEEL (AESS) SHALL COMPLY WITH AISC CODE OF STANDARD PRACTICE, SECTION 10.

8.

FIELD WELDS HAVE BEEN INDICATED WHERE THEY ARE EXPECTED TO OCCUR. THE CONTRACTOR SHALL DETERMINE THE ACTUAL FIELD WELDING NECESSARY TO COMPLETE THE PROJECT AND INCLUDE ALL ASSOCIATED COSTS WITHIN THE BASE BID.

9.

ALL SPECIFIED FILLET WELD SIZES ARE MINIMUM SIZES. INCREASE WELDS TO AISC MINIMUM SIZES BASED ON THICKNESSES OF MATERIALS JOINED.

ROUGH CARPENTRY / WOOD

031000.000

031000.000

1.

ALL GRADES SPECIFIED ARE MINIMUM GRADES REQUIRED. DOUGLAS FIR-LARCH SHALL BE GRADED BY A GRADING AGENCY CERTIFIED BY THE AISC TO THE WCLB OR WIPA GRADING RULES, CONFORMING TO DOC P5.20. REDWOOD SHALL BE GRADED BY THE CALIFORNIA REDWOOD ASSOCIATION, REDWOOD INSPECTION SERVICE.

2.

WOOD SPECIES SPECIFICATIONS ("DP" INDICATES DOUGLAS FIR-LARCH CONFORMING TO DOC P520):

NON-LOAD-BEARING STUDS, TOP PLATES, BLOCKING, FURRING AND BRACING	DF #2
JOISTS, RAFTERS, PURLINS, BEAMS & POSTS	DF #1 (UNO)
LOAD-BEARING STUDS (UNO)	
HEIGHT NOT EXCEEDING 15'-0"	DF #2
HEIGHT EXCEEDING 15'-0"	DF #1

3.

MOISTURE CONTENT OF SAWN LUMBER SHALL NOT EXCEED 19% WHEN FRAMING STARTS OR SHEATHING IS APPLIED. ANY NONCOMPLIANT WORK SHALL BE REJECTED AND REFRAMED WITH ACCEPTABLE LUMBER.

4.

ARCHITECTURALLY EXPOSED TIMBERS 4" NOMINAL, IN THE LEAST DIMENSION SHALL NOT CONTAIN BOXED HEART.

5.

PROVIDE FIRE-RETARDANT-TREATED (FRT) LUMBER AND WOOD STRUCTURAL PANELS PER CBC SECTION 2303.2 WHERE INDICATED BY ARCHITECT.

6.

WOOD MEMBERS SHALL BE PRESERVATIVE-TREATED (PT) OR NATURALLY DURABLE (WITH APPROVAL OF SEOR) WHERE EXPOSED TO WEATHER AND IN ACCORDANCE WITH CBC SECTION 2304.12. SILL PLATES SHALL BE PRESERVATIVE-TREATED DOUGLAS FIR #2. END CUTS AND HOLES IN PT SILL PLATES SHALL BE TREATED.

7.

FASTENERS, INCLUDING NUTS AND WASHERS, FOR PRESERVATIVE-TREATED WOOD, WOOD EXPOSED TO WEATHER, AND FIRE-RETARDANT-TREATED WOOD SHALL BE OF HOT DIPPED ZINC-COATED GALVANIZED STEEL, STAINLESS STEEL, SILICON BRONZE OR COPPER, THE COATING WEIGHTS FOR ZINC-COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM A153. EXCEPTIONS: FASTENERS OTHER THAN NAILS, TIMBER RIVETS, WOOD SCREWS AND LAG SCREWS SHALL BE PERMITTED TO BE OF MECHANICALLY DEPOSITED ZINC-COATED STEEL WITH COATING WEIGHTS IN ACCORDANCE WITH ASTM B680, CLASS 88 MINIMUM, AND PLAIN CARBON STEEL FASTENERS, INCLUDING NUTS AND WASHERS, IN SBX/OTD AND ZINC-BORATE PRESERVATIVE-TREATED WOOD IN AN INTERIOR, DRY ENVIRONMENT SHALL BE PERMITTED.

8.

UNLESS NOTED OTHERWISE, SILL FASTENERS FOR INTERIOR NON-STRUCTURAL WALLS MAY BE 0.15" DIAMETER x 1 1/4" EMBED POPs AT 16"OC.

9.

SILL PLATES SHALL BE BOLTED TO CONCRETE WITH 5/8" DIAMETER ANCHOR BOLTS AT 48" OC MAX, UNO, WITH A BOLT BETWEEN 7 x BOLT DIAMETER (4 3/8" MIN) AND 12" FROM THE END OF EACH PIECE OF SILL (2 BOLTS MIN EACH PIECE). PIECE OF SILL SHALL BE CONSIDERED ENDED WHERE PLATE IS CUT OVER ONE-THIRD OF CROSS-SECTION.

10.

ANCHOR BOLTS FOR BEARING WALLS SHALL HAVE 7" EMBEDMENT (UNO) MEASURED FROM TOP OF SLAB.

11.

ALL BOLTS IN WOOD SHALL BE ASTM A307 STANDARD BOLTS, UNO. BOLTS AND SCREWS SHALL BE TIGHTENED AT TIME OF ERECTION AND RETIGHTENED BEFORE CLOSING IN OR AT THE COMPLETION OF THE JOB. HOLES IN WOOD AND STEEL MEMBERS FOR BOLTS SHALL BE THE NOMINAL BOLT DIAMETER PLUS 1/16".

12.

ALL NAIL SPACING, EDGE DISTANCES, AND END DISTANCES SHALL BE SUCH AS TO AVOID SPLITTING OF THE WOOD. HOLES FOR NAILS, WHERE NECESSARY TO PREVENT SPLITTING, SHALL BE BORED OF A DIAMETER SMALLER THAN THAT OF THE NAILS.

13.

HOLES IN WOOD FOR LAG SCREWS SHALL BE FIRST BORED TO THE SAME DIAMETER AND DEPTH AS THE SHANK. HOLES FOR THE THREADED PORTION SHALL BE BORED WITH A BIT DIAMETER EQUAL TO 40% TO 70% OF THE SHANK DIAMETER IN DOUGLAS FIR. FOR OTHER WOOD SPECIES, REFER TO THE NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS).

14.

LAG SCREWS AND SCREWS SHALL BE SCREWED AND NOT DRIVEN INTO PLACE.

15.

STANDARD CUT STEEL WASHERS SHALL BE PROVIDED UNDER HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS WHICH BEAR ON WOOD. SEE SHEAR WALL SCHEDULE FOR WASHER REQUIREMENTS AT SHEAR WALLS. BOLTS WHERE OCCUR.

16.

STUD BEARING WALLS AND PARTITIONS SHALL HAVE DOUBLE TOP PLATES LAPPED AT INTERSECTIONS. JOINTS IN UPPER AND LOWER MEMBERS OF DOUBLE TOP PLATES SHALL BE STAGGERED AT LEAST 4'-0".

17.

NOTCHING AND HOLES SHALL NOT BE ALLOWED EXCEPT AS DETAILED ON THESE PLANS OR AS APPROVED BY THE SEOR.

18.

INSTALL WINDOWS AND DOORS IN STUD WALLS AFTER DEAD LOADS ARE APPLIED, AND PROVIDE A 1/2" SHIM SPACE AT THE HEAD CONDITION.

19.

STRUCTURAL FLOOR, ROOF AND WALL SHEATHING SHALL BE APA-RATED AND SHALL CONFORM TO DOC P51 OR PS2.

20.

EXTERIOR STUD WALLS SHALL BE COMPLETELY SHEATHED WITH 1/32" SHEATHING, EXPOSURE-1 (32/16), TYPICAL, UNO.

21.

INTERIOR BEARING WALLS SHALL BE SHEATHED WITH 1/2" GYP BOARD EACH SIDE, FULL HEIGHT, UNO.

22.

ALL STRUCTURAL WALL SHEATHING SHALL BE SPLICED ON 2" NOMINAL BLOCKING AT HORIZONTAL JOINTS, UNO.

23.

AT FLOOR FRAMING, PROVIDE BRIDGING OR FULL-HEIGHT BLOCKING AS REQUIRED BY THE BUILDING CODE.

24.

STRUCTURAL FLOOR AND ROOF SHEATHING SHALL BE APA-RATED EXPOSURE-1. 1/8" GAP SHALL BE PROVIDED BETWEEN ADJACENT SHEATHING PANELS. PANELS WITH GRADE STAMP INDICATION "SIZED FOR SPACING" MAY BE USED TO FACILITATE THIS REQUIREMENT. SHEATHING AT EXTERIOR DECKS SHALL BE EXTERIOR RATED PLYWOOD.

25.

AT FLOOR APPLICATIONS, ATTACH FLOOR SHEATHING TO FRAMING USING RING-SHANK NAILS AND GLUE.

CONCRETE MASONRY

031000.000

031000.000

1.

CONCRETE MASONRY UNITS (CMU) SHALL DEVELOP THE FOLLOWING MINIMUM 28 DAY PRISM COMPRESSIVE STRENGTHS:

LOCATION	f'm	CONCRETE MASONRY UNITS	GROUT
ALL CMU, UNO	2000 PSI	2000 PSI	2000 PSI

2.

CONCRETE BLOCK SHALL CONFORM TO ASTM C90 MEDIUM-WEIGHT. USE OF LIGHTWEIGHT BLOCK REQUIRES PRIOR WRITTEN APPROVAL BY THE SEOR.

3.

MORTAR SHALL BE TYPE S MORTAR.

4.

VERTICAL REINFORCING SHALL BE FULL HEIGHT OF WALL AND SHALL BE BRACED AT 6'-8" MAXIMUM TO PREVENT MOVEMENT WHILE GROUTING.

5.

HORIZONTAL REINFORCING SHALL BE IN BOND BEAM UNITS AND TIED SECURELY TO VERTICAL REINFORCING.

6.

DOWELS, ANCHORS, AND OTHER EMBEDDED ITEMS SHALL BE TIED SECURELY IN PLACE TO PREVENT MOVEMENT WHILE GROUTING. WET SETTING OR STABBING IS NOT ALLOWED.

7.

LAYOUT OF MASONRY BLOCK UNITS SHALL BE PER ARCHITECTURAL DRAWINGS. BLOCK MODULES / MORTAR JOINTS SHOWN ON THESE DRAWINGS ARE FOR PRESENTATION PURPOSES ONLY AND NOT INTENDED TO SUPERSEDE ARCHITECTURAL DESIGN REQUIREMENTS. BLOCK SHALL BE PLACED IN RUNNING BOND AND SHALL BE 8x8-16 NOMINAL UNITS, UNO. WHERE BLOCK IS REQUIRED TO BE PLACED IN STACK BOND (SEE ARCH), OPEN-ENDED UNITS (I.E., "SPEED BLOCK") SHALL BE USED.

8.

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE SAFETY OF LIFT HEIGHT FOR OPEN-ENDED OR FIELD MODIFIED BLOCKS.

9.

REINFORCING 8" BLOCK:

8" CMU	12" CMU
TYPICAL VERTICAL REINFORCING	#5 @ 16"OC, CENTERED
TYPICAL HORIZONTAL REINFORCING	#4 @ 24"OC, CENTERED

10.

PROVIDE VERTICAL CONTROL JOINTS IN CMU WALLS AS SHOWN ON PLAN, UNLESS NOTED OTHERWISE. VERTICAL CONTROL JOINTS SHALL OCCUR AT:

a.

25'-0"OC MAXIMUM ALONG LENGTH OF WALL.

b.

A SPACING NOT EXCEEDING 1.5 TIMES THE WALL HEIGHT

c.

CHANGES IN WALL HEIGHT

d.

CHANGES IN WALL THICKNESS

e.

FLOOR AND ROOF JOINTS

f.

24" PAST ONE SIDE OF OPENINGS LESS THAN 6'-0" WIDE

g.

24" PAST BOTH SIDES OF OPENINGS GREATER THAN OR EQUAL TO 6'-0" WIDE

h.

CORNERS AND INTERSECTIONS, WITHIN A DISTANCE EQUAL TO HALF THE CONTROL JOINT SPACING

11.

(DSA) FILL ALL CELLS WITH GROUT. LIFTS SHALL BE 4'-0" MAX UNLESS HIGH-LIFT GROUTING IS USED. GROUT FOR EACH POUR SHALL BE STOPPED 1 1/2" BELOW TOP OF BLOCK EXCEPT AT THE FINAL COURSE. ALL GROUT SHALL BE THOROUGHLY CONSOLIDATED BY VIBRATING IMMEDIATELY AFTER PLACING. HORIZONTAL REINFORCING SHALL BE FULLY EMBEDDED IN GROUT IN AN UNINTERRUPTED POUR. DSA APPROVAL IS REQUIRED FOR HIGH-LIFT GROUTING. ALL HIGH-LIFT GROUTING SHALL CONFORM TO DSA IR 21-2 AND CBC 2019 SECTION 2104.1.3.1.1.2

FOUNDATIONS AND SLABS ON GRADE

031000.001

031000.001

1.

GEOTECHNICAL REPORT INFORMATION AND DESIGN CRITERIA:

2022 CBC - TABLE 1806A.2: PRESUMPTIVE LOAD-BEARING VALUES	
GEOTECHNICAL DESIGN CRITERIA	
MINIMUM WIDTH OF FOOTINGS	12"
MINIMUM EMBEDMENT OF FOOTINGS	12"
ALLOWABLE SOIL PRESSURE, DEAD LOAD + LIVE LOAD	1,500 PSF
ALLOWABLE SOIL PRESSURE, DEAD LOAD + LIVE LOAD + LATERAL LOAD	1,500 PSF
ALLOWABLE LATERAL SOIL BEARING PRESSURE PER FOOT OF DEPTH	100 PSF
DESIGN COEFFICIENT OF FRICTION FOR SLIDING	0.25

2.

THE CONTRACTOR SHALL CONFORM TO ALL RECOMMENDATIONS AND CONDITIONS INDICATED IN SECTION 1804 OF THE 2022 CBC.

3.

FOOTINGS ARE CENTERED UNDER WALLS AND COLUMNS, UNO.

4.

ALL TRENCHES SHALL COMPLY WITH APPLICABLE OSHA REQUIREMENTS.

5.

ALL EXCAVATIONS SHALL BE PROPERLY BACKFILLED BUT NOT BEHIND RETAINING WALLS BEFORE CONCRETE OR MASONRY ATTAINS ITS FULL DESIGN STRENGTH.

6.

THE DESIGN OF ALL RETAINING WALLS AND SUBTERRANEAN BUILDING WALLS INDICATED ON THESE DRAWINGS IS BASED ON DRAINED SOILS.

7.

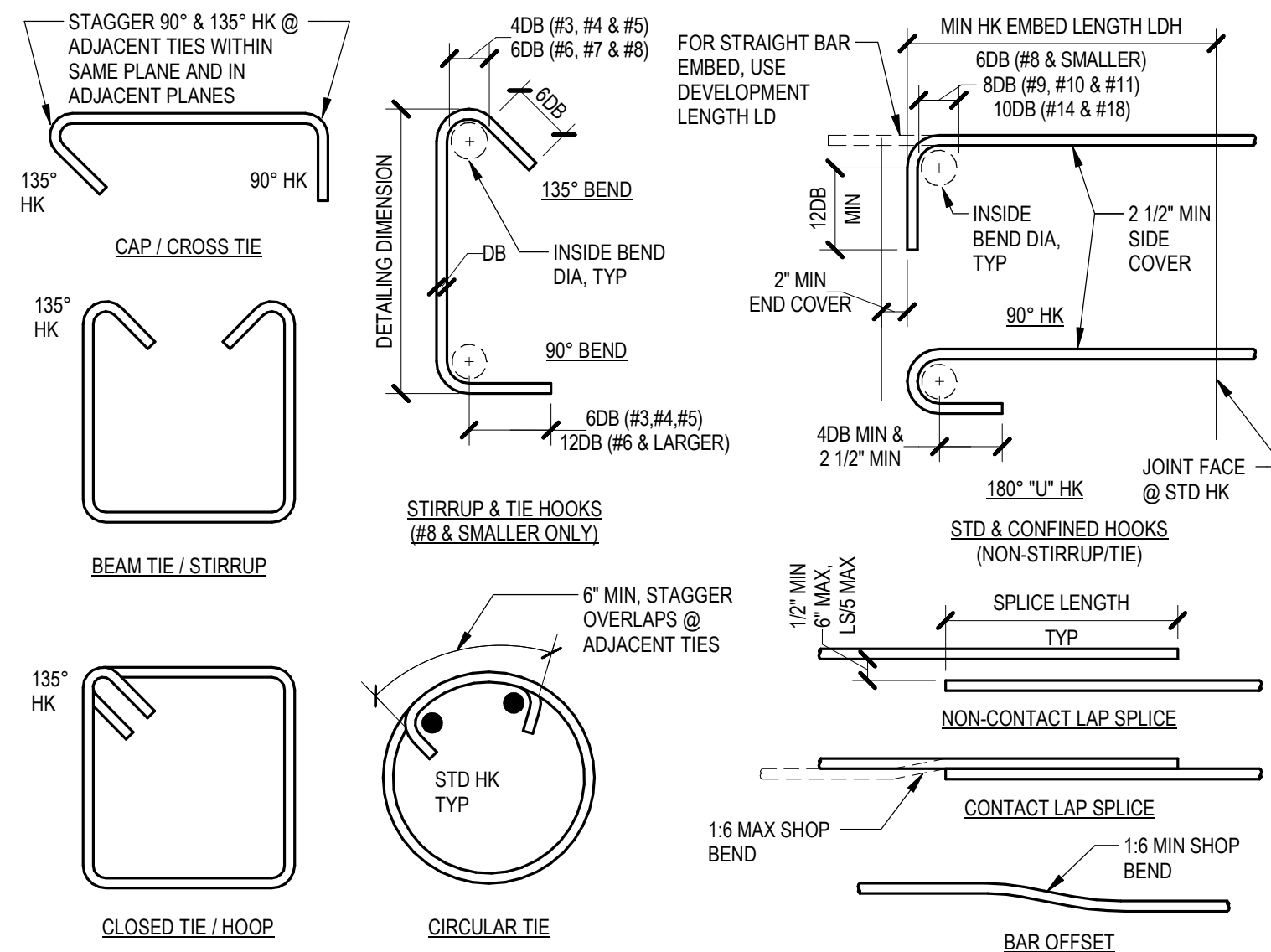
CONSTRUCTION JOINTS (CJ) AND SAWCUT (SC) JOINTS IN SLABS SHALL OCCUR WHERE SPECIFIED IN CONSTRUCTION DOCUMENTS. CONTRACTOR SHALL SUBMIT SLAB JOINT LAYOUT TO SEOR FOR REVIEW PRIOR TO PLACING CONCRETE. CJS SHALL HAVE FORMED POUR STOPS. CONSTRUCTION JOINTS IN WALLS AND FOOTINGS NEED NOT OCCUR AT THE SAME LOCATION, UNO.

8.

SEE ARCHITECTURAL DRAWINGS FOR LOCATIONS OF SLAB SLOPES, DEPRESSIONS, CURBS, DRAINS, NON-STRUCTURAL PARTITIONS AND OTHER EMBEDDED ITEMS NOT SHOWN IN THE STRUCTURAL DRAWINGS.

9.

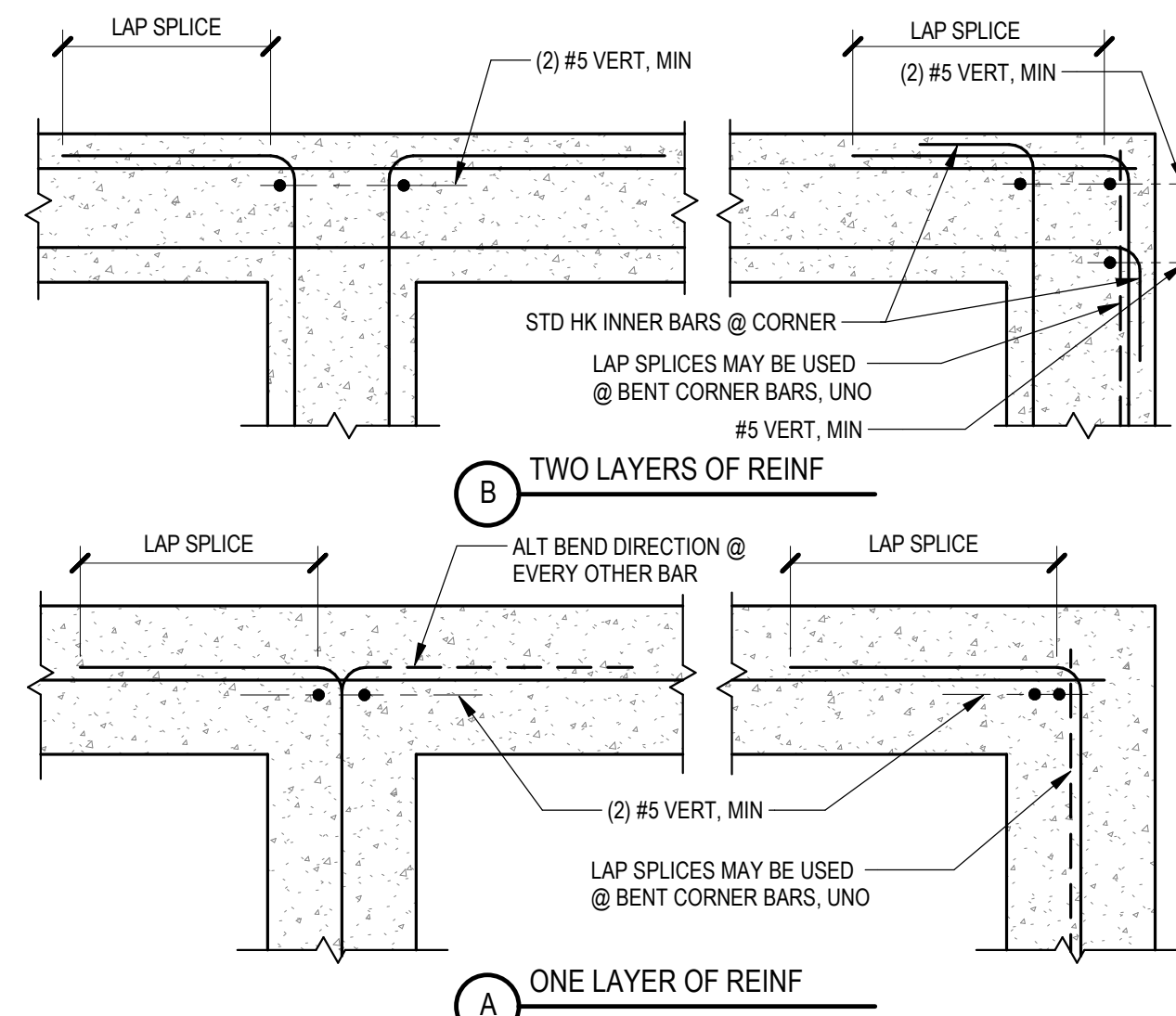
CONTRACTOR SHALL PROTECT ALL UTILITY LINES, ETC. ENCOUNTERED DURING EXCAVATION AND BACKFILLING. THE ARCHITECT AND ENGINEERS ARE NOT RESPONSIBLE FOR THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES WHETHER OR NOT SHOWN ON THE DRAWINGS. THE LOCATION OF ANY EXISTING UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER SHOULD ANY SUCH UNIDENTIFIED



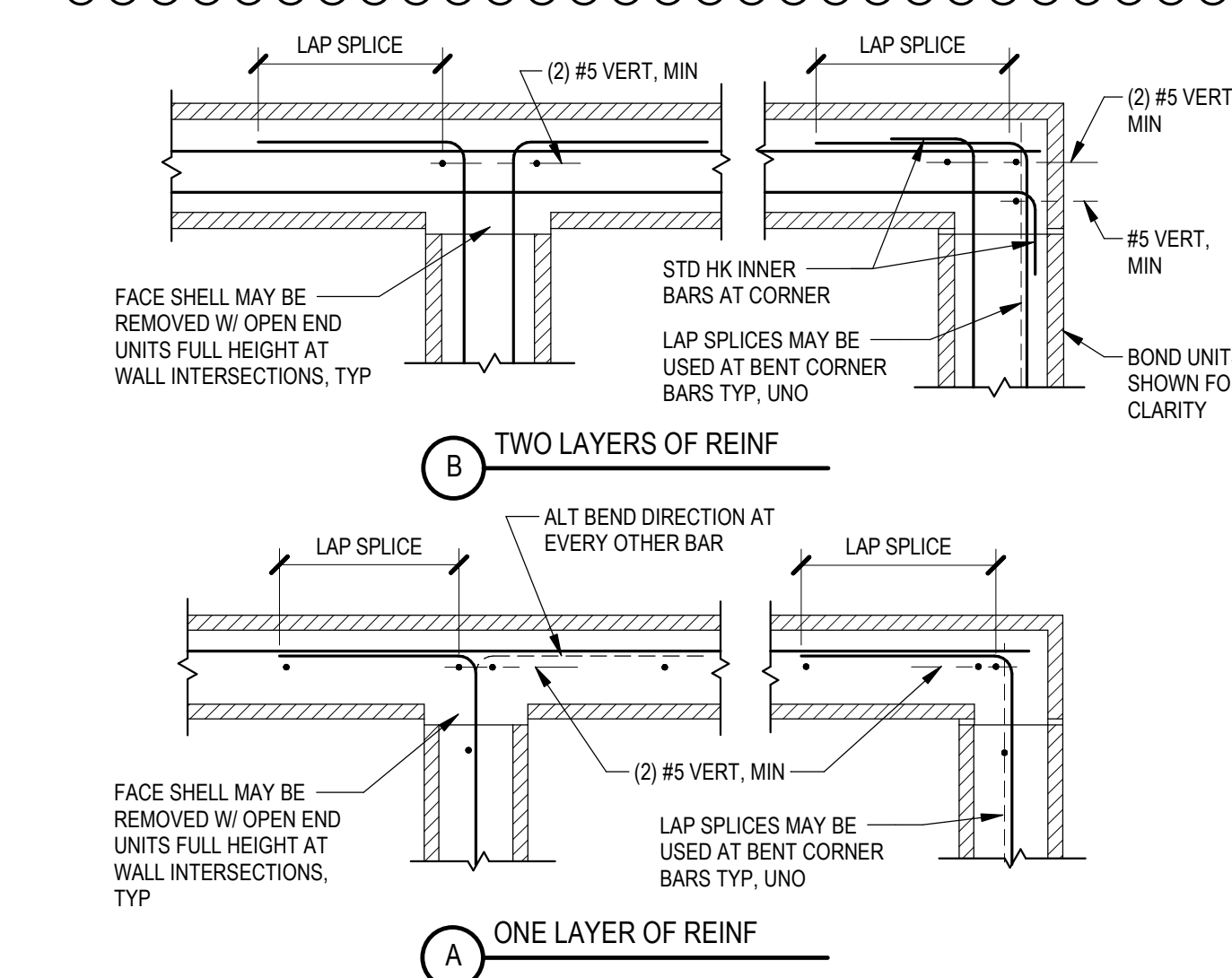
BAR SIZE	HOOKS, LAPS & DEVELOPMENT LENGTHS			
	STD HOOK DEVELOPMENT LENGTH L _{dh} (IN)	CLASS B LAP SPLICED L _s (IN)	DEVELOPMENT LENGTH L _d (IN)	
#3	6	22	28	17
#4	8	29	37	22
#5	10	36	47	28
#6	12	43	56	33
#7	14	50	65	38
#8	16	57	74	43
#9	18	64	83	48
#10	20	71	92	53
#11	22	78	101	58
#3	6	19	24	15
#4	7	25	32	19
#5	9	31	40	24
#6	10	37	48	29
#7	12	44	56	34
#8	14	51	64	39
#9	15	57	72	44
#10	17	64	80	49
#11	19	71	88	54
#3	6	17	22	13
#4	6	22	29	17
#5	8	28	36	22
#6	9	33	43	28
#7	11	40	50	33
#8	12	46	56	38
#9	14	53	63	43
#10	15	60	70	48
#11	17	67	77	53

- NOTES:
- SEE BUILDING CODE AND ACI FOR ALL REQUIREMENTS NOT NOTED.
 - FOR LIGHTWEIGHT CONCRETE, MULTIPLY L_{dh}, L_s AND L_d VALUES BY 1.33.
 - "TOP" BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW BARS. ALL OTHER BARS ARE "BOTTOM" BARS.
 - WHERE REQUIRED L_s CANNOT BE OBTAINED WITH STRAIGHT BARS, EXTEND REINFORCING AS FAR AS POSSIBLE L_{dh} MINIMUM AND PROVIDE STANDARD HOOK. WHERE L_{dh} CANNOT BE OBTAINED, CONTACT THE SEOR.
 - VALUES ARE FOR GRADE 60 (FY=60 KSI) REINFORCEMENT. SPICE LENGTHS ARE FOR CLEAR SPACING NOT LESS THAN 2DB AND CONCRETE COVER NOT LESS THAN DB.
 - FOR EPOXY-COATED AND/OR BUNDLED REINFORCEMENT, CONTACT THE SEOR.
 - WHERE BARS OF DIFFERENT SIZES ARE LAP SPLICED IN TENSION, SPICE LENGTH SHALL BE THE LARGER OF L_d OF THE LARGER BAR AND L_s OF THE SMALLER BAR.
 - WHERE CLASS "A" LAP SPLICES ARE SPECIFICALLY INDICATED, USE L_d.

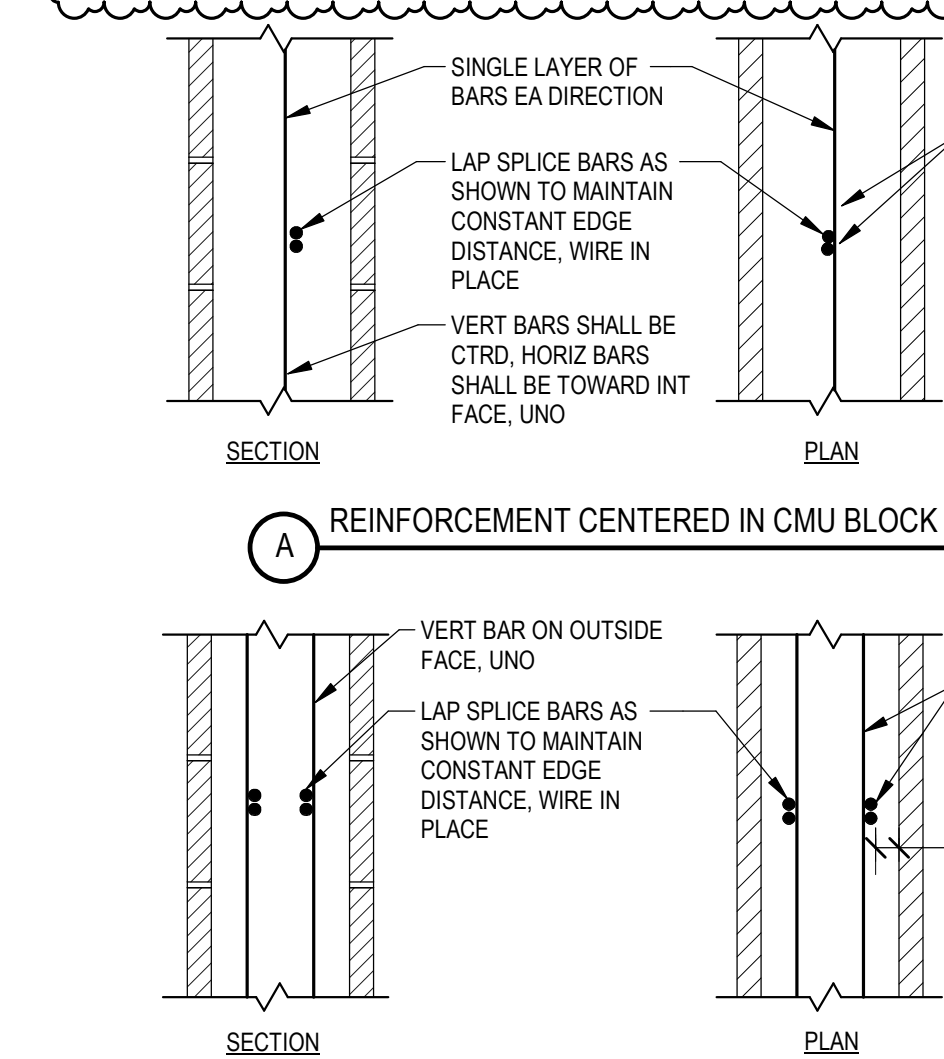
13 CONCRETE REINFORCEMENT DETAILS & DEVELOPMENT LENGTHS



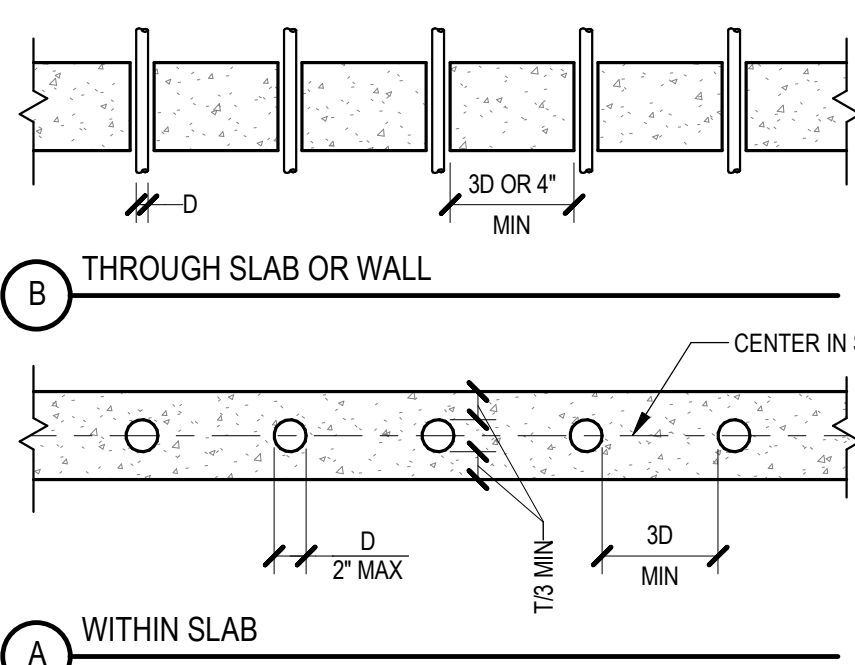
14 CONCRETE WALL & FTG INTERSECTIONS



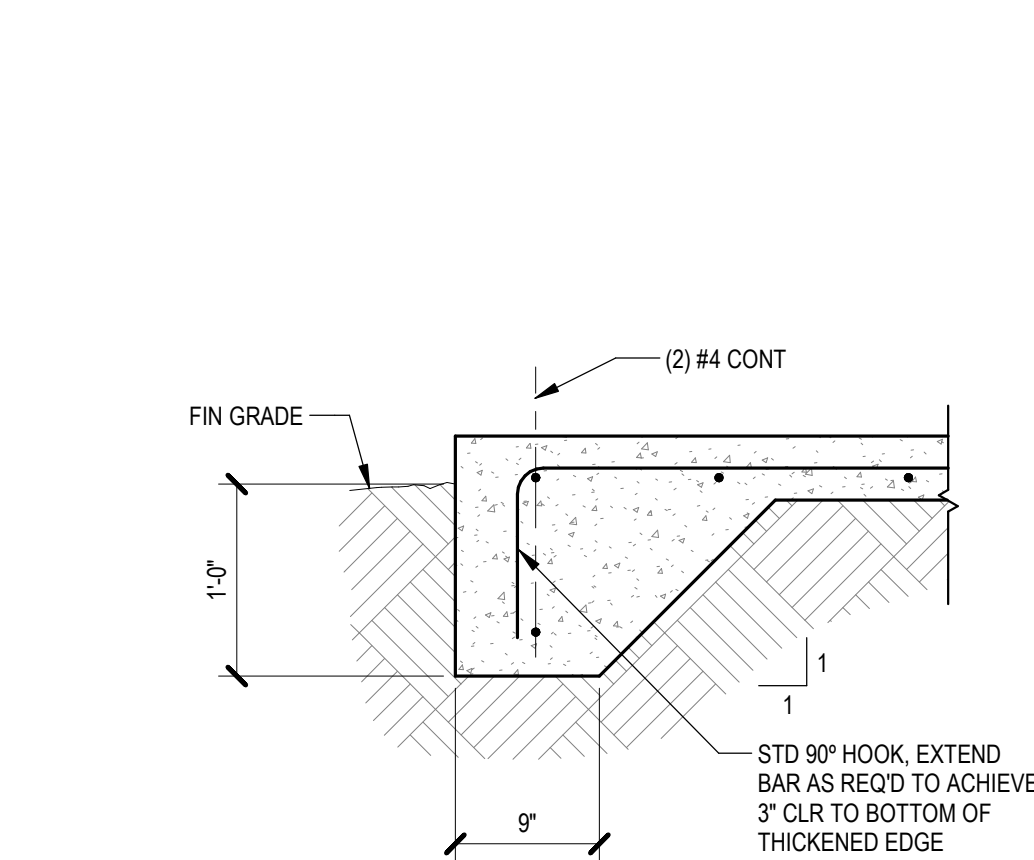
15 CMU WALL INTERSECTIONS



16 CMU REINFORCEMENT DETAILS & DEVELOPMENT LENGTHS



10 PIPES/CONDUITS IN/THRU SLAB & WALL

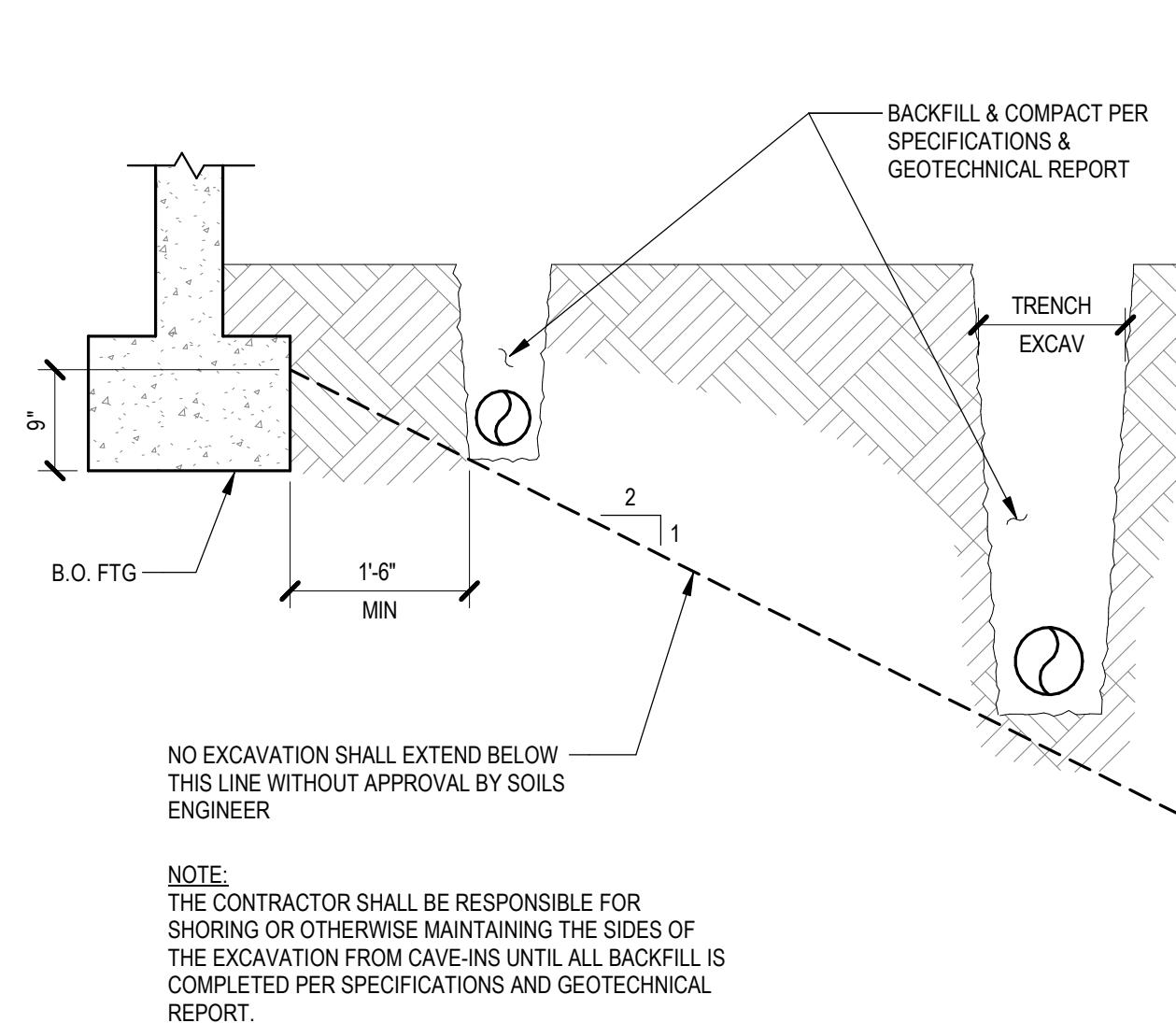


11 EXTERIOR SLAB ON GRADE EDGE OF SLAB

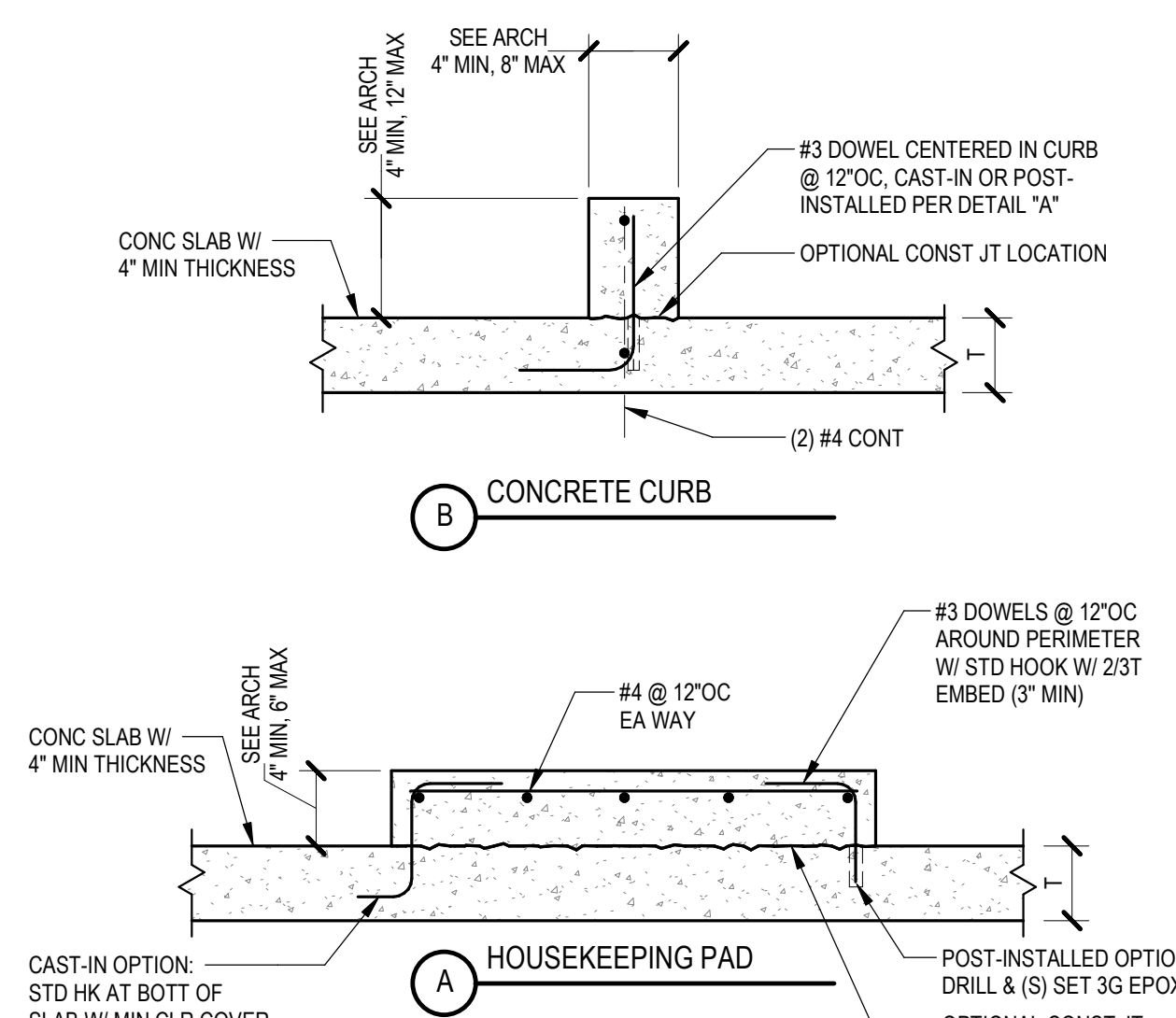
BAR SIZE	STD HOOK L _{dh} (IN)	LAP SPLICED L _s (IN)		DEVELOPMENT LENGTH L _d (IN)	
		72DB (IN)	EDGE BAR / MULT BARS	SINGLE BAR, CTRD	
#3	11	27	16	15	
#4	14	36	25	20	
#5	17	45	39	25	
#6	20	54	54	39	
#7	23	63	63	50	
#8	26	72	72	71	
#9	29	81	81	82	

- NOTES:
- VALUES ARE FOR GRADE 60 REINF DEVELOPED IN CMU (f_m = 2000 PSI).
 - VALUES MAY NOT BE USED FOR DEVELOPMENT INTO CONCRETE.

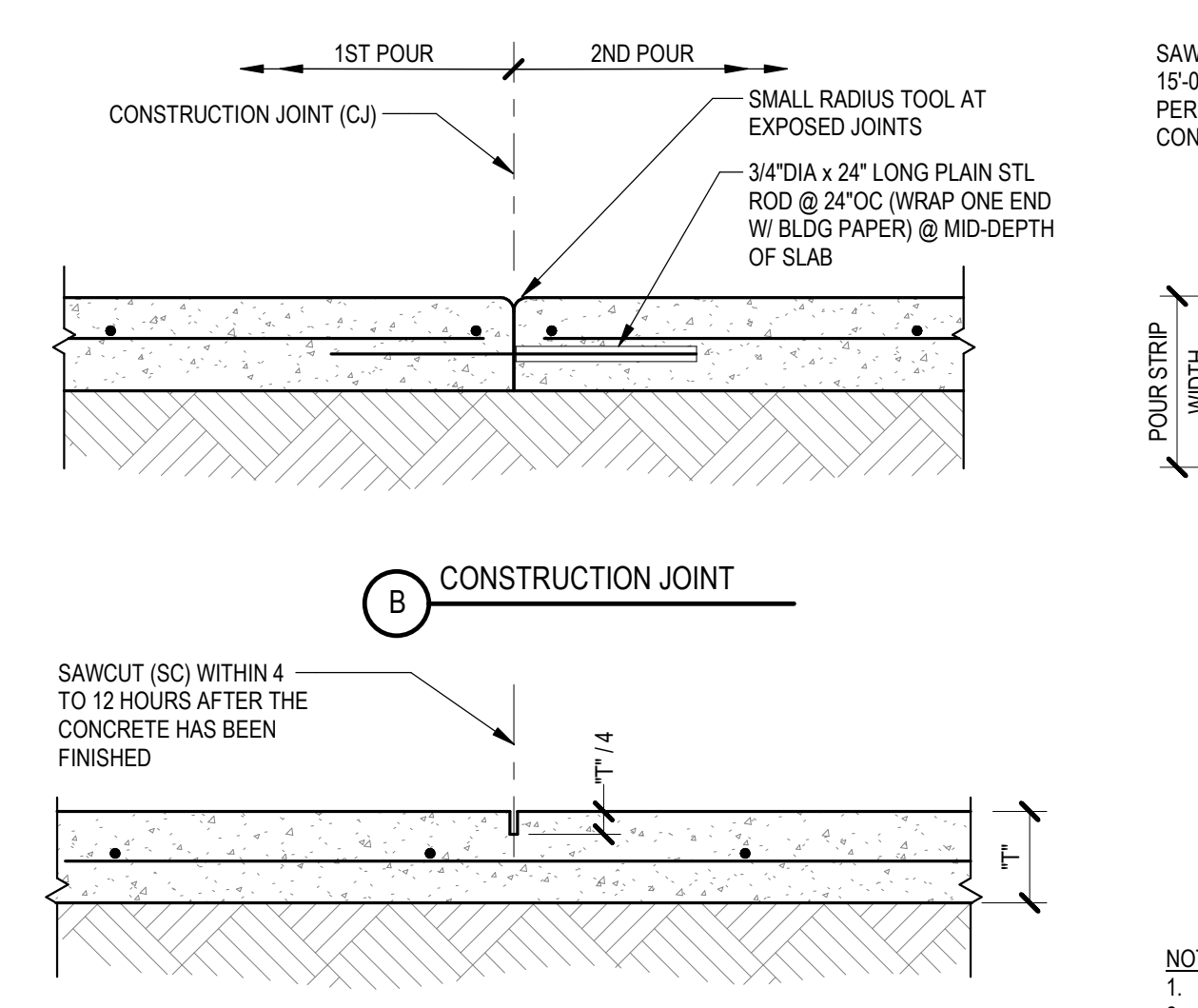
5 EDGE OF SLAB TO (E) SLAB



6 EXCAVATION PARALLEL TO FOOTINGS



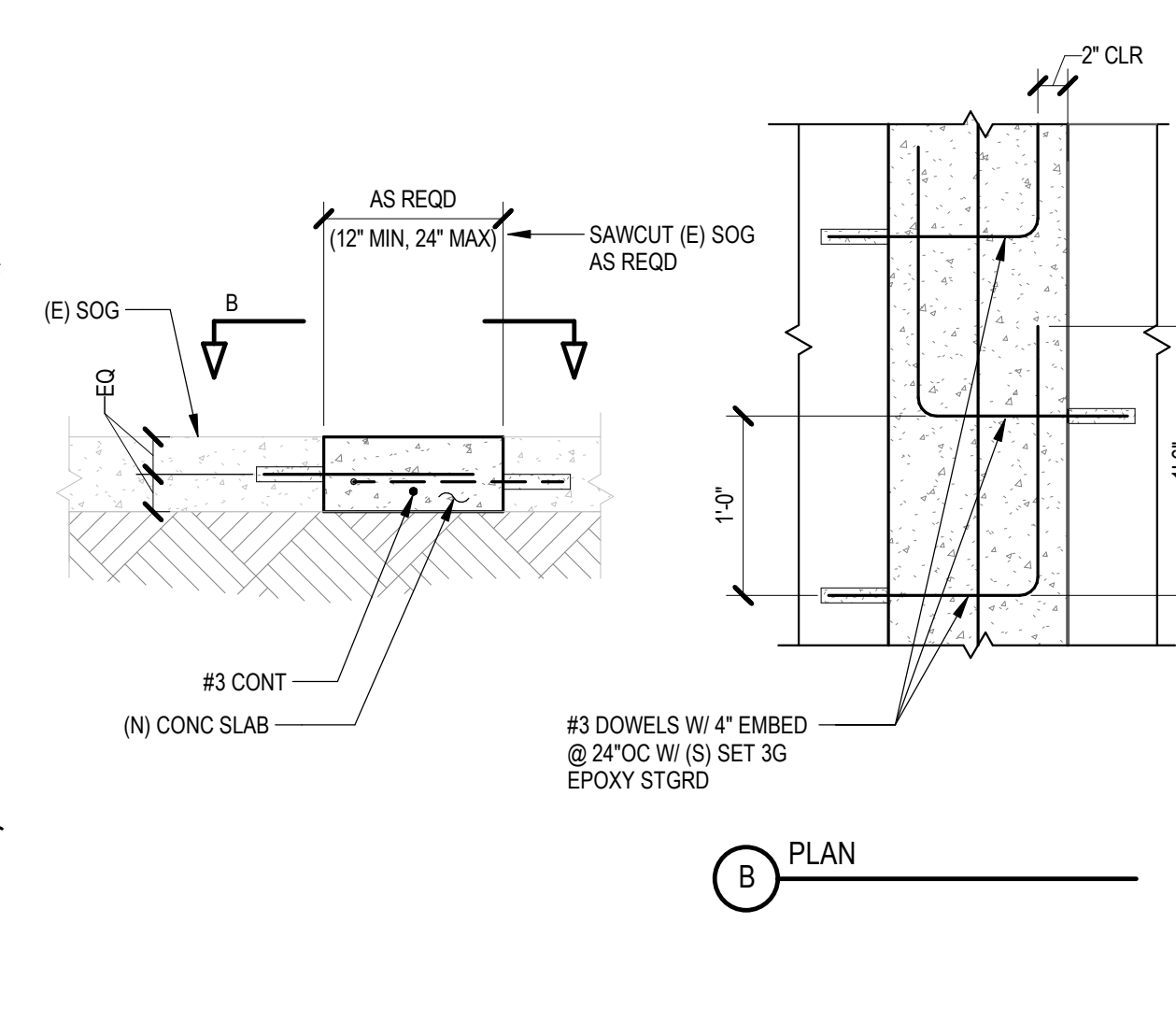
7 CONCRETE PAD & CURB



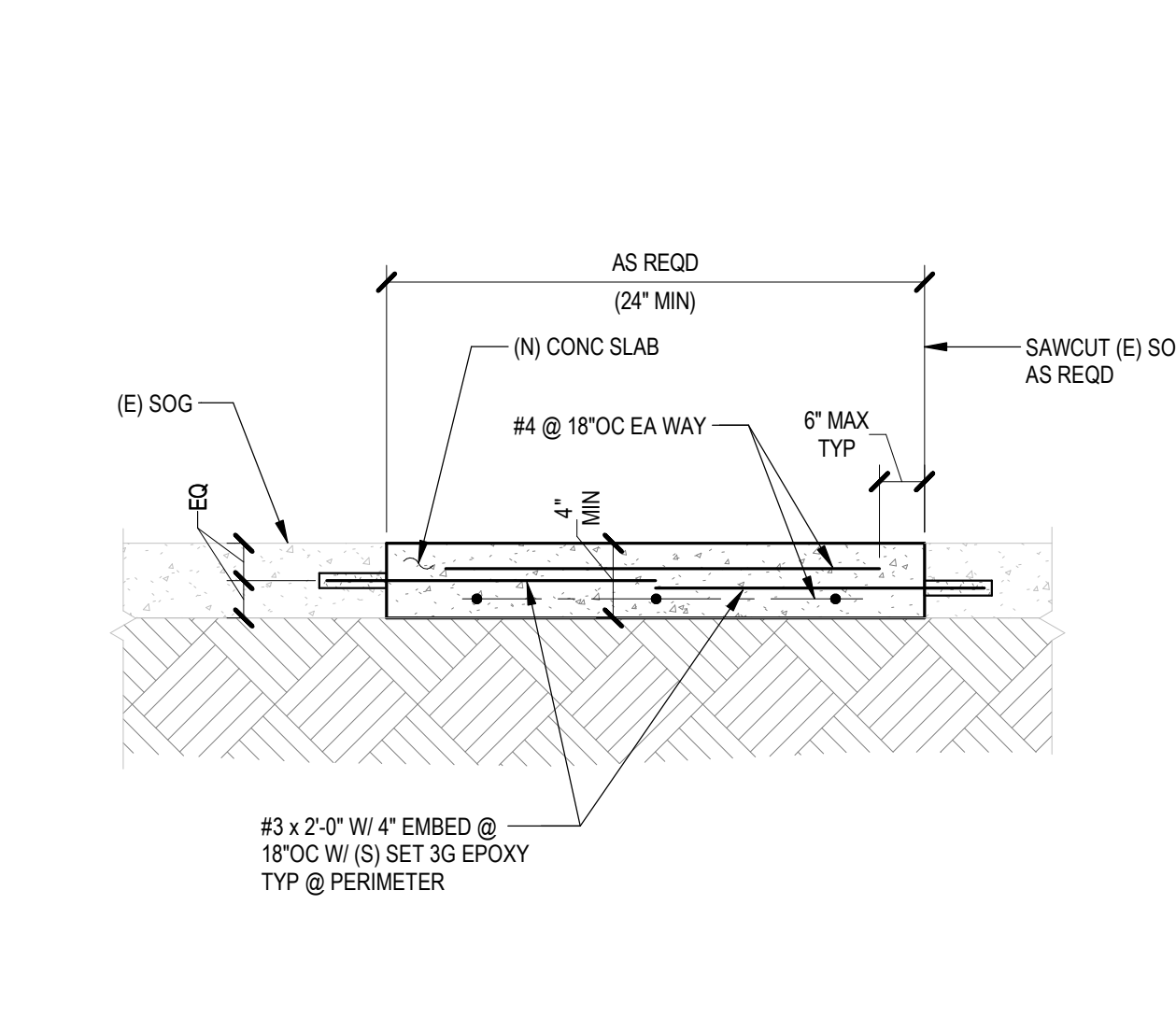
8 SLAB ON GRADE CONTROL JOINTS



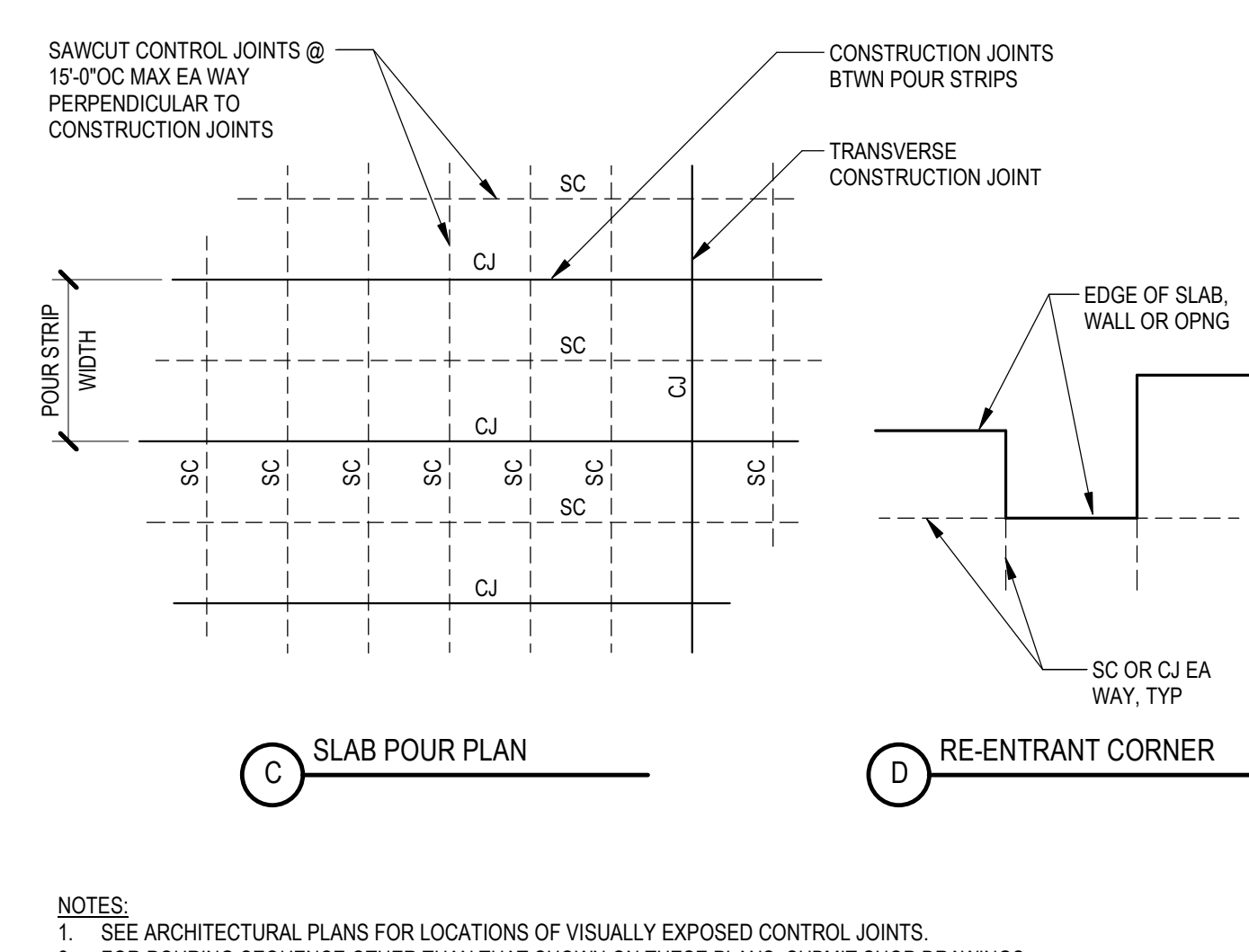
1 ISOLATED EQUIPMENT PAD



2 NARROW INTERIOR SAWCUT IN (E) SLAB



3 INTERIOR SAWCUT IN (E) SLAB



- NOTES:
- SEE ARCHITECTURAL PLANS FOR LOCATIONS OF VISUALLY EXPOSED CONTROL JOINTS.
 - FOR POURING SEQUENCE OTHER THAN THAT SHOWN ON THESE PLANS, SUBMIT SHOP DRAWINGS TO SEOR FOR REVIEW 7 DAYS PRIOR TO POUR.



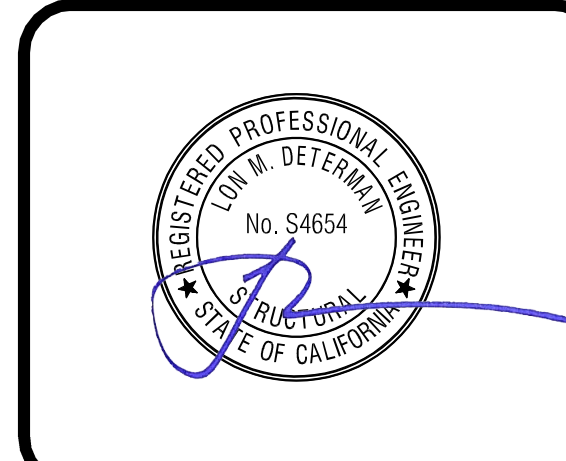
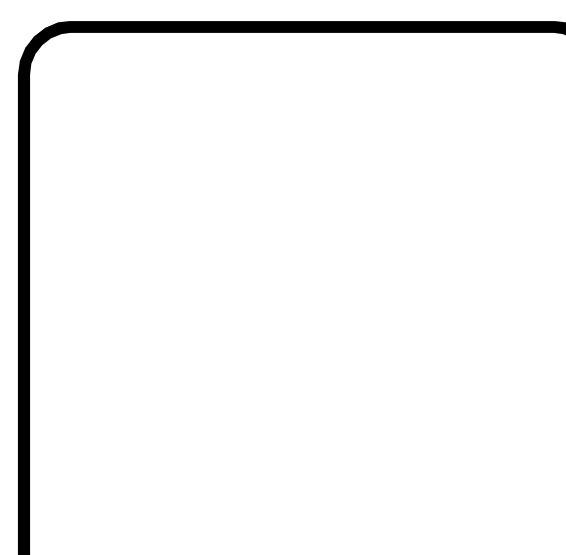
ARCHITECT
 FOLSOM
 1110 Iron Point Road, Suite 200
 Folsom, CA 95630-8315
 916-355-9922

STRUCTURAL ENGINEER
miyamoto.

1450 Harvard Drive, Suite One
 West Sacramento, CA 95691
 M2301016_R01

T: (916) 373-1969
 miyamotointernational.com

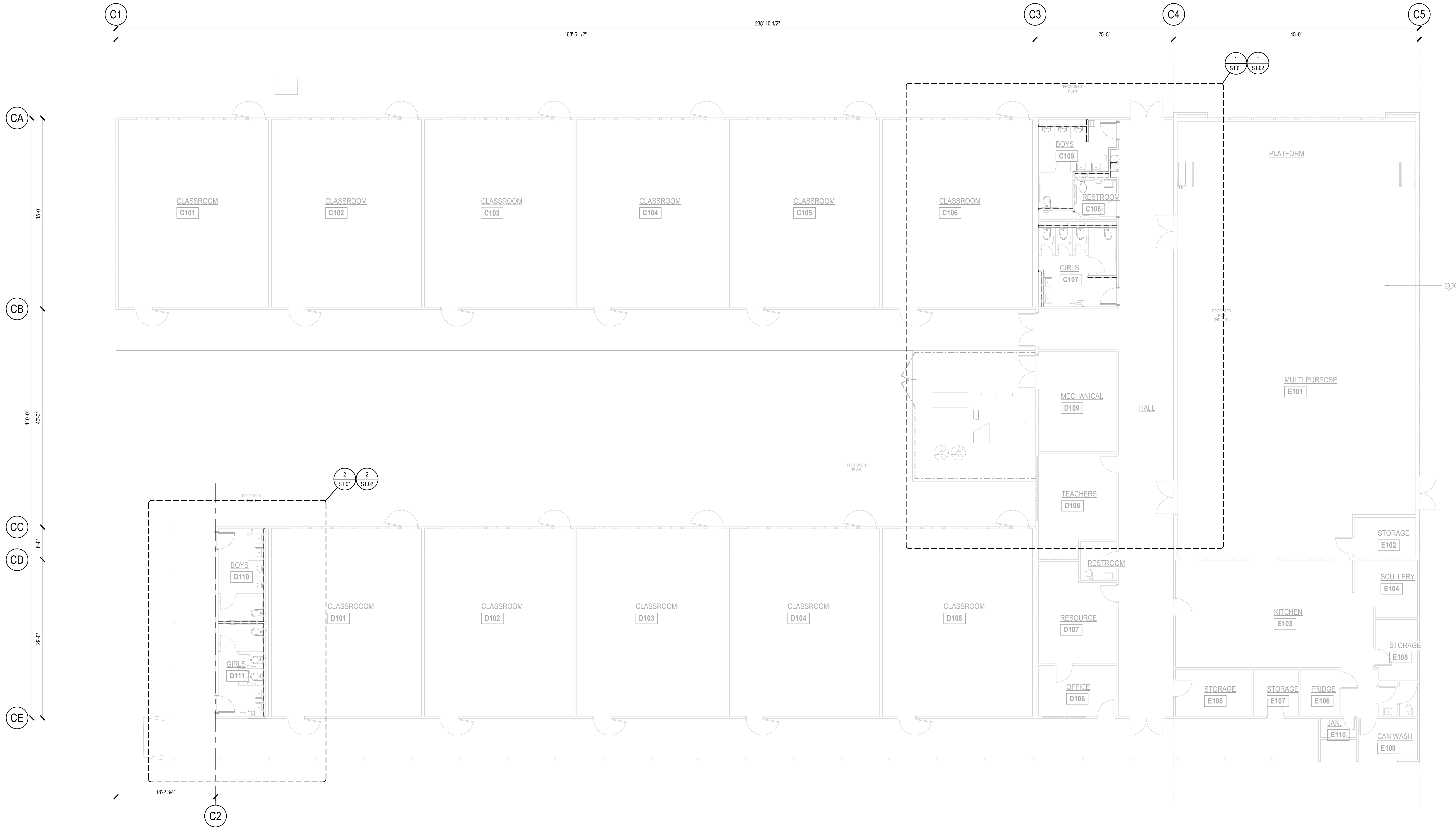
NICHOLS ES MODERNIZATION
 LODI UNIFIED SCHOOL DISTRICT
 LEROY NICHOLS ELEMENTARY SCHOOL
 1301 CRESCENT AVENUE
 LODI, CA 95240
 DSA APP No. 02-121896



CLIENT		
LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER		
230170		
DATE	02/04/2025	
DRAWN BY: AJR	CHKD BY: RM	
REVISIONS		
#	DESCRIPTION	DATE
2	ADDENDUM 02	01/31/2025
DSA APP No. 02-121896		

TYPICAL
 FOUNDATION &
 SOG DETAILS





1 OVERALL PLAN
1/8" = 1'-0"

Not for permitting or construction

This document is for plan review only

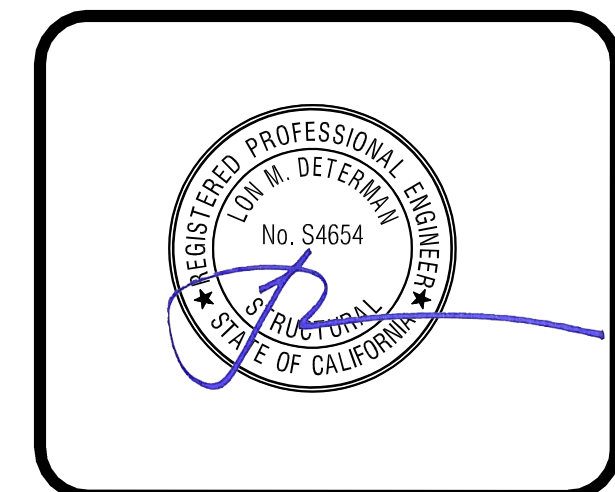
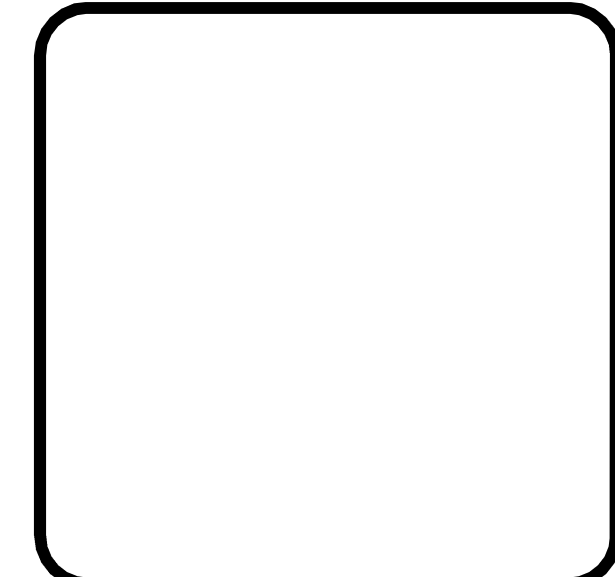


ARCHITECT PBK Architects, Inc.
FOLSOM
1110 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-355-9922
PBK.com

STRUCTURAL ENGINEER
miyamoto.
1450 Highway Drive, Suite One
West Sacramento, CA 95691
M2301016_R01
T: (916) 373-1999
miyamotointernational.com

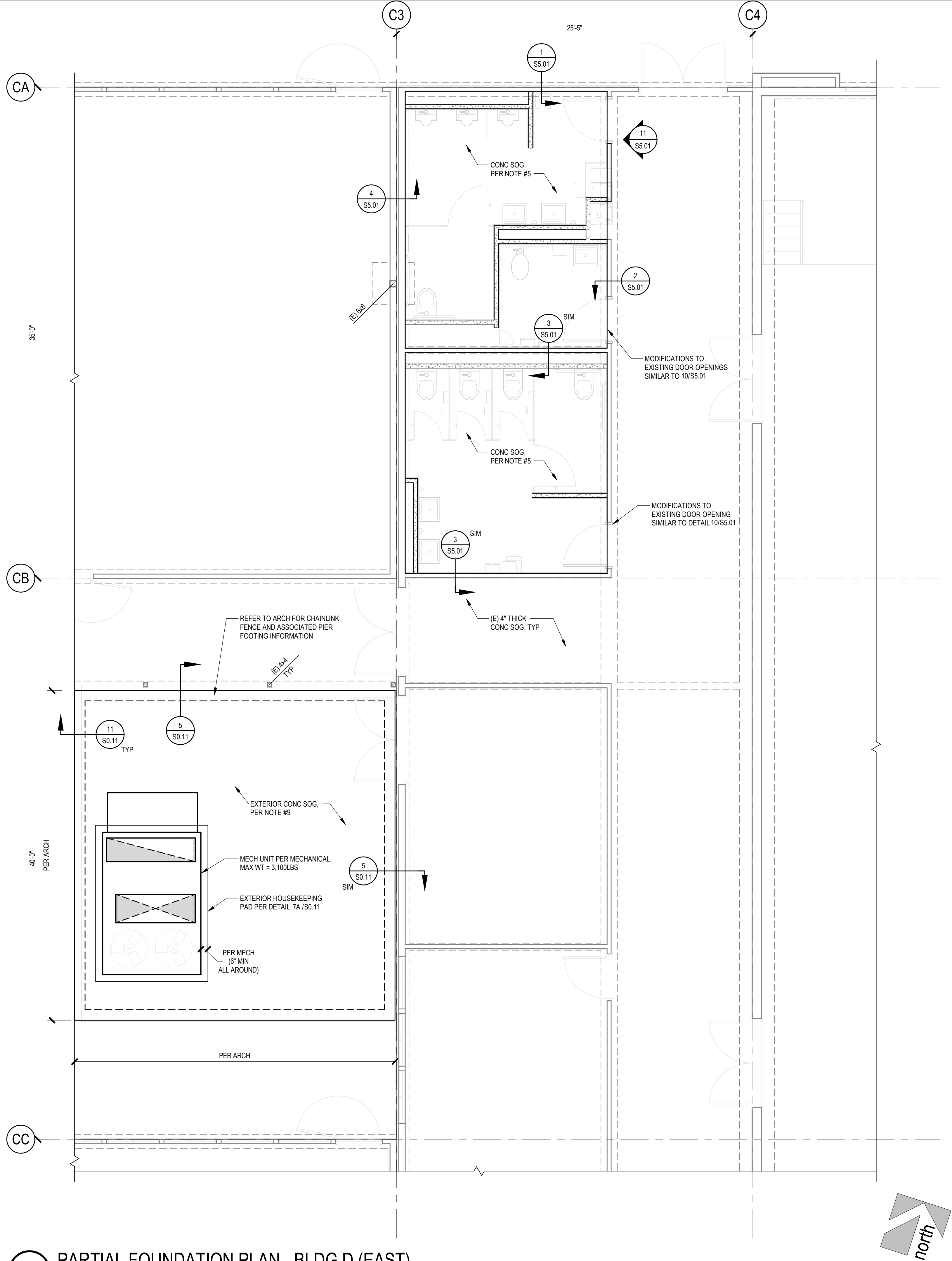
NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 95240
DSA APP No. 02-121896

LODI
UNIFIED SCHOOL DISTRICT



CLIENT LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER 230170		
DATE 02/04/2025		
DRAWN BY: AJR CHKD BY: RM		
REVISIONS		
#	DESCRIPTION	DATE
DSA APP No. 02-121896		

OVERALL PLAN

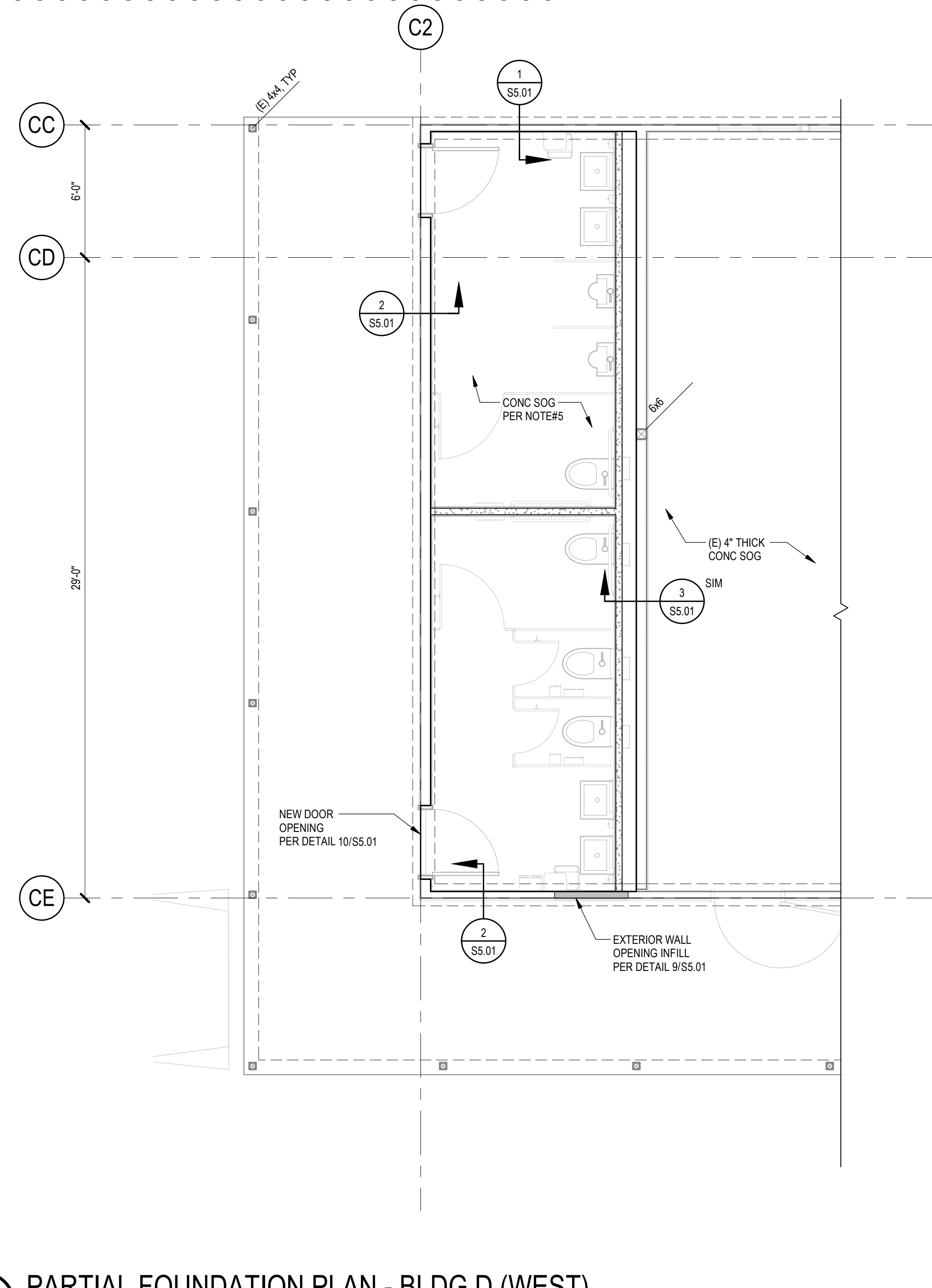


1 PARTIAL FOUNDATION PLAN - BLDG D (EAST)

1/4" = 1'-0"

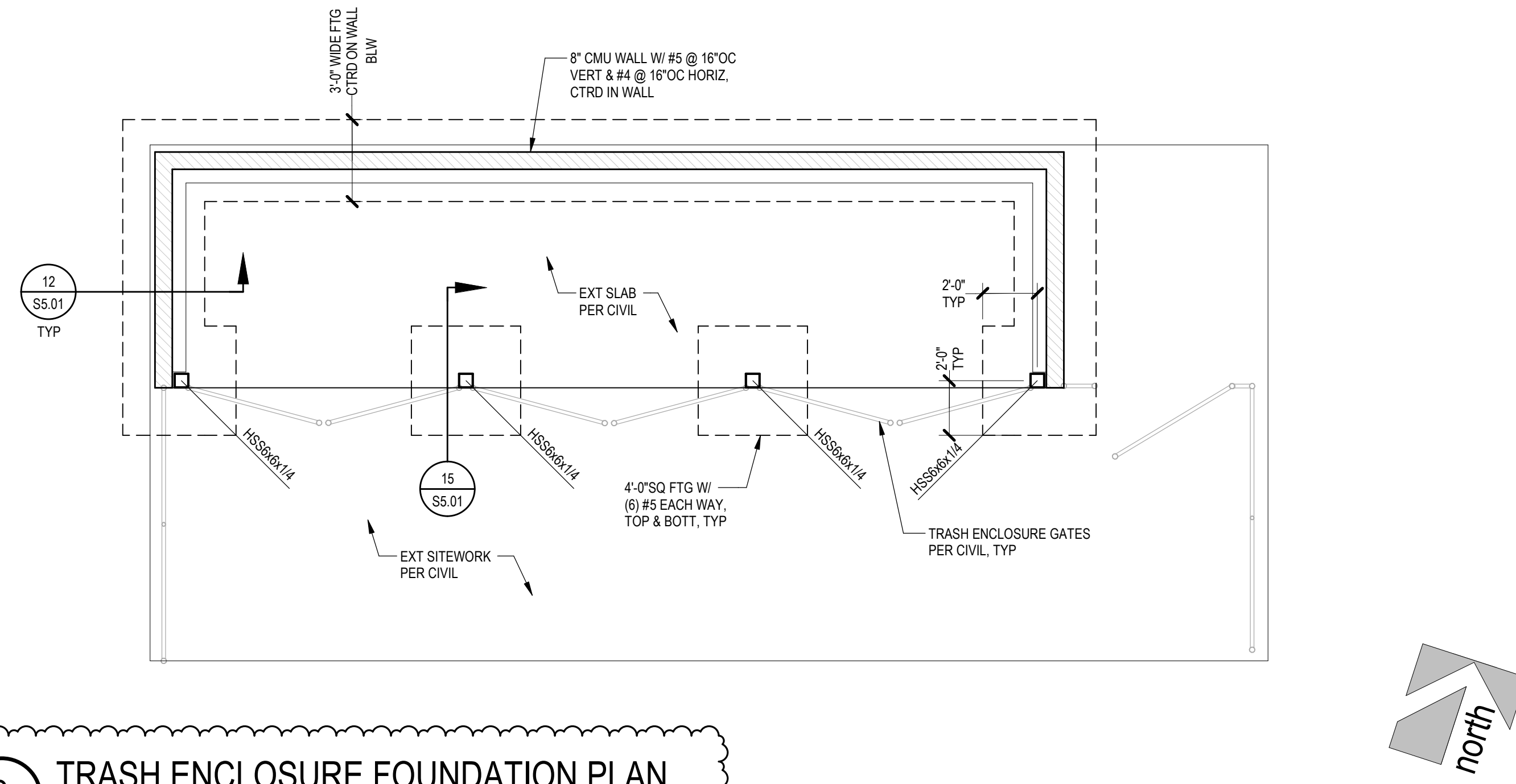
3 TRASH ENCLOSURE FOUNDATION PLAN

1/4" = 1'-0"



2 PARTIAL FOUNDATION PLAN - BLDG D (WEST)

1/4" = 1'-0"

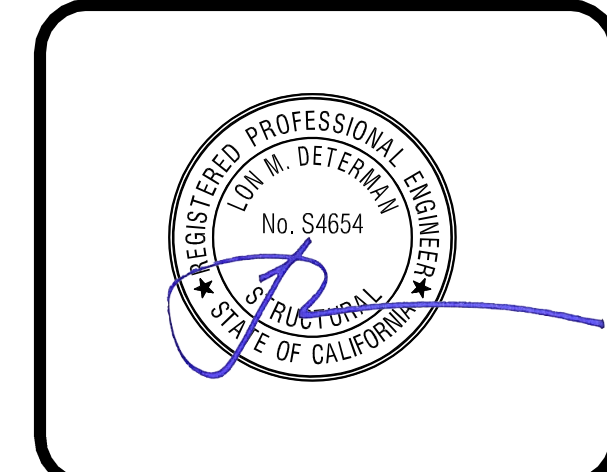
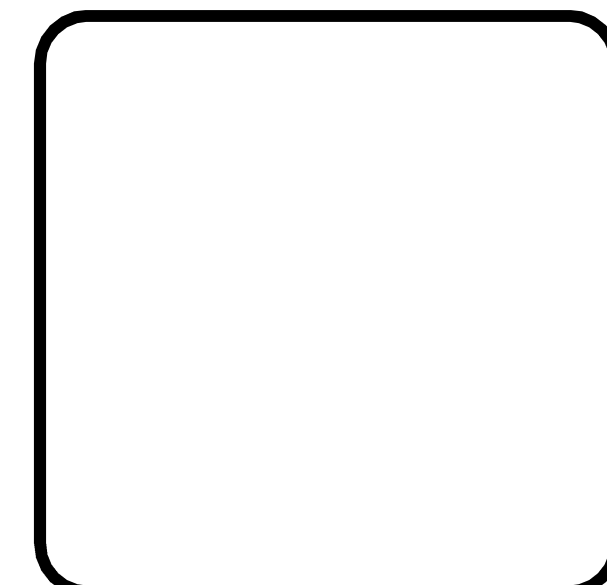


ARCHITECT PBK Architects, Inc.
FOLSOM
1110 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-355-9922
PBK.com

STRUCTURAL ENGINEER
miyamoto.

1450 Highway Drive, Suite One
West Sacramento, CA 95691
M2301016_R01
T: (916) 373-1999
miyamotointernational.com

NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 95240
DSA APP No. 02-121896

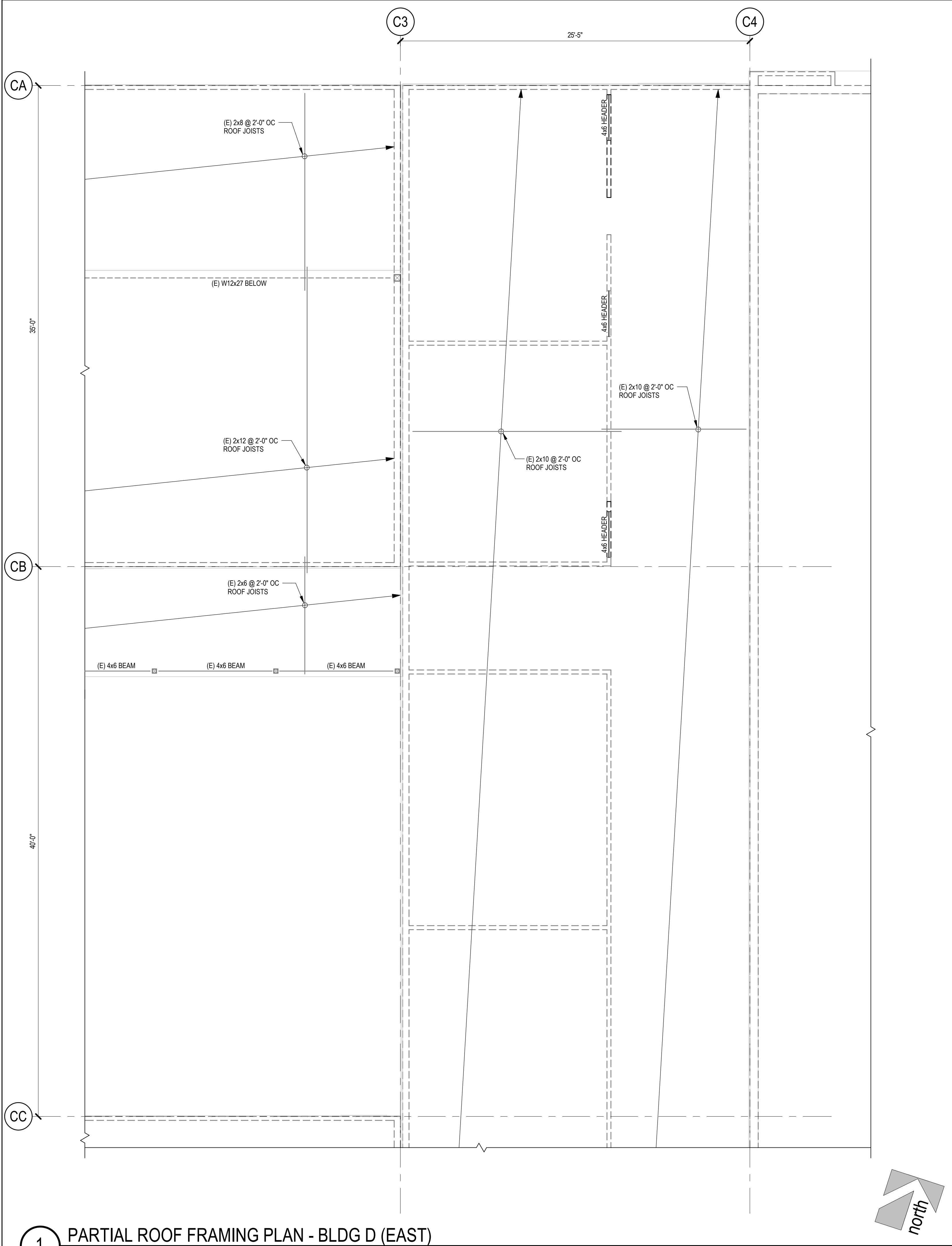


CLIENT		
LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER		
230170		
DATE		
02/04/2025		
DRAWN BY: AJR		
CHKD BY: RM		
REVISIONS		
#	DESCRIPTION	DATE
2	ADDENDUM 02	01/31/2025

DSA APP No. 02-121896

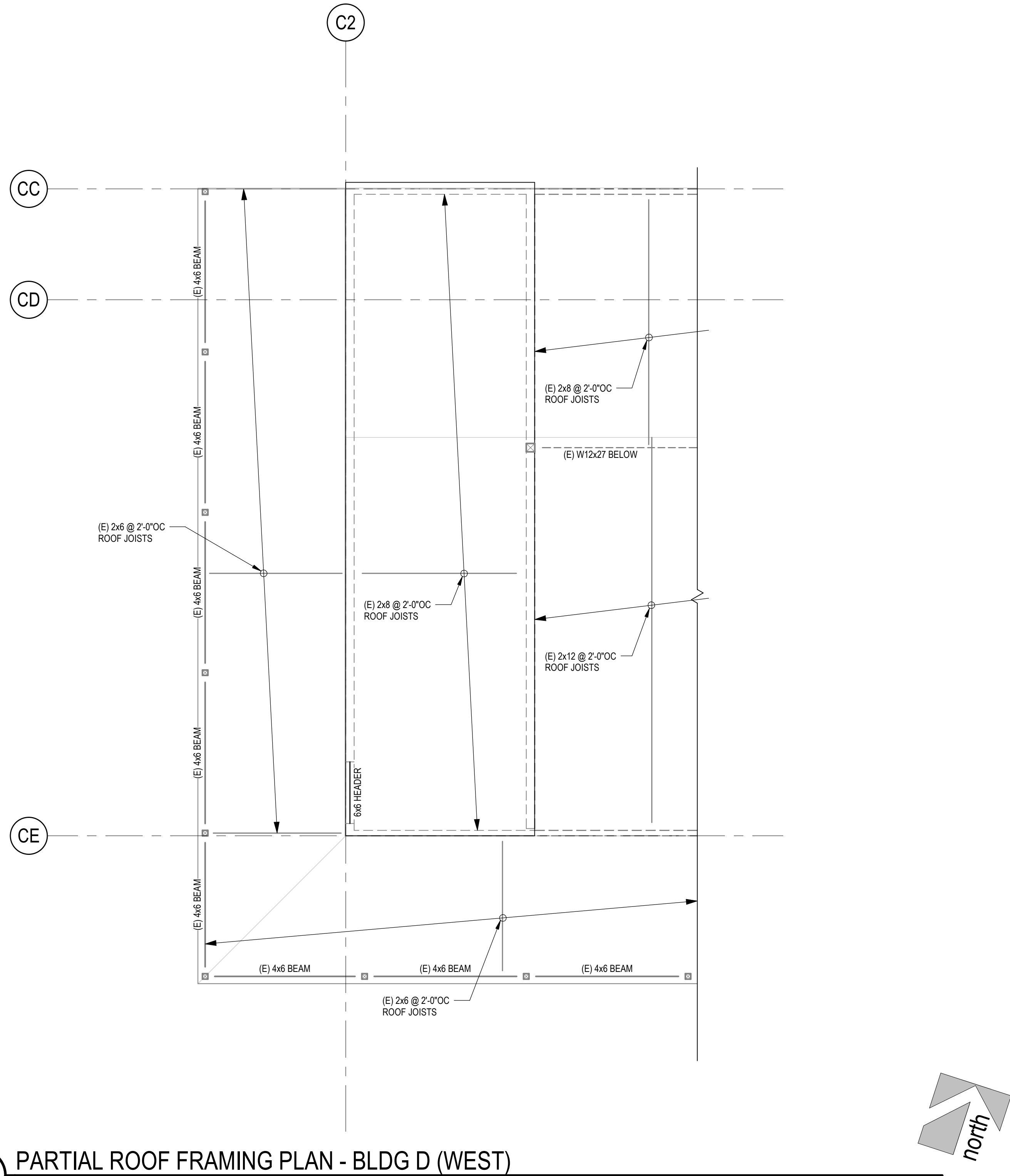
PARTIAL
FOUNDATION
PLANS

S1.01



1 PARTIAL ROOF FRAMING PLAN - BLDG D (EAST)
1/4" = 1'-0"

- NOTES:
- SEE 'E' BUILDING DRAWINGS FOR TOP OF ROOF ELEVATIONS.
 - SEE ARCHITECTURAL, PLUMBING, MECHANICAL AND ELECTRICAL FOR LOCATION OF EQUIPMENT. CONTRACTOR TO VERIFY ALL UNIT LOCATIONS, SIZES AND OPENINGS.



2 PARTIAL ROOF FRAMING PLAN - BLDG D (WEST)
1/4" = 1'-0"

Not for permitting or construction

ARCHITECT

PBK Architects, Inc.

PBK.com

FOLSOM

1110 Iron Point Road, Suite 200

Folsom, CA 95630-8315

916-355-9922

STRUCTURAL ENGINEER

miyamoto.

1450 Highway Drive, Suite One
West Sacramento, CA 95691
M2301016_R01

T: (916) 373-1995
miyamotointernational.com

NICHOLS ES MODERNIZATION

LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL

1301 CRESCENT AVENUE
LODI, CA 95240

DSA APP No. 02-121896

LODI

UNIFIED SCHOOL DISTRICT

REGISTERED PROFESSIONAL ENGINEER

NO. S4654

STATE OF CALIFORNIA

CLIENT:
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER:
230170

DATE:
02/04/2025

DRAWN BY: AJR CHKD BY: RM

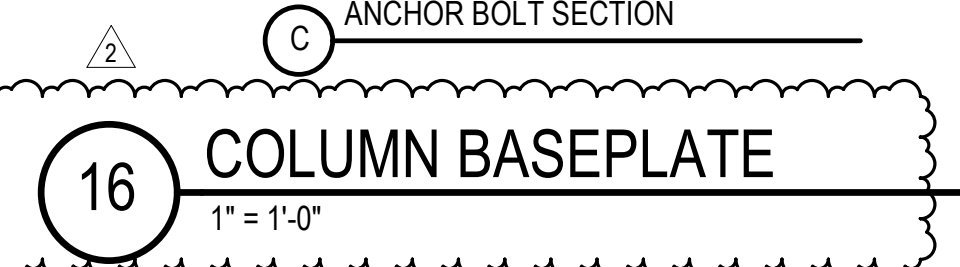
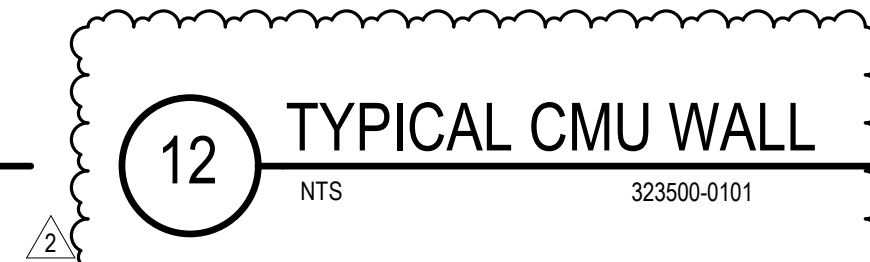
REVISIONS

#	DESCRIPTION	DATE

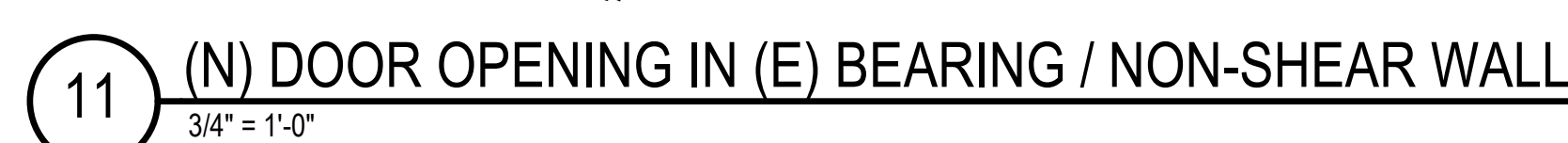
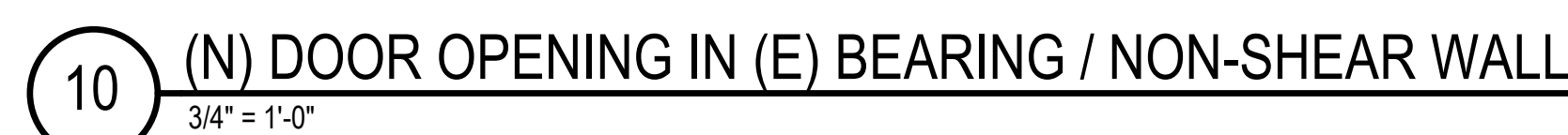
DSA APP No. 02-121896

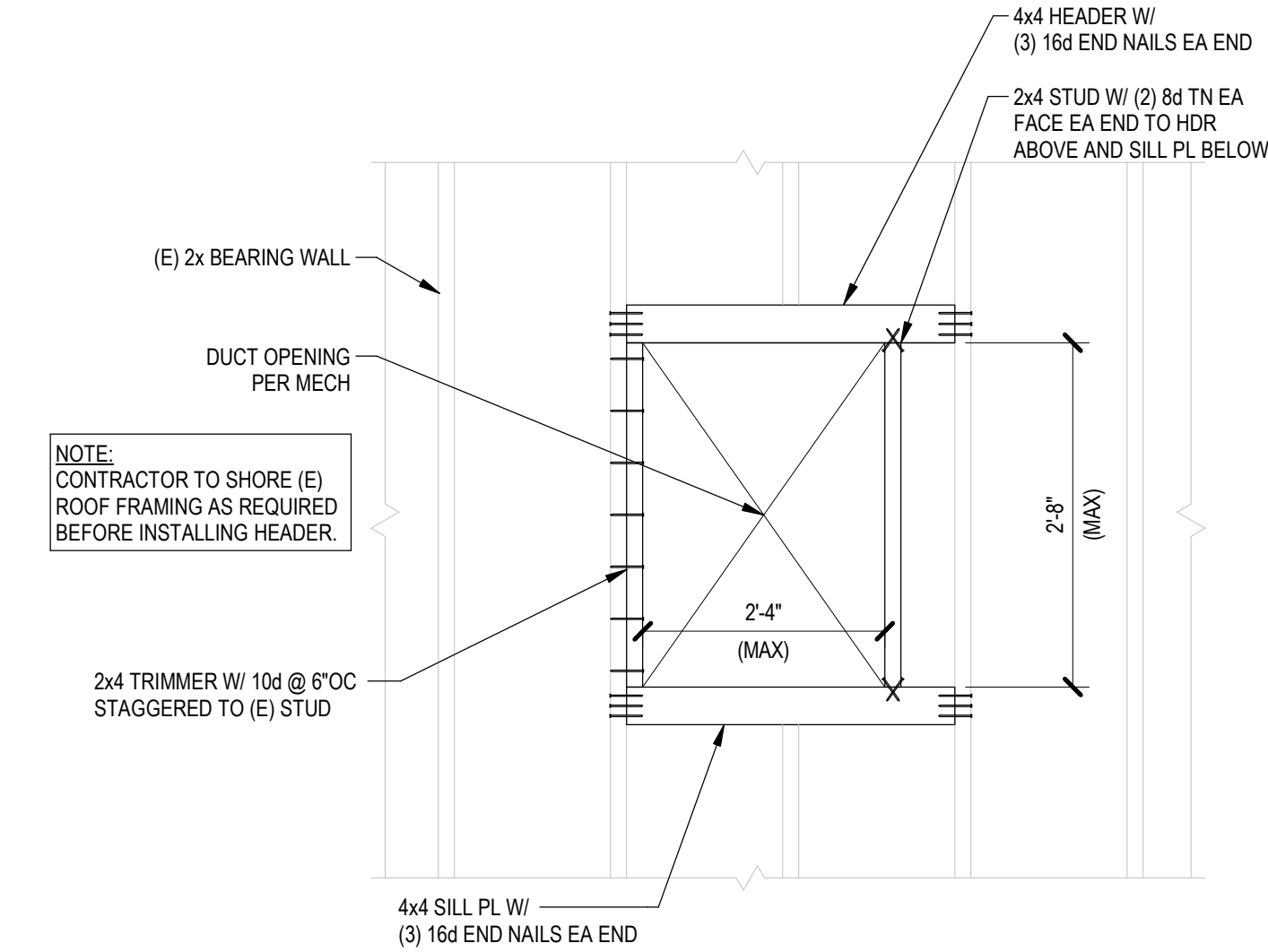
**PARTIAL ROOF
FRAMING PLANS**

S1.02

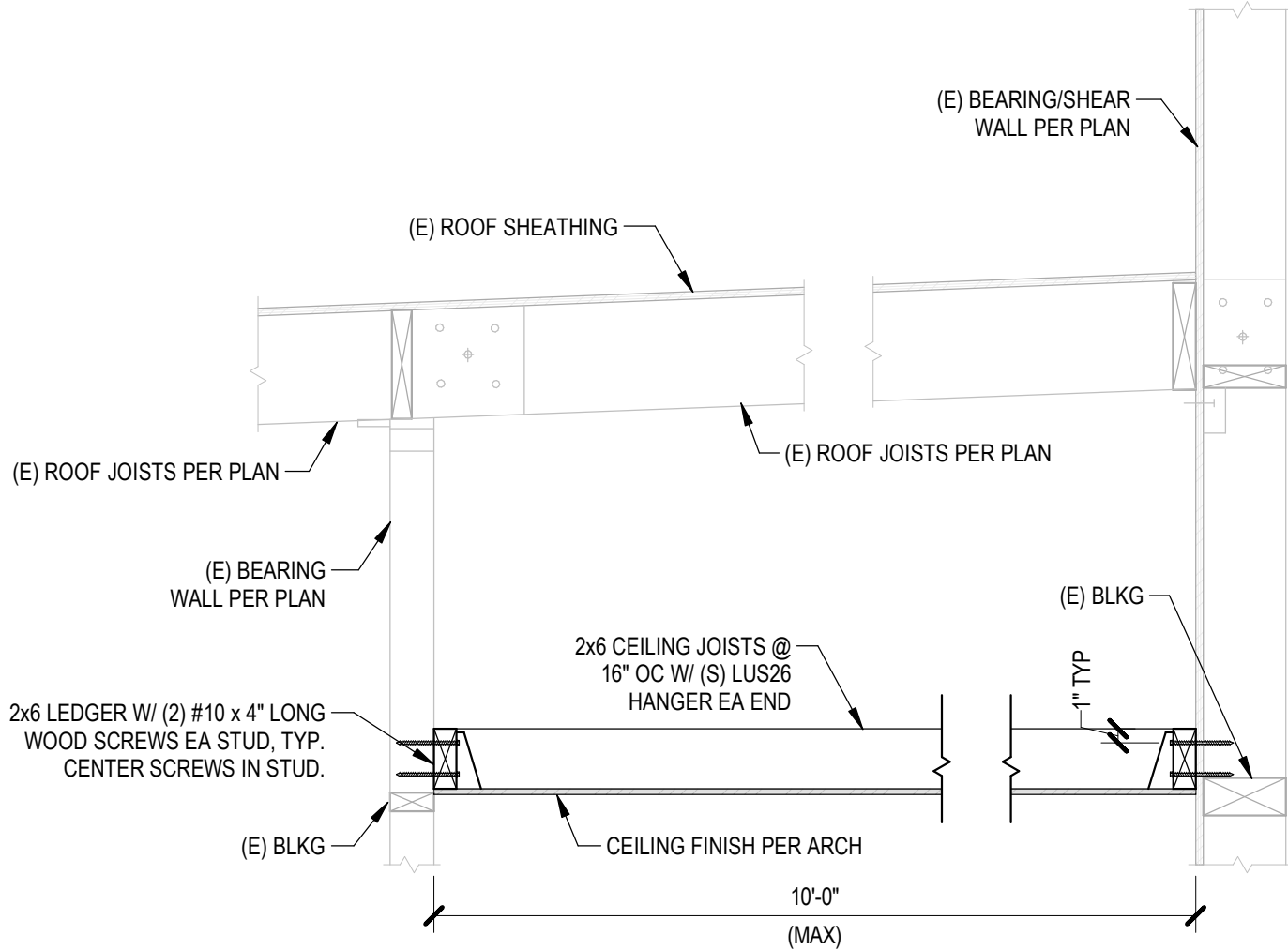


HOLE, EDGE DISTANCE & WASHER SCHEDULE				
BOLT DIAMETER	DE	HOLE DIAMETER	MIN WASHER SIZE	MIN WASHER THICKNESS
3/4"	2"	1 5/16"	2 1/2"SQ	1/2"





1 DUCT PENETRATION IN (E) WALL
3/4" = 1'-0"



2 CEILING FRAMING REPLACEMENT
FOR (N) DUCT INSTALLATION
1" = 1'-0"

Not for permitting or construction

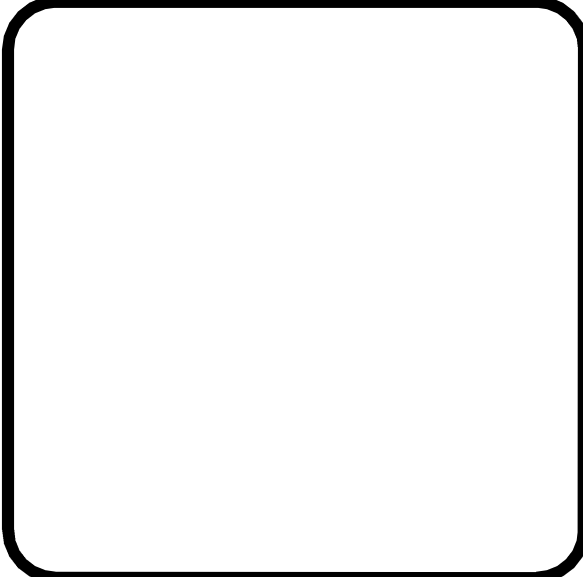
This document is for plan review only



ARCHITECT
FOLSOM
1110 Iron Point Road, Suite 200
Folsom, CA 95630-8315
916-355-9922
PBK.com

STRUCTURAL ENGINEER
miyamoto.
1450 Highway Drive, Suite One
West Covina, CA 91791
M2301016_R01
T: (916) 373-1999
miyamotointernational.com

NICHOLS ES MODERNIZATION
LODI UNIFIED SCHOOL DISTRICT
LEROY NICHOLS ELEMENTARY SCHOOL
1301 CRESCENT AVENUE
LODI, CA 95240
DSA APP No. 02-121896



CLIENT		
LODI UNIFIED SCHOOL DISTRICT		
PROJECT NUMBER		
230170		
DATE		
02/04/2025		
DRAWN BY: AJR		
CHKD BY: RM		
REVISIONS		
#	DESCRIPTION	DATE

DSA APP No. 02-121896
**(BID ALTERNATE)
WOOD FRAMING
DETAILS**

S5.41A

Structural Calculations for Leroy Nichols ES Modernization

LODI, California

Trash Enclosure Submittal
MI2301016
2/04/2025



TABLE OF CONTENTS

LEROY NICHOLS ES MODERNIZATION

FENCE GATE POST ANALYSIS:

- 1.1. END POST CHECK
- 1.2. MIDDLE POST CHECK
- 1.3. GATE POST BASE PLATE + ANCHORAGE DESIGN
- 1.4. GATE POST FOOTING DESIGN

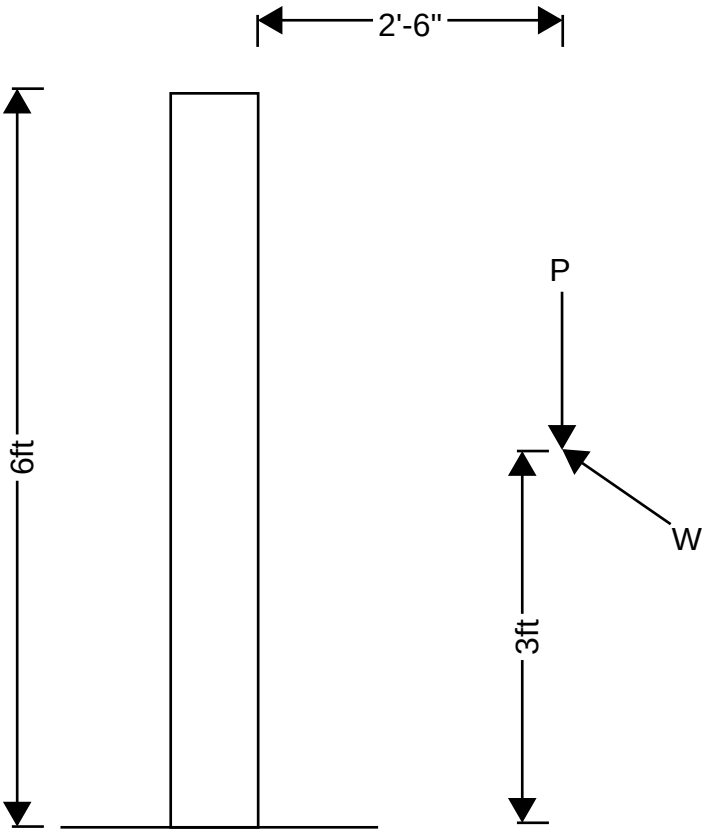
CMU ENCLOSURE WALL:

- 2.1. CMU WALL DESIGN
- 2.2. CMU WALL FOOTING DESIGN

FENCE GATE POST ANALYSIS

1.1. END POST CHECK

END POST CHECK



GATE POST LOADS

GATE DEAD LOAD

FRAME: $8.78\text{plf} \times (5\text{ft} + 5\text{ft} + 6\text{ft} + 6\text{ft}) = 191.36\#$
METAL DECK: $1.5\text{psf} \times (5\text{ft} \times 6\text{ft}) = 45\#$
TOTAL, P: $191.36\# + 45\# = 238.16\#$

GATE WIND LOAD

WIND: $(5\text{ft} \times 6\text{ft} \times 34\text{psf}) = 1020\#$ (SEE SPREADSHEET)

D/C = 0.18 **(PASSES)** (SEE ENERCALC)

Wind Base Shear (All-Heights Method) for MWFRS: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted
- CBC §1601.1.1 / §1601A.1.1 - Reference for Scope of Building Classification
- CBC §1609.1.1 / §1609A.1.1 - Reference for Determining Basic Wind Speed

Structure Information

Mean Roof Height	z =	8.00 [ft]
Parapet Height (top of parapet to top of roof)	h =	0.00 [ft]
Width of Structure	W =	8.8 [ft]
Length of Structure	L =	33.5 [ft]

Wind Coefficients - Table 27.2-1

Risk Category	=	III	(Table 1.5-1)
Basic Wind Speed	V =	100 [mph]	CBC §16- Fig.1609.3(2)
Solid Freestanding Walls, Roof Top	K_d =	0.85	(Sec. 26.6)
Surface Roughness	=	B	CBC §16- 1609.4.2
Exposure Category	=	C	CBC §16- 1609.4.3
Site Topology	=	Escarpment	
Site Location	=	Upwind	
Height to topographic peak (valley)	H =	31 [ft]	
Horizontal distance from peak to mid-height	L_h =	100 [ft]	
Horizontal distance from building location relative to topographical peak (valley)	x =	100 [ft]	
	K_1 =	0.26	
	K_2 =	0.75	
	K_3 =	0.82	
Are all conditions in 26.8.1 met?		No	
Topographic Factor	K_{zt} =	1.00	(Sec. 26.8.2, Eq. 26.8-1)
Elevation Factor	K_e =	I	(Sec. 26.9)
	K_z =	0.85	(Sec. 26.10.1)
	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 26.10-1)
Low-rise or rigid structure?		Yes	
Gust Effect Factor	G =	0.85	

User Input

Calculated Values

Intermediate Design Values

Design Values

Design Wind Loads for Solid Freestanding Walls and Solid Signs: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted

User Input

Calculated Values

Intermediate Design Values

Design Values

Structure Information

Height to the top of the Sign	$h =$	6.0 [ft]	(Figure 29.3-1)
Horizontal Dimension of the Sign	$B =$	33.3 [ft]	(Figure 29.3-1)
Vertical Dimension of the Sign	$s =$	6.0 [ft]	(Figure 29.3-1)
Sign thickness	$t =$	0.7 [ft]	
Horizontal Dimension of return corner	$L_r =$	8.0 [ft]	

Single Faced Sign or Wall

Gross Area of the Solid Freestanding Wall or Solid Sign	$A_s =$	199.8 [ft ²]	
s/h Ratio	$s/h =$	1.00	
Aspect Ratio B/s	$B/s =$	12.00	
Total Area of Openings in Sign Surface	$A_{OPNG} =$	0.0 [ft ²]	
Sign Openings Percentage	$A_{OPNG} / A_s =$	0.0 [%]	
Ratio of Solid Area to Gross Area	$\epsilon =$	1.0	

Wind Parameters

Velocity Pressure Evaluated at Height h	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 29.3-1)
Gust-effect Factor	$G =$	0.85	(Sec. 26.9)
Reduction Factor for Sign Openings	$(1 - (1 - \epsilon)^{1.5}) =$	1.00	(Figure 29.3-1)
Net Force Coefficient, Cases A & B	$C_f =$	1.30	(Figure 29.3-1)
Net Force Coefficients, Case C	C_f at region 0 to s from windward edge =	2.19	(Figure 29.3-1)
	C_f at region s to 2s from windward edge =	2.04	(Figure 29.3-1)
	C_f at region 2s to 3s from windward edge =	1.56	(Figure 29.3-1)
	C_f at region 3s to 10s from windward edge =	0.25	(Figure 29.3-1)

Minimum Design Wind Pressure = $p_{MIN} = 16.0$ [psf]

Design Wind Forces (includes reduction factor for openings where occurs)

	Design Wind Pressure, p_h [psf]			
Design Wind Force, Case A	$F_A = 20 A_s$	=	4078 [lb]	(Eq. 29.3-1)
Design Wind Force, Case B	$F_B = 20 A_s$	=	4078 [lb]	(Eq. 29.3-1)
Force Horizontal Eccentricity, Cases A & B	$e_h =$		0.00 [ft]	
Force Vertical Eccentricity, Cases A & B	$e_v =$		0.30 [ft]	

Design Wind Force, Case C, Region 0 to s	$F_{C0} = 34 A_s$	=	6881 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region s to 2s	$F_{C1} = 32 A_s$	=	6400 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region 2s to 3s	$F_{C2} = 24 A_s$	=	4894 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region 3s to 10s	$F_{C3} = 16 A_s$	=	1469 [lb]	(Eq. 29.3-1)

Forces for Case C act through the geometric center of each region

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: Fence Post (TYP End Post)

Code References

Calculations per AISC 360-16, IBC 2018, CBC 2019, ASCE 7-16
 Load Combinations Used : IBC 2018

General Information

Steel Section Name :	HSS6x6x1/4	Overall Column Height	6.0 ft
Analysis Method :	Load Resistance Factor	Top & Bottom Fixity	Top Free, Bottom Fixed
Steel Stress Grade		Brace condition for deflection (buckling) along columns :	
Fy : Steel Yield	36.0 ksi	X-X (width) axis :	
E : Elastic Bending Modulus	29,000.0 ksi	Unbraced Length for buckling ABOUT Y-Y Axis = 6 ft, K = 2.1	
		Y-Y (depth) axis :	
		Unbraced Length for buckling ABOUT X-X Axis = 6.0 ft, K = 2.1	

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 114.120 lbs * Dead Load Factor

AXIAL LOADS . . .

Axial Load at 3.0 ft, Xecc = 30.0 in, D = 0.240 k

BENDING LOADS . . .

Moment acting about X-X axis at 3.0 ft, W = 4.760 k-ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS Max. Axial+Bending Stress Ratio =	0.1828 : 1	Maximum Load Reactions . .	
Load Combination	+1.20D+W	Top along X-X	0.0 k
Location of max.above base	0.0 ft	Bottom along X-X	0.0 k
At maximum location values are . . .		Top along Y-Y	0.0 k
Pu	0.4249 k	Bottom along Y-Y	0.0 k
0.9 * Pn	136.276 k	Maximum Load Deflections . . .	
Mu-x	4.760 k-ft	Along Y-Y	-0.1333 in at 6.0ft above base
0.9 * Mn-x :	30.240 k-ft	for load combination :W Only	
Mu-y	-0.720 k-ft	Along X-X	0.01680 in at 6.0ft above base
0.9 * Mn-y :	30.240 k-ft	for load combination :D Only	
PASS Maximum Shear Stress Ratio	0.0 : 1		
Load Combination	0.0		
Location of max.above base	0.0 ft		
At maximum location values are . . .			
Vu : Applied	0.0 k		
Vn * Phi : Allowable	0.0 k		

Load Combination Results

Load Combination	Maximum Axial + Bending Stress Ratios				CbX	CbY	KxLx/Ry	KyLy/Rx	Maximum Shear Ratios		
	Stress Ratio	Status	Location	Stress Ratio					Status	Location	
+1.40D	0.030	PASS	1.37 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	
+1.20D	0.025	PASS	0.00 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	
+1.20D+0.50W	0.104	PASS	0.00 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	
+1.20D+W	0.183	PASS	0.00 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	
+0.90D+W	0.176	PASS	0.00 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	
+0.90D	0.019	PASS	0.00 ft	2.27	2.27	64.62	64.62	0.000	PASS	0.00 ft	

Maximum Reactions

Note: Only non-zero reactions are listed.

Load Combination	Axial Reaction	X-X Axis Reaction		k	Y-Y Axis Reaction		Mx - End Moments		k-ft	My - End Moments	
	@ Base	@ Base	@ Top		@ Base	@ Top	@ Base	@ Top		@ Base	@ Top
D Only	0.354										-0.600
+D+0.60W	0.354						2.856				-0.600
+D+0.450W	0.354						2.142				-0.600
+0.60D+0.60W	0.212						2.856				-0.360
+0.60D	0.212										-0.360
W Only							4.760				

Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: Fence Post (TYP End Post)

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
Axial @ Base	Maximum	0.354						-0.600
"	Minimum					4.760		
Reaction, X-X Axis Base	Maximum	0.354						-0.600
"	Minimum	0.354						-0.600
Reaction, Y-Y Axis Base	Maximum	0.354						-0.600
"	Minimum	0.354				-0.600		
Reaction, X-X Axis Top	Maximum	0.354						-0.600
"	Minimum	0.354						-0.600
Reaction, Y-Y Axis Top	Maximum	0.354						-0.600
"	Minimum	0.354						-0.600
Moment, X-X Axis Base	Maximum		4.760			4.760		
"	Minimum	0.354						-0.600
Moment, Y-Y Axis Base	Maximum							-0.600
"	Minimum	0.354						-0.600
Moment, X-X Axis Top	Maximum	0.354						-0.600
"	Minimum	0.354						-0.600
Moment, Y-Y Axis Top	Maximum	0.354						-0.600
"	Minimum	0.354						-0.600

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0168 in	6.000 ft	0.000 in	0.000 ft
+D+0.60W	0.0168 in	6.000 ft	-0.080 in	6.000 ft
+D+0.450W	0.0168 in	6.000 ft	-0.060 in	6.000 ft
+0.60D+0.60W	0.0101 in	6.000 ft	-0.080 in	6.000 ft
+0.60D	0.0101 in	6.000 ft	0.000 in	0.000 ft
W Only	0.0000 in	0.000 ft	-0.132 in	5.960 ft

Steel Section Properties : HSS6x6x1/4

Depth	=	6.000 in	I xx	=	28.60 in^4	J	=	45.600 in^4
Design Thick	=	0.233 in	S xx	=	9.54 in^3			
Width	=	6.000 in	R xx	=	2.340 in			
Wall Thick	=	0.250 in	Zx	=	11.200 in^3			
Area	=	5.240 in^2	I yy	=	28.600 in^4	C	=	15.400 in^3
Weight	=	19.020 plf	S yy	=	9.540 in^3			
			R yy	=	2.340 in			

Ycg = 0.000 in

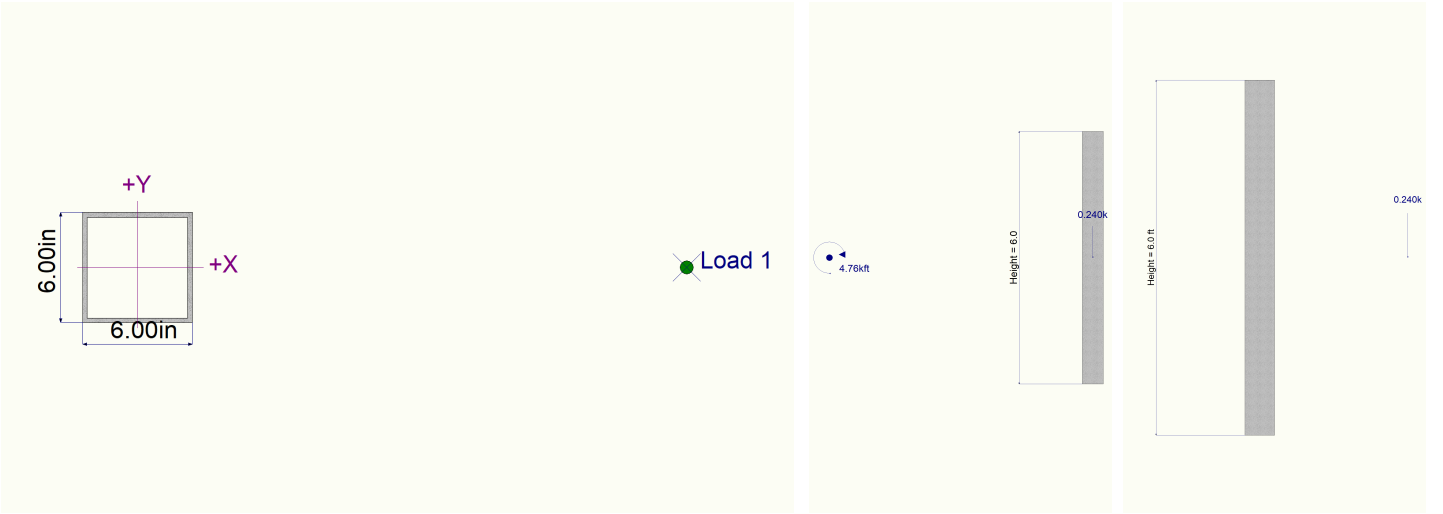
Steel Column

Project File: Trash Enclosure.ec6

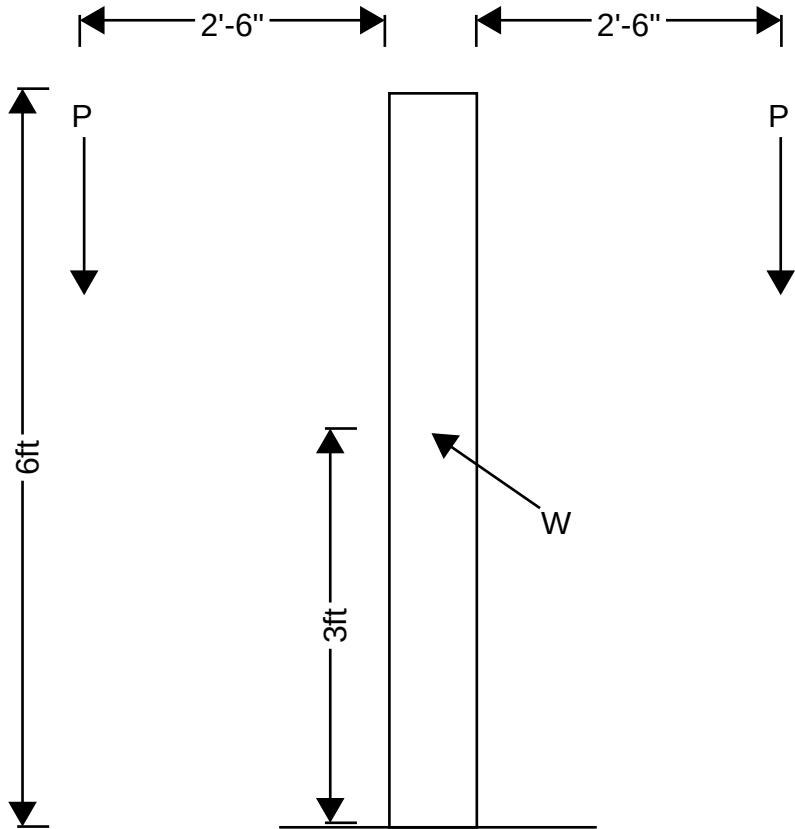
LIC# : KW-06018304, Build:20.22.6.12 MIYAMOTO INTERNATIONAL INC (c) ENERCALC INC 1983-2022

DESCRIPTION: Fence Post (TYP End Post)

Sketches



1.2. MIDDLE POST CHECK

MIDDLE POST CHECK**GATE POST LOADS****GATE DEAD LOAD**FRAME: $8.78\text{plf} \times (5\text{ft} + 5\text{ft} + 6\text{ft} + 6\text{ft}) = 191.36\#$ METAL DECK: $1.5\text{psf} \times (5\text{ft} \times 6\text{ft}) = 45\#$ TOTAL, P: $191.36\# + 45\# = 238.16\#$ **GATE WIND LOAD**WIND: $(3\text{ft} \times 6\text{ft} \times 34\text{psf}) + (5\text{ft} \times 6\text{ft} \times 32\text{psf}) = 1572\#$
(SEE SPREADSHEET)D/C = 0.16 **(PASSES)** (SEE ENERCALC)

Wind Base Shear (All-Heights Method) for MWFRS: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted
- CBC §1601.1.1 / §1601A.1.1 - Reference for Scope of Building Classification
- CBC §1609.1.1 / §1609A.1.1 - Reference for Determining Basic Wind Speed

Structure Information

Mean Roof Height	z =	8.00 [ft]
Parapet Height (top of parapet to top of roof)	h =	0.00 [ft]
Width of Structure	W =	8.8 [ft]
Length of Structure	L =	33.5 [ft]

Wind Coefficients - Table 27.2-1

Risk Category	=	III	(Table 1.5-1)
Basic Wind Speed	V =	100 [mph]	CBC §16- Fig.1609.3(2)
Solid Freestanding Walls, Roof Top	K_d =	0.85	(Sec. 26.6)
Surface Roughness	=	B	CBC §16- 1609.4.2
Exposure Category	=	C	CBC §16- 1609.4.3
Site Topology	=	Escarpment	
Site Location	=	Upwind	
Height to topographic peak (valley)	H =	31 [ft]	
Horizontal distance from peak to mid-height	L_h =	100 [ft]	
Horizontal distance from building location relative to topographical peak (valley)	x =	100 [ft]	
	K_1 =	0.26	
	K_2 =	0.75	
	K_3 =	0.82	
Are all conditions in 26.8.1 met?		No	
Topographic Factor	K_{zt} =	1.00	(Sec. 26.8.2, Eq. 26.8-1)
Elevation Factor	K_e =	I	(Sec. 26.9)
	K_z =	0.85	(Sec. 26.10.1)
	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 26.10-1)
Low-rise or rigid structure?		Yes	
Gust Effect Factor	G =	0.85	

User Input**Calculated Values****Intermediate Design Values****Design Values**

Design Wind Loads for Solid Freestanding Walls and Solid Signs: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted

User Input

Calculated Values

Intermediate Design Values

Design Values

Structure Information

Height to the top of the Sign	$h =$	6.0 [ft]	(Figure 29.3-1)
Horizontal Dimension of the Sign	$B =$	33.3 [ft]	(Figure 29.3-1)
Vertical Dimension of the Sign	$s =$	6.0 [ft]	(Figure 29.3-1)
Sign thickness	$t =$	0.7 [ft]	
Horizontal Dimension of return corner	$L_r =$	8.0 [ft]	

Single Faced Sign or Wall

Gross Area of the Solid Freestanding Wall or Solid Sign	$A_s =$	199.8 [ft ²]	
s/h Ratio	$s/h =$	1.00	
Aspect Ratio B/s	$B/s =$	12.00	
Total Area of Openings in Sign Surface	$A_{OPNG} =$	0.0 [ft ²]	
Sign Openings Percentage	$A_{OPNG} / A_s =$	0.0 [%]	
Ratio of Solid Area to Gross Area	$\epsilon =$	1.0	

Wind Parameters

Velocity Pressure Evaluated at Height h	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 29.3-1)
Gust-effect Factor	$G =$	0.85	(Sec. 26.9)
Reduction Factor for Sign Openings	$(1 - (1 - \epsilon)^{1.5}) =$	1.00	(Figure 29.3-1)
Net Force Coefficient, Cases A & B	$C_f =$	1.30	(Figure 29.3-1)
Net Force Coefficients, Case C	C_f at region 0 to s from windward edge =	2.19	(Figure 29.3-1)
	C_f at region s to $2s$ from windward edge =	2.04	(Figure 29.3-1)
	C_f at region $2s$ to $3s$ from windward edge =	1.56	(Figure 29.3-1)
	C_f at region $3s$ to $10s$ from windward edge =	0.25	(Figure 29.3-1)

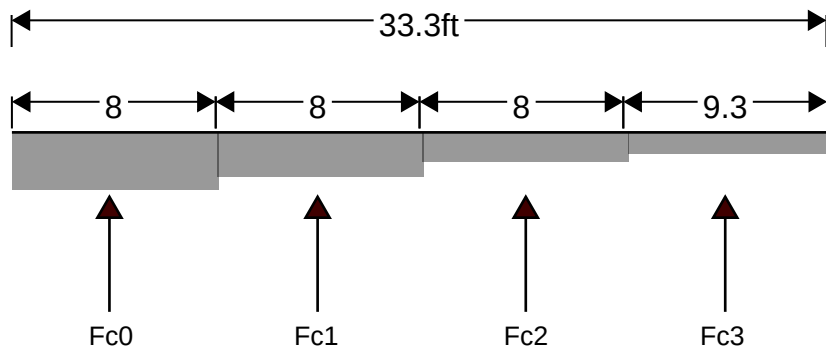
Minimum Design Wind Pressure = $p_{MIN} = 16.0$ [psf]

Design Wind Forces (includes reduction factor for openings where occurs)

	Design Wind Pressure, p_h [psf]			
Design Wind Force, Case A	$F_A = 20 A_s$	=	4078 [lb]	(Eq. 29.3-1)
Design Wind Force, Case B	$F_B = 20 A_s$	=	4078 [lb]	(Eq. 29.3-1)
Force Horizontal Eccentricity, Cases A & B	$e_h =$		0.00 [ft]	
Force Vertical Eccentricity, Cases A & B	$e_v =$		0.30 [ft]	

Design Wind Force, Case C, Region 0 to s	$F_{C0} = 34 A_s$	=	6881 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region s to $2s$	$F_{C1} = 32 A_s$	=	6400 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region $2s$ to $3s$	$F_{C2} = 24 A_s$	=	4894 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region $3s$ to $10s$	$F_{C3} = 16 A_s$	=	1469 [lb]	(Eq. 29.3-1)

Forces for Case C act through the geometric center of each region



Project Title:
 Engineer:
 Project ID:
 Project Descr:

Steel Column

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: Fence Post (Worse-Case Middle Post)

Extreme Reactions

Item	Extreme Value	Axial Reaction @ Base	X-X Axis Reaction @ Base @ Top	k	Y-Y Axis Reaction @ Base @ Top	Mx - End Moments @ Base @ Top	k-ft	My - End Moments @ Base @ Top
Axial @ Base	Maximum	0.594						
"	Minimum		-1.600					-4.800
Reaction, X-X Axis Base	Maximum	0.594						
"	Minimum		-1.600					-4.800
Reaction, Y-Y Axis Base	Maximum	0.594						
"	Minimum	0.594						
Reaction, X-X Axis Top	Maximum	0.594						
"	Minimum	0.594						
Reaction, Y-Y Axis Top	Maximum	0.594						
"	Minimum		-1.600					-4.800
Moment, X-X Axis Base	Maximum	0.594						
"	Minimum	0.594						
Moment, Y-Y Axis Base	Maximum	0.594						
"	Minimum		-1.600					-4.800
Moment, X-X Axis Top	Maximum	0.594						
"	Minimum	0.594						
Moment, Y-Y Axis Top	Maximum	0.594						
"	Minimum	0.594						

Maximum Deflections for Load Combinations

Load Combination	Max. X-X Deflection	Distance	Max. Y-Y Deflection	Distance
D Only	0.0000 in	0.000 ft	0.000 in	0.000 ft
+D+0.60W	0.0448 in	6.000 ft	0.000 in	0.000 ft
+D+0.450W	0.0336 in	6.000 ft	0.000 in	0.000 ft
+0.60D+0.60W	0.0448 in	6.000 ft	0.000 in	0.000 ft
+0.60D	0.0000 in	0.000 ft	0.000 in	0.000 ft
W Only	0.0741 in	5.960 ft	0.000 in	0.000 ft

Steel Section Properties : HSS6x6x1/4

Depth	=	6.000 in	I xx	=	28.60 in^4	J	=	45.600 in^4
Design Thick	=	0.233 in	S xx	=	9.54 in^3			
Width	=	6.000 in	R xx	=	2.340 in			
Wall Thick	=	0.250 in	Zx	=	11.200 in^3			
Area	=	5.240 in^2	I yy	=	28.600 in^4	C	=	15.400 in^3
Weight	=	19.020 plf	S yy	=	9.540 in^3			
			R yy	=	2.340 in			

Ycg = 0.000 in

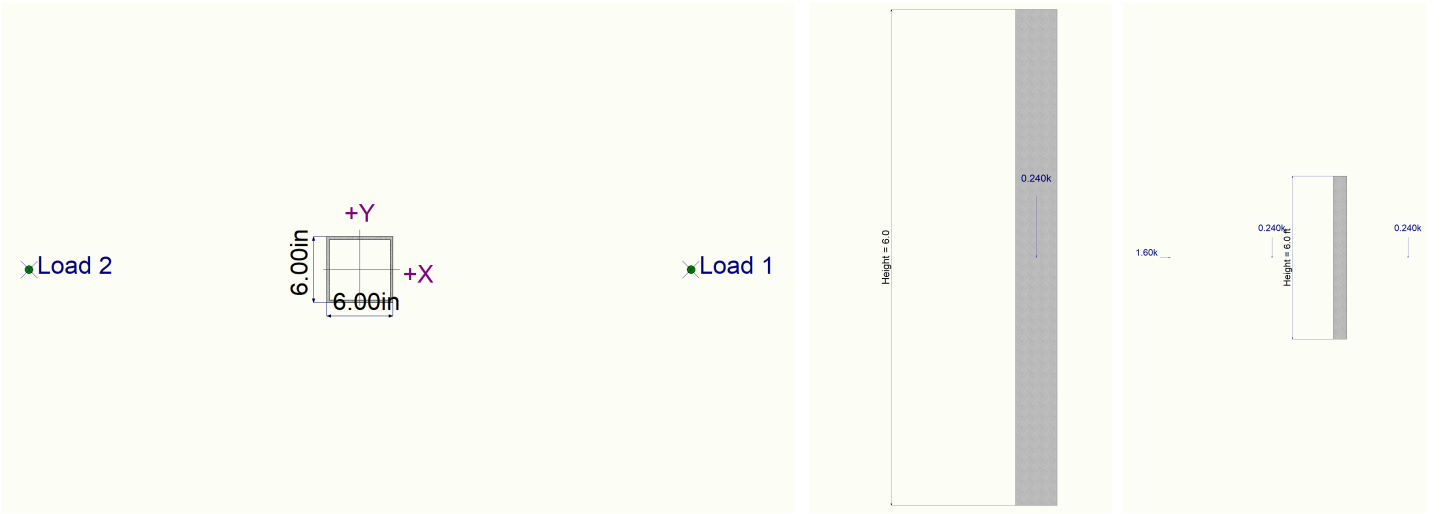
Steel Column

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12 MIYAMOTO INTERNATIONAL INC (c) ENERCALC INC 1983-2022

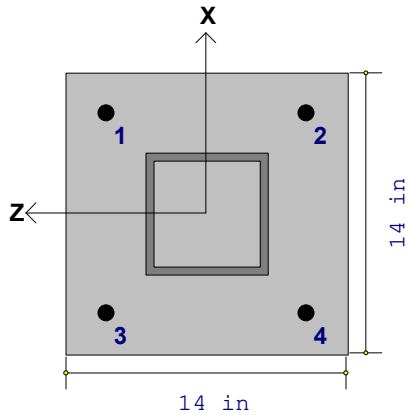
DESCRIPTION: Fence Post (Worse-Case Middle Post)

Sketches



1.3. GATE POST BASE PLATE + ANCHORAGE DESIGN

Middle Gate Post Base Plate

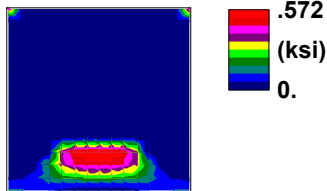


Plain Base Plate Connection

Base Plate Thickness : 1. in
 Base Plate Fy : 36. ksi
 Bearing Surface Fp : 4.42 ksi
 Anchor Bolt Diameter : .75 in
 Anchor Bolt Material : F1554-36
 Anchor Bolt Fu : 60. ksi
 Column Shape : HSS6x6x4
 Steel Code : AISC 14th:LRFD

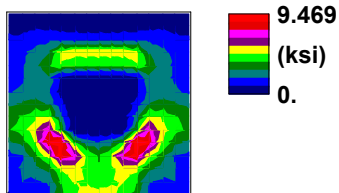
Bearing Pressure

Maximum Bearing : .572 ksi
 Max/Allowable Ratio : .129 ASCE Strength 4 (a)
 (ABIF = 1.000)



Base Plate Stress

Maximum Stress : 9.469 ksi
 Max/Allowable Ratio : .195 ASCE Strength 6
 (ASIF = 1.000)



Anchor Bolts

Bolt	X (in)	Z (in)	Tens.(k)	Vx (k)	Vz (k)	Fnt (ksi)	ft (ksi)	Fnv (ksi)	fv (ksi)	Unity	Combination
1	5.	5.	4.484	.4	0.	45.	10.149	27.	.905	.301 (T)	ASCE Strength 6 (10)
2	5.	-5.	4.484	.4	0.	45.	10.149	27.	.905	.301 (T)	ASCE Strength 6 (10)
3	-5.	5.	4.484	-.4	0.	45.	10.149	27.	.905	.301 (T)	ASCE Strength 6 (9)
4	-5.	-5.	4.484	-.4	0.	45.	10.149	27.	.905	.301 (T)	ASCE Strength 6 (9)

Note: Fnt and Fnv shown above include phi factors.

Loads

	P (k)	Vx (k)	Vz (k)	Mx (k-ft)	Mz (k-ft)
DL	.24				
WL		1.6			7.3

Anchor Bolt Embed Capacity Results

Note: All capacities shown include phi factors

Single Bolt Tension Envelope Results

LC	Bolt	Tens.(k)	Nsa(k)	Ncb(k)	Npn(k)	Nsb(k)	Unity	Ductility	Load(k)	Steel(in2)
9	3	4.484	15.03	35.123	25.715	0.	.298	N.A.	0.	0.

Single Bolt Vx Envelope Results

LC	Bolt	Vx (k)	Vz (k)	Vsa(k)	VcbXx(k)	VcbXz(k)	VcbZz(k)	VcbZx(k)	Vcp (k)	VxUnity	VzUnity
5	1	.4	0.	7.816	18.841	41.868	20.164	41.868	70.246	.051	0.

Seismic Ductility & Anchor Reinforcement Results

LC	Bolt	Vx (k)	Vz (k)	VxUnity	VzUnity	Vx-Duct	Vx-L(k)	Vx-St(in2)	Vz-Duct	Vz-L(k)	Vz-St(in2)
5	1	.4	0.	.051	0.	N.A.	0.	0.	N.A.	0.	0.

Single Bolt Vz Envelope Results

LC	Bolt	Vx (k)	Vz (k)	Vsa(k)	VcbXx(k)	VcbXz(k)	VcbZz(k)	VcbZx(k)	Vcp (k)	VxUnity	VzUnity
1	1	0.	0.	7.816	20.164	41.868	20.164	41.868	70.246	0.	0.

Seismic Ductility & Anchor Reinforcement Results

LC	Bolt	Vx (k)	Vz (k)	VxUnity	VzUnity	Vx-Duct	Vx-L(k)	Vx-St(in2)	Vz-Duct	Vz-L(k)	Vz-St(in2)
1	1	0.	0.	0.	0.	N.A.	0.	0.	N.A.	0.	0.

Single Bolt: Combined Tension and Shear Capacity Envelope Results

LC	Bolt	Nn(k)	Vnx(k)	Vnz(k)	SRSS	Interaction
1	1	15.03	7.816	7.816	0.	N.A.

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

1

2/4/2025

Specifier's comments:

1 Input data

Anchor type and diameter:

Heavy Hex Head ASTM F 1554 GR. 36 3/4



Item number:

not available

Specification text:

Ø 3/4 in Heavy Hex Head ASTM F 1554 GR. 36 with 12 in nominal embedment depth per Technical data , cast in place installation per MPII

Effective embedment depth:

$h_{ef} = 12.000$ in.

Material:

ASTM F 1554

Evaluation Service Report:

Hilti Technical Data

Issued | Valid:

- | -

Proof:

Design Method ACI 318-19 / CIP

Shear edge breakout verification:

Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)

Stand-off installation:

$e_b = 0.000$ in. (no stand-off); $t = 1.000$ in.

Anchor plate^R:

$l_x \times l_y \times t = 14.000$ in. x 14.000 in. x 1.000 in.; (Recommended plate thickness: not calculated)

Profile:

Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.

Base material:

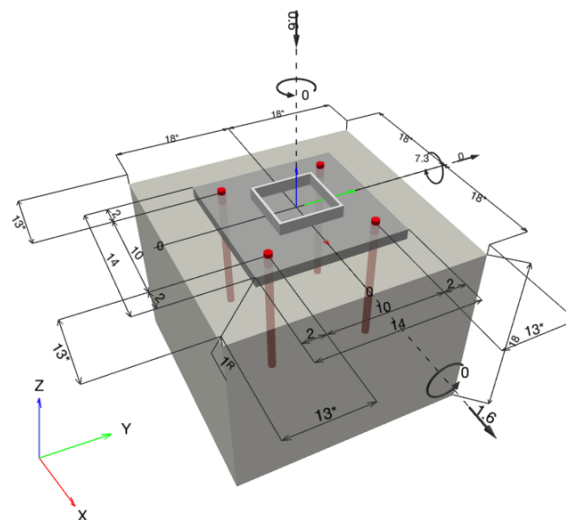
cracked concrete, 3000, $f'_c = 3,000$ psi; $h = 18.000$ in.

Reinforcement:

tension: not present, shear: not present;
edge reinforcement: none or < No. 4 bar

^R - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [kip, ft.kip]



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page: 2
Specifier:
E-Mail:
Date: 2/4/2025

1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -0.600; V _x = 1.600; V _y = 0.000; M _x = 0.00000; M _y = 7.30000; M _z = 0.00000;	no	26

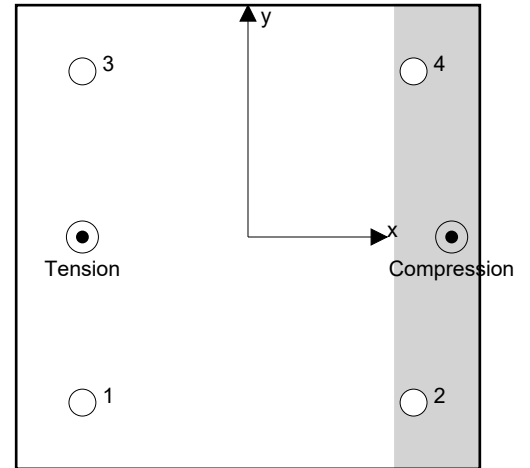
2 Load case/Resulting anchor forces

Anchor reactions [kip]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	3.763	0.400	0.400	0.000
2	0.000	0.400	0.400	0.000
3	3.763	0.400	0.400	0.000
4	0.000	0.400	0.400	0.000

Max. concrete compressive strain: 0.10 [‰]
Max. concrete compressive stress: 456 [psi]
Resulting tension force in (x/y)=(-5.000/-0.000): 7.525 [kip]
Resulting compression force in (x/y)=(6.151/-0.000): 8.125 [kip]



Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N _{ua} [kip]	Capacity ϕN_n [kip]	Utilization $\beta_N = N_{ua} / \phi N_n$	Status
Steel Strength*	3.763	14.529	26	OK
Pullout Strength*	3.763	15.305	25	OK
Concrete Breakout Failure**	7.525	32.507	24	OK
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page: 3
Specifier:
E-Mail:
Date: 2/4/2025

3.1 Steel Strength

$$N_{sa} = A_{se,N} f_{uta} \quad \text{ACI 318-19 Eq. (17.6.1.2)}$$

$$\phi N_{sa} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$A_{se,N} [\text{in.}^2]$	$f_{uta} [\text{psi}]$
0.33	58,000

Calculations

$N_{sa} [\text{kip}]$
19.372

Results

$N_{sa} [\text{kip}]$	ϕ_{steel}	$\phi N_{sa} [\text{kip}]$	$N_{ua} [\text{kip}]$
19.372	0.750	14.529	3.763

3.2 Pullout Strength

$$N_{pN} = \psi_{c,p} N_p \quad \text{ACI 318-19 Eq. (17.6.3.1)}$$

$$N_p = 8 A_{brg} f'_c \quad \text{ACI 318-19 Eq. (17.6.3.2.2a)}$$

$$\phi N_{pN} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$\psi_{c,p}$	$A_{brg} [\text{in.}^2]$	λ_a	$f'_c [\text{psi}]$
1.000	0.91	1.000	3,000

Calculations

$N_p [\text{kip}]$
21.864

Results

$N_{pn} [\text{kip}]$	ϕ_{concrete}	$\phi N_{pn} [\text{kip}]$	$N_{ua} [\text{kip}]$
21.864	0.700	15.305	3.763

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

4

2/4/2025

3.3 Concrete Breakout Failure

$$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \quad \text{ACI 318-19 Eq. (17.6.2.1b)}$$

$$\phi N_{cbg} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Nc} \text{ see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-19 Eq. (17.6.2.1.4)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.3.1)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.4.1b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.6.1b)}$$

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \quad \text{ACI 318-19 Eq. (17.6.2.2.1)}$$

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
8.667	0.000	0.000	13.000	1.000
c_{ac} [in.]	k_c	λ_a	f_c [psi]	
-	24	1.000	3,000	

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
936.00	676.00	1.000	1.000	1.000	1.000	33.539

Results

N_{cbg} [kip]	$\phi_{concrete}$	ϕN_{cbg} [kip]	N_{ua} [kip]
46.439	0.700	32.507	7.525



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page: 5
Specifier:
E-Mail:
Date: 2/4/2025

4 Shear load

	Load V_{ua} [kip]	Capacity ϕV_n [kip]	Utilization $\beta_v = V_{ua} / \phi V_n$	Status
Steel Strength*	0.400	7.555	6	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	1.600	90.019	2	OK
Concrete edge failure in direction x+**	1.600	13.149	13	OK

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

$$V_{sa} = 0.6 A_{se,V} f_{uta} \quad \text{ACI 318-19 Eq. (17.7.1.2b)}$$

$$\phi V_{steel} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$A_{se,V}$ [in. ²]	f_{uta} [psi]
0.33	58,000

Calculations

V_{sa} [kip]
11.623

Results

V_{sa} [kip]	ϕ_{steel}	ϕV_{sa} [kip]	V_{ua} [kip]
11.623	0.650	7.555	0.400

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

6

2/4/2025

4.2 Pryout Strength

$$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right] \quad \text{ACI 318-19 Eq. (17.7.3.1b)}$$

$$\phi V_{cp} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Nc} \text{ see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-19 Eq. (17.6.2.1.4)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.3.1)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.4.1b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.6.1b)}$$

$$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} \quad \text{ACI 318-19 Eq. (17.6.2.2.1)}$$

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	8.667	0.000	0.000	13.000
$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	24	1.000	3,000

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
1,296.00	676.00	1.000	1.000	1.000	1.000	33.539

Results

V_{cp} [kip]	$\phi_{concrete}$	ϕV_{cp} [kip]	V_{ua} [kip]
128.599	0.700	90.019	1.600

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

7

2/4/2025

4.3 Concrete edge failure in direction x+

$$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}} \right) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} \Psi_{parallel,V} V_b \quad \text{ACI 318-19 Eq. (17.7.2.1b)}$$

$$\phi V_{cbg} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Vc} \text{ see ACI 318-19, Section 17.7.2.1, Fig. R 17.7.2.1(b)*}$$

$$A_{Vc0} = 4.5 c_{a1}^2 \quad \text{ACI 318-19 Eq. (17.7.2.1.3)}$$

$$\Psi_{ec,V} = \left(\frac{1}{1 + \frac{e_v}{1.5c_{a1}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.3.1)}$$

$$\Psi_{ed,V} = 0.7 + 0.3 \left(\frac{c_{a2}}{1.5c_{a1}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.4.1b)}$$

$$\Psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.6.1)}$$

$$V_b = 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5} \quad \text{ACI 318-19 Eq. (17.7.2.2.1b)}$$

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\Psi_{c,V}$	h_a [in.]
12.000	13.000	0.000	1.000	18.000
l_e [in.]	λ_a	d_a [in.]	f_c [psi]	$\Psi_{parallel,V}$
6.000	1.000	0.750	3,000	1.000

Calculations

A_{Vc} [in. ²]	A_{Vc0} [in. ²]	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{h,V}$	V_b [kip]
648.00	648.00	1.000	0.917	1.000	20.492

Results

V_{cbg} [kip]	$\phi_{concrete}$	ϕV_{cbg} [kip]	V_{ua} [kip]
18.784	0.700	13.149	1.600

*Anchor row defined by: Anchor 2, 4; Case 3 controls

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.259	0.122	5/3	14	OK

$$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} \leq 1$$



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

8

2/4/2025

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to <https://submittals.us.hilti.com/PROFISAnchorDesignGuide/>

Fastening meets the design criteria!

www.hilti.com

Company:
Address:
Phone I Fax:
Design:
Fastening point:

Page: 9
Specifier:
E-Mail:
Date: 2/4/2025

7 Installation data

Profile: Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.

Hole diameter in the fixture: $d_f = 0.812$ in.

Plate thickness (input): 1.000 in.

Recommended plate thickness: not calculated

Anchor type and diameter: Heavy Hex Head ASTM F 1554 GR. 36 3/4

Item number: not available

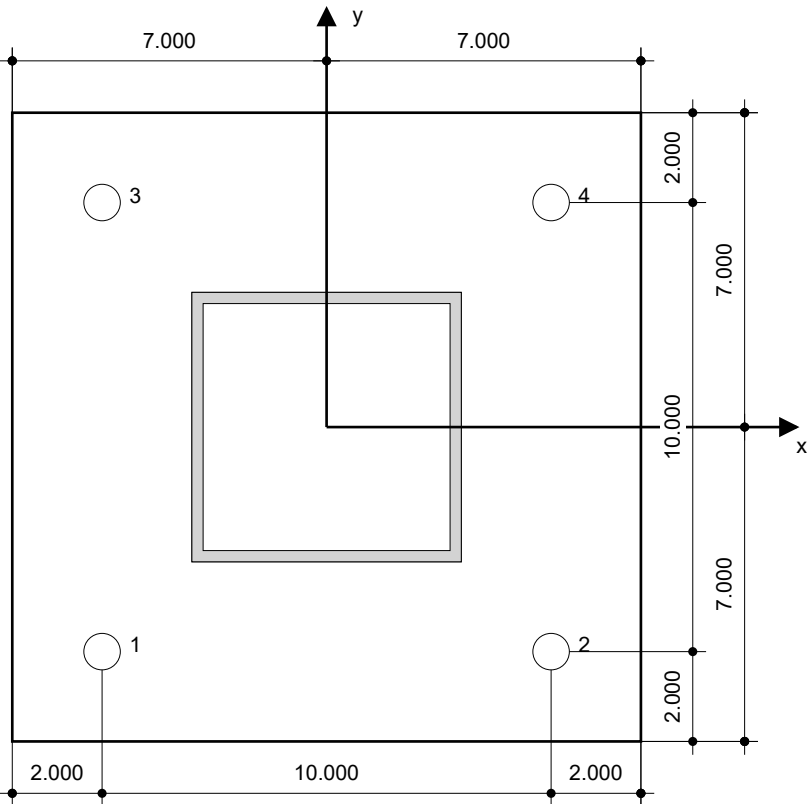
Maximum installation torque: -

Hole diameter in the base material: - in.

Hole depth in the base material: 12.000 in.

Minimum thickness of the base material: 13.000 in.

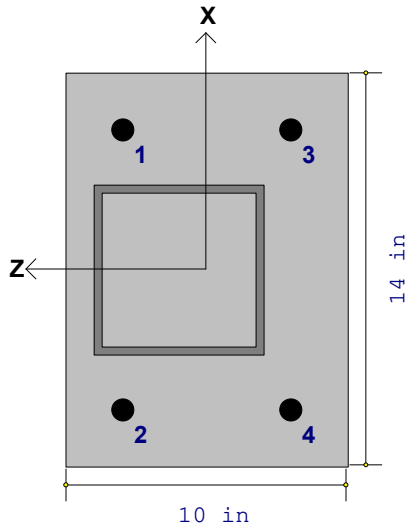
Ø 3/4 in Heavy Hex Head ASTM F 1554 GR. 36 with 12 in nominal embedment depth per Technical data , cast in place installation per MPII



Coordinates Anchor [in.]

Anchor	x	y	c _{-x}	c _{+x}	c _{-y}	c _{+y}
1	-5.000	-5.000	13.000	23.000	13.000	23.000
2	5.000	-5.000	23.000	13.000	13.000	23.000
3	-5.000	5.000	13.000	23.000	23.000	13.000
4	5.000	5.000	23.000	13.000	23.000	13.000

Eccentric Gate Post Base Plate

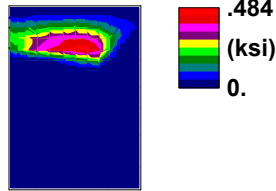


Plain Base Plate Connection

Base Plate Thickness : 1. in
 Base Plate Fy : 36. ksi
 Bearing Surface Fp : 4.42 ksi
 Anchor Bolt Diameter : .75 in
 Anchor Bolt Material : F1554-36
 Anchor Bolt Fu : 60. ksi
 Anchor Bolt Shape : HSS6x6x4

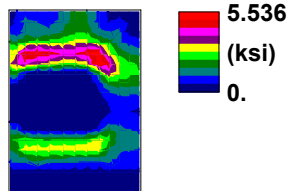
Bearing Pressure

Maximum Bearing : .484 ksi
 Max/Allowable Ratio : .109 ASCE Strength 4 (a)
 (ABIF = 1.000)



Base Plate Stress

Maximum Stress : 5.536 ksi
 Max/Allowable Ratio : .114 ASCE Strength 6
 (ASIF = 1.000)



Anchor Bolts

Steel Code	X (in)	Z (in)	Tension (k)	Vx (k)	Vz (k)	Fnt (ksi)	ft (ksi)	Fnv (ksi)	fv (ksi)	Unity	Combination
1 Concrete Ccde 3.	3.	3.	2.433	-.006	45.	7.753	27.	.659	.23 (T)	ASCE Strength 6 (10)	
2 With IS 1212 Amendment 1	3.	-3.	2.433	.009	45.	7.762	27.	.668	.23 (T)	ASCE Strength 6 (9)	
3	5.	-3.	2.434	-.042	45.	5.51	27.	.471	.163 (T)	ASCE Strength 6 (10)	
4	-5.	-3.	2.433	-.057	45.	5.507	27.	.493	.163 (T)	ASCE Strength 6 (9)	

Note: Fnt and Fnv shown above include phi factors.

Loads

	P (k)	Vx (k)	Vz (k)	Mx (k-ft)	Mz (k-ft)
DL	.24				
WL		1.			4.7

Anchor Bolt Embed Capacity Results

Note: All capacities shown include phi factors

Single Bolt Tension Envelope Results

LC	Bolt	Tens.(k)	Nsa(k)	Ncb(k)	Npn(k)	Nsb(k)	Unity	Ductility	Load(k)	Steel(in2)
9	2	3.429	15.03	37.632	25.715	0.	.228	N.A.	0.	0.

Single Bolt Vx Envelope Results

LC	Bolt	Vx (k)	Vz (k)	Vsa(k)	VcbXx(k)	VcbXz(k)	VcbZz(k)	VcbZx(k)	Vcp (k)	VxUnity	VzUnity
5	2	.295	-.009	7.816	21.201	45.733	20.164	44.444	75.264	.038	.001

Seismic Ductility & Anchor Reinforcement Results

LC	Bolt	Vx (k)	Vz (k)	VxUnity	VzUnity	Vx-Duct	Vx-L(k)	Vx-St(in2)	Vz-Duct	Vz-L(k)	Vz-St(in2)
5	2	.295	-.009	.038	.001	N.A.	0.	0.	N.A.	0.	0.

Single Bolt Vz Envelope Results

LC	Bolt	Vx (k)	Vz (k)	Vsa(k)	VcbXx(k)	VcbXz(k)	VcbZz(k)	VcbZx(k)	Vcp (k)	VxUnity	VzUnity
5	4	.21	.057	7.816	21.201	45.733	20.164	44.444	75.264	.027	.007

Seismic Ductility & Anchor Reinforcement Results

LC	Bolt	Vx (k)	Vz (k)	VxUnity	VzUnity	Vx-Duct	Vx-L(k)	Vx-St(in2)	Vz-Duct	Vz-L(k)	Vz-St(in2)
5	4	.21	.057	.027	.007	N.A.	0.	0.	N.A.	0.	0.

Single Bolt: Combined Tension and Shear Capacity Envelope Results

LC	Bolt	Nn(k)	Vnx(k)	Vnz(k)	SRSS	Interaction
1	1	15.03	7.816	7.816	0.	N.A.

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

1

2/4/2025

Specifier's comments:

1 Input data

Anchor type and diameter:

Heavy Hex Head ASTM F 1554 GR. 36 3/4



Item number:

not available

Specification text:

Ø 3/4 in Heavy Hex Head ASTM F 1554 GR. 36 with 12 in nominal embedment depth per Technical data , cast in place installation per MPII

Effective embedment depth:

$h_{ef} = 12.000$ in.

Material:

ASTM F 1554

Evaluation Service Report:

Hilti Technical Data

Issued | Valid:

- | -

Proof:

Design Method ACI 318-19 / CIP

Shear edge breakout verification:

Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)

Stand-off installation:

$e_b = 0.000$ in. (no stand-off); $t = 1.000$ in.

Anchor plate^R:

$l_x \times l_y \times t = 10.000$ in. x 14.000 in. x 1.000 in.; (Recommended plate thickness: not calculated)

Profile:

Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.

Base material:

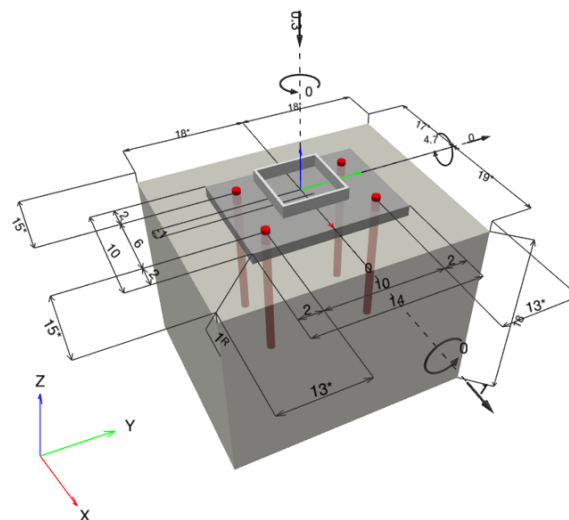
cracked concrete, 3000, $f'_c = 3,000$ psi; $h = 18.000$ in.

Reinforcement:

tension: not present, shear: not present;
edge reinforcement: none or < No. 4 bar

^R - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [kip, ft.kip]



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page: 2
Specifier:
E-Mail:
Date: 2/4/2025

1.1 Design results

Case	Description	Forces [kip] / Moments [ft.kip]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = -0.300; V _x = 1.000; V _y = 0.000; M _x = 0.00000; M _y = 4.70000; M _z = 0.00000;	no	26

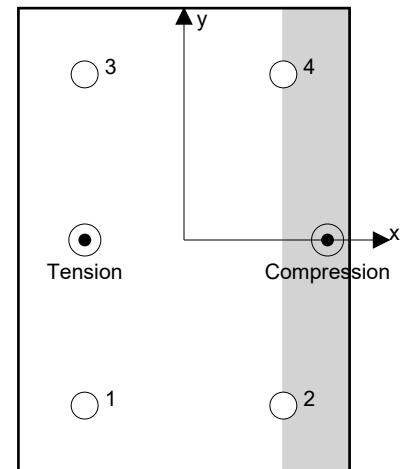
2 Load case/Resulting anchor forces

Anchor reactions [kip]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	3.735	0.250	0.250	0.000
2	0.003	0.250	0.250	0.000
3	3.735	0.250	0.250	0.000
4	0.003	0.250	0.250	0.000

Max. concrete compressive strain: 0.13 [‰]
Max. concrete compressive stress: 557 [psi]
Resulting tension force in (x/y)=(-2.994/0.000): 7.476 [kip]
Resulting compression force in (x/y)=(4.335/0.000): 7.776 [kip]



Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N _{ua} [kip]	Capacity ϕN_n [kip]	Utilization $\beta_N = N_{ua} / \phi N_n$	Status
Steel Strength*	3.735	14.529	26	OK
Pullout Strength*	3.735	15.305	25	OK
Concrete Breakout Failure**	7.476	33.532	23	OK
Concrete Side-Face Blowout, direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page: 3
Specifier:
E-Mail:
Date: 2/4/2025

3.1 Steel Strength

$$N_{sa} = A_{se,N} f_{uta} \quad \text{ACI 318-19 Eq. (17.6.1.2)}$$

$$\phi N_{sa} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$A_{se,N} [\text{in.}^2]$	$f_{uta} [\text{psi}]$
0.33	58,000

Calculations

$N_{sa} [\text{kip}]$
19.372

Results

$N_{sa} [\text{kip}]$	ϕ_{steel}	$\phi N_{sa} [\text{kip}]$	$N_{ua} [\text{kip}]$
19.372	0.750	14.529	3.735

3.2 Pullout Strength

$$N_{pN} = \psi_{c,p} N_p \quad \text{ACI 318-19 Eq. (17.6.3.1)}$$

$$N_p = 8 A_{brg} f'_c \quad \text{ACI 318-19 Eq. (17.6.3.2.2a)}$$

$$\phi N_{pN} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$\psi_{c,p}$	$A_{brg} [\text{in.}^2]$	λ_a	$f'_c [\text{psi}]$
1.000	0.91	1.000	3,000

Calculations

$N_p [\text{kip}]$
21.864

Results

$N_{pn} [\text{kip}]$	ϕ_{concrete}	$\phi N_{pn} [\text{kip}]$	$N_{ua} [\text{kip}]$
21.864	0.700	15.305	3.735

www.hilti.com

Company:

Address:

Phone | Fax:

Design:

Fastening point:

Page:

4

Specifier:

E-Mail:

Date:

2/4/2025

3.3 Concrete Breakout Failure

$$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \quad \text{ACI 318-19 Eq. (17.6.2.1b)}$$

$$\phi N_{cbg} \geq N_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Nc} \text{ see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-19 Eq. (17.6.2.1.4)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.3.1)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.4.1b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.6.1b)}$$

$$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5} \quad \text{ACI 318-19 Eq. (17.6.2.2.1)}$$

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
10.000	2.994	0.000	13.000	1.000
c_{ac} [in.]	k_c	λ_a	f_c [psi]	
-	24	1.000	3,000	

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
1,296.00	900.00	0.834	1.000	0.960	1.000	41.569

Results

N_{cbg} [kip]	$\phi_{concrete}$	ϕN_{cbg} [kip]	N_{ua} [kip]
47.903	0.700	33.532	7.476



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

5

2/4/2025

4 Shear load

	Load V_{ua} [kip]	Capacity ϕV_n [kip]	Utilization $\beta_v = V_{ua} / \phi V_n$	Status
Steel Strength*	0.250	7.555	4	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	1.000	80.451	2	OK
Concrete edge failure in direction x+**	1.000	13.149	8	OK

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

$$V_{sa} = 0.6 A_{se,V} f_{uta} \quad \text{ACI 318-19 Eq. (17.7.1.2b)}$$

$$\phi V_{steel} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

Variables

$A_{se,V}$ [in. ²]	f_{uta} [psi]
0.33	58,000

Calculations

V_{sa} [kip]
11.623

Results

V_{sa} [kip]	ϕ_{steel}	ϕV_{sa} [kip]	V_{ua} [kip]
11.623	0.650	7.555	0.250

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

6

2/4/2025

4.2 Pryout Strength

$$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right] \quad \text{ACI 318-19 Eq. (17.7.3.1b)}$$

$$\phi V_{cp} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Nc} \text{ see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)}$$

$$A_{Nc0} = 9 h_{ef}^2 \quad \text{ACI 318-19 Eq. (17.6.2.1.4)}$$

$$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e_N}{3 h_{ef}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.3.1)}$$

$$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.4.1b)}$$

$$\psi_{cp,N} = \text{MAX} \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.6.2.6.1b)}$$

$$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5} \quad \text{ACI 318-19 Eq. (17.6.2.2.1)}$$

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	10.000	0.000	0.000	13.000
$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	-	24	1.000	3,000

Calculations

A_{Nc} [in. ²]	A_{Nc0} [in. ²]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [kip]
1,296.00	900.00	1.000	1.000	0.960	1.000	41.569

Results

V_{cp} [kip]	$\phi_{concrete}$	ϕV_{cp} [kip]	V_{ua} [kip]
114.931	0.700	80.451	1.000

www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

7

2/4/2025

4.3 Concrete edge failure in direction x+

$$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}} \right) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} \Psi_{parallel,V} V_b \quad \text{ACI 318-19 Eq. (17.7.2.1b)}$$

$$\phi V_{cbg} \geq V_{ua} \quad \text{ACI 318-19 Table 17.5.2}$$

$$A_{Vc} \text{ see ACI 318-19, Section 17.7.2.1, Fig. R 17.7.2.1(b)*}$$

$$A_{Vc0} = 4.5 c_{a1}^2 \quad \text{ACI 318-19 Eq. (17.7.2.1.3)}$$

$$\Psi_{ec,V} = \left(\frac{1}{1 + \frac{e_v}{1.5c_{a1}}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.3.1)}$$

$$\Psi_{ed,V} = 0.7 + 0.3 \left(\frac{c_{a2}}{1.5c_{a1}} \right) \leq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.4.1b)}$$

$$\Psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0 \quad \text{ACI 318-19 Eq. (17.7.2.6.1)}$$

$$V_b = 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5} \quad \text{ACI 318-19 Eq. (17.7.2.2.1b)}$$

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\Psi_{c,V}$	h_a [in.]
12.000	13.000	0.000	1.000	18.000
l_e [in.]	λ_a	d_a [in.]	f_c [psi]	$\Psi_{parallel,V}$
6.000	1.000	0.750	3,000	1.000

Calculations

A_{Vc} [in. ²]	A_{Vc0} [in. ²]	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{h,V}$	V_b [kip]
648.00	648.00	1.000	0.917	1.000	20.492

Results

V_{cbg} [kip]	$\phi_{concrete}$	ϕV_{cbg} [kip]	V_{ua} [kip]
18.784	0.700	13.149	1.000

*Anchor row defined by: Anchor 2, 4; Case 3 controls

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.257	0.076	5/3	12	OK

$$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} \leq 1$$



www.hilti.com

Company:
Address:
Phone | Fax:
Design:
Fastening point:

Page:
Specifier:
E-Mail:
Date:

8

2/4/2025

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- For additional information about ACI 318 strength design provisions, please go to <https://submittals.us.hilti.com/PROFISAnchorDesignGuide/>

Fastening meets the design criteria!

www.hilti.com

Company:
Address:
Phone I Fax:
Design:
Fastening point:

Page: 9
Specifier:
E-Mail:
Date: 2/4/2025

7 Installation data

Profile: Square HSS (AISC), HSS6X6X.250; (L x W x T) = 6.000 in. x 6.000 in. x 0.250 in.

Hole diameter in the fixture: $d_f = 0.812$ in.

Plate thickness (input): 1.000 in.

Recommended plate thickness: not calculated

Anchor type and diameter: Heavy Hex Head ASTM F 1554
GR. 36 3/4

Item number: not available

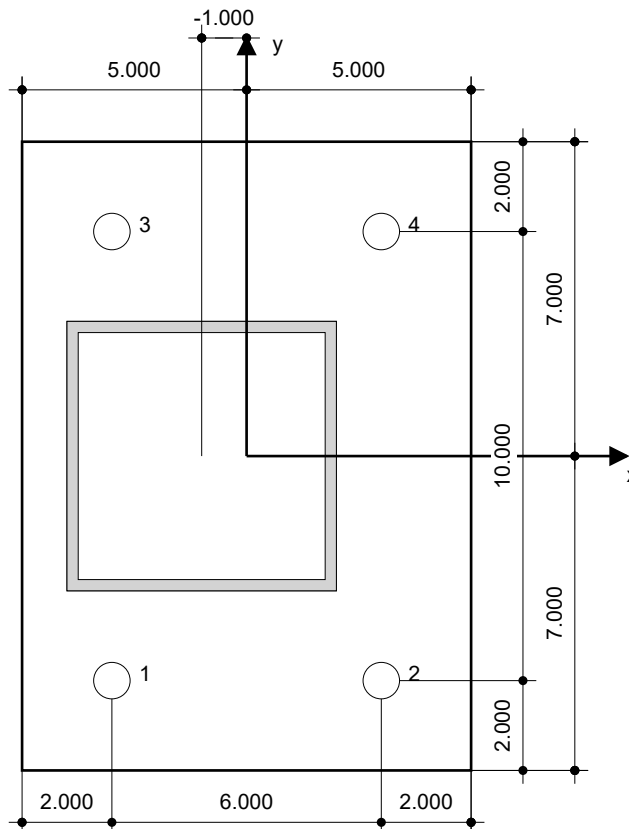
Maximum installation torque: -

Hole diameter in the base material: - in.

Hole depth in the base material: 12.000 in.

Minimum thickness of the base material: 13.000 in.

Ø 3/4 in Heavy Hex Head ASTM F 1554 GR. 36 with 12 in nominal embedment depth per Technical data , cast in place installation per MPII



Coordinates Anchor [in.]

Anchor	x	y	c _{-x}	c _{+x}	c _{-y}	c _{+y}
1	-3.000	-5.000	15.000	21.000	13.000	23.000
2	3.000	-5.000	21.000	15.000	13.000	23.000
3	-3.000	5.000	15.000	21.000	23.000	13.000
4	3.000	5.000	21.000	15.000	23.000	13.000

1.4. GATE POST FOOTING DESIGN

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combinations Used : IBC 2018

General Information

Material Properties

f _c : Concrete 28 day strength	=	3.0 ksi
f _y : Rebar Yield	=	60.0 ksi
E _c : Concrete Elastic Modulus	=	3,122.0 ksi
Concrete Density	=	145.0 pcf
φ Values Flexure	=	0.90
Shear	=	0.750

Analysis Settings

Min Steel % Bending Reinf.	=	
Min Allow % Temp Reinf.	=	0.00180
Min. Overturning Safety Factor	=	1.0 : 1
Min. Sliding Safety Factor	=	1.0 : 1
Add Ftg Wt for Soil Pressure	:	Yes
Use ftg wt for stability, moments & shears	:	Yes
Add Pedestal Wt for Soil Pressure	:	No
Use Pedestal wt for stability, mom & shear	:	No

Soil Design Values

Allowable Soil Bearing	=	1.990 ksf
Soil Density	=	110.0 pcf
Increase Bearing By Footing Weight	=	Yes
Soil Passive Resistance (for Sliding)	=	100.0 pcf
Soil/Concrete Friction Coeff.	=	0.250

Increases based on footing Depth

Footing base depth below soil surface	=	2.20 ft
Allow press. increase per foot of depth when footing base is below	=	ksf ft

Increases based on footing plan dimension

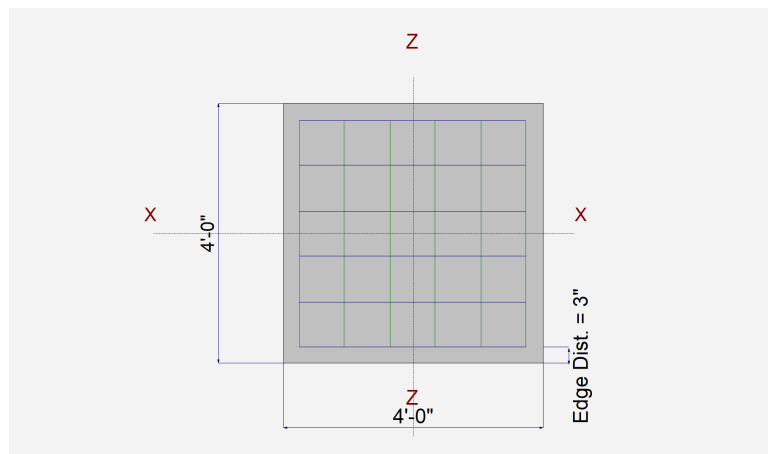
Allowable pressure increase per foot of depth when max. length or width is greater than	=	ksf ft
---	---	--------

Dimensions

Width parallel to X-X Axis	=	4.0 ft
Length parallel to Z-Z Axis	=	4.0 ft
Footing Thickness	=	18.0 in

Pedestal dimensions...

px : parallel to X-X Axis	=	in
pz : parallel to Z-Z Axis	=	in
Height	=	in
Rebar Centerline to Edge of Concrete... at Bottom of footing	=	3.0 in



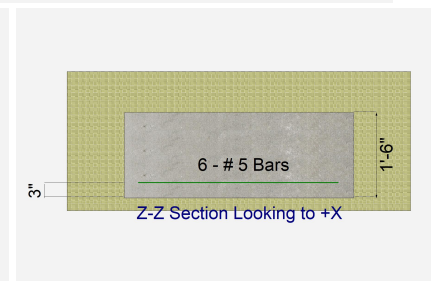
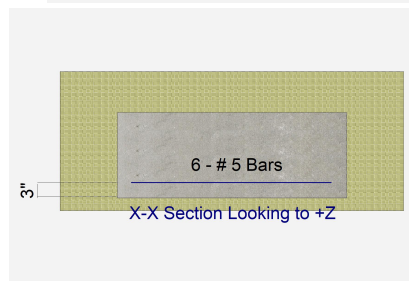
Reinforcing

Bars parallel to X-X Axis	=	6.0
Number of Bars	=	# 5
Reinforcing Bar Size	=	# 5

Bars parallel to Z-Z Axis	=	6.0
Number of Bars	=	# 5
Reinforcing Bar Size	=	# 5

Bandwidth Distribution Check (ACI 15.4.4.2)

Direction Requiring Closer Separation	n/a
# Bars required within zone	n/a
# Bars required on each side of zone	n/a



Applied Loads

	D	L _r	L	S	W	E	H
P : Column Load	=	0.50					k
OB : Overburden	=						ksf
M-xx	=				5.760		k-ft
M-zz	=						k-ft
V-x	=						k
V-z	=				1.570		k

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

DESIGN SUMMARY

Design OK

	Min. Ratio	Item	Applied	Capacity	Governing Load Combination
PASS	0.5250	Soil Bearing	1.159 ksf	2.208 ksf	+0.60D+0.60W about X-X axis
PASS	1.285	Overturning - X-X	4.869 k-ft	6.254 k-ft	+0.60D+0.60W
PASS	n/a	Overturning - Z-Z	0.0 k-ft	0.0 k-ft	No Overturning
PASS	n/a	Sliding - X-X	0.0 k	0.0 k	No Sliding
PASS	1.754	Sliding - Z-Z	0.9420 k	1.652 k	+0.60D+0.60W
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift
PASS	0.002875	Z Flexure (+X)	0.08750 k-ft/ft	30.434 k-ft/ft	+1.40D
PASS	0.002875	Z Flexure (-X)	0.08750 k-ft/ft	30.434 k-ft/ft	+1.40D
PASS	0.04922	X Flexure (+Z)	1.498 k-ft/ft	30.434 k-ft/ft	+0.90D+W
PASS	0.02322	X Flexure (-Z)	0.7066 k-ft/ft	30.434 k-ft/ft	+1.20D+W
PASS	0.002248	1-way Shear (+X)	0.1847 psi	82.158 psi	+1.40D
PASS	0.002248	1-way Shear (-X)	0.1847 psi	82.158 psi	+1.40D
PASS	0.06537	1-way Shear (+Z)	5.371 psi	82.158 psi	+0.90D+W
PASS	0.01816	1-way Shear (-Z)	1.492 psi	82.158 psi	+1.20D+W
PASS	0.006269	2-way Punching	1.030 psi	164.317 psi	+1.20D+W

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc		Zecc		Actual Soil Bearing Stress @ Location				Actual / Allow Ratio
				(in)		Bottom, -Z	Top, +Z	Left, -X	Right, +X	
X-X, D Only	2.208	n/a	0.0			0.3258	0.3258	n/a	n/a	0.148
X-X, +D+0.60W	2.208	n/a	11.210			0.0	0.8099	n/a	n/a	0.367
X-X, +D+0.450W	2.208	n/a	8.408			0.0	0.6651	n/a	n/a	0.301
X-X, +0.60D+0.60W	2.208	n/a	18.684			0.0	1.159	n/a	n/a	0.525
X-X, +0.60D	2.208	n/a	0.0			0.1955	0.1955	n/a	n/a	0.089
Z-Z, D Only	2.208	0.0	n/a			n/a	n/a	0.3258	0.3258	0.148
Z-Z, +D+0.60W	2.208	0.0	n/a			n/a	n/a	0.3258	0.3258	0.148
Z-Z, +D+0.450W	2.208	0.0	n/a			n/a	n/a	0.3258	0.3258	0.148
Z-Z, +0.60D+0.60W	2.208	0.0	n/a			n/a	n/a	0.1955	0.1955	0.089
Z-Z, +0.60D	2.208	0.0	n/a			n/a	n/a	0.1955	0.1955	0.089

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
X-X, D Only	None	0.0 k-ft	Infinity	OK
X-X, +D+0.60W	4.869 k-ft	10.424 k-ft	2.141	OK
X-X, +D+0.450W	3.652 k-ft	10.424 k-ft	2.855	OK
X-X, +0.60D+0.60W	4.869 k-ft	6.254 k-ft	1.285	OK
X-X, +0.60D	None	0.0 k-ft	Infinity	OK
Z-Z, D Only	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.60W	None	0.0 k-ft	Infinity	OK
Z-Z, +D+0.450W	None	0.0 k-ft	Infinity	OK
Z-Z, +0.60D+0.60W	None	0.0 k-ft	Infinity	OK
Z-Z, +0.60D	None	0.0 k-ft	Infinity	OK

All units k

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Stability Ratio	Status
X-X, D Only	0.0 k	2.173 k	No Sliding	OK
X-X, +D+0.60W	0.0 k	2.173 k	No Sliding	OK
X-X, +D+0.450W	0.0 k	2.173 k	No Sliding	OK
X-X, +0.60D+0.60W	0.0 k	1.652 k	No Sliding	OK
X-X, +0.60D	0.0 k	1.652 k	No Sliding	OK
Z-Z, D Only	0.0 k	2.173 k	No Sliding	OK
Z-Z, +D+0.60W	0.9420 k	2.173 k	2.307	OK
Z-Z, +D+0.450W	0.7065 k	2.173 k	3.076	OK
Z-Z, +0.60D+0.60W	0.9420 k	1.652 k	1.754	OK
Z-Z, +0.60D	0.0 k	1.652 k	No Sliding	OK

Project Title:
 Engineer:
 Project ID:
 Project Descr:

General Footing

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Side	Tension Surface	As Req'd in ²	Gvrn. As in ²	Actual As in ²	Phi*Mn k-ft	Status
X-X, +1.40D	0.08750	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.40D	0.08750	-Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D	0.0750	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D	0.0750	-Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D+0.50W	0.5821	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D+0.50W	0.4321	-Z	Top	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D+W	1.322	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +1.20D+W	0.7066	-Z	Top	0.3888	AsMin	0.4650	30.434	OK
X-X, +0.90D+W	1.498	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +0.90D+W	0.5301	-Z	Top	0.3888	AsMin	0.4650	30.434	OK
X-X, +0.90D	0.05625	+Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
X-X, +0.90D	0.05625	-Z	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.40D	0.08750	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.40D	0.08750	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D	0.0750	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D	0.0750	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D+0.50W	0.0750	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D+0.50W	0.0750	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D+W	0.0750	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +1.20D+W	0.0750	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +0.90D+W	0.05625	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +0.90D+W	0.05625	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +0.90D	0.05625	-X	Bottom	0.3888	AsMin	0.4650	30.434	OK
Z-Z, +0.90D	0.05625	+X	Bottom	0.3888	AsMin	0.4650	30.434	OK

One Way Shear

Load Combination...	Vu @ -X	Vu @ +X	Vu @ -Z	Vu @ +Z	Vu:Max	Phi Vn	Vu / Phi*Vn	Status
+1.40D	0.18 psi	0.18 psi	0.18 psi	0.18 psi	0.18 psi	82.16 psi	0.00	OK
+1.20D	0.16 psi	0.16 psi	0.16 psi	0.16 psi	0.16 psi	82.16 psi	0.00	OK
+1.20D+0.50W	0.16 psi	0.16 psi	1.14 psi	1.46 psi	1.46 psi	82.16 psi	0.02	OK
+1.20D+W	0.16 psi	0.16 psi	1.49 psi	3.64 psi	3.64 psi	82.16 psi	0.04	OK
+0.90D+W	0.12 psi	0.12 psi	1.12 psi	5.37 psi	5.37 psi	82.16 psi	0.07	OK
+0.90D	0.12 psi	0.12 psi	0.12 psi	0.12 psi	0.12 psi	82.16 psi	0.00	OK

Two-Way "Punching" Shear

All units k

Load Combination...	Vu	Phi*Vn	Vu / Phi*Vn	Status
+1.40D	0.70 psi	164.32psi	0.004249	OK
+1.20D	0.60 psi	164.32psi	0.003642	OK
+1.20D+0.50W	0.60 psi	164.32psi	0.003642	OK
+1.20D+W	1.03 psi	164.32psi	0.006269	OK
+0.90D+W	0.98 psi	164.32psi	0.005974	OK
+0.90D	0.45 psi	164.32psi	0.002731	OK

CMU ENCLOSURE WALL

2.1. CMU WALL DESIGN

Wind Base Shear (All-Heights Method) for MWFRS: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted
- CBC §1601.1.1 / §1601A.1.1 - Reference for Scope of Building Classification
- CBC §1609.1.1 / §1609A.1.1 - Reference for Determining Basic Wind Speed

Structure Information

Mean Roof Height	z =	8.00 [ft]
Parapet Height (top of parapet to top of roof)	h =	0.00 [ft]
Width of Structure	W =	8.8 [ft]
Length of Structure	L =	33.5 [ft]

Wind Coefficients - Table 27.2-1

Risk Category	=	I	(Table 1.5-1)
Basic Wind Speed	V =	100 [mph]	CBC §16- Fig.1609.3(4)
Solid Freestanding Walls, Roof Top	K_d =	0.85	(Sec. 26.6)
Surface Roughness	=	B	CBC §16- 1609.4.2
Exposure Category	=	C	CBC §16- 1609.4.3
Site Topology	=	Escarpment	
Site Location	=	Upwind	
Height to topographic peak (valley)	H =	31 [ft]	
Horizontal distance from peak to mid-height	L_h =	100 [ft]	
Horizontal distance from building location relative to topographical peak (valley)	x =	100 [ft]	
	K_1 =	0.26	
	K_2 =	0.75	
	K_3 =	0.82	
Are all conditions in 26.8.1 met?		No	
Topographic Factor	K_{zt} =	1.00	(Sec. 26.8.2, Eq. 26.8-1)
Elevation Factor	K_e =	I	(Sec. 26.9)
	K_z =	0.85	(Sec. 26.10.1)
	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 26.10-1)
Low-rise or rigid structure?		Yes	
Gust Effect Factor	G =	0.85	

User Input

Calculated Values

Intermediate Design Values

Design Values

Design Wind Loads for Solid Freestanding Walls and Solid Signs: ASCE 7-16**Notes**

- References below are for ASCE 7-16 except as noted

User Input

Calculated Values

Intermediate Design Values

Design Values

Structure Information

Height to the top of the Sign	$h =$	8.0 [ft]	(Figure 29.3-1)
Horizontal Dimension of the Sign	$B =$	33.3 [ft]	(Figure 29.3-1)
Vertical Dimension of the Sign	$s =$	8.0 [ft]	(Figure 29.3-1)
Sign thickness	$t =$	0.7 [ft]	
Horizontal Dimension of return corner	$L_r =$	8.0 [ft]	

Single Faced Sign or Wall

Gross Area of the Solid Freestanding Wall or Solid Sign	$A_s =$	266.4 [ft ²]	
s/h Ratio	$s/h =$	1.00	
Aspect Ratio B/s	$B/s =$	12.00	
Total Area of Openings in Sign Surface	$A_{OPNG} =$	0.0 [ft ²]	
Sign Openings Percentage	$A_{OPNG} / A_s =$	0.0 [%]	
Ratio of Solid Area to Gross Area	$\epsilon =$	1.0	

Wind Parameters

Velocity Pressure Evaluated at Height h	$q_h = q_z = 0.00256 K_z K_{zt} K_d K_e V^2$	18.5 [psf]	(Eq. 29.3-1)
Gust-effect Factor	$G =$	0.85	(Sec. 26.9)
Reduction Factor for Sign Openings	$(1 - (1 - \epsilon)^{1.5}) =$	1.00	(Figure 29.3-1)
Net Force Coefficient, Cases A & B	$C_f =$	1.30	(Figure 29.3-1)
Net Force Coefficients, Case C	C_f at region 0 to s from windward edge =	2.35	(Figure 29.3-1)
	C_f at region s to $2s$ from windward edge =	2.04	(Figure 29.3-1)
	C_f at region $2s$ to $3s$ from windward edge =	1.56	(Figure 29.3-1)
	C_f at region $3s$ to $10s$ from windward edge =	0.25	(Figure 29.3-1)

Minimum Design Wind Pressure =

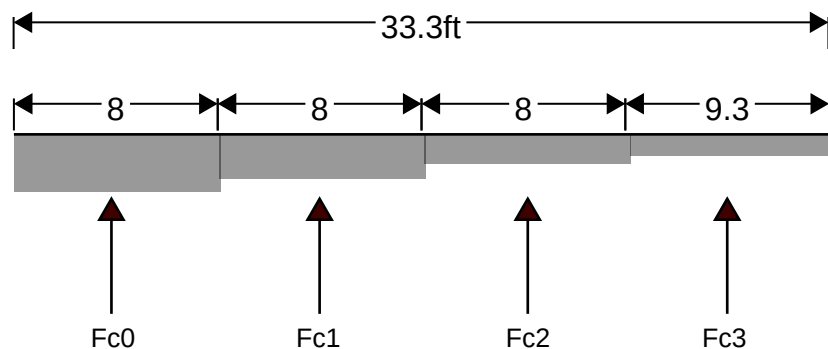
$$p_{MIN} = 16.0 \text{ [psf]}$$

Design Wind Forces (includes reduction factor for openings where occurs)

	Design Wind Pressure, p_h [psf]			
Design Wind Force, Case A	$F_A = 20 A_s$	=	5438 [lb]	(Eq. 29.3-1)
Design Wind Force, Case B	$F_B = 20 A_s$	=	5438 [lb]	(Eq. 29.3-1)
Force Horizontal Eccentricity, Cases A & B	$e_h =$		0.00 [ft]	
Force Vertical Eccentricity, Cases A & B	$e_v =$		0.40 [ft]	

Design Wind Force, Case C, Region 0 to s	$F_{C0} = 37 A_s$	=	9829 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region s to $2s$	$F_{C1} = 32 A_s$	=	8533 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region $2s$ to $3s$	$F_{C2} = 24 A_s$	=	6525 [lb]	(Eq. 29.3-1)
Design Wind Force, Case C, Region $3s$ to $10s$	$F_{C3} = 16 A_s$	=	1190 [lb]	(Eq. 29.3-1)

Forces for Case C act through the geometric center of each region



Seismic Forces acting on CMU Wall
(Ref: 2022 CBC & ASCE 7-16)

- Notes
- References below are for ASCE 7-16 except as noted.
 - Values shown are at Strength Design or LRFD level, with ASD values noted in italics.

Seismic Design Force Variables	
Component amplification factor	$a_p = 1.00$ (Table 13.5-1 or 13.6-1)
Component response modification factor	$R_p = 2.50$ (Table 13.5-1 or 13.6-1)
Spectral response acceleration at short periods	$S_{DS} = 0.542$ g (Eq. 11.4-3)
Component importance factor	$I_p = 1.25$ (§13.1.3)
	$z/h = 0.00$
Self Weight of CMU Wall	$W_w = 81.00$ psf
Height of CMU Wall	$h = 9.00$ ft
Total Wall Weight	$W_p = 729$ plf

Horizontal and Vertical Seismic Design Forces

$$F_p = 0.4 a_p S_{DS} W_p / (R_p / I_p) \times (1 + 2z / h) = 0.108 W_p \text{ (Eq. 13.3-1)}$$
$$F_{p-max} = 1.6 S_{DS} I_p W_p = 1.084 W_p \text{ (Eq. 13.3-2)}$$
$$F_{p-min} = 0.3 S_{DS} I_p W_p = 0.203 W_p \text{ (Eq. 13.3-3)}$$
$$\text{Governing horizontal seismic design force coefficient} = 0.203$$

Horizontal Seismic Design Force	$F_p = 148$ plf	
Vertical Seismic Design Force	$F_{pv} = 0.2S_{DS}W_p = 79$ plf	(§13.3.1)

MASONRY WALL PANEL DESIGN (TMS 402/602-16)

In accordance with strength design method

Tedds calculation version 2.2.09

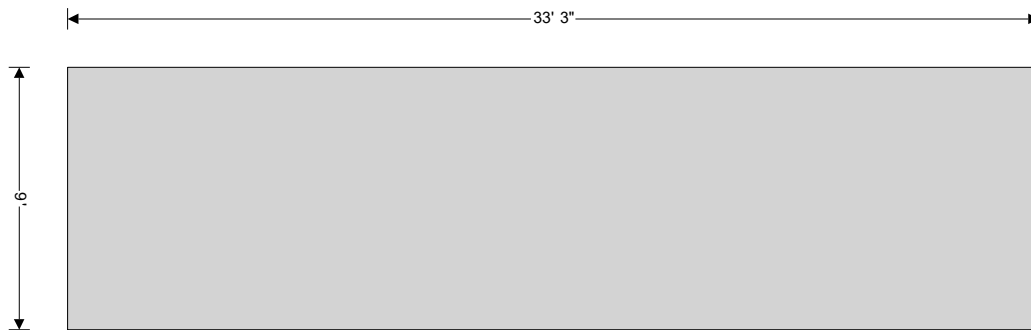
Masonry wall panel details

Ordinary Reinforced Masonry Shearwall - Reinforced single-wythe wall, the wall is free at the top and fixed at the bottom for out of plane loads

The wall is fixed at the bottom and free at the top for in plane loads

Panel length $L = 33.25$ ft

Panel height $h = 9$ ft



Seismic properties

Seismic design category

D

Seismic importance factor (ASCE7 Table 1.5-2) $I_e = 1.25$

Design spectral response acceleration parameter, short periods (IBC 1613.2.4 or ASCE7 11.4.5)

$S_{DS} = 0.542$

Shear wall designation

Special reinforced

Redundancy factor, on in-plane load

$\rho_{ve} = 1.0$

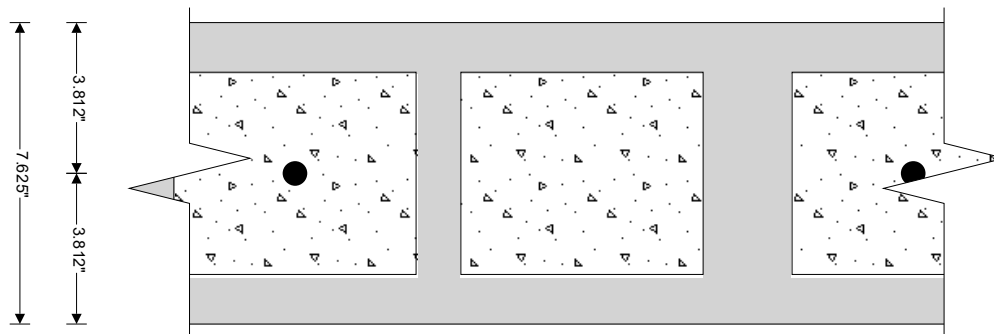
Redundancy factor, on out-of-plane load

$\rho_E = 1.0$

Construction details

Wall thickness

$t = 7.625$ in

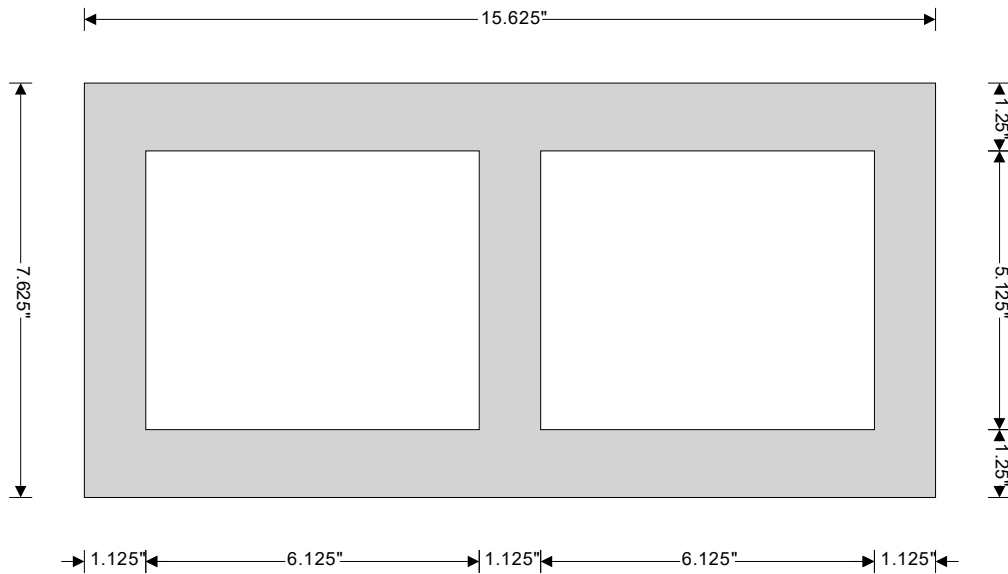


Masonry details

Hollow concrete units fully grouted in running bond fully bedded with PCL class M mortar

Compressive strength of unit $f_{cu} = 2000$ psi

Density of masonry units	$\gamma_{\text{block}} = 103 \text{ lb/ft}^3$
Height of masonry units	$h_b = 7.625 \text{ in}$
Length of masonry units	$l_b = 15.625 \text{ in}$
Number of internal webs	$N_{\text{web}} = 1$
Number of end webs	$N_{\text{end}} = 2$
Internal web thickness	$t_{\text{bw}} = 1.125 \text{ in}$
Face shell thickness	$t_{\text{bf}} = 1.25 \text{ in}$
End web thickness	$t_{\text{be}} = 1.125 \text{ in}$
Area of block	$A_{\text{block}} = [t \times l_b - (l_b - N_{\text{web}} \times t_{\text{bw}} - N_{\text{end}} \times t_{\text{be}}) \times (t - 2 \times t_{\text{bf}})] / l_b = 43.28 \text{ in}^2/\text{ft}$
Area of grout	$A_{\text{grout}} = [(l_b - N_{\text{web}} \times t_{\text{bw}} - N_{\text{end}} \times t_{\text{be}}) \times (t - 2 \times t_{\text{bf}})] / l_b = 48.22 \text{ in}^2/\text{ft}$
Density of grout	$\gamma_{\text{grout}} = 140 \text{ lb/ft}^3$
Self weight of wall construction	$WSW_w = A_{\text{block}} \times \gamma_{\text{block}} + A_{\text{grout}} \times \gamma_{\text{grout}} = 77.84 \text{ psf}$
Self weight of bond beam	$WSW_b = 2 \times t_{\text{bf}} \times \gamma_{\text{block}} + (t - 2 \times t_{\text{bf}}) \times \gamma_{\text{grout}} = 81.25 \text{ psf}$
Self weight of wall	$WSW = ((s_v - h_b) \times WSW_w + h_b \times WSW_b) / s_v = 79.46 \text{ psf}$



From TMS 602-16 Table 2 - Compressive strength of masonry

Net compressive strength of masonry	$f_m = 2000 \text{ psi}$
Modulus of elasticity for masonry	$E_m = 900 \times f_m = 1800000 \text{ psi}$
Shear modulus of masonry	$G_v = 0.4 \times E_m = 720000 \text{ psi}$

From TMS 402 -16 Table 9.1.9.2 - Modulus of rupture

Modulus of rupture normal to bed	$f_{r_{\text{norm}}} = 163 \text{ psi}$
Modulus of rupture parallel to bed	$f_{r_{\text{para}}} = 267 \text{ psi}$

Reinforcement details

Yield strength of reinforcement	$f_y = 60000 \text{ psi}$
Allowable tensile stress in reinforcement	$F_s = 32000 \text{ psi}$
Modulus of elasticity for reinforcement	$E_s = 29000000 \text{ psi}$
Vertical reinforcement provided	No.5 bars at 16 in centers



Miyamoto International
1450 Halyard Drive Suite 1
West Sacramento, CA 95691

Project
Nichols Leroy

Job Ref.
MI2301016

Section

Sheet no./rev.
3

Calc. by
BM

Date
2/5/2025

Chk'd by

Date

App'd by

Date

Area of vertical reinforcement

$$A_s = \pi \times \text{Dia}^2 / (4 \times s) = \mathbf{0.23 \text{ in}^2/\text{ft}}$$

Yield strength of horizontal reinforcement

$$f_{yv} = \mathbf{60000 \text{ psi}}$$

Allowable tensile stress in horizontal reinforcement $F_{sv} = \mathbf{32000 \text{ psi}}$

Horizontal reinforcement provided

(1) No. 4 bars at 16 in centers

Area of horizontal reinforcement

$$A_v = 1 \times \pi \times \text{HDia}^2 / (4 \times s_v) = \mathbf{0.15 \text{ in}^2/\text{ft}}$$

Minimum area of vertical reinf. (cl. 9.3.6.2)

$$A_{s_min} = A_v / 3 = \mathbf{0.05 \text{ in}^2/\text{ft}}$$

PASS - Area of vertical reinforcement provided exceeds the minimum

Seismic reinforcement requirements

Minimum vertical reinf., seismic (Ch. 7)

No. 4 bars at 36 in

PASS - Vertical distributed reinforcement meets minimum seismic requirements

Minimum horizontal reinf., seismic (Ch. 7)

(1) No. 4 bar at 36 in

PASS - Horizontal distributed reinforcement meets minimum seismic requirements

Special reinforced shear wall reinforcement checks

Min. vertical reinforcement area (7.3.2.6(a))

$$A_{s_minE1} = 0.0007 \times t = \mathbf{0.06 \text{ in}^2/\text{ft}}$$

PASS - Vertical reinforcement area exceeds minimum required

Min. horizontal reinforcement area (7.3.2.6(a))

$$A_{v_minE} = 0.0007 \times t = \mathbf{0.06 \text{ in}^2/\text{ft}}$$

PASS - Horizontal reinforcement area exceeds minimum required

Min. total reinforcement area (7.3.2.6(a))

$$A_{t_minE} = 0.002 \times t = \mathbf{0.18 \text{ in}^2/\text{ft}}$$

Total area of steel

$$A_s + A_v = \mathbf{0.38 \text{ in}^2/\text{ft}}$$

PASS - Total reinforcement area exceeds minimum required

Lateral out-of-plane loads

Wind load on panel

$$W = \mathbf{16 \text{ psf}}$$

Wind load on parapet

$$W_p = \mathbf{18 \text{ psf}}$$

Seismic load factor (ASCE7 12.11.1)

$$F_p = 0.4 \times S_{DS} \times I_e = \mathbf{0.271}$$

Seismic load from wall

$$E_{wall} = \max(F_p, 0.1) \times w_{sw} = \mathbf{21.5 \text{ psf}}$$

Additional seismic load

$$E_{add} = \mathbf{0 \text{ psf}}$$

Seismic lateral load on panel

$$E = E_{wall} + E_{add} = \mathbf{21.5 \text{ psf}}$$

Lateral in-plane loads

Wind shear load on wall

$$V_W = \mathbf{13086 \text{ lbs}}$$

Seismic shear load on wall

$$V_E = \mathbf{4587 \text{ lbs}}$$

Vertical loading details

Vertical seismic load factor applied to dead load

$$F_{Ev} = 0.2 \times S_{DS} = \mathbf{0.108}$$

From IBC 2018 cl.1605.2 - Basic load combinations (Utilization)

Load combination no.1

$$1.4 \times \text{DL} \text{ (0.011)}$$

Load combination no.2

$$1.2 \times \text{DL} + 1.6 \times \text{LL} + 0.5 \times (\text{LL}_r \text{ or } \text{SL} \text{ or } \text{RL}) \text{ (0.009)}$$

Load combination no.3

$$1.2 \times \text{DL} + \text{LL} + 1.6 \times (\text{LL}_r \text{ or } \text{SL} \text{ or } \text{RL}) \text{ (0.009)}$$

Load combination no.4

$$1.2 \times \text{DL} + 1.6 \times (\text{LL}_r \text{ or } \text{SL} \text{ or } \text{RL}) + 0.5 \times \text{W} \text{ (0.086)}$$

Load combination no.5

$$1.2 \times \text{DL} + \text{W} + \text{LL} + 0.5 \times (\text{LL}_r \text{ or } \text{SL} \text{ or } \text{RL}) \text{ (0.171)}$$

Load combination no.6

$$1.2 \times \text{DL} + E_h + E_v + \text{LL} + 0.7 \times \text{SL} \text{ (0.229)}$$

Load combination no.7

$$0.9 \times \text{DL} + \text{W} \text{ (0.174)}$$

Load combination no.8

$$0.9 \times \text{DL} + E_h - E_v \text{ (0.235)}$$



Miyamoto International
1450 Halyard Drive Suite 1
West Sacramento, CA 95691

Project
Nichols Leroy

Job Ref.
MI2301016

Section

Sheet no./rev.
4

Calc. by
BM

Date
2/5/2025

Chk'd by

Date

App'd by

Date

Properties of masonry section

Cross-sectional area

$$A = t = 91.5 \text{ in}^2/\text{ft}$$

Properties for walls loaded out-of-plane:

Moment of inertia

$$I = t^3 / 12 = 443.3 \text{ in}^4/\text{ft}$$

Section modulus

$$S = I / c = 116.3 \text{ in}^3/\text{ft}$$

Radius of gyration

$$r = \sqrt{I / A} = 2.201 \text{ in}$$

Effective height factor

$$K = 1$$

Properties for walls loaded in-plane:

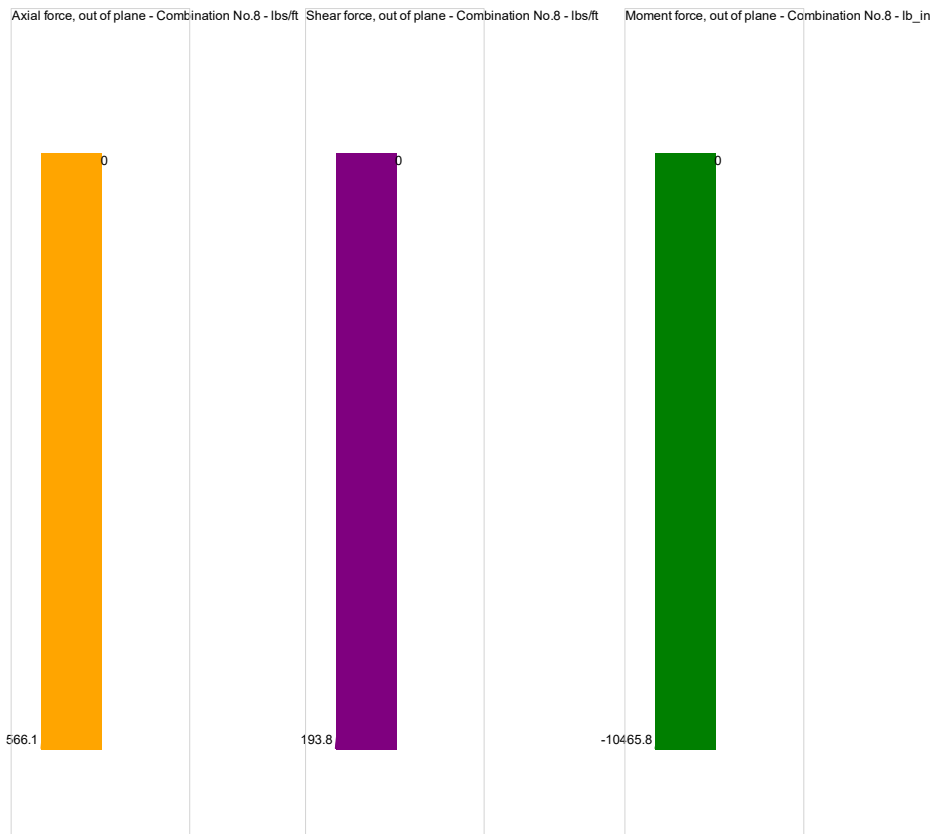
Gross moment of inertia

$$I_{x_gross} = t \times L^3 / 12 = 40362429 \text{ in}^4$$

Gross section modulus

$$S_{x_gross} = I_{x_gross} / (L / 2) = 202318 \text{ in}^3$$

Consider wall at bottom under load combination no.8



Axial load at bottom of panel

$$P = 566 \text{ lb/ft}$$

Slenderness ratio

$$(K \times h) / r = 49.065 < 99$$

Nominal axial strength

$$P_n = 0.8 \times (0.8 \times f_m \times (A - A_s) + A_s \times 0 \text{ ksi}) \times [1 - ((K \times h) / (140 \times r))^2] = 102476 \text{ lb/ft}$$

Strength reduction factor

$$\phi = 0.9$$

Design axial strength

$$\phi \times P_n = 92229 \text{ lb/ft}$$

$$P / (\phi \times P_n) = 0.006$$

PASS - Nominal axial strength exceeds axial load

Factored axial stress

$$P / t = 6 \text{ psi}$$

Factored axial stress limit

$$0.2 \times f'_m = 400 \text{ psi}$$

PASS - Allowable stress under out of plane loads exceeds factored axial stress

Nominal cracking moment strength

$$M_{cr} = S \times f_{r_norm} = 18954 \text{ lb_in/ft}$$

Modular ratio

$$n = E_s / E_m = 16.111$$

Distance to neutral axis

$$c_{cr} = (A_s \times f_y + P) / (0.64 \times f'_m) = 0.936 \text{ in}$$

Moment of inertia of cracked section

$$I_{cr} = n \times (A_s + P \times t / (f_y \times 2 \times d)) \times (d - c_{cr})^2 + c_{cr}^3 / 3 = 35.2 \text{ in}^4/\text{ft}$$

By iteration

$$M_{u0} = M = 10466 \text{ lb_in/ft}$$

$$\delta_{u0} = M_{u0} \times h^2 / (4 \times E_m \times I) = 0.038 \text{ in}$$

$$M_{u1} = M_{u0} + P \times \delta_{u0} = 10487 \text{ lb_in/ft}$$

$$\delta_{u1} = M_{u1} \times h^2 / (4 \times E_m \times I) = 0.038 \text{ in}$$

Bending moment at bottom of panel

$$M = M_{u0} + P \times \delta_{u1} = 10487 \text{ lb_in/ft}$$

Depth of reinforcement

$$d = 3.813 \text{ in}$$

Effective width per bar

$$b_{eff} = \min(s, 6 \times t_{nom}, 72 \text{ in}) = 16 \text{ in}$$

Strength reduction factor

$$\phi = 0.9$$

Tensile strain in reinforcement

$$\epsilon_s = f_y / E_s = 0.0021$$

Maximum usable compressive strain of masonry

$$\epsilon_{mu} = 0.0025$$

Fiber of max.compressive strain to neutral axis

$$C_{bal} = \epsilon_{mu} \times d / (\epsilon_{mu} + \epsilon_s) = 2.086 \text{ in}$$

Tensile force at balance point

$$T_{bal} = A_s \times f_y = 13806 \text{ lb/ft}$$

$$\beta_1 = 0.8$$

Compressive force at balance point

$$C_{bal} = 0.8 \times f'_m \times \beta_1 \times C_{bal} = 32042 \text{ lb/ft}$$

Design axial force at balance point

$$P_{bal} = \phi \times (C_{bal} - T_{bal}) = 16413 \text{ lb/ft}$$

Design moment at balance point

$$M_{bal} = \phi \times [T_{bal} \times (d - t / 2) + C_{bal} \times (t / 2 - \beta_1 \times C_{bal} / 2)] = 85882 \text{ lb_in/ft}$$

Maximum design moment from interaction diagram

$$M_c = 44633 \text{ lb_in/ft}$$

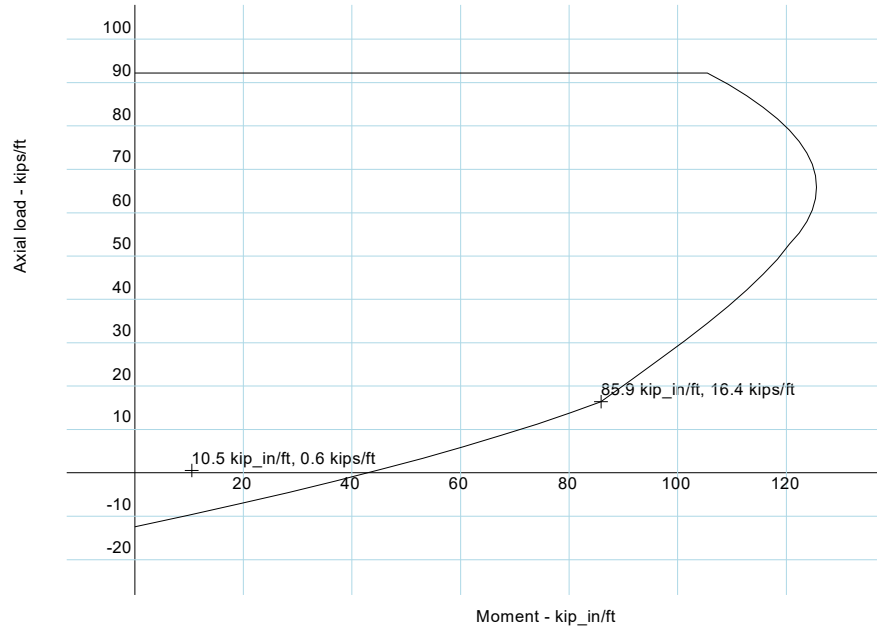
$$M / M_c = 0.235$$

PASS - Combination of applied axial load and flexure is acceptable

Maximum area of tensile reinforcement (9.3.3.2)

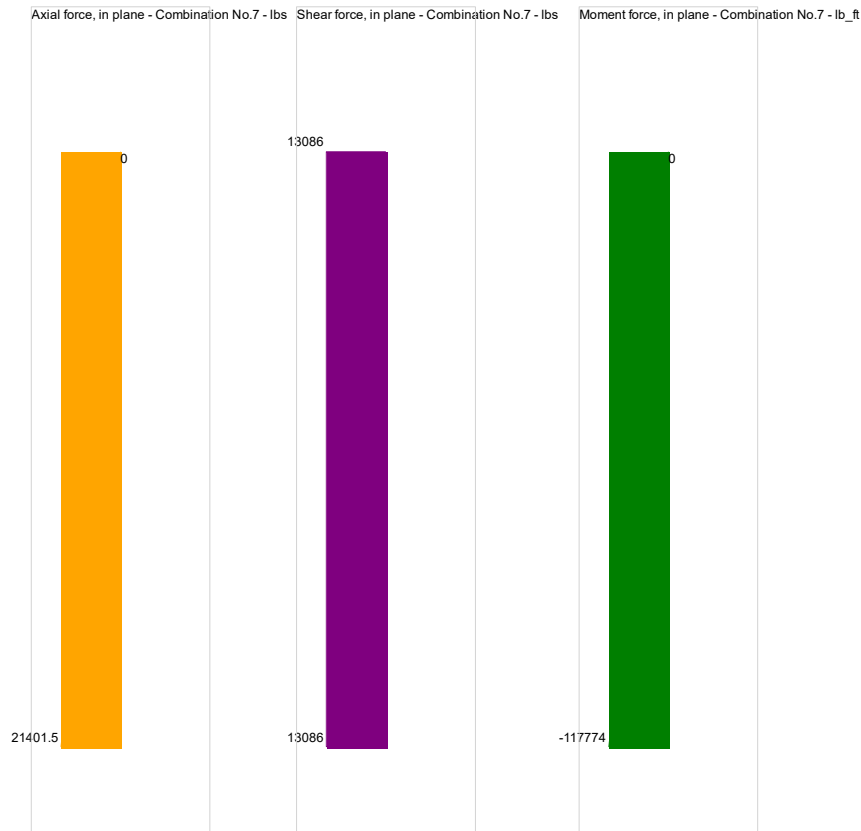
$$A_{s_max} = 0.64 \times f'_m \times [\epsilon_{mu} / (\epsilon_{mu} + 1.5 \times \epsilon_s)] \times d / f_y = 0.435 \text{ in}^2/\text{ft}$$

PASS - Area of reinforcement provided is less than maximum allowable



Strength interaction diagram

Consider wall at bottom under load combination no.7



Shear force	$V = 13$ kips
Compressive force	$N_u = 21402$ lb
Depth to reinforcement	$d_{in} = L - l_b / 4 = 32.92$ ft
Net shear area	$A_{nv} = d_{in} \times t = 3012.590$ in ²
Nominal masonry shear strength	$V_{nm} = [4 - 1.75 \times \min(M_u / (V \times d_{in}), 1)] \times A_{nv} \times \sqrt{f'_m \times 1 \text{ psi}} + 0.25 \times N_u = 480$ kips
Nominal shear strength	$V_n = \min(V_{nm}, 5.938 \times A_{nv} \times \sqrt{f'_m \times 1 \text{ psi}}) = 480$ kips
Strength reduction factor	$\phi_v = 0.8$
Design shear strength	$\phi_v \times V_n = 384$ kips $V / (\phi_v \times V_n) = 0.034$
Shear reinforcement is not required for strength	
Nominal reinf. shear strength	$V_{ns} = 0.5 \times A_v \times f_{yv} \times d_{in} = 145$ kips
Nominal shear strength	$V_n = \min(V_{nm} + V_{ns}, 5.938 \times A_{nv} \times \sqrt{f'_m \times 1 \text{ psi}}) = 625$ kips
Design shear strength	$\phi_v \times V_n = 500$ kips $V / (\phi_v \times V_n) = 0.026$
PASS - Design shear strength exceeds applied shear strength	
Coefficient of friction	$\mu = 1.0$
Distance to neutral axis	$C_{NA} = 3.29$ ft
Area in compression	$A_{nc} = A \times C_{NA} = 301.2$ in ²
Nominal shear friction strength	$V_{nf} = \max(\mu \times (A_s \times d_{in} \times f_y + N_u), 0 \text{ lbs}) = 476$ kips
Design shear friction strength	$\phi V_{nf} = 380.8$ kips
Shear friction utilization	$V / \phi V_{nf} = 0.034$
PASS - Allowable shear friction stress exceeds applied shear stress	
Axial load at base of wall	$P = 21402$ lb
Moment at base of wall	$M = 1413288$ lb_in
By iteration, tension at balance point	$T_{bal} = 100996$ lb
Compression at balance point	$C_{bal} = 1898504$ lb
Axial load at balance point	$P_{bal} = C_{bal} - T_{bal} = 1797508$ lb
By iteration, moment at balance point	$M_{bal} = 228868247$ lb_in
Maximum moment from interaction diagram	$M_c = 57097303$ lb_in $M / M_c = 0.025$
PASS - Combination of applied axial load and flexure is acceptable	
Special reinforced shear wall checks:	
Minimum nominal shear strength (7.3.2.6.1.1)	$V_{n_SpRf} = \min(1.25 \times M_c / (\phi \times h), 2.5 \times V) = 32.72$ kips
PASS - Nominal shear strength provided exceeds nominal shear strength required	
Min. vertical reinforcement (7.3.2.6(a))	$A_{s_minE2} = A_{v_req} / 3 = 0$ in ² /ft
PASS - Vertical reinforcement provided exceed minimum required	



Miyamoto International
1450 Halyard Drive Suite 1
West Sacramento, CA 95691

Project
Nichols Leroy

Section

Calc. by
BM

Date
2/5/2025

Chk'd by

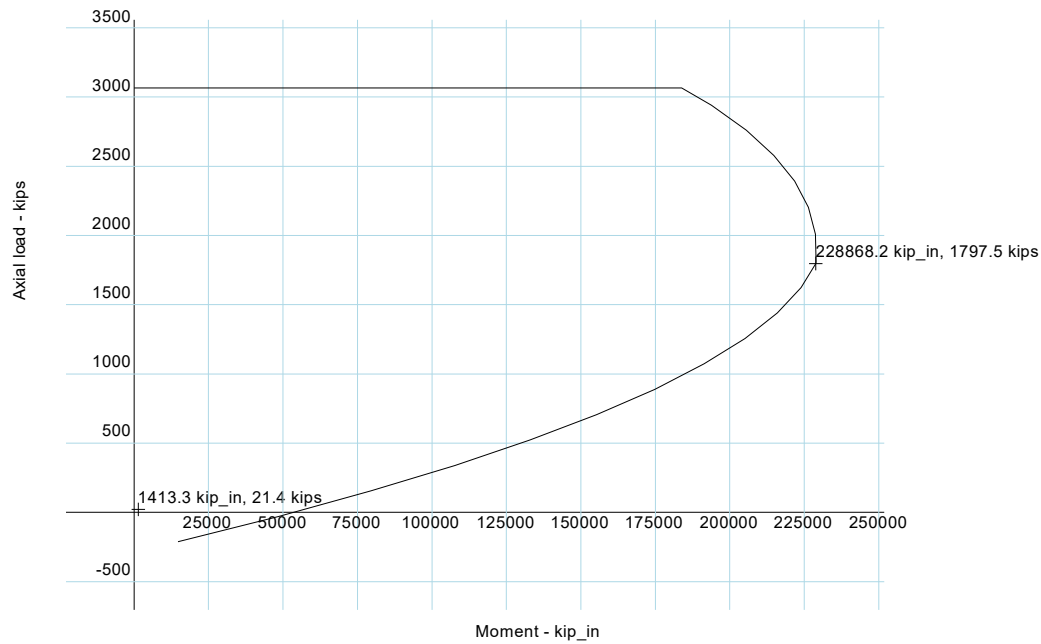
Date

Job Ref.
MI2301016

Sheet no./rev.
8

App'd by

Date



Strength interaction diagram

Seismic drift

Defl. amplification factor (ASCE7 Table 12.2-1)

Cracked moment of inertia

Elastic displacement

Design story drift (ASCE7 Eqn 12.8-15)

Allowable seismic drift

Seismic drift utilization

$C_d = 1.75$

$I_{x_cr} = 0.3 \times I_{x_gross} = 12108729 \text{ in}^4$

$\delta_{ln_xe} = p_{ve} \times V_E \times h^3 / (3 \times E_m \times I_{x_cr}) + 1.2 \times p_{ve} \times V_E \times h / (A_{nv} \times G_v) = 0 \text{ in}$

$\delta_{ln_x} = C_d \times \delta_{ln_xe} / I_e = 0 \text{ in}$

$\Delta_a = 0.01 \times h = 1.08 \text{ in}$

$\delta_{ln_x} / \Delta_a = 0.000$

PASS - Shear wall meets seismic drift requirements

2.2. CMU WALL FOOTING DESIGN

Project Title:
Engineer:
Project ID:
Project Descr:

Wall Footing

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

Code References

Calculations per ACI 318-14, IBC 2018, CBC 2019, ASCE 7-16

Load Combinations Used : IBC 2018

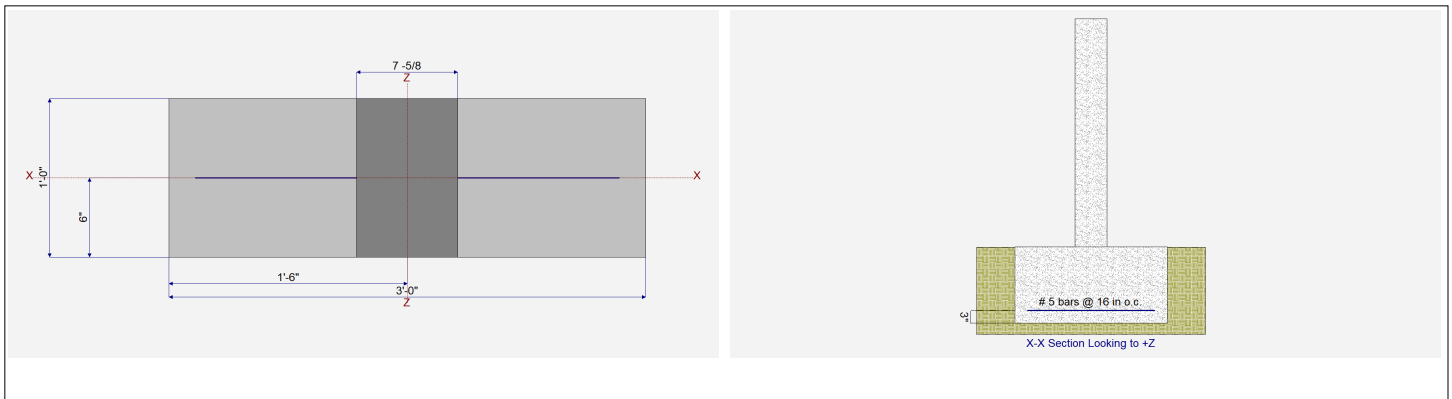
General Information

Material Properties			Soil Design Values		
f'c : Concrete 28 day strength	=	3.0 ksi	Allowable Soil Bearing	=	1.990 ksf
f _y : Rebar Yield	=	60.0 ksi	Increase Bearing By Footing Weight	=	No
E _c : Concrete Elastic Modulus	=	3,122.0 ksi	Soil Passive Resistance (for Sliding)	=	110.0 pcf
Concrete Density	=	145.0 pcf	Soil/Concrete Friction Coeff.	=	0.250
φ Values					
Flexure	=	0.90			
Shear	=	0.750			
Analysis Settings			Increases based on footing Depth		
Min Steel % Bending Reinf.	=		Reference Depth below Surface	=	ft
Min Allow % Temp Reinf.	=	0.00180	Allow. Pressure Increase per foot of depth	=	ksf
Min. Overturning Safety Factor	=	1.0 : 1	when base footing is below	=	ft
Min. Sliding Safety Factor	=	1.0 : 1			
AutoCalc Footing Weight as DL :		Yes	Increases based on footing Width		
			Allow. Pressure Increase per foot of width	=	ksf
			when footing is wider than	=	ft
			Adjusted Allowable Bearing Pressure	=	1.990 ksf

Dimensions

Reinforcing

Footing Width	=	3.0 ft	Footing Thickness	=	18.0 in	Bars along X-X Axis	
Wall Thickness	=	7.625 in	Rebar Centerline to Edge of Concrete...			Bar spacing	= 16.00
Wall center offset			at Bottom of footing	=	3.0 in	Reinforcing Bar Size	= # 5
from center of footing	=	0 in					



Applied Loads

		D	Lr	L	S	W	E	H
P : Column Load	=	0.73	0.0	0.0	0.0	0.0	0.0	0.0 k
OB : Overburden	=	0.0	0.0	0.0	0.0	0.0	0.0	0.0 ksf
V-x	=	0.0	0.0	0.0	0.0	0.2160	0.140	0.0 k
M-zz	=	0.0	0.0	0.0	0.0	1.010	0.70	0.0 k-ft
Vx applied	=	0.0 in above top of footing						

MIN AREA OF STEEL PASSES
THROUGH AREA OF LONG. REBAR IN
FOOTING AND WALL DOWELS NOT
RELLECTED IN THIS CALCULATION

Project Title:
Engineer:
Project ID:
Project Descr:

THIS IS OK AS #5 @ 16" OC IS
PROVIDED TOP & BOTT IN
ADDITION TO LONGITUDINAL
REBAR IN FOOTING.

Wall Footing

Project File: Trash Enclosure.ec6

LIC#: KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

DESIGN SUMMARY

Design N.G.

Factor of Safety	Item	Applied	Capacity	Governing Load Combination	
PASS	1.555	Overturning - Z-Z	0.8004 k-ft	1.244 k-ft	+0.60D+0.60W
PASS	1.60	Sliding - X-X	0.1296 k	0.2074 k	+0.60D+0.60W
PASS	n/a	Uplift	0.0 k	0.0 k	No Uplift

Utilization Ratio	Item	Applied	Capacity	Governing Load Combination	
PASS	0.5190	Soil Bearing	1.033 ksf	1.990 ksf	+0.60D+0.60W
FAIL	As < Min	Z Flexure (+X)	0.4509 k-ft	15.455 k-ft	+1.40D
FAIL	As < Min	Z Flexure (-X)	0.4509 k-ft	15.455 k-ft	+1.40D
PASS	n/a	1-way Shear (+X)	0.0 psi	82.158 psi	n/a
PASS	0.0	1-way Shear (-X)	0.0 psi	0.0 psi	n/a

Detailed Results

Soil Bearing

Rotation Axis & Load Combination...	Gross Allowable	Xecc	Actual Soil Bearing Stress		Actual / Allowable Ratio
			-X	+X	
, D Only	1.990 ksf	0.0 in	0.4608 ksf	0.4608 ksf	0.232
, +D+0.60W	1.990 ksf	6.947 in	0.0 ksf	1.0 ksf	0.503
, +D+0.70E	1.990 ksf	5.529 in	0.03645 ksf	0.8852 ksf	0.445
, +D+0.450W	1.990 ksf	5.211 in	0.06090 ksf	0.8608 ksf	0.433
, +D+0.5250E	1.990 ksf	4.147 in	0.1425 ksf	0.7791 ksf	0.392
, +0.60D+0.60W	1.990 ksf	11.579 in	0.0 ksf	1.033 ksf	0.519
, +0.60D+0.70E	1.990 ksf	9.215 in	0.0 ksf	0.7551 ksf	0.379

Units : k-ft

Overturning Stability

Rotation Axis & Load Combination...	Overturning Moment	Resisting Moment	Stability Ratio	Status
, D Only	None	0.0 k-ft	Infinity	OK
, +D+0.60W	0.8004 k-ft	2.074 k-ft	2.591	OK
, +D+0.70E	0.6370 k-ft	2.074 k-ft	3.255	OK
, +D+0.450W	0.6003 k-ft	2.074 k-ft	3.455	OK
, +D+0.5250E	0.4778 k-ft	2.074 k-ft	4.341	OK
, +0.60D+0.60W	0.8004 k-ft	1.244 k-ft	1.555	OK
, +0.60D+0.70E	0.6370 k-ft	1.244 k-ft	1.953	OK

Sliding Stability

Force Application Axis Load Combination...	Sliding Force	Resisting Force	Sliding SafetyRatio	Status
, D Only	0.0 k	0.3456 k	No Sliding	OK
, +D+0.60W	0.1296 k	0.3456 k	2.667	OK
, +D+0.70E	0.0980 k	0.3456 k	3.527	OK
, +D+0.450W	0.09720 k	0.3456 k	3.556	OK
, +D+0.5250E	0.07350 k	0.3456 k	4.702	OK
, +0.60D+0.60W	0.1296 k	0.2074 k	1.60	OK
, +0.60D+0.70E	0.0980 k	0.2074 k	2.116	OK

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +1.40D	0.4509	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.40D	0.4509	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D	0.3865	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D	0.3865	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+0.50W	0.1574	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+0.50W	0.6156	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+W	0.002497	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+W	0.9011	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+E	0.07563	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +1.20D+E	0.7002	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +0.90D+W	0	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +0.90D+W	0.939	+X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK
, +0.90D+E	0.009076	-X	Bottom	0.3888	Min Temp %	0.2325	15.455	OK

Project Title:
Engineer:
Project ID:
Project Descr:

Wall Footing

Project File: Trash Enclosure.ec6

LIC# : KW-06018304, Build:20.22.6.12

MIYAMOTO INTERNATIONAL INC

(c) ENERCALC INC 1983-2022

DESCRIPTION: --None--

Footing Flexure

Flexure Axis & Load Combination	Mu k-ft	Which Side ?	Tension @ Bot. or Top ?	As Req'd in^2	Gvrn. As in^2	Actual As in^2	Phi*Mn k-ft	Status
, +0.90D+E One Way Shear	0.6253	+X	Bottom	0.3888	Min Temp %	0.2325	15.455 Units : k	OK
Load Combination...	Vu @ -X	Vu @ +X		Vu:Max	Phi Vn	Vu / Phi*Vn		Status
+1.40D		0 psi	0 psi	0 psi	82.158 psi	0		OK
+1.20D		0 psi	0 psi	0 psi	82.158 psi	0		OK
+1.20D+0.50W		0 psi	0 psi	0 psi	82.158 psi	0		OK
+1.20D+W		0 psi	0 psi	0 psi	82.158 psi	0		OK
+1.20D+E		0 psi	0 psi	0 psi	82.158 psi	0		OK
+0.90D+W		0 psi	0 psi	0 psi	82.158 psi	0		OK
+0.90D+E		0 psi	0 psi	0 psi	82.158 psi	0		OK

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS, 2022 CBC

General

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

IMPORTANT: This form is only a summary list of structural tests and some of the special inspections required for the project. Generally, the structural tests and special inspections noted on this form are those that will be performed by the Geotechnical Engineer of Record, Laboratory of Record, or Special Inspector. The actual complete test and inspection program must be performed as detailed on the DSA approved documents. The appendix at the bottom of this form identifies work NOT subject to DSA requirements for special inspection or structural testing. The project inspector is responsible for providing inspection of all facets of construction, including but not limited to, special inspections not listed on this form such as structural wood framing, high-load wood diaphragms, cold-formed steel framing, anchorage of non-structural components, etc., per Title 24, Part 2, Chapter 17A (2022 CBC).

****NOTE:** Undefined section and table references found in this document are from the CBC, or California Building Code.

KEY TO COLUMNS

1. TYPE	2. PERFORMED BY
Continuous – Indicates that a continuous special inspection is required	GE (Geotechnical Engineer) – Indicates that the special inspection shall be performed by a registered geotechnical engineer or his or her authorized representative.
Periodic – Indicates that a periodic special inspection is required	LOR (Laboratory of Record) – Indicates that the test or special inspection shall be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See CAC Section 4-335.
Test – Indicates that a test is required	PI (Project Inspector) – Indicates that the special inspection may be performed by a project inspector when specifically approved by DSA.
	SI (Special Inspection) – Indicates that the special inspection shall be performed by an appropriately qualified/approved special inspector.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

Geotechnical Reports: Project does NOT have and does NOT require a geotechnical report

S1. GENERAL:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify that: • Site has been prepared properly prior to placement of controlled fill and/or excavations for foundations. • Foundation excavations are extended to proper depth and have reached proper material. • Materials below footings must not contain loose material, mud, organic silt, organic clays, or peat.	See Notes	PI	Refer to specific items identified in the Appendix listing exemptions for limitations. Placement of controlled fill exceeding 12" depth under foundations and/or within the building envelope is not permitted without a geotechnical report.

S2. SOIL COMPACTION AND FILL:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Perform classification and testing of fill materials.	Test	LOR*	* Under the supervision of the geotechnical engineer.
☒	b. Verify use of proper materials, densities and inspect lift thicknesses, placement and compaction during placement of fill.	Continuous	LOR*	* Under the supervision of a geotechnical engineer or LOR's engineering manager. Refer to specific items identified in the Appendix listing exemptions for limitations.
☒	c. Compaction testing.	Test	LOR*	* Under the supervision of a geotechnical engineer or LOR's engineering manager. Refer to specific items identified in the Appendix listing exemptions for limitations.

S3. DRIVEN DEEP FOUNDATIONS (PILES):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify pile materials, sizes and lengths comply with the requirements.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	b. Determine capacities of test piles and conduct additional load tests as required.	Test	LOR*	* Under the supervision of the geotechnical engineer.
☐	c. Inspect driving operations and maintain complete and accurate records for each pile.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	d. Verify locations of piles and their plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and record any pile damage.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	e. Steel piles.	Provide tests and inspections per STEEL section below.		
☐	f. Concrete piles and concrete filled piles.	Provide tests and inspections per CONCRETE section below.		
☐	g. For specialty piles, perform additional inspections as determined by the registered design professional in responsible charge.	*	*	* As defined on drawings or specifications.

	S4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):			
	Test or Special Inspection	Type	Performed By	Code References and Note
☐	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	PI	Continuous inspection to be provided by project inspector. Refer to specific items identified in the Appendix listing exemptions for limitations.
☐	b. Verify pier locations, diameters, plumbness and lengths. Record concrete or grout volumes.	Continuous	PI	Continuous inspection to be provided by project inspector. Refer to specific items identified in the Appendix listing exemptions for limitations.
☐	c. Concrete piers.	Provide tests and inspections per CONCRETE section below.		

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (SOILS), 2022 CBC

Table 1705A.6, Table 1705A.7, Table 1705A.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S5. RETAINING WALLS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Placement, compaction and inspection of backfill.	Continuous	GE*	1705A.6.1. * By geotechnical engineer or his or her qualified representative. (See section S2 above).
☐	b. Placement of soil reinforcement and/or drainage devices.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	c. Segmental retaining walls; inspect placement of units, dowels, connectors, etc.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. See DSA IR 18-2.
☐	d. Concrete retaining walls.	Provide tests and inspections per CONCRETE section below.		
☐	e. Masonry retaining walls.	Provide tests and inspections per MASONRY section below.		

	S6. OTHER SOILS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Soil Improvements	Test	GE*	Submit a comprehensive report documenting final soil improvements constructed, construction observation and the results of the confirmation testing and analysis to CGS (California Geological Survey) for final acceptance. * By geotechnical engineer or his or her qualified representative.
☐	b. Inspection of Soil Improvements	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
☐	c.			

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC

Table 1705A.3; ACI 318-19 Sections 26.12 & 26.13

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

C1. CAST-IN-PLACE CONCRETE				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify use of required design mix.	Continuous	SI	Table 1705A.3 Item 5, 1910A.1.
☒	b. Identifiy, sample, and test reinforcing steel.	Test	LOR	1910A.2; ACI 318-19 Ch.20 and Section 26.6.1.2; DSA IR 17-10. (See Appendix (end of this form) for exemptions.)
☒	c. During concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	Table 1705A.3 Item 6; ACI 318-19 Sections 26.5 & 26.12.
☒	d. Test concrete (f' _c).	Test	LOR	1905A.1.17; ACI 318-19 Section 26.12.
☒	e. Batch plant inspection: Periodic	See Notes	SI	Default of 'Continuous' per 1705A.3.3. If approved by DSA, batch plant inspection may be reduced to 'Periodic' subject to requirements in Section 1705A.3.3.1, or not required per 1705A.3.3.2. See IR 17-13. (See Appendix (end of this form) for exemptions.)
☐	f. Welding of reinforcing steel.	Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.		

C2. PRESTRESSED / POST-TENSIONED CONCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Sample and test prestressing tendons and anchorages.	Test	LOR	1705A.3.4, 1910A.3
☐	b. Inspect placement of prestressing tendons.	Periodic	SI	1705A.3.4, Table 1705A.3 Items 1 & 9.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC

Table 1705A.3; ACI 318-19 Sections 26.12 & 26.13

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	c. Verify in-situ concrete strength prior to stressing of post-tensioning tendons.	Periodic	SI	Table 1705A.3 Item 13. Special inspector to verify specified concrete strength test prior to stressing.
☐	d. Inspect application of post-tensioning or prestressing forces and grouting of bonded prestressing tendons.	Continuous	SI	1705A.3.4, Table 1705A.3 Item 9; ACI 318-19 Section 26.13

	C3. PRECAST CONCRETE (IN ADDITION TO SECTION C1):			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect fabrication of precast concrete members.	Continuous	SI	ACI 318-19 Section 26.13, and PCI MNL-128 and -130.
☐	b. Inspect erection of precast concrete members.	Periodic	SI*	Table 1705A.3 Item 10. * May be performed by PI when specifically approved by DSA.
☐	c. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category D, E or F, inspect such connections and reinforcement in the field for: 1. Installation of the embedded parts 2. Completion of the continuity of reinforcement across joints. 3. Completion of connections in the field.	Continuous	SI	Table 1705A.3; ACI 318-19 Section 26.13.1.3; ACI 550.5
☐	d. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	Periodic	SI	Table 1705A.3; ACI 318-19 Section 26.13.1.3; ACI 550.5

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (CONCRETE), 2022 CBC

Table 1705A.3; ACI 318-19 Sections 26.12 & 26.13

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

C4. SHOTCRETE (IN ADDITION TO SECTION C1):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect shotcrete placement for proper application techniques.	Continuous	SI	1705A.3.9, Table 1705A.3 Item 7, 1908A.1, 1908A.2, 1908A.3. See ACI 506.2-13 Section 3.4, ACI 506R-16.
☐	b. Sample and test shotcrete (f'c).	Test	LOR	1908A.2, 1705A.3.9

C5. POST-INSTALLED ANCHORS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic), 1705A.3.8 (See Appendix (end of this form) for exemptions). ACI 318-19 Section 26.13. * May be performed by the project inspector when specifically approved by DSA.
☒	b. Test post-installed anchors.	Test	LOR	1910A.5. (See Appendix (end of this form) for exemptions.)

C6. OTHER CONCRETE:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a.			

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (MASONRY), 2022 CBC

1705A.4; TMS 602-16, Tables 3 and 4.

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

M1. STRUCTURAL MASONRY: (f'm = 2000 psi)				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Mill certificate indicates compliance with requirements for reinforcement, anchors, ties, fasteners and metal accessories. See item C1(b) for identification, sampling and testing of reinforcing steel.	Periodic	SI*	2103A.4; TMS 602-16 Article 1.5B.2 & 2.4. * To be performed by qualified LOR representative. Applicable testing by LOR. See IR 17-10 for unidentified reinforcing steel.
☒	b. Producer's certificate of compliance for masonry units, mortar and grout materials.	Test	LOR	1705A.4, 2103A.2, 2103A.3, 2103A.5; TMS 602-16 Articles 1.5B.2 2.1, 2.2, 2.6A and 2.6B, and Table 6 footnote 3.
☒	c. Test masonry (f'm).	Test	LOR	1705A.4. For Unit Strength: 2105A.3; TMS 602-16 Articles 1.4B.2, 1.5B.1 & 1.5B.2. For Prism (required when f'm > 2000 psi): 2105A.2; TMS 602-16 Articles 1.4B.3, 1.4B.4, 1.5B.1 & 1.5B.2.
☒	d. Verify proportions or properties of site-prepared, premixed or preblended mortar.	Periodic	SI	TMS 602-16, Table 3 (row 5), Table 4 Item 1a. DSA PR 20-01. (See Appendix (end of this form) for exemptions.)
☒	e. Verify proportions or properties of site-prepared, premixed or preblended grout.	Periodic	SI	TMS 602-16, Table 3 (row 5), Table 4 Item 2d. (See Appendix (end of this form) for exemptions.)
☒	f. Batch plant inspection: Periodic	See Notes	SI	Default of ' Continuous ' per 1705A.3.3 . If approved by DSA, batch plant inspection may be reduced to ' Periodic ' subject to requirements in Section 1705A.3.3.1 , or not required per 1705A.3.3.2 . See IR 17-13. Refer to TMS 602-16 Table 3 and Table 4, Item #3a. (See Appendix (end of this form) for exemptions.)
☒	g. Test core-drilled samples.	Test	LOR	2105A.4. (See Appendix (end of this form) for exemptions.)
☐	h. Inspect preparation of prisms.	Continuous	SI	TMS 602-16 Articles 1.4.B.3 & 1.4.B.4 & Table 4 Item 4.
☒	i. Verify size, location and condition of all dowels, construction supporting masonry, etc.	Periodic	SI	

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (MASONRY), 2022 CBC

1705A.4; TMS 602-16, Tables 3 and 4.

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	j. Verify size, grade and type of reinforcement, connectors, and anchor bolts. Verify size and location of structural members.	Periodic	SI	TMS 602-16 Table 4, Items 1c & 3c.
☒	k. Inspect placement of reinforcement, anchor bolts, and connectors.	Continuous	SI	TMS 602-16 Table 4 Item 2c.
☒	l. Placement, consolidation, and reconsolidation of grout.	Continuous	SI	TMS 602-16 Table 4 Item 3h.
☒	m. Inspect placement of masonry units and construction of mortar joints.	Periodic	SI	TMS 602-16 Table 4 Item 3b.
☒	n. Verify preparation, construction and protection of masonry during cold weather (temperature below 40° F) or hot weather (temperature above 90° F).	Periodic	SI*	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.
☒	o. Inspect type, size and location of anchors and all other items to be embedded in masonry including other details of anchorage of masonry to structural members, frames and other construction.	Continuous	SI	TMS 602-16 Table 4 Item 3d.
☒	p. Inspect grout space, including mortar protrusions, prior to placement of grout.	Continuous	SI	TMS 602-16 Table 4 Item 2a.
☐	q. Welding of reinforcing steel.	TMS 602-16 Table 4 Item 3e. Provide special inspection per STEEL, Category S/A4(d) & (e) and/or S/A5(g) & (h) below.		

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (MASONRY), 2022 CBC

1705A.4; TMS 602-16, Tables 3 and 4.

Application Number:

02-121896

School Name:

Leroy Nichols Elementary school

School District:

Lodi Unified

DSA File Number:

39-50

Increment Number:

Date Created:

2025-02-05 16:50:12

M2. VENEER OR GLASS BLOCK PARTITIONS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify proportions of site prepared mortar and grout and/or verify certification of premixed mortar.	Periodic	SI	TMS 602-16 Table 3 (row 5) and Table 4 Items 1a & 2d.
☐	b. Inspect placement of units and construction of mortar joints.	Periodic	SI	TMS 602-16 Table 4 Item 3b.
☐	c. Inspect placement of wire, connectors and anchors	Periodic	SI	TMS 602-16 Table 4 Item 2c.
☐	d. Inspect type, size and location of anchors and all other items to be embedded in masonry veneer including details of anchorage of masonry to veneer backing, frames and other construction.	Periodic	SI	TMS 602-16 Table 4 Item 3d.
☐	e. Verify preparation, construction and protection of masonry during cold weather (temperature below 40° F) or hot weather (above 90° F).	Periodic	SI*	TMS 602-16 Table 4 Item 3f. * May be performed by the project inspector when specifically approved by DSA.
☐	f. Test adhered veneer bond strength.	Test	LOR	1410.2.1; TMS 402 Article 12.3.2.4. (Field constructed mock-up laboratory tested in accordance with ASTM C482).

M3. POST-INSTALLED ANCHORS IN MASONRY:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect installation of post-installed anchors	See Notes	SI*	1617A.1.19, 1705A.4, Table 1705A.3 Item 4a (Continuous) & 4b (Periodic); ACI 318-14 Sections 17.8 & 26.13. * May be performed by the project inspector when specifically approved by DSA. (See Appendix (end of this form) for exemptions.)

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (MASONRY), 2022 CBC

1705A.4; TMS 602-16, Tables 3 and 4.

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	b. Test post-installed anchors.	Test	LOR	1705A.4, 1910A.5. (See Appendix (end of this form) for exemptions.)

	M4. OTHER MASONRY:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a.			

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

S/A1. STRUCTURAL STEEL, COLD-FORMED STEEL AND ALUMINUM USED FOR STRUCTURAL PURPOSES				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements. • Material sizes, types and grades comply with requirements.	Periodic	*	Table 1705A.2.1 Item 3a–3c. 2202A.1; AISI S100-20 Section A3.1 & A3.2, AISI S240-20 Section A3 & A5, AISI S220-20 Sections A4 & A6. * By special inspector or qualified technician when performed off-site.
☒	b. Test unidentified materials	Test	LOR	2202A.1.
☒	c. Examine seam welds of HSS shapes	Periodic	SI	DSA IR 17-3.
☒	d. Verify and document steel fabrication per DSA-approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (1705A.2.4).
☐	e. Buckling restrained braces.	Test	LOR	Testing and special inspections in accordance with IR 22-4.

S/A2. HIGH-STRENGTH BOLTS:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify identification markings and manufacturer's certificates of compliance conform to ASTM standards specified in the DSA-approved documents.	Periodic	SI	Table 1705A.2.1 Items 1a & 1b, 2202A.1; AISC 360-16 Section A3.3, J3.1, and N3.2; RCSC 2014 Section 1.5 & 2.1; DSA IR 17-8 & DSA IR 17-9.
☐	b. Test high-strength bolts, nuts and washers.	Test	LOR	Table 1705A.2.1 Item 1c, 2213A.1; RCSC 2014 Section 7.2; DSA IR 17-8.
☐	c. Bearing-type ("snug tight") connections.	Periodic	SI	Table 1705A.2.1 Item 2a, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Section 9.1; DSA IR 17-9.
☐	d. Pretensioned and slip-critical connections.	*	SI	Table 1705A.2.1 Items 2b & 2c, 1705A.2.6, 2204A.2; AISC 360-16 J3.1, J3.2, M2.5 & N5.6; RCSC 2014 Sections 9.2 & 9.3; DSA IR 17-9. **"Continuous" or "Periodic" depends on the tightening method used.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

S/A3. WELDING:				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Verify weld filler material identification markings per AWS designation listed on the DSA-approved documents and the WPS.	Periodic	SI	1705A.2.5, Table 1705A.2.1 Items 4 & 5; AWS D1.1 and AWS D1.8 for structural steel; AWS D1.2 for Aluminum; AWS D1.3 for cold-formed steel; AWS D1.4 for reinforcing steel; DSA IR 17-3.
☒	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
☒	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.

S/A4. SHOP WELDING (IN ADDITION TO SECTION S/A3):				
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1–4; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☒	b. Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Items 5a.5 & 5a.6; AISC 360-16 (and AISC 341-16 as applicable); DSA IR 17-3.
☐	c. Inspect welding of stairs and railing systems.	Periodic	SI	1705A.2.1; AISC 360-16 (and AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3.
☐	d. Verification of reinforcing steel weldability other than ASTM A706.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	e. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A5. FIELD WELDING (IN ADDITION TO SECTION S/A3):			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds.	Continuous	SI	Table 1705A.2.1 Items 5a.1–4; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☒	b. Inspect single-pass fillet welds ≤ 5/16".	Periodic	SI	Table 1705A.2.1 Item 5a.5; AISC 360-16 (AISC 341-16 as applicable); DSA IR 17-3.
☐	c. Inspect end-welded studs (ASTM A-108) installation (including bend test).	Periodic	SI	2213A.2; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1; DSA IR 17-3.
☐	d. Inspect floor and roof deck welds.	Periodic	SI	1705A.2.2, Table 1705A.2.1 Item 5a.6; AISC 360-16 (AISC 341-16 as applicable); AWS D1.3; DSA IR 17-3.
☐	e. Inspect welding of structural cold-formed steel.	Periodic	SI*	1705A.2.5; AWS D1.3; DSA IR 17-3. The quality control provisions of AISI S240-20 Chapter D shall also apply. * May be performed by the project inspector when specifically approved by DSA.
☐	f. Inspect welding of stairs and railing systems.	Periodic	SI*	1705A.2.1; AISC 360-16 (AISC 341-16 as applicable); AWS D1.1 & D1.3; DSA IR 17-3. * May be performed by the project inspector when specifically approved by DSA.
☐	g. Verification of reinforcing steel weldability.	Periodic	SI	1705A.3.1; AWS D1.4; DSA IR 17-3. Verify carbon equivalent reported on mill certificates.
☐	h. Inspect welding of reinforcing steel.	Continuous	SI	Table 1705A.2.1 Item 5b, 1705A.3.1, Table 1705A.3 Item 2, 1903A.8; AWS D1.4; DSA IR 17-3.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:

02-121896

School Name:

Leroy Nichols Elementary school

School District:

Lodi Unified

DSA File Number:

39-50

Increment Number:

Date Created:

2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A6. NONDESTRUCTIVE TESTING:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Ultrasonic	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	b. Magnetic Particle	Test	LOR	1705A.2.1, 1705A.2.5; AISC 341-16 J6.2, AISC 360-16 N5.5; AWS D1.1, AWS D1.8; DSA IR 17-2.
☐	c.	Test	LOR	

	S/A7. STEEL JOISTS AND TRUSSES:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Verify size, type and grade for all chord and web members as well as connectors and weld filler material; verify joist profile, dimensions and camber (if applicable); verify all weld locations, lengths and profiles; mark or tag each joist.	Continuous	SI	1705A.2.3, Table 1705A.2.3; AWS D1.1; DSA IR 22-3 for steel joists only. 1705A.2.4; AWS D1.3 for cold-formed steel trusses.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number:

02-121896

School Name:

Leroy Nichols Elementary school

School District:

Lodi Unified

DSA File Number:

39-50

Increment Number:

Date Created:

2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
	S/A8. SPRAYED FIRE-RESISTANT MATERIALS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Examine structural steel surface conditions, inspect application, take samples, measure thickness and verify compliance of all aspects of application with DSA-approved documents.	Periodic	SI	1705A.15, 1705A.15.1, 1705A.15.2, 1705A.15.3, 1705A.15.4, 1705A.15.5, 1705A.15.6.
☐	b. Test density.	Test	LOR	1705A.15.1, 1705A.15.5, ASTM E605
☐	c. Bond strength adhesion/cohesion.	Test	LOR	1705A.15.1, 1705A.15.6, ASTM E736

	S/A9. ANCHOR BOLTS AND ANCHOR RODS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☒	a. Anchor Bolts and Anchor Rods	Test	LOR	Identify, sample and test anchor bolts and anchor rods not meeting exemptions identified in Section 1 of IR 17-11.
☐	b. Threaded rod not used for foundation anchorage.	Test	LOR	Identify, sample and test threaded rods not meeting exemptions identified in Section 1 of IR 17-11.

	S/A10. STORAGE RACK SYSTEMS:			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a. Materials used, to verify compliance with one or more of the material test reports in accordance with the approved construction documents.	Periodic	SI	Table 1705A.13.7
☐	b. Fabricated storage rack elements.	Periodic	SI	1704A.2.5; Table 1705A.13.7

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS (STEEL AND ALUMNINUM), 2022 CBC

1705A.2.1, Table 1705A.2.1; AISC 303-16, AISC 341-16, AISC 358-16, AISC 360-16; AISI S100-20; RCSC 2014; AWS D1.1, AWS D1.2, AWS D1.3, AWS D1.4, AWS D1.8

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	c. Storage rack anchorage installation.	Periodic	SI	ANSI/MH16.1 Section 7.3.2; Table 1705A.13.7
☐	d. Completed storage rack system to indicate compliance with the approved construction documents.	Periodic	SI*	Table 1705A.13.7; * May be preformed by the project inspector when specifically approved by DSA.

	S/A11. Other Steel			
	Test or Special Inspection	Type	Performed By	Code References and Notes
☐	a.			

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

Exempt items given in DSA IR A-22 or the 2022 CBC (including DSA amendments) and those items identified below with a check mark by the design professional are NOT subject to DSA requirements for the structural tests / special inspections noted. **Items marked as exempt shall be identified on the approved construction documents.** The project inspector shall verify all construction complies with the approved construction documents.

	SOILS:
☐	1. Deep foundations acting as a cantilever footing with a design based on minimum allowable pressures per CBC Table 1806A.2 and without a geotechnical report for the following cases: A) free standing sign or scoreboard, B) cell or antenna towers and poles less than 35'-0" tall (e.g., lighting poles, flag poles, poles supporting open mesh fences, etc.), C) single-story structure with dead load less than 5 psf (e.g., open fabric shade structure), or D) covered walkway structure with an apex height less than 10'-0" above adjacent grade.
☐	2. Shallow foundations, etc. are exempt from special inspections and testing by a Geotechnical Engineer for the following cases: A) buildings without a geotechnical report and meeting the exception item #1 criteria in CBC Section 1803A.2 supported by native soil (any excavation depth) or fill soil (not exceeding 12" depth per CBC Section 1804A.6), B) soil scarification/recompaction not exceeding 12" depth, C) native or fill soil supporting exterior non-structural flatwork (e.g., sidewalks, site concrete ramps, site stairs, parking lots, driveways, etc.), D) unpaved landscaping and playground areas, or E) utility trench backfill with depth not exceeding 12".

	CONCRETE/MASONRY:
☐	1. Post-installed anchors for the following: A) exempt non-structural components (e.g., mechanical, electrical, plumbing equipment - see item 7 for "Welding" in the Appendix below) given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) or B) interior nonstructural wall partitions meeting criteria listed in exempt item 3 for "Welding" in the Appendix below
☒	2. Concrete batch plant inspection is not required for items given in CBC Section 1705A.3.3.2 subject to the requirements and limitations in that section.
☒	3. Non-bearing non-shear masonry walls may be exempt from certain DSA masonry testing and special inspection items as allowed per DSA IR 21-1. Refer to construction documents for specific exemptions accordingly for each applicable wall condition shown in Appendix A of IR 21-1.
☒	4. Epoxy shear dowels in site flatwork and/or other non-structural concrete.

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	CONCRETE/MASONRY:
☒	5. Testing of reinforcing bars is not required for items given in CBC Section 1910A.2 subject to the requirements and limitations in that section.

	WELDING:
☒	1. Solid-clad and open-mesh fences, gates with maximum leaf span of 10', and gates with a maximum rolling section of 10' all having an apex height less than 8'-0" above lowest adjacent grade. When located above circulation or occupied space below, these gates/fences are not located within 1.5x gate/fence height (max 8'-0") to the edge of floor or roof.
☐	2. Handrails, guardrails, and modular or relocatable ramps associated with walking surfaces less than 30" above adjacent grade (excluding post base connections per the 'Exception' language in Section 1705A.2.1); fillet welds shall not be ground flush.
☐	3. Non-structural interior cold-formed steel framing spanning less than 15'-0", such as in interior partitions, interior soffits, etc. supporting only self weight and light-weight finishes or adhered tile, masonry, stone, or terra cotta veneer no more than 5/8" thickness and apex less than 20'-0" in height and not over an exit way. Maximum tributary load to a member shall not exceed the equivalent of that occurring from a 10'x10' opening in a 15' tall wall for a header or king stud.
☒	4. Manufactured support frames and curbs using hot rolled or cold-formed steel (i.e., light gauge) for mechanical, electrical, or plumbing equipment weighing less than 2000# (equipment only) (connections of such frames to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	5. Manufactured components (e.g., Tolco, B-Line, Afcon, etc.) for mechanical, electrical, or plumbing hanger support and bracing (connections of such components to superstructure elements using welding will require special inspection as noted in selected item(s) for Sections S/A3, S/A4 and/or S/A5 of listing above).
☐	6. TV Brackets, projector mounts with a valid listing (see DSA IR A-5) and recreational equipment (e.g., playground structures, basketball backstops, etc.) (connections of such elements to superstructure elements using welding will require special inspection as noted in selected item(s) for sections S/A3, S/A4 and/or S/A5 located in the Steel/Aluminum category of listing above).

Appendix: Work Exempt from DSA Requirements for Structural Tests / Special Inspections

Application Number: 02-121896	School Name: Leroy Nichols Elementary school	School District: Lodi Unified
DSA File Number: 39-50	Increment Number:	Date Created: 2025-02-05 16:50:12

	WELDING:
☒	7. Any support for exempt non-structural components given in CBC Section 1617A.1.18 (which replaces ASCE 7-16, Section 13.1.4) meeting the following: A) when supported on a floor/roof, <400# and resulting composite center of mass (including component's center of mass) $\leq 4'$ above supporting floor/roof, B) when hung from a wall or roof/floor, <20# for discrete units or <5 plf for distributed systems.

DSA 103-22: LISTING OF STRUCTURAL TESTS & SPECIAL INSPECTIONS(SIGNATURE), 2022 CBC

Application Number:

02-121896

School Name:

Leroy Nichols Elementary school

School District:

Lodi Unified

DSA File Number:

39-50

Increment Number:

Date Created:

2025-02-05 16:50:12

Name of Architect or Engineer in general responsible charge:

LEONA KETTERL

Name of Structural Engineer (When structural design has been delegated):

LON DETERMAN

Signature of Architect or Structural Engineer:

Date:

02/07/2025

Note: To facilitate DSA electronic mark-ups and identification stamp application, DSA recommends against using secured electronic or digital signatures.

DSA STAMP

DSA 103-22: LIST OF REQUIRED VERIFIED REPORTS, CBC 2022

Application Number:

02-121896

DSA File Number:

39-50

School Name:

Leroy Nichols Elementary school

Increment Number:

School District:

Lodi Unified

Date Created:

2025-02-05 16:50:12

1. Structural Testing and Inspection: Laboratory Verified Report Form DSA 291

2. Concrete Batch Plant Inspection: Laboratory Verified Report Form DSA 291

3. Post-installed Anchors: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

4. Masonry Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

5. Shop Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292

6. Field Welding Inspection: Laboratory Verified Report Form DSA 291, or, for independently contracting SI, Special Inspection Verified Report Form DSA 292
