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Steel Construction | From the Mill to Topping Out



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Session Description

18.3 Steel Fabrication October 29, 2018

From the start of a project through final shipment, this session will provide a detailed review for each and every step in the fabrication process. Topics include:

- Detailing
- Project management
- Purchasing of material
- Production: receiving material, cutting, hole making, parts, layout, fit, welding, bolting, cambering, assembling, cleaning and coating
- Quality control: inspection, testing and error resolution
- Shipping



Learning Objectives

- Describe the main tasks addressed to begin detailing: determining format (modeled or not), advanced bill of materials, detailing standards, erection aids, sequencing and submittals.
- List project management activities that relate to steel fabrication.
- List the steps of steel traceability and describe it's importance.
- List the main steps of steel fabrication production.

Night School 18: Steel Construction

From the Mill to Topping Out
Session 3: Steel Fabrication
October 29, 2018



Christian B Crosby, PE, CWI
Operations Manager
Cianbro Fabrication and Coating
Georgetown, MA



Night School 18: Steel Construction

From the Mill to Topping Out

Quick recap of sessions 1 and 2...



Night School 18: Steel Fabrication

- 18.1 Introduction to the Steel Construction Process
- 18.2 The Manufacturing of Structural Steel Shapes
- 18.3 Steel Fabrication: A Virtual, Detailed tour of the Steel Fabrication Process
- 18.4 Connection Design as the Fabricator's Representative
- 18.5 It Doesn't Get Built Without the Erector
- 18.6 Erection Engineering – Stability During Construction
- 18.7 Field Fixes and Solution
- 18.8 Quality Control and Quality Assurance

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Night School 18: Steel Fabrication

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Steel Fabrication

A virtual, detailed tour of the steel fabrication process



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Steel Fabrication: From start thru final shipment

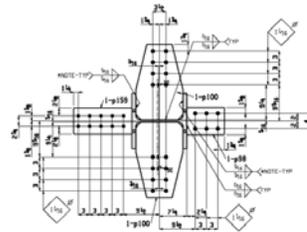
- Detailing
- Project Management
- Production
- Shipping
- Quality Control



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Steel Fabrication: Detailing

- Project Kick-Off
- ABM's
- Detailing Standards
- Erector Needs
- Submittals



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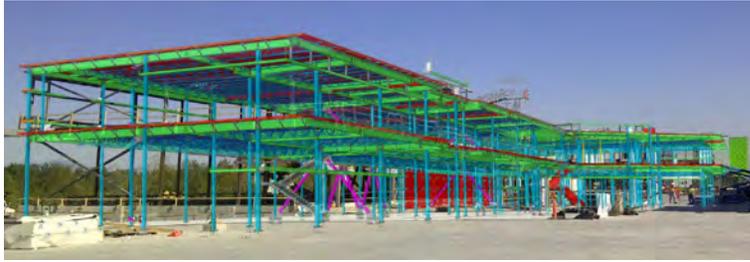
Steel Fabrication: Detailing – Project Kick Off

- Format of DWG's
 - Structural
 - Connections
 - Misc
- Sequencing: what do they want first?



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Steel Fabrication: Detailing – Modeling



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Steel Fabrication: Detailing – Project Kick Off

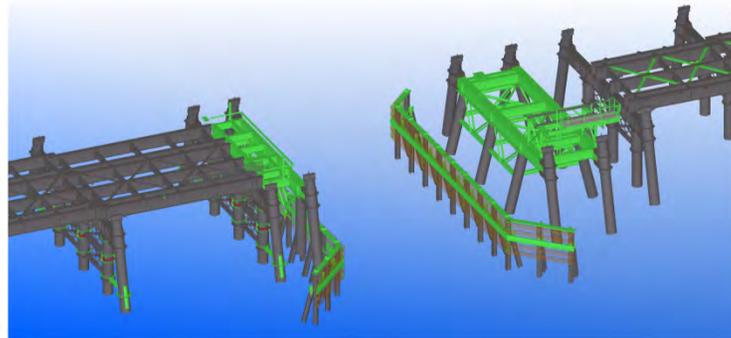


- Review of design DWG
 - Plans, elevations, sections
 - Notes
- Review of specs
- Review of specials



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Steel Fabrication: Detailing – Modeling



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Steel Fabrication: Advanced Bills of Material

Advanced Bills of Mat'l (ABM)

- Size of project
- Modeled or by hand
- Main Mat'l
- Detail Mat'l
- Purchasing discussed in next section



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Steel Fabrication: Preferred Grades for Bolts

**Table 2-6
 Applicable ASTM Specifications for
 Various Types of Structural Fasteners**

ASTM Designation	F _y Min. Yield Stress (ksi)	F _u Tensile Stress* (ksi)	Diameter Range (in.)	Bolts			Washers			Anchor Rods		
				High-Strength	Conventional	Common Bolts	Hardened	Plain	Direct-Tension Indicator	Threaded Rods	Hooked	Headed
Gr. A325 ¹	-	120	0.5 to 1.5	■	■							
Gr. F1852 ²	-	120	0.5 to 1.25	■	■							
Gr. A490 ¹	-	150	0.5 to 1.5	■	■							
Gr. F2280 ²	-	150	0.5 to 1.25	■	■							
F3111	-	200	1 to 1.25 incl.									
F3043	-	200	1 to 1.25 incl.									
A194 Gr. 2H	-	-	0.25 to 4									
A563	-	-	0.25 to 4									
F436	-	-	0.25 to 4 ³									
F844	-	-	any									
F859	-	-	0.5 to 1.5									
A36	36	58-80	to 10									

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Steel Fabrication: Preferred Grades - Anchors

ASTM Designation	F _y Min. Yield Stress (ksi)	F _u Tensile Stress* (ksi)	Diameter Range (in.)	High-Strength	Conventional	Common Bolts	Hardened	Plain	Direct-Tension Indicator	Threaded Rods	Hooked	Headed	Threaded & Nutted
Gr. 36	36	58-80	0.25 to 4										
Gr. 55	55	75-95	0.25 to 4										
Gr. 105	105	125-150	0.25 to 3										



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Steel Fabrication: Detailing – Detailing Standards

- Each shop is different
- Presentation of DWG
- Connection details
- Equipment and level of automation
- Skills and abilities

DETAILING



FOR STEEL
 CONSTRUCTION
 THIRD EDITION



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Steel Fabrication: Detailing – Detailing Standards

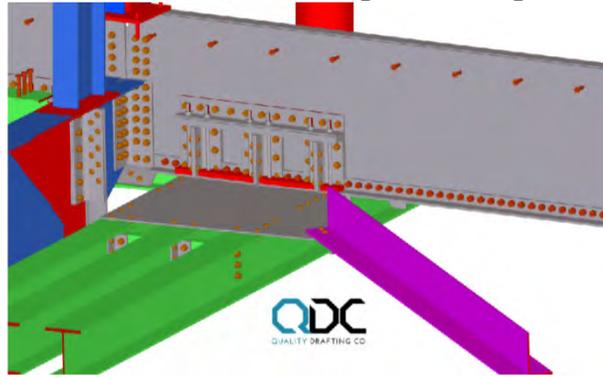
The drawing shows a detailed view of a steel truss structure. It includes a table of material specifications for various components, such as members, gusset plates, and bolts. The CIAMBRO logo is prominently displayed in the bottom right corner of the drawing area.



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Steel Fabrication: Detailing – Detailing Standards



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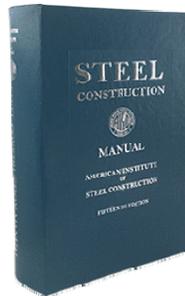
Steel Fabrication: Detailing – Detailing Standards



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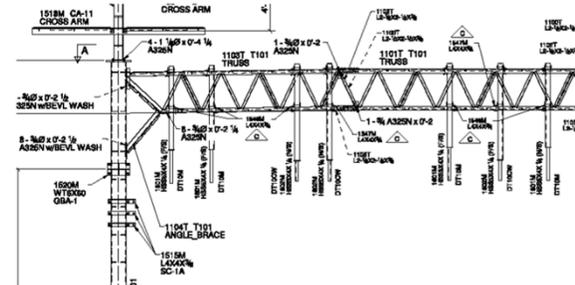
Steel Fabrication: Detailing – Erector Needs

- Erection DWG's
- Column Splices – Steel Manual Table 14-3
- Perimeter cable holes
- Shop assemblies



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Steel Fabrication: Erection DWG's

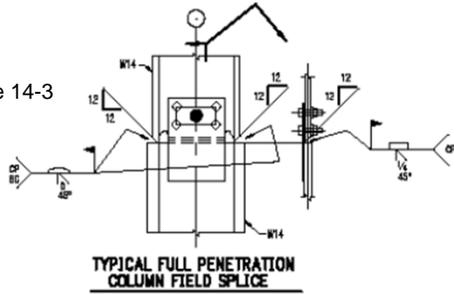


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Steel Fabrication: Column Splice Detail

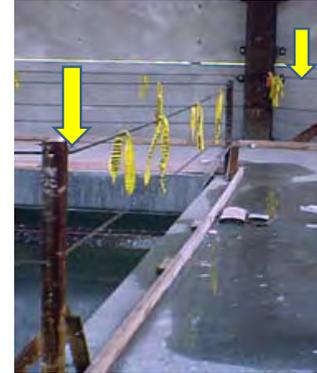
Steel Manual Table 14-3



33

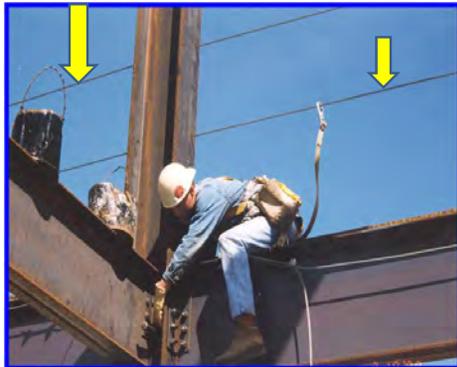
Steel Fabrication: Perimeter Cable Holes

Perimeter railing
attached to
structural steel



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Steel Fabrication: Perimeter Cable Holes



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Steel Fabrication: Shop Assemblies



Steel Fabrication: Detailing – Submittals

- COSP Section 4: Approval Documents
 - 4.1 Owner Responsibility: Released for Construction Design Documents
 - 4.2 Fabricator Responsibility: Approval Documents – The structural steel shop drawings, erection drawings, and embedment drawings or where the parties have agreed in the contract documents to provide digital model(s), the fabrication and erection models.



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Steel Fabrication: Detailing – Submittals

- COSP Section 4: Approval Documents
 - 4.3 Use of Digital Files or Copies of the Design Documents.
 - 4.4 Approval: a. correctly interpreted the contract documents. b. reviewed and approved connection details. c. Released to begin fabrication.
 - 4.5 Fab and Erection Docs not Furnished by Fabricator.



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Steel Fabrication: Detailing – Submittals

- COSP Section 4: Approval Documents
 - 4.6 The RFI Process. Interpretation and implementation of the contract documents, including clarifications and or revisions to the contract documents.
 - 4.7 Erection Documents



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Steel Fabrication: Detailing – Submittals

Connection Design:

- First Class did cover in detail
- Next week's class: 18.4 Connection Design as the Fabricator's Representative
- COSP section 3.1.1 gives the Owner's Designated Representative for Design (ODRD) 3 options for Connection Design



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Steel Fabrication: Detailing – Submittals

Connection Design Options COSP 3.1.1:

Option 1: the complete *connection* design shall be shown in the structural *design documents*.



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Steel Fabrication: Detailing – Submittals

Connection Design Options COSP 3.1.1:

Option 2: in the structural *design documents* or *specifications*, the *connection* shall be designated to be selected or completed by an experienced *steel detailer*.



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Steel Fabrication: Detailing – Submittals

Connection Design Options COSP 3.1.1:

Option 3: in the structural *design documents* or *specifications*, the *connection* shall be designated to be designed by a licensed engineer working for the *fabricator*.



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Steel Fabrication: Detailing – Submittals

Connection Design Options COSP 3.1.1:

There is more to each of these options but I wanted to provide a brief outline for them.

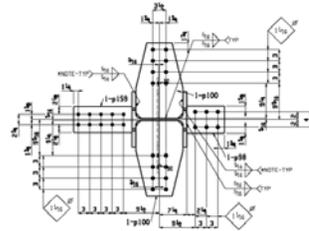


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Steel Fabrication: Detailing - Summary

- Project Kick-Off
- ABM's
- Detailing Standards
- Erection Aids
- Submittals



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Steel Fabrication: Project Management



- Project kick off
- Scope of Supply
- Ordering Mat'l
- Managing submittals
- Budgeting
- Schedules



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Steel Fabrication: Project Management

- **Project kick off**
- Scope of Supply
- Ordering Mat'l
- Managing submittals
- Budgeting
- Schedules
- This usually occurs at the same time as setting up the detailer.
- On bigger jobs, this will involve CM, GC, erector, other subs, etc.



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Steel Fabrication: Project Management

- Project kick off
- **Scope of Supply**
- Ordering Mat'l
- Managing submittals
- Budgeting
- Schedules
- Again, similar to the kick off meeting with detailer.
- Ensure that no items are missed...



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Steel Fabrication: Project Management

Ordering Mat'l

- Receive Detailer ABM
 - Nesting Mat'l
 - Linear Mat'l
 - PL Mat'l
 - Additional Testing
 - CVN's, Others
- Mill Orders Main Mat'l:
 - Bundle quantities
 - Check mill rolling
 - Min truck load orders
 - 42K-48K lbs
 - Mills have the info online.



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Steel Fabrication: Project Management - Ordering

Detail Mat'l

- Plate
 - PL 96 x 240. Special sizes are available
 - Talk to each mill on min orders
- Flat Bar
 - Standard lengths 20'-0
- Angle
 - Standard lengths 40'-0
 - 10K lbs
- Rolling schedules
- Back to connection standards.



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Steel Fabrication: PM – Ordering Mat'l, Bundle Qty

Nucor-Yamato Steel

Hytheville, Arkansas
 YYS

Area: Plant
 Title: Bundling Practices
 No: NYS-D-001

Section	3E	3E	4E	4E	5E	5E	6E	6E
AT8 Wall Tie	5	5	5	5	5	5	5	5
W30X116-391 & W33 thru W44	1	1	1	1	1	1	1	1
30X99-108	3	3	3	3	3	3	3	3
30X90	3	3	3	3	3	3	3	3
W27X114-368	1	1	1	1	1	1	1	1
27X102	3	3	3	3	3	3	3	3
27X94	3	3	3	3	3	3	3	3
27X84	3	3	3	3	3	3	3	3
W24X117-370	1	1	1	1	1	1	1	1
24X104	3	3	3	3	3	3	3	3
24x55-103	3	3	3	3	3	3	3	3
W21X101-273	1	1	1	1	1	1	1	1
44-99	3	3	3	3	3	3	3	3
W18X143-311	1	1	1	1	1	1	1	1



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Steel Fabrication: PM – Ordering Mat'l, Rolling

Nucor-Yamato Proposed Roll/Close Schedule * ISO 9001:2015 Registered * October 2
 Inquire items are followed immediately by the last order date of the book week if available — Highlighted Item

Week Beginning		28-Oct	4-Nov	11-Nov	18-Nov	25-Nov	2-Dec
NYS Fiscal Week		44	45	46	47	48	49
Wide Flange Sections	MM #						
W44x16x230-335	2				47 10/30		
W40x16x199-593	2				47 10/30		
W40x12x149-392	2				47 10/30		
W36x17x487-552	2				48 11/1		
W36x16.5x231-441	2				48 11/1	48 11/1	
W36x12x135-256	2					48 11/1	
W33x15.75x201-387	2					48 11/1	
W33x11.5x118-169	2					48 11/1	
W30x15x173-433	2					48 11/1	
W30x10.5x90-148	2					48	



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Steel Fabrication: Project Management

- Project kick off
- Scope of Supply
- Ordering Mat'l
- **Managing submittals**
- Budgeting
- Schedules
- Working with Detailer and CM, GC, customer
- RFI's and Logs
- Revised contract doc's
- DWG submittals and Logs
- Buy out's



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Steel Fabrication: Project Management

- Project kick off
- Scope of Supply
- Ordering Mat'l
- Managing submittals
- **Budgeting**
- Schedules
- Mat'l
- Labor
- Subs
- Other items
 - Bolts
 - Joist and Deck
 - Bearings



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Steel Fabrication: Project Management

- Project kick off
- Scope of Supply
- Ordering Mat'l
- Managing submittals
- Budgeting
- **Schedules**
- Coordination:
 - Site
 - Erector
 - Customer
- Software:
 - MS Project
 - Primavera
 - Excel



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Steel Fabrication: Project Management



- Project kick off
- Scope of Supply
- Ordering Mat'l
- Managing submittals
- Budgeting
- Schedules



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Steel Fabrication: Production

- Receiving Mat'l
- Cutting
- Hole Making
- Parts
- Layout
- Fit
- Welding
- Bolting
- Cambering
- Assembling
- Cleaning
- Coating
- Shipping



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Steel Fabrication: Production – Receiving Mat'l

- Receiving Mat'l
 - Trucking
 - Rail
- Traceability



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Steel Fabrication: Production – Traceability

- AISC 360, Spec. for Structural Steel Buildings (steel spec), Sect. N2.1, Mat'l ID. Takes us to COSP section 6.1
- COSP Section 6.1 “...demonstrate...a method of mat'l ID, visible up to the point of assembling members...”



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Steel Fabrication: Production – Traceability

- So how do shops do this?
 - Visual inspection of mat'l to A6.
 - Mark the material as they off load deliveries with heat #, PO, job #, size, etc.
 - Place in a specific yard location.
 - Update their material inventory system with received mat'l.
 - Issue a pull ticket to bring material into plant.
 - Use a nested cut list to process mat'l at which point the mat'l receives a piece mark or ship mark.



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Steel Fabrication: Production – Traceability



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Steel Fabrication: Production – Traceability



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Steel Fabrication: Production – Traceability



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Steel Fabrication: Production – Traceability



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Optimiser Pull List				NO PREBLAST RELEASED FOR FABRICATION 04/10	
Job # 7170186 Restani - HH-88B Shoring Towers - Needle Beams		Property of Cianbro Fabrication & Coating Corp		Approved for cutting on 04/10/18 April 11, 2018	
Nesting #19 7170186 - WP #34 - GFab		Cut from reserved stock only.		NO PREBLAST RELEASED FOR FABRICATION	
Files: Prodpack: 34		CIANBRO FABRICATION & COATING NO OUTSIDE INSPECTOR			
Description and Grade	Quan	Length	Source Heat Cert	Area Country	Unit Weight PO Number
L 3-1/2x3x3/8 A36	92	40' 0"	Stock# 58245.0000 1028919	G-12C US	316.00# PO02959-04349
W 12x72 A992	5	50' 0"	Stock# 72774.0000 60121942	G-Q US	3,600.00# PO06381-06171
	8	50' 0"	Stock# 72776.0000 60121942	G-17 US	3,600.00# PO06381-06171

Optimiser Expanded Cut List									
Job # 7170186 Restani - HH-88B Shoring Towers - Needle Beams		Page # 28		Property of Cianbro Fabrication & Coating Corp 04/10/18 16:30:16					
Nesting #19 7170186 - WP #34 - GFab		Approved for cutting on 04/10/18		NO PREBLAST RELEASED FOR FABRICATION					
Cut from reserved stock only.				Summary of Bars Required		NO PREBLAST RELEASED FOR FABRICATION			
W 12x72 A992		5 Pos @ 50' 0"		Stock# 72774.0000		Apr 11, 2018			
		8 Pos @ 50' 0"		Stock# 72776.0000		CIANBRO FABRICATION & COATING NO OUTSIDE INSPECTOR			
Summary of Parts to be Cut									
Item	Mark	Qty	Lot	Pos @	Length	Weight	Notes/Call outs	Load#	
	1001B	51	17-20	16 Pos @	0' 9"				
	1001BL2	51	17-20	8 Pos @	0' 6"				
	1001MTT	51	17-20	26 Pos @	9' 9"				
	2								
	1001M2T	51	17-20	6 Pos @	4' 9"				
	2								
	1001M3T	51	17-20	4 Pos @	2' 3"				
	m1004	51	17-20	26 Pos @	9' 9"				
	m1005	51	17-20	6 Pos @	4' 9"				
	m1006	51	17-20	4 Pos @	2' 3"				
W 12x72 A992 Bar No. 3 1 @ 50' 0" Stock# 72774.0000									
Material Expedient: P.O.# P006381-06171 Used Heat Cert #									
Heat Cert # 60121942 Country: US									
Item	Mark	Qty	Lot	Pos @	Length	Weight	Notes/Call outs	Load#	
#2	1001B	51	17-20	4 Pos @	0' 9"	54,00#	BASE	Load#	
#3	1001BL2	51	17-20	7 Pos @	0' 6"	36,00#	BOLSTER	Load#	
#5	1001MTT	51	17-20	3 Pos @	9' 9"	702,00#	FRAMES	Load#	
	2								
#8	1001M2T	51	17-20	7 Pos @	4' 9"	347,00#	FRAMES	Load#	

Steel Fabrication: Production – Traceability

- Traceability
 - Typical ship marking system for fabricators

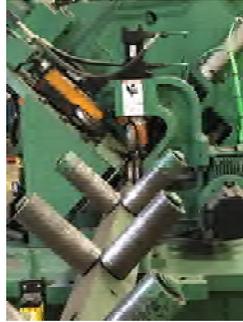


Steel Fabrication: Production – Cutting

- Cutting
 - For WF, C, large L; etc. most shops use a band saw.
 - PL: burn tables and shear. Plasma and oxy fuel.
 - Small L: shear or saw.
- Steel spec, Sect. M2, item 2 address thermal cutting.
- COSP section 6.2 address thermal cutting.



Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Cutting



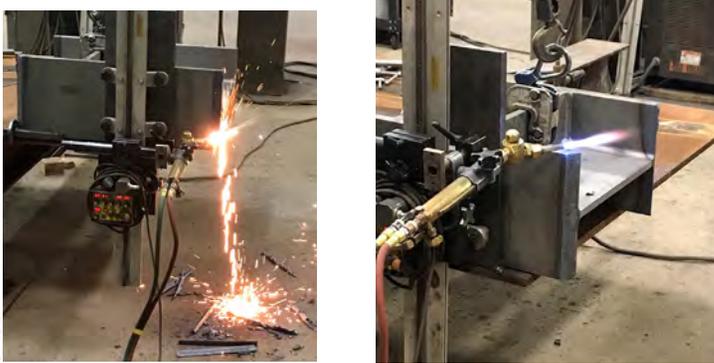
Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Cutting



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Steel Fabrication: Production – Hole Making

- Hole Making
 - Steel spec, section M2.5 addresses bolted construction...
 - RCSC section 3.3, bolt holes. Sizes: standard, oversized, short slot and long slot. Table 3.1. Also, thermal cut and burrs are address.
 - Drilling and punching are the main processes for hole making.



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Steel Fabrication: Production – Hole Making



Drill Line



Punch Line

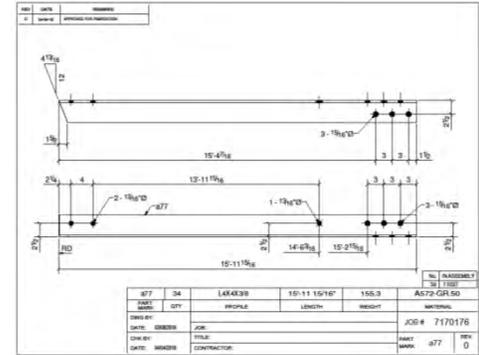


Mag Drilling

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Steel Fabrication: Production – Parts

- Parts
 - Recap
 - Received mat'l
 - Cut main sticks
 - Cut detail



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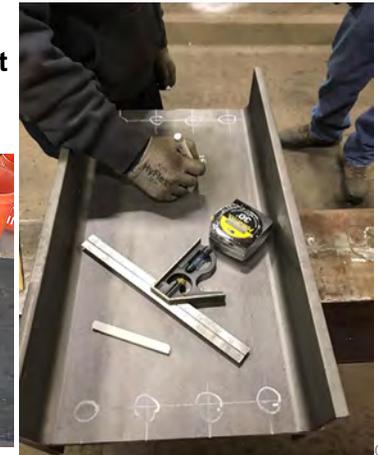
Steel Fabrication: Production – Parts



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Steel Fabrication: Layout

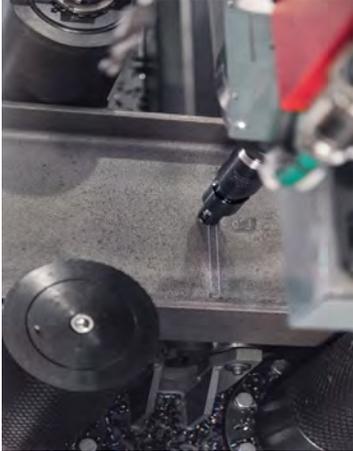
- Layout by hand



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Steel Fabrication: Production – Layout

Layout automated



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The image shows a close-up of an automated layout machine. A cutting tool is positioned to cut a steel beam, with a circular cutting wheel visible in the foreground. The machine is in a dark industrial setting.

Steel Fabrication: Production – Fitting



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The image consists of two photographs. The left photo shows a worker in a white hard hat and dark clothing fitting a long steel beam into a structure. The right photo shows a worker in an orange shirt and white hard hat working on a large steel beam in a factory setting.

Steel Fabrication: Production – Fitting



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The image shows an automated fitting machine in a large industrial facility. The machine is orange and black, with a robotic arm positioned over a long steel beam. The background is a bright, open industrial space.

Steel Fabrication: Production – Welding AWS D1.1

- Gen Requirements
- Design
- Prequal & Qualifications
- Fabrication
- Inspection



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The image shows the cover of the AWS D1.1 Structural Welding Code – Steel book. The cover is red and white, with the AWS logo and the text 'American Welding Society' and 'ANSI' visible.

Steel Fabrication: Production – Welding AWS D1.1



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Steel Fabrication: Production – Welding AWS D1.1



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Steel Fabrication: Production – Bolting

- RCSC

- Sect 1: Gen Require
- Sect 2: Components
- Sect 3: Bolted Parts
- Sect 4: Joint Types
 - Snug tight
 - Pretensioned
 - Slip critical
- Sect 5: Limit States

- Sect 6: Washers
- Sect 7: Preinstallation Verification Testing
- Sect 8: Installation
- Sect 9: Inspection
- Sect 10: Arbitration



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Steel Fabrication: Production – Bolting



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Steel Fabrication: Production – Bolting



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Steel Fabrication: Production – Cambering

- Cambering
 - Mechanical
 - Heat (Steel Spec, M2.1)
 - Tolerances COSP 6.4.4



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Steel Fabrication: Production – Cambering



Mechanical

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Steel Fabrication: Production – Cambering



92



Steel Fabrication: Production – Cambering



Heat



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Steel Fabrication: Production – Assembling



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Steel Fabrication: Production – Cleaning



- Cleaning per SSPC
 - SP1: Solvent
 - SP2: Hand tool
 - SP3: Power tool
 - SP5: White metal blast
 - SP6: Commercial blast
 - SP7: Brush blast
 - SP10: Near white blast



95

Steel Fabrication: Production – Coating



- Coating
 - Primer
 - Multi coat paint
 - Hot dip galv
 - Metalizing



96

Steel Fabrication: Shipping



Legal and Permit Load Sizes Vary by State and City so the following is approximate sizes. So check with your local fab shop.



97

Steel Fabrication: Shipping

	WIDTH	HEIGHT	LENGTH
Standard Flatbed	8'-6"	5'-0"	Either 48'-0" Or 53'-0"
Legal Load	Up to 8'-9"	Up to 13'-6"	Up to 55'-0"
Permit, Signage	Less than 14'-0"	Varies by Authority	Up to 85'-0"
Special Permit, Escorts	14'-0"+	Varies by Authority	Over 85'-0"



98

Steel Fabrication: Shipping



99

Steel Fabrication: Quality Control

- | | |
|--|---|
| Quality Management System Requirements | <ul style="list-style-type: none"> • Purchasing • Mat'l ID • Fab Process Control • Inspection & Testing • Calibration of Inspection, Measuring, Test Equipment |
| <ul style="list-style-type: none"> • Management • Contract & Spec Review • Detailing • Doc & Data Control • Control of QC Records | |



100



Steel Fabrication: Quality Control

- Control of Nonconformances
- Corrective Action
- Handling, Storage, Delivery of Product & Mat'l
- Training
- Internal Audit



101

Steel Fabrication: Quality Control

Fab Tolerances

- COSP Section 6.4
- AWS D1.1
 - 5.21 Tolerances of joint dimensions
 - 5.22 Dimensional tolerance of welded structural members
 - 5.23 Weld profiles



102

Steel Fabrication: Quality Control

- **18.1 Introduction to the Steel Construction Process**
 - Reviewed in detail Steel Spec Chapter N



103

Steel Fabrication: Summary

- Detailing
- Project Management
- Production
- Shipping
- Quality Control



104

AISC | Questions?



**Smarter.
Stronger.
Steel.**

Individual Webinar Registrants

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Within 2 business days...

- You will receive an email on how to report attendance from: registration@aisc.org.
- Be on the lookout: Check your spam filter! Check your junk folder!
- Completely fill out online form. Don't forget to check the boxes next to each attendee's name!



Individual Webinar Registrants

CEU/PDH Certificates

Within 2 business days...

- New reporting site (URL will be provided in the forthcoming email).
- Username: Same as AISC website username.
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8-Session Registrants

CEU/PDH Certificates

One certificate will be issued at the conclusion of all 8 sessions.



8-Session Registrants

Access to the quiz: Information for accessing the quiz will be emailed to you by Wednesday. It will contain a link to access the quiz. EMAIL COMES FROM NIGHTSCHOOL@AISC.ORG

Quiz and Attendance records: Posted Tuesday mornings.
www.aisc.org/nightschool - click on Current Course Details.

Reasons for quiz:

- EEU – must take all quizzes and final to receive EEU
- CEUs/PDHS – If you watch a recorded session you must take quiz for CEUs/PDHS.
- REINFORCEMENT – Reinforce what you learned tonight. Get more out of the course.

NOTE: If you attend the live presentation, you do not have to take the quizzes to receive CEUs/PDHS.



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Access to the recording: Information for accessing the recording will be emailed to you by this Wednesday. The recording will be available for three weeks. For 8-session registrants only. EMAIL COMES FROM NIGHTSCHOOL@AISC.ORG.

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Night School 13: Design of Industrial Buildings

8-SESSION PACKAGE RESOURCES

Event	Date	Handouts	Videos	Quiz	Attendance
N513 - Design Criteria	1/30/2017 7:00:00 PM	Handouts	Videos	Pass Score: 80	Pending
N513 - Economic Considerations	2/6/2017 7:00:00 PM	Handouts	Available 02/06/2017 5pm EST	Available 02/08/2017 5pm EST	Pending
N513 - Lateral Load Systems and Details	2/13/2017 7:00:00 PM	Handouts	Available 02/13/2017 5pm EST	Available 02/15/2017 5pm EST	Pending
N513 - Preliminary Design Procedures	2/27/2017 7:00:00 PM	Handouts	Available 03/01/2017 5pm EST	Available 03/01/2017 5pm EST	Pending
N513 - Crane Girder Design and Frame Analysis	3/6/2017 7:00:00 PM	Handouts	Available 03/06/2017 5pm EST	Available 03/08/2017 5pm EST	Pending
N513 - Frame Member and Connection Design	3/13/2017 7:00:00 PM	Handouts	Available 03/13/2017 5pm EST	Available 03/15/2017 5pm EST	Pending
N513 - Transfer Crane Girder & Longitudinal Brag Bracing Dm	3/27/2017 7:00:00 PM	Handouts	Available 03/29/2017 5pm EST	Available 03/29/2017 5pm EST	Pending
N513 - Building Envelope and Bracing Design	4/3/2017 7:00:00 PM	Handouts	Available 04/03/2017 5pm EST	Available 04/03/2017 5pm EST	Pending
N513 - Final Exam	4/10/2017 7:00:00 PM			Available 04/10/2017 5pm EST	

Night School Resources for 8-session package Registrants

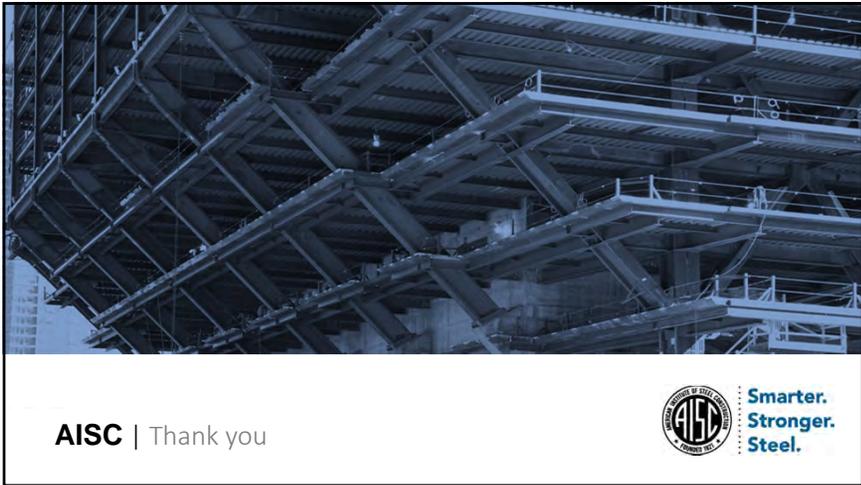
- Weekly “quiz and recording” email.
- Weekly updates of the master Quiz and Attendance record found at www.aisc.org/nightschool. Scroll down to Quiz and Attendance records.
 - Updated on Tuesday mornings.



Night School Resources for 8-session package Registrants

- Webinar connection information:
 - Found in your registration confirmation/receipt.
 - Reminder email sent out Monday mornings.
- Link to handouts also found here.



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