



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

July 26, 2019

Anne Marie Zsamba
Real Estate Specialist
Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
AnneMarie.Zsamba@crowncastle.com

RE: **EM-T-MOBILE-109-190722** – T-Mobile notice of intent to modify an existing telecommunications facility located at 1197 Norwich Road, Plainfield, Connecticut.

Dear Ms. Zsamba:

The Connecticut Siting Council (Council) is in receipt of your correspondence of July 24, 2019 submitted in response to the Council's July 23, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr



Zsamba, Anne Marie

From: Zsamba, Anne Marie
Sent: Wednesday, July 24, 2019 11:05 AM
To: 'Robidoux, Evan'
Cc: CSC-DL Siting Council
Subject: RE: Council Incomplete Letter for EM-T-MOBILE-109-190722-NorwichRd-Plainfield
Attachments: Digitally Signed MA_1197 Norwich Road_Plainfield_826747_PASSING.pdf

Good morning,

In response to the Council's notice of incomplete correspondence, dated July 23, 2019, attached please find an electronic copy of the Mount Analysis for this filing signed by Justin T. Kline, a Connecticut Professional Engineer. Please note that this document is digitally signed and date stamped.

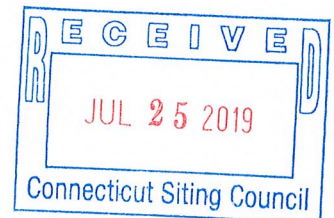
If possible, please confirm receipt of this email as well as your ability to view the signature on the attached document.

I will remit a hard copy of this report to the Council as well.

Thank you kindly.

ANNE MARIE ZSAMBA
Real Estate Specialist
T: (201) 236-9224
F: (724) 416-6112

CROWN CASTLE
3 Corporate Park Drive, Suite 101,
Clifton Park, NY 12065
CrownCastle.com



From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Wednesday, July 24, 2019 9:58 AM
To: Zsamba, Anne Marie <AnneMarie.Zsamba@crowncastle.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Incomplete Letter for EM-T-MOBILE-109-190722-NorwichRd-Plainfield

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square

Date: May 30, 2019

Kevin Morrow
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679

Subject: Mount Modification Report

Carrier Designation: T-Mobile Equipment Change-out
Carrier Site Number: CT11314C
Carrier Site Name: Plainfield/I-395

Crown Castle Designation: Crown Castle BU Number: 826747
Crown Castle Site Name: Plainfield/I-395
Crown Castle JDE Job Number: 559247
Crown Castle Purchase Order Number: 1386072
Crown Castle Order Number: 479828 Rev. 7

Engineering Firm Designation: Paul J Ford and Company Project Number: A37519-1567.003.7191

Site Data: 1197 Norwich Road, Plainfield, Windham County, CT 06234
Latitude 41.646325°, Longitude -71.941306°

Structure Information: Tower Height & Type: 150 Foot Monopole
Mount Elevation: 149 Foot
Mount Type: (1) 13.5 Foot Platform

Dear Kevin Morrow,

Paul J Ford and Company is pleased to submit this "Mount Modification Report" to determine the structural integrity of the T-Mobile antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

13.5' Platform

SUFFICIENT*
*The mount has sufficient capacity once the modifications, as described in Section 4.1 Recommendations of this report, are completed.

This analysis utilizes an ultimate 3-second gust wind speed of 135 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by



Deepesh Savla, P.E.
Project Engineer
dsavla@pauljford.com

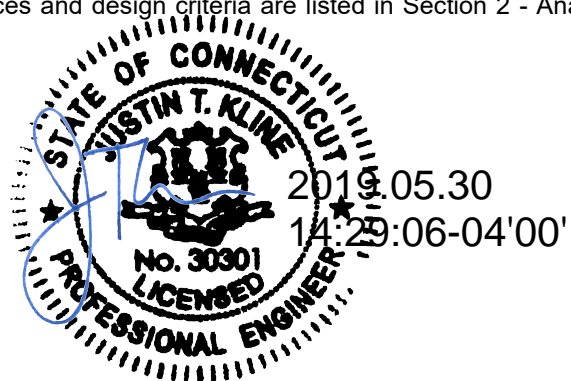


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1) INTRODUCTION

The existing mount under consideration is (1) 13.5' Platform mount identified as a QMSP platform by Site Pro based on photos and Manufacturer Drawings

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	135 mph
Exposure Category:	C
Topographic Factor at Base:	1.0
Topographic Factor at Mount:	1.0
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Man Live Load at Mid/End-Points:	250 lb
Man Live Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
149	150	3	EMS Wireless	RR90-17-02DP	(1) 13.5' Platform
		3	RFS/Celwave	APXVAARR24_43-UNA20	
		3	Ericsson	KRY 112 489/2	
		3	Ericsson	RADIO 4449 B12/B71	
		3	Ericsson	KRY 112 144/1	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Manufacturer Drawings	Dated: 05/17/10	QMSP	Site Pro
Photos	-	-	CCISites
Order	ID: 479828 Rev. 7 Dated: 04/18/19	-	CCISites

3.1) Analysis Method

RISA-3D (version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

3.2) Assumptions

- 1) *The analysis of the existing tower or the effect of the mount attachment to the tower is not within the current scope of work.*
- 2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
- 3) *The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.*
- 4) *All member connections have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report. All U-Bolt connections have been properly tightened. This analysis will be required to be revised if the existing conditions in the field differ from those shown in the above referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.*
- 5) *Steel grades are as follows, unless noted otherwise:*

a) Channel, Solid Round, Angle, Plate, Unistrut	ASTM A36 (GR 36)
b) Pipe	ASTM A53 (GR 35)
c) HSS (Rectangular)	ASTM 500 (GR B-46)
d) HSS (Round)	ASTM 500 (GR B-42)
e) Threaded Rods	ASTM F1554 (GR 36)
f) Connection Bolts	ASTM A325
g) U-Bolts	SAE J429 (GR 2)
- 6) *Proposed equipment is to be installed in the locations specified in Appendix A. Any changes to the proposed equipment locations will render this report invalid.*
- 7) *Mount has been modeled based on the photographs and/or the TIA inspection referenced in Table 2. Member information and dimensions not provided have been assumed based on previous experience with similar mounts. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.*

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3- Mount Component Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Face Horizontals	149	18.9	Pass
1	Support Rail		19.9	Pass
1	Grating Support Members		12.3	Pass
1	Standoff Members		16.9	Pass
1	Corner Plates		50.6	Pass
1	Kicker Support		20.0	Pass
1	Mount Pipes		62.5	Pass
1	Mount to Tower Connection		20.0	Pass

Mount Rating (max from all components) =	62.5%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

- Install SitePro1 PRK-1245L Platform Reinforcement Kit or EOR approved equivalent as indicated in "Appendix D – Supplemental Modification Information" and in conformance with the attached manufacturer drawings.
- Install SitePro1 HRK14 Handrail Support Kit or EOR approved equivalent as indicated in "Appendix D – Supplemental Modification Information" and in conformance with the attached manufacturer drawings.
- Replace existing mount pipes with 8-ft long, P2.5 STD (2.88" O.D. x 0.189") mount pipes where required. See Appendix D details.

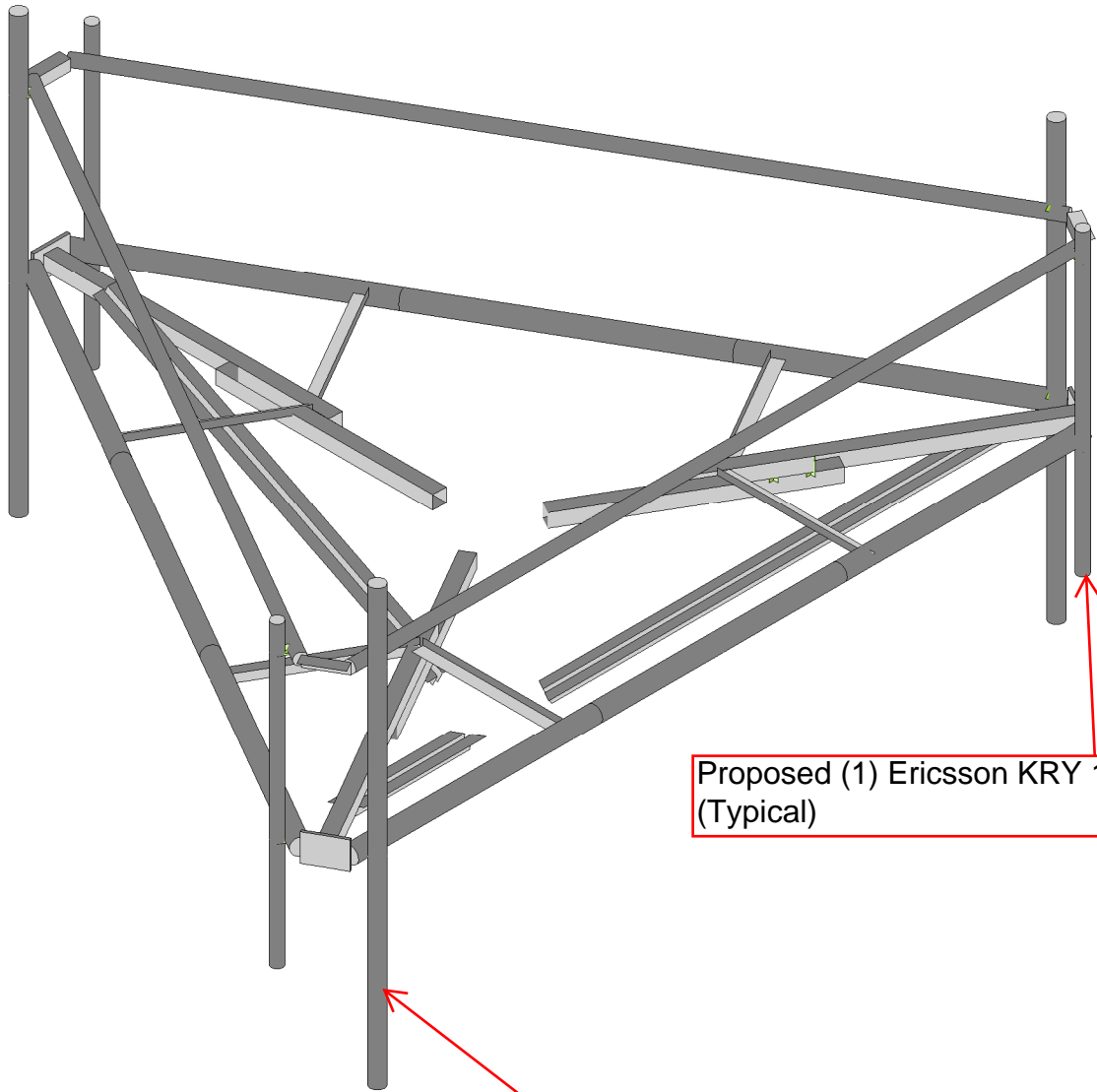
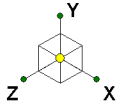
Connection from the mount to the tower and local stresses on the tower are sufficient.

**STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING
SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY**

- 1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.
- 2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.
- 3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.
- 4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.
- 5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

APPENDIX A

WIRE FRAME AND RENDERED MODELS



Proposed (1) Ericsson KRY 112 489/2
(Typical)

Proposed (1) RFS/CELWAVE / APXVAARR24_43-UNA20
+ (1) ERICSSON / RADIO 4449 B12/B71
(Typical)

Envelope Only Solution

Paul J Ford Company
SS
37519-1567.003.7191

826747_Plainfield I-395

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May 27, 2019 at 2:25 PM
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APPENDIX B

SOFTWARE INPUT CALCULATION

ANSI/TIA-222H - WIND & ICE LOAD CALCULATIONS

Site Code/Name	826747 - Plainfield/I-395
State	Connecticut
County	Windham
V	135 mph
V _i	50 mph
t _i	1.5 in
z _s	151 ft
z	150 ft

Structure Class	II
Exposure Category	C
Topographic Category	1
Wind direction probability factor	0.95
Gust factor	1
Wind Pressure (including K _a = 0.9)	54.69 psf
t _{iz}	1.75 in

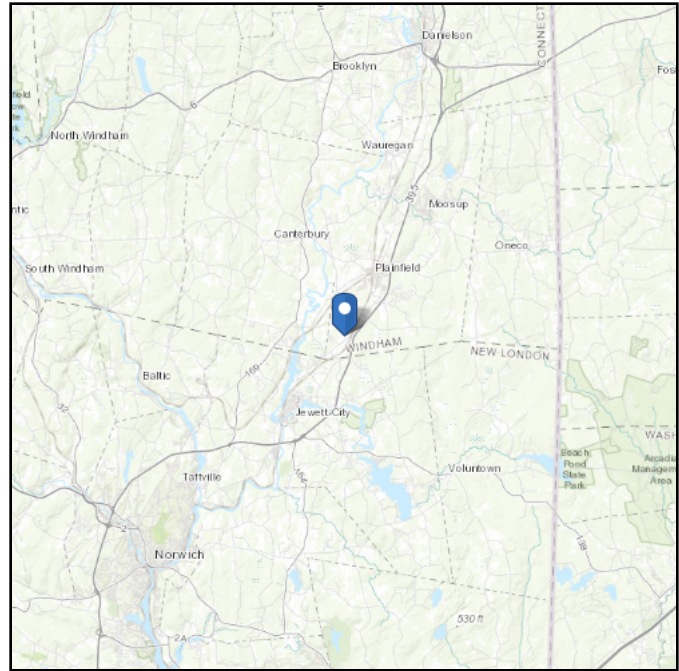
Dead and Wind Forces for Equipment									
Manufacturer	Model	L [in]	W [in]	D [in]	0° [lbs]	30° [lbs]	60° [lbs]	90° [lbs]	Weight [lbs]
EMS WIRELESS	RR90-17-02DP	56	8	2.75	238.2	205.6	140.5	107.9	13.5
RFS/CELWAVE	APXVAARR24_43-UNA20	95.6	24	8.7	1103.0	948.3	638.9	484.2	128.0
ERICSSON	KRY 112 144/1	7	6	3	19.1	16.7	12.0	9.6	11.0
ERICSSON	KRY 112 489/2	11	6.1	3.94	30.6	27.9	22.6	20.0	15.4
ERICSSON	RADIO 4449 B12/B71	14.95	13.19	9.25	89.9	83.2	69.7	63.0	75.0

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 151.39 ft (NAVD 88)
Latitude: 41.646325
Longitude: -71.941306



Wind

Results:

Wind Speed:	132 Vmph
10-year MRI	79 Vmph
25-year MRI	89 Vmph
50-year MRI	98 Vmph
100-year MRI	107 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Thu May 02 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

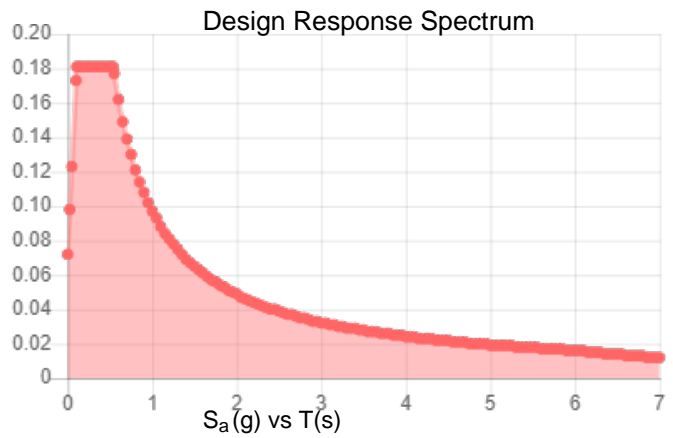
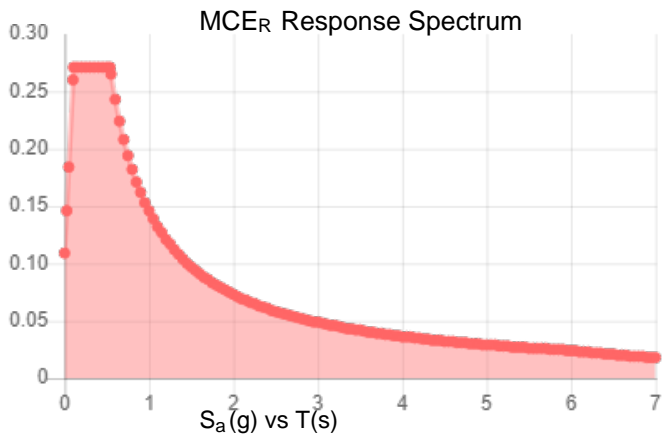
Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

Site Soil Class: D - Stiff Soil

Results:

S_s :	0.17	S_{DS} :	0.181
S_1 :	0.061	S_{D1} :	0.097
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.085
S_{MS} :	0.271	PGA _M :	0.136
S_{M1} :	0.146	F _{PGA} :	1.6
		I_e :	1

Seismic Design Category B



Data Accessed:

Thu May 02 2019

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Thu May 02 2019

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

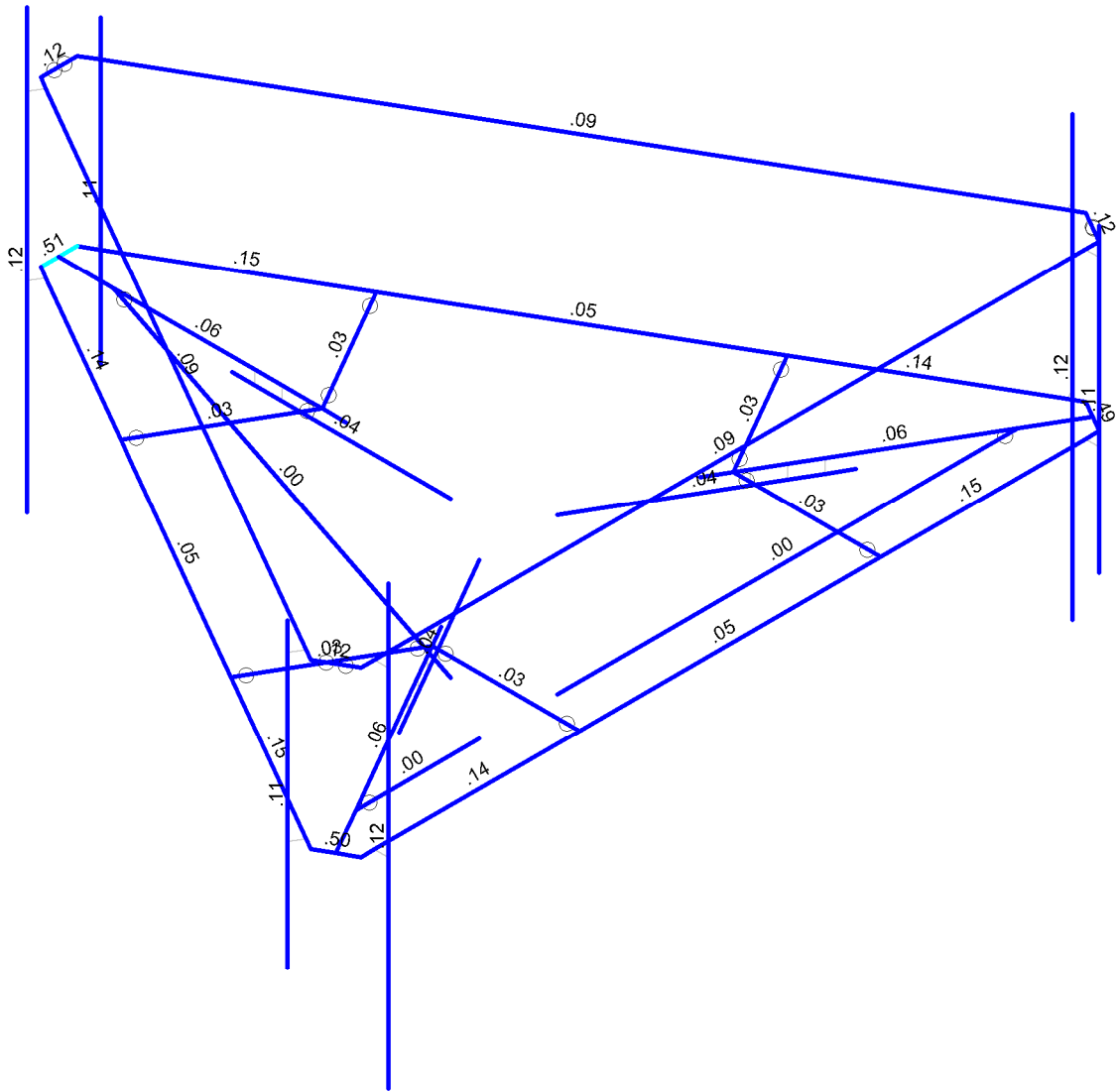
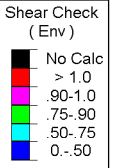
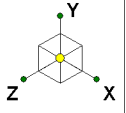
The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Paul J Ford Company

SS

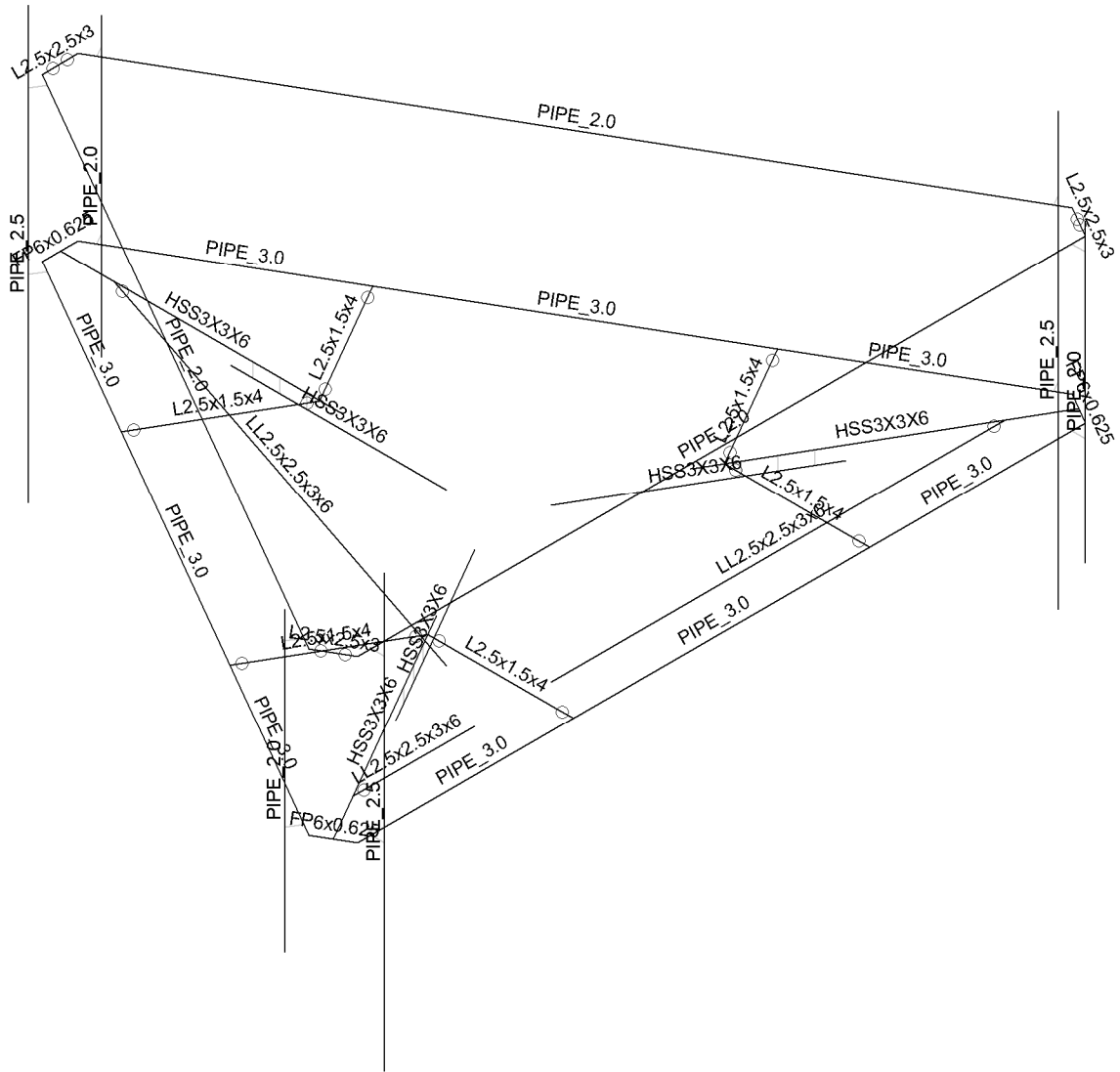
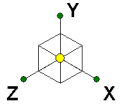
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Paul J Ford Company

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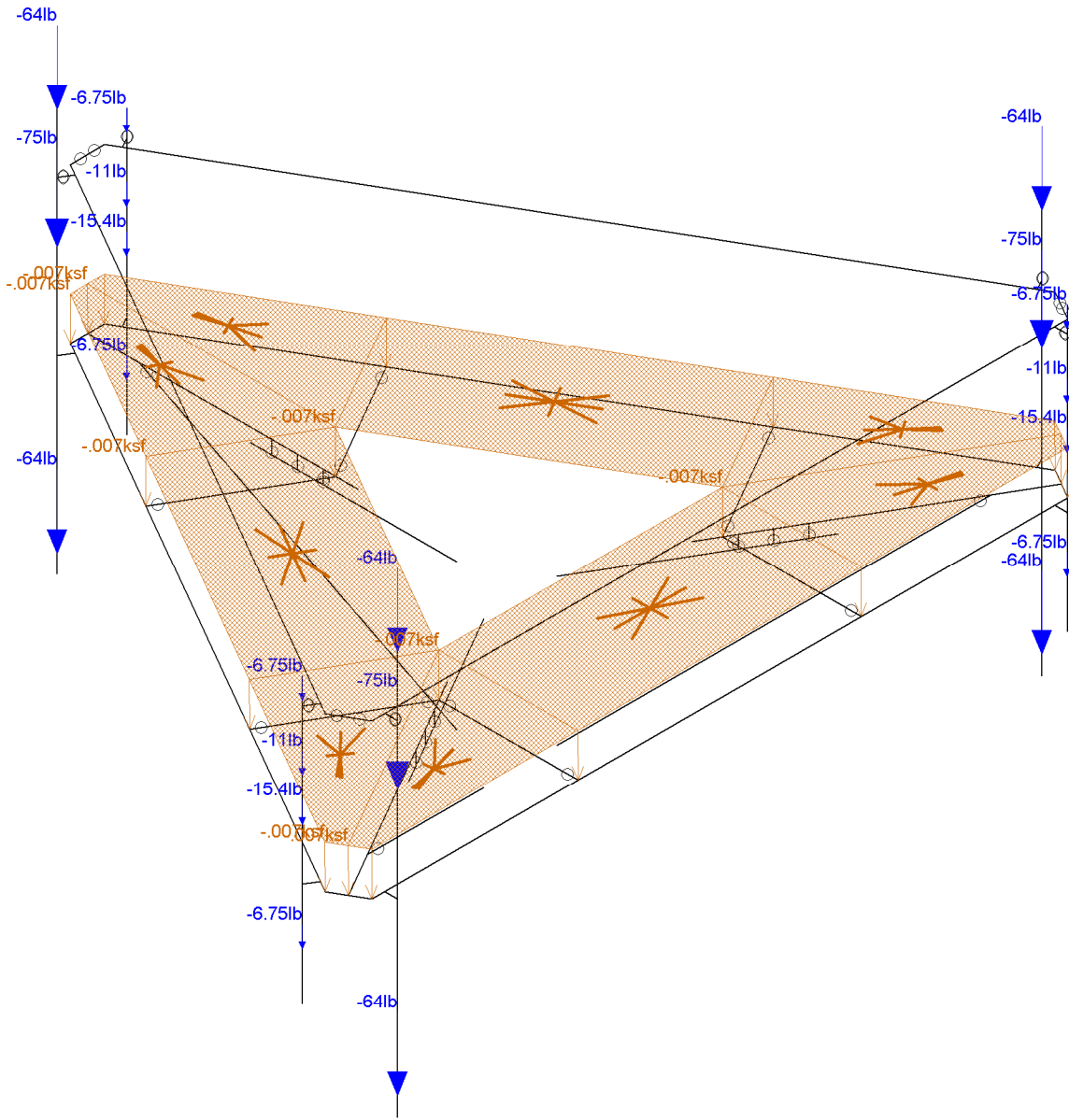
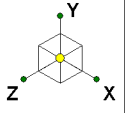
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826747_Plainfield I-395

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826747_Plainfield I-395_REINF.R3D



Loads: BLC 2, We
Envelope Only Solution

Paul J Ford Company

SS

37519-1567.003.7191

826747_Plainfield I-395

SK - 7

May 27, 2019 at 2:27 PM

826747_Plainfield I-395_REINF.R3D



Company : Paul J Ford Company
 Designer : SS
 Job Number : 37519-1567.003.7191
 Model Name : 826747_Plainfield I-395

May 27, 2019
 2:29 PM
 Checked By: DS

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): LRFD
Cold Formed Steel Code	AISI S100-16: LRFD
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR SET ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-16
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B 42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.B 46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TS3x3x5	HSS3X3X5 A10...	Beam	Tube	A53 Gr.B	Typical	3.363	4.102	4.102	6.071
2	L2.5x2.5x4	L2.5x2.5x4	Beam	Single Angle	A36 Gr.36	Typical	1.19	.692	.692	.026
3	PIPE 3.0	PIPE 3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
4	PIPE 2.0	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	FP6x0.625	FP6x0.625	Beam	BAR	A36 Gr.36	Typical	3.75	.122	11.25	.456

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N72A	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N60B	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N79	Reaction	Reaction	Reaction			
5	N80	Reaction	Reaction	Reaction			
6	N81	Reaction	Reaction	Reaction			



Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	PIPE 3.0	54									Lateral
2	M2	PIPE 3.0	54									Lateral
3	M3	PIPE 3.0	54									Lateral
4	M4	FP6x0.625	8									Lateral
5	M5	FP6x0.625	8									Lateral
6	M6	FP6x0.625	8									Lateral
7	M7	HSS3X3X6	63									Lateral
8	M8	HSS3X3X6	63									Lateral
9	M9	HSS3X3X6	63									Lateral
10	M10	L2.5x1.5x4	32.332									Lateral
11	M11	L2.5x1.5x4	32.332									Lateral
12	M12	L2.5x1.5x4	32.332									Lateral
13	M13	L2.5x1.5x4	32.332									Lateral
14	M16	HSS3X3X6	48									Lateral
15	M20	HSS3X3X6	48									Lateral
16	M21	HSS3X3X6	48									Lateral
17	M56	PIPE 3.0	54									Lateral
18	M59	PIPE 3.0	54									Lateral
19	M61	PIPE 3.0	54									Lateral
20	M62	PIPE 3.0	54									Lateral
21	M64	PIPE 3.0	54									Lateral
22	M66	PIPE 3.0	54									Lateral
23	M101	PIPE 2.5	96									Lateral
24	M104	PIPE 2.0	66									Lateral
25	M36	L2.5x1.5x4	32.332									Lateral
26	M37	L2.5x1.5x4	32.332									Lateral
27	M39	PIPE 2.5	96									Lateral
28	M41	PIPE 2.0	66									Lateral
29	M43	PIPE 2.5	96									Lateral
30	M45	PIPE 2.0	66									Lateral
31	M46	LL2.5x2.5x3...	82.735									Lateral
32	M47	LL2.5x2.5x3...	82.735									Lateral
33	M48	LL2.5x2.5x3...	82.735									Lateral
34	M49	PIPE 2.0	162									Lateral
35	M50	PIPE 2.0	162									Lateral
36	M51	L2.5x2.5x3	8									Lateral
37	M52	L2.5x2.5x3	8									Lateral
38	M53	L2.5x2.5x3	8									Lateral
39	M60	PIPE 2.0	162									Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(de...	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N103			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
2	M2	N9	N99			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
3	M3	N3	N107			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
4	M4	N1	N2			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
5	M5	N3	N4			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
6	M6	N5	N9			FP6x0.625	Beam	BAR	A36 Gr.36	Typical
7	M7	N6	N40			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
8	M8	N7	N18			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
9	M9	N8	N29			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
10	M10	N11	N12		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
11	M11	N12	N78		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
12	M12	N13	N14		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical



Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(de...)	Section/Shape	Type	Design List	Material	Design Rules
13	M13	N14	N84		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
14	M16	N61	N60B			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
15	M17	N20	N21			RIGID	None	None	RIGID	Typical
16	M18	N22	N23			RIGID	None	None	RIGID	Typical
17	M19	N24	N25			RIGID	None	None	RIGID	Typical
18	M20	N63	N62			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
19	M21	N74	N72A			HSS3X3X6	Beam	SquareTube	A500 Gr....	Typical
20	M56	N99	N157A			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
21	M59	N103	N101			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
22	M61	N107	N159A			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
23	M62	N157A	N2			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
24	M64	N159A	N5			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
25	M66	N101	N4			PIPE 3.0	Column	Pipe	A53 Gr.B	Typical
26	M79	N154D	N155C			RIGID	None	None	RIGID	Typical
27	M80	N156C	N157C			RIGID	None	None	RIGID	Typical
28	M81	N158C	N159C			RIGID	None	None	RIGID	Typical
29	M82	N160C	N161B			RIGID	None	None	RIGID	Typical
30	M83	N162A	N163A			RIGID	None	None	RIGID	Typical
31	M84	N164A	N165A			RIGID	None	None	RIGID	Typical
32	M100	N190	N191			RIGID	None	None	RIGID	Typical
33	M101	N193A	N192			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
34	M103	N196A	N197A			RIGID	None	None	RIGID	Typical
35	M104	N199	N198A			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
36	M36	N58	N60		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
37	M37	N60	N60A		270	L2.5x1.5x4	Beam	Single Angle	A36 Gr.36	Typical
38	M38	N60C	N61A			RIGID	None	None	RIGID	Typical
39	M39	N63A	N62A			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
40	M40	N64	N65			RIGID	None	None	RIGID	Typical
41	M41	N67	N66			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
42	M42	N68	N69			RIGID	None	None	RIGID	Typical
43	M43	N71	N70			PIPE 2.5	Column	Pipe	A53 Gr.B	Typical
44	M44	N72	N73			RIGID	None	None	RIGID	Typical
45	M45	N75	N74A			PIPE 2.0	Column	Pipe	A36 Gr.36	Typical
46	M46	N79	N82			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
47	M47	N80	N107B			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
48	M48	N81	N109			LL2.5x2.5x3x6	VBrace	Double Angle...	A36 Gr.36	Typical
49	M49	N91	N87			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
50	M50	N88A	N90			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical
51	M51	N86	N87		180	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
52	M52	N88A	N89		180	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
53	M53	N90	N91		90	L2.5x2.5x3	Beam	Single Angle	A36 Gr.36	Typical
54	M54	N94	N95			RIGID	None	None	RIGID	Typical
55	M55	N96	N97			RIGID	None	None	RIGID	Typical
56	M56A	N98	N99A			RIGID	None	None	RIGID	Typical
57	M57	N100	N101A			RIGID	None	None	RIGID	Typical
58	M58	N102	N103A			RIGID	None	None	RIGID	Typical
59	M59A	N104	N105			RIGID	None	None	RIGID	Typical
60	M60	N86	N89			PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M2						Yes	** NA **			None
3	M3						Yes	** NA **			None
4	M4						Yes				None



Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
5	M5						Yes				None
6	M6						Yes				None
7	M7						Yes				None
8	M8						Yes	Default			None
9	M9						Yes				None
10	M10	BenPIN	BenPIN				Yes				None
11	M11	BenPIN	BenPIN				Yes				None
12	M12	BenPIN	BenPIN				Yes				None
13	M13	BenPIN	BenPIN				Yes				None
14	M16						Yes	Default			None
15	M17	BenPIN					Yes	** NA **			None
16	M18	BenPIN					Yes	** NA **			None
17	M19	BenPIN					Yes	** NA **			None
18	M20						Yes				None
19	M21						Yes				None
20	M56						Yes	** NA **			None
21	M59						Yes	** NA **			None
22	M61						Yes	** NA **			None
23	M62						Yes	** NA **			None
24	M64						Yes	** NA **			None
25	M66						Yes	** NA **			None
26	M79	BenPIN					Yes	** NA **			None
27	M80	BenPIN					Yes	** NA **			None
28	M81	BenPIN					Yes	** NA **			None
29	M82	BenPIN					Yes	** NA **			None
30	M83	BenPIN					Yes	** NA **			None
31	M84	BenPIN					Yes	** NA **			None
32	M100						Yes	** NA **			None
33	M101						Yes	** NA **			None
34	M103						Yes	** NA **			None
35	M104						Yes	** NA **			None
36	M36	BenPIN	BenPIN				Yes				None
37	M37	BenPIN	BenPIN				Yes				None
38	M38						Yes	** NA **			None
39	M39						Yes	** NA **			None
40	M40						Yes	** NA **			None
41	M41						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M46		BenPIN				Yes	** NA **			None
47	M47		BenPIN				Yes	** NA **			None
48	M48		BenPIN				Yes	** NA **			None
49	M49						Yes				None
50	M50						Yes				None
51	M51	OOOOOX	OOOOOX				Yes				None
52	M52	OOOOOX	OOOOOX				Yes				None
53	M53	OOOOOX	OOOOOX				Yes				None
54	M54	OOOXOX					Yes	** NA **			None
55	M55	OOOXOX					Yes	** NA **			None
56	M56A	OOOXOX					Yes	** NA **			None
57	M57	OOOXOX					Yes	** NA **			None
58	M58	OOOXOX					Yes	** NA **			None
59	M59A	OOOXOX					Yes	** NA **			None
60	M60						Yes				None



Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self We	DL		-1.1						
2	We	DL					21		9	
3	Ice We	DL					21	30	9	
4	W0	WL					21	30		
5	W30	WL					42	60		
6	W60	WL					42	60		
7	W90	WL					21	30		
8	W120	WL					42	60		
9	W150	WL					42	60		
10	W0 + Ice	WL					21	30		
11	W30 + Ice	WL					42	60		
12	W60 + Ice	WL					42	60		
13	W90 + Ice	WL					21	30		
14	W120 + Ice	WL					42	60		
15	W150 + Ice	WL					42	60		
16	500lbs LM 1	LL				1				
17	500lbs LM 2	LL				1				
18	500lbs LM 3	LL								
19	500lbs LM 4	LL								
20	250lbs LV 5	LL				1				
21	250lbs LV 6	LL				1				
22	BLC 2 Transient Area Loads	None						102		
23	BLC 3 Transient Area Loads	None						102		

Load Combinations

Description	S	P	S	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa
1 Dead	Yes	Y			1	1.4	2	1.4											
2 Dead + Wind 0°	Yes	Y			1	1.2	2	1.2	4	1									
3 Dead + Wind 30°	Yes	Y			1	1.2	2	1.2	5	1									
4 Dead + Wind 60°	Yes	Y			1	1.2	2	1.2	6	1									
5 Dead + Wind 90°	Yes	Y			1	1.2	2	1.2	7	1									
6 Dead + Wind 120°	Yes	Y			1	1.2	2	1.2	8	1									
7 Dead + Wind 150°	Yes	Y			1	1.2	2	1.2	9	1									
8 Dead + Wind 180°	Yes	Y			1	1.2	2	1.2	4	-1									
9 Dead + Wind 210°	Yes	Y			1	1.2	2	1.2	5	-1									
10 Dead + Wind 240°	Yes	Y			1	1.2	2	1.2	6	-1									
11 Dead + Wind 270°	Yes	Y			1	1.2	2	1.2	7	-1									
12 Dead + Wind 300°	Yes	Y			1	1.2	2	1.2	8	-1									
13 Dead + Wind 330°	Yes	Y			1	1.2	2	1.2	9	-1									
14 Dead + Ice + Wind Ice 0°	Yes	Y			1	1.2	2	1.2	10	1	3	1							
15 Dead + Ice + Wind Ice 30°	Yes	Y			1	1.2	2	1.2	11	1	3	1							
16 Dead + Ice + Wind Ice 60°	Yes	Y			1	1.2	2	1.2	12	1	3	1							
17 Dead + Ice + Wind Ice 90°	Yes	Y			1	1.2	2	1.2	13	1	3	1							
18 Dead + Ice + Wind Ice 120°	Yes	Y			1	1.2	2	1.2	14	1	3	1							
19 Dead + Ice + Wind Ice 150°	Yes	Y			1	1.2	2	1.2	15	1	3	1							
20 Dead + Ice + Wind Ice 180°	Yes	Y			1	1.2	2	1.2	10	-1	3	1							
21 Dead + Ice + Wind Ice 210°	Yes	Y			1	1.2	2	1.2	11	-1	3	1							
22 Dead + Ice + Wind Ice 240°	Yes	Y			1	1.2	2	1.2	12	-1	3	1							
23 Dead + Ice + Wind Ice 270°	Yes	Y			1	1.2	2	1.2	13	-1	3	1							
24 Dead + Ice + Wind Ice 300°	Yes	Y			1	1.2	2	1.2	14	-1	3	1							
25 Dead + Ice + Wind Ice 330°	Yes	Y			1	1.2	2	1.2	15	-1	3	1							
26 Dead + LM5001 + Wred 0°	Yes	Y			1	1.2	2	1.2	16	1.5	4	.049							
27 Dead + LM5001 + Wred 30°	Yes	Y			1	1.2	2	1.2	16	1.5	5	.049							
28 Dead + LM5001 + Wred 60°	Yes	Y			1	1.2	2	1.2	16	1.5	6	.049							

Load Combinations (Continued)

Description		S	P	S	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B	Fa	B
29	Dead + LM5001 + Wred 90°	Yes	Y			1	1.2	2	1.2	16	1.5	7	.049																
30	Dead + LM5001 + Wred 120°	Yes	Y			1	1.2	2	1.2	16	1.5	8	.049																
31	Dead + LM5001 + Wred 150°	Yes	Y			1	1.2	2	1.2	16	1.5	9	.049																
32	Dead + LM5001 + Wred 180°	Yes	Y			1	1.2	2	1.2	16	1.5	4	-0.0																
33	Dead + LM5001 + Wred 210°	Yes	Y			1	1.2	2	1.2	16	1.5	5	-0.0																
34	Dead + LM5001 + Wred 240°	Yes	Y			1	1.2	2	1.2	16	1.5	6	-0.0																
35	Dead + LM5001 + Wred 270°	Yes	Y			1	1.2	2	1.2	16	1.5	7	-0.0																
36	Dead + LM5001 + Wred 300°	Yes	Y			1	1.2	2	1.2	16	1.5	8	-0.0																
37	Dead + LM5001 + Wred 330°	Yes	Y			1	1.2	2	1.2	16	1.5	9	-0.0																
38	Dead + LM5002 + Wred 0°	Yes	Y			1	1.2	2	1.2	17	1.5	4	.049																
39	Dead + LM5002 + Wred 30°	Yes	Y			1	1.2	2	1.2	17	1.5	5	.049																
40	Dead + LM5002 + Wred 60°	Yes	Y			1	1.2	2	1.2	17	1.5	6	.049																
41	Dead + LM5002 + Wred 90°	Yes	Y			1	1.2	2	1.2	17	1.5	7	.049																
42	Dead + LM5002 + Wred 120°	Yes	Y			1	1.2	2	1.2	17	1.5	8	.049																
43	Dead + LM5002 + Wred 150°	Yes	Y			1	1.2	2	1.2	17	1.5	9	.049																
44	Dead + LM5002 + Wred 180°	Yes	Y			1	1.2	2	1.2	17	1.5	4	-0.0																
45	Dead + LM5002 + Wred 210°	Yes	Y			1	1.2	2	1.2	17	1.5	5	-0.0																
46	Dead + LM5002 + Wred 240°	Yes	Y			1	1.2	2	1.2	17	1.5	6	-0.0																
47	Dead + LM5002 + Wred 270°	Yes	Y			1	1.2	2	1.2	17	1.5	7	-0.0																
48	Dead + LM5002 + Wred 300°	Yes	Y			1	1.2	2	1.2	17	1.5	8	-0.0																
49	Dead + LM5002 + Wred 330°	Yes	Y			1	1.2	2	1.2	17	1.5	9	-0.0																
50	Dead + LM5003 + Wred 0°	Yes	Y			1	1.2	2	1.2	18	1.5	4	.049																
51	Dead + LM5003 + Wred 30°	Yes	Y			1	1.2	2	1.2	18	1.5	5	.049																
52	Dead + LM5003 + Wred 60°	Yes	Y			1	1.2	2	1.2	18	1.5	6	.049																
53	Dead + LM5003 + Wred 90°	Yes	Y			1	1.2	2	1.2	18	1.5	7	.049																
54	Dead + LM5003 + Wred 120°	Yes	Y			1	1.2	2	1.2	18	1.5	8	.049																
55	Dead + LM5003 + Wred 150°	Yes	Y			1	1.2	2	1.2	18	1.5	9	.049																
56	Dead + LM5003 + Wred 180°	Yes	Y			1	1.2	2	1.2	18	1.5	4	-0.0																
57	Dead + LM5003 + Wred 210°	Yes	Y			1	1.2	2	1.2	18	1.5	5	-0.0																
58	Dead + LM5003 + Wred 240°	Yes	Y			1	1.2	2	1.2	18	1.5	6	-0.0																
59	Dead + LM5003 + Wred 270°	Yes	Y			1	1.2	2	1.2	18	1.5	7	-0.0																
60	Dead + LM5003 + Wred 300°	Yes	Y			1	1.2	2	1.2	18	1.5	8	-0.0																
61	Dead + LM5003 + Wred 330°	Yes	Y			1	1.2	2	1.2	18	1.5	9	-0.0																
62	Dead + LM5004 + Wred 0°	Yes	Y			1	1.2	2	1.2	19	1.5	4	.049																
63	Dead + LM5004 + Wred 30°	Yes	Y			1	1.2	2	1.2	19	1.5	5	.049																
64	Dead + LM5004 + Wred 60°	Yes	Y			1	1.2	2	1.2	19	1.5	6	.049																
65	Dead + LM5004 + Wred 90°	Yes	Y			1	1.2	2	1.2	19	1.5	7	.049																
66	Dead + LM5004 + Wred 120°	Yes	Y			1	1.2	2	1.2	19	1.5	8	.049																
67	Dead + LM5004 + Wred 150°	Yes	Y			1	1.2	2	1.2	19	1.5	9	.049																
68	Dead + LM5004 + Wred 180°	Yes	Y			1	1.2	2	1.2	19	1.5	4	-0.0																
69	Dead + LM5004 + Wred 210°	Yes	Y			1	1.2	2	1.2	19	1.5	5	-0.0																
70	Dead + LM5004 + Wred 240°	Yes	Y			1	1.2	2	1.2	19	1.5	6	-0.0																
71	Dead + LM5004 + Wred 270°	Yes	Y			1	1.2	2	1.2	19	1.5	7	-0.0																
72	Dead + LM5004 + Wred 300°	Yes	Y			1	1.2	2	1.2	19	1.5	8	-0.0																
73	Dead + LM5004 + Wred 330°	Yes	Y			1	1.2	2	1.2	19	1.5	9	-0.0																
74	Dead + LV2505	Yes	Y			1	1.2	2	1.2	20	1.5																		
75	Dead + LV2506	Yes	Y			1	1.2	2	1.2	21	1.5																		
76	Service 60mph Wind 0°	Yes	Y			1	1	2	1	4	.198																		

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
1	N72A	max	5181.706	2	315.46	8	776.595	11	2.154	11	21.475	11	3.147	2
2		min	-2555.706	8	-295.95	2	-777.713	5	-2.157	5	-21.588	5	-4.285	8
3	N60B	max	1246.915	11	315.283	12	2278.043	12	2.849	5	21.469	3	2.482	12
4		min	-2566.294	5	-295.73	6	-4557.194	6	-3.8	11	-21.582	9	-1.938	6



Company : Paul J Ford Company
 Designer : SS
 Job Number : 37519-1567.003.7191
 Model Name : 826747_Plainfield I-395

May 27, 2019
 2:29 PM
 Checked By: DS

Envelope Joint Reactions (Continued)

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC	
5	N62	max	1390.052	4	315.278	4	4416.812	10	3.903	4	21.469	7	2.71	3
6		min	-2711.522	10	-295.746	10	-2147.484	4	-2.932	10	-21.582	13	-2.182	9
7	N79	max	-895.479	8	2822.477	14	6.629	13	0	76	0	76	0	76
8		min	-5595.522	14	475.636	8	-6.034	3	0	1	0	1	0	1
9	N80	max	2836.147	17	2859.061	17	4908.384	17	0	76	0	76	0	76
10		min	449.094	12	476.053	12	775.689	12	0	1	0	1	0	1
11	N81	max	2833.273	23	2856.655	23	-776.718	4	0	76	0	76	0	76
12		min	447.194	4	476.024	4	-4904.499	23	0	1	0	1	0	1
13	Totals:	max	4733.4	2	7893.818	23	4730.132	11						
14		min	-4733.398	8	2559.541	76	-4730.139	5						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M43	PIPE 2.5	.625	52	3	.119	52	10	30038.461	50715	43.155	43.155	1...	H1-1b
2	M101	PIPE 2.5	.617	52	7	.119	52	2	30038.461	50715	43.155	43.155	1...	H1-1b
3	M39	PIPE 2.5	.617	52	11	.119	52	6	30038.461	50715	43.155	43.155	1...	H1-1b
4	M45	PIPE 2.0	.543	41.938	8	.107	41.938	4	22757.755	33048	23.101	23.101	1...	H1-1b
5	M104	PIPE 2.0	.543	41.938	12	.106	41.938	8	22757.755	33048	23.101	23.101	1...	H1-1b
6	M41	PIPE 2.0	.543	41.938	4	.107	41.938	12	22757.755	33048	23.101	23.101	2...	H1-1b
7	M4	FP6x0.625	.288	4	9	.506	4	y 17	109546.7...	121500	18.986	182.25	1...	H1-1b
8	M5	FP6x0.625	.288	4	13	.499	4	y 23	109546.7...	121500	18.986	182.25	1...	H1-1b
9	M6	FP6x0.625	.288	4	5	.489	4	y 14	109546.7...	121500	18.986	182.25	1...	H1-1b
10	M53	L2.5x2.5x3	.226	0	5	.122	8	z 6	27994.715	29192.4	10.471	23.662	1...	H2-1
11	M52	L2.5x2.5x3	.226	8	13	.122	0	y 2	27994.715	29192.4	10.471	23.662	1...	H2-1
12	M51	L2.5x2.5x3	.226	8	9	.122	0	y 10	27994.715	29192.4	10.471	23.662	1...	H2-1
13	M49	PIPE 2.0	.202	81	23	.088	162	9	5397.31	32130	22.459	22.459	1...	H1-1b
14	M60	PIPE 2.0	.201	79.313	17	.088	162	13	5397.31	32130	22.459	22.459	1...	H1-1b
15	M47	LL2.5x2.5x3x6	.200	0	17	.002	0	y 1	31808.924	58320	55.717	30.314	1	H1-1b*
16	M48	LL2.5x2.5x3x6	.199	0	23	.002	0	y 1	31808.924	58320	55.717	30.314	1	H1-1b*
17	M50	PIPE 2.0	.199	79.313	20	.088	162	5	5397.31	32130	22.459	22.459	1...	H1-1b
18	M46	LL2.5x2.5x3x6	.197	0	14	.002	0	y 1	31808.924	58320	55.717	30.314	1	H1-1b*
19	M64	PIPE 3.0	.189	50.625	23	.147	54	9	58506.375	65205	68.985	68.985	2...	H1-1b
20	M66	PIPE 3.0	.184	50.625	8	.147	54	5	58506.375	65205	68.985	68.985	1...	H1-1b
21	M62	PIPE 3.0	.184	50.625	4	.147	54	13	58506.375	65205	68.985	68.985	1...	H1-1b
22	M1	PIPE 3.0	.177	3.375	2	.141	0	2	58506.375	65205	68.985	68.985	1...	H1-1b
23	M3	PIPE 3.0	.177	3.375	6	.140	0	6	58506.375	65205	68.985	68.985	1...	H1-1b
24	M2	PIPE 3.0	.177	3.375	10	.140	0	10	58506.375	65205	68.985	68.985	1...	H1-1b
25	M61	PIPE 3.0	.173	27	75	.052	54	13	58506.375	65205	68.985	68.985	1...	H1-1b
26	M21	HSS3X3X6	.169	48	11	.041	48	z 5	122133.6...	140346	134.55	134.55	1...	H1-1b
27	M16	HSS3X3X6	.169	48	3	.041	48	z 9	122133.6...	140346	134.55	134.55	1...	H1-1b
28	M20	HSS3X3X6	.169	48	7	.041	48	z 13	122133.6...	140346	134.55	134.55	1...	H1-1b
29	M8	HSS3X3X6	.139	12.469	17	.063	11.813	y 17	110461.91	140346	134.55	134.55	2...	H1-1b
30	M7	HSS3X3X6	.139	12.469	23	.063	11.813	y 23	110461.91	140346	134.55	134.55	2...	H1-1b
31	M9	HSS3X3X6	.132	12.469	15	.063	11.813	y 14	110461.91	140346	134.55	134.55	2...	H1-1b
32	M10	L2.5x1.5x4	.123	16.503	18	.026	32.332	z 7	17986.715	30682.8	5.53	19.167	1...	H2-1
33	M12	L2.5x1.5x4	.123	16.503	14	.026	32.332	z 3	17986.715	30682.8	5.53	19.167	1...	H2-1
34	M36	L2.5x1.5x4	.123	16.503	22	.026	32.332	z 11	17986.715	30682.8	5.53	19.167	1...	H2-1
35	M13	L2.5x1.5x4	.122	15.829	25	.030	0	z 21	17986.715	30682.8	5.53	19.167	1...	H2-1
36	M11	L2.5x1.5x4	.122	15.829	17	.030	0	z 25	17986.715	30682.8	5.53	19.167	1...	H2-1
37	M37	L2.5x1.5x4	.122	15.829	21	.032	0	z 17	17986.715	30682.8	5.53	19.167	1...	H2-1
38	M59	PIPE 3.0	.106	0	7	.052	54	9	58506.375	65205	68.985	68.985	1...	H1-1b
39	M56	PIPE 3.0	.106	0	3	.052	54	5	58506.375	65205	68.985	68.985	1...	H1-1b

SITE DETAILS

Site Name/Code 826747 - Plainfield/I-395
 Date 5/27/2019
 Engineer LB

CONNECTION PARAMETERS

Loadcase # 5
 Number of bolts 4
 B 4.0 in
 H 4.0 in
 Bolt Diameter d 5/8 in
 Tensile Area A_b 0.31 in²
 Tensile Area A_n 0.23 in²
 Grade A325
 Bolt Ultimate Strength F_{ub} 120 ksi
 Connection length reduction factor R_b 1



Connection Sketch/Photo

CONNECTION LOADS

Bending Moment M_{xx} 21.59 kips-in
 Bending Moment M_{zz} 0.41 kips-in
 Torsional Moment M_{yy} 2.16 kips-in
 Shear Force V_x 0.00 kips
 Shear Force V_z 0.78 kips
 Axial Force T_y 1.43 kips

SOFTWARE REACTIONS TABLE

L...	Joint Label	X [lb]	Y [lb]	Z [lb]	MX [k-in]	MY [k-in]	MZ [k-in]
5	N72A	1433.06	-811	-777.713	-2.157	-21.588	-414
5	N60B	-2566.294	-256.869	-3838.284	2.849	-11.317	-569
5	N62	1140.71	261.629	-1713.227	3.221	-7.936	1.38
5	N79	-1997.751	1026.35	5.829	0	0	0
5	N80	1460.215	1481.238	2515.905	0	0	0
5	N81	530.076	559.909	-922.649	0	0	0
5	Totals:	.017	3071.446	-4730.139			

BOLT CHECK

Bolt Tension Capacity

$$\phi R_{nt} = 0.75 \cdot F_{ub} \cdot A_n$$

$$\phi R_{nt} = \mathbf{20.3 \text{ kips}}$$

Bolt Shear Capacity

$$\phi R_{nv} = 0.75 \cdot 0.625 \cdot 0.8 \cdot F_{ub} \cdot A_b \cdot R_b$$

$$\phi R_{nv} = \mathbf{13.8 \text{ kips}}$$

Maximum Bolt Tension

$$T_{ub} = F_{Mxx} + F_{Mzz} + T_y / 4$$

$$T_{ub} = \mathbf{3.11 \text{ kips}}$$

Maximum Bolt Shear

$$V_{ub} = \text{sqrt}((V_x/4)^2 + (V_z/4)^2) + F_{Myy}$$

$$V_{ub} = \mathbf{0.39 \text{ kips}}$$

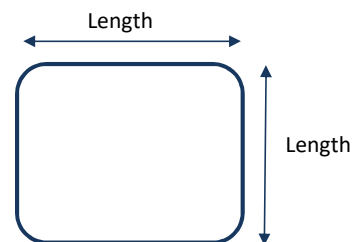
Tension Ratio: 15.3% PASS

Shear Ratio: 2.8% PASS

$(T_{ub} / \phi R_{nt})^2 + (V_{ub} / \phi R_{nv})^2 < 1.0$ Ratio 2.4% PASS

WELD CHECK

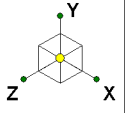
Filler Metal Strength 70 ksi
 Weld Thk. 0.375 in
 Nominal Weld Thk. 0.265 in
 Length 3.0 in
 Shear 0.78 kips
 Moment 22.00 kips-in
 A 1.59 in²
 S_w 3.51 in³
 f_v 0.49 ksi
 f_m 6.27 ksi
 f_r 6.29 ksi
 Allowable Weld Stress 31.5 ksi



20.0% PASS

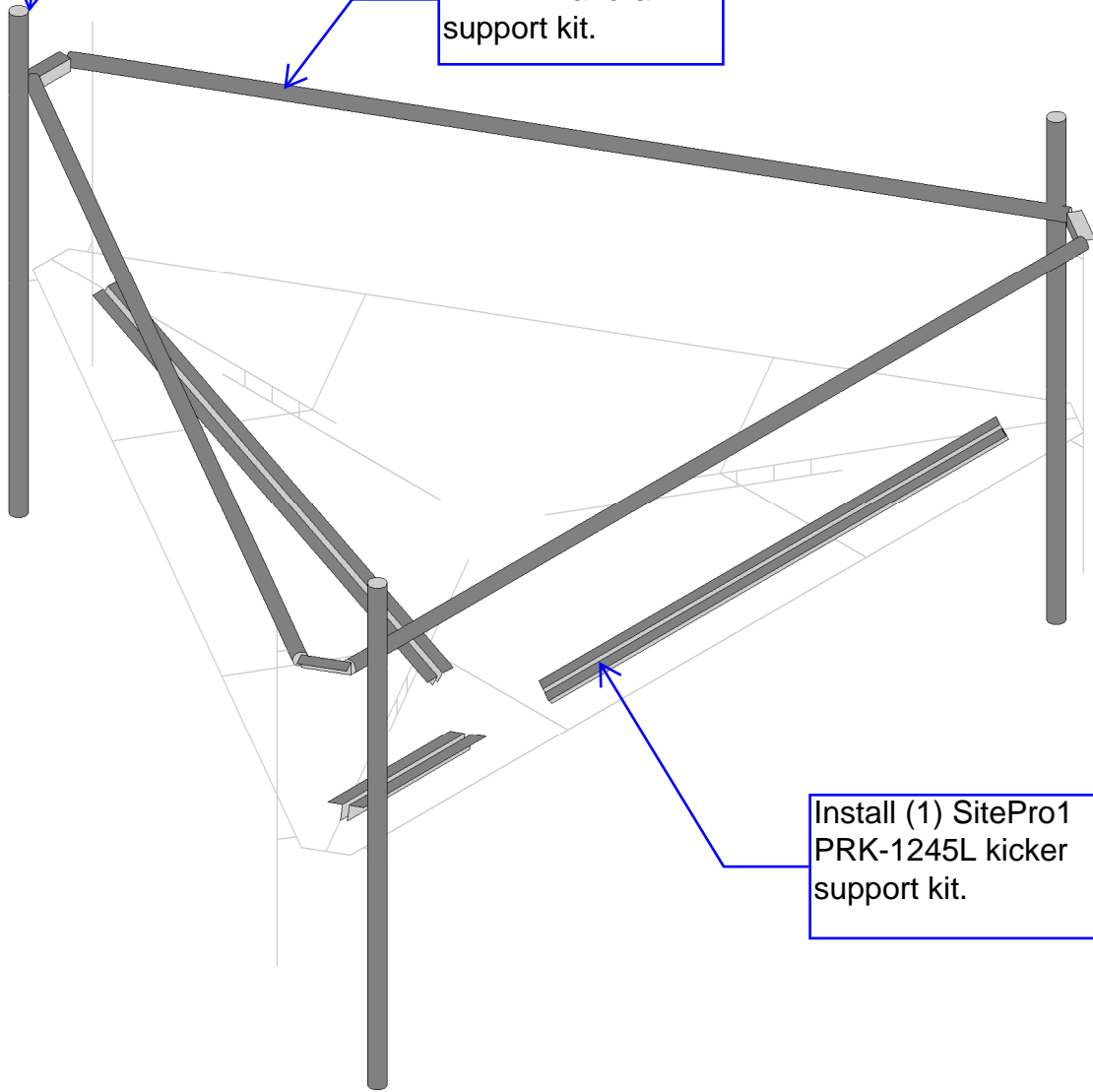
APPENDIX D

SUPPLEMENTAL MODIFICATION INFORMATION



Replace existing pipes with 8-ft P2.5 STD pipes
(Typical, 1 per sector)

Install (1) SitePro1
HRK14 handrail
support kit.



Install (1) SitePro1
PRK-1245L kicker
support kit.

Envelope Only Solution

Paul J Ford Company

SS

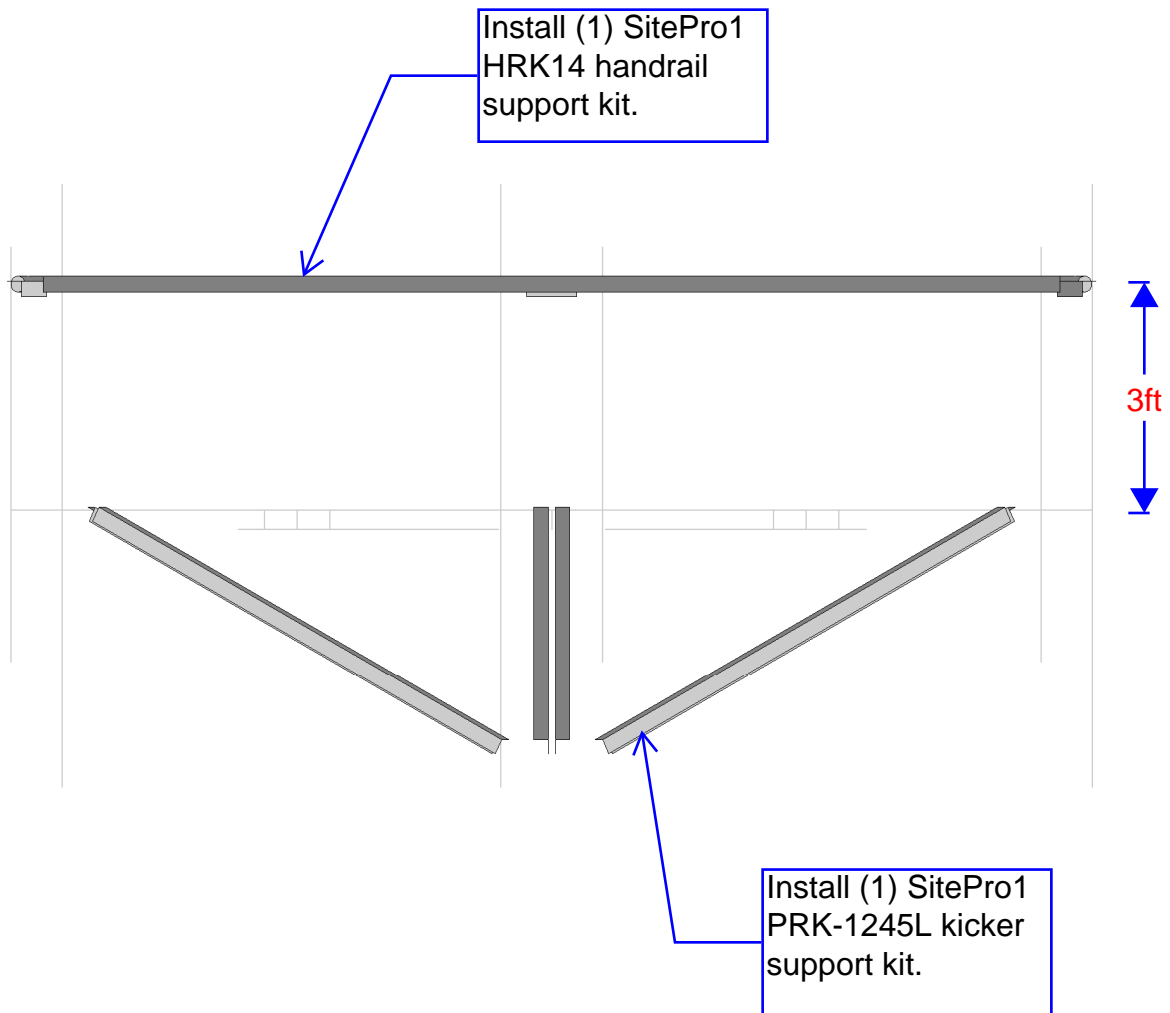
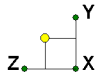
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826747_Plainfield I-395

SK - 8

May 27, 2019 at 2:27 PM

826747_Plainfield I-395_REINF.R3D



Envelope Only Solution

Paul J Ford Company

SS

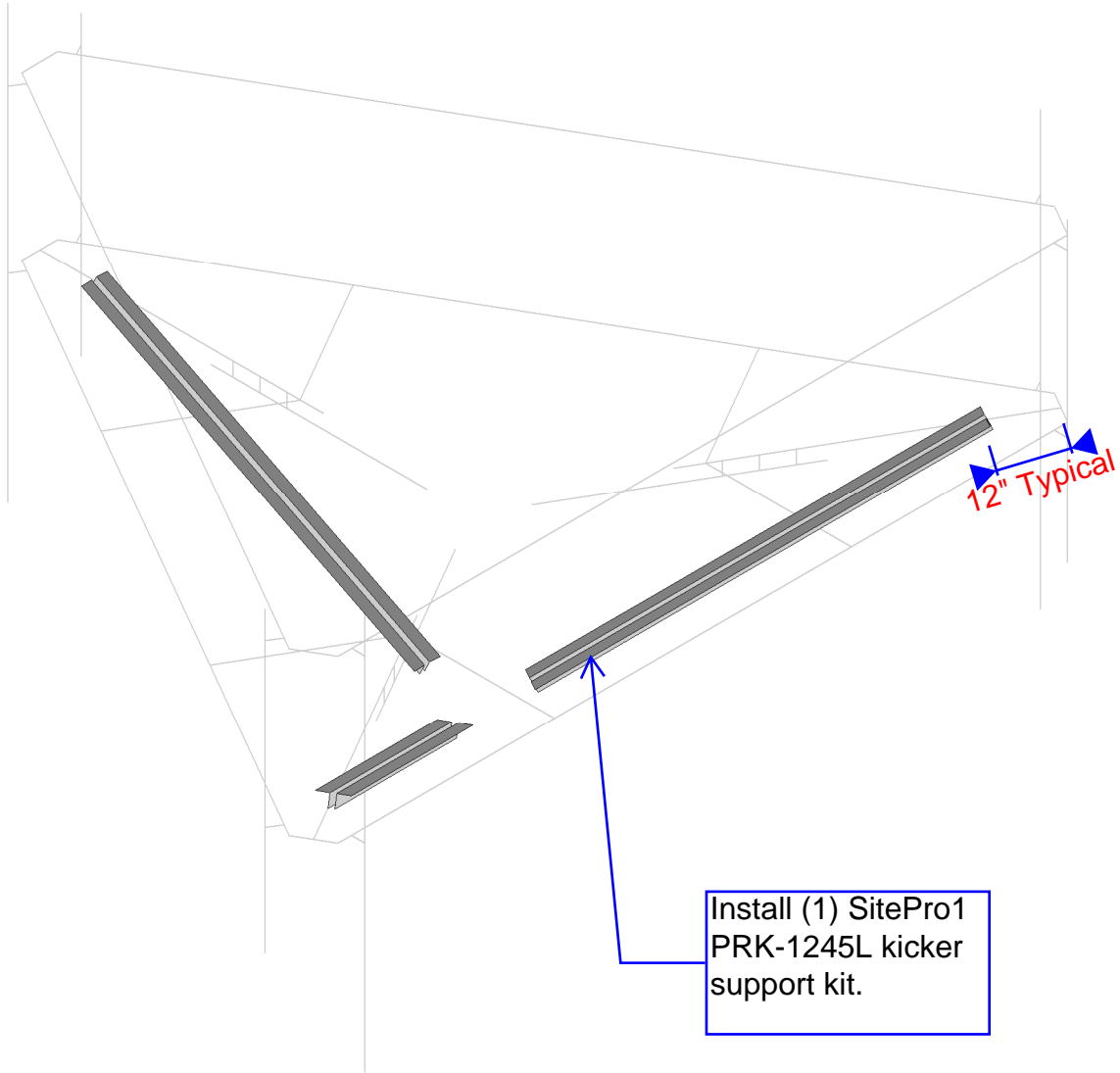
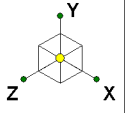
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826747_Plainfield I-395

SK - 9

May 27, 2019 at 2:28 PM

826747_Plainfield I-395_REINF.R3D



Install (1) SitePro1
PRK-1245L kicker
support kit.

Envelope Only Solution

Paul J Ford Company

SS

37519-1567.003.7191

826747_Plainfield I-395

SK - 10

May 27, 2019 at 2:28 PM

826747_Plainfield I-395_REINF.R3D

APPENDIX E

**MANUFACTURER DRAWINGS
(FOR REFERENCE ONLY)**

Pxxx: Bulk Pipe



Features:

- Factory cut end, hot-dip galvanized pipe

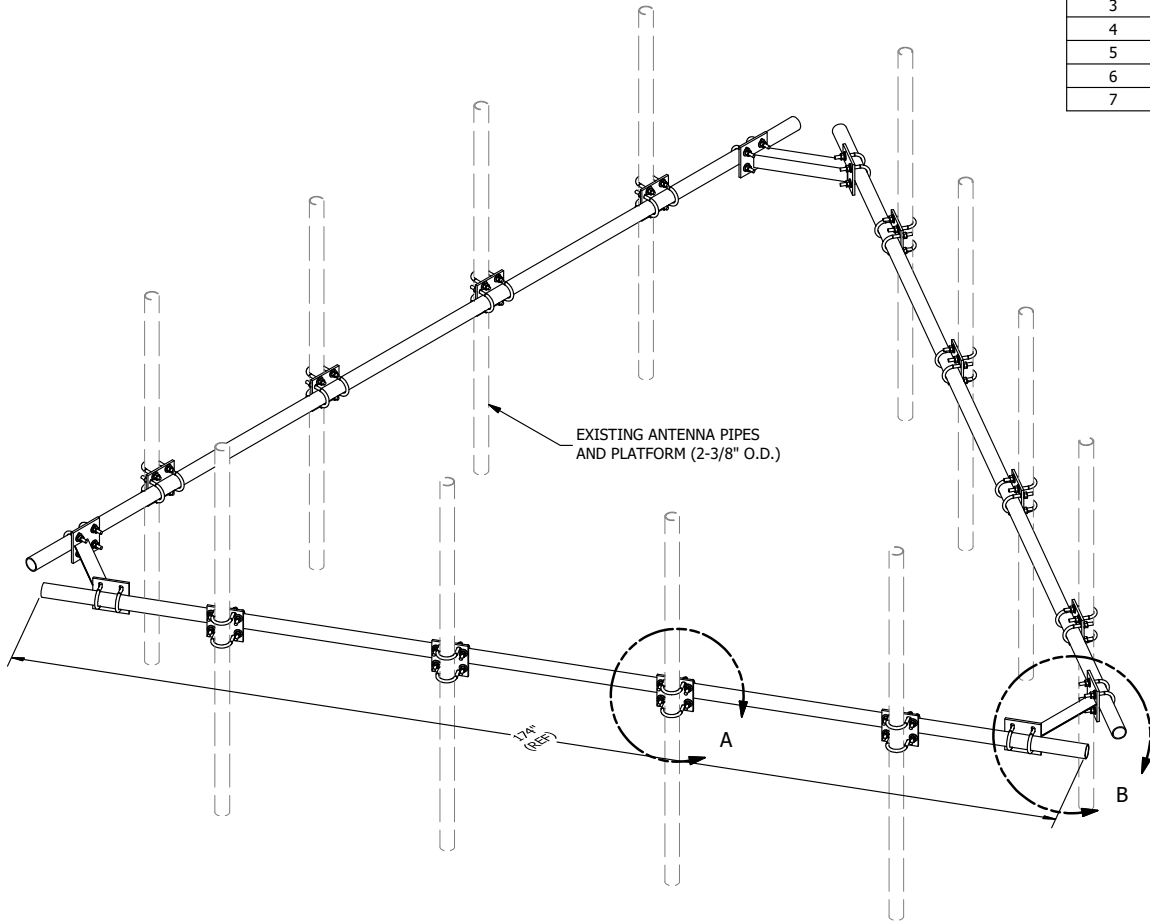
Construction:

- ASTM A53 Grade B
- Schedule 40

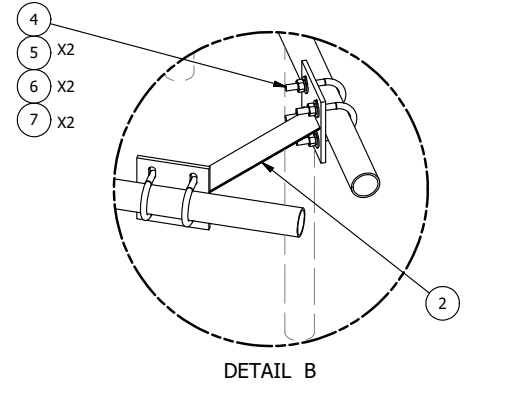
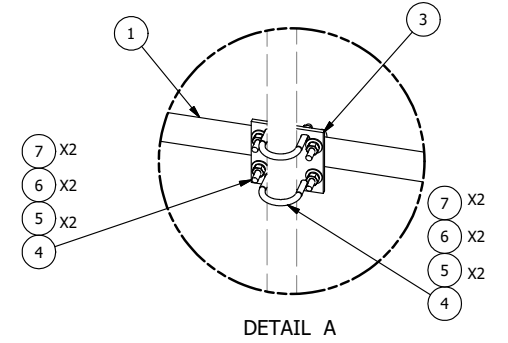
Design Criteria:

- ASTM A53 Grade B (Yield $F_y = 35$ ksi [240 MPa] / Tensile $F_u = 60$ ksi [415 MPa])
- Hot dip galvanized in accordance with ASTM A123 requirements

Part #	Length	OD x Length (in)	Weight
P263	5'-3"	2-3/8" x 63"	20 lb
P272	6'-0"	2-3/8" x 72"	22 lb
P284	7'-0"	2-3/8" x 84"	26 lb
P296	8'-0"	2-3/8" x 96"	30 lb
P2120	10'-0"	2-3/8" x 120"	37 lb
P2126	10'-6"	2-3/8" x 126"	39 lb
P2150	12'-6"	2-3/8" x 150"	46 lb
P2174	14'-6"	2-3/8" x 174"	53 lb
P3084	7'-0"	2-7/8" x 84"	41 lb
P3096	8'-0"	2-7/8" x 96"	47 lb
P30120	10'-0"	2-7/8" x 120"	58 lb
P30126	10'-6"	2-7/8" x 126"	61 lb
P30150	12'-6"	2-7/8" x 150"	73 lb
P30174	14'-6"	2-7/8" x 174"	84 lb
P360	5'-0"	3-1/2" x 60"	38 lb
P372	6'-0"	3-1/2" x 72"	46 lb
P396	8'-0"	3-1/2" x 96"	61 lb
P3150	12'-6"	3-1/2" x 150"	95 lb
P3160	13'-4"	3-1/2" x 160"	101 lb
P3174	14'-6"	3-1/2" x 174"	110 lb
P3216	18'-0"	3-1/2" x 216"	137 lb
P472	6'-0"	4-1/2" x 72"	65 lb
P4126	10'-6"	4-1/2" x 126"	114 lb



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	P2174	2-3/8" OD X 174" SCH 40 GALVANIZED PIPE	174 in	55.75	167.24
2	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
3	12	SCX1	CROSSOVER PLATE 2-3/8" X 2-3/8"	6 in	3.71	44.50
4	60	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.63	37.51
5	120	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	4.09
6	120	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.67
7	120	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	8.60
TOTAL WT. #						302.36



REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	REPLACED HCP WITH X-AHCP	CEK		7/11/2014
REVISION HISTORY				

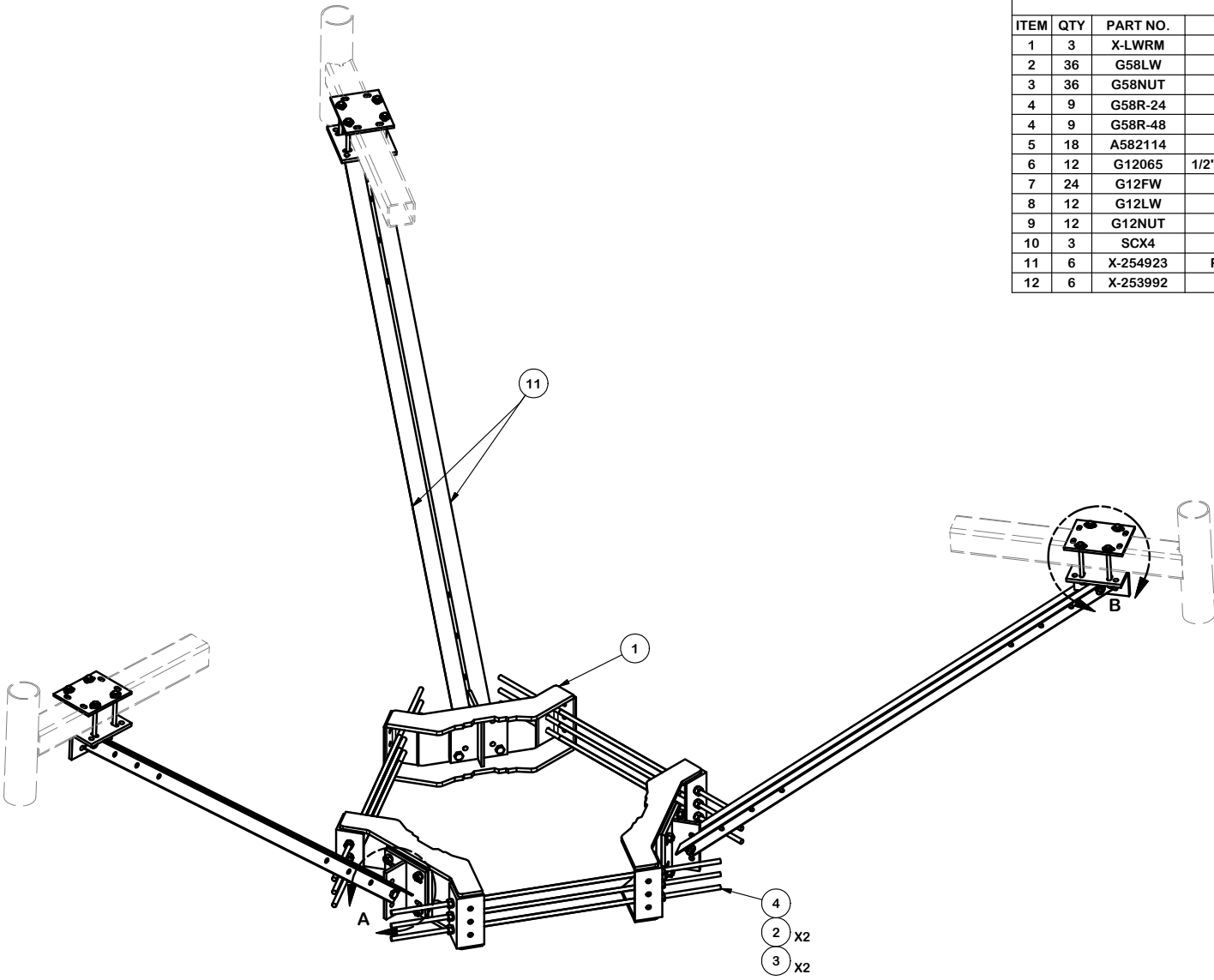
TOLERANCE NOTES

**TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)**

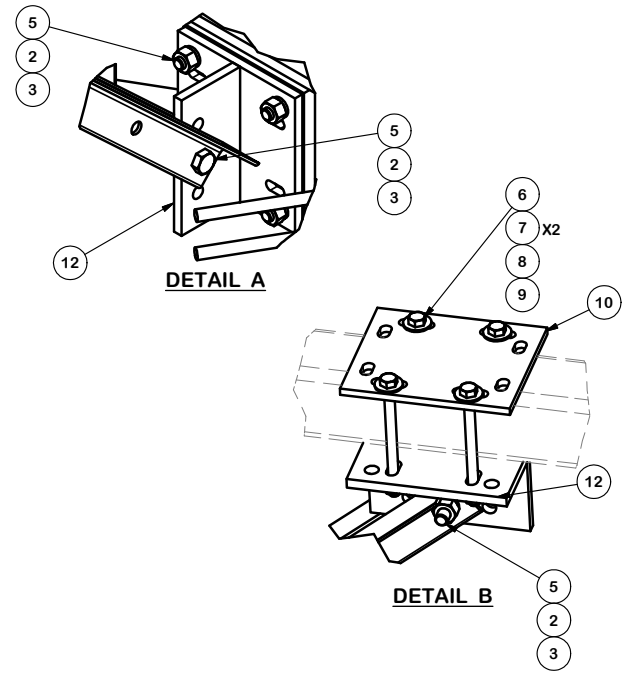
PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION			
HANDRAIL KIT FOR 14'-6" FACE			
CPD NO.	DRAWN BY	ENG. APPROVAL	
	KC8 5/30/2012		
CLASS	SUB	DRAWING USAGE	CHECKED BY
81	01	CUSTOMER	BMC 7/13/2014

 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX	
	Engineering Support Team: 1-888-753-7446	
PART NO.	HRK14	PAGE 1 OF 1
DWG. NO.	HRK14	



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMNT		68.81	206.42
2	36	G58LW	5/8" HDG LOCKWASHER		0.03	0.94
3	36	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	4.68
4	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
4	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
5	18	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	5.62
6	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
7	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
8	12	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.17
9	12	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	0.86
10	3	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	18.06
11	6	X-254923	PLATFORM REINFORCEMENT KIT ANGLE	84 in	22.83	137.00
12	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
					TOTAL WT. #	517.21



TOLERANCE NOTES
 TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

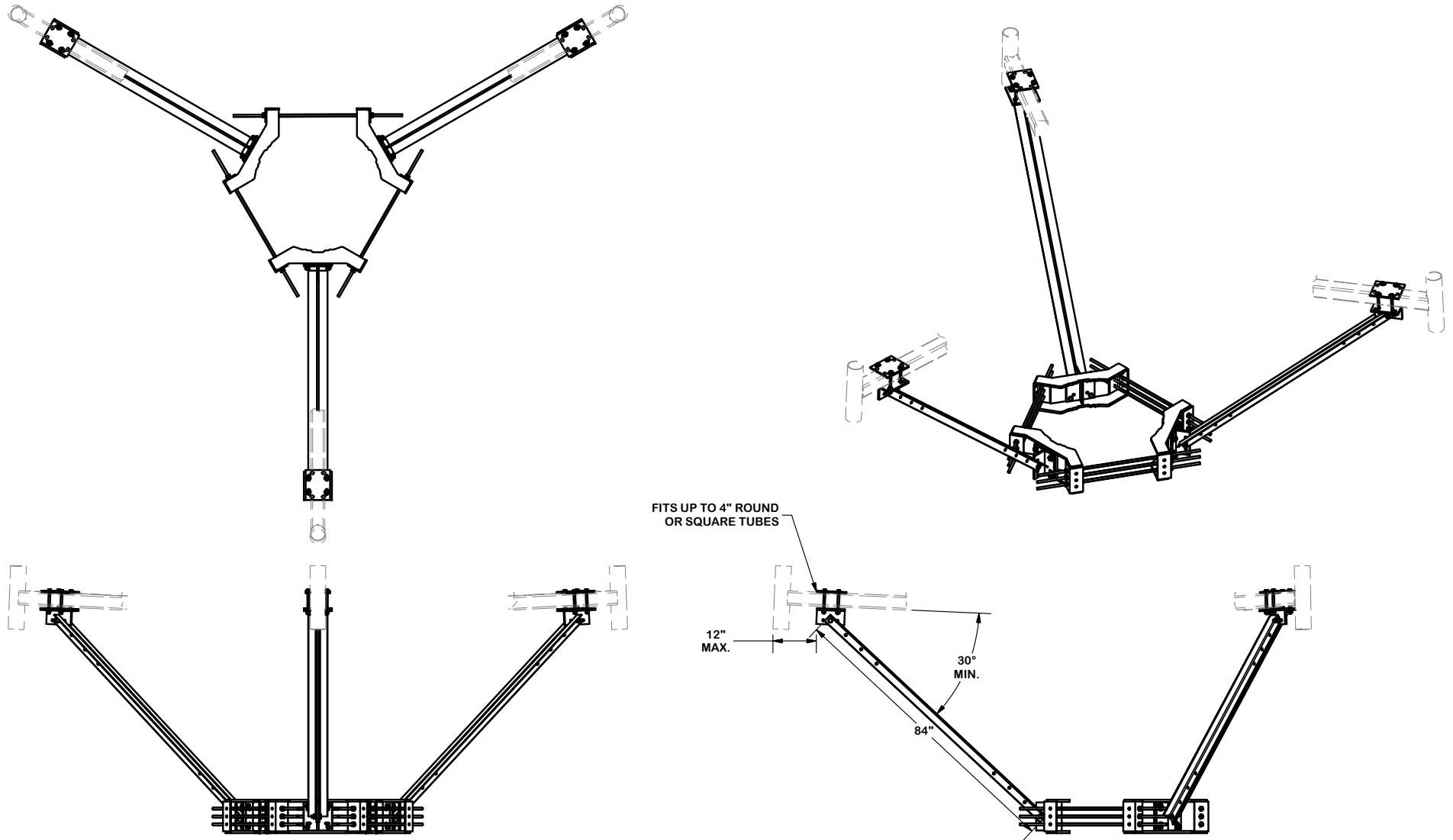
PROPRIETARY NOTE:
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DESCRIPTION		PLATFORM REINFORCEMENT ON A 12" TO 45" POLE 7" ANGLE	
CPD NO.	4488	DRAWN BY	CEK 7/16/2014
CLASS	81	DRAWING USAGE	CUSTOMER
SUB	01	ENG. APPROVAL	BMC 1/18/2016

 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	PRK-1245L
DWG. NO.	PRK-1245L

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED ALL 5/8" BOLTS TO A582114	4488	CEK	10/1/2015

REVISION HISTORY



TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER ASSEMBLY ($\pm 0.060"$)

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 PLATFORM REINFORCEMENT
 ON A 12" TO 45" POLE
 7° ANGLE

CPD NO. 4488	DRAWN BY CEK 7/16/2014	ENG. APPROVAL
CLASS 81	SUB 01	DRAWING USAGE CUSTOMER
		CHECKED BY BMC 1/18/2016



Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

Engineering Support Team:
 1-888-753-7446

PART NO. PRK-1245L	PAGE 2 OF 2
DWG. NO. PRK-1245L	

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED ALL 5/8" BOLTS TO A582114	4488	CEK	10/1/2015
REVISION HISTORY				