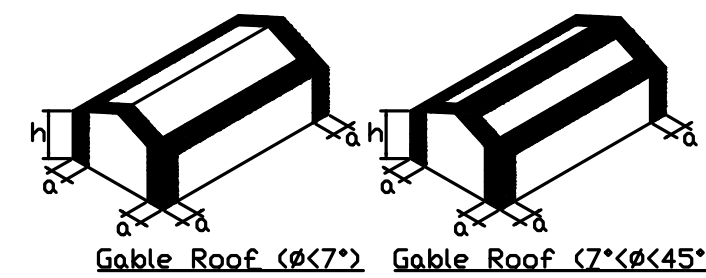
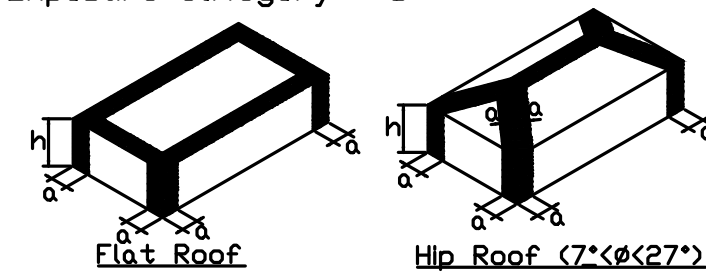


STRUCTURAL GENERAL NOTES

A. DESIGN LOADS

- Building Category II
Ie=1.0
Is=1.0
Iw=1.0
- Roof Dead Load = 18 psf
- Snow Load: Ground snow Pg = 40 psf
Ce = 1.0 Ct = 1.0 Cs = 1.0
Snow load Pf = Pgx0.7C1sxCtxCs = 28 psf (Typ)
USE = 30 Psf
- Seismic requirements
Site Class = D
SDS = 0.056 SDI = 0.054
Seismic Design Category = A
Seismic analysis procedure = Minimum
- Wind Loads (Method II)
Wind Speed = 90 MPH
Exposure Category = B



Interior Zones End Zones
Roof Zone 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

Adjusted Components and Cladding:

Angle to 7°	ZONE									
	1	2	3	4	5	DH22	DH23			
10	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
20	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
30	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
40	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
50	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
60	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
70	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
80	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5
90	-1.3	-2.4	-3.6	-4.2	-4.7	-5.0	-5.2	-5.3	-5.4	-5.5

B. SPECIFIED MATERIAL STRENGTHS

- Poured-in-place Concrete, f'c
Slab-on-grade 3500 psi @ 28 days
1" stone 4000 psi @ 28 days
Foundations 3000 psi @ 28 days
1 1/2" stone 3000 psi @ 28 days
Exposed Air Entrained
- Reinforcing Steel ASTM A615 Fy = 60 ksi
- Welded Wire Fabric ASTM A185 Fy = 65 ksi
- Structural Steel (UND) ASTM A992
- Steel Tubing ASTM A500, Grade B
- Miscellaneous ASTM A36
- Bolts for Structural Connections ASTM A325, Type N
- Anchor Bolts ASTM AF1554-36
- Masonry Grout, f'c 2500 psi @ 28 days
- Masonry Running Bond, f'm 2000 psi
- Allowable Soil Bearing Pressure 2000 psf
- Welding Electrodes 3000 E70

C. FOUNDATIONS

- If there is a question regarding the soils, a Geotechnical Engineer, hired by the owner, shall inspect each footing excavation and shall confirm that the actual soil conditions meet or exceed the design pressure.
- Remove all topsoil and other soils containing organics from beneath floor slabs and foundations. Proof roll exposed sub grades under direction of the Geotechnical Engineer. Remove all soft or loose soils detected by proof rolling and replace with specified fill on a unit price basis.
- Provide a minimum of 4'-0" of soil cover above the bottom of all footings exposed to the weather or unheated spaces.
- Provide sufficient temporary protection to prevent all exposed footing sub grades from freezing and all footings with less than 4'-0" of soil cover from heaving. Do not place concrete or backfill over frozen soil.
- The Contractor shall slope the bottom of the excavation to a temporary sump pit to keep accumulated groundwater and surface runoff away from the foundation bearing stratum. Pump groundwater out of the excavation before placing backfill. Do not allow the water to stand in the excavation and soften the soils at or below bearing level.

- The sidewalls of all excavations shall be properly sloped, sheeted and braced in accordance with DSHA regulations and other procedures to provide safe working conditions. The responsibility for safe working conditions is solely that of the Contractor.
- Center all wall footings on walls unless noted otherwise. Center all column footings and piers on columns unless otherwise noted.
- Backfill walls with even lifts on alternate sides to prevent excessive horizontal load on walls.
- When excavating adjacent to an existing structure, use shoring as required to prevent undermining of the existing foundations.
- When backfilling walls, maintain adequate shoring until supporting elements are poured and cured.
- No holes, trenches or other disturbances of the soil below footings, other than shown on structural plans, will be allowed within the volume described by lines sloping downward at 45 degrees to the horizontal from the bottom edges of the Footings.
- Specified compacted granular fill shall be well graded pit run sand and gravel mixture with no more than 8% passing a No. 200 sieve. Fill shall be free of shale, clay, friable material and debris. Compact fill to 95% Modified Proctor under footings and 90% under slabs.

D. CONCRETE

- Proportioning of materials shall be in accordance with ACI 211.1- Latest Recommended Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete. Maximum aggregate size shall be 1-1/2" for Footings, 3/4" for slabs, walls and columns and 3/8" for toppings. Maximum water-cement ratio 0.45. Proportion concrete mixes for a 3' to 4' slump.

Provide an approved Air Entraining Admixture conforming to ASTM C260 and ACI 318-89 table 4.4.1 for all concrete exposed to freeze thaw conditions.

All concrete mixes may contain an approved non-chloride Water Reducing Admixture in accordance with ASTM C494, Type A. All concrete mixes shall contain a Water-Reducing Admixture except where other Water-Reducing type Admixture is required in the same concrete mix.

Provide an approved non-chloride non-corrosive Accelerator conforming to ASTM C494, Type C or E for all concrete flatwork poured at an ambient temperature of less than 50 degrees F. Provide an approved Water-Reducing Retarding Admixture conforming to ASTM C494, Type D for all concrete flatwork poured at an ambient temperature of 80 degrees F or higher.

Where more than one admixture is used in a concrete mix, provide substantiating data that indicates that these admixtures are compatible without producing detrimental or unpredictable results. Use admixtures from one manufacturer only provide the proper admixture quantities based upon total cementitious materials in accordance with the manufacturer's recommendations to achieve the desired results for specific site conditions and concrete materials. Maximum water soluble chloride ion concentrations in hardened concrete at an age of 28 days contributed from all ingredients including water, aggregates, cementitious materials and admixtures shall not exceed 0.10 percent.

- Submit two copies of proposed mix designs to the Structural Engineer. Provide sufficient time in the construction schedule to allow a minimum of five full working days of review period in the Engineer's office.
- A Testing Firm, hired and paid for by the Contractor shall conduct concrete testing.
 - Four standard cylinders for each 50 cubic yards or 5000 square feet of wall or slab or fraction thereof of each mix design placed in any one day. Test one cylinder at 7 days and one at 14 days for information and the other two at 28 days for acceptance. Comply with ASTM C172-21, C31-69 and C39-72.
 - Slump test for each pour. Comply with ASTM C143-78.
 - Air content test for each corresponding set of cylinders. Comply with ASTM C231-78.
 - The contractor shall pay for all additional testing required for concrete suspected of non compliance.
- Convey concrete to point of use and deposit continuously in level layers to prevent separation of grout and aggregate. Work the concrete thoroughly around reinforcement, embedded fixtures, and into the corners of forms. Do not deposit concrete in free standing water, loose dirt, rubbish or other foreign matter. Proceed with concreting at such a rate that the concrete is plastic at all times and flows readily into the spaces between the bars. Do not retemper concrete. Use an approved method of vibration.
- Use "ConFill" by Master Builders or equal on all flatwork constructed without protection of walls and roof.

- Protect all concrete and grout from premature drying, excessively hot or cold temperature, and mechanical injury. Maintain concrete and grout with minimum moisture loss at relatively constant temperature for the required curing period. When the mean daily ambient temperature is less than 40 degrees F, provide temporary heat, insulating blankets, etc. So as to maintain the temperature of the concrete and grout at a minimum of 50 degrees F for 7 days. Provide adequate venting for equipment exhaust.
- Cure concrete and grout such that the maximum moisture loss does not exceed 0.55 kg/m² in 72 hours when tested in accordance with ASTM C156-80. Approved methods include approved curing compounds or soaking with water and covering with polyethylene sheets. Water cure slabs to receive toppings, grout beds, resinous flooring or other special coatings.
- Seal all exterior concrete with Master Builders 'GP' after the full curing period.
- Provide sawcut control joints in each direction for all slabs on grade. Control joint spacing shall not exceed 24'-0" nor 36 times the slab thickness unless otherwise shown. Control joint spacing shall not be less than 2/3 nor more than 1-1/2 times the spacing of the width of the slab in the other direction.
- Carefully examine architectural, mechanical, electrical and equipment drawings before each concrete pour to include all cast-in items, anchorage devices, block outs, sleeves, depressions, and other special requirements.
- Conduit and pipes embedded in concrete shall conform to ACI 318-89 Section 6.3.

F. REINFORCING STEEL

- Submit one electronic copy of each shop drawing to the Engineer for approval. Provide sufficient time in construction schedule to allow a minimum of ten full working days of review period in the Engineer's office.
- Provide bolsters, chairs, dowel blocks, standees and #4 support bars as required to support specified reinforcement at spacings not to exceed 4'-0" in either direction. Tie securely together to hold steel in position.
- Welding of reinforcement is not permitted. Field bending of reinforcement is not permitted.
- Concrete cover for reinforcing steel, unless otherwise shown, shall be as follows:
Footings: 3" clear from bottom & sides, 2" clear from top
Walls: 1 1/2" clear from each side
Beams, Columns: 1 1/2" clear to stirrups or ties & piers
Structural Slabs: 1" clear from top & sides, 3/4" clear from bottom
Slab-On-Grade: 1/2" slab thickness from top, but not less than 3/4" nor greater than 2"
When fiber reinforcing is specified on the plans, Provide the following minimum reinforcing and dosages for all slabs on grade except sidewalks:
4' -5' slab: 1.5# per cubic yard FRC BI Blend, or approved Equal
6' Slab: 3# per cubic yard Forta Ferro, or approved equal
- All reinforcing bars shall be fabricated in accordance with ACI 218 and ACI Detailing Manual SP-66. Provide "standard hooks" unless otherwise noted. Specified bar length does not include length of hook. Place hooked end of bar 2" clear from edge of concrete, unless otherwise noted.
- All laps shall be Class "B", unless noted otherwise. Use "top bar" lap lengths for all horizontal wall bars and for top bars in slabs and beams over 14" deep. Mechanical couplers capable of developing the full tensile capacity of the bars may be used at any lap location.
- Corner bars shall be provided at all wall corners and intersections.
- Plain weld wire fabric shall be lapped and / or anchored to develop fy per ACI 318.
- Welding of reinforcing is not permitted.

G. ANCHORS

- All post installed anchors must conform to ACI Appendix D requirements.
- All expansion bolts fastened to masonry shall be zinc plated sleeve type in accordance with Federal Specification FF-S-325 Group II, Type 3, Class 3.
- All adhesive anchors shall be DOWERS 'AC108 + GGLD' - or - equal.
- All anchor bolts shall conform to ASTM F 1554-36 unless noted otherwise. Provide standard nut and washer tacked in place on embedded end. At gravity only connections, L-Shaped rods are acceptable. Embedment to hooked end shall be 12 rod diameters. Embedment shall not exceed footing thickness minus 3 inches. Hook length shall be 4 rod diameters 3" min. Embedded portion of anchor bolts shall be clean and free of oil, grease and all foreign substances. Provide minimum 6' projection.
- All anchors in contact with treated lumber shall be hot dipped galvanized, stainless steel or have manufacturer's approved coating for contact with treated lumber.

H. STRUCTURAL STEEL

- Structural steel details, fabrication, and erection shall conform to the latest edition of the AISC Manual of Steel Construction - ASD, unless noted otherwise.
- High strength bolts shall be installed in accordance with AISC 'Specifications for Structural Joints Using ASTM A325 or A490 Bolts' latest edition. Bolts are designed as bearing-type connections, unless noted otherwise.
- Bolts for slip-critical connections and bolts subject to tension shall be tightened to develop minimum tension specified by AISC using direct-tension indicator tightening method. Use direct-tension indicator washers under non-turning part assembly.
- All welding shall be done by AWS certified welders with experience and certification in the types of welding indicated. Certifications shall not have lapsed due to disuse for 6 months.
- All welds to be E70XX electrodes, unless noted otherwise.
- Field connections shall be welded or bolted. Shop connections shall be welded unless otherwise indicated or approved. Welds indicated with a shop weld symbol may be made in the field with the approval of the structural engineer. Unless noted otherwise, all welds shall be continuous 3/8" throat. All full and / or partial penetration welds shall be fully detailed on the shop drawings.
- Fabricators shall select AISC simple shear connections for steel beams capable of carrying the reaction force when indicated or 50% of the total uniform load for the given size, span, and grade of beam, as tabulated in the AISC tables for allowable loads.
- Simple shear connections shall be standard double angle or single shear plates, unless noted otherwise. Select connections from the AISC, Simple Shear Connections Design Aid, latest edition whenever possible. All bolted connections shall have minimum 2 bolts, unless noted otherwise.
- Shop paint structural steel with a standard primer.
- Beams noted thus W_x_ (number of studs) = camber in inches shall have 3/4" shear stud connections developing capacity as listed in table 14.1 (ASD). Studs are to be uniformly spaced at the beam top flange.
- Camber beams as indicated on the drawings. Fabricate and install beams with natural camber upwards.
- Structural steel members for the work of other trades shall be shown on the shop drawings. Burning of holes and cuts in the field shall not be allowed, except by written authorization from the structural engineer.
- Furnish and install miscellaneous steel (curbs, hangers, expansion joint angles, struts, etc.) as called for or as necessary per architectural and mechanical / electrical drawings.
- See architectural drawings for fireproofing of structural steel. Do no prime members which are to receive spray-on fireproofing unless directed by the architect.
- Submit one reproducible copy, if needed, of each shop drawing to the Engineer for approval. Provide sufficient time in construction schedule to allow a minimum of ten full working days of review period in the Engineer's office.
- Under all column base plates provide double nuts, or leveling plates. Provide 1 1/2" minimum leveling grout. Use "Set Grout" by Chemrex, Masterflow 555 by Master Builders, or approved equal unless otherwise noted on structural drawings.

I. OPEN WEB STEEL JOISTS

- Design, fabrication, and erection shall be in accordance with the latest edition of the Steel Joist Institute Specification.
- Provide bridging per SJI specifications. Provide uplift bridging at bottom chord for loading noted on the drawings. Where bridging interferes with mechanical or other trades, General Contractor shall coordinate removal / replacement with Joist manufacturer.
- Connections required by SJI specifications, but not called out, shall be designed and furnished by the Joist fabricator. All Joist headers and accessories shall be furnished by the Joist fabricator.
- Use care to avoid damage to Joist chords in all field welding.
- Steel Joists shall be top chord bearing unless otherwise noted on the plans.
- All Joists at or nearest to column lines shall be bolted with long slotted holes in the bearing shoe. Where Joists align with columns, Joist bottom chord shall extend to a column connection plate without welding, unless noted otherwise.
- All Joists bearing on steel shall be welded to supporting steel unless noted otherwise.
- Provide anchors at each end of each row of bridging, top & bottom chords, except at expansion joints, according to manufacturer's recommendations.
- No concentrated load or connection greater than 100 lbs shall be applied to the Joists further than 4' from any panel point unless an additional web member is provided from the load point to a panel point at the opposite chord. See appropriate details. Additional web member shall be L2x2x3/8 unless otherwise shown on the drawings.
- Any single panel point of the lower chord of exposed roof Joists and truss girders shall be capable of carrying safely a suspended concentrated load of not less than 200 lbs in addition to dead load.
- Shop paint steel Joists with a standard gray primer, unless Joists are to receive fireproofing.

- All mechanical ducts and lightweight mechanical units to be hung from the open web Joists shall be supported from hangers and framing supplied by the trade contractor. Connect hangers at Joist panel points only.
- Submit one electronic copy of each shop drawing to the Engineer for approval. Provide sufficient time in construction schedule to allow a minimum of ten full working days of review period in the Engineer's office.

J. STEEL DECK

- Material, detailing, design, manufacture, and erection of metal decks shall be in accordance with the Steel Deck Institute (SDI) Specification.
- In no case shall welding to steel members by less than 3/8" puddle welds @ 6' o.c. (7 per 36' sheet) at all supports and edges. Provide 16 gage welding washers when recommended by the manufacturer for the gage of metal deck specified below. Side laps shall be fastened with #10 tek screws, minimum one at each midspan. Opening edges shall receive the same welding as required at deck ends. All welding by certified welders experienced in light gage metal deck work.
- The deck manufacturer shall furnish all closure plates, pour stops, ridge and valley plates, sump pans and drain plated, welding washers, and other accessories required to provide a finished surface for insulation and roofing or concrete slabs.
- Install deck with a minimum 2" end lap centered over supports.
- Install corrugated form deck with corrugation edges up.
- All composite metal deck shall be galvanized. All corrugated form deck shall be galvanized. All metal roof deck shall be painted. All galvanizing shall be ASTM A525 G 60.
- Provide angle framing 3 1/2" x 3 1/2" x 1/4" on each side of all roof sump pans.
- Submit one electronic copy of each shop drawing to the Engineer for approval. Provide sufficient time in construction schedule to allow a minimum of ten full working days of review period in the Engineer's office.

L. LIGHT GAGE STEEL FRAMING

- All framing components shall be cut squarely for attachment to perpendicular members or as required on angular fit against abutting members. Members shall be held positively in place until properly fastened.
- Temporary bracing shall be provided and remain in place until the structure is completely stabilized. Temporary bracing is the responsibility of others.
- All field cutting of studs must be done by sawing or shearing. Torch cutting of cold formed members is unacceptable.
- When required for bridging purposes, the framing fabricator is to ensure punch out alignment when assembling framing and field cutting studs to length.
- No splices in studs, joists, or other load carrying members may be made without prior engineering review and specific details for any such splice(s).
- No notching or coping of studs, joists or rafters is allowed, unless stated within this drawing package.
- Where splicing of wall track is necessary between studs, splice of stud shall be placed in the adjoining track sections and fastened to the track flanges at both sides of the wall or the tracks shall be butted tight together and fastened to structure either side of the joint.
- If additional holes are required in the metal studs or joists, contact a licensed professional engineer for guidance before cutting holes.
- Mechanical bridging, spaced at the intervals described herein, shall be installed prior to the attachment of facing materials.
- Installation of sheathing, wallboard or any other collateral material shall be performed in accordance with the project manufacturer's specifications, the current ASTM standard and/or guidelines outlined in the contract documents.
- For all tracks used in composite members such as trusses, posts, headers and Jamb, the track must be installed as a single piece; no splicing is permitted.
- The maximum allowable gap (measured between the web of the stud and the web of the track) for a stud seated in a track in a non-axial load bearing condition is 1/8" U.N.D. It is recommended that this gap be eliminated in an axial load bearing condition by pre-loading the studs until they are fully seated in the track. Failure to do so could result in serviceability problems in the future.
- Joist and/or roof framing must bear directly over studs. If not, a structural member (by others) is required on top of runner track for proper bearing and anchorage.

- Responsibilities and norms of good practice for fabrication and installation of cold-formed steel structural framing shall be per the requirements of the A.I.S.I. 'Code of Standard Practice for Cold-Formed Steel Structural Framing'.
- Erector and Manufacturer should have a minimum of 2 years of production experience in structural light gage work comparable to that shown and specified, in not less than three projects of similar scope with the Owner or Architect determining the suitability of the experience.

CONNECTION NOTES

- If required, all welded connections are to be performed in accordance w/ AWS D1.3-81 'Specifications for Welding Sheet Steel in Structures'. Consult AWS D19.0-72 'Welding Zinc Coated Steel' and ANSI standard Z49.1 for information regarding safe welding procedures. All welds are to be touched-up with a rust inhibitive galvanizing paint.
- Suggested weld metal and process for shop welding are: 60ksi weld metal strength (min). Suggested methods for field welding: 1/8" (U.N.D.) E60XX (min) electrode - SMAW or 'gostess' MIG. Minimum weld throat thickness (t) must match or exceed the base steel thickness of the thinnest connected part U.N.D.
- All screws shall be of the diameter and size indicated on the drawings, and shall be those manufactured and tested by ITW Buildex or equivalent. A minimum (3) d edge distance and (3) d screw spacing is required, U.N.D. on the drawings. Screw penetrations through joined materials shall not be less than three exposed threads. Select screws with an adequate cutting tip to accommodate the total thickness to be drilled. Drilling must be completed before the threads engage the material. Consult the contract documents for minimum coating requirements of screws. Where screw attachments are made to framing components of different thickness, the thinnest component must be penetrated first. Screw design is based on a type 'T3' screw. (U.N.D.)
- All powder actuated fasteners (P.A.F.) shall be those as manufactured by Hilti or equal. All pins subjected to tension shall have 15mm (min) diameter steel washers. The following min edge distances and fastener spacing apply:

Pin Diameter	Edge Distance		Minimum Spacing		Penetration
	Steel	Concrete	Steel	Concrete	Steel/Concrete
0.145"	1/2"	2"	1"	3"	FULL VARIES
0.177"	1/2"	2"	1"	3"	FULL VARIES
- All concrete screw fasteners shall be those as manufactured and tested by Hilti (Kwik-Con II) or equal. The following min edge distances and fastener spacing apply (U.N.D. specifically on drawings):

Diameter	Edge Distance	Min. Spacing
1/8"	1 1/2"	3 1/2"
1/4"	1 1/2"	3"

 Edge Distance = 6 x diameter; Min Spacing = 12 x diameter
- The framing contractor may substitute fasteners of equivalent specifications and load carrying capacities. Prior to installation, the framing contractor is to submit the current product literature from the selected manufacturer for approval.
- It is the responsibility of others to verify that fasteners are installed according to manufacturer's instruction. It is also the responsibility of others to verify/ensure the quality of fastener connection.

MATERIAL NOTES

- All studs and Joist members 16 gauge and heavier shall be formed from steel corresponding to a type listed in the A.I.S.I. 'Specification for the Design of Cold-Formed Steel Structural Members', with a min yield strength of 50ksi (U.N.D. specifically)
- All 18 gauge and lighter members, track, bridging, and accessory items shall be formed from steel 'Specification for the Design of Cold-Formed Steel Structural Members', with a min yield strength of 40ksi U.N.D. specifically.
- All framing products part of the exterior wall or roof systems shall have an ASTM A G90 Galvanized Coating
- All slide clips, support clips and clip angles are 50ksi, (U.N.D.)

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Checklist of existing file conditions
REVISIONS:

SHEET INDEX:
STRUCTURAL
GENERAL NOTES

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