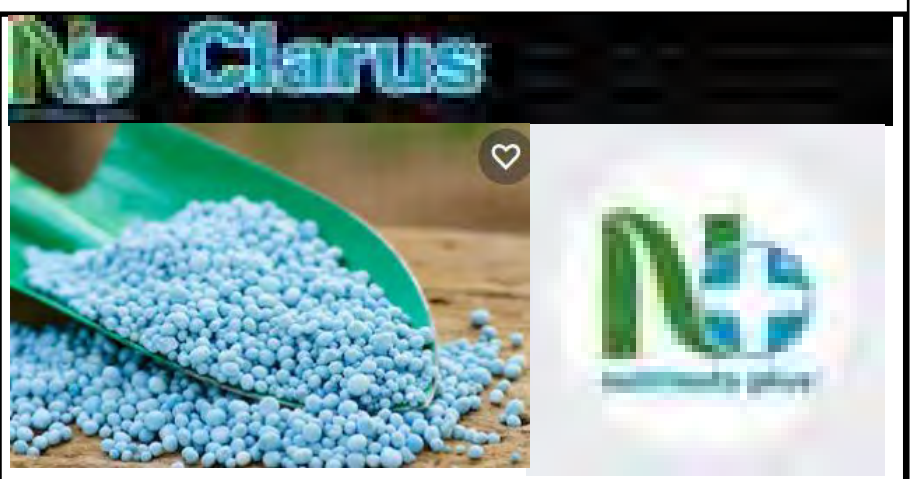
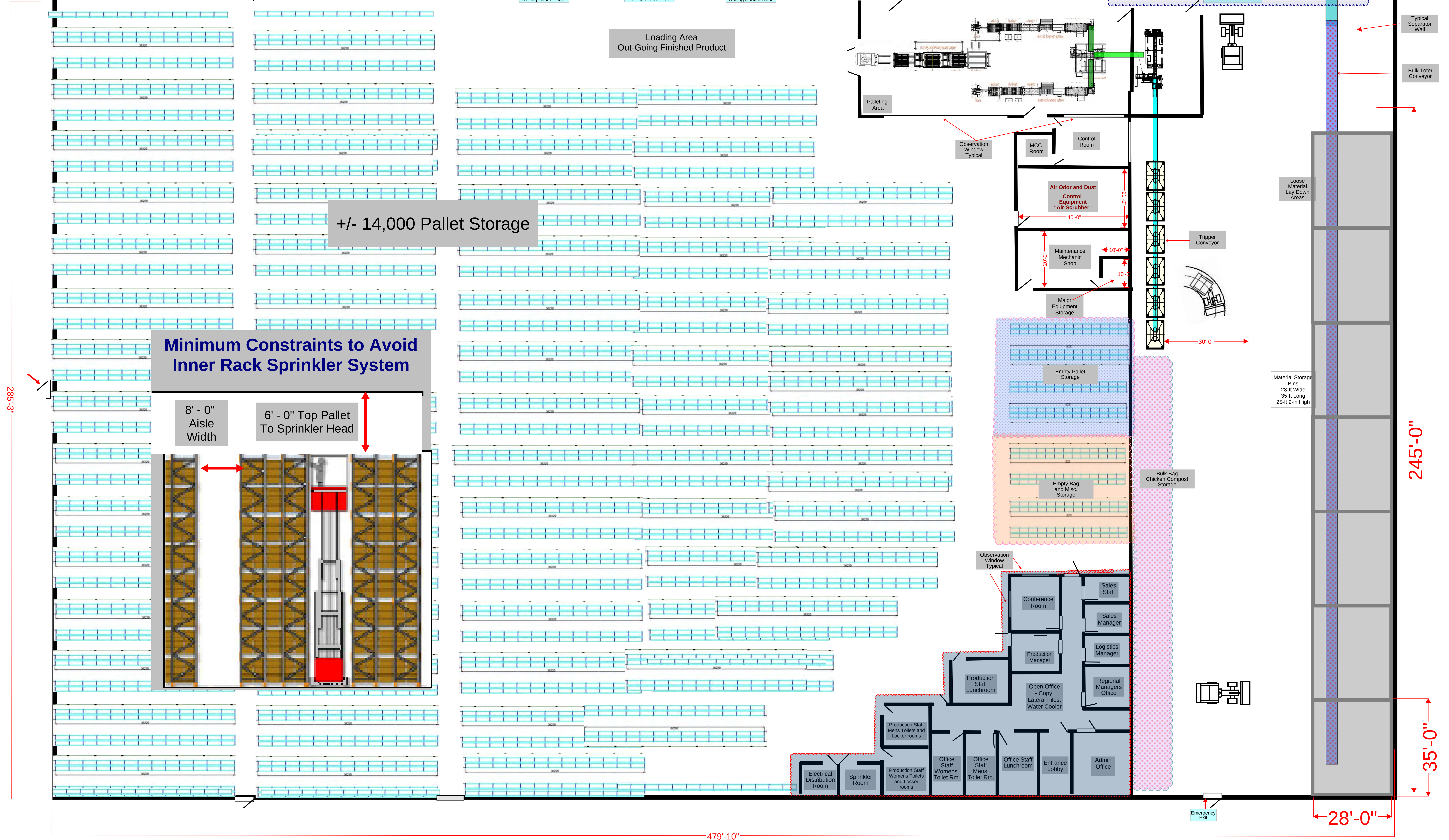


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Midwest Blending and Bagging
Conceptual Planning



Drawing Legend

Conceptual Drawing	12-3-2020
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CS 1.00

General Layout

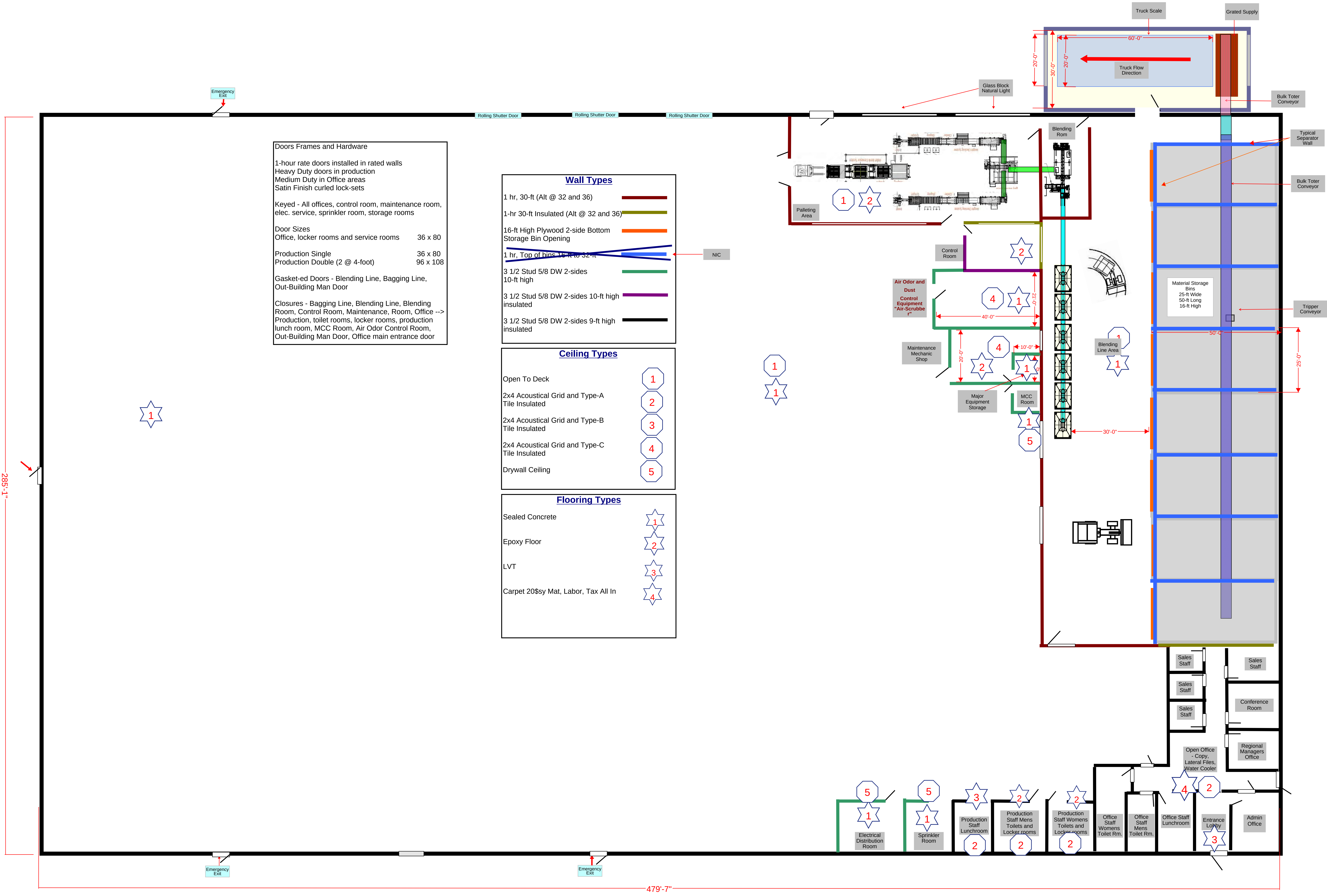
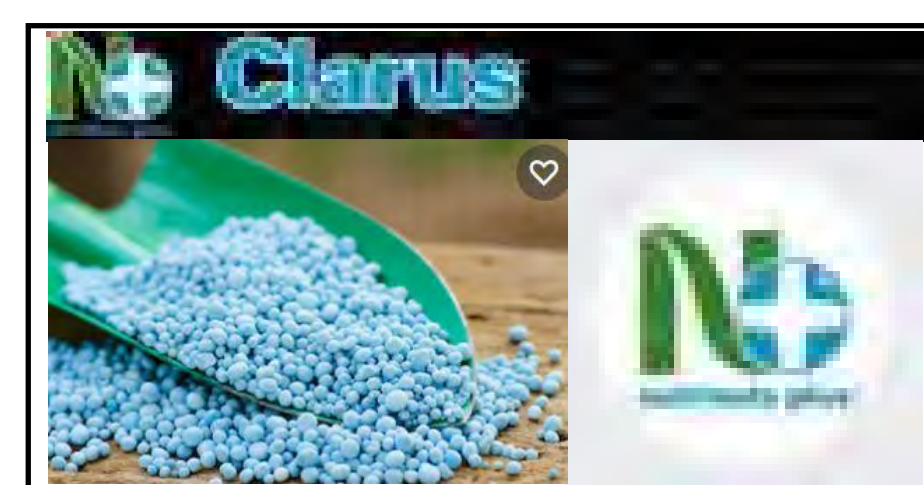
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Doors Frames and Hardware

1-hour rate doors installed in rated walls
Heavy Duty doors in production
Medium Duty in Office areas
Satin Finish curled lock-sets

Keyed - All offices, control room, maintenance room, elec. service, sprinkler room, storage rooms

Door Sizes

Office, locker rooms and service rooms	36 x 80
Production Single	36 x 80
Production Double (2 @ 4-foot)	96 x 108

Gasket-ed Doors - Blending Line, Bagging Line, Out-Building Man Door

Closures - Bagging Line, Blending Line, Blending Room, Control Room, Maintenance, Room, Office --> Production, toilet rooms, locker rooms, production lunch room, MCC Room, Air Odor Control Room, Out-Building Man Door, Office main entrance door

Wall Types	
1 hr, 30-ft (Alt @ 32 and 36)	1
1-hr 30-ft Insulated (Alt @ 32 and 36)	2
16-ft High Plywood 2-side Bottom Storage Bin Opening	3
1 hr, Top of bins 16-ft x 32-ft	4
3 1/2 Stud 5/8 DW 2-sides 10-ft high	5
3 1/2 Stud 5/8 DW 2-sides 10-ft high insulated	6
3 1/2 Stud 5/8 DW 2-sides 9-ft high insulated	7

Ceiling Types	
Open To Deck	1
2x4 Acoustical Grid and Type-A Tile Insulated	2
2x4 Acoustical Grid and Type-B Tile Insulated	3
2x4 Acoustical Grid and Type-C Tile Insulated	4
Drywall Ceiling	5

Flooring Types	
Sealed Concrete	1
Epoxy Floor	2
LVT	3
Carpet 20\$sy Mat, Labor, Tax All In	4

Drawing Log	
Conceptual Review	10-03-2020
Conceptual Rev's	10-22-2020
Conceptual Rev's	10-28-2020

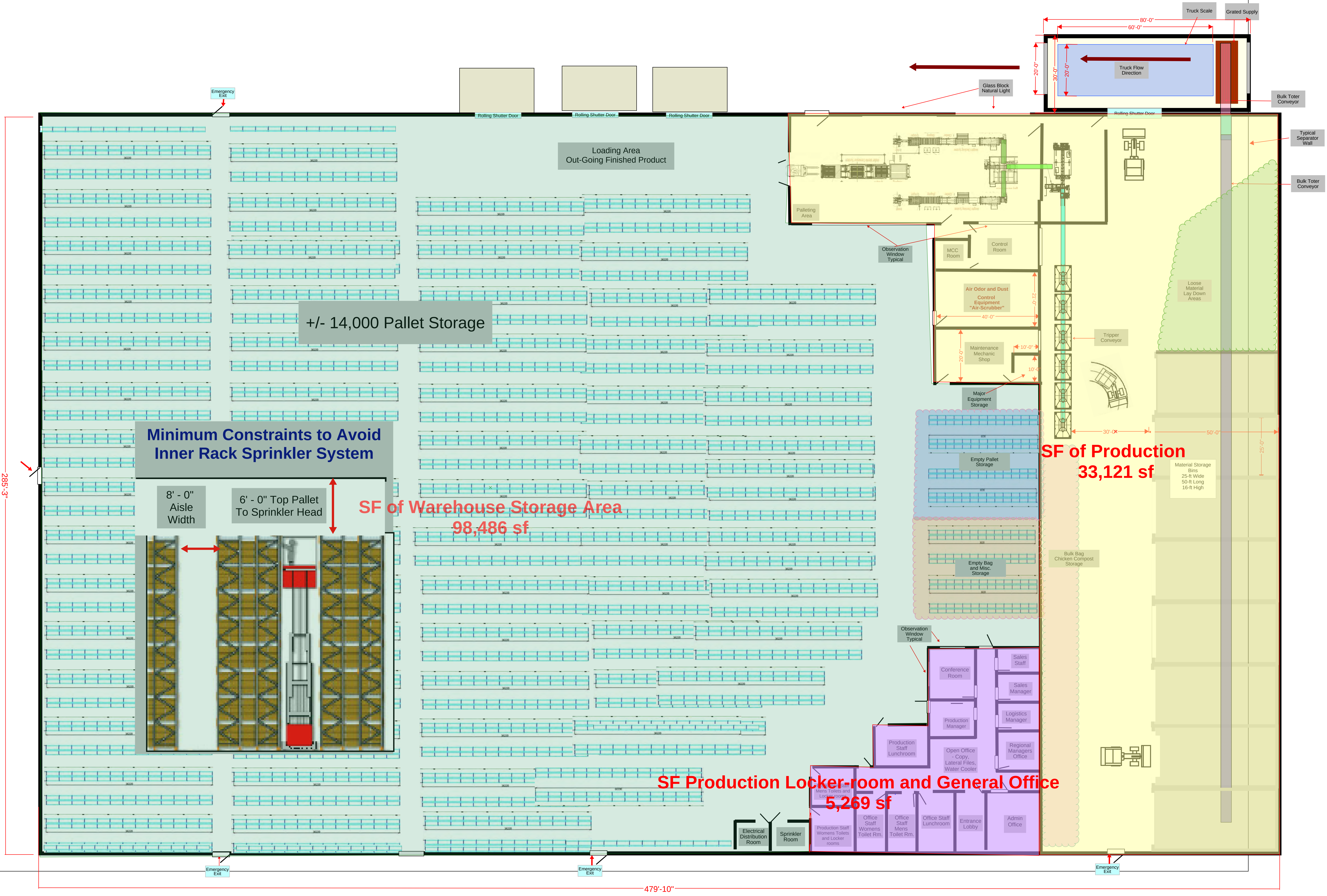
CS 1.10

Wall and Ceiling Types

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Conceptual Rev's	10-28-2020

CS 1.20
Square Foot

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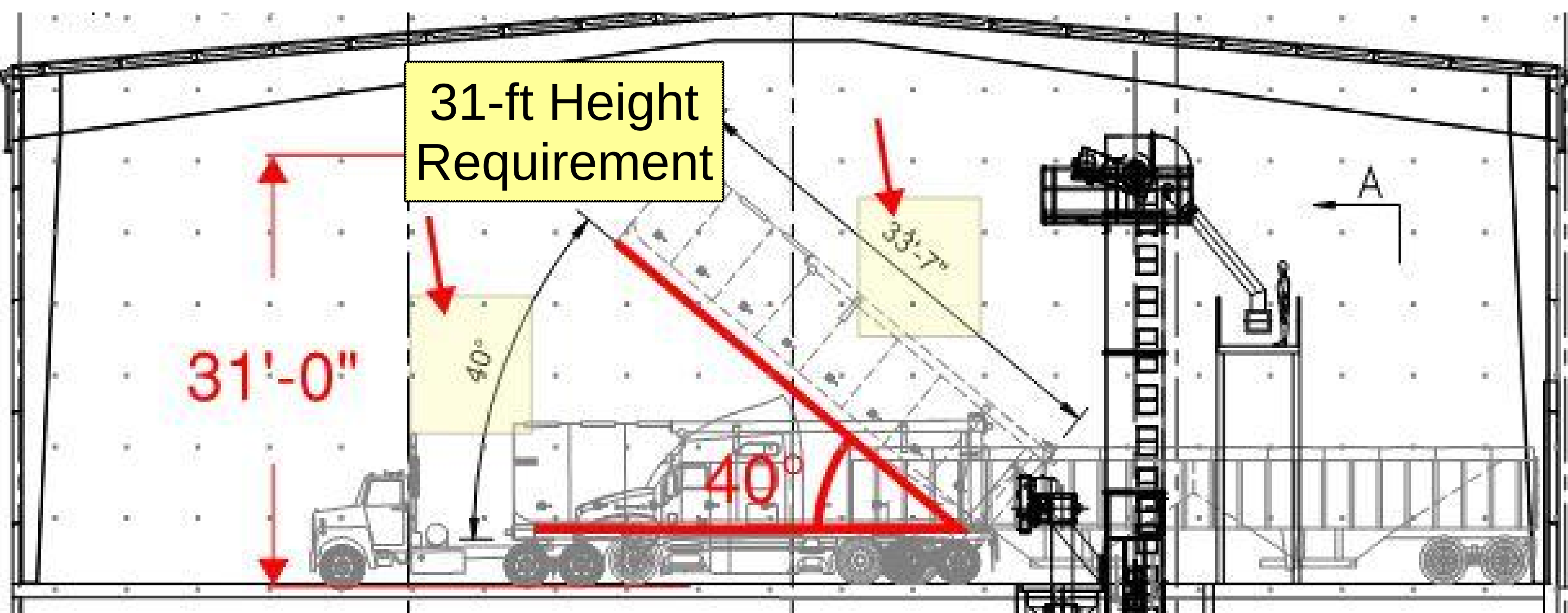
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Conceptual Planning

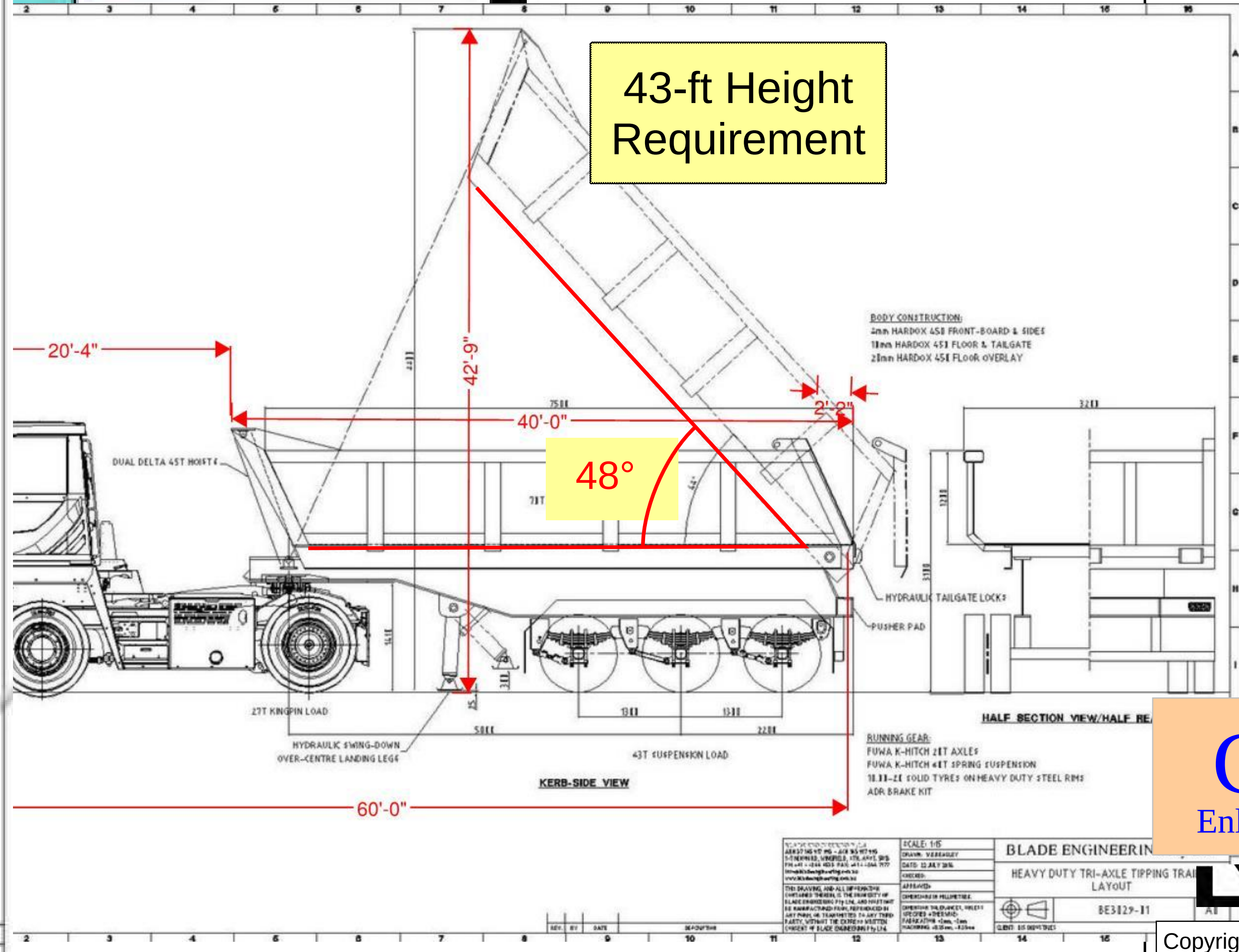
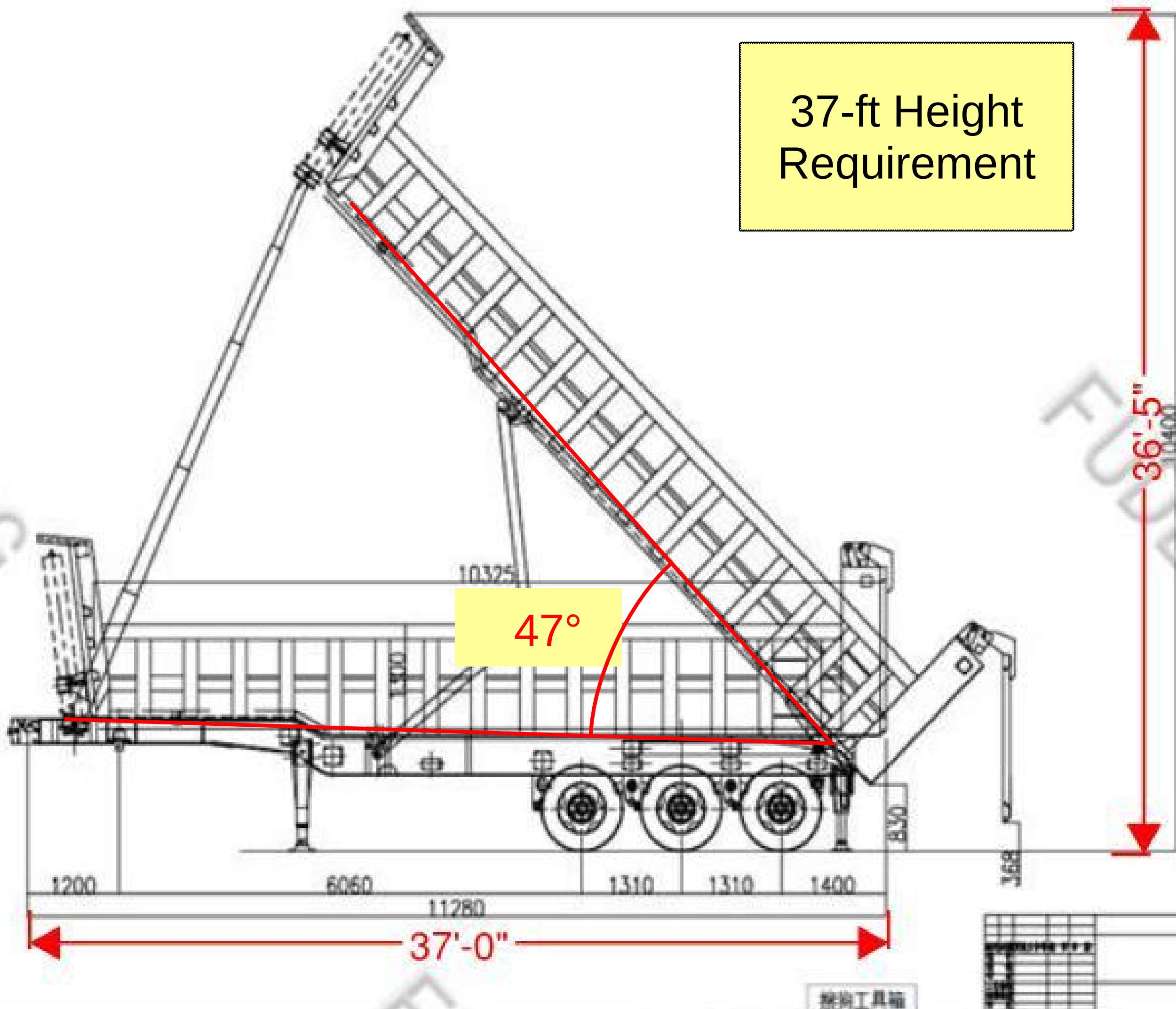
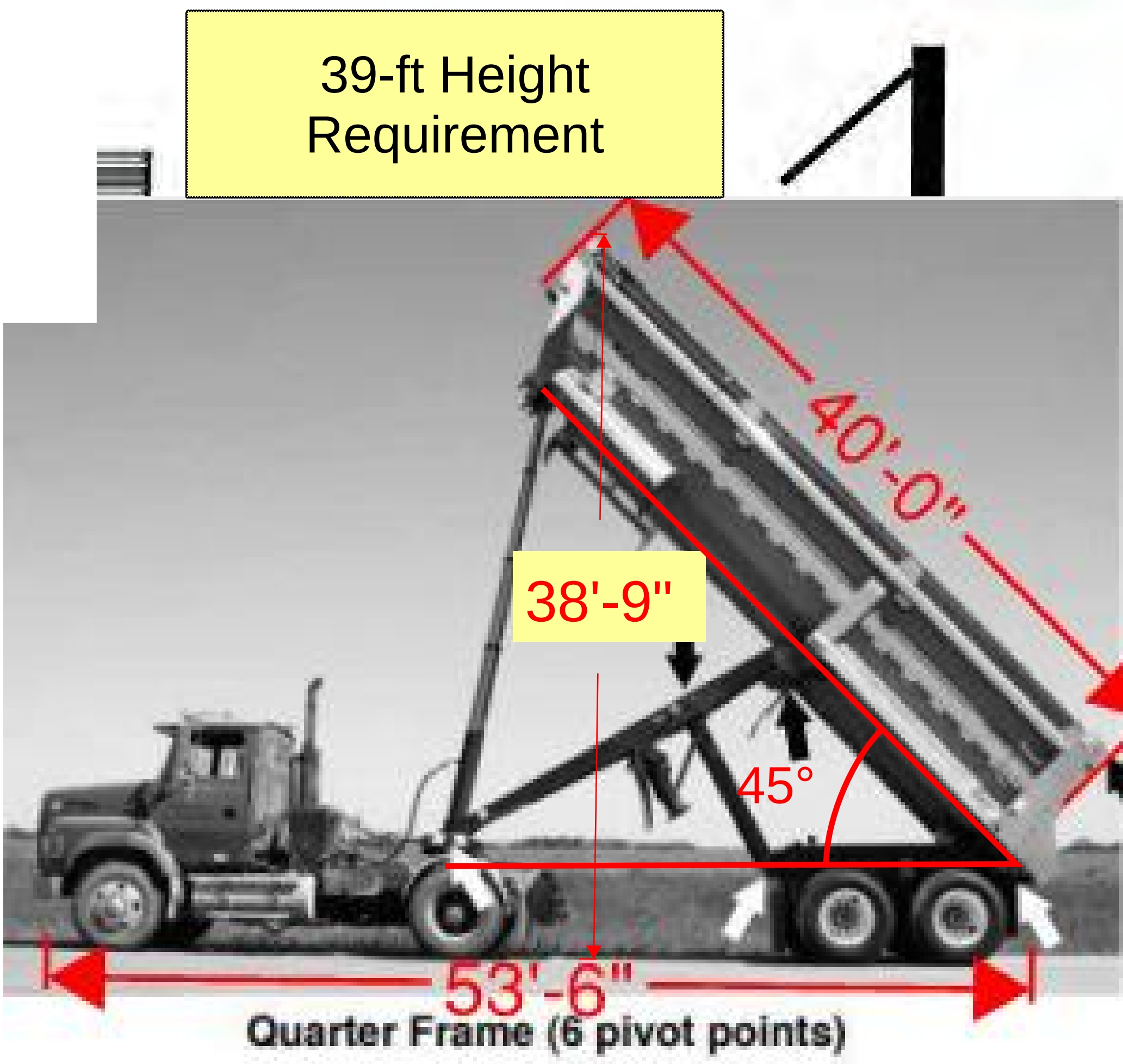
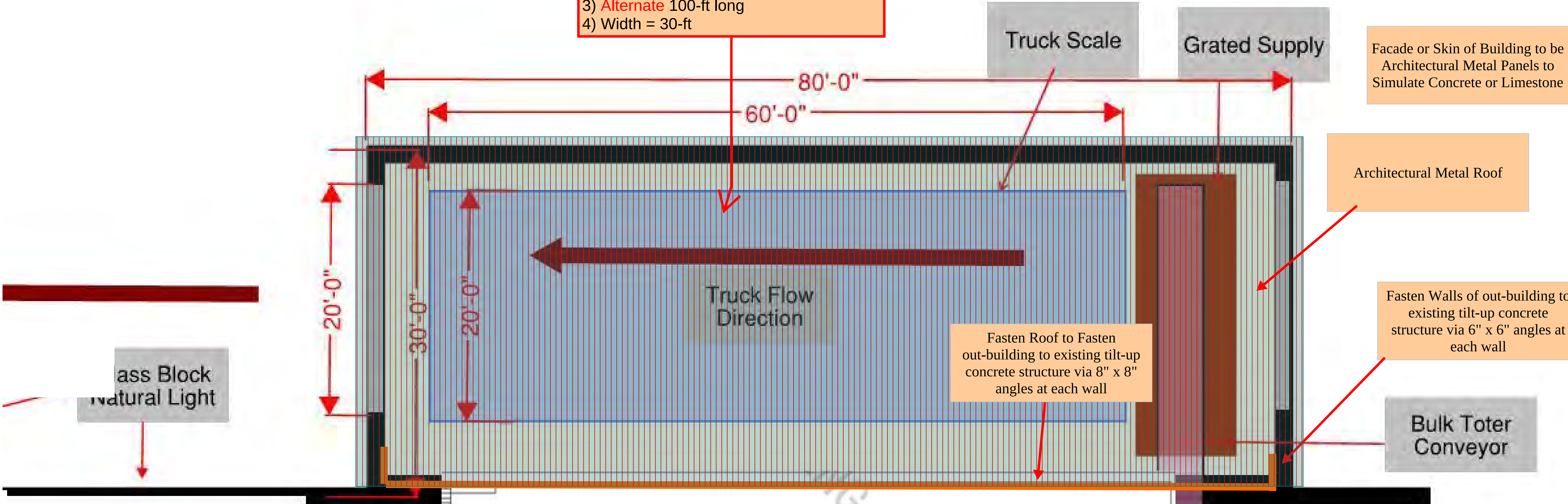


DRAWING LOG

Enlarged Out-Building	11 10 2020
Revisions	11 23 2020



- Lean-To Metal Out-Building General Notes**
- 1) Height = 40-ft clear Finished Floor to bottom of roof structure
 - 2) Base Price 80-ft long
 - 3) **Alternate** 100-ft long
 - 4) Width = 30-ft



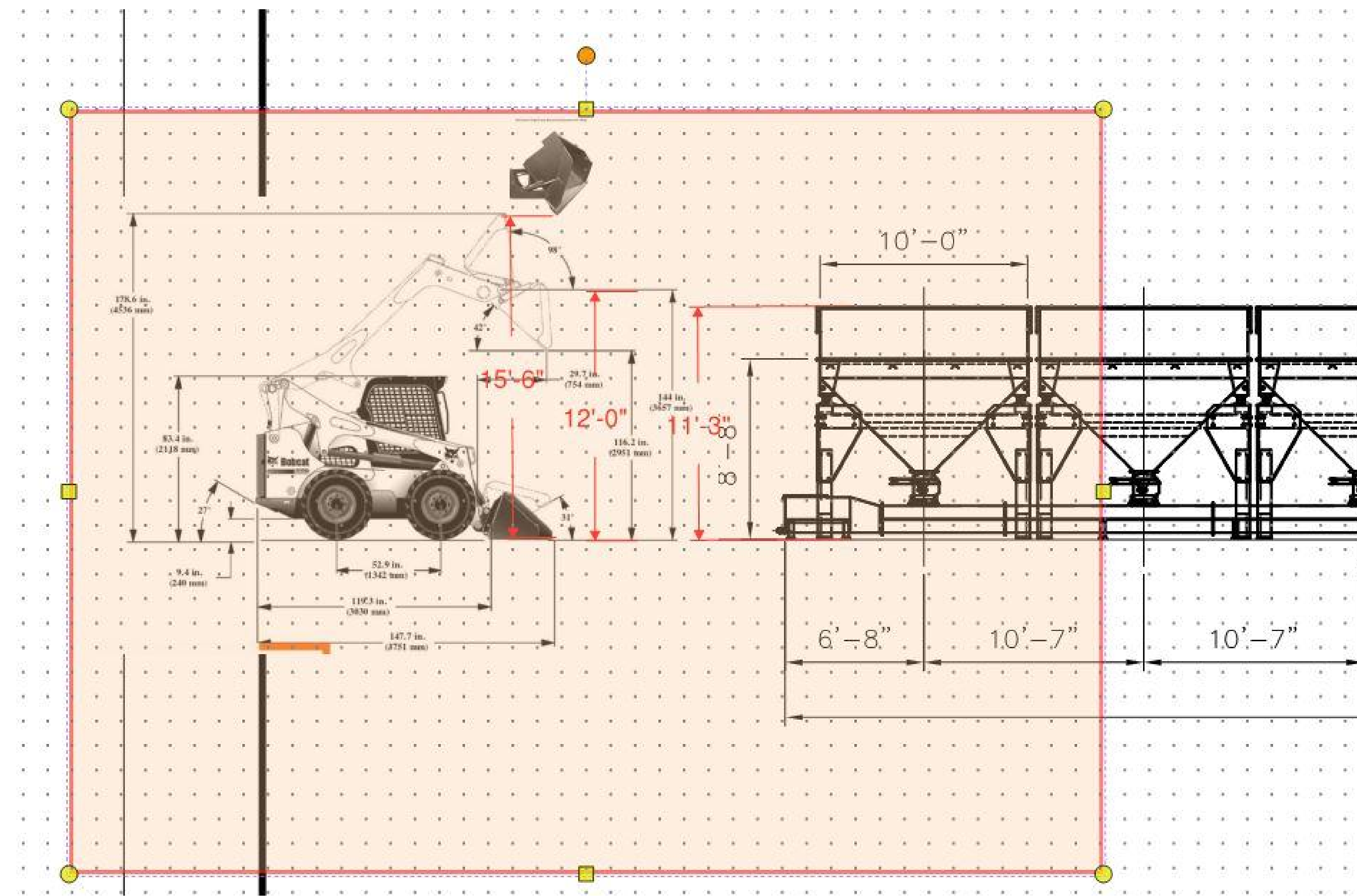
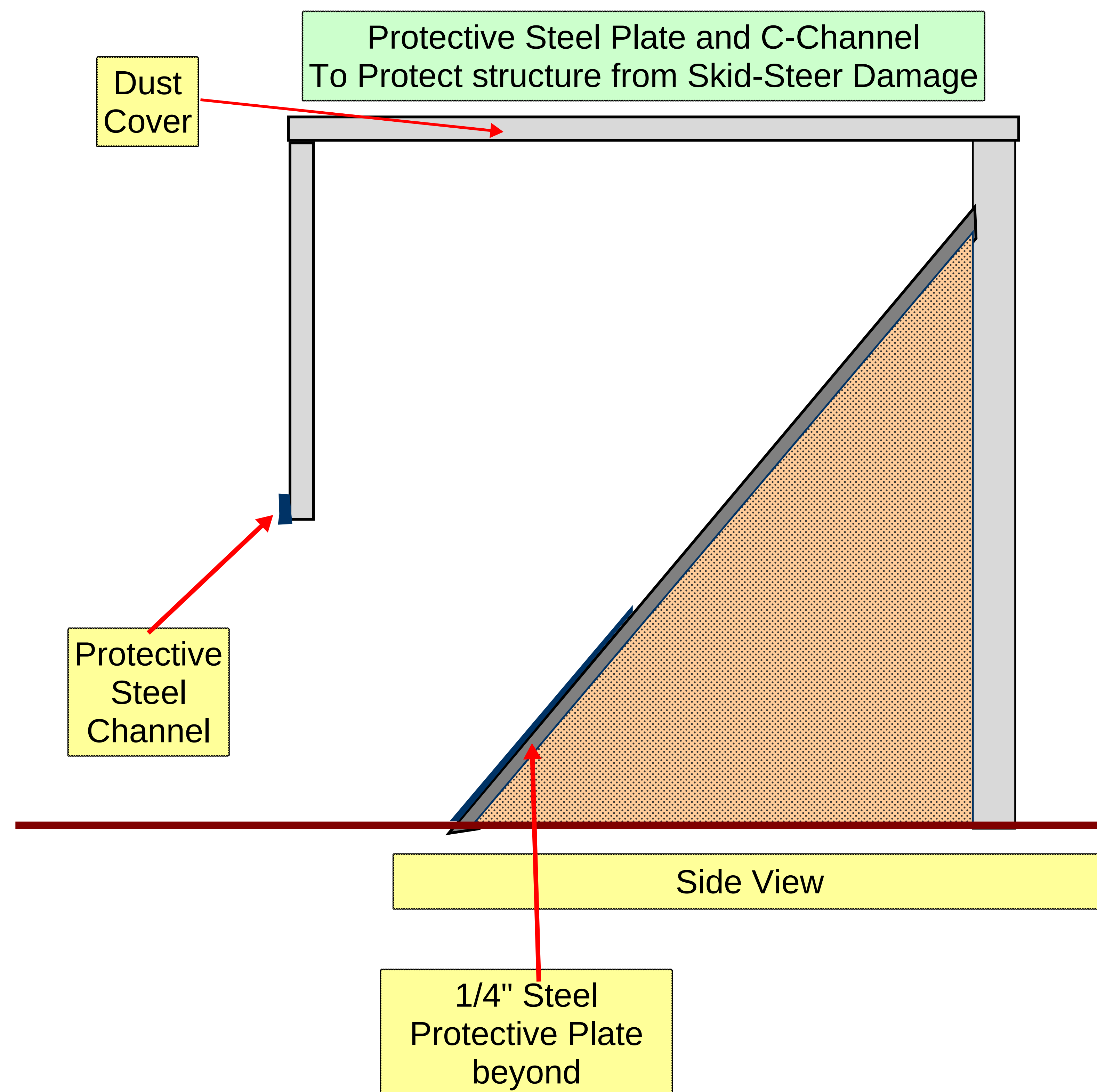
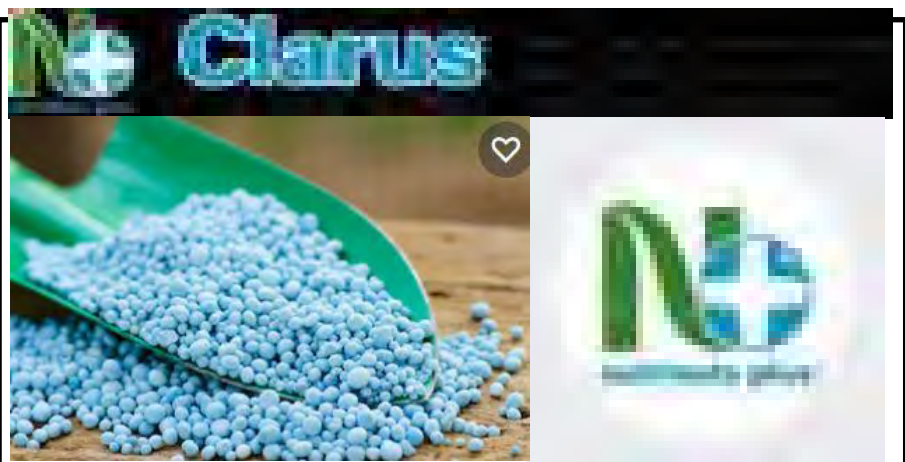
CS 5.00
Enlarged Out-Building



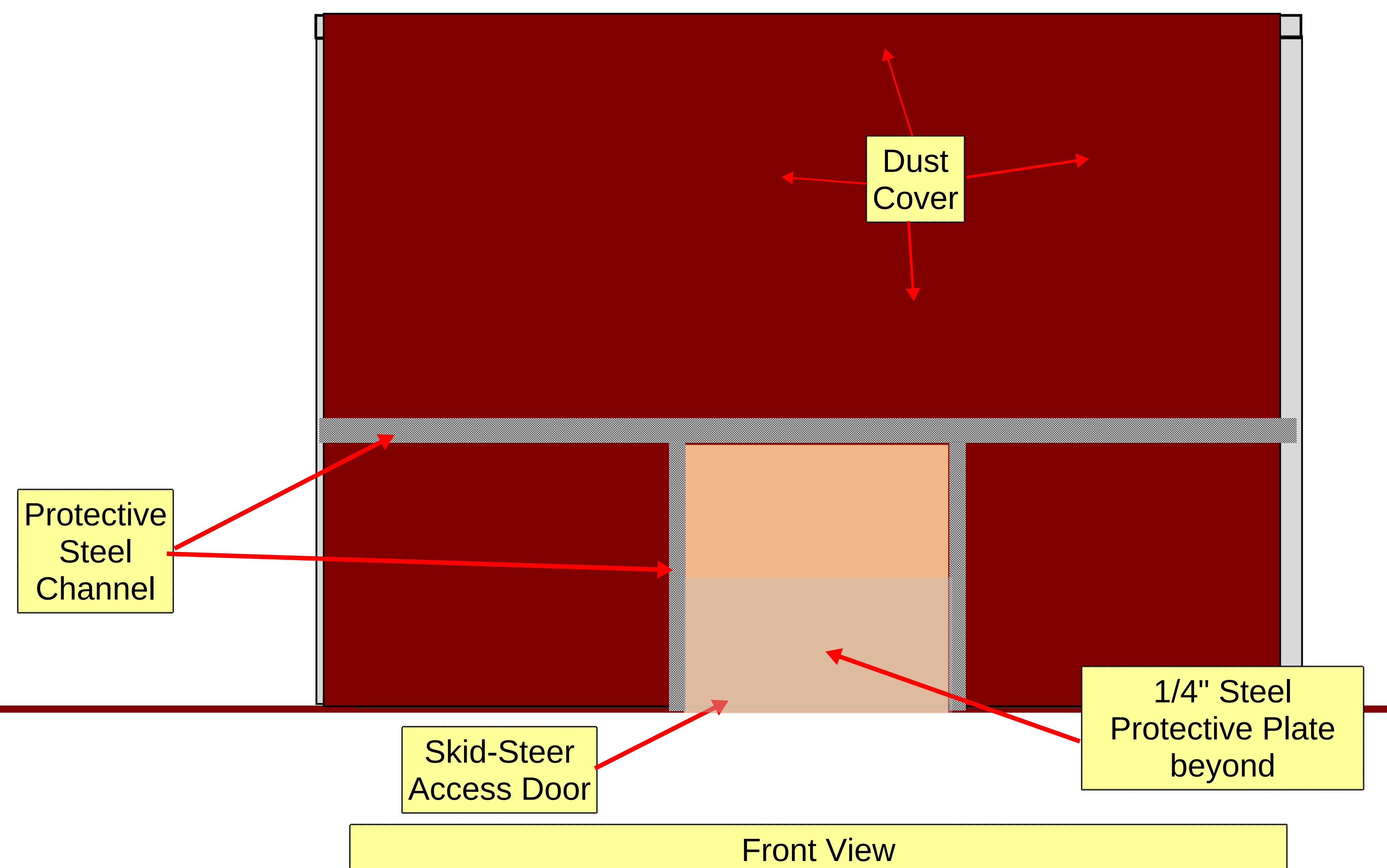
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Protective Steel Plate and C-Channel
To Protect structure from Skid-Steer Damage



Drawing Legend

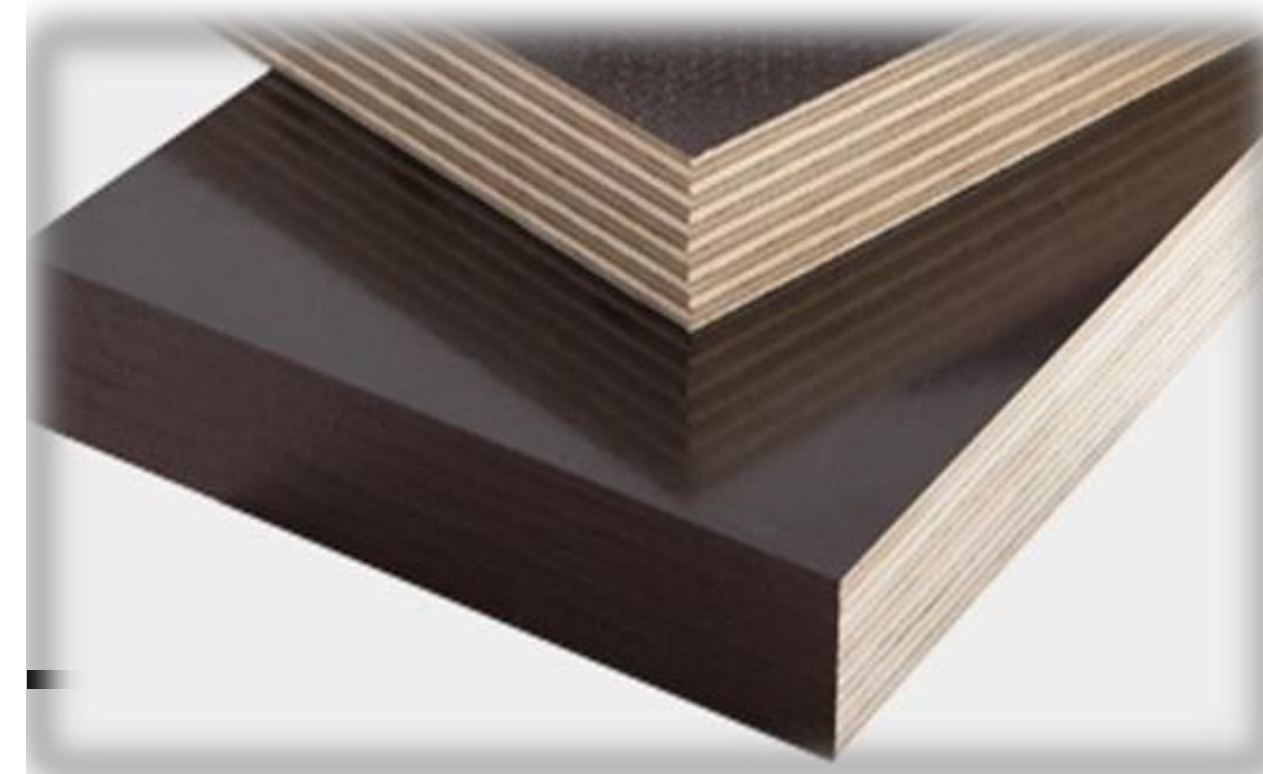
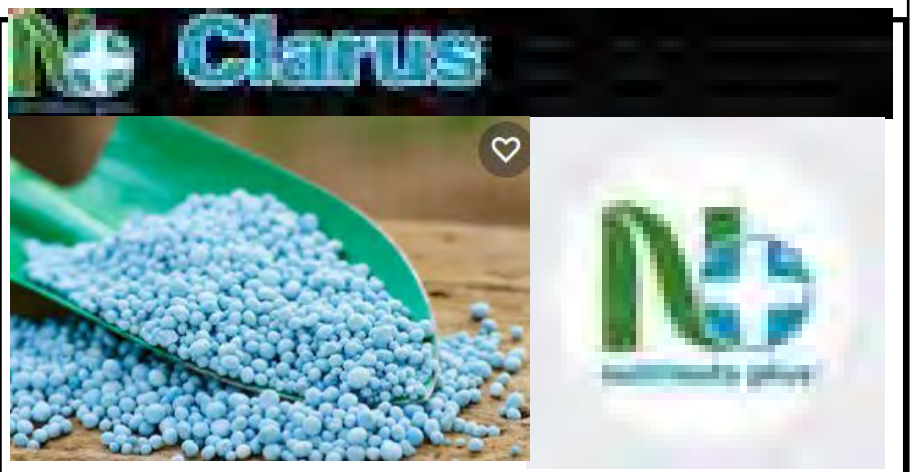
Conceptual Drawing 12-3-2020

CS 6.1
Enlarged Mat. Storage Bin

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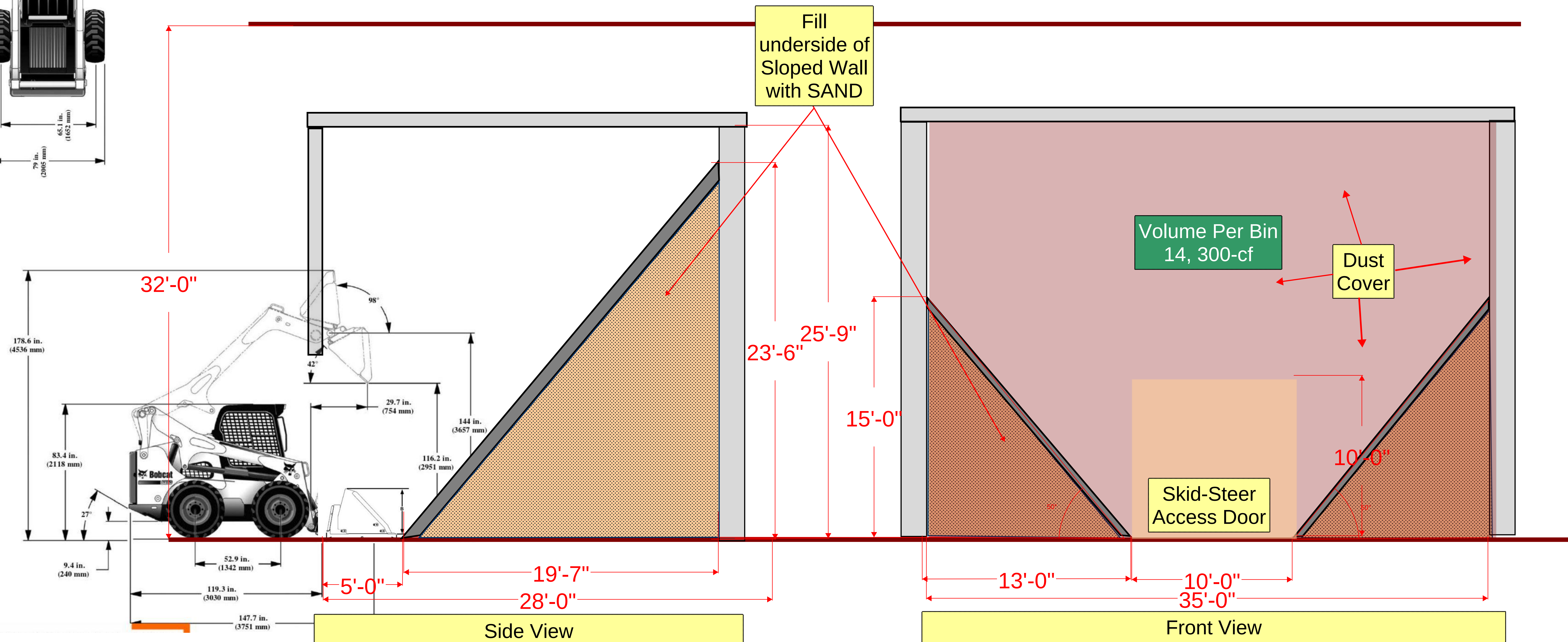
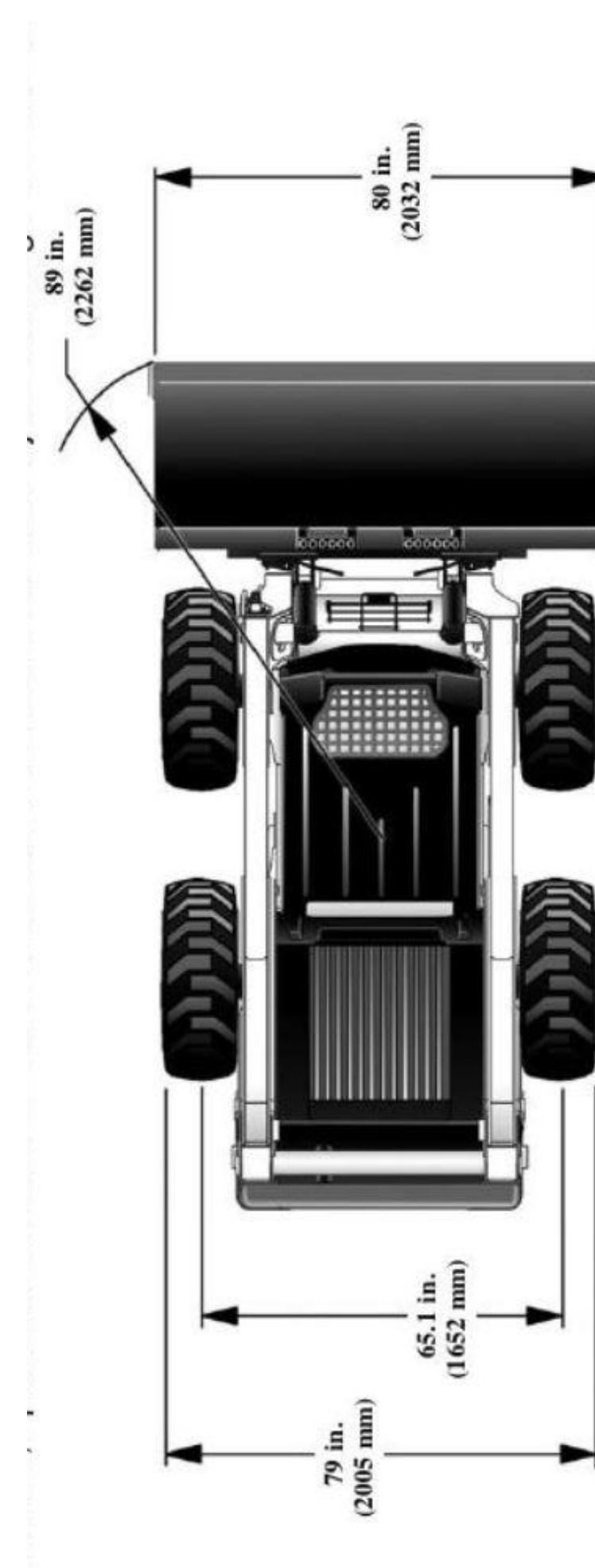
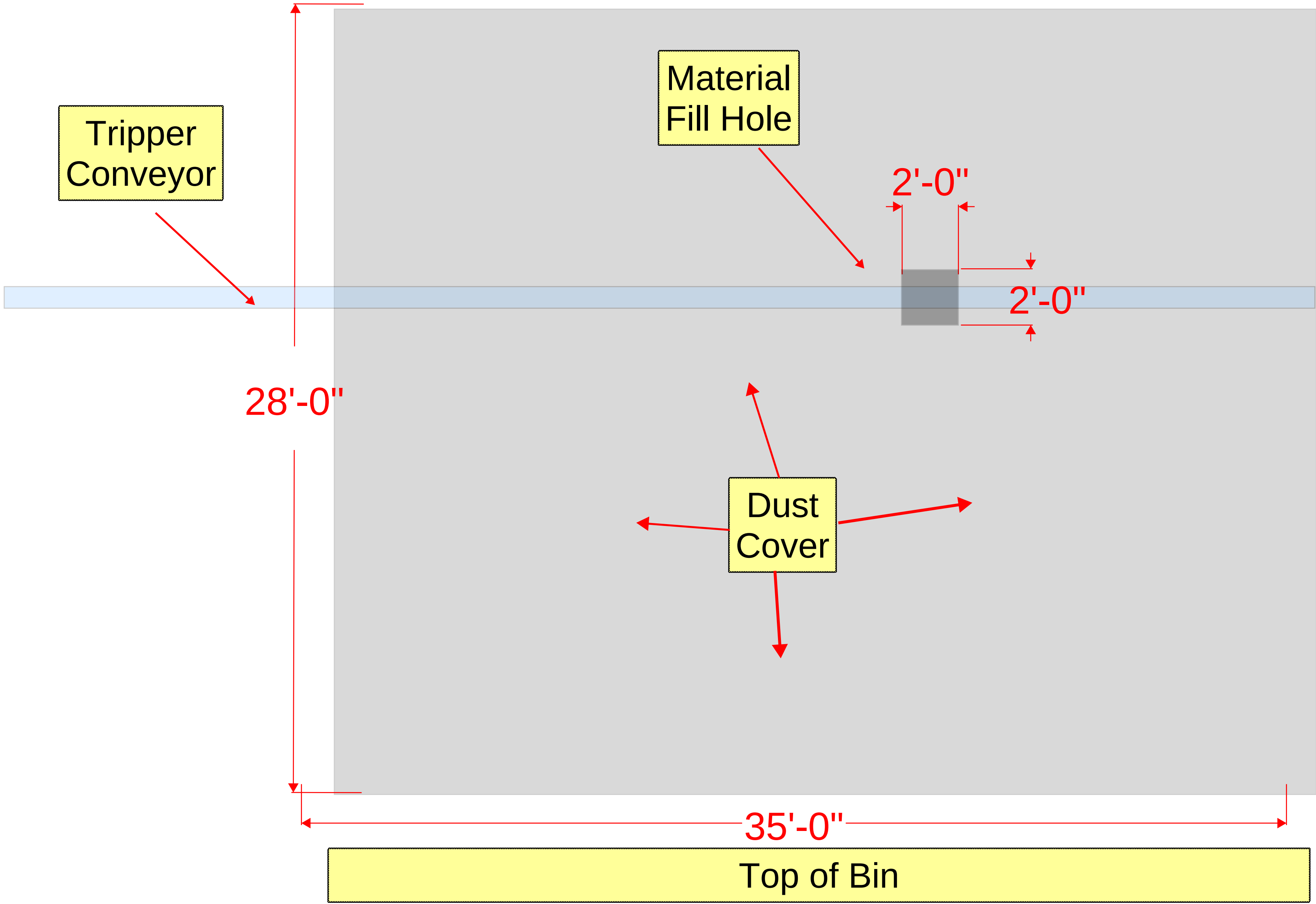
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Conceptual Planning



32-Ply Marine Plywood
(PSF) Phenolic Surface
Film Faced Birch Plywood



Framing
2"x6"16ga Cold Formed
Framing



Drawing Legend

Conceptual Drawing	12-3-2020
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Volume Per Bin
14, 300-cf

Dust
Cover

Skid-Steer
Access Door

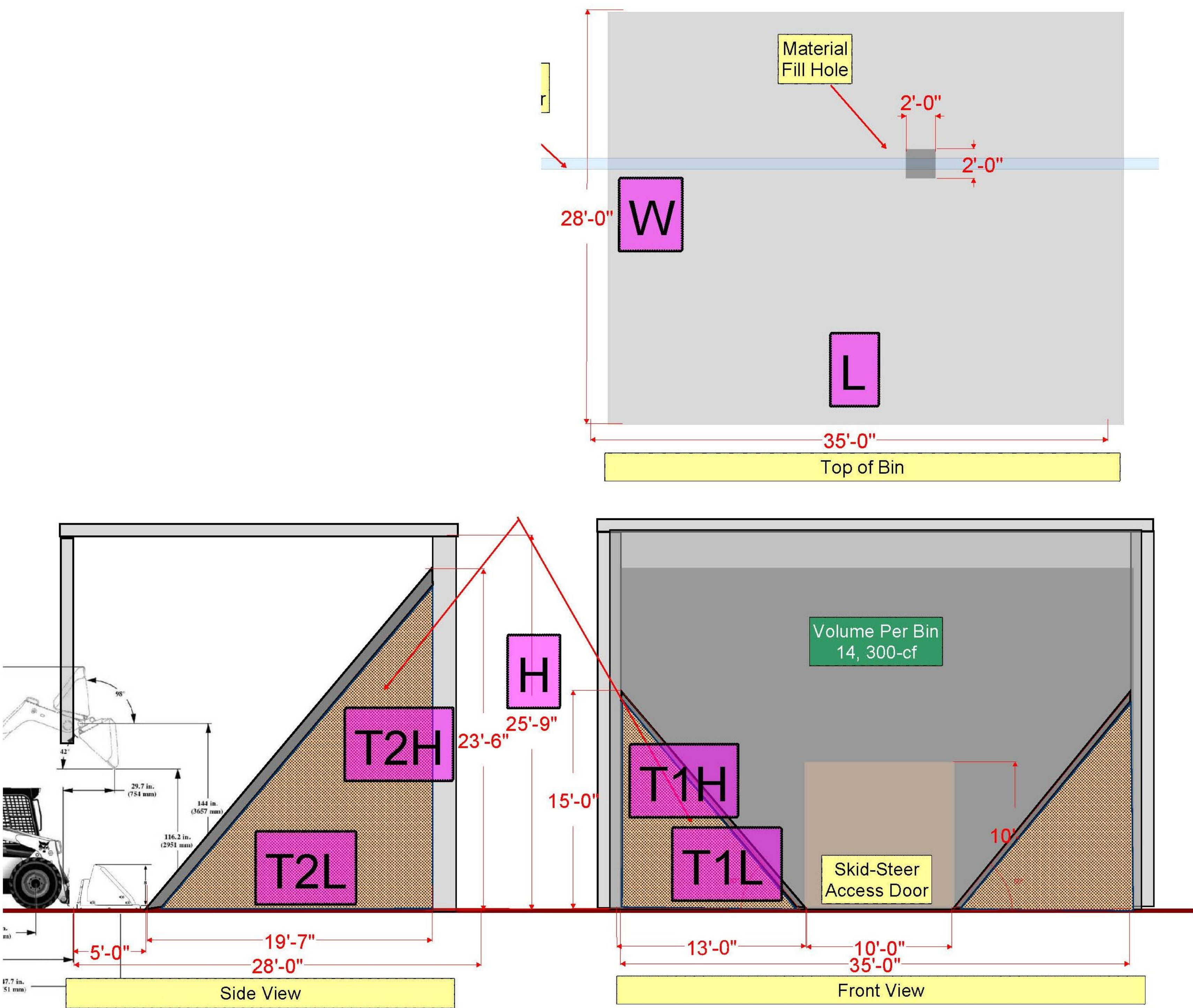
CS 6.0

Enlarged Mat. Storage Bin

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BioSource Nutrients Illinois
Midwest Blending and Bagging Facility
Trucking Analyses

Design for 100 TPD Biosolids 200TPD Screaming Green									Tons per Day = 200		
Clarus Pro Screaming Green (16-2-3)	Lbs./ton	%	Bulk Density	Tons per Day	Loads of 20-ton-trucks per 7 day week	Production Days of Stored Material	Volume in Cubic Feet for X-Days Storage	Required Bin Size Cubic Feet	Actual Storage Bin Size	Actual Storage Bin Size	Loads of 20 tons per Day
Urea	180	9.0%	48	18 T/Day	6 Loads/Week	10 Days Storage	7,500	7,500 cf	8,193 cf	Bin Type - 3	1.3 Trucks/Day
Amm Sulfate	220	11.0%	55	22 T/Day	8 Loads/Week	10 Days Storage	8,000	8,000 cf	8,193 cf	Bin Type - 3	1.5 Trucks/Day
Sulfur Coated Urea	335	16.8%	55	34 T/Day	12 Loads/Week	10 Days Storage	12,182	12,000 cf	14,170 cf	Bin Type - 1	2.3 Trucks/Day
Sulfate of Potash	120	6.0%	55	12 T/Day	4 Loads/Week	10 Days Storage	4,364	4,500 cf	5,843 cf	Bin Type - 4	0.8 Trucks/Day
Poultry Compost	160	8.0%	38	16 T/Day	6 Loads/Week	Jumbo Bags	NOT REQUIRED				1.1 Trucks/Day
Ammonium Phosphate	Possible Future										
Biosolids Stored in Silo	985	49.3%	43	99 T/Day	34 Loads/Week	3 Days Storage	13,744	14,000 cf	14,170 cf	Bin Type - 1	6.9 Trucks/Day
Swing Bin									14,170 cf	Bin Type - 1	
Swing Bin									14,170 cf	Bin Type - 1	
Total	2,000	100.0%		200 T/Day	70 Loads/Week						14.0 Trucks/Day

Storage Bin Volumn Calculator								
Bin Label	Volumn	L	W	H	T1H	T1L	T2H	T2L
Bin Type - 1	14170 -cf	36	28	25.75	13.47	13.00	23.50	19.50
Bin Type - 2	13733 -cf	35	28	25.75	12.95	12.50	23.50	19.50
(Not Used)	13285 -cf	34	28	25.75	12.44	12.00	23.50	19.50
(Not Used)	12826 -cf	33	28	25.75	11.92	11.50	23.50	19.50
(Not Used)	12356 -cf	32	28	25.75	11.40	11.00	23.50	19.50
(Not Used)	11874 -cf	31	28	25.75	10.88	10.50	23.50	19.50
(Not Used)	11382 -cf	30	28	25.75	10.36	10.00	23.50	19.50
(Not Used)	10878 -cf	29	28	25.75	9.84	9.50	23.50	19.50
(Not Used)	10363 -cf	28	28	25.75	9.33	9.00	23.50	19.50
(Not Used)	9837 -cf	27	28	25.75	8.81	8.50	23.50	19.50
(Not Used)	9300 -cf	26	28	25.75	8.29	8.00	23.50	19.50
(Not Used)	8752 -cf	25	28	25.75	7.77	7.50	23.50	19.50
Bin Type - 3	8193 -cf	24	28	25.75	7.25	7.00	23.50	19.50
(Not Used)	7622 -cf	23	28	25.75	6.74	6.50	23.50	19.50
(Not Used)	7040 -cf	22	28	25.75	6.22	6.00	23.50	19.50
(Not Used)	6447 -cf	21	28	25.75	5.70	5.50	23.50	19.50
Bin Type - 4	5843 -cf	20	28	25.75	5.18	5.00	23.50	19.50
(Not Used)	5228 -cf	19	28	25.75	4.66	4.50	23.50	19.50



Drawing Legend

Conceptual Drawing 12-3-2020

CS 6.20
Storage Bin Legend

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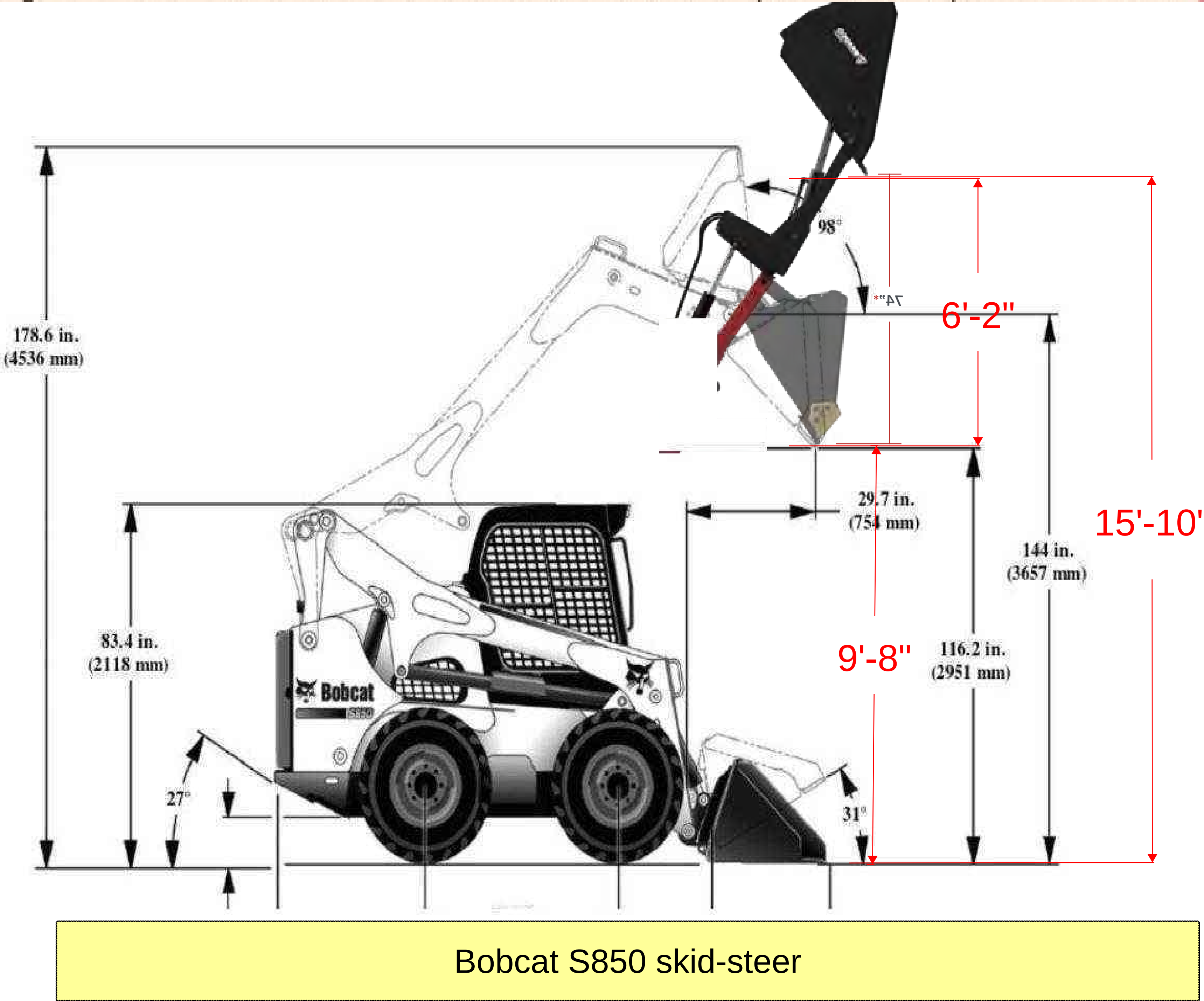
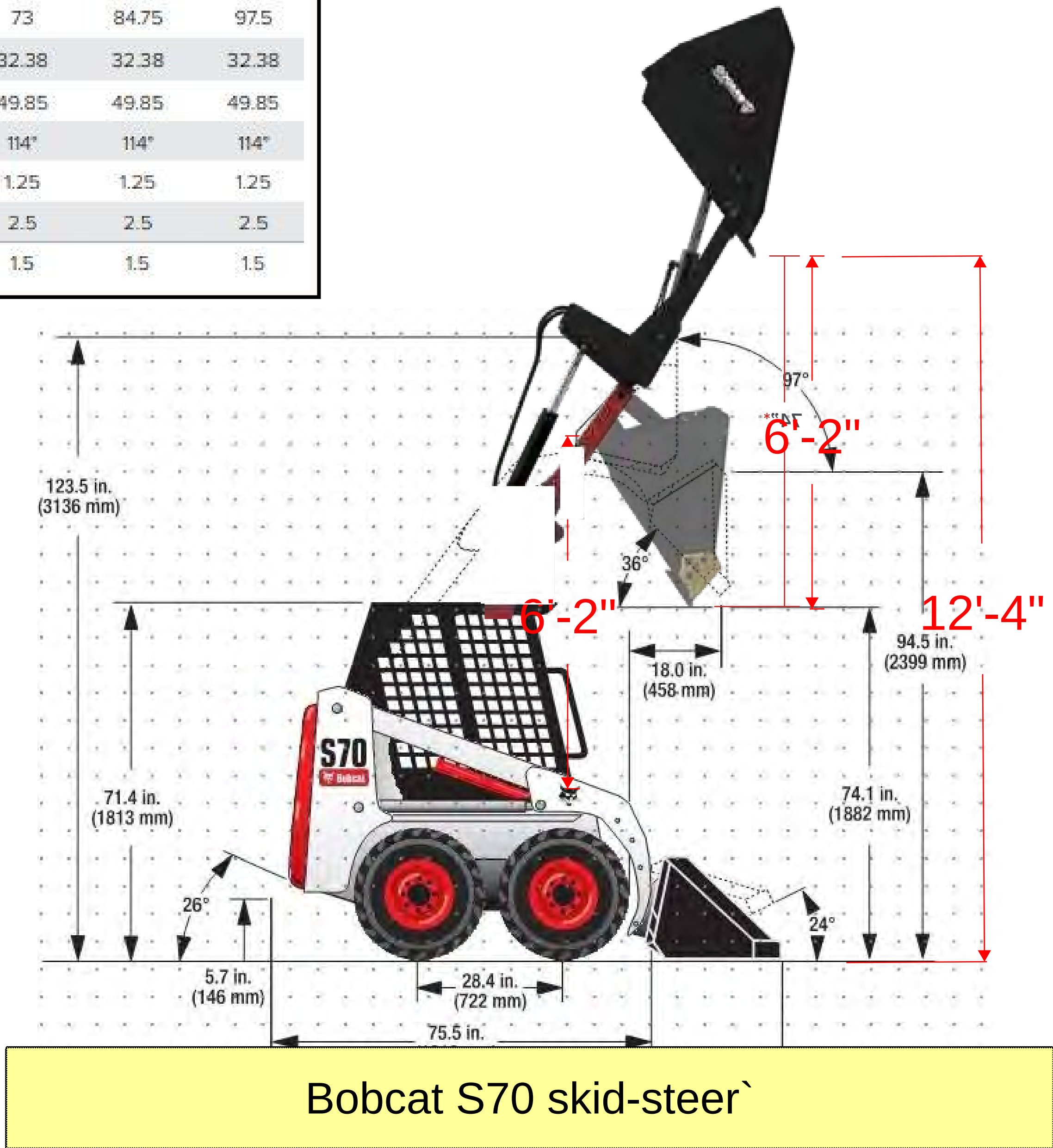
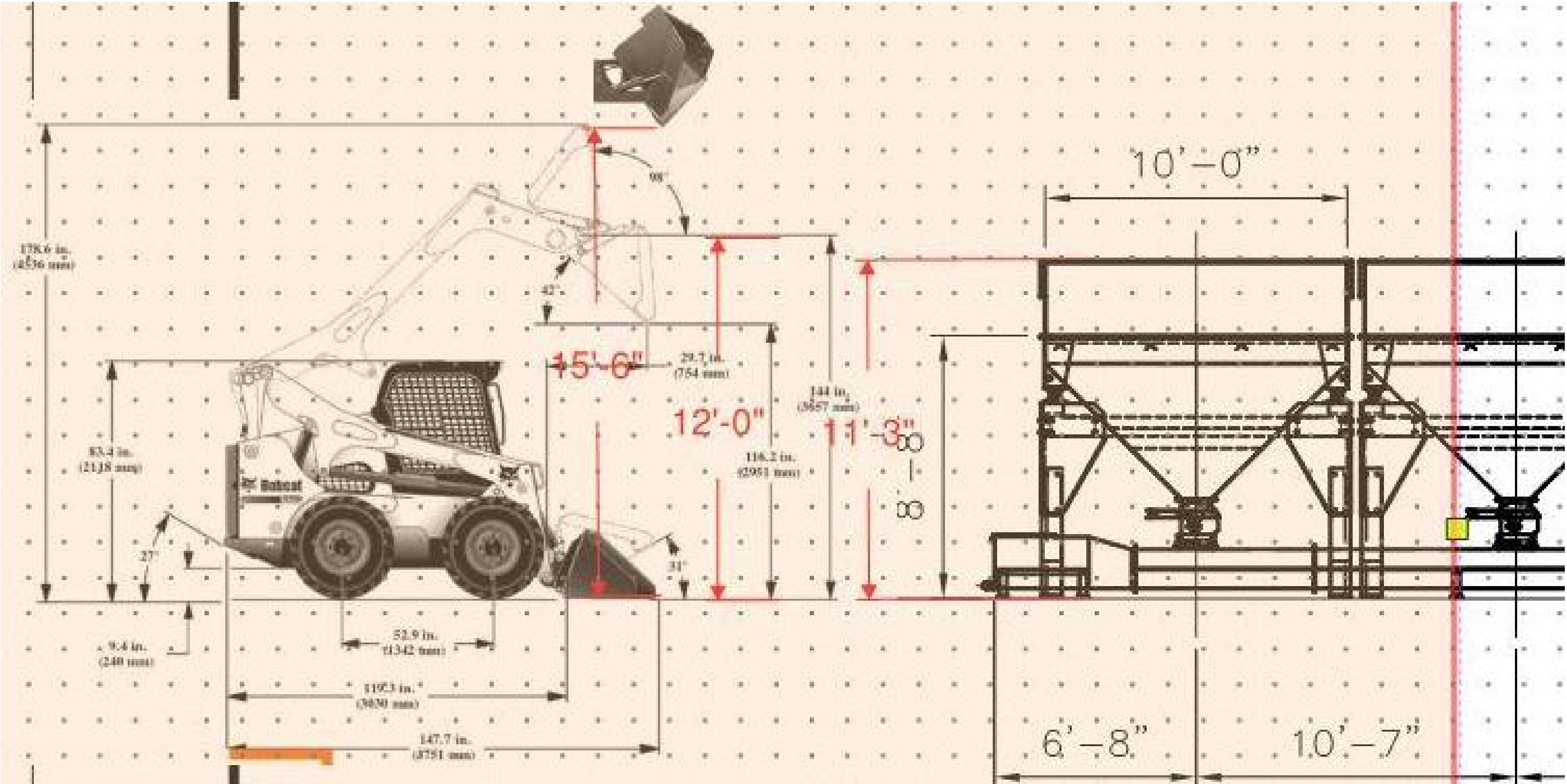


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Conceptual Review 10-03-2020

BRADCO®
HIGH-DUMP BUCKET

	60"	72"	84"	96"
Part Number	122651	122619	122657	122660
Weight (lbs)	1,000	1,145	1,250	1,350
Capacity (cu/yd)	1.00	1.19	1.44	1.68
A. Width (in)	60.75	73	84.75	97.5
B. Height (in)	32.38	32.38	32.38	32.38
C. Depth (in)	49.85	49.85	49.85	49.85
D. Rotation (deg)	114°	114°	114°	114°
Pin Size (in)	1.25	1.25	1.25	1.25
Cylinder Boar (in)	2.5	2.5	2.5	2.5
Cylinder Rod Diameter (in)	1.5	1.5	1.5	1.5

BRADCO®
HIGH-DUMP BUCKET
Details



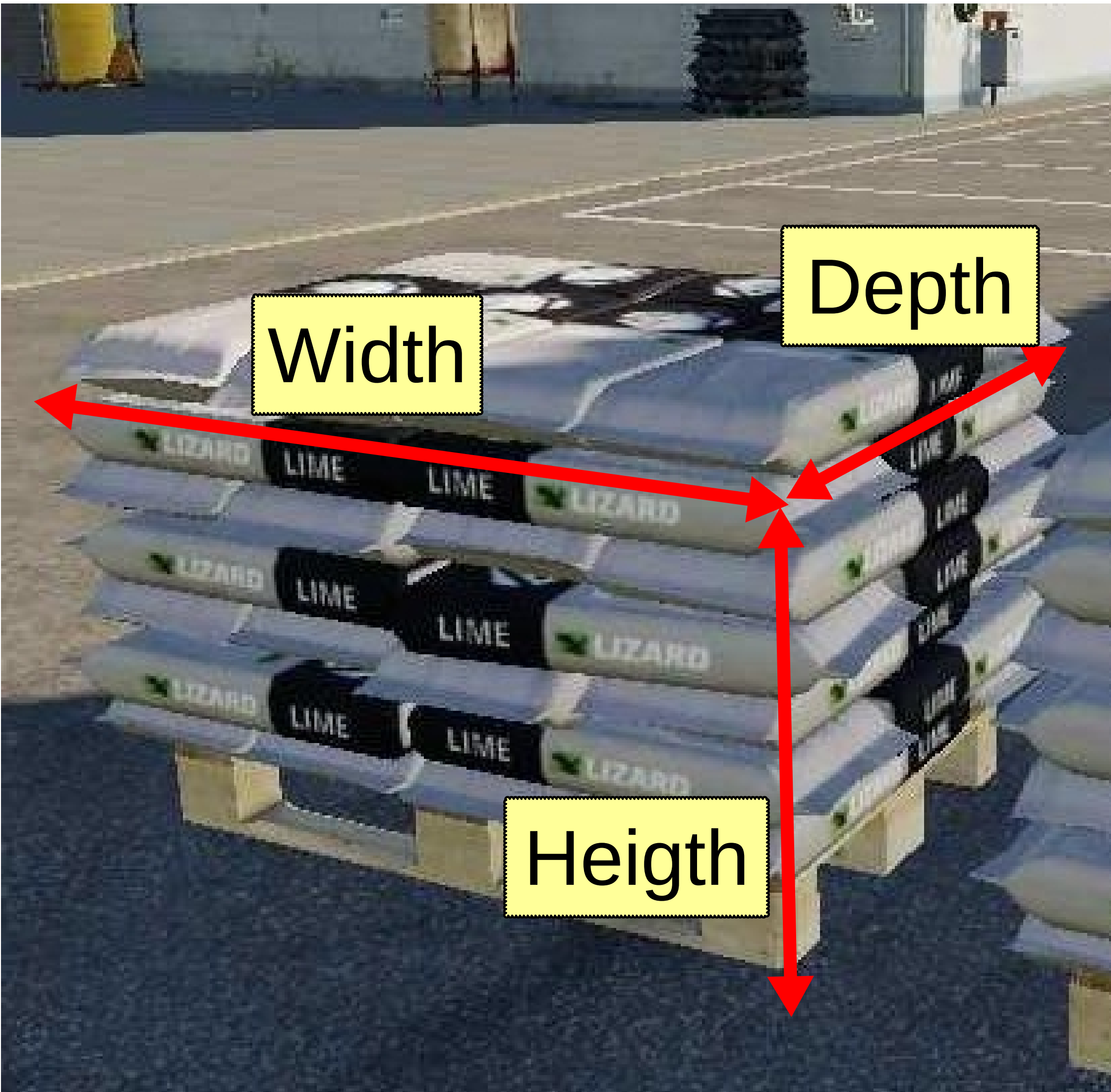
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Midwest Blending and Bagging
Conceptual Planning

Design Intent
40-Bags per skid and 50-Pounds per bag = 2000-pounds per skid
 A Pallet is 40"-Wide x 48"-Deep x 40"-High

Width _____

Depth _____

Height _____



Design Intent 2-way Pallet design and Components Pallet Dimension 40" x 48" x 5 3/8"
--

Design Intent 2-way Pallet design and Components Pallet Dimension 40" x 48" x 5 3/8"
--

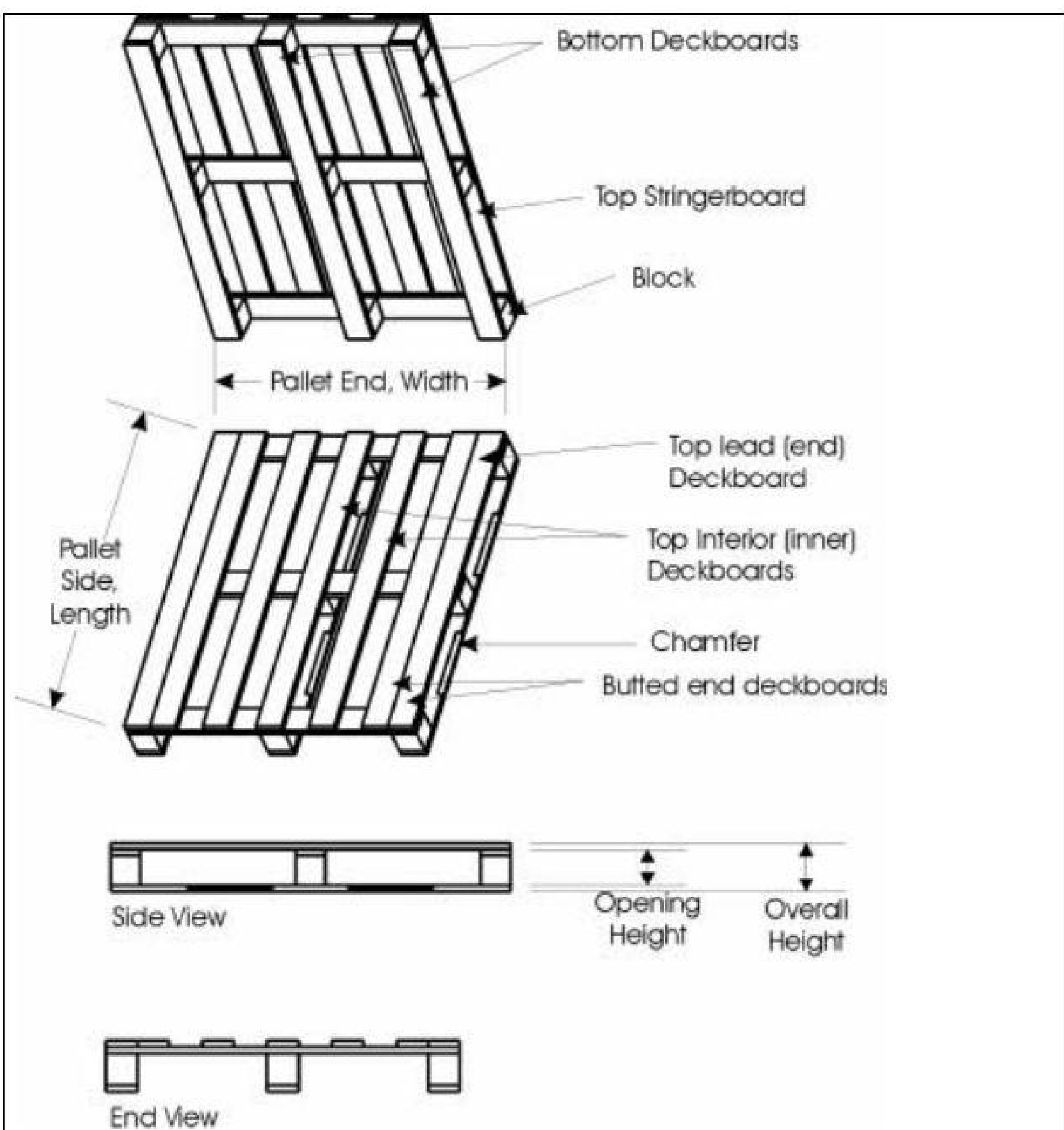
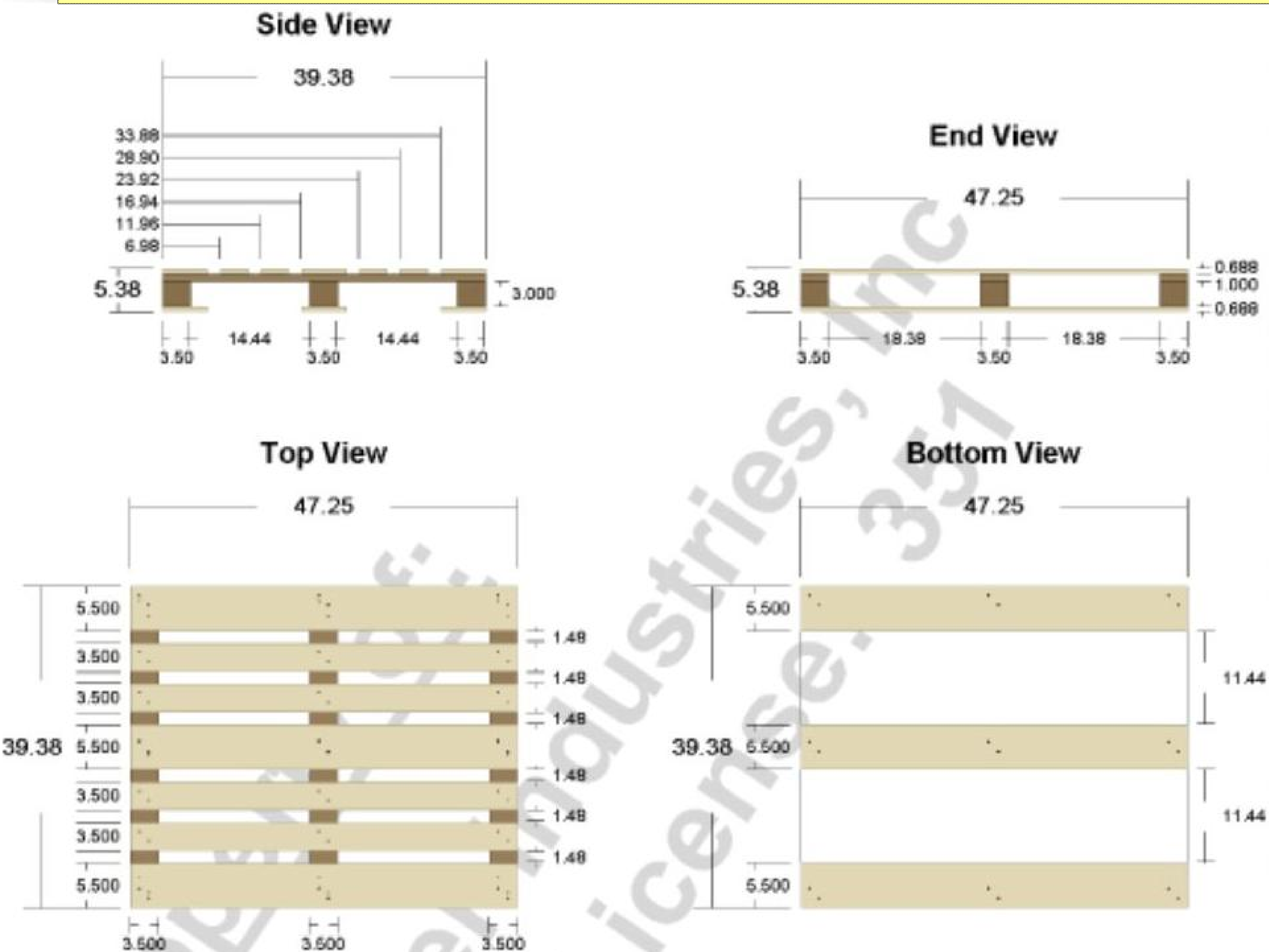
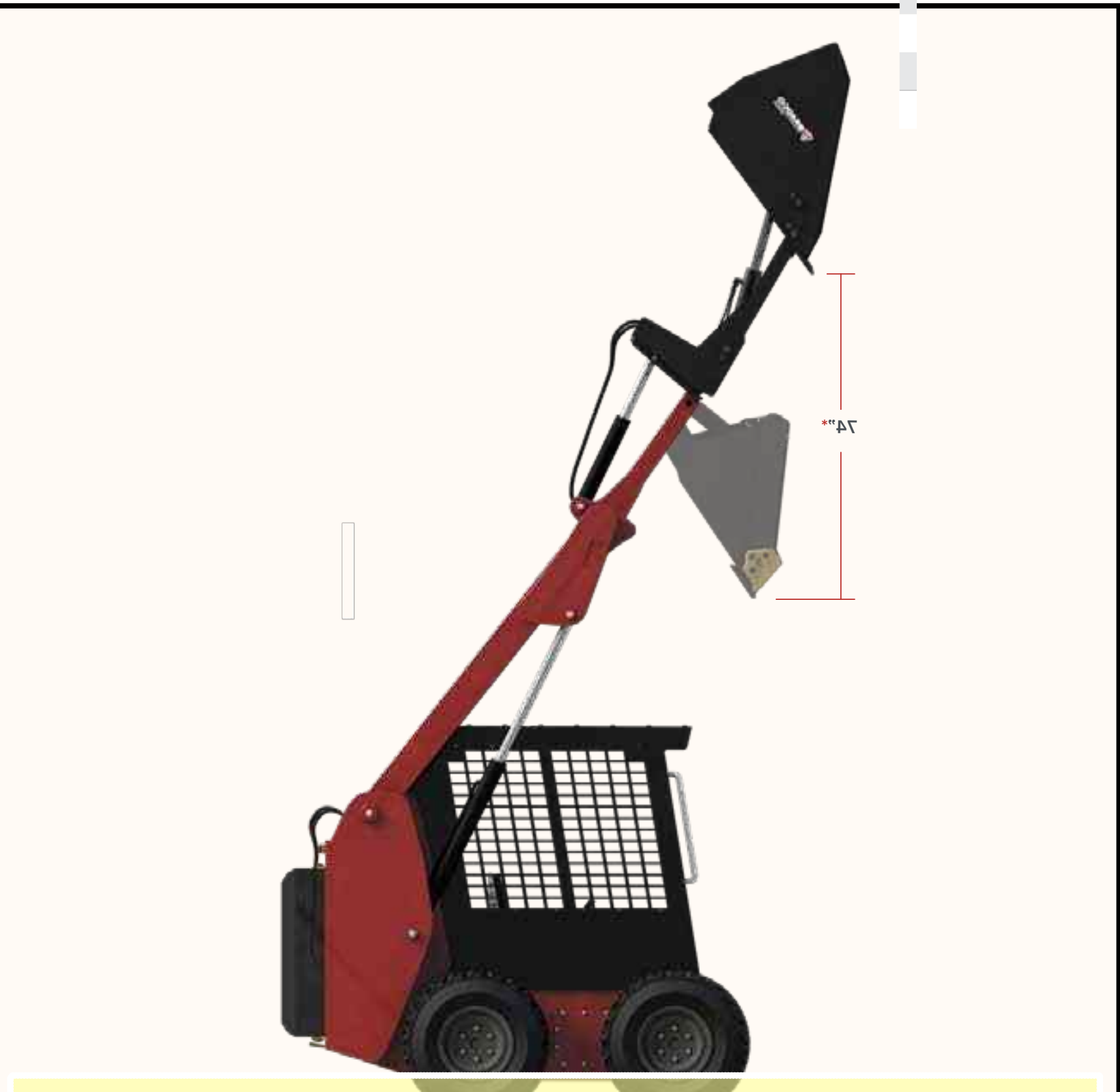
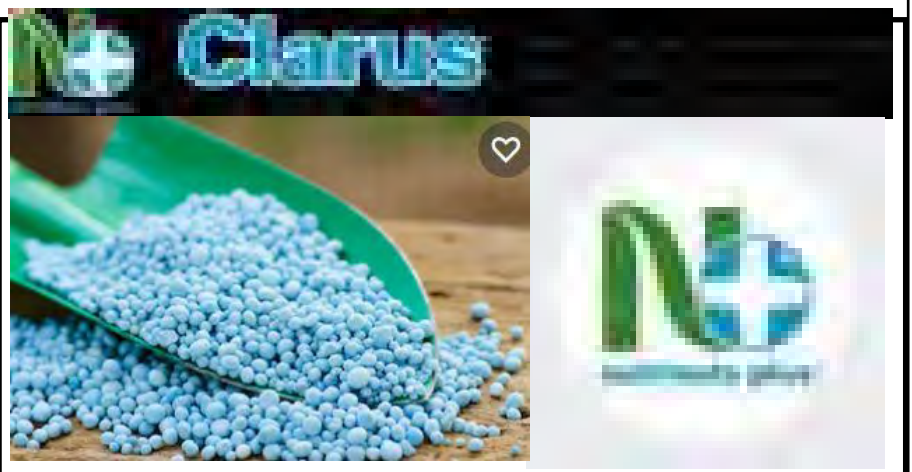


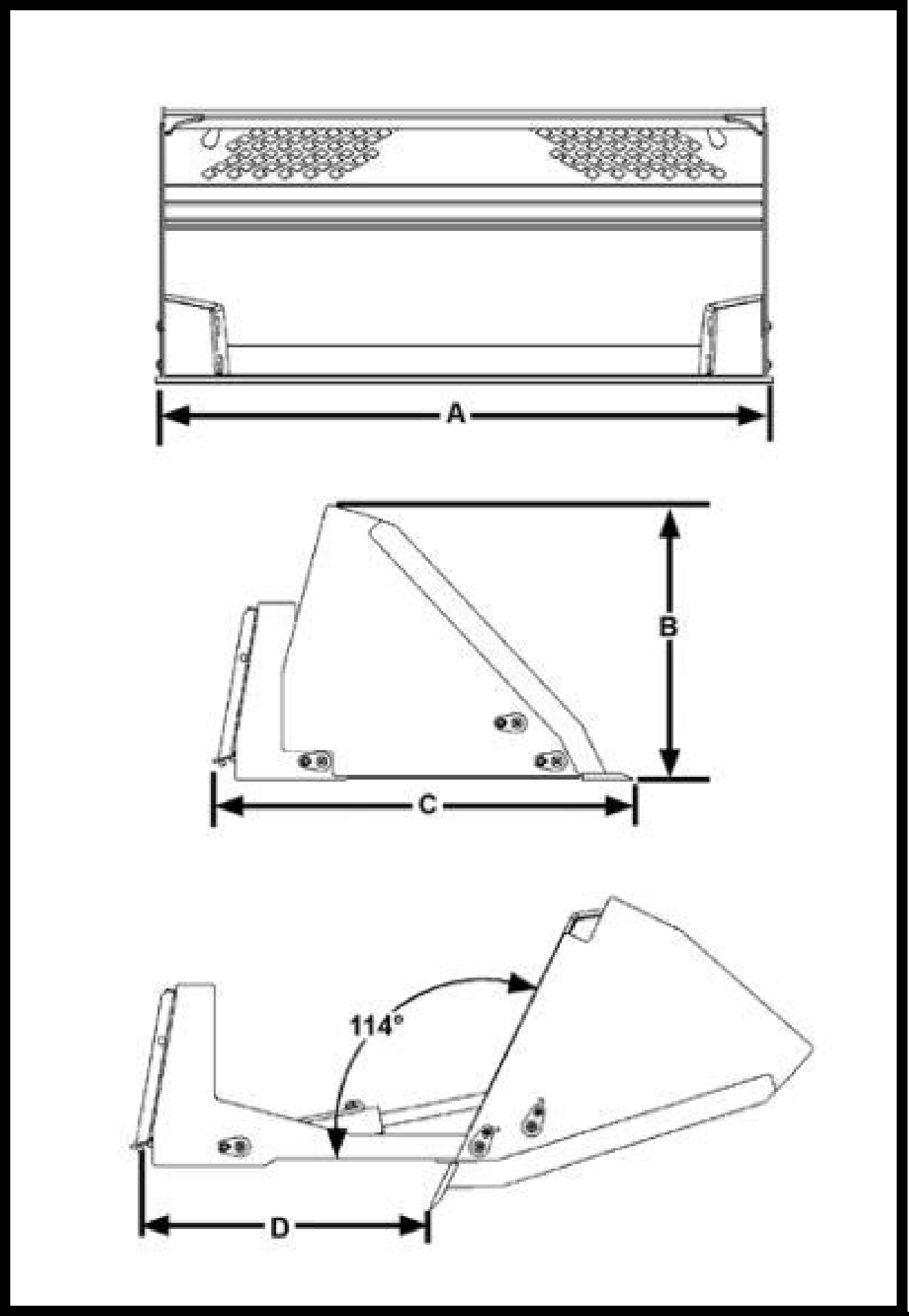
Figure 1: Block Pallet, Unidirectional Style Shown Above (Preferred, EU)

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Conceptual Planning

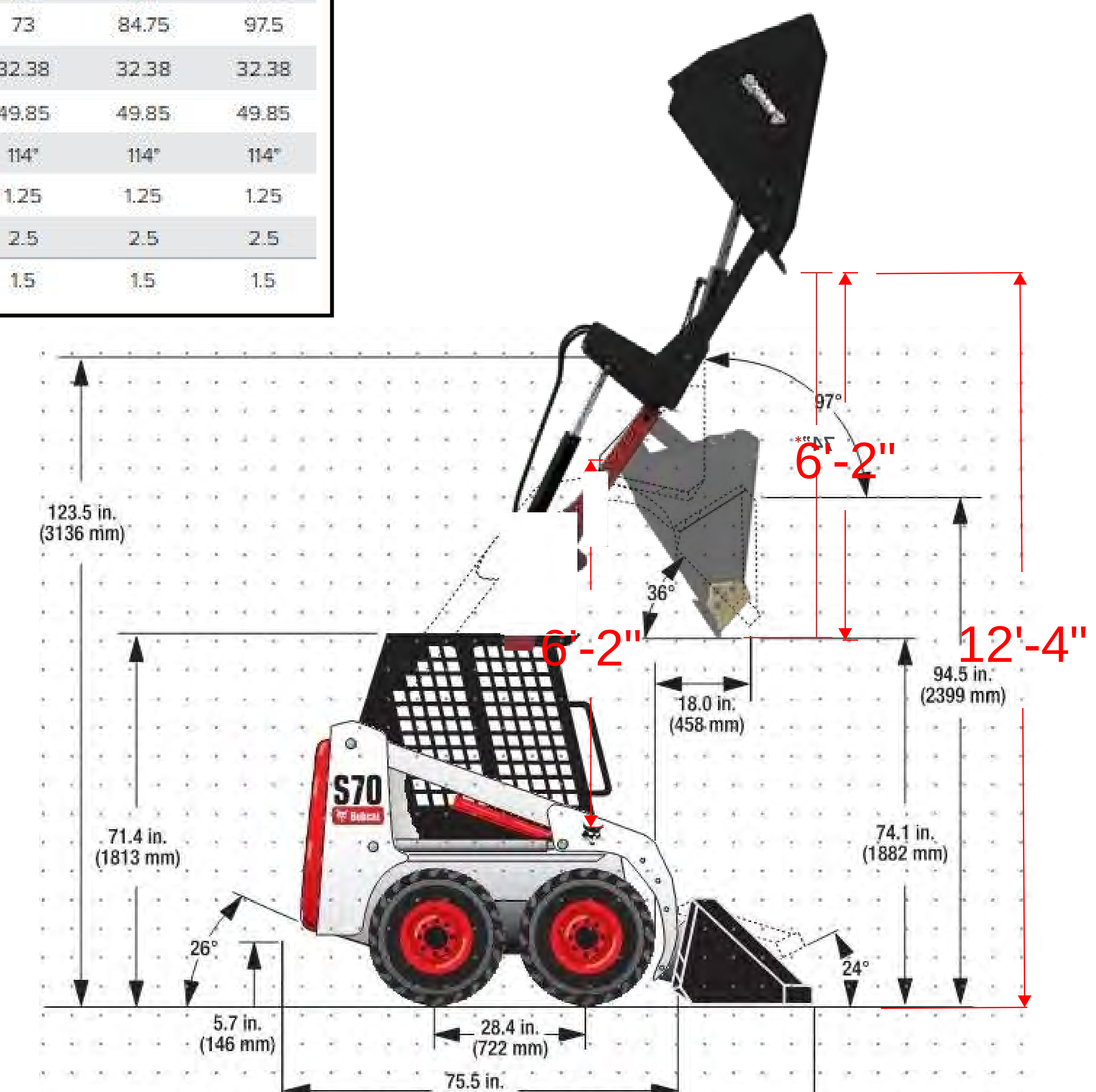


BRADCO®
HIGH-DUMP BUCKET

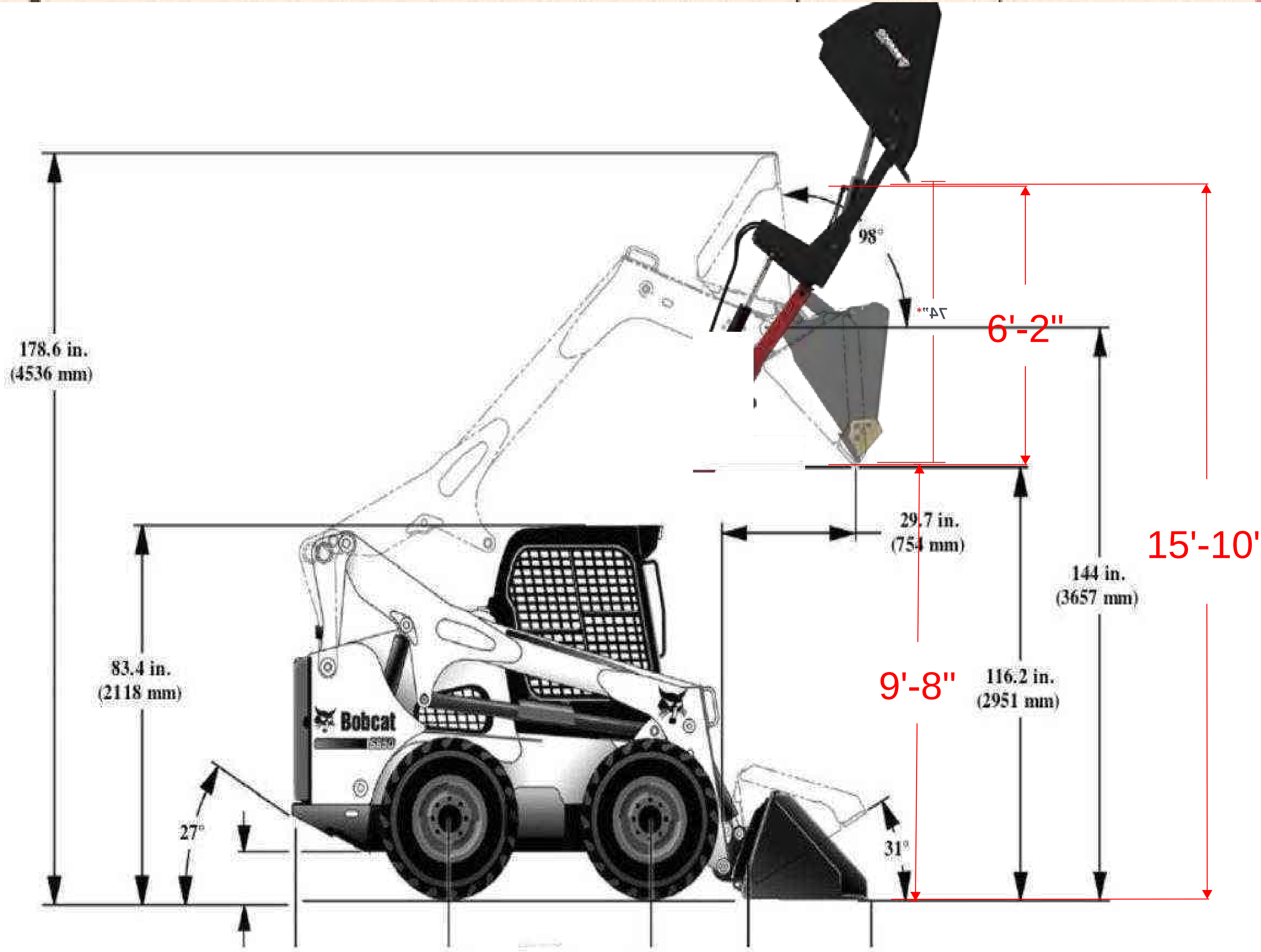
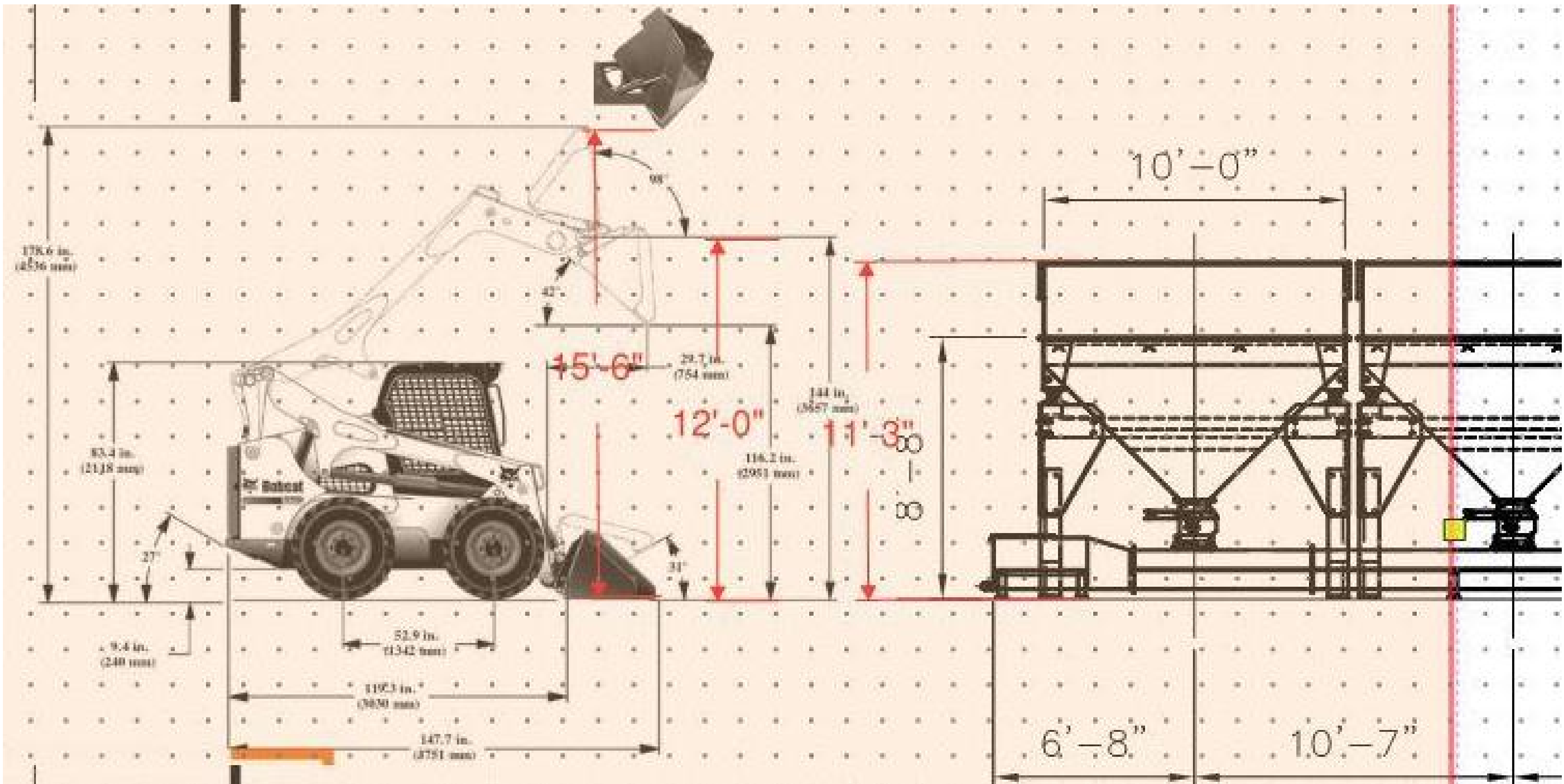
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C. Depth (in)	49.85	49.85	49.85	49.85
D. Rotation (deg)	114°	114°	114°	114°
Pin Size (in)	1.25	1.25	1.25	1.25
Cylinder Boar (in)	2.5	2.5	2.5	2.5
Cylinder Rod Diameter (in)	1.5	1.5	1.5	1.5



BRADCO® HIGH-DUMP BUCKET Details



Bobcat S70 skid-steer`



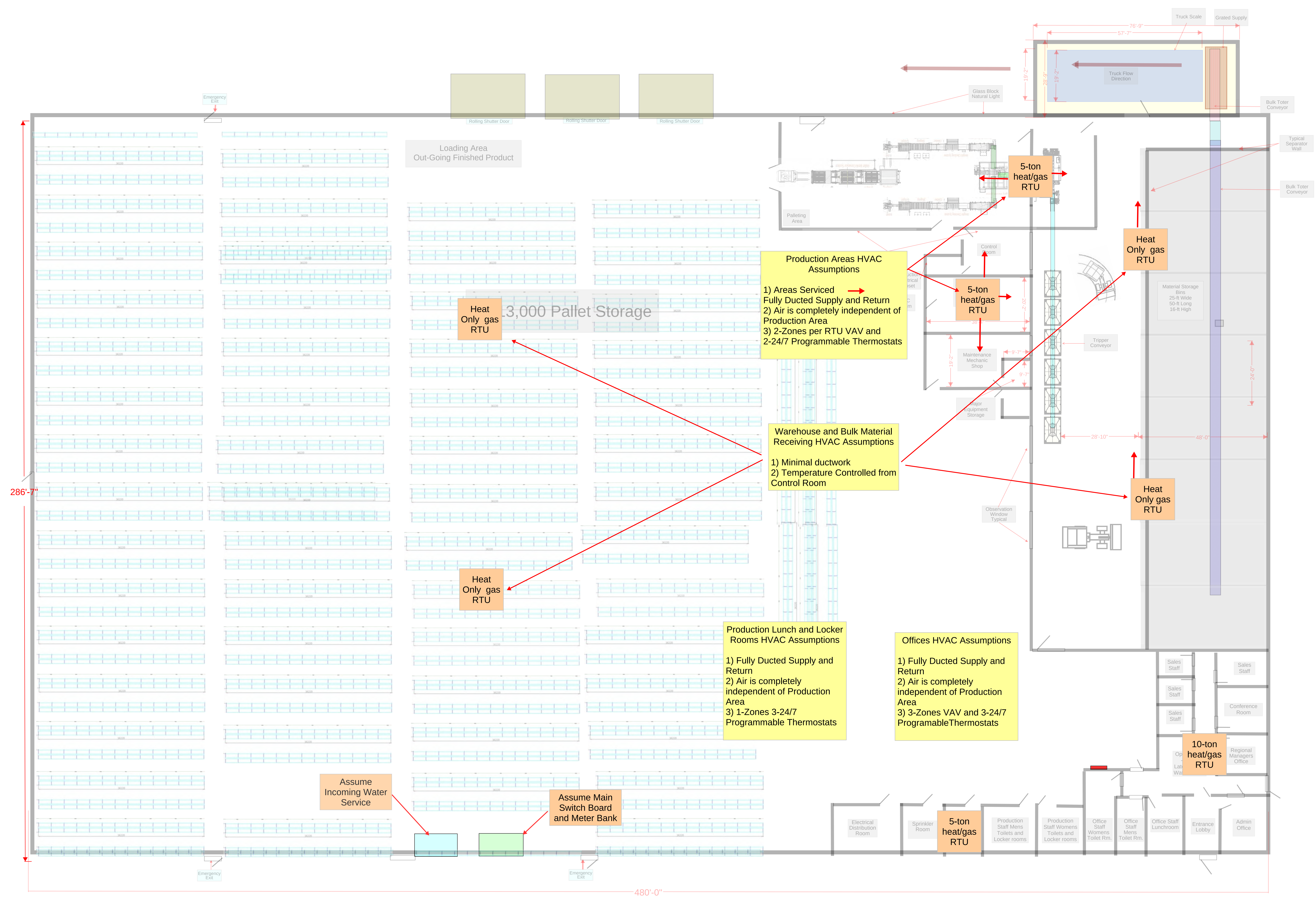
Bobcat S850 skid-steer

Drawing Legend

Conceptual Drawing	12-3-2020
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Midwest Blending and Bagging
Conceptual Planning



Drawing Log	
Conceptual Review	10-03-2020
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Considerations for Conceptual Dust Control Criteria

LEL for sawdust has been determined to be between 40 and 50 grams/m3

Sources of ignition

Electrostatic discharge - improperly installed conveyor belt, which can act like a Van De Graff generator

Friction

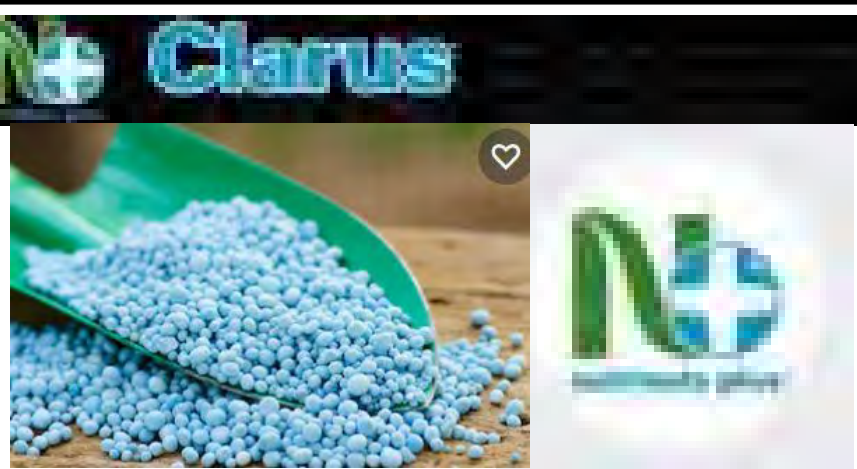
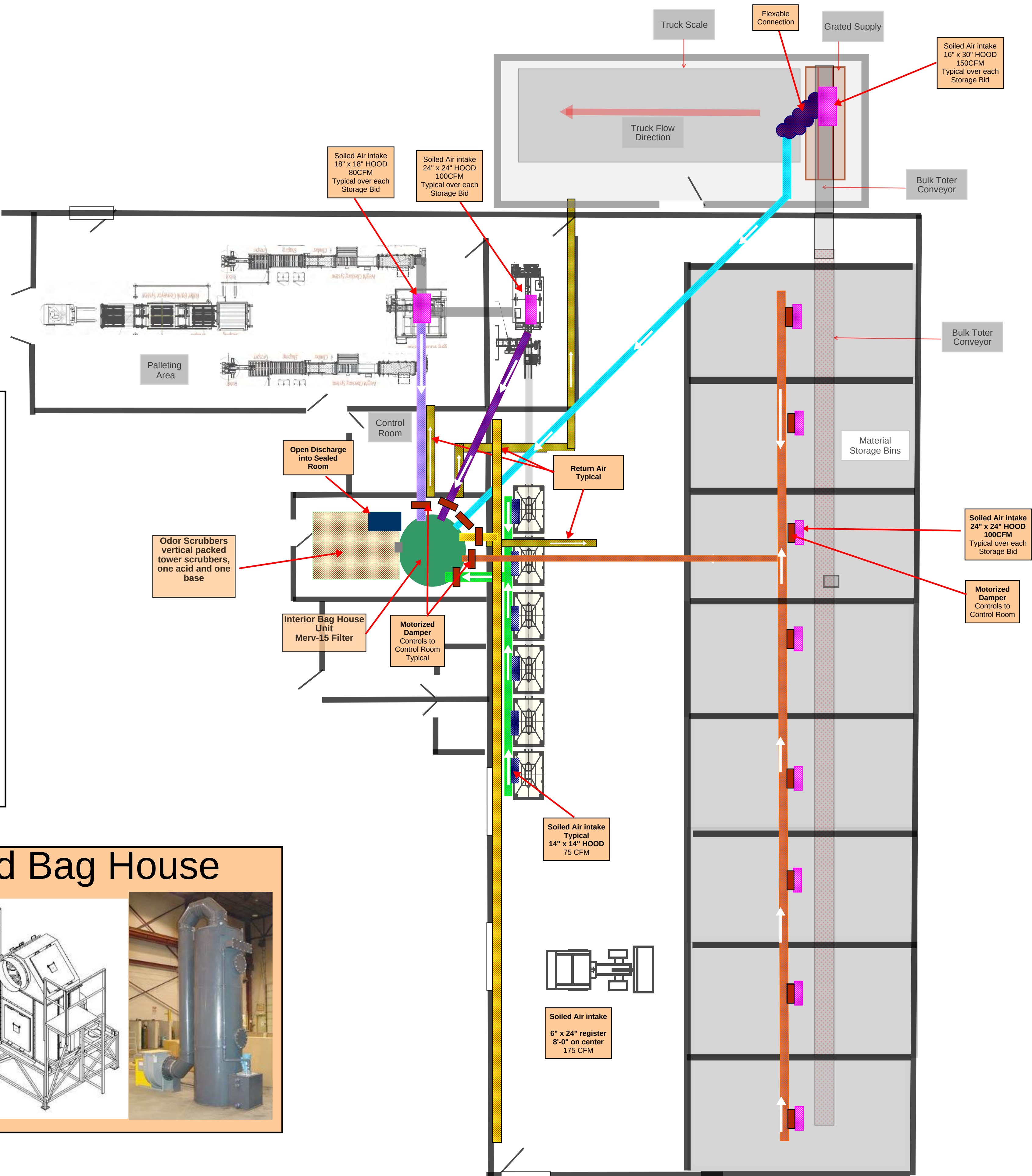
Electrical arcing from machinery or other equipment hot surfaces (e.g. overheated bearings)

Fire

Self-ignition

Six-Zone Air Quality and Odor Control Total CFM=800-CFM

- Zone-1 Material Storage Hopper Area 150-CFM
- Zone-2 Over Scale Hoppers 75-CFM
- Zone-3 Floor Level Scale Hoppers 175-CFM
- Zone-4 Materials Receiving Garage 150-CFM
- Zone-5 Blending Area 100CFM
- Zone-6 Bagging Area 80-CFM
- Return Air
- VAV Control Per Zone and Storage Hopper
- Odor Scrubbers -vertical packed tower scrubbers, one acid and one base
- Bag House Dust Collection



Drawing Log

Conceptual Review	10-03-2020
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Conceptual Rev's	11-20-2020



CS M2.00
Ductwork Dust and
Odor Control

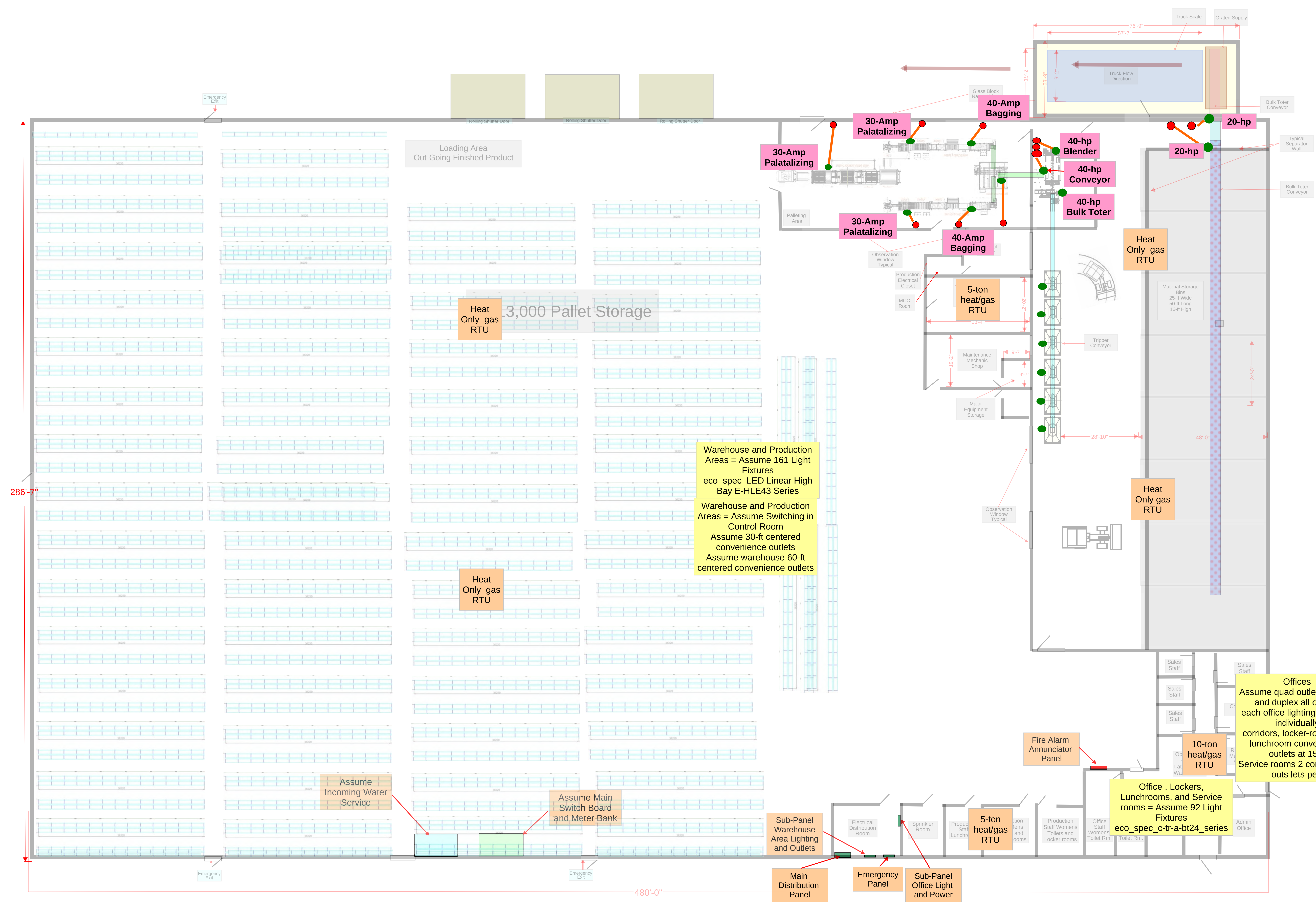
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Conceptual Air Scrubbers And Bag House



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Drawing Log

Conceptual Review	10-03-2020
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CS E1.00
General Layout

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Considerations for Conceptual Dust Control Criteria

LEL for sawdust has been determined to be between 40 and 50 grams/m³

Sources of ignition

Electrostatic discharge - improperly installed conveyor belt, which can act like a Van De Graff generator

Friction

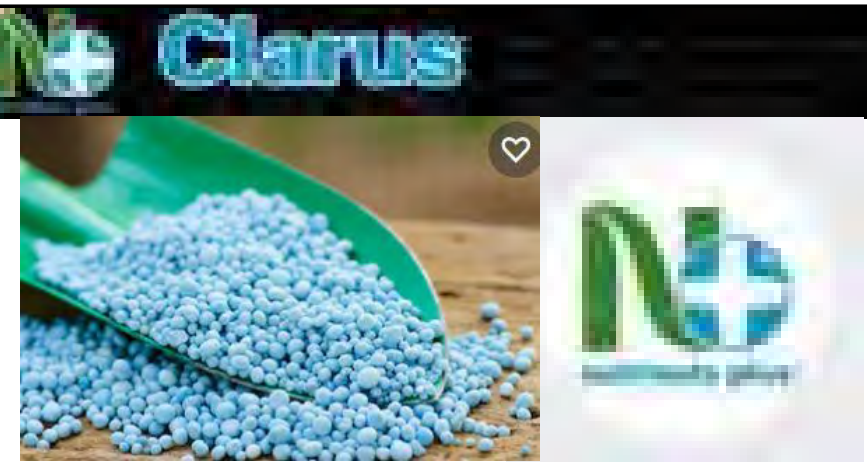
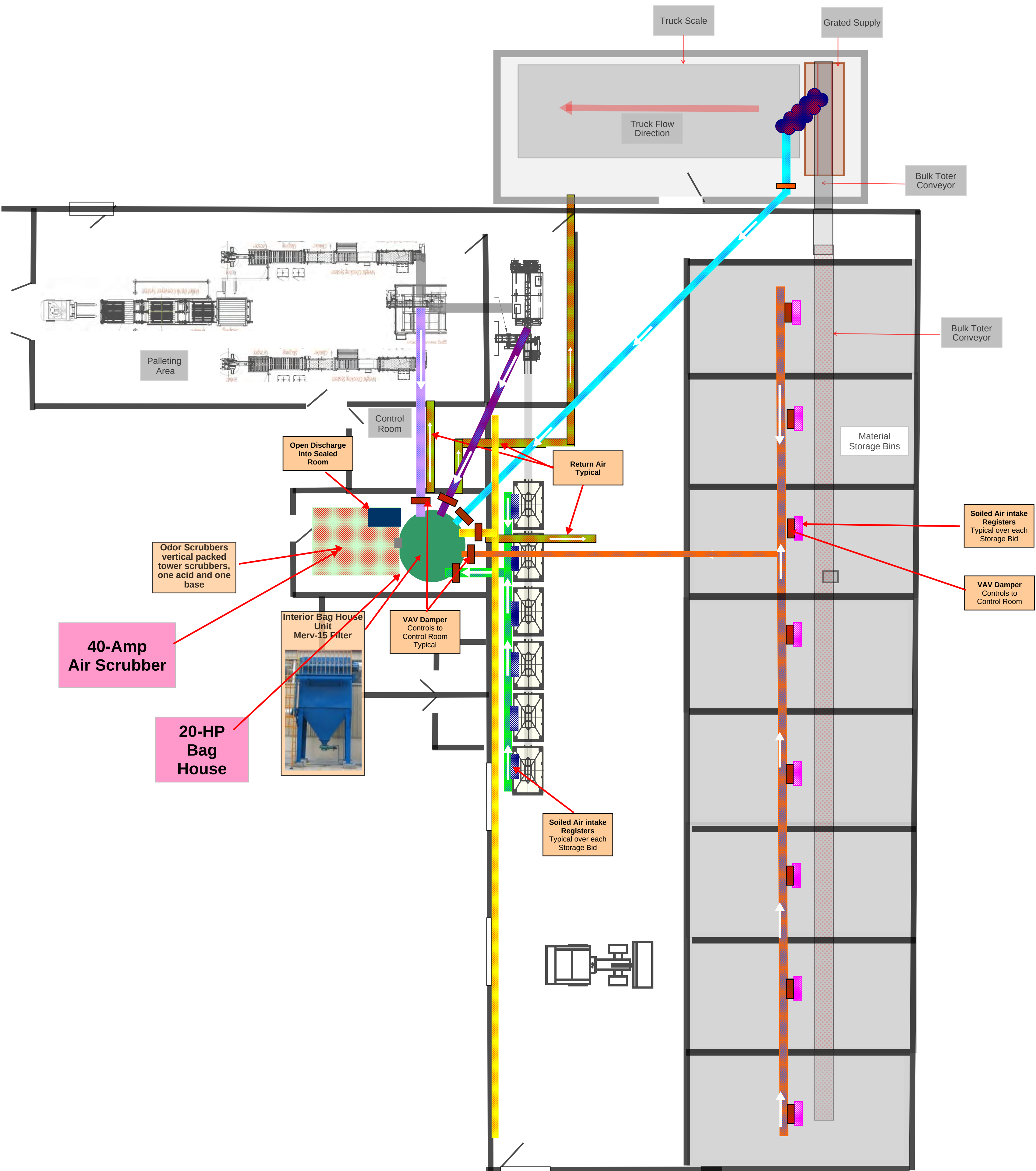
Electrical arcing from machinery or other equipment hot surfaces (e.g. overheated bearings)

Fire

Self-ignition

Six-Zone Air Quality and Odor Control

- Zone-1 Material Storage Hopper Area
- Zone-2 Over Scale Hoppers
- Zone-3 Floor Level Scale Hoppers
- Zone-4 Materials Receiving Garage
- Zone-5 Blending Area
- Zone-6 Bagging Area
- Return Air
- VAV Control Per Zone and Storage Hopper
- Odor Scrubbers -vertical packed tower scrubbers, one acid and one base
- Bag House Dust Collection



Drawing Log

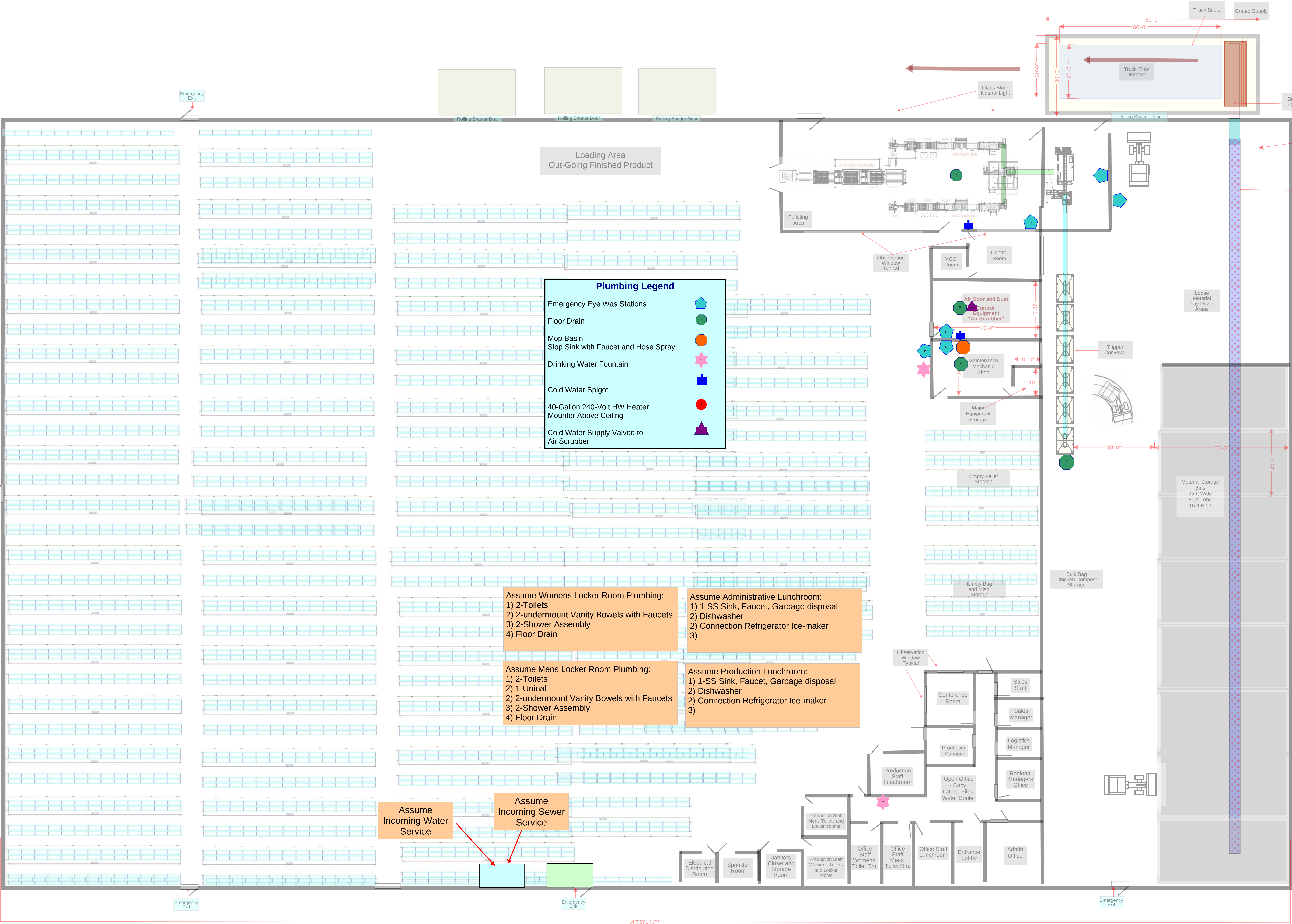
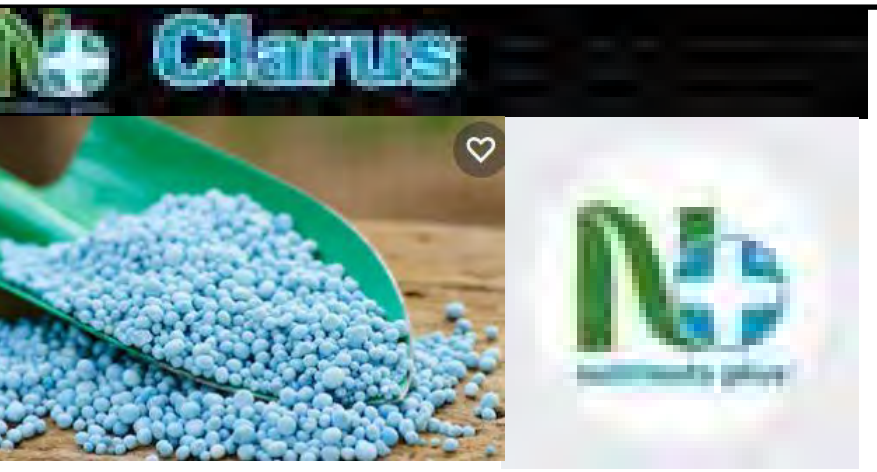
Conceptual Review	10-03-2020
Conceptual Rev's	10-22-2020
Conceptual Rev's	10-28-2020

CS E2.00
General Layout

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Drawing Log

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Conceptual Rev's	10-28-2020

CS P1.00
Plumbing

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