CANNONDESIGN

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB
PROJECT NAME

8274 BIG BEND BLVD
ADDRESS

NUMBER

WEBSTER UNIVERSITY
OWNER

CANNON DESIGN
ARCHITECT / ENGINEER

Joe Voypick
SUBMITTED BY

055113-006
CONTRACTOR / CM SUBMITTAL NO.

CANNON DESIGN SUBMITTAL NO.

DRAWING / DETAIL REFERENCE

055113
SPECIFICATION SECTION / PARAGRAPH

Atlas Iron Works
MANUFACTURER / SUPPLIER

ITEM / PRODUCT ID

REQUIRED DATE

PRIORITY

◯ CRITICAL

ITEM BEING SUBMITTED (check only one)

- ◉ Shop Drawings
- ◯ Samples (_____ copies)
- ◯ LEED Submittal
- ◯ Certification / Qualifications
- ◯ Record Documents
- ◯ Product Data
- ◯ Coordination Drawing
- ◯ Calculations
- ◯ Schedules
- ◯ O&M Manuals
- ◯ Other _____

ITEM BEING SUBMITTED FOR (check only one)

◉ Action ◯ Information Only ◯ Record

REMARKS OR DEVIATIONS

Atlas has hired DMA for engineered calcs

CONTRACTOR / CM CERTIFICATION
(SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)

PARIC

PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:
Devin D. Gates

Joe Voypick — REVIEWED BY
12/27/16 — DATE

To be completed by Reviewer

05 5113-006
CANNON DESIGN SUBMITTAL NUMBER

12/27/16
RECEIVED DATE

RECEIVED SIGNED AND SEALED CALCULATIONS FROM DMA ON 01.24.17.

- ◯ A. No Exceptions Taken
  No further review of submittal is required.
- ◉ B. Make Corrections Noted
  Incorporate corrections in work; resubmission is not required.
- ◯ C. Revise and Resubmit
  Revise as noted, and resubmit for review.
- ◯ D. Rejected
  Submittal is not in compliance with Contract Documents; provide new submittal.
- ◯ E. For Record / Information Only
  Submittal was reviewed for Record / Information purposes only.
- ◯ F. Not Required for Review
  Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be affected thereby. This review is null and void if submittal deviates from contract documents and does not indicate or note deviations.

A/E COMMENTS ◯ See attached sheet(s) for additional comments

PROVIDE SEPARATE LEED SUBMITTAL.

RECEIVED SIGNED AND SEALED CALCULATIONS FROM DMA ON 01.24.17.

SHOP DRAWING / SUBMITTAL REVIEW

☒ NO EXCEPTION TAKEN ☐ EXCEPTIONS NOTED, RESUBMITTAL NOT REQUIRED
☐ REJECTED
☐ REVIEWED FOR INFORMATION ONLY ☐ REVISE AND RESUBMIT AS NOTED

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the plans and specifications. Contractor is responsible for: Dimensions which shall be confirmed and correlated at the job site, fabrication processes and techniques of the construction, coordination of his work with that of all other trades and the satisfactory performance of his work.

DAVID MASON & ASSOCIATES, INC.

REVIEW BY: JVW DATE: 01/24/2017

Jill Walker 2017.01.24

Kelvin Patel — REVIEWED BY

Digitally signed by Kelvin Patel
DN: C=US, E=kpatel@cannondesign.com, O=Cannon Design, OU=Architect, CN=Kelvin Patel
Date: 2017.01.24 18:01:35-06'00'

01/24/17 — DATE

77 Westport Plaza
Suite 250
St. Louis, MO 63146

TRANSMITTAL

No. 15051-0411

Paric Corporation

PROJECT: 15051-Webster University Interdisciplinary Science Building

DATE: 12/27/2016

TO: Cannon Design
1100 Clark Ave
St Louis MO 63102

Fax;
314-241-2203

RE: Stair #3 Shop Drawings

ATTN: Kelvin Patel

JOB: 15051

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☑ Shop Drawings	☑ Approval	☐ Approved as Submitted
☐ Letter	☐ Your Use	☐ Approved as Noted
☐ Prints	☐ As Requested	☐ Returned After Loan
☐ Change Order	☐ Review and Comment	☐ Resubmit
☐ Plans		☐ Submit
☐ Samples	**SENT VIA:**	☐ Returned
☐ Specifications	☐ Attached	☐ Returned for Corrections
☐ Other:	☐ Separate Cover Via:	☐ Due Date:

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal		055113-006	1		12/27/2016	Stair #3 Shop Drawings	Submitted

NOTES:

CC:

Signed: _____
Devin Gates

DAVID MASON & ASSOCIATES
CHICAGO, IL • ST. LOUIS, MO

COMPUTATION SHEETS

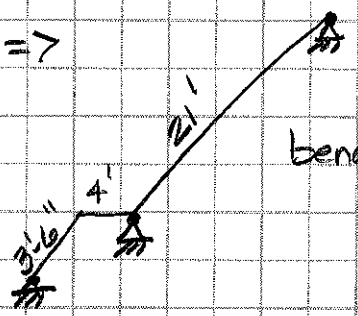
PROJECT #: W4-ISB 2014312 COMPUTED BY: JYW

PROJECT TITLE: STAIR #3 CHECKED BY:

CLIENT: ATLAS / CANNON DATE: 1-22-17

STRINGER SIZE C12 X 20.7

SPAN =>



bending check

STATE OF MISSOURI JILL YVETTE WALKER NUMBER 2001150027 PROFESSIONAL ENGINEER 1-24-17

STAIR LOADS DL = 60 psf · 2.25' + 20.7 plf = 155.7 plf

LL = 100 psf · 2.25' = 225 plf

M_{max} = 14.3 k-ft fixed at post, 18.5 k-ft pinned at post

check weld $\frac{14.3 \cdot 12000}{12.3} = 4766\ \#/in$

capacity quick check for 1/4" weld

0.928 · 4 = 3.712 k/in > 4.74 k/in

Standard fillet No Good

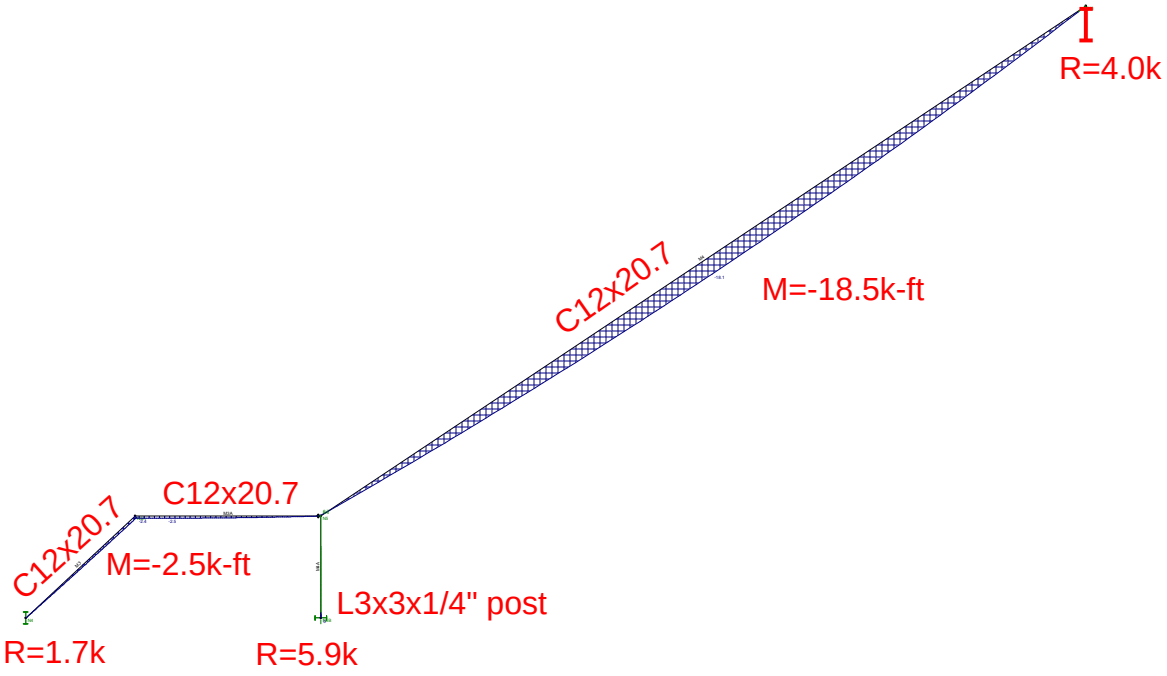
CJP Groove welds provided, ∴ OK

Stringer Size C12x 20.7 ok

Reaction to post = 5.64k

POST SIZE L 3x3x1/4" UNITY CHECK = 0.88 < 1.0 ok

Treads supported by 1/4" bent plate - ok by inspection for 4'-6" span



	STAIR #3 STRINGER & POST	3
		Jan 24, 2017 at 2:09 PM
		Stair 3 Stringer.r3d

Member AISC 13th(360-05): ASD Steel Code Checks

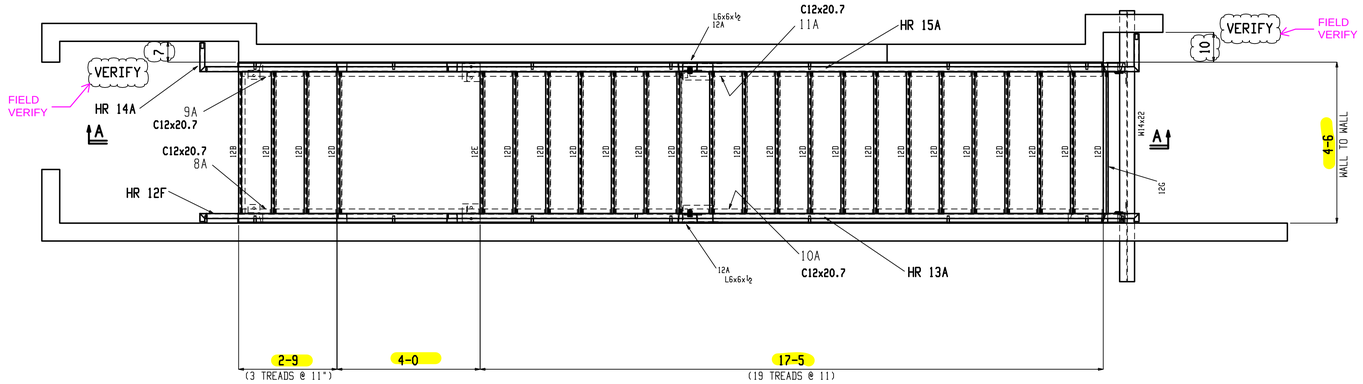
	LC	Member	Shape	UC Max	Loc[ft]	Shear UC	Loc[ft]	Dir	Pnc/om [k]	Pnt/om [k]	Mnyy/om...	Mnzz/om...	Cb	Eqn
1	1	M3	C12x20.7	.056	3.419	.028	0	y	113.986	131.066	4.949	45.988	1.388	H1-1b
2	1	M4	C12x20.7	.670	10.297	.081	0	y	27.98	131.066	4.949	27.336	1	H1-1b
3	1	M3A	C12x20.7	.056	.664	.033	4.25	y	105.638	131.066	4.949	45.988	1.207	H1-1b
4	1	M4A	L3x3x4	.882	0	.033	0	y	28.41	31.042	1.123	2.499	1.726	H2-1

Member Section Deflections

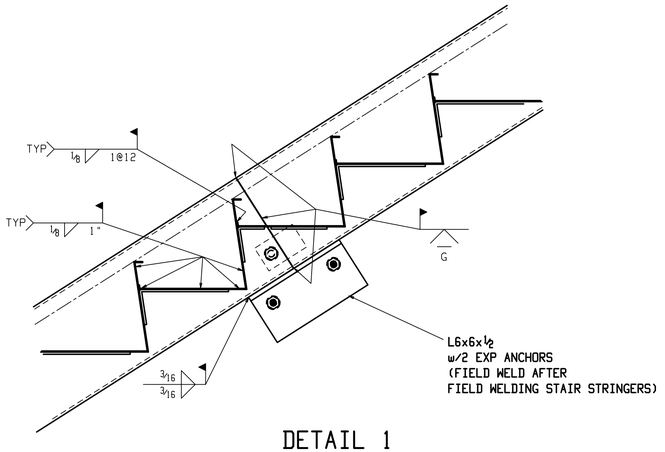
	LC	Member Label	Sec	x [in]	y [in]	z [in]	x Rotate[rad]	(n) L/y Ratio	(n) L/z Ratio
1	1	M3	1	-.003	.003	0	1.26e-3	NC	NC
2			2	-.003	0	.012	1.275e-3	NC	NC
3			3	-.003	-.004	.024	1.291e-3	NC	NC
4			4	-.003	-.006	.036	1.307e-3	NC	NC
5			5	-.003	-.008	.048	1.322e-3	NC	NC
6	1	M4	1	0	-.005	.045	5.432e-3	NC	NC
7			2	0	-.276	.033	5.432e-3	928.602	NC
8			3	0	-.386	.022	5.432e-3	657.915	NC
9			4	0	-.275	.011	5.432e-3	920.607	NC
10			5	0	0	0	5.432e-3	NC	NC
11	1	M3A	1	.003	-.008	.048	1.757e-3	NC	NC
12			2	.003	-.009	.047	1.757e-3	NC	NC
13			3	.003	-.008	.046	1.757e-3	NC	NC
14			4	.003	-.006	.045	1.757e-3	NC	NC
15			5	.003	-.004	.045	1.757e-3	NC	NC
16	1	M4A	1	.004	-.003	-.045	-3.16e-3	NC	825.874
17			2	.003	.019	-.02	-3.16e-3	4933.932	NC
18			3	.002	.023	-.007	-3.16e-3	4384.395	2473.648
19			4	0	.015	-.001	-3.16e-3	7171.319	2934.772
20			5	0	0	0	-3.16e-3	NC	NC

Joint Reactions

	LC	Joint Label	X [k]	Y [k]	Z [k]	MX [k-ft]	MY [k-ft]	MZ [k-ft]
1	1	N4	0	1.655	.001	0	-.005	0
2	1	N6	-.318	3.967	0	0	0	0
3	1	N5B	.318	5.921	-.001	-.038	0	0
4	1	Totals:	0	11.543	0			
5	1	COG (ft):	X: 12.181	Y: 6.458	Z: 0			

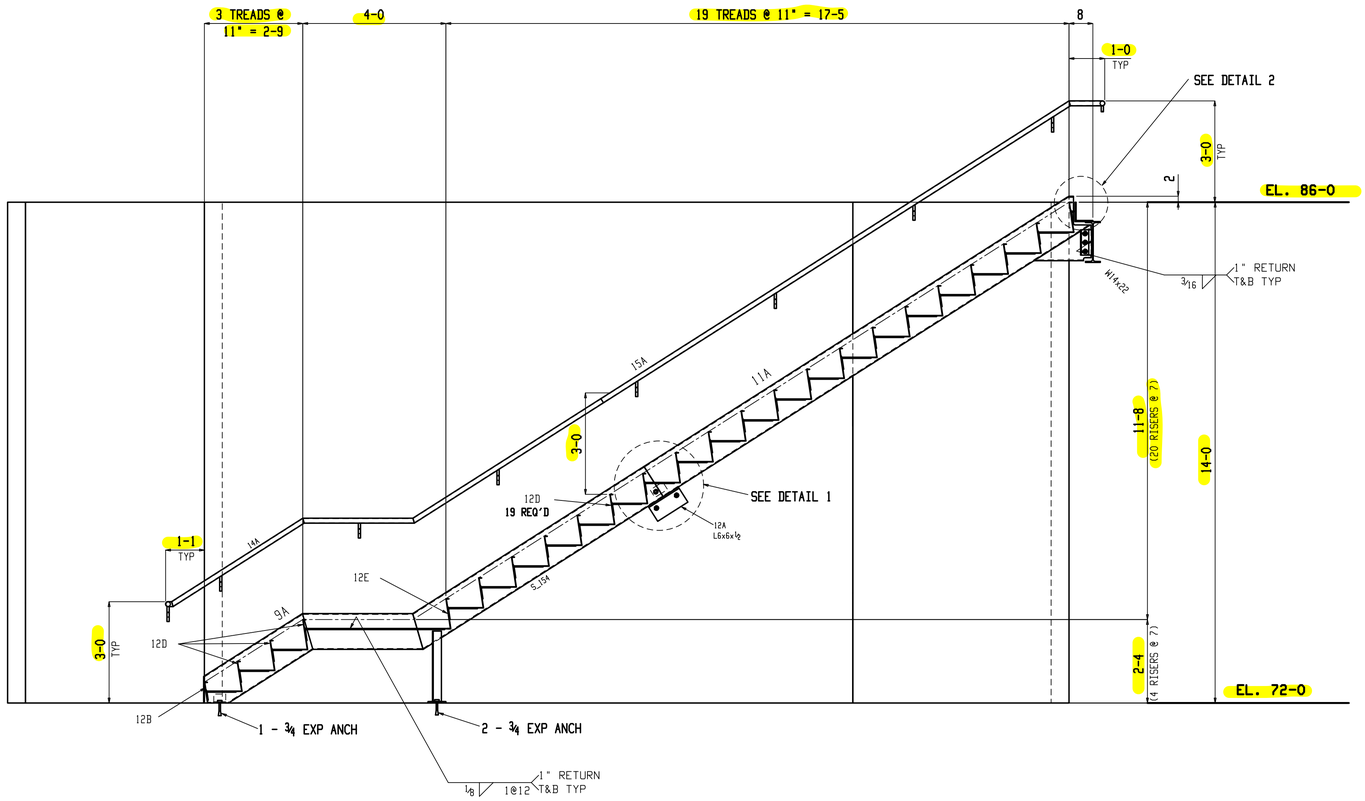


STAIR 3-1 FRAMING PLAN

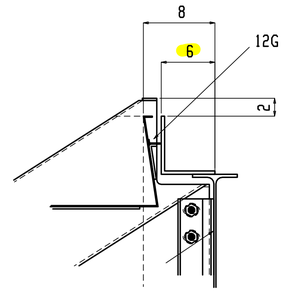


DETAIL 1

TYPICAL DETAIL FOR FIELD WELDING
STAIR SPLICES AND PANS



SECTION A-A



DETAIL 2

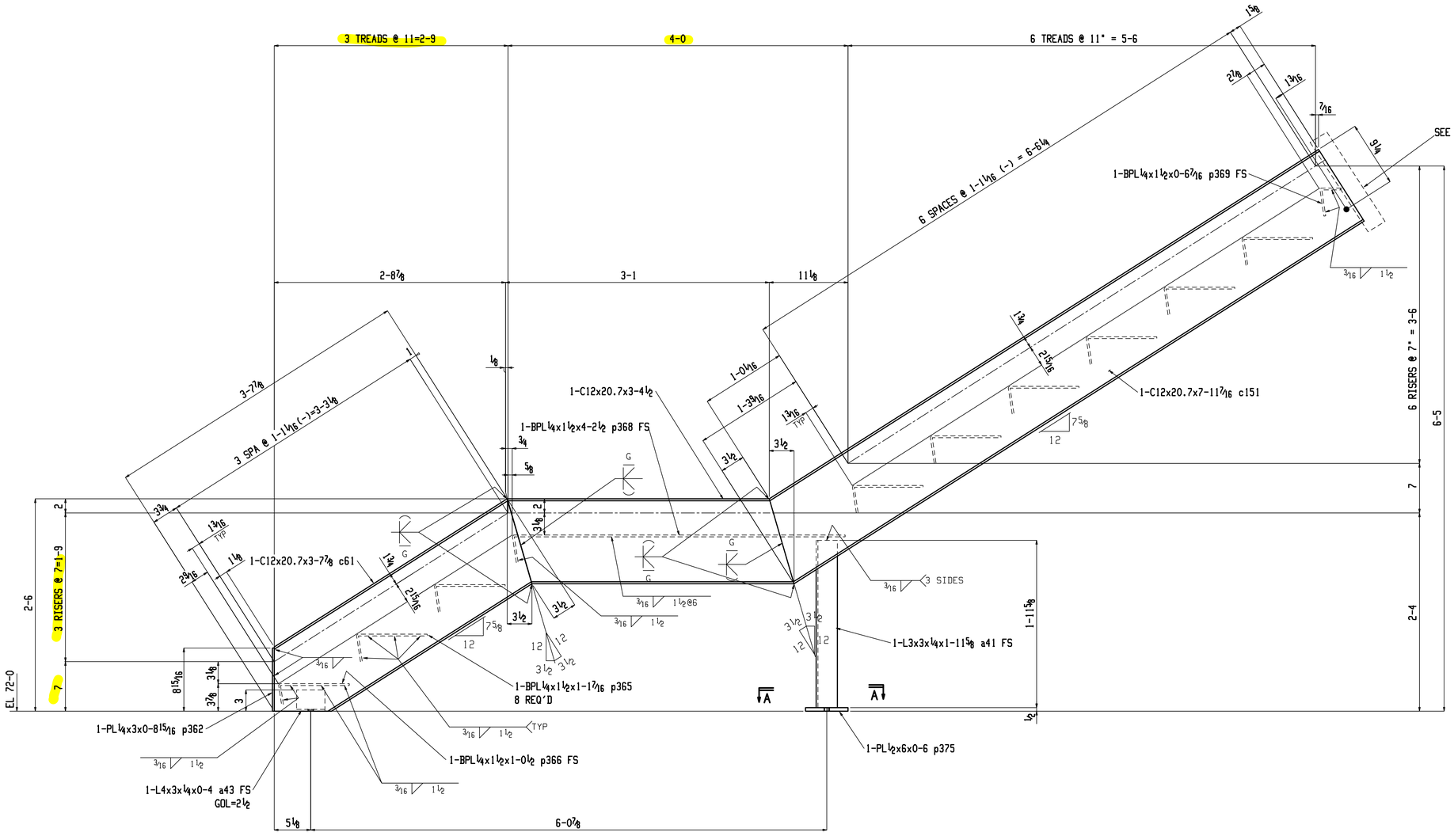
DETAIL FOR SHOWING PAN 12G

△

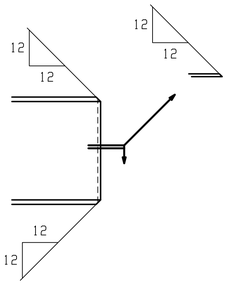
△0 12-20-16: FOR APPROVAL

ATLAS IRON WORKS — EST. 1928

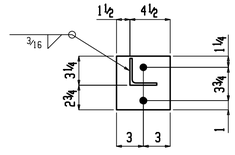
Project: WEBSTER UNIVERSITY
Customer: PARIC
Owner: WEBSTER UNIVERSITY
Location: WEBSTER GROVES, MO.
Dwn: KRT Date: 12-10-16 Ckd: BD Date: 12-20-16
Job No. A16013M DWG#: E3



ONE STRINGER 8A



DETAIL A



Section A-A

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		8A	STRINGER			E3
1	1	8A	C12x20.7	3	4 1/2	A36
1	1	a41	L3x3x1/4	1	11 5/8	A36
1	1	a43	L4x3x1/4	0	4	A36
1	1	c151	C12x20.7	7	11 7/16	A36
1	1	c61	C12x20.7	3	7 7/8	A36
1	1	p375	PL 1/2x6	0	6	A36
1	1	p368	PL 1/4x1 1/2	4	2 1/2	BENT A36
8	8	p365	PL 1/4x1 1/2	1	1 7/16	BENT A36
1	1	p369	PL 1/4x1 1/2	0	6 7/16	BENT A36
1	1	p366	PL 1/4x1 1/2	1	0 1/2	BENT A36
1	1	p362	PL 1/4x3	0	8 15/16	A36
			FIELD BOLTS			
1			3/4 Dia A325	0	1 3/4	+1HD WASH
3			3/4 DIA EXP ANCH	0	5	
ONE		DETAIL A				
1	1	DETAIL A				

△

△0 12-20-16: FOR APPROVAL

Sequence: - Ref. E-Plans: SEE BOM

Material: ASTM A36 U.N.O. Edge Dist.: 1 1/4" U.N.O.

Holes: 13/16" UNO Bolts: NOTED

Cleaning: SSPC-SP2,3

Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS — EST. 1928

Project: WEBSTER UNIVERSITY

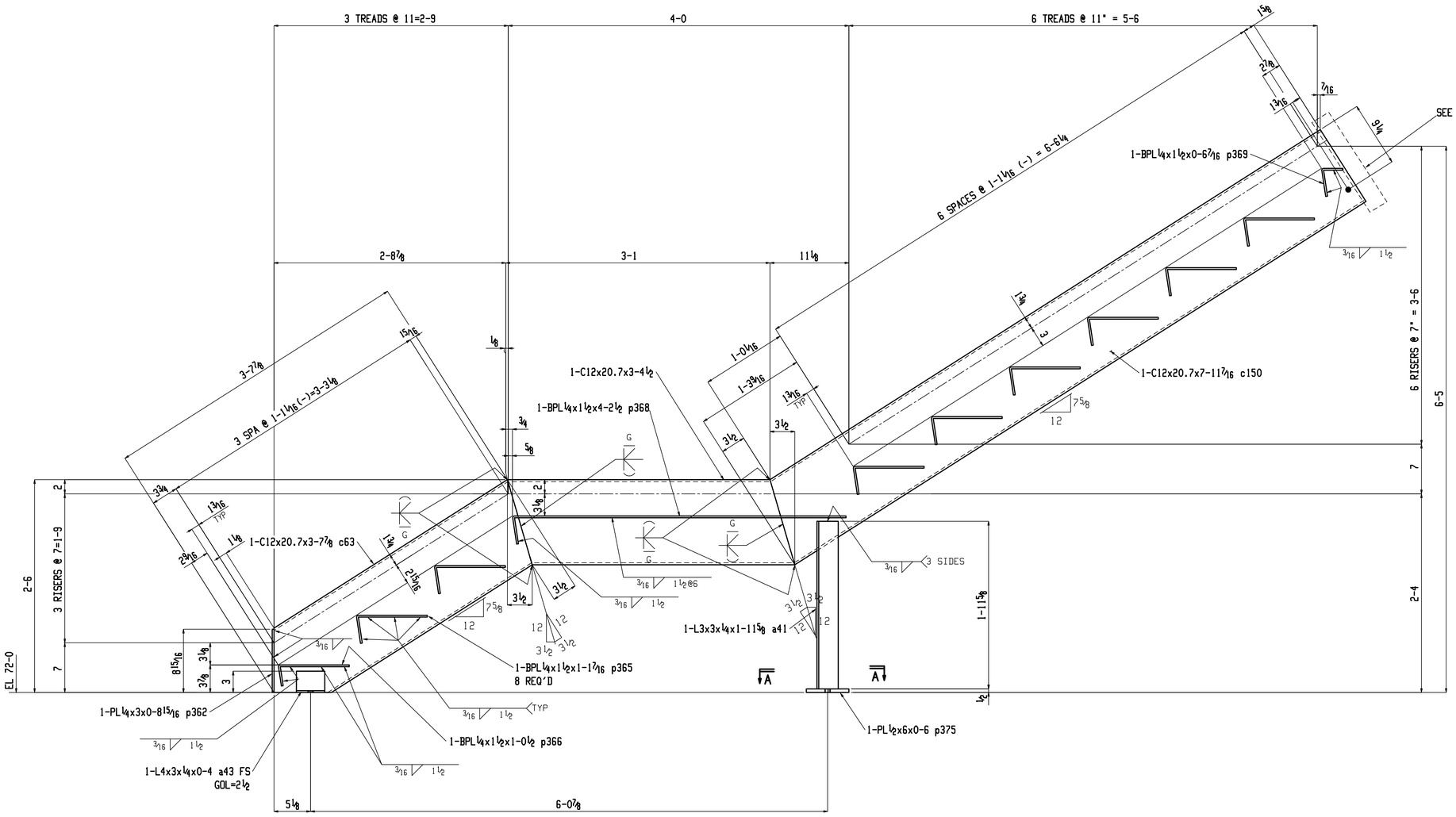
Customer: PARIC

Owner: WEBSTER UNIVERSITY

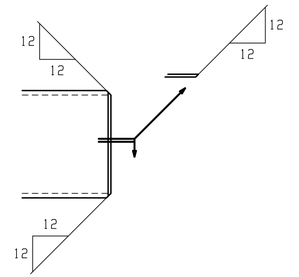
Location: WEBSTER GROVES, MO.

Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16

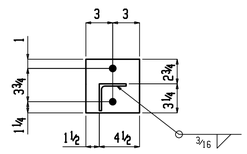
Job No. A16013M DWG#: 8



ONE STRINGER 9A



DETAIL B



Section A-A

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		9A	STRINGER			E3
1	1	9A	C12x20.7	3	4 1/2	A36
1	1	a41	L3x3x1/4	1	11 5/8	A36
1	1	a43	L4x3x1/4	0	4	A36
1	1	c150	C12x20.7	7	11 7/16	A36
1	1	c63	C12x20.7	3	7 7/8	A36
1	1	p375	PL 1/2x6	0	6	A36
1	1	p368	PL 1/4x1 1/2	4	2 1/2	BENT A36
8	8	p365	PL 1/4x1 1/2	1	1 7/16	BENT A36
1	1	p369	PL 1/4x1 1/2	0	6 7/16	BENT A36
1	1	p366	PL 1/4x1 1/2	1	0 1/2	BENT A36
1	1	p362	PL 1/4x3	0	8 15/16	A36
			FIELD BOLTS			
1			3/4 Dia A325	0	1 3/4	+HHD WASH
3			3/4 DIA EXP ANCH	0	5	
ONE		DETAIL A				
1	1	DETAIL A				

△

△0 12-20-16: FOR APPROVAL

Sequence: - Ref. E-Plans: SEE BOM

Material: ASTM A36 U.N.O. Edge Dist.: 1 1/4" U.N.O.

Holes: 13/16" UNO Bolts: NOTED

Cleaning: SSPC-SP2,3

Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS — EST. 1925

Project: WEBSTER UNIVERSITY

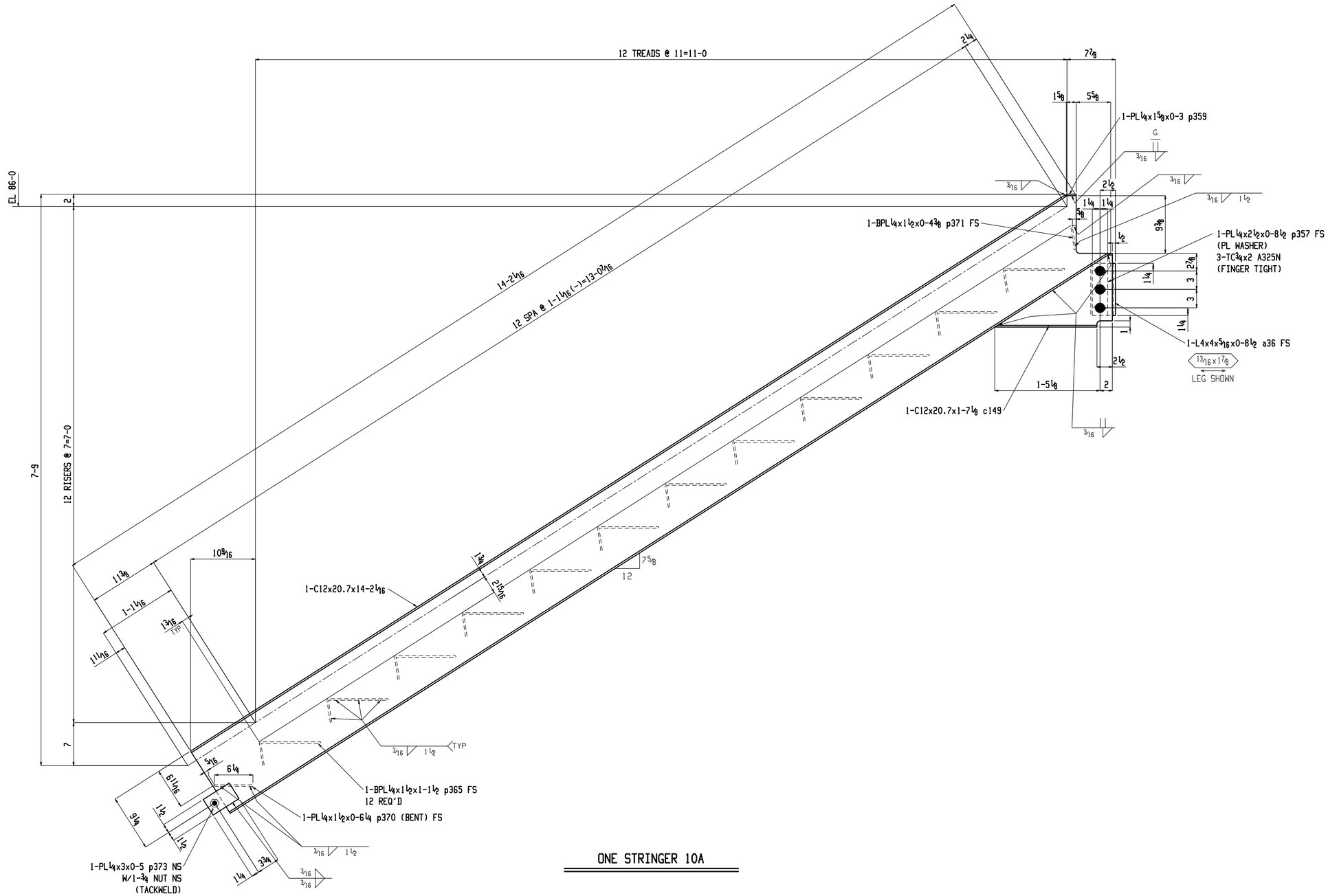
Customer: PARIC

Owner: WEBSTER UNIVERSITY

Location: WEBSTER GROVES, MO.

Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16

Job No. A16013M DWG#: 9



ONE STRINGER 10A

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		10A	STRINGER			E3
1	1	10A	C12x20.7	14	2¹⁵/₁₆	A36
1	1	a36	L4x4x5/16	0	8½	A36
1	1	c149	C12x20.7	1	7⅛	A36
12	12	p365	PL¼x1½	1	1½	BENT A36
1	1	p370	PL¼x1½	0	6¼	A36
1	1	p371	PL¼x1½	0	4⅜	BENT A36
1	1	p373	PL¼x3	0	5	A36
1	1	p357	PL¼x2½	0	8½	A36
1	1	p359	PL¼x1⅝	0	3	A36
3	3		TC ¾ Dia A325N	0	2	IHD WASH
1	1		TC ¾ Dia A325N	0	4¼	IHD WASH
1	1		¾ DIA NUT			HHX

△

△0 12-20-16: FOR APPROVAL

ATLAS IRON WORKS — EST. 1888

Sequence: - Ref. E-Plans: SEE BOM

Material: ASTM A36 U.N.O. Edge Dist.: 1¼" U.N.O.

Holes: 13/16" UNO Bolts: NOTED

Cleaning: SSPC-SP2,3

Paint: 1.5 MILS DFT Std Gray Primer

Project: WEBSTER UNIVERSITY

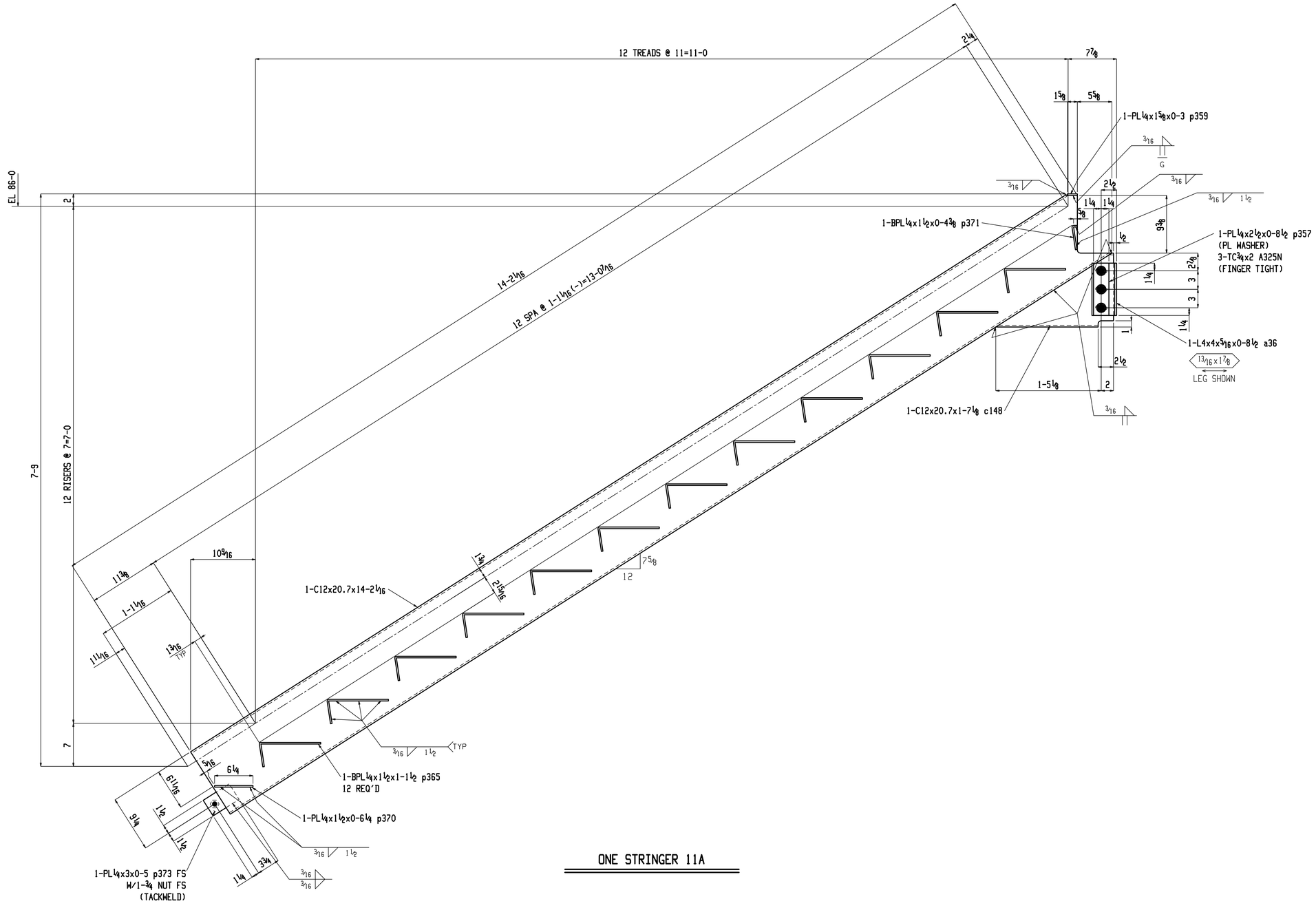
Customer: PARIC

Owner: WEBSTER UNIVERSITY

Location: WEBSTER GROVES, MO.

Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16

Job No. A16013M DWG#: 10



ONE STRINGER 11A

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		11A	STRINGER			E3
1	1	11A	C12x20.7	14	2 1/16	A36
1	1	a36	L4x4x5/16	0	8 1/2	A36
1	1	c148	C12x20.7	1	7 1/8	A36
12	12	p365	PL 1/4x1 1/2	1	1 1/2	BENT A36
1	1	p370	PL 1/4x1 1/2	0	6 1/4	A36
1	1	p371	PL 1/4x1 1/2	0	4 3/8	BENT A36
1	1	p373	PL 1/4x3	0	5	A36
1	1	p357	PL 1/4x2 1/2	0	8 1/2	A36
1	1	p359	PL 1/4x1 5/8	0	3	A36
3	3		TC 3/4 Dia A325N	0	2	IHD WASH
1	1		3/4 DIA NUT			HHX

△

△0 12-20-16: FOR APPROVAL

Sequence: - Ref. E-Plans: SEE BOM

Material: ASTM A36 U.N.O. Edge Dist.: 1 1/4" U.N.O.

Holes: 13/16" UNO Bolts: NOTED

Cleaning: SSPC-SP2,3

Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS - EST. 1922

Project: WEBSTER UNIVERSITY

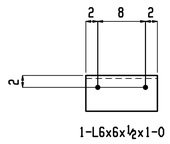
Customer: PARIC

Owner: WEBSTER UNIVERSITY

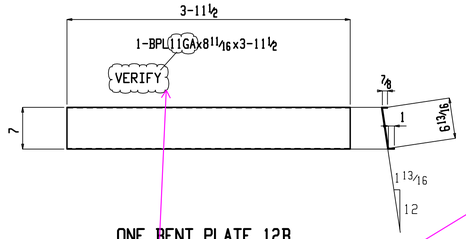
Location: WEBSTER GROVES, MO.

Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16

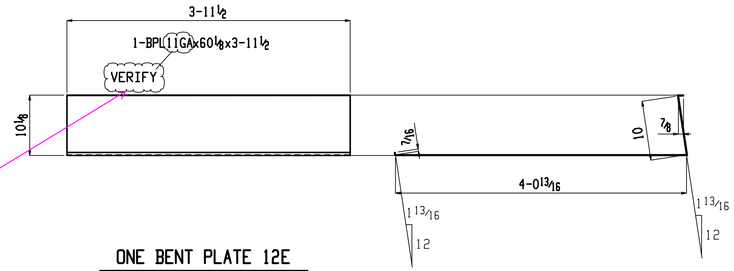
Job No. A16013M DWG#: 11



2 ANGLES 12A

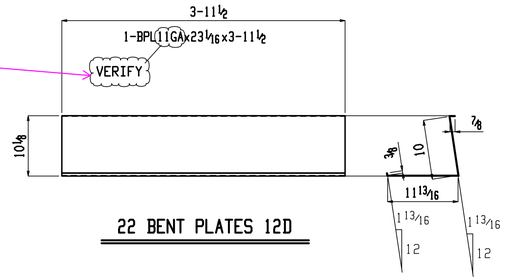


ONE BENT PLATE 12B

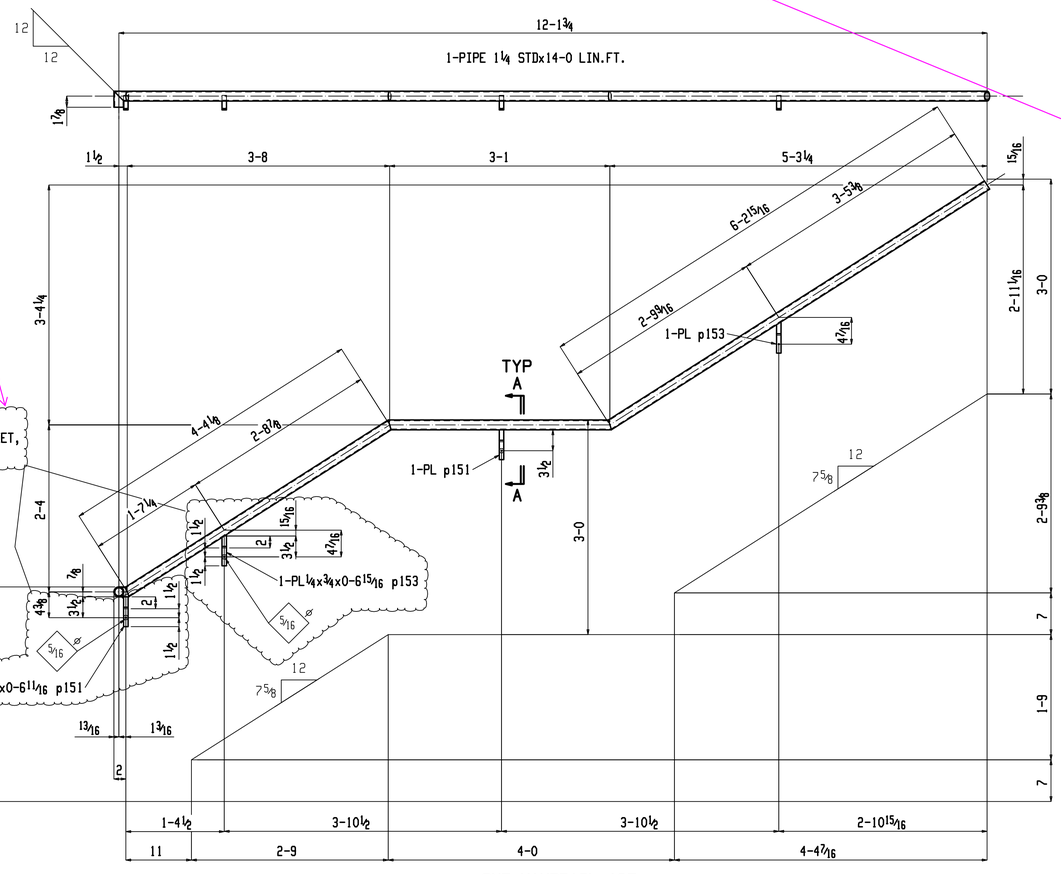


ONE BENT PLATE 12E

DELEGATED DESIGN, THICKNESS TO MEET PERFORMANCE REQUIREMENTS PER SPECIFICATION.



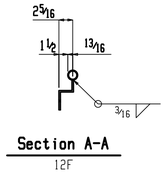
22 BENT PLATES 12D



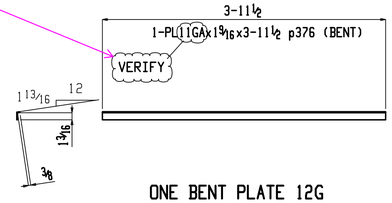
ACCEPTABLE, PROVIDED IT MEETS PERFORMANCE REQUIREMENTS PER SPECIFICATION.

APPROVER VERIFY OR PROVIDE HANDRAIL BRACKET, VERIFY ANCHORS

ONE HANDRAIL 12F



Section A-A
12F



ONE BENT PLATE 12G

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
2		12A	ANGLE			E3
2	1	12A	L6x6x½	1	0	A36
			FIELD BOLTS			
4			¾ DIA EXP ANCH	0	4	
ONE		12B	BENT PLATE			E3
1	1	12B	PL11GAx8¹¹/₁₆	3	11½	BENT A36
22		12D	BENT PLATE			E3
22	1	12D	PL11GAx23¹/₁₆	3	11½	BENT A36
ONE		12E	BENT PLATE			E3
1	1	12E	PL11GAx60⅛	3	11½	BENT A36
ONE		12F	HANDRAIL			E3
1	1	12F	PIPE 1¼ STD	14	0	LIN.FT. A53
2	2	p153	PL¼x¾	0	6¹⁵/₁₆	A36
2	2	p151	PL¼x¾	0	6¹¹/₁₆	A36
			FIELD BOLTS			
4			¼ DIA EXP ANCH	0	3	
ONE		12G	BENT PLATE			E3
1	1	12G	PL11GAx1⁹/₁₆	3	11½	BENT A36

△

△0 12-20-16: FOR APPROVAL

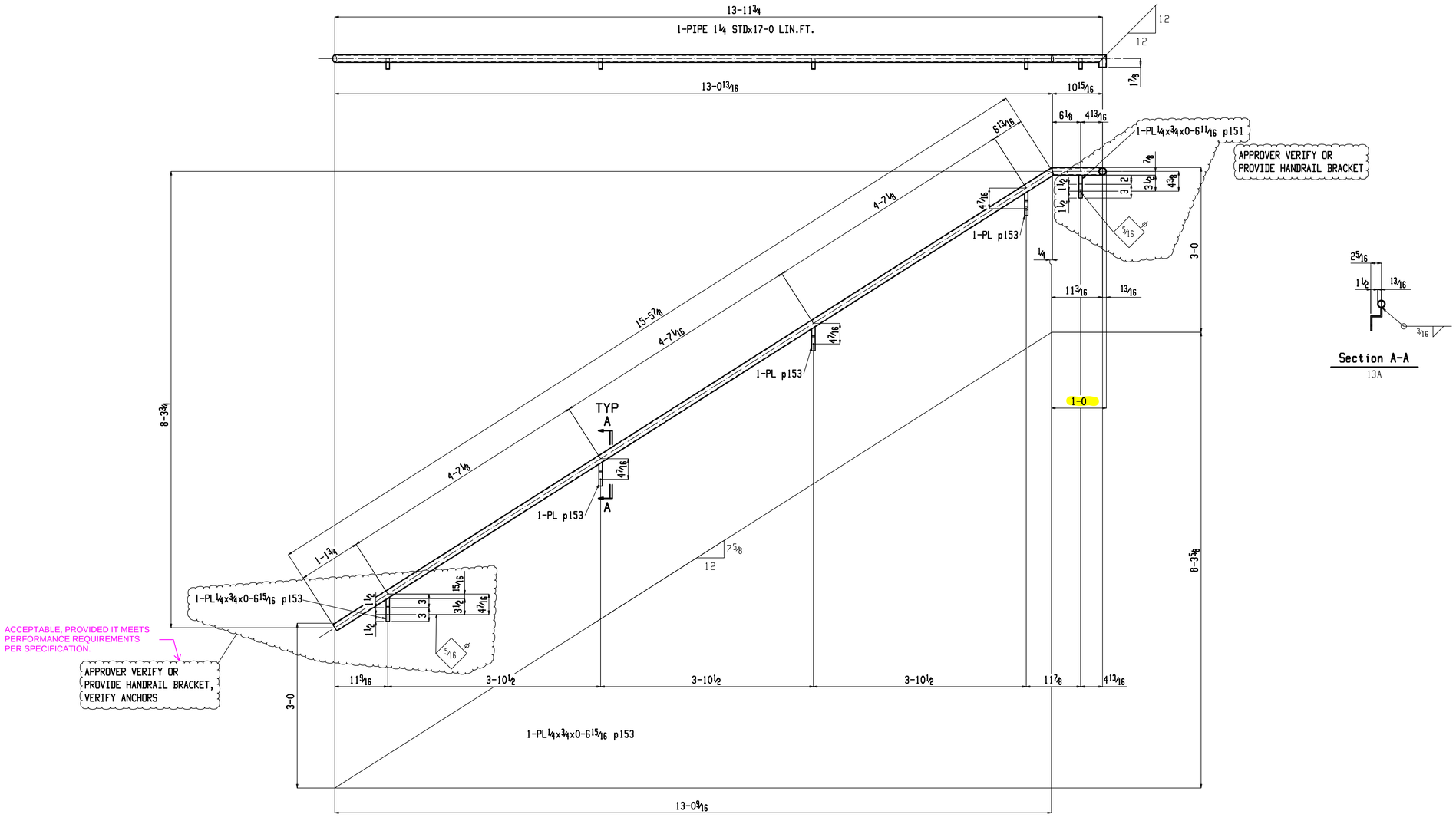
Sequence: -
Ref. E-Plans: SEE BOM
Material: ASTM A36 U.N.O.
Edge Dist.: 1¼" U.N.O.
Holes: 13/16" UNO
Bolts: NOTED
Cleaning: SSPC-SP2,3
Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS — EST. 1928

Project: WEBSTER UNIVERSITY
Customer: PARIC
Owner: WEBSTER UNIVERSITY
Location: WEBSTER GROVES, MO.
Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16
Job No. A16013M
DWG#: 12

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		13A	HANDRAIL			E3
1	1	13A	PIPE 1¼ STD	17	0	LIN.FT. A53
4	4	p153	PL¼x¾	0	6 15/16	A36
1	1	p151	PL¼x¾	0	6 11/16	A36
			FIELD BOLTS			
3			¼ DIA EXP ANCH	0	3	
2			¼ DIA LAG SCREW	0	3	



ONE HANDRAIL 13A

Section A-A
13A

△
△0 12-20-16: FOR APPROVAL

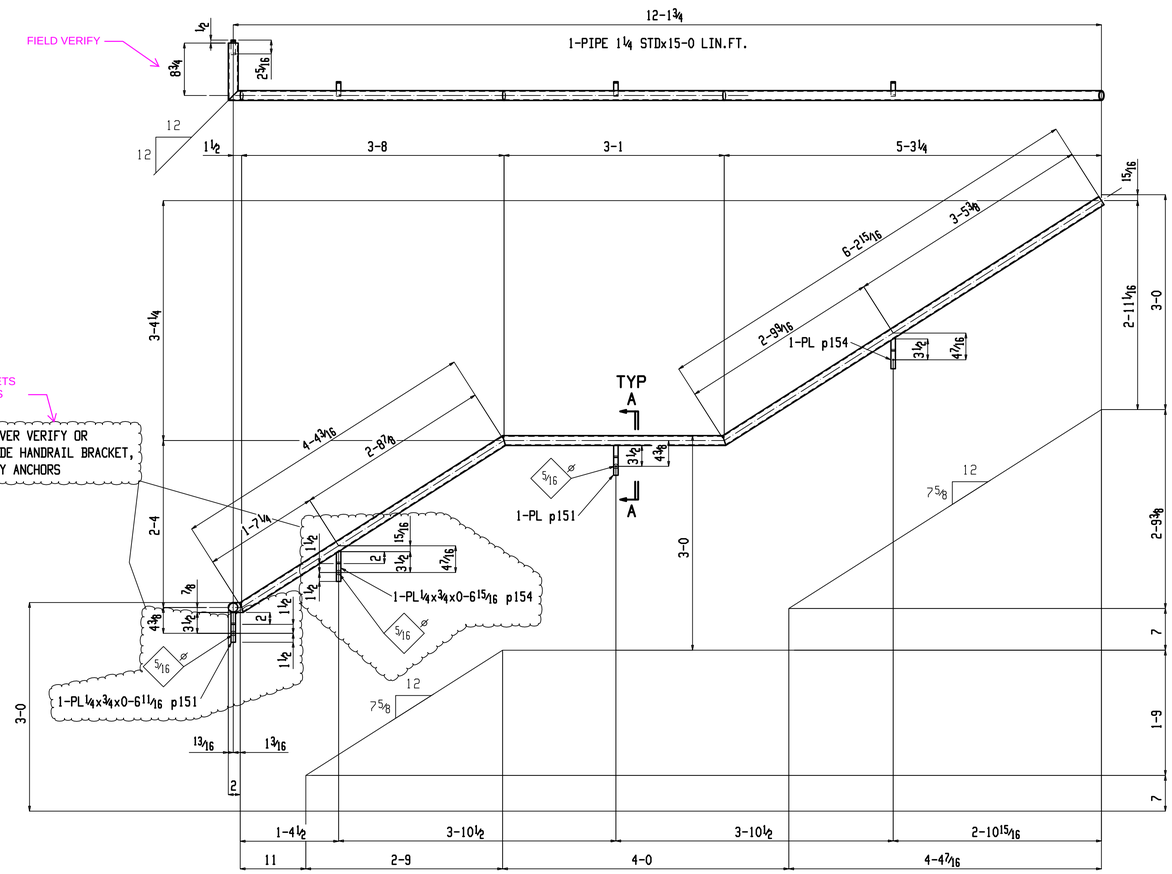
Sequence: - Ref. E-Plans: SEE BOM
Material: ASTM A36 U.N.O. Edge Dist.: 1¼" U.N.O.
Holes: 13/16" UNO Bolts: NOTED
Cleaning: SSPC-SP2,3
Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS – EST. 1925

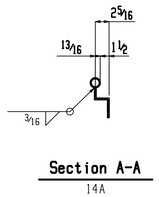
Project: WEBSTER UNIVERSITY
Customer: PARIC
Owner: WEBSTER UNIVERSITY
Location: WEBSTER GROVES, MO.
Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16
Job No. A16013M DWG#: 13

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		14A	HANDRAIL			E3
1	1	14A	PIPE 1¼ STD	15	0	LIN.FT. A53
2	2	p154	PL¼x¾	0	6 15/16	A36
2	2	p151	PL¼x¾	0	6 11/16	A36
			FIELD BOLTS			
4			¼ DIA EXP ANCH	0	3	



ONE HANDRAIL 14A

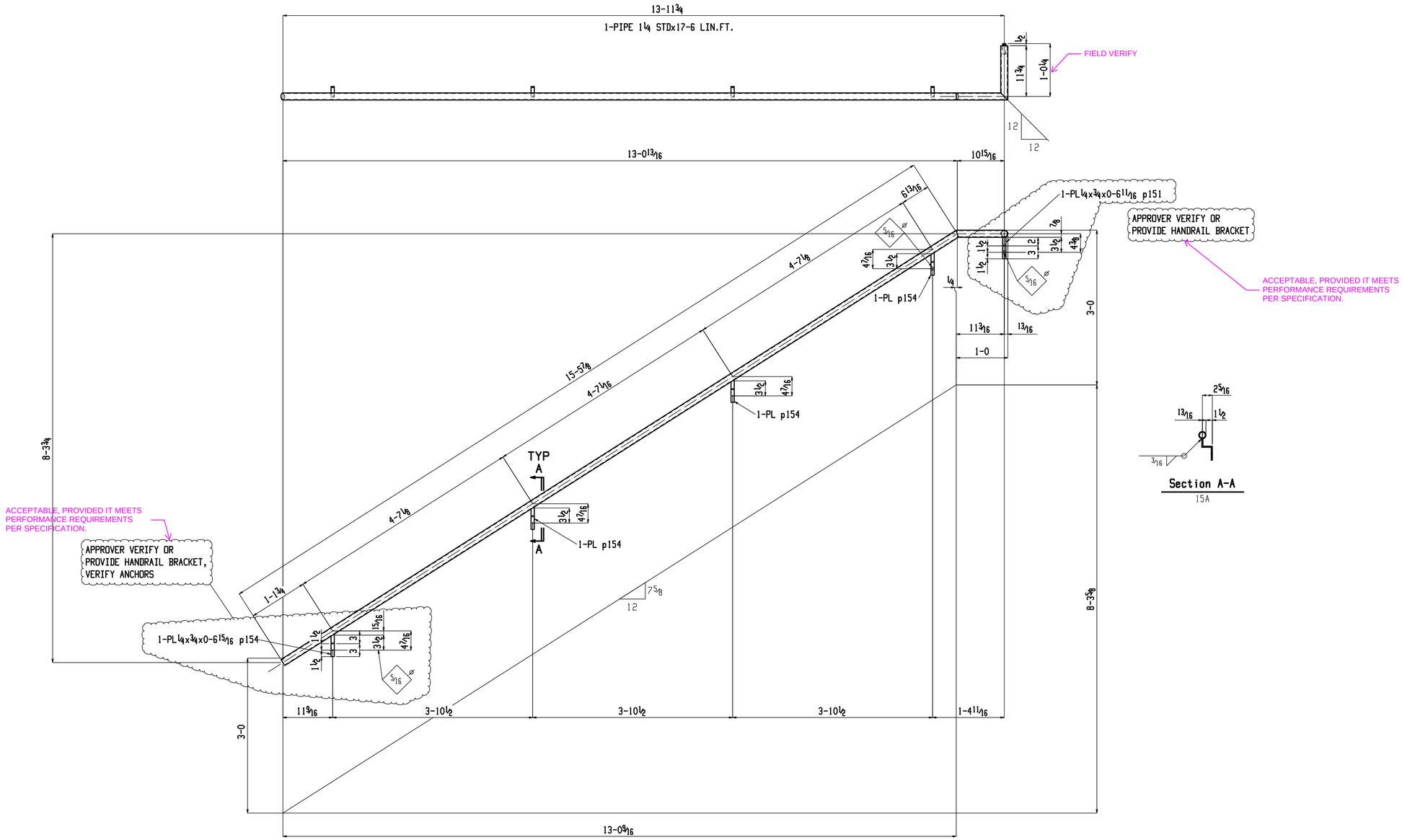


Section A-A
14A

△	
△0	12-20-16: FOR APPROVAL
Sequence: –	Ref. E-Plans: SEE BOM
Material: ASTM A36 U.N.O.	Edge Dist.: 1¼" U.N.O.
Holes: 13/16" UNO	Bolts: NOTED
Cleaning: SSPC-SP2,3	
Paint: 1.5 MILS DFT Std Gray Primer	

ATLAS IRON WORKS — EST. 1928

Project:	WEBSTER UNIVERSITY
Customer:	PARIC
Owner:	WEBSTER UNIVERSITY
Location:	WEBSTER GROVES, MO.
Dwn: SAM	Date: 12-10-16 Ckd: BD Date: 12-20-16
Job No. A16013M	DWG#: 14



ONE HANDRAIL 15A

BILL OF MATERIAL

QTY TOTAL	QTY UNIT	PC MARK	DESCRIPTION	LENGTH		REMARKS
ONE		15A	HANDRAIL			E3
1	1	15A	PIPE 1¼ STD	17	6	LIN.FT. A53
4	4	p154	PL ¼x3¾	0	6¹⁵⁄₁₆	A36
1	1	p151	PL ¼x3¾	0	6¹¹⁄₁₆	A36
			FIELD BOLTS			
3			¼ DIA EXP ANCH	0	3	
3			¼ DIA LAG SCREW	0	3	

△

△0 12-20-16: FOR APPROVAL

Sequence: - Ref. E-Plans: SEE BOM

Material: ASTM A36 U.N.O. Edge Dist.: 1¼" U.N.O.

Holes: 13⁄16" UNO Bolts: NOTED

Cleaning: SSPC-SP2,3

Paint: 1.5 MILS DFT Std Gray Primer

ATLAS IRON WORKS — EST. 1888

Project: WEBSTER UNIVERSITY

Customer: PARIC

Owner: WEBSTER UNIVERSITY

Location: WEBSTER GROVES, MO.

Dwn: SAM Date: 12-10-16 Ckd: BD Date: 12-20-16

Job No. A16013M DWG#: 15