

GENERAL NOTES - STRUCTURAL

DESIGN SPECIFICATIONS: ACI 318-99, AISC ASD 9th Edition
 GOVERNING BUILDING CODE: 1999 BOCA

General

- The Contractor shall notify the Engineer of any observed discrepancies in dimensions, detailing, or other items as shown on the plans or specified prior to proceeding with work relating to said discrepancies.
- The Contractor shall not alter or modify work shown on the structural drawings without receiving written approval of the Engineer.
- The Contractor shall be responsible for supplying shop drawings for wood joists & trusses, structural steel, reinforcing steel, and concrete mix designs. Shop drawings must be reviewed for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of the Contractor, and shall be stamped "approved" by the Contractor prior to submittal. Shop drawings submitted without the Contractor's stamped approval will be returned rejected. All shop drawings shall be reviewed by the Structural Engineer prior to construction.

Slab On Grade:

- Welded wire fabric shall be supplied in sheets only. Rolls will not be permitted.
- Welded wire fabric, when used, shall be supported on chairs or blocks prior to concrete placement. Mesh shall not be hooked and pulled up during concrete placement.
- Welded wire fabric shall have end and edge laps of one full mesh plus 2" between cross wires. Wire all laps securely together.
- Welded wire fabric shall conform to ASTM A185.

Foundations:

- Foundations for this project(s) have been designed in accordance with requirements set forth in a soils report prepared by SCI Engineering, Inc., April 2001, 2000-0337.10. Continuous and individual footings have been designed for an allowable soil bearing value of 2000 psf. The Contractor shall refer to Soils Report for all requirements and recommendations pertinent to this project.
- Anchor bolts shall conform to ASTM A307 and shall be located by means of a template. Provide a nut above and below template to assure proper vertical alignment.
- All foundations shall be square and level.
- Grout below column base plates. Grout shall be dry and stiff to prevent shrinkage, with a minimum compressive strength of 4000 psi. Thoroughly compact grout beneath base plate.

CONCRETE AND REINFORCING STEEL:

- Concrete mix designs shall meet the following requirements: (Taken from ACI Manual of Concrete-1990, 211.1)

Location	Minimum Compressive Strength (PSI)	Maximum Aggregate Size	Cement Lbs.	Sack Mix (Per C.Y.)	Max. Water/Cement Ratio	Slump (in.)	Air Entrainment Percent (%)
All Concrete	5000	3/4"	611	6 1/2	.48	4 ± 1	6 ± 1

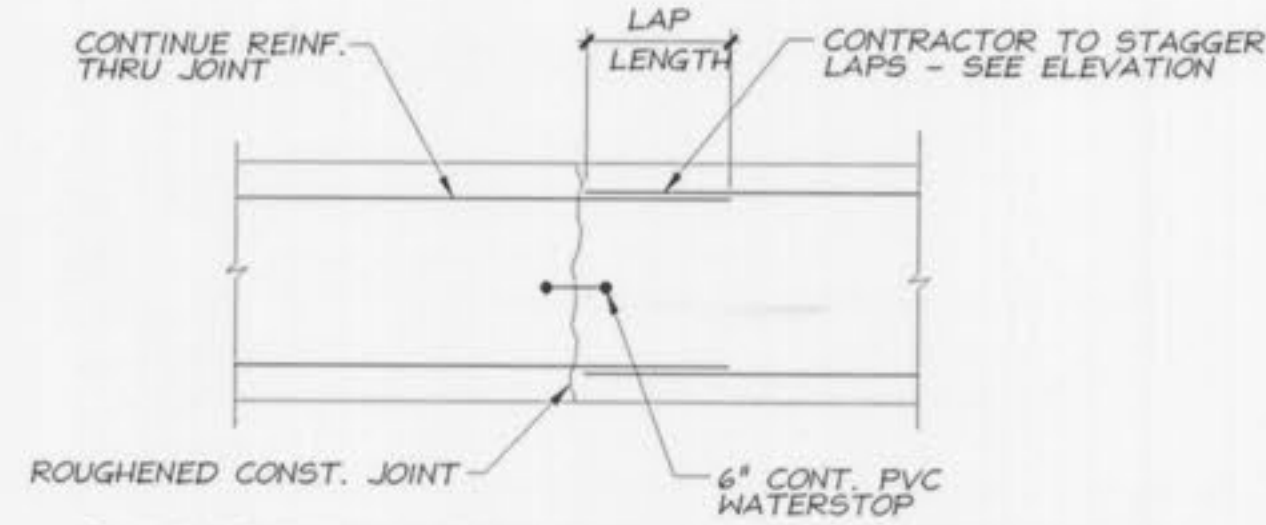
- Fly ash shall not be used unless approved in writing by the Engineer. Fly ash, if approved, shall conform to ASTM C618 and shall not exceed 15% of the total cement volume.
- All concrete is reinforced unless specifically called out as unreinforced. Reinforce all concrete not otherwise shown with same steel as in similar sections or areas.
- Construction joints in grade beams shall be at midspan unless noted otherwise. Reinforcing steel shall be continuous through construction joints unless noted otherwise.
- No aluminum items shall be embedded in any concrete. At all locations where aluminum comes in contact with concrete, the two materials shall be kept separate by applying a bitumastic coating or other approved insulating coating to the aluminum surface. Care shall be taken to prevent the bitumastic from showing on permanently exposed surfaces.
- Reinforcing bars #4 and larger (except ties and stirrups) shall meet ASTM A615 with Supplementary Requirements (S1), Grade 60, smaller bars shall be Grade 40.
- Concrete coverage of reinforcement shall have the following clear distance unless noted otherwise on the drawings:
 - Cast against earth: 3"
 - Formed concrete exposed to earth or weather: 2"
 - Not exposed to earth or weather: 1" Slabs, 1-1/2" Beams and columns
- Embedment and all reinforcing bars marked continuous shall be embedded to develop the full tension capacity of the bar. Laps shall be Class B tension laps unless specified otherwise on the drawings. Unless shown otherwise, splice top bars near midspan and splice bottom bars over supports.
- Supply corner bars 4'-0" long (min. 2'-0" in each direction or 48 bar diameters) in outside face of wall at corners of all walls and grade beams, matching size and spacing of horizontal bars. Where there are no vertical bars in outside face of wall, supply three (3)-#4 vertical support bars for corner bars.
- All bars are to be supported in forms and spaced with wire bar supports per ACI "Manual of Standard Practice for Detailing Concrete Structures" (latest edition). Bars shall be securely wired per latest edition of CRSI Recommended Practice for Placing Reinforcing Bars. Accessories for exposed concrete shall be plastic or have plastic-tipped feet.
- Welded wire fabric shall have end and edge laps of one full mesh plus 2" between cross wires. Wire all laps securely together.
- Concrete placed during cold weather shall conform to the requirements of ACI 306R-88. Cold weather is defined as a period when for more than 3 successive days the mean daily temperature drops below 40°F.
- Concrete placed during hot weather shall conform to the requirements of ACI 305R-89. Hot weather is defined as that combination of air temperature, concrete temperature, relative humidity and wind speed that will cause a rate of evaporation of 0.2 lb/sq.ft./hr. or more as defined by Figure 2.1.5 of ACI 305R-89.

MASONRY

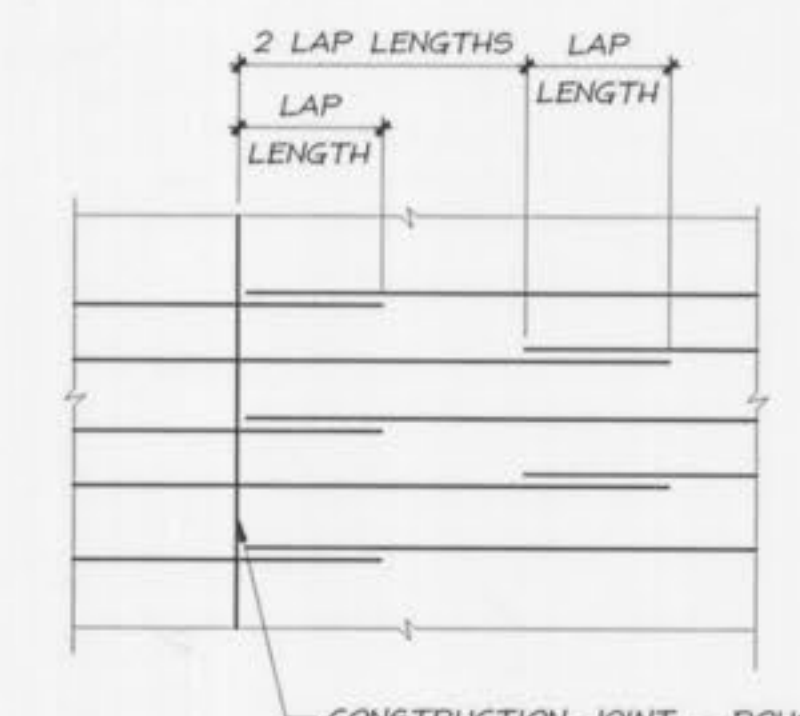
- Mortar shall be Type S for all masonry work and must achieve a minimum compressive strength of 1800 psi at 28-day test. Masonry shall have a minimum strength of $f_m = 1500$ psi.
- Masonry grout shall be a coarse type grout and must achieve a minimum compressive strength of 2000 psi at 28-day test. Slump shall range from 8" minimum to 10" maximum. Grout materials and proportions shall conform to ASTM C476.
- All masonry shall be reinforced with horizontal 9 gage ladder or truss type reinforcement at 16" o.c. vertical or as shown on the drawings.
- Vertical reinforcing shall be installed as noted on the drawings. Reinforcing bars shall be lapped as specified in ACI 530-99.
- Vertical control joints in masonry shall be 3/8" wide, full height of wall at locations shown on the architectural drawings. Joints shall be spaced at a maximum of 25'-0" apart and coordinated with the architect. All horizontal joint reinforcing shall be discontinuous at masonry control joints.
- Lintels over openings shall be installed as indicated on the drawings. If no lintels are indicated, notify the Engineer.

ALUMINUM

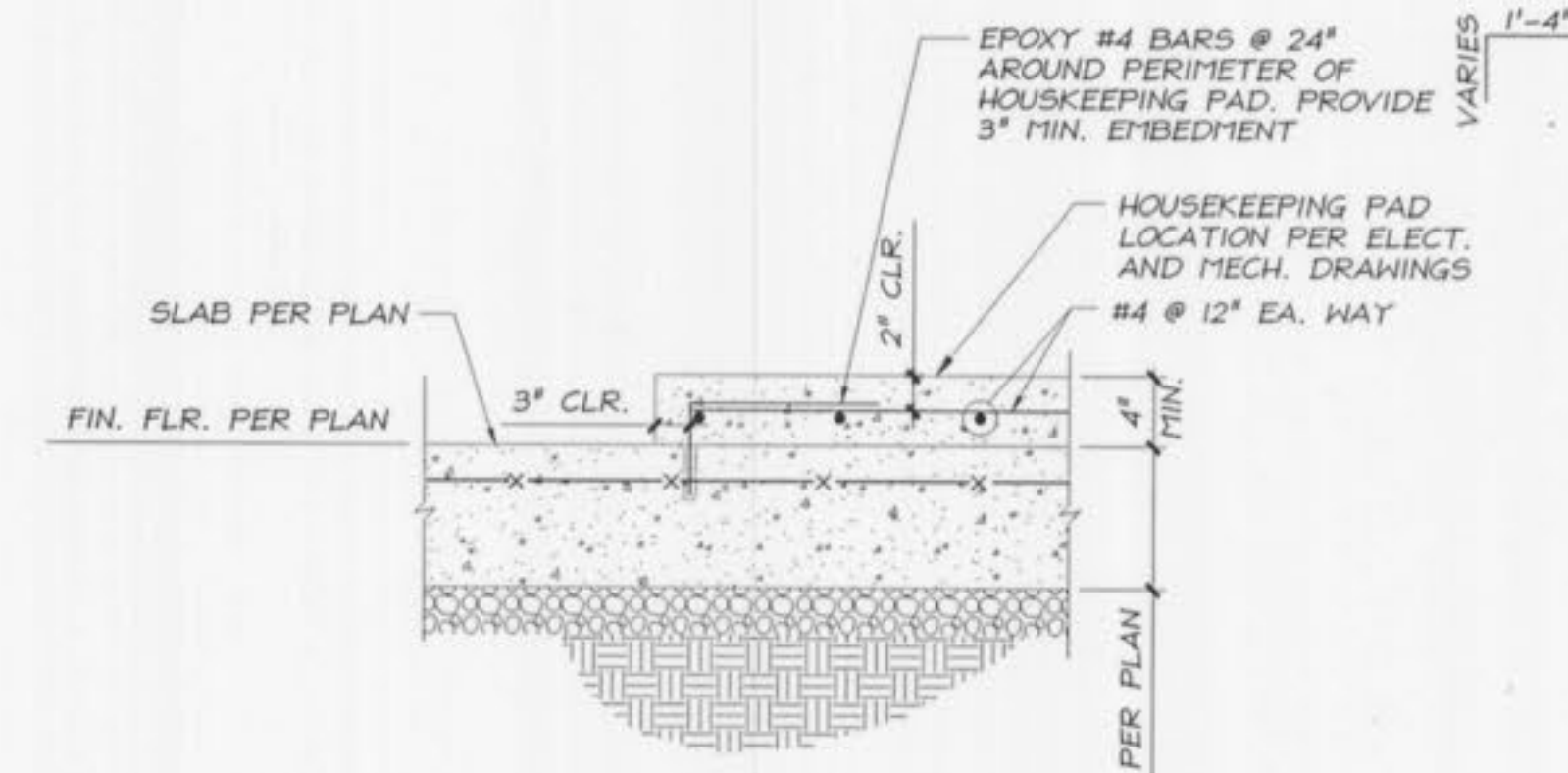
- All aluminum shall be alloy 6061 T4 conform to ASTM B211 with a minimum yield strength of 35 ksi.
- Connections not shown shall be designed by the fabricator. Beam connections shall develop 50% of the total uniform load capacity unless noted otherwise. Bolts shall be as follows:
 Connection Bolts - Type 304 or 316 stainless-steel fasteners
- Welding shall conform to the latest publication of applicable codes set forth by the American Welding Society.
- All aluminum stairs shall be designed by the aluminum stair manufacturer in compliance with the governing building code, and shall be signed and sealed by a registered Engineer in the State of Missouri.



CONSTRUCTION JOINT DETAIL
SCALE: N.T.S.



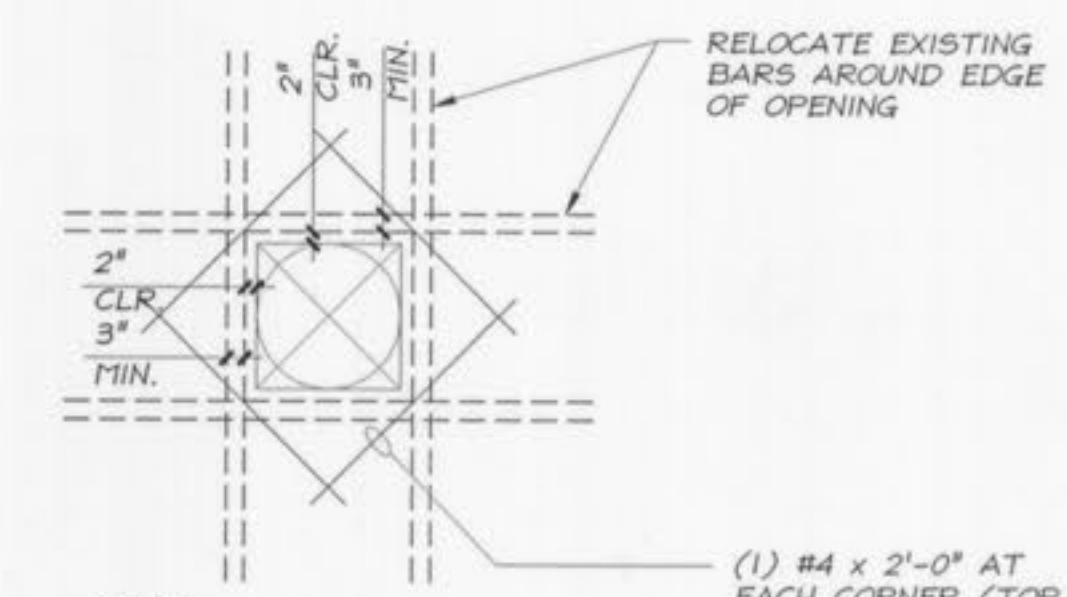
CONSTRUCTION JOINT ELEV.
SCALE: N.T.S.



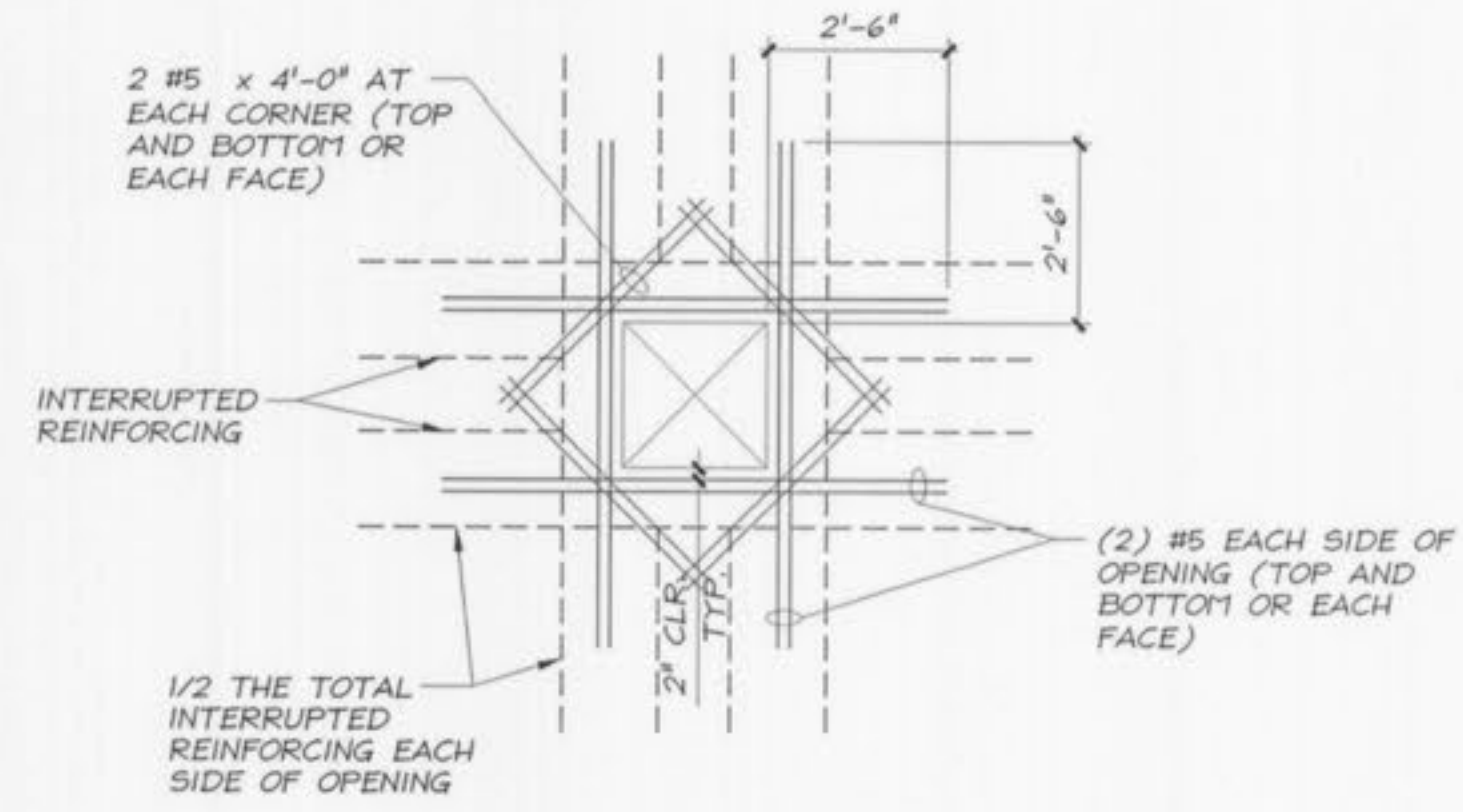
TYP. HOUSEKEEPING PAD
SCALE: N.T.S.

ABBREVIATIONS

- F.B.E. = FOOTING BEARING ELEVATION
- C.J. = CONTROL JOINT
- W.W.F. = WELDED WIRE FABRIC
- T.O.S. = TOP OF STEEL



NOTE: OCCURS AT OPENINGS SMALLER THAN TWICE (2x) THE SPACING OF REINFORCEMENT (18" MAX. OPENING)



NOTE: OCCURS AT OPENINGS LARGER THAN TWICE (2x) THE SPACING OF REINFORCEMENT

ADDITIONAL REINF. AT OPENINGS IN WALLS AND SLABS
SCALE: N.T.S.

GEORGE BUTLER ASSOCIATES, INC.
Engineers • Architects
Kansas • Missouri • Illinois

GBA



WASTEWATER TREATMENT PLANT EXPANSION
STRUCTURAL GENERAL NOTES
AND TYPICAL DETAILS
 CITY OF O'FALLON, MISSOURI

JOB NO.: 9234
DATE: 10-08-2001

DESIGNED BY: KSB
DRAWN BY: RGA
CHECKED BY: KSB

SHEET NUMBER

S0.01