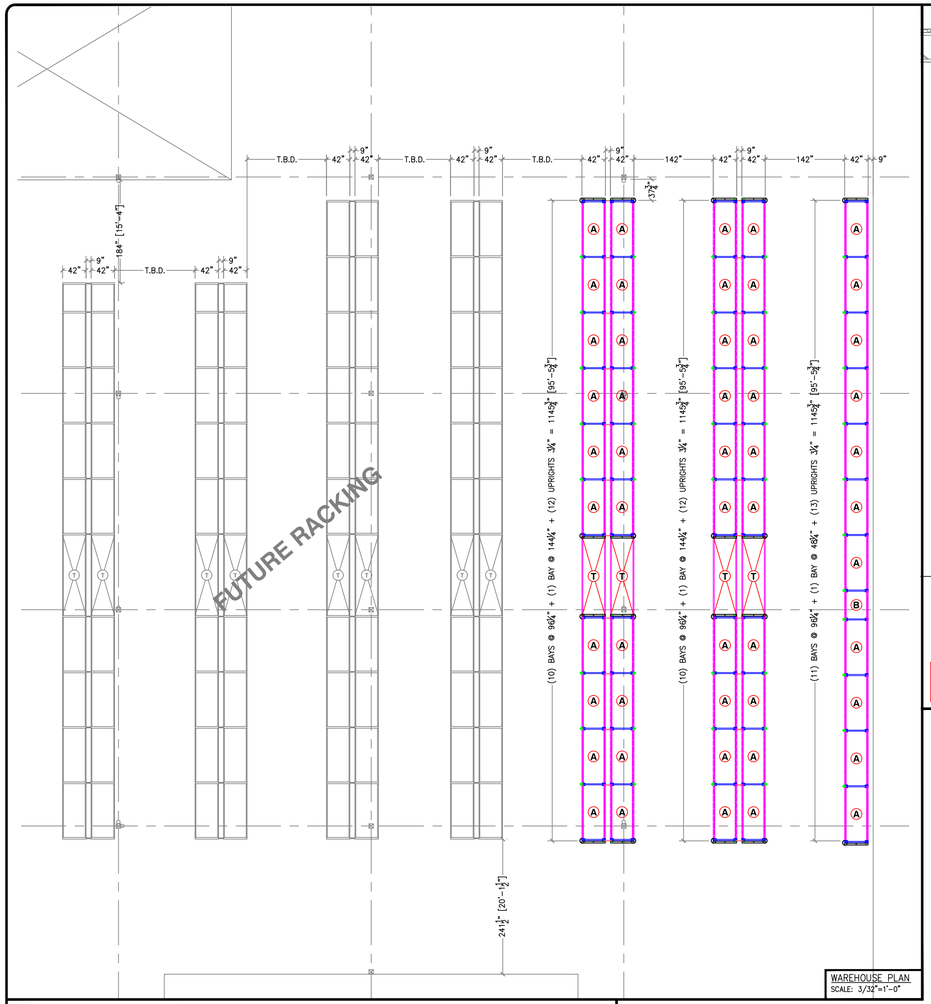
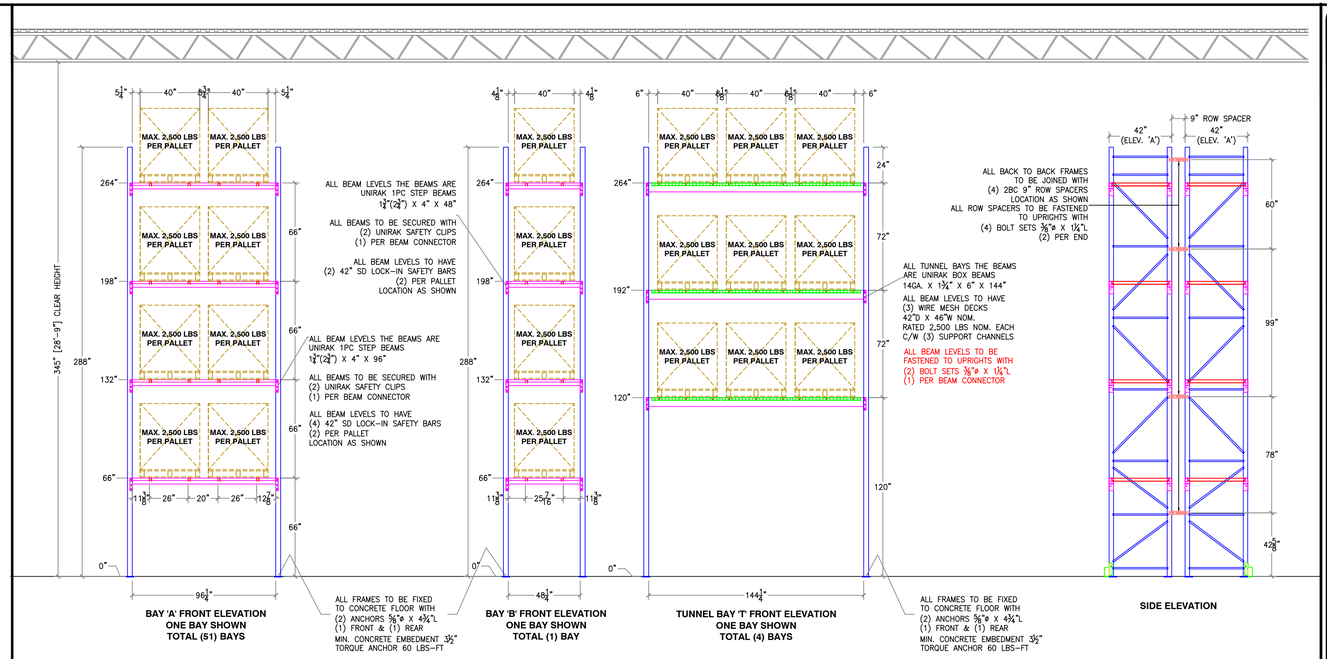


WAREHOUSE PLAN
SCALE: 3/32"=1'-0"

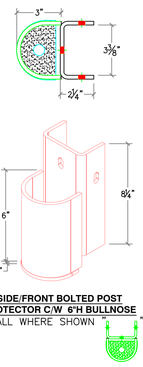


FLOOR LOAD: THE MAX. LOAD BEARING ON THE CONCRETE SLAB IS 13.6 Kips PER POST UNDER FULLY LOADED SEISMIC CONDITIONS (1DL +1LL+1E).

FRONT & SIDE ELEVATION
SCALE: 1/4"=1'-0"

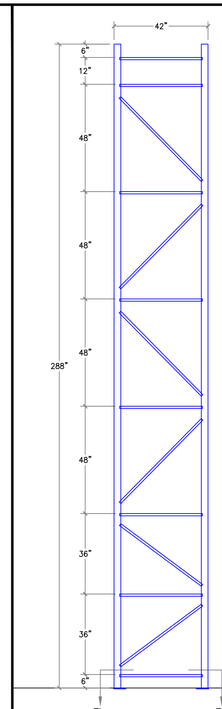
LICENCED PROFESSIONAL ENGINEER
SEP 12 2023
H. NEMES
100174492
PROVINCE OF ONTARIO

REVIEW OF STRUCTURAL DESIGN ONLY



SIDE/FRONT BOLTED POST PROTECTOR C/W 6"H BULLNOSE
INSTALL WHERE SHOWN

Note: To be installed on front leg of all uprights, except where elevations 'C'
Use (1) ⅜"ø x 1¼"GR.5 bolt set to attach to face of upright
Use (1) ⅜"ø x 4¼" anchors to attach to concrete (3½" embedment)

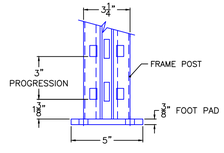


FRAME 'F'

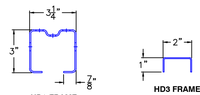
FRAME SCHEDULE:

ALL FRAMES ARE,
UNIRAK HD3 FRAME 42" D X 288" H
13ga X 3-¼" X 3" ROLL FORMED POSTS
14ga X 1" X 2" X 1" HORIZ. & DIAG. BRACE MEMBER
MAX. BRACE PANEL 48"H
⅜" X 5" X 5-½" FOOTPADS

Refer to FRAME DETAILS for brace panel spacing.



SECTION Fa-Fa



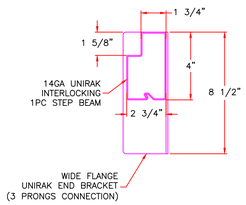
HD3 FRAME POST PROFILE
HD3 FRAME BRACE PROFILE

FRAME DETAILS
SCALE: 3/8"=1'-0"

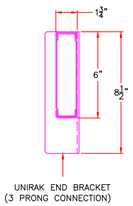
LOAD BEAM CAPACITY CHART

	LOAD TYPE	CAPACITY U.D.L
BAY 'A' BEAM LEVELS, THE BEAMS ARE	UNIRAK 1PC STEP BEAM 1 3/4"(2 3/4") X 4" X 96"	5,450 LBS/PAIR
BAY 'B' BEAM LEVELS, THE BEAMS ARE	UNIRAK 1PC STEP BEAM 1 3/4"(2 3/4") X 4" X 48"	10,400 LBS/PAIR
TUNNEL BAY 'T' BEAM LEVELS, THE BEAMS ARE	UNIRAK BOX BEAM 1-3/4" (45mm) X 6" X 144"	9,525 LBS/PAIR

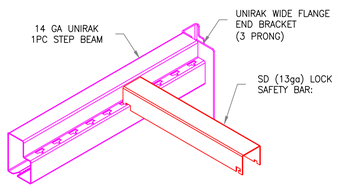
NOTE:
1. ALL UNIRAK '1PC' STEP BEAMS CONSIST OF '1 PIECE' INTERLOCKING 14GA ROLL FORMED STEP BEAM FACTORY WELDED TO 11GA X 8½" (3 PRONG) UNIRAK WIDE FLANGE END BRACKETS.
2. ALL BOX BEAMS CONSIST OF (2) INTERLOCKING 14GA. ROLL FORMED "C" CHANNELS FACTORY WELDED TO 11GA. X 8½" (3 PRONG) UNIRAK END BRACKETS
3. ALL BEAMS ARE WELDED FLUSH TOP ON UNIRAK FORMED END BRACKETS AND ARE INSTALLED ON 3" INCREMENTS.
4. ALL BEAM ELEVATIONS SHOWN ARE RELATIVE TO THE TOP OF FRAME FOOTPAD.



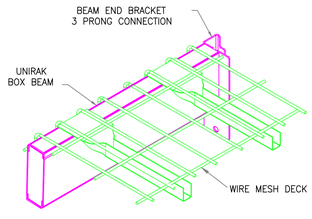
UNIRAK 14GA 1PC STEP BEAM CROSS SECTION



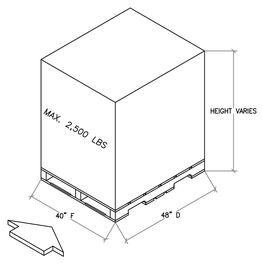
UNIRAK 6" BOX BEAM CROSS SECTION



UNIRAK '1PC' STEP BEAM
C/W SD LOCK IN SAFETY BAR
SAFETY BAR CAPACITY: 1,250 LBS EACH.

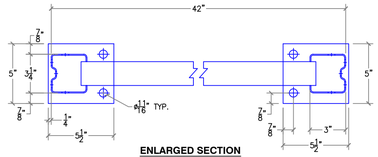


WATER FALL WIRE MESH DECK ON UNIRAK BOX BEAM



PALLET SPECIFICATIONS:

PALLET: 40" W x 48" D (GMA/CHEP STYLE PALLET)



ENLARGED SECTION Fb-Fb

ADDITIONAL NOTES:
1). ENGINEERING CERTIFICATION APPLIES TO NEW RACK MATERIALS ONLY SUPPLIED BY SPACE AID MANUFACTURING.

GENERAL NOTES: PALLET RACK

1.0 – DESIGN SPECIFICATIONS:
1.1 – Steel components to be designed to meet CSA-S136.
1.2 – Rack structures have been designed for structural adequacy in accordance with the general requirements of Part 4 of the Ontario Building Code (2012) and the specific requirements of the User Guide for Steel Storage Racks – CSA A344-17 & Design of Steel Structures – CSA S16-19, Annex 'N', as applicable.
1.3 – Allowance has been made for seismic loading for BRADFORD, ONTARIO: Sa (0.2) = 0.123, Sa (0.5) = 0.081, Sa (1.0) = 0.048, Sa (2.0) = 0.0250 Sa (5.0) = 0.0062, Sa (10.0) = 0.0027; PGA = 0.074; PGV = 0.063;
1.4 – Importance factor: I = 1
Soil site class: 'D' assumed
1.5 – Maximum beam deflection shall not exceed L/180, where 'L' represents the length of beam in inches.

2.0 – MATERIAL SPECIFICATIONS AND SAFETY FACTORS:
2.1 – Cold formed frame post and beam sections are "Uni-Rak" style and shall be constructed from high strength steel: G40.21, 56 ksi min. yield.
2.2 – Cold formed frame bracing shall be constructed from high strength steel: G40.21, 56 ksi min. yield.
2.3 – Base Plates to be 50 ksi min. yield.
2.4 – Miscellaneous structural sections, plates etc.: G40.21–44W.
2.5 – Frames have been designed with a safety factor of at least 1.75 against buckling.
2.6 – Beams have been designed with a safety factor of 1.67 against yielding.
NOTE: THE SAFETY FACTORS GIVEN ARE REQUIRED BY CODE AND ARE NOT, UNDER ANY CIRCUMSTANCES, TO BE ERODED OR DIMINISHED IN ANY WAY.

3.0 – WELDING:
3.1 – Welding to be according to CSA W59 latest edition.

4.0 – INSTALLATION:
4.1 – All Frames to be mechanically fixed to slab-on-grade as shown on front elevation.
4.2 – For Beam installation – See installation note in front elevation.
4.3 – All back-to-back frames to be joined with (4) Zbc Row-Spacers. For installation see side elevations.
Row Spacers should be located at or near Horizontal/Diagonal Brace member (where possible), location see side elevation view.
4.4 – All aisle crescent floor guards to be fixed to slab-on-grade with ⅜"ø x 4¾"L anchors (3 per aisle end guard)
4.5 – All ⅜"ø bolt sets are GR.5 and consist of (1) hex bolt, (1) flat washer & (1) serrated flange lock nut.
4.6 – All bolts are to be installed to a snug-tight condition ensuring all plies are in firm contact. Snug-tight condition is attained with a few impacts of an impact wrench or the full effort of a person using an ordinary spud wrench.
4.7 – All Frames must be shimmed where required to provide firm contact between the post and the slab to ensure frames are plumb in both directions in the cross-aisle and down-aisle directions. The maximum tolerance from the vertical is 0.5" in 10 feet. (Shim size must be minimum of the foot pad size)

5.0 – FIRE RATING:
5.1 – No allowance has been made for Fire Rating. In-rack sprinklers, if required, are to be designed and installed by the Owner.
5.2 – Fire extinguishers shall be supplied and installed by the Owner in accordance with applicable Fire and Building Codes.
5.3 – All other concerns in a non-structural nature including lighting, "NO SMOKING" signs etc., shall be the responsibility of the Owner an shall conform to applicable Fire and Building Codes.

6.0 – CONCRETE FLOOR LOADING:
6.1 – Floor is assumed to be 7" thick uncracked concrete with a minimum compressive strength of 4,000 psi. The assumption is made for anchor check purpose only.
6.2 – The Owner is responsible to ensure the slab-on-grade and subsurface soil conditions are adequate to sustain rack loads in seismic conditions. The Owner is required to take any action necessary to ensure adequacy including geotechnical investigations and the installation of footings, if required.

7.0 – PERMITS:
7.1 – All Permits required shall be the responsibility of the Owner.

8.0 – OWNER MAINTENANCE:
8.1 – The Owner shall maintain the structural integrity of the installed rack system by assuring proper operational, housekeeping, and maintenance procedures including but not limited to, the following:
8.1a – Prohibit overloading of any pallet positions and of the overall rack system.
8.1b – Regularly inspect for damage. If damage is found, immediately unload the affected area and replace or repair any damaged upright posts, beams or other structural components.
8.1c – Visually check all bolted connections (if there are any) every (6) months to ensure that all bolts are snug tight.
8.1d – Require all pallets to be maintained in good, safe operating condition.
8.1e – Ensure pallets are properly placed onto pallet load support beams in a properly stacked and stable position.
8.1f – PALLETS MUST SPAN BOTH BEAMS. Do not place undersized pallets directly on safety bars or wire mesh decks unless said components are specifically designed for such loading.
8.1g – Customer to ensure storage at the ground level does not prohibit access to any exits or main aisles as required by applicable Fire and Building codes.
8.1h – All material handling equipment operators should be trained in accordance with CSA B335.
8.1i – Material handling practices should be designed to minimize impact loads on the pallet rack.

9.0 – ALTERATIONS:
9.1 – Rack frame allowable load capacity is based on beam locations and beam loading as shown. Reconfiguration or rearrangement of the rack structure is not allowed without prior approval from Space Aid Mfg.

10.0 – COLOUR(S) & FINISH:
10.1 – All new components to receive 2-3 mils baked-on polyester powder coating in our standard colour(s)
Frames, Row Spacers:SA Barn Red
Beams:SA. Sky White
Post Protector, Aisle end guard: SA. Safety Yellow

11.0 – PLAQUES:
11.1 – The Owner is recommended to display appropriate signage indicating maximum permissible design loads in a prominent viewing position.

REV	DESCRIPTION	DATE
0	ISSUED FOR ENGINEER REVIEW	08 SEP 2023

REVISIONS

SPACE AID MANUFACTURING
43 Regan Rd.,
Brampton, ON.
L7A 1B3
P: 905-840-5550
F: 905-840-5560

CUSTOMER: GREY JAY SALES & DISTRIBUTION
Grey Jay Sales & Distribution Corp.
22 Morgan Heights Drive,
Huntsville, Ontario P1H 1B7

PROJECT: GREY JAY SALES & DISTRIBUTION
Grey Jay Sales & Distribution Corp.
257 Sterling Crescent,
Bradford, Ontario L3Z 4L5

DRAWING TITLE: UNIRAK PALLET RACKING

DETAIL SYMBOL	SCALE	DWG NO.	REV.
DETAIL NUMBER / LOCATION SHEET / DETAIL SHEET	SEE NOTE	S230835	0
	DRN.BY	DATE	JOB NO.	SHEET
	NA	08 SEP 2023	S230835	1/1

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