

**From:** Barbadora, Jeff <Jeff.Barbadora@crowncastle.com>

**Sent:** Wednesday, December 11, 2024 2:05 PM

**To:** CSC-DL Siting Council <Siting.Council@ct.gov>

**Subject:** Part 1 - Petition NO. 1388 - 189 Boston Post Road Old Lyme, CT 876406/459664

**Importance:** High

Good Afternoon,

This email is to confirm ATT construction activities were completed along with the tower modification per the Paul J. Ford structural analysis report in 2020.

Please see attached PE NO. 1388 and pictures of the completed work from 2020.

This is part 1 of three emails because the MI report is 211 pages which is too large to send. MI Report (p1-105) and (p106-211) will be sent separately.

Thanks,

**Jeffrey Barbadora**

Permitting Specialist

781-970-0053

**Crown Castle**

1800 W. Park Drive, Suite 250

Westborough, MA 01581





09.12.2020 14:51

12/09/2020 14:51:48





09.12.2020 14:51

12/09/2020 14:51:53





09.12.2020 14:39

12/09/2020 14:39:17



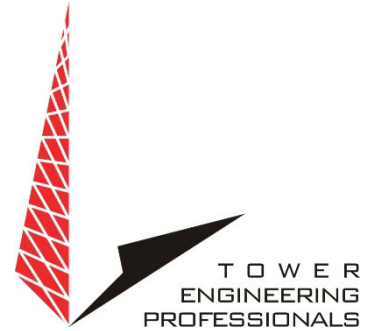


09.12.2020 13:38

12/09/2020 13:38:15



Date: September 30, 2020  
Tower Engineering Professionals  
326 Tryon Road  
Raleigh, NC 27603  
(919) 661-6351 (Office)



## Modification Inspection Report

### *Crown Castle Site Information*

**Crown POC:** Dan Vadney  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
**BU Number:** 876406  
**Site Name:** Old Lyme Firehouse  
**Site Address:** 189 Boston Post Road, Old Lyme, CT 06371, USA  
**Latitude N 41° 20' 56.37", Longitude W 72° 17' 43.65"**  
**110 Foot** – Monopole Tower

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 CED-SOW-10007 Modification Inspection SOW.

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

☒ **PASSING MI**

The configuration, materials and/or workmanship of the modifications are installed in accordance with the Contract Documents. If additional information or the full report are required, please contact Crown Castle.

### ***Modification Design Information:***

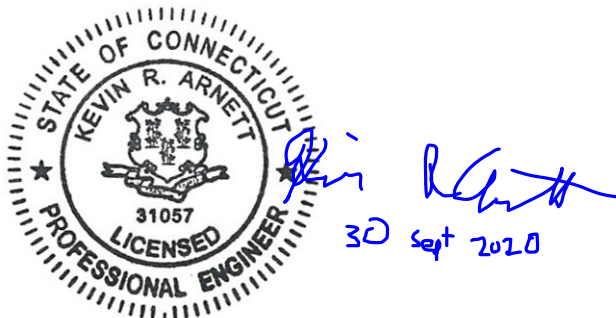
**SDD Vendor:** Paul J. Ford and Company  
**SDD Date:** March 25, 2019  
**Vendor Job Number:** 37519-0914  
**Name of EOR:** Joseph P. Jacobs, P.E.  
**Source of SDD:** 8299430

### ***MI Vendor Information:***

**Dates on Site:** 9/21/20, 9/24/20, & 9/28/20  
**MI Crew Lead:** Christopher Thompson, P.E., C.W.I., Timothy Vicisko, E.I., & Kevin Arnett, P.E., C.W.I.

We at Tower Engineering Professionals 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,



Kevin R. Arnett, P.E., C.W.I.



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## **RECORD DRAWINGS**



# MODIFIED 110'-0" MONOPOLE RED LINE DRAWINGS BU #876406; NE OLD LYME-OLD LYME FIREHOUSE

189 BOSTON POST ROAD  
OLD LYME, CONNECTICUT 06371  
NEW LONDON COUNTY  
LAT: 41° 20' 56.37"; LONG: -72° 17' 43.65"  
ORDER: 441746 REV. 5; WO: 1708570

## PROJECT CONTACTS

STRUCTURE OWNER:  
CROWN CASTLE  
MOD PM: DAN VADNEY AT DAN.VADNEY@CROWNCastle.COM  
PH: (518) 373-3510  
MOD CM: JASON D'AMICO AT JASON.DAMICO@CROWNCastle.COM  
PH: (860) 209-0104

ENGINEER OF RECORD:  
PJFORD@PAULJFORD.COM

## WIND DESIGN DATA

REFERENCE STANDARD	ANSI/TIA-222-H
LOCAL CODE	2016 CONNECTICUT STATE BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	135 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	105 MPH
ICE THICKNESS	1.5 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
Kzt	1.0

**NEXTGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

## SHEET INDEX

SHEET NUMBER	DESCRIPTION
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## HOT WORK INCLUDED

NA	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
NA	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

TOWER MANUFACTURER: EEI  
TOWER MANUFACTURER #: 9259

THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1579783

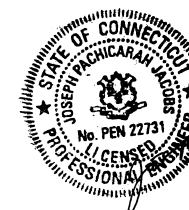
QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD & COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT PJFORD@PAULJFORD.COM.

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.



## SAFETY CLIMB: "LOOK UP"

THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO; PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS



MAR 25 2019

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**PAUL J. FORD & COMPANY**  
250 E Broad St, Ste 400  
Columbus, OH 43215  
Phone 614-221-6679  
www.pauljford.com

**CROWN CASTLE**  
3530 TORRINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
PH: (704) 416-2000

BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

TITLE SHEET

T-1

REV DATE DESCRIPTION



MI CHECKLIST				
REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION	
PRE-CONSTRUCTION				
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.	
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL B PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
NA	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
ADDITIONAL TESTING AND INSPECTIONS:				
CONSTRUCTION				
X	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
NA	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.	
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY AN APPROVED FOUNDATION INSPECTOR AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.	
X	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT. ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.	
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.	
X	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.	
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.	
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 ENG-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.	
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.	
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.	
ADDITIONAL TESTING AND INSPECTIONS:				
POST-CONSTRUCTION				
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.	
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.	
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.	
NA	BOLT INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.	
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.	
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.	
ADDITIONAL TESTING AND INSPECTIONS:				
PASSING MI				
Tuesday, September 29, 2020				

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

## MODIFICATION INSPECTION NOTES

### GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS, AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MIs SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

### SERVICE LEVEL COMMITMENT

THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING AN MI REPORT:

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON-SITE.

### REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
- WELD PREPARATION
- BOLT INSTALLATION
- FINAL INSTALLED CONDITION
- SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
- FINAL INFIELD CONDITION

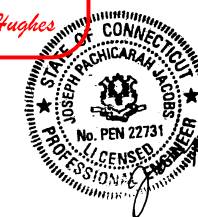
PHOTOS OF ELEVATED MODIFICATIONS TAKEN ONLY FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

**NEXT GEN**  
SERVICES GROUP

**AS-BUILT**  
**Changed as noted**  
**Dated 9-18-2020**

*Signed Dan Hughes*



MAR 25 2019

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**PAUL J. FORD & COMPANY**  
 250 E Broad St, Ste 600  
 Columbus, OH 43215  
 Phone 614.221.6679  
 www.pauljford.com

**CROWN CASTLE**  
 9530 TORRINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
 PH: (704) 416-2000

**BU #876406; NE OLD LYME-OLD LYME  
 FIREHOUSE  
 OLD LYME, CONNECTICUT  
 MODIFIED 110"-0" MONOPOLE**

PROJECT NO: 37519-0914.001.7700  
 DRAWN BY: DC  
 DESIGNED BY: UY  
 CHECKED BY: BKK  
 DATE: 03-25-2019

MI CHECKLIST

MI-1

REV	DATE	DESCRIPTION



VI 037519-0914.001.DWG

## 1. GENERAL NOTES

- 1.1. THE MONOPOLE STRUCTURE IN ITS EXISTING CONDITION DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE PROPOSED AND EXISTING LOADS FROM THE ATTACHED STRUCTURAL MODIFICATION REPORT AT THE REQUIRED MINIMUM WIND SPEEDS. DO NOT INSTALL ANY NEW LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
- 1.2. THESE DRAWINGS WERE PREPARED FROM INFORMATION PROVIDED BY CROWN CASTLE. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT DRAWINGS AND THEIR FIELD VERIFIED CONDITIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE BEFORE PROCEEDING WITH THE WORK. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR THE FABRICATOR.
- 1.3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
- 1.4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN SUCCESSFULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
- 1.5. ALL CONSTRUCTION MEANS AND METHODS, INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSIS/AE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSIS/AE A10.48 (LATEST EDITION) AND CROWN STANDARD CSD-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS V CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSIS/AE-322 (LATEST EDITION).
- 1.6. OBSERVATION VISITS TO THE SITE BY CROWN CASTLE AND/OR THE EOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES. ANY SUPPORT SERVICES PERFORMED BY THE EOR DURING CONSTRUCTION ARE SOLELY FOR THE PURPOSE OF ACHIEVING GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
- 1.7. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FLAWS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY CROWN CASTLE AND EOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
- 1.8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
- 1.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
- 1.10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED AND RELOCATED, REPLACED, OR RE-INSTALLED AS REQUIRED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH CROWN CASTLE, TESTING AGENCY, AND EOR.
- 1.11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS.
- 1.12. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE YOUR CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.
- 1.13. FOR STANDARD CROWN PARTS SEE THE MOST RECENT VERSION OF THE "CCL APPROVED REINFORCEMENT COMPONENTS" CATALOG.
- 1.14. ALL SOLUTIONS FOR THE REPLACEMENT, RELOCATION OR MODIFICATION OF THE SAFETY CLIMB AND/OR ANY OF THE MONOPOLE CLIMBING FACILITIES SHALL BE COORDINATED WITH TUF-TUG PRODUCTS. CONTACT DETAILS: 3434 ENCRETE LANE, MORAIN, OHIO 45439 PHONE: 937-299-1213 EMAIL: TUF-TUG@AOL.COM

## 2. STRUCTURAL STEEL

- 2.1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
  - 2.1.1. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
    - 2.1.1.1. "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
    - 2.1.1.2. "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.
    - 2.1.1.3. "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
  - 2.1.2. BY THE AMERICAN WELDING SOCIETY (AWS):
    - 2.1.2.1. "STRUCTURAL WELDING CODE - STEEL D1.1."
    - 2.1.2.2. "STANDARD SYMBOLS FOR WELDING, BRAZING, AND NONDESTRUCTIVE EXAMINATION"
- 2.2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS," DEC. 31, 2008.
- 2.3. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- 2.4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- 2.5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO CROWN CASTLE'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
- 2.6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
- 2.7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
- 2.8. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
- 2.9. FIELD CUTTING OF STEEL:
  - 2.9.1. IMPORTANT CUTTING AND WELDING SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING SAFETY PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY."
  - 2.9.2. ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.

## 3. TOUCH UP OF GALVANIZING

- 3.1. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER'S) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
- 3.2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATINGS IN ACCORDANCE WITH AWS D1.1. CROWN CASTLE'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
- 3.3. CROWN CASTLE'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE ADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

## 4. HOT-DIP GALVANIZING

- 4.1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
- 4.2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES WITH EOR APPROVAL OF THE TESTING AGENCY.
- 4.3. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

## 5. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER

- 5.1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY CROWN CASTLE, CROWN CASTLE WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
  - 5.2. ANY FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE EXISTING GALVANIZED STEEL POLE STRUCTURE AND THE WELDED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT CROWN CASTLE REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.
  - 5.3. CROWN CASTLE SHALL REFER TO ANSIS/AE-222-G-2-2009, SECTION 14 AND ANNEX J FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY CROWN CASTLE BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. THE EOR RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT. ACCORDING TO ANSIS/AE-222-G-2-2009 SECTION 14.2.1 IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS.
- ## 6. FIELD NDE MINIMUM REQUIREMENTS
- 6.1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
  - 6.2. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
  - 6.3. FOR NEW PLATE PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
  - 6.4. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033 "TOWER BASE PLATE NDE, AND ENG-BUL-10051: NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE". NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
  - 6.5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.
- ## 7. FOUNDATION WORK
- 7.1. THE CONTRACTOR SHALL PROTECT THE EXISTING MONOPOLE STRUCTURE, AS WELL AS ANY OTHER NEARBY EXISTING FOUNDATIONS FOR OTHER STRUCTURES OR EQUIPMENT, FROM LOSS OF SOIL AROUND AND/OR BENEATH FOOTINGS DURING ANY EXCAVATION. THE CONTRACTOR SHALL BRACE THE SITES OF THE OPEN EXCAVATION AS REQUIRED.
  - 7.2. THE EFFECT OF ADDITIONAL EXCAVATION FOR FOUNDATION AUGMENTATION AND REINFORCING, WHERE REQUIRED, MAY HAVE IMPACT ON EXISTING EQUIPMENT AND/OR OTHER EXISTING STRUCTURES NEAR THE EXCAVATION. THE EOR HAS NOT BEEN PROVIDED WITH ANY SPECIFIC INFORMATION OR DETAILS REGARDING EXISTING EQUIPMENT OR OTHER EXISTING STRUCTURES ON THE SITE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE EFFECT THAT ANY EXCAVATION WORK HAS ON EXISTING NEARBY EQUIPMENT AND/OR STRUCTURES. CONTRACTOR SHALL COORDINATE THIS SITE-SPECIFIC INFORMATION WITH CROWN CASTLE AND THE TESTING AGENCY PRIOR TO CONSTRUCTION AND FOUNDATION WORK. AFTER OBTAINING THE PRIOR WRITTEN PERMISSION OF CROWN CASTLE, THE CONTRACTOR SHALL ADEQUATELY BRACE, SHORE, AND/OR RELOCATE THE INTERFERING EXISTING NEARBY EQUIPMENT AND/OR STRUCTURES AS NECESSARY.
  - 7.3. FOUNDATION CONDUIT NOTE: "IF, DURING THE COURSE OF A FOUNDATION MODIFICATION, THE GC ENCOUNTERS EXISTING CONDUIT LOCATED WITHIN THE CONFINES OF THE EXISTING OR PROPOSED FOUNDATION CONCRETE AND THIS CONDUIT IS NOT IN A LOCATION THAT IS SPECIFIED WITHIN THESE DESIGN DRAWINGS, THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE BEFORE PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS. IF CONDUIT IS THEN INSTALLED THROUGH THE EXISTING FOUNDATION OR PROPOSED FOUNDATION MODIFICATION AND HASN'T BEEN SPECIFIED WITHIN THESE DESIGN DRAWINGS THEN THE GC SHALL IMMEDIATELY CONTACT THE EOR FOR GUIDANCE PRIOR TO PROCEEDING WITH THE INSTALLATION OF THE PROPOSED FOUNDATION MODIFICATIONS."
- ## 8. CAST-IN-PLACE CONCRETE
- 8.1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS. WATER CEMENT RATIO = 0.45 (MAXIMUM).
  - 8.2. CONCRETE EXPOSED TO WEATHER SHALL BE AIR ENTRAINED (8% +/- 1.5%).
  - 8.3. ALL REINFORCING STEEL SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60.
  - 8.4. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318, LATEST EDITION. CONTRACTOR SHALL FOLLOW ALL APPLICABLE ACI PROCEDURES FOR COLD WEATHER AND HOT WEATHER CONCRETE PLACEMENT.
  - 8.5. ALL REINFORCING DETAILS SHALL CONFORM TO "DETAILS AND DETAILING OF CONCRETE REINFORCING" ACI 315, LATEST EDITION, UNLESS DETAILED OTHERWISE ON THE DRAWINGS.
  - 8.6. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL OPENINGS, SLEEVES, ANCHOR RODS, INSERTS, ETC., AS REQUIRED BEFORE CONCRETE IS PLACED.
  - 8.7. WHERE BAR LENGTHS ARE GIVEN ON THE DRAWINGS, THE LENGTH OF ANY HOOK, IF REQUIRED, IS NOT INCLUDED.
  - 8.8. CONTRACTOR SHALL PROVIDE SPACERS, CHAIRS, BOLSTERS, ETC., NECESSARY TO SUPPORT REINFORCING STEEL. CHAIRS WHICH BEAR ON EXPOSED CONCRETE SURFACES SHALL HAVE ENDS WHICH ARE PLASTIC TIPPED OR STAINLESS STEEL.
  - 8.9. ALL STRUCTURAL MEMBERS SHALL BE POURED MONOLITHICALLY, EXCEPT FOR REQUIRED CONSTRUCTION JOINTS. CONTRACTOR SHALL SUBMIT PROPOSED CONSTRUCTION JOINT LOCATIONS AND DETAILS TO THE EOR FOR REVIEW.
  - 8.10. CONTRACTOR SHALL PROVIDE 1/4-INCH CHAMFER ON ALL EXPOSED CORNERS UNLESS OTHERWISE INDICATED ON THE DRAWINGS. MINIMUM CLEARANCES FOR REINFORCING STEEL SHALL BE MAINTAINED AS SPECIFIED BY ACI.
  - 8.11. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT:
    - 3" ..... CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.
    - 2" ..... CONCRETE EXPOSED TO EARTH OR WEATHER, #6 THROUGH #18 BARS.
    - 1 1/2" ..... CONCRETE EXPOSED TO EARTH OR WEATHER, #5 BAR AND SMALLER.
  - 8.12. FOOTING BARS SHALL BE BENT 1'-0" AROUND CORNERS, OR PROVIDE CORNER BARS WITH A 2'-0" LAP ON EACH LEG.
  - 8.13. TESTING LABORATORY SHALL SUBMIT ONE COPY OF ALL CONCRETE TEST REPORTS DIRECTLY TO THE EOR.
  - 8.14. CONTRACTOR SHALL KEEP A COPY OF "FIELD REFERENCE MANUAL" (ACI PUBLICATION SP-15, LATEST EDITION) AT THE PROJECT FIELD OFFICE.
  - 8.15. FLY ASH SHALL BE PERMITTED. FLY ASH CONTENT SHALL BE A MAXIMUM OF 25% OF CEMENT WEIGHT.

## 9. EPOXY GROUTED REINFORCING ANCHOR RODS - (NOT REQUIRED)

## 10. BASE PLATE GROUT REMOVAL - (NOT REQUIRED)

## 11. BASE PLATE GROUT - (NOT REQUIRED)

NEXTGEN  
SERVICES GROUP

AS-BUILT

Changed as noted

Dated 9-18-2020

Signed Dan Hughes

PASSING MI

Tuesday, September 29, 2020

Kevin Arnett, P.E., C.W.I.

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**PJF PAUL J. FORD & COMPANY**  
250 E Broad St, Ste 600 Columbus, OH 43215  
Phone 614.221.6679 www.pauljford.com

**CROWN CASTLE**  
9530 TORNINGDON WAY SUITE 300 CHARLOTTE, NC 28277  
PH: (704) 416-2000

BU #876406; NE OLD LYME-OLD LYME

FIREHOUSE

OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

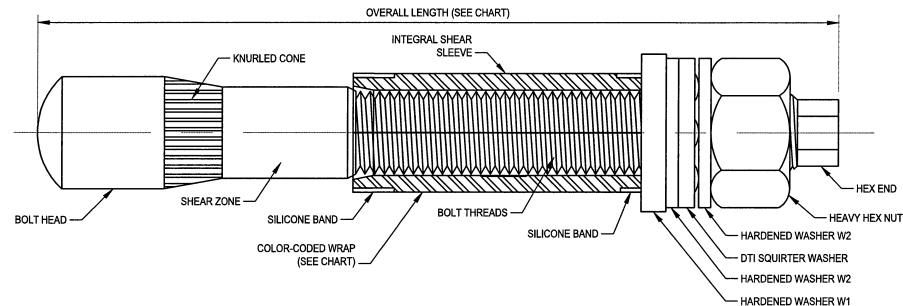
GENERAL NOTES

N-1

MAR 25 2019

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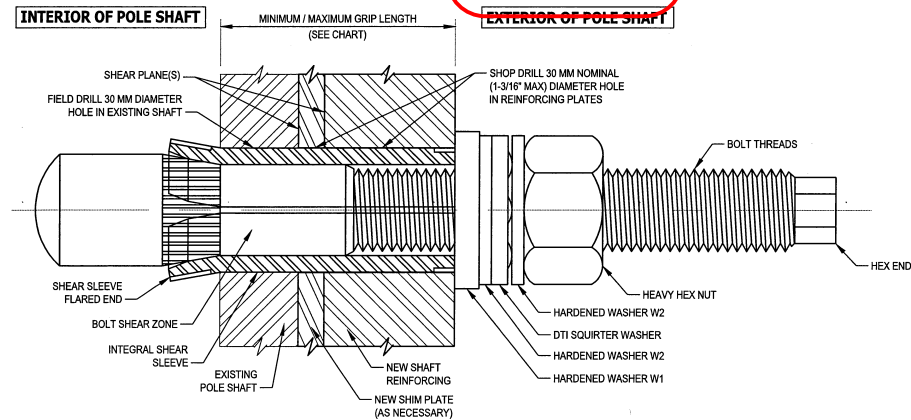




## PRE-INSTALLED FORGBolt® ASSEMBLY DETAIL 1 B-1

**NEXTGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



## INSTALLED FORGBolt® ASSEMBLY DETAIL 2 B-1

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

FORGBolt®		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)				
GROUP A	FORGBolt® Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt® A325 - PC8.8	1 135	5.31	1.3	3/8" to 1"	--	RED
	2 160	6.30	1.6	3/4" to 1-1/2"	--	GREEN
	3 195	7.68	1.9	1-1/4" to 2-1/4"	--	BLUE
	4 260	10.24	2.6	2" to 3-1/2"	Splice Bolt	YELLOW
	5 365	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	ORANGE
	6 440	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	BLACK
DTI Note	Each Group A (A325/PC8.8) FORGBolt® assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

### FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

#### INSTALLATION NOTES:

1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

#### BOLT HOLE NOTES:

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

#### BOLT TIGHTENING AND INSPECTION NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', AUG. 1, 2014.
2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', AUG. 1, 2014.

**AISC GROUP A MATERIAL: ASTM A325 AND PC8.8**  
**(Fu = 120 KSI MIN TENSILE STRESS)**

**CONTAINS PROPRIETARY INFORMATION**  
**U.S. PATENT NUMBER 9,562,558 B2**

#### DISTRIBUTOR CONTACT:

PRECISION TOWER PRODUCTS  
PHONE: 888-926-4857  
EMAIL: info@precisiontowerproducts.com  
WEB: www.precisiontowerproducts.com



MAR 25 2019

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BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

FORGBolt®  
DETAILS

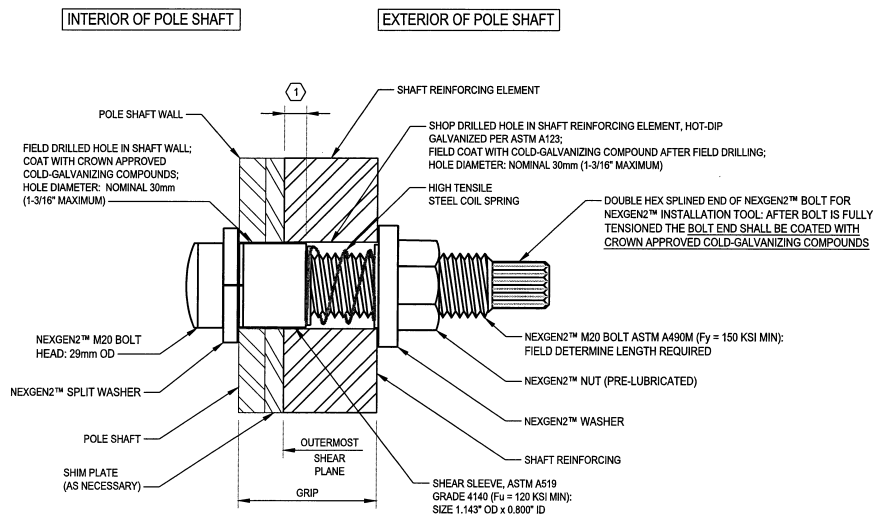
B-1





AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

- ① NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING NEXGEN2™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL NEXGEN2™ BOLT DETAIL ①  
B-2

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

# **FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION**

## **BOLT HOLE NOTES:**

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

## **BOLT TIGHTENING AND INSPECTION NOTES:**

1. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.3: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITHOUT SEVERING THE SPLINED END AND WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 6.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL NEXGEN2™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL NEXGEN2™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE NEXGEN2™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DOUBLE HEX SPLINED END OF THE BOLTS HAVE BEEN TWISTED OFF AND COATED WITH CROWN APPROVED COLD-GALVANIZING COMPOUND..

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2032	M20x75	1/2"	5/8"	1 3/8"
2NG2036	M20x95	11/16"	15/16"	1 7/16"
2NG2048	M20x95	1 3/16"	1 7/16"	1 7/8"
2NG2057	M20x95	1 5/8"	1 7/8"	2 1/4"
2NG2068	M20x135	2"	2 1/4"	2 11/16"
2NG2096	M20x135	2 7/16"	2 11/16"	3 3/4"
2NG2127	M20x175	3"	3 3/4"	5"
2NG2212	M20x250	4"	5"	8 5/16"

**NOTE: NEXGEN2™ BOLT ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AND MANUFACTURER SPECIFICATIONS.**

**NOTE: INSTALL NEXGEN2™ BOLT ASSEMBLY PER MANUFACTURER'S INSTRUCTIONS.**

## **DISTRIBUTOR CONTACT DETAILS:**

ALLFASTENERS  
959 LAKE ROAD  
MEDINA, OHIO, USA 44256  
PHONE: 440-232-6060  
FAX 440-232-6062  
WEBSITES: [WWW.ALLFASTENERS.COM](http://WWW.ALLFASTENERS.COM)  
[WWW.AFTOWER.COM](http://WWW.AFTOWER.COM)



MAR 25 2019

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**PJF PAUL J. FORD & COMPANY**  
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**CROWN CASTLE**  
3530 TORMINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
PH (704) 416-2000

**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

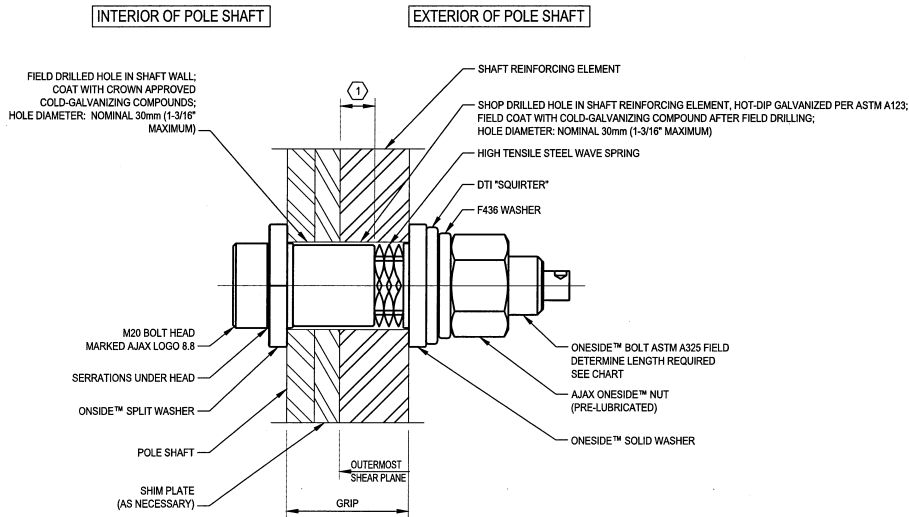
PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**NEXGEN2™ BOLT DETAIL**

**B-2**



- ① NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING AJAX ONESIDE™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL AJAX ONESIDE™ BOLT DETAIL 1  
B-3

**NEXTOGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

# **FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION**

## **BOLT HOLE NOTES:**

1. ALL SHOP-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM SHOP-DRILLED HOLE DIAMETER PERMITTED IS 1-3/16".
2. ALL FIELD-DRILLED HOLES SHALL BE NOMINAL 30 MM DIAMETER. THE MAXIMUM FIELD-DRILLED HOLE DIAMETER PERMITTED IS 30 MM.

## **BOLT TIGHTENING AND INSPECTION NOTES:**

1. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.4: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 8.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL AJAX ONESIDE™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL AJAX ONESIDE™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX ONESIDE™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DIRECT TENSION INDICATOR WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED.
4. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX ONESIDE™/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
5. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: MODIFICATION INSPECTION SOW.

## **BOLT ASSEMBLY AND INSTALLATION:**

1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

## **AJAX ONESIDE™ BOLT DETAIL**

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.85-8	M20 x 85	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MT0	121.0 / 211.0	4.724" / 8.310"

## **DISTRIBUTOR**

IRA SVENSGAARD AND ASSOCIATES  
PETER SVENDSGAARD - PETERS@IRASVENS.COM  
JOHN KILLAM - JOHN@IRASVENS.COM  
PHONE: (530) 647-8225  
FAX: (530) 647-8229

## **MANUFACTURER**

AJAX FASTENERS  
SALES + TECH: ONESIDE@AJAXFAST.COM.AU



MAR 25 2019

REV DATE DESCRIPTION

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**BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
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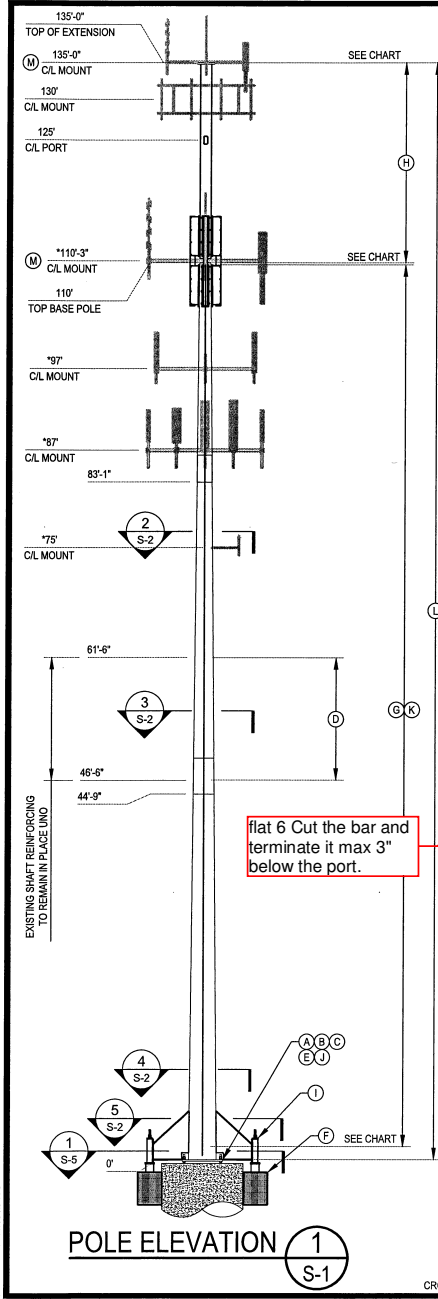
PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**AJAX ONESIDE™  
BOLT DETAIL**

**B-3**



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TOWER MODIFICATION SCHEDULE			
	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
A	0'	REMOVE EXISTING POST INSTALLED ANCHOR RODS AS REQUIRED	S-5
B	0'	REMOVE AND REPLACE EXISTING BASE PLATE STIFFENERS	S-5 & S-6
C	0'	INSTALL NEW DOUBLER PLATES	S-5 & S-7
D	46'-6" TO 61'-6"	REMOVE EXISTING SHAFT REINFORCING ON FLATS 2, 8 AND 14. SEE REMOVAL CHART ON THIS SHEET	S-2
E	0'	TEMPORARILY REMOVE ICE BRIDGES AS REQUIRED FOR SHAFT REINFORCING INSTALL	S-4
F	0'	INSTALL NEW CONCRETE GRADE BEAMS	S-10
G	1'-7" TO 109'-9"	INSTALL NEW SHAFT REINFORCING	S-1 TO S-3
H	110' TO 135'-0"	INSTALL NEW POLE EXTENSION	S-12 TO S-14
I	0'	INSTALL NEW ROCK ANCHORS AND BRACKETS	S-8 TO S-11
J	0'	INSTALL NEW TRANSITION STIFFENERS W BEARING PLATES	S-6
K	1'-7" TO 109'-9"	REMOVE AND REPLACE STEP BOLTS AS REQUIRED FOR INSTALLATION OF NEW SHAFT REINFORCING. SEE CROWN DOCUMENT CED-CAT-10300 FOR STEP BOLT ATTACHMENT DETAILS.	S-1
L	0' TO 135'-0"	INSTALL NEW SAFETY CLIMB THAT EXTENDS THE ENTIRE HEIGHT OF THE POLE. COORDINATE WITH TUF-TUG	S-1
M	135'-0"	ANTENNAS, COAX AT 110' TO BE RELOCATED TO 135'. COORDINATE WITH CROWN CASTLE	S-1

NOTE: SHAFT REINFORCING MAY NEED TO BE INSTALLED OFF-CENTER OF FLAT FOR FIT UP. OFFSETS THAT RESULT IN THE FASTENER BEING LOCATED LESS THAN 1 1/2" FROM THE APEX OF THE FLAT MUST BE APPROVED BY THE ENGINEER OF RECORD.

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE													
BOTTOM ELEVATION	TOP ELEVATION	ELEMENT	FLAT # / DEGREE SEPARATION	ELEMENT LENGTH	ELEMENT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	APPROXIMATE BOLTS PER ELEMENT	STEEL WEIGHT PER PLATE	APPROXIMATE TOTAL BOLT QUANTITY	ESTIMATED TOTAL STEEL WEIGHT	NOTES
1'-7"	35'-6"	CFP-08512533.92#1	F6 & F18	33'-11"	2	17	17	17"	51	1226 LBS.	102	2452 LBS.	SHAFT REINFORCING
1'-7"	35'-6"	WCFF-08512533.92#2	F2	33'-11"	1	0	17	17"	32	1226 LBS.	32	1226 LBS.	SHAFT REINFORCING
4'-9"	35'-6"	WCFF-08512530.75#2	F8	30'-9"	1	0	17	17"	33	1112 LBS.	33	1112 LBS.	SHAFT REINFORCING
11'-6"	35'-6"	CFP-08512524#3	F12 & F14	24'-0"	2	17	17	17"	44	868 LBS.	88	1736 LBS.	SHAFT REINFORCING
35'-7"	70'-7"	CCIAFP-08512535	F6, F12, F18	35'-0"	3	17	17	17"	52	1256 LBS.	156	3795 LBS.	SHAFT REINFORCING
35'-7"	70'-7"	CFP-08512535#4	F2, F8 & F14	35'-0"	3	17	17	17"	52	1256 LBS.	156	3795 LBS.	SHAFT REINFORCING
70'-8"	77'-3"	CFP-08512565#5	F6, F12 & F18	6'-7"	3	11	11	19"	22	182 LBS.	66	546 LBS.	SHAFT REINFORCING
70'-8"	95'-8"	CFP-08512525#6	F2, F8 & F14	25'-0"	3	19	19	17"	48	904 LBS.	144	2712 LBS.	SHAFT REINFORCING
95'-9"	109'-9"	CFP-08512514#7	F2, F8 & F14	14'-0"	3	14	19	19"	36	387 LBS.	108	1161 LBS.	SHAFT REINFORCING
										865	18635 LBS.		

NOTES:

- 1) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS, DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
  - 2) ALL REINFORCING SHALL BE ASTM A672 GR. 65.
  - 3) WELDS SHALL BE E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.
  - 4) HOLES FOR BOLTS ARE 30mm UNLESS NOTED OTHERWISE.
  - 5) ALL SHIMS SHALL BE ASTM A36.
  - 6) ALL HOLES ARE TO BE DRILLED, DO NOT BURN OR PUNCH.
  - 7) FOR PLATES STARTING AT 9', THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 8' ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPICED TOGETHER, THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT THE PROPOSED ELEVATION ± 3". FOR BOTTOM OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE PLATE
- \* FOR JUMP PLATES, TERMINATION BOLTS LISTED ARE INCLUDED IN TERMINATION BOLTS FOR SHAFT REINFORCING

\* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

SPICE PLATE INSTALLATION CHART						
BOTTOM ELEVATION	TOP ELEVATION	CCI PART # / DIMENSIONS	QUANTITY	QUANTITY OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QUANTITY	TOTAL STEEL WEIGHT
31'-0"	40'-1"	CCI-SP-085125-17-17	6	34	204	1988 LBS.
66'-1"	73'-8"	CCI-SP-085125-11-17	3	28	84	630 LBS.
66'-1"	75'-8"	CSP-085125-17-19	3	36	108	1038 LBS.
90'-8"	99'-6"	CSP-085125-14-19	3	33	99	732 LBS.

\* NUMBER OF ADDITIONAL BOLTS WHEN SPICING INTO EXISTING FLAT PLATES

ASTM A36 SHIMS FOR MONOPOLE REINFORCEMENT MEMBERS SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESSES SHALL BE NO LESS THAN 1/16". SHIMS THICKER THAN 1/4" SHALL BE SHOP WELDED TO THE NEW SHAFT REINFORCING WITH 5/16" FILLET WELDS. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT ENGINEER OF RECORD APPROVAL.

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

MANUFACTURER POLE SPECIFICATIONS

TAPER	0.232449 IN/FT
BASE PLATE STEEL	ASTM A572 GRADE 60 (60 KSI)
ANCHOR RODS	2 1/4" ASTM 615 GRADE 75
FLANGE PLATE STEEL	NA
FLANGE BOLTS	NA

SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (FT)	DIAMETER ACROSS FLATS (IN)		POLE GRADE (ksi)	POLE SHAPE
				@ TOP	@ BOTTOM		
1	26.92	0.1875	3.33	16.000	22.330	65	18-SIDED
2	41.63	0.2500	4.42	21.172	30.840	65	18-SIDED
3	49.20	0.3125		29.314	40.750	65	18-SIDED

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PRIOR TO FABRICATION AND INSTALLATION CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

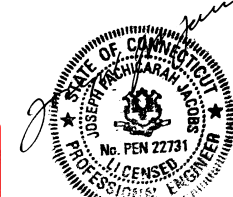
\*FOR PARTS NOT DETAILED WITHIN THE DRAWING AND STARTING WITH "CCI", SEE CATALOG FOR DETAILS: CED-CAT-10300, MONOPOLE STANDARD DRAWINGS AND APPROVED REINFORCEMENT COMPONENTS

**NEXTGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed Dan Hughes

REMOVAL CHART

TYPE OF MODIFICATION	FLAT	START ELEVATION	END ELEVATION
SHAFT REINFORCING	2, 8, 14	46'-6"	61'-6"



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BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

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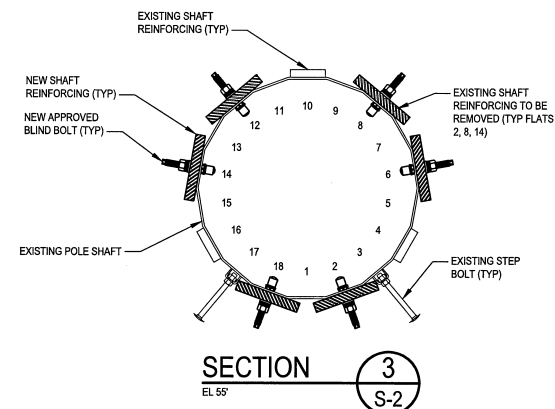
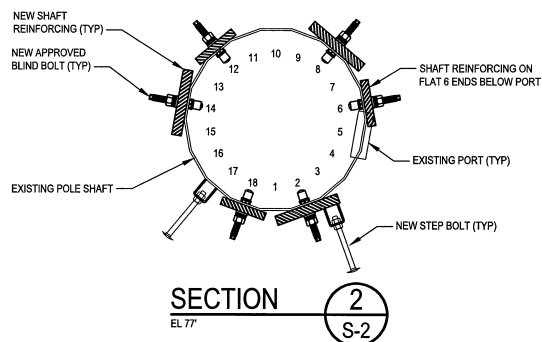
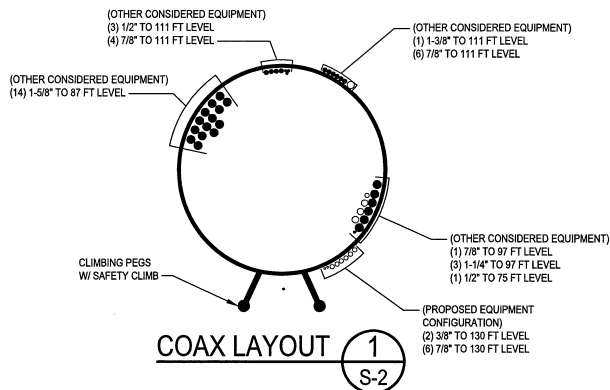
MONOPOLE  
PROFILE

S-1

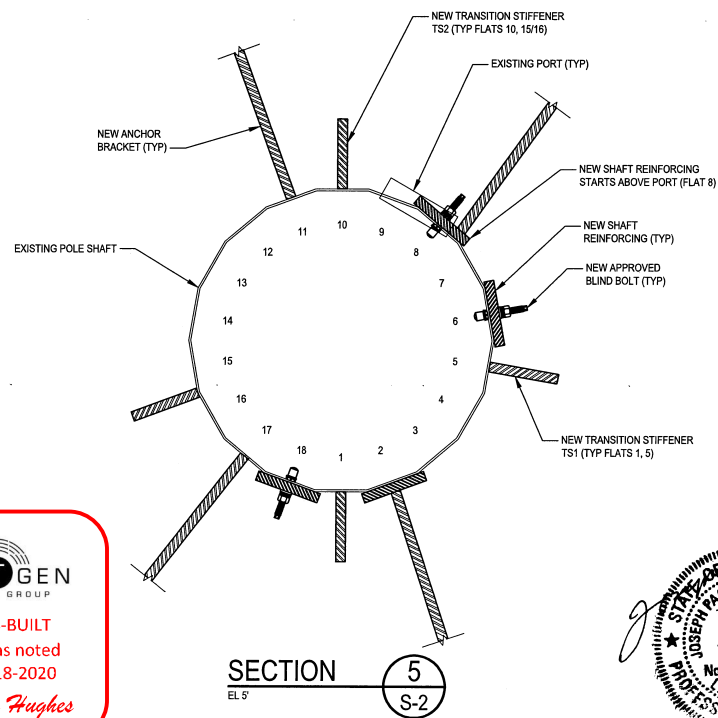
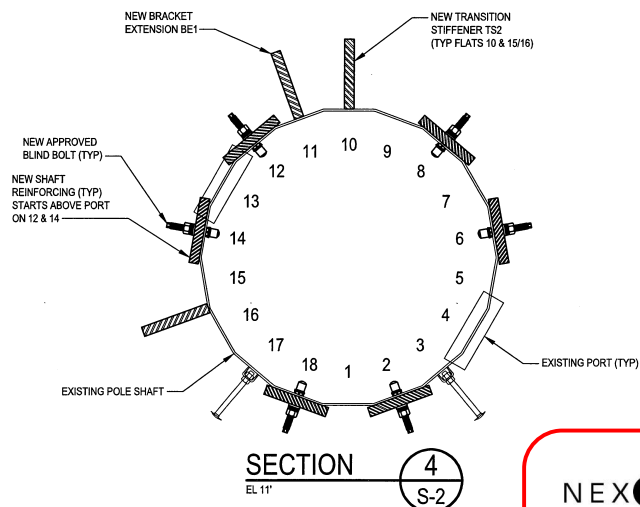
CROWN CASTLE US PATENT NOS 8,046,972; 8,156,712; 7,849,659; 8,424,269 AND PATENT PENDING

REV DATE DESCRIPTION



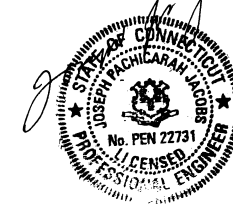


NOTE:  
EXISTING STEP BOLTS AND STEP  
BOLT CLIPS THAT ARE REMOVED  
SHALL NOT BE REUSED



**NEX T GEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



MAR 25 2019

REV	DATE	DESCRIPTION
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**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**MONOPOLE SECTIONS & DETAILS**

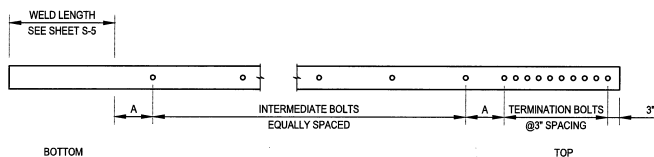
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**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**



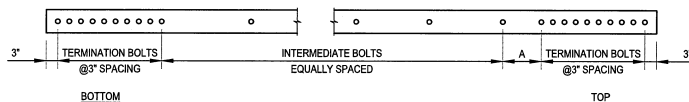


AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



### CUSTOM WELDED FLAT PLATE DETAIL

NOTE: "A" DIMENSION MAY VARY, NOT TO EXCEED MAXIMUM INTERMEDIATE BOLT SPACING

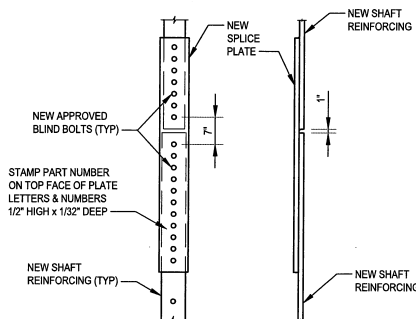


### CUSTOM BOLTED FLAT PLATE DETAIL

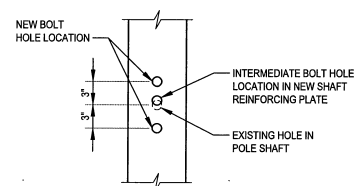
NOTE: "A" DIMENSION MAY VARY, NOT TO EXCEED MAXIMUM INTERMEDIATE BOLT SPACING

CFP-065 125 20  
WIDTH (E.G.: 6.5")  
THICKNESS (E.G.: 1.25")  
LENGTH (E.G.: 20")

### CUSTOM FLAT PLATE PART NUMBER BREAKDOWN

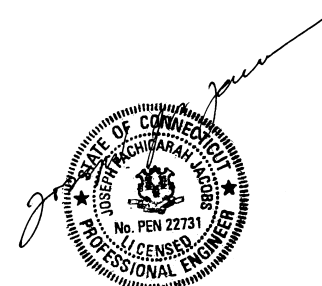


### SPLICE DETAIL



### INTERMEDIATE BOLT HOLE FIX

NTS



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250 E Broad St, Ste 400 Columbus, OH 43215  
Phone 614-221-6679  
www.pauljford.com

**CROWN CASTLE**  
3530 TORRINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
PH: (704) 416-2000

BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

MONOPOLE  
SECTIONS &  
DETAILS

S-3

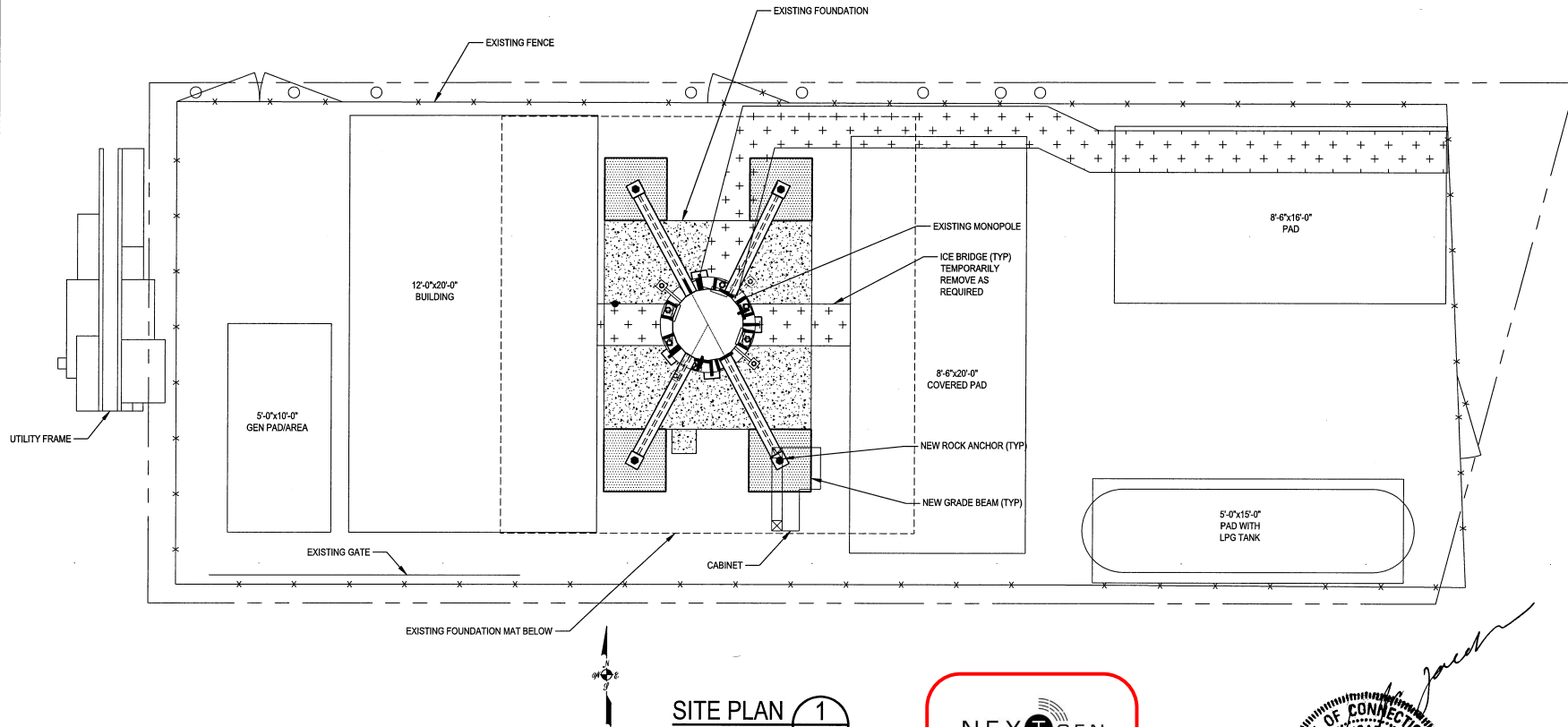
PASSING MI  
Tuesday, September 29, 2020  
Kevin Arnett, P.E., C.W.I.

MAR 25 2019

REV	DATE	DESCRIPTION



SITE COORDINATION REQUIRED: PRIOR TO CONSTRUCTION CONTRACTOR SHALL COORDINATE AND FIELD VERIFY LOCATION OF REQUIRED NEW FOUNDATION RELATIVE TO EXISTING SITE EQUIPMENT AND CONSTRAINTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE MEANS AND METHODS OF SHORING AND/OR RELOCATION OF GROUND BASED EQUIPMENT THAT WILL BE AFFECTED BY THE PROPOSED ENVELOPE OF THE CURRENT FOUNDATION MOD DESIGN. PLEASE CONTACT THE EOR IF DESIGN INPUT OR NECESSARY CHANGES TO THE DESIGN ARE NEEDED. IF THE DESIGN IS FEASIBLE, BUT THE CONTRACTOR HAS A PREFERENCE TO INSTALL A DIFFERENT OPTION TO ACCOMMODATE ALTERNATE TECHNIQUES OR SUBCONTRACTOR LIMITATIONS - IT IS EXPECTED THAT THESE ISSUES WILL BE ADDRESSED AT THE TIME OF BIDDING. ANY CHANGES TO ORIGINAL DESIGN WILL REQUIRE FURTHER ENGINEERING - CONTRACTOR IS EXPECTED TO BUDGET ACCORDINGLY.



SITE PLAN 1  
S-4

CONTRACTOR TO VERIFY THE LOCATION OF BURIED CONDUIT AND CONFIRM THE CONDUIT WILL NOT CONFLICT WITH THE NEW ROCK ANCHORS/GRADE BEAM

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

**NEXT GEN**  
SERVICES GROUP  
AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



MAR 25 2019

REV	DATE	DESCRIPTION
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**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

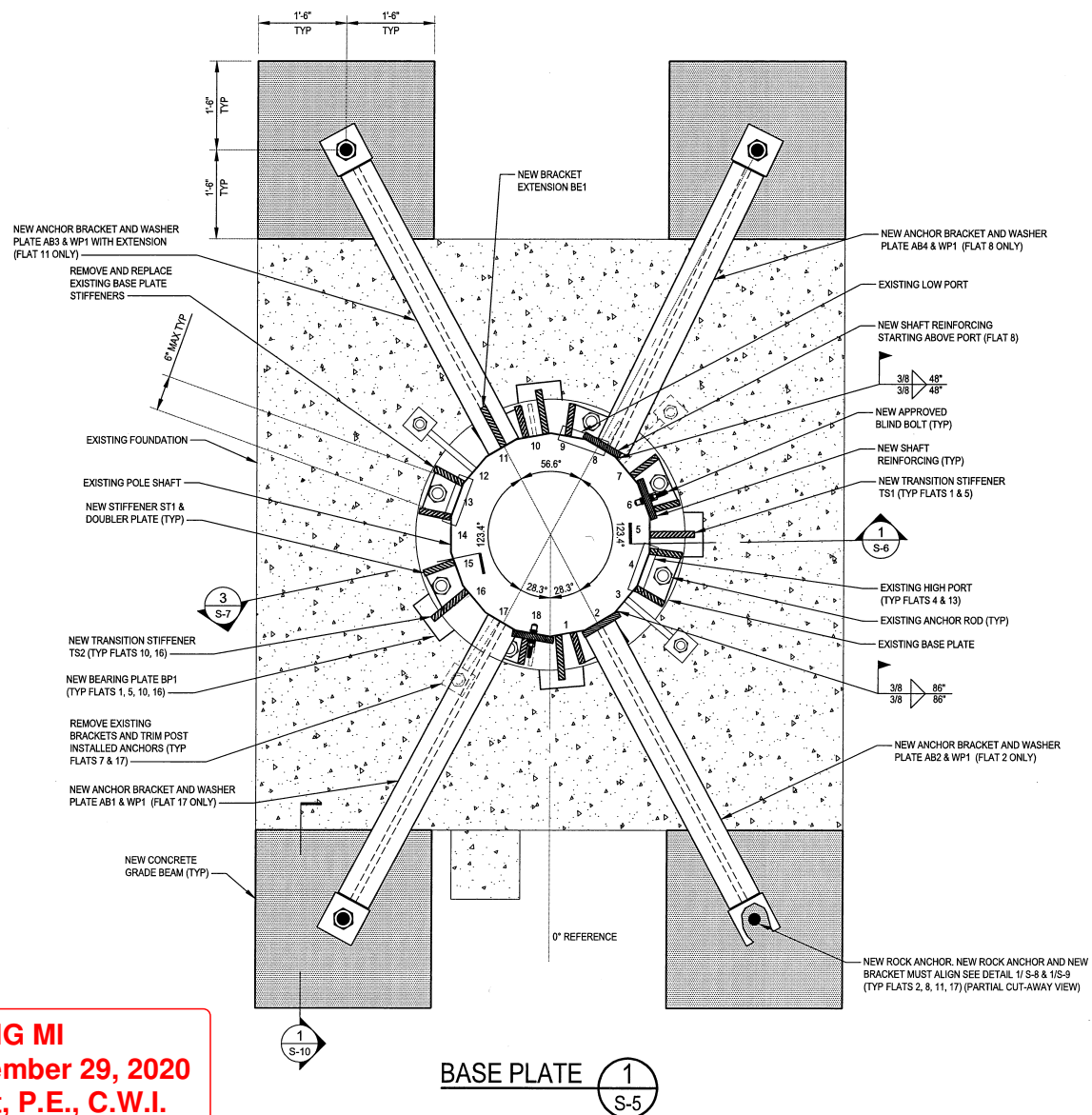
SITE PLAN

S-4



V:\0.375\0914.001.DWG

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**



**NEXOTEN**  
SERVICES GROUP  
**AS-BUILT**  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



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Columbus, OH 43215  
Phone 614.221.6679  
www.pauljford.com  
**CROWN CASTLE**  
3630 TORRINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
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**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

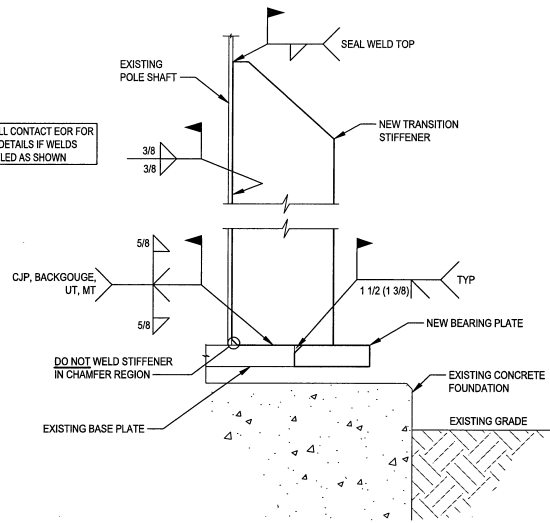
PROJECT No:	37519-0914.001.7700
DRAWN BY:	DC
DESIGNED BY:	UY
CHECKED BY:	BKK
DATE:	03-25-2019

**BASE PLATE DETAILS**

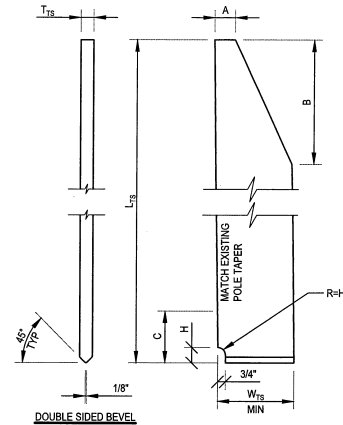
**S-5**



CONTRACTOR SHALL CONTACT EOR FOR  
ALTERNATE WELD DETAILS IF WELDS  
CANNOT BE INSTALLED AS SHOWN

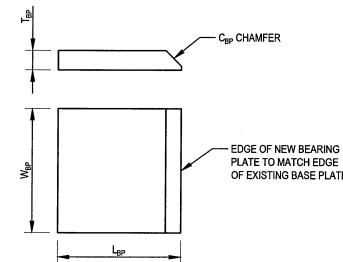


On flat 1 Stiffener  
Needed to make this  
a single sided bevel  
due to fit up issue



TRANSITION STIFFENER

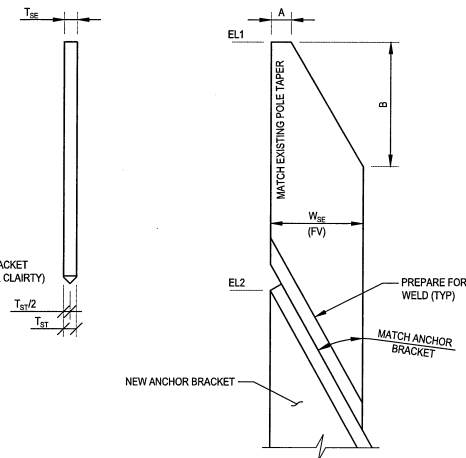
PART #	FLAT #	QTY	MAT'L SPEC	T <sub>TS</sub> (IN)	W <sub>TS</sub> (IN)	L <sub>TS</sub> (IN)	A (IN)	B (IN)	H (IN)
TS1	1, 5	2	ASTM A572 GR 65KSI	1 1/4	9	117	2	12	1 1/4
TS2	10, 16	2	ASTM A572 GR 65KSI	1 1/4	9	234	2	12	1 1/4



BEARING PLATE

PART #	FLAT #	QTY	MAT'L SPEC	T <sub>BP</sub> (IN)	W <sub>BP</sub> (IN)	L <sub>BP</sub> (IN)	C <sub>BP</sub> (IN)
BP1	1, 5, 10, 16	4	ASTM A572 GR 50 KSI	1 1/2	10	4	1 1/2

NEW ANCHOR BRACKET  
(NOT SHOWN FOR CLAIRTY)



BRACKET EXTENSION

PART #	FLAT #	QTY	MAT'L SPEC	T <sub>BE</sub> (IN)	W <sub>BE</sub> (IN)	A (IN)	B (IN)	EL1	EL2
BE1	11	1	ASTM A572 GR 65KSI	1 1/4	10	2	12	19'-6"	8'-3"



AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**



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**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
**OLD LYME, CONNECTICUT**  
**MODIFIED 110'-0" MONOPOLE**

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

TRANSITION  
STIFFENER  
DETAILS

**S-6**

REV	DATE	DESCRIPTION
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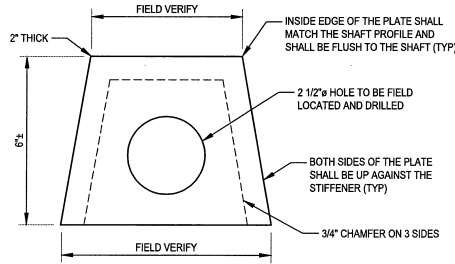
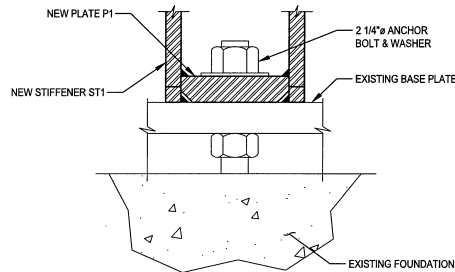
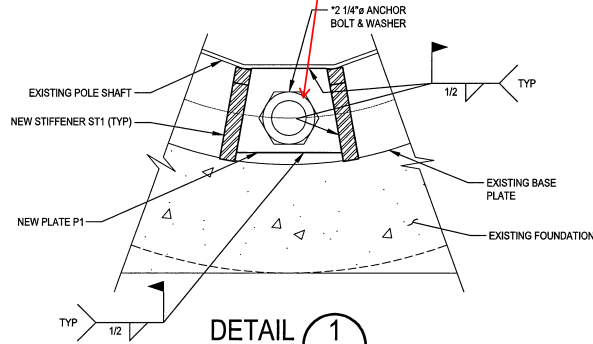
AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

Due to the addition of the Doublers Plate 2 nuts will not fit. Jam nuts used

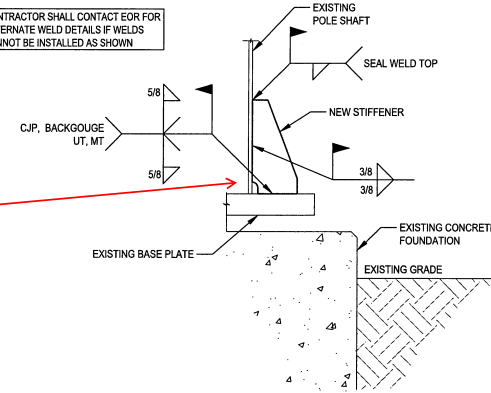


used a single side CJP for the Transition stiffeners Were needed

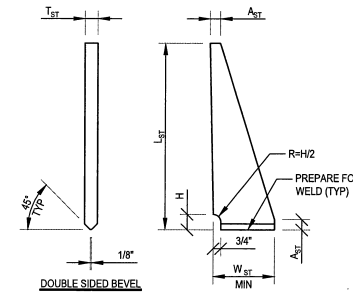
CONTRACTOR SHALL CONTACT EOR FOR ALTERNATE WELD DETAILS IF WELDS CANNOT BE INSTALLED AS SHOWN



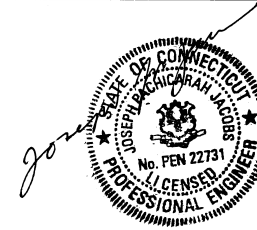
**DOUBLER PLATE MK~DP1**  
(8 REQUIRED) (Fy = 50 KSI)



**STIFFENER DETAIL 3 S-7**



STIFFENER								
PART #	FLAT #	QTY	MATL SPEC	T <sub>ST</sub> (IN)	W <sub>ST</sub> (IN)	L <sub>ST</sub> (IN)	A <sub>ST</sub> (IN)	H (IN)
ST1	1, 2, 3/4, 4/5, 6, 7, 8, 9, 10, 11, 12/13, 13/14, 15, 17, 18	15	ASTM A572 GR 65KSI	1 1/4	6 1/2	18	1	1 1/4



**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

REV	DATE	DESCRIPTION
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**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
**OLD LYME, CONNECTICUT**  
**MODIFIED 110'-0" MONOPOLE**

PROJECT No: 37519-0914.001.7700  
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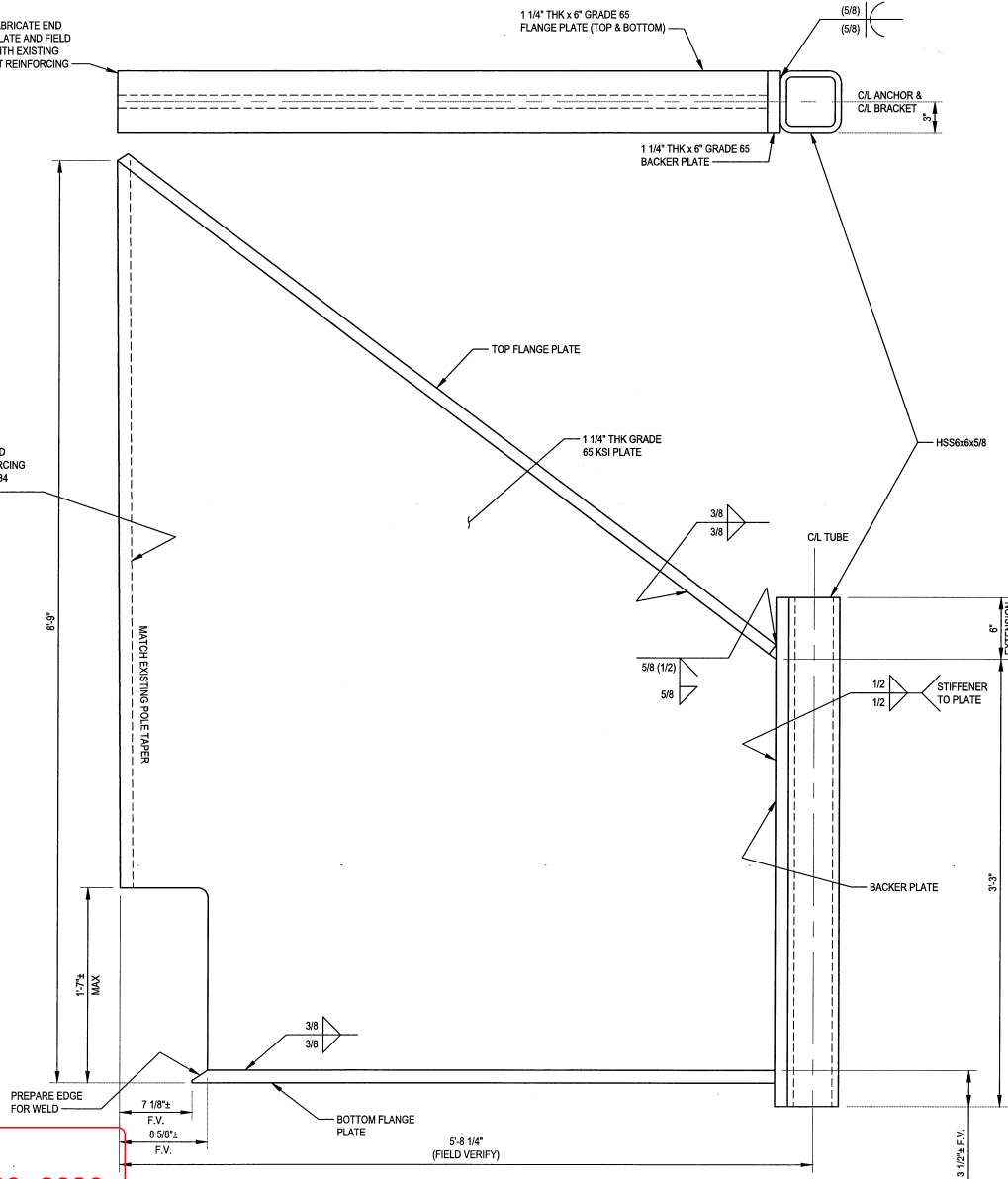
**DOUBLER PLATE DETAILS**

**S-7**



AS REQUIRED, SHOP FABRICATE END  
OF TOP AND BOTTOM PLATE AND FIELD  
NOTCH TO FIT FLUSH WITH EXISTING  
POLE SHAFT AND SHAFT REINFORCING

NOTCH AS REQUIRED  
FOR SHAFT REINFORCING  
(BRACKETS AB2 & AB4  
ONLY)



**ANCHOR BRACKET MK~AB1, AB2 & AB4**

(TUBE Fy = 50 KSI) (STIFFENER Fy = 65 KSI)

**NEXTOGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



MAR 25 2019

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FIREHOUSE**  
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MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**ANCHOR BRACKET  
DETAILS**

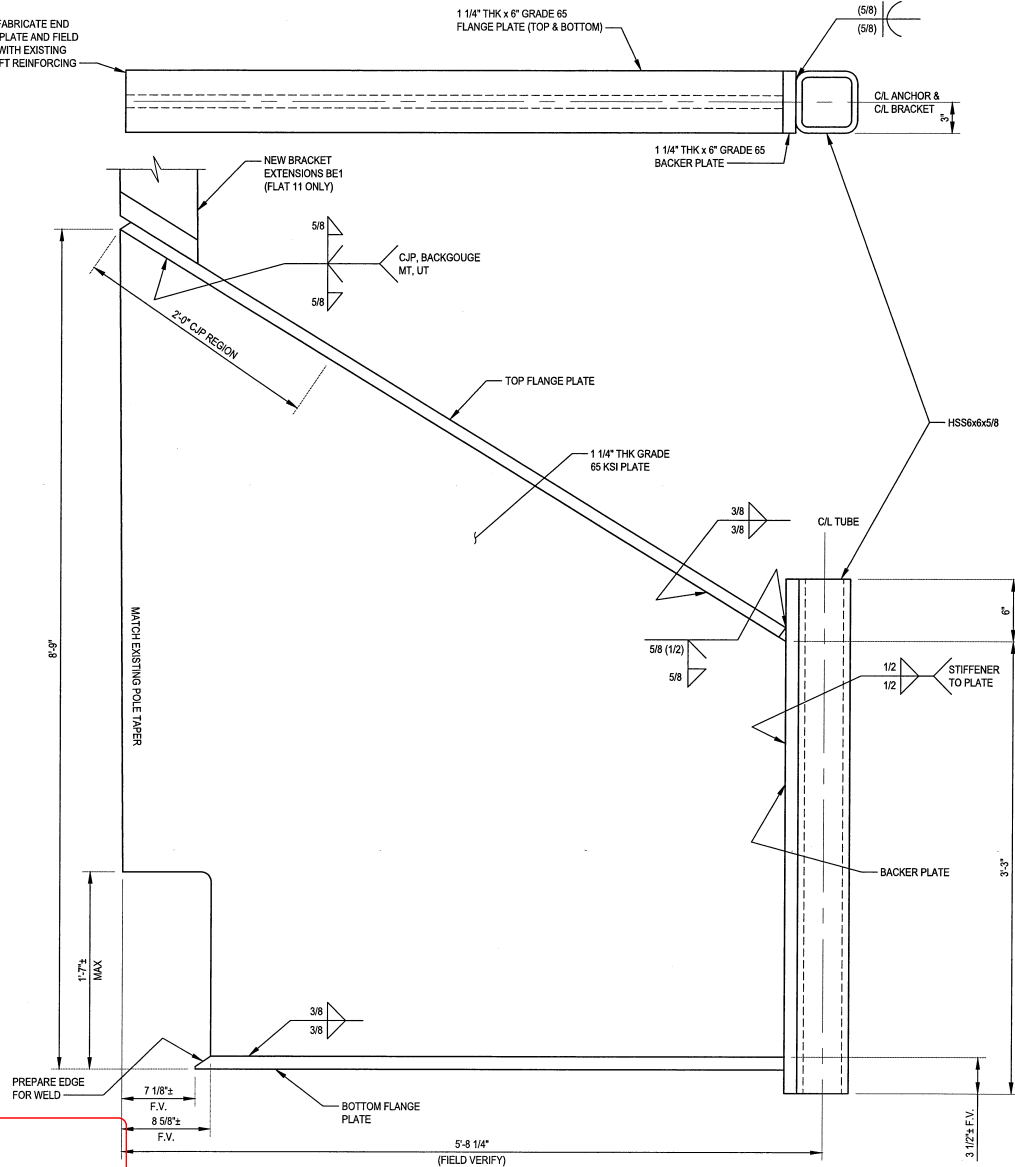
**S-8**

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

REV	DATE	DESCRIPTION
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AS REQUIRED, SHOP FABRICATE END OF TOP AND BOTTOM PLATE AND FIELD NOTCH TO FIT FLUSH WITH EXISTING POLE SHAFT AND SHAFT REINFORCING

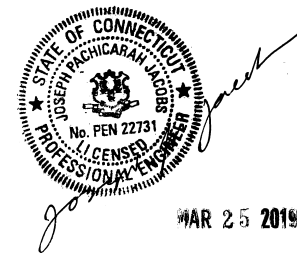


**ANCHOR BRACKET MK~AB3**

(1 REQUIRED) (TUBE Fy = 50 KSI) (STIFFENER Fy = 65 KSI)

**NEXTEGEN**  
SERVICES GROUP

AS-BUILT  
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Dated 9-18-2020  
Signed *Dan Hughes*



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3930 TORRINGTON WAY SUITE 300 CHARLOTTE, NC 28277  
PH: (724) 416-2000

**BU #876406; NE OLD LYME-OLD LYME FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**ANCHOR BRACKET DETAILS**

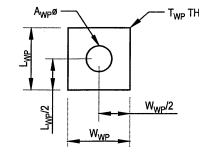
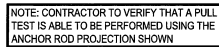
**S-9**

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

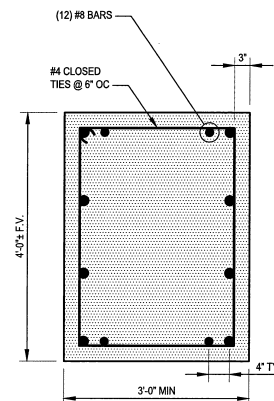
REV	DATE	DESCRIPTION
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V:\037519-0914.001.DWG





WASHER PLATE							
PART #	FLAT #	QTY	MAT'L SPEC	T <sub>WP</sub> (IN)	W <sub>WP</sub> (IN)	L <sub>WP</sub> (IN)	A <sub>WP</sub> (IN)
WP1	2, 8, 11, 17	4	ASTM A572 GR 50KSI	2 1/2	7 1/2	7 1/2	3 1/8
WP2	2, 8, 11, 17	4	ASTM A572 GR 50KSI	2 1/2	14	14	3 1/8



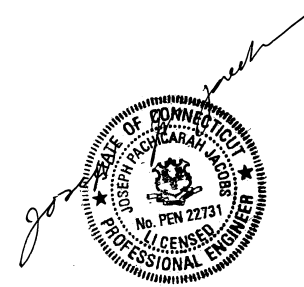
SECTION 2  
S-10

**NEXTGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

NEW BRACKET DETAIL 1  
S-10

**PASSING MI**  
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3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277  
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BU #876406; NE OLD LYME-OLD LYME  
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OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No:	37519-0914.001.7700
DRAWN BY:	DC
DESIGNED BY:	UY
CHECKED BY:	BKK
DATE:	03-25-2019

## GRADE BEAM DETAILS

S-10

V1.0 37519-0914.001.DWG

REV	DATE	DESCRIPTION
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\* THE DESIGN REQUIRES ROCK ANCHORS FOR THE LISTED CAPACITY IN TENSION AND THE PIPE SLEEVE IN COMPRESSION AS LAID OUT PER PLAN. THE CONTRACTOR/ROCK ANCHOR INSTALLER IS RESPONSIBLE FOR THE MEANS AND METHODS TO ENSURE THE NECESSARY CAPACITY AND WILL DEMONSTRATE THE INSTALLED CAPACITY PER THE SPECIFIED TESTING. THE EMBEDMENT DEPTH AND GROUT DIAMETER ARE LISTED AS A PRELIMINARY BASIS FOR BIDDING. THE INTENT IS FOR THE INSTALLER TO REVIEW THE CURRENT SOIL INFORMATION AND DESIGN REQUIREMENTS TO ENSURE THAT THE CONTRACTOR'S SPECIFIC EQUIPMENT OR INSTALLATION TECHNIQUE IS APPROPRIATE. IF THE CONTRACTOR BELIEVES THE SCOPE SHOULD CHANGE UPON REVIEW, PLEASE ADDRESS PRIOR TO BIDDING. PLEASE COORDINATE WITH ENGINEER OF RECORD PRIOR TO INSTALLATION.

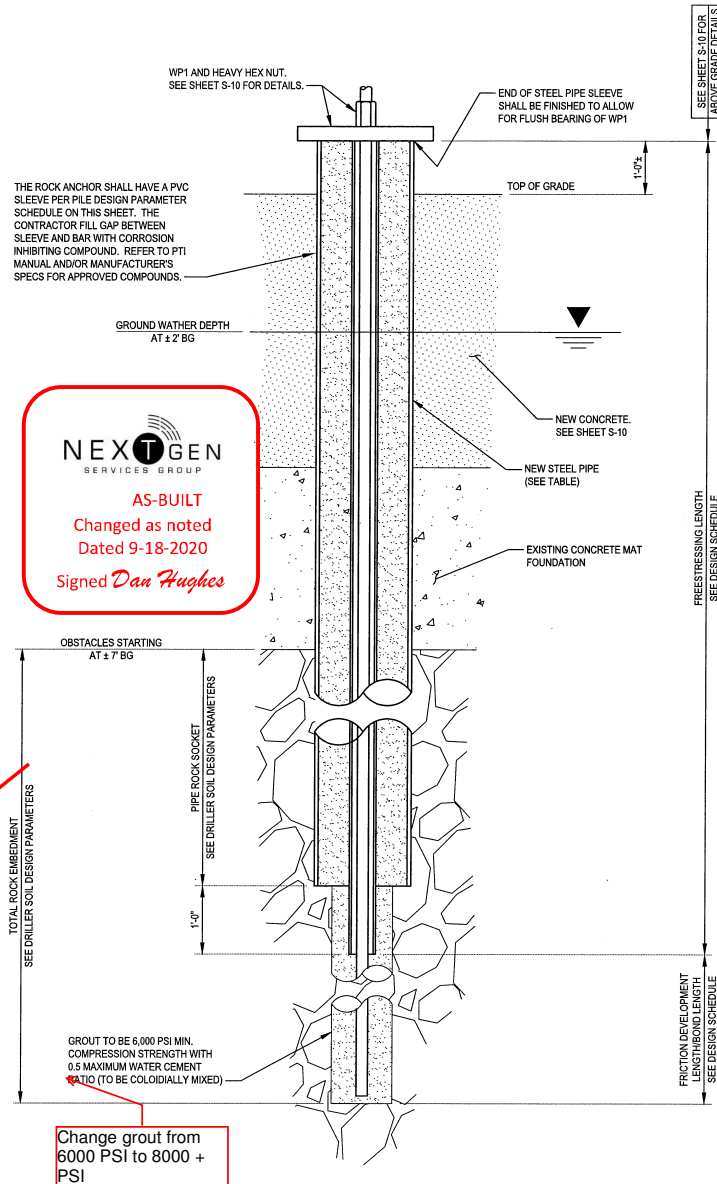
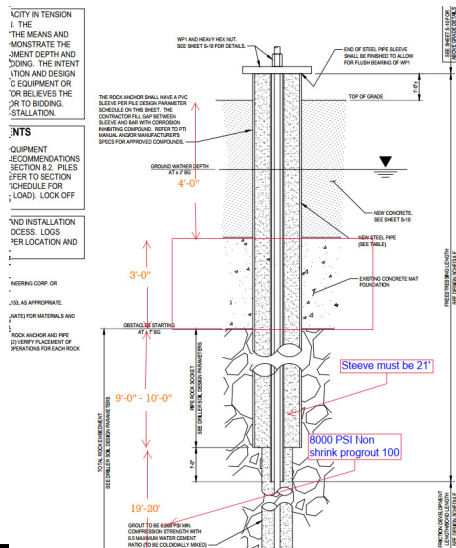
### ROCK ANCHOR TESTING REQUIREMENTS

ALL ROCK ANCHORS ARE TO BE TESTED IN TENSION. FOLLOW EQUIPMENT GUIDELINES DISCUSSED IN THE POST TENSIONING INSTITUTE "RECOMMENDATIONS FOR PRESTRESSED ROCK AND SOIL ANCHORS" DESIGN GUIDE, SECTION 8.2. PILES SHALL BE LOADED USING PTI'S PROOF TEST METHODOLOGY (REFER TO SECTION 8.3.3 OF THE PTI DESIGN GUIDE; SEE PILE DESIGN PARAMETER SCHEDULE FOR TENSION LOAD, ALIGNMENT LOAD, DESIGN LOAD AND LOCK OFF LOAD). LOCK OFF ANCHOR TO WASHER PLATE AT SPECIFIED LOCK OFF LOAD.

ROCK ANCHOR INSTALLER IS TO MAINTAIN DETAILED DRILLING AND INSTALLATION LOGS FOR REVIEW BEFORE TESTING AS A PART OF A QA/QC PROCESS. LOGS SHOULD SHOW SOIL CONDITIONS, AUGER SIZES, GROUT USED PER LOCATION AND FINAL EMBEDMENTS.

#### ROCK ANCHOR NOTES:

1. ALL BAR STEEL AND ASSOCIATED HARDWARE SHALL BE SUPPLIED BY WILLIAMS FORM ENGINEERING CORP. OR OWNER/EOC APPROVED EQUIVALENT.
2. ALL BAR, NUTS AND BEARING PLATES SHALL BE HOT-DIP GALVANIZED PER ASTM A123 OR A153, AS APPROPRIATE.
3. CONTACT WILLIAMS FORM ENGINEERING CORP. (OR MANUFACTURER OF APPROVED ALTERNATE) FOR MATERIALS AND INSTALLATION PROCEDURES AND RECOMMENDATIONS.
4. SPECIAL INSPECTION OF THE ROCK ANCHORS IS REQUIRED AS FOLLOWS: (1) VERIFY THAT ROCK ANCHOR AND PIPE MATERIAL, SIZE AND LENGTH COMPLY WITH THE INFORMATION SHOWN ON THIS DRAWING, (2) VERIFY PLACEMENT OF EACH ROCK ANCHOR, (3) OBSERVE DRILLING, GROUTING AND TESTING (AS APPROPRIATE) OPERATIONS FOR EACH ROCK ANCHOR AND MAINTAIN COMPLETE AND ACCURATE RECORDS FOR EACH ROCK ANCHOR.
5. CONTRACTOR TO PERFORM TESTING PRIOR TO POURING CONCRETE GRADE BEAM.



### PROPOSED ANCHOR DESIGN PARAMETERS

1  
S-11

PILE DESIGN PARAMETER SCHEDULE	
PIPE ROCK SOCKET	12' MIN
ROCK ANCHOR Ø	3"
FACTORED PILE CAPACITY @Ph (kips)	411
EXTENSION ABOVE PIPE	5'-6" MIN
FREESTRESSING LENGTH	21' MIN
TOTAL ROCK EMBEDMENT	30' MIN
DEVELOPMENT LENGTH / BOND LENGTH	17' MIN
TOTAL LENGTH	42' MIN
TARGET TENSION LOAD (KIPS)	411
ALIGNMENT LOAD (KIPS)	31
DESIGN LOAD (KIPS)	309
LOCK OFF LOAD (KIPS)	309
STEEL PIPE SIZE (ASTM A53-B-35)	12XS
PVC PIPE	3.5" OD x 0.318" THK (3.326" ID)

\* DESIGN BASED ON WILLIAMS R71 (150 KSI)

DRILLER / INSTALLER SOIL DESIGN PARAMETERS			
LAYER THICKNESS	SOIL TYPE	ULTIMATE GROUT BOND VALUES	CORE HOLE DESIGN SIZE
4'-0"	PROPOSED FOUNDATION	IGNORE/SLEEVE	12.75"
3'-0"	EXISTING FOUNDATION	IGNORE/SLEEVE	12.75"
12'-0"	SEE GEOTECHNICAL REPORT	IGNORE/SLEEVE	12.75"
17'-0"	SEE GEOTECHNICAL REPORT	112 PSI	8"

SOIL VALUES WERE PROVIDED FROM DELTA OAKS AND JOB #GEO10-04035-05 DATED FEBRUARY 4, 2019

change from 3.5" OD anchor rod PVC sleeve to 4" ID PVC Sleeve

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**



SEP 25 2020

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Columbus, OH 43215  
Phone 614.221.6679  
www.pauljford.com

**CROWN CASTLE**  
3530 TORNINGDON WAY SUITE 300 CHARLOTTE, NC 28277  
PH: (704) 416-2000

BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

ROCK ANCHOR  
DETAILS

S-11



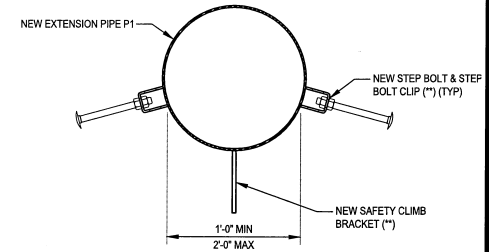
CONTRACTOR TO VERIFY ALL  
EXISTING DIMENSIONS PRIOR TO  
FABRICATION OF EXTENSION

**NEXT GEN**  
SERVICES GROUP

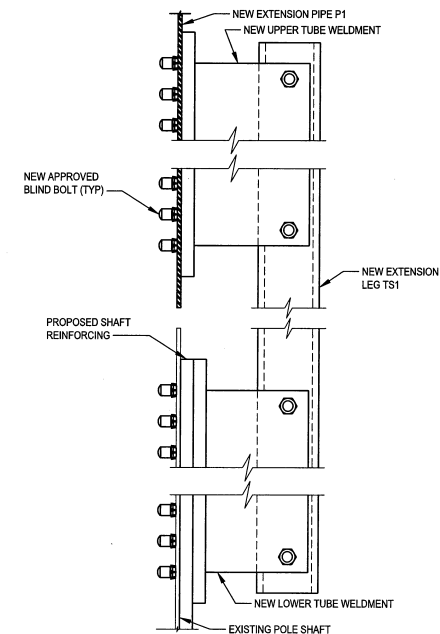
AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

**SAFETY CABLE NOTE:**

EXISTING SAFETY CABLE SHALL BE REPLACED  
WITH A NEW CABLE THAT EXTENDS THE ENTIRE  
TOWER LENGTH. CONTRACTOR SHALL  
COORDINATE LOCATIONS OF EXISTING STEP  
BOLTS AND SAFETY CLIMB WITH NEW EXTENSION  
PRIOR TO FABRICATION. CONTRACTOR SHALL  
COORDINATE SOLUTION WITH TUF-TUG PRIOR TO  
FABRICATION. THE NEW SYSTEM SHALL BE  
CROWN APPROVED PRIOR TO CONSTRUCTION. (\*\*)



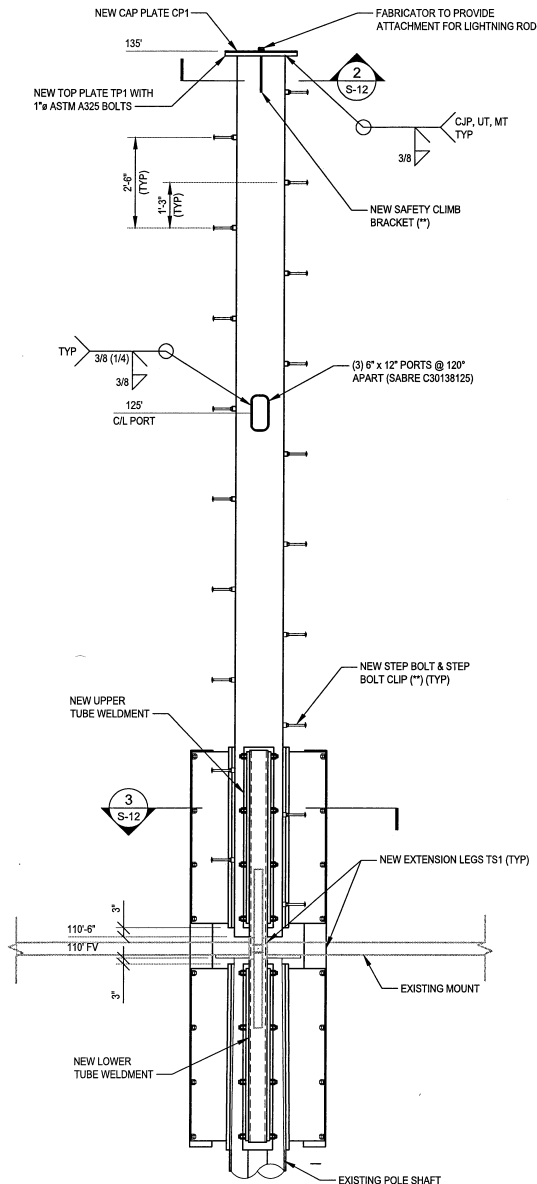
**SAFETY CLIMB & STEP BOLT LAYOUT**



**SECTION 4**  
(MOUNT NOT SHOWN FOR CLARITY)



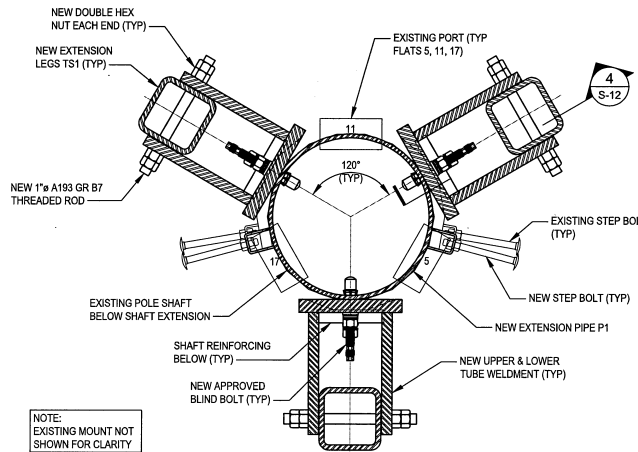
MAR 25 2019



**PARTIAL ELEVATION 1**  
S-12

NEW (4) 1\"/>

**SECTION 2**  
S-12



NOTE:  
EXISTING MOUNT NOT  
SHOWN FOR CLARITY

**SECTION 3**  
S-12

**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**

\*\* SEE CROWN DOCUMENT CED-CAT-10300

REV	DATE	DESCRIPTION
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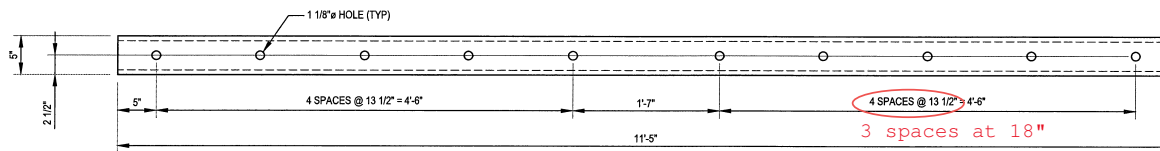
**BU #876406; NE OLD LYME-OLD LYME  
FIREHOUSE**  
OLD LYME, CONNECTICUT  
MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
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CHECKED BY: BKK  
DATE: 03-25-2019

EXTENSION  
DETAILS

S-12



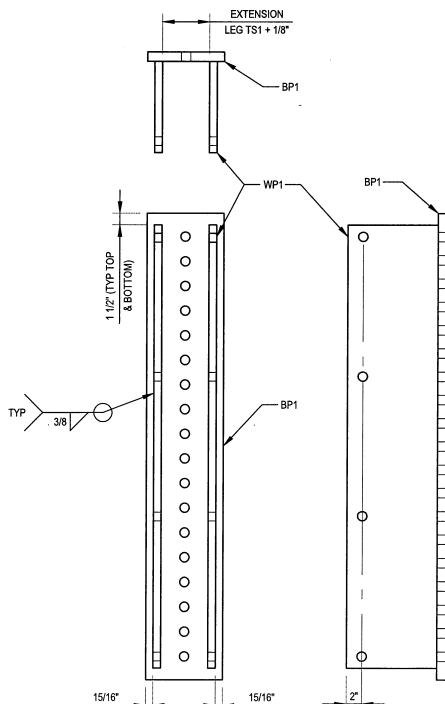


**EXTENSION LEG MK-TS1**  
(3 HSS5 x 5 x 1/2 REQUIRED) (Fy = 46 KSI)

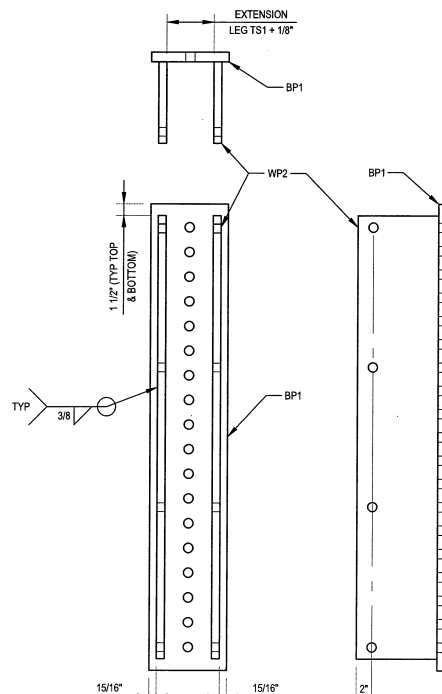


AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*

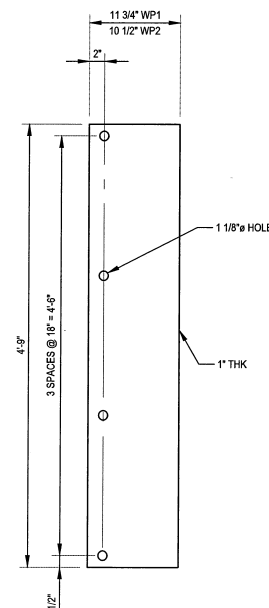
**PASSING MI**  
**Tuesday, September 29, 2020**  
**Kevin Arnett, P.E., C.W.I.**



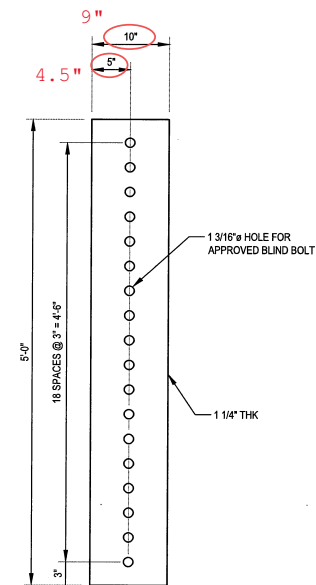
**UPPER TUBE WELDMENT**  
(3 TOTAL REQUIRED) (Fy = 65 KSI)



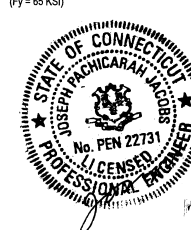
**LOWER TUBE WELDMENT**  
(3 TOTAL REQUIRED) (Fy = 65 KSI)



**WELDED PLATE MK-WP1/WP2**  
(Fy = 65 KSI)



**BACKER PLATE MK-BP1**  
(Fy = 65 KSI)



MAR 25 2016

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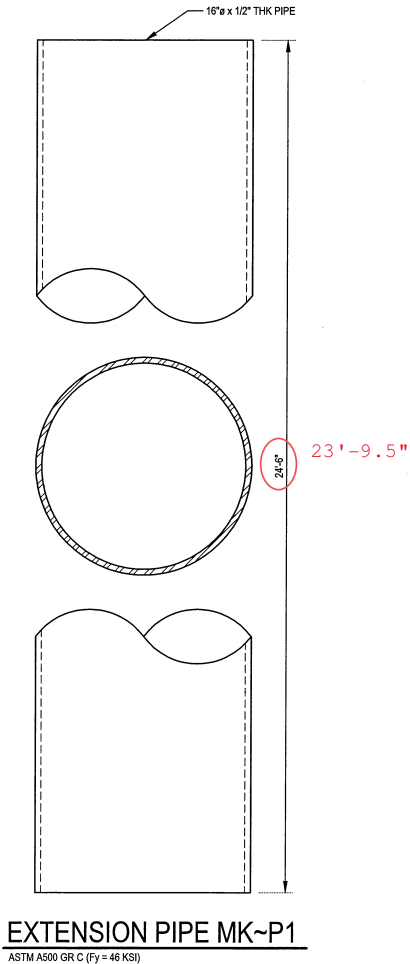
PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

**EXTENSION DETAILS**

**S-13**

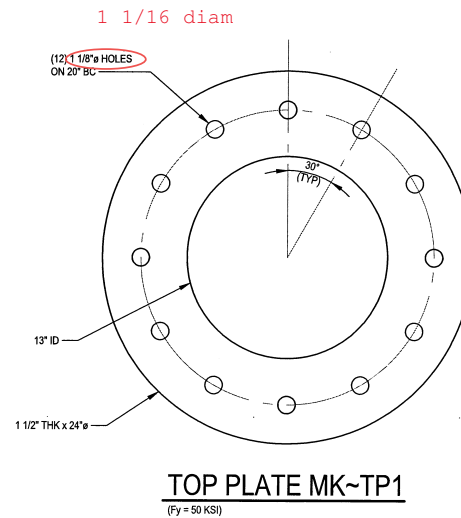
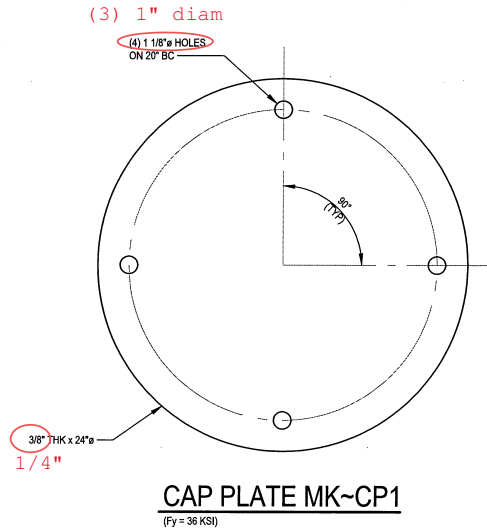
REV	DATE	DESCRIPTION
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**NEXTGEN**  
SERVICES GROUP

AS-BUILT  
Changed as noted  
Dated 9-18-2020  
Signed *Dan Hughes*



MONOPOLE EXTENSION MATERIAL LIST			
MARK	QTY	MATERIAL	STEEL WEIGHT
CP1	1	CAP PLATE	48
BP1	6	BACKER PLATE	1277
WP1	6	WELDED PLATE (UPPER)	1141
WP2	6	WELDED PLATE (LOWER)	1020
P1	1	EXTENSION PIPE	981
TP1	1	TOP PLATE	192
TS1	3	HSS6 x 6 x 1/2	
	3	6" x 12" SABRE PORT	
	4	1"ø ASTM A325 BOLT	
	30	1"ø ASTM A193 GR B7 BOLT	
	114	APPROVED BLIND BOLT	
	19	STEP BOLT	
	38	LOCK WASHERS AND NUTS FOR STEP BOLTS	
			4659

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MODIFIED 110'-0" MONOPOLE

PROJECT No: 37519-0914.001.7700  
DRAWN BY: DC  
DESIGNED BY: UY  
CHECKED BY: BKK  
DATE: 03-25-2019

EXTENSION  
DETAILS

S-14

**PASSING MI**  
Tuesday, September 29, 2020  
Kevin Arnett, P.E., C.W.I.



MAR 25 2019

REV	DATE	DESCRIPTION



## **EOR RFI FORMS**



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	Rich@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

## Instructions

### General Contractor(GC) to Complete Engineering Issue Section

RFIs shall be submitted to the EOR prior to deviating from the original design drawings. This includes changes required based on the pre-fabrication mapping. Changes required based on the mapping shall be documented in the EOR RFI Form and submitted to the EOR alongside shop drawings.

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**Issue Type Dropdown Menu** - select the reason for the question from the drop down

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**Attachments** – When sketches, photos, and/or drawings are attached select "Yes" in the drop down.

**Engineering Issue Box**– This space should contain a detailed explanation of the question along with any other information that the EOR might need to completely answer the inquiry. **As part of this description, please provide any information regarding contributing factors and possible resolutions based on your capabilities in the field and general means and methods.**

### Engineer of Record(EOR) to Complete Resolution Section

**Resolution Box** – This space shall contain the resolution from the EOR or approval of the option provided by the contractor.

**Drawing Change Needed** – If this is marked 'Yes' then a drawing revision is required based upon the resolution.

**Crown Approval** – If this is marked 'Needed' then Crown must be contacted for approval of the resolution.

**Sketch/Drawing Attached** – If this is marked 'Yes' then there is an illustration attached as part of the resolution.

**ESP #** – Associated ESP # should be included, if applicable.

**Resolved By** – The first and last name of the Engineer that approved the resolution should be entered with the date.

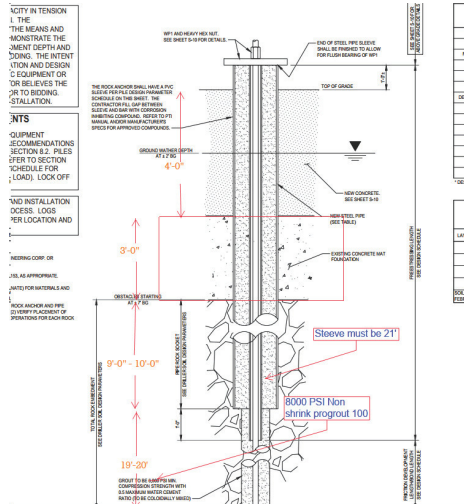
**Notes:** This RFI form is for the purpose of addressing technical and construction related questions and issues. Final work authorization shall be approved by the Crown POC prior to proceeding with any work that deviates from the original design, scope, price and/or schedule. This form is not an authorization of a change order.



## Engineering Issue

<b>Issue Type:</b>	Change Request	<b>Attachments:</b>	Yes
--------------------	----------------	---------------------	-----

- 1) Request change from 3.5" OD anchor rod PVC sleeve to 4" ID PVC Sleeve
- 2) Change grout from 6000 PSI to 8000 + PSI
- 3) Dimensional changes



<b>Submitted by:</b>	Rich Taschek	<b>Date:</b>	5/6/20
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## Resolution

<b>Drawing Change:</b>	Yes	<b>Crown Approval</b>	Needed
<b>Sketch/Drawing Attached:</b>	No	<b>ESP #:</b>	

All items are approved.

<b>Resolved By:</b>		<b>Date:</b>	
---------------------	--	--------------	--



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	Rich@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

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Engineering Issue			
Issue Type:	Change Request	Attachments:	Yes
<p>As discussed we have a couple of fit up issues here. We ran into the same problems at a site a couple years back called Grassy Hill. TJ will remember this stie.</p> <p>It is not possible to put a 12-3/4" pipe through a 12-3/4" hole. We need to change the diameters of a couple of items.</p> <p>1- The core hole in the foundation should be 14". This will allow us enough room for drill tooling.</p> <p>2- The pipe is too big for the rock socket, the drilling is never perfectly straight so we need to reduce the size of the pipe to 10".</p> <p>3- There is no problem with the 8" hole.</p> <p>4- We can increase the PSI of the grout to 7000 or 8000 if that helps.</p> <p>Pre Email Dated 1/16/202</p>			
Submitted by:	Rich Taschek	Date:	5/6/20
Resolution			
Drawing Change:	Yes	Crown Approval	Needed
Sketch/Drawing Attached:	No	ESP #:	
<p>The changes above are approved.</p>			
Resolved By:	Thomas J. Dehnke, PE	Date:	5/7/20



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	dan.hughes@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

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Engineering Issue			
Issue Type:	Change Request	Attachments:	Yes
<p>1) can we get approval To us a single side CJP for the Transition stiffeners Were need See example Picture below</p>  <p>2) Due to the addition of the Doublers Plate 2 nuts will not fit Will this Be acceptable or should we look into getting a Jam nuts ?</p> 			
Submitted by:	Dan Hughes	Date:	7/8/20
Resolution			
Drawing Change:	Yes	Crown Approval	Needed
Sketch/Drawing Attached:	No	ESP #:	
<p>1) Single sided CJP is approved. 2) Jam nuts would be preferred.</p>			
Resolved By:	Thomas J. Dehnke, PE	Date:	7/9/20



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	dan.hughes@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

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Engineering Issue			
Issue Type:	Change Request	Attachments:	Yes
<p>1) On flat 1 Stiffener Need to make this a single sided bevel due to fit up issue</p>			
Submitted by:	Dan Hughes	Date:	7/23/20
Resolution			
Drawing Change:	Yes	Crown Approval	Needed
Sketch/Drawing Attached:	No	ESP #:	
<p>Per conversations this is for the horizontal welds. This is approved.</p>			
Resolved By:	Thomas J. Dehnke, PE	Date:	7/23/20



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	dan.hughes@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

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- **Other** – All other requests.

**Attachments** – When sketches, photos, and/or drawings are attached select "Yes" in the drop down.

**Engineering Issue Box**– This space should contain a detailed explanation of the question along with any other information that the EOR might need to completely answer the inquiry. **As part of this description, please provide any information regarding contributing factors and possible resolutions based on your capabilities in the field and general means and methods.**

### Engineer of Record(EOR) to Complete Resolution Section

**Resolution Box** – This space shall contain the resolution from the EOR or approval of the option provided by the contractor.

**Drawing Change Needed** – If this is marked 'Yes' then a drawing revision is required based upon the resolution.

**Crown Approval** – If this is marked 'Needed' then Crown must be contacted for approval of the resolution.

**Sketch/Drawing Attached** – If this is marked 'Yes' then there is an illustration attached as part of the resolution.

**ESP #** – Associated ESP # should be included, if applicable.

**Resolved By** – The first and last name of the Engineer that approved the resolution should be entered with the date.

**Notes:** This RFI form is for the purpose of addressing technical and construction related questions and issues. Final work authorization shall be approved by the Crown POC prior to proceeding with any work that deviates from the original design, scope, price and/or schedule. This form is not an authorization of a change order.



Engineering Issue			
Issue Type:	Change Request	Attachments:	Yes
<p>Below are items that were in the approved fab drawings that deviated From the Constrution drawings with the exception of 1 and 4 can these items be approved</p> <p>1-Backer Plat MK-BP1 is 9" wide instead of 10". (welded WP1 does have the 15/16" edge distance)</p> <p>2-Bolt spacing on extension leg MK-TS1 is 18" instead of 13.5"</p> <p>3- Cap plate MK-CP1 has (3) 1" holes instead of (4) 1-1/8" holes and is 1/4" thick instead of 3/8" thick</p> <p>4- Top plate MK-TP1 has (12) 1-1/16" holes instead of (12) 1-1/8"</p> <p>5- Extension pipe MK-P1 is 23'-9.5" long instead of 24'-6" long</p>			
Submitted by:	Dan Hughes	Date:	9/16/20
Resolution			
Drawing Change:	Yes	Crown Approval	Needed
Sketch/Drawing Attached:	No	ESP #:	
<p>My responses numbered to match the above:</p> <p>1) Approved, after reviewing the fab and PJF design, the 9" will work and give the necessary 5-1/8" opening in the wing plates necessary.</p> <p>2) Approved</p> <p>3) Approved</p> <p>4) Approved</p> <p>5) Approved</p>			
Resolved By:		Date:	



**PUNCH LIST DOCUMENTATION**



## Punchlist BU # 876406 - Old Lyme Firehouse

Status:

Complete

Project Information

Project Contacts	Punchlist Issuance #	Date	Visit	
MI Vendor	TEP	1	28-Sep	OnSite
MI On-site inspector	Kevin Arnett			
MI WO #	1809064			
General Contractor	NextGen			
Crown POC	Dan Vadney			
EOR	PJF			
BU	876406			
Site Name	Old Lyme Firehouse			
				Structural Impact To Capacity
				No
				# of Punchlist Items
				0

## Zero Punchlist Items

NonConformance Impact to Capacity  
(Shall Be Provided by EOR)

New Overall Structure Capacity Rating :

-

## Documentation Complete / Documentation Missing

MI Checklist Documents

MI Checklist Documents	Required	Date Submitted	Requirement Waived	Date Compliance Verified	Status
PRE-CONSTRUCTION					
EOR Approved Shop Drawings	Required	6/9/2020	N/A	9/28/2020	Complete
Fabrication Inspection	Required	6/9/2020	N/A	9/28/2020	Complete
Fabricator Certified Weld Inspection	Required	6/9/2020	N/A	9/28/2020	Complete
Material Test Report (MTR)	Required	6/9/2020	N/A	9/28/2020	Complete
Fabricator NDE Report	N/A	N/A	N/A	-	N/A
NDE Insp. Report of Monopole Base Plate	Required	6/9/2020	N/A	9/28/2020	Complete
Packing Slips	Required	6/9/2020	N/A	9/28/2020	Complete
Additional Pre-Construction Inspections	N/A	N/A	N/A	-	N/A
Pre-Construction Document Comments					
CONSTRUCTION					
Foundation Inspections	Required	6/9/2020	N/A	9/28/2020	Complete
Post-Installed Anchor Rod Verification	N/A	N/A	N/A	-	N/A
Base Plate Grout Verification	N/A	N/A	N/A	-	N/A
Contractor's Certified Weld Inspection	Required	6/9/2020	N/A	9/28/2020	Complete
On-Site Cold Galvanizing Verification	Required	6/9/2020	N/A	9/22/2020	Complete
Tension Twist and Plumb Report	N/A	N/A	N/A	-	N/A
GC As-Built Drawings	Required	6/9/2020	N/A	9/22/2020	Complete
Additional Construction Inspections	N/A	N/A	N/A	-	N/A
Construction Document Comments					
POST-CONSTRUCTION					
Construction Compliance Verification	Required	6/9/2020	N/A	9/22/2020	Complete
Post-Installed Anchor Rod Pull-Out Testing	N/A	N/A	N/A	-	N/A
Additional Post-Construction Inspections	N/A	N/A	N/A	-	N/A
Post-Construction Document Comments					
MI Checklist Comments					

## Nonconformance List



**EOR APPROVED SHOP DRAWINGS**

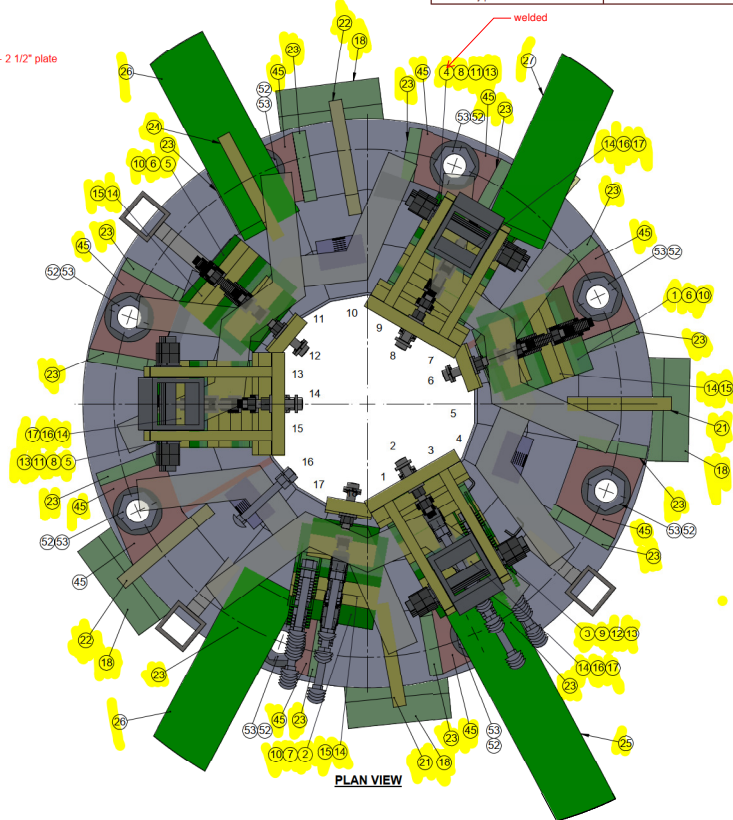


welded WCFP

CFP-0851252167-6

ITEM NO	QTY.	PART NUMBER	DESCRIPTION	MATERIAL	WT. EA.	EXT. WT.
1	1	CFP-0851253392-1	PLATE 1 1/4" THK X 8 1/2" X 33'-11 1/16" LG	A572-GR65	1230	1230
2	1	CFP-0851253392-1-SBC	PLATE 1 1/4" THK X 8 1/2" X 33'-11 1/16" LG	A572-GR65	1240	1240
3	1	WCFP-0851253392-2-SBC	PLATE 1 1/4" THK X 8 1/2" X 33'-11 1/16" LG	A572-GR65	1247	1247
4	1	CFP-0851253075-2	PLATE 1 1/4" THK X 8 1/2" X 30'-9" LG	A572-GR65	1120	1120
5	2	CFP-08512524-3	PLATE 1 1/4" THK X 8 1/2" X 24'-0" LG	A572-GR65	867	1734
6	2	CCI-AFP-08512535	PLATE 1 1/4" THK X 8 1/2" X 35'-0" LG	A572-GR65	1269	2538
7	1	CCI-AFP-08512535-SBC	PLATE 1 1/4" THK X 8 1/2" X 35'-0" LG	A572-GR65	1284	1284
8	2	CFP-08512535-4	PLATE 1 1/4" THK X 8 1/2" X 35'-0" LG	A572-GR65	1269	2538
9	1	CFP-08512535-4-SBC	PLATE 1 1/4" THK X 8 1/2" X 35'-0" LG	A572-GR65	1284	1284
10	3	CFP-085125565-5	PLATE 1 1/4" THK X 6 1/2" X 6'-7" LG	A572-GR65	177	531
11	2	CFP-08512525-6	PLATE 1 1/4" THK X 8 1/2" X 21'-8" LG	A572-GR65	780	1560
12	1	CFP-08512525-6-SBC	PLATE 1 1/4" THK X 8 1/2" X 21'-8" LG	A572-GR65	787	787
13	3	CFP-08512514-7	PLATE 1 1/4" THK X 6 1/2" X 17'-10" LG	A572-GR65	487	1461
14	8	CCI-SP-0851285-16-16	PLATE 1 1/4" THK X 8 1/2" X 9'-1" LG	A572-GR65	316	1896
15	3	CCI-SP-085125-11-17	PLATE 1 1/4" THK X 8 1/2" X 7'-7" LG	A572-GR65	199	597
16	3	CCI-SP-085125-17-19	PLATE 1 1/4" THK X 8 1/2" X 9'-7" LG	A572-GR65	333	999
17	3	CCI-SP-085125-14-19	PLATE 1 1/4" THK X 6 1/2" X 8'-10" LG	A572-GR65	232	696
18	4	TSFP	PLATE 1 1/2" THK X 4" X 10" LG	A572-GR65	14	56
19	4	WP1	PLATE 2 1/2" THK X 7 1/2" X 7 1/2"	A572-GR50	35	140
20	4	WP2	PLATE 2" X 1 1/2" X 1'-2"	A572-GR50	107	428
21	2	TS1	PLATE 1 1/4" THK X 10 1/8" X 9'-9" LG	A572-GR65	379	758
22	2	TS2	PLATE 1 1/4" THK X 11 1/4" X 19'-6" LG	A572-GR65	821	1642
23	15	ST1	PLATE 1 1/4" THK X 6 3/4" X 1'-6" LG	A572-GR65	24	360
24	1	BE1	PLATE 1 1/4" THK X 11 5/16" X 11'-5 11/16"	A572-GR65	477	477
25	1	ARB2	ANCHOR ROD BRACKET	(GALV)	2092	2092
26	2	ARB3	ANCHOR ROD BRACKET	(GALV)	2110	4220
27	1	ARB4	ANCHOR ROD BRACKET	(GALV)	2141	2141
28	3	BARB-1	BOLTED ANCHOR ROD BRACKET	(GALV)	584	1752
29	3	BARB-2	BOLTED ANCHOR ROD BRACKET	(GALV)	544	1632
30	5	85-25-SHIM	PLATE 1/4" THK X 8 1/2" X 8 1/2"	A36	5	25
31	11	85-18-SHIM	PLATE 3/16" THK X 8 1/2" X 8 1/2"	A36	4	44
32	11	85-12-SHIM	PLATE 1/8" THK X 8 1/2" X 8 1/2"	A36	3	33
33	6	85-06-SHIM	PLATE 1/16" THK X 8 1/2" X 8 1/2"	A36	1	6
34	2	END-SHIM-1	PLATE 3/16" THK X 5" X 3'-0" LG	A36	9	18
35	1	END-SHIM-2	PLATE 3/16" THK X 6" X 4'-6" LG	A36	17	17
36	2	END-SHIM-3	PLATE 3/16" THK X 6 3/4" X 4'-6" LG	A36	19	38
37	1	END-SHIM-4	PLATE 3/16" THK X 7 1/2" X 4' 6" LG	A36	21	21
38	1	38-SHIM-1	PLATE 3/8" THK X 6 1/2" X 1'-0"	A36	8	8
39	1	31-SHIM-1	PLATE 5/16" THK X 6 1/2" X 1'-0"	A36	7	7
40	1	25-SHIM-1	PLATE 1/4" THK X 6 1/2" X 1'-0"	A36	6	6
41	15	18-SHIM-1	PLATE 3/16" THK X 6 1/4" X 1'-0"	A36	4	60
42	17	18-SHIM-2	PLATE 3/16" THK X 7" X 10 1/2"	A36	4	68
43	3	TUBE	TUBE 5" X 5" X 1/2" WALL X 11'-9" LG	A500-GR C (46KSI)	354	1062
44	4	PVC	PIPE 3 1/2" SCH 40 (10.9 OD) X 20' LG (MIN)	PVC	29	116
45	8	DOUBLERS	BASE PLATE DOUBLERS	A572-GR50	167	167
46	4	PIPE	12" XHY PIPE (12.34" OD X .30" WALL) X 20'-0" LG	A500-GR C (46KSI)	1335	5340
47	4	R71-24	ROCK ANCHOR 3" DIA X 42'-0" LG (MIN)	150 KSI (GALV)	1030	4120
48	48	ROD	THREADED ROD 1" DIA X 1'-1" LG	A193-GR B7 (GALV)	3	144
49	48	80001-100	HARDENED FLATWASHER 1" DIA	F436 (GALV)	0.09	4.32
50	48	80002-100	HARDENED LOCKWASHER 1" DIA	F436 (GALV)	0.10	4.8
51	96	80003-100	HEAVY HEX NUT 1-BUNC	A-563 (GALV)	0.43	41.28
52	8	063-80164	HARDENED FLATWASHER 2 1/4" DIA	F436 (GALV)	0.96	7.58
53	8	225-NUT	HEAVY HEX NUT 2 1/4- 1/2UNC	A-563 (GALV)	4.24	33.92
54	12	80003-3	HEAVY HEX NUT 3" DIA	A-563 (GALV)	6.93	107.16
55	59	SB	3/4" DIA STEP BOLT W/ (2) NUTS	A449 (GALV)	1	59
56	393	OSBATC20,95-30	AJAX YELLOW ASSY (M20X95) 1,417" TO 1,85" GRIP	(GALV)	1	393
57	454	OSBATC20,135-48	AJAX BROWN ASSY (M20X135) 2,245" TO 2,875" GRIP	(GALV)	1	454
58	79	OSBATC20,135-67	AJAX PURPLE ASSY (M20X135) 2,874" TO 3,7" GRIP	(GALV)	1	79
59	1	EXTENSION	16" DIA EXTENSION	(GALV)	2229	2229
61	3	MPS	PLATE 1 1/4" THK X 4 1/2" X 2'-0" LG	A36	38	114
61	24	2RCNGM20212A	ALLFASTENERS STEP BOLT ADAPTOR ASSY W/ BOLT	A565 (MAGNI)	1	24
62	5	2NG2048	NEXGEN2 ASSY (M20X95MM) 1 7/16" TO 1 7/8" GRIP	(MAGNI)	1	5
63	19	2NG2096	NEXGEN2 ASSY (M20X135MM) 2 11/16" TO 3 3/4" GRIP	(MAGNI)	1	19
TOTAL WEIGHT					53315.16	

2 1/2" plate



PLAN VIEW

**PJF PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

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By: uyerra Date: 11/11/2019

☐ Reviewed, No exceptions taken  
☒ Reviewed, Make Noted Corrections  
☐ Revise and Resubmit  
☐ Rejected, See Remarks  
☐ Reviewed Only For Loads Imposed on the Structure

- NOTES:
1. INSTALL REINFORCEMENT STEEL AS SHOWN.
  2. REFER TO STRUCTURAL ANALYSIS:  
PAUL J FORD & COMPANY  
WORK ORDER NO# 1708570  
PROJECT NO# 37519-0914.001.7700  
MODIFICATION DWGS DATED 03/25/19
  3. ALL MATERIAL HOT DIPPED GALVANIZED.

#	DATE	REVISION

**SITE NUMBER** BU876406  
**DATE** 10/24/19  
**DRAWN BY** SRM  
**EOR** PAUL J FORD & COMPANY

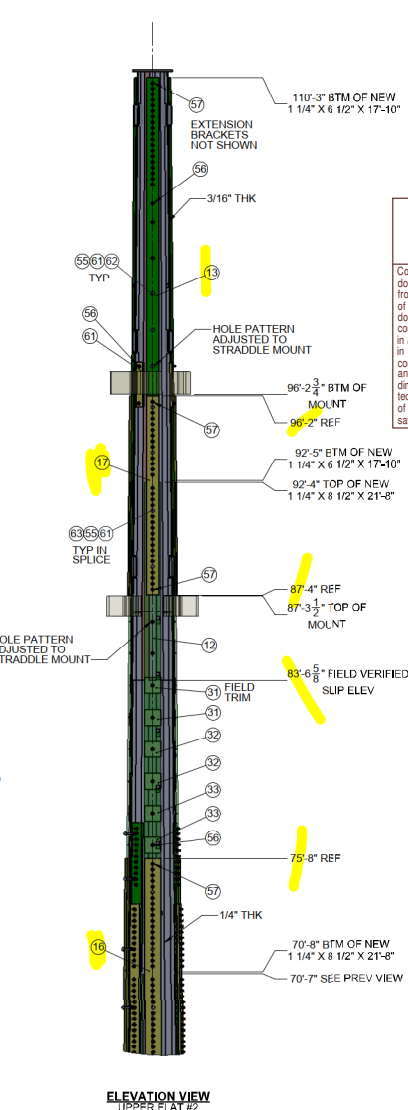
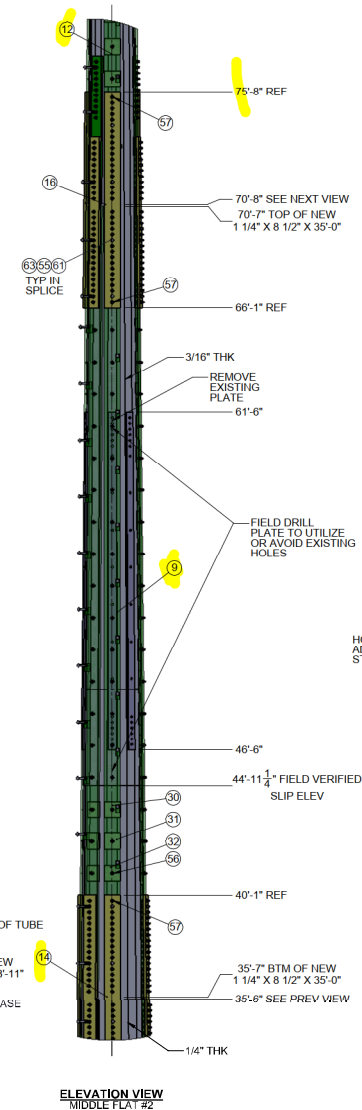
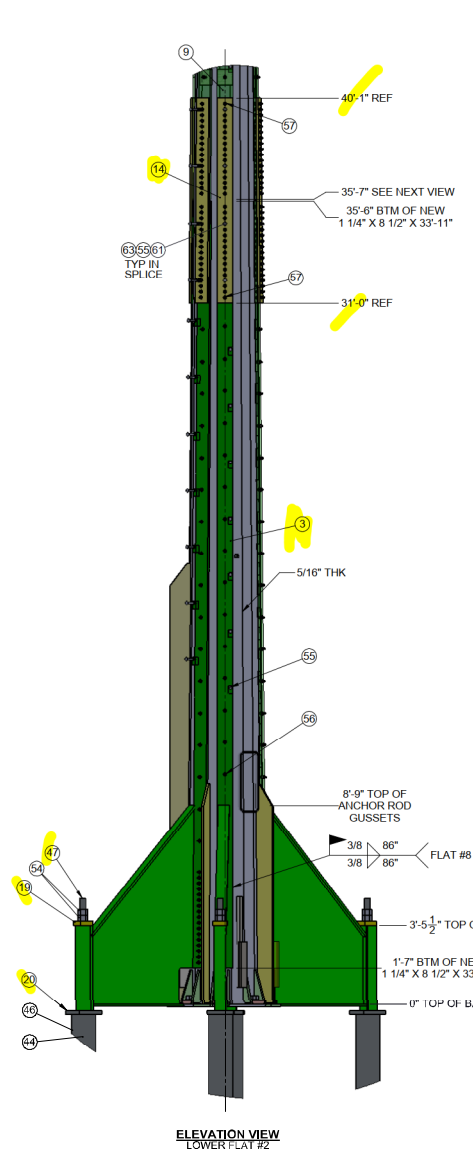
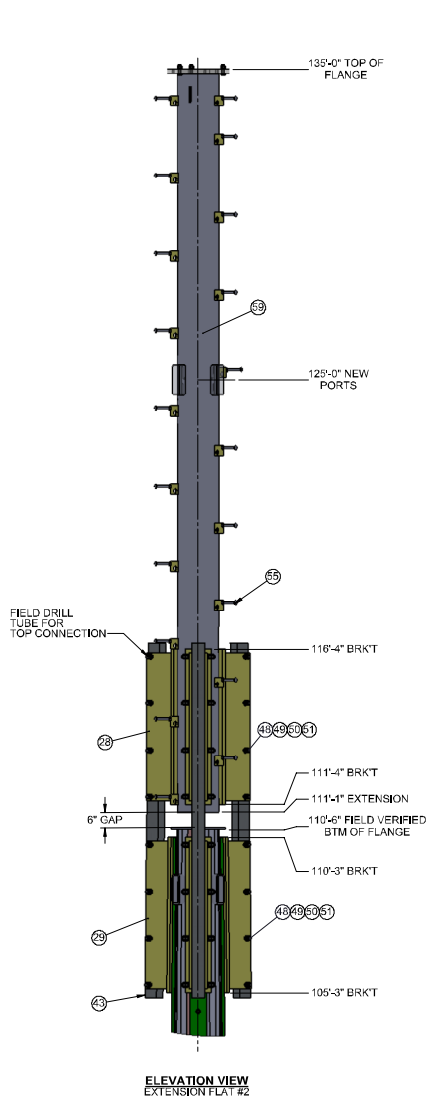
**PROJECT INFORMATION**  
**BU876406**  
**NE OLD LIME-OLD LYME FIREHOUSE**  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEX T GEN**  
SERVICE GROUP  
**NEX T GEN SERVICES GROUP, INC**  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

**SHEET NUMBER**  
**NGS-01**

DRAWING INDEX	
NGS-01	PLAN VIEW & BOM
NGS-02	ELEVATIONS
NGS-03	ELEVATIONS
NGS-04	ELEVATIONS
NGS-05	ELEVATIONS
NGS-06	PLATE DETAILS
NGS-07	PLATE DETAILS
NGS-08	SPLICE PLATE & HARDWARE DETAILS
NGS-09	HARDWARE DETAILS
NGS-10	ANCHOR ROD BRACKET DETAILS
NGS-11	EXTENSION HARDWARE DETAILS
NGS-12	ANCHOR ROD NUT DOUBLERS
NGS-13	EXTENSION DETAILS





**PJF PAUL J. FORD & COMPANY**  
Columbus, Ohio Orlando, Florida

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By: uyerra Date: 11/11/2019

☐ Reviewed, No exceptions taken  
☒ Reviewed, Make Noted Corrections  
☐ Revise and Resubmit  
☐ Rejected, See Remarks  
☐ Reviewed Only For Loads Imposed on the Structure

#	DATE	REVISION

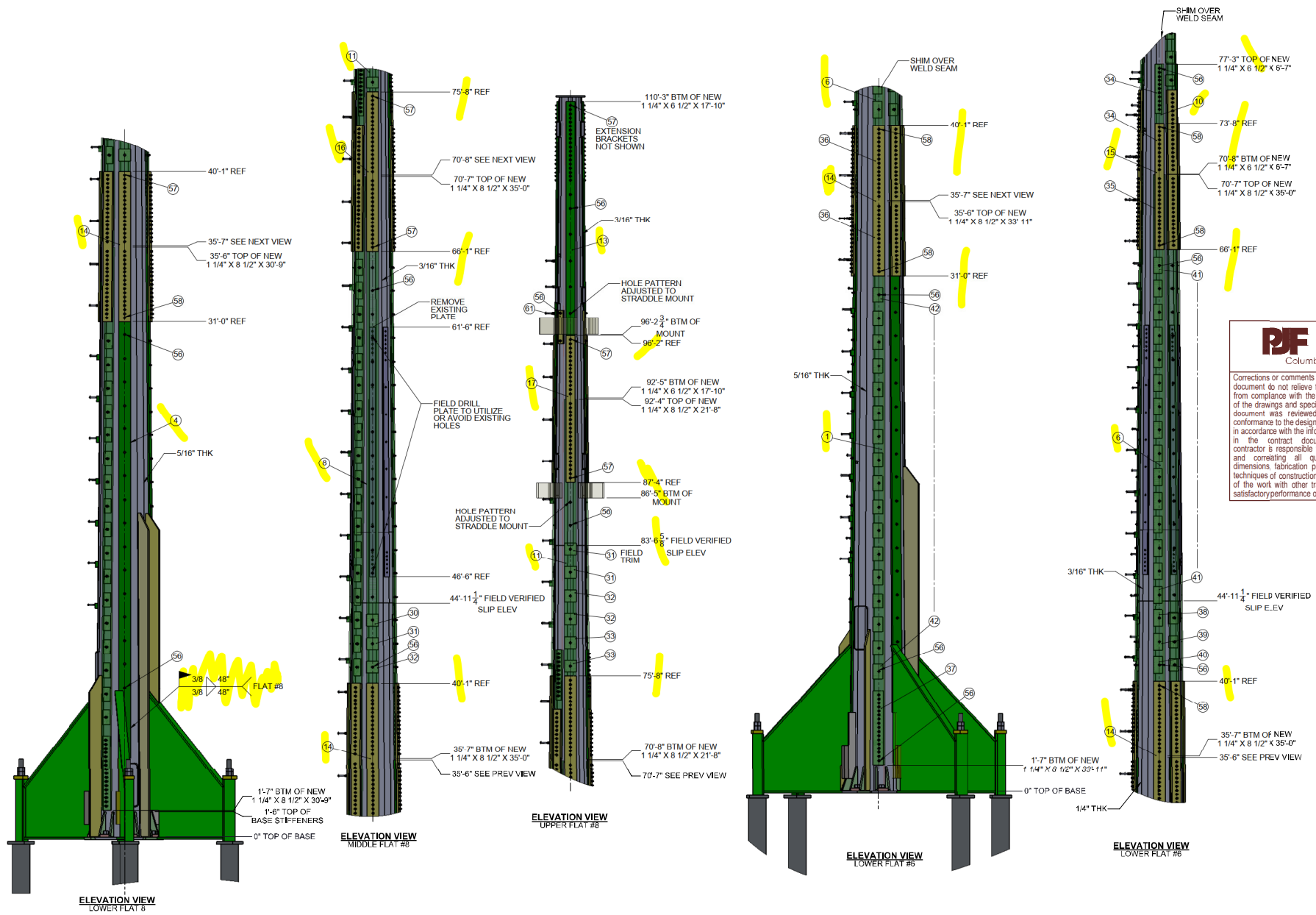
SITE NUMBER **BU876406**  
DATE 10/24/19  
DRAWN BY SRM  
EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION  
**BU876406**  
**NE OLD LIME-OLD LYME FIREHOUSE**  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTOGEN**  
SERVICES GROUP  
NEXTOGEN SERVICES GROUP, INC.  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

SHEET NUMBER  
**NGS-02**





**PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

By: uyerra Date: 11/11/2019

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☒ Reviewed, Make Noted Corrections

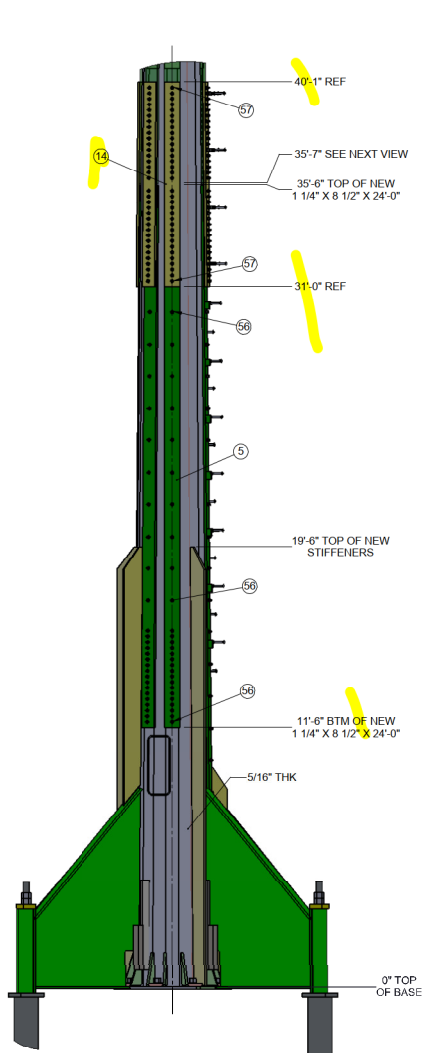
☐ Revise and Resubmit

☐ Rejected, See Remarks

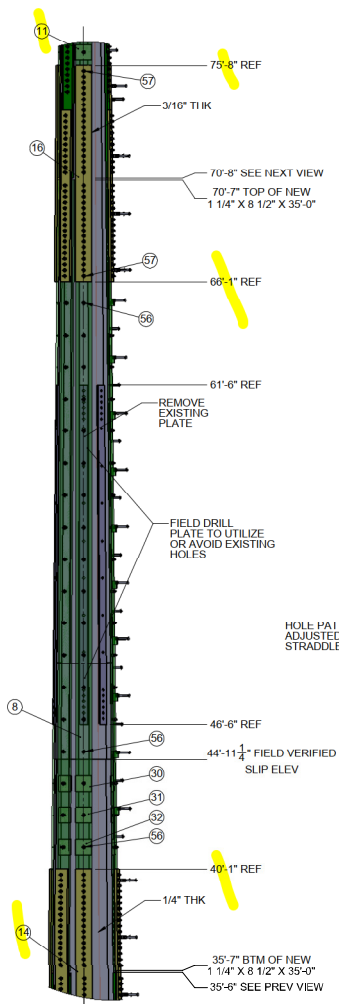
☐ Reviewed Only For Loads Imposed on the Structure

#	DATE	REVISION
SITE NUMBER <b>BU876406</b>		
DATE 10/24/19		
DRAWN BY SRM		
EOR <b>PAUL J FORD &amp; COMPANY</b>		
PROJECT INFORMATION		
<b>BU876406</b>		
<b>NE OLD LIME-OLD LYME FIREHOUSE</b>		
189 BOSTON POST ROAD		
OLD LYME, CT 06371		
<b>NEXTOGEN SERVICES GROUP, INC</b> 2242 OLD MARLTON PIKE E. SUITE 100 MARLTON, NJ 08053		
SHEET NUMBER <b>NGS-03</b>		

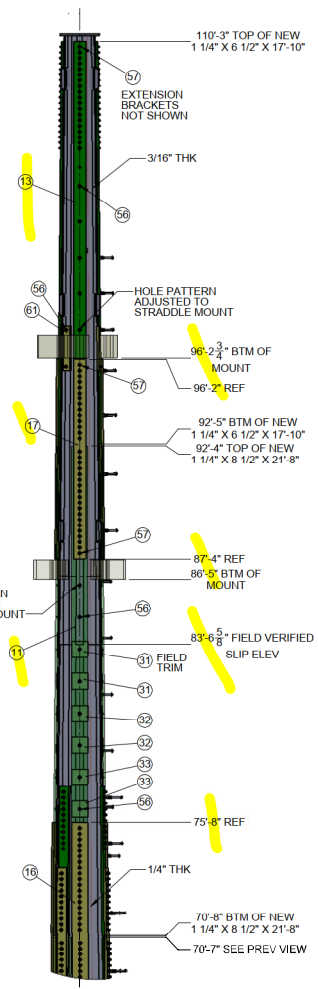




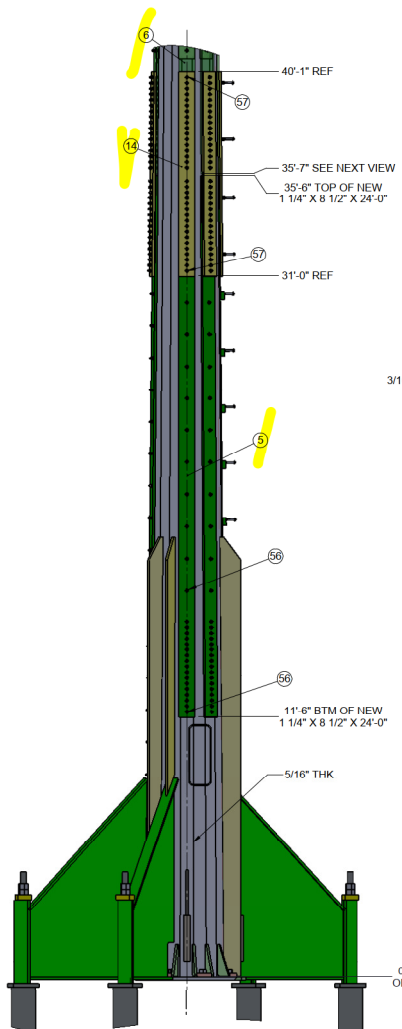
**ELEVATION VIEW**  
LOWER FLAT 14



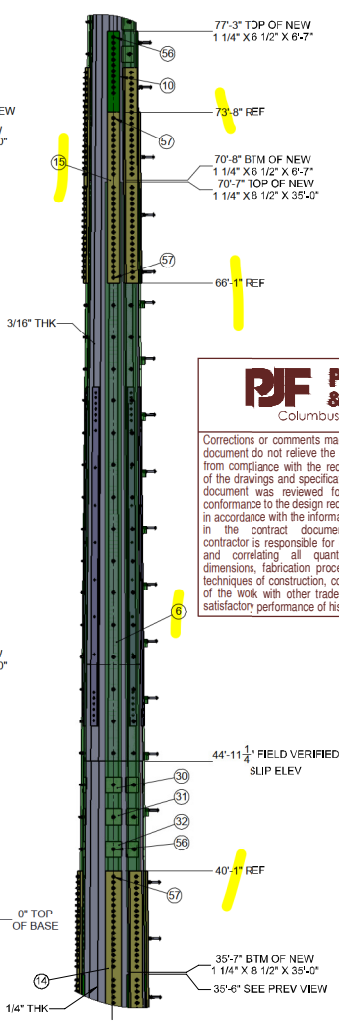
**ELEVATION VIEW**  
MIDDLE FLAT 14



**ELEVATION VIEW**  
UPPER FLAT 14



**ELEVATION VIEW**  
LOWER FLAT 12



**ELEVATION VIEW**  
UPPER FLAT 12

**PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

By: uyerra Date: 11/11/2019

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☐ Reviewed, No exceptions taken

☒ Reviewed, Make Noted Corrections

☐ Revise and Resubmit

☐ Rejected, See Remarks

☐ Reviewed Only For Loads Imposed on the Structure

☐ Reviewed, No exceptions taken

☒ Reviewed, Make Noted Corrections

☐ Revise and Resubmit

☐ Rejected, See Remarks

☐ Reviewed Only For Loads Imposed on the Structure

#	DATE	REVISION

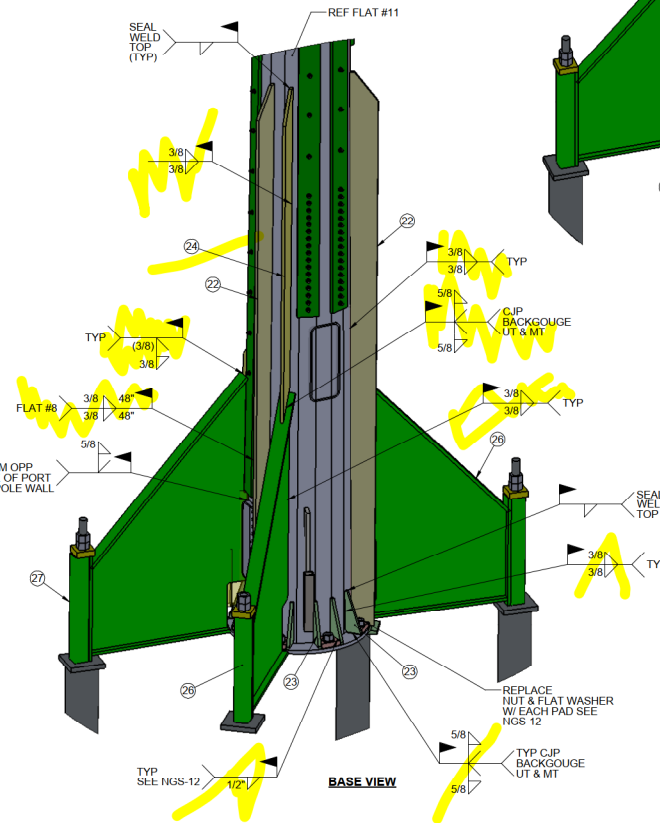
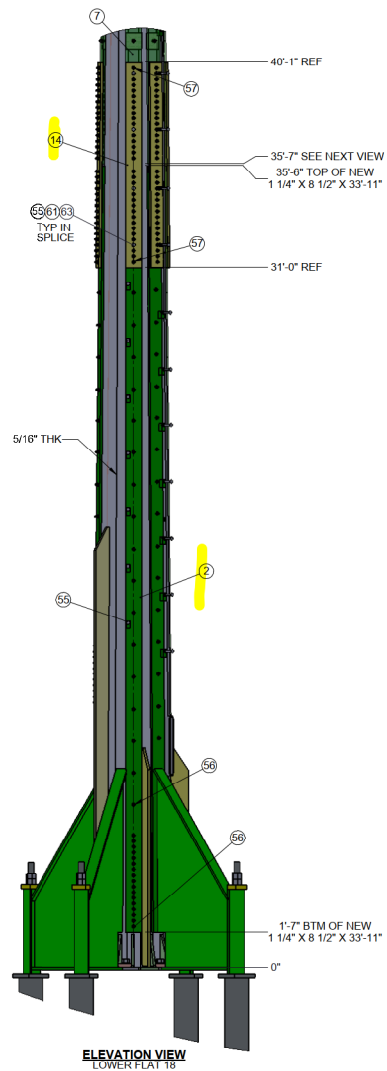
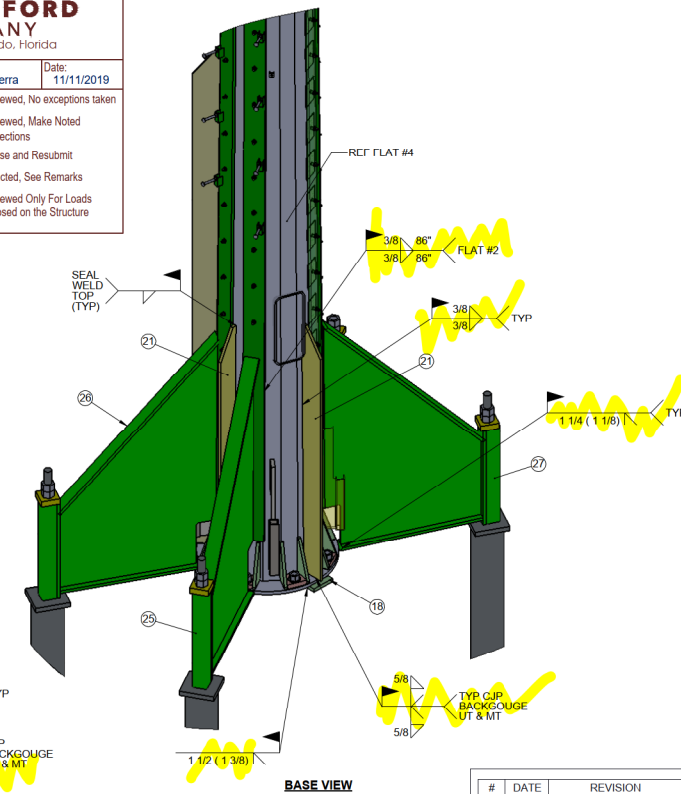
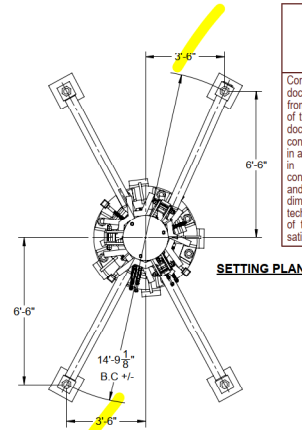
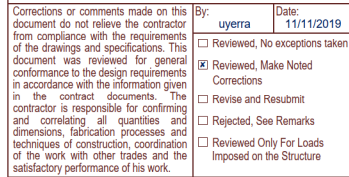
SITE NUMBER **BU876406**  
 DATE 10/24/19  
 DRAWN BY SRM  
 EOR **PAUL J FORD & COMPANY**



**PROJECT INFORMATION**  
**BU876406**  
**NE OLD LIME-OLD LYME FIREHOUSE**  
 189 BOSTON POST ROAD  
 OLD LYME, CT 06371

**NEXTEGEN SERVICES GROUP**  
 NEXTEGEN SERVICES GROUP, INC  
 2242 OLD MARLTON PIKE E. SUITE 100  
 MARLTON, NJ 08053

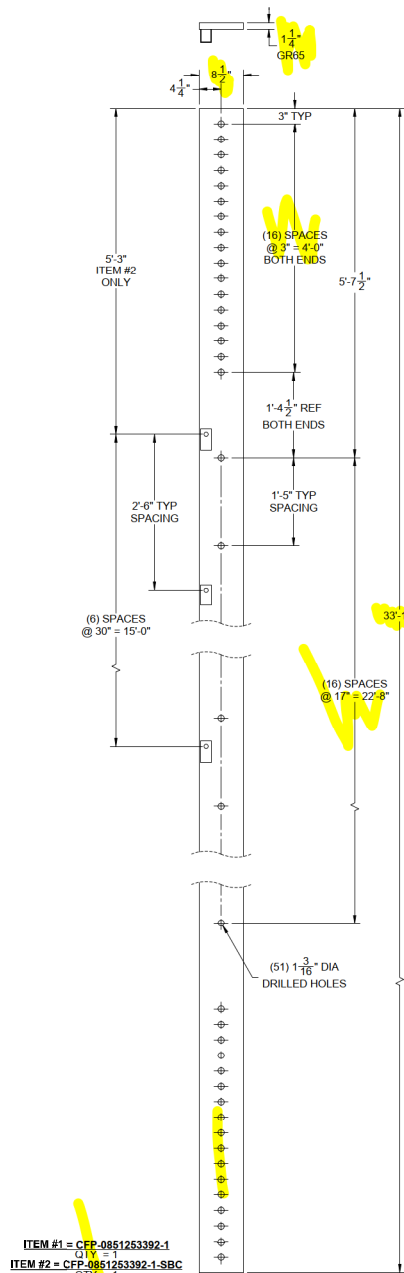
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**NGS-04**



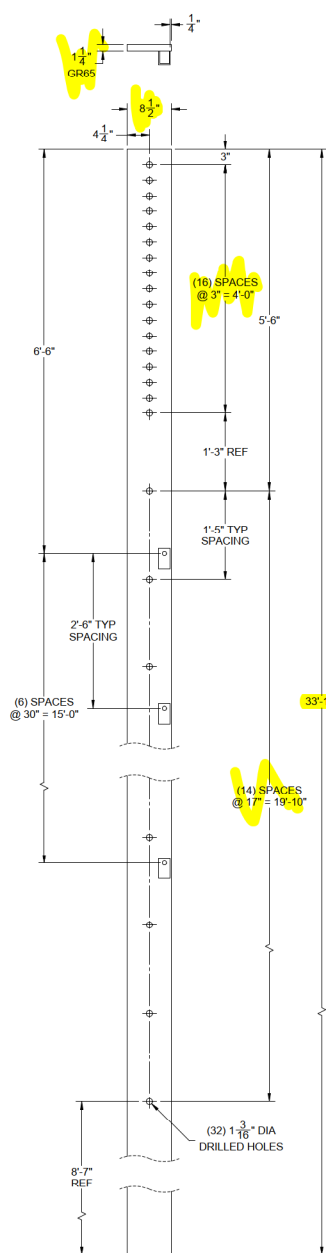


#	DATE	REVISION
SITE NUMBER		<b>BU876406</b>
DATE		10/24/10
DRAWN BY		SRM
EOR		<b>PAUL J FORD &amp; COMPANY</b>
PROJECT INFORMATION		
<b>BU876406</b>		
NE OLD LIME-OLD LYME FIREHOUSE		
189 BOSTON POST ROAD OLD LYME, CT 06371		
 <p><b>NEXTEG SERVICES GROUP, INC</b>        2242 OLD MARLTON PIKE E, SUITE 100        MARLTON, NJ 08053</p>		
		SHEET NUMBER <b>NGS-05</b>

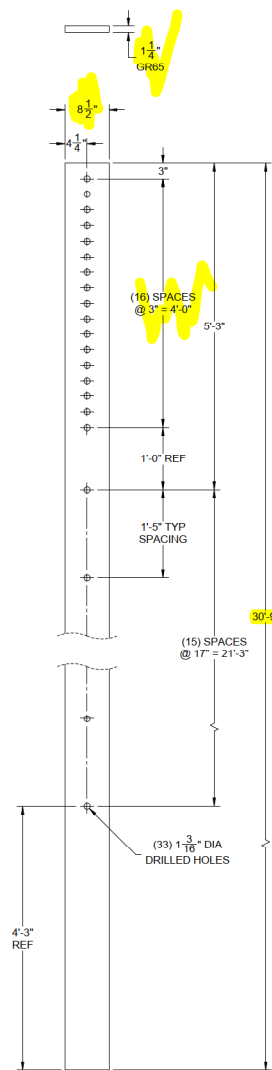




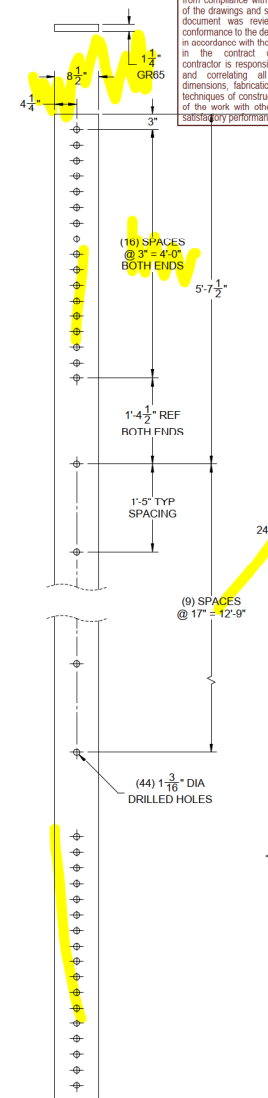
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QTY = 1



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QTY = 1



ITEM #4 = CFP-08512533075-2  
QTY = 1



ITEM #5 = CFP-08512524-3  
QTY = 2

**PJF PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

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By: uyerra Date: 11/11/2019

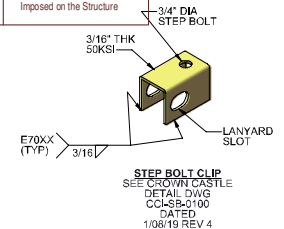
☐ Reviewed, No exceptions taken

☒ Reviewed, Make Noted Corrections

☐ Revise and Resubmit

☐ Rejected, See Remarks

☐ Reviewed Only For Loads Imposed on the Structure



#	DATE	REVISION

SITE NUMBER **BU876406**  
DATE 10/24/19  
DRAWN BY SRM  
EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION

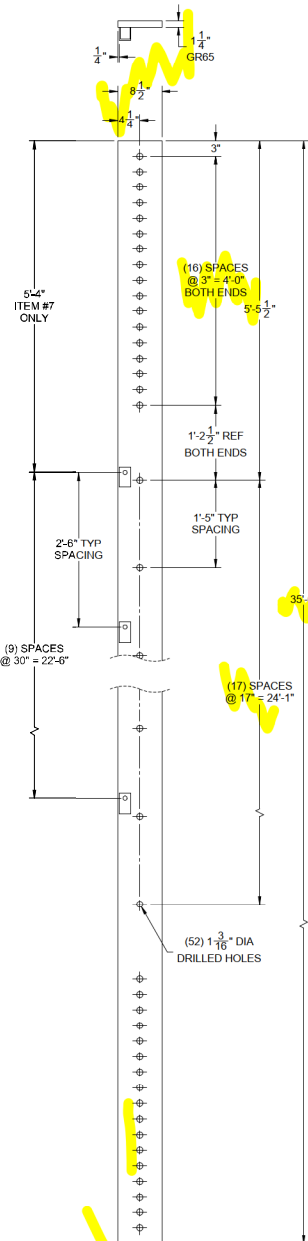
**BU876406**  
**NE OLD LIME-OLD LYME FIREHOUSE**  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTGEN**  
SERVICES GROUP

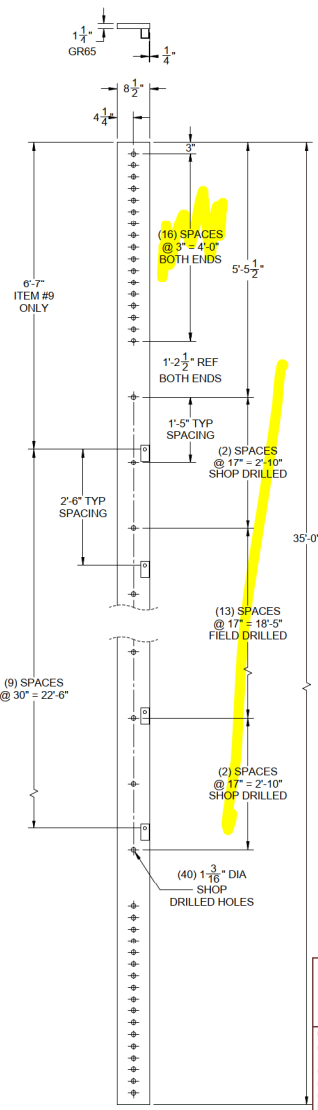
**NEXTGEN SERVICES GROUP, INC**  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

SHEET NUMBER  
**NGS-06**

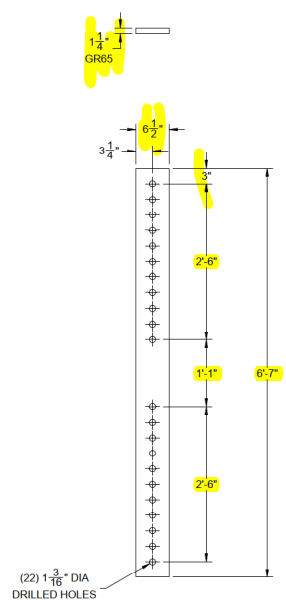
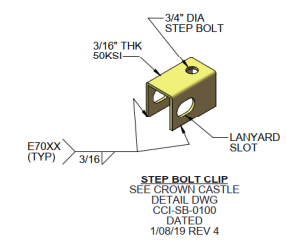




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ITEM #7 = CCL-APP-08512535-SBC  
QTY = 1



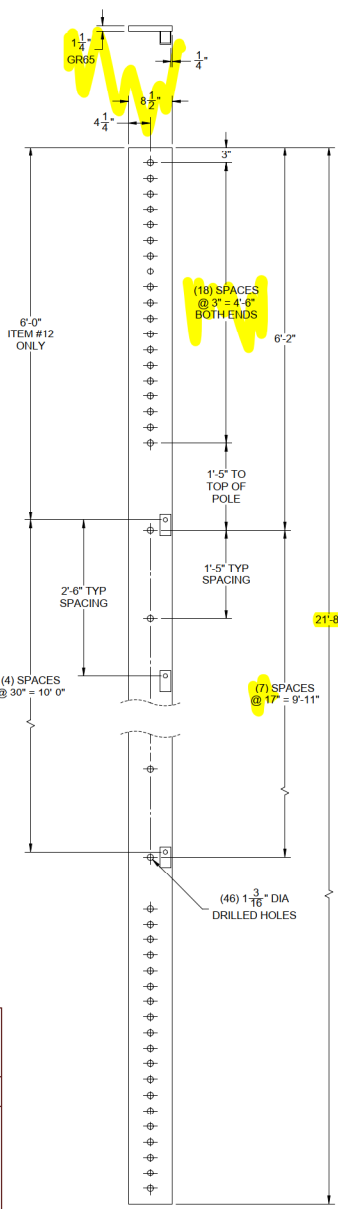
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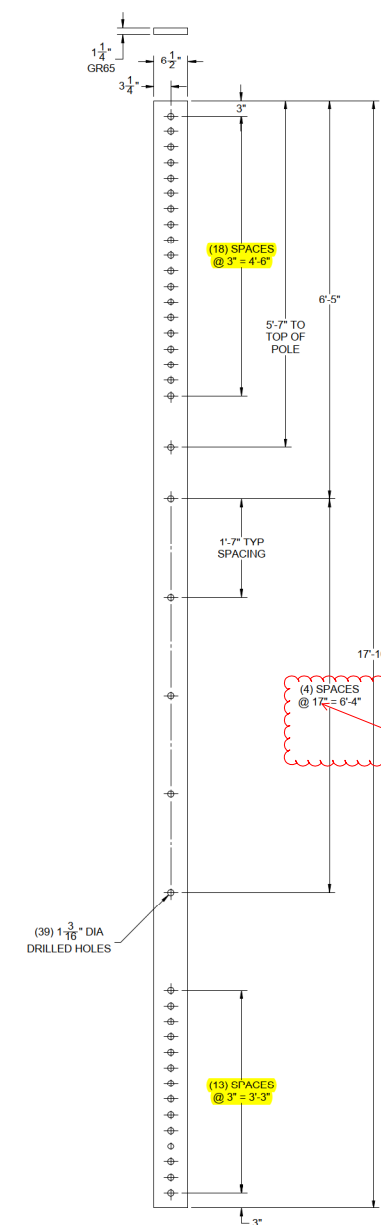
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**PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

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--	--



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ITEM #13 = CFP-06512514-7  
QTY = 3

#	DATE	REVISION

SITE NUMBER **BU876406**  
 DATE: 10/24/19  
 DRAWN BY: SRM  
 EOR: **PAUL J FORD & COMPANY**

PROJECT INFORMATION

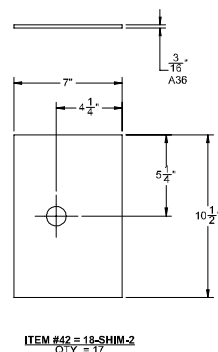
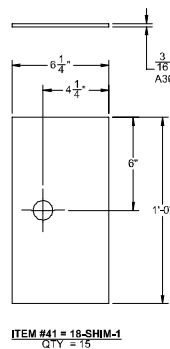
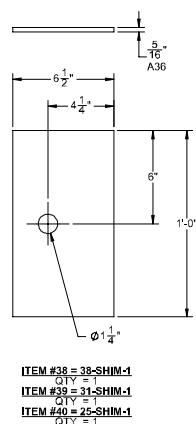
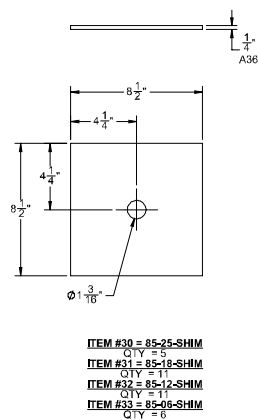
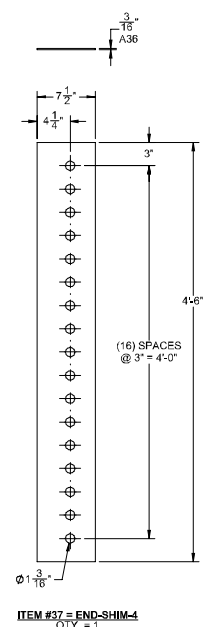
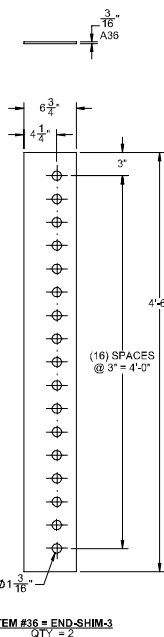
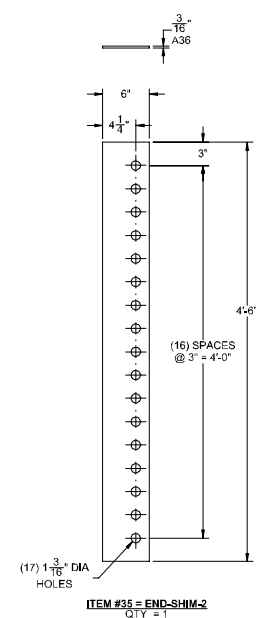
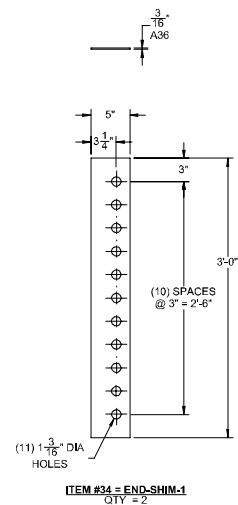
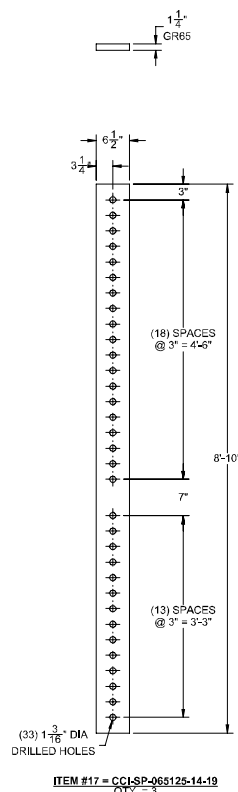
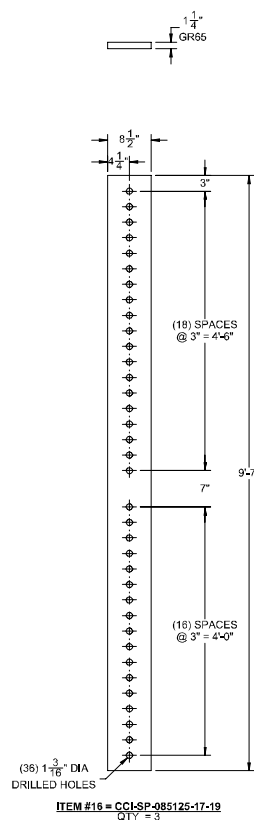
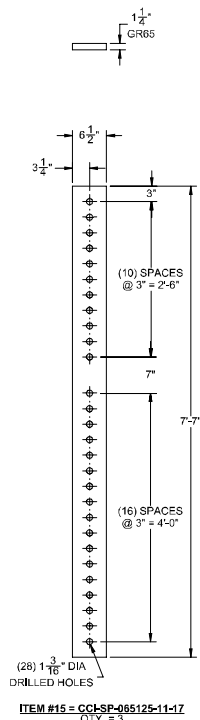
**BU876406**  
 NE OLD LIME-OLD LYME FIREHOUSE  
 189 BOSTON POST ROAD  
 OLD LYME, CT 06371

**NEXTGEN**  
 SERVICES GROUP

**NEXTGEN SERVICES GROUP, INC**  
 2242 OLD MARLTON PIKE E. SUITE 100  
 MARLTON, NJ 08053

SHEET NUMBER  
**NGS-07**





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	uyerra	11/11/2019
	<input type="checkbox"/> Reviewed, No exceptions taken	
	<input checked="" type="checkbox"/> Reviewed, Make Noted Corrections	
	<input type="checkbox"/> Revise and Resubmit	
	<input type="checkbox"/> Rejected, See Remarks	
	<input type="checkbox"/> Reviewed Only For Loads Imposed on the Structure	

#	DATE	REVISION

SITE NUMBER	<b>BU876406</b>
DATE	10/24/19
DRAWN BY	SRM
EOR	<b>PAUL J FORD &amp; COMPANY</b>

PROJECT INFORMATION  
**BU876406**  
NE OLD LIME-OLD LYME  
FIREHOUSE  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

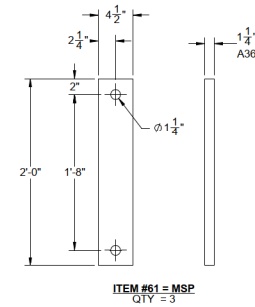
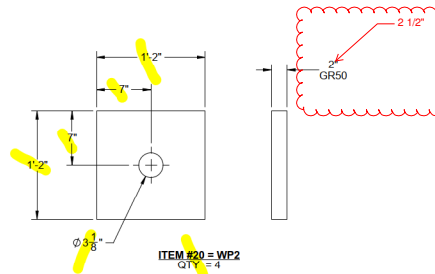
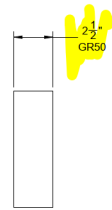
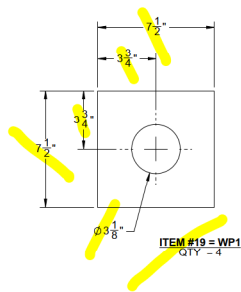
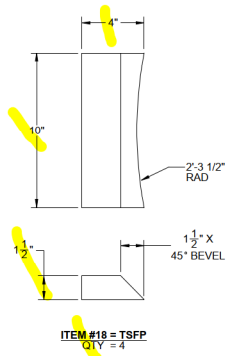
**NEXTGEN**  
SERVICES GROUP

**NEXTGEN SERVICES GROUP, INC**  
2242 OLD MARLTON PIKE E, SUITE 100  
MARLTON, NJ 08053



SHEET NUMBER  
**NGS-08**





**PAUL J. FORD & COMPANY**  
Columbus, Ohio · Orlando, Florida

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By: uyerra Date: 11/11/2019

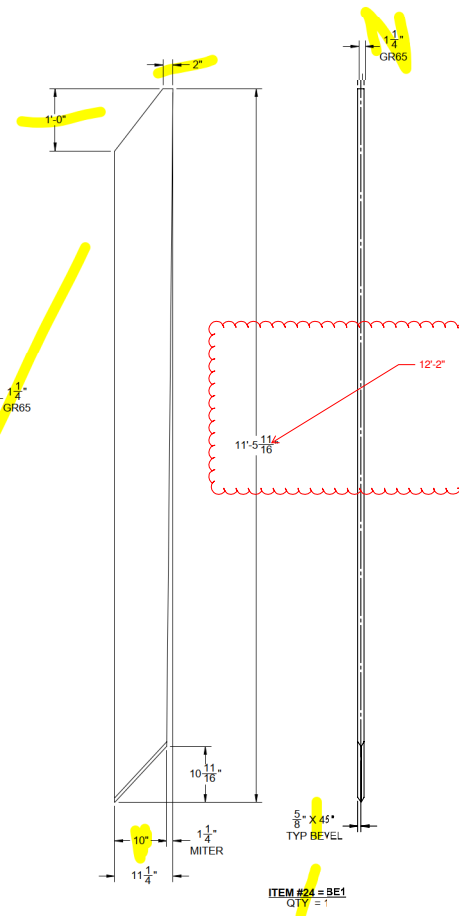
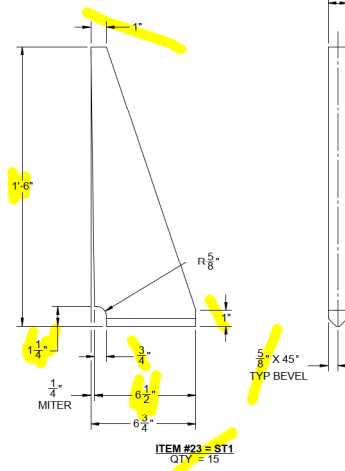
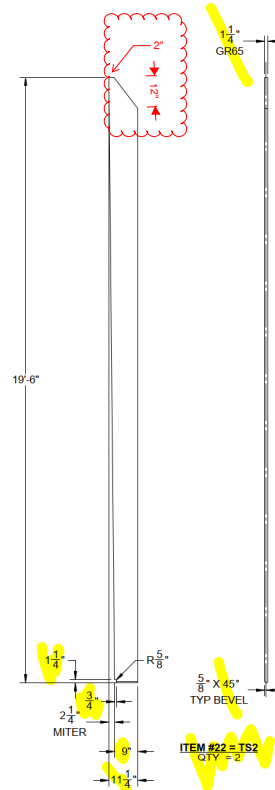
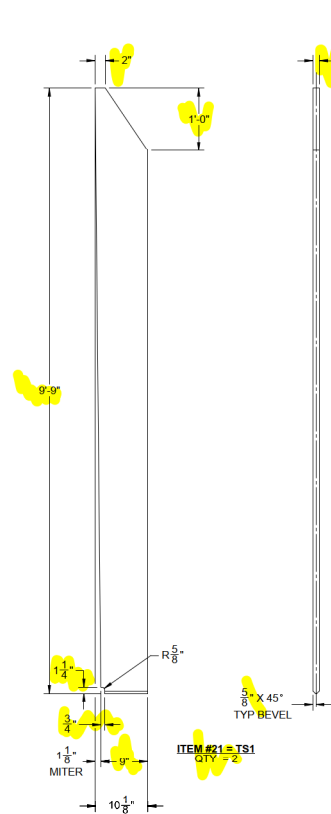
☐ Reviewed, No exceptions taken

☒ Reviewed, Make Noted Corrections

☐ Revise and Resubmit

☐ Rejected, See Remarks

☐ Reviewed Only For Loads Imposed on the Structure



#	DATE	REVISION

SITE NUMBER **BU876406**

DATE 10/24/19

DRAWN BY SRM

EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION

**BU876406**

**NE OLD LIME-OLD LYME FIREHOUSE**

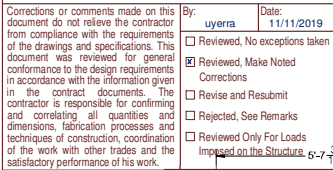
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTGEN**  
SERVICES GROUP

**NEXTGEN SERVICES GROUP, INC**  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

SHEET NUMBER  
**NGS-09**





SITE NUMBER	BU876406
DATE	10/24/19
DRAWN BY	SRM
EOR	PAUL J FORD & COMPANY

**BU876406**  
NE OLD LIME-OLD LYME  
FIREHOUSE  
189 BOSTON POST ROAD  
OLD LYME, CT 06371



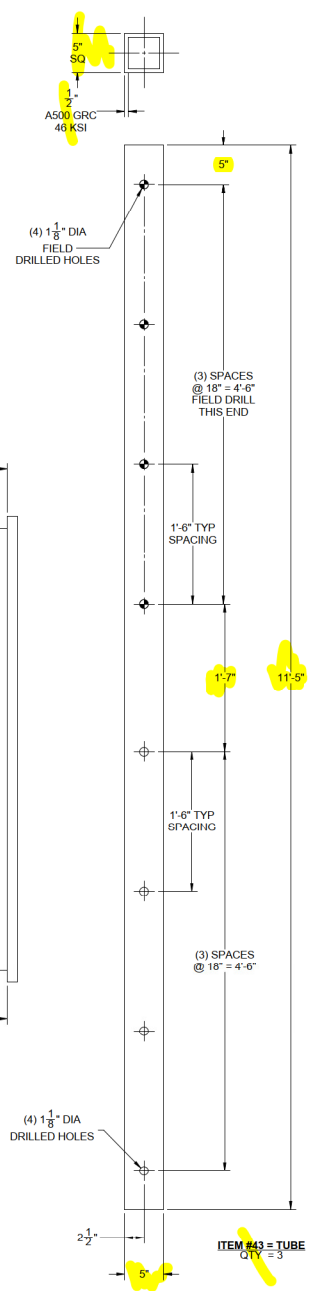
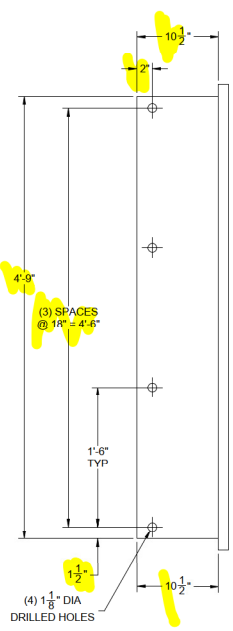
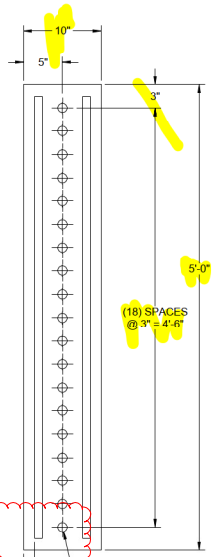
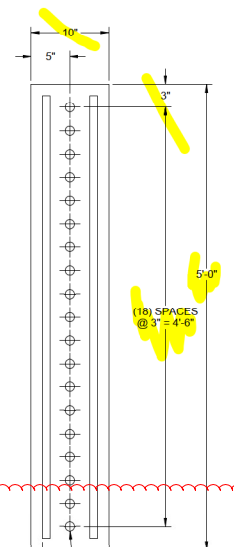
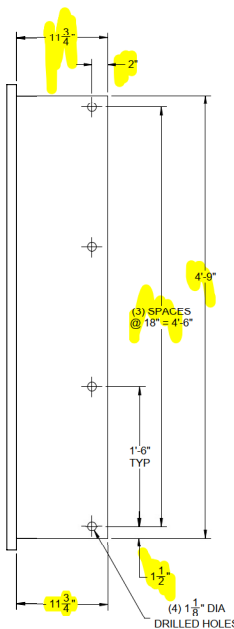
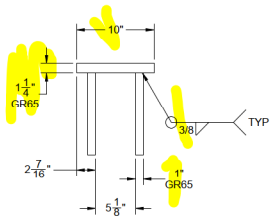
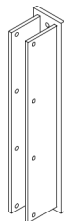
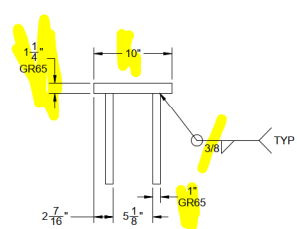
SHEET NUMBER  
**NGS-10**



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By: lyerna Date: 11/11/2019

☐ Reviewed, No exceptions taken  
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☐ Revised and Resubmit  
☐ Rejected, See Remarks  
☐ Reviewed Only For Loads Imposed on the Structure



ITEM #28 = BARB-1  
QTY = 3

ITEM #29 = BARB-2  
QTY = 3

ITEM #43 = TUBE  
QTY = 3

#	DATE	REVISION

SITE NUMBER **BU876406**  
DATE 10/24/19  
DRAWN BY SRM  
EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION  
**BU876406**  
**NE OLD LIME-OLD LYME FIREHOUSE**  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTOGEN**  
SERVICES GROUP  
NEXTGEN SERVICES GROUP, INC  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

**NGS-11**  
SHEET NUMBER



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By: lyema Date: 11/11/2019

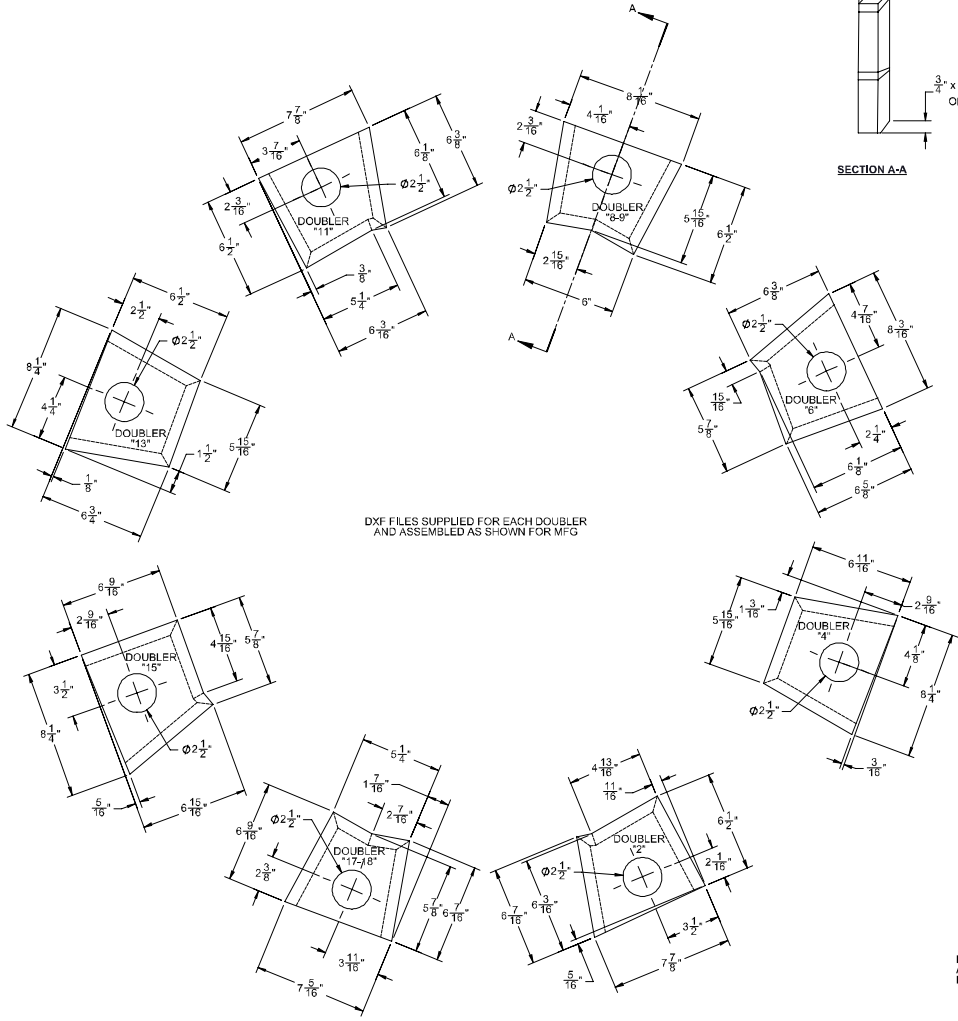
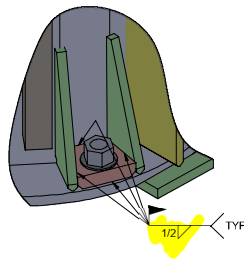
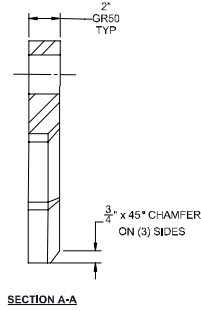
☐ Reviewed, No exceptions taken

☐ Reviewed, Make Note Corrections

☐ Revised and Resubmit

☐ Rejected, See Remarks

☐ Reviewed Only For Loads Imposed on the Structure

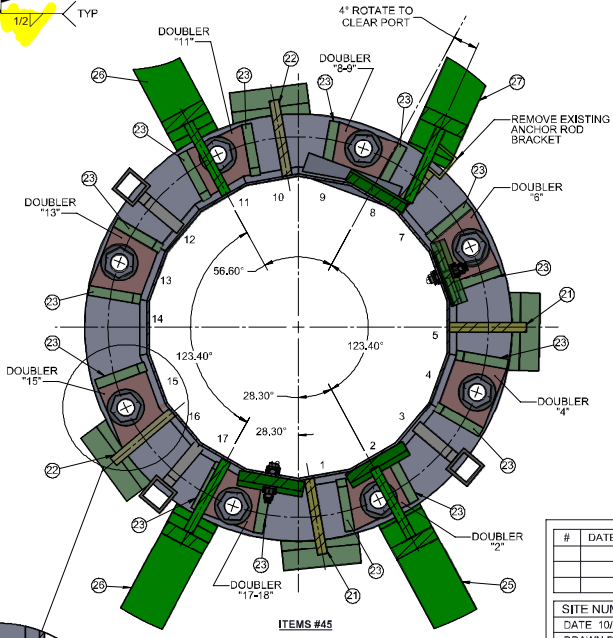


DXF FILES SUPPLIED FOR EACH DOUBLER AND ASSEMBLED AS SHOWN FOR MFG

DO NOT REMOVE MORE THAN (1) ONE EXISTING NUT AT A TIME

REPLACE NUTS AND ADD PLAT WASHER AT EACH LOCATION

DETAIL B



#	DATE	REVISION

SITE NUMBER **BU876406**

DATE 10/24/19

DRAWN BY SRM

EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION

**BU876406**

**NE OLD LIME-OLD LYME FIREHOUSE**

189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTGEN**  
SERVICES GROUP

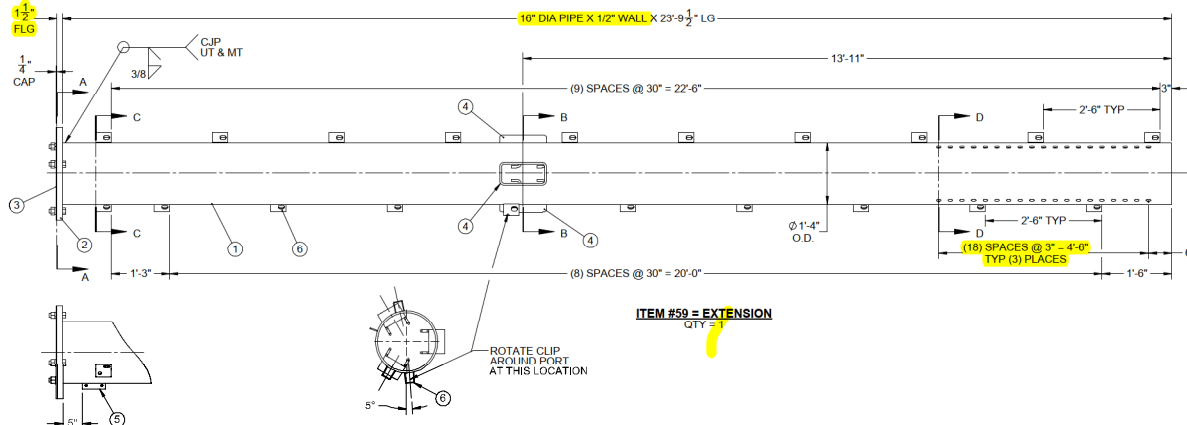
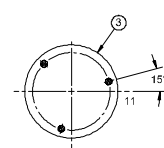
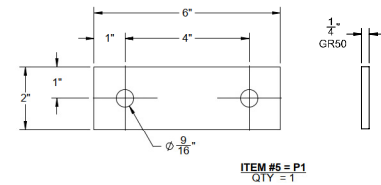
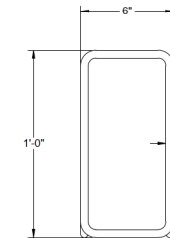
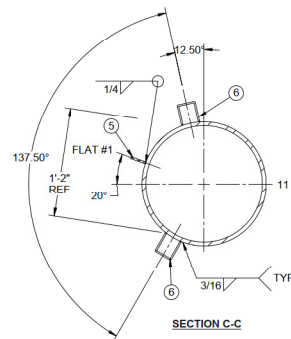
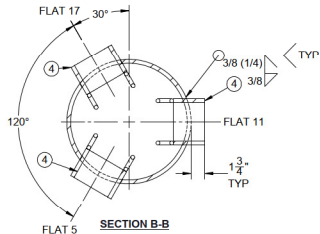
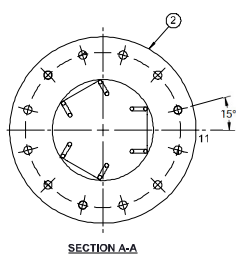
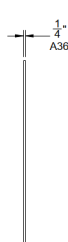
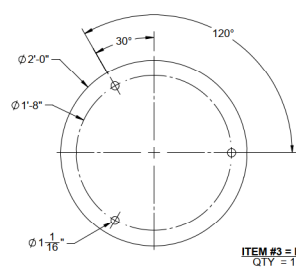
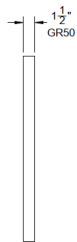
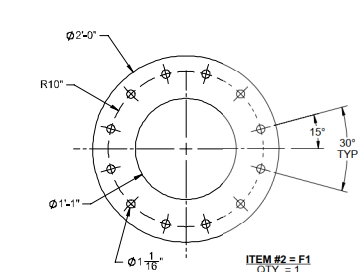
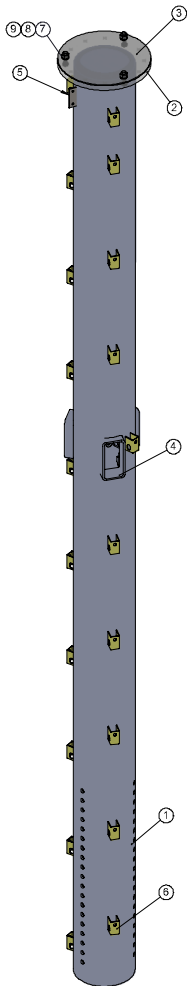
**NEXTGEN SERVICES GROUP, INC**  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

SHEET NUMBER  
**NGS-12**



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By: lyerna Date: 11/11/2019  
☐ Reviewed, No exceptions taken  
☐ Reviewed, Make Note Corrections  
☐ Revised and Resubmit  
☐ Rejected, See Remarks  
☐ Reviewed Only For Loads Imposed on the Structure



ITEM NO	QTY	PART NUMBER	DESCRIPTION	MATERIAL	WT EA	EXT. WT.
1	1	T1	16" PIPE (16" O.D. X 1/2" WALL) X 23'-9 1/2"	A500-C-48KS	1999	1999
2	1	F1	FLANGE 1 1/2" THK X 2'-0" OD X 1'-1" I.D.	A572-GR50	134	134
3	1	F2	FLANGE 1 1/2" THK X 2'-0" OD	A36	32	32
4	3	C30138125	1/2" THK X 6" X 12" (OUTSIDE) X 4" PORT W/ J-HOOKS	A572-GR65	20	60
5	1	P1	PLATE 1/4" THK X 2" X 6" LG	A572-GR50	1	1
6	20	CCI-SBC	STEP BOLT CLIP 3/16" THK W/ 3/4" DIA HOLE	A572-GR50	1.40	28
7	3	80002-100	HARDENED LOCKWASHER 1" DIA	F436 (GALV)	0.10	0.3
8	3	80003-100	HEAVY HEX NUT 1-BUNC	A-563 (GALV)	0.43	1.29
9	3	80000-100-350	HEX HVY BOLT 1-BUNC X 3 1/2" LG	A325 (GALV)	1.16	3.48
TOTAL WEIGHT					2259.07	

#	DATE	REVISION

SITE NUMBER **BU876406**  
DATE: 10/24/19  
DRAWN BY: SRM  
EOR **PAUL J FORD & COMPANY**

PROJECT INFORMATION  
**BU876406**  
NE OLD LIME-OLD LYME  
FIREHOUSE  
189 BOSTON POST ROAD  
OLD LYME, CT 06371

**NEXTGEN**  
SERVICES GROUP  
NEXTGEN SERVICES GROUP, INC  
2242 OLD MARLTON PIKE E. SUITE 100  
MARLTON, NJ 08053

SHEET NUMBER  
**NGS-13**



## **FABRICATION INSPECTION**



Machine and Welding of Danbury INC. Project: Crown Castle – Old Lyme Firehouse – BU# 876406 -  
Address- 189 Boston Post Road Old Lyme, Connecticut 06371- Tower Modification Materials

Date: 2/20/2020

Specifications:

ANSI/TIA-222-G

AISC Steel Construction Manual, 14<sup>th</sup> Edition

AWS D1.1/D1M: 2010 Structural Welding Code

Inspection Summary:

Machine and Welding of Danbury INC. has fabricated the tower modification members associated with this project in accordance with the specifications listed above. Machine and Welding of Danbury Inc. utilizes special fabrication fixtures to precisely set-up tower components before they are welded. There are numerous in-process inspection procedures that take place during set-up, before welding, after welding, and after galvanizing. Final inspection procedures include inspecting the finished tower components as well as verifying all in-process inspections have been performed and properly documented.

Machine and Welding of Danbury INC. hereby certifies that all tower components have been fabricated in accordance with the specifications listed above and per the drawings provided by Paul J Ford.

All materials have passed inspection.

*Zachary Stuart Yale*

Zachary Stuart Yale

President

Machine and Welding of Danbury INC.

Date: \_\_2/20/2020\_\_



## **FABRICATOR CERTIFIED WELDING INSPECTIONS**



**01 March 2020**

Mr. Stuart Yale  
1260 N. Main St.  
Walnut Cove, NC 27052  
syale@mwdfab.com  
(336) 462-0526

**Subject: Shop Inspection Report**

Site Number: 876406  
Site Name: Old Lyme Firehouse

Metal Inspection Technology Project Number: 2002-017

Metal Inspection Technology is pleased to submit this **“Shop Inspection Report”** for the above mentioned project.

This report has been prepared in accordance with the proper industry specifications and documents the results of the testing performed specifically for this modification project.

Metal Inspection Technology (MIT) appreciates the opportunity of providing Mr. Stuart Yale and Crown Castle our professional services. If you have any questions or need of further information on this, or any other projects, please contact us via phone at (980) 241-5611 or email at [mgfinley@metalinspektionstechnology.com](mailto:mgfinley@metalinspektionstechnology.com) or [jfinley@metalinspektionstechnology.com](mailto:jfinley@metalinspektionstechnology.com)

Respectfully Submitted;





**Scope of Services:**

To perform Visual Welding Inspection in accordance with AWS D.1-2015 of the associated shop welds for the (58) Step Peg Brackets, (4) Anchor Rod Brackets, (6) Bolt-On Brackets, (1) Safety Climb Plate, (2) Monopole Extension Flanges, (3) Port Holes on Monopole Extension, (36) Lifting Lugs to Reinforcing Plates and to prepare a report of all observations and test results.

**Testing Performed By:**

Mr. Michael G. Finley  
Metal Inspection Technology  
3388 Highway 73  
Iron Station, NC 28080

**14 February 2020 Inspection & Testing:**

Mr. Michael Finley and Mrs. Jennifer Finley arrived at MWD Fabrication in Walnut Cove, NC for the Pre/During/Post visual inspection of the shop welds for the (58) Step Peg Brackets, (4) Anchor Rod Brackets, (6) Bolt-On Brackets, (1) Safety Climb Plate, (36) Lifting Lugs to Reinforcing Plates, (2) Monopole Extension Flanges, (3) Port Holes On Monopole Extension. Magnetic Particle and Ultrasonic Shearwave Testing were also performed during this visit and no indications were noted during the time of testing.

**Visual Welding Inspection** was performed on the (36) Lifting Lug welds to Reinforcing Plates. Welds were gauged and verified to have either met or exceeded 3/16". Welds for the (58) Step Peg Brackets to Reinforcing Plates and new Monopole Extension were gauged and verified to have either met or exceeded 3/16" as indicated on the modification drawings. Welds for the (4) Anchor Rod Brackets were gauged and verified to have either met or exceeded the required 3/8" from the Top Plates to the Stiffeners as indicated on the modification drawings. Welds from the Stiffeners to the Backer Plates were gauged and verified to have either met or exceeded the required 1/2" as indicated on the modification drawings. Welds from the Tubes to the backer plates were gauged and verified to have either met or exceeded the required 5/8". Welds for (2 of 4) of the Anchor Rod Brackets called for a 2' length CJP. The CJP cap weld 2' in Length was gauged and verified to have either met or exceeded the required 3/8" as indicated on the Modification drawings. Welds for the (6) Bolt-On brackets were gauged and verified to have either met or exceeded the required 3/8" as indicated on the modification drawings. CJP cap welds for the (2) Flange Plates on the new Monopole extension were gauged and verified to have either met or exceeded the required 3/8" as indicated on Sheet NGS-13 of the modification drawings. Welds for the (3) Port Holes on the new Monopole extension were gauged and verified to have either met or exceeded the required 3/8" as indicated on Sheet NGS-13 of the modification drawings. Welds for the (1) Safety Climb Plate to the new Monopole Extension were gauged and verified to have either met or exceeded the required 1/4" as indicated on the modification drawings. All welds inspected either met or exceeded the minimum visual inspection criteria based in Table 6.1 of the AWS D1.1 Structural Welding Code 2015 Edition. See attached photographs. Magnetic Particle and Ultrasonic Shearwave Testing were also performed. See below.


## SHOP DAILY INSPECTION REPORT

Client <u>MWD Fabrication</u>	Report No. <u>2002-017</u>
Project <u>Old Lyme Firehouse</u>	Job Number <u>2002-017</u>
Site No. <u>876406</u>	Inspector <u>Michael G. Finley</u>
Location <u>Walnut Cove, NC</u>	Date <u>02/14/2020</u>

QTY	PART NUMBER	CODE	DIM	VT	WELD ID	GLV	NOTE
36	Lifting Lugs to Reinforcing Plates	AWS D1.1	X	√	RH	NO	N/A
58	Step Peg Brackets to Reinforcing Plates and new Monopole Extension	AWS D1.1	X	√	RH	NO	N/A
4	Anchor Rod Brackets	AWS D1.1	X	√	GM	NO	N/A
1	Tower Extension w/ (2) Flanges, (3) Port Holes	AWS D1.1	X	√	WMB	NO	N/A
6	Bolt-On Brackets	AWS D1.1	X	√	GM	NO	N/A
1	Safety Plate	AWS D1.1	X	√	WMB	NO	N/A

**LEGEND:** MG-Material Grade, WR-Weld Reject, S-Stencil Missing, ML-Material Length, PM-Paint Masking

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Michael G. Finley AWS-CWI	02/14/2020	Reviewed By 
Inspector	Date	(Signed Copy on File)



## 14 FEBRUARY 2020 – MAGNETIC PARTICLE TESTING REPORT BU# 876406 OLD LYME FIREHOUSE

<b>Material Type:</b> Carbon Steel Grade 65		<b>Part Size:</b> Various	
<b>Standard:</b> AWS D1.1			
<b>Procedure:</b> MIT-MT-D1-08			
<b>METHOD</b>			
<input checked="" type="checkbox"/> Dry		<input type="checkbox"/> Wet	
<b>Particles</b>			
Particle Color: <input checked="" type="checkbox"/> SirChem Dry Powder 63 Red		Particle Manufacturer: <input checked="" type="checkbox"/> Circle Systems Inc.	
		Particle Batch No. 19748	
<b>Magnetic Field</b>			
<input checked="" type="checkbox"/> Yoke		<input checked="" type="checkbox"/> AC <input type="checkbox"/> DC	
		Longitudinal/ 2 Directions	
Field Verified by: <input checked="" type="checkbox"/> Pie Gage		Demagnetized <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>EQUIPMENT USED</b>			
<input checked="" type="checkbox"/> Magnaflux Y-1		Serial No.: 1444     Cal Due Date: 02/26/20	
<b>INSPECTION RESULTS</b>			
<b>Quantity</b>	<b>Part Number</b>	<b>Description</b>	<b>Results</b>
1	N/A	Monopole Extension Top and Bottom Flange	<b>Accept</b>
3	N/A	Port Holes on Monopole Extension	<b>Accept</b>
2	N/A	2' Length of Anchor Rod Brackets	<b>Accept</b>
Comments: <b>No indications were noted during time of testing.</b>			

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Michael G. Finley MT Level II      02/14/2020  
**Inspector      NDT Level II      Date**

**Reviewed By**



**(Signed Copy on File)**



**14 FEBRUARY 2020 - ULTRASONIC TESTING REPORT**  
**BU# 876406 OLD LYME FIREHOUSE**

Equipment	Olympus Epoch LTC	Transducer	2.25 MHz
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Serial No.	130806210
Procedure No.	UT-D1-08
Material Thickness	Varies
AWS Joint	AWS Approved
Quality Requirements	AWS D1.1 Table 6.2
Welding Process	GMAW

[illegible]

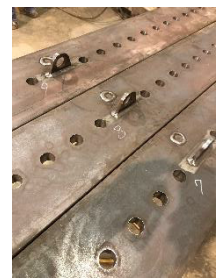
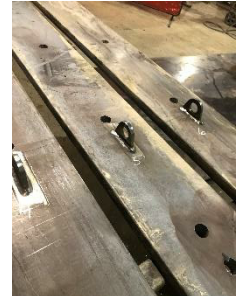
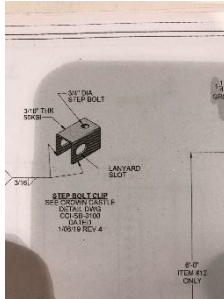
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Michael G. Finley	UT Level II	02/14/2020
<b>Inspector</b>	<b>Level</b>	<b>Date</b>

Reviewed By \_\_\_\_\_  
(Signed Copy on File)



## 14 FEBRUARY 2020 - SHOP PHOTOGRAPHS BU# 876406 OLD LYME FIREHOUSE



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Michael G. Finley AWS-CWI

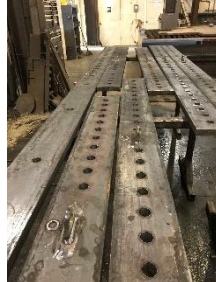
02/14/2020

Inspector

Date



**14 FEBRUARY 2020 - SHOP PHOTOGRAPHS  
BU# 876406 OLD LYME FIREHOUSE**



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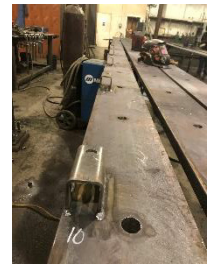
Inspector

02/14/2020

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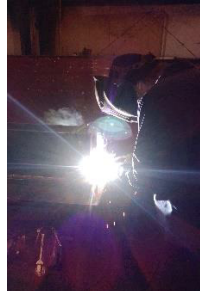
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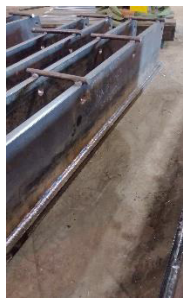
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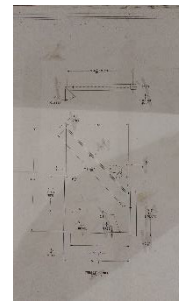
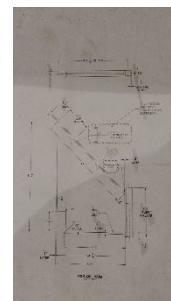
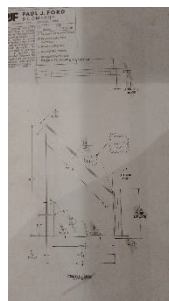
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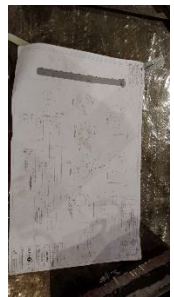
Inspector

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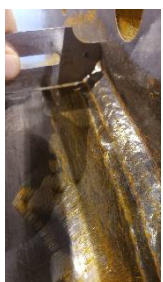
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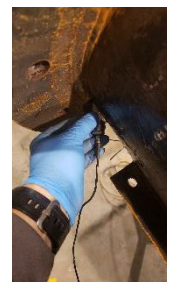
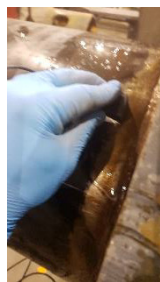
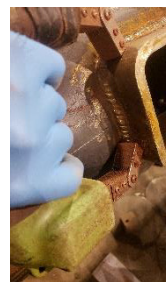
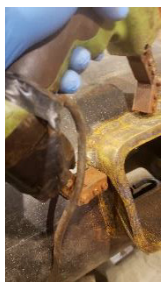
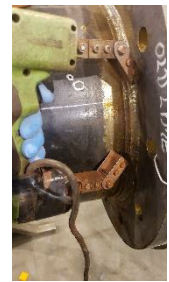
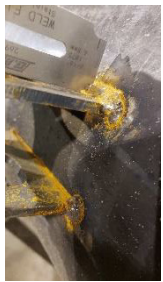
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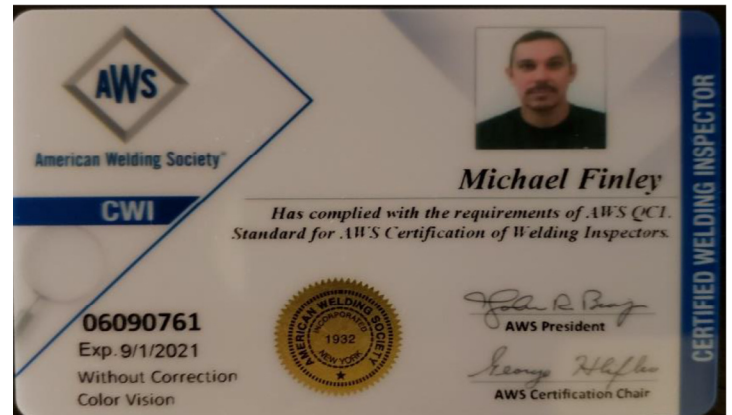



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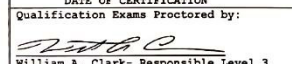

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Inspector


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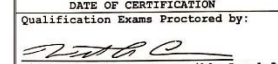





	<b>Metal Inspection Technology</b> <b>PERSONNEL CERTIFICATION AND QUALIFICATION RECORD</b>
---	---

<b>NAME OF CERTIFIED INDIVIDUAL</b> Michael G. Finley					
<b>CERTIFICATION LEVEL</b> Level-2		<b>NDT METHODS:</b> Magnetic Particle Inspection (MPI)			
<b>EDUCATION:</b> BS/AS Engineering Technology		<b>YEAR COMPLETED:</b> 6			
<b>EXPERIENCE SUMMARY</b>					
<b>METHOD</b>	<b>LEVEL</b>	<b>SPECIFICATION</b>	<b>COMPANY</b>	<b>FROM</b>	<b>TO</b>
Magnetic Particle	Level 2	ASME & AWS SNT-TC-1A ASTM	Metal Inspection Technology	10/2013	Present
Magnetic Particle	Level 2	ASME & AWS SNT-TC-1A ASTM	CWI Services Inc	11/2011	10/2013
<b>TECHNICAL TRAINING</b>					
<b>COURSE/METHOD</b>		<b>HOURS</b>	<b>SPONSORED BY</b>	<b>DATE</b>	
Magnetic Particle Testing Level 1 & 2		20	CLR Testing & Inspection	11/2011	
MPI Supplemental Training		15	CWI Services Inc	11/2011	
<b>Date of Hire/Assignments:</b> 10/2013, Magnetic Particle Inspector					
<b>EXAMINATION RESULTS</b>					
MPI General <u>86.00%</u> **SPECIFIC <u>100%</u> Practical <u>100%</u> COMPOSITE(AVERAGE) <u>95.3%</u>					
** Fluorescent Magnetic Particle- Wet Continuous / Residual,**					
<b>(MPI)</b> October 08, 2019		<b>October 08, 2022</b>			
<b>DATE OF CERTIFICATION</b>					
<b>Qualification Exams Proctored by:</b>			<b>CERTIFIED BY:</b>		
 William A. Clark- Responsible Level 3 NDT Level III I certify that the above named individual has successfully completed all of the qualification requirements described in SNT-TC-1A and Metal Inspection Technology's Standard Written Practice. And is here by qualified to conduct NDT testing and inspections on behalf of Metal Inspection Technology as a Level-2 MPI NDT Inspector in the above referenced technique.**			 President Metal Inspection Technology I certify that the above named individual has successfully completed all of the certification requirements described in SNT-TC-1A and Metal Inspection Technology's Standard Written Practice. And is here by certified to conduct NDT testing and inspections on behalf of Curtiss Wright Controls as a Level-2 MPI NDT Inspector in the above referenced technique.**		

	<b>Metal Inspection Technology</b> <b>PERSONNEL CERTIFICATION AND QUALIFICATION RECORD</b>
---	---

<b>NAME OF CERTIFIED INDIVIDUAL</b> Michael G. Finley					
<b>CERTIFICATION LEVEL</b> Level-2		<b>NDT METHODS:</b> Ultrasonic Testing (UT)			
<b>EDUCATION:</b> BS/AS Engineering Technology		<b>YEAR COMPLETED:</b> 6			
<b>EXPERIENCE SUMMARY</b>					
<b>METHOD</b>	<b>LEVEL</b>	<b>SPECIFICATION</b>	<b>COMPANY</b>	<b>FROM</b>	<b>TO</b>
Ultrasonic Testing	Level 2	ASME & AWS SNT-TC-1A ASTM	Metal Inspection Technology	10/2013	Present
Ultrasonic Testing	Level 2	ASME & AWS SNT-TC-1A ASTM	CWI Services Inc	11/2010	10/2013
<b>TECHNICAL TRAINING</b>					
<b>COURSE/METHOD</b>		<b>HOURS</b>	<b>SPONSORED BY</b>	<b>DATE</b>	
Ultrasonic Testing Level I		40	Flumsted	05/2009	
UT Supplemental Training Level II		50	CWI Services Inc	11/2010	
<b>Date of Hire/Assignments:</b> 10/2013, Ultrasonic Testing Inspector					
<b>EXAMINATION RESULTS</b>					
UT General <u>82.00%</u> **SPECIFIC <u>94%</u> Practical <u>95%</u> COMPOSITE(AVERAGE) <u>95%</u>					
** Fluorescent / Visible **					
<b>(UT)</b> October 08, 2019		<b>October 08, 2022</b>			
<b>DATE OF CERTIFICATION</b>					
<b>Qualification Exams Proctored by:</b>			<b>CERTIFIED BY:</b>		
 William A. Clark- Responsible Level 3 NDT Level III I certify that the above named individual has successfully completed all of the qualification requirements described in SNT-TC-1A and Metal Inspection Technology's Standard Written Practice. And is here by qualified to conduct NDT testing and inspections on behalf of Metal Inspection Technology as a Level-2 UTI NDT Inspector in the above referenced technique.**			 President Metal Inspection Technology I certify that the above named individual has successfully completed all of the certification requirements described in SNT-TC-1A and Metal Inspection Technology's Standard Written Practice. And is here by certified to conduct NDT testing and inspections on behalf of Curtiss Wright Controls as a Level-2 UTI NDT Inspector in the above referenced technique.**		



Reported To: Mr. Zachary Stuart Yale  
 Machine & Welding of Danbury  
 1741 Pitzer Rd.  
 Danbury, NC 27016

Date: 12/31/18  
 P/O Number: 18-TRIS-2096  
 Report Number: 1  
 Project: Crown Castle Welding Qualification

### AWS - WELDER, WELDING OPERATOR OR TACK WELDER QUALIFICATION TEST RECORD

Name: Walter Mark Beasley  
 Type of Welder: Semi-Automatic  
 Welding Procedure Specification No. Crown Castle-FCAW-07  
 Welding Code: AWS D1.1  
 Identification Number: 2341  
 Rev: 2  
 Date: 2/8/18

Variables	Record Actual Values	Qualification Range
Process/Type	FCAW	FCAW
Electrode size/multi le	Single	Single
Current/Position	DCEP	Vertical, Flat, Horizontal, Fillets & Grooves
Weld Position	3G	U hill
Weld Protection	U hill	With
Backing with or Without	With	
Material/Spec	A572-65	All AWS Pre qualified Material
Base Metal		
Thickness: (Plate)		
Groove	1"	1/8" – Unlimited
Fillet	N/A	1/8" - Unlimited
Thickness: (Pipe/tube)		
Groove	N/A	1/8" – Unlimited
Fillet	N/A	1/8" - Unlimited
Diameter: (Pipe)		
Groove	N/A	24" and greater
Fillet	N/A	Any Diameter
Filler Metal		
Spec. No.	AWS A5.29	
Class	E81T-1	
F-No.	6	F6
Gas/Flux Type	100% CO2	N/A

**VISUAL INSPECTION** Acceptable: ☒ Yes ☐ No Date coupon welded: 12/27/18

#### Guided Bend Test Results

3	Results	4G	Results
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

#### Fillet Test Results

Appearance: N/A Fillet Size: N/A

Fracture Test Root: N/A Macroetch: N/A

Describe the location, nature, and size of any crack or tear in the specimen:

#### Radiographic Test Results

Film ID	Results	Remarks	Film ID	Film ID	Results
FCAW3G-2341	Pass	N/A	N/A	N/A	N/A
Film evaluated by: Christopher Duhan			TUV Rheinland Industrial Solutions		
Mechanical tests conducted by: N/A			Laboratory Test Number: N/A		
Welding supervised by: Eric Pierson			Company: TUV Rheinland Industrial Solutions		
			AWS Accreditation No. 090103		

The welder identified above ☒ SSES, ☐ FAILS based on the requirements of the code listed above.

Reviewer's Signature:

Date: / -

Client Approval:

Date:

#### TÜV RHEINLAND INDUSTRIAL SOLUTIONS, INC.

These test results report our findings at the time of inspection and shall be reviewed by the client for compliance to the project requirements. Due to the limitations of nondestructive testing in evaluating all of the factors that determine the overall component quality, no guarantee is made or liability assumed by TÜV Rheinland Industrial Solutions, Inc. ("TRIS") for the component quality or serviceability.



**Eric V Pierson**  
**CWI 15092091**  
**QC1 EXP. 9/1/2021**

RAP 3/4/2015  
 Crown Castle AWS Welder Qualification  
 Page 1

724-378-3900 • FAX (724)-378-3940



3/17/2015

Variables	Record Actual Values			Qualification Range
Process/Type	FCAW			FCAW
Electrode (single/multiple)	Single			Single
Current/Polarity	DCEP			All Positions
Position	3G & 4G			
Weld Progression	Uphill			Uphill
Backing (With or Without)	With			With
Material/Spec	A36	To	A36	All AWS Prequalified Material
Base Metal				
Thickness: (Plate)				
Groove				
Fillet	1"			1/8" to Unlimited
Thickness: (Pipe/tube)				1/8" to Unlimited
Groove				
Fillet				
Diameter: (Pipe)				24" OD and Greater
Groove				
Fillet				
Filler Metal	AWS A5.20			F6 Filler Metal
Spec. No.				
Class				
F-No.	F6			N/A
Gas/Flux Type	CO <sub>2</sub>			

**VISUAL INSPECTION**

Acceptable:



Yes



No

Date coupon welded:

7/27/2017

**Guided Bend Test Results**

Type – 3G	Result	Type – 4G	Result
Side Bend	PASS	Side Bend	PASS
Side Bend	PASS	Side Bend	PASS

**Fillet Test Results** N/A

Appearance:

Fillet Size:

Fracture Test Root:

Macroetch:

(Describe the location, nature, and size of any crack or tearing of the specimen):

**Radiographic Test Results** N/A

Film ID	Results	Remarks	Film ID	Results	Remarks
Film evaluated by:			Company:		
Mechanical tests conducted by: Richard Portman			Laboratory Test Number: A17-025		
Welding supervised by: Richard Portman			Company: TUV Rheinland Industrial Solutions		
			AWS Accreditation No. 090103		



7/31/2017



Richard A. Portman  
CWI 05061311  
QC1 EXP. 6/1/2020



Reported To: Mr. Zachary Stuart Yale  
 Machine & Welding of Danbury  
 1260 North Main Street  
 Walnut Cove, NC 27052

Date: 11/26/2019  
 P/O Number: 19-TRIS-1571  
 Report Number: 1  
 Project: Crown Castle Welding Qualification

### AWS - WELDER, WELDING OPERATOR OR TACK WELDER QUALIFICATION TEST RECORD

Name: Ricky Harp  
 Type of Welder: Semi-Automatic  
 Welding Procedure Specification No. MWD E81T1 FCAW  
 Welding Code: AWS D1.1  
 Identification Number: 9132  
 Rev: 0  
 Date: 11/26/19

Variables	Record	Actual Values	Qualification Range
Process/Type		FCAW	FCAW
Electrode		Sinle	Sinle
Current/Polari		DCEP	Flat, Horizontal, & Vertical
Position		3G	Fillet & Grooves
Weld Position		U hill	U hill
Backin With or Without		With	With
Material/Spec	A572-65	To	A572-65
Base Metal			All AWS Pre qualified Material
Thickness: Plate			
Groove		1"	1/8" – Unlimited
Fillet		N/A	1/8" - Unlimited
Thickness: (Pipe/tube)			
Groove		N/A	1/8" – Unlimited
Fillet		N/A	1/8" - Unlimited
Diameter: (Pipe)			
Groove		N/A	24" and reater
Fillet		N/A	An Diameter
Filler Metal			
Spec. No.		AWS A5.36	
Class		E81T-1	
F-No.		6	F6
Gas/Flux Type		75/25 % AR/Co2	N/A

**VISUAL INSPECTION** Acceptable: ☒ Yes ☐ No Date coupon welded: 11/21/2019

#### Guided Bend Test Results

3G	Results	4G	Results
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

#### Fillet Test Results

Appearance: N/A Fillet Size: N/A

Fracture Test Root: N/A Macroetch: N/A

Describe the location nature and size of any crack or tearing of the specimen

#### Radiographic Test Results

Film ID	Results	Remarks	Film ID	Film ID	Results
FCAW3G-9132	Pass	N/A	N/A	N/A	N/A
Film evaluated by: Christopher Du an			TUV Rheinland Industrial Solutions		
Mechanical tests conducted by: N/A			Laboratory Test Number: N/A		
Welding supervised by: Dennis Hildebrand			Company: TUV Rheinland Industrial Solutions		
			AWS Accreditation No. 090103		

The welder identified above ☒ PASSES, ☐ FAILS based on the requirements of the code listed above.

Reviewer's Signature:

Date:

Client Approval:

Date:

#### TÜV RHEINLAND INDUSTRIAL SOLUTIONS, INC.

These test results report our findings at the time of inspection and shall be reviewed by the client for compliance to the project requirements. Due to the limitations of nondestructive testing in evaluating all of the factors that determine the overall component quality, no guarantee is made or liability assumed by TÜV Rheinland Industrial Solutions, Inc. ("TRIS") for the component quality or serviceability.

 **Dennis L Hildebrand**  
 CWI 00060171

RAP 3/4/2015  
 Crown Castle AWS Welder Qualification  
 Page 1



## WELDING PROCEDURE SPECIFICATION (WPS)

AWS D1.1

Company Name: MACHINE AND WELDING OF DANBURY

☒ Prequalified

Qualified By Testing

Identification #: MWD-FCAW-GAS-Shld-TJNT01

Revision: NONE

Date: 01/04/2018

By: M.DIXON

Welding Process: FCAW

Supporting PQR #: PREQUALIFIED

☐ Automatic☒ Semi-Auto☐ Manual☐ Mechanized

## JOINT DESIGN USED

Joint Type: Tee

Backing: ☐ Yes ☒ NoWeld: ☒ Single ☐ Double

Backing Materials: N/A

Root Opening: N/A

Root Face Dimension: N/A

Groove Angle: N/A

Radius (J-U): N/A

Back Gouging: ☐ Yes ☒ No

Method: N/A

## POSITION

Position Of Groove: N/A

Fillet: ALL

Vertical Progression:

☒ Up☐ Down☐ N/A

## ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW): ☒ Short Circuit ☒ Globular ☒ SprayCurrent: ☐ AC☒ DCEP☐ DCEN☐ PulsedPower Source: ☐ CC☒ CV

Other: ABOVE 250 AMPS FLAT AND HORIZONTAL POSITION WELDS ONLY

Tungsten Electrode (GTAW): Size: N/A

Type: N/A

## BASE METALS

Material Specification: Group I, II or III To Group I, II or III

Type Or Grade: All Prequalified

To All Prequalified

Thickness: Groove: N/A

Fillet:

Diameter (Pipe):

## FILLER METALS

AWS Specification: A5.29 AWS

Classification: E81T1-XX

## SHIELDING

Flux: FAST FREEZE

Electrode-Flux (Class): RUTILE

Gas: AR/CO2

Composition: 75%/25%Gas

Flow Rate: 35 -50

Cup Size: 5/8" TO 3/4"

## PREHEAT / INTERPASS

Preheat Temperature: Minimum: SEE NOTE

Interpass Temperature: Minimum: 50

Maximum: 550

## TECHNIQUE

Stringer Or Weave Bead: Both

Multi-Pass Or Single Pass (Per Side): Multiple Pass

Number Of Electrodes: 1

Electrode Spacing: Longitudinal: N/A

Lateral: N/A

Angle: N/A

Contact Tube To Work Distance: 5/8" TO 3/4"

Peening: No

Interpass Cleaning: MECHANICAL

## POSTWELD HEAT TREATMENT

Temperature: NOT REQUIRED

Time: N/A

## ADDITIONAL NOTES

1/8 TO 3/4 50 MINIMUM PREHEAT  
 3/4 TO 1 1/2" 150 MINIMUM PREHEAT  
 OVER 1 1/2" TO 2 1/2" 225 MINIMUM PREHEAT  
 OVER 2 1/2" 300 MIN PREHEAT



Michael G Dixon  
 CWI 10120661  
 QC1 EXP. 12/1/2019



## Welding Procedure

Pass Or Weld Layers	Process	Filler Metal Class	Filler Metal Diameter	Current Type & Polarity	Current Amps Or Wire Feed Speed	Volts	Travel Speed	Notes
ALL	FCAW	5.29	0.052	DCEP	125/130IPM	24	VARIABLE	5/8 CTWD
ALL	FCAW	5.29	0.052	DCEP	200/225IPM	25	VARIABLE	5/8 CTWD
ALL	FCAW	5.29	0.052	DCEP	250/295IPM	26	VARIABLE	3/4 CTWD
ALL	FCAW	5.29	0.052	DCEP	300/368	27	VARIABLE	3/4 CTWD

## Joint Details

Single-bevel-groove weld (4)  
Butt joint (B)  
T-joint (T)  
Corner joint (C)

Welding Process	Joint Designation	Base Metal Thickness (U = unlimited)		Groove Preparation			Allowed Welding Positions	Weld Size (E)	Notes			
		T <sub>1</sub>	T <sub>2</sub>	Root Opening Root Face Groove Angle	Tolerances							
					As Detailed (see 3.12.3)	As Fit-Up (see 3.12.3)						
SMAW	BTC-P4	U	U	R = 0 f = 1/8 min. α = 45°	+1/16, -0 +0, -0 +10° - 5°	+1/8, -1/16 ±1/16 +10° - 5°	All	S-1/8	b, e, f, g, j, k			
GMAW FCAW	BTC-P4-GF	1/4 min.	U	R = 0 f = 1/8 min. α = 45°	+1/16, -0 +0, -0 +10° - 5°	+1/8, -1/16 ±1/16 +10° - 5°	F, H V, OH	S	a, b, f, g, j, k			
SAW	TC-P4-S	7/16 min.	U	R = 0 f = 1/4 min. α = 60°	±0 +0, -0 +10° - 5°	+1/16, -0 ±1/16 +10° - 5°	F	S	b, f, g, j, k			

Double-bevel-groove weld (5)  
Butt joint (B)  
T-joint (T)  
Corner joint (C)

Welding Process	Joint Designation	Base Metal Thickness (U = unlimited)		Root Opening Root Face Groove Angle	Tolerances		Allowed Welding Positions	Total Weld Size (E <sub>1</sub> + E <sub>2</sub> )	Notes				
		T <sub>1</sub>	T <sub>2</sub>		As Detailed (see 3.12.3)								
					As Detailed (see 3.12.3)	As Fit-Up (see 3.12.3)							
SMAW	BTC-P5	5/16 min.	U	R = 0 f = 1/8 min. α = 45°	+1/16, -0 +0 -0 +10° -5°	+1/8, -1/16 ±1/16 +10° -5°	All	S <sub>1</sub> + S <sub>2</sub> -1/4	a, f, g, i, j, k				
GMAW FCAW	BTC-P5-GF	1/2 min.	U	R = 0 f = 1/8 min. α = 45°	+1/16, -0 +0 -0 +10° -5°	+1/8, -1/16 ±1/16 +10° -5°	F, H V, OH	S <sub>1</sub> + S <sub>2</sub> -1/4	a, f, g, i, j, k				
SAW	TC-P5-S	3/4 min.	U	R = 0 f = 1/4 min. α = 60°	±0 +0 -0 +10° -5°	+1/16, -0 ±1/16 +10° -5°	F	S <sub>1</sub> + S <sub>2</sub>	f, g, i, j, k				

Single-J-groove weld (6)  
Butt joint (B)  
T-joint (T)  
Corner joint (C)

The diagram shows a cross-section of a single-J-groove weld joint. Key dimensions labeled include:  $S(E)$  (total thickness),  $R$  (fillet radius),  $T_1$  and  $T_2$  (plate thicknesses),  $T$  (total thickness), and  $R$  (fillet radius). The joint is shown in two views: 'OUTSIDE CORNER' and 'INSIDE CORNER'.

Welding Process	Joint Designation	Base Metal Thickness (U = unlimited)		Groove Preparation			Allowed Welding Positions	Weld Size (E)	Notes			
		$T_1$	$T_2$	Root Opening Root Face Bevel Radius Groove Angle	Tolerances							
					As Detailed (see 3.12.3)	As Fit-Up (see 3.12.3)						
SMAW	B-P8	1/4 min.	—	$R = 0$ $f = 1/8$ min. $r = 3/8$ $\alpha = 30^\circ$	+1/16, -0 +0, -0 +1/4, -0 +10°, -0°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S	a, f, g, j, k			
	TC-P8	1/4 min.	U	$R = 0$ $f = 1/8$ min. $r = 3/8$ $\alpha = 30^\circ$ $\alpha = 45^\circ$	+1/16, -0 +0, -0 +1/4, -0 +10°, -0° +10°, -0°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5° +10°, -5°	All	S	a, f, g, j, k			
GMAW FCAW	B-P8-GF	1/4 min.	—	$R = 0$ $f = 1/8$ min. $r = 3/8$ $\alpha = 30^\circ$	+1/16, -0 +0, -0 +1/4, -0 +10°, -0°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S	a, f, g, j, k			
	TC-P8-GF	1/4 min.	U	$R = 0$ $f = 1/8$ min. $r = 3/8$ $\alpha = 30^\circ$ $\alpha = 45^\circ$	+1/16, -0 +0, -0 +1/4, -0 +10°, -0° +10°, -0°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5° +10°, -5°	All	S	a, f, g, j, k			

Double-J-groove weld (9)  
Butt joint (B)  
T-joint (T)  
Corner joint (C)

Welding Process	Joint Designation	Base Metal Thickness (U = unlimited)		Groove Preparation			Allowed Welding Positions	Total Weld Size (E <sub>1</sub> + E <sub>2</sub> )	Notes			
		T <sub>1</sub>	T <sub>2</sub>	Root Opening Root Face Bevel Radius Groove Angle	Tolerances							
					As Detailed (see 3.12.3)	As Fit-Up (see 3.12.3)						
SMAW	B-P9	1/2 min.	—	R = 0 f = 1/8 min. r = 3/8 α = 30°	+1/16, -0 +0, -0 +1/4, -0 +10°, -5°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S <sub>1</sub> + S <sub>2</sub>	a, f, g, i, j, k			
	TC-P9	1/2 min.	U	R = 0 f = 1/8 min. r = 3/8 α = 30° α <sub>2</sub> = 45°	+1/16, -0 +0, -0 +1/4, -0 +10°, -5°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S <sub>1</sub> + S <sub>2</sub>	a, f, g, i, j, k			
	B-P9-GF	1/2 min.	—	R = 0 f = 1/8 min. r = 3/8 α = 30°	+1/16, -0 +0, -0 +1/4, -0 +10°, -5°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S <sub>1</sub> + S <sub>2</sub>	a, f, g, i, j, k			
GMAW FCAW	TC-P9-GF	1/2 min.	U	R = 0 f = 1/8 min. r = 3/8 α = 30° α <sub>2</sub> = 45°	+1/16, -0 +0, -0 +1/4, -0 +10°, -5°	+1/8, -1/16 ±1/16 +1/4, -0 +10°, -5°	All	S <sub>1</sub> + S <sub>2</sub>	a, f, g, i, j, k			

- This procedure meets the general requirements of the AWS d1.1 clause 3 for prequalified status.
- This procedure is to be used for welding carbon steel when post weld heat treatment and impact testing is not required by governing production codes.
- Positions qualified are all. Vertical welds must be made in the upward progression.
- Maximum root pass thickness and single pass fillet weld size Flat 3/8", Horizontal 5/16", Vertical 1/2", Overhead 5/16".
- The orientation of the two members in the joint may vary from 135 to 180 degrees for butt joints, or 45 to 35 degrees for corner joints, or 45 to 90 degrees for T-joints.
- Minimum weld size (E) as shown in Table 3.4. Depth of preparation (S) as specified on design drawings.
- If fillet welds are used to reinforce groove welds in corner or T-joints in statically loaded structures, the weld shall be equal to or larger than T 1/4 but not to exceed design drawing size. Groove welds in corner or T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to or larger than T 1/4 but not to exceed design drawing size.
- Double groove welds may have grooves of unequal depth, provided these conform to the limitations of Note 7. Also weld size (E) applies to individually to each groove.
- For corner joints, the outside groove preparation may be either or both members provided the basic groove configuration is not changed and adequate edge distance is maintained to support the welding operations without excessive edge melting.
- When base metal is below 32 F, the base metal shall be preheated to a minimum of 70 F and the minimum interpass temperature shall be maintained during welding.
- If material has coating in the weld zone, remove coating 2" either side of the weld zone prior to welding.





## WELDING PROCEDURE SPECIFICATION (WPS)

AWS D1.1

Company Name: MACHINE AND WELDING OF DANBURY

☒ Prequalified

Qualified By Testing

Identification #: MWD-FCAW-02CJP

Revision: NONE

Date: 01/04/2018

By: M.DIXON

Welding Process: FCAW

Supporting PQR #: PREQUALIFIED

☐ Automatic☒ Semi-Auto☐ Manual☐ Mechanized

## JOINT DESIGN USED

Joint Type: SINGLE BEVEL GROOVE - TCU4aGF

Backing: Yes ☒ No Weld: ☒ Single Double

Backing Materials: GROUP I, II &amp; III

Root Opening: 0 - 1/2" Root Face Dimension: NOT LIMITED

Groove Angle: 40 - 65 Radius (J-U): N/A

Back Gouging: Yes ☒ No Method: N/A

## POSITION

Position Of Groove: ALL Fillet: N/A

Vertical Progression: ☒ Up ☐ Down ☐ N/A

## ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW): ☐ Short Circuit ☐ Globular ☐ SprayCurrent: ☐ AC DCEP ☒ DCEN Pulsed

Power Source: CC CV

Other: N/A

Tungsten Electrode (GTAW): Size: N/A Type: N/A

## TECHNIQUE

Stringer Or Weave Bead: OPTIONAL

Multi-Pass Or Single Pass (Per Side): AS REQUIRED

Number Of Electrodes: 1

Electrode Spacing: Longitudinal: N/A

Lateral: N/A

Angle: N/A

Contact Tube To Work Distance: 5/64" DIA TO 1"

Peening: NOT ALLOWED

Interpass Cleaning: BRUSH, CHIP HAMMER, GRIND

## POSTWELD HEAT TREATMENT

Temperature: NOT REQUIRED

Time: N/A

## BASE METALS

Material Specification: ALL To GROUP I, II &amp; III

Type Or Grade: N/A To N/A

Thickness: Groove: 1/8" - UNLIMITED Fillet: N/A

Diameter (Pipe): N/A

## FILLER METALS

AWS Specification: A5.36

AWS Classification: E81T8-A5-K8-H8 F6

## SHIELDING

Flux: SELF SHIELD Electrode-Flux (Class): N/A

Gas: N/A Composition: N/A

Flow Rate: N/A Gas Cup Size: N/A

## PREHEAT / INTERPASS

Preheat Temperature: Minimum: TABLE 3.2

Interpass Temperature: Minimum: TABLE 3.2 Maximum: 550

## ADDITIONAL NOTES

1/8 TO 3/4	70 MINIMUM PREHEAT
3/4 TO 1 1/2"	150 MINIMUM PREHEAT
OVER 1 1/2" TO 2 1/2"	225 MINIMUM PREHEAT
OVER 2 1/2"	300 MIN PREHEAT



Michael G Dixon  
CWI 10120661  
QC1 EXP. 12/1/2019



## Welding Procedure

Pass Or Weld Layers	Process	Filler Metal Class	Filler Metal Diameter	Current Type & Polarity	Current Amps Or Wire Feed Speed	Volts	Travel Speed	Notes
ALL	FCAW	5.36	1/16"	DCEN	145/200IPM	16-20	AS REQ	MEMO

Single-bevel-groove weld (4)  
T-joint (T)  
Corner joint (C)

Tolerances	
As Detailed (see 3.13.1)	As Fit-Up (see 3.13.1)
$R = +1/16, -0$	$+1/4, -1/16$
$\alpha = +10^\circ, -0^\circ$	$+10^\circ, -5^\circ$

Welding Process	Joint Designation	Base Metal Thickness (U = unlimited)		Groove Preparation		Allowed Welding Positions	Gas Shielding for FCAW	Notes
		T <sub>1</sub>	T <sub>2</sub>	Root Opening	Groove Angle			
SMAW	TC-U4a	U	U	$R = 1/4$	$\alpha = 45^\circ$	All	—	e, g, j, k
				$R = 3/8$	$\alpha = 30^\circ$	F, V, OH	—	e, g, j, k
GMAW FCAW	TC-U4a-GF	U	U	$R = 3/16$	$\alpha = 30^\circ$	All	Required	a, g, j, k
				$R = 3/8$	$\alpha = 30^\circ$	F	Not req.	a, g, j, k
				$R = 1/4$	$\alpha = 45^\circ$	All	Not req.	a, g, j, k
SAW	TC-U4a-S	U	U	$R = 3/8$	$\alpha = 30^\circ$	F	—	g, j, k
				$R = 1/4$	$\alpha = 45^\circ$			

## MEMO

1. This procedure meets the general requirements of the AWS d1.1 clause 3 for prequalified status.
2. This procedure is to be used for welding carbon steel when post weld heat treatment and impact testing is not required by governing production codes.
3. Positions qualified are all. Vertical welds must be made in the upward progression.
4. Maximum root pass thickness and single pass fillet weld size Flat 3/8", Horizontal 5/16", Vertical 1/2", Overhead 5/16".
5. The orientation of the two members in the joint may vary from 135 to 180 degrees for butt joints, or 45 to 35 degrees for corner joints, or 45 to 90 degrees for T-joints.
6. Minimum weld size (E) as shown in Table 3.4. Depth of preparation (S) as specified on design drawings.
7. If fillet welds are used to reinforce groove welds in corner or T-joints in statically loaded structures, the weld shall be equal to or larger than T 1/4 but not to exceed design drawing size. Groove welds in corner or T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to or larger than T 1/4 but not to exceed design drawing size.
8. Double groove welds may have grooves of unequal depth, provided these conform to the limitations of Note 7. Also weld size (E) applies to individually to each groove.
9. For corner joints, the outside groove preparation may be either or both members provided the basic groove configuration is not changed and adequate edge distance is maintained to support the welding operations without excessive edge melting.
10. When base metal is below 32 F, the base metal shall be preheated to a minimum of 70 F and the minimum interpass temperature shall be maintained during welding.
11. If material has coating in the weld zone, remove coating 2" either side of the weld zone prior to welding.



Michael G Dixon  
CWI 10120661  
QC1 EXP. 12/1/2019



### **FABRICATOR NDE INSPECTION**

**See Fabricator Certified Weld Inspection for NDE inspection.**



## **MATERIAL TEST REPORT (MTR)**



## MILL TEST REPORT

Lot#: 54218100027 Part#: 357104

BRIGHTON-BEST INTERNATIONAL INC.

This MTR contains 1 pages (Page: 1)

TIANJIN PINGYUAN HARDWARE CO., LTD.  
 NO.8 CONSTRUCTION FIVE BRANCH, BALITAI TOWN, JINNAN DISTRICT, TIANJIN  
 TEL: 0086-22-23792163 FAX: 0086-22-23790387 e-mail: bxm@tjpyco.com

## CERTIFICATE OF INSPECTION

PURCHASER : BRIGHTON-BEST INTERNATIONAL (TAIWAN) INC.  
 ADDRESS : NO. 122 YILIN ROAD, RENDE DIST., TAINAN CITY 71752, TAIWAN  
 DESCRIPTION : ASTM F436 TYPE 1 WASHERS ( ASTM F2329-13 HDG)  
 INSP. DATE : 10/29/2018 ISSUED DATE: 10/29/2018  
 PO # : U59799 LOT NO. : 54218100027  
 INVOICE NO : FPB18100851-14 CERT. NO. : R076787  
 MATERIAL TYPE : 45C/3.5mm MANU. DATE : 10/26/2018  
 SAMPLE SIZE : ASTM F436-11 SIZE : F436 1"  
 HEAT NO : 13408273 LOT SIZE : 36000 PCS  
 MANUFACTURER: TIANJIN PINGYUAN HARDWARE CO., LTD. PART NO : 357104

DIMENSIONAL INSP. SPEC.: ASTM F436-11

TEST FACILITY: M

CHARACTERISTICS	SPECIFIED	ACTUAL RESULT	ACCE.	REJE.
VISUAL APPEARANCE	ASTM F2329-13	PASSED	29	0
INSIDE:	27.00 - 28.60	27.35-28.48	8	0
OUTSIDE:	49.20 - 52.40	50.85-50.94	8	0
THICKNESS:	3.45 - 4.50	3.47-3.50	8	0
HEAD MARKING	F436 PY	F436 PY	8	0

MECHANICAL INSP. SPEC.: ASTM F436-11

TEST FACILITY: M

CHARACTERISTICS	TEST METHOD	SPECIFIED	ACTUAL RESULT	ACCE.	REJE.
HARDNESS	ASTM F436-11	28-45 HRC	29-42	4	0
FINISH	ASTM F2329-13 HDG	55um	56um	4	0

CHEMICAL COMPOSITION %

TEST FACILITY: S

C	Si	Mn	P	S	Cu	Ni	Cr	B	V
0.45	0.26	0.58	0.026	0.019	0.04	0.02	0.07	0.0000	0.00

INSP. RESULT: SAMPLES TESTED CONFORM TO ALL OF THE SPECIFICATION AS ABOVE.

LAB. CHIEF/CERT. SIGNATORY:

(NAN-KU LIN) PAGE: 1 OF 1

REMARKS: XIANYIN

Country of Origin: CHINA

DIMENSION=mm, TENSILE=Mpa

\* THE REPORT MUST NOT BE REPRODUCED EXCEPT IN FULL AND RELATE ONLY TO THE ITEM TESTED.

\* THE REPORT IS ISSUED ACCORDING TO ISO16228 F3.1(EN10204 3.1).

\* THE QMS IS APPROVED TO ISO9001-2008, VALID TO JUN.25.21

TEMPERING TEMPERATURE CONFORM TO THE REQUIREMENT OF ASTM F436-11

天津市平源五金制品有限公司  
 TIANJIN PINGYUAN HARDWARE CO., LTD.



# **Certified Material Test Report to ISO16228 F3.1 (EN 10204-2004 3.1)** **FOR ASME SA194/ ASTM A194-16 GRADE 2H HVY HEX NUTS**

FACTORY: NINGBO HAIXIN HARDWARE CO.,LTD.DATE: NOV.09.2018ADDRESS: XIJINGTANG LUOTUO NINGBO ZHEJIANG  
315205 CHINACOUNTRY OF ORIGIN: CHINAMFG LOT NUMBER: 5140830005CUSTOMER: BRIGHTON-BEST INTERNATIONAL (TAIWAN) INCPO NUMBER: U57430QNTY SHIPPED: 2.700MPCSPART NO: 313020SAMPLE SIZE: ACC. TO ASME B18.18.1-11MANUFACTURER DATE: 2018/11/5SIZE & DESCRIPTION: 1-8+0.024"(HDG/WAX/BLUE DYE)FINISH: H.T.HOT DIP GAL PER ASTM A153-09/ASTM F2329-13**STEEL PROPERTIES:**TEST FACILITY: SSTEEL GRADE: SWRCH45KSIZE: 38mmHEAT NO: 331700607**CHEMISTRY COMPOSITION:**

CHEMIST	C %	Mn %	P %	S %	Si %	Cr %	Ni %	Cu %	Mo %	OTHERS
SPE:	MIN	MAX	MAX	MAX	MAX					
	0.40	1.00	0.04	0.05	0.40					
TEST:	0.45	0.7	0.018	0.002	0.18					

**DIMENSIONAL INSPECTIONS**SPECIFICATION: ASME /ANSI B18.2.2-2015TEST FACILITY: M**CHARACTERISTICS**

TEST METHOD

SPECIFIED

ACTUAL RESULT

ACC.

REJ.

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APPEARANCE

ASTM F812-12

PASSED

100

0

WIDTH A/F

1.575"-1.625"

1.591"-1.613"

32

0

WIDTH A/C

1.796"-1.876"

1.834"-1.861"

32

0

THREAD

ASME B1.1-03

PASSED

8

0

HEIGHT

0.956"-1.012"

0.976"-0.995"

32

0

MARK

2HZN LM

PASSED

100

0

HDG THICKNESS

ASTM A153-09/ASTM F2329-13 min:43um

57UM-68UM

20

0

**MECHANICAL PROPERTIES:**

TO 1-1/2" in

SPECIFICATION: ASME SA194/ ASTM A194-16TEST FACILITY: M**CHARACTERISTICS**

TEST METHOD

SPECIFIED

ACTUAL RESULT

ACC.

REJ.

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HARDNESS

ASTM E18-12

24-35HRC

HRC29-30

5

0

PROOF LOAD

ASTM F606-11 MIN106000LBF

106000LBF

5

0

HARDNESS AFTER 24H AT 540°C ASTM A194 MIN 89 HRC

HRB 93-97

5

0

TEMPERING TEMPERATURE Min455°C

PASSED(520°C)

MACROETCH

ASTM E381-12 S1/R1/C1~S4/R4/C

S2/R2/C2

5

0

PARTS ARE MANUFACTURED AND TESTED IN ACCORDANCE WITH ASME SA194/ ASTM A194-16

PARTS MEET ASME SECTION II PART A

ALL TESTS IN ACCORDANCE WITH THE METHODS PRESCRIBED SPECIFICATION. WE CERTIFY  
 THAT THIS DATA IS A TRUE REPRESENTATION OF INFORMATION PROVIDED BY THE MATERIAL  
 SUPPLIER AND OUR TESTING LABORATORY.

All parts meet the requirements of FQA and records of compliance are on file.

Maker's ISO#00109Q211593R0M/3302





**HANGZHOU SPRING WASHER CO.,LTD**  
**QUALITY TEST CERTIFICATE OF SPRING LOCK WASHER**

Standard: ASME B 18.21.1-2009 Contract No.:                       
 Order No.: PO U61748 Invoice No.: 19SHD052

Chemical Composition (%)	C	Si	Mn	P	S	Cr	Ni	Cu
	0.64	0.2	0.56	0.012	0.005	0.03	0.03	0.1
Material Type.	65#	Heat No.	V890106151		TEST FACILITY:S			
Specification	REGULAR HELICAL LOCK WASHER 1" HDG							
Quantity	9 M				COUNTRY OF ORIGIN:CHINA			
Lot No.	19010174							
Part No.	350008							
Testing Item	Ac/n	Norm(mm)	Result(mm)	Reject	Norm	Result	Reject	
Inside Diameter	2/100	25.68-26.41	26.03-26.32	0				
Outside Diameter	1/32	Max42.86	Max42.11	0				
Width	1/32	Min7.64	Min7.78	0				
Thickness	1/32	6.45-7.15	6.74-6.92	0				
Height								
Section								
Surface Defects	2/100	None	None	0				
Hardness	0/8	HRC38-46	HRC38.2-39.5	0				
Springing								
Toughness	0/8	Qualified	Qualified	0				
Zinc Coating	0/8	Min53um	Min59.6um	0				
TEST FACILITY:M								
Zinc Coating Standard of:		ASTM F1941-2015 F2329.						
Customer Name:		BRIGHTON BEST INTERNATIONAL (TAIWAN) INC.						
General:		The spring lock washers are conformed with the standard of ASME B 18.21.1-2009. QUALIFIED.						
THE REPORT IS ISSUED ACCORDING TO ISO16228 F3.1(EN10204 3.1)								

Inspector: Shiweiqing

Quality Inspection

Date: 2019.03.27





NUCOR STEEL TUSCALOOSA, INC.

# MILL TEST CERTIFICATE

Nucor Steel Tuscaloosa, Inc.  
1700 HOLT RD N.E.  
Tuscaloosa, AL 35404-1000  
800 800-8204  
customerservice@nucortusk.com

Page:3 of 3

Load Number	Tally	Mill Order Number	PO NO   Line NO	Part Number	Certificate Number	Prepared
R213381	00000000847673	N-171790-001	V16885 01	100096480A572-65	S84767301-1	03/24/2019 05:59
<b>Grade</b>				<b>Customer:</b>		
<b>Order Description:</b> Hot Roll Plate A57265T3, 1.0000 IN x 96.000 IN x 480.000 IN				<b>Sold TO:</b> LEECO STEEL LLC Lisle IL		
<b>Quality Plan Description:</b> A572-65 .50 CEV: ASTM A572-65 T3-07				<b>Ship TO:</b> LEECO STEEL LLC Pendergrass GA		
				<b>Sent TO:</b>		

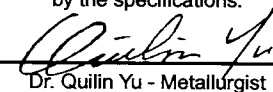
Shipped Item	Certified By	Heat/Slab Number	Yield ksi	Tensile ksi	Y/T %	ELONGATION %		Bend OK?	Hard HB	Charpy Impacts (ft-lbs)					Shear %				Test Temp
						2"	8"			Size mm	1	2	3	Avg	1	2	3	Avg	
9C2008AA	S9C2006FTT	B9P3617-04 ***	69.5	92.7	75.0		20.7												
9C2008AA	S9C2020FTT	B9P3617-04 ***	72.8	92.5	78.7	33.2													

Items: 13 PCS: 13 Weight: 169888 LBS

Mercury has not come in contact with this product during the manufacturing process nor has any mercury been used by the manufacturing process. Certified in accordance with EN 10204 3.1. No weld repair has been performed on this material. Yield strength is determined by the 0.2% offset method unless otherwise noted. Manufactured to a fully killed fine grain practice. ISO 9001:2015 Registered, PED Certified

\*\*\*\* indicates Heats melted and Manufactured in the U.S.A.

We hereby certify that the product described above passed all of the tests required by the specifications.

  
Dr. Quilin Yu - Metallurgist





# Jinn Her Enterprise Co., Ltd.

NO. 107, SHIN-LO ST, KANGSHAN, 820 KAOHSIUNG, TAIWAN R.O.C.  
TEL: +886 (07) 8229001 FAX: +886 (07) 8223750 +886 (07) 6211903

## CERTIFICATE OF INSPECTION

1 / 1

CUSTOMER NAME : BRIGHTON-BEST INTERNATIONAL(TAIWAN) INC.  
CUSTOMER'S ADDRESS : NO. 122, YILIN RD., RENDE TOWNSHIP  
TAINAN COUNTY, 717  
TAIWAN, R. O. C.  
ORDER NUMBER : U06985  
PART NUMBER : 497432  
DESCRIPTION : ASTM A325 STRUCTURE BOLT TY. 1.HD MARK "A325" & "JH"

SIZE : 1-8X3-1/2 NC  
FINISH : H.T. HOT DIP GAL  
QUANTITY : 5400.0  
BOLT MFR. : JINN HER ENTERPRISE CO.,LTD.  
NUT MFR. :  
WASHER MFR. :

REPORT NO : JH12041219003  
REPORT DATE : 2012/04/28  
BOLT LOT NO : B118796G1  
BOLT MATERIAL : 10B33  
BOLT HEAT NO : 2DG88  
NUT LOT NO :  
NUT MATERIAL :  
NUT HEAT NO :  
WASHER LOT NO :  
WASHER MATERIAL :  
WASHER HEAT NO :  
ASSEMBLY LOT NO :  
BOLT MFR. DATE : 2012/3/8  
NUT MFR. DATE :  
WASHER MFR. DATE :

BOLT DIMENSIONAL INSPECTION				INSPECTION : 2012/03/28			
SPECIFICATION : ASME B18.2.6				SAMPLING STANDARD : ASME B18.18.2M			
CHARACTERISTIC	TEST METHOD	STANDARD	UNIT	TEST VALUE	SAMPLE	ACC	REJ
WIDTH ACROSS CORNERS	JIS B1071	45.62-47.65	mm	46.47-46.56	8	8	0
WIDTH ACROSS FLATS	JIS B1071	40.01-41.27	mm	40.56-40.64	8	8	0
HEIGHT	JIS B1071	15.02-15.92	mm	15.62-15.65	8	8	0
BODY DIA.	JIS B1071	24.79-25.95	mm	25.29-25.32	8	8	0
BODY LENGTH	JIS B1071	MIN 36.58	mm	37.75-37.83	8	8	0
GRIP LENGTH	JIS B1071	MAX 44.45	mm	43.01-43.09	8	8	0
LENGTH	JIS B1071	84.08-88.90	mm	87.21-87.36	8	8	0
THREAD	ASME B1.3M	NONE	N/A	PASS	8	8	0
BOLT MECHANICAL INSPECTION				INSPECTION : 2012/03/15			
SPECIFICATION : ASTM A325				SAMPLING STANDARD : ASTM F1470			
CHARACTERISTIC	TEST METHOD	STANDARD	UNIT	TEST VALUE	SAMPLE	ACC	REJ
CORE HARDNESS	ASTM A325	25.0-34.0	HRC	30-31	4	4	0
TENSILE STRENGTH	ASTM A325	MIN 120.0	ksi	148-149	3	3	0
PROOF LOAD	ASTM A325	MIN 85.0	ksi	PASS	3	3	0
BOLT FINISH INSPECTION				INSPECTION : 2012/03/28			
SPECIFICATION : ASTM F2329				SAMPLING STANDARD : ASTM F1470			
CHARACTERISTIC	TEST METHOD	STANDARD	UNIT	TEST VALUE	SAMPLE	ACC	REJ
THICKNESS OF COATING	ASTM F2329	MIN 51.0	um	57-60	15	15	0
ADHESION TEST	ASTM F2329	NONE	N/A	PASS	3	3	0
BOLT APPEARANCE INSPECTION				INSPECTION : 2012/03/28			
SPECIFICATION : ASTM F2329				SAMPLING STANDARD : ASTM F1470			
CHARACTERISTIC	TEST METHOD	STANDARD	UNIT	TEST VALUE	SAMPLE	ACC	REJ
PRESENCE FINISH	ASTM F2329	NONE	N/A	PASS	15	15	0
BOLT APPEARANCE INSPECTION				INSPECTION : 2012/03/28			
SPECIFICATION : ASTM F788/F788M				SAMPLING STANDARD : ASME B18.18.2M			
CHARACTERISTIC	TEST METHOD	STANDARD	UNIT	TEST VALUE	SAMPLE	ACC	REJ
GENERAL WORKMANSHIP	VISION	NONE	N/A	PASS	8	8	0
CHEMICAL ANALYSIS %							
HEAT NO C-x100 MN-x100 P-x1000 S-x1000 SI-x100 CU-x100 NI-x100 CR-x100 MO-x100 AL-x1000 B-x10000 V-x100							
2DG88 35 84 19 9 20 13 21							

\* Heats of steel, having the elements listed in section 5.4 of ASTM A325, intentionally added, were not used to produce the bolts.



### BOLT MARKING

Remark : 1. Lab is accredited according to ISO/IEC17025 requirements. This certificate is valid with signature of Yi-Sung Chen.

2. This test certificate is responsible for designated samples only. This test certificate only relates to the items listed and tested, it's not allowed to be partially used.
3. The above composition is quoted from original mill certs which is not in the scope of Lab Accreditation.
4. This test certificate in accordance with EN 10204 type 3.1.
5. Unless specified by the customer, the latest version of the testing specs was used.
6. Quality System conforms to ISO 9001 requirements and certified by TUV.

*Yi-Sung Chen*



U06985



497432



B118796G1





A Division of Lonestar Group

**MATERIAL TEST REPORT**



PO# 33752 SO# 349429

Item: 1-8 X 14		ALL THREAD STUD	
Material Specification: ASTM A193(17) B7		HDG	
ASTM F1554(18) GR 105 S4			
LOT#:	W13287		
Heat Number:	5803815705		
Tensile Strength KSI:	142	Yield Strength KSI:	127
Elongation:	19	Reduction of Area:	59
Hardness:	29 HRC	Charpy Impact -20F:	71/70/71
Macro Etch:	S1/R1/C1	Tempering Temp.:	1418 F
Quenched and Tempered		Decarburization:	0.005

Carbon (C):	0.410	Chromium (CR):	0.910
Manganese (MN):	0.910	Molybdenum (MO):	0.180
Phosphorus (P):	0.009	Copper (CU):	NA
Sulfur (S):	0.008	Nitrogen (N):	NA
Silicon (SI):	0.340	Nickel (NI):	NA
Cobalt (CO):	NA	Aluminum (AL):	NA
Vanadium (V):	NA	Tin (SN):	NA
Tungsten (W):	NA	Titanium (TI):	NA
Columbium/Niobium (NB/CB):	NA	Boron (B):	NA
Calcium (CA):	NA		

"AmeriBolt is a Lonestar Fasteners approved bolting products supplier"

We hereby certify that the material was manufactured, sampled, tested and inspected per the most recent revision of the product or material specification. The foregoing data was furnished to us by our supplier or resulting from a test performed in a recognized laboratory and is on file in the records of the corporation.

Name: Lori Walker



# SSAB

## Test Certificate

Form TC1; Revision 3; Date 7 Feb 2018

1770 Bill Sharp Boulevard, Muscatine, IA 52761-9412, US

		Customer P.O. No.: 02094640				Mill Order No.: 41-560685-01				Shipping Manifest : MT366836																				
		Product Description: ASTM A572-50/M345(18)/A709-50/M345(18)				Ship Date: 22 Jan 19				Cert No: 061753286																				
						Cert Date: 22 Jan 19				( Page 1 of 1 )																				
		Size: 1.500 X 96.00 X 240.0 (IN)																												
Tested Pieces				Tensiles								Charpy Impact Tests																		
Heat Id	Piece Id	Tested Thickness	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB) 1 2 3 Avg				% Shear 1 2 3 Avg				Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr									
A9A211	C27	1.508 (DISCRT)	L	58	82		23	T																						
A9A211	C30	1.757 (DISCRT)	L	56	81		24	T																						
Chemical Analysis																														
Heat Id	C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	ORGN																
A9A211	.18	1.25	.018	.001	.19	.030	.36	.18	.19	.03	.000	.036	.008	USA																
<p>KILLED STEEL MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT. ! WARNING: THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING NICKEL AND NICKEL COMPOUNDS, WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. FOR MORE INFORMATION GO TO WWW.P65WARNINGS.CA.GOV. MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT 100% MELTED AND MANUFACTURED IN THE USA. PRODUCTS SHIPPED: A9A211 C28 PCES: 4, LBS: 39204</p>																														
(P) Cust Part # : 13099										WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION										Brian Wales SENIOR METALLURGIST - PRODUCT										



## MILL TEST CERTIFICATE

Nucor Steel Tuscaloosa, Inc.  
1700 HOLT RD N.E.  
Tuscaloosa, AL 35404-1000  
800 800-8204  
customerservice@nucortusk.com

Load Number	Tally	Mill Order Number	PO NO   Line NO	Part Number	Certificate Number	Prepared
R213395	00000000847695	N-171790-002	V16885 02	125096480A572-65	D84769502-1	08/26/2019 11:27
Grade			Customer:			
Order Description: Hot Roll Plate A57265T3, 1.2500 IN x 96.000 IN x 480.000 IN Quality Plan Description: A57260 DP: ASTM A572-60-13			Sold TO: LEECO STEEL LLC Lisle IL Ship TO: LEECO STEEL LLC Pendergrass GA Sent TO:			

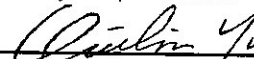
Shipped Item	Certified By	Heat/Slab Number	Yield ksi	Tensile ksi	Y/T %	ELONGATION %		Bend OK?	Hard HB	Charpy Impacts (ft-lbs)					Shear %				Test Temp
						2"	8"			Size mm	1	2	3	Avg	1	2	3	Avg	
9C2002BA	S9C2002FTT	B9P3616-03 ***	68.4	91.5	74.8		17.8												
9C2002CA	S9C2002FTT	B9P3616-03 ***	68.4	91.5	74.8		17.8												
9C2002DA	S9C2002FTT	B9P3616-03 ***	68.4	91.5	74.8		17.8												
9C2004AA	S9C2004FTT	A9P1222-02 ***	67.5	90.2	74.8		18.9												
9C2004BA	S9C2004FTT	A9P1222-02 ***	67.5	90.2	74.8		18.9												
9C2004CA	S9C2004FTT	A9P1222-02 ***	67.5	90.2	74.8		18.9												
9C2004DA	S9C2004FTT	A9P1222-02 ***	67.5	90.2	74.8		18.9												
9C2006AA	S9C2006FTT	B9P3617-01 ***	69.5	92.7	75.0		20.7												
9C2006BA	S9C2006FTT	B9P3617-01 ***	69.5	92.7	75.0		20.7												
9C2006CA	S9C2006FTT	B9P3617-01 ***	69.5	92.7	75.0		20.7												

Items: 10 PCS: 10 Weight: 163354 LBS

Mercury has not come in contact with this product during the manufacturing process nor has any mercury been used by the manufacturing process. Certified in accordance with EN 10204 3.1. No weld repair has been performed on this material. Yield strength is determined by the 0.2% offset method unless otherwise noted. Manufactured to a fully killed fine grain practice. ISO 9001:2015 Registered, PED Certified

\*\*\*\* indicates Heats melted and Manufactured in the U.S.A.

We hereby certify that the product described above passed all of the tests required by the specifications.

  
Dr. Quilin Yu - Metallurgist





12400 Highway 43 North, Axis, Alabama 36505, US

## Test Certificate

**WARNING:** This product can expose you to chemicals including nickel and nickel compounds, which are known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Form TC1: Revision 4: Date 6 Feb 2019

<b>Customer:</b> LEECO STEEL PRODUCTS, INC. 1011 WARRENVILLE ROAD SUITE 500 LISLE IL 60532	<b>Customer P.O.No.:</b> V16255 <b>Product Description:</b> ASTM A572(18) 65/M450 <b>Size:</b> 1.250 X 96.00 X 480.0 (IN)	<b>Mill Order No.:</b> 41-561193-01 <b>Shipping Manifest:</b> AR282894 <b>Ship Date:</b> 09 Feb 19 <b>Cert Date:</b> 09 Feb 19 (Page 1 of 1)
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Tested Places:				Tensiles:				Charpy Impact Tests											
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB)			% Shear			Tst Temp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
										1	2	3	Avg	1	2	3	Avg		
E9B038	A05	1.251 (DISCRT)	L 72	72	92		19	T											
			T 70	91			21	T											
E9B038	A06	0.998 (DISCRT)	L 73	73	95		20	T											
			T 71	95			18	T											

Chemical Analysis																	
Heat	Id	C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	ORGN
	E9B038	.16	1.53	.009	<.001	.03	.042	.13	.08	.17	.03	.046	.091	.007	.0001	.0088	USA

KILLED STEEL  
MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.  
! WARNING: THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING NICKEL AND NICKEL COMPOUNDS, WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.  
FOR MORE INFORMATION GO TO [WWW.P65WARNINGS.CA.GOV](http://WWW.P65WARNINGS.CA.GOV).  
MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT  
100% MELTED AND MANUFACTURED IN THE USA.  
NO WELD REPAIR HAS BEEN PERFORMED ON THIS MATERIAL.  
PRODUCTS SHIPPED: A03 PCES: 1, LBS: 16335 E9B038 A02 PCES: 3, LBS: 49005

(P)	Cust Part #: 125096480A572-65	WE HEREBY CERTIFY THAT THIS MATERIAL WAS TESTED IN ACCORDANCE WITH, AND MEETS THE REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION	Justin Ward SENIOR METALLURGIST - PRODUCT
-----	-------------------------------	--	--





CMC STEEL ALABAMA  
101 S 50TH STREET  
BIRMINGHAM AL 35212-3525

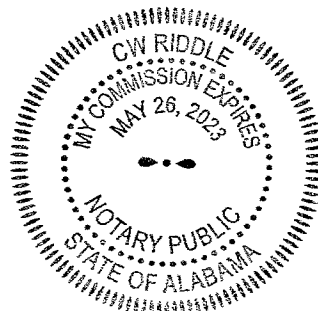
**CERTIFIED MILL TEST REPORT**  
For additional copies call  
800-637-3227

We hereby certify that the test results presented here  
are accurate and conform to the reported grade specification

  
Marcus W. McCluney - CMC Steel AL

Quality Assurance Manager

HEAT NO.:1062749 SECTION: FLAT 1-1/4x6-1/2 40'0" A572-65T2 GRADE: ASTM A572-18 Grade 65 Type 2 ROLL DATE: 11/18/2019 MELT DATE: 11/17/2019 Cert. No.: 82904337 / 062749B960	S O L D T O	Allfasteners USA LLC  959 Lake Rd Medina OH US 44256-2453 4402326060 4402326062	S H I P T O	Machine & Welding of Danbury Inc  1260 Main St Walnut Cove NC US 27052-9393 2167892736	Delivery#: 82904337 BOL#: 73299520 CUST PO#: 13645 CUST P/N: DLVRY LBS / HEAT: 35368.000 LB DLVRY PCS / HEAT: 32 EA
--	----------------------------	---	----------------------------	---	--

Characteristic	Value	Characteristic	Value	Characteristic	Value
C	0.21%	Elongation Gage Lgth test 1	8IN		
Mn	1.04%	Yield Strength test 2	71.9ksi		
P	0.012%	Tensile Strength test 2	88.9ksi		<p>The Following is true of the material represented by this MTR:</p> <ul style="list-style-type: none"><li>*Material is fully killed</li><li>*100% melted and rolled in the USA</li><li>*EN10204:2004 3.1 compliant</li><li>*Contains no weld repair</li><li>*Contains no Mercury contamination</li><li>*Manufactured in accordance with the latest version of the plant quality manual</li><li>*Meets the "Buy America" requirements of 23 CFR635.410, 49 CFR 661</li><li>*Warning: This product can expose you to chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a></li></ul>
S	0.022%	Elongation test 2	18%		
Si	0.23%	Elongation Gage Lgth test 2	8IN		
Cu	0.30%				
Cr	0.12%				
Ni	0.11%				
Mo	0.023%				
V	0.066%				
Cb	0.001%				
Sn	0.010%				
B	0.0003%				
Ti	0.001%				
N	0.0122%				
Carbon Eq A6	0.45%				
Yield Strength test 1	72.3ksi				
Tensile Strength test 1	88.6ksi				
Elongation test 1	18%				

REMARKS :

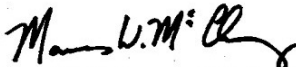





CMC STEEL ALABAMA  
101 S 50TH STREET  
BIRMINGHAM AL 35212-3525

CERTIFIED MILL TEST REPORT  
For additional copies call  
800-637-3227

We hereby certify that the test results presented here  
are accurate and conform to the reported grade specification

  
Marcus W. McCluney - CMC Steel AL

Quality Assurance Manager

HEAT NO.:1062751 SECTION: FLAT 1-1/4x8-1/2 40'0" A572-65T2 GRADE: ASTM A572-18 Grade 65 Type 2 ROLL DATE: 11/19/2019 MELT DATE: 11/17/2019 Cert. No.: 82937438 / 062751B961		S O L D T O	Allfasteners USA LLC 959 Lake Rd Medina OH US 44256-2453 4402326060 4402326062	S H I P T O	Machine & Welding of Danbury Inc 1260 Main St Walnut Cove NC US 27052-9393 2167892736	Delivery#: 82937438 BOL#: 73349749 CUST PO#: 14073 CUST P/N: DLVRY LBS / HEAT: 43370.000 LB DLVRY PCS / HEAT: 30 EA
Characteristic	Value	Characteristic	Value	Characteristic	Value	
C	0.21%	Elongation Gage Lgth test 1	8IN			
Mn	1.06%	Yield Strength test 2	69.3ksi			
P	0.012%	Tensile Strength test 2	88.9ksi			
S	0.031%	Elongation test 2	16%			
Si	0.24%	Elongation Gage Lgth test 2	8IN			
Cu	0.30%					
Cr	0.15%					
Ni	0.10%					
Mo	0.024%					
V	0.068%					
Cb	0.001%			The Following is true of the material represented by this MTR: *Material is fully killed *100% melted and rolled in the USA *EN10204:2004 3.1 compliant *Contains no weld repair *Contains no Mercury contamination *Manufactured in accordance with the latest version of the plant quality manual *Meets the "Buy America" requirements of 23 CFR635.410, 49 CFR 661 *Warning: This product can expose you to chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>		
Sn	0.011%					
B	0.0003%					
Ti	0.001%					
N	0.0126%					
Carbon Eq A6	0.46%					
Yield Strength test 1	70.6ksi					
Tensile Strength test 1	87.2ksi					
Elongation test 1	18%					

REMARKS :



## MILL TEST CERTIFICATE

Page:1 of 1

1700 HOLT RD N.E.  
Tuscaloosa, AL 35404-1000  
800 800-8204

customerservice@nucortusk.com

<b>Load Number</b>	<b>Tally</b>	<b>Mill Order Number</b>	<b>PO NO</b>	<b>Line NO</b>	<b>Part Number</b>	<b>Certificate Number</b>	<b>Prepared</b>
T198930	0000000818065	N-168306-001	V15535	1		S81806501-1	10/22/2018 18:27
<b>Grade</b>					<b>Customer:</b>		
<b>Order Description:</b> Hot Roll Plate From Coil A57265, 0.5000 IN x 96.000 IN x 480.000 IN <b>Quality Plan Description:</b> A57265T3: ASTM A572 65 T3 07					<b>Sold TO:</b> LEECO STEEL LLC Lisle IL <b>Ship TO:</b> LEECO STEEL, LLC Chattanooga TN <b>Sent TO:</b>		

Shipped Item	Heat/Slab Number	Certified By	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Co	V	Al	Ti	N2	B	Ca	Sn	CEV	ACI
8J1788B	A8T2622-01 ***	A8T2622	0.18	1.26	0.008	0.001	0.04	0.18	0.04	0.04	0.011	0.038	0.052	0.030	0.002	0.006	0.0002	0.0007	0.004	0.43	
8J1788C	A8T2622-01 ***	A8T2622	0.18	1.26	0.008	0.001	0.04	0.18	0.04	0.04	0.011	0.038	0.052	0.030	0.002	0.006	0.0002	0.0007	0.004	0.43	

Shipped Item	Certified By	Heat/Slab Number	Yield ksi	Tensile ksi	Y/T %	ELONGATION %		Bend OK?	Hard HB	Charpy Impacts (ft-lbs)					Shear %				Test Temp	
						2"	8"			Size mm	1	2	3	Avg	1	2	3	Avg		
8J1788B	S8J1788FTT	A8T2622-01 ***	70.5	84.7	83.2	28.3														
8J1788B	S8J1788MTT	A8T2622-01 ***	70.7	84.4	83.8	29.0														
8J1788C	S8J1788FTT	A8T2622-01 ***	70.5	84.7	83.2	28.3														
8J1788C	S8J1788MTT	A8T2622-01 ***	70.7	84.4	83.8	29.0														

Items: 2 PCS: 5 Weights: 20051-150

Items: 2 PCS: 5 Weight: 32671 LBS

Mercury has not come in contact with this product during the manufacturing process nor has any mercury been used by the manufacturing process. Certified in accordance with EN 10204 3.1. No weld repair has been performed on this material. Yield strength is determined by the 0.2% offset method unless otherwise noted. Manufactured to a fully killed fine grain practice. NUTEMPER TEMPER PASSED plate from coil ISO 9001:2015 Registered, PED Certified

We hereby certify that the product described above passed all of the tests required by the specifications.

*Quilin Yu*  
Dr. Quilin Yu - Metallurgist

\*\*\* indicates Heats melted and Manufactured in the U.S.A.





# Test Certificate

Form TC1: Revision 3: Date 7 Feb 2018

13609 Industrial Road, Houston, TX 77015, US

<b>Customer:</b> KLOECKNER METALS CORPORATION 500 COLONIAL CENTER PKWY SUITE 500 ROSWELL GA 30076	<b>Customer P.O.No.:</b> CLT-7338526	<b>Mill Order No.</b> 41-559702-01	<b>Shipping Manifest:</b> HT120602	
	<b>Product Description:</b> ASTM A36(14)/A709(17)36/ASME SA36(17) AASHTO M270(15)36, 0.80-1.20 MN		<b>Ship Date:</b> 27 Dec 18	<b>Cert No:</b> 031213414 (Page 1 of 1)
	<b>Size:</b> 0.250 X 96.00 X 240.0 (IN)			

Tested Pieces:				Tensiles:						Charpy Impact Tests											
Heat Id	Piece Id	Piece Dimensions	Tst Loc	YS (KSI)	UTS (KSI)	%RA	Elong % 2in 8in	Tst Dir	Hardness	Abs. Energy(FTLB) 1 2 3 Avg				% Shear 1 2 3 Avg				Tst Tmp	Tst Dir	Tst Siz (mm)	BDWTT Tmp %Shr
E8H104	0371	0.375 (T.L.C)	L	59	70		30	T													
			C	47	70		34	T													
E8H104	0376	0.250 (T.L.C)	L	49	69		32	T													
			C	50	71		32	T													
W8H600	0405	0.250 (T.L.C)	L	49	71		32	T													
			C	50	71		32	T													
W8H600	0409	0.188 (T.L.C)	L	58	69		25	T													
			C	58	70		30	T													
A8U3248	8H2612	0.250 (T.L.C)	L	60	73		29	T													
			C	57	73		29	T													
A8U3248	8H2614	0.250 (T.L.C)	L	50	71		33	T													
			C	52	72		29	T													

Heat Id		Chemical Analysis																ORGN	
		C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Cb	V	Ti	B	N	IIW		
E8H104		.17	.83	.012	.001	.04	.040	.28	.14	.06	.04	.001	.004	.015	.0001	.0088	.36		USA
W8H600		.18	.83	.011	.001	.06	.042	.31	.16	.11	.04	.001	.004	.016	.0001	.0072	.38		USA
A8U3248		.19	.88	.013	.004	.07	.028	.15	.04	.08	.02	.002	.005	.002	.0001	.0090	.37		USA

KILLED STEEL

CEV (IIW) = C + MN/6 + (CR+MO+V)/5 + (NI+CU)/15

MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT

MATERIAL MARKED BELOW WITH AN ASTERISK IS PRODUCED FROM COIL

PRODUCTS SHIPPED:

* E8H104	0375	PCES:	12, LBS:	19608	* W8H600	0404	PCES:	12, LBS:	19608
* A8U3248	8H2615	PCES:	1, LBS:	1634					

(P)

Cust Part #:

WE HEREBY CERTIFY THAT THIS MATERIAL WAS  
TESTED IN ACCORDANCE WITH, AND MEETS THE  
REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

Justin Ward  
SENIOR METALLURGIST - PRODUCT



Nucor Steel Tuscaloosa, Inc.  
1700 HOLT RD N.E.  
Tuscaloosa, AL 35404-1000  
800 800-8204  
customerservice@nucortusk.com

Load Number	Tally	Mill Order Number	PO NO   Line NO	Part Number	Certificate Number	Prepared
T233568	00000000893975	N-507470-010	1214483014 001	07800400	S89397501-1	11/22/2019 12:12

Grade	Customer:
Order Description: Hot Roll Plate From Coil 1/4 x 96 x 240 A57250 15ft lbs. @ -20 degrees Quality Plan Description: A57250/IMP-1: ASTM A572-50-15/A709-50/M270-50 H FREQ IMPACTS	Sold TO: ALRO STEEL CORP Lansing MI Ship TO: ALRO METALS SERVICE CENTER CORP. Lansing MI Sent TO:

Shipped Item	Heat/Slab Number	Certified By	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Cb	V	Al	Ti	N2	B	Ca	Sn	CEV	ACI
9K1853G	A9X4335-04 ***	A9X4335	0.07	1.10	0.012	0.003	0.18	0.17	0.05	0.06	0.017	0.034	0.005	0.027	0.013	0.007	0.0002	0.0017			

Shipped Item	Certified By	Heat/Slab Number	Yield ksi	Tensile ksi	Y/T %	ELONGATION %	Bend OK?	Hard HB	Charpy Impacts (ft-lbs)	Shear %	Test Temp
						2" 8"			Size mm 1 2 3	1 2 3	
9K1853G	S9K1853FTT	A9X4335-04 ***	55.1	68.1	80.9	35.5			5.0 85 91	81 85.7	-22 F
9K1853G	S9K1853BLI	A9X4335-04 ***							5.0 86 99	96 93.7	-22 F
9K1853G	S9K1853FLI	A9X4335-04 ***							5.0 80 108	82 90.0	-22 F
9K1853G	S9K1853MLI	A9X4335-04 ***									
9K1853G	S9K1853MTT	A9X4335-04 ***	58.2	68.1	85.5	29.1					

Items: 2 PCS: 27 Weight: 44106 LBS

Mercury has not come in contact with this product during the manufacturing process nor has any mercury been used by the manufacturing process. Certified in accordance with EN 10204 3.1. No weld repair has been performed on this material. Yield strength is determined by the 0.2% offset method unless otherwise noted. Manufactured to a fully killed fine grain practice. NUTEMPER TEMPER PASSED plate from coil ISO 9001:2015 Registered, PED Certified

\*\*\*\*\* indicates Heats melted and Manufactured in the U.S.A.

We hereby certify that the product described above passed all of the tests required by the specifications.

*Quilin Yu*  
Dr. Quilin Yu - Metallurgist



05-21-2019 04:01

Load - 3323532

BL - 6398349

blr466

Machine &amp; Welding of Danbury, Inc

Heat - 1815728

Cust. PO -

Order - 17429474

**NUCOR**Berkeley Division of NUCOR Corporation  
ISO 9001 and IATF 16949 RegisteredDELIVER TO: certs  
Namasco

## METALLURGICAL TEST REPORT

P.O. Box 2259

Mt. Pleasant, SC 29465

Nucor Steel - Berkeley

a division of NUCOR corporation

Phone: 843-336-6000

Sales Fax: 843-336-6150

MTR BER INQUIRIES@NUCOR.COM

Ship Date 11/17/18

Bill of Lading # 1375925

Vehicle # NSBX000309

Issuance Date 11/17/18

MTR# 1548533

Ship KLOECKNER METALS CORPORATION

To: 1090 NORTH STEEL CIR

HUGER, SC 29450

ROSWELL, GA 30076

HUGER, SC 29450

P/O # 7319080-7

Mill Order # 449013-6

Part # 10063

Total Wgt 216300.00 LB

Gauge x Width .1100 MIN X 72.0000 MIN HR HOT ROLL COIL  
ASTM A1011 / CS-B / REV: 2017a  
Chemistry certification only

Heat	C	Mn	P	S	Si	Ca	NI	Cr	Mo	Sn	Al	V	Nb	N	Ti	B	Ca
1815728 .06	.37	.008	.001	.03	.07	.03	.04	.00	.004	.032	.002	.000	.006	.001	.000	.000	.002
Coil (tag)	1815728-5 (74900.00 LB)																

Mill Test Reports according to EN10204 3.1

All material is sold subject to the description, specifications and terms and conditions set forth on the face and reverse side of Nucor Steel - Berkeley's sales order acknowledgment.

Tensile Testing, when applicable, is performed in accordance with ASTM A-370 specifications. Specimen is machined to standard rectangular test configuration (Figure 3 of ASTM A-370) with a 2" gage length. Yield strength is determined at 0.2% offset.

This material has been produced in compliance with the chemistry and established rolling practices of the ordered specification. If material is ordered to a chemical composition only and if physical testing is not a requirement of the customer's order, testing is not performed by the producer.

We hereby certify the above information is correct as contained in the records of the corporation.  
Kevin Skero Robert Moses  
Hot Mill Metallurgist Chief Metallurgist  
\*\* 100% MELTED AND MANUFACTURED IN THE USA \*\*



# Mill Test Report

Page 1

Issuing Date :	05/15/2018	B/L No. : 502115	Load No. : 511745	Our Order No. : 156579/3	Cust. Order No. : 13321251
Vehicle No:	BOYD 8457	Sold To: ALRO STEEL CORP		Ship To: ALRO STEEL CORP CHARLOTTE NC	
Specification:	2.5000" x 96.000" x 240.000"		3100 E HIGH ST		12933 SAM NEELEY DRIVE
	ASTM A572 Grade 50-15/ASTM A709 Grade 50-17/ASME SA572-50		JACKSON, MI 49204		704-588-5880
	(2017)/AASHTO M270-2017 50 Type 2				CHARLOTTE, NC 28273
Marking :	07807300				

Heat No	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	Al(tot)	V	Nb	Ti	N	Ca	B	Sn	Ceq	Pcm
8502850	0.18	1.28	0.010	0.002	0.23	0.19	0.07	0.08	0.01	0.034	0.074	0.002	0.002	0.0084	0.0022	0.0002	0.009	0.45	0.28

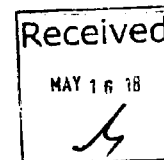
			Tensile Test				
Plate Serial No	Pieces	Tons	Dir.	(psi) Yield	(psi) Tensile	Elong. % in 2"	Elong. % in 8"
8502850-01	1	8.16	T	56,000	85,000	23.7	
			T	58,000	88,000	24.8	

			Charpy Impacts																
			Absorbed Energy (Ft-lbs)				Lateral Expansion (in.)					Shear (%)					Min	Temp ("F)	Size
Plate Serial No	Pieces	Tons	Dir.	(ft-lbs) 1	(ft-lbs) 2	(ft-lbs) 3	(ft-lbs) Ave	Min	(in.) 1	(in.) 2	(in.) 3	(in.) Ave	(in.) Min	(%) 1	(%) 2	(%) 3	(%) Ave		
8502850-01	1	8.16	H-L	52.7	71.7	57.2	60.5	15										-20	10mm

ALRO STEEL/METAL



RT08831462



Manufactured to fully killed fine grain practice by Electric Arc Furnace. Welding or weld repair was not performed on this material. Mercury has not been used in the direct manufacturing of this material. Produced as continuous cast discrete plate as-rolled, unless otherwise noted in Specification. For Mexico shipments: nhc-SalesMX@Nucor.com  
Yield by 0.5EUL method unless otherwise specified. Ceq = C+(Mn/6)+((Cr+Mo+V)/5)+((Cu+Ni)/15)  
Pcm = C+(Si/30)+(Mn/20)+(Cu/20)+(Ni/60)+(Cr/20)+(Mo/15)+(V/10)+5B  
Melted and Manufactured in the USA. ISO 9001:2008 certified (#010940) by SRI Quality System Registrar (#0985-09). PED 97/23/EC 7/2 Annex 1, Para. 4.3 Compliant.  
DIN 50049 3.1.B/EN 10204 3.1B(2004), DIN EN 10204 3.1(2005) compliant. For ABS grades only. Quality Assurance certificate 14-MMPQA-723

We hereby certify that the contents of this report are accurate and correct. All test results and operations performed by the material manufacturer are in compliance with the applicable specifications, including customer specifications.

*T. A. Depretis*  
T. A. Depretis, Metallurgist

5/15/2018 5:46:50 PM



# SSAB

## Test Certificate

12400 Highway 43 North, Axis, Alabama 36505, US

Form TC1: Revision 4: Date 6 Feb 2019

<b>Customer:</b> ALRO STEEL CORPORATION 3100 E HIGH ST.  JACKSON MI 49203		<b>Customer P.O. No.:</b> CL14012636		<b>MHI Order No.:</b> 41-568047-01		<b>Shipping Manifest:</b> AT287057													
		<b>Product Description:</b> ASTM A572-50/M345(18)/A709-50/M345(18) LCVN 15 FT. LBS. @ -20F / A673-H				<b>Ship Date:</b> 18 Apr 19 <b>Cert Date:</b> 18 Apr 19		<b>Cert No:</b> 081719267 (Page 1 of 1)											
		<b>Size:</b> 2.000 X 96.00 X 240.0 (IN)																	
<b>Tested Pieces</b>			<b>Tensiles</b>				<b>Charpy Impact Tests</b>												
<b>Heat Id</b>	<b>Piece Id</b>	<b>Tested Thickness</b>	<b>Tst Loc</b>	<b>YS (KSI)</b>	<b>UTS (KSI)</b>	<b>%RA</b>	<b>Elong % 2in 8in</b>	<b>Tst Dir</b>	<b>Hardness</b>	<b>Abs. Energy(FTLB)</b>			<b>% Shear</b>			<b>Tst Tmp</b>	<b>Tst Dir</b>	<b>Tst Siz (mm)</b>	<b>BDWTT Tmp %Shr</b>
E9D080	A32	2.012 (DISCRT)	L	57	81		23	T		1	2	3	Avg	1	2	3	Avg		
E9D080	A33	2.013 (DISCRT)	L	56	81		24	T											
E9D080	A37	2.011 (DISCRT)	L							38	67	27	44				-22F	L	10
<b>Heat Id</b> 39D080																			
<b>Chemical Analysis</b>																			
	C	Mn	P	S	Si	Tot Al	Cu	Ni	Cr	Mo	Co	V	Ti						
39D080	.18	1.12	.010	.002	.18	.027	.27	.14	.10	.05	.003	.052	.001						
														ORGN USA					

**KILLED STEEL**

MERCURY IS NOT A METALLURGICAL COMPONENT OF THE STEEL AND NO MERCURY WAS INTENTIONALLY ADDED DURING THE MANUFACTURE OF THIS PRODUCT.

! WARNING: THIS PRODUCT CAN EXPOSE YOU TO CHEMICALS INCLUDING NICKEL AND NICKEL COMPOUNDS, WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. FOR MORE INFORMATION GO TO [WWW.P65WARNINGS.CA.GOV](http://WWW.P65WARNINGS.CA.GOV).

MTR EN 10204:2004 INSPECTION CERTIFICATE 3.1 COMPLIANT  
100% MELTED AND MANUFACTURED IN THE USA.

**PRODUCTS SHIPPED:**

E9D080

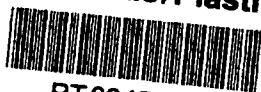
A37

PCES: 3, LBS: 39204

RECEIVED

APR 19 2019

BY

**Alro Metals/Plastics**

RT09451423

(P)

Cust Part #: 07805800

WE HEREBY CERTIFY THAT THIS MATERIAL WAS  
TESTED IN ACCORDANCE WITH, AND MEETS THE  
REQUIREMENTS OF, THE APPROPRIATE SPECIFICATION

Justin Ward

SENIOR METALLURGIST - PRODUCT



March 29, 2019  
Material Test Report

Part Description: 1000 pcs. 3/4" (10p) 9" Dome Head Step Bolts  
Material Specification: ASTM A449 - '14 Type 1  
Coating Specification: Galvanized per ASTM F2329 / A153

A449

Lot Number: 54136-2  
Material Heat Number: 3076333

## Tensile Test Results

Test Specification: ASTM A449 Type 1

Sampling: ASTM F1470

Property	Tensile	Yield	Elongation%	ROA%	Results
#1 psi	142600	132000	19.55%	61%	PASS
#2 psi	141000	130700	20%	61.4%	PASS
MIN	120000	92000	14%	35%	

## Coating Thickness Evaluation

Sample	Average	Weight oz./ft <sup>2</sup>	Sample	Average	Weight oz./ft <sup>2</sup>
1.	5.84	3.44	7.	5.20	3.05
2.	3.90	2.29	8.	4.12	2.42
3.	5.10	3.00	9.	5.60	3.29
4.	5.04	2.96	10.	3.52	2.07
5.	4.66	2.74	11.	4.66	2.74
6.	5.64	3.31			

## Hardness Testing

### Hardness HRC

1.	31.28
2.	29.49
3.	29.78

## Chemical Analysis

C	Mn	P	S	Si	Cu	Cr	Ni
.39%	.86%	.011%	.021%	.22%	.22%	.84%	.09%
Mo	V	Cb	Sn	Al	-	-	-
.200%	.026%	.003%	.008%	.002%	-	-	-

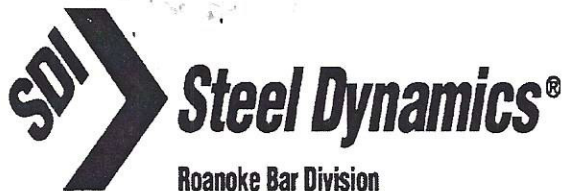
100% Melted and Manufactured in the USA - Chemical Analysis Values taken from Certified Mill Test Report

## Comments

All tests are in accordance with the latest revisions of the methods prescribed in the applicable SAE and ASTM specifications. The samples tested conform to the specifications listed above and were manufactured free of mercury contamination. No heats to which Bismuth, Selenium, Tellurium or Lead was intentionally added to produce the products. The steels were melted and manufactured in the U.S.A. and the product manufactured and tested in the U.S.A. We certify that this data is a true representation of the information provided by the material supplier and our testing laboratory. The above tested sample has been inspected for Visual Discontinuities and found Acceptable. They comply in all respects with the following ASTM A449 Type 1 and ASME B18.2.1. Threads are per ANSI B1 Class 2A.

Quality Representative





P.O. Box 13948  
Roanoke, VA 24038-3934  
Office: (540) 342-1831  
(800) 753-3532  
Fax: (540) 342-9437  
www.roanokesteel.com

## PRODUCT CERTIFICATION

MFG LOT NBR  
**JL2915-428075**  
HEAT NUMBER  
**JL2915**  
BILL OF LADING  
**00517845**  
SALES ORDER/LINE  
**126017 / 001**  
CERT ID / REV  
**00055733 / 01**

SOLD TO

**Metals USA P & S**  
4330 Pleasant Garden Road  
Greensboro, NC 27406  
USA

SHIP TO

**Metals USA P & S - Greensboro**  
4330 Pleasant Garden Road  
Greensboro, NC 27406  
USA

CUSTOMER P.O.	CUSTOMER PART	QUANTITY	BUNDLE(S)	TOTAL PIECES	GRADE	SHIPMENT DATE
<b>GBO-5535</b>	<b>N/A</b>	<b>5,084</b>	<b>1</b>	<b>57</b>	<b>A36/A529</b>	<b>01/20/2017</b>

PART NUMBER :	<b>FL013072000ZZ</b>	DESCRIPTION :	<b>Flat 3/8 x 3 1/2 20"0" A36/A529</b>
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### Alt Certs

ASTM A36/A36M-14 | ASTM A36/A36M-14 CU BEARING | ASTM A529/A529M-14 GR50 | ASTM A572/A572M-15 GR50 Type 2 |  
ASTM A709/A709M-15 GR36 | ASTM A709/A709M-15 GR36 CU BEARING | ASTM A709/A709M-16 GR50 Type 2 | CSA  
G40.21-13 GR44W | CSA G40.21-13 GR50W | AASHTO M270/M270M-12 GR36 | AASHTO M270/M270M-12 GR36 CU BEARING |  
AASHTO M270/M270M-12 GR50 Type 2 | ASME SA36/SA36M-15 (01JUL15) | ASME SA572/SA572M GR50 T2 (01JUL15)

### Chemical

C	Mn	S	P	Si	Cr	Ni	Mo	Cu	V	Nb	CE
0.13	1.04	0.023	0.013	0.24	0.11	0.08	0.03	0.25	0.018	0.001	0.40

### Yield Tensile Elongation

	Yld-1 (KSI)	Yld-1 (MPa)	Ultimate-1 (KSI)	Ultimate-1 (MPa)	Elong8" (%)
Sample-1	55.0	379	75.4	520	32.5
	Yld-2 (KSI)	Yld-2 (MPa)	Ultimate-2 (KSI)	Ultimate-2 (MPa)	Elong8" (%)
Sample-2	54.4	375	75.1	518	30

Approved ABS QA Mill. Certificate No. 12-MMPQA-676. This Material was melted and manufactured in our plant located in Roanoke, VA, USA, by basic Electric Furnace process(es) to meet the "ordered" Grade. Mercury, Radium or other Alpha source materials in any form have not been used in the production of this material. No Weld repair has been performed. Any tensile values stated herein either inch-pound units or SI units are to be regarded as separate as defined in the ASTM scope for this material. All samples tested are full size. Unless a metric specification is ordered, this material has been tested and meets the requirements of the inch-pound ranges.

This is to certify the above to be a true and accurate report as contained in the records of this company.

END OF CERTIFICATION

Engineer of Tests: Lewis E. Leftwich Jr.



19Aug19 13:14

T E S T C E R T I F I C A T E

No: LO 138388

PLATEPLUS INC  
266 BLAIR BEND DR  
LOUDON, TN 37774  
Tel: 865 408-2300

P/O No GB14299469  
Rel  
S/O No LO 50438-001  
B/L No LO 48717-001 Shp 19Aug19  
Inv No Inv

Sold To: ( 20012)  
ALRO STEEL CORPORATION  
PO BOX 927  
JACKSON MI 49204-0927

Ship To: ( 37)  
ALRO STEEL CORPORATION  
7966 NATIONAL SERVICE ROAD  
GREENSBORO NC 27409

Alro Metals/Plastics

Tel: 517-787-5500 Fax: 517 787-6399



CERTIFICATE of ANALYSIS and

RT09479135

No: LO 138388  
16Aug19

Part No 07000006  
HR BLK PLATE STRETCHED ASTM A-36/ASME SA-36  
3/16 X 48.0000" X 96.0000"

Pcs Wgt  
40 9,804

ASTM A36-14

Heat Number	Tag No	Mill Tag	Pcs	Wgt
M67940	219356	HSM 00967904	20	4,902
		VESSL=<NW190566>/CNTRY=<USA>/MELT=<USA>/MFG=<USA>/YLDH=55		
		TENSH=72/ELONH=32/YLDC=50/TENSC=69/ELONC=30		
M67940	219357	HSM 00967904	20	4,902
		VESSL=<NW190566>/CNTRY=<USA>/MELT=<USA>/MFG=<USA>/YLDH=55		
		TENSH=72/ELONH=32/YLDC=50/TENSC=69/ELONC=30		

Heat Number  
US STEEL  
M67940

\*\*\* Chemical Analysis \*\*\*

C=0.1900 Mn=0.8000 P=0.0110 S=0.0080 Si=0.0140 Cu=0.0200  
Al=0.0450 Cb=0.0040 V=0.0010 Ni=0.0100 Cr=0.0400 Ti=0.0010  
N=0.0050 Mo=0.0100 B=0.0000 Zr=0.0000 Sn=0.0000 Sb=0.0000  
Ca=0.0010

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED  
HEREIN WAS SAMPLED AND TESTED IN ACCORDANCE  
WITH THE SPECIFICATION, TO OUR KNOWLEDGE,  
AND FULFILLS REQUIREMENTS IN SUCH RESPECT.  
ALL PRODUCT IS PRODUCED FROM COIL. ELONGATION  
IS MEASURED FROM A TWO INCH GAGE LENGTH UNLESS  
OTHERWISE NOTED.



**Sold By:**  
**SOUTHLAND TUBE INCORPORATED**  
3525 Richard Arrington Jr Blvd N  
Birmingham, AL 35234  
Tel: 800-543-9024  
Fax: 205-251-1553

Purchase Order No: CL14355064  
Sales Order No: BHM 514265 - 1  
Bill of Lading No: BHM 13104 - 2  
Invoice No:

Shipped: 10/1/2019  
Invoiced:

**Sold To:**  
**115 - ALRO STEEL CORP.**  
P.O. BOX 927  
JACKSON, MI 49203

**Ship To:**  
**56 - ALRO (CL)-CHARLOTTE, NC**  
12933 SAM NEELY DR.  
CHARLOTTE, NC 28273

**CERTIFICATE of ANALYSIS and TESTS**

Customer Part No: 13016024

Certificate No: BHM 151530

Test Date: 9/30/2019

**TUBING A500 GRADE B(C)**  
**5" SQ X 1/2" X 24'**

Total Pieces    Total Weight Lbs  
6                      4,094

Bundle Tag	Mill	Heat	Specs	Y/T Ratio	Pieces	Weight Lbs
467647	40N	SJ3755	YLD=64600/TEN=77600/ELG=35.7/RWB=85.75	0.8325	6	4,094

Mill #: 40N Heat #: SJ3755 Carbon Eq: 0.3600 Heat Src Origin: MELTED AND MANUFACTURED IN THE USA

C	Mn	P	S	Si	Al	Cu	Cr	Mo	V	Ni	Nb	Co
0.2000	0.8500	0.0060	0.0040	0.0370	0.0270	0.1100	0.0300	0.0100	0.0050	0.0300	0.0020	0.0020

Sn	N	B	Ti	Ca
0.0030	0.0061	0.0001	0.0010	0.0018

LEED Information (based on the most recent LEED information from the producing mill)

Method	Location	Recycled Content	Post Consumer	Post Industrial
EAF	Decatur, AL	61.6%	27.2%	34.4%

Certification:

I certify that the above results are a true and correct copy of records prepared and maintained by Southland Tube Incorporated.  
Sworn this day, 9/30/2019.

WE PROUDLY MANUFACTURE ALL OUR PRODUCTS IN THE USA  
NUCOR TUBULAR PRODUCTS ARE MANUFACTURED, TESTED  
AND INSPECTED IN ACCORDANCE WITH ASTM STANDARDS.  
MATERIAL IDENTIFIED AS A500 GRADE B(C) MEETS BOTH  
ASTM A500 GRADE B AND A500 GRADE C SPECIFICATIONS.

**CURRENT STANDARDS:**

A252-10  
A500/A500M-18  
A513/A513M-15  
ASTM A53/A53M-12 | ASME SA-53/SA-53M-13  
A847/A847M-14  
A1085/A1085M-15  
IN COMPLIANCE WITH EN 10204 SECTION 4.1  
INSPECTION CERTIFICATE TYPE 3.1



**Barney Hatten**  
Supervisor of Technical Services & Quality Standards



**Sold By:**  
**SOUTHLAND TUBE INCORPORATED**  
3525 Richard Arrington Jr Blvd N  
Birmingham, AL 35234  
Tel: 800-543-9024  
Fax: 205-251-1553

Purchase Order No: GB14485018  
Sales Order No: BHM 519660 - 1  
Bill of Lading No: BHM 14960 - 10  
Invoice No:

Shipped: 11/15/2019  
Invoiced:

**Sold To:**  
**115 - ALRO STEEL CORP.**  
P.O. BOX 927  
JACKSON, MI 49203

**Ship To:**  
**59 - ALRO-GREENSBORO, NC**  
7966 NATIONAL SERVICE ROAD  
GREENSBORO, NC 27409

**CERTIFICATE of ANALYSIS and TESTS**

Customer Part No: 13016024

Certificate No: BHM 192347

Test Date: 11/13/2019

**TUBING A500 GRADE B(C)**  
**5" SQ X 1/2" X 24'**

Total Pieces    Total Weight Lbs  
6                      4,094

Bundle Tag	Mill	Heat	Specs	Y/T Ratio	Pieces	Weight Lbs
865851	40N	SJ6524	YLD=65300/TEN=77500/ELG=35.7/RWB=78.34	0.8426	6	4,094

Mill #: 40N Heat #: SJ6524 Carbon Eq: 0.3605 Heat Src Origin: MELTED AND MANUFACTURED IN THE USA

C	Mn	P	S	Si	Al	Cu	Cr	Mo	V	Ni	Nb	Cb
0.2000	0.8500	0.0070	0.0030	0.0330	0.0300	0.0900	0.0400	0.0100	0.0040	0.0300	0.0010	0.0010

Sn	N	B	Ti	Ca
0.0020	0.0065	0.0000	0.0010	0.0016

LEED Information (based on the most recent LEED information from the producing mill)

Method	Location	Recycled Content	Post Consumer	Post Industrial
EAF	Decatur, AL	61.6%	27.2%	34.4%

**Certification:**

I certify that the above results are a true and correct copy of records prepared and maintained by Southland Tube Incorporated.  
Sworn this day, 11/13/2019.

WE PROUDLY MANUFACTURE ALL OUR PRODUCTS IN THE USA  
NUCOR TUBULAR PRODUCTS ARE MANUFACTURED, TESTED  
AND INSPECTED IN ACCORDANCE WITH ASTM STANDARDS.  
MATERIAL IDENTIFIED AS A500 GRADE B(C) MEETS BOTH  
ASTM A500 GRADE B AND A500 GRADE C SPECIFICATIONS.

**CURRENT STANDARDS:**

A252-10  
A500/A500M-18  
A513/A513M-15  
ASTM A53/A53M-12 | ASME SA-53/SA-53M-13  
A847/A847M-14  
A1085/A1085M-15  
IN COMPLIANCE WITH EN 10204 SECTION 4.1  
INSPECTION CERTIFICATE TYPE 3.1



**Barney Hatten**  
Supervisor of Technical Services & Quality Standards



Alro Metals/Plastics



RT09443003

RECEIVED

FEB 06 2019

BY 

05Feb19 9:28

TEST CERTIFICATE

No: LO 51853

PLATEPLUS INC  
266 BLAIR BEND DR  
LOUDON, TN 37774  
Tel: 865 408-2300 Fax: 865 408-2317

P/O No CL13923452  
Rel  
S/O No LO 47209-001  
B/L No LO 45849-005 Shp 05Feb19  
Inv No Inv

Sold To: ( 20012)  
ALRO STEEL CORPORATION  
PO BOX 927  
JACKSON MI 49204-0927

Ship To: ( 34)  
ALRO STEEL CORPORATION  
12933 SAM NEELY DR  
CHARLOTTE NC 28273-4506

Tel: 517-787-5500 Fax: 517 787-6399

CERTIFICATE of ANALYSIS and TESTS

Cert. No: LO 51853  
05Feb19

Part No 07001405  
HR BLK PLATE STRETCHED ASTM A-36/ASME SA-36  
5/16 X 48.0000" X 96.0000"

Pcs Wgt  
12 4,901

ASTM A36-14

Heat Number Tag No Mill Tag  
463064 210672 1691381

Pcs Wgt  
12 4,901

YLDH=45/TENSH=66/ELONH=35/MILL=<THYSSNKRUP>  
VESSL=<SBI PERSEU>/CNTRY=<GERMANY>/YLDH=41/TENSC=63/ELONC=37

Heat Number \*\*\* Chemical Analysis \*\*\*  
THYSSENKRUPP STEEL EUROPE

463064 C=0.1400 Mn=0.8400 P=0.0160 S=0.0050 Al=0.0260 Si=0.0140  
Cu=0.0100 Ni=0.0190 Cr=0.0320 Mo=0.0040 V=0.0020 Nb=0.0010  
Ti=0.0150 N=0.0027

THIS IS TO CERTIFY THAT THE PRODUCT DESCRIBED  
HEREIN WAS SAMPLED AND TESTED IN ACCORDANCE  
WITH THE SPECIFICATION, TO OUR KNOWLEDGE,  
AND FULFILLS REQUIREMENTS IN SUCH RESPECT.  
ALL PRODUCT IS PRODUCED FROM COIL. ELONGATION  
IS MEASURED FROM A TWO INCH GAGE LENGTH UNLESS  
OTHERWISE NOTED.



**Sold By:**  
**INDEPENDENCE TUBE CORPORATION**  
6226 W. 74th St.  
Chicago, IL 60638  
Tel: 708-496-0380  
Fax: 708-563-1950

Purchase Order No: GB13141403  
Sales Order No: DCR 99816 - 1  
Bill of Lading No: DCR 67261 - 1  
Invoice No:

Shipped: 12/15/2017  
Invoiced:

**Sold To:**  
**115 - ALRO STEEL CORP.**  
P.O. BOX 927  
JACKSON, MI 49203

**Ship To:**  
**59 - ALRO STEEL CORP.-GREENSBORO**  
7966 NATIONAL SERVICE ROAD  
GREENSBORO, NC 27409

**RT09004218**

**CERTIFICATE of ANALYSIS and TESTS**

Customer Part No: 13017124

Certificate No: DCR 684605

Test Date: 12/14/2017

**TUBING A500 GRADE B(C)**  
**6" SQ X 1/2" X 24'**

Total Pieces      Total Weight  
36                      30,450

Bundle Tag	Mill	Heat	Specs	Y/T Ratio	Pieces	Weight
999086	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075
999087	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075
999090	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075
999091	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075
999102	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075
999103	40N	NG6733	YLD=71700/TEN=78800/ELG=27.5	0.9099	6	5,075

Mill #: 40N Heat #: NG6733 Carbon Eq: 0.1771 Heat Src Origin: MELTED AND MANUFACTURED IN THE USA

C	Mn	P	S	Si	Al	Cu	Cr	Mo	V	Ni	Nb	Cb
0.0600	0.5800	0.0080	0.0020	0.2380	0.0340	0.1200	0.0400	0.0100	0.0020	0.0300	0.0100	0.0100

Sn	N	B	Ti	Ca
0.0050	0.0069	0.0002	0.0020	0.0008

LEED Information (based on the most recent LEED information from the producing mill)

Method	Location	Recycled Content	Post Consumer	Post Industrial
EAF	Decatur, AL	57.7%	22.6%	35.1%

SIGNED T/R

Certification:

I certify that the above results are a true and correct copy of records prepared and maintained by Independence Tube Corporation. Sworn this day, 12/14/2017

WE PROUDLY MANUFACTURE ALL OUR PRODUCT IN THE USA.  
INDEPENDENCE TUBE PRODUCT IS MANUFACTURED, TESTED,  
AND INSPECTED IN ACCORDANCE WITH ASTM STANDARDS.  
MATERIAL IDENTIFIED AS A500 GRADE B(C) MEETS BOTH  
ASTM A500 GRADE B AND A500 GRADE C SPECIFICATIONS.

*Chris Allen*

**CURRENT STANDARDS:**

A252-10  
A500/A500M-13  
A513-13  
ASTM A53/A53M-12 | ASME SA-53/SA-53M-13  
A847/A847M-14  
A1085/A1085M-15

Chris Allen, ASQ CMQ/OE  
Quality Management Systems Manager



15Dec17 13:56

TEST CERTIFICATE

No: DCR 684605

INDEPENDENCE TUBE CORPORATION  
6226 W. 74TH STREET  
CHICAGO, IL 60638  
Tel: 708-496-0380 Fax: 708-563-1950

P/O No GB13141403  
Rel  
S/O No DCR 99816-001  
B/L No DCR 67261-001 Shp 18Dec17  
Inv No Inv

Sold To: ( 115)  
ALRO STEEL CORP.  
P.O. BOX 927  
JACKSON, MI 49203

Ship To: ( 59)  
ALRO STEEL CORP.-GREENSBORO  
7966 NATIONAL SERVICE ROAD  
GREENSBORO, NC 27409

Tel: 517-787-5500 Fax: 517 787-6399

CERTIFICATE of ANALYSIS and TESTS

Cert. No: DCR 684605  
14Dec17

Part No 13017124  
TUBING A500 GRADE B(C)  
6" SQ X 1/2" X 24'

ALRO STEEL/METAL



RT09004218

Heat Number Tag No  
NG6733 999086

YLD=71700/TEN=78800/ELG=27.5

NG6733 999087  
NG6733 999090  
NG6733 999091  
NG6733 999102  
NG6733 999103

Pcs Wgt  
36 30,450

Pcs Wgt  
6 5,075  
6 5,075  
6 5,075  
6 5,075  
6 5,075

Heat Number  
NG6733

\*\*\* Chemical Analysis \*\*\*

C=0.0600 Mn=0.5800 P=0.0080 S=0.0020 Si=0.2380 Al=0.0340  
Cu=0.1200 Cr=0.0400 Mo=0.0100 V=0.0020 Ni=0.0300 Nb=0.0100  
Cb=0.0100 Sn=0.0050 N=0.0069 B=0.0002 Ti=0.0020 Ca=0.0008  
MELTED AND MANUFACTURED IN THE USA

SIGNED T/R

WE PROUDLY MANUFACTURE ALL OUR PRODUCT IN THE USA.  
INDEPENDENCE TUBE PRODUCT IS MANUFACTURED, TESTED,  
AND INSPECTED IN ACCORDANCE WITH ASTM STANDARDS.  
MATERIAL IDENTIFIED AS A500 GRADE B(C) MEETS BOTH  
ASTM A500 GRADE B AND A500 GRADE C SPECIFICATIONS.

CURRENT STANDARDS:

A252-10  
A500/A500M-13  
A513-13  
ASTM A53/A53M-12 | ASME SA-53/SA-53M-13  
A847/A847M-14  
A1085/A1085M-15



P/O No. : 224325-00  
L/C No. : HU20110829001

# INSPECTION CERTIFICATE



CERTIFICATE No. : 190712-195

MANUFACTURED No. : 19-04-211-0

SUPPLIER : HUSTEEL CO., LTD.



Original  
certificate can be  
verified through QR  
Application.

ISSUED DATE : 2019.07.12

COMMODITY : H.F.W STEEL PIPE

API 5L X52M PSL2/

SPECIFICATION : ASTM A53B/ASME SA 53B

HEAD OFFICE SHINAN B/D 15F, 943-19, DAECHE-DONG,  
KANGNAM-GU, SEOUL, KOREA

DAEBUL PLANT 3RO, DAEBUL INDUSTRIAL COMPLEX, SAMHO-EUP.  
YEONGAM-GUN, JEOLLANAM-DO, KOREA

NO.	HEAT_NO	QUAN- TITY	TYPE	NOMINAL SIZE	ORDEF SIZE			WEIGHT	TENSILE TEST						CHEMICAL COMPOSITION(%)																	
		PCS			*1	O.D inch	W.T Inch		LENGTH ft	lb/ft	DIR.	TS	YS	EL	YR	WTS	DIV	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	B	CE IIV	CE Pcm
*2	*3	*4	PSI	%	%	PSI	*5	-2	-3	-4	-5	-3																				

16	SP36262	13	BPEB	16	16.000	0.500	42	82.85	T	77,737	63,959	41	82	83,828	H	6	18	111	16	1	19	11	21	30	20	240	16	TR		
17	SP36260	5	BPEB	16	16.000	0.500	42	82.85	T	77,447	62,509	39	81	83,683	P	6	20	116	16	1	18	14	31	46	30	313	16	10	259	124
															P	6	20	116	16	1	18	14	30	46	29	312	16	10	262	128
															H	6	20	112	13	2	28	11	21	20	10	240	16	20		
															P	6	23	116	11	2	26	13	27	33	19	311	19	14	258	125
18	P85189	2	BPEB	16	16.000	0.500	42	82.85	T	79,912	65,989	41	83	81,653	P	6	23	116	11	2	26	13	26	34	20	304	19	16	259	126
															H	6	16	101	13	1	18	10	20	100	10	360	20	20		
															P	5	17	107	12	1	17	10	27	58	12	442	14	10	238	114
															P	5	17	107	11	1	17	9	27	57	11	445	14	10	241	117

NO.	HYDROSTATIC TEST			HEAT TREATMENT	ZINC COATING TEST		THREADS		HARDNESS	IMPACT TEST			*13 N · D · T ( UT )	FLATTENING OR BEND TEST	VISUAL & DIMENSION	METALLOGRAPHIC TEST	RESIDUAL MAGNETISM
	T.P	H.T	RESULT		WZC	CST	TPI	ETL		TEST	( 0 ) °C						
PSI	sec	°C	g/m <sup>2</sup>	TIMES	In	HV	DIV	Energy (Ind, J)	SIZE	FLANGE TEST	REVERSE FLATTENING TEST	CRUSH TEST					
*9			*10	*11	*12		*7		*8								

16	2780	5	GOOD	950						B	294/265/286	B	<div>- Latest edition per API (46th,2018) ASTM(2018) ASME(2017)</div> <div>- Confirm to NACE MR 0175 and MR 0103 and ISO 15156 ;</div> <div>Chemical Composition, Heat Treatment, Hardness</div> <div>- RAW MATERIAL MAKER : POSCO(SOUTH KOREA) - NO.02~10, 14, 16~17</div> <div>N.S.C(JAPAN) - 01, 12~13, 15</div> <div>HYUNDAI STEEL(SOUTH KOREA) - NO.11, 18</div> <div>*SA : Shear Area(%)</div>
17	2780	5	GOOD	950					B	152/198/159	B		
									SA	95/95/95			
									B	309/259/273			
									W	170/152/218			
18	2780	5	GOOD	950					SA	100/95/95	B		
									B	299/247/294			
									W	212/198/188			
									SA	100/95/100			

NOTE

*1.Type of Pipe Ends			
BPE	Black Plain Ends	GPE	Galvanized Plain Ends
BPEB	GPE Bevelled	GPEB	GPE Bevelled
BTE	Black Threaded Ends	GTE	Galvanized Threaded Ends
BTC	Black Threaded & Coupled	GTC	Galvanized Threaded & Coupled

\*2. O.D : Outside Diameter, W.T : Wall Thickness      \*3. Direction - L : Longitudinal, T : Transverse

\*4. Tensile Test -TS : Tensile Strength, YS : Yield Strength, YR: Yield Ratio, EL : Elongation, WTS : Weld tensile strength, Gauge Length : 2 inch, Y.P method 0.5% Underload

\*5. H : Heat analysis, P : Product analysis      \*6. -2 : x1/100, -3 : x1/1000, -4 : x1/10000, -5 : x1/100000, Tr : Trace      \*7. B : Base Metal, W : Weld Line, H : Heat Affected Zone

\*8. Specimen Size - A:10x10mm, B :10x5.5mm, C:10x5.5mm, D:10x5.0mm, E:10x3.5mm, Direction : Transverse \*9. TP : Testing Pressure, HT : Holding Time \*10. Heat Treatment Seam Normalizing

\*11. WZC : Weight of Zinc Coating, CST : Copper Sulphate Test      \*12. TPI : Threads per inch, ETL : Effective length of threads      \*13. NDT : UT, Reference Standard 3.2x Drilled Hole

- Latest edition per API (46th,2018) ASTM(2018) ASME(2017)  
- Confirm to NACE MR 0175 and MR 0103 and ISO 15156 ;  
Chemical Composition, Heat Treatment, Hardness  
- RAW MATERIAL MAKER : POSCO(SOUTH KOREA) - NO.02~10, 14, 16~17  
N.S.C(JAPAN) - 01, 12~13, 15  
HYUNDAI STEEL(SOUTH KOREA) - NO.11, 18  
\*SA : Shear Area(%)

\*1.Type of Pipe Ends

BPE	Black Plain Ends	GPE	Galvanized Plain Ends
BPEB	BPE Bevelled	GPEB	GPE Bevelled
BTE	Black Threaded Ends	GTE	Galvanized Threaded Ends
BTC	Black Threaded & Coupled	GTC	Galvanized Threaded & Coupled

\*2. O.D : Outside Diameter, W.T : Wall Thickness

\*3. Direction - L : Longitudinal, T : Transverse

\*4. Tensile Test -TS : Tensile Strength, YS : Yield Strength, YR : Yield Ratio, EL : Elongation, WTS : Weld tensile strength, Gauge Length : 2 inch, Y.P method 0.5% Underload  
\*5. H : Heat analysis, P : Product analysis \*6. -2 : x1/100, -3 : x1/1000, -4 : x1/10000, -5 : x1/100000, Tr : Trace \*7. B : Base Metal, W : Weld Line, H : Heat Affected Zone  
\*8. Specimen Size - A:10x10mm, B :10x7.5mm, C:10x6.5mm, D:10x5.0mm, E:10x3.3mm, Direction : Transverse \*9. T.P : Testing Pressure, H.T : Holding Time \*10. Heat Treatment : Seam Normalizing  
\*11. WZC : Weight of Zinc Coating, CST : Copper Sulphate Test \*12. TPI : Threads per inch, ETL : Effective length of threads \*13. NDT : UT, Reference Standard 3.2x Drilled Hole

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE ORDER AND ABOVE SPECIFICATION  
THIS CERTIFICATE IS ISSUED ACCORDING TO EN 10204 3.1 (ISO 10474 3.1)

MANAGER OF Q.A TEAM



## Material Certifications for Shipment

B1 Num: 6392689

CustomerMachine & Welding of Danbury, Inc  
1741 Pitzer Rd  
Danbury, NC 27016-7651Ship ToMachine & Welding of Danbury Inc  
1260 N Main St  
Walnut Cove, NC 27052-9393Orders

Order No	GA Ord	Width	Length	Description/Part Number	Grade
17137195-4		60.000	120.000	Sheet Hot Rolled 16 Ga.	ASTM A1011 CS-B

Cust PO: 1090

Heat: 2810276

Mill ID:

Vendor: NUCOR STEEL - BERKELEY

Certification # 4243169

Issue Date: 30-JUL-18

Carbon Equivalent: .09

Chemical Properties

C	Mn	P	S	Si	Al	B	Ca	Cr	Cu
.030	.260	.005	.001	.020	.036	.000	.003	.040	.110
Mo	N	Nb	Ni	Sn	Ti	V			
.010	.007	.000	.040	.005	.001	.003			

Physical Properties

Property	YIELD	TENSILE
Mill Test		
Internal Test Head		
Internal Test Middle		
Internal Test Tail		

EDI863\_1354786







Berkley Division of NUCOR Corporation  
ISO 9001 and IATF 16949 Registered

P.O. Box 2259

Wt. Pleasant, SC 29465

Issue Date 7/30/18

TO: 500 COLONIAL CTR PKW

SITE 500

ROSWELL, GA 30076

Gauge x Width .0540 MIN x 60.0000 MIN

Pickled & Temper Pass

ASTM A1011 / CS-B / REV: 2017a

Chemistry certification only

METALLURGICAL TEST REPORT

Nucor Steel - Berkeley

a division of NUCOR corporation

SHIP KLOECKNER METALS CORPORATION

TO: 1090 NORTH STEEL CIR

HUGER, SC 29450

P/O # 7281814

Mill Order # 441764-2

Part # 1660DRX POMP

Vehicle # NSBX000114

DELIVER TO: certis

Namaste

Phone: 843-336-6000

Sales fax: 843-336-6150

SHIP date 7/30/18

Bill of lading # 1354786

Vehicle # NSBX000114

P/O # 7281814

Mill Order # 441764-2

Part # 1660DRX POMP

Heat 2810276 .03 .26 .005 .001 .02 .11 .04 .04 .01 .005 .036 .003 .000 .007 .001 .000 .003

Coil# (tag) 421500.100 ( 2810276-5 ) 421500.200 ( 2810276-5 )

(33480.00 LB) (33300.00 LB)

Mill Test Reports according to EN10204 3.1

All material is sold subject to the description, specifications and terms and conditions set forth on the face and reverse side of Nucor Steel - Berkeley's sales order acknowledgment.

Tensile testing, when applicable, is performed in accordance with ASTM A-370 specifications. Specimen is machined to standard rectangular test configuration (figure 3 of ASTM A-370) with a 2" gage length. Yield strength is determined at 0.2% offset.

This material has been produced in compliance with the chemistry and established rolling practices of the ordered specification. If material is ordered to a chemical composition only and if physical testing is not a requirement of the customer's order, testing is not performed by the producer.

We hereby certify the above information is correct as contained in the records of the corporation.

Kevin Skero Robert Moses

Hot Mill Metallurgist Chief Metallurgist

\*\* 100% MELTED AND MANUFACTURED IN THE USA \*\*

*Robert Moses*

03-06-2019 02:38

Load - 3258695

BL - 6392689

Heat - 2810276

Order - 17137195

Machine & Welding of Danbury, Inc

blr466





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5150

**JOB MATERIAL CERTIFICATION****Job No:** 611217**Job Information****Certified Date:** 3/21/19**Containers:** S15219861 S15219811 S15220191 S15220236 S15220243 S15220251 S15220252**Customer:** Skyline Steel**Ship To:** 1250 St. Johns Road  
Camp Hill, PA 17011**Vulcan Part No:** HRB 4140 3.000; A434 BD**Customer Part No:** 3" x 1" GR150**Customer PO No:** 105-509770-JEV**Shipped Qty:** 46171 lbs**Order No:** 384141**Line No:** 8**Note:****Applicable Specifications**

Type	Specification	Rev	Amend	Option
Heat Treat	Vulcan A722 Type I Modified ASTM A434 BD	2015 2018		

**Test Results**

See following pages for tests

**Certified Chemical Analysis**

Heat No: A190406 Lot 3.000							Origin: USA			
C	Mn	P	S	Si	Cr	Mo	Ni	V	Cu	Al
0.41	0.85	0.011	0.017	0.23	1.06	0.20	0.12	0.003	0.23	0.026
Sn	N	B	Ca	As	Sb	H, ppm	DI	RR	G.S.	Macro S
0.009	0.0083	0.0002	0.0007	0.005	0.004	1.2	5.70	20.5:1	7	1
Macro R	Macro C	J1	J2	J3	J4	J5	J6	J7	J8	J9
1	2	57	57	57	57	57	57	57	57	55
J10	J12	J14	J16	J18	J20	J24	J28	J32		
54	50	50	48	47	46	45	43	40		

**Notes**

Material was manufactured, tested and inspected as required by the product standard and in accordance with Vulcan's ISO 9001:2015 Quality Management System registered June 30th, 2017. Processed material is 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.  
Document is in accordance with EN 10204 - 3.1B of 2004 (3.1).  
Subject material was quenched and tempered to meet 150 ksi min Tensile, 127.5 ksi min Yield as tested using machined specimen per current version of ASTM A370. The material was not stretched.

Plex 3/21/19 4:01 PM vulcano Page 1 of 2





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5160

**JOB MATERIAL CERTIFICATION****Job No:** 611217**Job Information****Certified Date:** 3/21/19**Containers:** S15219661 S15219811 S15220191 S15220236 S15220243 S15220251 S15220252**Test Results****Part No:** HRB 4140 3.000x A434 BD**Test No:** 53705 **Test:** Quench & Temper Information (Lbs)

Description	Austenitizing Temp (F)	Tempering Temp (F)	Run Speed (F/min)	Quench Water Temp (F)	Note
	1,804	1,154	2.25	88.83	

**Test No:** 53706 **Test:** Vulcan A722 Modified

Description	Tensile (ksi)	Yield (ksi)	Elongation (%)	Elongation Gage Length	ROA (%)	Note
	171	155	14	4D	42	
	167	142	15	4D	41	

*Sallie Norwood*

3/21/19

Norwood, Sallie - Certification Engineer

Date

Plex 3/21/19 4:01 PM vulc.sano Page 2 of 2





## Product Certificate of Conformance

AF Lot #:		10460		Part #: 2NG2036									
Lot Number	Component Part Number	Description	Test Results										
			Proof Load (Mpa)		Hardness (HRC)				Wedge Tensile Test (psi)				
			Spec		Spec		Sample		Spec		Sample		
			Min	Sample	Min	Max	A	B	Min	A	B		
26308	2NG20095A490M	M20 x 95 NexGen2™ Structural Bolt			33	38	Pass	Pass	150000	Pass	Pass		
41002	2HHNM2025G2HM	M20-2.50 Heavy Hex Nut Grade 2H	1165	Pass			24	36	Pass	Pass			
794351	14SLSS1116M	11/16" Shear Sleeve			24	33	Pass	Pass					
54179	2NG25WH	M20 NexGen2™ Collapsible Split Washer			23	34	Pass	Pass					
51974	2NG2CWM	M20 Solid Collar Washer			23	34	Pass	Pass					



## Product Certificate of Conformance

AF Lot #:		10656		Part #: 2NG2048									
Lot Number	Component Part Number	Description	Test Results										
			Proof Load (Mpa)		Hardness (HRC)				Wedge Tensile Test (psi)				
			Spec		Spec		Sample		Spec		Sample		
			Min	Sample	Min	Max	A	B	Min	A	B		
26799	2NG20095A490M	M20 x 95 NexGen2™ Structural Bolt			33	38	Pass	Pass	150000	Pass	Pass		
51627	2HHNM2025G2HM	M20-2.50 Heavy Hex Nut Grade 2H	1165	Pass	24	36	Pass	Pass					
10309	14SLSS1316M	1-3/16 Shear Sleeve			24	33	Pass	Pass					
54179	2NG25WH	M20 NexGen2™ Collapsible Split Washer			23	34	Pass	Pass					
4117	2NG2CWM	M20 Solid Collar Washer			23	34	Pass	Pass					

**New York**  
 69 Orchard Street  
 Ramsey, New Jersey 07446  
 Tel 800 577 3171  
 Fax 201 783 8840

**Cleveland**  
 959 Lake Road  
 Medina, Ohio 44256  
 Tel 888 859 6060  
 Fax 440 232 6062

**Los Angeles**  
 5450 W 83rd Street  
 Los Angeles, California 90045  
 Tel 310 410 5007  
 Fax 866 553 7702

**Nebraska**  
 806 8th Street  
 Gothenburg, Nebraska 69138  
 Tel 855 330 2210  
 Fax 308 537 3500





## Product Certificate of Conformance

AF Lot #:		11022	M20 x 48		Part #: 2NG2048							
Lot Number	Component Part Number	Description	Test Results									
			Proof Load (Mpa)		Hardness (HRC)				Wedge Tensile Test (psi)			
			Spec		Spec		Sample		Spec		Sample	
			Min	Sample	Min	Max	A	B	Min	A	B	
26799	2NG20095A490M	M20 x 95 NexGen2™ Structural Bolt			33	38	Pass	Pass	150000	Pass	Pass	
51627	2HHNM2025G2HM	M20-2.50 Heavy Hex Nut Grade 2H	1165	Pass	24	36	Pass	Pass				
10309	14SL5S1316M	1-3/16 Shear Sleeve			24	33	Pass	Pass				
54179	2NG2SWH	M20 NexGen2™ Collapsible Split Washer			23	34	Pass	Pass				
4117	2NG2CWM	M20 Solid Collar Washer			23	34	Pass	Pass				



## Product Certificate of Conformance

AF Lot #:		10986		M20 x 68		Part #:		2NG2068			
Lot Number	Component Part Number	Description	Test Results								
			Proof Load (Mpa)		Hardness (HRC)				Wedge Tensile Test (psi)		
			Spec		Spec	Sample		Spec	Sample		
			Min	Sample	Min	Max	A	B	Min	A	B
22581	2NG20135A490M	M20 x 135 NexGen2™ Structural Bolt			33	38	Pass	Pass	150000	Pass	Pass
41002	2HHNM2025G2HM	M20-2.50 Heavy Hex Nut Grade 2H	1165	Pass	24	36	Pass	Pass			
770749	14SL5S134M	1 3/4" Shear Sleeve			24	33	Pass	Pass			
54179	2NG2SWH	M20 NexGen2™ Collapsible Split Washer			23	34	Pass	Pass			
51974	2NG2CWM	M20 Solid Collar Washer			23	34	Pass	Pass			



## Product Certificate of Conformance

AF Lot #:		10949	M20 x 96		Part #:		2NG2096						
					Test Results								
					Proof Load (Mpa)		Hardness (HRC)				Wedge Tensile Test (psi)		
							Spec		Sample		Spec	Sample	
					Min	Sample	Min	Max	A	B	Min	A	B
Lot Number	Component Part Number	Description											
22581	2NG 20135A 490M	M20 x 135 NexGen2™ Structural Bolt			33	38	Pass	Pass	150000	Pass	Pass		
41002	2HHNM2025G 2HM	M20-2.50 Heavy Hex Nut Grade 2H	1165	Pass	24	36	Pass	Pass					
779325	14SL5S2716M	2 7/16" Shear Sleeve			24	33	Pass	Pass					
54179	2NG 2SWH	M20 NexGen2™ Collapsible Split Washer			23	34	Pass	Pass					
51974	2NG2CWM	M20 Solid Collar Washer			23	34	Pass	Pass					

**New York**  
69 Orchard Street  
Ramsey, New Jersey 07446  
Tel 800 577 3171  
Fax 201 783 8840

**Cleveland**  
959 Lake Road  
Medina, Ohio 44256  
Tel 888 859 6060  
Fax 440 232 6062

**Los Angeles**  
5450 W 83rd Street  
Los Angeles, California 90045  
Tel 310 410 5007  
Fax 866 553 7702

**Nebraska**  
806 8th Street  
Gothenburg, Nebraska 69138  
Tel 855 330 2210  
Fax 308 537 3500





A Division of Lonestar Group



### Certificate of Compliance

This is to certify that the below described parts have been inspected and found to conform to Skyline's material and/or manufacturing specifications.

- Part number: SKYHN3000G-FG
- P.O. number: 105-508394-JEV
- Material heat: A164617
- Material lot: W5527

Name: Lori Walker

Date: 4/2/2019

SO #: 300586





DOC ID 7.5.3.1F Rev 5/18  
Date created 4/2/19

A Division of Lonestar Group

## MATERIAL TEST REPORT



LSF

PO# 105-508393-JEV

SO# 300586

Item: 3"	HEAVY HEX NUT		
Material Specification: ASTM A108-13	1045 LOW CARBON		
LOT#:	W5527		
Heat Number:	A164617	Country of Origin:	USA
Hardness:	212-219HBW	Wedge Tensile:	NA
Macro Etch:	NA	Tempering Temp.:	NA

Carbon (C):	0.450	Chromium (CR):	NA
Manganese (MN):	0.610	Molybdenum (MO):	NA
Phosphorus (P):	0.010	Copper (CU):	NA
Sulfur (S):	0.021	Nitrogen (N):	NA
Silicon (SI):	NA	Nickel (NI):	NA
Cobalt (CO):	NA	Aluminum (AL):	NA
Vanadium (V):	NA	Tin (SN):	NA
Tungsten (W):	NA	Titanium (TI):	NA
Columbium/Niobium (NB/CB):	NA	Boron (B):	NA
Calcium (CA):	NA		

"AmeriBolt is a Lonestar Fasteners approved bolting products supplier"

We hereby certify that the material was manufactured, sampled, tested and inspected per the most recent revision of the product or material specification. The foregoing data was furnished to us by our supplier or resulting from a test performed in a recognized laboratory and is on file in the records of the corporation.

Name: Lori Walker



## Certified Material Test Report

Cert #: 255354	Mill Order: 1618566	Heat #: A164617	Issued: 11/29/2016 12:37:29
Work Order: 219683	Sales Order: 170567-1		PO #: P252611-1
Load #: 259151	Reference #: rmb 1045 4.0000x290	Reference Desc:	End Use:
Size: 4"	Shape: Round	Grade: 1045	Length: 24' 2"
Grain Practice: Al Fine Grain (5-8) per ASTM A29	Reduction Ratio: 11.6 to 1	Disposition: Rolled Prime	

### Ladle Chemistry Analysis (ASTM A29)

C	Mn	P	S	Si	Al	Cu	Ni	Cr	Mo	Sn	N	V	Cb	B	Ca	W	Ti	DI
0.45	0.61	0.010	0.021	0.23	0.031	0.28	0.10	0.12	0.03	0.010	0.0111	0.000	0.000	0.0002	0.0006	0.000	0.000	1.25
Pb	Co	As	Sb	Zr	Bi	H (ppm)	O (ppm)	Ceq	J-Factor									
0.000	0.006	0.004	0.002	0.000	0.000	1.6		0.61	168									

### Product Check Analysis (ASTM A29)

C	Mn	P	S	Si	Al	Cu	Ni	Cr	Mo	Sn	N	V	Cb	Ti	B	Ca	O
Front																	
Back																	

### Jominy (ASTM A255)

	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
Calc'd Standard	1.5	3	6	7	9	11	13	15	20	25	30	35	40	45	50			
Calc'd Metric																		
	J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
Front																		
Back																		

### Microcleanliness (ASTM E45)

Method A								Method C		Method E	
AT	AH	BT	BH	CT	CH	DT	DH	S	O	SAM "B"	SAM "D"

### Microcleanliness (DIN 50602)

K			M	
S	O	Tot	Tot	

### Decarb

Depth	% of Diameter
-------	---------------

### Grain Size

Austenitic	Ferritic
------------	----------

### Macrostructure (ASTM E381)

S	R	C
1	1	2

### Magnetic Particle Inspection

Frequency	Severity
-----------	----------

### Mechanical Properties (ASTM A370)

Tensile Properties					Hardness	
Tensile Strength	0.2% Yield Strength	% Elong (2")	% ROA	0.35% EUL Yield Strength	(MR)	(Surf)

Steel Dynamics - Engineered Bar Products has a quality system in place which has been certified ISO 9001:2008 compliant, including PED certification.

### Comments/Specs

ASTM A576-90b (Re 2012)

Condition: As-Rolled, Hot-Rolled

I hereby certify that the content of this report is correct and accurate, and that all tests and operations performed on this material were in compliance with applicable material specifications and purchaser designated requirements.

Chris Kopf - Rolling Mill Metallurgist

Any alteration to this report voids Steel Dynamic's warranting of results. No weld repair has been performed on this material. This material is not radioactive and has not been exposed to radioactivity while under the control of Steel Dynamics. This material has not been exposed to mercury while under the control of Steel Dynamics. Unless otherwise noted, this material was melted, continually cast, and rolled in the USA; w/ all testing performed by Steel Dynamics.





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5150

# JOB MATERIAL CERTIFICATION

Job No: 611217

Job Information

Certified Date: 3/21/19

Containers: S15219861 S15219811 S15220191 S15220236 S15220243 S15220251 S15220252

Customer: Skyline Steel

Ship To: 1250 St. Johns Road  
Camp Hill, PA 17011

Vulcan Part No: HRB 4140 3.000 A434 BD

Customer Part No: 3" x 1" GR150

Customer PO No: 105-509770-JEV

Shipped Qty: 46171 lbs

Order No: 384141

Line No: 8

Note:

## Applicable Specifications

Type	Specification	Rev	Amend	Option
Heat Treat	Vulcan A722 Type I Modified ASTM A434 BD	2015 2018		

## Test Results

See following pages for tests

## Certified Chemical Analysis

Heat No: A190406 Lot 3.000							Origin: USA			
C	Mn	P	S	Si	Cr	Mo	Ni	V	Cu	Al
0.41	0.85	0.011	0.017	0.23	1.06	0.20	0.12	0.003	0.23	0.026
Sn	N	B	Ca	As	Sb	H, ppm	DI	RR	G.S.	Macro S
0.009	0.0083	0.0002	0.0007	0.005	0.004	1.2	5.70	20.5:1	7	1
Macro R	Macro C	J1	J2	J3	J4	J5	J6	J7	J8	J9
1	2	57	57	57	57	57	57	57	57	55
J10	J12	J14	J16	J18	J20	J24	J28	J32		
54	50	50	48	47	46	45	43	40		

## Notes

Material was manufactured, tested and inspected as required by the product standard and in accordance with Vulcan's ISO 9001:2015 Quality Management System registered June 30th, 2017. Processed material is 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.  
Document is in accordance with EN 10204 - 3.1B of 2004 (3.1).  
Subject material was quenched and tempered to meet 150 ksi min Tensile, 127.5 ksi min Yield as tested using machined specimen per current version of ASTM A370. The material was not stretched.

Plex 3/21/19 4:01 PM vulcano Page 1 of 2





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5160

**JOB MATERIAL CERTIFICATION****Job No:** 611217**Job Information****Certified Date:** 3/21/19**Containers:** S15219661 S15219811 S15220191 S15220236 S15220243 S15220251 S15220252**Test Results****Part No:** HRB 4140 3.000x A434 BD**Test No:** 53705 **Test:** Quench & Temper Information (Lbs)

Description	Austenitizing Temp (F)	Tempering Temp (F)	Run Speed (F/min)	Quench Water Temp (F)	Note
	1,804	1,154	2.25	88.83	

**Test No:** 53706 **Test:** Vulcan A722 Modified

Description	Tensile (ksi)	Yield (ksi)	Elongation (%)	Elongation Gage Length	ROA (%)	Note
	171	155	14	4D	42	
	167	142	15	4D	41	

*Sallie Norwood*

3/21/19

Norwood, Sallie - Certification Engineer

Date

Plex 3/21/19 4:01 PM vulc.sano Page 2 of 2



**PACKING SLIPS**



# NUCOR®

## SKYLINE STEEL LLC

### Transfer Packing List

Packing List  
Source  
Shipment Dt

164645-1  
PAP Camp Hill  
10/16/2019



GREINER INDUSTRIES, INC.  
1650 STEEL WAY  
MOUNT JOY, PA 17552

Divy Mthd Carrier Common Carrier  
GENERIC VENDOR FOR FREIG Ref

Vehicle No  
Trailer No

Job Set 267918

SO-262393-1-1

IP-309274

Process Ext Cleaning (XCL)

PWC

Outside Process (OPR) Normal Order

CF Threaded Bar, Grade 150  
Bare, 3.000", 40'

A190406

Lot  
10024

Pcs  
4

LBS  
3,840

Total for the Transfer 3,840 LBS

*James* 10/16/19



# NUCOR®

## SKYLINE STEEL LLC

### Bill of Lading

Reference No. 164645-1  
Shipment Date 10/16/2019



From Skyline Steel - New Jersey, One Arin Park, Middletown, NJ 07748

Ship To GREINER INDUSTRIES, INC., 1650 STEEL WAY, MOUNT JOY, PA 17552

Carrier GENERIC VENDOR FOR FREIGHT - Ref

Vehicle No

Trailer No

4 PCS (CF Threaded Bar)

Total 4 PCS 3,840 LBS

Attachments TPL-164645-1

Buyer acknowledges that all of Skyline's products may result in an exposure to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. Buyer is responsible for complying with California Proposition 65 and shall indemnify and hold harmless Nucor from and against any claims, damages, or liabilities suffered by Nucor as a result of Buyer's failure to comply with Proposition 65.



# NUCOR®

## SKYLINE STEEL LLC

### Bill of Lading

Reference No. 164645-1  
Shipment Date 10/16/2019



#### STRAIGHT BILL OF LADING - NON-NEGOTIABLE - TERMS AND CONDITIONS

- The carrier or party in possession ("Carrier") of any of the property described in this bill of lading (the "Goods") shall be liable for any loss of or damage to the Goods; provided, however: (a) Carrier shall not be liable for any loss of or damage to, or delay in delivery of, the Goods caused by an act of God, the public enemy, or an act of public authority; and (b) except in the case of negligence or willful misconduct of Carrier (and the burden to prove freedom from such negligence or willful misconduct shall be on Carrier), Carrier shall not be liable for loss, damage or delay resulting from an inherent defect in the Goods. THIS SHIPMENT IS NOT SUBJECT TO ANY CLASSIFICATIONS OR TARIFFS
- (a) Carrier shall provide adequate equipment available for the safe transportation of the Goods. Carrier shall provide drivers or operators who are skilled and experienced in the transport of items similar to the Goods. Carrier shall be solely responsible for securing Goods onto the means of transportation, and Carrier shall properly prepare such means of transportation for loading. Carrier shall tarp, cover and/or secure the Goods at Carrier's sole expense.  
(b) Carrier's delivery of the Goods shall occur according to the delivery dates or schedule as specified on the face of this bill of lading. Such delivery dates or schedule is an important consideration to shipper, and time is of the essence as to each delivery of the Goods. Carrier shall promptly notify shipper of any actual or foreseeable delay in meeting any delivery dates or schedule specified in this bill of lading.  
(c) Carrier's acceptance of this bill of lading shall be evidence of carrier's receipt of the Goods in good order and condition, unless otherwise noted on the face of this bill of lading.
- All deliveries are CPT (Incoterms 2010) customer's project site or facility, freight pre-paid or freight collect to destination. Risk of loss shall be assumed by consignee upon delivery by or on behalf of consignor to the first Carrier, and consignee shall bear risk of loss and provide insurance thereafter. Any claims for Goods lost or damaged in transit shall be made by consignee directly against the Carrier.
- Carrier shall not create or suffer, or permit a third party to create or obtain, any lien, encumbrance or security interest in the Goods. If the Goods should, for any reason, become subject to any such lien, encumbrance or security interest, Carrier shall, at its sole expense, take all actions necessary to remove the same as promptly as possible and shall notify shipper immediately of any and all such liens. Further, shipper may, at its option, elect to take actions to remove such liens. All expenses incurred by shipper and related to such actions shall be for the account of Carrier, and Carrier hereby agrees to indemnify shipper against any such expenses.
- Carrier shall, at its sole expense, take reasonable care in its handling, transporting and, when necessary, storing of all Goods. Carrier shall be liable to shipper and/or consignee for loss and/or damage to any Goods transported under this bill of lading. Carrier assumes all responsibility for and risk of safety and properly securing the Goods to Carrier's means of transportation and all liabilities and obligations arising out of the failure to do so or the shifting or movement for any reason of the load of the Goods on such means of transportation. Such liability shall begin at the time the Goods are loaded upon Carrier's equipment at the point of origin and shall continue until the Goods are delivered to consignee. Such liability for risk of loss or damage shall be for the full value of the Goods, which shall be understood to mean the full invoice value. The liability for risk of loss in no way minimizes or affects Carrier's indemnification obligations under Section 6 hereof.
- Carrier shall indemnify and hold harmless shipper for all damages, costs and expenses sustained by shipper by reason of bodily injury, sickness or death to, or any damages to the personal property of, shipper or third parties (including but not limited to owner/operators, and employees of shipper or carrier) arising out of or in any manner occasioned by any act, mistake, misuse, error, fault, negligence or omission of Carrier, or any of its officers, employees, agents, affiliates, contractors or subcontractors, in performing any obligation under this bill of lading.
- (a) The consignor or consignee shall pay the freight and all other lawful charges accruing on the shipment, as billed or corrected, except that collect shipments may move without recourse to the consignor when the consignor so stipulates by signature or endorsement or other acknowledgement in the space provided on the face of the bill of lading.  
(b) Notwithstanding the provisions of subsection (a) above, the consignee's liability for payment of additional charges that may be found to be due after delivery shall be as specified by 49 U.S.C §13708, except that the consignee need not provide the specified written notice to Carrier if the consignee is a for-hire carrier.  
(c) Nothing herein shall limit the right of Carrier to require at time of shipment the prepayment or guarantee of the charges. If upon inspection it is ascertained that the Goods shipped are not those described in this bill of lading, the freight charges must be paid based upon the Goods actually shipped.
- Carrier hereby warrants and represents that: (a) Carrier has experience in transporting items similar to the Goods and will transport the Goods in a safe and workmanlike manner, consistent with industry standards; (b) Carrier will provide only drivers and operators possessing the skill and experience necessary for the safe and workmanlike transportation of the Goods; (c) Carrier will deliver the Goods to their destination in the same condition as the Goods were received by Carrier; and (d) Carrier possesses all permits and licenses required by any foreign, federal, state, or municipal governing body and shall operate in full compliance with all laws, rules, regulations and ordinances and shall meet all requirements that may from time to time be specified in regulations now enforced or hereafter promulgated by any foreign, federal, state or municipal body.
- (a) All surface transportation provided under this bill of lading shall be subject to federal statutory and common law otherwise applicable to regulate interstate shipments. U.S. statutes and regulations shall apply unless otherwise waived by signed written agreement. To the extent state law applies, this bill of lading shall be governed by and construed in accordance with the laws of the state where the shipper is located (the "State").  
(b) Each party, solely for itself and its successors and assigns, hereby expressly and irrevocably consents to the exclusive jurisdiction of the state and federal courts located in the State for any litigation that may arise out of or be related to this bill of lading. On behalf of itself and its successors and assigns, Carrier hereby expressly and irrevocably waives (i) personal service of any and all process, and consents that all service of process may be made by registered mail, return receipt requested, directed to the party, and (ii) any objection based on forum non conveniens or venue of any such action.  
(c) If all or any part of the Goods is carried by water over any part of said route, such water carriage shall be performed subject to the terms and provisions and limitations of liability specified by any pertinent laws applicable to water carriers.

<b>FREIGHT CHARGES ARE</b>		CARRIER AMOUNT	Subject to Section 4 of the Uniform Code of Sales Act, this document is not negotiable. It is not a receipt for the Goods unless it is signed by the carrier. The carrier's liability for loss or damage to the Goods is limited to the amount of the freight charges actually paid.
TARE: When the tare is different from the tare of the container, it is required to state specifically on the agreed or declared tare of the container.		CARRIER FEE	
The agreed or declared tare of the property is as shown on the bill of lading.		DATE	
		TIME	
		TOTAL CHARGES	SIGNATURE OF CARRIER
RECEIVED BY: Subject to the carrier's bill of lading and to the terms and conditions of the bill of lading, the property described below is accepted by the carrier, subject to the terms and conditions of the bill of lading, and the carrier shall be responsible for the safe and proper transportation of the property. The carrier shall not be liable for loss or damage to the property unless it is shown on the bill of lading that the property was lost or damaged while in the carrier's possession. The carrier shall not be liable for loss or damage to the property unless it is shown on the bill of lading that the property was lost or damaged while in the carrier's possession. The carrier shall not be liable for loss or damage to the property unless it is shown on the bill of lading that the property was lost or damaged while in the carrier's possession.			
M/R ATTACHED		CARRIER DATE	

\* Mark with "X" to designate Hazardous Material as defined in Title 49 of the Code of Federal Regulations.





# PACKAGING SLIP

JOB: OLD LYME FIREHOUSE  
DATE: 5.27.2020  
PO#:

1741 Pitzer Road, Danbury, NC 27016  
Phone 336.462.0526 Office 336-591-9164  
Office@mwdfab.com

SHIP 2242 Old Marlton Pike  
TO Marlton NJ, 08053

BILL NextGen Services Group  
TO

ORDER DATE	ORDER NUMBER	JOB
11.27.2019	876406	Old Lyme Firehouse

ITEM #	ITEM	QUANTITY
1	1 1/2"x4"x10" Bearing Plates	4
2	1 1/2" x 14" x 14" Bearing Plate	1
3	2 1/2" x 10" x 10" Bearing Plate No Hole	1

Please have the receiver of materials sign below:

\_\_\_\_\_  
Print

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Parts List:

ARB2	25	ANCHOR ROD BRACKET	1		2092	2092	
ARB2-1	25.1	6"x6"x1/2"x3'9"	1	500-46			NG6733
ARB2-2	25.2	1 1/4"x6"x94 1/2"	1	65			B9P3617-01
ARB2-3	25.3	1 1/4"x6"x3'-9"	1	65			B9P3617-02
ARB2-4	25.4	1 1/4"x6"x4'-9 1/2"	1	65			B9P3617-03
ARB2-5	25.5	1 1/4"x5'-3 3/4"x8'-9"	1	65			B9P3617-04





## PACKAGING SLIP

JOB: OLD LYME FIREHOUSE  
DATE: 6.1.2020  
PO#: 2165

1741 Pitzer Road, Danbury, NC 27016  
Phone 336.462.0526 Office 336-591-9164  
Office@mwdfab.com

SHIP 189 Boston Post Road  
TO Old Lyme, Connecticut 06371

BILL NextGen Services Group  
TO

ORDER DATE	ORDER NUMBER	JOB
11.27.2019	876406	Old Lyme Firehouse

ITEM #	ITEM	QUANTITY
1	CFP-0851253392-1	1
2	CFP-0851253392-1-SBC	1
3	WCFP-0851253392-2-SBC	1
4	WCFP-0851253075-2	1
5	CFP-08512524-3	2
6	CCI-AFP-08512535	2
7	CCI-AFP-08512535-SBC	1
8	CFP-08512535-4	2
9	CFP-08512535-4-SBC	1
10	CFP-065125658-5	3
11	CFP-0851252167-6	2
12	CFP-08512167-6-SBC	1
13	CFP-06512514-7	3
14	CCI-SP-0851285-17-17	6
15	CCI-SP-065125-11-17	3
16	CCI-SP-085125-17-19	3
17	CCI-SP-065125-14-19	3



Please have the receiver of materials sign below:

\_\_\_\_\_  
Print

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date



**Parts List:**

Item	Item #	Dimensions	Qty	Mat	Weight Each	Weight Total	Heat #
Lifting Lugs?	Yes						
CFP-0851253392-1	1	1 1/4"x8 1/2"x33'-11 1/16"	1	65	1230	1230	1062751
CFP-0851253392-1-SBC	2	1 1/4"x8 1/2"x33'-11 1/16"	1	65	1240	1240	1062751
WCFP-0851253392-2-SBC	3	1 1/4"x8 1/2"x33'-11 1/16"	1	65	1247	1247	1062751
WCFP-0851253075-2	4	1 1/4"x8 1/2"x30'-9"	1	65	1120	1120	1062751
CFP-08512524-3	5	1 1/4"x8 1/2"x24'-0"	2	65	867	1734	1062751
CCI-AFP-08512535	6	1 1/4"x8 1/2"x35'-0"	2	65	1269	2538	1062751
CCI-AFP-08512535-SBC	7	1 1/4"x8 1/2"x35'-0"	1	65	1284	1284	1062751
CFP-08512535-4	8	1 1/4"x8 1/2"x35'-0"	2	65	1269	2538	1062751
CFP-08512535-4-SBC	9	1 1/4"x8 1/2"x35'-0"	1	65	1284	1284	1062751
CFP-065125658-5	10	1 1/4"x6 1/2"x6'-7"	3	65	177	531	1062749
CFP-0851252167-6	11	1 1/4"x8 1/2"x21'-8"	2	65	780	1560	1062751
CFP-08512167-6-SBC	12	1 1/4"x8 1/2"x21'-8"	1	65	787	787	1062751
CFP-06512514-7	13	1 1/4"x6 1/2"x17'-10"	3	65	487	1461	1062749
CCI-SP-0851285-17-17	14	1 1/4"x8 1/2"x9'-1"	6	65	316	1896	1062751
CCI-SP-065125-11-17	15	1 1/4"x6 1/2"x7'-7"	3	65	199	597	1062749
CCI-SP-085125-17-19	16	1 1/4"x8 1/2"x9'-7"	3	65	333	999	1062751
CCI-SP-065125-14-19	17	1 1/4"x6 1/2"x8'-10"	3	65	232	696	1062749
TSFP	18	1 1/2"x4"x10"	4	50	14	56	A8A211
WP1	19	2 1/2"x7 1/2"x7 1/2"	4	50	35	140	8502850
WP2	20	2 1/2"x1'-2"x1'-2"	4	50	134	536	8502850
TS1	21	1 1/4"x10 1/8"x9'-9"	2	65	379	758	B9P3617-01
TS2	22	1 1/4"x11 1/4"x19'-6"	2	65	821	1642	B9P3617-01
ST1	23	1 1/4"x6 3/4"x1'-6"	15	65	24	360	B9P3617-01
BE1	24	1 1/4"x11 5/16"x12'-2"	1	65	509	509	B9P3617

ARB2	25	ANCHOR ROD BRACKET	1		2092	2092	
ARB2-1	25.1	6"x6"x1 1/2"x3'9"	1	500-46			NG6733
ARB2-2	25.2	1 1/4"x6"x94 1/2"	1	65			B9P3617-01
ARB2-3	25.3	1 1/4"x6"x3'-9"	1	65			B9P3617-02
ARB2-4	25.4	1 1/4"x6"x4'-9 1/2"	1	65			B9P3617-03
ARB2-5	25.5	1 1/4"x5'-3 3/4"x8'-9"	1	65			B9P3617-04

ARB3	26	ANCHOR ROD BRACKET	2		2110	4220	
ARB3-1	26.1	6"x6"x1 1/2"x3'9"	2	500-46			NG6733
ARB3-2	26.2	1 1/4"x6"x95 3/16"	2	65			B9P3617-01
ARB3-3	26.3	1 1/4"x6"x3'-9"	2	65			B9P3617-02
ARB3-4	26.4	1 1/4"x6"x4'-9"	2	65			B9P3617-03
ARB3-5	26.5	1 1/4"x5'-5"x8'-9"	2	65			B9P3617-04



ARB4	27	ANCHOR ROD BRACKET	1		2141	2141	
ARB4-1	27.1	6"x6"x1/2"x3'9"	1	500-46			NG6733
ARB4-2	27.2	1 1/4"x6"x95 3/16"	1	65			B9P3617-01
ARB4-3	27.3	1 1/4"x6"x3'-9"	1	65			B9P3617-02
ARB4-4	27.4	1 1/4"x6"x4'-11"	1	65			B9P3617-03
ARB4-5	27.5	1 1/4"x5'-6 1/6"x8'-9"	1	65			B9P3617-04

BARB-1	28	BOLTED ANCHOR ROD	3		563	1689	
Backer	28.1	1 1/4"x10"x5'	3	65			B9P3617-01
Gusset	28.2	1"x11 3/4"x4'-9"	6	65			B9P3617-04

BARB-2	29	BOLTED ANCHOR ROD	3		523	1569	
Backer	29.1	1 1/4"x10"x5'	3	65			B9P3617-01
Gusset	29.2	1"x10 1/2"x4'-9"	6	65			B9P3617-04

85-25-SHIM	30	1/4"x8 1/2"x8 1/2"	5	A36	5	25	W8H600
85-18-SHIM	31	3/16"x8 1/2"x8 1/2"	11	A36	4	44	M67940
85-12-SHIM	32	1/8"x8 1/2"x8 1/2"	11	A1011	3	33	1815728
85-06-SHIM	33	1/16"x8 1/2"x8 1/2"	6	A1011	1	6	2810276
END-SHIM-1	34	3/16"x5"x3'-0"	2	A36	9	18	M67940
END-SHIM-2	35	3/16"x6"x4'-6"	1	A36	17	17	M67940
END-SHIM-3	36	3/16"x6 3/4"x4'-6"	2	A36	19	38	M67940
END-SHIM-4	37	3/16"x7 1/2"x4'-6"	1	A36	21	21	M67940
38-SHIM-1	38	3/8"x6 1/2"x1'-0"	1	A36	8	8	JL2915
31-SHIM-1	39	5/16"x6 1/2"x1'-0"	1	A36	7	7	463064
25-SHIM-1	40	1/4"x6 1/2"x1'-0"	1	A36	6	6	W8H600
18-SHIM-1	41	3/16"x6 1/4"x1'-0"	15	A36	4	60	M67940
18-SHIM-2	42	3/16"x7"x10 1/2"	17	A36	4	68	M67940
TUBE	43	5"x5"x1/2"x11'-5"	3	500-46	354	1062	SJ6524
DOUBLERS	44	BASE DOUBLERS	8	50	167	167	E9D080

PIPE	45	12 3/4"øx.5x24'-0"	4	500-46	1602	6408	
MPS	46	1 1/4"x4 1/2"x2'-0"	3	65	38	114	E9B038

EXTENSION	47	16" DIA EXTENSION	1	(GALV)	2229	2229	
T1	47.1	16" O.D.x1/2"x23'-9 1/2"	1	500-46			SP36262
F1	47.2	1 1/2"x2'-0" ODx1'-1" I.D.	1	50			A8A211
F2	47.3	1/4"x2'-0" OD	1	A36			W8H600
C30138125	47.4	1/2"x6"x12"x4" PORT W/ J-	3	65			A8T2622
P1	47.5	1/4"x2"x6"	1	50			A9X4335





## PACKAGING SLIP

JOB: OLD LYME FIREHOUSE  
DATE: 6.1.2020  
PO#: 2165

1741 Pitzer Road, Danbury, NC 27016  
Phone 336.462.0526 Office 336-591-9164  
Office@mwdfab.com

SHIP TO 189 Boston Post Road  
Old Lyme, Connecticut 06371

BILL TO NextGen Services Group

ORDER DATE	ORDER NUMBER	JOB
11.27.2019	876406	Old Lyme Firehouse

ITEM #	ITEM	QUANTITY
1	WP1	4
2	WP2	4
3	TS1	2
4	TS2	2
5	ST1	15
6	BE1	1
7	ARB2	1
8	ARB3	2
9	ARB4	1
10	BARB-1	3
11	BARB-2	3
12	85-25-SHIM	5
13	85-18-SHIM	11
14	85-12-SHIM	11
15	85-06-SHIM	6
16	END-SHIM-1	2
17	END-SHIM-2	1
18	END-SHIM-3	2
19	END-SHIM-4	1
20	38-SHIM-1	1
21	31-SHIM-1	1



22	25-SHIM-1	1
23	18-SHIM-1	15
24	18-SHIM-2	17
25	TUBE	3
26	DOUBLERS	8
27	PIPE	4
28	MPS	3
29	Extension	1
30	1" x 14" A193-B7 All Thread Rod	48
31	1" 2H Nuts	200
32	1" F436 Flat Washers	100
33	1" Lock Washers	100
34	1" x 3 ½" A325 Bolt	4
35	¾" x 9" A449 Step Bolts	36
36	2NG2048	26
37	2NG2068	6
39	2NG2096	7

Please have the receiver of materials sign below:

\_\_\_\_\_

Print

\_\_\_\_\_

Signature

\_\_\_\_\_

Date

Parts List:



BARB-1	28	BOLTED ANCHOR ROD	3		563	1689	
Backer	28.1	1 1/4"x10"x5'	3	65			B9P3617-01
Gusset	28.2	1"x11 3/4"x4'-9"	6	65			B9P3617-04

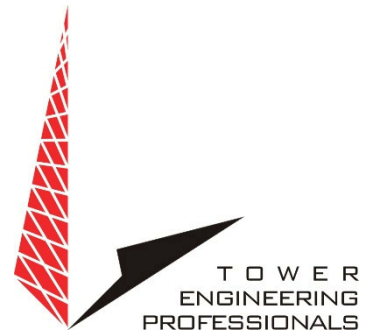
ARB2	25	ANCHOR ROD BRACKET	1		2092	2092	
ARB2-1	25.1	6"x6"x1/2"x3'9"	1	500-46			NG6733
ARB2-2	25.2	1 1/4"x6"x94 1/2"	1	65			B9P3617-01
ARB2-3	25.3	1 1/4"x6"x3'-9"	1	65			B9P3617-02
ARB2-4	25.4	1 1/4"x6"x4'-9 1/2"	1	65			B9P3617-03
ARB2-5	25.5	1 1/4"x5'-3 3/4"x8'-9"	1	65			B9P3617-04



## FOUNDATION INSPECTIONS



Date: September 30, 2020  
Tower Engineering Professionals  
326 Tryon Road  
Raleigh, NC 27603  
(919) 661-6351 (Office)



## Foundation Inspection Report

### Crown Castle Site Information

**Crown POC:** Dan Vadney  
3 Corporate Park Drive, Suite 101  
Clifton Park, NY 12065  
**BU Number:** 876406  
**Site Name:** Old Lyme Firehouse  
**Site Address:** 189 Boston Post Road, Old Lyme, CT 06371, USA  
**Latitude N** 41° 20' 56.37", **Longitude W** 72° 17' 43.65"  
**110 Foot** – Monopole Tower

Tower Engineering Professionals (TEP) is pleased to submit this “**Foundation Inspection Report**” to Crown Castle for the modification/reinforcement to the subject structure. The purpose of this foundation report is to confirm that the foundation modifications installed and the workmanship is in accordance with Crown Castle standards.

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

☒ **PASSING MI**

The configuration, materials and/or workmanship of the modifications are installed in accordance with the Contract Documents.

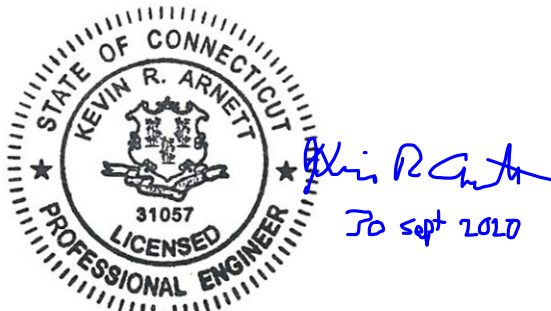
### *Modification Design Information:*

**SDD Vendor:** Paul J. Ford and Company  
**SDD Date:** March 25, 2019  
**Vendor Job Number:** 37519-0914  
**Name of EOR:** Joseph P. Jacobs, P.E.  
**Source of SDD:** 8299430

### *MI Vendor Information:*

**Dates on Site:** 6/25/20  
**MI Crew Lead:** Buck Williams

We at Tower Engineering Professionals 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,



Kevin R. Arnett, P.E., C.W.I.



## **Table of Contents**

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6.8.1 GC AS-BUILT & MI INSPECTOR REDLINE DRAWINGS	N/A
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6.8.3 REINFORCING STEEL INFORMATION & INSPECTION	4
6.8.4 CONCRETE TESTING & DELIVERY TICKETS	N/A
6.8.5 EARTHWORK LIFT & DENSITY	N/A
6.8.6 MICROPILE INSTALLATION AND TESTING	15
6.8.7 PUNCHLIST APPROVALS & REMEDIATION	24




## 6.8.2 FOUNDATION EXCAVATION AND SOILS INFORMATION

Photographs	Observation
	<p><b>Observation:</b></p> <p>Excavated soils typically matched the conditions noted in the Geotechnical Evaluation and Investigation Report provided by Paul J. Ford and Company dated March 25, 2019.</p>



### 6.8.3 REINFORCING STEEL INFORMATION & INSPECTION

Photograph	Observations and Recommendations
 <p>The photographs show three different views of the reinforcing steel inspection. The top photo shows a close-up of a hand holding a vernier caliper against a steel bar. The middle photo shows a yellow tape measure being held against a steel bar in a trench. The bottom photo shows a yellow tape measure being held against a steel bar in a trench, with a white conduit visible above the bars. Each photo has a timestamp in the bottom right corner: '06/25/2020 14:23', '06/25/2020 14:20', and '06/25/2020 14:28' respectively.</p>	<p><b>Observation:</b> A new grade beam was constructed around each new micropile. This was completed in accordance with the modification drawings provided by Paul J Ford and Company, dated March 25, 2019, except as noted below.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"><li>1. A conduit was running through the corner of the NE grade beam.</li><li>2. Up to 10" of cover is present (3" is specified).</li><li>3. Rebar spacing varies due to the steel tube. The number of bars is correct.</li><li>4. Air entrainment of new concrete was measured as 3.75% (6% specified)</li></ol> <p>These items were approved by the engineer of record. See correspondence for details.</p>



## **PACKING SLIPS**



Re-Steel Supply Co., Inc.  
2000 Eddystone Industrial Park  
Eddystone, PA 19022-  
Phone: (610)876-8216 FAX: (610)876-9279

JOB NUMBER <b>SA1982</b>	RELEASE NUMBER	REQ. DELIVERY DATE	PAGE 1 of 1
JOB NAME <b>OLD LYME ROAD</b>	CO. <b>FBQ6</b>		BY <b>JB</b>
CUSTOMER <b>NEXTGEN</b>			

MATERIAL TYPE <b>Rebar, Grade 60, Black</b>				REFERENCE				DRAWING ID				DESCRIPTION <b>PO# 2245</b>											
Item	Qty	Size	Length	Mark	Shape	Lbs	A	B	C	D	E	F/R	G	H	J	K	O	BC					

\*\*\*\*\* CPU \*\*\*\*\*

CONTACT RICH TASCHEK 856-810-1658

\$500.00

RM

**COPY 6/8 Billing list**

1	32	9	4-00			435												0
	32					435												
2	16	8	4-00			171												0
	16					171												
3	28	4	12-09	400	T1	238	0-042	2-06	3-06	2-06	3-06		0-042					C07
	28					238												

Total Weight: 844 Lbs

Longest Length: 12-09

#### WEIGHT SUMMARY

TOTAL				STRAIGHT			LIGHT BENDING			HEAVY BENDING		
SIZE	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS	ITEMS	PIECES	LBS
<b>Rebar, Grade 60, Black</b>												
4	1	28	238	0	0	0	1	28	238	0	0	0
8	1	16	171	1	16	171	0	0	0	0	0	0
9	1	32	435	1	32	435	0	0	0	0	0	0
	3	76	844	2	48	606	1	28	238	0	0	0

Total Weight: 844 Lbs

Longest Length: 12-09



# Bill of Lading

**Re-Steel Supply Co., Inc.**

2000 Eddystone Industrial Park  
Eddystone, PA 19022  
Phone: (610)876-8216

**Bill of Lading #:** ED014974**Ship Date:** 6/4/2020**Customer:** NEXTGEN**Job Number:** SA1982**Ship Via:** CUSTOMER PICKUP**F.O.B.:****Customer P.O.:****Customer Job No:****Contact:****Phone:**

S OLD LYME ROAD  
H OLD LYME ROAD

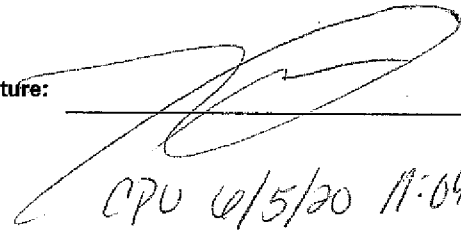
I  
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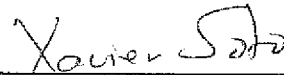
T  
O

# COPY

Qty Ordered	UM	Description	Weight (Lbs)
844	lbs	Reinforcing Steel Per CC FBQ6 Release 1 Rev. 0 PO# 2245 Rebar Black	844
Total Weight:			844

**Signature:****Name:**

  
CPU 6/5/20 11:09 AM







## Transport Release

Transport Pickup	196185 (PAP) Camp Hill
------------------	---------------------------

**Invoice To**  
Skyline Steel - New Jersey  
One Arin Park  
1715 Highway 35  
Suite 209  
Middletown, NJ 07748

### Ship-From

Camp Hill 1250 St. John's Road Camp Hill, PA 17011	Departure Date	6/9 11:03 AM
--	----------------	--------------

### Ship-To

NEXTGEN SERVICES C/O NE OLD LYME FIREHOUSE 52 LYME ST OLD LYME, CT 06371	Arrival Date	6/9 11:03 AM
	Delv Hours	16:00-18:00

Item	Product	Pcs	LBS
Our Order	SO-271467	Customer PO	2238 5/12/2020
2-1	OVERSIZE COUPLER GRADE 150 Hot Dip Galv TB300 BAR STOP Type	4	165
3-1	OVERSIZE HEX NUT GRADE 150 Hot Dip Galv TB300 BAR	4	85
4-1	H-BAR HEX NUT Bare T52MM OD BAR	6	31

Total	281
-------	-----

NOTE TO TRUCKERS: YOU MUST SUPPLY YOUR OWN DUNNAGE OR TRUCK WILL NOT BE LOADED.  
PPE REQUIRED FOR TRUCK DRIVERS: HARD HAT, SAFETY GLASSES, SAFETY VEST, STEEL TOED SHOES, & LONG PANTS





## Transport Release

Transport Pickup	196186 (VSG) V&S GALV.
------------------	---------------------------

**Invoice To**  
Skyline Steel - New Jersey  
One Arin Park  
1715 Highway 35  
Suite 209  
Middletown, NJ 07748

### Ship-From

V & S GALVANIZING  
153 MICRO DR  
JONESTOWN, PA 17038

Departure Date	6/9 11:04 AM
----------------	--------------

### Ship-To

NEXTGEN SERVICES  
C/O NE OLD LYME FIREHOUSE  
52 LYME ST  
OLD LYME, CT 06371

Arrival Date	6/9 11:04 AM
Delvry Hours	16:00-18:00

Item	Product	Pcs	LBS
Our Order	SO-271467		
	Customer PO 2238 5/12/2020		
1-1	Cold Formed Threaded Bar Grade 150 Hot Dip Galv 3.000" x 6'	4	576
Total			576

NOTE TO TRUCKERS: YOU MUST SUPPLY YOUR OWN DUNNAGE OR TRUCK WILL NOT BE LOADED.  
PPE REQUIRED FOR TRUCK DRIVERS: HARD HAT, SAFETY GLASSES, SAFETY VEST, STEEL TOED SHOES, & LONG PANTS



## **MATERIAL TEST REPORTS**



# NUCOR®

## SKYLINE

### Transfer Packing List

Packing List  
Source  
Shipment Dt

192673-1  
PAP Camp Hill  
5/18/2020



GREINER INDUSTRIES, INC.  
1650 STEEL WAY  
MOUNT JOY, PA 17552

*Maylon Transport*

Divy Mthd Carrier Common Carrier  
GENERIC VENDOR FOR FREIG Ref

Vehicle No  
Trailer No

Job Set 310983  
SO-271467-1-1  
IP-358667  
Process Ext Blasting (XBL) PWC Outside Process (OPR)  
Cold Formed Threaded Bar Grade 150 Hot Dip Galv  
3.000" x 6'

Normal Order

Lot	Pcs	LBS
10845	2	288
25151	2	288
<b>Total</b>	<b>4</b>	<b>576</b>

Heat No DOM

*C147242*

**Total for the Transfer 576 LBS**



# NUCOR®

## SKYLINE

### Bill of Lading

Reference No. 192673-1  
Shipment Date 5/18/2020



From Skyline Steel - New Jersey, One Arin Park, Middletown, NJ 07748

Ship To GREINER INDUSTRIES, INC., 1650 STEEL WAY, MOUNT JOY, PA 17552

Carrier GENERIC VENDOR FOR FREIGHT - Ref

Vehicle No

Trailer No

4 PCS (CF Threaded Bar)

Total 4 PCS 576 LBS

Attachments TPL-192673-1

Buyer acknowledges that all of Skyline's products may result in an exposure to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. Buyer is responsible for complying with California Proposition 65 and shall indemnify and hold harmless Nucor from and against any claims, damages, or liabilities suffered by Nucor as a result of Buyers failure to comply with Proposition 65.

Name of Carrier May 1st Transport Carrier's No. \_\_\_\_\_  
Received subject to the terms and conditions of this Bill of Lading.  
AT Camp Hill, PA 17011

The property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above, which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed that every service to be performed hereunder shall be subject to all the terms and conditions of this bill of lading. THIS BILL OF LADING IS NOT SUBJECT TO ANY CLASSIFICATION OR TARIFFS, WHETHER INDIVIDUALLY DETERMINED OR FILED WITH ANY FEDERAL OR STATE REGULATORY AGENCY, EXCEPT AS SPECIFICALLY AGREED TO IN WRITING BY THE SHIPPER AND CARRIER.

#### Carrier Certification:

Carrier acknowledges receipt of the property described above in good order and condition.

Driver's Signature: \_\_\_\_\_

If the shipment moves between two ports by a carrier by water, the law requires that the bill of lading shall state whether it is "carrier's weight" or "shipper's weight". The agreed-on declared value of the property is hereby specifically stated by the shipper to be not exceeding \_\_\_\_\_ per \_\_\_\_\_.

Shipper hereby certifies that he is familiar with all the terms and conditions of this bill of lading, including those on the back hereof, and the said terms and conditions are hereby agreed to by the shipper and accepted for itself and its assigns.

Subject to Section 7 of the terms and conditions of this bill of lading, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:

The carrier may decline to make delivery of this shipment without payment of freight and all other lawful charges.

NUE

(Signature of Consignor)

Freight charges are PREPAID unless marked collect

CHECK BOX IF COLLECT ☐

5/18/2020

09:11 AM



1





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5150

## JOB MATERIAL CERTIFICATION

Job No: 578049

Job Information

Certified Date: 7/2/18

Containers: S14105958 S14107288 S14107426 S14112853 S14113690

Customer: Skyline Steel

Ship To: 1250 St. Johns Road  
Camp Hill, PA 17011

Vulcan Part No: HRB 4140 3.000x720 A434 BD

Customer Part No: 3" x 60' GR150

Customer PO No: 105-507111-RH

Shipped Qty: 43285 lbs

Order No: 344149

Line No: 2

Note:

### Applicable Specifications

Type	Specification	Rev	Amend	Option
	Vulcan A722 Type I Modified	2015		

### Test Results

See following pages for tests

### Certified Chemical Analysis

Heat No: C147242 Lot: 3.000										Origin: USA				
C	Mn	P	S	Si	Cr	Mo	Ni	V	Cu	Al	Cl	Sn	Ti	N
0.410	0.96	0.007	0.023	0.24	0.96	0.19	0.18	0.001	0.21	0.023	0.001	0.012	0.001	0.0082
B	Ca	As	Sb	H, ppm	Pb	DI	RR	G.S.	Macro S	Macro R	Macro C	J1	J2	J3
0.0003	0.0007	0.005	0.002	1.3	0.001	5.87	19.8:1	8	1	1	2	57	57	57
J4	J5	J6	J7	J8	J9	J10	J12	J14	J16	J18	J20	J24	J28	J32
57	57	57	57	57	57	54	50	50	48	48	47	46	44	40

### Notes

Material was manufactured, tested and inspected as required by the product standard and in accordance with Vulcan's ISO 9001:2015 Quality Management System registered June 30th, 2017. No weld repair performed on the material. No Mercury used in the production of this material.  
Document is in accordance with EN 10204 - 3.1B of 2004 (3.1).





Vulcan Threaded Products  
10 Cross Creek Trail  
Pelham, AL 35124  
Tel (205) 620-5100  
Fax (205) 620-5150

## JOB MATERIAL CERTIFICATION

Job No: 578049

Job Information

Certified Date: 7/2/18

Containers: S14105958 S14107288 S14107426 S14112853 S14113690

### Test Results

Part No: HRB 4140 3.000x720 A434 BD

Test No: 49274 Test: Quench & Temper Information (Lbs)

Description	Austenitizing Temp (F)	Tempering Temp (F)	Run Speed (Ft/min)	Quench Water Temp (F)	Note
	1,819	1,158	5	95	

Test No: 49275 Test: Vulcan A722 Modified

Description	Tensile (ksi)	Yield (ksi)	Elongation (%)	Elongation Gage Length	ROA (%)	Note
	158	140	18	4D	56	
	159	140	16	4D	51	
	159	141	17	4D	56	
	165	147	16	4D	53	
	163	146	19	4D	52	

7/2/18

Griffin, Mitchell - Certification Engineer

Date



## 6.8.6 MICROPILE INSTALLTION AND TESTING

Photograph	Observations
 <p>The top photograph shows a worker using a yellow tape measure to measure the length of a concrete cap on a micropile. The middle photograph shows a micropile being installed into a hole, surrounded by concrete. The bottom photograph shows a micropile being tested with a pull test rig.</p> <p>06/25/2020 14:26</p> <p>06/25/2020 15:39</p> <p>06/25/2020 15:17</p>	<p><b>Observation:</b></p> <p>(4) New micropile rock anchors were installed. Anchors were pull tested and then grade beams were poured around them. This was completed in accordance with the modification drawings provided by Paul J Ford and Company, dated March 25, 2019</p>





# Compressive Strength of Concrete

Test Method: ASTM C 39

Report #: CC-000001

Report Date: 7/26/2020

Sample: 2561

## Tri State Materials Testing Lab

60 Woodlawn Road  
Berlin, CT 06037  
Phone: 203-949-7733  
Fax: 203-949-7735

## Client:

Tower Engineering Professionals, Inc.  
326 Tryon Road  
Raleigh, NC 27603

## Project:

BU # 876406  
NE Old Lyme-Old Lyme Fire House  
189 Boston Post Road  
Old Lyme, CT 06371

### Sample Details

Set #:	1	Technician:	Kevin Hernandez	Batched:	
Specimen Size:	4" X 8"	Cast By:	Kevin Hernandez	Sampled:	15:15 EDT
Specimens In Set:	5	Date Cast:	06/25/20	Cast:	15:25 EDT
Truck / Ticket #:	89 / 595683	Sampled From:	Buggy	Truck Empty:	
Contractor:		Placement Method:	Chute	Placement Time:	

### Location

Placement Location: Building Exterior - Footing  
Location Details: Footing  
Sample Location / Notes: No discrepancies noted

### Batch Log

Supplier:	Tilcon Connecticut, Inc	Mix Design:	500201	Strength:	5000 (psi)
On-Site Admixtures:	None				

### Field Measurements

Weather:	Sunny	Slump (in):	5 (ASTM C143)	Plastic Unit Weight:	
Air Temperature (F):	73	Concrete Temp (F):	70 (ASTM C1064)	Air Content:	4.7 (ASTM C231)
				Load Volume:	10 (yd <sup>3</sup> )

### Lab Test Results

Testing Lab: Tri State Materials Testing Lab, 60 Woodlawn Rd, Berlin, CT, 06037										
Specimen Number	Test Age Days	Test Date	Field / Lab Cure Days	Average Cylinder Diameter (in)	Cylinder Area (in <sup>2</sup> )	Max Load (lbs)	Strength (psi)	Fracture Type	Break Remark	Capping Method
1-1	7	07/02/20	1 / 6	4.00	12.57	60,100	4,780	2	5	U
1-2	28	07/23/20	1 / 27	4.00	12.57	86,800	6,910	6	Y	U
1-3	28	07/23/20	1 / 27	4.00	12.57	87,540	6,960	6	Y	U
1-4	28	07/23/20	1 / 27	4.00	12.57	89,000	7,080	6	Y	U
1-5	56 H	08/20/20	1 / 55							

Test Age Average Strengths (psi): 7 Day - 4780, 28 Day - 6980

### Capping Methods

5: 5 day test results. Y: The 28 day test results meet or exceed the specified strength. Tested By: Imran Chaudhary (1,2,3,4) Checked In : 06/26/2020 (1,2,3,4,5)	U: Unbonded Caps (ASTM C1231)
--	-------------------------------



TYPE 1 TYPE 2 TYPE 3 TYPE 4 TYPE 5 TYPE 6



# REPORT OF GROUT CUBE TEST

## TRC Engineers, Inc.

Report Date: 9/11/20

Project Number: 292140.0027  
Project: NE OLD LYME FIREHOUSE  
Client: NEXT GEN SERVICES GROUP  
Address: 2242 OLD MARLTON PIKE  
MARLTON, NJ 08053  
Attn: DAN HUGHES

Report Number: 1

### FIELD TEST CONDITIONS AND RESULTS

Date Sampled: Time Sampled:  
Date Placed: 5/7/2020  
Location of Sample: FLAT 7 - GROUT CUBE  
Supplier:  
Truck Number: Ticket Number:  
Mix Number:  
Design Strength: 8000  
Time Batched: Time Placed:  
Batch Size: Field Technician:  
Flow: Air Content:  
Grout Temp: Ambient Temp:  
Water Added: Lab Technician:

### LABORATORY TEST RESULTS

Specimen	Test Date	Age	Load	Side 1	Side 2	Area	Strength	Percent of Design	Curing Method
17016A#	9/9/2020	125	35000	2.00	2.00	4.00	8750	109%	
17016B#	9/9/2020	125	39000	2.00	2.00	4.00	9750	122%	

Average 28 day strength:

Remarks: AVERAGE DIAMETER PROVIDED  
ASTM C 1231

Copies to:

Reported by:

Mario Marra  
Concrete Lab Supervisor



# REPORT OF GROUT CUBE TEST

TRC Engineers, Inc.

Report Date: 9/11/20

Project Number: 292140.0027

Report Number: 2

Project: NE OLD LYME FIREHOUSE

Client: NEXT GEN SERVICES GROUP

Address: 2242 OLD MARLTON PIKE

MARLTON, NJ 08053

Attn: DAN HUGHES

## FIELD TEST CONDITIONS AND RESULTS

Date Sampled:

Time Sampled:

Date Placed: 5/7/2020

Location of Sample: FLAT 11 - GROUT CUBE

Supplier:

Truck Number:

Ticket Number:

Mix Number:

Design Strength: 8000

Time Batched:

Time Placed:

Batch Size:

Field Technician:

Flow:

Air Content:

Grout Temp:

Ambient Temp:

Water Added:

Lab Technician:

## LABORATORY TEST RESULTS

Specimen	Test Date	Age	Load	Side 1	Side 2	Area	Strength	Percent of Design	Curing Method
17017A#	9/9/2020	125	41000	2.00	2.00	4.00	10250	128%	
17017B#	9/9/2020	125	42000	2.00	2.00	4.00	10500	131%	

Average 28 day strength:

Remarks: AVERAGE DIAMETER PROVIDED

ASTM C 1231

Copies to:

Reported by:

Mario Marra  
Concrete Lab Supervisor



# TRC Engineers, Inc.

**Project:** NE OLD LYME FIREHOUSE  
**Client:** NEXT GEN SERVICES GROUP  
**Address:** 2242 OLD MARLTON PIKE  
MARLTON, NJ 08053  
**Attn:** DAN HUGHES

Date Sampled:	Time Sampled:
Date Placed: 5/8/2020	
Location of Sample: FLAT 17 - GROUT CUBE	
Supplier:	
Truck Number:	Ticket Number:
Mix Number:	
Design Strength: 8000	
Time Batched:	Time Placed:
Batch Size:	Field Technician:
Flow:	Air Content:
Grout Temp:	Ambient Temp:
Water Added:	Lab Technician:

## Page: 1 of 1



Verification Test Load Schedule

Pile #	1	Site Name		NE Old Lyme															
Effective jack area	78.54	Max Kips	309	3934.3															
Step	Loading		Effective -->		30 Seconds	1 minute	2 minutes	3 minutes	4 Minutes	5 Minutes	6 Minutes	10 Minutes	20 Minutes	30 Minutes	40 Minutes	50 Minutes	60 Minutes		
	Percentage of KIP load	Load, kips	Time, min.	PSI	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection		
Step 1	10%	30.9	1.0	393.43	0.0355	0.0355													
2 Load Cycles	25%	77.3	1.0	983.58	0.0105	0.0105													
3	50%	154.5	1.0	1967.15	0.1935	0.1915													
4	75%	231.8	1.0	2950.73	0.285	0.285													
5	100%	309.0	1.0	3934.30	0.408	0.408													
6	120%	370.8	1.0	4721.16	0.4885	0.4885													
7 Test Load	133%	411.0	10.0	5232.62	0.549	0.549	0.549	0.5475	0.547	0.547	0.5465	0.5465							
8	If the displacement value between minute 1 to 10 with test load is less than 0.040 in. then go to step #9. If the displacement value between 1 & 10 minutes with test load greater than 0.040 in. then continue to hold test load for an additional 50 (mins.) Continue recording the displacement values at 10 min. increments.																		
9 Alignment Load	10%	30.9	1.0	393.43	0.0945	0.0945													
	record residual movement at the alignment load. Upon completion, bring anchor to lock-off load; 309 kips			0.00															
				0.00															
				0.00															
				#REF!	#REF!														



<b>File #</b>	<b>2</b>	<b>Site Name</b> NE Old Lyme		
<b>Effective jack area</b>	78.54	<b>Max Kips</b>	309	3934.3

[illegible]

File	File #2	File	File #3	File	File #4	File	File #5
1)	31.9	400	.0048	.0045	.0045		
2)	27.7	1000	.0485	.0485	.485		
3)	154.5	2000	.135	.134	.134		
4)	231.8	3000	.2225	.2225	.2225		
5)	309.0	4000	.316	.316	.316		
6)	370.8	4900	.399	.3975	.397		
7)	411.0	5300	.4395	.4395	.4395		
Load File							
			2)	.4395			
			3)	.4395			
			4)	.4395			
			5)	.4395			
			6)	.4395			
			7)	.4395			
			8)	.4375			
			9)	.4395			
			10)	.4395			
	400			.0085		En	
	4000			.3225		.240	



Verification Test Load Schedule

Pile #	3	Site Name	NE Old Lyme														
Effective jack area	78.54	Max Kips	309	3934.3													
Step	Loading	Load, kips	Effective --> Time, min.	PSI	30 Seconds	1 minute	2 minutes	3 minutes	4 Minutes	5Minutes	6Minutes	10 Minutes	20 Minutes	30 Minutes	40 Minutes	50 Minutes	60 Minutes
Step 1	Percentage of KIP load																
	10%	30.9	1.0	393.43	0.0523	0.0525											
	25%	77.3	1.0	983.58	0.1063	0.1065											
	50%	154.5	1.0	1967.15	0.1933	0.1935											
	75%	231.8	1.0	2950.73	0.2905	0.29											
	100%	309.0	1.0	3934.30	0.3885	0.3885											
	120%	370.8	1.0	4721.16	0.462	0.4615											
7 Test Load	133%	411.0	10.0	5232.62	0.513	0.511	0.5105	0.5095	0.5095	0.5095	0.5095	0.508					
If the displacement value between minute 1 to 10 with test load is less than 0.040 in, then go to step #9.																	
If the displacement value between 1 & 10 minutes with test load greater than 0.040 in, then continue to hold test load for an addition 50 (mins) Continue recording the displacement values at 10 min. increments.																	
9 Alignment Load	10%	30.9	1.0	393.43	0.042	0.043											
	record residual movement at the alignment load. Upon completion, bring anchor to lock-off load; 309 kips				0.00												
					0.00												
					0.00												
Lock Off	100%	309.0	1.0	3934.30													
		0.0			0.00												
		0.0			0.00												
		0.0			0.00												
		#RLD1			#RLD1												
		0			0.00												

02/11/23 6:22 PM D-# 876406

Load	PSI	Time	Load	PSI
1) 20.9	400	0.015	10.025	0.025
2) 77.3	1000	0.015	0.025	0.025
3) 154.5	2000	0.015	0.025	0.025
4) 231.8	3000	0.015	0.025	0.025
5) 309.0	4000	0.015	0.025	0.025
6) 370.8	4800	0.015	0.025	0.025
7) 411.0	5300	0.015	0.011	0.011

0)	510.5
1)	509.5
2)	509.5
3)	509.5
4)	509.5
5)	509.5
6)	509.5
7)	509.5
8)	509.5
9)	509.5
10)	509.5
11)	509.5
12)	509.5
13)	509.5
14)	509.5
15)	509.5
16)	509.5
17)	509.5
18)	509.5
19)	509.5
20)	509.5
21)	509.5
22)	509.5
23)	509.5
24)	509.5
25)	509.5
26)	509.5
27)	509.5
28)	509.5
29)	509.5
30)	509.5
31)	509.5
32)	509.5
33)	509.5
34)	509.5
35)	509.5
36)	509.5
37)	509.5
38)	509.5
39)	509.5
40)	509.5
41)	509.5
42)	509.5
43)	509.5
44)	509.5
45)	509.5
46)	509.5
47)	509.5
48)	509.5
49)	509.5
50)	509.5
51)	509.5
52)	509.5
53)	509.5
54)	509.5
55)	509.5
56)	509.5
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79)	509.5
80)	509.5
81)	509.5
82)	509.5
83)	509.5
84)	509.5
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6-2-2-  
D-8 876406

Load	PSI	Time	Deflection	End
1) 30.9	400	0.053	0.125	0.021
2) 77.3	1000	0.1065	0.165	0.113
3) 154.5	2000	0.1935	0.1935	0.1935
4) 231.8	3000	0.2905	0.290	0.290
5) 309.0	4000	0.3885	0.3885	0.3885
6) 370.8	4800	0.462	0.4615	0.4615
7) 411.0	5300	0.513	0.511	0.511
8)			0.5105	
9)			0.5095	
10)			0.5095	
11)			0.5095	
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<b>File #</b>	<b>4</b>	<b>Site Name</b> NE Old Lyme		
<b>Effective jack area</b>	78.54	<b>Max Kips</b>	309	3934.3

Step	Leading		Effective		30 Seconds	1 minute	2 minutes	3 minutes	4 Minutes	5 Minutes	6 Minutes	10 Minutes	20 Minutes	30 Minutes	40 Minutes	50 Minutes	60 Minutes
	Percentage of KIP load	Load, kips	Time, min.	PSI	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection	Deflection
Step 1	10%	30.9	1.0	393.43	0.0155	0.0155											
2 Load Cycles	25%	77.3	1.0	983.58	0.091	0.091											
3	50%	154.5	1.0	1967.15	0.2255	0.2255											
4	75%	231.8	1.0	2950.73	0.33	0.33											
5	100%	309.0	1.0	3934.30	0.4385	0.4385											
6	120%	370.8	1.0	4721.16	0.5215	0.5215											
7 Test Load	133%	411.0	10.0	5232.62	0.5785	0.5785	0.5785	0.5785	0.5785	0.5785	0.5785	0.5785					
8	If the displacement value between minute 1 to 10 with test load is less than 0.040 in. then go to step #9. If the displacement value between 1 & 10 minutes with test load greater than 0.040 in. then continue to hold test load for an additional 50 (mins.) Continue recording the displacement values at 10 min. increments.				0.5785	0.5785	0.5785	0.5785	0.5785	0.5785	0.5785						
9 Alignment Load	10%	30.9	1.0	393.43	0.0493	0.0493											
	record residual movement at the alignment load. Upon completion, bring anchor to lock-off load; 309 kips				0.00	0.00											
Lock Off	100%	309.0	1.0	3934.30													
		0.0		0.00													
		0.0		0.00													
		0.0		0.00													
		0.0		0.00													
		0		0.00													

p1: 84  
6-2-20  
808076406  
(20)

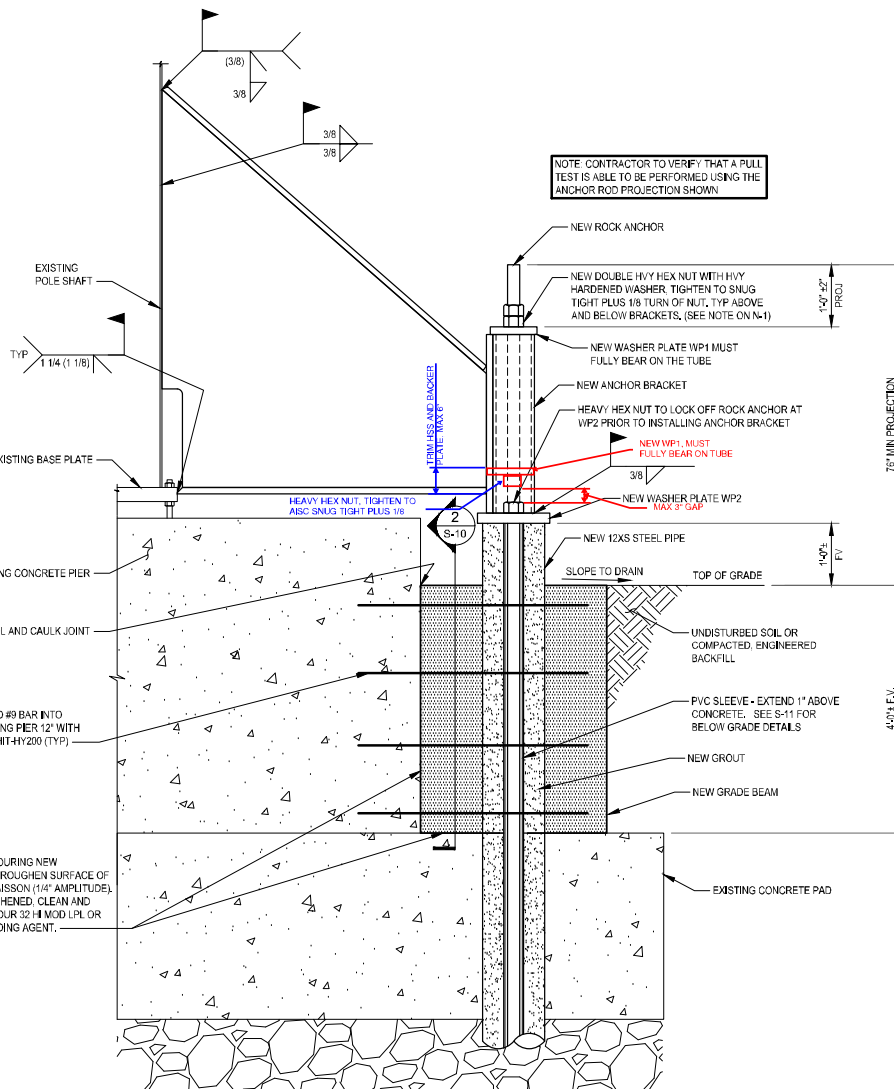
	Area	PSI	Time	Index	in
1)	30.9	400	.0155	.0155	.0155
2)	77.3	1000	.091	.091	.091
3)	154.5	2000	.2255	.2255	.2255
4)	231.8	3000	.330	.330	.330
5)	309.0	4000	.4385	.4385	.4385
6)	370.8	4800	.5215	.5215	.5215
7)	411.0	5300	.5785	.5785	.5785
8)			.5785		
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	Area	PSE	2000	1995	1990
1)	30.9	400	.0155	.0155	.0155
2)	77.7	1000	.091	.091	.091
3)	154.5	2000	.2255	.2255	.2255
4)	231.8	3000	.330	.330	.330
5)	309.0	4000	.4385	.4385	.4385
6)	370.8	4800	.5215	.5215	.5215
7)	411.0	5300	.5785	.5785	.5785
			2)	.5785	
			3)	.5785	
			4)	.5785	
			5)	.5785	
			6)	.5785	
			7)	.5785	
			8)	.5785	
			9)	.5785	
			10)	.5785	
	4000		.0495	.0495	
	4000		.449	<del>.0495</del>	336

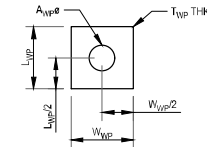


#### **6.8.7 PUNCHLIST APPROVALS & REMEDIATION**

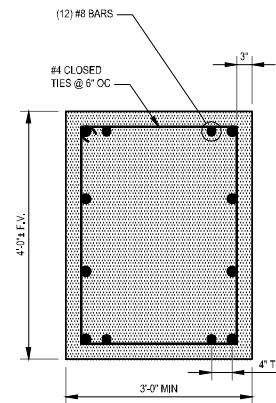




NEW BRACKET DETAIL 1 S-10



WASHER PLATE							
PART #	PLAT #	QTY	MATL SPEC	T <sub>WP</sub> (IN)	W <sub>WP</sub> (IN)	L <sub>WP</sub> (IN)	A <sub>WP</sub> (IN)
WP1	2, 8, 11, 17	4	ASTM A572 GR 50KSI	2 1/2	7 1/2	7 1/2	3 1/8
WP2	2, 8, 11, 17	4	ASTM A572 GR 50KSI	2 1/2	14	14	3 1/8



SECTION 2 S-10

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**PAUL J. FORD & COMPANY**  
 250 E. Broad St., Ste. 600, Columbus, OH 43215  
 Phone 614.221.6679 www.pauljford.com  
**CROWN CASTLE**  
 3830 TORRINGTON WAY, SUITE 300 CHARLOTTE, NC 28277  
 PH: (703) 416-2000

BU #876406, NE OLD LYME-OLD LYME FIREHOUSE  
 OLD LYME, CONNECTICUT  
 MODIFIED 110'-0" MONOPOLE

PROJECT No. 37519-0814.001.7700  
 DRAWN BY: DC  
 DESIGNED BY: UY  
 CHECKED BY: BKK  
 DATE: 03-25-2019

GRADE BEAM DETAILS

S-10

REV	DATE	DESCRIPTION





Kevin Arnett <karnett@tepgroup.net>

---

**RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's**

1 message

---

**Thomas J. Dehnke** <tdehnke@pauljford.com>

Thu, May 7, 2020 at 12:50 PM

To: Hannah Childers <hchilders@tepgroup.net>, "Hughes, Dan" <Dan.Hughes@nextgenservicesgroup.com>

Cc: Dan Vadney <dan.vadney@crowncastle.com>, "Forsythe, Jorge" <jorge.forsythe@nextgenservicesgroup.com>,

"Gentes, Joe" <Joe.Gentes@nextgenservicesgroup.com>, PMI <pmi@tepgroup.net>, "Taschek, Rich"

<Rich@nextgenservicesgroup.com>, pjfmod <pjfmod@pauljford.com>

Hannah,

Thank you for your time over the phone. Per our discussion, internal to the steel pipe the grout is required to extend to the top of the pipe. External to the steel tube, Ideally the grout should extend to the top of the existing concrete. If it does not, it shall exceed the bottom of the existing concrete by 10" min. Any open spaces are required to be filled with concrete when pouring the new grade beams.

As for the PVC pipe, I am not concerned that it is 11" short of the top of steel pipe.

If there is anything else please feel free to contact me.

Thank you,

**Thomas "T.J." Dehnke, PE | Project Manager**

Cell: 330.844.0790 | Direct: 614.448.4167 | Office: 614.221.6679 ext 2167 | [tdehnke@pauljford.com](mailto:tdehnke@pauljford.com) | [www.pauljford.com](http://www.pauljford.com)



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**Due to current events, I may not be reached at my desk. Please feel free to call my cell phone at 330.844.0790.**

**From:** Hannah Childers <hchilders@tepgroup.net>

**Sent:** Thursday, May 7, 2020 12:11 PM

**To:** Hughes, Dan <Dan.Hughes@nextgenservicesgroup.com>

**Cc:** Dan Vadney <dan.vadney@crowncastle.com>; Forsythe, Jorge <jorge.forsythe@nextgenservicesgroup.com>;

Gentes, Joe <Joe.Gentes@nextgenservicesgroup.com>; PMI <pmi@tepgroup.net>; Taschek, Rich

<Rich@nextgenservicesgroup.com>; Thomas J. Dehnke <tdehnke@pauljford.com>; pjfmod <pjfmod@pauljford.com>

**Subject:** Re: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's



TJ,

Could you also please clarify for me how far up you would like for the steel pipes to be grouted? Will grout need to reach top of concrete?

Thanks,

Hannah

On Thu, May 7, 2020 at 12:08 PM Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)> wrote:

Sorry sent the wrong one

Thanks,

Daniel Hughes

Structural Manager



NextGen Services Group

[2242 Old Marlton Pike](#)

[Marlton NJ, 08053](#)

[\(office\) 856-810-1658 x 241](#)

[\(fax\) 856-810-1659](#)

[\(Cell\) 856-206-8661](#)

[Dan.hughes@nextgenservicesgroup.com](mailto:Dan.hughes@nextgenservicesgroup.com)

Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time.

Problems are not stop signs, they are guidelines.

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---

**From:** Thomas J. Dehnke <[tdehnke@pauljford.com](mailto:tdehnke@pauljford.com)>  
**Sent:** Thursday, May 7, 2020 12:05 PM  
**To:** Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>; pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>; Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>; Dan Vadney <[dan.vadney@crowncastle.com](mailto:dan.vadney@crowncastle.com)>; Forsythe, Jorge <[jorge.forsythe@nextgenservicesgroup.com](mailto:jorge.forsythe@nextgenservicesgroup.com)>; PMI <[pmi@tepgroup.net](mailto:pmi@tepgroup.net)>; Taschek, Rich <[Rich@nextgenservicesgroup.com](mailto:Rich@nextgenservicesgroup.com)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>  
**Subject:** RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

Dan,

I think we filled out the same RFI yesterday, see attached email. Were there supposed to be more items that I am missing on the latest RFI?

Thank you,

**Thomas "T.J." Dehnke, PE | Project Manager**

Cell: 330.844.0790 | Direct: 614.448.4167 | Office: 614.221.6679 ext 2167 | [tdehnke@pauljford.com](mailto:tdehnke@pauljford.com) | [www.pauljford.com](http://www.pauljford.com)



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**Due to current events, I may not be reached at my desk. Please feel free to call my cell phone at 330.844.0790.**

---

**From:** Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>  
**Sent:** Thursday, May 7, 2020 11:21 AM  
**To:** pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>; Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>; Dan Vadney <[dan.vadney@crowncastle.com](mailto:dan.vadney@crowncastle.com)>; Forsythe, Jorge <[jorge.forsythe@nextgenservicesgroup.com](mailto:jorge.forsythe@nextgenservicesgroup.com)>; PMI <[pmi@tepgroup.net](mailto:pmi@tepgroup.net)>; Taschek, Rich <[Rich@nextgenservicesgroup.com](mailto:Rich@nextgenservicesgroup.com)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>; Thomas J. Dehnke <[tdehnke@pauljford.com](mailto:tdehnke@pauljford.com)>  
**Subject:** RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

TJ ,

Attached you will find the RFI for the email approval attached .



Thanks,

Daniel Hughes

Structural Manager



NextGen Services Group

2242 Old Marlton Pike

Marlton NJ, 08053

(office) 856-810-1658 x 241

(fax) 856-810-1659

(Cell) 856-206-8661

[Dan.hughes@nextgenservicesgroup.com](mailto:Dan.hughes@nextgenservicesgroup.com)

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---

**From:** pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>

**Sent:** Thursday, May 7, 2020 10:17 AM

**To:** Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>; Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>; Dan Vadney <[dan.vadney@crowncastle.com](mailto:dan.vadney@crowncastle.com)>; Forsythe, Jorge <[jorge.forsythe@nextgenservicesgroup.com](mailto:jorge.forsythe@nextgenservicesgroup.com)>; PMI <[pmi@tepgroup.net](mailto:pmi@tepgroup.net)>; Taschek, Rich <[Rich@nextgenservicesgroup.com](mailto:Rich@nextgenservicesgroup.com)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>; pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>; Thomas J. Dehnke <[tdehnke@pauljford.com](mailto:tdehnke@pauljford.com)>

**Subject:** RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

Adding TJ Dehnke.



---

**From:** Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>

**Sent:** Thursday, May 7, 2020 10:11 AM

**To:** Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>; Dan Vadney <[dan.vadney@crowncastle.com](mailto:dan.vadney@crowncastle.com)>; Forsythe, Jorge <[jorge.forsythe@nextgenservicesgroup.com](mailto:jorge.forsythe@nextgenservicesgroup.com)>; PMI <[pmi@tepgroup.net](mailto:pmi@tepgroup.net)>; Taschek, Rich <[Rich@nextgenservicesgroup.com](mailto:Rich@nextgenservicesgroup.com)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>; pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>

**Subject:** RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

Hannah ,

The email attached has the approval I just need to get it on to the RFI

Thanks,

Daniel Hughes

Structural Manager



NextGen Services Group

[2242 Old Marlton Pike](#)

[Marlton NJ, 08053](#)

[\(office\) 856-810-1658 x 241](#)

[\(fax\) 856-810-1659](#)

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[Dan.hughes@nextgenservicesgroup.com](mailto:Dan.hughes@nextgenservicesgroup.com)

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**From:** Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>

**Sent:** Thursday, May 7, 2020 10:08 AM

**To:** Dan Vadney <[dan.vadney@crowncastle.com](mailto:dan.vadney@crowncastle.com)>; Forsythe, Jorge <[jorge.forsythe@nextgenservicesgroup.com](mailto:jorge.forsythe@nextgenservicesgroup.com)>; Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>; PMI <[pmi@tepgroup.net](mailto:pmi@tepgroup.net)>; Taschek, Rich <[Rich@nextgenservicesgroup.com](mailto:Rich@nextgenservicesgroup.com)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>; pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>

**Subject:** Re: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

Good morning Rich,

Is there another RFI floating around that I haven't seen? Specifically checking for the following:

*For reference, steel pipes measure 17'-3" at flat 11 and 18'-3" at flat 8. PVC sleeves measure 17'-4.5" long.*

1. Thickness of 4" ID PVC not specified in the RFI, but it measures 0.1875" rather than 0.318" as originally specified.



2. 10XS steel pipe used in lieu of 12XS.





3. Rock anchors measure 40-ft total in length. Drawings specify 42-ft minimum.







4. Flats 8 and 11 are 1'-7" inside the edges of the mat rather than 1'-6". Both measure 1'-6" outward.



For reference, steel pipes measure 17'-3" at flat 11 and 18'-3" at flat 8. PVC measures 17'-4.5" long.

Thanks,

Hannah J. Childers, CWI

**Project Lead . Tower Engineering Professionals, Inc.** ([www.tepgroup.net](http://www.tepgroup.net))

326 Tryon Road . Raleigh, NC 27603

Office: 919.661.6351 . Fax: 919.661.6350 . Mobile: 828.302.1955





Kevin Arnett <karnett@tepgroup.net>

---

## RE: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

1 message

---

Thomas J. Dehnke <tdehnke@pauljford.com>

Tue, Jun 30, 2020 at 11:58 AM

To: Buck Williams <btwilliams@tepgroup.net>, Kevin Arnett <karnett@tepgroup.net>

Cc: "Hughes, Dan" <Dan.Hughes@nextgenservicesgroup.com>, "Vadney, Dan" <Dan.Vadney@crowncastle.com>, "David P. Beaumont" <dpbeaumont@tepgroup.net>, Hannah Childers <hchilders@tepgroup.net>, pjfmod <pjfmod@pauljford.com>, TowerEngineeringProfessionals <PML@tepgroup.net>, "Gentes, Joe" <Joe.Gentes@nextgenservicesgroup.com>, Mods <Mods@nextgenservicesgroup.com>, Brad Owen <bsowen@tepgroup.net>

Buck,

My responses are in red:

1. 4" conduit running through the corner of NE Grade beam.

**This is acceptable**

2. Up to 10" of extra cover is present, 3" cover was specified.

**This is acceptable**

3. Spacing variation due to steel tube (correct Number of bars are present). #4 Tie placement was specified at 6" OC. Space near tube is typically 11.5".

**This is acceptable**

4. Air entrainment of only 3.75 % was achieved. 6% +/- 1.5% was specified.

**This is not a structural issue but will be a future maintenance issue. I recommend having Crown weigh in on if they approve or not.**

Thank you,

**Thomas "T.J." Dehnke, PE | Project Manager**

Cell: 330.844.0790 | Direct: 614.448.4167 | Office: 614.221.6679 ext 2167 | [tdehnke@pauljford.com](mailto:tdehnke@pauljford.com) | [www.pauljford.com](http://www.pauljford.com)



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**Due to current events, I may not be reached at my desk. Please feel free to call my cell phone at**



330.844.0790.

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**From:** Buck Williams <[btwilliams@tepgroup.net](mailto:btwilliams@tepgroup.net)>  
**Sent:** Tuesday, June 30, 2020 9:46 AM  
**To:** Kevin Arnett <[karnett@tepgroup.net](mailto:karnett@tepgroup.net)>  
**Cc:** Hughes, Dan <[Dan.Hughes@nextgenservicesgroup.com](mailto:Dan.Hughes@nextgenservicesgroup.com)>; Vadney, Dan <[Dan.Vadney@crowncastle.com](mailto:Dan.Vadney@crowncastle.com)>; David P. Beaumont <[dpbeaumont@tepgroup.net](mailto:dpbeaumont@tepgroup.net)>; Hannah Childers <[hchilders@tepgroup.net](mailto:hchilders@tepgroup.net)>; Thomas J. Dehnke <[tdehnke@pauljford.com](mailto:tdehnke@pauljford.com)>; pjfmod <[pjfmod@pauljford.com](mailto:pjfmod@pauljford.com)>; TowerEngineeringProfessionals <[PMI@tepgroup.net](mailto:PMI@tepgroup.net)>; Gentes, Joe <[Joe.Gentes@nextgenservicesgroup.com](mailto:Joe.Gentes@nextgenservicesgroup.com)>; Mods <[Mods@nextgenservicesgroup.com](mailto:Mods@nextgenservicesgroup.com)>; Brad Owen <[bsowen@tepgroup.net](mailto:bsowen@tepgroup.net)>  
**Subject:** Re: NE Old Lyme-Old Lyme Firehouse - 876406 - 190128 - RFI's

CAUTION: External Email

Good Morning TJ,

I am following up officially after our call Thursday afternoon for the discrepancies noted during the rebar inspection here. I apologize for the delay. The punchlist is attached with photos as well as presented below in text only format.

During the inspection the following discrepancies were noted:

1. 4" conduit running through the corner of NE Grade beam.
2. Up to 10" of extra cover is present, 3" cover was specified.
3. Spacing variation due to steel tube (correct Number of bars are present). #4 Tie placement was specified at 6" OC. Space near tube is typically 11.5".
4. Air entrainment of only 3.75 % was achieved. 6% +/- 1.5% was specified.

Please let me know if you have any questions.

Thanks,

Buck Williams

Engineering Associate | Tower Engineering Professionals, Inc. ([www.tepgroup.net](http://www.tepgroup.net))  
326 Tryon Road | Raleigh, NC 27603 | Mobile: (910) 915-9630 |

On Fri, Jun 26, 2020 at 8:40 AM Kevin Arnett <[karnett@tepgroup.net](mailto:karnett@tepgroup.net)> wrote:

Dan,  
Do you need us here next week?

On Tuesday, June 23, 2020, Kevin Arnett <[karnett@tepgroup.net](mailto:karnett@tepgroup.net)> wrote:  
> Dan,  
> Yes we can be there Thursday. Buck (cc'd here) will be on site.



**BASE PLATE GROUT**



## General Information

Company:	Nextgen Services Group	Phone #:	856-810-1658
Email	dan.hughes@nextgenservicesgroup.com	GC Project #:	
BU #:	876406	Crown POC:	Dan Vadney
Site Name:	NE Old Lyme Road	EOR:	Paul J Ford
WO:	459664	EOR Project #:	37519-0914-.001.7700

## Instructions

### General Contractor(GC) to Complete Engineering Issue Section

RFIs shall be submitted to the EOR prior to deviating from the original design drawings. This includes changes required based on the pre-fabrication mapping. Changes required based on the mapping shall be documented in the EOR RFI Form and submitted to the EOR alongside shop drawings.

RFIs shall be submitted for configuration and material changes. Approved changes shall be documented on the GC As-builts and shall require Crown approval if changes impact structural capacity, climbing facilities, appurtenances, or future maintenance of the tower. See CED-SOW-10007 for further guidance.

**Issue Type Dropdown Menu** - select the reason for the question from the drop down

- **Drawing Review Waiver** – Requesting a waiver of the shop drawing review prior to the start of construction.
- **Drawing Approval/No Deviation** – For shop drawing review when the drawings do not deviate from the original design drawings.
- **Drawing Approval/Deviation** – For shop drawing review when the drawings deviates from the original design drawing. The drawings should highlight any and all deviations from the original drawings. In addition, in the Engineering Issue box a description of the changes should be given with a reason for the deviation.
- **Clarification** – If a further explanation of the design is needed to properly fabricate or install the modification as intended.
- **Change Request** – If seeking approval for a deviation from the design documents. This should be used for changes that are outside of the shop drawing review process.
- **Direction** – If a course of action is needed from the EOR to proceed with the installation of the modifications as designed.
- **Interference/Field Issue** – If there is a fit up issue with the modification as designed due to a field condition. This should be used for field issues outside of the shop drawing review process.
- **Other** – All other requests.

**Attachments** – When sketches, photos, and/or drawings are attached select "Yes" in the drop down.

**Engineering Issue Box**– This space should contain a detailed explanation of the question along with any other information that the EOR might need to completely answer the inquiry. **As part of this description, please provide any information regarding contributing factors and possible resolutions based on your capabilities in the field and general means and methods.**

### Engineer of Record(EOR) to Complete Resolution Section

**Resolution Box** – This space shall contain the resolution from the EOR or approval of the option provided by the contractor.

**Drawing Change Needed** – If this is marked 'Yes' then a drawing revision is required based upon the resolution.

**Crown Approval** – If this is marked 'Needed' then Crown must be contacted for approval of the resolution.

**Sketch/Drawing Attached** – If this is marked 'Yes' then there is an illustration attached as part of the resolution.

**ESP #** – Associated ESP # should be included, if applicable.

**Resolved By** – The first and last name of the Engineer that approved the resolution should be entered with the date.

**Notes:** This RFI form is for the purpose of addressing technical and construction related questions and issues. Final work authorization shall be approved by the Crown POC prior to proceeding with any work that deviates from the original design, scope, price and/or schedule. This form is not an authorization of a change order.



## Engineering Issue

Issue Type: Change Request Attachments: Yes

#1 Can the Grout verification be waived as there is no grout under the base of this tower

#2 See below this was on the mapping but not on the fab drawings . This port sits 1" on flat 6 . Can we get APPROVAL TO COPE THE BAR 1" ON THE EDGE AROUND THE PORT  
Flat 6 , there is a port on flat 5/6 that will interfere with our FB

### 11.0 Entry / Exit Ports:

Flat # or Azimuth	Bottom of Port to Top of Base Plate	Width	Height	Depth	Thickness	Flat Overlap Right	Flat Overlap Left
8/9	1' 9-1/2"	12-3/4"	32"	4"	1"	6-3/4"	6-3/4"
3/4/5, 12/13/14	8' 6"	12-3/4"	32"	4"	1"	3-1/4"	3-1/4"
5	74' 6"	6"	12"	2"	1/2"	1"	1"
5, 11, 17	88' 1"	6"	12"	2"	1/2"	1/4"	1/4"
5, 11, 17	98' 1"	6"	12"	2"	1/2"	1/4"	1/4"
5, 11, 17	108' 1"	6"	12"	2"	1/2"	1/4"	1/4"

Submitted by: Dan Hughes Date: 9/16/20

## Resolution

Drawing Change: Yes Crown Approval Needed

Sketch/Drawing Attached: No ESP #:

1) Approved

2) Cut the bar and terminate it max 3" below the port.

Resolved By: Thomas J. Dehnke, PE Date: 9/17/20



**FIELD CWI AND NDE**





Date: 9/1/2020  
 PO #: VPO-610894  
 Site #: BU # 876406  
 Site Name: Old Lyme Firehouse

pg. 1

## Certified Weld Inspection (CWI) Report

Purpose
A pre, during, and post weld inspection per AWS D1.1-2020 Structural Welding Code - Steel emphasizing Table 8.1 Visual Inspection Acceptance Criteria.
***** COMPLETE SECTIONS IN GRAY *****

Pre Welding Inspection Activity				
Site Visit Date:	7/9/20			
Inspector:	James E. Kehley	Phone #	570-579-7847	
CWI #:	01080291	Weather:	80's	
Contractor:	NextGen Service Group	Crown ID:	WPS:	Item Welded:
Welder Name:	Brandon Doane	Yes	Yes	See Pg 4
Welder Name:				

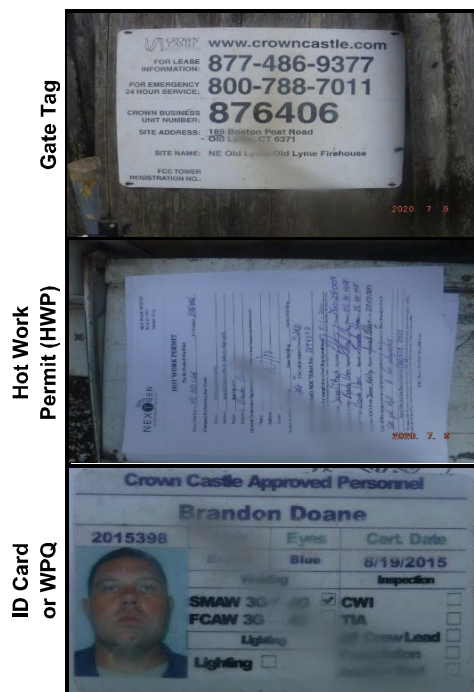
### Site Safety:

Was a signed Hot Work Permit (HWP) posted on site?  
 Was there a Hazards Analysis Plan on site?  
 Was there visible fire prevention equipment?  
 Was personal protective equipment (PPE) being utilized?  
 If a monopole, does the base weld pass visual CWI?  
 If existing mods were present, do they pass visual CWI?

### Y / N Comments:

Yes	Signed
Yes	Cofirmed
Yes	Cofirmed
Yes	Cofirmed
Yes	Cofirmed
n/a	no existing mods

### Photos:



### Comments:





Date:  
PO #:  
Site #:  
Site Name:

9/1/20  
VPO-610894  
BU # 876406  
Old Lyme Firehouse

pg. 2

## Certified Weld Inspection (CWI) Report (cont.)

### During Welding Inspection Activity

Site Visit Dates:	7/29/20	n/a	n/a	Weather:	80's
Inspector:	James E. Kehley	CWI #:	01080291	Phone:	570-751-2565

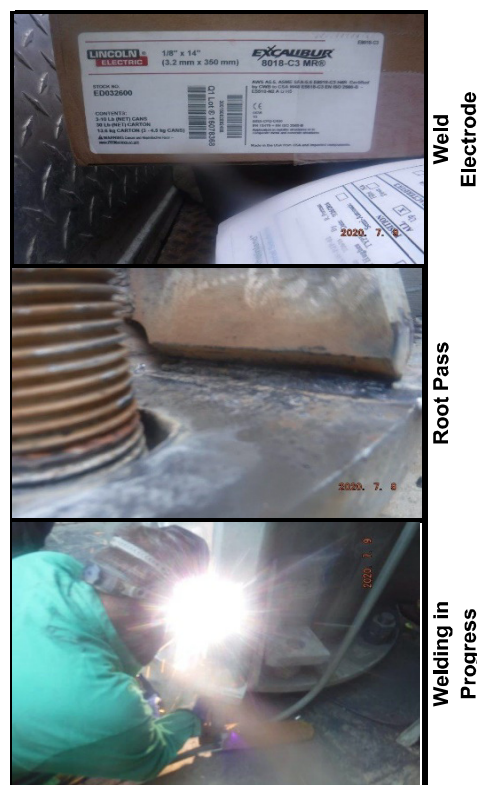
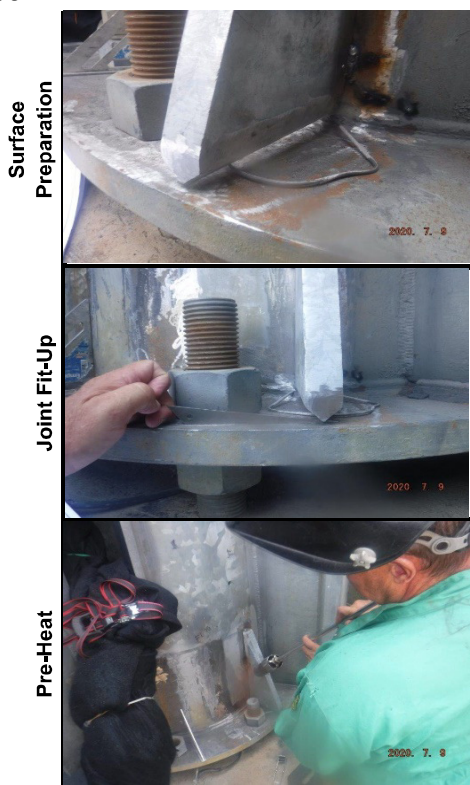
#### Welding Related Parameters:

Were drawings on site showing size, length, type of weld?  
Does the weld joint type match the drawings?  
Was the surface preparation adequate?  
Were preheat requirements being followed?  
Were the electrodes or wire stored properly?  
If SMAW process, was a rod oven being used?  
Was the appropriate wire/electrode strength utilized?  
Were the welds cleaned properly?

#### Y / N Comments:

Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed

#### Photos:



#### Comments:



Date:  
PO #:  
Site #:  
Site Name:

9/1/2020  
VPO-610894  
BU # 876406  
Old Lyme Firehouse

pg. 3

## Certified Weld Inspection (CWI) Report (cont.)

### Post Welding Inspection Activity

Site Visit Dates:	9/1/20		n/a		n/a	Weather:	70's
Inspector:	James E. Kehley	CWI #:	01080291	Phone:	570-751-2565		

#### Visual Inspection Criteria (Table 6.1; Section 6.9):

Was the weld metal and base material free of cracks?  
Does the weld appear to have good fusion?  
Was the weld material free of craters?  
Was the weld profile acceptable?  
Does the weld size match the drawings?  
Was undercut acceptable for material thickness & loading?  
Was the weld free of unacceptable porosity?  
If a monopole, was interior inspected for burn-through?

#### Y / N Comments:

Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	Confirmed
Yes	within AWS D1.1 limits
Yes	Confirmed
Yes	Confirmed

#### Photos:



#### Comments:





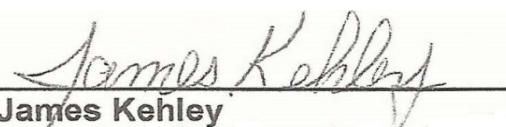

Date:  
PO #:  
Site #:  
Site Name:

9/1/20  
VPO-610894  
BU # 876406  
Old Lyme Firehouse

pg. 4

## Certified Weld Inspection (CWI) Report (cont.)

### Post Welding Inspection Activity (cont.)

✓	The welding inspection operation pre, during & final performed at suitable intervals was in compliance with AWS D1.1 requirements & project specifications to the best of our knowledge
	The welding was in compliance with AWS D1.1 requirements & project specifications to the best of our knowledge with the comments/exceptions noted above
	The welding was <b>NOT</b> in compliance with AWS D1.1 requirements & project specifications as noted
 <b>James Kehley</b> Inspector Signature - James E. Kehley	
 <b>James E Kehley</b> CWI 01080291 QC1 EXP. 8/1/2022 AWS CWI# 01080291	

**Please note the following items to have been inspected: CD's Dated 3-25-19**

### General Inspection Description

NO:	Location / Part #	Description	ACC / REJ
1	4 New Transition Stiffeners	CWI / UT/ MT Inspection	ACC
2	4 New Foot Pads	CWI / MT Inspection	ACC
3	4 New ARB's	CWI / MT Inspection	ACC
4	1 New ARB Extension	CWI / UT/ MT Inspection	ACC
5	15 New Gusset Stiffeners	CWI / UT/ MT Inspection	ACC
6	2 New Flat Plates With Weld	CWI / MT Inspection	ACC
7	8 New Doubler Plates / Washer Plates	CWI / MT Inspection	ACC

**Notes:** Flat 8 ARB welded from one side only per fab drawings due to Handhole interference for approx. 2' 3". Stiffener on flat 10 CJP changed to a single bevel. Chamfered areas of washer plates are not welded, drawing only calling out 4 sides.

### Additional Comments / Recommendations::

This report does not relieve the contractor / subcontractor of the responsibility to complete construction / Installation per applicable codes and standards, approved Project Submittals / Plans / Technical Specifications. This is a snapshot report and is limited to the days of inspection noted. MITS is not liable for future unforeseen defects, indications, or other issues due to changed conditions, weather, fatigue, corrosion, structural modifications, or other. No warranties are provided or implied.





Date: 9/1/2020  
 PO #: VPO-610894  
 Site #: BU # 876406  
 Site Name: Old Lyme Firehouse

pg. 1

## NDE - Magnetic Particle (MT) Report

Purpose
To perform non-destructive examination (NDE) magnetic particle testing of welds per Procedure.
***** COMPLETE SECTIONS IN GRAY *****

Inspection					
Site Visit Dates:	7/9/2020	7/29/29	9/1/2029	Weather:	70's - 80's
Inspector:	James E. Kehley - Level II	Phone #:	570-751-2565		
Material:	Ferrous Material	Code:	ASTM E709 & AWS D1.1-2015		
Procedure #:	MIT-NDT-MT-01	Type of Welds:	Per Drawing As Specified Below		
Equipment Method:	Magnetic AC Yoke	Surface Preparation:	As Welded Wired Brushed Cleaned		
Make Model & Serial #:	Y-1 Magnaflux SN #4344	Particle Type:	Magnaflux #8A Red-Batch #17G084		
Ambient Lighting:	Yes	Yoke Spacing:	4" - 6"		
Block Serial #:	Mits-10 - Steel	Calibration Date:	ASTM E-709	6/10/20 to 12/10/20	
Current Type:	AC	Particle Applied:	Gray or Red Dry Powder		

Results				
Area Tested	Area Examined %	Results	Repairs	Comments
4 New Transition Stiffeners	100%	Accept		1,5,10,16
4 New Foot Pads	100%	Accept		1,5,10,16
4 New ARB's	100%	Accept		2,8,11,17
1 New ARB Extension	100%	Accept		Flat 11
15 New Gusset Stiffeners	100%	Accept		1,2,3-4,4-5,6,7,8,9,10,11,12-13,13-14,15,17,18
2 New Flat Plates With Weld	100%	Accept		2 & 8
8 New Doubler Plates / Washer Plates	100%	Accept		1-2,4,6-7,8-9,10-11,13,15-16, 17-

### Comments/Recommendations:

MT inspection of the items listed above were found to be acceptable.

☒ The welds pass the magnetic particle (MT) NDE per requirements  
☐ The welds do **NOT** pass the magnetic particle (MT) NDE per requirements

James Kehley  
 Inspector Signature James E. Kehley



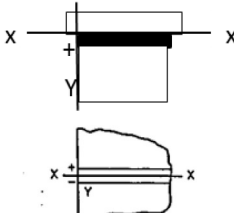


Date: 9/1/2020  
 PO #: VPO-610894  
 Site #: BU # 876406  
 Site Name: Old Lyme Firehouse

## NDE - Ultrasonic Testing (UT) Report

Purpose
To perform non-destructive examination (NDE) ultrasonic testing of welds per AWS D1.1 & Procedure.
***** COMPLETE SECTIONS IN GRAY *****

Inspection			
Site Visit Dates:	7/9/2020	7/29/2020	
Inspector:	James E. Kehley		
Material / Thickness:	Carbon Steel / 1.25"		
Procedure #:	MITS-NDT-UT-01		
Equipt Make / Model:	Olympus Epoch 650		
Equipment Serial #:	160289912		
UT Method:	Pulse Echo - Contact		
Trans Angle / Freq:	0 & 70 Deg / 2.25 MHz		
Transducer Size:	.8" x.875" Rect / .500" or 1" Rnd		
Phone #:	9/1/2020	NA	
AWS Joint Type:	TC-U5b		
Static / Cyclic :	Table 8.3		
Surface Condition:	Existing Galv or Cleaned Wired Brush		
Calibration Block Type:	IIW Type 1 - Steel / SN #20212		
Welding Process:	SMAW		
Equipment Calibrated:	Table 8.8	7/10/20 to 9/10/20	
Couplant Material:	Cellulose Gum Batch #71596		
Weather:	70's - 80's		



Results														
Piece Location	Weld ID	Trans Angle	From Face	Leg	Indication Level (a)	Reference Level (b)	Attenuation Factor (c)	Indication Rating (d)	Length Indication	Sound Path	Depth	Distance from X	Distance from Y	Discontinuity Evaluation
4 New Transition Stiffeners	Stiffeners to Base Plate Weld	70	A	I / II		54								Accept
1 New ARB Extension	ARB Extension to ARB	70	A	I / II		54								Accept
15 New Gusset Stiffeners	Stiffeners to Base Plate Weld	70	A	I / II		54								Accept

**Comments/Recommendations:**

UT inspection of the items listed above were found to be acceptable.

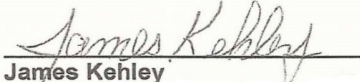
<input checked="" type="checkbox"/>	The welds do pass the ultrasonic testing (UT) NDE per requirements
<input type="checkbox"/>	The welds do <b>NOT</b> pass the ultrasonic testing (UT) NDE per requirements
<div style="text-align: right;">   <b>James Kehley</b>            Inspector Signature: James E. Kehley         </div>	



Photo #1 (DSCF2255.jpg)



Photo #2 (DSCF2256.jpg)



Photo #3 (DSCF2257.jpg)



Photo #4 (DSCF2258.jpg)



Photo #5 (DSCF2259.jpg)



Photo #6 (DSCF2260.jpg)



Photo #7 (DSCF2261.jpg)



Photo #8 (DSCF2262.jpg)



Photo #9 (DSCF2263.jpg)





Photo #19 (DSCF2273.jpg)



Photo #20 (DSCF2274.jpg)



Photo #21 (DSCF2275.jpg)



Photo #22 (DSCF2276.jpg)



Photo #23 (DSCF2277.jpg)



Photo #24 (DSCF2278.jpg)



Photo #25 (DSCF2279.jpg)



Photo #26 (DSCF2280.jpg)



Photo #27 (DSCF2281.jpg)





Photo #37 (DSCF2291.jpg)



Photo #38 (DSCF2292.jpg)



Photo #39 (DSCF2293.jpg)



Photo #40 (DSCF2294.jpg)



Photo #41 (DSCF2295.jpg)



Photo #42 (DSCF2296.jpg)



Photo #43 (DSCF2297.jpg)

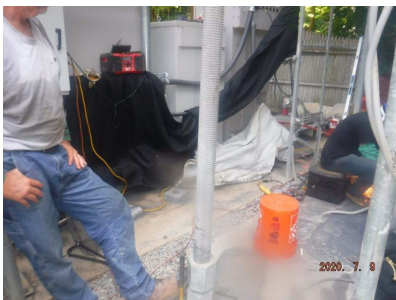


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Photo #45 (DSCF2299.jpg)





Photo #46 (DSCF2300.jpg)



Photo #47 (DSCF2301.jpg)



Photo #48 (DSCF2303.jpg)



Photo #49 (DSCF2304.jpg)



Photo #50 (DSCF2305.jpg)

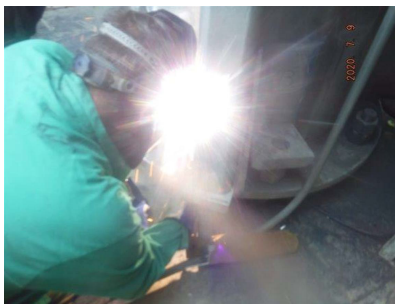


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Photo #52 (DSCF2307.jpg)



Photo #53 (DSCF2308.jpg)



Photo #54 (DSCF2309.jpg)





Photo #64 (DSCF2319.jpg)



Photo #65 (DSCF2320.jpg)



Photo #66 (DSCF2321.jpg)



Photo #67 (DSCF2322.jpg)



Photo #68 (DSCF2323.jpg)



Photo #69 (DSCF2324.jpg)



Photo #70 (DSCF2325.jpg)



Photo #71 (DSCF2326.jpg)



Photo #72 (DSCF2327.jpg)





Photo #73 (DSCF2328.jpg)



Photo #74 (DSCF2329.jpg)



Photo #75 (DSCF2330.jpg)



Photo #76 (DSCF2331.jpg)



Photo #77 (DSCF2332.jpg)



Photo #78 (DSCF2333.jpg)



Photo #79 (DSCF2334.jpg)



Photo #80 (DSCF2335.jpg)



Photo #81 (DSCF2336.jpg)





Photo #91 (DSCF2490.jpg)



Photo #92 (DSCF2491.jpg)



Photo #93 (DSCF2492.jpg)



Photo #94 (DSCF2493.jpg)



Photo #95 (DSCF2494.jpg)

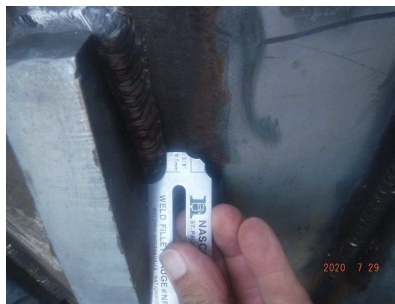


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Photo #97 (DSCF2496.jpg)



Photo #98 (DSCF2497.jpg)



Photo #99 (DSCF2498.jpg)

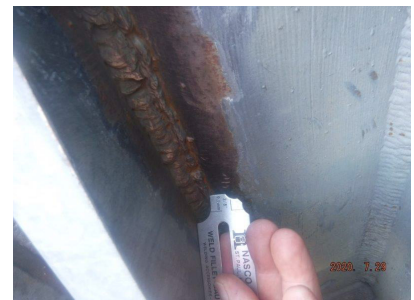




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Photo #101 (DSCF2500.jpg)



Photo #102 (DSCF2501.jpg)



Photo #103 (DSCF2502.jpg)



Photo #104 (DSCF2503.jpg)



Photo #105 (DSCF2504.jpg)



Photo #106 (DSCF2505.jpg)



Photo #107 (DSCF2506.jpg)



Photo #108 (DSCF2507.jpg)





Photo #136 (DSCF2535.jpg)



Photo #137 (DSCF2536.jpg)



Photo #138 (DSCF2537.jpg)



Photo #139 (DSCF2538.jpg)

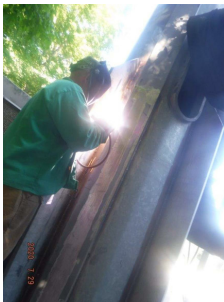


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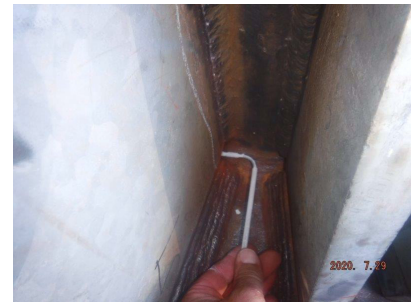


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Photo #143 (DSCF2542.jpg)



Photo #144 (DSCF2543.jpg)





Photo #172 (DSCF2769.jpg)

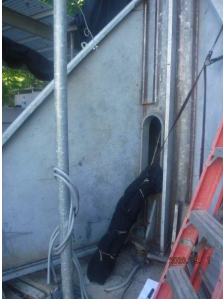


Photo #173 (DSCF2770.jpg)



Photo #174 (DSCF2771.jpg)



Photo #175 (DSCF2772.jpg)



Photo #176 (DSCF2773.jpg)



Photo #177 (DSCF2774.jpg)



Photo #178 (DSCF2775.jpg)



Photo #179 (DSCF2776.jpg)



Photo #180 (DSCF2777.jpg)





Photo #190 (DSCF2790.jpg)



Photo #191 (DSCF2791.jpg)



Photo #192 (DSCF2792.jpg)



Photo #193 (DSCF2793.jpg)

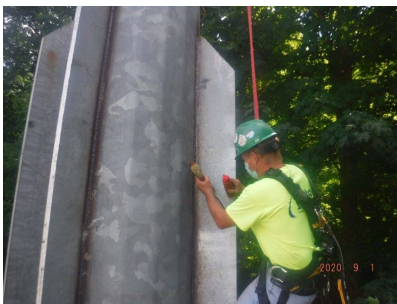


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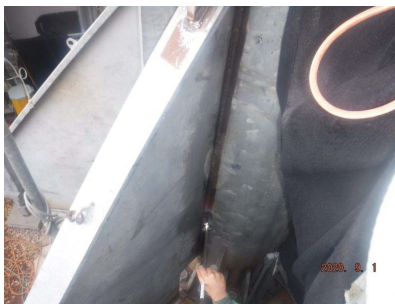


Photo #195 (DSCF2795.jpg)



Photo #196 (DSCF2796.jpg)



Photo #197 (DSCF2797.jpg)



Photo #198 (DSCF2798.jpg)





Photo #244 (DSCF2844.jpg)



Photo #245 (DSCF2845.jpg)



Photo #246 (DSCF2846.jpg)



Photo #247 (DSCF2847.jpg)



Photo #248 (DSCF2848.jpg)



Photo #249 (DSCF2849.jpg)



Photo #250 (DSCF2850.jpg)



Photo #251 (DSCF2851.jpg)



Photo #252 (DSCF2852.jpg)





Photo #271 (DSCF2871.jpg)

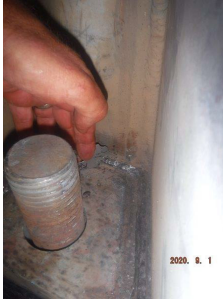


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Photo #273 (DSCF2873.jpg)



Photo #274 (DSCF2874.jpg)

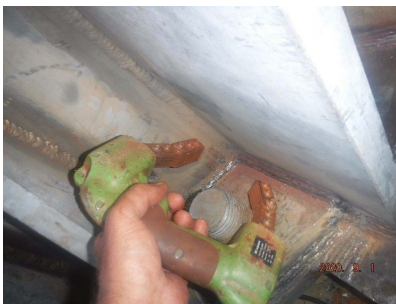


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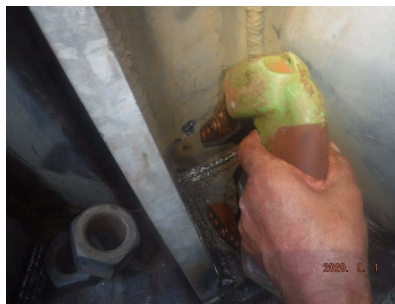


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Photo #277 (DSCF2877.jpg)



Photo #278 (DSCF2878.jpg)



Photo #279 (DSCF2879.jpg)





4/30/2018 11:18:44 AM

**Brandon Doane**

**NextGen Services Group**

**1800 Pittsburgh Drive**

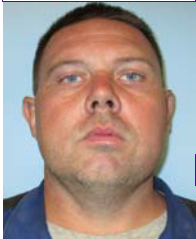
**Delaware, OH 43015**

**Dear Brandon,**

Congratulations on joining the list of approved personnel and thank you for your commitment to safety and quality on Crown Castle projects. See below for an example of the Crown ID card that will be printed in the coming weeks and mailed to the address above.

The card contains the unique CCI ID Number that has been issued as part of the Crown approved personnel program.

Please verify the information below for accuracy, reply with any changes needed to the ID card. Future changes to your information should be submitted to [CED.support@crowncastle.com](mailto:CED.support@crowncastle.com).

Crown Castle Approved Personnel			
<b>Brandon Doane</b>			
<b>2015398</b>	Hair	Eyes	Cert. Date
	<b>Brown</b>	<b>Blue</b>	<b>8/19/2015</b>
	Welding		Inspection
	SMAW 3G <input checked="" type="checkbox"/> 4G <input checked="" type="checkbox"/>	CWI	<input type="checkbox"/>
	FCAW 3G <input type="checkbox"/> 4G <input type="checkbox"/>	TIA	<input type="checkbox"/>
	Lighting	MI Crew Lea	<input type="checkbox"/>
	Lighting <input type="checkbox"/>	Foundation	<input type="checkbox"/>
		Anchor Rod	<input type="checkbox"/>



Reported To: Mr. Dan Hughes  
 NextGen Services Group  
 2242 Old Marlton Pike  
 Marlton, NJ 08053

Date: 4/3/18  
 P/O Number: 18-TRIS-0308 CC  
 Report Number: 1  
 Project: Crown Castle Welding Qualification

### AWS - WELDER, WELDING OPERATOR OR TACK WELDER QUALIFICATION TEST RECORD

Name: Brandon Doane  
 Type of Welder: Manual  
 Welding Procedure Specification No. Crown Castle-SMAW-09

Welding Code: AWS D1.1  
 Identification Number: 3390  
 Rev: 0 Date: 9/19/17

Variables	Record	Actual Values	Qualification Range
Process/T e		SMAW	SMAW
Electrode sin le/multi le		Sin le	Sin le
Current/Polarity		DCEP	
Position		3G & 4G	All Positions
Weld Pro ession		U hill	U hill
Backin With or Without		With	With
Material/S ec	A572-65	To	A572-65
Base Metal			All AWS Pre ualified Material
Thickness: (Plate)			
Groove		1"	1/8" - Unlimited
Fillet		N/A	1/8" - Unlimited
Thickness: (Pipe/tube)			
Groove		N/A	1/8" Unlimited
Fillet		N/A	1/8" - Unlimited
Diameter: (Pipe)			
Groove		N/A	24" and greater
Fillet		N/A	An Diameter
Filler Metal			
Spec. No.		AWS A5.5	
Class		E8018	
F-No.		4	F1-F4
Gas/Flux T e		N/A	N/A

#### VISUAL INSPECTION

Acceptable:



Yes



No

Date coupon welded:

4/3/18

#### Guided Bend Test Results

N/A  
 Result

Result

#### Fillet Test Results

Ap earance:

Fillet Size:

Fracture Test Root:

Macroetch:

Describe the location nature and size of an crack or tearin of the s ecimen :

#### Radiographic Test Results

Film ID	Results	Remarks	Film ID	Results	Remarks
3390 SMAW 3G	Pass		3390 SMAW 4G	Pass	
Film evaluated b :	Chris Du an		Com an :	TUV Rheinland	
Mechanical tests conducted b :	N/A		Laborato	Test Number:	
Welding supervised by:	Dennis Hildebrand	Company:	TUV Rheinland Industrial	AWS Accreditation	090103

The welder identified above ✓ PASSES,        FAILS

based on the requirements of the code listed above.

Reviewer's Signature: Dennis Hildebrand

Date: 4 5 18

Client Approval:

Date:

#### TÜV RHEINLAND INDUSTRIAL SOLUTIONS, INC.

These test results report our findings at the time of inspection and shall be reviewed by the client for compliance to the project requirements. Due to the limitations of nondestructive testing in evaluating all of the factors that determine the overall component quality, no guarantee is made or liability assumed by TÜV Rheinland Industrial Solutions, Inc. ("TRIS") for the component quality or serviceability.



**Dennis L. Hildebrand**  
 CWI 00060171  
 QC1 EXP. 6/1/2018

RAP 3/4/2015  
 Crown Castle AWS Welder Qualification  
 Page 1





## Nondestructive Testing Personnel Recertification Record



**Name:** James E. Kehley

**Company Name:** MITS, Inc.

**NDT Method:** Ultrasonic Testing (UT)

**Level of Qualification:** Level II

**Training Statement:** Previous Training Accepted

### Technical Performance Examination Results

General	Specific	Practical	Composite	Date
Not Required	Not Required	100	100	2/28/2020

#### Vision Examination:

(Refer to the Visual Acuity Record for results of the near-vision acuity and color contrast differentiation / perception tests.)

Verification of Candidate's Recertification Results by:

*Daniel S. Sladovnik*

Daniel S. Sladovnik (Level III)

### Limitations / Special Conditions

None

### Certification Statement

The above named individual has satisfactorily met the qualification requirements of the MITS, Inc. Written Practice in accordance with SNT-TC-1A (2016) and AWS D1.1 (2015) Clause 6 Part F para. 6.20, and is hereby certified and assigned. Other details of qualification are maintained on file with our company, and are available for review upon request.

Authorized by: Brian MALT

Signature: Brian Malt

Title: President

Date of Certification: 2/28/20

### Recertification Requirements

(Recertification required every 3 years)

Date of Expiration: 2/28/2023







## Nondestructive Testing Personnel Recertification Record



**Name:** James E. Kehley  
**Company Name:** MITS, Inc.

**NDT Method:** Magnetic Particle Testing (MT)  
**Level of Qualification:** Level II  
**Technique(s):** Yoke

**Training Statement:** Previous Training Accepted

### Technical Performance Examination Results

General	Specific	Practical	Composite	Date
Not Required	Not Required	100	100	2/28/2020

#### Vision Examination:

(Refer to the Visual Acuity Record for results of the near-vision acuity and color contrast differentiation / perception tests.)

Verification of Candidate's Recertification Results by:

*Daniel S. Sladovnik*

Daniel S. Sladovnik (Level III)

### Limitations / Special Conditions

None

### Certification Statement

The above named individual has satisfactorily met the qualification requirements of the MITS, Inc. Written Practice in accordance with SNT-TC-1A (2016), and is hereby certified and assigned. Other details of qualification are maintained on file with our company, and are available for review upon request.

Authorized by:

*Brian Malt*

Signature:

*Brian Malt*

Title:

*President*

Date of Certification:

*2/28/20*

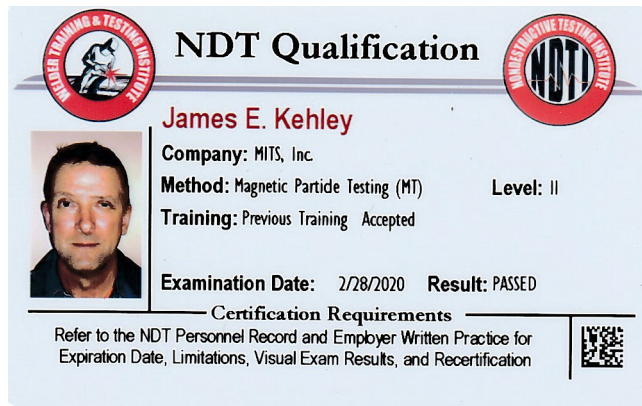
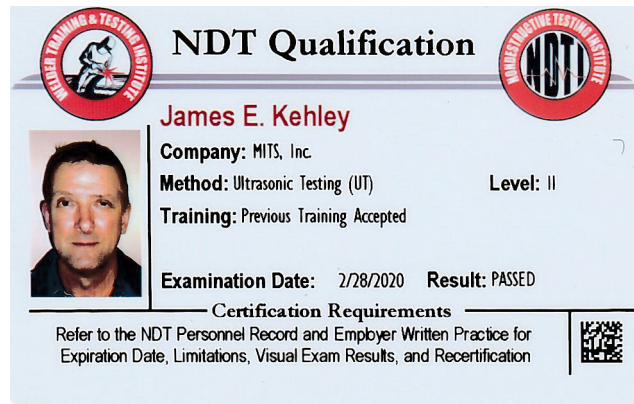
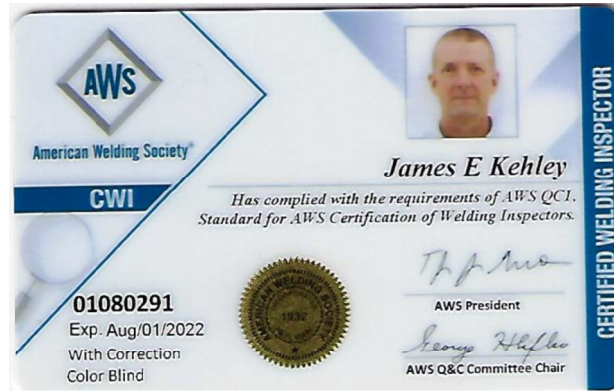
### Recertification Requirements

(Recertification required every 3 years)


Date of Expiration: 2/28/2023







**Crown Castle Approved Personnel**

<b>James Kehley</b>			
<b>2017250</b>	Hair	Eyes	Cert. Date
	<b>Blond</b>	<b>Hazel</b>	<b>12/6/2017</b>
	Welding		Inspection
	SMAW 3G <input type="checkbox"/> 4G <input type="checkbox"/>	CWI <input checked="" type="checkbox"/>	
	FCAW 3G <input type="checkbox"/> 4G <input type="checkbox"/>	TIA <input type="checkbox"/>	
	Lighting <input type="checkbox"/>	MI Crew Lea <input type="checkbox"/>	
Lighting <input type="checkbox"/>		Foundation <input type="checkbox"/>	Anchor Rod <input checked="" type="checkbox"/>



WELDING PROCEDURE SPECIFICATION (WPS) ☒ Yes  
**YES** QUALIFIED BY TESTING \_\_\_\_\_  
 Or PROCEDURE QUALIFICATION RECORDS (PQR) ☐

Manual ☒

Semi-Automatic ☐

### JOINT DESIGN USED

Type Corner, Lap or Tee Joint

Single ☒

☒

Backing Yes ☐

### POSITION

Position of Groove

N/A

Fillet ALL

Vertical Progression

Up ☒

Down ☐

### ELECTRICAL CHARACTERISTICS

AC ☐

DCEP ☒

Other:

Tungsten Electrode (GTAW) – N/A

Size

Type

### BASE METALS

Material Spec. ASTM A 572 Gr. 65

Type or Grade Group III

Thickness Groove N/A

Fillet UNL

Diameter (Pipe) Any Diameter

### FILLER METALS

AWS Specification AWS A5.5

AWS Classification E8018

### TECHNIQUE

Stringer or Weave Bead

BOTH

Multi-pass or Single Pass (per side)

BOTH

Number of Electrodes

1

### SHIELDING

Flux N/A

Gas N/A

Composition N/A

Electrode-Flux (Class) N/A

Flow Rate N/A

Gas Cup Size N/A

### ELECTRODE SPACING

Longitudinal

N/A

Lateral

N/A

Angle N/A

Contact Tube to Work Distance N/A

Peening

NONE PERMITTED

Interpass Cleaning

POWER TOOLS AND BRUSHING

### PREHEAT

Min. Preheat Temp & 1/8" – 3/4" 50°F, > 3/4" – 1 1/2" 150°F

Interpass Temp. > 1 1/2" – 2 1/2" 225°F, > 2 1/2" 300°F  
Max 450°F

### POSTWELD HEAT TREATMENT

Temp. N/A

Time N/A

### WELDING PROCEDURE

0Pass or Weld Layer (s)	Process	Filler Metals		Type & Polarity	Current Amps	Volts	Travel Speed	Joint Details
		Class	Diam					
ALL	SMAW	E8018	1/8"	DCEP	85 – 160	N/A	5-10 ipm	PAGE 2
ALL	SMAW	E8018	5/32"	DCEP	110 – 210	N/A	5-10 ipm	PAGE 2



WPS. No. WPS-SMAW-FILLET-01

Rev. 0

## JOINTS

Backing: Yes ☐ No ☒

Backing Material Type: N/A

Fillet Welded From: One Side ☒ Both Sides ☒

Process: SMAW

Joint Designation: Corner, Lap or Tee Joint

Base Metal Thickness: 1/8 inch – UNLIMITED

## Minimum Fillet Weld Size

## Table 5.8 of AWS D1.1

Thickness	Weld Size, S
in	Single Pass
$T \leq \frac{1}{4}$	$\frac{1}{8} (\frac{3}{16}^*)$
$T \leq \frac{1}{2}$	$\frac{3}{16}$
$T \leq \frac{3}{4}$	$\frac{1}{4}$
$T > \frac{3}{4}$	$\frac{5}{16}$

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements in AWS D1.1 – 2015

TÜV Rheinland Industrial Solutions

Richard Portman (CWI# 05061311)

(Authorized By)

July 26, 2016

(Date)




Richard A Portman  
CWI 05061311  
QC1 EXP. 6/1/2017



**WELDING PROCEDURE SPECIFICATION (WPS) ☒ Yes**  
**PREQUALIFIED YES QUALIFIED BY TESTING \_\_\_\_\_**  
**Or PROCEDURE QUALIFICATION RECORDS (PQR) ☐**

Company Name: **NextGen Service Group**  
Welding Process (es) **SMAW**  
Supporting PQR # (s) **Prequalified**

Identification # **WPS-SMAW-PJP-03**  
Revision **0** Date **7/26/16** By **R. Portman**  
Authorized By **Daniel Hughes** Date: **7/26/2016**  
**TYPE**  
Manual ☒ Semi-Automatic ☐

**JOINT DESIGN USED**

Type **BTC-P4 and BTC-P5**  
Single ☒ Double Weld ☒  
Backing Yes ☐ No ☒  
Backing Material - See Note, Page 2  
Root Face Dimension **1/8" Min.**  
Radius (J-U)  
No ☒ Method **N/A**

**BASE METALS**

Material Spec. **ASTM A-53-B-42/ A36 / A 572 Gr. 65**  
Type or Grade **Group I, or II, to Group III**  
Thickness **Groove 1/4"-UNL Fillet N/A**  
Diameter (Pipe) **N/A**

**FILLER METALS**

AWS Specification **AWS A5.1**  
AWS Classification **E7018**

**SHIELDING**

Flux **N/A** Gas **N/A** Composition **N/A**  
Electrode-Flux (Class) **N/A** Flow Rate **N/A**  
Gas Cup Size **N/A**

**PREHEAT**

Min. Preheat Temp & **1/4" - 3/4" 50°F, > 3/4" - 1 1/2" 150°F**  
Interpass Temp. **> 1 1/2" - 2 1/2" 225° F, > 2 1/2" 300° F**  
Max **450° F**

**POSITION**

Position of Groove **ALL** Fillet **N/A**  
Vertical Progression **Up ☒** Down ☐

**ELECTRICAL CHARACTERISTICS**

**Transfer Mode (GMAW) - N/A**  
Short-Circuiting ☐ Globular ☐  
**Current**  
AC ☐ DCEP ☒ DCEN ☐  
Other:

**TECHNIQUE**

Stringer or Weave Bead **BOTH**  
Multi-pass or Single Pass (per side) **BOTH**  
Number of Electrodes **1**

**ELECTRODE SPACING**

Longitudinal **N/A** Lateral **N/A** Angle **N/A**  
Contact Tube to Work Distance **N/A**  
Peening **NONE PERMITTED**  
Interpass Cleaning **POWER TOOLS AND BRUSHING**

**POSTWELD HEAT TREATMENT**

Temp. **N/A**  
Time **N/A**

**WELDING PROCEDURE**

OPass or Weld Layer (s)	Process	Filler Metals		Type & Polarity	Current Amps	Volts	Travel Speed	Joint Details
		Class	Diam					
<b>ALL</b>	<b>SMAW</b>	<b>E7018</b>	<b>1/8"</b>	<b>DCEP</b>	<b>85 - 160</b>	<b>N/A</b>	<b>5-10 ipm</b>	<b>PAGE 2</b>
<b>ALL</b>	<b>SMAW</b>	<b>E7018</b>	<b>5/32"</b>	<b>DCEP</b>	<b>110 - 210</b>	<b>N/A</b>	<b>5-10 ipm</b>	<b>PAGE 2</b>



WPS. No. WPS-SMAW-PJP-03

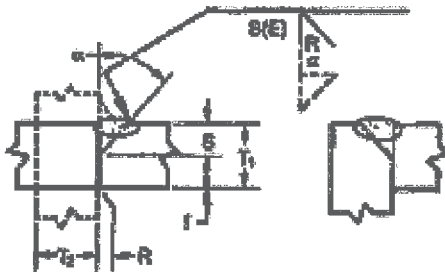
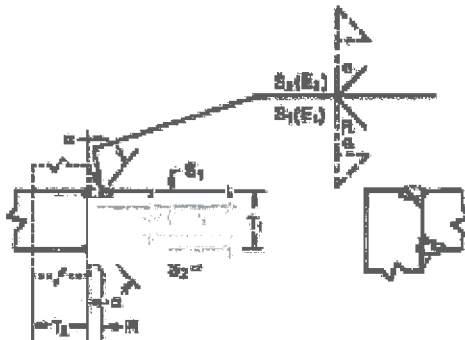
Rev. 0

## JOINTS

Type of Welded Joint(s): Butt, Tee, Corner Joint

Backing: Yes ☐ No ☒

Backing Material Type: See Note

Single Bevel - Groove WeldBTC-P4Double Bevel - Groove WeldBTC-P5

Process:

Joint Designation: **BTC-P4 and BTC-P5**

Root Opening R	Groove Angle a	Root Face f	Positions allowed
0-1/16"	45°	1/8" Min.	F, H, V, OH

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements in AWS D1.1 – 2015

**TÜV Rheinland Industrial Solutions****Richard Portman (CWI# 05061311)**

(Authorized Rep)


**July 26, 2016**

(Date)



Richard A Portman  
 CWI 05061311  
 QC1 EXP. 6/1/2017



**WELDING PROCEDURE SPECIFICATION (WPS) ☒ Yes**  
**QUALIFIED BY TESTING** \_\_\_\_\_  
**RECORDS (PQR) ☐**

0

Manual ☒

Semi-Automatic ☐

**JOINT DESIGN USED**

Type **BTC-P4 and BTC-P5**

Single ☒

☒

Backing Yes ☐

**BASE METALS**

Material Spec. **ASTM A 572 Gr. 65**

Type or Grade **Group III**

Thickness Groove **1/4"-UNL** Fillet **N/A**

Diameter (Pipe) **N/A**

**FILLER METALS**

AWS Specification **AWS A5.5**

AWS Classification **E8018**

**SHIELDING**

Flux **N/A** Gas **N/A** Composition **N/A**

Electrode-Flux (Class) **N/A** Flow Rate **N/A**

Gas Cup Size **N/A**

**PREHEAT**

Min. Preheat Temp & Interpass Temp. **1/4" – 3/4" 50°F, > 3/4" – 1 1/2" 150°F**  
**> 1 1/2" – 2 1/2" 225° F, >2 1/2" 300° F**  
Max **450° F**

**POSITION**

Position of Groove **ALL** Fillet **N/A**

Vertical Progression Up ☒

Down ☐

**ELECTRICAL CHARACTERISTICS**

DCEP ☒

**TECHNIQUE**

Stringer or Weave Bead **BOTH**

Multi-pass or Single Pass (per side) **BOTH**

Number of Electrodes **1**

**ELECTRODE SPACING**

Longitudinal **N/A** Lateral **N/A** Angle **N/A**

Contact Tube to Work Distance **N/A**

Peening **NONE PERMITTED**

Interpass Cleaning **POWER TOOLS AND BRUSHING**

**POSTWELD HEAT TREATMENT**

Temp. **N/A**

Time **N/A**

**WELDING PROCEDURE**

OPass or Weld Layer (s)	Process	Filler Metals		Type & Polarity	Current Amps	Volts	Travel Speed	Joint Details
		Class	Diam					
<b>ALL</b>	<b>SMAW</b>	<b>E8018</b>	<b>1/8"</b>	<b>DCEP</b>	<b>85 – 160</b>	<b>N/A</b>	<b>5-10 ipm</b>	<b>PAGE 2</b>
<b>ALL</b>	<b>SMAW</b>	<b>E8018</b>	<b>5/32"</b>	<b>DCEP</b>	<b>110 – 210</b>	<b>N/A</b>	<b>5-10 ipm</b>	<b>PAGE 2</b>



WPS. No. WPS-SMAW-PJP-02

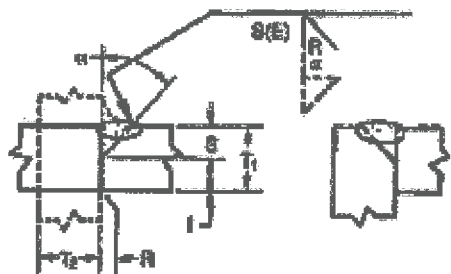
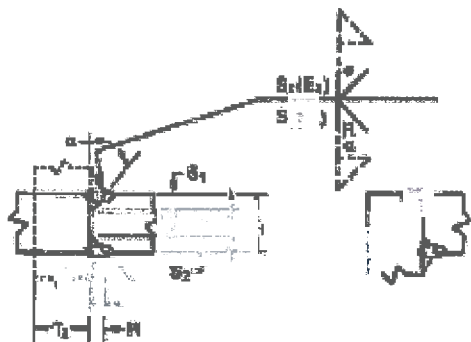
Rev. 0

## JOINTS

Type of Welded Joint(s): Butt, Tee, Corner Joint

Backing: Yes ☐ No ☒

Backing Material Type: N/A

☒Single Bevel - Groove WeldBTC-P4Double Bevel-Groove WeldBTC-P5

Process:

Joint Designation: **BTC-P4 and BTC-P5**

Root Opening R	Groove Angle a	Root Face f	Positions allowed
0-1/16"	45°	1/8" Min.	F, H, V, OH

We, the undersigned, certify that the statements in this record are correct and that the test welds were prepared, welded, and tested in accordance with the requirements in AWS D1.1 – 2015

**TÜV Rheinland Industrial Solutions**  
**Richard Portman (CWI# 05061311)**

(Authorized Rep.)


July 26, 2016

(Date)



Richard A Portman  
CWI 05061311  
QC1 EXP. 6/1/2017

Welding Procedure Spec D1.1  
RAP 7/26/2016

100 INDUSTRIAL BOULEVARD • ALIQUIPPA, PA 15001 • TELEPHONE (724)-378-3900 • FAX (724)-378-3940





NextGen Services Group  
2242 Old Marlton Pike  
Marlton NJ, 08053  
(office) 856-810-1658

# WPS-SMAW-CJP-04

Welding Procedure Specification Prequalified YES

Single Bevel, & Double Bevel Groove Welds

Date **February 2<sup>nd</sup> 2017**

By **Mits Inspection & Testing Services, Inc**

Authorized **Dan Huges**

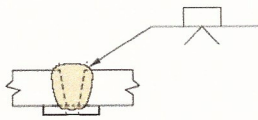
Revision **Original 02-02-2017**

Process **SMAW**

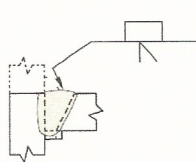
Process type **Manual**

Weld Type and Joint Design

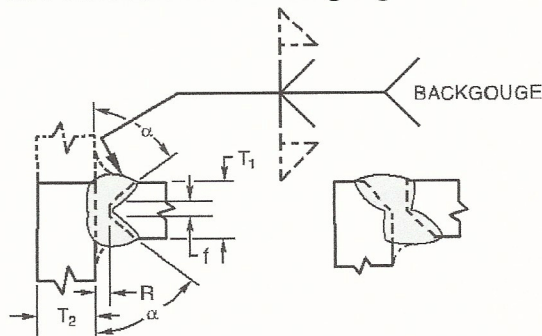
**Single V-Grooves  
In Butt Joints  
Full Penetration  
With backing**



**Single Bevel Grooves In  
Butt, Corner, T- Joints  
Full Penetration  
With Backing**



**Double Bevel Grooves In Corner, T- Joints  
Full Penetration With Backgouge**



Root opening	1/4" or 3/8" (+1/4, -1/16)	1/4" or 3/8" (+1/4, -1/16)	0 to 1/8" (+1/16 -0)
Root face	0	0	0 to 1/8" (Not Limited)
groove angle	45° or 30° (+10° -5°)	45° or 30° (+10° -5°)	45° (+10° -5°)

Base Material	Group II, III—including <b>A36, A572-65</b>
Backing (grooves)	Group I—including <b>A36</b>
Thickness	<b>1/8" to unlimited</b>
Filler Metal Specification	<b>AWS A5.5</b>
Filler Metal Classification	<b>E8018, E8018-1 H4R, E8018MR,</b>
Positions	<b>1G, 2G, 3G, 4G</b>
Electrical Characteristics	<b>DCEP (DC+)</b>
Technique	<b>Stringers and Weave multi pass and single pass. (1- Electrode)</b>
Interpass cleaning	<b>Chipping, power needle, wire brush (No Peening Permitted)</b>
Shielding	<b>NA</b>

Preheat/ Interpass Temperature  
Note: Any material temp below 32°F  
must be preheated and maintained to a  
min. temp of 70°F

≤3/4"	50°F
>3/4" to 1 1/2"	150°F
>1 1/2" to 2 1/2"	225°F
>2 1/2"	300°F

Position	Filler metal		Current		Optimum	Travel speed (inches/min.)
	Class	Diameter	Type/polarity	Amperage		
<b>All</b>	<b>E8018</b>	<b>1/8"</b>	<b>DC+</b>	<b>85-160</b>	<b>125</b>	<b>11-18</b>
<b>All</b>	<b>E8018</b>	<b>5/32"</b>	<b>DC+</b>	<b>110-210</b>	<b>160</b>	<b>11-14</b>
<b>All</b>	<b>E8018</b>	<b>3/32"</b>	<b>DC+</b>	<b>70-110</b>	<b>95</b>	<b>11-24</b>

**We, the undersigned, certify that the statements in this record are correct and were prepared in accordance with the requirements of AWS D1.1/D1.1 M:2015 -Structural Welding Code--Steel.**

Signature &  
Date:

*Brian P Malt* Feb-02-2017



Brian P Malt  
CWI 06080851  
QC1 EXP. 8/1/2018



## WELDING PROCEDURE SPECIFICATION (WPS)

AWS D1.1

Company Name: NextGen Services Group

☒ Prequalified ☐ Qualified By Testing

Identification #: 170044

Revision:

Date: 03/17/2017

By: Daniel Hughes

Welding Process: SMAW

Supporting PQR #:

☐ Automatic☐ Semi-Auto☒ Manual☐ Mechanized

## JOINT DESIGN USED

Joint Type: Tee

Backing: ☒ Yes ☐ NoWeld: ☒ Single ☐ Double

Backing Materials: A572

Root Opening: 1/4" or 3/8"

Root Face Dimension:

Groove Angle: 45

Radius (J-U):

Back Gouging: ☐ Yes ☒ No

Method: N/A

## BASE METALS

Material Specification: A572

To A572

Type Or Grade: 65

To 65

Thickness: Groove: 1"

Fillet: 3/8

Diameter (Pipe):

## FILLER METALS

AWS Specification: A5.5

AWS Classification: E8018-C3

## SHIELDING

Flux: Electrode-Flux (Class):

Gas: Composition:

Flow Rate: Gas Cup Size:

## PREHEAT / INTERPASS

Preheat Temperature: Minimum: 50F

Interpass Temperature: Minimum: 50

Maximum: 300

## POSITION

Position Of Groove: 2G Horizontal

Fillet:

Vertical Progression:

☐ Up☐ Down☒ N/A

## ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW): ☐ Short Circuit ☐ Globular ☐ SprayCurrent: ☐ AC☒ DCEP☐ DCEN☐ PulsedPower Source: ☐ CC☐ CV

Other:

Tungsten Electrode (GTAW): Size:

Type:

## TECHNIQUE

Stringer Or Weave Bead: Stringer

Multi-Pass Or Single Pass (Per Side): Multiple Pass

Number Of Electrodes: 1

Electrode Spacing: Longitudinal:

Lateral:

Angle:

Contact Tube To Work Distance:

Peening:

Interpass Cleaning: Chipping ,wire brush,Power needle

## POSTWELD HEAT TREATMENT

Temperature:

Time:

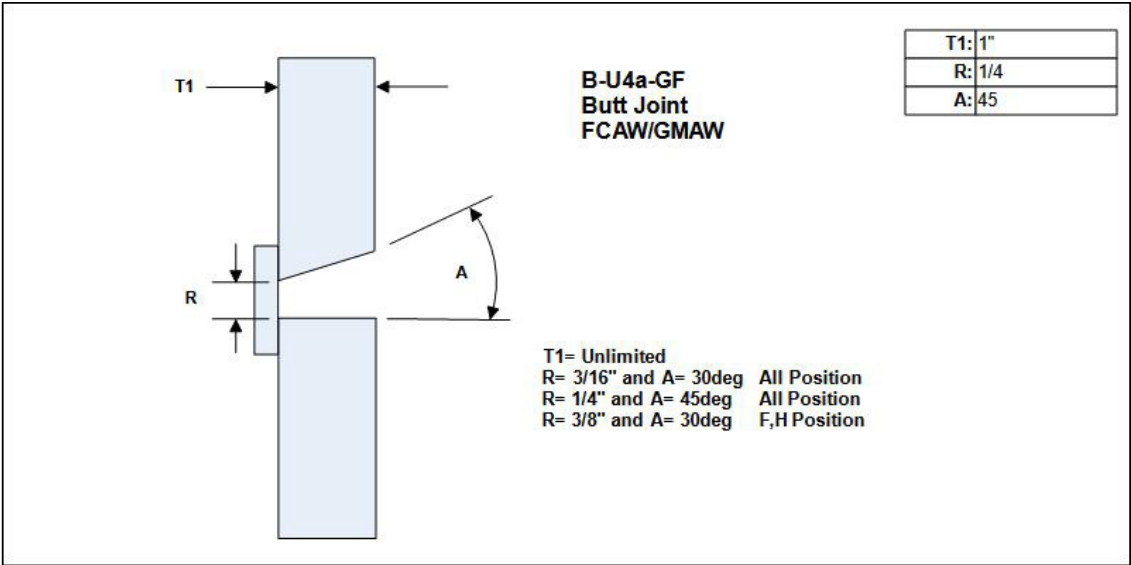
## ADDITIONAL NOTES



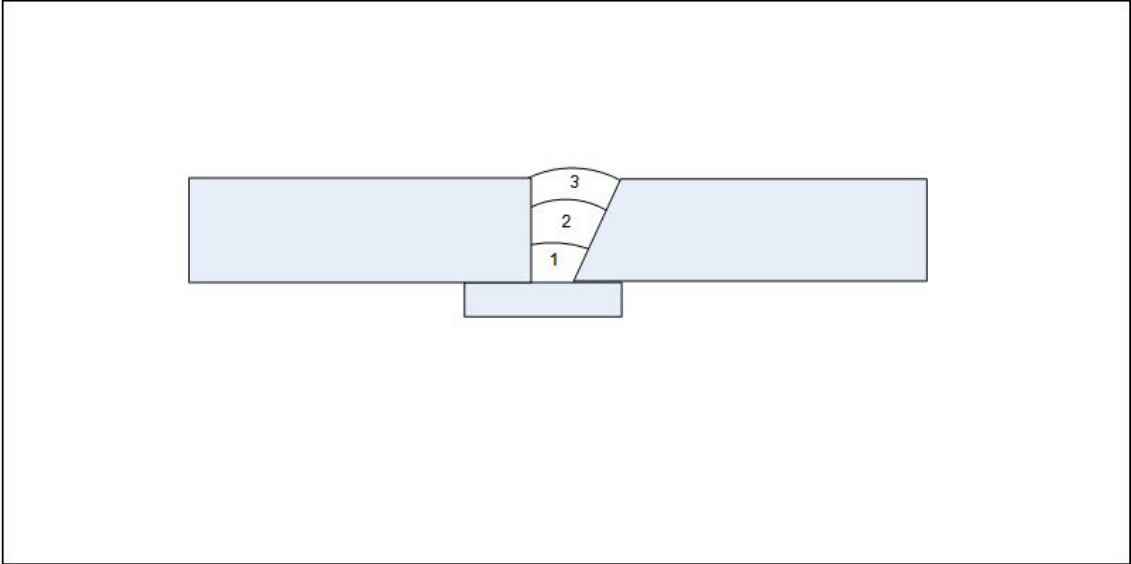
Welding Procedure

Pass Or Weld Layers	Process	Filler Metal Class	Filler Metal Diameter	Current Type & Polarity	Current Amps Or Wire Feed Speed	Volts	Travel Speed	Notes
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Joint Details



Weld Passes





## WELDING PROCEDURE SPECIFICATION (WPS)

AWS D1.1

Company Name: **NextGen Services Group**

☒ Prequalified ☐ Qualified By Testing

Identification #: NXGS-D1.1-Bp3

Revision:

Date: 05/14/2019

By: Daniel Hughes

Welding Process: SMAW

Supporting PQR #: NONE Prequalified

☐ Automatic

☐ Semi-Auto

☒ Manual

☐ Mechanized

### JOINT DESIGN USED

Joint Type: Tee

Backing: ☐ Yes ☒ No Weld: ☐ Single ☒ Double

Backing Materials:

Root Opening: 0" to 1/8 Root Face Dimension: 0" to 1/8

Groove Angle: 45 Radius (J-U):

Back Gouging: ☒ Yes ☐ No Method: grinder

### BASE METALS

Material Specification: A572 To A572

Type Or Grade: 50 To 50

Thickness: Groove: 5/8 Fillet: 3/8

Diameter (Pipe):

### FILLER METALS

AWS Specification: A5.1

AWS Classification: E7018

### SHIELDING

Flux: Electrode-Flux (Class):

Gas: Composition:

Flow Rate: Gas Cup Size:

### PREHEAT / INTERPASS

Preheat Temperature: Minimum: 150

Interpass Temperature: Minimum: 150 Maximum: 300

### POSITION

Position Of Groove: 1G Flat Fillet:

Vertical Progression: ☐ Up ☐ Down ☒ N/A

### ELECTRICAL CHARACTERISTICS

Transfer Mode (GMAW): ☐ Short Circuit ☐ Globular ☐ Spray

Current: ☒ AC ☐ DCEP ☐ DCEN ☐ Pulsed

Power Source: ☐ CC ☐ CV

Other:

Tungsten Electrode (GTAW): Size: Type:

### TECHNIQUE

Stringer Or Weave Bead: Stringer

Multi-Pass Or Single Pass (Per Side): Multiple Pass

Number Of Electrodes: 1

Electrode Spacing: Longitudinal:

Lateral:

Angle:

Contact Tube To Work Distance:

Peening: No

Interpass Cleaning: wier wheel

### POSTWELD HEAT TREATMENT

Temperature:

Time:

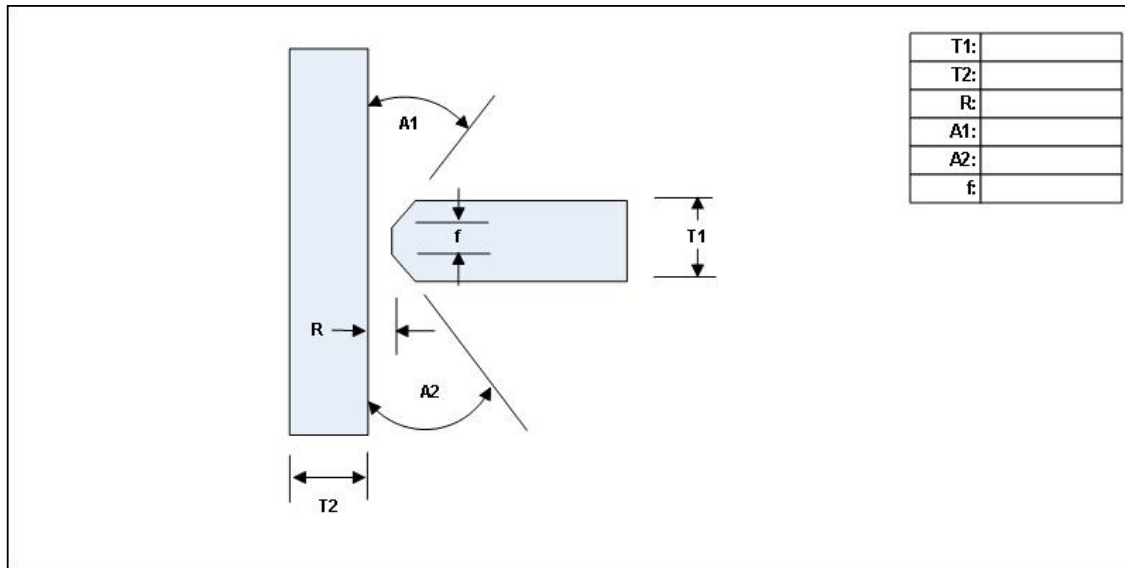
### ADDITIONAL NOTES



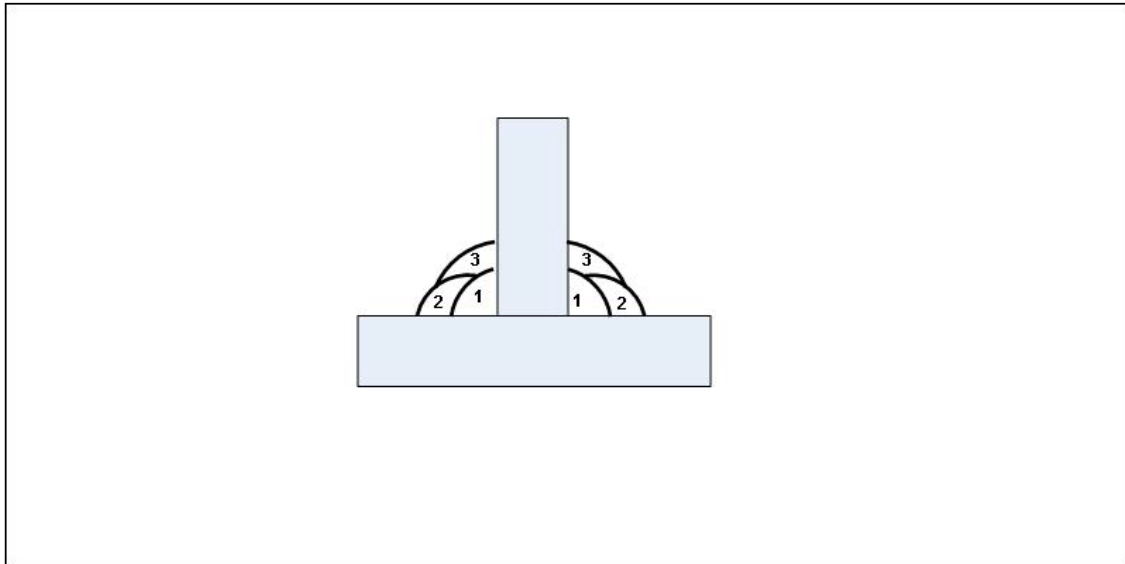
## Welding Procedure

Pass Or Weld Layers	Process	Filler Metal Class	Filler Metal Diameter	Current Type & Polarity	Current Amps Or Wire Feed Speed	Volts	Travel Speed	Notes
1-2	smaw	E8018	1/8	DCEP	110-140		6-10ipm	
3-n	SMAW	E8018	5/32	DCEP	150-187		8-11 IPM	

## Joint Details



## Weld Passes

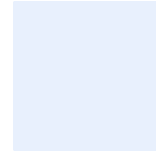




**CONSTRUCTION AND GALVANIZING COMPLIANCE LETTER**



Date: September 28, 2020  
Nextgen Services Group  
2242 Old Marlton Pike, Suite 100  
Marlton, NJ 08053  
856-810-1658



## Construction and Galvanizing Compliance Letter

### ***Crown Castle Site Information:***

**Crown POC:** Dan Vadney  
3 Corporate Park Drive Suite 101  
Clifton Park, NY 12065  
**BU Number:** 876406  
**Site Name:** NE Old Lyme-Old Lyme Firehouse  
**Site Address:** 189 BOSTON POST ROAD OLD LYME, CONNECTICUT 06371

**Latitude** 41.3493, **Longitude** -72.2955  
**135 Foot – Monopole Tower**

Nextgen Services Group is pleased to submit this “**Construction Compliance Letter**” to Crown Castle for the modification/reinforcement to the subject structure. All construction practices, workmanship, and cold galvanizing applications were performed in accordance with CED-SOW-10007 Modification Inspection SOW. Please refer to the supporting photographs on the following page.

### ***Modification Design Information:***

**SDD Vendor:** PJF  
**SDD Date:** 3/25/19  
**Vendor Job Number:** 37519-0914.001.7700  
**Name of EOR:** TJD  
**Source of SDD:** 8299430

### ***Contractors Information:***

**GC Crew Lead:** Brandon Doane  
**Dates on Site:** 7-2-20 / 9-28-20  
**Sub-Contractor Company:** Sub-Contractor Firm Name  
**Welder(s) Company:** NextGen Services group  
**Welder(s):** Brandon Doane  
**Welder(s) CCI Number:** 2019160  
**Dates on Site:** 7/2/20-9/1/20

### ***Product Information:***

**Dates of Application:** 9/1/20-9/28/20  
**Cold Galvanizing Product:** ZRC

We at Nextgen Services Group 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,

*Daniel Hughes*



# Cold Galvanizing Supporting Photographs

Gate Sign & Galvanizing Product



Installation



Monopole Shaft Interior

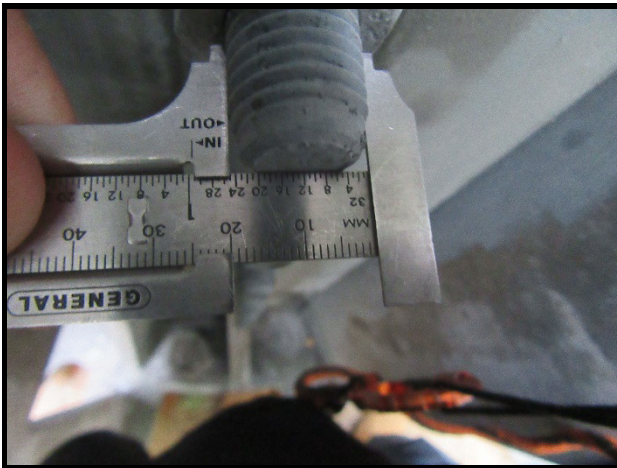




## INSPECTION PHOTOS

















# CONTRACTOR PHOTOGRAPHS

