

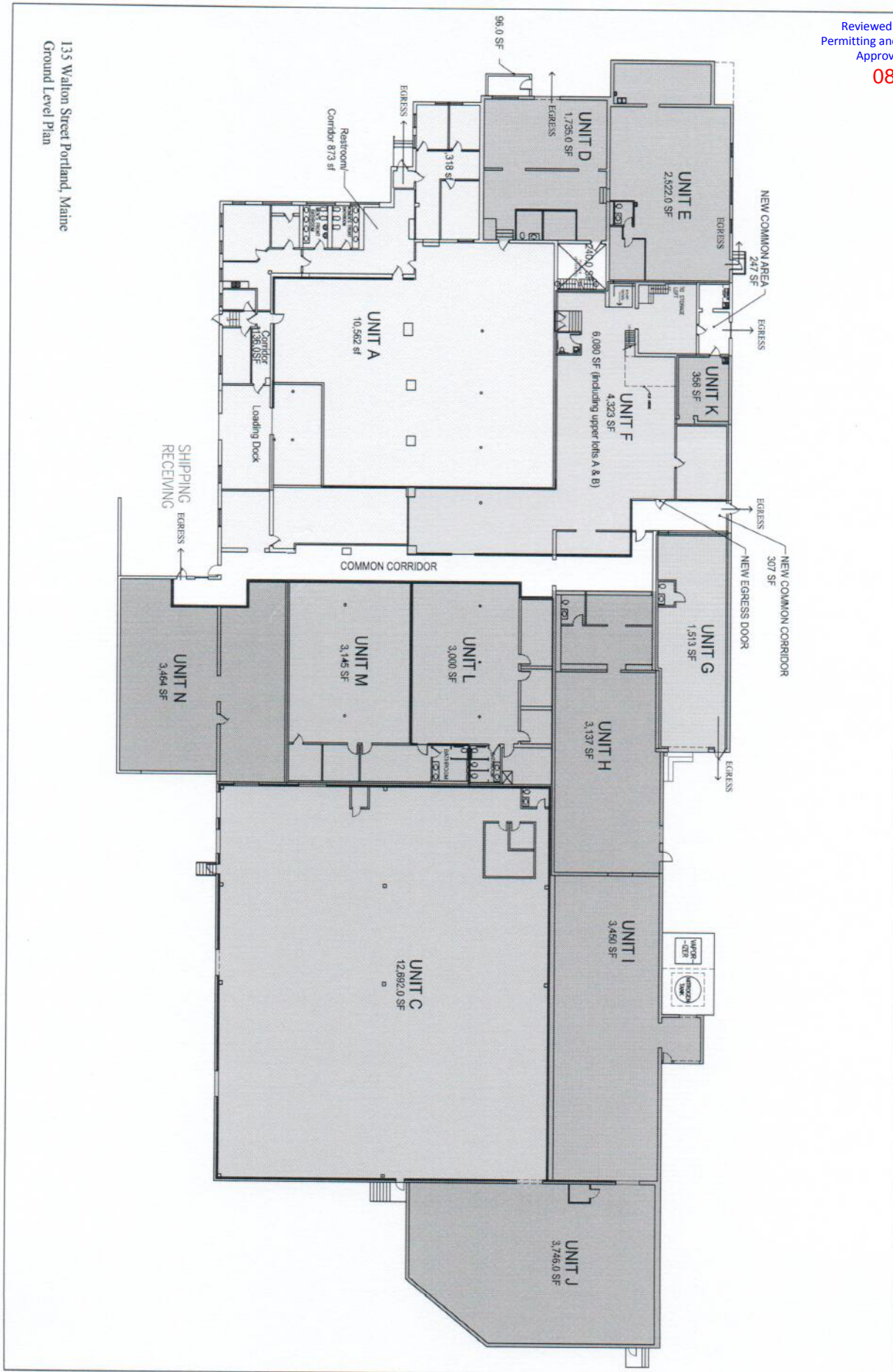
Full Warehouse Complex Plan (ours is Unit N)



Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions

08/08/2018

EXHIBIT A



135 Walton Street Portland, Maine
Ground Level Plan

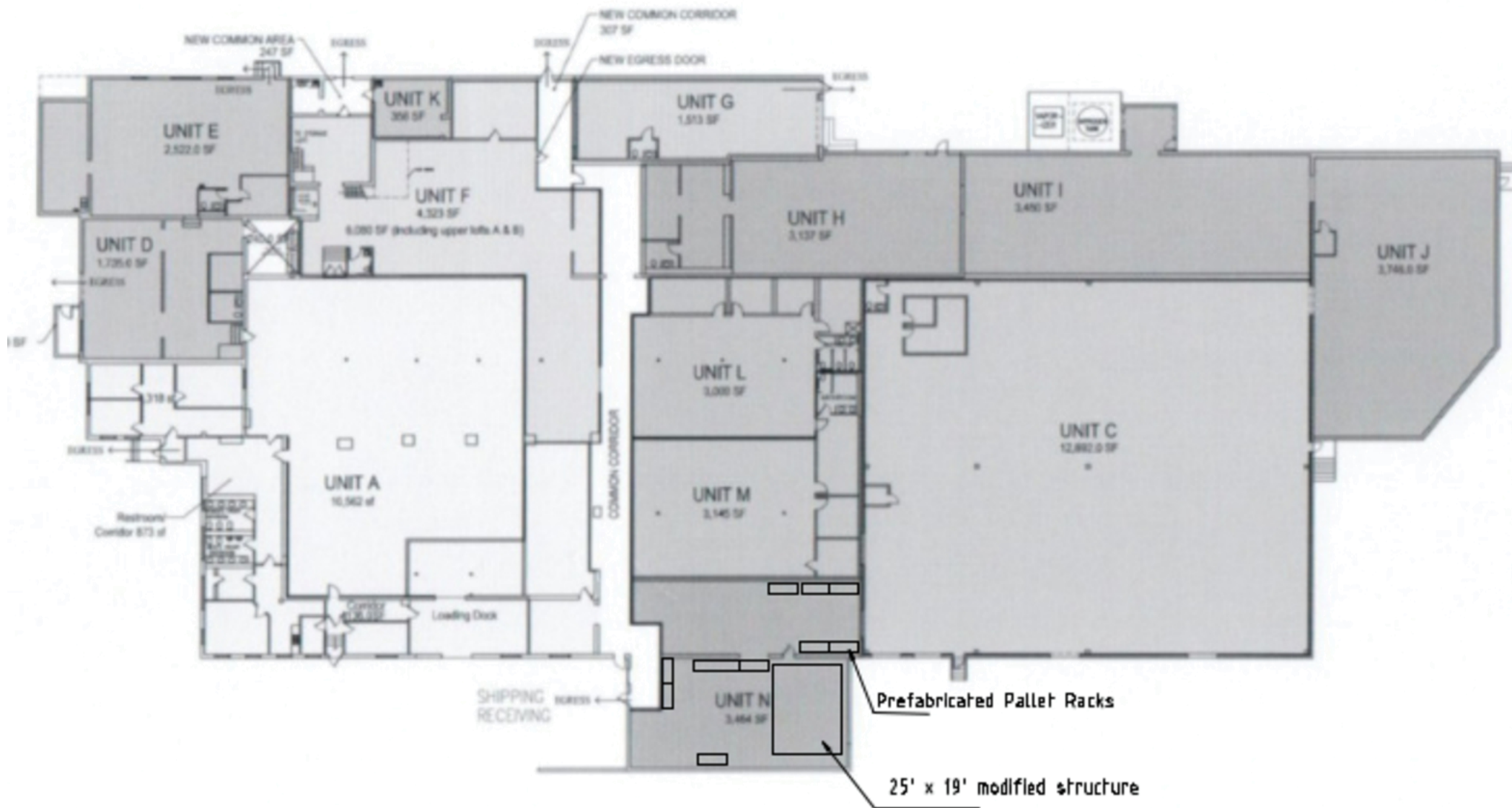


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Warehouse Key Plan

Alterations for Unit N Labeled

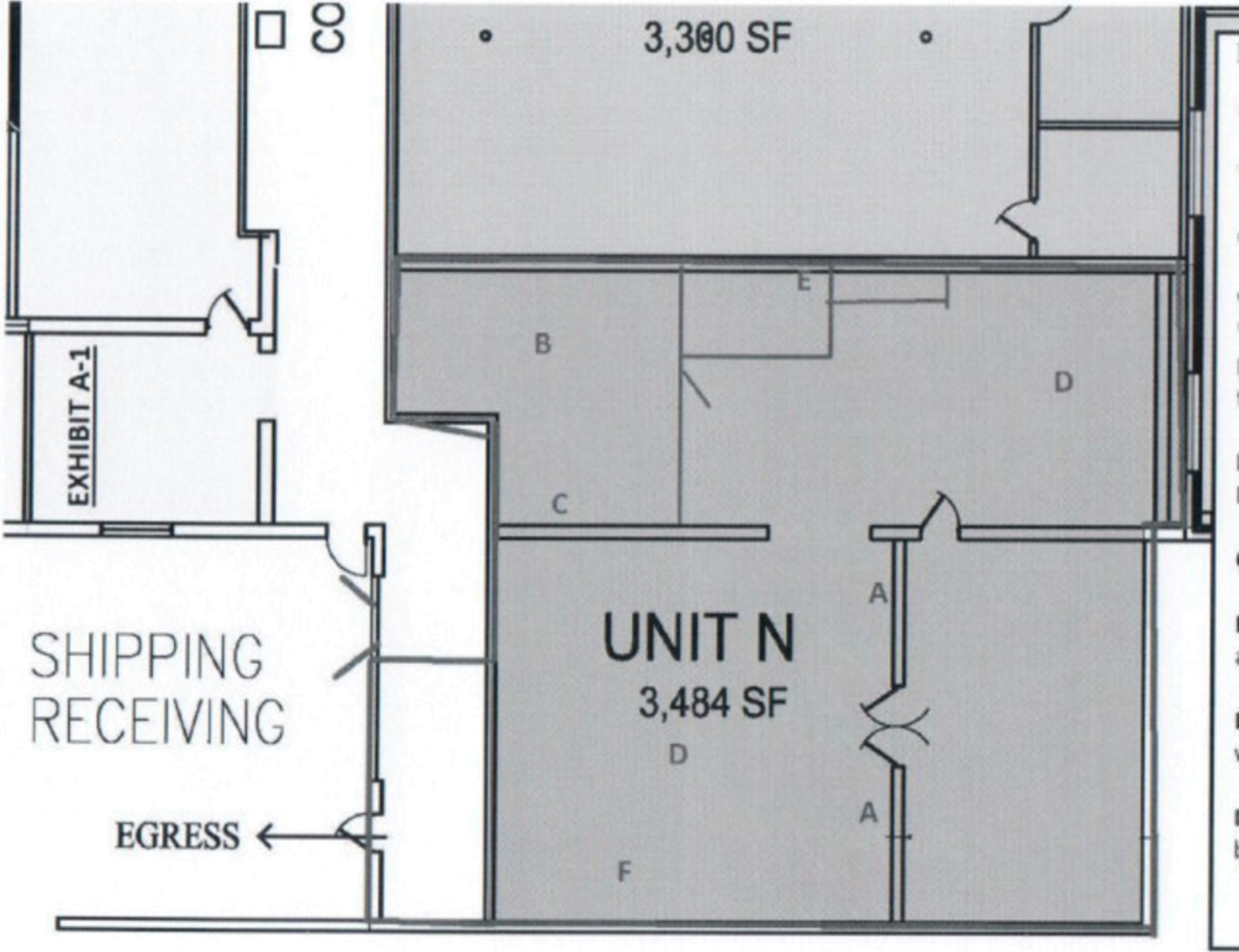




Unit N

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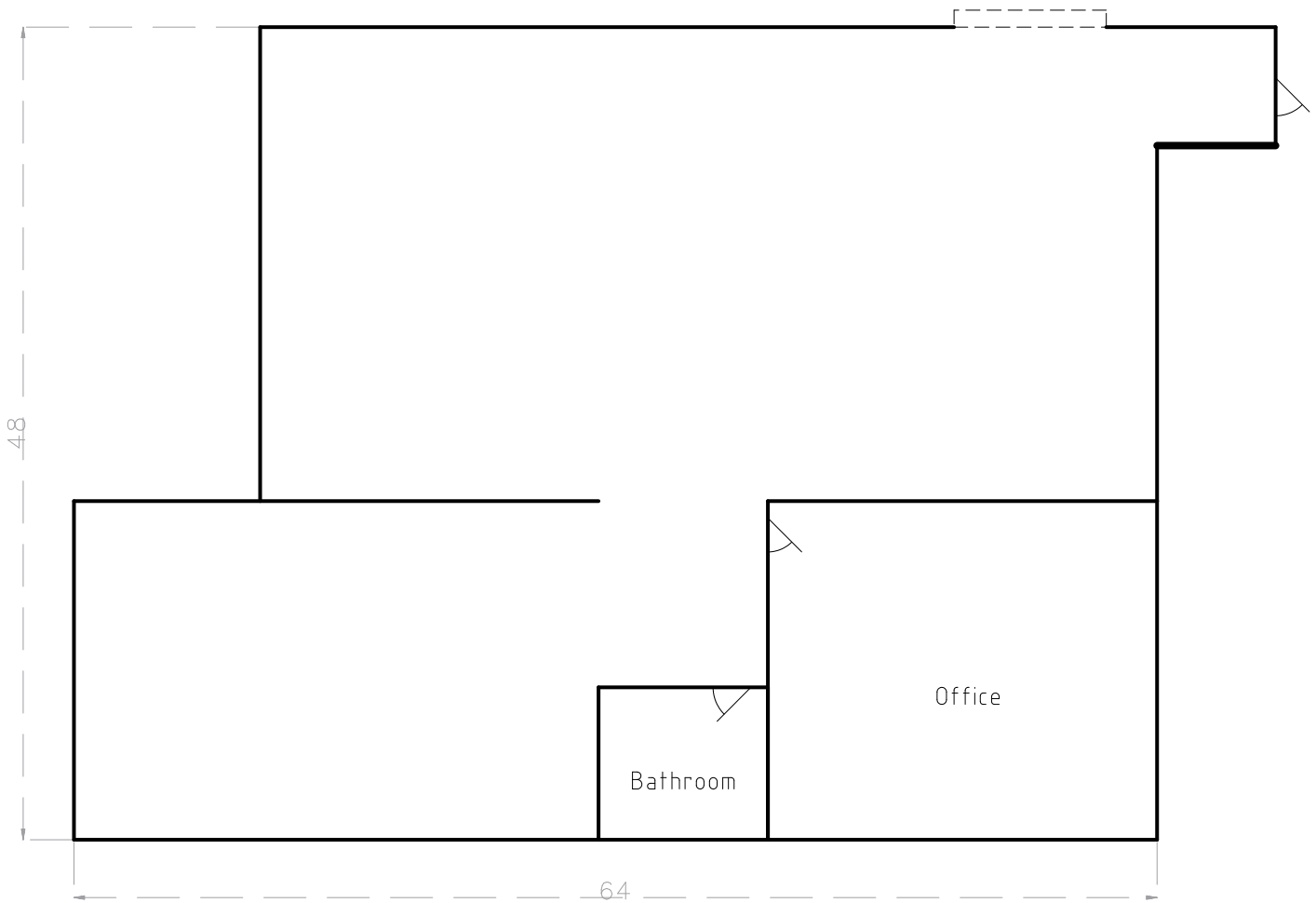


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Unaltered Warehouse Layout

Measurements in Feet



[-----] Overhead Retractable Door

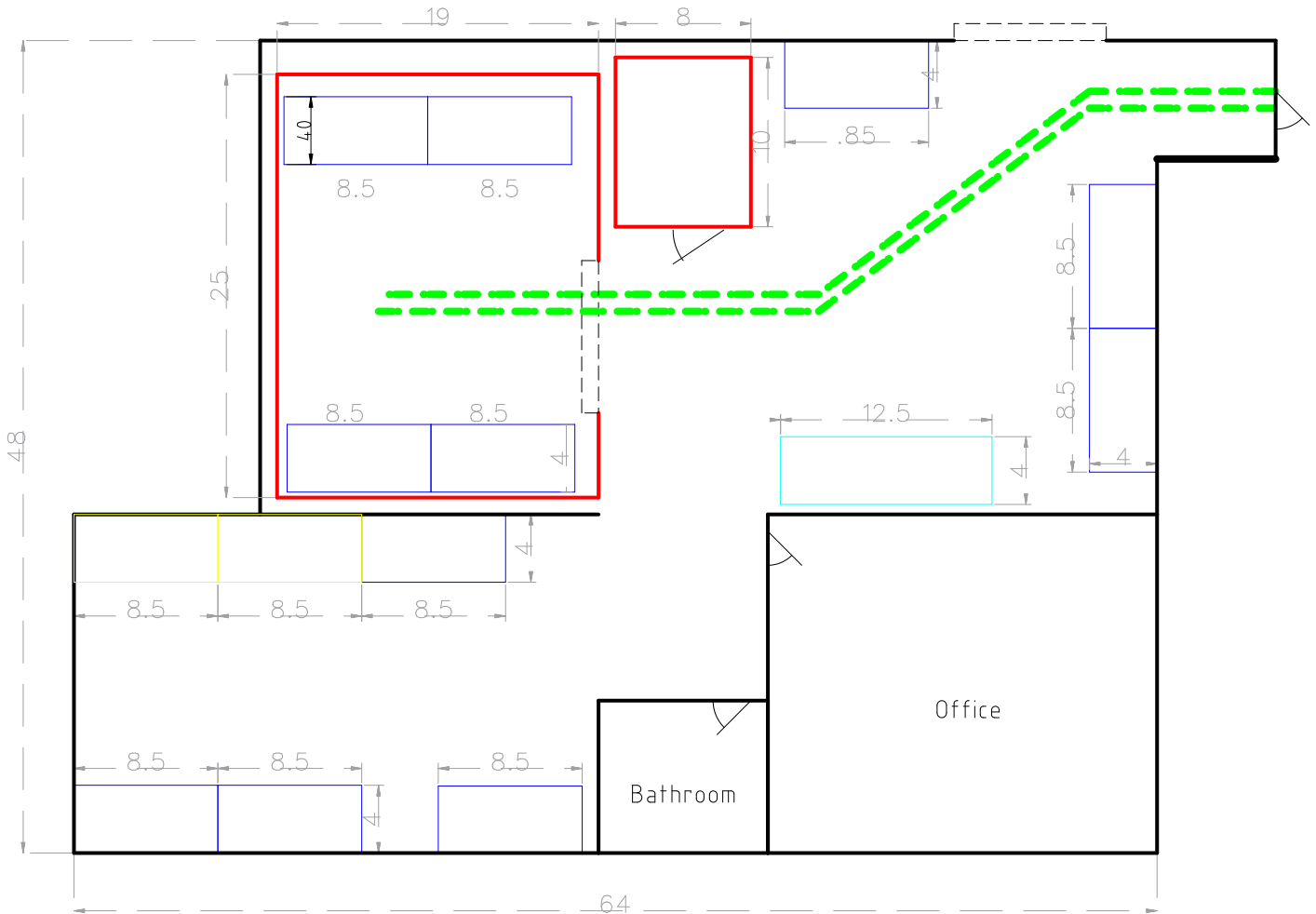
Fully Altered Warehouse Layout with Egress Path


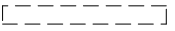

All Measurements in Feet






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08/08/2018



-  Exit Path
Length of Exit Path - 58 Ft
-  Overhead Retractable Door
-  Walk In Coolers

- Racks Separated by Load Weight
-  5047 lb. Rated Pallet Rack
SN: IBX390 96"
 -  4044 lb. Rated Pallet Rack
SN: IBX350 96"
 -  7820 lb. Rated Pallet Rack
SN: IBH600 144"

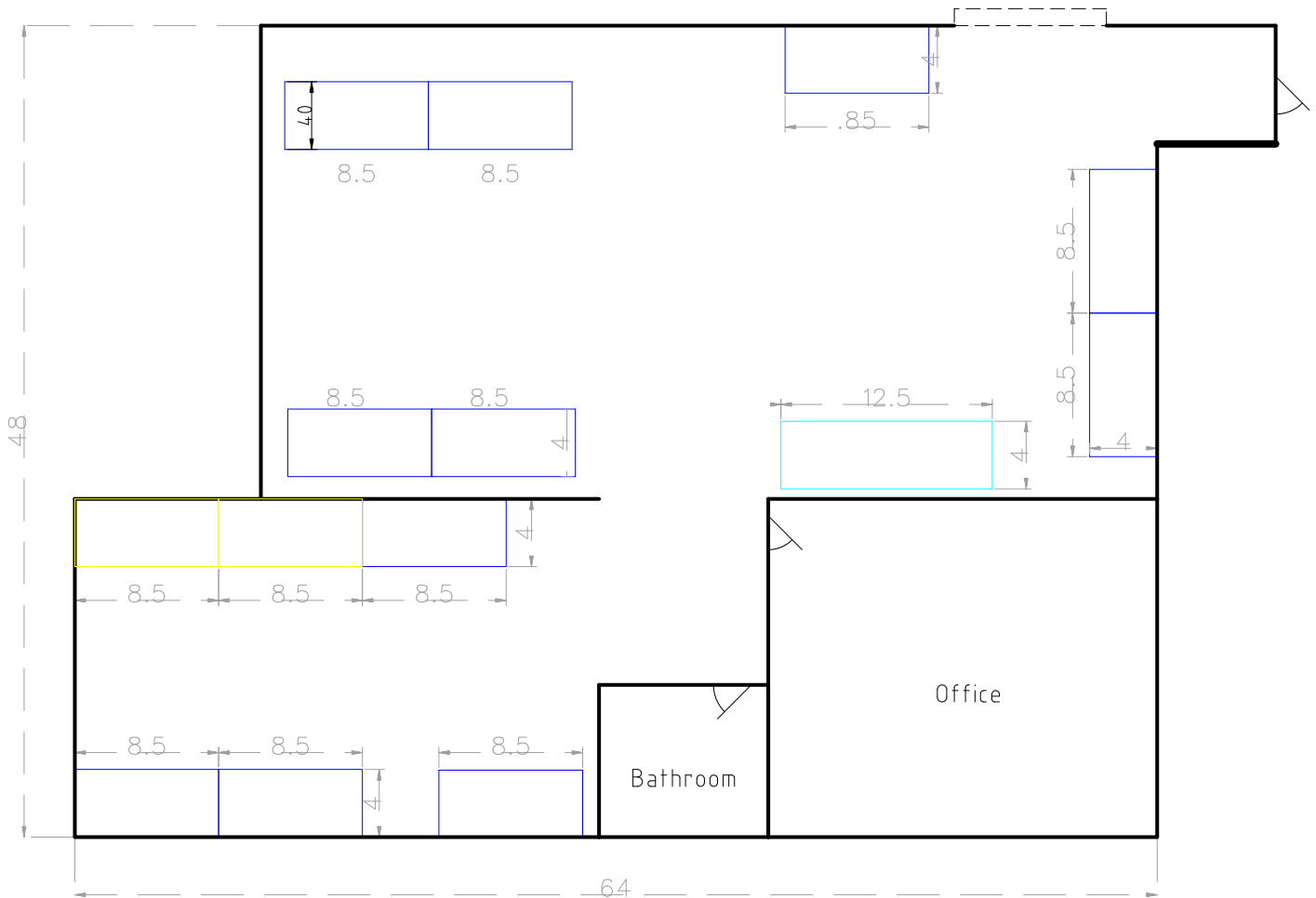
Warehouse Layout with Prefabricated Rack Placement



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08/08/2018

All Measurements in Feet



Exit Path
 Length of Exit Path - 58 Ft



Overhead Retractable Door

Racks Separated by Load Weight



5047 lb. Rated Pallet Rack
 SN: IBX390 96"



4044 lb. Rated Pallet Rack
 SN: IBX350 96"



7820 lb. Rated Pallet Rack
 SN: IBH600 144"

Prefabricated Rack Specs



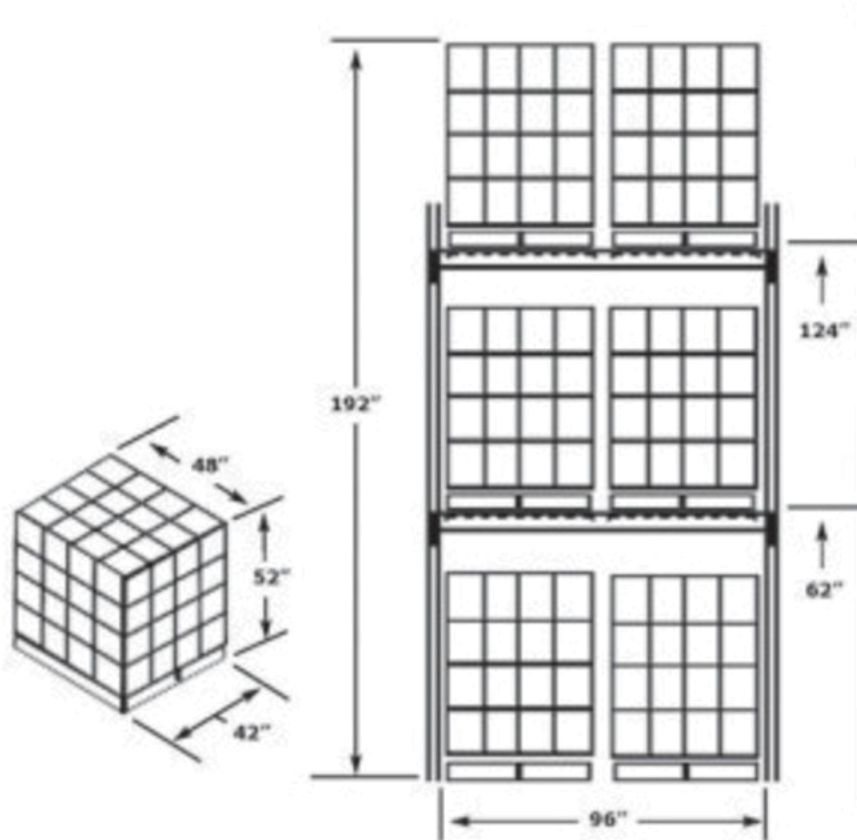
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Vertical Beam Weight
 Capacity in Lbs.
 (Our Layout Highlighted)

BEAM SPACING	UPRIGHT FRAME				
	IU18	IU24	IU29	IU35	IU38
36	19,380	28,800	35,500	40,300	45,100
42	18,100	27,200	33,600	38,100	42,700
48	16,700	25,300	31,100	35,300	39,600
54	15,300	23,200	28,600	32,500	36,300
60	13,800	21,100	26,000	29,500	33,000
66	12,300	19,000	23,400	26,600	29,700
72	10,900	16,900	20,800	23,700	26,400
78	9,500	14,900	18,200	20,800	23,200
84	8,300	13,100	16,100	18,300	20,400
90	7,300	11,600	14,200	16,200	18,100
96	6,500	10,300	12,700	14,400	16,100

Manufacturer Recommended
 Installation Specs



Rack Horizontal Support Load Capacities in Lbs.
(Our Rack System is Highlighted)



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BEAM & FRAME CAPACITIES

Three Punch Styles Available

Beam Length	IBX300	IBX350	IBX390	IBX430	IBX480	IBN480	IBN550	IBN600	IBH600
48"	7,383	8,890	10,292	11,663	13,813	16,062	19,349		
60"	6,118	7,311	8,419	9,506	11,205	13,014	15,625	17,792	
72"	5,045	6,246	7,162	8,055	9,460	10,974	13,145	14,935	18,552
84"	3,846	5,133	6,261	7,022	8,216	9,519	11,364	12,896	16,001
90"	3,413	4,535	5,679	6,607	7,719	8,934	10,652	12,087	14,981
92"	3,285	4,363	5,455	6,486	7,569	8,759	10,431	11,837	14,671
94"	3,165	4,196	5,245	6,351	7,424	8,591	10,231	11,598	14,374
96"	3,052	4,044	5,047	6,111	7,286	8,421	10,029	11,368	14,089
98"	2,945	3,896	4,862	5,885	7,153	8,268	9,835	11,148	13,816
100"	2,845	3,762	4,687	5,666	7,026	8,121	9,659	10,937	13,554
102"	2,751	3,630	4,522	5,465	6,904	7,970	9,480	10,734	13,303
104"	2,662	3,506	4,366	5,276	6,778	7,755	9,308	10,538	13,061
106"	2,574	3,393	4,219	5,091	6,584	7,482	9,141	10,350	12,815
108"	2,494	3,282	4,079	5,000	6,357	7,224	8,873	10,046	12,455
110"	2,415	3,177	3,948	4,763	6,142	6,979	8,615	9,753	12,096
112"	2,344	3,081	3,823	4,605	5,939	6,740	8,381	9,478	11,770
114"	2,273	2,986	3,704	4,462	5,746	6,521	8,146	9,212	11,453
116"	2,208	2,896	3,591	4,320	5,569	6,312	7,917	8,954	11,145
118"	2,144	2,810	3,484	4,190	5,394	6,114	7,712	8,712	10,855
120"	2,083	2,729	3,378	4,062	5,228	5,926	7,505	8,478	10,576
132"	1,773	2,313	2,851	3,421	4,383	4,961	6,431	7,264	9,059
138"	1,646	2,141	2,636	3,158	4,040	4,571	5,981	6,748	8,405
144"	1,534	1,989	2,448	3,000	3,737	4,223	5,569	6,273	7,820
156"	1,342	1,735	2,126	2,536	3,228	3,646	4,794	5,449	6,802
168"	1,187	1,528	1,870	2,222	2,821	3,182	4,172	4,772	5,961

Who is the rack system manufacturer? What are the installation requirements? (attachment to floor? attachment to walls? lateral bracing?... etc.) Have the racks been installed as per manufacturer's requirements?

Where are the specific horizontal members with the above capacities located in the floor plan? What is to be stored on the racks? What is the weight of those materials? Are each component of the racks sufficient to support the weight of those stored materials?

Please provide a letter from a structural engineer stating these racks have been installed as per manufacturer's requirements, industry standards and are structurally capable of supporting the proposed loads.

Supplemental Information Requested 7/16 for Building Review



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Rack System Manufacturer - Husky Rack & Wire www.huskyrackandwire.com

Installation requirements - See Manufacturer Installation Manual on pages 10 & 11

Attachment to floor? - Yes, each leg is attached to the warehouse floor with 3" concrete anchors

Attachment to walls? - No, not required.

Lateral Bracing? - Each rack system must have at least 2 horizontal beam levels. All our racks are set up with 2 or 3 horizontal rack levels

Location of the different horizontal members in the warehouse - See warehouse diagram on page 12

Have the racks been installed as per manufacturer's requirements - See attached structural engineer letter on page 13

What is to be stored on the racks? - We will be storing pallets of beer. These pallets come in 2 different sizes: pallets holding a maximum of 9 kegs, weighing 160 lbs each, totaling 1440 lbs, or 1500 lbs with the weight of the pallet, and pallets holding up to a maximum of 60 cases of canned beer, each weighing 24 lbs, totaling 1440 lbs, or 1500 with the weight of the pallet. On the 96" horizontal racks (IBX350, 4044 lb capacity, and IBX390, 5047 lb capacity) , we will be stacking a maximum of 2 pallets, totaling 3000 lbs. On the 144" horizontal rack, (IBH600 with a capacity of 7820 lbs) we will be stacking a maximum of 3 pallets, totaling 4500 lbs; within its capacity.



Putting Together A Rack Job

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***Please first see Scope of Responsibility on page 1.**

Step 1. Find out everything there is to know about the item you are handling/storing. Find out the three-dimensional size and weight of every load and pallet going to any location. Remember that the pallet may not be exactly the same size as the load, there may be overhang one way or the other. Also be careful to ask about the quality of the bottom of the pallets and whether or not they are capable of resting on just beams. If they are broken or rotted, they might require wire deck to safely support them.

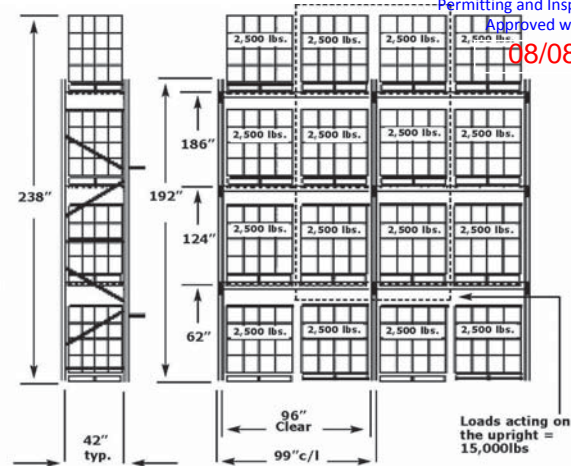
Step 2. Find out everything there is to know about the area that the rack is going to be installed. Start with the physical dimensions of the available space. Next the floor condition, its load bearing capacity and any slope. Find out about the available clear headroom and the presence of any overhead or other obstructions. Find out if there are any access-ways that the rack must not obstruct. Column centerlines and size are also important for flue space specification and layout information.

Step 3. Find out the method to be used for storing and retrieving loads in the rack (often Fork Truck or Pallet Jack). Can it carry the proposed load? What is its width and right angle turn dimension? What is its maximum lift height? Remember you must subtract from this number, usually 6", for most pallets to be lifted clear of the beam. Take note of anything else that might impede on its safe interaction with the rack.

Step 4. Select the beam. First decide how many loads should be on each beam level. The length of the beam can be determined by adding three inches to either side of the pallet, (or load, whichever is largest), and multiplying by all the loads on the beam. For example, a load/pallet of 42" width, two to a beam = $42" + 3" + 3"$, multiply by 2 and this comes to a 96" beam. The 3" additions are to give adequate side clearance for loading and unloading. The model of beam should then be selected from the 'Beam & Frame Capacities Chart' below, making sure that the loads do not exceed the maximum capacity. If the beams are longer than 116" they should be tied across the middle to prevent beam spread. If loose decking is to be used, any pair of beams over 90" in length should be tied across the middle for the same reason.

Step 5. At this point **ALWAYS** start a sketch of each individual bay, no matter how small the job.

Step 6. Figure out how many beam levels you will have in any bay. Are the first pallets/loads going to sit on the floor, or on a set of beams? To calculate the number of levels add together the pallet and load height plus 6" for clearance. Add the face/height of the beam you just selected for the overall total. Fit as many levels as possible in the height available remembering to make sure the fork truck is able to lift the pallet off the top beam with its maximum fork height capabilities. It usually needs an additional 6-8" of lift height over the top beam. Finally make sure there is enough clearance for any sprinkler requirements.



Step 7. A. Find out the frame capacity necessary. Add up all of the beam loads acting on the frame, then work out the largest pallet opening on the frame (usually floor to first beam, but occasionally beam to beam above that). Loads on either side of the frame up to the center points of the beams, act upon the frames. Note that in the illustration above there is 15,000 lbs. acting on the middle frame. Now, using the capacity chart shown below, select the appropriate frame model. **B.** Figure out how high the frame needs to be to reach the top of the top beam. In most applications you should then add between 6" and 18" (up to the next standard frame size) to allow for flexibility in installation. If the customer wants the frame flush with the top of the top beam, be very sure to check the load dimensions again very carefully and check the floor for the possibility of slope in both the 'cross-aisle' and 'down-aisle' directions. **C.** Figure out how deep the frame needs to be. The dimension of the pallet determines this. In most applications an overhang of 3" on either side of the pallet is desirable (if the pallet is 48" deep the frame should be 42"). If the application demands that the pallets be flush with the front and back faces of the rack bay, cross supports from beam to beam **MUST** be used. The cross supports may be crossbars or wire deck.

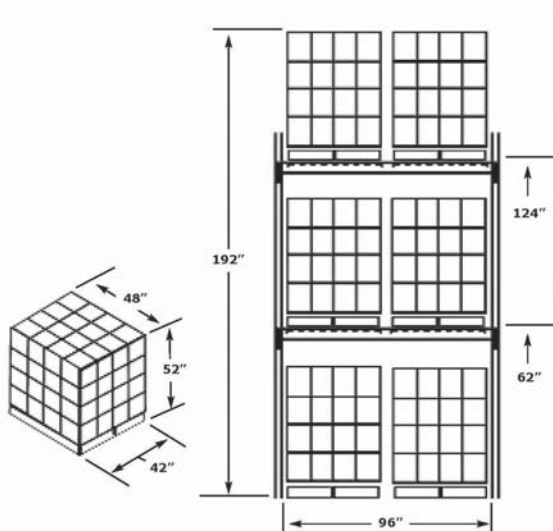
Step 8. Now put together your final sketch showing all the bays that go together to make up a row, and count up all the beams and frames you need for the system.

Step 9. Is your system a single row? Or will it be installed 'back-to-back' with another row of rack? If it is back-to-back, it should be tied across the 'flue space' in the middle with row spacers. You should always use a minimum of two row spacers no matter the height. You should also ensure there is not a gap greater than 10' in height between row spacers, adding a third or fourth one if necessary.

Step 10. You must now check to see whether your system is stable or not. First, check the height compared to the depth for overturning stability. To do this, find the height from the floor to the top of the very topmost beam. Now, divide that figure by either the depth of the frame (if this is a single row); or, the depth of both frames plus the row spacers (if this is a back-to-back row). Is the answer to your division sum larger than 6.0? If so you will need to call your Husky Rack & Wire representative for assistance, as the system is unstable. Second, check for rotational stability. Do you have only a single beam level between frames in a bay anywhere? If so, you need to call your Husky Rack & Wire representative for assistance, as this system also is unstable.

General. General Pallet rack installations are structurally engineered systems that carry heavy loads. The steps above give a guideline for the safe specification of components for simple cases where conditions are perfect. They are written with regard to RMI 2014 which is the guiding industry specification at time of publication. If, in the future, this specification is revised or overridden; or, if you have any doubt or confusion whatsoever about any of the steps above, please contact your Husky Rack & Wire representative for assistance.

Final. Please remember that your system should be shimmed level and anchored to the floor (one anchor per leg).





Warnings

- **The rack structure should be assembled and used only as shown on assembly drawings.** Changing the configuration (such as adjusting storage levels) can adversely affect the load carrying capacity and reduce the structural integrity of the rack system.
- **Do not install racks outdoors**, unless specifically designed for this purpose.
- **Allow adequate aisle spacing.**
- **Install good lighting in every rack aisle.**
- **Installation of capacity signage is highly recommended.** These signs should identify the characteristics for which the rack was designed, such as load size, load weight and rack configuration. These signs are very useful for communicating safe information to both present and future users. These signs should be prominently located for easy visibility, and should be permanently affixed to the rack structure.
- **Be cautious when intermingling new and existing parts.** Even components produced by the same manufacturer can vary in design. These differences can adversely affect the overall performance and safety of a rack structure. Any and all warranties and guarantees are made void if non-Husky Rack & Wire products are used in conjunction with Husky Rack & Wire products.
- **Do not cut, weld, or in any other way modify any component of your Husky Rack & Wire storage rack.** Doing so will make null and void any warranties and guarantees.
- **Never climb on racks, during or after assembly.** Storage racks are not designed to be stepped on or climbed on. A slip or fall may result in serious injury or death. It is your responsibility to communicate this important warning to all who come into the proximity of your storage rack.

Installation

When setting up Husky Rack & Wire **Invincible, Reliable, or Lynx** brand pallet rack, please refer to the installation instructions noted below. If you have any questions, please call 1-800-438-5629. Our company will be glad to assist you.

During installation, wear hard hats, safety glasses, and steel-toed shoes.

Storage racks should be assembled only by trained personnel, experienced with proper rack assembly procedures.

1. Compare material with the packing slip to make sure you received all the components in good condition.
2. The post that has the diagonal bracing channel welded closest to the floor is the front post of the upright. In either single row or double row (back-to-back) installations, the front post should always face the aisle. In single row installations with an aisle on either side, the front should face the aisle having the most traffic.
3. Using help, engage one end of the beam at the desired height to the front of one upright. Next, engage the other end of the beam to the front of the 2nd upright. Repeat this procedure on the back side of the bay.
4. Check the bay for level, plumb and square. The upright frames must be plumb to within 1/2" per 10 foot of height. The beams must be level to within 1/8" per 6 foot of beam length. Shims are available and should be used throughout the installation to maintain their tolerances. In addition to being plumb and level the upright bay should be square. You can check this by measuring diagonally across the bay. The two diagonal measurements must be within 1/8" of being the same.
5. Subsequent bays should be installed using the same process outlined in steps 3 and 4.
6. Install the next level of beams using the same procedure as in step 3. Continue to check each bay for level, plumb and square. Be sure to allow at least 6" of clearance between the top of the pallet load and the bottom of the beam on next level.
7. Place wall or row spacers at the top and bottom of the uprights and secure with nuts and bolts. When using row spacers, always use at least two per upright. Installation of all accessories can now be made (pallet crossbars, decking, etc.).
8. Complete a final check to ensure all rack is level, plumb and square and anchor all uprights to an adequate concrete floor. Whenever the height to depth ratio is 6:1 or greater, please consult your supplier for additional bracing requirements.

Note: Protective devices are not a substitute for regular inspections involving management personnel.

9. WARNING - bolt beams in place if safety clips are not engaging properly, or when
 - placing beams over aisles
 - unusual conditions such as close load clearances, tight aisle clearance or large bulky loads are present
 - beams are in positions that are difficult to inspect.

Use 7/16" x 4" hex bolts and nuts with 7/16" flat washers to side bolt 3.5", 4.0" and 4.5" beams.

Use 7/16" x 4" hex bolts and nuts with 7/16" flat washers to top bolt 5.0", 5.5" and 6.0" beams.

When side top or side bolting is not possible the beams can be front bolted through the safety clip hole. Use 3/8" x 1" hex bolt and nut with 3/8" flat washers to front bolt beams.

Inspection and Maintenance

Once installed, the owner should insure that monthly inspections are performed and that the rack system is properly maintained in accordance with the RMI Specification referred to on page 1 of this manual. During inspections, properly trained users should check for:

- Damage to any uprights or beams
- Leaning, out-of-plumb or out-of-square rack
- Safety locks, safety clips and/or bolts that are not fully engaged and intact
- Load sizes that exceed maximum capacity

If any rack deficiencies are detected, the affected area should immediately be unloaded and all damaged components should be replaced. Owners should notify all forklift operators to alert their supervisor of any rack damage or out-of-plumb conditions they observe in the rack structure (not matter how insignificant it may seem).

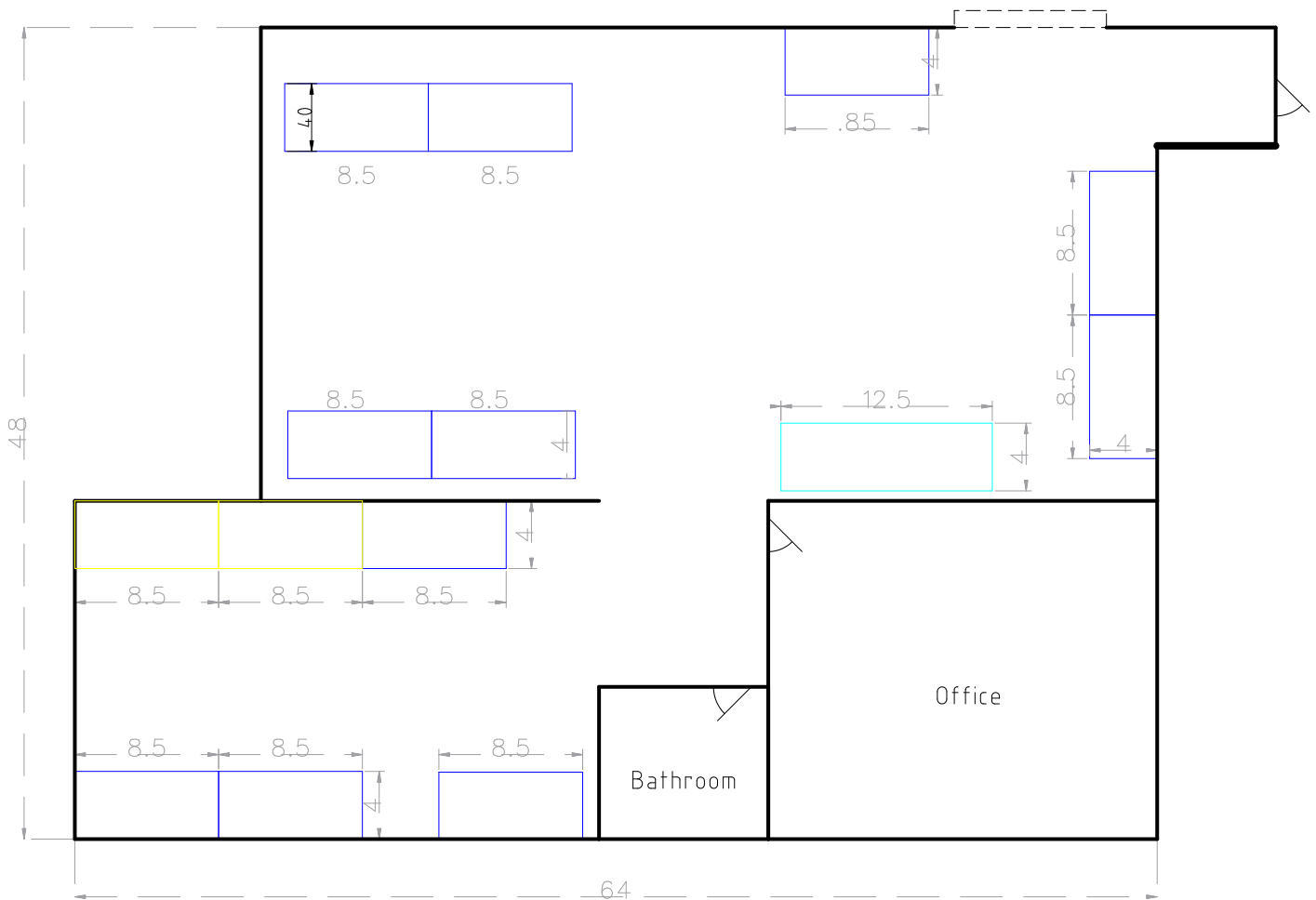
If you have any questions on installation or maintenance call 1-800-438-5629. Ask for the Engineering Department or visit us at www.huskyrackandwire.com.



Rack Layout Including Rack Capacities

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions

08/08/2018



Exit Path
Length of Exit Path - 58 Ft



Overhead Retractable Door

Racks Separated by Load Weight



5047 lb. Rated Pallet Rack
SN: IBX390 96"



4044 lb. Rated Pallet Rack
SN: IBX350 96"



7820 lb. Rated Pallet Rack
SN: IBH600 144"



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L & L STRUCTURAL
ENGINEERING SERVICES, INC.
Six Q Street
South Portland, ME 04106

Telephone: 207 767-4830

August 7, 2018

Luke Myers
Operations & Logistics Coordinator
Craft Collective Distributors
135 Walton Street, Unit N
Portland, Maine 04102

Subject: Craft Collective Distributors - 135 Walton Street, Unit N, Portland, Maine
Storage Rack Structural Capacity and Structural Support of Storage Rack

Dear Luke,

As per your request we have reviewed the proposed storage racking system intended to be supported on the existing concrete slab on grade at the Craft Collective Distributors Warehouse located at 135 Walton Street, Unit N in Portland, Maine. The purpose of our review and analysis is to determine if the proposed racking system is capable of supporting the intended structural load and to determine if the existing concrete slab is capable of supporting the concentrated load imposed by the vertical columns (or uprights) of the storage racks. Our analysis and review of the proposed storage racking system was performed utilizing the 2015 International Building Code (IBC) adopted by the City of Portland, Maine. The analysis also considered the Building Code Requirements for Reinforced Concrete (ACI 318-latest edition) published by the American Concrete Institute; the Building Code Requirements for Structural Plain Concrete (ACI 318.1-latest edition) published by the American Concrete Institute and the Manual of Steel Construction (AISC-latest edition) published by the American Institute of Steel Construction.

The proposed racking system is the 'Invincible Rack' manufactured/supplied by Husky Rack & Wire Corporation. The selected racking systems are the 4'-0" x 8'-0" model IBX350 and the model IBX390 which are intended to be stacked 2 racks high and connected end to end with another 4' x 8' rack. In addition, there is one rack system that is the 4'-0" x 12'-0" model IBH600 which is intended to be only 1 rack high and not to be connected end to end with any other rack system. The beam capacity on both sides of the two types of 4'x8' racking systems is 4,044# and 5,047# (as a uniform load) respectively for the model IBX350 and model IBX390 and 7,820# (as a uniform load) for the 4'-0" x 12'-0" model IBH600 racking system. The IU18 upright/column capacity for all of the racking systems is 8,350#.

Craft Collective Distributors – Stor. Rack Struct. Cap. and Struct. Supp. of Stor. Rack



The structural loads that are intended to be supported on the racks consist of 4'x4' pallets of beer weighing up to 1600# each. The pallets shall be loaded with either 9 kegs weighing approximately 160# each, or 60 cases of canned beer weighing approximately 24# each. Therefore, the anticipated structural load is approximately 1440# per pallet plus the weight of the pallet, covers and/or wrapping for a total anticipated structural load of approximately 1600# per pallet. Each rack will support a maximum of two pallets on the 4'x8' racks and 3 pallets maximum on the 4'x12" racks. Hence, the maximum beam load anticipated is the approximate 3,200# rack load divided by two beams which equals approximately 1,600# per beam in the 4'x8' racks which is less than the 4,044# beam capacity specified by the manufacturer and the approximate 4,800# rack load divided by two beams which equals approximately 2,400# per beam in the 4'x12" racks which is less than the 7,820# beam capacity specified by the manufacturer. In addition, the maximum anticipated column load for racks attached two high and end to end is approximately 3,200# per column which is less than the 8,350# column capacity. Therefore, the proposed storage racking system is adequate to support the intended structural loading.

We analyzed the existing concrete floor slab to determine if the slab is capable of supporting the intended 3,200# concentrated load imposed from the column in the proposed storage racking system. We understand that the existing slab was originally designed to be a 5" thick concrete slab and that you have confirmed the existing slab thickness by drilling test cores to be a minimum thickness of approximately 4 1/2". Based on the results of the slab testing, the 4 1/2" minimum thick concrete slab is capable of supporting the anticipated 3,200# concentrated load from the column creating a shear stress of approximately only 35% to 40% of the allowable concrete shear stress for the existing slab. In addition, the 4 1/2" concrete slab will distribute the anticipated 3,200# concentrated on the soil below the slab sufficiently to exert an approximate 3.2 KSF pressure on the soils beneath the slab. This is a reasonable soil bearing pressure as long as the soil beneath the slab is a compacted granular/structural fill (to be confirmed by the final user). If the soil beneath the slab is not adequately compacted, the slab will settle at the location of the columns and the racks shall be removed from that area of the slab.

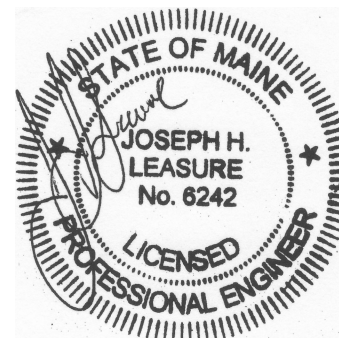
In conclusion, the proposed storage racking systems are capable of supporting the anticipated load as described above and the existing concrete slab as well as the soils beneath the slab are adequate to support the anticipated column load from the racking system.

If you have any further questions or require any additional information and/or technical assistance, please do not hesitate to call.

Sincerely,

L&L Structural Engineering Services, Inc.

Joseph H. Leasure, P.E.
 Principal
 cc: File



Supplementary Photos of Racks



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Permitting and Inspections Department
Approved with Conditions

08/08/2018





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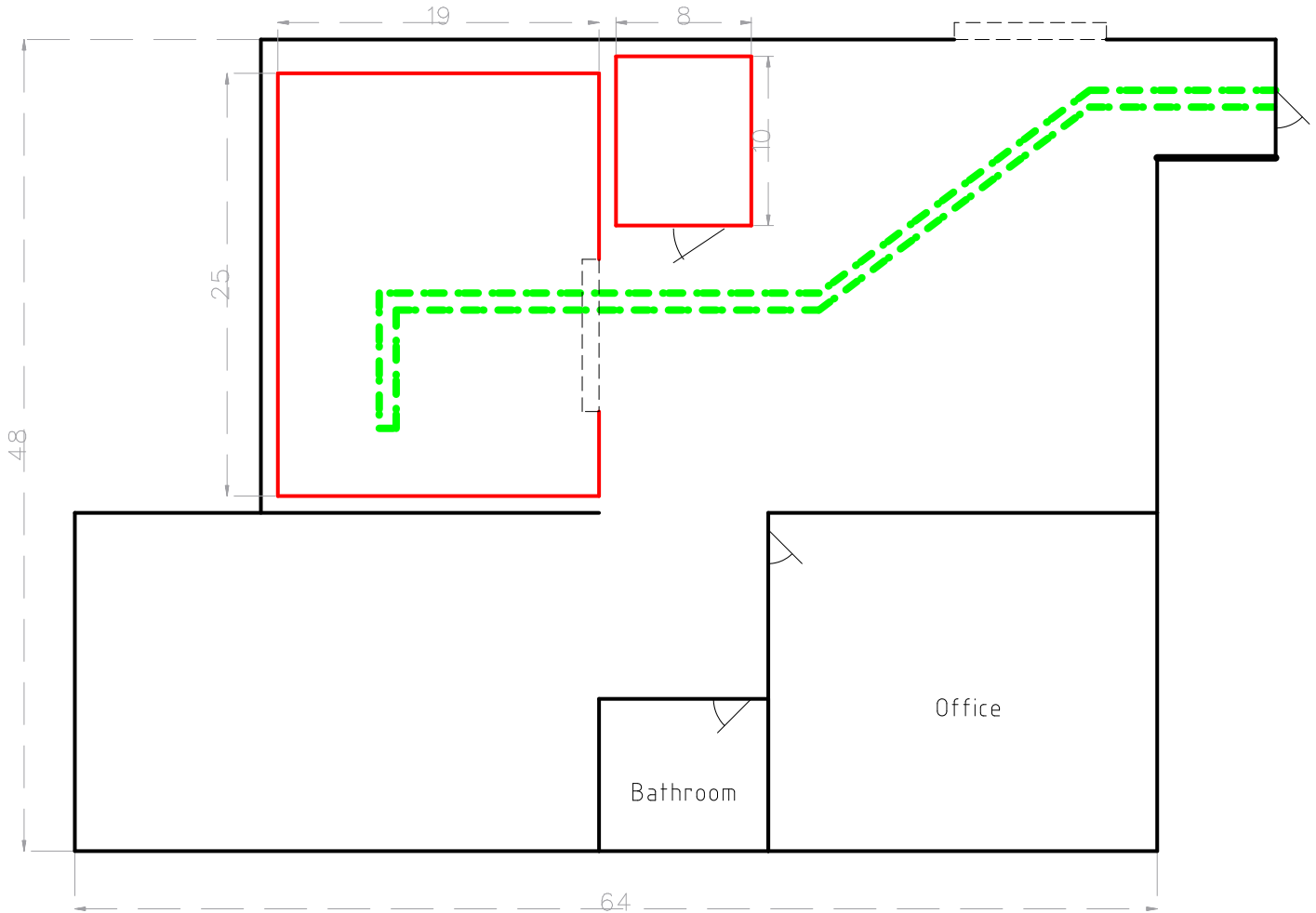





Warehouse Layout with Walk-in Cooler Placement and Egress Path

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions

08/08/2018

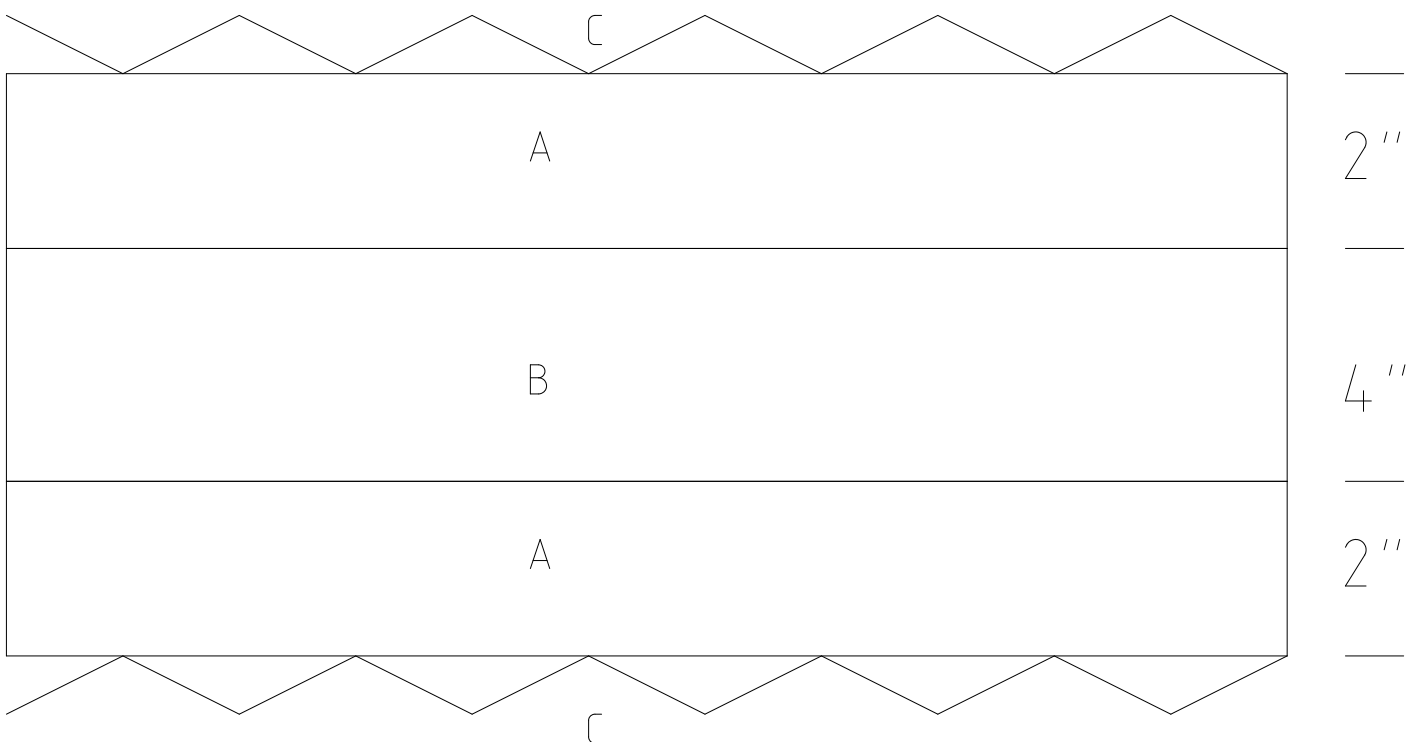
Measurements in Feet



-  Exit Path
Length of Exit Path - 58 Ft
-  Overhead Retractable Door
-  Walk In Coolers



Cross Section Diagram of Materials Used in Custom Walk-In Fridge



A - 2 inch thick Dow Styrofoam Insulation
(Spec Sheet on Following Pages)

B - 4 inch thick ROXUL Safe Fire Insulation
(Spec Sheet on Following Pages)

C - 2.5" 29 Gauge Galvanized Steel Siding



Dow Foam Insulation Specs



Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
08/08/2018

STYROFOAM™ Brand Scoreboard Extruded Polystyrene Foam Insulation

1. PRODUCT NAME

STYROFOAM™ Brand Extruded Polystyrene Foam (XPS) Square Edge Insulation

2. MANUFACTURER

The Dow Chemical Company
Dow Building Solutions
200 Larkin Center,
Midland, MI 48674
1-866-583-BLUE (2583)
Fax 1-989-832-4465

dowbuildingsolutions.com

3. PRODUCT DESCRIPTION

STYROFOAM™ Brand Scoreboard Insulation is an extruded polystyrene foam insulation board that is scored longitudinally on 16” and 24” centers, making it easy to size to commonly used widths. STYROFOAM™ Brand Scoreboard Insulation has excellent insulating characteristics, high resistance to water and water vapor, exceptional compressive strength and long-term durability.

Basic Use

STYROFOAM™ Brand Scoreboard Insulation is designed for use in exterior cavity wall and foundation applications. Like all STYROFOAM™ Brand Extruded Polystyrene products, STYROFOAM™ Brand Scoreboard Insulation resists moisture to deliver a stable R-value* over the long term.

4. TECHNICAL DATA

Applicable Standards

STYROFOAM™ Brand Scoreboard Insulation meets ASTM C578, Type IV – Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Applicable standards include:

- C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

- D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- C272 – Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
- E96 – Standard Test Methods for Water Vapor Transmission of Materials
- C203 – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- D2126 – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging

Code Compliances

STYROFOAM™ Brand Scoreboard Insulation complies with the following codes:

- Meets IBC/IRC requirements for foam plastic insulation; see ICC-ES ESR 2142, BOCA-ES RR 21-02
- Underwriters Laboratories, Inc. (UL) Classified, see Classification Certificate D369

Contact your Dow sales representative or local authorities for state and local building code requirements and related acceptances.

Physical Properties

STYROFOAM™ Brand Scoreboard Insulation exhibits the properties and characteristics indicated in Table 2 when tested as represented.

Exposure to ultraviolet radiation in sunlight for several weeks will cause the surface of STYROFOAM™ Brand Scoreboard Insulation to become yellow and dusty. A lightcolored, opaque protective covering should be used if excessive solar exposure is expected. The surface degradation will have no measurable effect on the insulating value of the plastic foam unless the deterioration is allowed to continue until actual foam thickness is lost. Since the dust would impair the performance of adhesives and finishes, the dusty surface should be brushed off before these products are applied.

Environmental Data

STYROFOAM™ Brand Scoreboard Insulation is hydrochlorofluorocarbon (HCFC) free with zero ozone-depletion potential. STYROFOAM™ Brand Scoreboard Insulation is reusable in many applications.

STYROFOAM™ Brand Insulation products produced in North America contain an average of 20% pre-consumer recycled content certified by UL Environment Inc.

TABLE 1: Sizes, R-Values and Edge Treatments for STYROFOAM™ Brand Scoreboard Extruded Polystyrene Foam Insulation

Nominal Board Thickness ⁽¹⁾ (in.)	R-Value ⁽²⁾	Board Size (Feet)	Edge Treatment
0.75	3.8	4 × 8	Square Edge
1.0	5.0	4 × 8	Square Edge
1.5	7.5	4 × 8	Square Edge
2.0	10.0	4 × 8	Square Edge
2.5	12.5	4 × 8	Square Edge
3.0	15.0	4 × 8	Square Edge

(1) Not all product sizes are available in all regions. Additional product sizes are available by custom order. Consult your Dow sales representative about other sizes and lead-time requirements.

(2) Aged R-value at 1” cured foam @ 75°F mean temperature. R-value expressed in ft²•h•°F/Btu. R-value determined by ASTM C518 using the aging process in ASTM C1289 (90 days @ 140°F).

*R means resistance to heat flow. The higher the R-value, the greater the insulating power. R-value determined by ASTM C518.



Fire Information

STYROFOAM™ Brand Scoreboard

Insulation is combustible; protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector.

5. INSTALLATION

STYROFOAM™ Brand Scoreboard Insulation is easy to handle, cut and install. Visit www.dowbuildingsolutions.com or contact a local Dow representative for more specific instructions.

6. AVAILABILITY

STYROFOAM™ Brand Scoreboard Insulation is manufactured in several locations across North America and is distributed through an extensive network. For more information, call 1-800-232-2436.

7. WARRANTY

In the United States, a 50-year thermal limited warranty is available on STYROFOAM™ Insulation products 1.5 inches and greater. For thickness less than 1.5 inches, other warranties may apply. Warranties are available as described at <http://building.dow.com/na/en/tools/warranty.htm>

TABLE 2: Physical Properties of STYROFOAM™ Brand Scoreboard Extruded Polystyrene Foam Insulation

Property And Test Method	Value
Thermal Resistance per inch, ASTM C518 @ 75°F mean temp., ft ² •h•°F/Btu, min., R-value ⁽¹⁾ , min.	5.0
Compressive Strength ⁽²⁾ , ASTM D1621, psi, min.	25
Water Absorption, ASTM C272, % by volume, max.	0.3
Water Vapor Permeance ⁽³⁾ , ASTM E96, perm, max.	1.5
Maximum Use Temperature, °F	165
Coefficient of Linear Thermal Expansion, ASTM D696, in/in•°F	3.5 × 10 ⁻⁵
Flexural Strength, ASTM C203, psi, min.	50
Dimensional Stability, ASTM D2126, % linear change, max.	2.0
Surface Burning Characteristics, ASTM E84, Flame Spread ⁽⁴⁾	15
Smoke Developed	165

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(1) R means resistance to heat flow. The higher the R-value, the greater the insulating power.

(2) Vertical compressive strength is measured at 10 percent deformation or at yield, whichever occurs first. Since STYROFOAM™ Brand Extruded Polystyrene Foam Insulations are visco-elastic materials, adequate design safety factors should be used to prevent long-term creep and fatigue deformation.

(3) Based on 1" thickness.

(4) This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

8. MAINTENANCE

Not applicable.

9. TECHNICAL SERVICES

Dow can provide technical information to help address questions when using STYROFOAM™ Brand Scoreboard Insulation. Technical personnel are available to assist with any insulation project. For technical assistance, call 1-866-583-BLUE (2583).

10. FILING SYSTEMS

www.dowbuildingsolutions.com
www.sweets.com



The Dow Chemical Company

Building Solutions
200 Larkin • Midland, MI 48674

US

Technical Information: 1-866-583-BLUE (2583)
Sales Information: 1-800-232-2436

dowbuildingsolutions.com

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CAUTION: This product is combustible and shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

WARNING: Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.



Roxul Fire Insulation Specs

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ROXUL SAFE™ Fire Safing Insulation

Technical Data Sheet

Firestopping 07840* • Firestopping 07 84 00**
Fibrous Fire Safing 07 84 56.13** • Curtain wall & glazed assemblies 08 44 00**

ROCKWOOL ROXUL SAFE™ is semi-rigid, mineral wool batt insulation approved for use in fire rated joints, through penetrations and perimeter fire containment systems.

	Performance	Test Standard
Compliance	Mineral Fiber Block and Board Thermal Insulation - Type IVA Compliant MEA Approval, New York City Approval	ASTM C612 339-97-M
Reaction to Fire	Flame spread index = 0; Smoke developed index = 0 Flame spread index = 0; Smoke developed index = 0 Determination of Non Combustibility of Building Materials - Non Combustible Test for Non-Combustibility - Non Combustible Fire Tests of Firestop Systems Fire Tests of Penetration Firestop Systems Tests for Fire Resistance of Building Joint Systems Perimeter Fire Barrier Systems Smoulder Resistance - 0.01% Consult UL, ULC and Intertek Directories for fire rated designs	ASTM E84 (UL 723) CAN/ULC S102 CAN/ULC S114 ASTM E136 CAN/ULC S115 ASTM E814 (UL 1479) UL 2079 ASTM E2307/E119 CAN/ULC S129
Density	Actual Density - 4.5 lbs/ft ³ (72 kg/m ³)	ASTM C303
Corrosion Resistance	Stress Corrosion Cracking Tendency of Austenitic Stainless Steel - Passed Corrosion of Steel - Passed	ASTM C795 ASTM C665
Reaction to Moisture	Moisture Sorption by weight - 0.04% Determination of Fungi Resistance - Passed	ASTM C1104 ASTM C1338
Thickness Dimensions	Product is available in 2", 3" and 4" (50.8 mm, 76.2 mm and 101.6 mm) 24" x 48" (610 mm x 1219 mm)	

Supplementary Pictures of Cooler



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