

GENERAL LOADING NOTES

- Building Code: 2006 International Building Code Loads calculated using ASCE 7-05
- Gravity Loads:
- Roof Dead Load: 20 psf
- Roof Collateral Load: 5 psf
- Roof Live Load: 20 psf
- Ground Snow Load, P_g: 5 psf
Flat Roof Snow Load, P_f: 5 psf + 3.5 psf (Rain on Snow) = 8 psf
- Wind Load (Analytical Design Wind Procedure)

Risk Category	II
Nominal Design Wind Speed:	V _{ASD} = 120 mph
Wind Importance Factor:	I _w = 1.0
Wind Exposure:	C
Enclosure Classification:	Enclosed
Internal Pressure Coefficient:	G _{Cp} = +/- 0.18
Wind Pressure (MWFRS)	= 18.7 psf
Walls	
Parapets	
• Windward	= +30.0 psf
• Leeward	= -20.0 psf

*Pressure Indicates Combined Windward and Leeward Pressure.

NOMINAL COMPONENTS AND CLADDING WIND PRESSURES (PSF)				
AREA	10 sf	50 sf	100 sf	500 sf
NEGATIVE ZONE 1	-32.2	-30.3	-29.5	-29.5
NEGATIVE ZONE 2	-54.1	-40.7	-35.0	-35.0
NEGATIVE ZONE 3	-54.1	-40.7	-35.0	-35.0
POSITIVE ZONES 1	+13.1	+11.2	+10.4	+10.4
POSITIVE ZONES 2 & 3	+29.5	+26.5	+25.1	+22.1
OVERHANG ZONES 1 & 2	-46.4	-44.5	-43.7	-30.0
OVERHANG ZONE 3	-46.4	-44.5	-43.7	-30.0

PARAPET

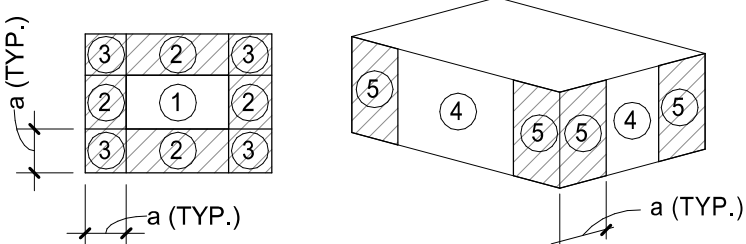
qp = 28.8 psf

NOMINAL COMPONENTS AND CLADDING WIND PRESSURES (PSF)						
AREA	10 sf	20 sf	50 sf	100 sf	200 sf	500 sf
SOLID PARAPET PRESSURE						
CASE A:						
ZONE 2:	+77.8	+70.4	+60.5	+53.1	+51.7	+49.9
ZONE 3:	+77.8	+70.4	+60.5	+53.1	+51.7	+49.9
CASE B: INTERIOR ZONES 4 & 5:						
NEGATIVE ZONE 4:	-54.5	-51.7	-48.1	-45.3	-42.6	-38.9
CORNER ZONE	-62.3	-58.1	-52.7	-48.5	-44.4	-38.9

WALLS

NOMINAL COMPONENTS AND CLADDING WIND PRESSURES				
AREA	10 sf	100 sf	200 sf	500 sf
NEGATIVE ZONE 4	-32.0	-27.6	-26.3	-24.6
NEGATIVE ZONE 5	-39.3	-30.6	-28.0	-24.6
POSITIVE ZONE 4 & 5	+29.5	+25.2	+23.8	+22.1

EDGE ZONE, a = 10'-0"



Note that Linear Interpolation is allowed between the areas listed above. See section above for Wind Speed, Exposure Factor and Risk Category. These wind pressure shall be used for the design of exterior component and cladding materials not specifically designed and detailed by the Structural Engineer of Record.

- Seismic:
 - Risk Category II
 - Site Coefficient
 - F_a = 1.60
 - F_v = 2.40
 - S_s = 0.121
 - S₁ = 0.053
 - S₂ = 0.129
 - S₃ = 0.085
 - Soil Site Class D (Per Geotechnical Report)
 - Seismic Design Category B
 - Basic Seismic-Force-Resisting System:
 - Steel System Not Specifically Detailed For Seismic Resistance, Excluding Cantilever Column Systems
 - Response Modification Coefficient (R) = 3.0
 - Seismic Response Coefficient (C_s) = 0.0697
 - Design Base Shear, V = W • C_s • Seismic Response Coefficient, C_s = 0.043
 - Analysis Procedure = Equivalent Lateral Force Procedure
- Geotechnical Report -
 - Geotechnical Investigation Performed By: Terracon
 - Report Number: E4215017
 - Date of Report: April 26, 2021

GENERAL SOIL PREPARATION AND FOUNDATION NOTES

- Foundations have been designed in accordance with the Geotechnical Report prepared for this project. A copy of this report is available for inspection in the specifications.
- All excavation, fill, compaction and grading of the site shall be in accordance with the specifications and the recommendations contained in the geotechnical report(s).
- At the locations where utility trenches cross the building line, 5' of each trench centered on the building line shall be backfilled with a compacted, low-permeability clay.
- Continuous and spread footings foundations -
 - Design Bearing pressure is 2,000 psf (net) for foundations bearing on suitable soils per Geotech Report. Bearing materials shall be verified by a licensed geotechnical engineer.
 - All foundations are designed and detailed with formed sides. If the contractor elects to use earth formed sides, one inch shall be added to each side to provide adequate cover over the reinforcing at the contractor's expense.
 - Moisture Content in footing excavations shall be maintained until footing is placed. Footings shall be poured as soon as practical after excavations are completed.
- Do not backfill foundation walls until the restraining slabs or adequate bracing are in place. All backfill shall be placed and compacted in accordance with the specification.
- Exterior slabs shall slope away from the structure a minimum of 1/4" per foot unless otherwise noted.
- Bottom of footings shall bear a minimum of 18" below adjacent finished grade.
- Re: Geotechnical Report for requirements of lean concrete backfill or over-excavation/backfill at footing locations.

CAST-IN-PLACE CONCRETE NOTES

- The concrete requirements are -
 - 28 Day concrete compressive strengths -

Mix Location	Min. FC(PSI)	Max. Slump (in)	Max. W/C Ratio	Max. Aggregate ASTM C33	Air Content
Foundations	3000	5	0.55	1 1/2" No. 57	5% to 7%
Slab-on-Grade	4000	4	0.45	1" No. 67	None

 *All Mixes exposed to freeze/thaw shall be air entrained, air content 6%, ±1%.
 - Concrete clear cover over reinforcing shall be in accordance with the current addition of ACI 318 listed below unless otherwise noted -

Location	Clear Cover (inches)
Cast against earth	3
Exposed to earth or weather #6 and larger	2
Exposed to earth or weather #5 and smaller	1 1/2
Slabs not exposed to weather	1
Slabs-on-grade (cover from top of slab)	1 1/2

- Concrete reinforcing shall meet the following -
 - Reinforcing bars shall conform to the requirements of ASTM A615 Grade 60. Reinforcing bars required to be welded shall conform to the requirements of ASTM A706 Grade 60. Welding of reinforcing other than specified is prohibited.
 - All reinforcing shall be continuous. Continuous bars shall lap in accordance with table "A" on sheet S002, unless otherwise noted.
 - Provide corner bars in outside face of all foundations and walls equal in size and spacing to main horizontal reinforcing. Extend inside face reinforcing of all foundations and walls to outside face and bend to a standard 90 degree hook.
 - Provide 2-#5 each side of each opening thru walls or slabs unless noted otherwise. Bars to extend 2'-0" past opening.
 - Shop Drawings shall be submitted with reinforcing steel detailed in accordance with the current addition of ACI 318.

- Forming and embedment shall meet the following -
 - All foundations are designed and detailed with formed sides. If the contractor elects to use earth formed sides, one inch shall be added to each side to provide adequate cover over the reinforcing at the contractor's expense.
 - All exposed edges of concrete shall be chamfered 3/4" inside forms or tolled to 3/4" radius on slabs unless otherwise noted.
 - Slabs-on-Grade shall have construction joints and control joints (sawed joints) located as shown on the drawings. Contractor shall locate slab joints on shop drawings.
 - At the contractor's option, either the sawed or keyed construction joint may be used. The keyed joint shall be used to terminate any placement.
 - Where necessary, vertical construction joints shall be located within the center one-third of the span. All joints shall be thoroughly cleaned and purposely roughened to 1/4" prior to placing adjacent concrete. Joints in exposed concrete shall be used with a maximum spacing of 50'.
 - The contractor shall be responsible for the design of all forming, temporary bracing and shoring.
 - No aluminum shall be embedded in concrete. Conduit and piping embedded in concrete shall be spaced a minimum of four diameters and the outside diameter shall be less than 30% of the member thickness placed between layers of reinforcing.
- Curing for concrete surfaces not in contact with forms: One of the following procedures shall be applied immediately after completion of placement and finishing. -
 - Ponding or continuous sprinkling.
 - Application of absorptive mats or fabric kept continuously wet.
 - Application of waterproof sheet materials, conforming to specifications for waterproof sheet materials for curing concrete (ASTM C171).
 - Application of a curing compound conforming to "specifications for liquid membrane - forming compounds for curing concrete" (ASTM C309). The compound shall be applied in accordance with the recommendations of the manufacturer immediately after any water sheen which may develop after finishing has disappeared from the concrete surface. It shall not be used on any surface against which additional concrete is to be bonded unless it is proven that the curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications. Curing shall be continued at least 7 days.
 - Perform adequate slab moisture emission tests per ASTM F1869-04 to confirm that emission levels meet the covering manufacturer's specification before placing the covering. These tests should not be conducted until the buildings closed in and the HVAC equipment run sufficiently to create temperature/humidity environment that is representative of the typical conditions the covering will experience.

- All vapor retarder's shall be Stego Wrap 15-Mil Class A vapor retarder or approved equal unless more stringent requirements are shown in specifications. 6 mil visqueen is not approved equal.
- Epoxy anchors shall be Hilti HAS Rods embed with Hilti HIT-HY 200 adhesive. Anchor rod size and embedment shall be as indicated in the details.

CONCRETE COLD WEATHER REQUIREMENTS

- In cold weather, all heating equipment and protective enclosures shall be on the job ready for use when concrete is placed. Such equipment shall be adequate for the purpose of heating the concrete materials and protecting the concrete in accordance with the following requirements:
- Whenever the temperature of the surrounding atmosphere is 40°F or lower, or there is a probability of it falling below 40°F, all aggregates and water shall be pre-heated and all forms, fill and ground with which the concrete is in contact or is calculated to come in contact with, shall be defrosted. Steel reinforcement and aggregates shall be protected by adequate means to prevent formation of an ice film.
 - All concrete placed in the forms shall have a temperature between 60°F and 80°F and adequate means shall be provided by enclosures and heating equipment for maintaining a temperature of at least 72°F for the first seven days and at least 50°F for as much more time as may be necessary, as determined by the engineer, to ensure the proper curing of the concrete.
 - Canvas or other protective covering shall be kept clear of all concrete in order to permit free circulation of air around all walls, columns, and over tops of all slabs.
 - The contractor is to protect the soil from freezing during the construction period, this includes footings that have been cast.
 - Whenever the temperature of the surrounding atmosphere is 40°F to 50°F, no concrete work shall be done unless approved by the structural engineer.

STRUCTURAL STEEL NOTES

- Structural steel shall meet the following requirements unless otherwise noted on the drawings -

Type	ASTM	Grade	Fy(Min) (psi)
Structural shapes (except angles)	A992	50	50,000
Steel Angles, Plates, & Rods	A36	---	36,000
Structural Tubing	A500	B	46,000
(Optional)	A500	C	50,000
Anchor Bolts	F1554	36	36,000
Structural Bolts	A325	---	---
- Structural steel connections -
 - Connection bolts shown in drawings are 3/4" diameter A325 bearing type "N" unless noted otherwise.
 - All welding shall be in accordance with latest AWS code. All welds shall use E70XX electrodes.
- Steel framing connections shall be tightened and columns shall be plumbed and grouted below the base plate in place before decking is attached to frame.
- No holes shall be cut thru steel beams in field unless approved in writing.
- All exposed steel shall be hot dipped galvanized.

COLD-FORMED METAL TRUSS NOTES

- Design trusses shall be in accordance with ANSI/AISIS240-15, North American Standard for Cold-Formed Steel Structural Framing.
- All truss top chords shall have a minimum thickness of 54 mils (16 GA).
- In addition to all other live loads, wind loads, and mechanical loads stated, trusses shall be design with a top chord dead load of 15 PSF and bottom chord dead load of 10 PSF.
- Cold-formed steel manufacturer shall provide a project-specific permanent bracing diagram for any required lateral stability bracing required of the trusses due to any in-plane loads, and furnish the required permanent bracing materials.
- Truss manufacturer shall provide the required truss-to-bearing and truss-to-truss attachment hardware required.
- Individual Truss Design Drawings shall be provided and sealed by a professional engineer registered in the state in which the project is located.

STEEL DECK NOTES

- Steel roof deck shall comply with the Steel Deck Institute requirements.
- Contractor shall take necessary precautions to prevent damage to the deck during construction. Damaged deck must be replaced.
- Deck spans exceeding those in the "Construction Load Tables" published by the S.D.I. may require special precautions during construction.
- End laps shall be 2" minimum and occur at a support.
- Frame all openings thru deck over 10" in either dimension with angle 3 x 3 x 1/4 each side of opening.
- No point loads (such as duct or pipe hangers, grid ceiling hangers, ect.) shall be placed on or attached to the deck.
- Steel roof deck shall be 1 1/2" deep, 20 ga. (type B) wide rib metal decking (see plan for locations). Decking shall have yield strength of 33,000 psi. Decking shall receive finish per specification. Decking shall be continuous over a minimum of three supports. Each deck unit shall be attached to supporting members and adjacent panels as follows - **REF. 10/S511**

36" Panel	No. of end and support fasteners: Simpson Strong-Tie XL Large-Head Metal screws (X1S1214)	14
	No. of equally spaced fasteners between supports in sidslaps: Simpson Strong-Tie X1S1016	8
- Steel roof deck shall be 2" deep, 20 ga. (Versa-Dek LS ES Acoustical or equivalent that is able to be supported by 16 ga. trusses) acoustic dovetail decking (see plan for locations). Decking shall have a minimum I_x of 0.341 (IN⁴/FT) A minimum S_x of 0.261 (IN³/FT), and a minimum S_y of 0.258 (IN³/FT). Decking shall receive finish per specification. Decking shall be continuous over a minimum of three supports. Each deck unit shall be attached to supporting members and adjacent panels as follows -

24 1/2" Panel or equivalent equal	No. of end and support fasteners: Simpson Strong-Tie XL Large-Head Metal screws (XLQ114T1224)	8
	No. of equally spaced fasteners between supports in sidslaps: Simpson Strong-Tie X1S1016 (equally spaced #12 tek screws)	6" o.c.
- The deck shall be supported by structural steel beams or joists at edges with a continuous angle (re: detail for size) along the boundaries welded/anchored to the angle unless otherwise noted.
- Platform decking shall have a yield strength of 33,000 psi. Decking shall receive finish per specifications.
- Platform deck shall be attached to light gage framing below with #10 tek screws @ 6" o.c.

COLD FORMED METAL FRAMING NOTES (CFMF)

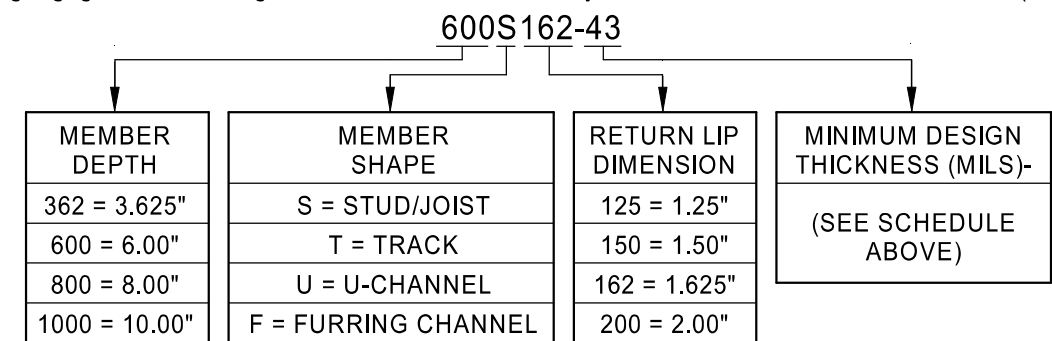
- All exterior or load bearing walls shall be constructed of steel "C" studs of the size shown in the plans and shall conform to AISI specifications. Minimum section properties shall meet steel stud manufacturers association's published section properties.
- Minimum width of the studs shall be 1 5/8", and the lip of the "C" portion shall be a minimum of 1/2".
- Stud track shall be 18 ga. minimum or as indicated in details and shall be anchored as follows:

To Steel	Hilti DX-35, 0.157" dia. X-U, Track pins @ 24" o.c. (or approved equal)
To Concrete	Simpson Strong-Tie Titen HD Screw Anchors 1/2" dia. with 4" embedment @ 32" o.c. (or approved equal)
	Optional - Simpson Strong-Tie PDPA Powder Actuated Fastener 0.157" dia. with min. 1 1/2" embedment @ 12" o.c. (or approved equal)
- Steel studs shall be installed in accordance with the manufacturer's recommendations. Horizontal bridging shall be placed at 4'-0" o.c. or as per manufacturer's recommendation if less than 4'-0".
- A minimum yield strength of 33KSI (33,000 psi) with the exception that 16 ga. and heavier studs shall have a minimum yield strength of 50KSI (50,000 psi).

MINIMUM DESIGN THICKNESS (Mils)	DESIGN THICKNESS (IN.)	INSIDE CORNER RADIUS (IN.)	GAGE NO. (REFERENCE ONLY)
16	0.0188	0.0843	25
27	0.0283	0.0796	22
30	0.0312	0.0781	20-DRYWALL
33	0.0346	0.0764	20-STRUCTURAL
43	0.0451	0.0712	18
54	0.0566	0.0849	16
68	0.0713	0.1069	14
97	0.1017	0.1525	12

NOTE: Minimum Thickness represents 95% of the thickness and is the minimum acceptable thickness delivered to the job site based on Section A3.4 of the AISI Specification.

- Typical light gage metal framing nomenclature established by the American Iron and Steel Institute (AISI) is as follows:



MISCELLANEOUS NOTES

- Reproduction of structural contract documents as shop drawings, erection plans, fabrication plans or details if not authorized and, if submitted, will be rejected without checking. A license to use any portion or all the CAD files for the limited purpose of assisting contractor's preparation of shop drawings for submittal under the construction contract may be purchased from HFA-AE under a standard form of agreement for \$1,000.
- Concrete pads for mechanical and electrical equipment on floors shall be 3 1/2" high unless otherwise noted and reinforced with #3 bars on 12" centers each way, 1 1/2" from top of slab. When the pad exceeds 10" in thickness, reinforce with #3 bars on 12" centers each way top and bottom. Anchor pad to slab with #4 dowels at 24" o.c. each way cast or epoxied into supporting slab.
- Contractor shall supply all items for attaching mechanical and electrical equipment to the building structure to resist all loads including seismic forces. Attachment shall be made so as not to overstress structural members. Coordinate the attachments and locations of the equipment with the structural shop drawings. Re: to mechanical and electrical drawings for additional requirements.
- Substitution of expansion anchors for embedded anchors as shown on the drawings will not be permitted unless approved by the engineer in advance.
 - Verification of all dimensions, elevations, opening sizes, and mechanical equipment weights prior to starting work.
 - Provide temporary bracing and shoring as required for stability during construction.
 - Verification of all floor depressions and offsets with architectural drawings.
 - Remove all abandoned foundations, utilities, pipelines, etc. that interfere with new construction.
- Review and approve all shop drawings prior to submittal noting changes made which do not comply with design drawings.
- Plans, sections, and details are not to be scaled for determination of quantities, lengths, or fit of materials.
- See architectural, mechanical and electrical drawings for size and location of all openings, sleeves, curbs, pads, inserts, etc. not shown on structural drawings. Before fabrication of materials, coordinate with mechanical and electrical requirements.
- Construction documents consist of these drawings and a separate book of specifications. The drawings and specifications are complimentary, neither is meant to stand alone for any portion of the work described herein. Any conflict between drawings and specifications shall be reported immediately to the architect.

TYPICAL STRUCTURAL ABBREVIATIONS

ACI	AMERICAN CONCRETE INSTITUTE	LBS.	POUNDS
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	LG.	LONG
A.B.	ANCHOR BOLT	LLH	LONG LEG HORIZONTAL
A.E.S.S.	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL	LLV	LONG LEG VERTICAL
A.F.F.	ABOVE FINISH FLOOR	MAX.	MAXIMUM
ARCH.	ARCHITECT	MBM	METAL BUILDING MANUFACTURER
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS	MECH.	MECHANICAL
BAL.	BALANCE	MFR.	MANUFACTURER
B.F.F.	BELOW FINISHED FLOOR	MIN.	MINIMUM
B.L.	BLOCK LINTEL	MISC.	MISCELLANEOUS
BLDG.	BUILDING	MTL.	METAL
BM.	BEAM	N.I.C.	NOT IN CONTRACT
B.O.D.	BOTTOM OF DECK	N.S.	NEAR SIDE
BOTT.	BOTTOM	N.T.S.	NOT TO SCALE
BRG.	BEARING	No.	NUMBER
CL	CENTERLINE	O.C.	ON CENTER
C.J.	CONTRACTION JOINT	O.D.	OUTSIDE DIAMETER
CLR.	CLEAR	O.F.	OUTSIDE FACE
CMU	CONCRETE MASONRY UNIT	O.H.	OPPOSITE HAND
COL.	COLUMN	OPNG.	OPENING
CONC.	CONCRETE	PAF	POWDERED ACTUATED FASTENER
CONN.	CONNECTION	P.M.E.J.	PREMOLDED EXPANSION JOINT
CONST.	CONSTRUCTION	PCF	POUNDS PER CUBIC FOOT
CTRD.	CENTERED	PED	PEDESTAL
C.T.R.	CENTERLINE	PL	PLATE
D.B.A.	DEFORMED BAR ANCHOR	PLF	POUNDS PER LINEAR FOOT
DEG. or °	DEGREE	PROJ.	PROJECTION
DIA. or Ø	DIAMETER	PSF	POUNDS PER SQUARE FOOT
DIM.	DIMENSION	PSI	POUNDS PER SQUARE INCH
DN	DOWN	QTY.	QUANTITY
do	DITTO	R.O.	ROUGH OPENING
DTL.	DETAIL	RE:	REFER
DWG.	DRAWING	R	RADIUS
DWL.	DOWEL	REIN.F.	REINFORCEMENT
EA.	EACH	REQD	REQUIRED
E.F.	EACH FACE	RTU	ROOF TOP UNIT
E.J.	EXPANSION JOINT	S.D.S.	SELF-DRILLING SCREWS
E.O.D.	EDGE OF DECK	SCHED.	SCHEDULE
E.O.S.	EDGE OF SLAB	SECT.	SECTION
EL.	ELEVATION	SIM.	SIMILAR
EQ.	EQUAL	SJI	STEEL JOIST INSTITUTE
EW	EACH WAY	S.O.G.	SLAB-ON-GRADE
EXIST.	EXISTING	SPA.	SPACING
EXP.	EXPANSION	SPECS	SPECIFICATIONS
F.F.E.	FINISH FLOOR ELEVATION	STD.	STANDARD
FLR.	FLOOR	STIFF.	STIFFENER
FDN.	FOUNDATION	STL.	STEEL
FTG.	FOOTING	T&B	TOP AND BOTTOM
F.S.	FAR SIDE	T.O.	TOP OF
G.B.	GRADE BEAM	T.O.P.	TOP OF PIER
GA.	GAUGE	TOC	TOP OF CONCRETE
GALV.	GALVANIZED	TOF	TOP OF FOOTING
HK.	HOOK	TOW	TOP OF WALL
HORIZ.	HORIZONTAL	TRANS.	TRANSVERSE
H.S.A.	HEADED STUD ANCHOR	TYP.	TYPICAL
I.F.	INSIDE FACE	U.N.O.	UNLESS NOTED OTHERWISE
IBC	INTERNATIONAL BUILDING CODE	VERT.	VERTICAL
INFO.	INFORMATION	W	WITH
JBE	JOIST BEARING ELEVATION	WT.	WEIGHT
JST.	JOIST	W.P.	WORK POINT
JK.	JOINT	WWF	WELDED WIRE FABRIC
KSI	KIPS PER SQUARE INCH	XE	EXTENDED END

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