EMPIRE telecom

November 9, 2015

Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: EM-AT&T-015-140709 Notice of Completion of Construction for New Cingular Wireless/ AT&T facility at 2 Kaechele Place, Bridgeport, Connecticut

Dear Ms. Bachman:

The purpose of this letter is to notify you that construction activity associated with the above-referenced decision has been completed. I am enclosing the Modification Inspection Report that was completed for the modification/reinforcement to the subject structure mentioned in the Notice of Intent letter from the CSC dated August 4, 2014.

If you have any questions or need any additional information regarding this facility, please do not hesitate to contact me.

Sincerely,

David Cooper

David P. Cooper
Empire Telecom
Director of Site Acquisition
16 Esquire Road
Billerica, MA 01862
dcooper@empiretelecomm.com
Mobile 617-639-4908
Office 978-608-8404

June 5, 2015

Mr. Dan Vadney
Crown Castle USA, Inc.
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(518) 373-3510
Dan.Vadney@crowncastle.com

Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351 (office)
(919) 661-6350 (fax)
PMI@tepgroup.net

Subject: **Modification Inspection Report**

Crown Castle Designation:	**Crown Castle BU Number:**	841288
	Crown Castle Site Name:	Bridgeport North
	Crown Castle JDE Job Number:	297907
Engineering Firm Designation:	**TEP Project Number:**	25567_26102
Site Data:	**2 Kaechele Place** **Bridgeport, Fairfield County, CT 06606** **Latitude N *41° 13' 24.04"*, Longitude W *73° 13' 0.38"*** **150 Foot – Monopole Tower**	

Dear Mr. Vadney,

Tower Engineering Professionals is pleased to submit this **"Modification Inspection Report"** (MI Report) to Crown Castle for the modification/reinforcement to the subject structure. This Modification Inspection (MI) was performed in accordance with Crown Castle ENG-SOW-10007 Modification Inspection SOW, Contract Documents, and Crown Castle Purchase Order number 721479. The purpose of this MI is to confirm that the modification installation configuration and workmanship are in accordance with the contract document(s) listed in Table 2. The MI is not a review of the adequacy or effectiveness of the modification/reinforcement solution.

Table 1 – General Information

	Company	Contact	Dates on Site
MI Inspector	Tower Engineering Professionals	Andrew T. Haldane, P.E., C.W.I.	N/A
MI Inspector Field Representative (if applicable)	Tower Engineering Professionals	Hannah Childers	5/12/15
■ Independent	☐ EOR	☐ Turnkey	
Modification Design EOR	GPD Group	John N. Kabak, P.E.	N/A
General Contractor	FOSS Electric	Matt Hague	Unknown
Sub to the General Contractor	N/A	N/A	N/A
Field CWI for the General Contractor	Applied Testing Group, LLC	Lloyd J. Harper, CWI	5/10/15
Field NDE for the General Contractor	Applied Testing Group, LLC	Lloyd J. Harper, CWI	5/6/15

Table 2 – Documents

Document(s)	Remarks	Source
Modification Drawings Date: September 19, 2014 EOR: John N. Kabak, P.E. Job#: 2014777.814288.03	Creator of Drawings: GPD Group Job #: 2014777.814288.03 Date of Drawings: 9/19/14	CCIsites Drawing File: 5303822

Based on our inspection, Tower Engineering Professionals, Inc. determines this project:

X PASSING MI

The configuration, materials and/or workmanship of the modifications are installed in accordance with the Contract Documents and no deficiencies were found.

__ PASS AS NOTED MI

The configuration, materials and/or workmanship of the modifications are accepted as noted (see detail below).

__ FAILED MI

The configuration, materials and/or workmanship of the modifications are NOT installed in accordance with the Contract Documents. The rejection is based on non-conformance in the following area(s):

__ Materials (see detail below)

__ Workmanship (see detail below)

__ Configuration (see detail below)

Discrepancies were noted between the As-Built field conditions and the structural modification drawings. The As-Built field conditions were approved by the Engineer of Record. All discrepancies are noted in the executive summary.

All observations were performed after the construction was complete. Tower Engineering Professionals, Inc. was not present during the construction phase. The onsite PMI was performed by Hannah Childers and Jordan Adams of Tower Engineering Professionals, Inc., (919) 661-6351.

We at Tower Engineering Professionals, Inc. appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted,

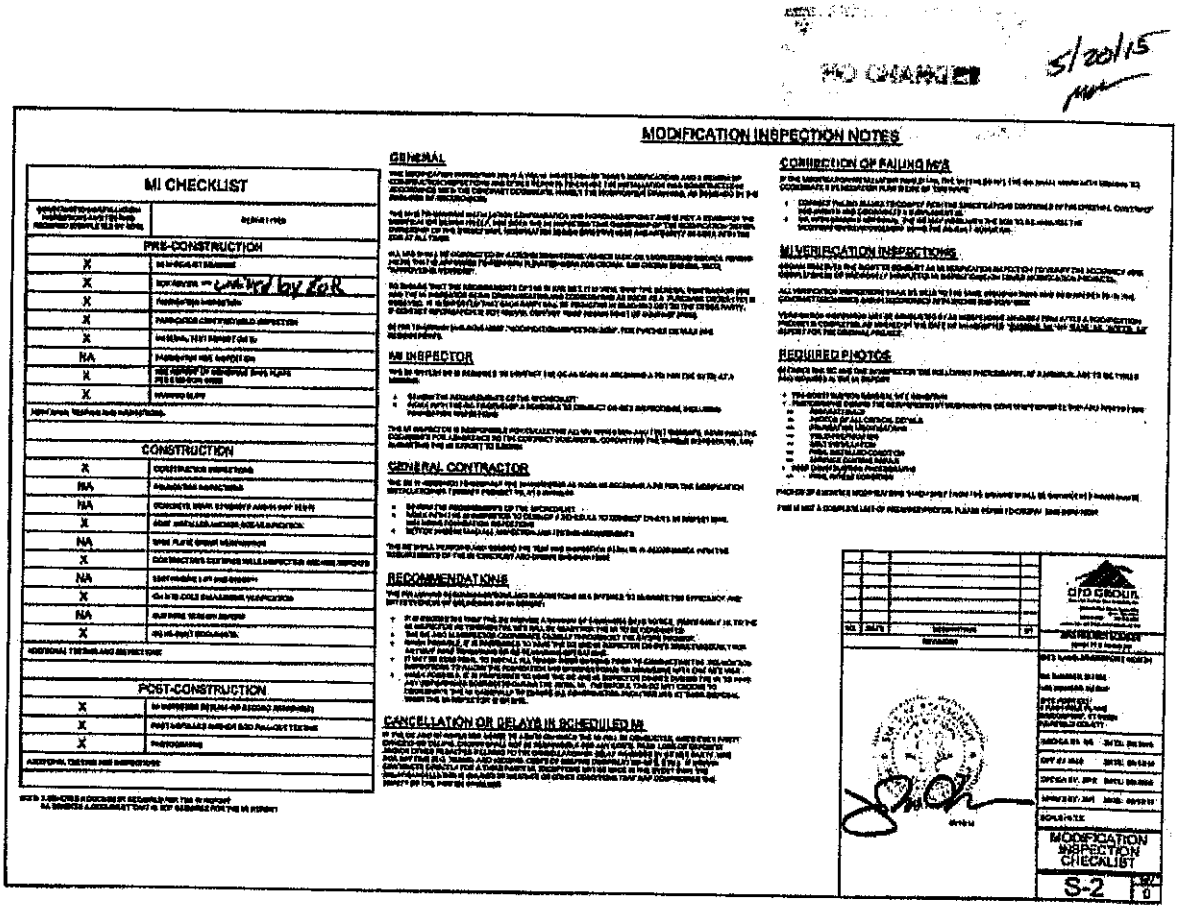
Andrew T. Haldane, P.E., C.W.I.

Table of Contents

PAGE NO.

PRE-CONSTRUCTION

6.1.1 MI CHECKLIST DRAWING



NO CHANGE 5/20/15

MODIFICATION INSPECTION NOTES

MI CHECKLIST

	PRE-CONSTRUCTION
X	
X	
X	
X	
X	
NA	
X	
X	
	CONSTRUCTION
X	
NA	
NA	
X	
NA	
X	
NA	
X	
NA	
X	
	POST-CONSTRUCTION
X	
X	
X	

GENERAL

MI INSPECTOR

GENERAL CONTRACTOR

RECOMMENDATIONS

CANCELLATION OR DELAYS IN SCHEDULED MI

CORRECTION OF FAILING MI'S

MI VERIFICATION INSPECTIONS

REQUIRED PHOTOS

MODIFICATION INSPECTION CHECKLIST

S-2

6.1.2 EOR APPROVED SHOP DRAWINGS

From: Said, Mody <msaid@gpdgroup.com>
Sent: Wednesday, May 20, 2015 8:04 AM
To: Matt Hague
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Matt,

Any item in the MI checklist that need to be waived, should be taken care of before construction starts.

The shop drawing requirement can be waived if the construction was entirely based on the SDD package by GPD.

Thank You,

Mody Said, E.I.
Structural Analyst

GPD GROUP
520 South Main Street, Suite 2531 Akron, OH 44311 gpdgroup.com
Office: 330.572.2087 Fax: 330.572.2101

AKRON / ATLANTA / CLEVELAND / COLUMBUS / INDIANAPOLIS / LOUISVILLE / MARION / PHOENIX / SEATTLE / YOUNGSTOWN

From: Matt Hague [mailto:MHague@fossllc.com]
Sent: Tuesday, May 19, 2015 4:23 PM
To: Said, Mody
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Hey Mody I'm working on turnover for this site. Could you please approve a waiver of Shop drawing review as the install is just about complete.

Thank you,

Matt Hague
Project Manager

Mobile - 213.307.0981
Office - 267-419-8190
Fax - 866.886.1841
Emergency Service Line - 213.801.0312
Email - MHague@fossllc.com
Web Site - www.fossllc.com

6.1.3 FABRICATION INSPECTION

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To: R F Telecom

1084 Bethlehem Pike
Montgomeryville, PA 18936

Subject: PO: 11077

June 4, 2015

Please accept this letter as certification that our work on Steel Package for Bridgeport North - 841288 was performed in accordance with industry standards and the contractor documents.

Please contact me if you have any questions.

Thank you

Fabrication Project Manager

Allfasteners USA LLC.

New York
69 Dorland Street
Ramsay, New Jersey 07445
Tel 1-800-517-3171
Fax +1 (201) 783-8840

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Gothenburg, Nebraska 69138
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6.1.4 FABRICATOR CERTIFIED WELD INSPECTION

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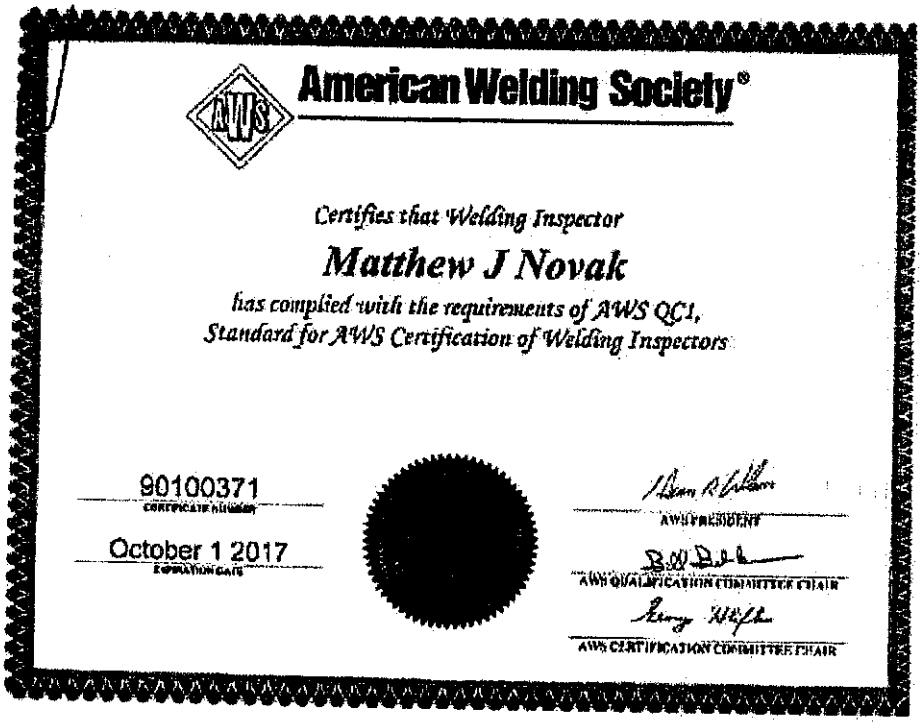

American Welding Society®

Certifies that Welding Inspector

Matthew J Novak

has complied with the requirements of AWS QC1,
Standard for AWS Certification of Welding Inspectors

90100371
CERTIFICATE NUMBER

October 1 2017
EXPIRATION DATE

AWS PRESIDENT

AWS QUALIFICATION COMMITTEE CHAIR

AWS CERTIFICATION COMMITTEE CHAIR

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Certificate
of
Tests and Qualifications
of
Welding Operator

TOTAL QUALITY TESTING, INC.
HAS PREPARED AND TESTED THE
SPECIMENS WELDED BY

ED CASPER

WELDING PERFORMED UNDER THE SUPERVISION OF

BEREA MFG.

IN ACCORDANCE WITH
AWS D1.1 - 2008 STRUCTURAL STEEL WELDING CODE
G.M.A.W., 3/8", 2F FILLET WELD TESTS
PER WPS: 00022 & 00023

Qualification Date: 2/20/09
Expiration Date: INDEFINITE
Lab No.: 0902-3075

Authorized Signature: Mark Demchak
MARK DEMCHAK
AWS - CWI

Total Quality Testing, Inc.

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69 Orchard Street,
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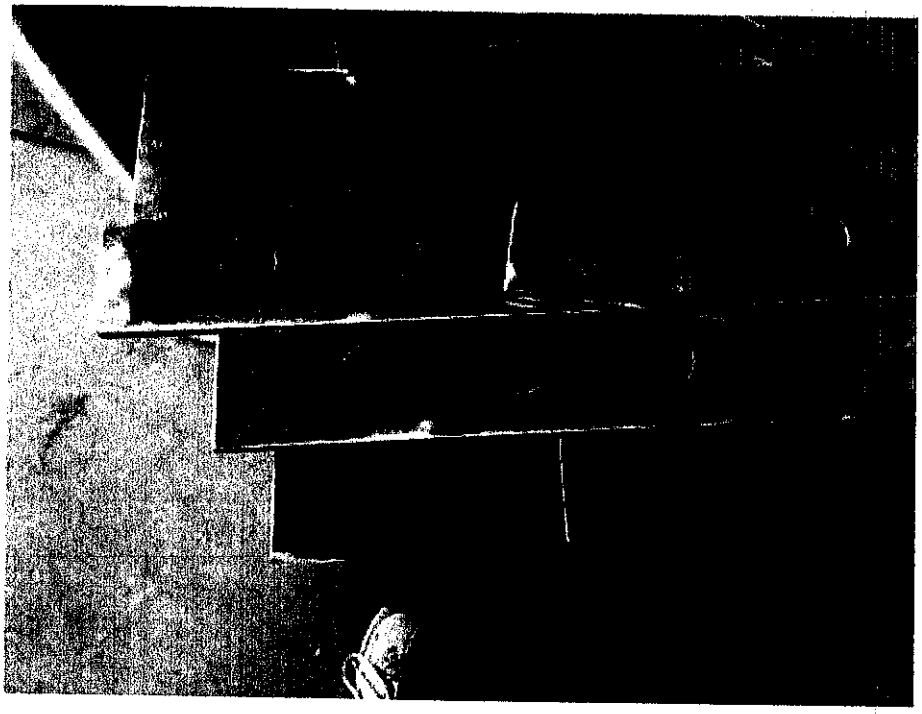

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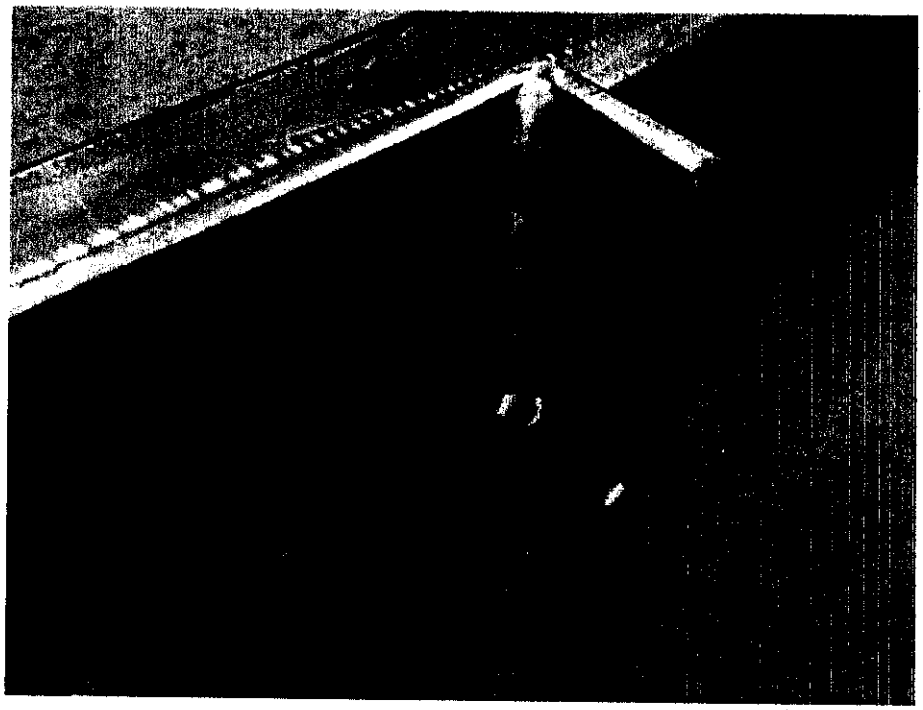

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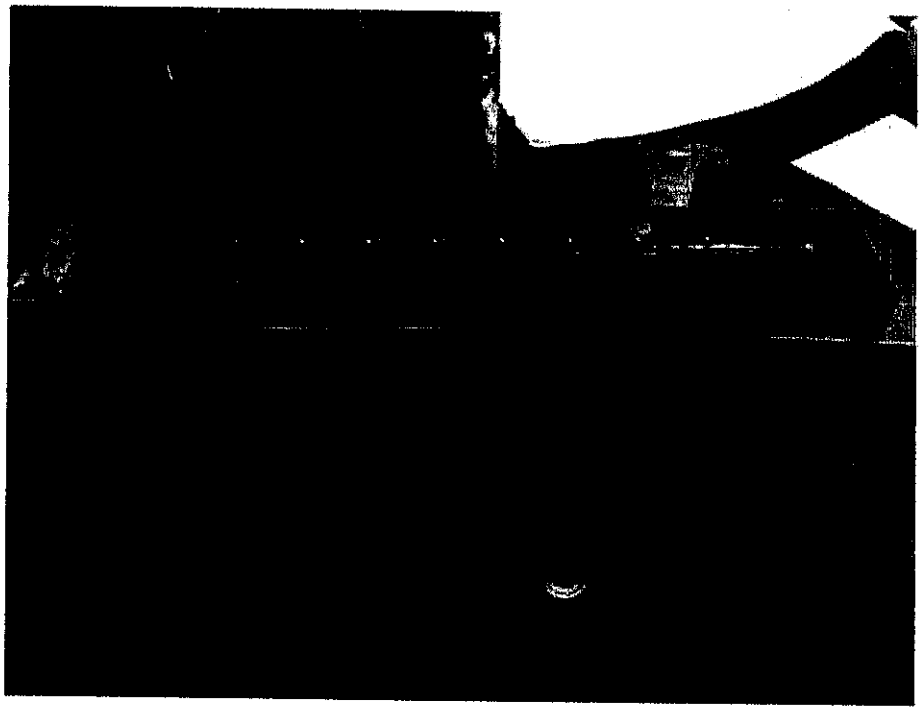

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Total Quality Testing, Inc.

All Fasteners
15401 Commerce Park Dr.
Cleveland, OH 44142

TQT File No.: 1505-0761
P.O. No.: 43811
Inspected: 5-28-15
Reported: 5-28-15

Standard: AWS D1.1-2010 Structural Code, Section 6, Table 6.1

Procedure: TQT-VT-103, REV. 2

Project Name: Bridgeport North

Quantity: 8 **Total Accepted:** 8 **Total Rejected:** 0

Remarks:

On May 28th, 2015 a final visual weld inspection was performed in the as welded condition at 430 Geiger Street, Berea, Oh 44017. The final weld inspection was performed on 8 End Brackets. All welds inspected were found to meet the criteria of AWS D1.1 Structural Welding Code.

Results:

End Brackets	Acceptable

Inspected By: Matthew Novak Date: 5/28/15

Matthew Novak
CWI #90100371
SNT-TC-1A/NAS 410 LEVEL II

Matthew J Novak
CWI 90100371
QC1 EXP. 10/1/2017

8321 WEST 181ST STREET • BROOK PARK, OHIO 44142 • (216) 676-8800 • FAX (216) 676-8808

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6.1.5 MATERIAL TEST REPORT (MTR)

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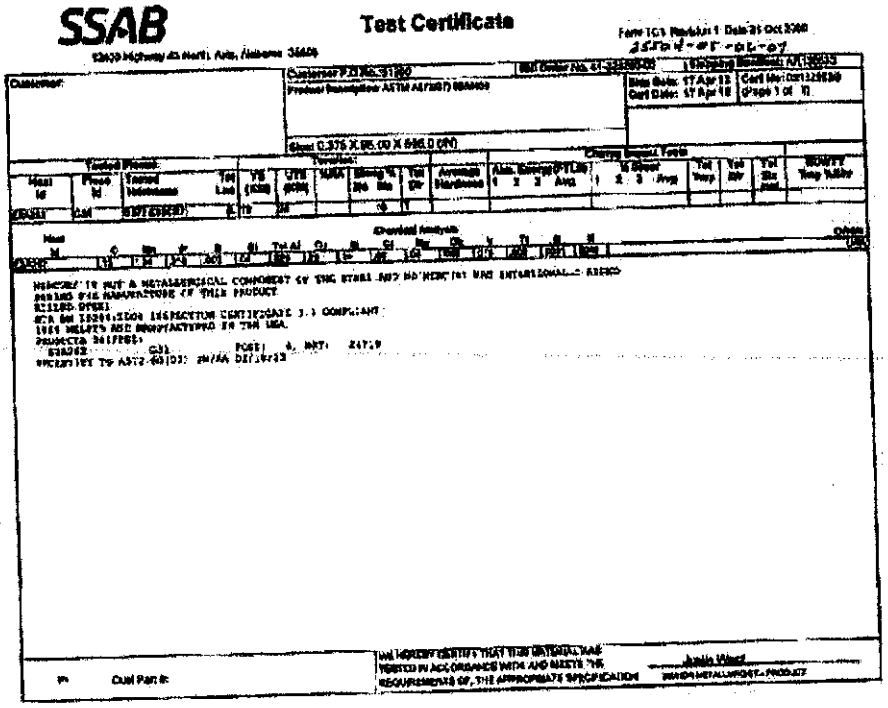

SSAB

Test Certificate

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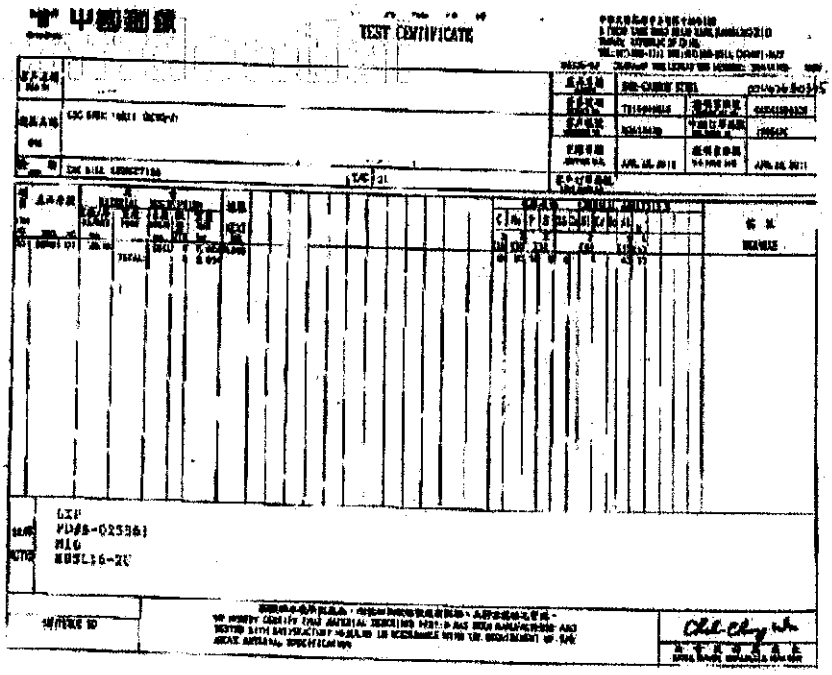

TEST CERTIFICATE

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SGS

Material & Engineering Laboratory-Kaohsiung

Test Report

Report No. : KK-11-00267X
Page No. : 1 OF 1
Date of Report : Jan. 18, 2011

Owner	SUNNY SCREW INDUSTRY CO., LTD.
Applicant	SUNNY SCREW INDUSTRY CO., LTD.
Sample Name	Steel Wire φ25.30mm
Size	M16×43
Order No.	CH12265
Part No.	FOM8-025361
DWG No.	HB8L16-2U
Sample Taken By	SUNNY SCREW INDUSTRY CO., LTD.(廠商)
Sample Submitted By	SUNNY SCREW INDUSTRY CO., LTD.(廠商)
Date of Sample Received	Jan. 09, 2011
Date of Testing	Jan. 09, 2011 to Jan. 18, 2011
Testing Method	ASTM-A370-10
Remark	The information mentioned in the above section is provided by Client (Including Date of Sample Received and Date of Testing)

TEST RESULTS :

Specimen No.	Yield Strength (0.2% offset) ksi	Tensile Strength ksi	Elongation (G.L.2in.) %	Hardness HRBW
φ25.30	59	64	32	77

— End —

The tested specimen(s) offered in this test report is/are for reference only. The conformity judgment is at the Applicant's sole request.

Signed for and on behalf of
SGS Taiwan Ltd.

TW6776799

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Part Number: ZAOSBSG20095 | M20 x 95 AJAX ONESIDE™ Structural Bolt Set Galvanized 32/Box

Component Description	Lot ID	Test Results								
		Proof Load (kN)		Hardness (HRC) To ASTM F606				Wedge Tensile Test (kN) To ASTM F606		
		Spec		Spec		Sample		Spec	Sample	
		Min	Sample	Min	Max	A	B	Min	A	B
M20 X 95 ONESIDE BOLTS	M00071B6/09			33	38	38	38	203	232	232
	M00071B6/10			33	38	38	38	203	232	232
	M00071B6/10			33	38	38	38	203	232	232
STRUCTURAL GAL NUT M20 WITH WAX	56824723	285	Pass	24	35	29	32			
ONESIDE SOLID WASHER 21 X 8 X 42 GAL	93450			21	34	34	34			
ONESIDE SPLIT WASHER 21 X 8 X 42 GAL	55345G/2			21	34	33	34			

2AOSBSG20135 | M20 x 135 AJAX ONESIDE™ Structural Bolt Set Galvanized 24/Box

Component Description	Lot ID	Test Results								
		Proof Load (kN)		Hardness (HRC) To ASTM F606				Wedge Tensile Test (kN) To ASTM F606		
		Spec		Spec		Sample		Spec	Sample	
		Min	Sample	Min	Max	A	B	Min	A	B
M20 X 135 ONESIDE BOLTS	M00071B7/04			33	38	38	38	203	232	232
	M00071B7/05			33	38	38	38	203	232	232
	M00071B7/05			33	38	38	38	203	232	232
STRUCTURAL GAL NUT M20 WITH WAX	56824723	285	Pass	24	35	29	32			
ONESIDE SOLID WASHER 21 X 8 X 42 GAL	93450			21	34	34	34			
ONESIDE SPLIT WASHER 21 X 8 X 42 GAL	55345G/2			21	34	33	34			

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Part Number: 2DTIM20BMGAFSIF | M20 DTI PERMASquirter Washer Grade 8.8 Galvanized 100/Box 1000/Keg

CERTIFICATION OF TESTING

DIRECT TENSION INDICATOR WASHERS PER ASTM F959M-07

PART NUMBER: ASF - M20MAG
SIZE AND TYPE: M20 8.8 MG DTIS
LOT NUMBER: V34

STEEL HEAT: A39139
MANUFACTURING DATE: 7/10/2013

CUSTOMER:
PO #:
INVOICE #:

TEST NUMBER: 13218-V34
TEST DATE: 8/1/2013
TEST PROCEDURE: ASTM F959-11

COMPRESSION LOAD IN kN AT 0.4 mm
ACCEPTABLE COMPRESSION RANGE FOR M20 8.8 DTIS IS 142000 TO 170000 kN

1) 158,800	11) 154,070	20) 160,599
2) 151,105	12) 156,498	21) 166,177
3) 154,731	13) 158,447	22) 161,616
4) 166,906	14) 154,541	23) 166,021
5) 159,398	15) 151,864	24) 163,667
6) 154,220	16) 153,908	25) 163,909
7) 153,887	17) 155,910	26) 163,019
8) 156,033	18) 154,979	27) 160,088
9) 152,660	19) 156,711	28) 166,822
10) 156,533		29) 164,331

Min: 151,105 Avg: 154,809
Max: 166,906 St. Dev: 1,732

GAUGE NUMBER: 6 - 626
CALIBRATED WITH STANDARD: 106884A
UNCERTAINTY FACTOR - 80%

TEST NUMBER: MA-13218-V34
TEST DATE: 8/1/2013
TEST PROCEDURE: ASTM B499-04 FOR THICKNESS AND ASTM B568-98 FOR ADHESION

COATING THICKNESS IN MICRONS
AVERAGE OF TEN THICKNESS TESTS PER PART

THICKNESS			ADHESION
1) 80.0	11) 85.7	20) 81.4	1) PASS
2) 82.0	12) 80.3	21) 77.8	2) PASS
3) 83.1	13) 81.8	22) 82.2	3) PASS
4) 78.6	14) 80.1	23) 80.2	4) PASS
5) 86.5	15) 86.5	24) 85.8	5) PASS
6) 74.8	16) 80.8	25) 87.1	
7) 78.2	17) 83.6	26) 83.6	
8) 79.2	18) 83.4	27) 80.6	
9) 74.1	19) 84.2	28) 84.3	
10) 83.3		29) 70.6	

Min: 69.0 Avg: 82.7
Max: 87.1 St. Dev: 6.78

GAUGE: 6-814 ELCOMETER 456
CALIBRATED WITH STANDARDS: 12041281 12041282
UNCERTAINTY FACTOR: +/- 0.85 MICRONS WITH A K FACTOR OF 2

TESTING RESULTS RELATE ONLY TO THE ITEMS TESTED

SAMPLING PER ASTM F1470-12 STANDARD PRACTICE FOR FASTENER SAMPLING FOR SPECIFIED MECHANICAL AND PERFORMANCE INSPECTION

New York
68 Orchard Street
Ramsey, New Jersey 07446
Tel 1-800-577-3177
Fax +1 (201) 783-0340

Cleveland
1940 | Commerce Park Drive
Cleveland, Ohio 44142
Tel 1-866-359-8052
Fax +1 (440) 232-0052

Los Angeles
9450 W. 83rd Street,
Los Angeles, California 90045
Tel +1 (310) 410-3007
Fax +1 (310) 410-3004

Nebraska
102 8th Street,
Gothenburg, Nebraska 69138
Tel 1-866-330-2510
Fax +1 (308) 537-2500

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Part Number: 2WRWGM020 | M20 Structural Flat Washer F436 Galvanized

Part Name: M20 F436 METRIC HDSR GALV.
Purchase Order: 369[illegible]
Shipment BOL: B175211
Shipment ID: A01B6330
Quantity: 6600
Manufacturers Marking: "P"

Steel Supplier: HORIZON STEEL CO.
Grade: CF436 GRADE STEEL
Lot: C7261M
Heat: 326345
Carbon: .25 (.21 - .93)
Manganese: 1.287 (1.43 - 1.61
Phosphorous: .009 (.03 Max.)
Sulfur: .002 (.05 Max.)
Silicon: .197

SPECIFICATIONS

HARDNESS: TEST METHOD: ASTM E18
HRC 38 - 45
CHECKED TO ASTM F606M

PLATING: TEST METHOD: ASTM B499
0.0025" Min.
MECH GALV TO ASTM B695
CLASS 55 TYPE 1

TEST RESULTS

HARDNESS:
HRC 41 - 43

PLATING:
0.0022" - 0.0030"

CERTIFIED TEST REPORT

7/16/13

*HORIZON STEEL
50390 UTICA DRIVE
SHELBY TWP., MICH. 48315
800-875-9914

SIZE: .122 MIN x 6.18 X COIL
GRADE: HRPO F436 GRADE
MELTED & MFD IN USA

P/I Date 7/16/13 Bill/Lading# 116171 Sales Order: 805821 01
Cust. P/O#: 21626-1 Part No.: ZZD10M12Z FOR PT# P1383H00

Tag# 739572 01 Heat# 326345 MasterTag# 232749 01

C : .230	Mn: 1.287	P : .009	S : .002	Al: .048	Si: .197	
Ni: .080	Cb: .001	Mo: .002	Cu: .010	V: .001	Cr: .246	
		Ca: .002	N : .005		Ti: .001	

Rock: 07 Oil: SW0

WE HEREBY CERTIFY THE ABOVE IS CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY

New York
69 Orchard Street
Ramsey, New Jersey 07446
Tel 1-800-677-3171
Fax +1 (201) 825-0340

Cleveland
16401 Commerce Park Drive
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Fax +1 (308) 537-3200

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Part Number 10RSBAO39 | Round Seamless Bolt Sleeve 39" Length to suit M20 AJAX ONESIDE™ Structural Bolt - 4140 Steel

064017	87421	07/22/14	21	00	57	14	01	06950000000		ICP 1

ALLFASTENERS USA LLC
15401 COMMERCE PARK DRIVE
CLEVELAND OH USA 44142

ALLFASTENERS USA LLC
15401 COMMERCE PARK DRIVE
CLEVELAND OH 44142

SH 2
TR 3
INV 3

COLLECT/OPEN TOP/TARPED/FOB 5 LYON MI/*NTO BELOW — CUST PU

4140	ROUND	COLD DRAWN		STRESS RELIEVED	08/12/14
SEAMLESS	ASTM/A 519 06			CD ALLOY MECHANICAL	08/23/14

		1.143	.607			1.746		10:51:03 06/25/14

ITM NUM	BALE NUM	--BALE-- PCS	--BALE-- FTG	HEAT NO.	LENGTH	ITM STATUS	PART NUMBER
1	1 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	2 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	3 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	4 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	5 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	6 2	39	474	00A140055	MULTS 3' 3.000"	CON	
1	7 2	39	474	00A140055	MULTS 3' 3.000"	CON	

00A140055	.400	.880	.006	.021	.180	.070	.990	.160	.130	.020	EF SQ1

00A140055	127,619	97,466	71.9	HRC 25-27			OK

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INTERNATIONAL FASTENERS INDUSTRIAL CO., LTD.

P.O. BOX 1017, KAOHSIUNG, TAIWAN ROC

TEL:[illegible] E-mail:[illegible]

FAX:886-7-2391468 • 886-7-2391910 • 886-7-2395332

DATE: MAY 02, 2012

REF : 20120220-LIP

LINDAPTER INTERNATIONAL LTD LINDSAY HOUSE, BRACKENBECK ROAD, BRADFORD, WEST YORKSHIRE. ENGLAND BD7 2NF	MATERIAL ORIGIN: TAIWAN.

CERTIFICATE OF CONFORMITY

DEAR SIRS,

RE: YOUR ORDER NO. S-025361 – M16 HBSL16-20

WE HEREBY CONFIRM THAT THE MATERIAL SUPPLIED AGAINST MATERIAL CERTIFICATE NO.0004240335 IS EQUIVALENT OR SUPERIOR TO THE 10B21 MILD STEEL, ETC AS SPECIFIED BY DRAWING NO. LTSD-2145 - REV B

YOURS FAITHFULLY

INTERNATIONAL FASTENERS INDUSTRIAL CO.,LTD

AUTHORIZED SIGNATURE

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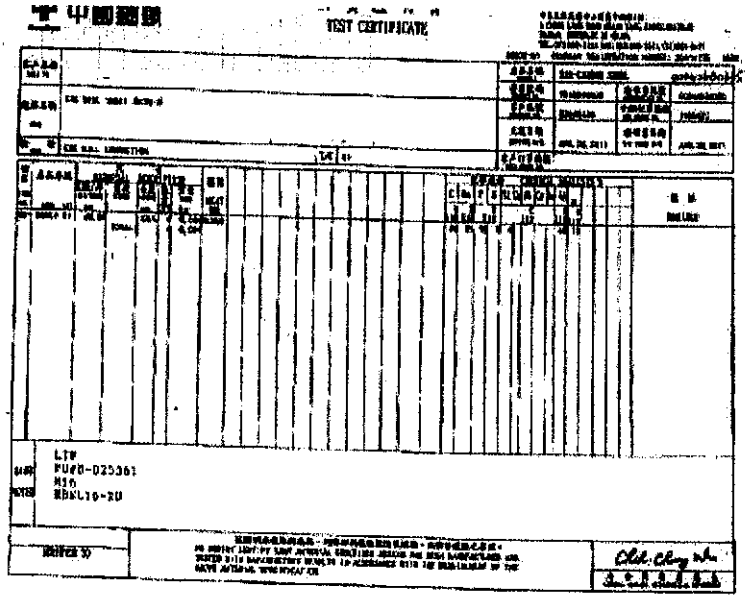
TEST CERTIFICATE

LIW
FU60-025361
M16
BDXL10-20

New York
68 Orchard Street
Passaic, New Jersey 07416
Tel 1-800-577-3171
Fax +1 (201) 723-0305

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SGS

Material & Engineering Laboratory-Kaohsiung

Test Report

Report No. : KK-11-002672
Page No. : 1 OF 1
Date of Report : Jan. 19, 2011

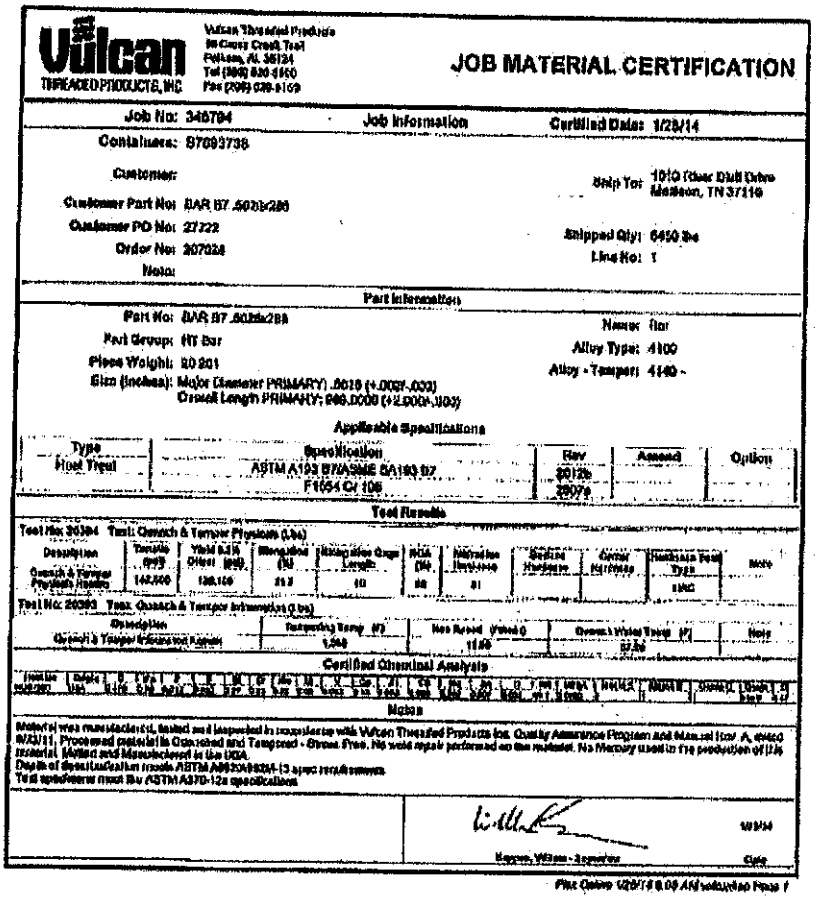
Owner	SUNNY SCREW INDUSTRY CO., LTD.
Applicant	SUNNY SCREW INDUSTRY CO., LTD.
Sample Name	Steel Wire φ 21.30mm
Size	M16×61
Order No.	C311285
Part No.	POMB-025351
Heat No.	HBSL16-2U
Sample Taken By	SUNNY SCREW INDUSTRY CO., LTD.(新豐興)
Sample Submitted By	SUNNY SCREW INDUSTRY CO., LTD.(新豐興)
Date of Sample Received	Jan. 09, 2011
Date of Testing	Jan. 09, 2011 to Jan. 18, 2011
Testing Method	ASTM A370-10
Remark	The information mentioned in the above section is provided by Client (Exclude Date of Sample Received and Date of Testing)

TEST RESULTS :

Specimen No.	Yield Strength (0.2% offset) ksi	Tensile Strength ksi	Elongation (G.L.2in.) %	Hardness HRBW
φ 21.30	59	64	32	77

-----End-----

Signed for and on behalf of
SGS Taiwan Ltd.



Vulcan
THREADED PRODUCTS, INC

Vulcan Threaded Products
99 Cross Creek Trail
Pelham, AL 35124
Tel (205) 620-5150
Fax (205) 620-5159

JOB MATERIAL CERTIFICATION

Job No: 348794 — Job Information — Certified Date: 1/28/14

Containers: S7093736

Customer:

Ship To: 1010 River Bluff Drive
Madison, TN 37115

Customer Part No: BAR B7 .5625x288

Customer PO No: 27722

Order No: 207028

Shipped Qty: 6450 lbs

Line No: 1

Note:

Part Information

Part No: BAR B7 .5625x288

Name: Bar

Part Group: HT Bar

Alloy Type: 4100

Piece Weight: 20.201

Alloy - Temper: 4140 -

Size (inches): Major Diameter PRIMARY: .5625 (+.003/-.003)
Overall Length PRIMARY: 288.0000 (+2.000/-.000)

Applicable Specifications

Type	Specification	Rev	Amend	Option
Heat Treat	ASTM A193 B7/ASME SA193 B7	2012b		
	F1554 Gr 105	2007a		

Test Results

Test No: 20384 Test: Quench & Temper Physicals (Lbs)

Description	Tensile (ksi)	Yield 0.2% Offset (ksi)	Elongation (%)	Reduction Area (%)	Brinell Hardness	Charpy Ft-Lbs	Hardness Test Type	Note
Quench & Temper Physicals Readings	142,000	126,100	21.0	63	293		BHN	

Test No: 20385 Test: Quench & Temper Information (Lbs)

Description	Tempering Temp (F)	Hrs Rated (Hours)	Oversize Water Temp (F)	Note
Quench & Temper Information Readings	1,350	10.00	97.00	

Certified Chemical Analysis

Heat No	Grade	C	Cr	Mn	P	S	Si	Ni	Mo	V	Cu	Al	Cb	Sn	B	Ti	Pb	Ca	Nitrogen	Aluminum	Columbium	Oxygen
348794	4140	0.410	0.940	0.840	0.012	0.002	0.250	0.120	0.190	0.010	0.160	0.030	0.010	0.010	0.0000	0.010	0.000	0.0000	0.0080			

Notes

Material was manufactured, tested and inspected in accordance with Vulcan Threaded Products Inc. Quality Assurance Program and Manual Rev. A, dated 8/23/11. Processed material is Quenched and Tempered - Stress Free. No weld repair performed on the material. No Mercury used in the production of this material. Melted and Manufactured in the USA.
Depth of Decarburization meets ASTM A962/A962M-13 spec requirements
Test specimens meet the ASTM A370-12a specifications

William Wilson - Inspector — 1/28/14 — Date

Fax Order 1/28/14 8:09 AM received Page 1

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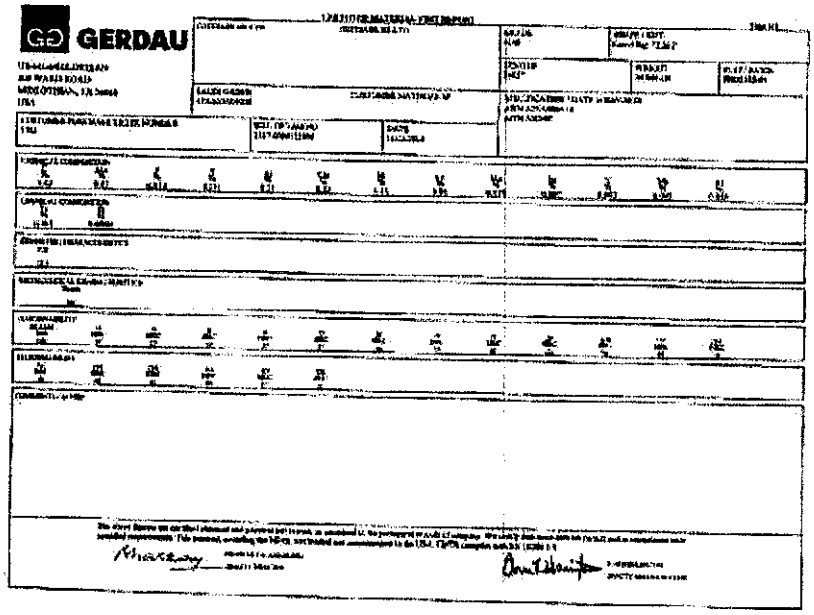

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TQ Industries – All Products Division
3700 S. Route 31
Crystal Lake, IL 60012
Tel 815-459-2400
Fax 815-455-8307

Testing Report

Job No	Report Date
5409	12/12/2014

Customer Code	Bill Customer Address Code	Bill Address	Bill City	Bill State	Bill Zip	Bill Country

PO No	Customer Part Process	Customer Part No	Customer Part Revision
1749-TC	White Quench Temper Stress Free	[illegible]	

Job No	Heat No	Grade	Serial No	Mill Tag No	Pieces	Quantity	Net Weight	Flat Thickness/Round Diameter	Length	Width/Thickness
5409	[illegible]	4140	[illegible]	[illegible]	10	4290	4290	2.000	190	0
5409	[illegible]	4140	[illegible]	[illegible]	15	4290	4290	2.000	190	0
5409	[illegible]	4140	[illegible]	[illegible]	15	4290	4290	2.000	190	0
5409	[illegible]	4140	[illegible]	[illegible]	15	4290	4290	2.000	190	0
5409	[illegible]	4140	[illegible]	[illegible]	12	3430	3430	2.000	190	0
5409	[illegible]	4140	[illegible]	[illegible]	15	4290	4290	2.000	190	0
Job Totals		0	0		87	24881	24881			

Control No	Specification Description	Unit	Value
109462	Austenizing Time (minutes)	Minutes	45
109463	Tempering Temperature (F)	Degrees F	1200
109464	Tempering Time (minutes)	Minutes	90
109461	Austenizing Temperature (F)	Degrees F	1600

Specification	Revision	Name
AS 2.000 X 500 RD, 4140 HT 30-40 RC 1804		ASTM A193-07 - A/M-DC - F1554-07ε1

ACCREDITED Testing Cert #1564.01

Approved Signatory: Ken Rueff

All test results reported below were performed by an A2LA accredited lab

Cert Note

Control No	Specification Description	Unit	Lower Limit	Upper Limit	Value	Result	Gage/Outside Lab	Gage Description	Next Calibration Date
109470	Mid-Radius Brinell Hardness	HBW		321	311	PASS	Brinell Tester 486	Brinell Tester	9/7/2015
109470		HBW		321	311	PASS	Brinell Tester 385	Brinell Tester	9/7/2015
109470		HBW		321	311	PASS	Brinell Tester 385	Brinell Tester	9/7/2015
109470	Surface Brinell Hardness	HBW		321	302	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109470		HBW		321	302	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109470		HBW		321	302	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109470		HBW		321	335	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109470		HBW		321	302	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109470		HBW		321	302	PASS	Brinell Tester 363	Brinell Tester	1/7/2015
109205	Tensile Strength [Minimum]	ksi	125	150	149	PASS	Tensile Machine 3845	Tensile Machine	10/2/2015

107206		ksi	128	130	141	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		ksi	126	130	142	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206	Yield Strength (0.2% offset)	ksi	100		127	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		ksi	100		128	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		ksi	102		129	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206	Elongation (%)	%	18		17	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		%	18		16	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		%	18		14	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206	Reduction of Area (%)	%	60		62	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		%	60		64	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206		%	60		58	PASS	Tensile Machine 9041	Tensile Machine	1/23/2015
107206	Charpy Testing Temperature (F)	Degrees F	-22	-18	-20	PASS	CVN Thermometer 42150	Chiller	1/7/2015
107206	Charpy Impact (CVN ft-lb)	Ft Pounds	18		53	PASS	Charpy Impact Tester B	Charpy Impact Tester	1/4/2015
107206		Ft Pounds	18		55	PASS	Charpy Impact Tester A	Charpy Impact Tester	1/4/2015
107206		Ft Pounds	18		57	PASS	Charpy Impact Tester B	Charpy Impact Tester	1/4/2015

[redacted]

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Atlas Tube (U.S.) Inc.
13101 Bolton Road
Plymouth, Michigan, USA
48170
Tel: 313-454-9500
Fax: 313-454-1474

Atlas Tube
JMC STEEL GROUP

Ref.SO.: 80617450
Date: 08.12.2014
Customer: 834

MATERIAL TEST REPORT

Shipped to:

FOR: ALL FASTENERS USA
PO#: 41044
5" SQ X 1/2" W X 21' (1 PC)

Material No: 40040600
Made in: USA
Melted in: USA
Sales order: 924247
Purchase Order:

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V	Ti	B	N
1539530	0.200	0.830	0.012	0.007	0.019	0.064	0.030	0.007	0.006	0.010	0.040	0.001	0.001	0.000	0.005

Bundle No	PCs	Yield	Tensile	Elo.2in	Certification	CE
[illegible]	8	0778064 Psi	0858592 Psi	29 %	ASTM A500-13 GRADE B&C	0.34

Material Notes:
Sales Or.Notes:

Material No: 50080600
Made in: USA
Melted in: USA
Sales order: 924247
Purchase Order:

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V	Ti	B	N
[illegible]	0.200	0.830	0.009	0.009	0.020	0.032	0.030	0.006	0.006	0.010	0.040	0.003	0.000	0.001	0.006

Bundle No	PCs	Yield	Tensile	Elo.2in	Certification	CE
[illegible]	4	0858442 Psi	0883600 Psi	24 %	ASTM A500-13 GRADE B&C	0.35

Material Notes:
Sales Or.Notes:

Material No: 50080600
Made in: USA
Melted in: USA
Sales order: 924247
Purchase Order:

Heat No	C	Mn	P	S	Si	Al	Cu	Cb	Mo	Ni	Cr	V	Ti	B	N
[illegible]	0.200	0.830	0.009	0.009	0.020	0.032	0.030	0.006	0.006	0.010	0.040	0.003	0.000	0.001	0.006

Bundle No	PCs	Yield	Tensile	Elo.2in	Certification	CE
[illegible]	4	0858442 Psi	0883600 Psi	24 %	ASTM A500-13 GRADE B&C	0.35

Material Notes:
Sales Or.Notes:

Authorized by Quality Assurance:
The results reported on this report represent the actual attributes of the material furnished and indicate full compliance with all applicable specification and contract requirements.
Tensile tested per ASTM G1.7 method.

Steel Tube Institute

Metals Service Center Institute

New York
62 Orchard Street,
Ramsey, New Jersey 07446
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Fax +1 (201) 783-8340

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EVRAZ

Material Test Report

Sold To:

Order 229067-01 Customer PO 10633

Other Information for Order 229067-01

Test Direction: L = Longitudinal and T = Transverse

Notary Public: ____________________

I certify the above results to be correct as contained in the records of the corporation.

Chief Metallurgist, David J. Cannon D. J. Cannon

Revision:

Page 1 of 1

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to EVRAZ [redacted]

[redacted]

Material Test Report

B/L: 3131171

Sold To:

Order 239420-03 Cust PO 83976 24D

Specifications:

Products Shipped for Order 239420-03 (sorted by Serial)

Serial	Heat-Item	Qty	Wt	Piece Size as Shipped	Size	Qty
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Chemical Analysis for Order 239420-03 (sorted by Heat)

Furnace	Heat	C	Mn	P	S	Si	Ni	Cr	Cu	Mo	Sn
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Tensile Tests for Order 239420-03 (sorted by Heat)

Serial	Heat-Item	Gauge Length	Gauge Dia	Tensile PSI	Tensile MPa	Yield PSI	Yield MPa	Elongation %	Elongation In.	Elongation Dia	Hardness	Yield Type	Yield	Mode	Ult	Tests In Lot
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Impact Tests for Order 239420-03 (sorted by Heat)

Serial	Heat-Item	Gauge Thickness	Gauge Dia	Temp °F	Temp °C	Pt-Lbs 1	Pt-Lbs 2	Pt-Lbs 3	Anvils 1	Anvils 2	Anvils 3	Hardness	Yield Type	Yield	Mode	Ultimate	Tests In Lot
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Impact Tests for Order 239420-03 Supplemental Information (sorted by Heat)

Serial	Heat-Item	Gauge Thickness	Gauge Dia	Mil Exp Gap	Shear % 1	Shear % 2	Shear % 3	Hardness	Yield Type	Yield	Mode	Ultimate	Tests In Lot
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Other Information for Order 239420-03

Unless otherwise specified, Warranty, Inclusion or claims must be submitted within one week after receipt.

I hereby certify the above results to be correct as contained in the records of the corporation.

Metallurgist: Ryan Carmichael

Inspector:

Page 1 of 6

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EVRAZ

Material Test Report

B/L: 316847

10/03/2019

Sold To:

Order: 348834-04 Cust PO 55261 Part No. 3720A2-1

Specifications:
ASTM A449/A449M-14 Grade A Fine Grain Practice
ASTM A709/A709M-15 A709(A36) Type A Fully Killed Fine Grain Practice
AASHTO M270M/270-15 Grade 36(250) Fine Grain Practice Grade A

Products Shipped for Order 348834-04 sorted by Serial#

Serial#	Heat-Slab Seq	M/R	Plate Size in Inches	Plate Size in MM	Lbs	Pc
3720A2-1	20318-103 Slab	R-F	1.000 x 21.000 x 437.5000	25.40 x 533.40 x 11111.25	20,125	5,121

Shipment Summary of Order 348834-04: 1 pieces 20,241 lbs (0.100 Imp)

Chemical Analysis for Order 348834-04 (sorted by Heat)

Item Identity	Heat	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Sn
	77515	0.070	1.130	0.008	0.004	0.030	0.190	0.080	0.110	0.020	0.012
		Al	V	Nb/Cb	B	Alloy	Ti	W			
		0.034	0.002	0.001	0.0010	0.010	0.001	0.0005			

Tensile Tests for Order 348834-04 (sorted by Heat)

Serial#	Heat-Slab	Direction	Dia	Proportion		Yield		Elongation		RA %	Hard Tests	Ftu	Fty	Y/T	Tests By
				Gage		Point									
				Inches	MM	PSI	MPa	%	in	%					
3720A2-1	20318-103	L	1.2500	50.775	775	600	531	369	29	58		77440			3201121

Other Information for Order 348834-04
Material is 100% melted and manufactured in the USA. 3720A2-1 also meets the requirements of ASTM A572-07 Type 2 as requested. See the purchase Purchase Sheet

I certify the above results to be correct as contained in the records of the corporation.

Metallurgist, Ryan Carmichael

Revision 2

Page 4 of 8

New York
68 Orchard Street
Ramsey, New Jersey 07446
Tel 1-800-577-3179
Fax +1 (201) 785-0340

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Cleveland, Ohio 44131
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Fax +1 (440) 232-4052

Los Angeles
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Fax +1 (310) 410-3504

Nebraska
1127 11th Street,
Gothenburg, Nebraska 69138
Tel 1-855-310-7210
Fax +1 (308) 537-3500

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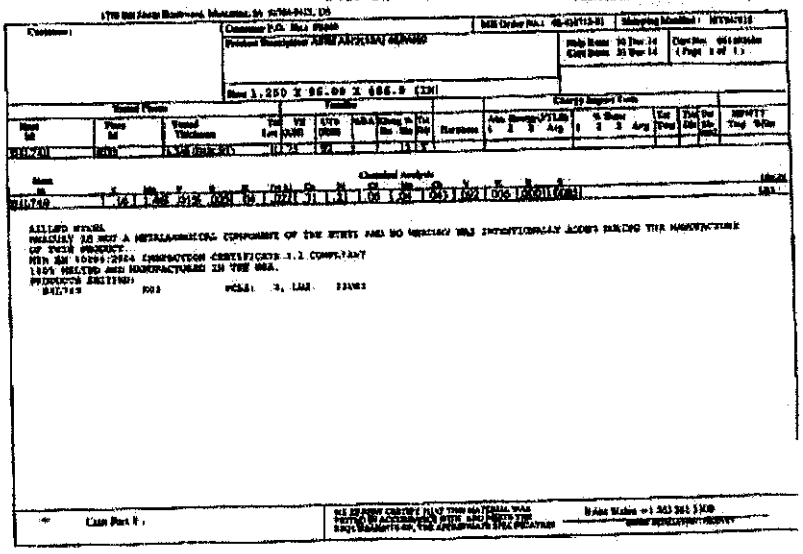
SSAB **Test Certificate**



ALLIED STEEL
PROUDLY TO NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE
OF THIS PRODUCT.
MTR AS 10899:2004 CONFORMITY CERTIFICATE 3.1 COMPLIANT
100% MELTED AND MANUFACTURED IN THE USA.
PRODUCTS ROLLED

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Fax +1 (310) 410-3004

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Gothenburg, Nebraska 69138
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Fax +1 (308) 537-3580

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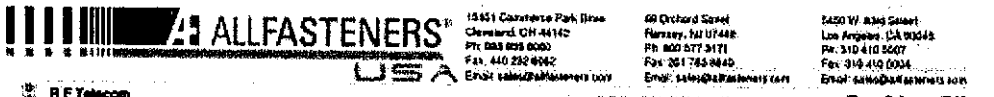
6.1.6 NDE REPORT OF MONOPOLE BASE PLATE

Please see Contractor's Certified Weld Inspection for NDE Report

6.1.7 PACKING SLIPS



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Packing Slip
74269
App No: 7519

Order Date	Ship Date	Customer Order No.	Ordered By	Contact No.	Reference	Entered By
10.28.2014	03.31.2015	10660	Matt Hague	267.419.9180	BRIDGEPORT NORTH - 8	BEC

Order Code	Description	Unit	Qty Ordered	Back Order	Supplied	BinCode
14OF431	Steel Package for Bridgeport North - 841268 Includes: 4 pieces - (DO-SFP-065125) 1-1/4 x 6-1/2 x 238 3/4 Flat Plate Grade 65 Galvanized with 33 Holes 4 pieces - (DO-SFP-065125) 1-1/4 x 6-1/2 x 238 3/4 Flat Plate Grade 65 Galvanized with 33 Holes 4 pieces - 1-1/4 x 6-1/2 x 81 1/8 Splice Plate Grade 65 Galvanized with 22 Holes 2 pieces - 1-1/4 x 3-1/4 x 1ft 6in Anchor Bracket Plate Grade 50 Galvanized (Welded to Pipe Below) 2 pieces - 6 x 6 x 1/2 x 2ft HSS Tube A500 GR B (46 KSI) Galvanized for Anchor Bracket (Welded to Plate Above) 2 pieces - 1-1/4 x 3-1/4 x 2ft Anchor Bracket Plate Grade 50 Galvanized (Tapered & Welded to Pipe Below) 2 pieces - 6 x 6 x 1/2 x 2ft 10in HSS Tube A500 GR B (46 KSI) Galvanized for Anchor Bracket (Welded to Plate Above) 8 pieces - 3/4 x 6 x 6 Square Washer Plate Grade 50 Galvanized with 2-1/2" Hole (Welded to Plate Below) 8 pieces - 3/8 x 6 x 28 3/8 Plate for End Bracket Assembly Grade 65 Galvanized with 28 Holes (Welded to Plate Below) 8 pieces - 3/8 x 4 3/8 x 28 3/8 Plate for End Bracket Assembly Grade 65 Galvanized with 18 Holes (Welded to Plate Above & Below) 16 pieces - 3/8 x 2 x 6in Plate for End Bracket Assembly Grade 65 Galvanized (Welded to Plate Above)	Each	1		1	

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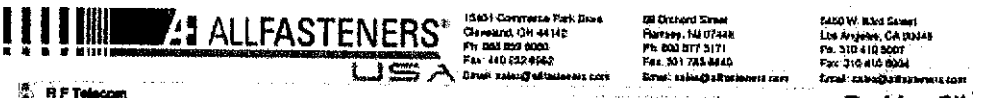

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74269
App No: 7519

Order Date	Ship Date	Customer Order No.	Ordered By	Contact No.	Reference	Entered By
10.28.2014	03.31.2015	10660	Matt Hague	267.419.9180	BRIDGEPORT NORTH - 8	BEC

Order Code	Description	Unit	Qty Ordered	Back Order	Supplied	BinCode
2TRGB721441212	2-1/4-4.5 x 12ft Threaded Rod B7 Galvanized	Each	4		4	
2HHNG21445Gvy	2-1/4-4.5 Heavy Hex Nut A194 Grade 2H Galvanized	Each	12		12	1K5A
6OF740	5/8-11 x 4-1/2 U-Bolt Galvanized with 2-1/2" Between Legs & 2" Thread B7	Each	72		72	
2HHNG581IGZH	5/8-11 Heavy Hex Nut A194 Grade 2H Galvanized 400/Ctn	Each	144		144	1K5C/1Q1B/1D
2WRWG058	5/8 Structural Flat Washer F436 Galvanized 1500/Ctn	Each	144		144	1C8E/1N3B
2M5LG58	5/8 Medium Split Lock Washer Galvanized 1600/Ctn	Each	144		144	1C8D/1N4B
3H816-2HDG	H816-2HDG M16 Size 2 Hvhn-Bolt HDG Hot Dip Galvanized "Darting Hole Bolts in place of Box Bolts. M16 Ajax Bolts are available as well if approved by engineer."	Each	40		40	
2AD5BS020065	M20 x 65 AJAX ONESIDE™ Structural Bolt Set Galvanized 32/Box	Each	192		192	
2AD5BS020135	M20 x 135 AJAX ONESIDE™ Structural Bolt Set Galvanized with Reinforced Head 24/Box	Each	96		96	
1DRSSAC039	Round Seamless Bolt Sleeve 39" Length to suit M20 AJAX ONESIDE™ Structural Bolt - 4140 Steel	Each	21		21	1K3B/1Q2A
2D11M20MGAFSF	M20 DTI FERMASpanner Washer Grade 8.8 Galvanized 100/Box 1000/Key	Each	300		300	
2WRWGM020	M20 Structural Flat Washer F436 Galvanized	Each	300		300	1Q8Q
	M20 Knurled Washer Magni 565		200		200	1C8E

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Page 2 of 3

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App No:7519

Order Date	Ship Date	Customer Order No.	Ordered By	Contact No.	Reference	Entered By
10.22.2014	03.31.2015	15669	Matt Hague	267-419-8100	BRIDGEPORT NORTH - 8	EEC

Order Code	Description	Unit	Qty Ordered	Back Order	Supplied	BinCode
14RRG	1/8 Thick Red Rubber Gasket 70 Durometer to suit 4420 AJAX ONESIDE™ Structural Bolt Sleeve	100	300		300	
14SP6126120	1/16 x 6-1/2 x 6-1/2 Slotted Shim Plate for OneSide Bolt Galvanized	Each	40		40	
SCT20010316	1-3/16 x 2 Carbide Tipped Annular Cutter Bit	Each	2		2	1K2C
SCT90010316	1-3/16 x 9 Carbide Tipped Annular Cutter Bit	Each	1		1	
10BA520112	1/2 Buckle for Banding Gr 201 Stainless Steel Box of 100	Each	1		1	
10BAS2011203100	1/2 x 0.020 x 100ft Band Gr 201 Stainless Steel	Each	1		1	
10CERT	Certificates	Each	1		1	
FREIGHTOUT	Shipping & Handling Charge		1		1	

PICKED BY	PACKED BY	CHECKED BY	DISPATCH VIA	SPECIAL MESSAGE	RECEIVED IN GOOD ORDER & CONDITION
			BEST WAY		PLEASE CHECK ALL ITEMS BEFORE SIGNING. DISCREPANCIES MUST BE REPORTED WITHIN 7 DAYS.
			PAID	TERMS	
				NET 30 Days	

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Page 1 of 1

CONSTRUCTION

6.2.1 CONSTRUCTION INSPECTIONS

To Whom It May Concern,

The Bridgeport North project BU#841288 was completed on 06-1-15 according to the EOR approved design drawings dated 9/19/14. This work was satisfactorily completed within OSHA rules and regulations and per current industry standards, Crown Communications standards to meet the EOR specifications as designed and approved modifications to the original design.

Thank you,

JEREMY NORRIS

SE REGIONAL MANAGER

Mobile- 267-644-6531

6.2.2 POST INSTALLED ANCHOR ROD VERIFICATION

Montgomeryville, PA 18936

Subject: Post Installed Anchor Rod Verification Report

Designation: Crown BU Number: BU 841288
Site Name: BRIDGEPORT NORTH

Inspection Firm Designation: Project Number:

Site Data: Address, City, State, Zip
2 KAAECHELE PLACE BRIDGEPORT CT 06606

Foss Electric. is pleased to submit this **"Post Installed Anchor Rod Verification Report"** to Crown Castle for the modification/reinforcement to the subject structure. The purpose of this Post Installed Anchor Rod Verification Report is to confirm that the Anchor Rod installation/configuration and workmanship are in accordance with industry standards and the contract document(s) listed in Table 2 and Crown Castle Document number ENG-PRC-10119.

Table 1 – General Information

	Representative	Contact Information
ROBERT FOSS ELECTRIC	Jeremy Norris	267-644-6531

Table 2 – Design Documents

	Remarks	Source
Tower Modification Drawings		Lusk Enterprise

Based on our inspection, *FOSS ELECTRIC.* determines this project:

X Installation of Anchor Rods Acceptable

The configuration, materials and/or workmanship of the modifications are installed in accordance with the Contract Documents and no deficiencies were found.

Observations were performed during and after construction. Please see Tables 1 thru 4 and associated documents below for site conditions and photo documentation of the required parameters.

We at *ROBERT FOSS ELECTRIC*, appreciate the opportunity to provide our continuing professional services to Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Regards,

Jeremy Norris
Construction Manager
FOSS ELECTRIC

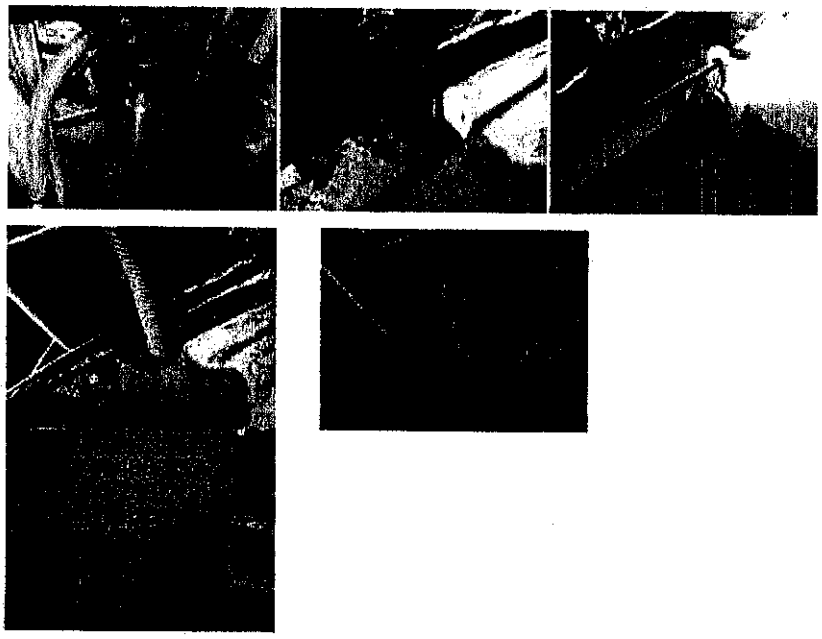
Document No. INC-RPT-302 Revision 0

Table 3 – Results Summary

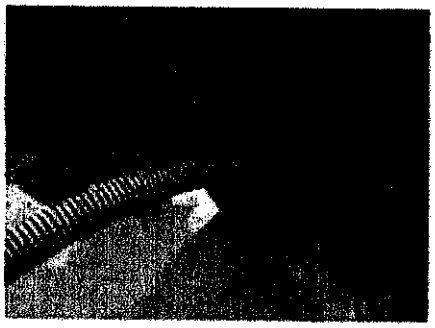
Date of Test	5/9/2015
Test Company and Contact Name	Lusk Enterprise
Test Equipment used including 6 month calibration certification	
Size and grade of anchor bolts tested	6 FEET ASTM F1554-105
Epoxy agent or cementitious grout used	REDHEAD G 5
Weather conditions and temperature	See Table 4

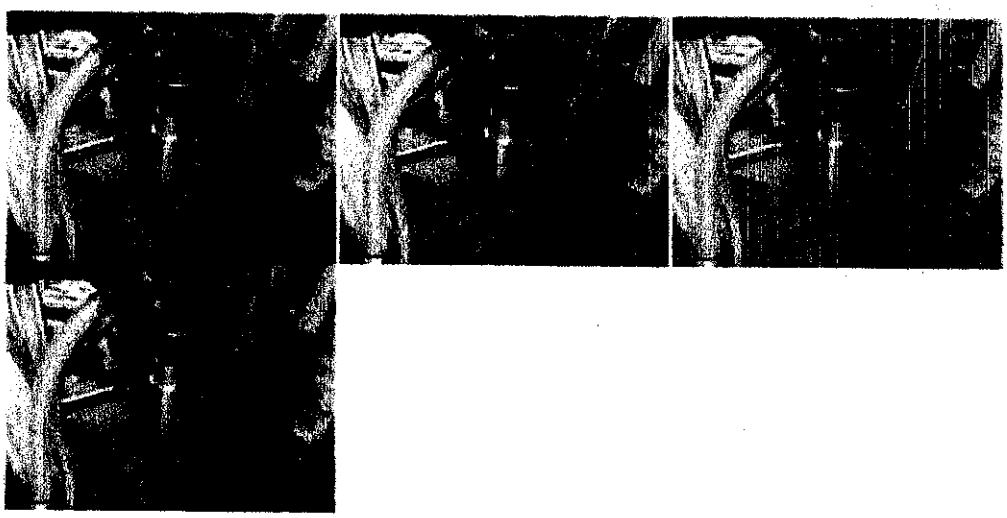
Table 4 – Weather/Curing Conditions Installed:

Mean Temperature °F	
Max Temperature °F	65°
Min Temperature °F	
Dew Point °F	
Average Humidity °F	
Maximum Humidity °F	
Minimum Humidity °F	
Precipitation (in)	
Sea Level Pressure (in)	
Wind Speed(mph)	8MPH
Max Wind Speed(mph)	
Max Gust Speed(mph)	
Visibility(miles)	



Site ID: BU 875222





6.2.3 CONTRACTOR'S CERTIFIED WELD INSPECTION

Applied Testing Group, LLC
Quality Nondestructive Testing Solutions

11017 Mt. Charron Rd., NW
Huntsville, AL 35810

Phone: (256) 426-8976
danielirons11@att.net

May 11, 2015

Mr. Jeremy Norris
RF Telecom, LLC
1084 Bethleham Pike
Montgomery, Pennsylvania 18936

Subject: ATG Project No. 031-15, Final Examination Report, 150' Monopole Tower Reinforcement Project, Bridgeport North, BU# 841288, 2 Kaechele Place, Bridgeport, Connecticut 06606

Dear Mr. Norris:

We are pleased to submit two copies of our Final Examination Report for the above referenced project. These services were provided in accordance with our proposal, 15-031, Bridgeport North, dated May 11, 2015. We proceeded with our services based on both your purchase order number and email authorization.

SCOPE OF SERVICES

We have reviewed or observed the pre, during, and post welding operations, conducted a 100% pre-modification visual (VT) and ultrasonic examination (UT) of the existing available tower-to-base plate circumferential weld, a 100% VT and magnetic particle (MT) examination of the four existing base plate stiffener-to-pole shaft welds, and a 100% VT and MT of the four new anchor bracket-to-tube and pole shaft welded connections, to evaluate their conformance with the applicable code requirements, project plans, and specifications.

The following services have not been provided by our firm: surveying for line and grade, cost estimates, review of design and contract documents, tests of material other than structural steel, and professional services not discussed herein.

WELDING, VISUAL, MAGNETIC PARTICLE, AND ULTRASONIC OBSERVATIONS

AWS/Certified Welding Inspector and NDE II/III Technician personnel from our office reviewed or observed the pre, during, and post welding operations. This included verification of the welding machine amperage for actual field voltage/amperage determinations. We also accomplished a VT and MT examination of the four existing base plate stiffener-to-pole shaft welds, and a VT and MT of the four new anchor bracket-to-tube and pole shaft welded connections, at the site between May 6, 2015 and May 10, 2015. The plans used were those prepared by GPD, dated September 19, 2014.

WELDING, VISUAL, MAGNETIC PARTICLE, AND ULTRASONIC OBSERVATION RESULTS

The pre, during, and post welding operations, the pre-modification VT and UT of the tower-to-base plate circumferential weld, the VT and MT examination of the four existing base plate stiffener-to-pole shaft welds, and the VT and MT of the four new anchor bracket-to-tube and pole shaft welded connection, were in conformance with the applicable requirements delineated in ANSI/AWS D 1.1:2010-*Structural Steel Code*, and the project plans and specifications, as we understand them. Refer to the appended Visual Observation Report, Magnetic Particle Examination Report, Ultrasonic Calibration Report, Ultrasonic Testing of Welds Report, Welder Certification, CWI/NDE Certifications, and supporting photographs for particulars.

Discrepancies noted between the plans and specifications or code requirements, and the as-built construction observed in the conduct of the welding and structural steel observations were brought to the attention of the contractor. According to our records, all noted discrepancies have been corrected in the field in accordance with the project plans and specifications.

We have endeavored to complete the services identified herein in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions as this project. No other representation, express or implied, is included or intended, and no warranty or guarantee is included or intended in this agreement, or any report, opinion, document, or other instrument of service.

We are pleased to be of service to you on this project. If you have any questions concerning this report, do not hesitate to contact either of the undersigned.

Very truly yours,

APPLIED TESTING GROUP, LLC.

L. John Harper, CWI/NDE Level II
Senior Staff Technologist

Daniel Irons, NDE Level III
Principal

Appended: Visual Observation Report (1)
Ultrasonic Calibration Report (1)
Ultrasonic Testing of Welds Report (1)
Magnetic Particle Examination Report (1)
Welder Certification (1)
Photographs (22)

Applied Testing Group, LLC

11017 Mt. Chevron Rd., NW
Huntsville, AL 35810
Phone: (256) 945-0761

ULTRASONIC CALIBRATION REPORT

Client: RF Telecom, LLC			**Project:** Bridgeport North		**BEW:** 841288
Location/Area: 2 Kincheloe Place, Bridgeport, CT			**Component(s):** Tower Circumferential Weld		
Time In: 11:30 a.m.	**Time Out:** 3:30 p.m.		**Job No.:** ATG-031-15		**GPD Ref #:** 2014777.814288.03
ITEM:	☒ Weld(s)	☐ Structural	☐ Casting(s)	☐ Pipe(s)	☒ Plate(s)
	☐ Machinery	☐ Machined Part	☒ Other: Tower-to-Base Plate Weld		

Material:	Size	No. of Pieces	Base Metal	Process/Filler Metal	Weld Condition:
Carbon Steel	0.406"	(1)	A572 Gr. 65	E 8018	☒ As Welded ☐ Ground

Acceptance Standard: ANSI/AWS D1.1: 2010 Edition			**Procedure:** AWS-UT-1, Rev. 1		
Type of Inspection Method	☒ Soundness	☐ Thickness	**UT Equipment Name/Model/Serial No.:** KrautKramer Branson / USK-7 / SER# 27276-3260		
	☒ Angle Beam	☐ Bond	**Straight Beam:** Transducer: GE Gamma RPH Size: .500" Diameter Frequency: 2.25 MHz Serial No. 0221.3D	**Angle Beam:** Transducer: GE Gamma Size: .375" Diameter Frequency: 2.25 MHz Serial No. 00P1CY	
	☐ Other:		**Transducer Type:** ☒ Single ☐ Dual ☐ Delay	**Wedge Angle(s):** ☒ 60 Degree S/N W-300 ☒ 70 Degree S/N W-223	

Reference Block: ☒ DSC ☐ HW ☐ Other:	**Reference Block** No.: 97-8116	**Material:** Carbon Steel	**Calibration Block Type:** DSC Diameter: N/A	**Calibration Block No.:** 97-8116	**Material:** C/S - 1.0"
Screen Size: ☐ 2.5" ☒ 5" ☐ 10" ☐ Other	**Reference Gain:** 42.0 dB – 60 Degree 46.0 dB – 70Degree	**Scanning Gain:** ☐ +6db ☒ Other: 14dB	**Initial Calibration Time:** 11:30 a.m.	**Calibration Recheck:** 1) 3:30 pm 2) 3) 4)	**Couplant:** Sonotrace, Batch # 25-004/10125E

EXAMINATION SUMMARY:

Acceptable. See "notes" on UTR-001 for details.

Examined By: Daniel Irons, Level III	**Date:** May 06, 2015
Reviewed By: L.J. Harper, CWI/Level II	**Date:** May 06, 2015

Cal. Sheet No. : UTC - 001
Indication Report No(s). : UTR – 001

Applied Testing Group, LLC

11017 Mt. Charrin Rd., NW
Huntsville, AL 35810
Phone: (256) 945-0763

REPORT OF ULTRASONIC TESTING OF WELDS

Client: RF Telecom, LLC	**Project:** Bridgeport North	**Job No.:** ATG-031-15	**Bill:** 041288
Location: 3 Knowlele Plaze, Bridgeport, CT	**Area:** See below	**Report No:** UTR-001	

WELD IDENTIFICATION: Tower-to-Base Plate Circumferential Weld
MATERIAL THICKNESS: 0.406"
WELD JOINT AWS: T/C
WELDING PROCESS: SMAW
QUALITY REQUIREMENTS ANSI/AWS D1.1: 2010
REMARKS: All dimensions are expressed in inches.
NOTES: 100% of available surface areas examined

FLAT NO./ LOCATION	INDICATION NUMBER	TRANSDUCER ANGLE	FROM FACE / SURFACE	LEG*	DECIBELS				DISCONTINUITY					ACCEPTABLE	REJECTABLE	REMARKS
					INDICATION LEVEL A	REFERENCE LEVEL B	ATTENUATION FACTOR C	INDICATION RATING D	LENGTH	ANGULAR DISTANCE (SOUND PATH)	DEPTH FROM SURFACE "A"	DISTANCE FROM X	DISTANCE FROM Y			
Existing circumferential tower-to-base plate weld.	-	60° 70	A	-	-	42 46	-	-	-	-	-	-	-	X		ACCEPTABLE

NOTE:

An ultrasonic examination of 100% of the available existing full penetration tower-to-base plate circumferential welded connection was conducted. The subject weld proved to be acceptable in accordance with the applicable acceptance criteria as set forth in ANSI/AWS D1.1: 2010- *Structural Welding Code – Steel*, and the project plans and specifications, as we understand them.

Examined By: Daniel Irons, Level III	**Date:** May 06, 2015
Reviewed By: L.J. Harper, CWI/Level II	**Date:** May 06, 2015

NOTE: We, the above signed, have evaluated the above referenced welded connections, and to the best of our knowledge, state that the information [illegible] accurate. This examination report reflects the actual NDE procedure that was conducted by Applied Testing Group, LLC. Submittance of this report is for information [illegible] does not reflect any guarantee of the part, important procedures, or standards, and is subject to the limitations of each test method.

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 945-9761

MAGNETIC-PARTICLE EXMAINATION REPORT

Client: RF Telecom, LLC **Project:** Bridgeport North **ATG No** 31-015
Location: 2 Kaechele Place, Bridgeport, CT **Area:** See below **BU#:** 841288

WELD LOCATION AND IDENTIFICATION SKETCH

Component/Weld Identification	Area Examined		Interpretation		Repairs		Remarks
	Entire	Specific	Accept	Reject	Accept	Reject	
Four existing stiffener-to-base plate welds	X		X		N/A	N/A	ACCEPTABLE
Four new anchor bracket-to-tube, and pole shaft welds	X		X		N/A	N/A	ACCEPTABLE

PRE-EXAMINATION:
Surface Preparation: Power Wire Grinding, Wire Brush

EQUIPMENT:
Instrument Make: Parker Research Corp. **Model:** DA-400 **Serial No:** 13018
Powder Manufacturer: Parker Research Corp. **Description:** RP6 Red Powder **Batch No:** 17209

METHOD OF INSPECTION:

☒Dry ☐Wet ☒Visible ☐Fluorescent

How Media Applied: Manual Dusting, Magnetic Powder Blower

☐Residual ☒Continuous ☐Free-Continuous
☐AC ☒DC ☐Half-Wave
☐Prods ☒Yoke ☐Cable Wrap ☐Other: _____

Direction for Field: ☒ Longitudinal ☐ Circular ☐ Other: _____

Strength of Field: Verified with pie gauge, carying intensity
(Number of ampere turns, field density, magnetizing force, number, and duration of force application.)

POST EXAMINATION:
Demagnetizing Technique (if required): N/A
Cleaning (if required): Wipe **Coating Method :** Manual, CRC Zinc, reapplied manually per specifications

We, the undersigned, certify that the statements in this record are correct, and that the test welds were prepared and tested in accordance with the requirements of ANSI/AWS D1.1 2010.

Inspector / Level: L. John Harper, CWI/NDE Level II Date: 05/10/2015

Reviewed by: Daniel Ivans, NDE Level III Date: 05/10/2015

NOTICE: THIS EXAMINATION REPORT REFLECTS THE ACTUAL NDE PROCEDURE THAT WAS CONDUCTED BY APPLIED TESTING GROUP, LLC PERSONNEL. SUBMISSION OF THIS REPORT IS FOR INFORMATIONAL PURPOSES AND DOES NOT REFLECT ANY GUARANTEE OF THE PART, INSPECTION PROCEDURES, OR STANDARDS AND IS SUBJECT TO THE LIMITATIONS OF EACH TEST METHOD.

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 945-0761

VISUAL OBSERVATION REPORT

Client: : RF Telecom, LLC		**Project:** Bridgeport North	**BU#:** 841288
Project Location: 2 Knechele Place, Bridgeport, CT		**ATG Technician:** L. Harper	**Date:** 05-10-15
Time In: 8:30 a.m.	**Time Out:** 12:50 p.m.	**Job No:** ATG-031-15	**GPD Ref.#:** 2014777.814288.03

FIELD OBSERVATIONS

☒	**Anchor Bracket Assembly Welded Connections:**	Location	Acceptable
	Installation of four new anchor bracket-to-tube and pole shaft welds at the base elevation.	Plate Size	Acceptable
		Welds Correct Size	Acceptable
		Welds Correct Length	Acceptable
	☒ Acceptable ☐ Unacceptable ☒ See note: 1		
☐	**Fabricated Flange Extension Welded Connections:**	Location	
		Plate Size	
		Welds Correct Size	
		Welds Correct Length	
	☐ Acceptable ☐ Unacceptable ☐ See note:		
☐	**I-Beam Welded Connections:**	Beams Correct Size	
		Locations / Orientation	
		Welds Correct Size	
		Welds Correct Length	
	☐ Acceptable ☐ Unacceptable ☐ See note:		
☐	**Bridge Stiffener Welded Connections:**	Location	
		Plate Size	
		Welds Correct Size	
		Welds Correct Length	
	☐ Acceptable ☐ Unacceptable ☐ See note:		
☒	**Existing Base Plate Stiffener Welded Connections:**	Location	Acceptable
	Installation of four existing stiffener-to-pole shaft and existing base plate welds at the base elevation.	Plate Size	Acceptable
		Welds Correct Size	Acceptable
		Welds Correct Length	Acceptable
	☒ Acceptable ☐ Unacceptable ☒ See note: 2		
☐	**Safety Tie-Down Termination Welded Connection:**	Location	
		Plate Size	
		Welds Correct Size	
		Welds Correct Length	
	☐ Acceptable ☐ Unacceptable ☐ See note:		
☒	**Other:**		
	The pre, during, and post welding operations were observed to be acceptable in accordance with the applicable requirements delineated in ANSI/AWS D1.1:2010.		
	☒ Acceptable ☐ Unacceptable		

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 945-0761

Project: Bridgeport North	BU #: 841288	Job No: ATG-031-15	Date: 05-10-15
REMARKS AND/OR DISCREPANCIES:			

Notes:

On May 10, 2015, Applied Testing Group LLC, performed a visual examination of the installation of four new anchor bracket-to-tube and pole shaft, and four existing stiffener-to-pole shaft and existing base plate welded connections, located at 2 Kaechele Place, Bridgeport, CT.

The pre, during, and post welding operations were noted to be acceptable in accordance with the applicable requirements delineated in ANSI/AWS D1.1:2010.

The following were examined:

1) Installation of four new anchor bracket-to-tube and pole shaft welds at the base elevation.
2) Installation of four existing stiffener-to-pole shaft and existing base plate welds extension welded connections at the base elevation.

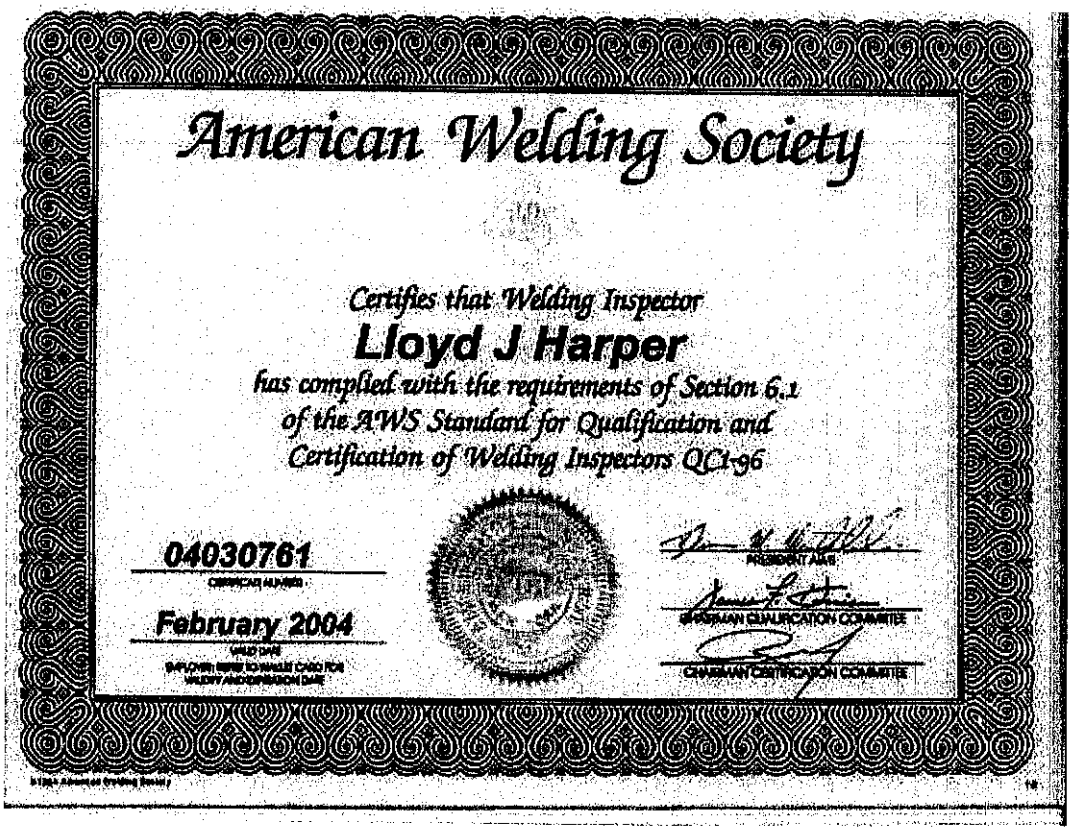
The welds were acceptable in accordance with ANSI/AWS D1.1:2010 and the project plans/specifications. Cold galvanizing paint has been acceptably applied to all exterior locations.

PLANS USED:

Title(s): GPD	Date: 09-19-14	Revision: 0
Drawing No(s): S1 to S10		
Visit Requested by: Jeremy Norris	Title: Regional Construction Mgr. – RF Telecom, LLC	

Examined By: L. John Harper, AWS/CWI-NDE Level II	Date: May 10, 2015
Reviewed By: Daniel Irons, NDE Level III	Date: May 10, 2015

NOTE: We, the above signed, have evaluated the above referenced welded connections, and to the best of our knowledge, state that the information within this report is accurate. This examination report reflects the actual NDE procedure that was conducted by Applied Testing Group, LLC. Submission of this report is for information purposes only and does not relieve any guarantee of the part, inspection procedures, or standards, and is subject to the limitations of each test method.



American Welding Society

Certifies that Welding Inspector

Lloyd J Harper

has complied with the requirements of Section 6.1 of the AWS Standard for Qualification and Certification of Welding Inspectors QC1-96

04030761

CERTIFICATE NUMBER

February 2004

VALID DATE

EMPLOYER RENEW TO VALIDATE CARD FOR VALIDITY AND EXPIRATION DATE

PRESIDENT AWS

CHAIRMAN QUALIFICATION COMMITTEE

CHAIRMAN CERTIFICATION COMMITTEE

Certification QuikCheck

AWS's Free Online Certification Verification Service

Please enter a Certification number below, along with the last name of the inspector. This number can be found on a wallet card or wall certificate produced by the inspector. The search will return the certification number, a name, and an expiration date for that individual.

Certification was found

Cert. No.	Name	Expiration	Cert. Description
04030761	Lloyd J Harper	March 1, 2016	Certified Welding Inspector

Certification number: 04030761

Last name: harper

Go

Alternatively, you may search using the individual's information to view all certifications *(all fields are required)*:

Last Name:

First Name or First Initial:

Birth Month / Day: --select birth month-- / --select birth day--

Search

AWS strongly suggests that the certification identity be verified with a government issued photo identification card, such as a driver's license.

How to interpret the Certification number to determine the level of certification:

Key
1 = CWI
2 = CAWI eligible for upgrade*
3 = cwi by upgrade*
4 = CAWI
5 = CWI through CWSIP
7 = CWI through Reciprocity
8 = SCWI
E = CWE
G = CWENG

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 425-8975

VISUAL ACUITY RECORD

NAME : Lloyd J. Harper **Social Security Number:** 9716

NEAR VISION : Required ☒ Not Required: ☐

	LEFT		RIGHT	
	Jaeger #	Distance	Jaeger #	Distance
UNCORRECTED				
CORRECTED	J-2	12"	J-2	12"

FAR VISION: Required: ☐ Not Required: ☒

	LEFT	RIGHT
UNCORRECTED		
CORRECTED	20/20	20/20

COLOR CONTRAST DIFFERENTIATION: **REQUIRED** ☒ **NOT REQUIRED** ☐

PSEUDO ISOCHROMATIC PLATES: **PASS** ☒ **FAIL** ☐

BRIGHTNESS DISCRIMINATION: **PASS** ☒ **FAIL** ☐

Restrictions: None

Corrective Lenses Required: Yes ☒ No: ☐

Examiner: Thomas J Hennessy Date: November 4, 2013

Expiration date of visual acuity examination: **Date:** **NOVEMBER 4, 2014**

Applied Testing Group, LLC

11017 Mt. Clarron Rd., NW
Huntsville, AL 35810
Phone: (256) 425-0975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Lloyd J. Harper **Social Security Number:** 9716

fully meets the requirements of NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: Magnetic Particle

Certification Level : II **Date of Certification:** 06/28/14

Certification Expiration Date: 06/28/2017

Test Scores:

Test	Grade	Administered By	Remarks
General:	85.0	T. Munson	
Specific:	95.0	T. Munson	
Practical	95.0	T. Munson	
Composite:	91.6		

Limitations: None

Recommended for certification by: Thomas J Munson Date: 06/28/14

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : David Lamm Date: 06/28/14

NDE Manager

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 425-8975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Lloyd J. Harper **Social Security Number:** 9716

fully meets the requirements of NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: Liquid Penetrant

Certification Level : II **Date of Certification:** 06/21/2014

Certification Expiration Date: 06/21/2017

Test Scores:

Test	Grade	Administered By	Remarks
General:	90.0	T. Munson	
Specific:	95.0	T. Munson	
Practical	95.0	T. Munson	
Composite:	96.3		

Recommended for certification by: Thomas B Munson Date: 06/20/2014

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : David Lamm Date: 06/21/2014

NDE Manager

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 425-8975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Lloyd J. Harper **Social Security Number:** 9716

fully meets the requirements of NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: Visual

Certification Level : II **Date of Certification:** 01/12/14

Certification Expiration Date: 02/26/2017

Test Scores:

Test	Grade	Administered By	Remarks
General:	95.0	T. Munson	
Specific:	100.0	T. Munson	
Practical	100.0	T. Munson	AWS-CWI
Composite:	98.3		

Recommended for certification by: Thomas B Munson **Date:** 01/10/14

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : Daniel Shaw **Date:** 01/12/14

NDE Manager

Applied Testing Group, LLC

11017 Mt. Charron Rd., NW
Huntsville, AL 35810
Phone: (256) 425-0975

Personnel Testing
Education, Training and Experience Record

Name: Lloyd J. Harper Signature:* [signature]

Date of Birth: 06/10/1956 Date of Employment: 11/24/03

Training and Experience Through: July 1, 2014

- The information provided is accurate and true to the best of my knowledge.

EDUCATION

School	Location	Date Graduated	Degree/Major
Varina High School	Varina, VA	1984	Diploma/General Studies

CLASSROOM TRAINING

Subject	Training Hours	Dates Completed	Source/ Company
Liquid Penetrant Level I & II	40	2003	Schnabel
Magnetic Particle Level I & II	40	2002	Schnabel
Radiation Safety/Level I	49	2002	E. I. Dupont
Visual Testing – AWS	40	1993	AWS
Fundamental of Weld Engineering	40	1994	Ohio State U.
Liquid Penetrant Level I	12	1996	ASNT

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Personnel Testing
Education, Training and Experience Record

WORK EXPERIENCE

Test Method	Level	Company	Total Months Exp.
Visual Testing	II	Applied Testing Group, LLC	41
	II	Mistras Services, Inc.	36
	II	Schnabel Engineering	44
	CWI	American Welding Society	181
Magnetic Particle	II	Applied Testing Group, LLC	42
	II	Mistras Services, Inc.	24
	II	Schnabel Engineering	22
Liquid Penetrant	II	Applied Testing Group, LLC	34
	II	Mistras Services, Inc.	24
	II	Schnabel Engineering	40
	II		
Radiographic	II	Mistras Services, Inc.	9
	II	Schnabel Engineering	14

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 425-0971

VISUAL ACUITY RECORD

NAME : Daniel Irons **Social Security Number:** 6010

NEAR VISION: Required ☒ Not Required: ☐

	LEFT		RIGHT	
	Jaeger #	Distance	Jaeger #	Distance
UNCORRECTED				
CORRECTED	J-2	12"	J-2	12"

FAR VISION: Required: ☒ Not Required: ☐

	LEFT	RIGHT
UNCORRECTED		
CORRECTED	20/20	20/20

COLOR CONTRAST DIFFERENTIATION: REQUIRED ☒ NOT REQUIRED ☐

PSEUDO ISOCHROMATIC PLATES: PASS ☒ FAIL ☐

BRIGHTNESS DISCRIMINATION: PASS ☒ FAIL ☐

Restrictions: Far Vision

Corrective Lenses Required: Yes ☒ No: ☐

Examiner: Thomas J Munson Date: September 14, 2013

Expiration date of visual acuity examination: **Date:** SEPTEMBER 14, 2014

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 425-8973

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: UT

Certification Level : III **Date of Certification:** 03/14/2011

Certification Expiration Date: 03/13/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	92.0	T. Munson, P.E.	
Specific:	96.0	T. Munson, P.E.	
Practical	92.0	T. Munson, P.E.	
Composite:	92.5		

Limitations: Contact, Immersion, Air Coupled

Recommended for certification by: T. Munson, P.E. **Date:** 03/14/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : T. Munson, P.E. **Date:** 03/14/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 425-5975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: BT

Certification Level : III **Date of Certification:** 03/17/2011

Certification Expiration Date: 03/16/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	96.0	T. Munson, P.E.	
Specific:	96.0	T. Munson, P.E.	
Practical	92.0	T. Munson, P.E.	
Composite:	93.5		

Limitations: Bubble Leak

Recommended for certification by: T. Munson, P.E.
Corporate Professional ASNT NDT Level III
ASNT File Number 9295 **Date:** 03/17/2011

Certified by : T. Munson, P.E.
Corporate Professional ASNT NDT Level III
ASNT File Number 9295 **Date:** 03/17/2011

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 428-8974

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: MT

Certification Level : III **Date of Certification:** 03/14/2011

Certification Expiration Date: 03/13/2011

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	88.0	T. Munson, P.E.	
Specific:	96.0	T. Munson, P.E.	
Practical	90.0	T. Munson, P.E.	
Composite:	91.0		

Limitations: Visible Dry, Fluorescent Wet

Recommended for certification by: _____, P.E. **Date:** 03/14/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : _____, P.E. **Date:** 03/14/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

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HUNTSVILLE, ALABAMA 35810
PH: (256) 425-8975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: RT

Certification Level : III **Date of Certification:** 03/15/2011

Certification Expiration Date: 03/14/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	90.0	T. Munson, P.E.	
Specific:	94.0	T. Munson, P.E.	
Practical	96.0	T. Munson, P.E.	
Composite:	92.5		

Limitations: Conventional Film, Digital, Computed, Neutron

Recommended for certification by: _____, P.E. **Date:** 03/15/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : _____, P.E. **Date:** 03/15/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 425-5973

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: PT

Certification Level : III **Date of Certification:** 03/15/2011

Certification Expiration Date: 03/14/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	89.0	T. Munson, P.E.	
Specific:	92.0	T. Munson, P.E.	
Practical	92.0	T. Munson, P.E.	
Composite:	90.5		

Limitations: Visible Solvent Dye, Visible & Fluorescent Water Washable, Visible & Fluorescent Solvent Dye

Recommended for certification by: T. Munson, P.E. **Date:** 03/15/2011

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : T. Munson, P.E. **Date:** 03/15/2011

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Applied Testing Group, LLC

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HUNTSVILLE, ALABAMA 35810
PH: (256) 425-8975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: Eddy Current

Certification Level : III **Date of Certification:** 03/16/2011

Certification Expiration Date: 03/15/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	84.0	T. Munson, P.E.	
Specific:	88.0	T. Munson, P.E.	
Practical	92.0	T. Munson, P.E.	
Composite:	88.5		

Limitations: Tubing Ferrous and Nonferrous, Surface

Recommended for certification by: Thomas S Munson, P.E. **Date:** 03/16/2011

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : Thomas S Munson, P.E. **Date:** 03/16/2011

Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Applied Testing Group, LLC

11017 MT. CHARRON RD., NW
HUNTSVILLE, ALABAMA 35810
PH: (256) 425-6975

Nondestructive Testing
Qualification and Certification Record

This is to certify that:

Name: Daniel Irons **Social Security Number:** 6010

Fully meets the requirements of ATG-NDE-QC-PQ-1 and is hereby certified in the method and the qualification level shown below:

NDT Method: Visual

Certification Level : III **Date of Certification:** 03/16/2011

Certification Expiration Date: 03/15/2016

Test Scores:

Test	Grade	Administered By	Remarks
Basic:	90.0	T. Munson, P.E.	
Method:	94.0	T. Munson, P.E.	
Specific:	96.0	T. Munson, P.E.	
Practical	100.0	T. Munson, P.E.	
Composite:	95.0		

Limitations: Manual and Remote

Recommended for certification by: _____, P.E. **Date:** 03/16/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

Certified by : _____, P.E. **Date:** 03/16/2011
Corporate Professional ASNT NDT Level III
ASNT File Number 9295

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HUNTSVILLE, ALABAMA 35810
PH: (256) 425-8975

Nondestructive Testing
Education, Training and Experience Form

Name: Daniel Irons Signature:

Date of Birth: 11/26/57 Date of Employment: 03/14/2011

Training and Experience Through: January 1, 2014

EDUCATION

School	Location	Date Graduated	Degree/Major
MenchvilleHigh School	Newport News, VA	1976	Advanced Studies
General Nuclear Services, Inc.	Newport News, VA	1979	Nondestructive Testing Technology
Newport News Shipbuilding & Drydock, Inc.	Newport News, VA	1981	Advanced Automated Ultrasonic
Newport News Shipbuilding & Drydock, Inc.	Newport News, VA	1981	Eddy Current
Northeast Utilities, Inc.	Milford, CT	1982	IGSCC Detection
Ebasco Services, Inc.	New York, NY	1983	Automated Ultrasonics, Eddy Current, IGSCC Detection & Sizing
Electric Power Research Institute (ERPI)	Charlotte, NC	1985	IGSCC Detection & Sizing
Electric Power Research Institute (ERPI)	Charlotte, NC	1985	IGSCC Overlay
American Welding Society (AWS)	Houston, TX	2002	NDT of Welds
Fundamentals of Professional Practice	Silver Spring, MD	2003	American Soils & Foundation Engineers (ASFE)
Computed Radiography – Sturr System	Pensacola, FL	2007	Virtual Media Integration (VMI)
Infrared Testing &Technologies	Richmond, VA	2010	Munson NDT
Computed Radiography Image Interpretation	Richmond, VA	2010	General Electric

Nondestructive TestingTraining Form

Subject	Training Hours	Dates Completed	Source/ Company
Ultrasonic Testing, Level I & II	650	1979	General Nuclear Services, Inc.
Radiographic Testing, Level I & II	725	1979	General Nuclear Services, Inc.
Eddy Current Testing, Level I & II	180	1979	General Nuclear Services, Inc.
Liquid Penetrant Testing, Level I & II	95	1979	General Nuclear Services, Inc.
Magnetic Particle Testing, Level I & II	110	1979	General Nuclear Services, Inc.
Visual Testing, Level I & II	425	1979	General Nuclear Services, Inc.
Leak Testing, Level I & II – Bubble	40	1979	General Nuclear Services, Inc.
Leak Testing, Level I & II – Pressure Change	40	1979	General Nuclear Services, Inc.
Leak Testing, Level I & II – Halogen Diode	40	1979	General Nuclear Services, Inc.
Leak Testing, Mass Spectrometer – Level I & II	80	1979	General Nuclear Services, Inc.
Advanced Automated Ultrasonic Testing – (UDARPS)	80	1981	Newport News Shipbuilding & Drydock, Inc.
Eddy Current-Shipboard and BOP Applications	80	1981	Newport News Shipbuilding & Drydock, Inc.
IGSCC Detection	8	1982	Northeast Utilities, Inc.
Automated Ultrasonic, Eddy Current, IGSCC Detection & Sizing, Leak Testing (BT and PC)	160	1983	Ebasco Services, Inc.
IGSCC Detection & Sizing	40	1985	Electric Power Research Institute (ERPI)
IGSCC Overlay Detection & Sizing	8	1985	Electric Power Research Institute (ERPI)
NDT of Welds	24	2002	American Welding Society (AWS)
Computer Radiography	24	2007	Virtual Media Integration (VMI)
InfraredTesting &Technologies	80	2010	Munson NDT
Computed Radiography Interpretation	24	2010	General Electric

Nondestructive TestingExperience Form Continued...

Test Method	Level	Company	Total Months Experience
Ultrasonic	II	General Services Nuclear Corporation, Inc.	37
	II	Newport News Shipbuilding & Drydock, Inc.	20
	II	Ebasco Services, Inc.	27
	III	Nuclear Energy Services, Inc.	14
	III	General Electric, Nuclear Plant Services	22
	III	ATEC Associates, Inc.	49
	III	Deadline Support Services, Inc.	99
	II	Mechanical Integrity Quality Assurance, Inc.	15
	III	Schnabel Engineering, Inc.	93
	III	Mistras Services, Inc.	29
↓	III	Applied Testing Group, Inc.	48
Radiographic	II	General Services Nuclear Corporation, Inc.	37
	II	Newport News Shipbuilding & Drydock, Inc.	20
	II	Ebasco Services, Inc.	27
	III	Nuclear Energy Services, Inc.	14
	III	General Electric, Nuclear Plant Services	22
	III	ATEC Associates, Inc.	49
	III	Deadline Support Services, Inc.	99
	II	Mechanical Integrity Quality Assurance, Inc.	2
	III	Schnabel Engineering, Inc.	95
	III	Mistras Services, Inc.	29
↓	III	Applied Testing Group, Inc.	3
Liquid Penetrant	II	General Services Nuclear Corporation, Inc.	37
	II	Newport News Shipbuilding & Drydock, Inc.	20
	II	Ebasco Services, Inc.	27
	III	Nuclear Energy Services, Inc.	14
	III	General Electric, Nuclear Plant Services	22
	III	ATEC Associates, Inc.	49
	III	Deadline Support Services, Inc.	99
	II	Mechanical Integrity Quality Assurance, Inc.	15
↓	III	Schnabel Engineering, Inc.	74

Nondestructive Testing
Experience Form Continued...

Liquid Penetrant-Continued		III	Applied Testing Group, Inc.	11
Magnetic Particle		II	General Services Nuclear Corporation, Inc.	37
		II	Newport News Shipbuilding & Drydock, Inc.	20
		II	Ebasco Services, Inc.	27
		III	Nuclear Energy Services, Inc.	14
		III	General Electric, Nuclear Plant Services	22
		III	ATEC Associates, Inc.	49
		III	Deadline Support Services, Inc.	99
		II	Mechanical Integrity Quality Assurance, Inc.	15
		III	Schnabel Engineering, Inc.	62
		III	Mistras Services, Inc.	29
		III	Applied Testing Group, Inc.	39
Eddy Current		II	General Services Nuclear Corporation, Inc.	37
		II	Newport News Shipbuilding & Drydock, Inc.	20
		II	Ebasco Services, Inc.	27
		III	ATEC Associates, Inc.	49
		III	Deadline Support Services, Inc.	99
		II	Mechanical Integrity Quality Assurance, Inc.	15
		III	Schnabel Engineering, Inc.	48
		III	Mistras Services, Inc.	15
		III	Applied Testing Group, Inc.	26
Visual Testing		II	General Services Nuclear Corporation, Inc.	37
		II	Newport News Shipbuilding & Drydock, Inc.	20
		II	Ebasco Services, Inc.	27
		III	Nuclear Energy Services, Inc.	14
		III	General Electric, Nuclear Plant Services	22
		III	ATEC Associates, Inc.	49
		III	Deadline Support Services, Inc.	99
		II	Mechanical Integrity Quality Assurance, Inc.	15
		III	Schnabel Engineering, Inc.	95
		III	Mistras Services, Inc.	29
		III	Applied Testing Group, Inc.	48

Applied Testing Group, LLC
Quality Nondestructive Testing Services

11017 Mt. Charron Rd., NW
Huntsville, Alabama 35811
Phone: (256) 425-8935
appliedtesting11@att.net

Welder Qualification Test Record

Welder or Welding Operator's Name: Ryan L. Toomey **Contractor:** JCC Deployment Services, Inc.
Welder's SSN: xxx -xx- 0984 **Qualification Date:** March 01, 2014
WPS #: Pre-qualified-ANSI/AWS D1.1 **Revision Year:** AWS D1.1 2010

Variables	Actual Variable(s) Used	Qualification Range(s)
Process:	SMAW	Shielded Metal Arc Welding
Joint Type	Single Bevel Groove	CJP, PJP, Fillet, Slot-unlimited
Backing Material Type	With	With or Without
Base Metal:		
Material Specification / Group	ASTM A572, Grade 65	Group 1& 2
Thickness - Groove / Fillet	1" CJP Groove	Unlimited
Diameter (pipe) – Groove / Fillet	N/A	Over 24"
Filler Metal:		
Specification Number	AWS A5.1	
Classification	E8018	F4 and Lower
A Number / F Number	A1 / F4	
Electrode Size	3/32 – 5/32	
Single or multiple electrodes	Single	Single
Position(s) Tested: 2	3G & 4G	F, V, O, H
Progression:	Uphill	Uphill
Gas/Flux Type:	N/A	N/A
Current/Polarity:	DCRP	As Req. by WPS

Visual Examination Results: Acceptable I.A.W. AWS D1.1:2010: ☒ Yes ☐ No

Guided Bend Test Results ☐ Yes ☒ N/A

Type	Result	Type	Result
N/A	N/A	N/A	N/A

Fillet Test Results: ☐ Yes ☒ N/A

Appearance:	N/A	**Fillet Size:**	N/A
Fracture Test	N/A	**Macroetch:**	N/A
Inspected by:	N/A	**Test Number:**	N/A
Organization:	N/A	**Date:**	N/A

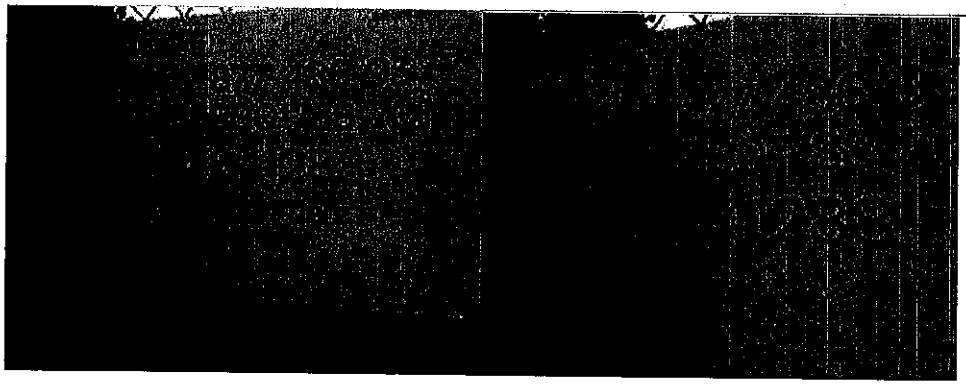
Radiographic Test Results: ☒ Yes ☐ N/A

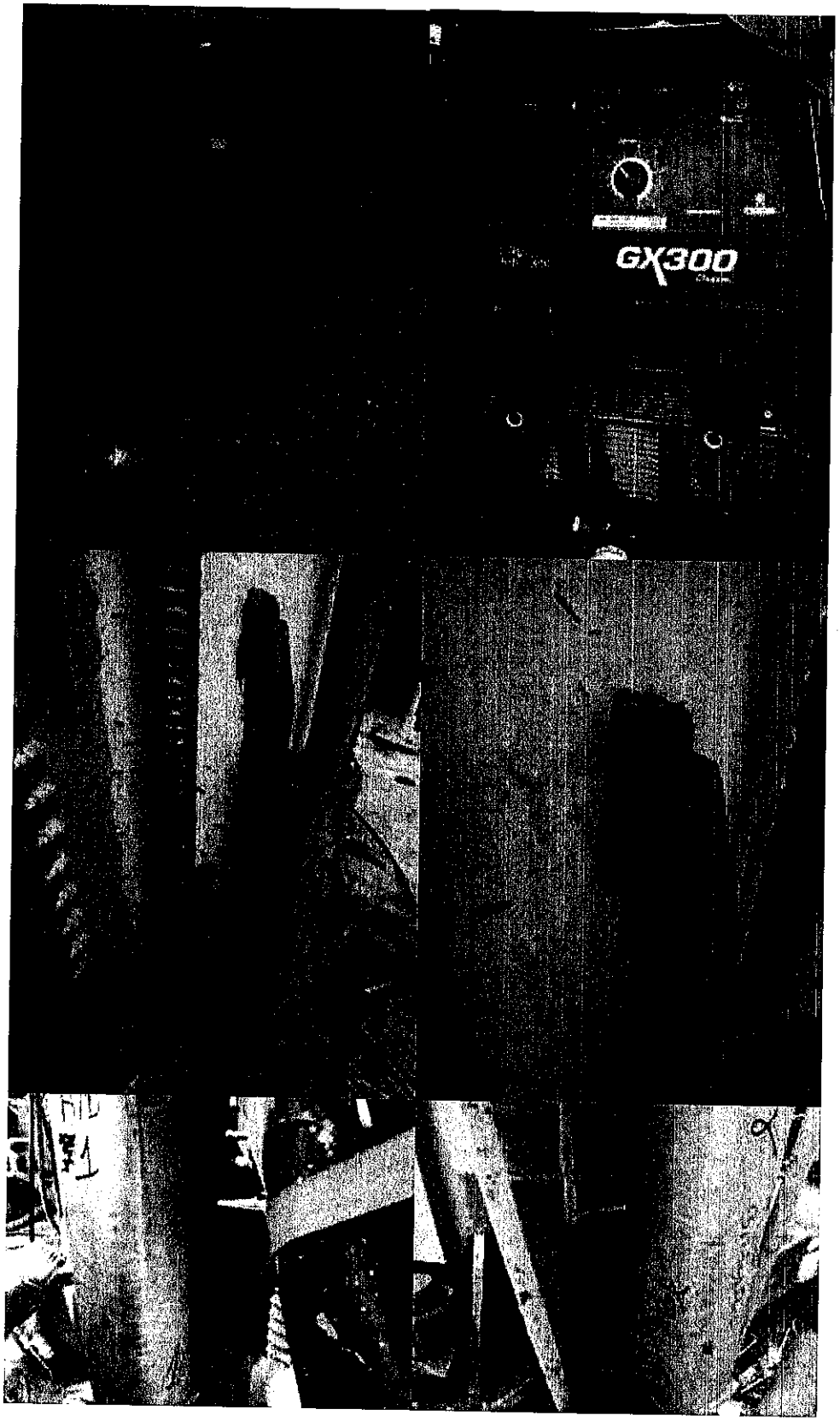
Film Id #	Results	Remarks	Film ID #	Results	Remarks
OHI 0984	Acceptable (3G)	N/A	0-1	Acceptable	Acceptable
VERT# 0984	Acceptable (4G)	N/A	0-1	Acceptable	Acceptable

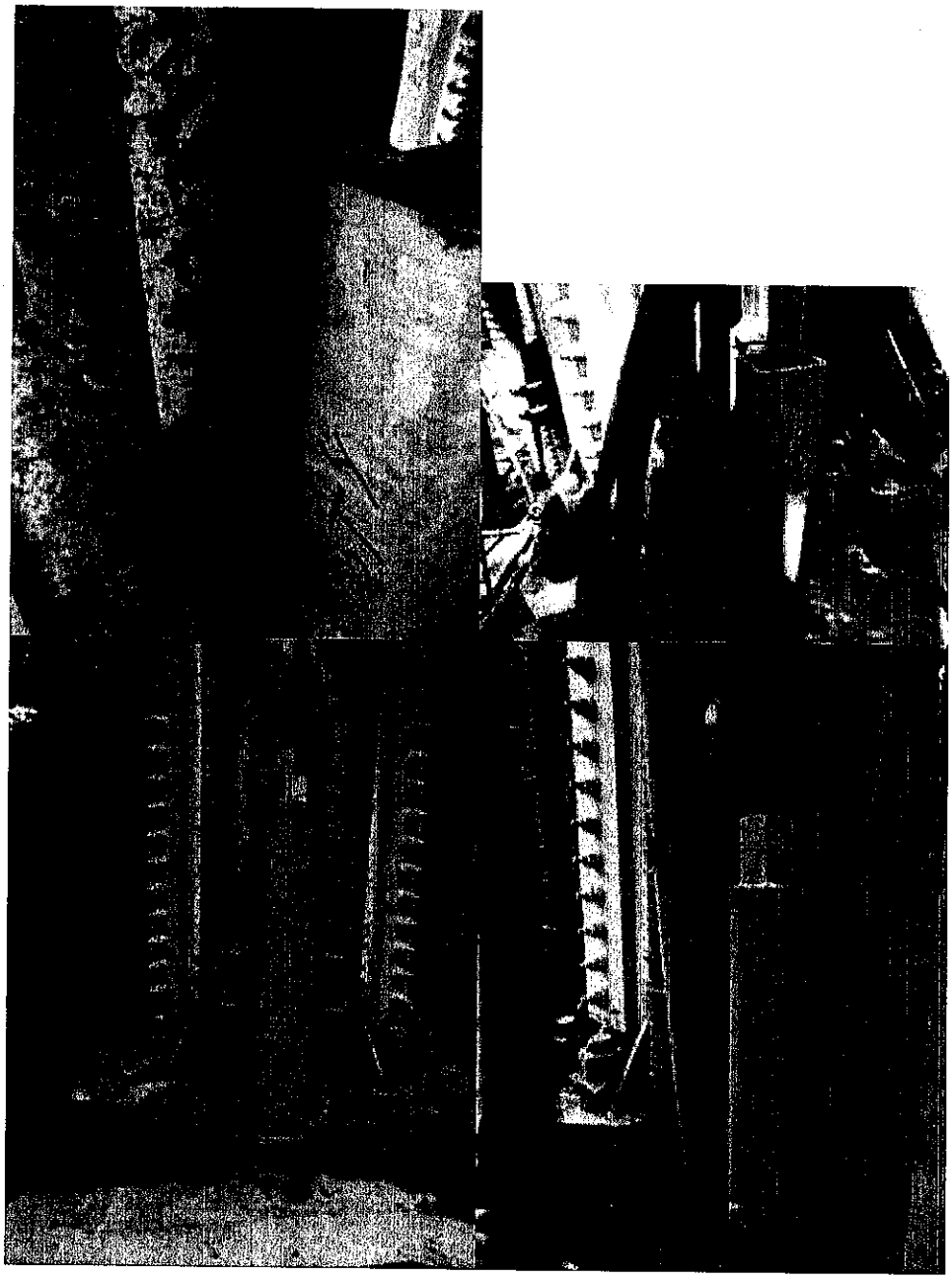
Interpreted By: J. Riggs Job Number: #: 028-14
Organization: Applied Testing Group, LLC Date: March 01, 2014

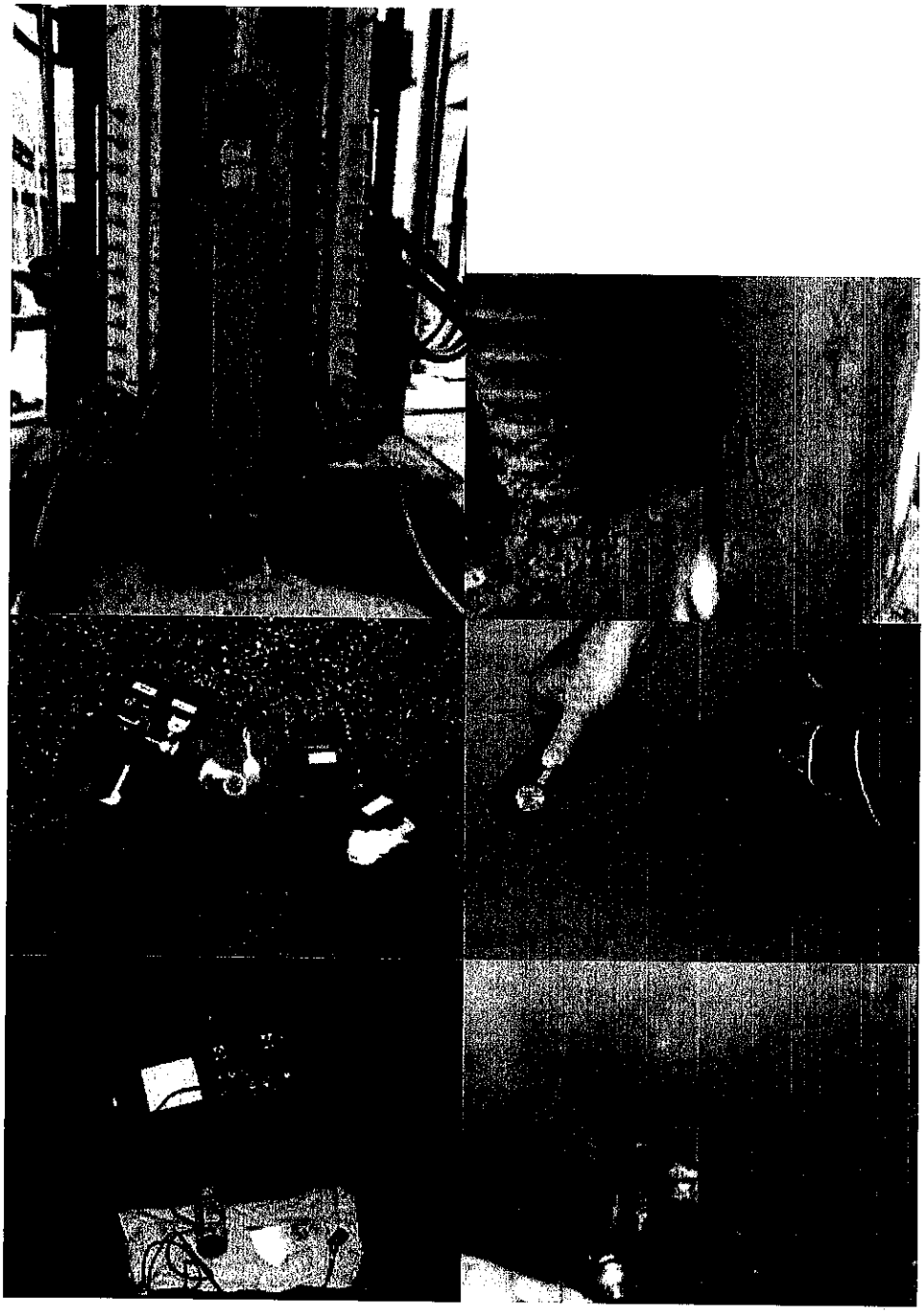
*The undersigned certifies that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements of ANSI/AWS D1.1:2010, Structural Welding Code Steel.

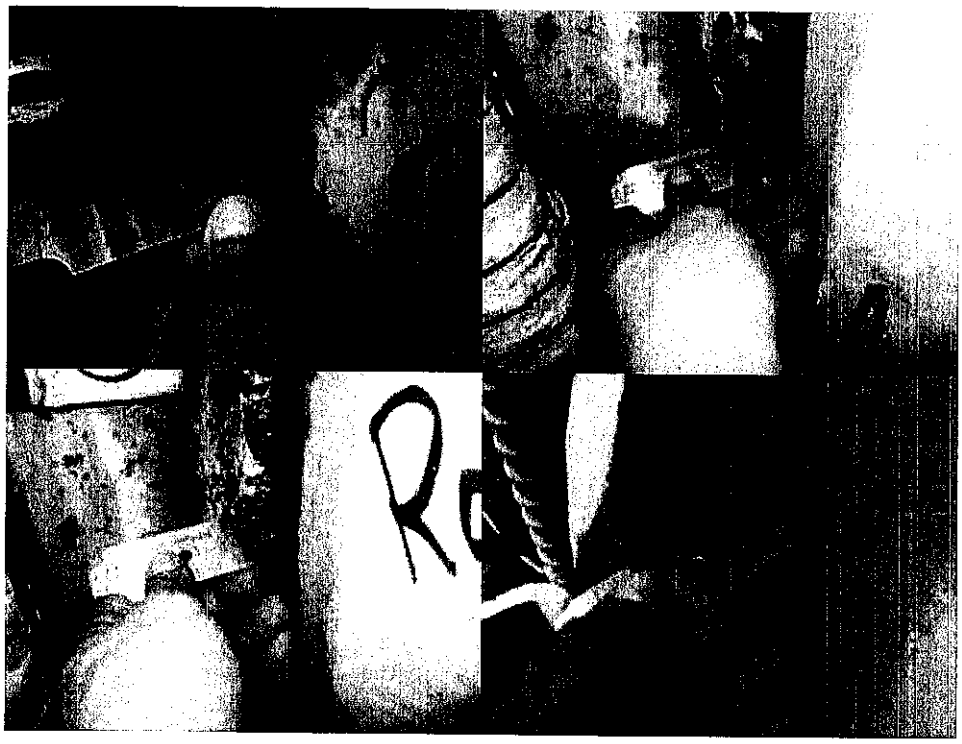
*Authorized By: L. John Harper, AWS/CWI Date: March 01, 2014




GX300







6.2.4 ON SITE COLD GALVANIZING VERIFICATION

Robert Foss Electric, LLC
1084 Bethlehem Pike
Montgomeryville, PA 18936

Contact: Jeremy Norris
Project Manager: Matt Hague
Robert Foss Electric
Address: 1084 Bethlehem Pike
City/State/Zip: Montgomeryville, PA 18936

RE: Crown Castle Site 841288 Bridgeport North

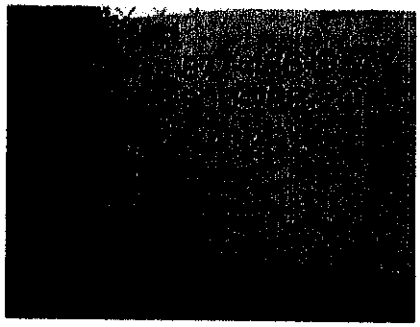
Contact,

This letter verifies that Robert Foss Electric used ZRC cold-galvanization for all on-site cold galvanizing per industry standards in accordance with Crown Castle document ENG-BUL-10149 on the work performed at site 841288 Bridgeport North.

Regards,

Jeremy Norris
Construction Manager
Foss Electric

jnorris@fossllc.com



6.2.5 GC AS-BUILT DOCUMENTS

NO CHANGES 5/20/15

MONOPOLE REINFORCEMENT DRAWINGS

PREPARED FOR CROWN CASTLE

SITE NAME: BRIDGEPORT NORTH
BU NUMBER: 841268

SITE ADDRESS:
2 KAECHELE PLACE
BRIDGEPORT, CT 06606
FAIRFIELD COUNTY

PROJECT CONTACTS:

1. CROWN TOWER STRUCTURAL ANALYST
   ANDREW BAZINET
   (508) 868-3442
   ANDREW.BAZINET@CROWNCASTLE.COM
   3 CORPORATE PARK DRIVE, SUITE 101
   CLIFTON PARK, NY 12065
2. CROWN PROJECT MANAGER
   JERRY BRUNO
   (781) 970-0508
   JERRY.BRUNO@CROWNCASTLE.COM
   500 WEST CUMMINGS PARK, SUITE 3400
   WOBURN, MA 01801
3. GPD DESIGN ENGINEER (EOR)
   JOHN M. KABAK, P.E.
   (716) 856-1607
   DRAUKOVIC@GPDGROUP.COM
   520 SOUTH MAIN STREET, SUITE 2531
   AKRON, OH 44311

TOWER INFORMATION

TOWER MANUFACTURER / TYPE #	N/A
TOWER HEIGHT / TYPE	150 FT MONOPOLE TOWER
TOWER LOCATION DATUM: QUAD / UNIT:	LAT: 41° 13' 34.24" LONG: 73° 13' 3.36" ELEV: 232 FT AMSL
STRUCTURAL DESIGN DRAWING:	CCI (150) S (0300)
STRUCTURAL ANALYSIS REPORT:	GPD GROUP (150 # 012665)
STRUCTURAL ANALYSIS DATE:	05/08/2015
APPLICATION ID:	APP # 254955 (REV. 1)
COMPLETED DOCUMENT ID:	CCI ID # 841273

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA/EIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES AND THE 2005 CT BUILDING CODES BEING A FASTEST MILE WIND SPEED OF 85 MPH WITH NO ICE, 30 MPH WITH 0.75 INCH ICE THICKNESS IN ACCORDANCE WITH ASCE 7 ICE CONDITIONS AND 60 MPH UNDER SERVICE LOADS.

DIRECTIONS: I-91 S TOWARD NEW HAVEN/GRAND TRUNK EXIT 6. TAKE EXIT 57 FOR CT-15 NORTH CROSS POINT 0.4 MI ST. MERGE ONTO CT-15 S TO I-95 S. TAKE EXIT 48 FOR CT-111E TOWARD CT-113 E. KEEP LEFT AT THE FORK, FOLLOW SIGNS FOR BRIDGEPORT 2.50 FT. MI. TURN LEFT ONTO MAIN ST. 0.9 MI 21. TURN LEFT ONTO KAECHELE PL DRIVE AROUND KAECHELE PLACE AND YOU WILL SEE A SPORT SMALL DRIVEWAY ACCESS ROAD ON AN INCLINE LEADING TO THE TOWER SITE.

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S-1	TITLE SHEET
S-2	MODIFICATION INSPECTION CHECKLIST
S-3	NOTES
S-4	ADDITIONAL NOTES
S-5	ANCHOR BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE
S-6	TOWER ELEVATION
S-7	TOWER SECTIONS
S-8	ADDITIONAL TOWER SECTIONS
S-9	ADDITIONAL TOWER SECTIONS
S-10	ADDITIONAL TOWER SECTIONS

GPD GROUP

TITLE PAGE

S-1

NO CHANGES 5/20/15

MODIFICATION INSPECTION NOTES

AN CHECKLIST

	PRE-CONSTRUCTION
X	
X	
X	
X	
X	
NA	
X	
X	
	CONSTRUCTION
X	
NA	
NA	
X	
NA	
X	
NA	
X	
NA	
X	
	POST-CONSTRUCTION
X	
X	
X	

GENERAL

MI INSPECTION

GENERAL CONTRACTOR

RECOMMENDATIONS

CANCELLATION OR DELAYS IN SCHEDULE MI

CORRECTION OF FAILING MOD

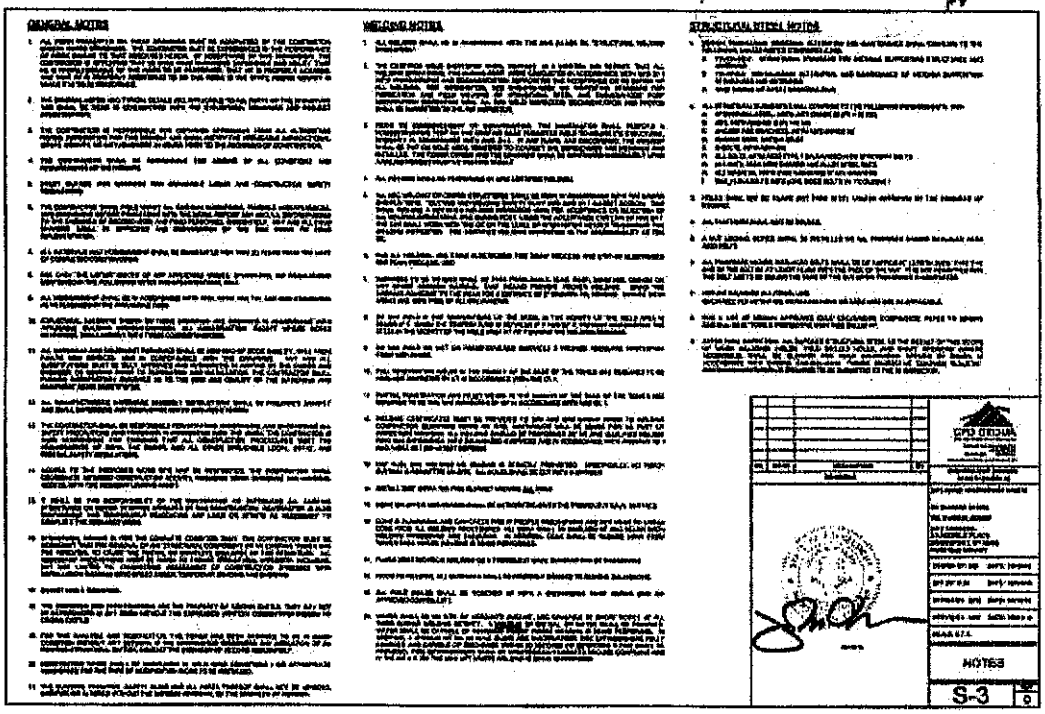
MI VERIFICATION INSPECTION

REQUIRED PHOTOS

GPD GROUP

MODIFICATION INSPECTION CHECKLIST

S-2



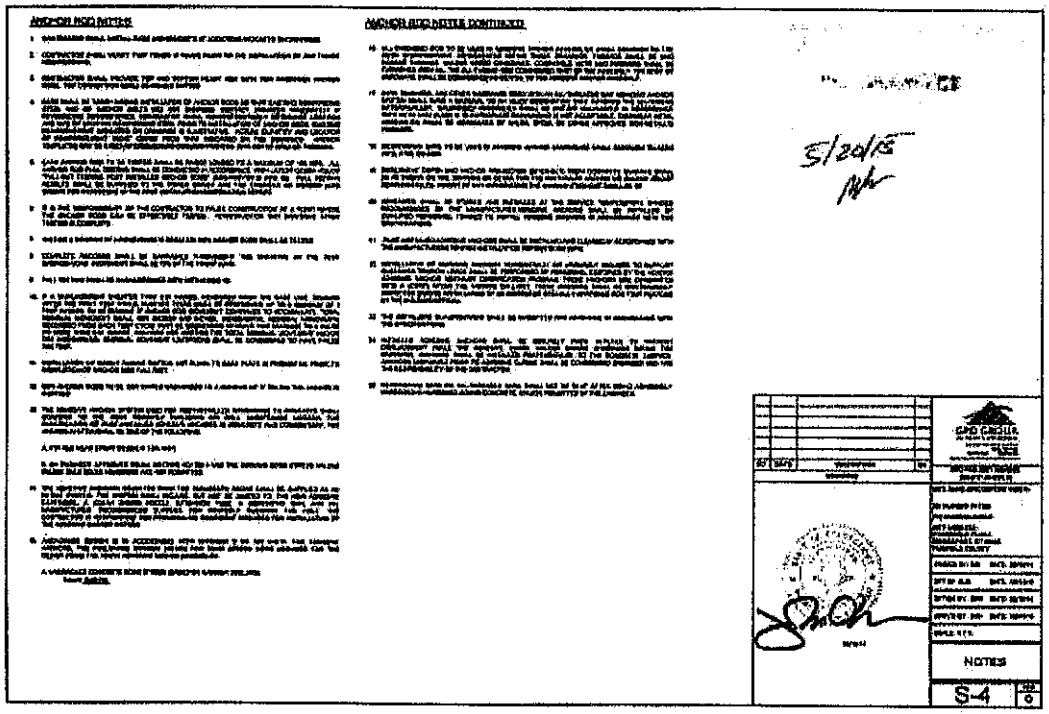
GENERAL NOTES

WELDING NOTES

STRUCTURAL STEEL NOTES

NOTES

S-3



GENERAL NOTES

ANCHOR BOLT NOTES CONTINUED

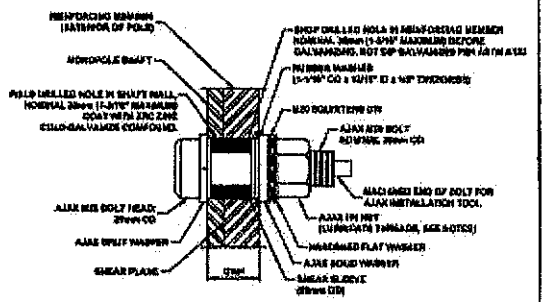
NOTES

S-4

5/26/15

AJAX/DTI BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

M20 AJAX/DTI BOLT ASSEMBLY COMPONENT SPECIFICATIONS:

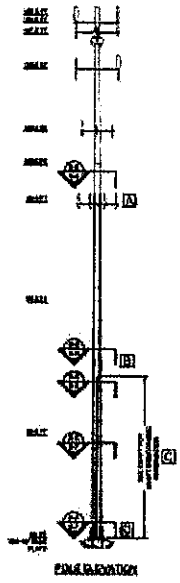


DETAIL 1: M20 AJAX/DTI BOLT ASSEMBLY

CPO GROUP

S-5

5/26/15

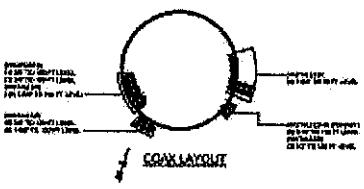


POLE SPECIFICATIONS

POLE MODIFICATION SCHEDULE

SHAFT SECTION DATA

CCI FLAT PLATE (TS K3) REINFORCING SCHEDULE



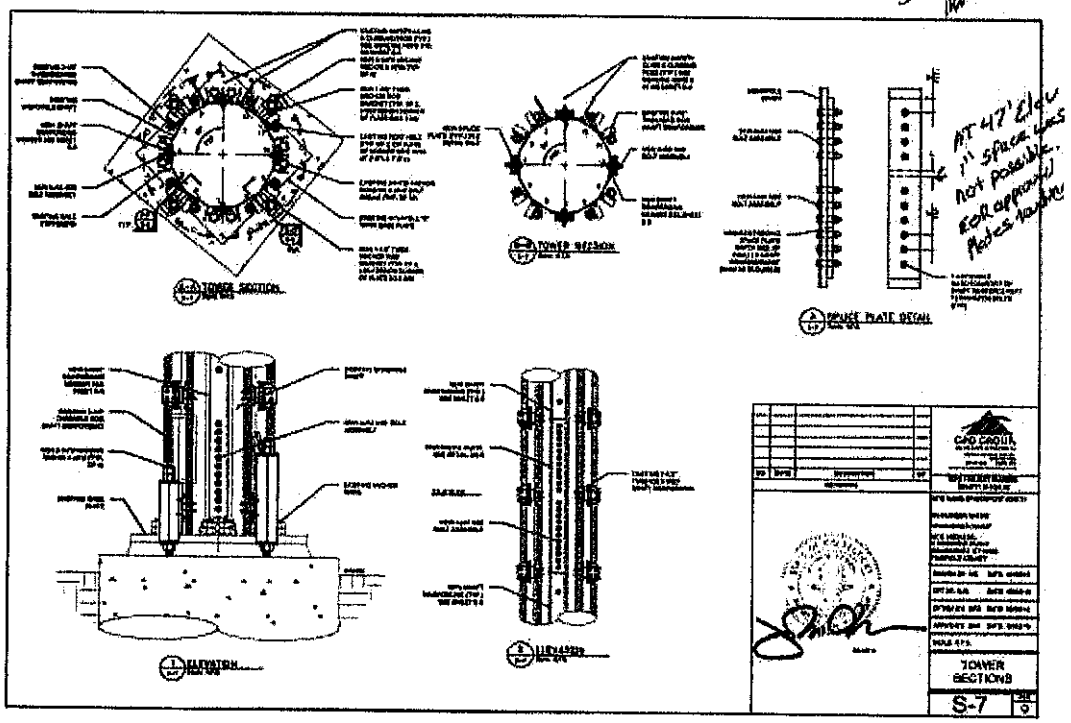
COAX LAYOUT

CPO GROUP

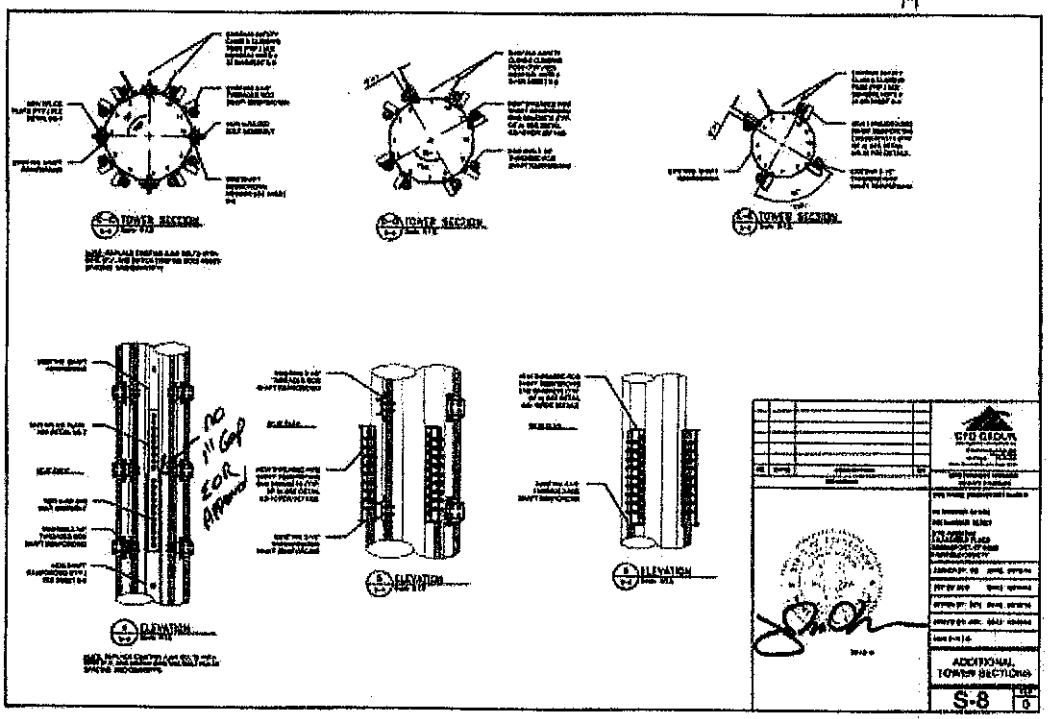
TOWER ELEVATION

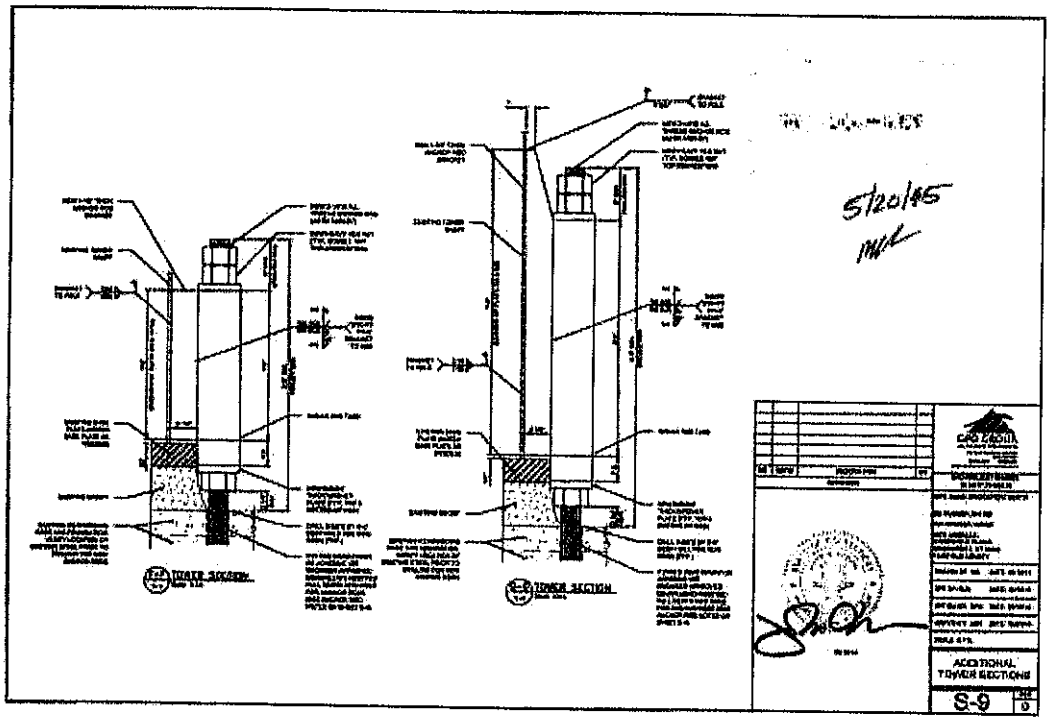
S-6

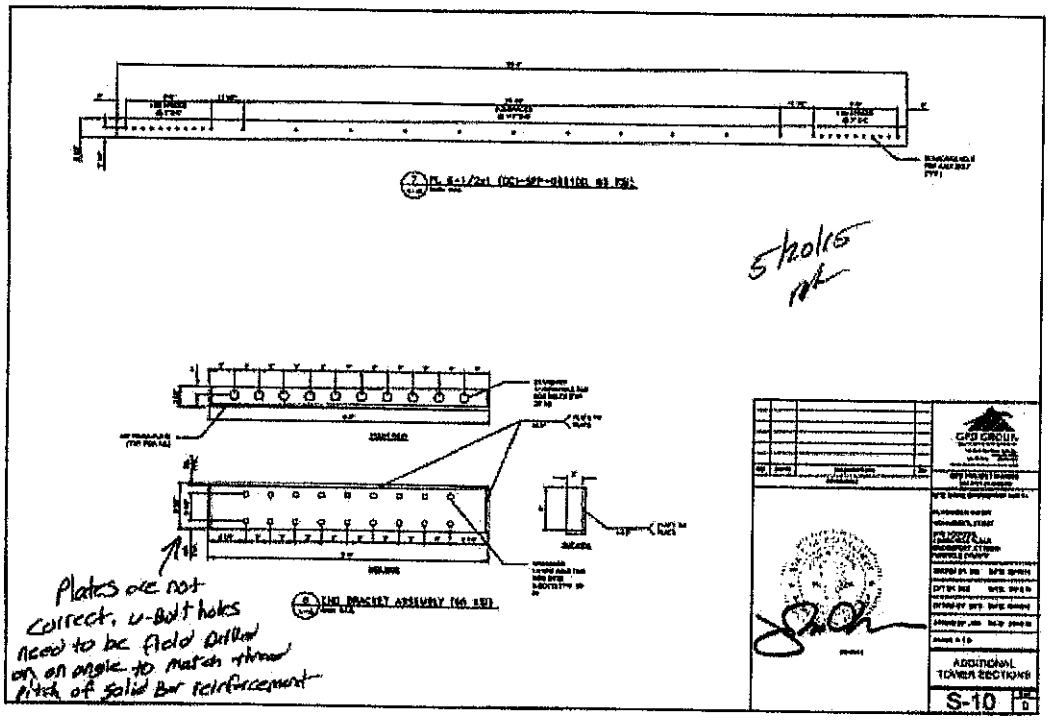
5/20/15
MM



5/20/15
MM



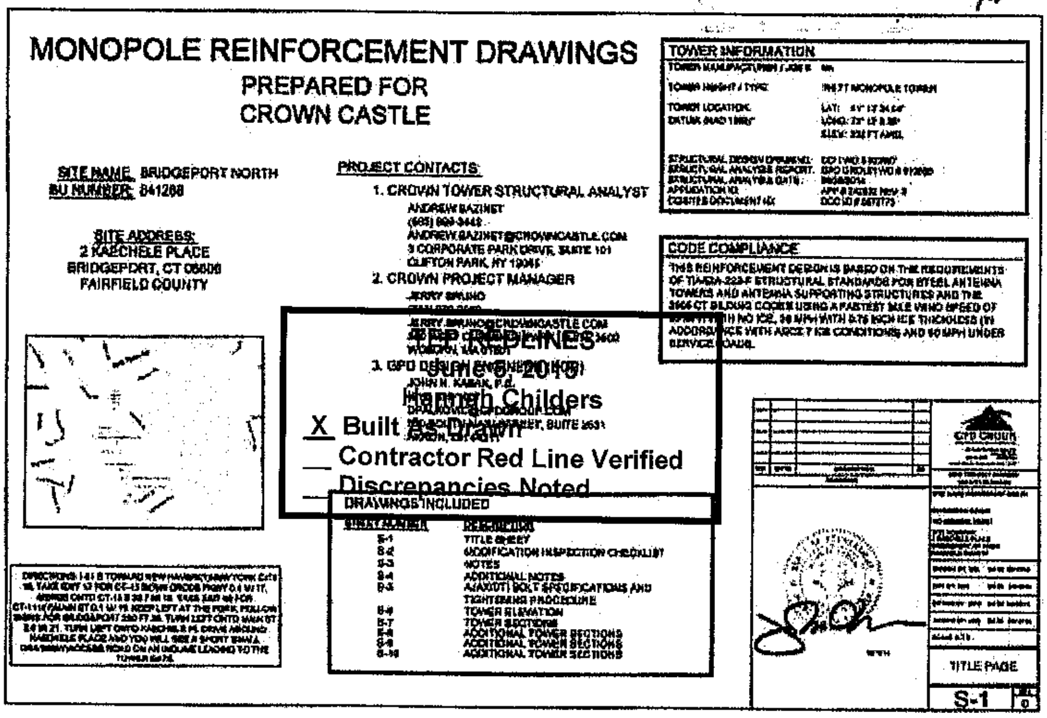

5 holes
ADDITIONAL TOWER SECTIONS
S-9


5 holes
Plates are not correct. u-bolt holes need to be field drilled on an angle to match thread pitch of solid bar reinforcement
ADDITIONAL TOWER SECTIONS
S-10

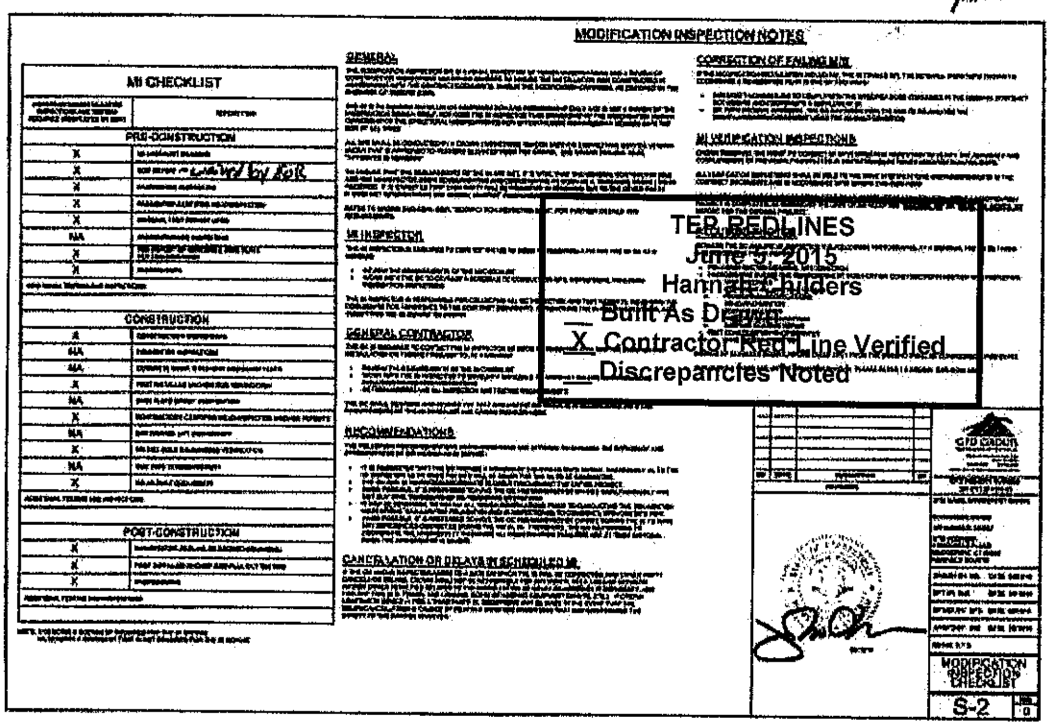
POST-CONSTRUCTION

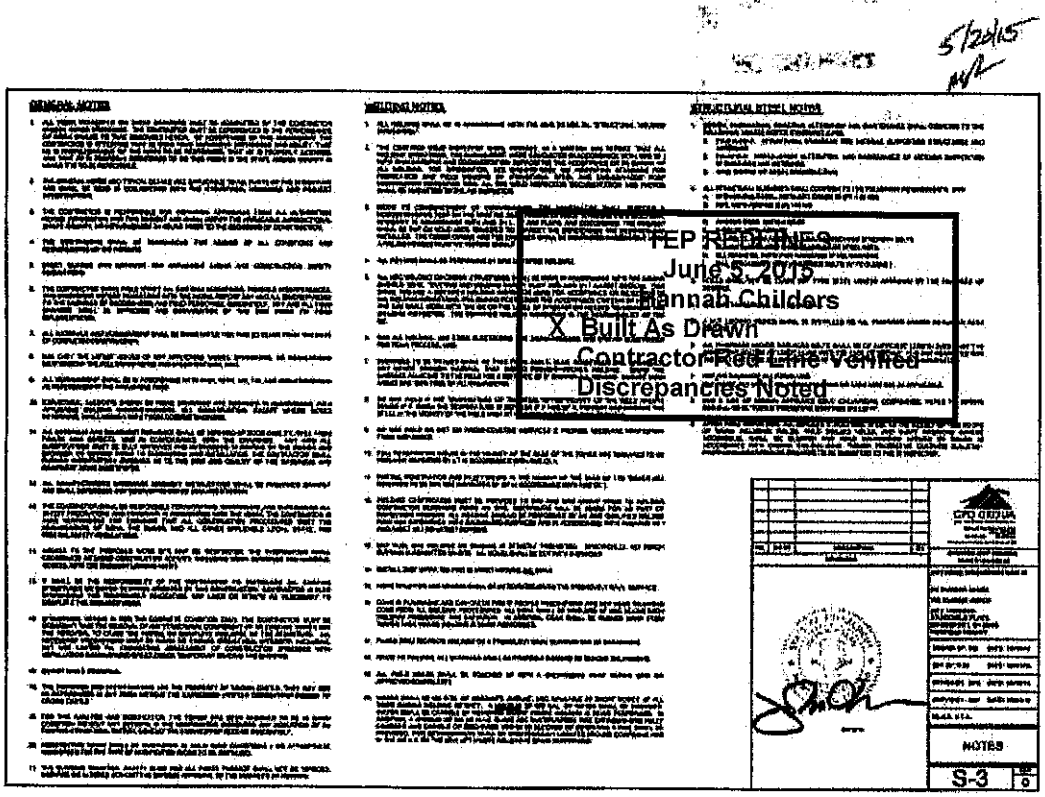
6.3.1 MI INSPECTOR REDLINE OR RECORD DRAWING(S)

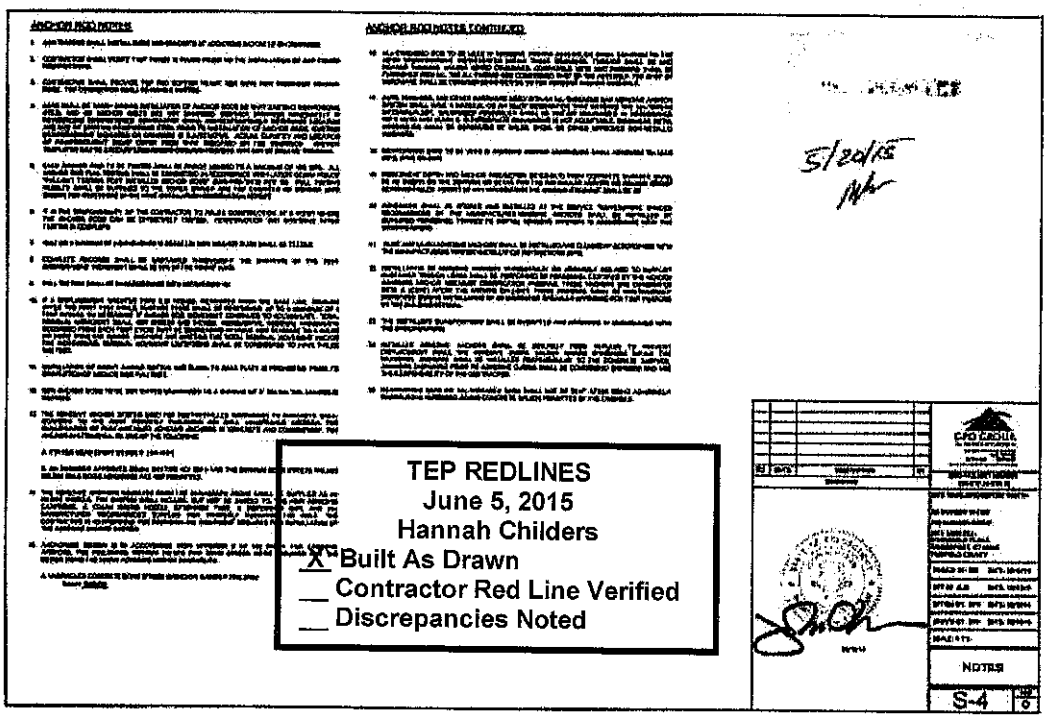
NO CHANGES 5/20/15



NO CHANGES 5/20/15



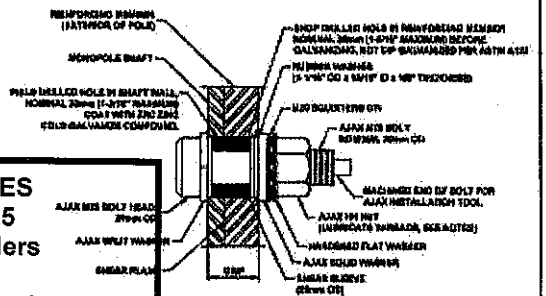

5/20/15
TEP REDLINES
June 5, 2015
Hannah Childers
X Built As Drawn
Contractor Red Line Verified
Discrepancies Noted
NOTES
S-3


5/20/15
TEP REDLINES
June 5, 2015
Hannah Childers
X Built As Drawn
__ Contractor Red Line Verified
__ Discrepancies Noted
NOTES
S-4

5/26/15 MH

AJAX/DTI BOLT SPECIFICATIONS AND TIGHTENING PROCEDURE

M20 AJAX/DTI BOLT ASSEMBLY COMPONENT SPECIFICATIONS:

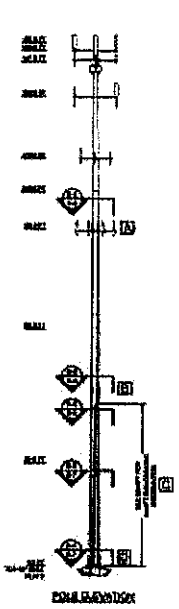


TEP REDLINES
June 5, 2015
Hannah Childers
X Built As Drawn
___ Contractor Red Line Verified
___ Discrepancies Noted

DETAIL 1: M20 AJAX/DTI BOLT ASSEMBLY

S-5

5/26/15 MH

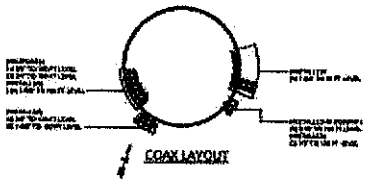


POLE SPECIFICATIONS

SHAFT SECTION DATA

POLE MODIFICATION SCHEDULE

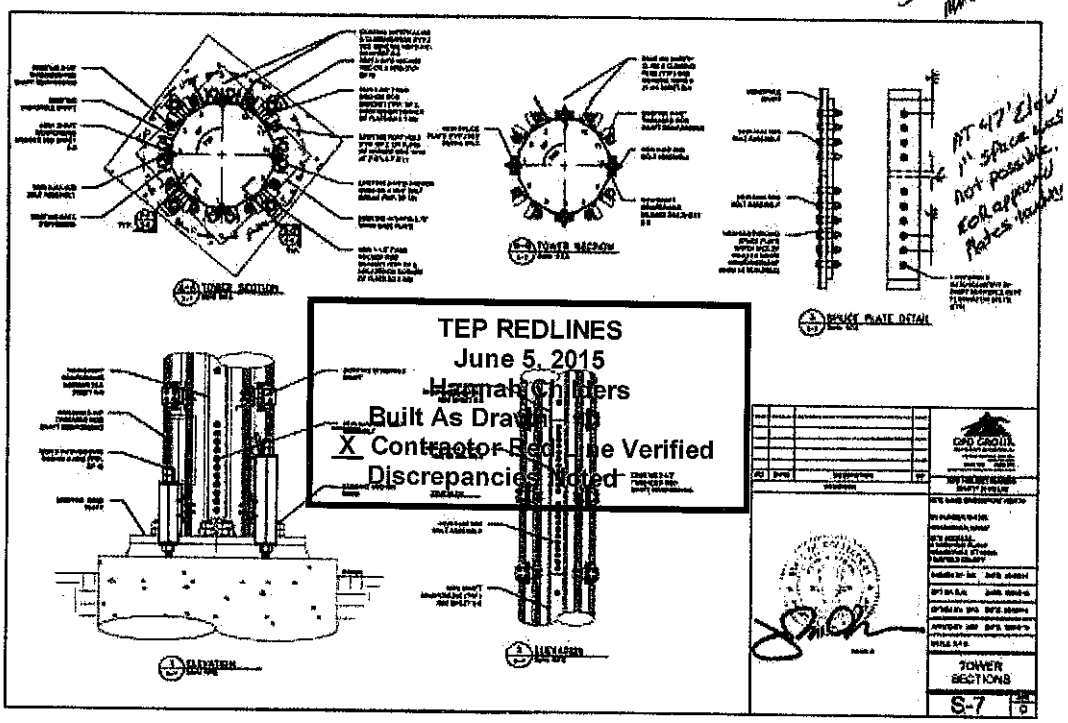
TEP REDLINES
June 5, 2015
Hannah Childers
X Built As Drawn
___ Contractor Red Line Verified
___ Discrepancies Noted



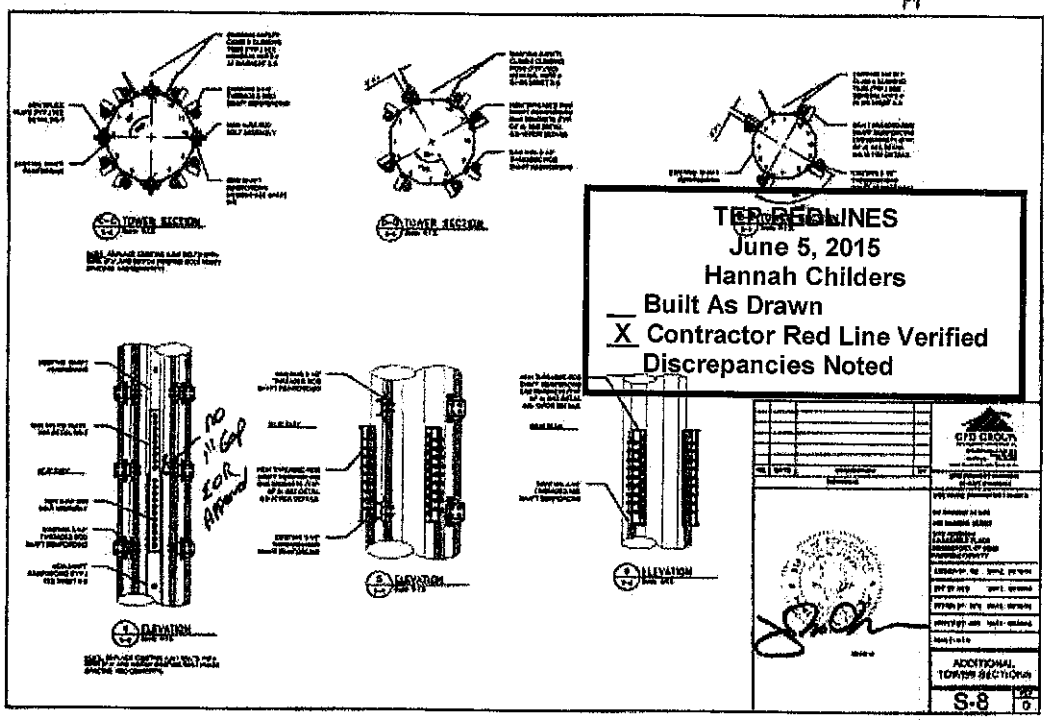
TOWER ELEVATION

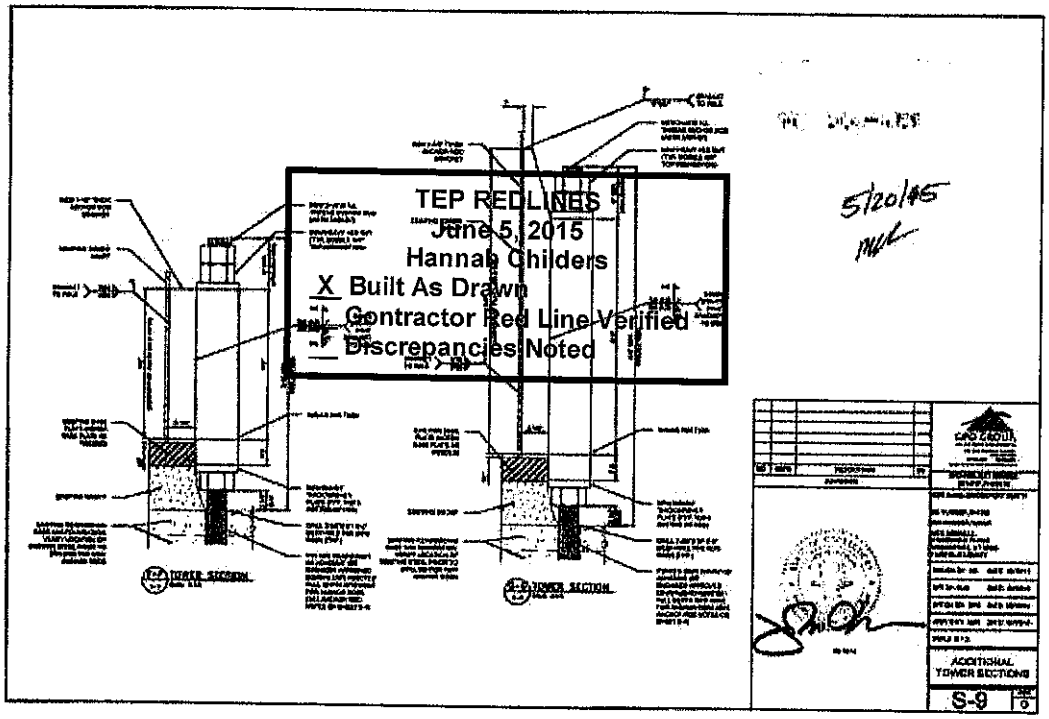
S-6

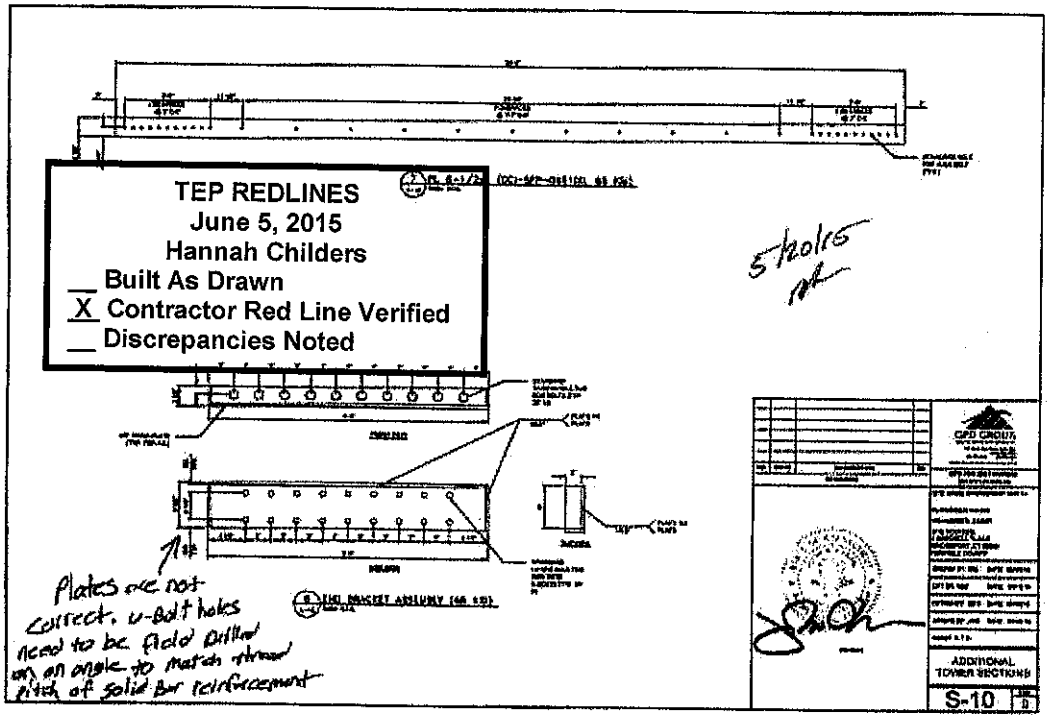
5/20/15 MM



5/20/15 MM




TEP REDLINES
June 5, 2015
Hannah Childers
X Built As Drawn
__ Contractor Red Line Verified
__ Discrepancies Noted
5/20/15
mk
ADDITIONAL TOWER SECTIONS
S-9


TEP REDLINES
June 5, 2015
Hannah Childers
__ Built As Drawn
X Contractor Red Line Verified
__ Discrepancies Noted
5 holes
mk
Plates are not correct. u-bolt holes need to be field drilled on an angle to match thread pitch of solid bar reinforcement
ADDITIONAL TOWER SECTIONS
S-10

6.3.2 POST INSTALLED ANCHOR ROD PULL-OUT TESTING

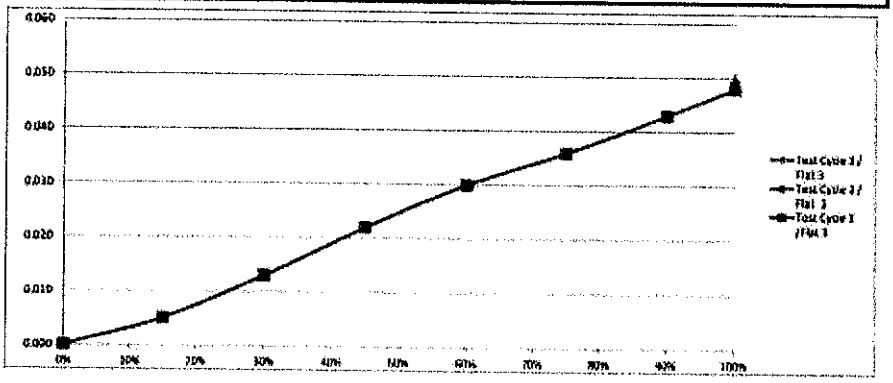
Pull Test Document

Project Number:	841288	Date:	5/9/2019
Site Name:	Bridgeport North		
Site Number:		Weather Conditions:	sunny
Anchor Number:	Flat G/7	Temperature:	70
Tester			
Company:	Lusk Enterprise Contractor Name	Anchor Rod Diam. (in):	2 1/4
Name:	Shane Lusk Person Completing Test	Anchor Rod Material:	williams
Phone:	6785915018	Target Tension (kip):	180
E-mail:	lusktesting@c	Epoxy/Grout Product:	Red Head GS
		Cylinder:	2X4S
Test Equipment:	Dark Tech Manning		

Notes:

Percent of Target Tension	Load (kip)	Pre Test	Test Cycle 1 / Flat 3		Test Cycle 2 / Flat 3		Test Cycle 3 / Flat 3	
		Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)
0%		0.000	0.000					
15%	1.2		0.005	0.005				
30%	2.4		0.013	0.013				
45%	3.6		0.022	0.022				
60%	4.9		0.030	0.030				
75%	6.1		0.036	0.036				
90%	7.3		0.043	0.043				
100%	8.1	0.050	0.048	0.048				
0%	0.0	0.003	0.000					

Check Sustained Deflection:		
Check Incremental Residual Deflection, Test Cycle 1:	-0.003	(passes if within 0.001")
Check Incremental Residual Deflection, Test Cycle 2:		(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 3:		(passes if within 0.010")
Check Total Residual Deflection:	0.000	(passes if within 0.050")
Check All:		



\\Rep-nm-fil001\towers\Towers\210001 - 300001\25587\26102 841288 BRIDGEPORT NORTH FM1\45168 FM1\Documents\Pull Test\Copy of pull test[illegible]

Pull Test Document

Project Number:	841284	Date:	9/9/2015
Site Name:	Bridgeport North		
Site Number:		Weather Conditions:	sunny
Anchor Number:	Flat 0/10	Temperature:	70

Tester

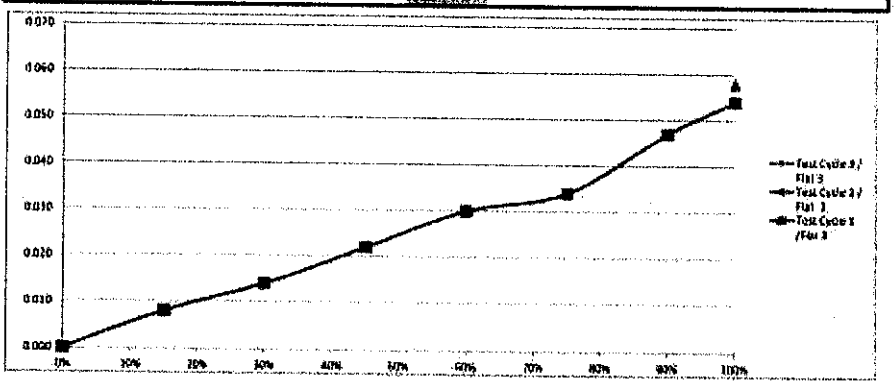
Company:	Lusk Enterprise Contractor Name	Anchor Rod Diam. (in):	1 1/4
Name:	Shane Lusk Person Completing Test	Anchor Rod Material	williams
Phone:	6785915810	Target Tension (Kip):	190
E-mail:	lusk@comcast.net	Epoxy/Grout Product:	Red Head GS
		Cylinder:	23.45

Test Equipment: Bolt Tech Manning

Notes:

Percent of Target Tension	Load (kip)	Pre Test	Test Cycle 1 /Flat 3		Test Cycle 2 / Flat 3		Test Cycle 3 / Flat 3	
		Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)
0%		0.000	0.000					
15%	1.2		0.008	0.008				
30%	2.4		0.016	0.016				
45%	3.6		0.022	0.022				
60%	4.9		0.030	0.030				
75%	6.1		0.036	0.036				
90%	7.3		0.047	0.047				
100%	8.1	0.058	0.054	0.054				
0%	0.0	0.006	0.002					

Check Sustained Deflection:		(passes if within 0.001")
Check Incremental Residual Deflection, Test Cycle 1:	-0.004	(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 2:		(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 3:		(passes if within 0.010")
Check Total Residual Deflection:	0.002	(passes if within 0.050")
Check All:		



\\Ap-vm-fs01\Common\Towers\20001 - 30000\35567\26102-841284 BRIDGEPORT NORTH PWI\45168 PWI\Closeouts\Pull Test\Copy of pull test[illegible]

Pull Test Document

Project Number:	841284	Date:	6/9/2015
Site Name:	Bridgeport North		
Site Number:		Weather Conditions:	sunny
Anchor Number:	Flat 11/13	Temperature:	90

Tester

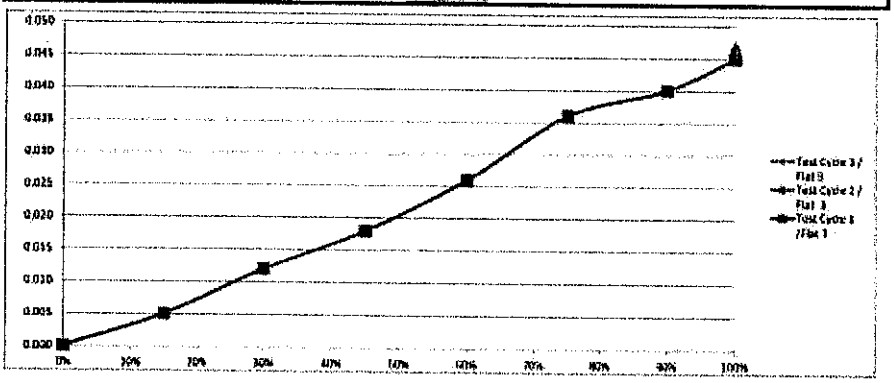
Company:	Lusk Enterprises Contractor Name	Anchor Rod Diam. (in):	2 1/4
Name:	Shane Lusk Person Completing Test	Anchor Rod Material:	williams
Phone:	6785913610	Target Tension (kip):	190
E-mail:	lusk@comcast.net	Epoxy/Grout Product:	Red Head GS
		Cylinder	23.43

Test Equipment: DGR Tech Manning

Notes

Percent of Target Tension	Load (kip)	Pre Test	Test Cycle 1 / Flat 3		Test Cycle 2 / Flat 3		Test Cycle 3 / Flat 3	
		Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)	Initial Deflection (in)	Sustained Deflection (in)
0%		0.000	0.000					
15%	1.2		0.005	0.005				
30%	2.4		0.012	0.012				
45%	3.6		0.018	0.018				
60%	4.9		0.026	0.026				
75%	6.1		0.036	0.036				
90%	7.3		0.040	0.040				
100%	8.1	0.047	0.045	0.045				
0%	0.0	0.003	0.006					

Check Sustained Deflection:		(passes if within 0.001")
Check Incremental Residual Deflection, Test Cycle 1:	0.003	(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 2:		(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 3:		(passes if within 0.010")
Check Total Residual Deflection:	0.006	(passes if within 0.050")
Check All:		



\\exp-nn-fs01\company\Towers\21001 - 30000\25567\26102 841284 BRIDGEPORT NORTH PWI\45168 PWI\Closeout\Pull Test\Copy of pull test[redacted] PM

Pull Test Document

Project Number:	341268	Date:	5/9/2015
Site Name:	Bridgeport North		
Site Number:		Weather Conditions:	sunny
Anchor Number:	Flat 3/4	Temperature:	70

Tester

Company:	Lusk Enterprises	Contractor Name	
Name:	Shane Lusk	Person Completing Test	
Phone:	6785915010		
E-mail:	lusksr@cox.net		

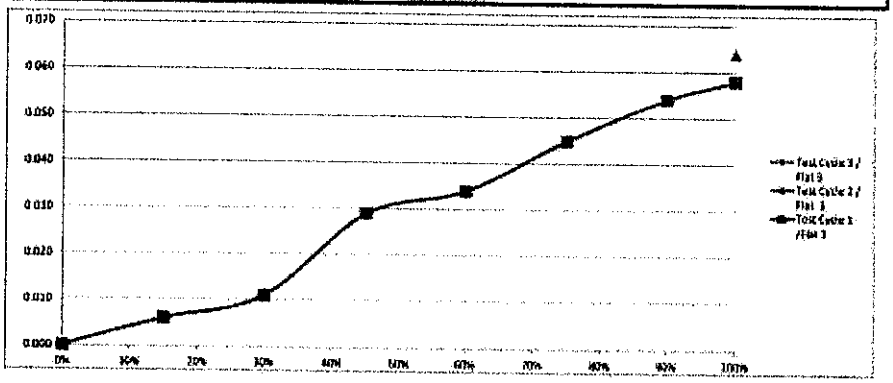
Anchor Rod Diam. (in):	2 1/4
Anchor Rod Material:	williams
Target Tension (kip):	190
Epoxy/Grout Product:	Red Head GS
Cylinder	28.43

Test Equipment: Bolt Tech Manning

Notes:

Percent of Target Tension	Load (kip)	Pre Test Deflection (in)	Test Cycle 1 /Flat 3 Initial Deflection (in)	Test Cycle 1 /Flat 3 Sustained Deflection (in)	Test Cycle 2 / Flat 3 Initial Deflection (in)	Test Cycle 2 / Flat 3 Sustained Deflection (in)	Test Cycle 3 / Flat 3 Initial Deflection (in)	Test Cycle 3 / Flat 3 Sustained Deflection (in)
0%		0.000	0.000					
15%	1.2		0.006	0.006				
30%	2.4		0.011	0.011				
45%	3.6		0.029	0.029				
60%	4.9		0.034	0.034				
75%	6.1		0.045	0.045				
90%	7.3		0.054	0.054				
100%	8.1	0.064	0.058	0.058				
0%	0.0	0.007	0.003					

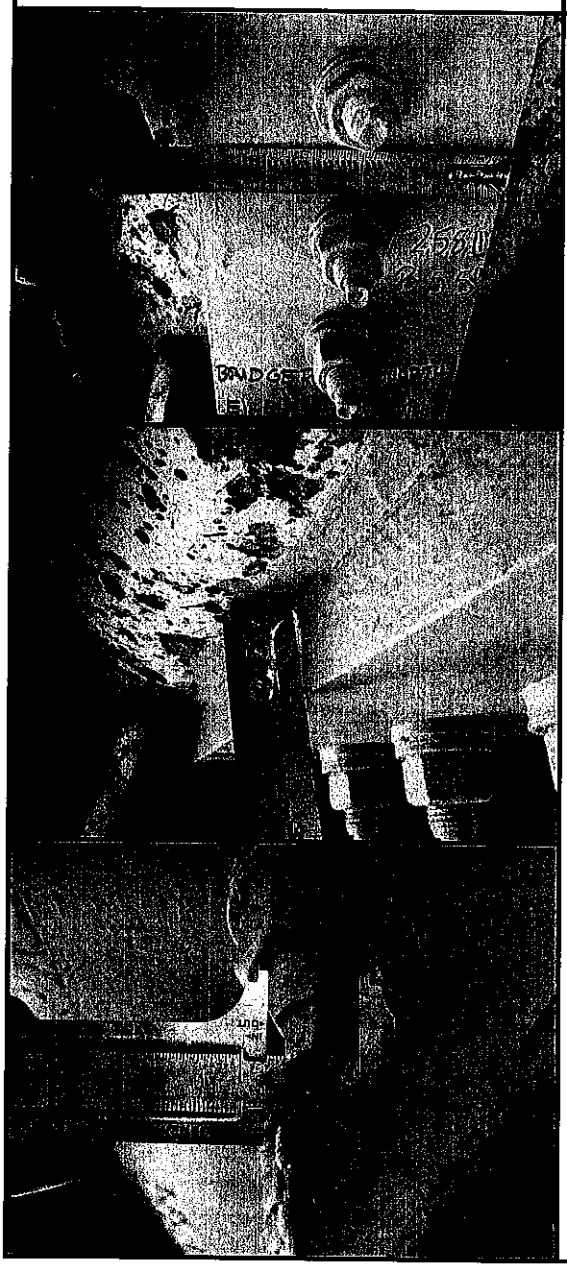
Check Sustained Deflection:		(passes if within 0.001")
Check Incremental Residual Deflection, Test Cycle 1:	-0.004	(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 2:		(passes if within 0.010")
Check Incremental Residual Deflection, Test Cycle 3:		(passes if within 0.010")
Check Total Residual Deflection:	0.003	(passes if within 0.050")
Check All:		

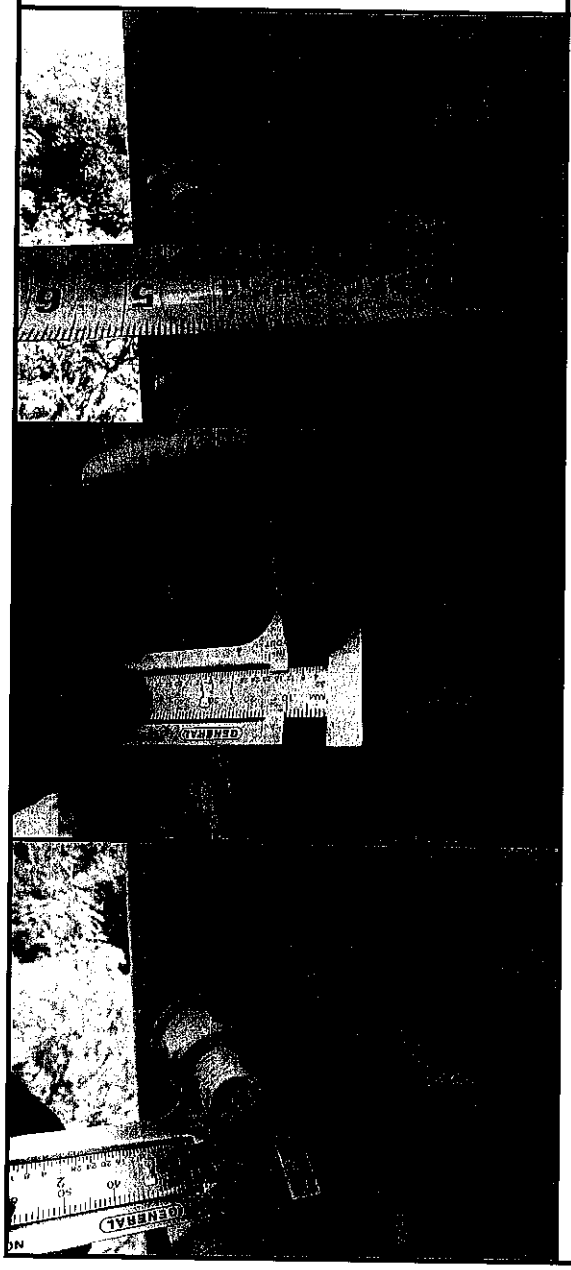


\\Jea-nm-fs\Dept\Towers\Towers\70001 - 80000\255671\76102 341268 BRIDGEPORT NORTH Pull\45168 Pull\Closeout\Pull Test\Copy of pull tests\160826 20913 Pull

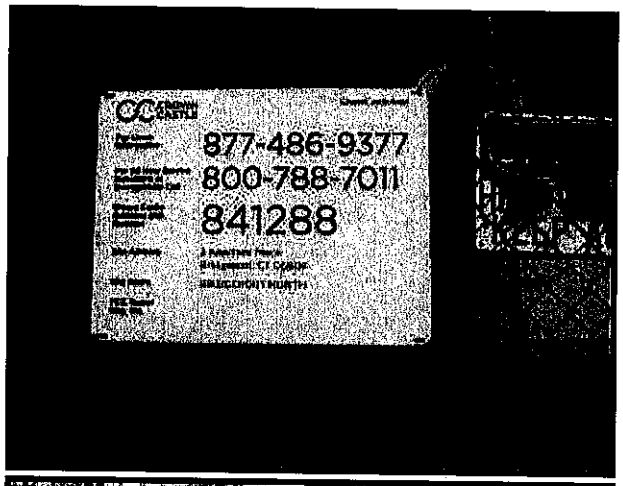
6.3.3 EXECUTIVE SUMMARY

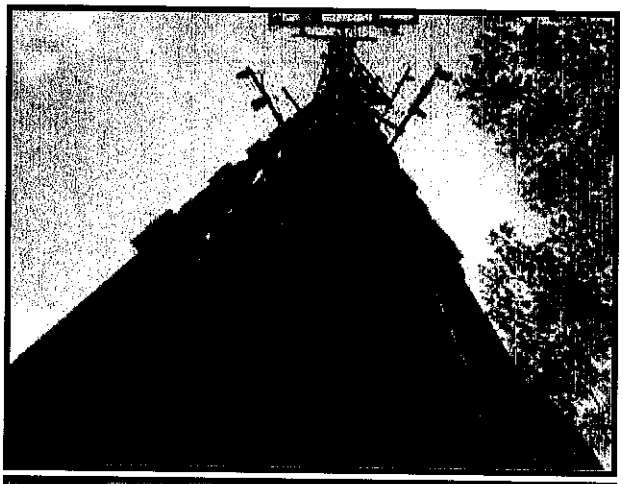
Photograph	Observations and Recommendations
	**Item 1** **Observation:** New anchor rods were installed into the existing foundation and encased with new anchor brackets. This was completed in accordance with pages S-7 & S-9 of the modification drawings provided by GPD Group dated September 19, 2014. **Recommendation:** No action is required.

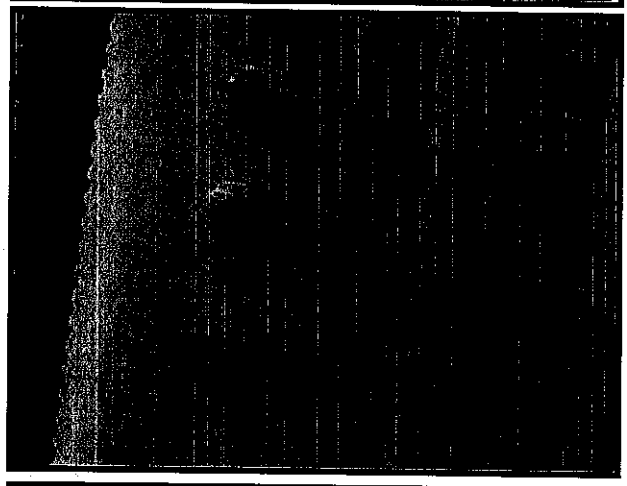
Photograph	Observations and Recommendations
	**Item 2** **Observation:** New reinforcement plates were installed to the tower from an elevation of 0.5-ft to 47-ft. This was completed in accordance with pages S-7 & S-8 of the modification drawings provided by GPD Group dated September 19, 2014 except as noted. Note: The second reinforcing plate stopped at 46'-10". There was no gap between the new and existing plates where a 1" gap was specified. These items were approved by the engineer of record. **Recommendation:** No action is required.

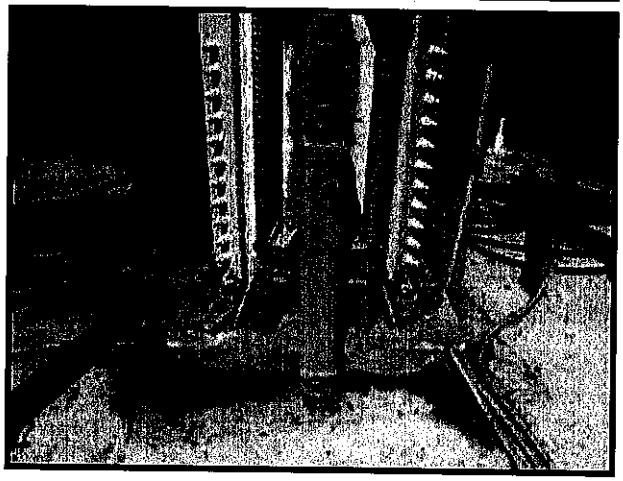
Photograph	Observations and Recommendations
	**Item 3** **Observation:** New threaded rod end connections were installed to the existing threaded rods on the tower shaft at elevations of 51-ft & 98-ft. This was completed in accordance with page S-8 of the modification drawings provided by GPD Group dated September 19, 2014 except as noted. Note: The original brackets did not fit up properly and were replaced. (See sketch of revised bracket detail in section 6.3.5) On the new brackets the edge distance was measured as 5" and 4" at the 51' and 98' elevations, respectively. U-bolt spacing varied slightly between 2.5" and 3.5" where 3" was specified. These two items were approved by the engineer of record. **Recommendation:** No action is required.

6.3.4 PHOTOGRAPHS

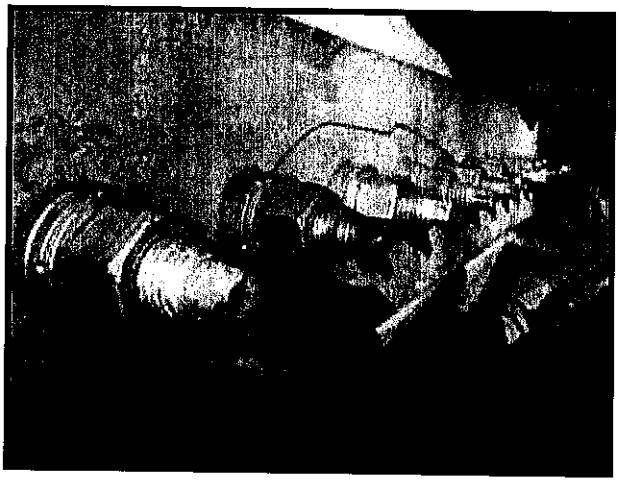


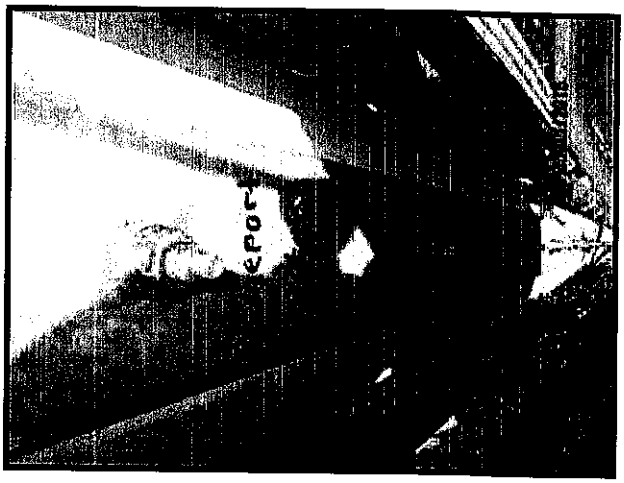


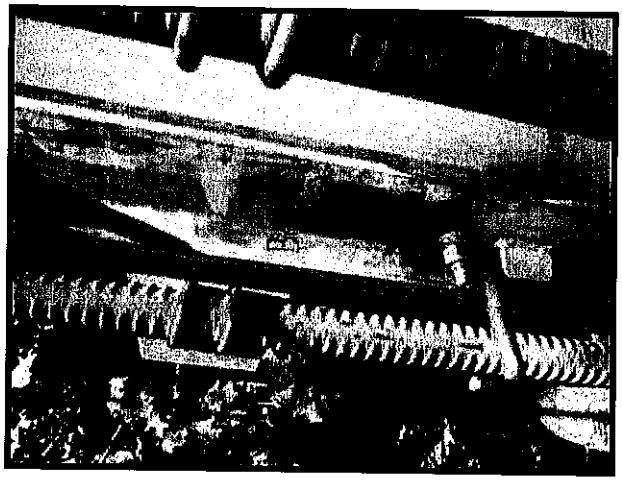


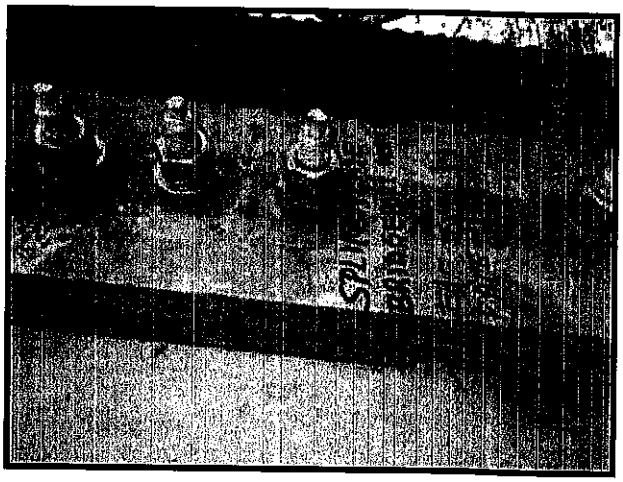


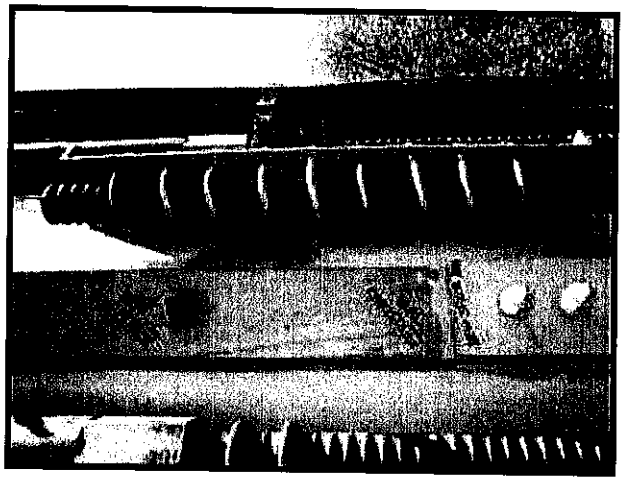
CONTRACTOR PHOTOGRAPHS

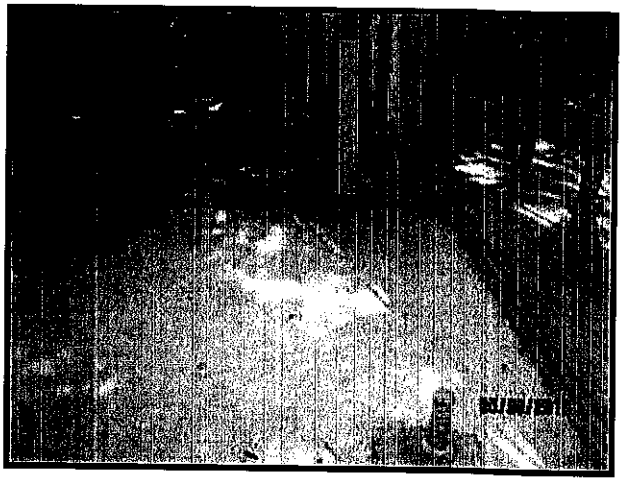












6.3.5 ENGINEER OF RECORD EMAIL

From: Said, Mody <msaid@tepdgroup.com>
Sent: Wednesday, June 03, 2015 5:01 PM
To: Kevin Arnett; Matt Hague; McGee, John
Cc: Roupe, Chris; Vadney, Dan; PMI; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor); Palkovic, Daniel; Burton, Chad; Smith, Brian
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Kevin,

My comments are below in Green, Thanks

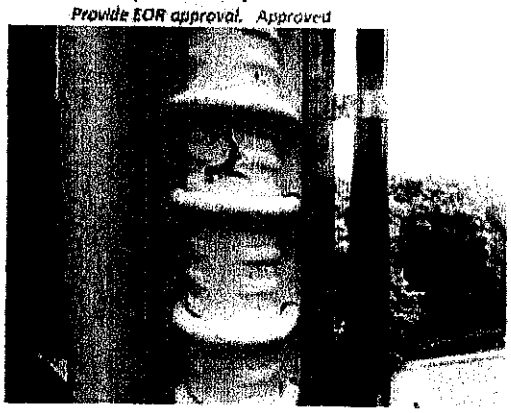
From: Kevin Arnett [mailto:karnett@tepgroup.net]
Sent: Wednesday, June 03, 2015 3:12 PM
To: Matt Hague; McGee, John; Said, Mody
Cc: Roupe, Chris; Vadney, Dan; PMI; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

All,
Our re-inspection was completed yesterday 6/2/15. Two small items regarding the new brackets were observed. All other items have been fixed.

Mody,
Please review these and let us know if they are OK. Note that all U-bolts were aligned between the threads of the existing bar.

1. The edge distance was specified as 3 13/16" and 4 3/8" from the end of the plate, but was field verified as ≈ 5" at 51' and ≈4" at 98'. (Photos 19, 46)
   Provide EOR approval. Approved

2. **U-bolt spacing of the new brackets was specified as 3" typical of 8 spaces, however it was field verified as 2.5" to 3.5". (Photos 24-28]**
   Provide EOR approval. *Approved*



2

Closeouts remaining:

- The latest revision of the design drawings that I have are Rev B, dated 3/21/14. (I'm pretty sure the 14 is a typo, and it should be 3/21/2015) If this is the correct set of drawings, we will need EOR approval for 50 ksi steel used for the anchor rod brackets and square washer plate. Rev A and B of the drawings specify 65 ksi steel for these parts. The MTRs and packing slips show grade 50. 50 ksi brackets are approved.
- Please send GC As Builts on the latest set of drawings with the updated bracket plate detail (referenced in the attached email from GPD)
- Construction Inspections letter
- MTR and packing slip for the new bracket plate that was re-fabricated
- Fabricator's CWI for the second bracket plate fabrication, if any welding was performed.

Kevin Arnett, PE, CWI
Project Manager | Tower Engineering Professionals, Inc. (www.tepgroup.net)
326 Tryon Road|Raleigh, NC 27603|Office: (919) 661-6351 ext.3405|Fax: (919) 661-6350

From: Kevin Arnett
Sent: Wednesday, June 03, 2015 11:26 AM
To: 'Matt Hague'; McGee, John
Cc: Roupe, Chris; Vadney, Dan; PMI; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Our crew visited the site late yesterday. As soon as they upload their information, I'll update everyone.

Kevin Arnett, PE, CWI
Project Manager | Tower Engineering Professionals, Inc. (www.tepgroup.net)
326 Tryon Road|Raleigh, NC 27603|Office: (919) 661-6351 ext.3405|Fax: (919) 661-6350

From: Matt Hague [mailto:MHague@fossllc.com]
Sent: Wednesday, June 03, 2015 11:16 AM
To: McGee, John
Cc: Kevin Arnett; Roupe, Chris; Vadney, Dan; PMI; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: Re: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

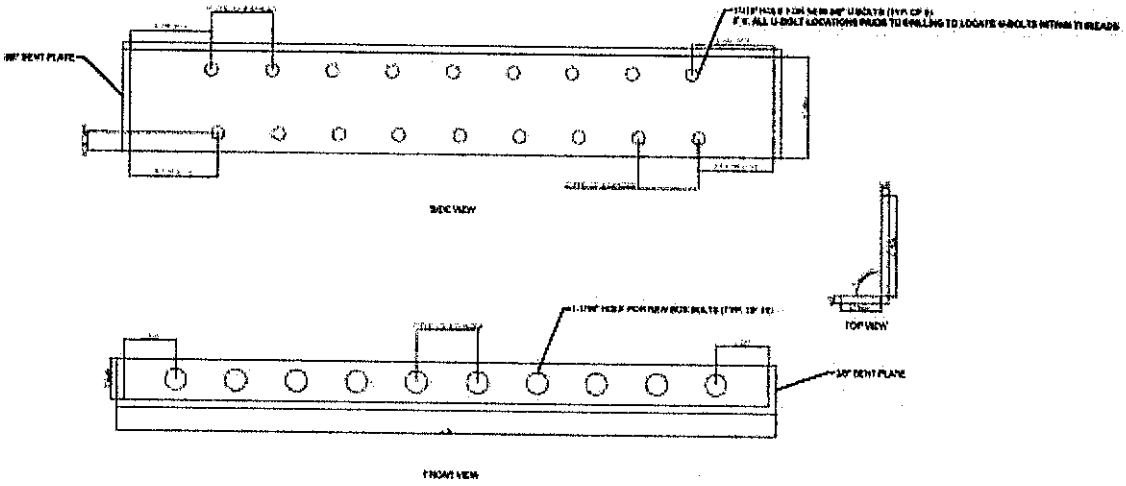
Yes waiting on the re inspection report.

Thank you,

Matt Hague
Project Manager
RF Telecom
Foss Electric

Mobile – 215.307.0981
Office – 267-419-8190
Fax – 866.886.4841
Email – MHague@Fossllc.com
Web Site – www.Fossllc.com

NEW 3/8" 90° BENT PLATE BRACKET-65 KSI



Evan Stanfield

From: Said, Mody <msaid@gpdgroup.com>
Sent: Monday, May 18, 2015 11:17 AM
To: Matt Hague; McGee, John
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; PMI; Palkovic, Daniel; Davis, Kyle; Smith, Brian; Burton, Chad; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary
Attachments: 841288 End Bracket Detail.pdf

Matt,

See attached for the detail. Please let me know if the fabricator will be able to bend a 65 ksi plate 90°. If this will work, I will update the drawings per the attached detail.

Thank You,

Mody Said, E.I.
Structural Analyst

GPD GROUP
520 South Main Street, Suite 2531 Akron, OH 44311 gpdgroup.com
Office: 330.572.3657 Fax: 330.572.2101

AKRON / ATLANTA / CLEVELAND / COLUMBUS / INDIANAPOLIS / LOUISVILLE / MARION / PHOENIX / SEATTLE / YOUNGSTOWN

From: Matt Hague [mailto:MHague@fossllc.com]
Sent: Monday, May 18, 2015 10:11 AM
To: Said, Mody; McGee, John
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; TowerEngineeringProfessionals; Palkovic, Daniel; Davis, Kyle; Smith, Brian; Burton, Chad; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Mody I just spoke to my fabricator as to what would be the easiest route to take. Could you possibly make us a quick sketch of the size and measurements of the plate so we can check on material availability?

Thank you,

Matt Hague
Project Manager

Mobile – 215.307.0981
Office – 267-419-8190
Fax – 866.886.4841
Emergency Service Line – 215.804.9312
Email – MHague@Fossllc.com
Web Site – www.Fossllc.com

1

From: Said, Mody [mailto:msaid@gpdgroup.com]
Sent: Monday, May 18, 2015 10:13 AM
To: McGee, John; Matt Hague
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; TowerEngineeringProfessionals; Palkovic, Daniel; Davis, Kyle; Smith, Brian; Burton, Chad; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Sure John. Matt can give me a call anytime today to discuss.

Thanks,

Mody Said, E.I.
Structural Analyst

GPD GROUP
520 South Main Street, Suite 2531 Akron, OH 44311 gpdgroup.com
Office: 330.572.3657 Fax: 330.572.2101

AKRON / ATLANTA / CLEVELAND / COLUMBUS / INDIANAPOLIS / LOUISVILLE / MARION / PHOENIX / SEATTLE / YOUNGSTOWN

From: McGee, John [mailto:John.McGee@crowncastle.com]
Sent: Monday, May 18, 2015 10:00 AM
To: Said, Mody; Matt Hague
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; TowerEngineeringProfessionals; Palkovic, Daniel; Davis, Kyle; Smith, Brian; Burton, Chad; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Understood Mody, please work with Matt to rectify the issues as quickly as possible. Thanks

Best Regards

John McGee
Project Manager ETA – Structural Modifications
T: (980) 209-8253 : M: (704) 877-8397 | F:(724) 416-4716
john.mcgee@crowncastle.com

CROWN CASTLE
3530 Toringdon Way Suite 300, Charlotte NC, 28277
CrownCastle.com

From: Said, Mody [mailto:msaid@gpdgroup.com]
Sent: Monday, May 18, 2015 9:57 AM
To: Matt Hague; McGee, John
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; TowerEngineeringProfessionals; Dan Palkovic; Davis, Kyle; Smith, Brian; Chad Burton; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Matt,

Would it be feasibly to use a 90 degrees 65 ksi bent plate to replace the bracket? This would eliminate the welding procedure. Please let me know if using the bent plate is a more cost effective option for you.

John,

Without the proper installation of the termination brackets to the threaded solid round members, the tower shaft is in an overstress condition. The solid round reinforcements are ineffective without proper termination connections.

Thank You,

Mody Said, E.I.
Structural Analyst

GPD GROUP
520 South Main Street, Suite 2531 Akron, OH 44311 gpdgroup.com
Office: 330.572.3657 Fax: 330.572.2101

AKRON / ATLANTA / CLEVELAND / COLUMBUS / INDIANAPOLIS / LOUISVILLE / MARION / PHOENIX / SEATTLE / YOUNGSTOWN

From: Matt Hague [mailto:MHague@fossllc.com]
Sent: Monday, May 18, 2015 9:37 AM
To: 'McGee, John'; Said, Mody
Cc: Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; TowerEngineeringProfessionals; Palkovic, Daniel; Davis, Kyle; Smith, Brian; Burton, Chad; Crook, LaTisha; Sanchez, Felix; Donahue, James (Vendor); D'Amico, Jason (Vendor)
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

John I spoke to Mody on Friday afternoon and they are looking into possibly using an angle in place of this welded termination plate. This would be shorter lead time and would correct the issue of the washers sitting on the weld. I am in the process of ordering these off size u-bolts that will fit inside the threads of the bar. I should have a better answer for you by later today.

Thank you,

Matt Hague
Project Manager

Mobile – 215.307.0981
Office – 267-419-8190
Fax – 866.886.4841
Emergency Service Line – 215.804.9312
Email – MHague@Fossllc.com
Web Site – www.Fossllc.com

Kevin Arnett

From:	Said, Mody <msaid@gpdgroup.com>
Sent:	Friday, May 15, 2015 1:58 PM
To:	Kevin Arnett; Roupe, Chris; Trent Johnston; Vadney, Dan; McGee, John
Cc:	PMI; Palkovic, Daniel; 'Matt Hague'; Davis, Kyle; Smith, Brian; Burton, Chad
Subject:	RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Item # 6 below is now updated.

From: Kevin Arnett [mailto:karnett@tepgroup.net]
Sent: Friday, May 15, 2015 1:25 PM
To: Said, Mody; Roupe, Chris; Trent Johnston; Vadney, Dan; McGee, John
Cc: PMI; Palkovic, Daniel; 'Matt Hague'; Davis, Kyle; Smith, Brian; Burton, Chad
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Regards to #6, this occurs at every U-bolt location on the bracket. We could not record a size, but looking at the photos, it appears to be a semi-circle of missing weld with a diameter approximately equal to the u-bolt diameter.

Kevin Arnett, PE, CWI
Project Manager | Tower Engineering Professionals, Inc. (www.tepgroup.net)
326 Tryon Road | Raleigh, NC 27603 | Office: (919) 661-6351 ext 3405 | Fax: (919) 661-6350

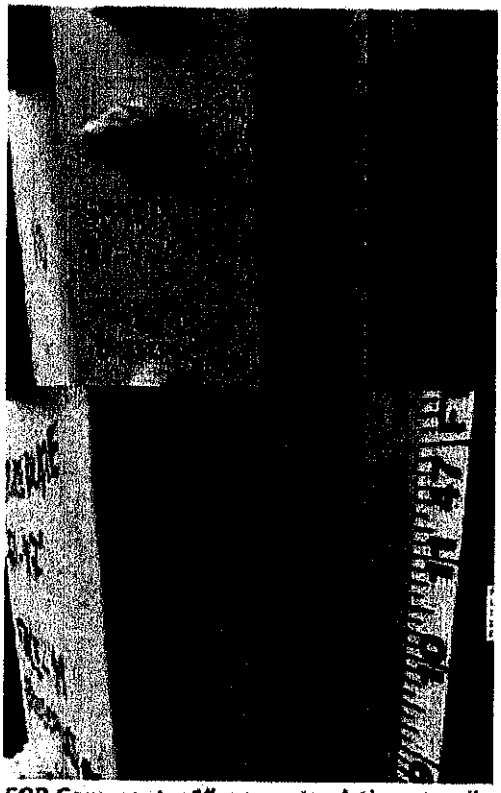
From: Said, Mody [mailto:msaid@gpdgroup.com]
Sent: Friday, May 15, 2015 12:52 PM
To: Roupe, Chris; Trent Johnston; Kevin Arnett; Vadney, Dan; McGee, John
Cc: PMI; Palkovic, Daniel; 'Matt Hague'; Davis, Kyle; Smith, Brian; Burton, Chad
Subject: RE: Bridgeport North BU# 841288 TEP# 25567_26102 - MI Summary

Kevin / Trent,

EOR Comments in Green below each item. The only items that need EOR approval are items 2-8 &11. Items 1,9,10 & "TIA items outside of the scope of the modifications" need Crown approval. (All item numbers are per the original punch list items sent by Kevin Arnett from TEP)

Inspection Summary with EOR Comments:

2. **Plate 2 ends at 46'-10" rather than 47' as specified in the drawings. There is no 1" gap between the new and existing reinforcement plates at this elevation. (Photos 137, 139)**
   Provide EOR approval.

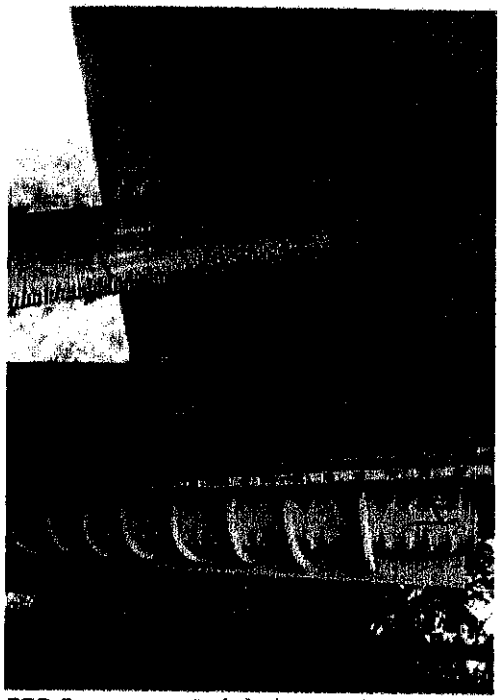


EOR Comments: *1" gap not existing at splice location will be acceptable (Item Approved).*

3. Shims were installed from ~27' to the splice at ~31'. (124,125)
   Provide EOR approval.

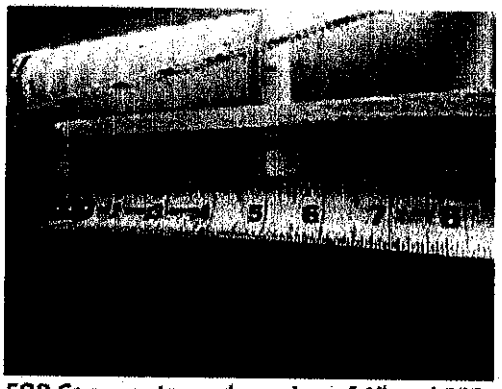
EOR Comments: ***Installed Shims is acceptable (Item Approved).***

4. **End bracket U-bolt holes were spaced at 3-1/2" rather than 3-1/8" as called for in the drawings. (Photos 179, 196)**
   Provide EOR approval.



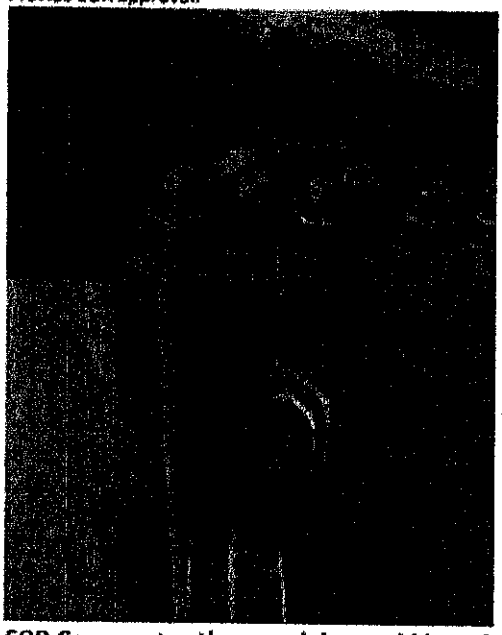
EOR Comments: ***Bolt holes spacing is 3-1/2" is acceptable (Item Approved).***

5. The spacing from the top of the new end brackets to the first U-bolt measured 4"; spacing from the bottom of the bracket to the bottom U-bolt measured 5". This spacing was typical at both 51' and 98'. Drawings call for 4-1/2" in both locations. (Photos 173, 175)
   Provide EOR approval.



EOR Comments: *end spacing of 4" and 5" instead of 4-1/2" are acceptable (Item Approved).*

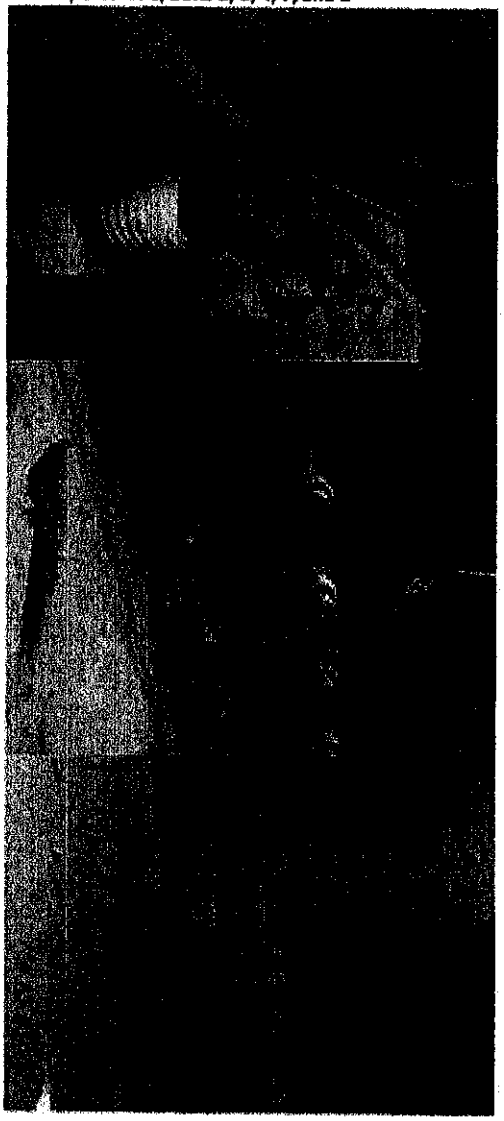
6. Gaps were cut in the corner welds of the end brackets at 51' and 98' to allow for the inside U-bolt washers and nuts. Not all of the washers could lay flush. (Photos 210, 239)
   Provide EOR approval.



EOR Comments: *the remaining weld length will not be sufficient* ***(Item Not Approved).***

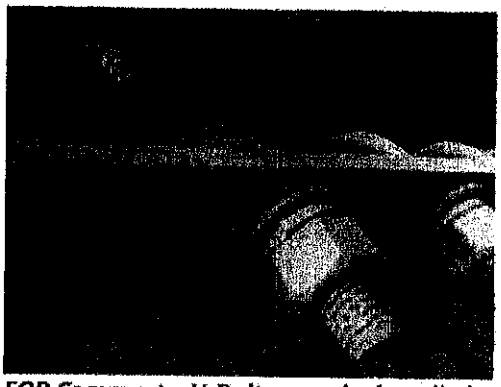
7. Box bolts were not installed flush to the bracket plate. Larger gaps were present in the following locations, numbered from the top of the end bracket: (Photos 191, 232, 237)
   Install the bolts so that they are tight and flush or provide EOR approval.
   a. 51', bracket 1, bolts 1 and 4

b. 51', bracket 3, bolt 5
c. 51', bracket 4, bolts 1, 3, 7, 9, and 10
d. 98', bracket 1, bolts 1, 4, 6, and 10
e. 98', bracket 2, bolts 1, 3, 4, 7, and 8



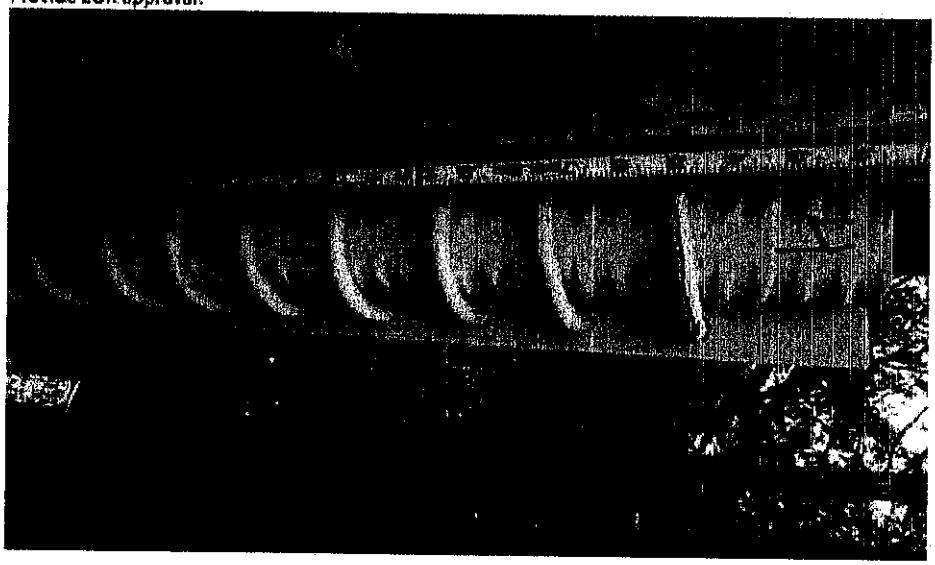
EOR Comments: *Bolts must be installed tight and flush* ***(Item Not Approved).***

8. Skewed U-bolts were observed on brackets 1 and 2 at 98'. (Photo 234)
Straighten the brackets and tighten to snug-tight condition.



EOR Comments: U-Bolts must be installed straight and tightened to snug-tight condition (Item Not Approved).

11. U-bolts in new brackets were offset slightly. This was not shown in the drawings. (196) Provide EOR approval.



EOR Comments: U-Bolts must fall between the threads then tightened to be snug-tight against the bracket (Item Not Approved).

Thanks,

Mody Said, E.I.
Structural Analyst

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