

Questions from Pre-Proposal Meeting for RTIS Project – V.3

Steve Lewis

1. Can you please confirm that the power and RJ45 Data connections will be pre-wired to the sign mounting point, and that any wiring requirements for power and data connection on the proposers is limited to getting the power and data from the interior of the sign to the sign mounting connection point. Further, can ITP provide updated drawings to illustrate this?

Answer. *Yes, power and RJ45 data connections are prewired from the communications cabinet on the platform through the structure to the pre-drilled holes for mounting the sign. The only wiring that will need to be run is from the sign to the ADA push to talk button for audible announcements of arrival times. See attached drawing with network and power wiring in the shelter structures.*

2. The RFP states that you require one Original hardcopy proposal, 4 additional hard copies, and one electronic copy on CD or Flash drive. The Addendum 1 specifics one single signed hardcopy, and 6 electronic copies. Can you please clarify the appropriate proposal submission requirements?

Answer. *One original hardcopy and 4 USB flash media is all that is necessary, sorry for any confusion.*

Alex Fay

1. Can ITP please provide additional information (specifications, dimensional drawings, etc.) on the interface between the vendor supplied sign/bracket and the existing shelter/structure? (on the call you mentioned some pre-existing holes... can you indicate the following:
 - a. Horizontal spacing between the holes
 - b. Vertical spacing between the holes (since they are on a curved surface – the “rib” of the shelter)
 - c. Diameter of the holes
 - d. Thickness of the metal material that the shelter “rib” is made from
 - e. Please note any differences between the 96ft / 48ft / 32ft / 16ft / NA length variants (“Section A” vs “Section B” vs. “Section C” drawings in RFP)

Answer. *See attached drawings provided by shelter fabricator and contractors for additional information on hole spacing, diameter, etc.*

2. Can ITP please provide access to a live, functional real-time data feed from Avail for vendors to test and demonstrate compatibility?
 - a. Feed can be from any routes – what is important is understanding how the data is structured, how frequently it updates, etc.

Answer. *Yes, we can provide access to our real-time data feed for test and validation purposes. The data feed is a Google Transit data feed using GTFS-real time.*

3. Can ITP clarify the data communication infrastructure for each sign?
 - a. (on the phone you mentioned that ITP will provide an Ethernet cable to the sign mounting location which will be wired to an ITP supplied switch with either fiber or cellular backhaul)

Answer. *Correct, each sign will communicate across Ethernet connections to the communications cabinet, and ultimately the ITP switch for each platform. The ITP switches at the platforms will send/receive data from ITP servers at the ITP central office and the GTFS-real time data feed through either a fiber connection run to the platform, or cellular connection (where we don't have the ability to run cable to the platform).*

4. Can ITP provide the maximum physical dimensions of the sign enclosure that are allowed by the existing shelter?
 - a. The drawings provided allow us to infer the maximum allowed vertical dimension (based on shelter height and min. ground clearance)
 - b. The drawings do not provide enough information to infer the maximum overall horizontal dimension.

Answer. *Please see updated drawing showing planned width of 3'3".*

5. Can ITP advise how many existing LED signs are already installed on the Silver Line and at Central Station?
 - a. Can ITP share any additional information about these signs (e.g. manufacturer, model, photo of serial # / label, etc?)

Answer. *We have 55 signs installed currently. (34) Sunrise CDP20, (17) Sunrise CDP40, and (4) Sunrise NXT. See attached photo.*

Brian Gilliom

1. For the LED Indicators as outlined below in the RFP at each stop, is providing this part of our scope in the RFP and if not how do we communicate with them to drive the signaling?

Answer. *The current signs on the Silver Line have a custom configuration between the sign and the LED indicator of the bus arriving/departing the station. The LED indicators will be manufactured and will be powered to light up. We would like to see solutions from the sign vendor to send a signal from the sign to illuminate the indicator when sign reports the bus is arriving, and turn back off when the bus departs the station. This is ONLY for the three (3) 'shared' stations (6 platforms; eastbound and westbound) list in the RFP.*



2. For Amber Alerts as Mentioned in Table 1, is there an API for this that we need to parse, or is this only an example of Agency Generated Alerting Content?

Answer. *This is just an example. We currently do have not an API setup, but we would like to look at options to handle this or present custom messages to signs as listed in section 4.3.2 of the RFP. "The system shall allow an authorized user to construct and display one or more text messages (e.g., real-time information messages regarding service disruptions and snow emergencies) of 150 characters or less. These messages shall be displayed on the DMS on a separate row from the predicted arrival times. Also, an equivalent audio announcement of the displayed message shall be provided on-demand (e.g., through a push-button)."*

3. For Power and Ethernet Cabling, Where will the Agency hand off the cabling to us for the signage? Will it be at a junction box near the signage install location?

Answer. *Power and RJ45 data connections are prewired from the communications cabinet on the platform through the structure to the pre-drilled holes for mounting the sign. The only wiring that will need to be run is from the sign to the ADA push to talk button for audible announcements of arrival times. See attached drawing with network and power wiring in the shelter structures.*

4. If the preference is to have one Cellular Router per station pair will the Agency provide the cabling to connect the pairs together via Ethernet, or will we need to use Wireless?

Answer. *Each sign will communicate across Ethernet connections to the communications cabinet, and ultimately the ITP switch for each platform. The ITP switches at the platforms will then send/receive data from ITP servers at the ITP central office and the GTFS-real time data feed through either a fiber connection run to the platform, or cellular connection (where we don't have the ability to run cable to the platform). The switches, fiber, and cellular routers will already be in-place, we just need to configure the signs to the network switch to pull the GTFS-real time data feed.*

5. In the Q&A call it sounded like some of the Stations would have Fiber routed to them. Should the Cellular Router be listed as an Option so that it is not included for stations that have Fiber Connectivity?

Answer. *No, the stations will already have fiber or a cellular router installed at each station ahead of time by the project contractor. Signs only need to connect to the ITP switch in the communications cabinet and be setup to access the data feed through the configured fiber or cellular connection to ITP central offices). No additional routers should be necessary.*

6. Section 10.5 refers to a 2 Year Warranty with Three one Year Extensions, Section 10.3 refers to a five year warranty with 2 options extensions. Can you clarify the warranty expectations?

Answer. *Sorry for the confusion. We would like to see a five (5)-year warranty included with optional one-year extensions. The RFP has been updated to correct the error.*

Solari

1. Is Microsoft software mandatory or can Linux be an alternative, giving the same functionality?

Answer. *No, Microsoft is not required. ITP is open to a variety of options. Please note that since this is an RFP and not a bid, proposers can indicate compliance with a modification to each requirement and describe the modification in the Compliance Matrix. Proposal scoring will not be affected by indicating "compliance with modification."*

2. Is NTCIP mandatory or a different protocol can be proposed, maintaining the same requirements?

Answer. *Yes, per the RFP section 4.2.4. "Interface with central system shall utilize National Transportation Communications Interface Protocols (NTCIP) standards, allowing additional signs to be added to the system without contractor support. An Interface Control Document (ICD) must be provided."*

Randy Hood

1. Can there be a Cloud solution

Answer. *We are open to a variety of solutions and we would be interested in seeing how a cloud solution would work. However, physical DMS are still required. Please note that since this is an RFP and not a bid, proposers can indicate compliance with a modification to each requirement and describe the modification in the Compliance Matrix. Proposal scoring will not be affected by indicating "compliance with modification."*



LL1 - P80 - v.3



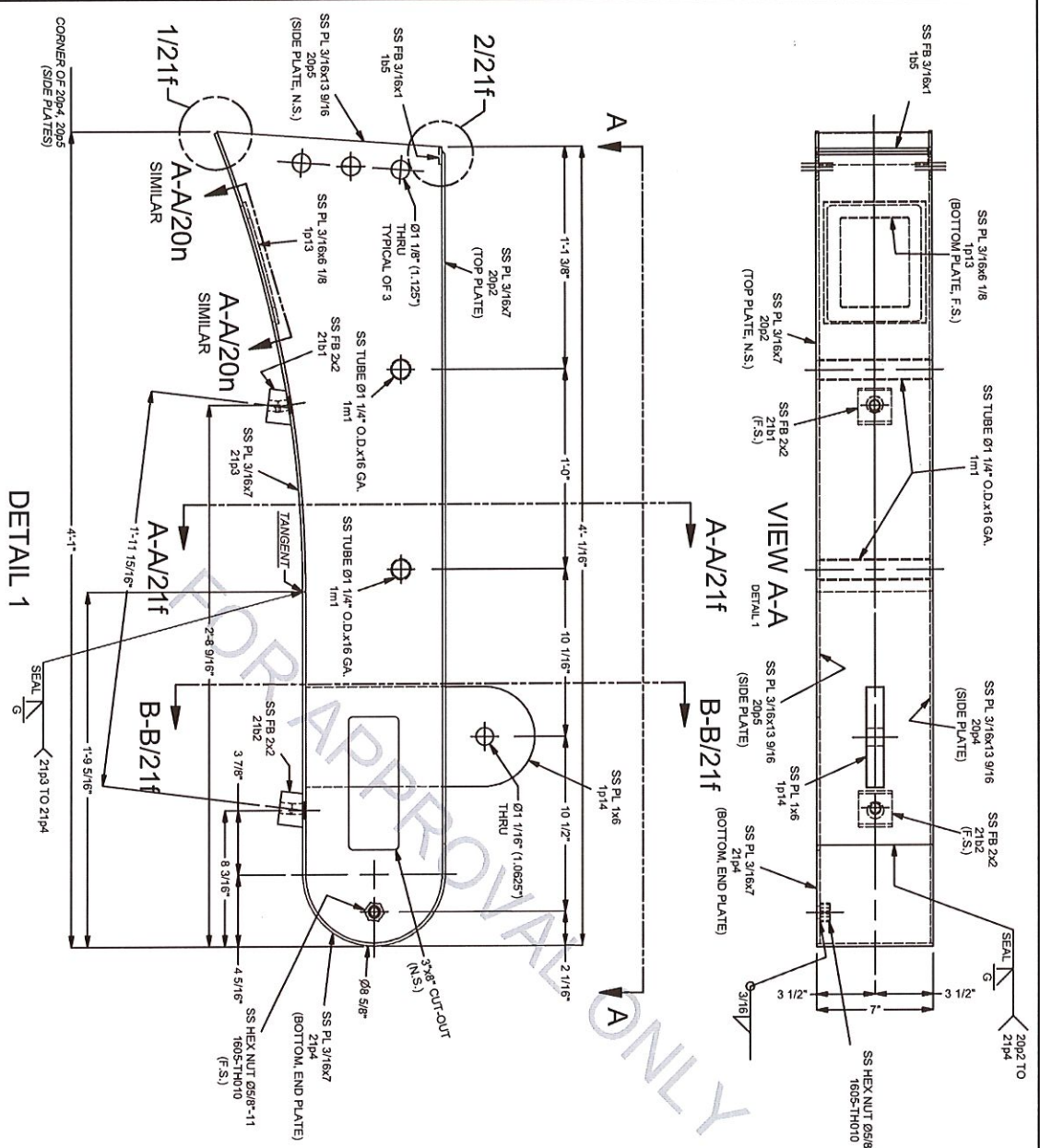
222 - P80 - v.3

1.3

Real Time Annual Sign Attachment Details
Type A
Pg 1991

TYPE A CANOPIES

1605.009



1-\"/>

ELECTRICAL ACCESS COVER PLATES
NEOPRENE GASKET AND ATTACHMENT
HARDWARE NOT SHOWN FOR CLARITY.
SEE SHEET 20n FOR DETAILS.

FOR APPROVAL ONLY 6/7/2018

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	NOTES	LENGTH	MASS
1	1			SS316L	SS PL 3/16x7		2'-8"	12.2536
1	1			SS316L	SS PL 3/16x7		2'-4 1/4"	8.558
1	1			SS316L	SS FB 2x2		0'-1 1/2"	1.4762
1	1			SS316L	SS FB 2x2		0'-1 1/2"	1.3077
1	1			2005	SS PL 3/16x13 9/16		4'-13/16"	22.3406
1	1			SS316L	SS PL 3/16x13 9/16		4'-13/16"	23.6754
1	1			SS316L	SS PL 3/16x7		3'-5 11/16"	15.576
1	1			SS316L	SS PL 1/2x13/16		1'-1 13/16"	22.7836
1	1			SS316L	SS PL 3/16x8 1/8		0'-7 9/16"	11.2829
1	1			SS316L	SS PL 11GA x5 1/2		0'-7 1/16"	1.4083
1	1			NEOPRENE	1/16" NEOPRENE GSKTX5 3/8		0'-6 15/16"	0.284
1	1			SS304L	SS TUBE Ø1 1/4" O.D. x16 GA.		0'-6 5/8"	4.552
1	1			SS304L	SS FB 3/16x1		0'-6 9/16"	3.59
1	1			SS318-8	SS HEX NUT Ø5/8"-11		0'-6 5/8"	1.299
4	1			SS318-8	SS PIN-IN-TORX BUTTON HEAD CAP SCREW Ø1/4"-20x3/4"		0'-3/4"	0.152

TOTAL WEIGHT EACH ASSEMBLY: 87.547 lbsmass

#	DATE	REVISION	NAME
1			

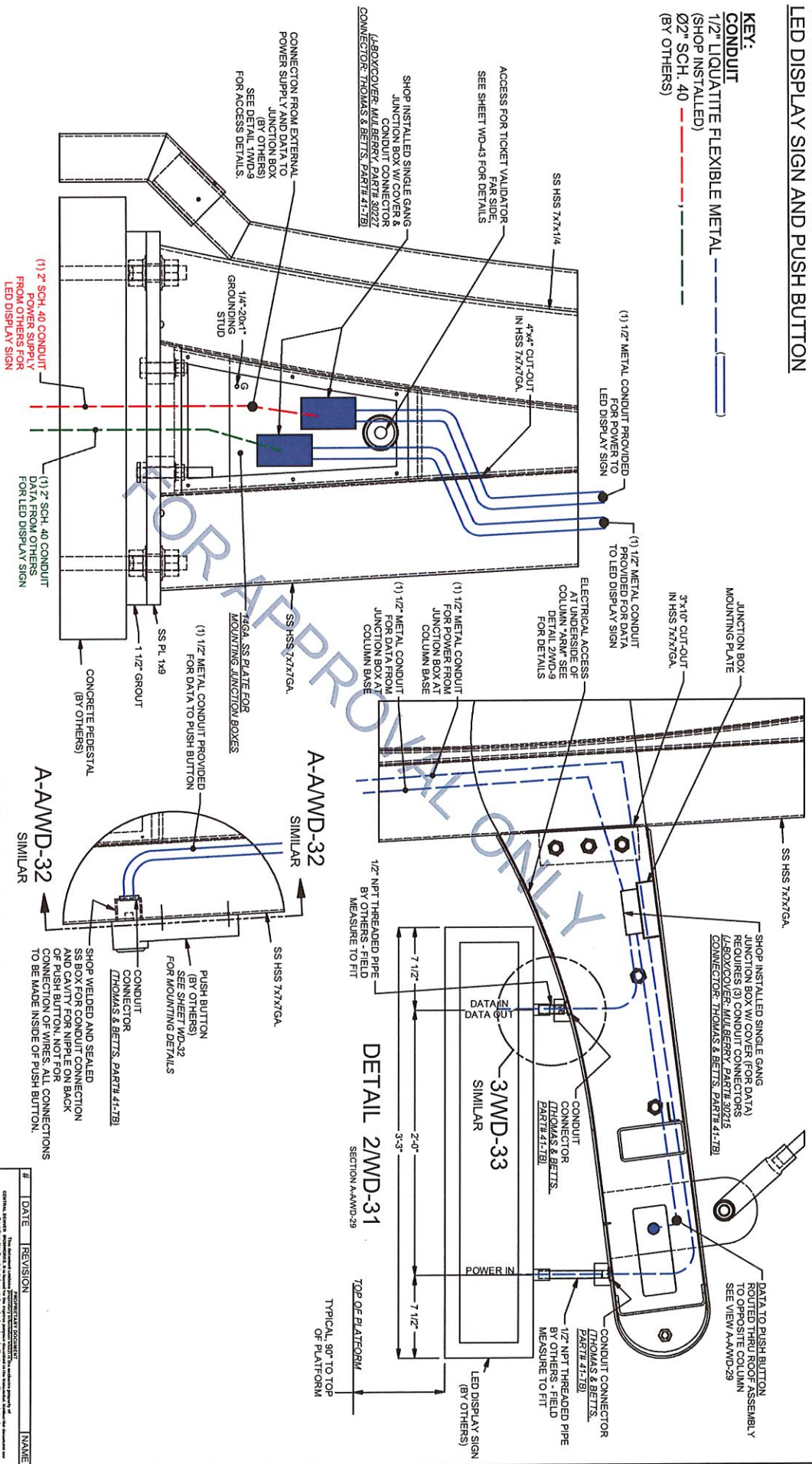
STRUCTURE: STATION CANOPIES
 MODEL #: 1605.009
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 NOTE: THE RAPID LARK LINE BRT
 DRAWN BY: SWM
 DESCRIPTION: ARM SUB-ASSEMBLY
 SHEET: 216

V.3

Real Time Arrival Sign
Type B
Pg 1 of 3

WIRING DIAGRAMS FOR LED DISPLAY SIGN AND PUSH BUTTON

KEY:
 1/2" LIQUATITE FLEXIBLE METAL (SHOP INSTALLED)
 Ø2" SCH. 40 (BY OTHERS)



ELECTRICAL PACKAGE

FOR APPROVAL ONLY 11/16/2018

#	DATE	REVISION	NAME
1			

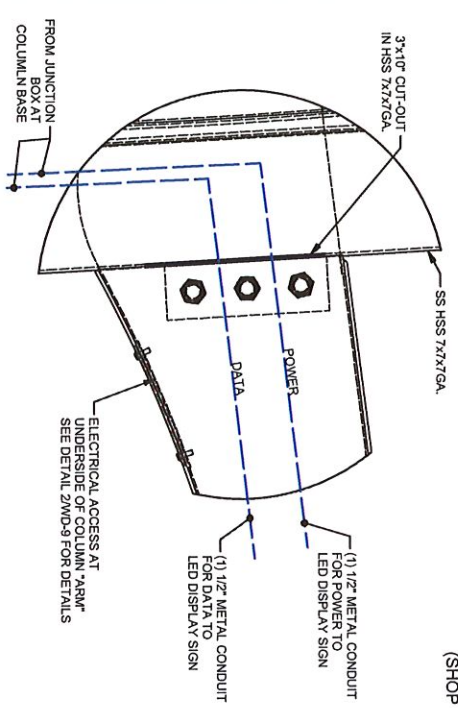
PROJECT: GRAND RAPIDS, MICHIGAN
 LOCATION: THE CHRISTIAN COMPANY
 DRAWN BY: S. J. L. (SHEET 1 OF 1)
 CHECKED BY: S. J. L.
 DESCRIPTION: WIRING DIAGRAMS
 SHEET: 1WMD-31
 WOV: 1605
 PROJECT: GRAND RAPIDS, MICHIGAN
 LOCATION: THE CHRISTIAN COMPANY
 DRAWN BY: S. J. L. (SHEET 1 OF 1)
 CHECKED BY: S. J. L.
 DESCRIPTION: WIRING DIAGRAMS
 SHEET: 1WMD-31
 WOV: 1605

V.3

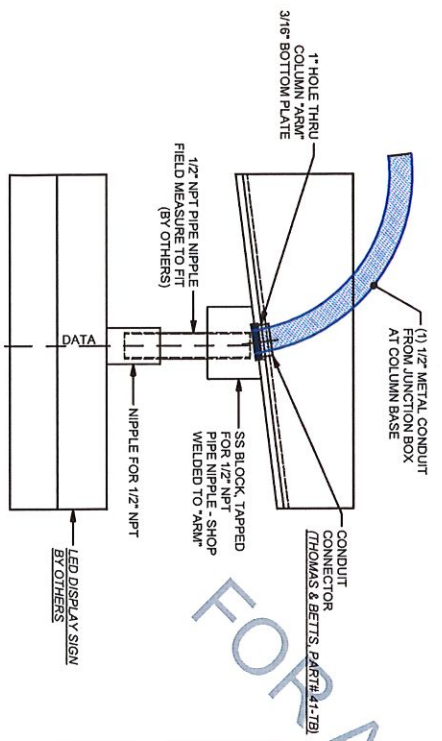
Real Time Arrival Sign
Type B pg 293

WIRING DIAGRAMS FOR LED DISPLAY SIGN AND PUSH BUTTON

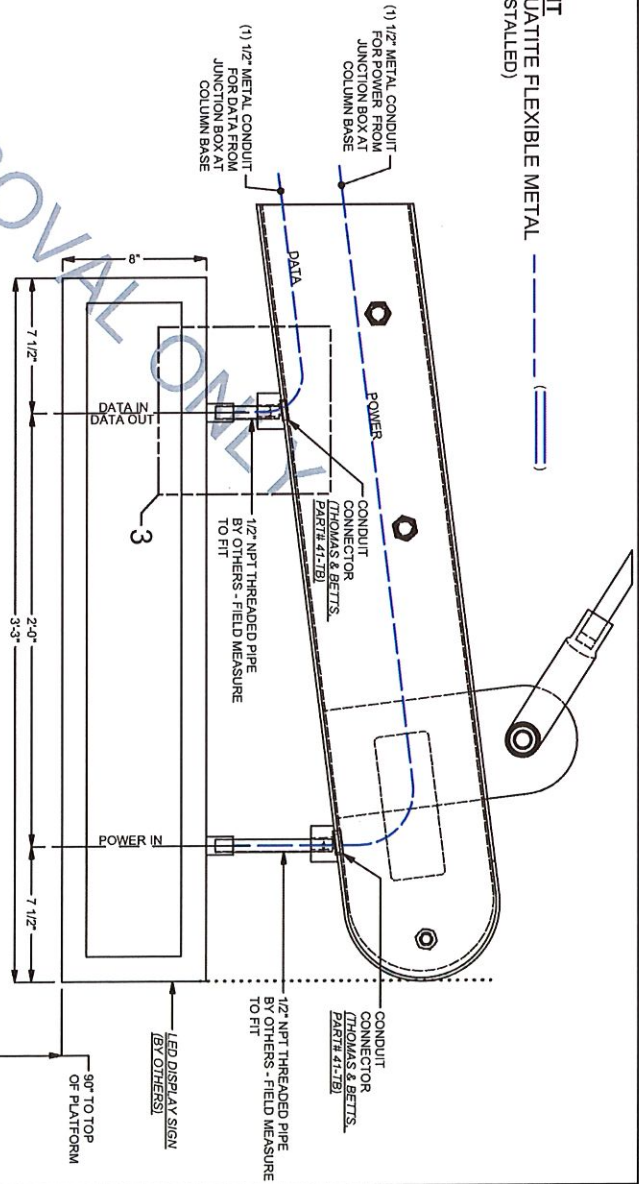
KEY:
CONDUIT
1/2" LIQUATITE FLEXIBLE METAL (SHOP INSTALLED)



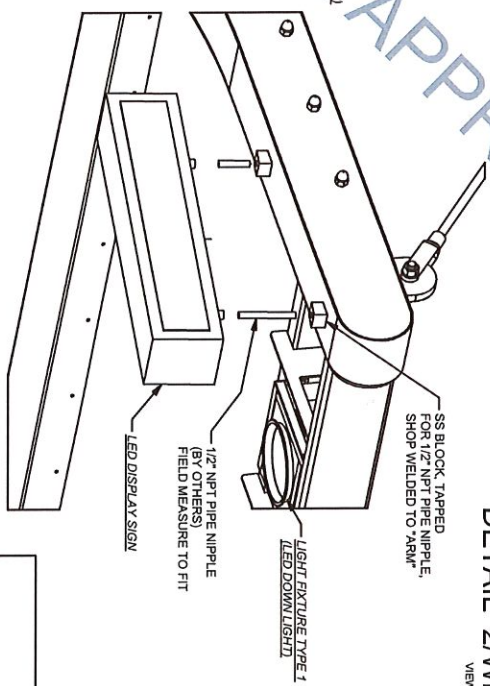
DETAIL 1MWD-33
VIEW A-A/MD-30



DETAIL 3
DETAIL 2



DETAIL 2MWD-33
VIEW A-A/MD-30



ISO VIEW

#	DATE	REVISION	NAME

PROJECT: GRAND RAPIDS STATION CANOPIES
 MODEL #: WOV# 1805
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTMAN COMPANY
 NOTE: THE RAPID LARKER LINE BRT
 DRAWN BY: SWM
 CHECKER: JLD
 DESCRIPTION: WIRING DIAGRAMS
 SHEET: 1MWD-33

V.3

Real Time Arrival Sign
Type B
Pg 3 of 3

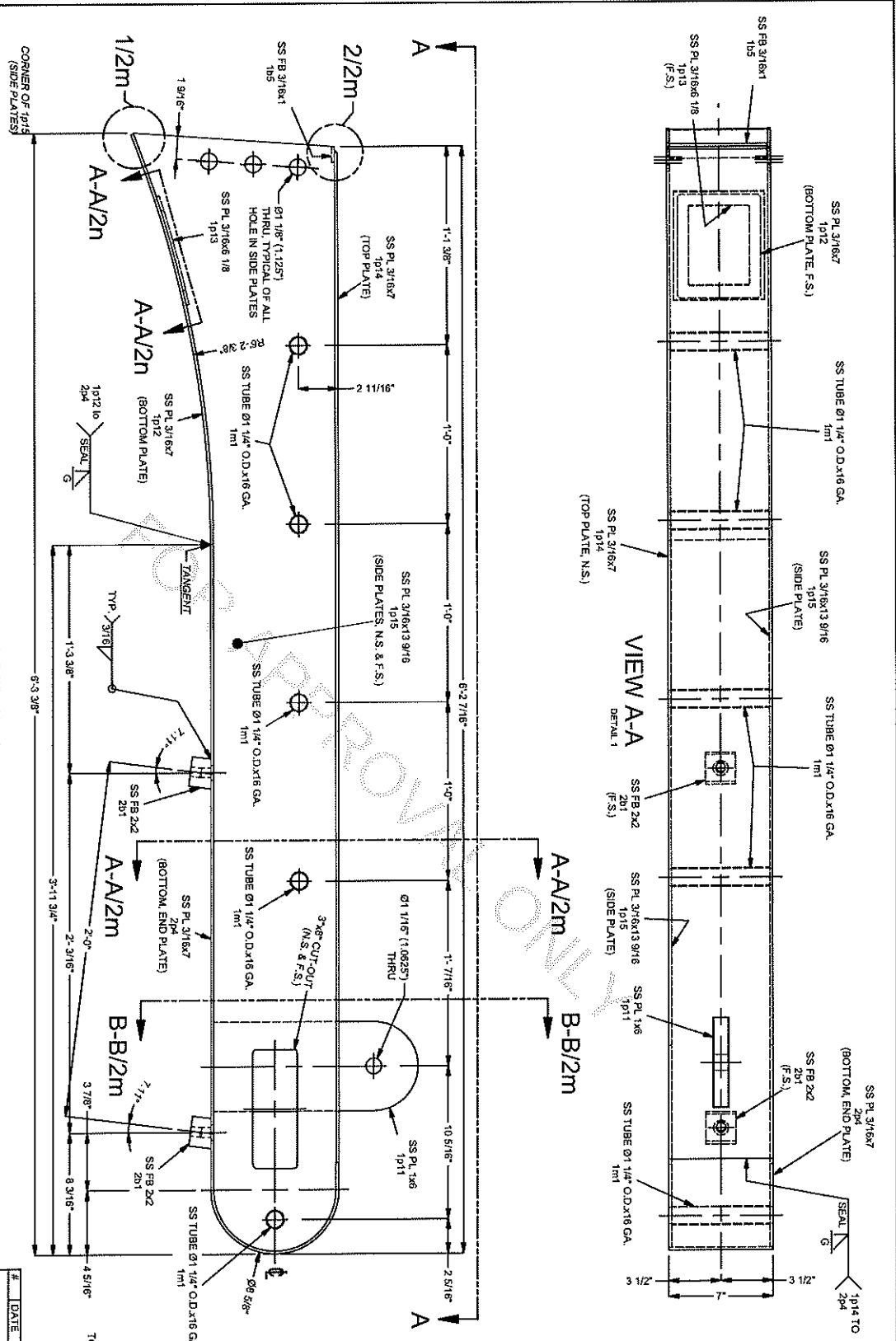
TYPE B CANOPIES

1605.012 - DESIGN REVISION #1

ELECTRICAL ACCESS COVER PLATES,
NEOPRENE GASKET AND ATTACHMENT
HARDWARE NOT SHOWN FOR CLARITY.
SEE SHEET 11 FOR DETAILS.

1-1/2" ARM SUB-ASSEMBLY MK 2sa1

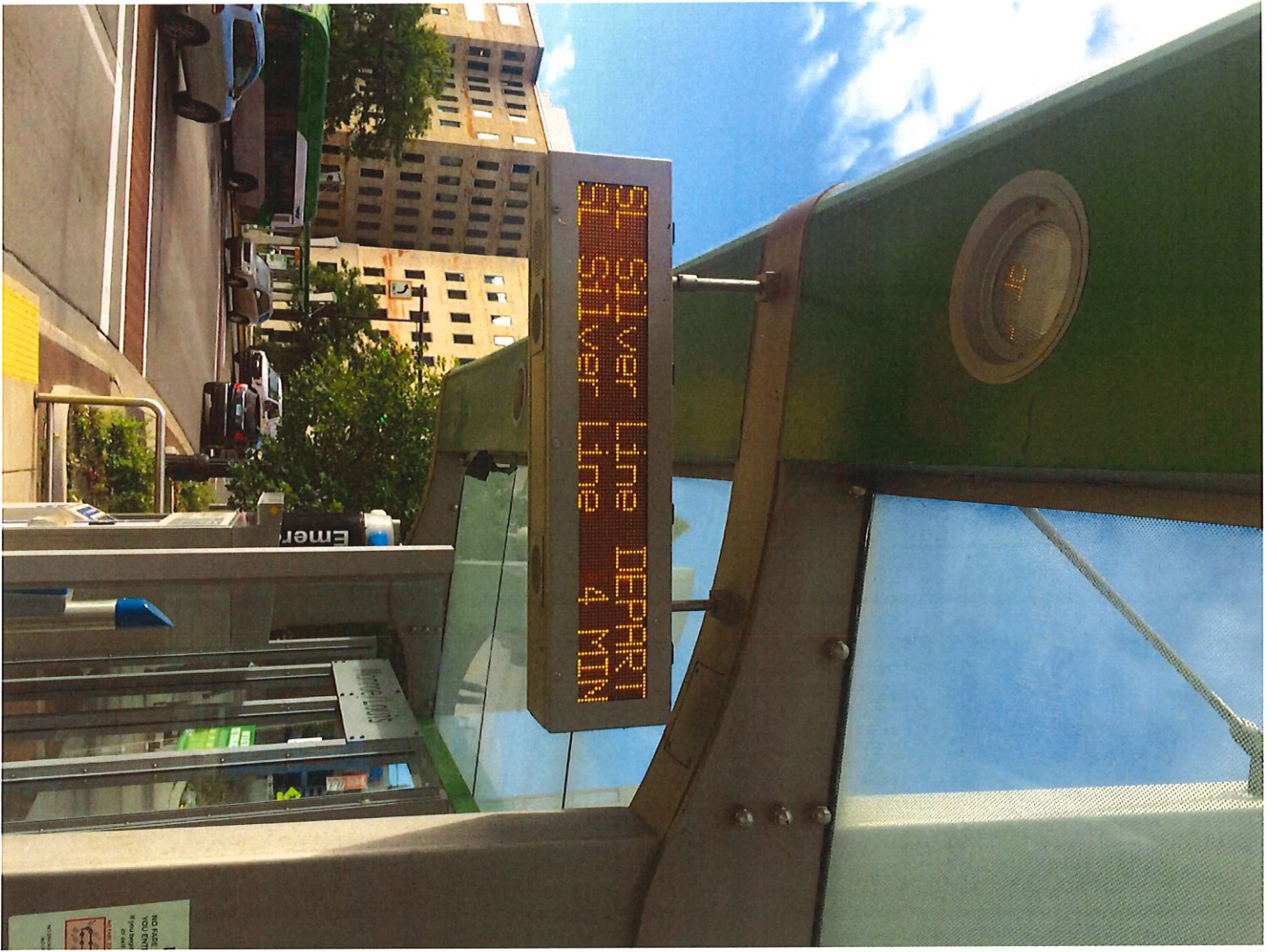
FOR APPROVAL ONLY 6/27/2018



DETAIL 1

TOTAL WEIGHT EACH ASSEMBLY: 887.865 lbsmss

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION
1	1			SS PL 316x7	1014 TO
2	1			SS PL 316x7	204
3	1			SS FB 2x2	201
4	1			SS PL 316x13 9/16	1015
5	1			SS PL 316x7	1016
6	1			SS PL 316x7	1014
7	1			SS PL 316x7	1013
8	1			SS PL 316x7	1012
9	1			SS PL 11GA-6 1/2	1012
10	1			SS PL 1x8	1011
11	1			NEOPRENE	1167 NEOPRENE GSKTS 3/8
12	6			SS TUBE Ø1 1/4" O.D. x 1/8 GA	SS TUBE Ø1 1/4" O.D. x 1/8 GA
13	1			SS FB 316x1	SS FB 316x1
14	1			SS PIN-IN-TORX BUTTON HEAD CAP SCREW Ø1/4" x 20x3/4"	SS PIN-IN-TORX BUTTON HEAD CAP SCREW Ø1/4" x 20x3/4"
15	1				1605-11601
16	1				
17	1				
18	1				
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100	1				



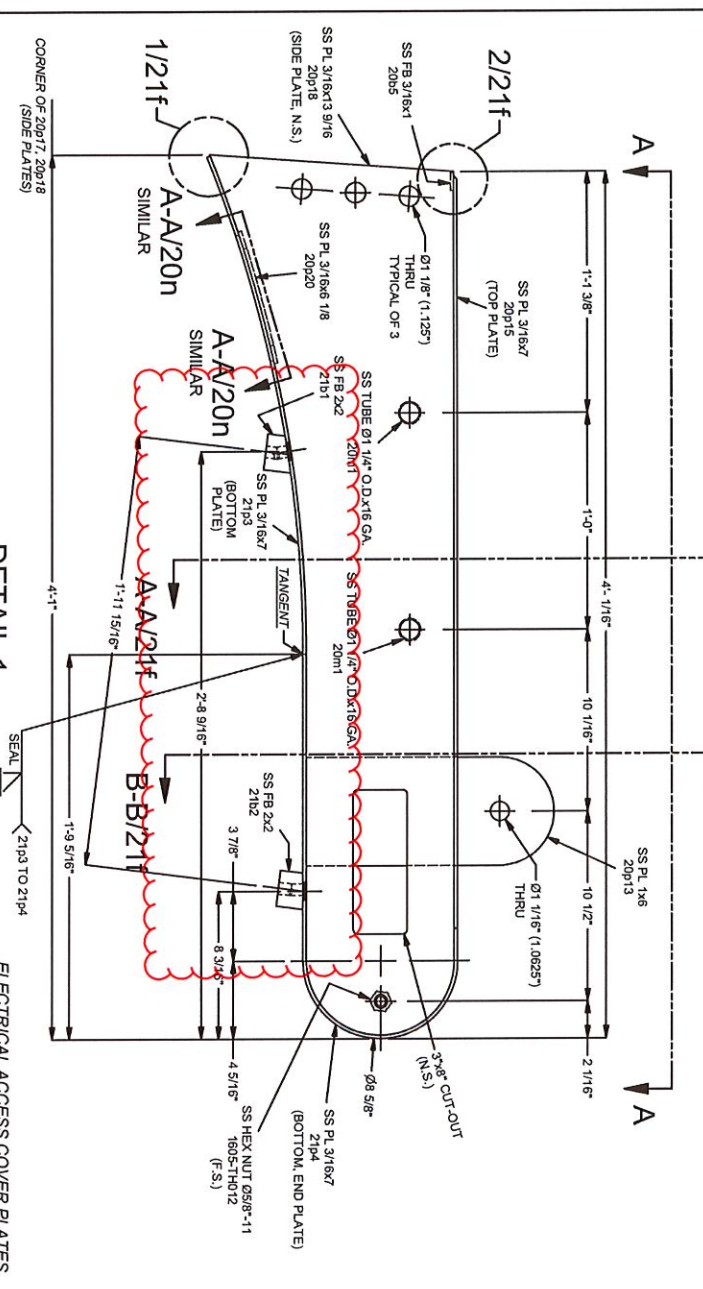
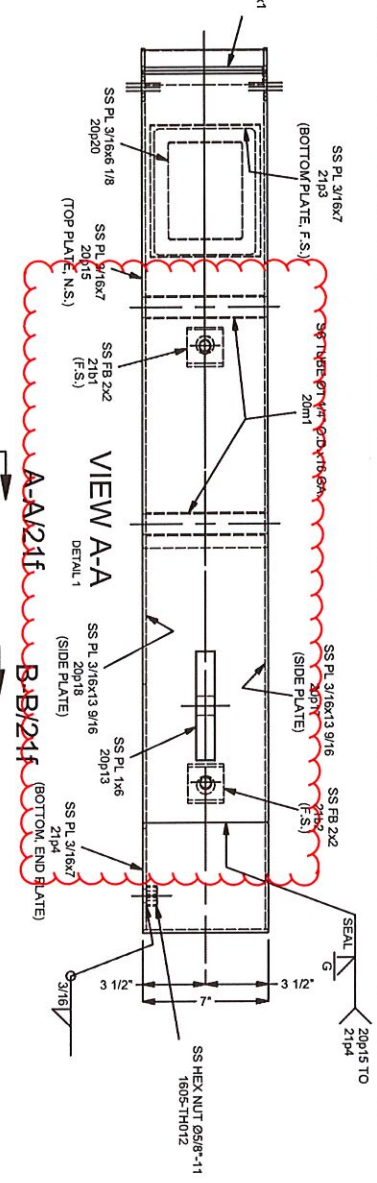
521-180 v.3



572-880-113

U-3

UMS Brackets
Type H Stelha
Pg 19 of 4



1-~"ARM" SUB-ASSEMBLY MK 21sa1

ELECTRICAL ACCESS COVER PLATES,
NEOPRENE GASKET AND ATTACHMENT
HARDWARE NOT SHOWN FOR CLARITY.
SEE SHEET 20N FOR DETAILS.

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	MASS	LENGTH	NOTES
1	1			SS316L	SS PIN-IN-TORX BUTTON HEAD CAP SCREW Ø1/4"-20x3/4"	0.192	0.34"	
1	1			SS316L	SS HEX NUT Ø5/8"-11	1.299	0.65/8"	
1	1			SS316L	SS FB 3/16x1	0.552	0.65/8"	
1	1			SS316L	1/8" NEOPRENE GSKT X3 3/8	0.284	1.13/16"	
1	1			SS316L	SS PL 1x6	22.7836	1.13/16"	
1	1			SS316L	SS PL 3/16x7	15.875	3.511/16"	
1	1			SS316L	SS PL 3/16x13 9/16	23.8754	4.13/16"	
1	1			SS316L	SS PL 11/64x5 1/2	22.3406	0.71/16"	
1	1			SS316L	SS PL 3/16x8 1/8	1.3518	0.71/16"	
1	1			SS316L	SS FB 2/2	1.3077	0.71/16"	
1	1			SS316L	SS FB 2/2	1.4762	0.71/16"	
1	1			SS316L	SS FB 2/2	8.558	2.41/4"	
1	1			SS316L	SS PL 3/16x7	12.2536	2.81/16"	

TOTAL WEIGHT EACH ASSEMBLY: 877.229 lbsmass

1605.080

AS-BUILT DRAWINGS 4/30/2019

QUANTITY	IN ASSEMBLY
1	1

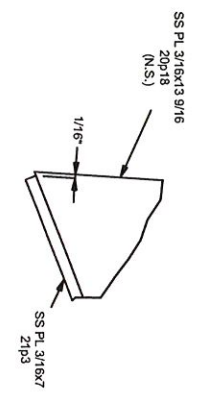
#	DATE	REVISION	NAME

STRUCTURE STATION CANOPIES
 MODEL#: GRAND RAPIDS, MICHIGAN
 LOCATION: THE CHRISTIAN COMPANY
 CUSTOMER: THE RAPID LAYER LINE BRT
 NOTE: THE RAPID LAYER LINE BRT
 DRAWN BY: SWM
 CHECKER: TD
 DESCRIPTION: ARM SUB-ASSEMBLY
 SHEET 21B
 WOF: 1605

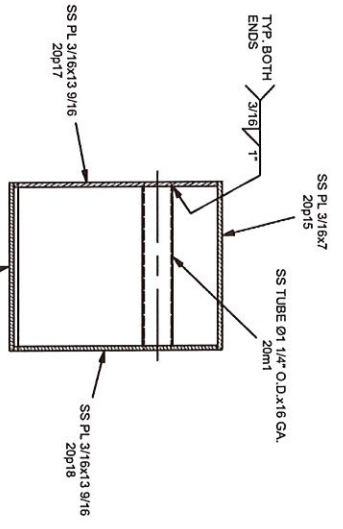
PAGE AB1-41

V.3

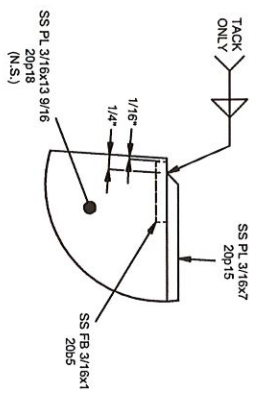
VMS Brackets
Type A Sketch
Pg 3 of 4



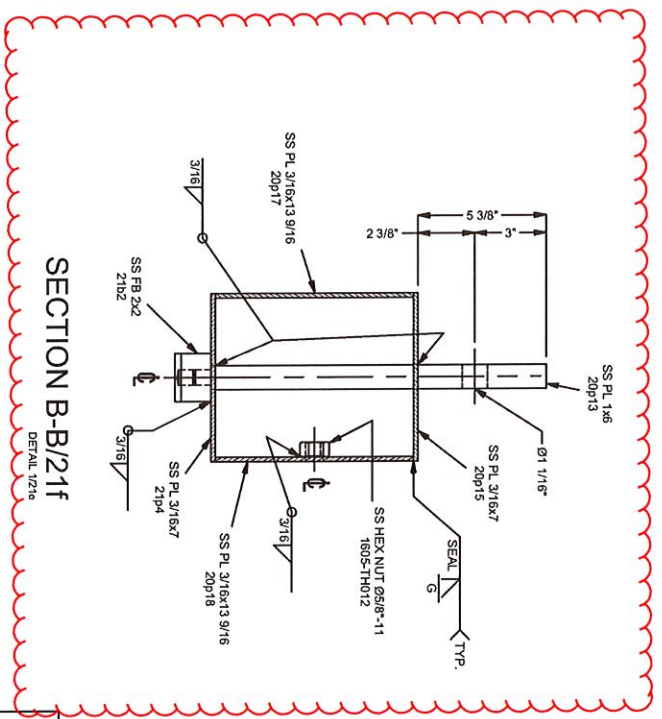
DETAIL 1/21f
DETAIL 1/21e



SECTION A-A/21f
DETAIL 1/21e



DETAIL 2/21f
DETAIL 1/21e



SECTION B-B/21f
DETAIL 1/21e

1605 080

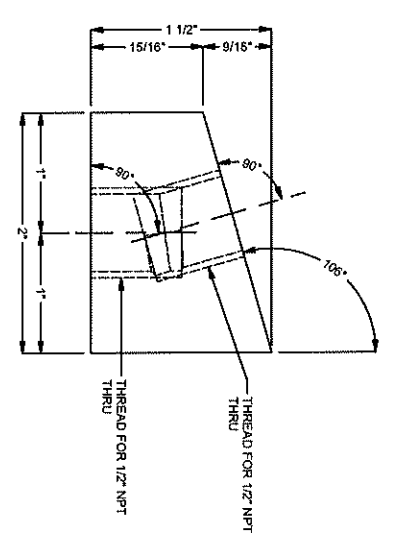
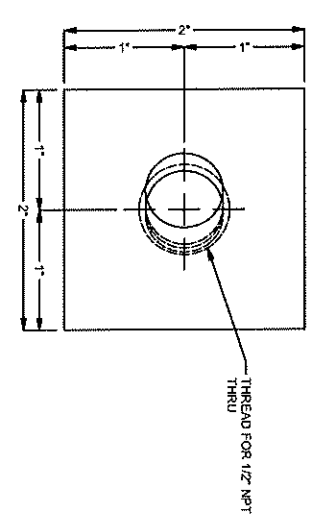
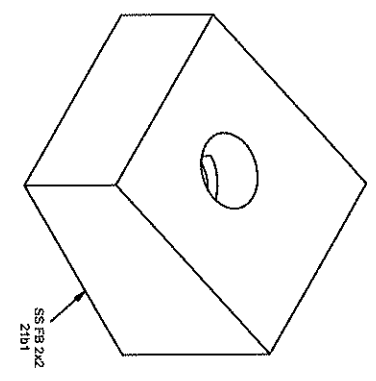
AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME

<p>REGISTERED CONSULTANT <small>Professional Engineer License No. 28000 State of Michigan</small></p>	
<p>DESIGNER: THE CHRISTIAN COMPANY <small>10000 Woodward Avenue Detroit, Michigan 48202-3209 Phone: 313.963.1200 Fax: 313.963.1201 Website: www.christiancompany.com</small></p>	
<p>PROJECT: GRAND RAPIDS, MICHIGAN LOCATION: THE CHRISTIAN COMPANY CUSTOMER: THE CHRISTIAN COMPANY NOTE: THE RAPID LAKER LINE BR</p>	<p>DRAWN BY: SWM CHECKED BY: J.D. DESCRIPTION: RAM SUBASSEMBLY</p>
<p>STRUCTURE: STATION CANOPIES MODEL #: VOW: 1605</p>	<p>SHEET: 211 PAGE: AB1-42</p>

V.3

VMS Brackets
Type H Skeler
Pg 3 of 4



REV / QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
1		21b1	SS316L	SS FB 2x2	0-1 1/2"	DETAIL	1.3277

#	DATE	REVISION	NAME
1			

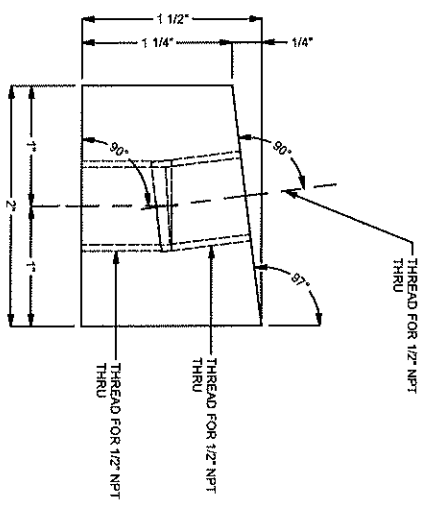
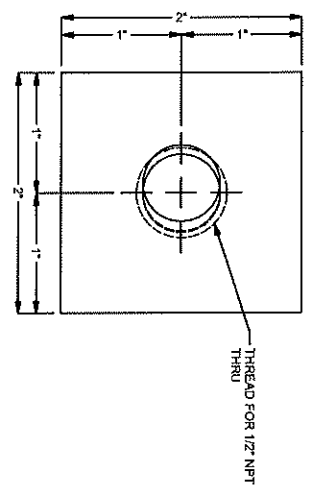
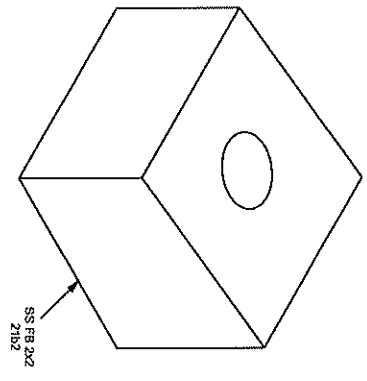
QUANTITY	IN ASSEMBLY
1	21b1

STRUCTURE: STATION CANPIERS	W/O# 1605
MODEL#:	
LOCATION: GRAND RAPIDS, MICHIGAN	
CUSTOMER: THE CHRISTIAN COMPANY	
NOTE: THE ROYAL LARKER LINE BR1	
DRAWN BY: SWA	CHECKER: TD
DESCRIPTION: SS FB 2x2	

V.3

VMS Brackets
Type A Skelton
Pg 4 of 4

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
1	1		21b2	SS376L	SS FB 22	0-1 1/2"	DETAIL	1.4792



#	DATE	REVISION	NAME
1 <td></td> <td></td> <td></td>			

QUANTITY	IN ASSEMBLY
1	21b1

STRUCTURE: STATION CANOPIES	WOW: 1605
MODEL #: GRAND RAPIDS, MICHIGAN	
LOCATION: THE CHRISTIAN COMPANY	
CUSTOMER: THE RAPID LAGER LINE BRT	
NOTE: THE RAPID LAGER LINE BRT	
DRAWN BY: SWA	CHECKER: TD
DESCRIPTION: SS FB 22	SHEET: 21b2

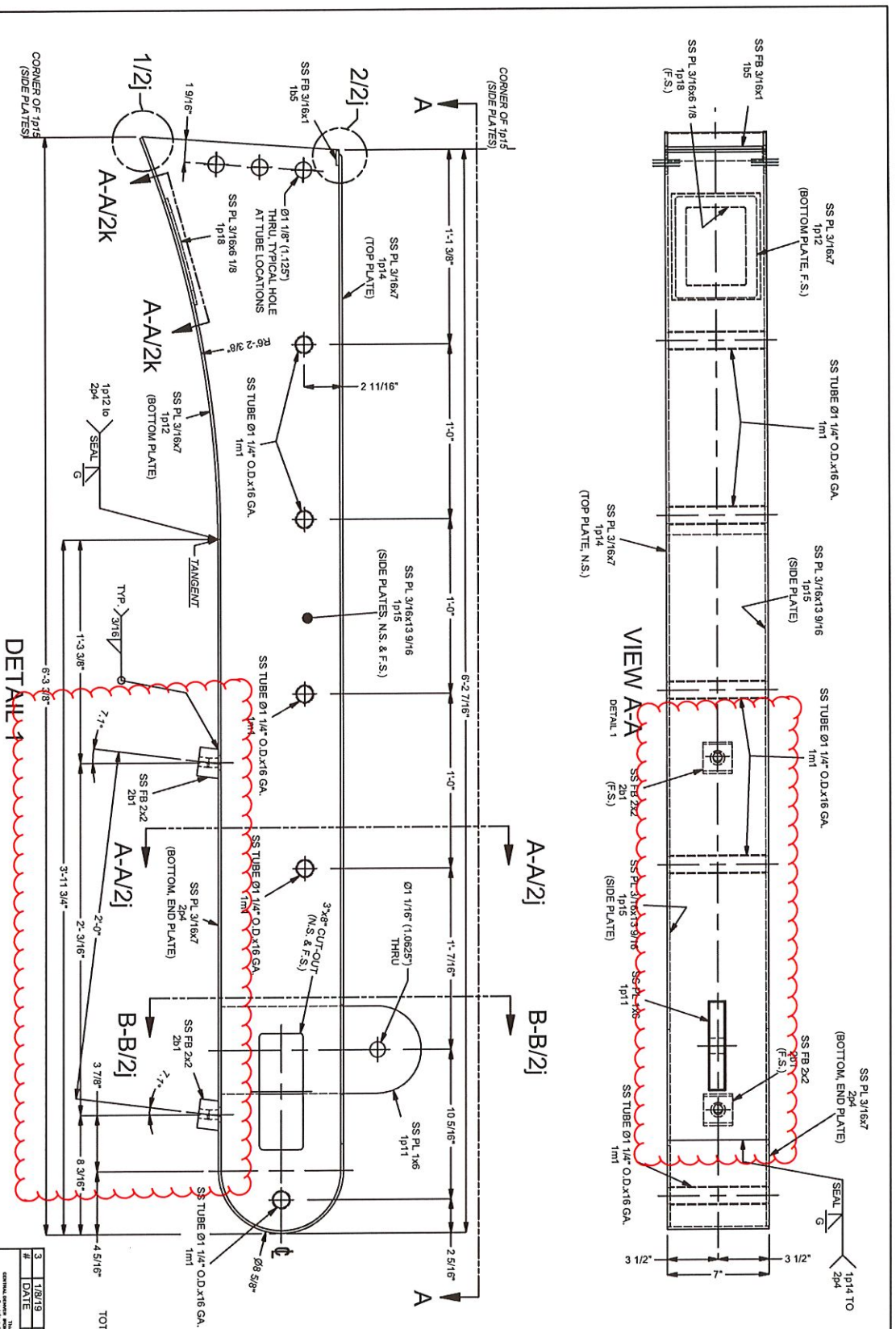
1605.080

AS-BUILT DRAWINGS 4/30/2019

PAGE AB1-106

1.3

VMS Brackets
Type B Skaters
Pg 1 of 3



ELECTRICAL ACCESS COVER PLATES, NEOPRENE GASKET AND ATTACHMENT HARDWARE NOT SHOWN FOR CLARITY. SEE SHEET 2K FOR DETAILS.

7-\"/>

1605_081

AS-BUILT DRAWINGS 5/1/2019

PAGE AB2-67

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
28	7			SS18-8	SS PIN-IN-TORX BUTTON HEAD CAP SCREW Ø1/4\"/>	0\"/>		0.152
7	2			SS304L	SS FB 316x1 1p18	0\"/>		4.68
35	3			SS304L	SS TUBE Ø1 1/4\"/>	0\"/>		2.04
7	7			SS161	NEOPRENE 1/8\"/>	0\"/>		22.7836
7	7			SS161	SS PL 1x8	1\"/>		8.601
7	7			SS161	SS PL 316x7	2\"/>		26.635
7	7			SS161	SS PL 316x7	5\"/>		34.1161
7	7			SS161	SS PL 316x13 9/16	6\"/>		1.3518
7	7			SS161	SS PL 116x5 1/2	0\"/>		1.2829
7	7			SS304L	SS PL 316x6 1/8	0\"/>		1.4762
7	7			SS316L	SS FB 2x2	4\"/>		22.3211
7	14			SS316L	SS PL 316x7	4\"/>		

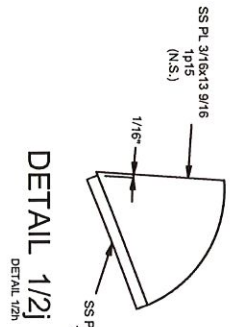
REV	DATE	REVISION	SWM	NAME
3	11/8/19	COLUMN CHANGES		
2				
5				
2				

QUANTITY	IN ASSEMBLY
42	
149	

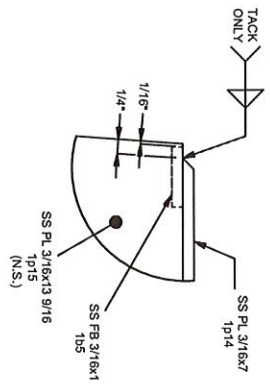
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 MODEL#: W04F 1605
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 DRAWN BY: SWM
 DESIGNED BY: SWM
 CHECKED BY: SWM
 SHEET: 2B
 DESCRIPTION: ARM SUB-ASSEMBLY

13

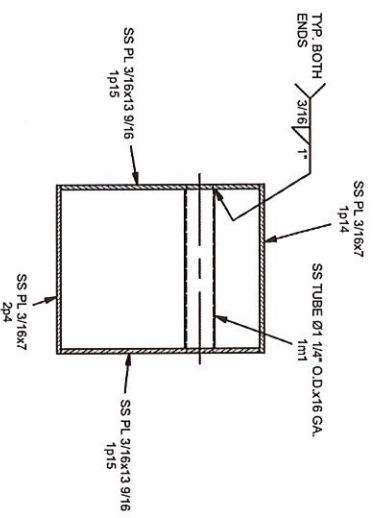
WMS Brackets
Type B Site Hets
Pg 2 of 3



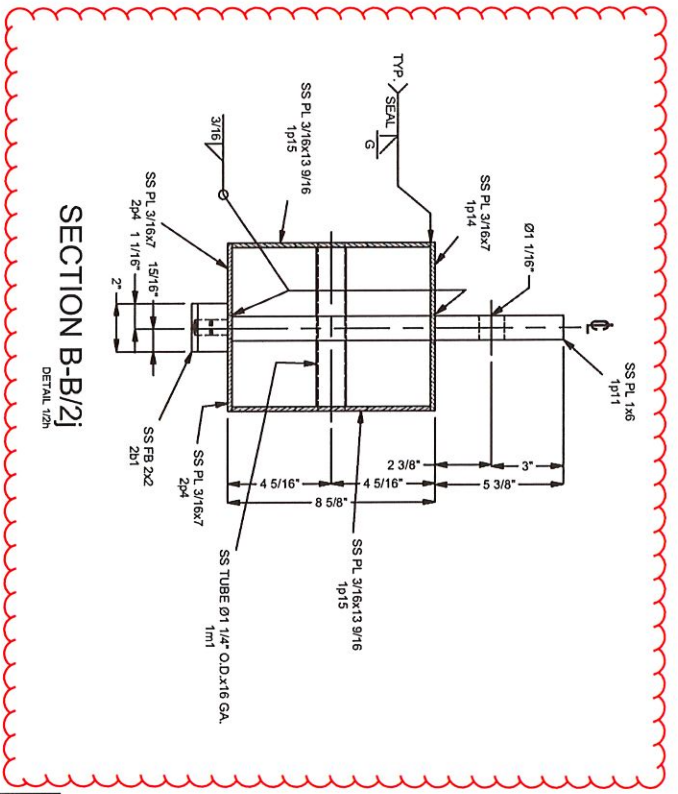
DETAIL 1/2
DETAIL 1/2h



DETAIL 2/2
DETAIL 1/2h



SECTION A-A/2
DETAIL 1/2h



SECTION B-B/2
DETAIL 1/2h

1605.0871

AS-BUILT DRAWINGS 5/1/2019

#	DATE	REVISION	NAME
1			

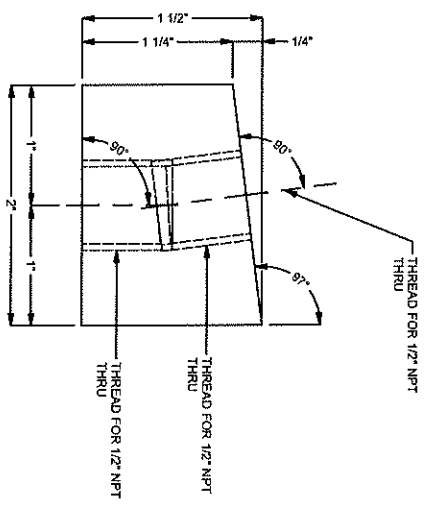
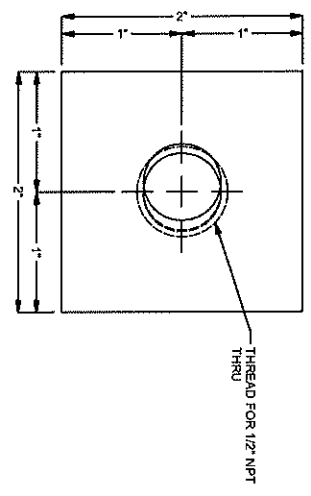
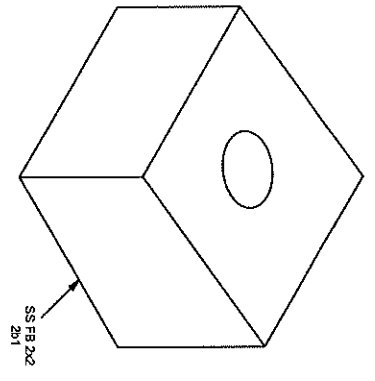
This document contains CONFIDENTIAL INFORMATION.
 CONFIDENTIAL INFORMATION is information that is not generally known or readily ascertainable by the public and the disclosure of which would be injurious to the competitive position of the Contractor or the Employer.

DRAWN BY: SWM
 CHECKED BY: T.D.
 DESCRIPTION: ANM SUBASSEMBLY

STRUCTURE: STATION CANOPIES
 MODEL #:
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 NOTE: THE RAPID LAKER LINE BR
 SHEET 2
 PAGE AB2-68

13

UMS Brackets
Type B Sketches
Pg 3 of 3



REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
36			2x1	SS316L	SS FB 2x2	0-1 1/2"	DETAIL	1.4762

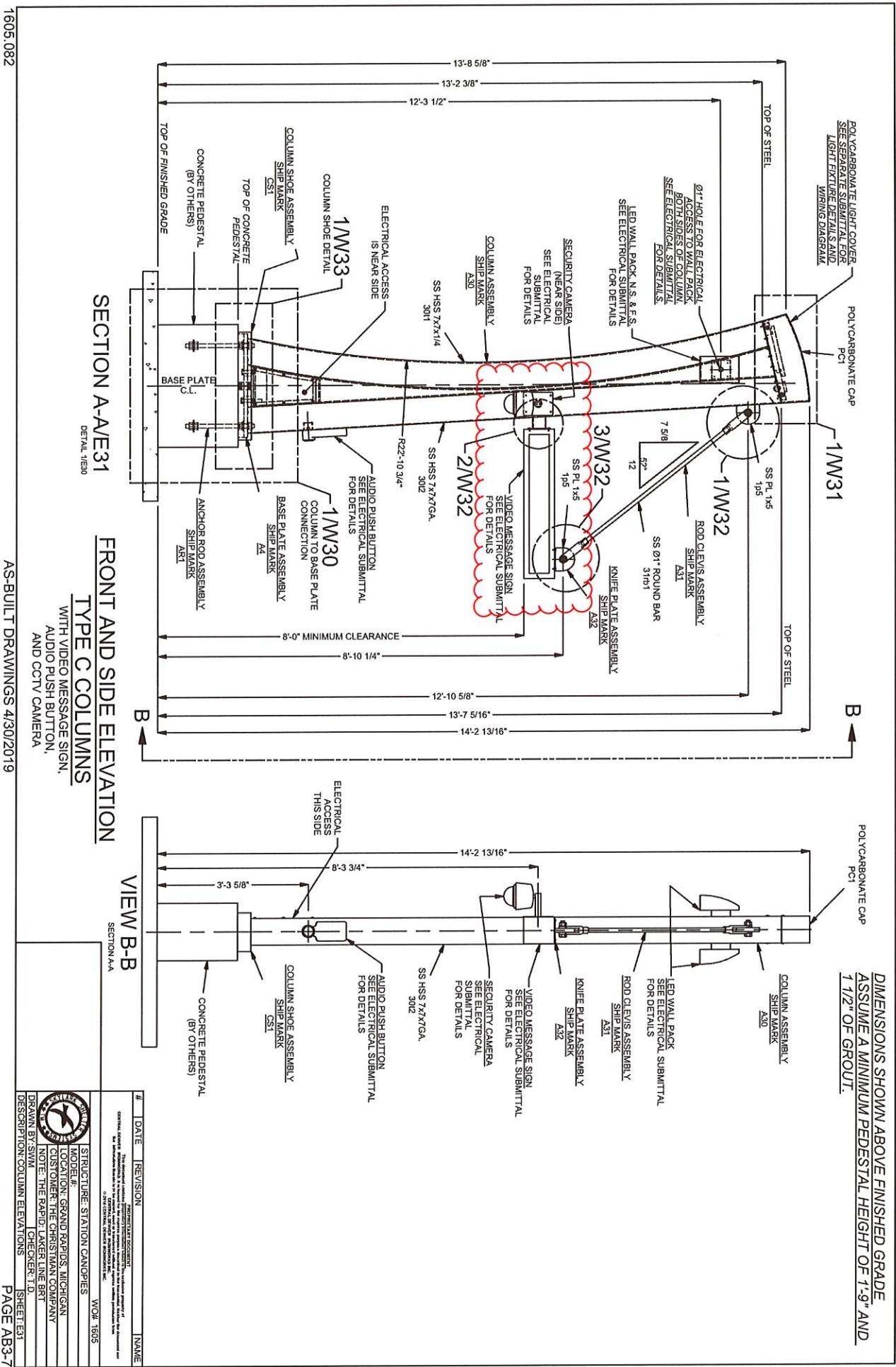
QTY	IN ASSEMBLY
14	2x1
22	4/1x1

3	12/19	CANOPY CHANGES	SVA
#	DATE	REVISION	NAME

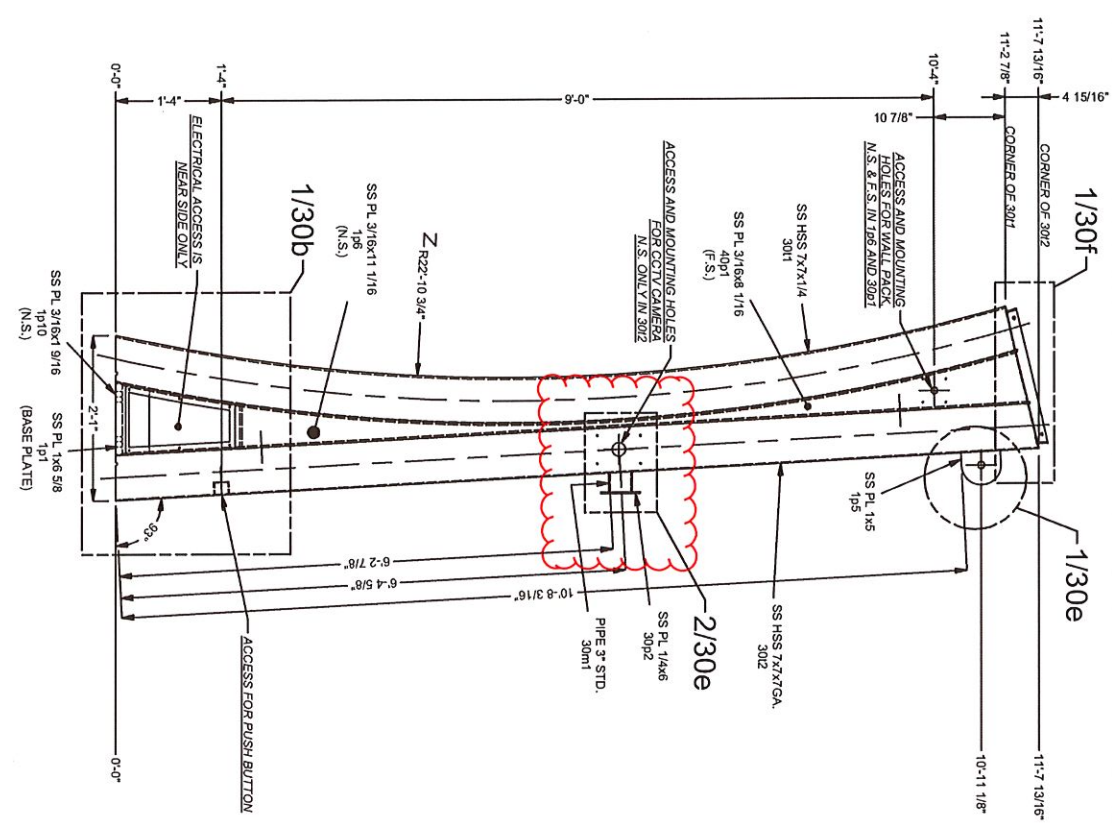
STRUCTURE STATION CANOPIES	VOIC 1605
MODEL#	LOCATION: GRAND RAPIDS, MICHIGAN
CUSTOMER: THE CHRISTIAN COMPANY	NOTE: THE RAPID LAKER LINE BR
DRAWN BY: SVA	CHECKER: T.D.
DESCRIPTION: SS FB 2x2	SHEET: 2x1

1.3

*WMS Brackets
Type C Columns
By log 4*



VMS Brackets
 Type C Columns
 Pg 2 of 4



DETAIL 1

COLUMN ASSEMBLY A30 - MAIN ELEVATION

- NOTES:**
- 1) ELECTRICAL ACCESS COVER PLATES, NEOPRENE GASKETS, AND SCREWS NOT SHOWN FOR CLARITY. SEE SHEET 300 FOR ELECTRICAL ACCESS DETAILS AT BOTTOM OF COLUMN.
 - 2) POLYCARBONATE CAP, NEOPRENE WEATHER STRIPPING AND GASKET, AND ATTACHMENT HARDWARE FOR CAP NOT SHOWN FOR CLARITY. BEACON LIGHT PLATE SUB-ASSEMBLY NOT SHOWN FOR CLARITY. SEE SHEET 300 FOR CAP AND LIGHT PLATE ATTACHMENT DETAILS.

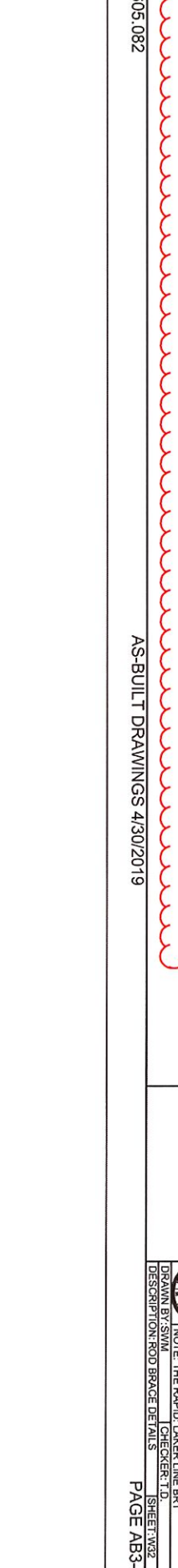
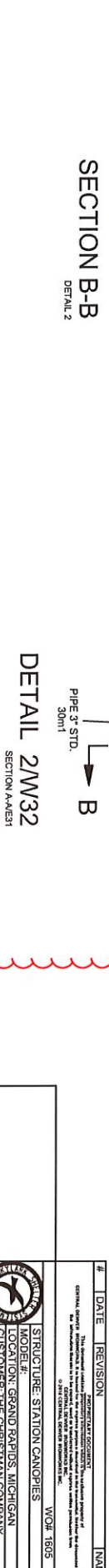
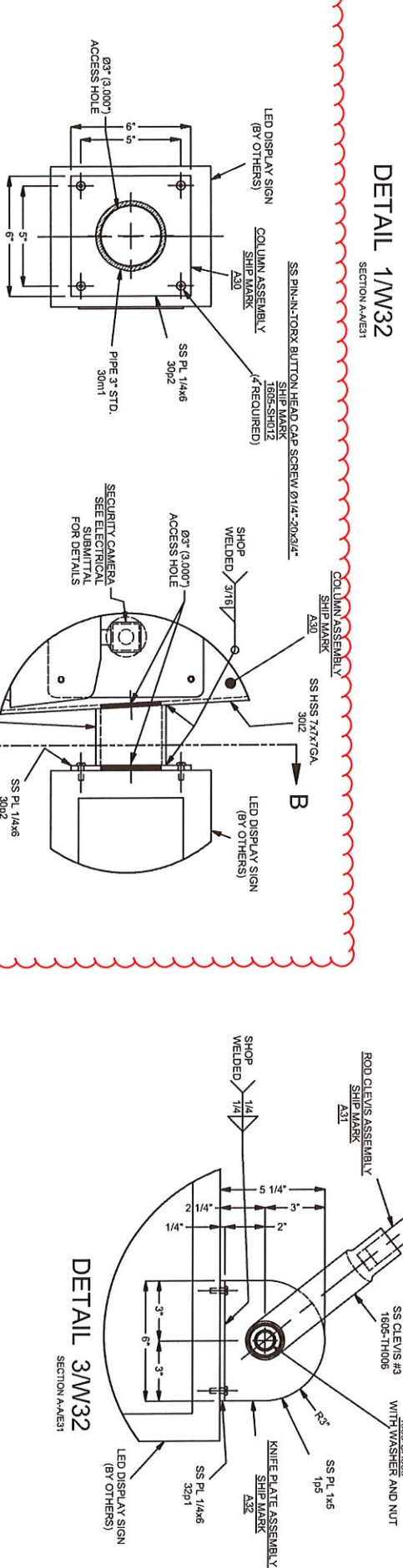
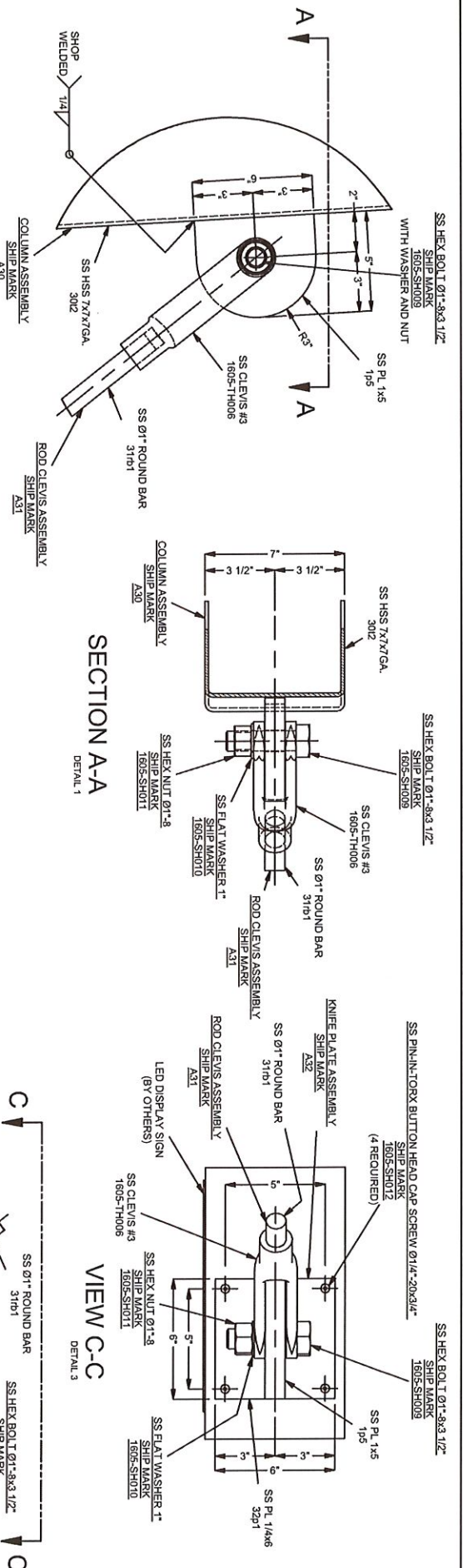
1605.082

AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME

	STRUCTURE STATION CANOPIES MODEL #: LOCATION: GRAND RAPIDS, MICHIGAN CUSTOMER: THE CHRISTMAN COMPANY NOTE: THE RAPID LAKER LINE BRT DRAWN BY: SVM CHECKER: TD DESCRIPTION: COLUMN ASSEMBLY	WORK 1605 SHEET 308 PAGE AB3-17
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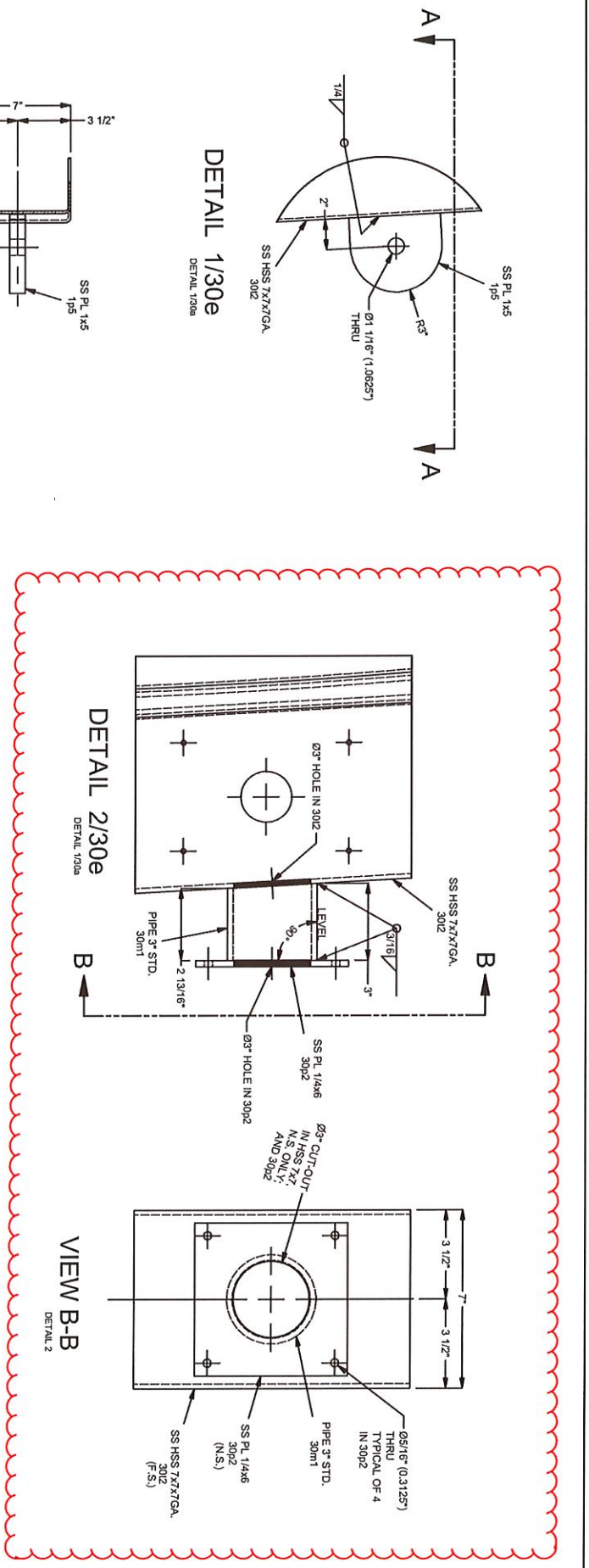
VMS Brackets
Type C Columns
Pg 3 of 4



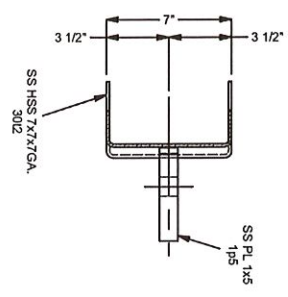
#	DATE	REVISION	NAME
1			

	MODEL #: GRAND RAPIDS, MICHIGAN CUSTOMER: THE CHRISTMAN COMPANY NOTE: THE RAPID LAKER LINE BRT DRAWN BY: SWM CHECKER: T.D. DESCRIPTION: ROD BRACE DETAILS SHEET: 1/32 PAGE: AB3-11
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VMS Brackets
 Type C Columns
 Pg 4 of 4



SECTION A-A
 DETAIL 1



1605.082

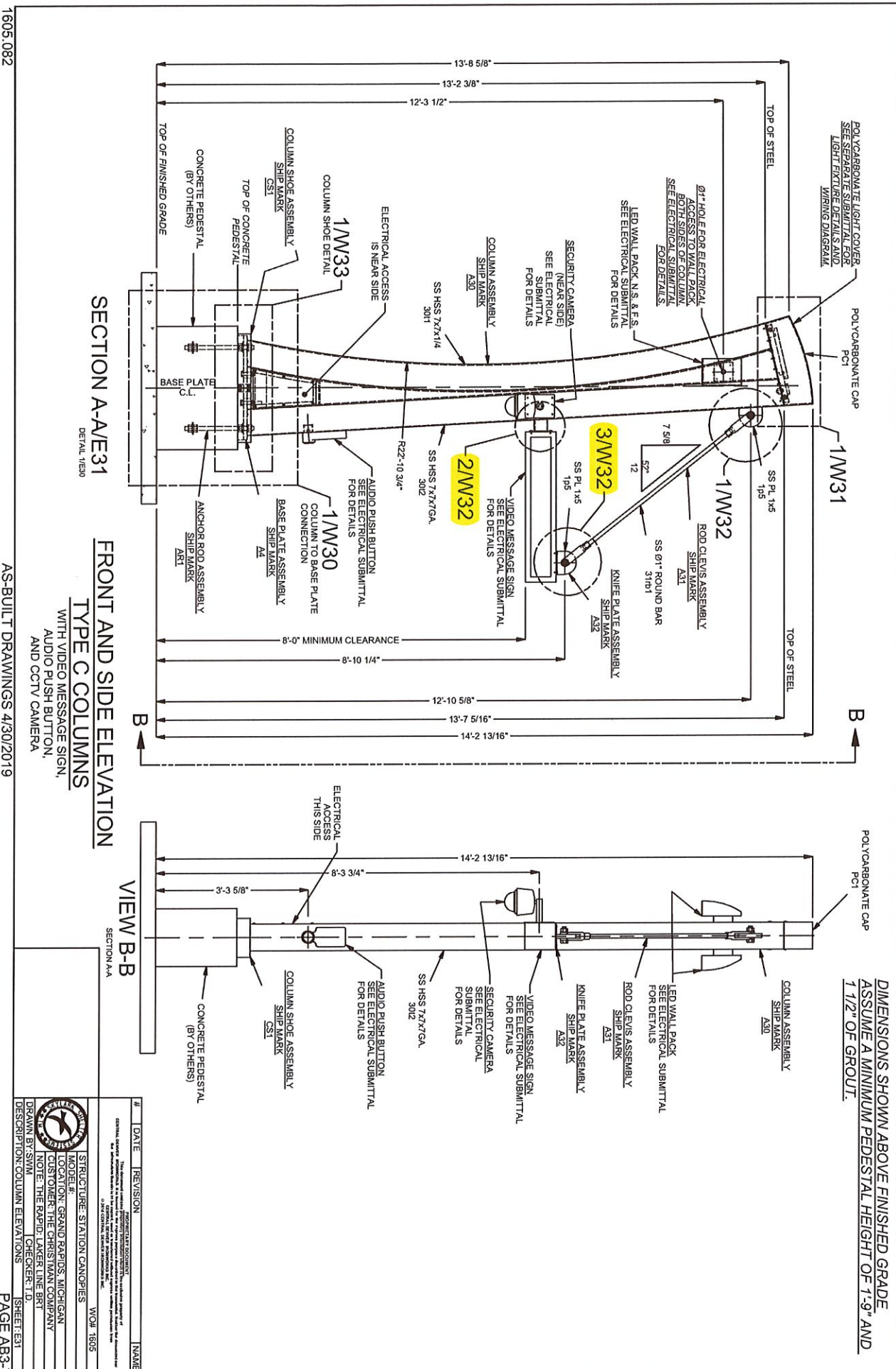
AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME

PROJECT/STATE DOCUMENT DESIGNER: THE CHRISTIAN COMPANY PROJECT: THE RAPID LAKER LINE BRT DRAWN BY: SWM CHECKER: T.D.	VCD# 1605 STRUCTURE: STATION CANOPIES MODEL #: LOCATION: GRAND RAPIDS, MICHIGAN CUSTOMER: THE CHRISTIAN COMPANY NOTE: THE RAPID LAKER LINE BRT DESCRIPTION: COLUMN ASSEMBLY
SHEET: 306 PAGE AB3-21	

1/3

*VMS Connection Plates
Type C Columns - Rev Skewed
Pg 1 of 6*

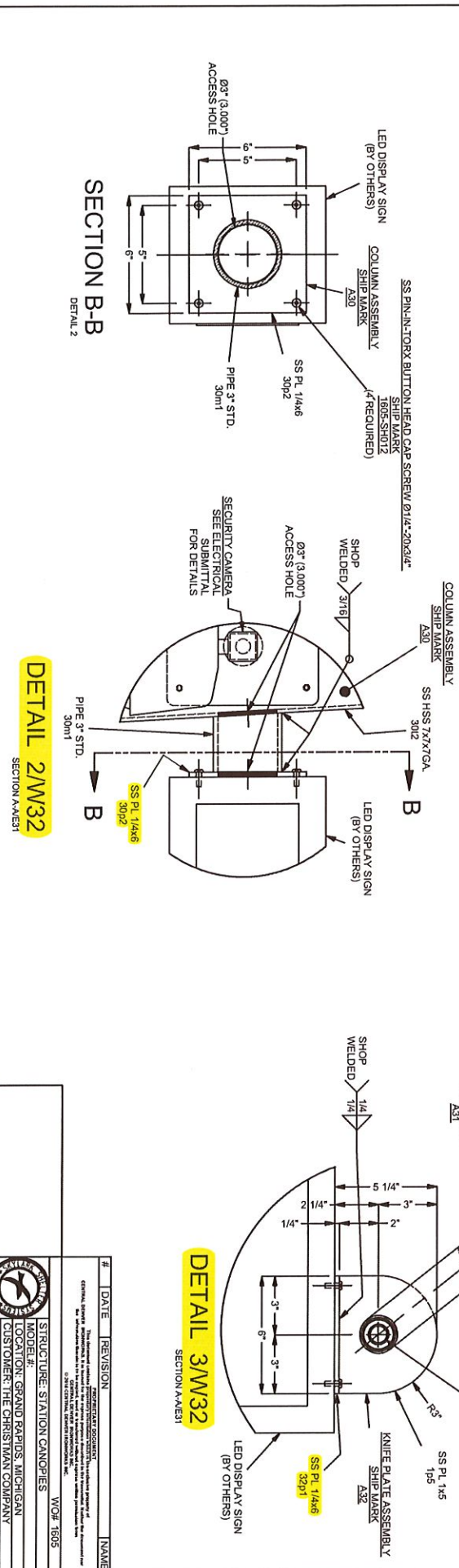
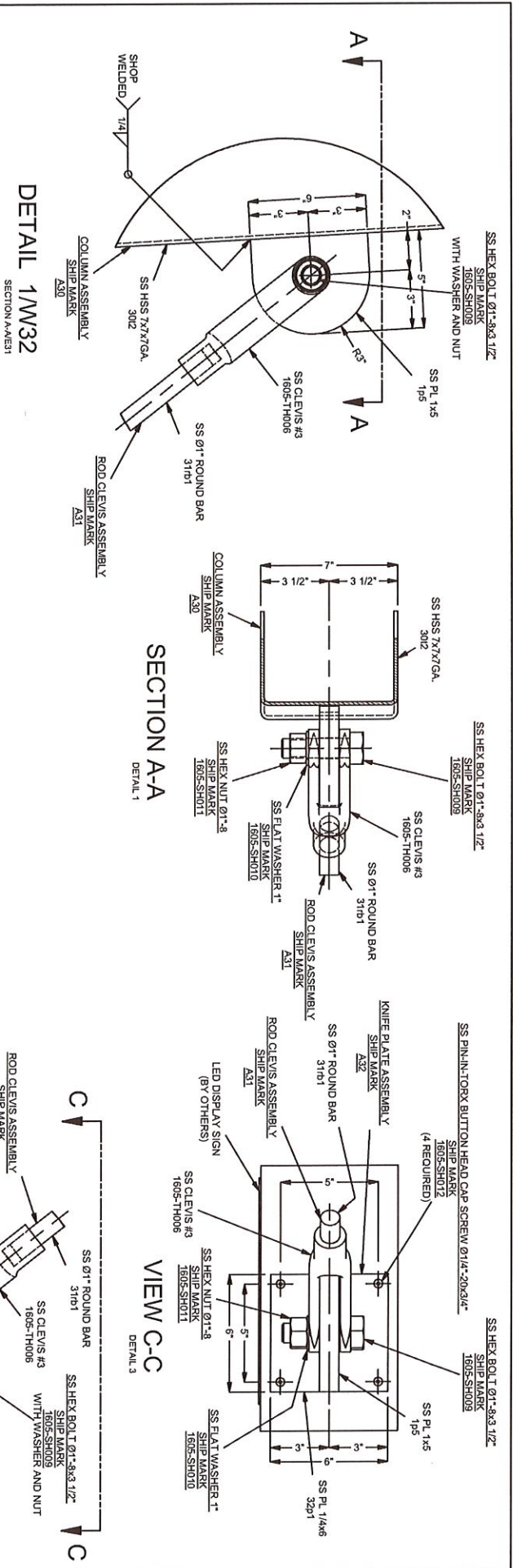


DIMENSIONS SHOWN ABOVE FINISHED GRADE
ASSUME A MINIMUM PEDESTAL HEIGHT OF 1'-9" AND
1 1/2" OF GROUT.

#	DATE	REVISION	NAME

STRUCTURE: STATION CANOPIES MODEL #: LOCATION: GRAND RAPIDS, MICHIGAN CUSTOMER: THE CHRISTIAN COMPANY NOTE: THE RAPID LAKER LINE BRIT DRAWN BY: SWM CHECKER: T.D. DESCRIPTION: COLUMN ELEVATIONS	VOR: 1605 SHEET: E31 PAGE: AB3-7

UMS Connection Plates
Type C Blunders - Real Station
Pg 2 of 6

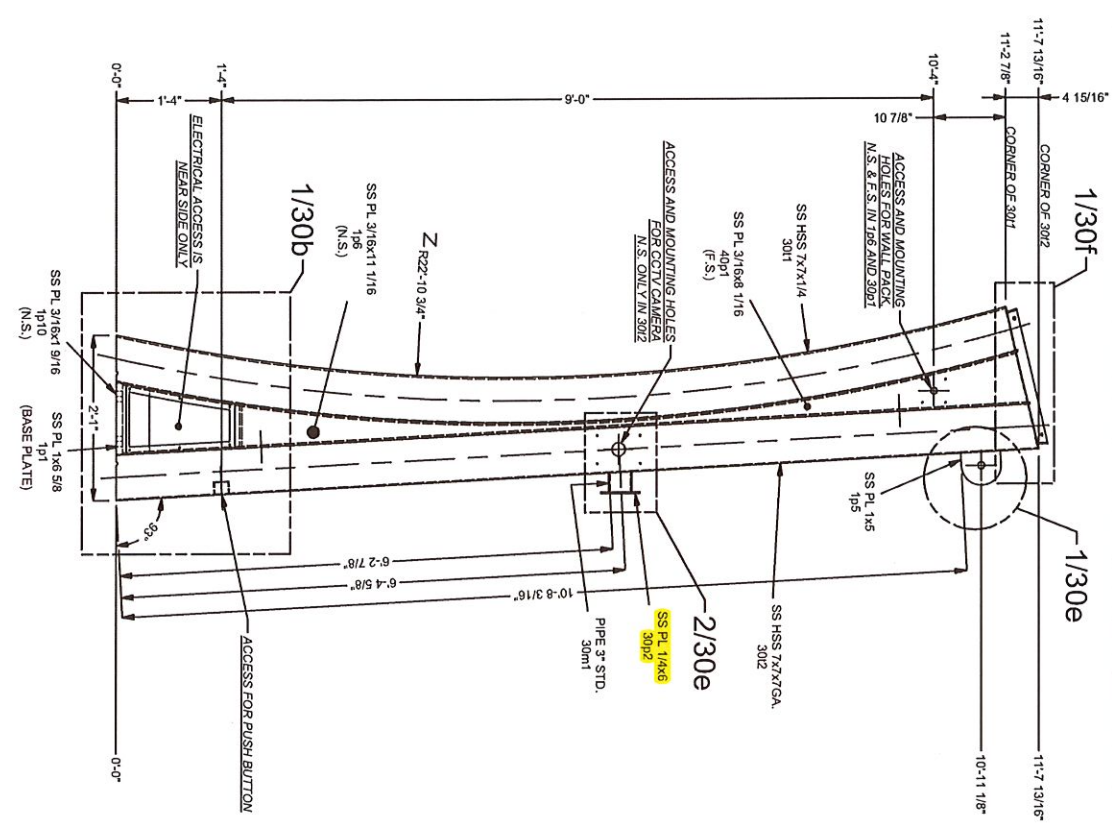


1605.082 AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME
1			

SHEET: W32
 DRAWN BY: SWM
 CHECKER: J.D.
 DESCRIPTION: ROD BRACE DETAILS
 PROJECT: STATION CANOPIES
 MODEL #: 1605
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 NOTE: THE RAPID-LAKER LINE BRT
 DRAWN BY: SWM
 CHECKER: J.D.
 SHEET: W32
 PAGE AB3-11

13



DETAIL 1

COLUMN ASSEMBLY A30 - MAIN ELEVATION

1605.082

AS-BUILT DRAWINGS 4/30/2019

UMS Connection Plates
Type C Columns - Per Sketch
Pg 3 of 6

#	DATE	REVISION	NAME
1			

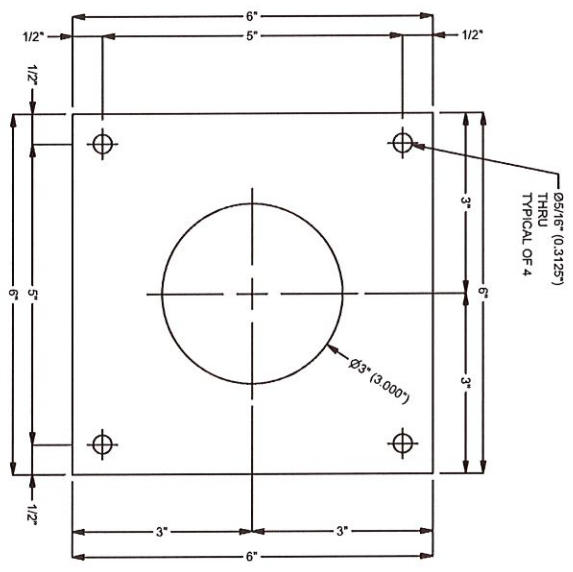
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 DRAWN BY: SWM
 CHECKED BY: T.D.
 SHEET: 308
 PAGE AB3-17

13

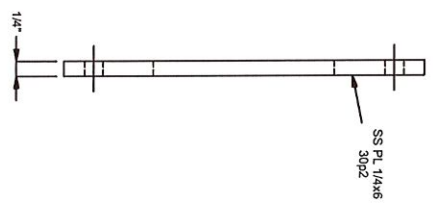
UMS Connection Plates
Type C Columns - Rev 5/25/16
By Ygd

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
2			30p2	SS316L	SS PL 1/4x6	0'-5"	DETAIL	2.0683

Parts List



BURNOUT FILE: 1605-30p2



QUANTITY	IN ASSEMBLY
2	AS0

1605.082

AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME

STRUCTURE: STATION CANOPIES
 MODEL #: WOP 1605
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 NOTE: THE RAPID LAKER LINE BRT
 DRAWN BY: SWM
 CHECKER: TD
 DESCRIPTION: SS PL 1/4x6
 SHEET: 30p2
 PAGE AB3-57

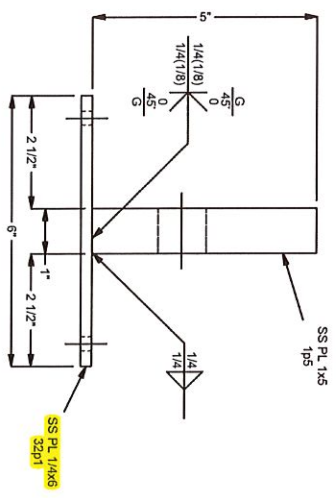
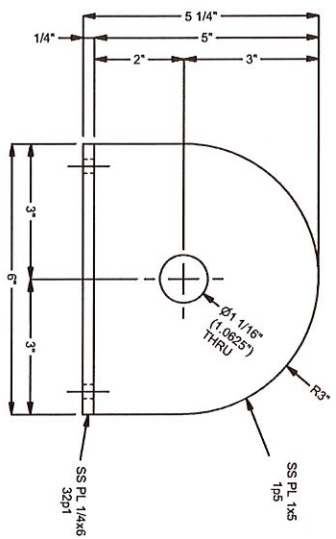
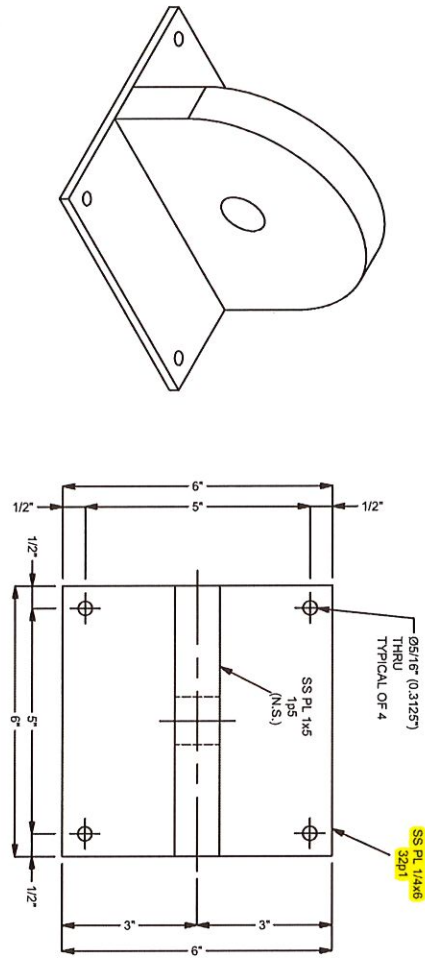
PAGE AB3-57

1/3

UMS Connection Plates
Type C Columns - Rev Station
Pg 5 of 6

Part List for Knife Plate Assembly A32

REV / QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
2		1P5	SS316L	SS PL 1x5	0'-6"	DETAIL	7.3708
2		32P1	SS316L	SS PL 1/4x6	0'-6"	DETAIL	2.579



2-KNIFE PLATE ASSEMBLY SHIP MK A32

1605.082

AS-BUILT DRAWINGS 4/30/2019

#	DATE	REVISION	NAME

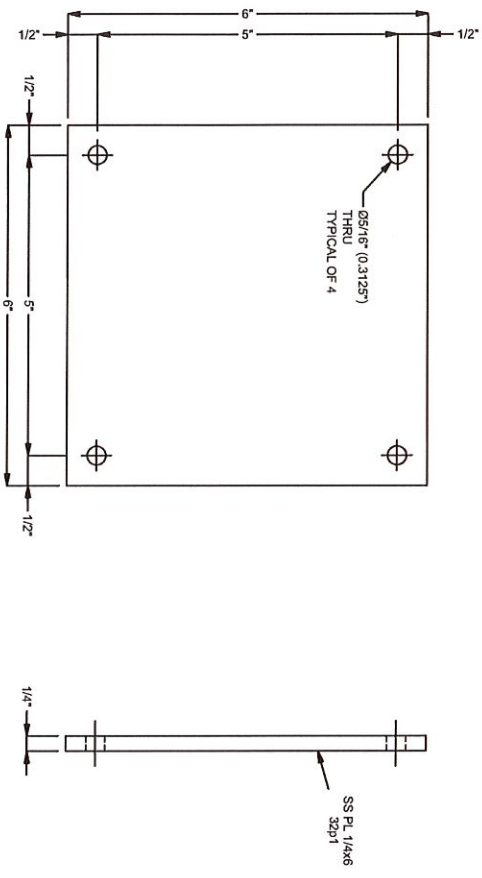
STRUCTURE: STATION CANOPIES
 MODEL #: WOP 1605
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTIAN COMPANY
 NOTE: THE RAPID-LAKER LINE BRT
 DRAWN BY: SWM
 CHECKER: T.D.
 DESCRIPTION: KNIFE PLATE ASSEMBLY
 SHEET: 32

13

VMS Connection Plates
Type C Columns - Red Station
Pg 6 of 6

REV	QTY	SHIP	TEMP	MAT	DESCRIPTION	LENGTH	NOTES	MASS
2			3201	SS316L	SS PL 1/4x6	0'-6"	DETAIL	2.579

Parts List



BURNOUT FILE: 1605-3201

1605.082

AS-BUILT DRAWINGS 4/30/2019

QUANTITY	IN ASSEMBLY
2	AS2

#	DATE	REVISION	NAME

STRUCTURE: STATION CANOPIES
 MODEL#: WOP# 1605
 LOCATION: GRAND RAPIDS, MICHIGAN
 CUSTOMER: THE CHRISTMAN COMPANY
 NOTE: THE RAPID LAKER LINE BRT
 DRAWN BY: SWM
 CHECKER: T.D.
 DESCRIPTION: SS PL 1/4x6
 SHEET: 3201

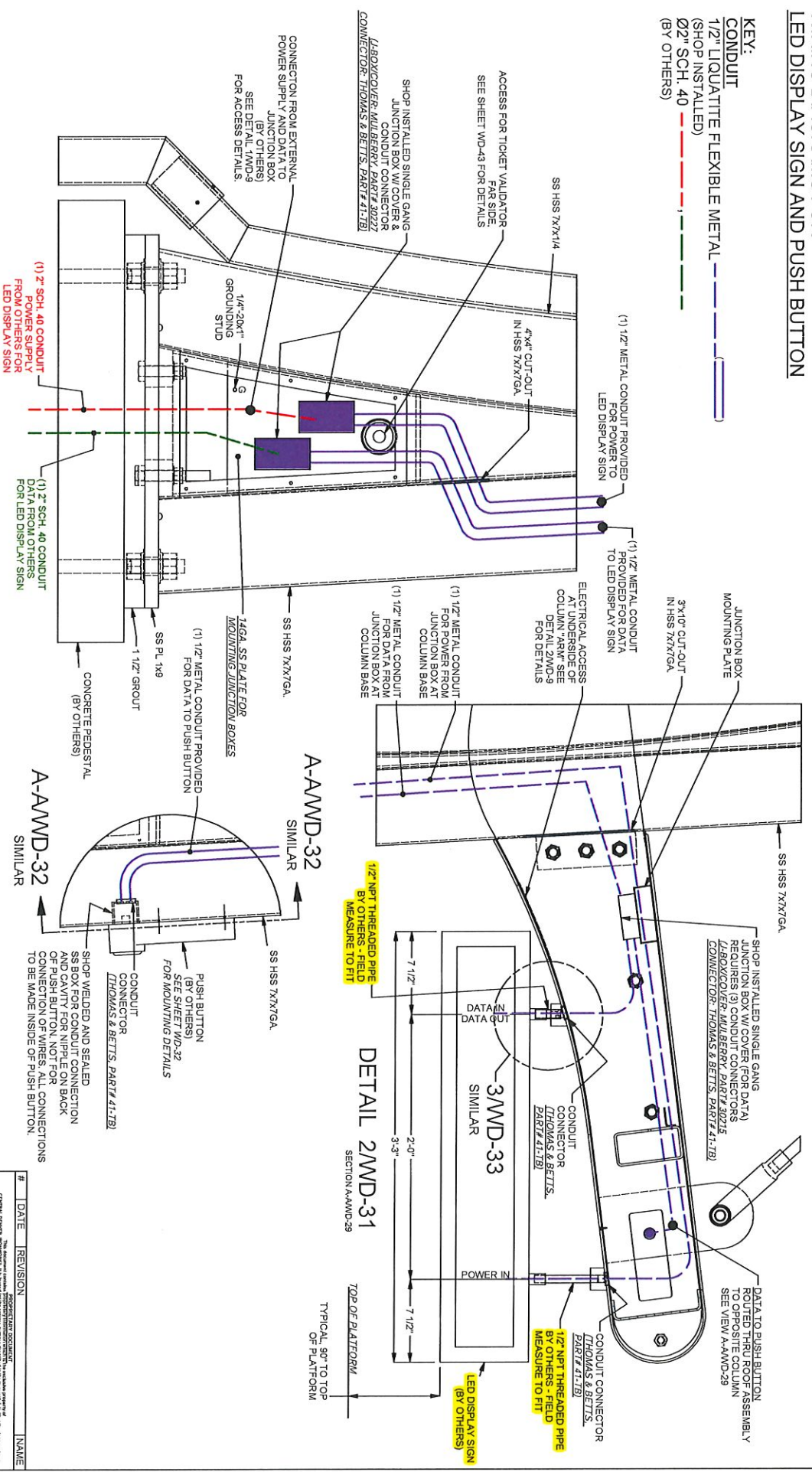
PAGE AB3-61

V.3

UMS Details
Types A & B Columns
Pg 1 of 1

WIRING DIAGRAMS FOR
LED DISPLAY SIGN AND PUSH BUTTON

KEY:
CONDUIT
1/2" LIQUATITE FLEXIBLE METAL (SHOP INSTALLED)
Ø2" SCH. 40
(BY OTHERS)



1605.049 [EOR-STAMPED FILE: 1605.061]



#	DATE	REVISION	DESIGNER	CHECKER	NAME

STRUCTURE:	STATION CANOPIES	WGT:	1605
MODEL #:			
LOCATION:	GRAND RAPIDS, MICHIGAN		
CUSTOMER:	THE CHRISTIAN COMPANY		
NOTE:	THE RAPID-LAKER LINE BRT		
DRAWN BY:	SWM	CHECKER:	T.D.
DESCRIPTION:	WIRING DIAGRAMS	SHEET:	WD-31