Specifying Architecturally Exposed Structural Steel

The Next Generation For Success

Course Number EX302

Thursday, June 21, 2018

12:30 – 1:30 p.m.

Learning Units 1 LU/HSW

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to constitute approval, sponsorship or endorsement by AIA of any method, product, service, enterprise or organization.

The statements expressed by speakers, panelists, and other participants reflect their own views and do not necessarily reflect the views or positions of The American Institute of Architects, or of AIA components, or those of their respective officers, directors, members, employees, or other organizations, groups or individuals associated with them.

Questions related to specific products and services may be addressed at the conclusion of this presentation.

Speakers

American Institute of Steel Construction (AISC)

Tabitha Stine
AISC Vice President of Market Development

Jacinda Collins
AISC Structural Steel Specialist – New York City

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Course / Learning Objectives

- Discover the factors that impact the implementation of AESS.
- Practice identifying and specifying AESS in the contract documents using the category approach.
- Discuss the expectations of fabrication and erection of AESS under the 2016 AISC Code of Standard Practice.
- Learn how to identify available resources for additional information when applying AESS on upcoming projects.

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

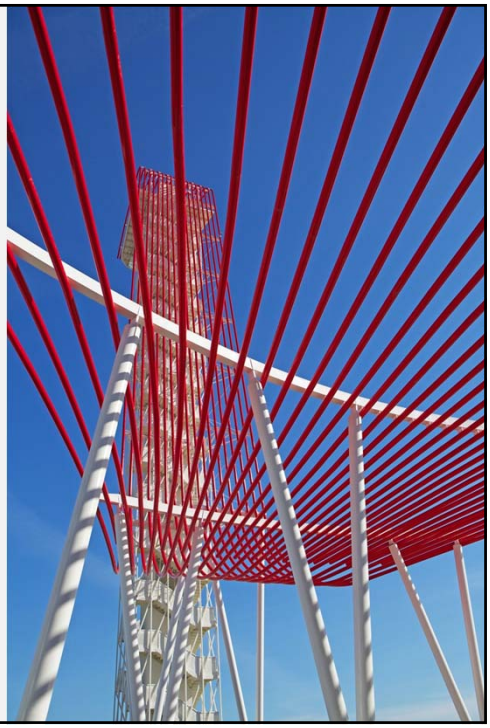
History of Exposed Steel

Buyer Be-Aware

Steps to AESS Category Selection

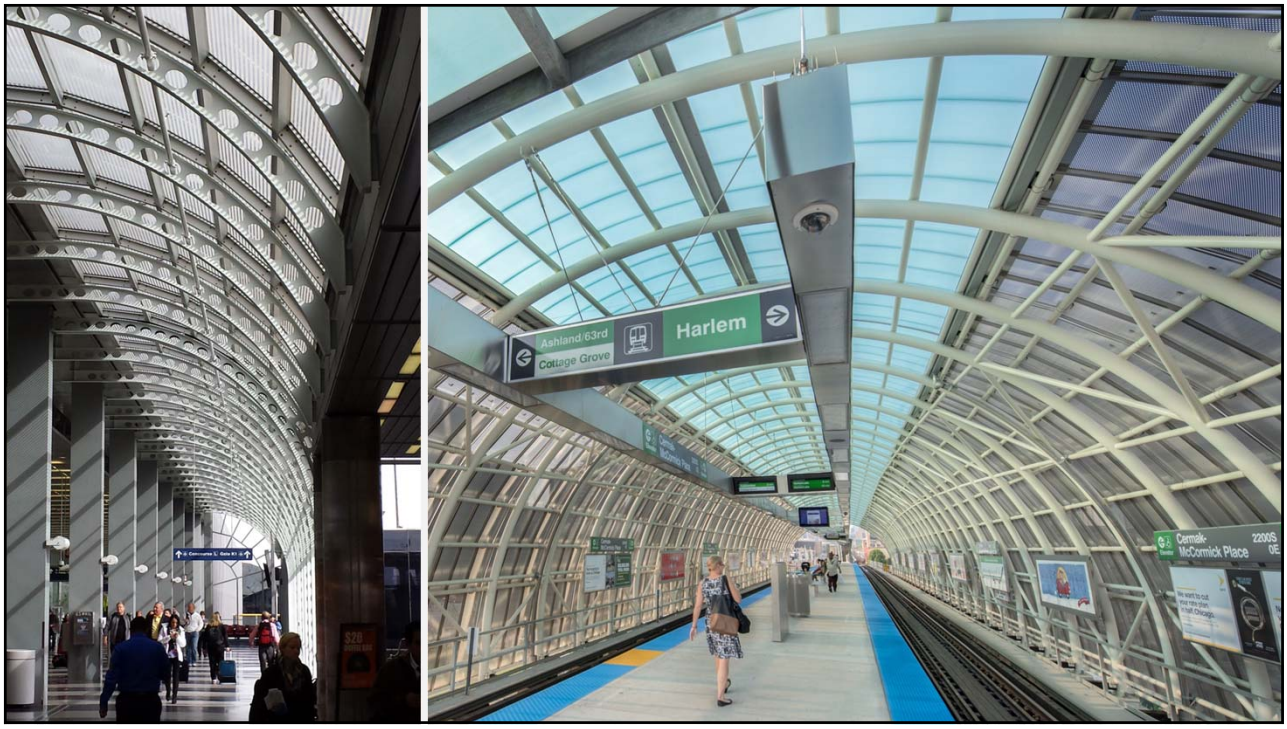
Questions

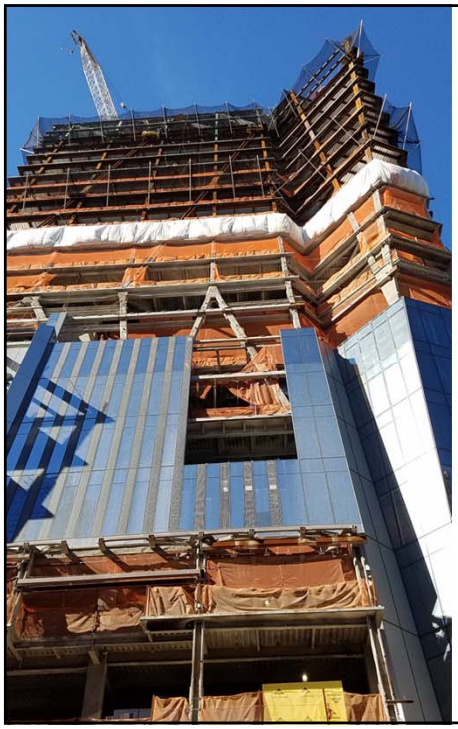
Resources



A'18 AIA Conference on Architecture 2018
June 21-23, New York City


History
A'18 AIA Conference on Architecture 2018
June 21-23, New York City


Ashland/63rd
Cottage Grove
Harlem
Cermak-
McCormick Place



AISC 303-10

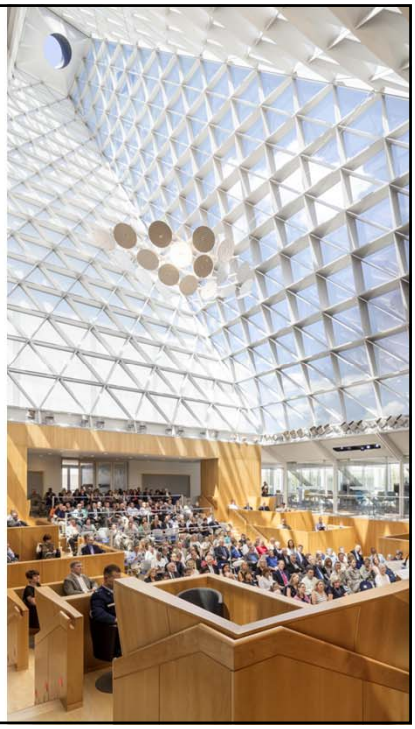
Code of Standard Practice for Steel Buildings and Bridges

April 14, 2010

Supersedes the March 18, 2005 AISC *Code of Standard Practice for Steel Buildings and Bridges* and all previous versions.

Prepared by the American Institute of Steel Construction under the direction of the AISC Committee on the Code of Standard Practice.

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
One East Wacker Drive, Suite 700, Chicago, Illinois 60601



Buyer Beware!!!!!!

Unexpected Cost

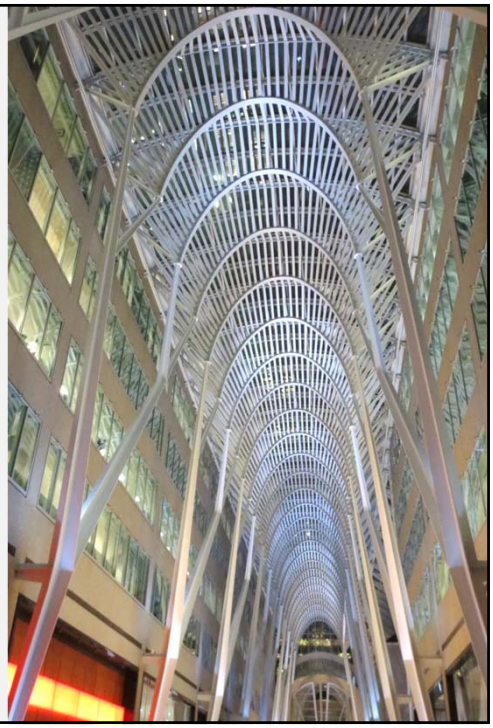
Unexpected Look

Unclear Contract Language

Confusing Expectations

Good Luck!

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



Beware → Be Aware

Code of Standard Practice Requirements

Connection Considerations

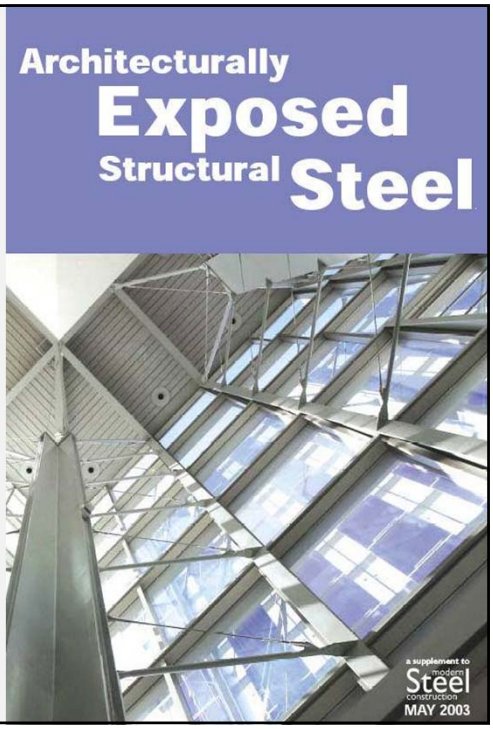
Fabrication Items

Erection Items

Communication

Cost of Craftsmanship

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



2016 AISC Code of Standard Practice

Section 10 - AESS

AESS 1

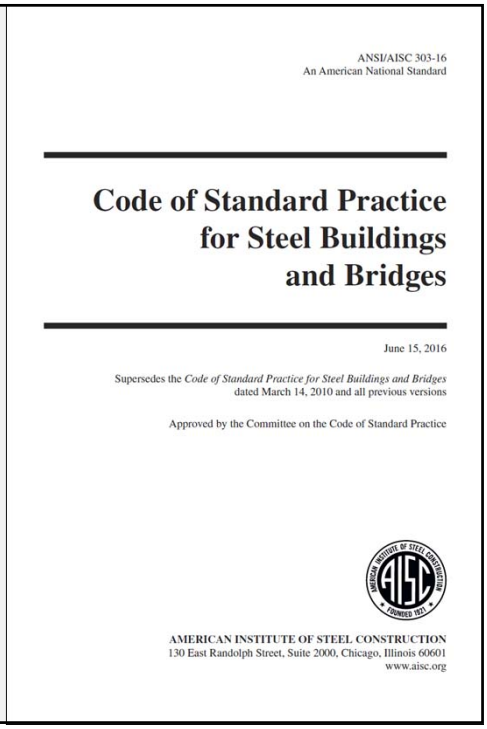
AESS 2

AESS 3

AESS 4

AESS C

A'18 AIA Conference on Architecture 2018
June 21-23, New York City


ANSI/AISC 303-16
An American National Standard

Code of Standard Practice for Steel Buildings and Bridges

June 15, 2016

Supersedes the *Code of Standard Practice for Steel Buildings and Bridges* dated March 14, 2010 and all previous versions

Approved by the Committee on the Code of Standard Practice

AMERICAN INSTITUTE OF STEEL CONSTRUCTION
130 East Randolph Street, Suite 2000, Chicago, Illinois 60601
www.aisc.org

New 2016-2018

Sample Specification

Cost Matrix

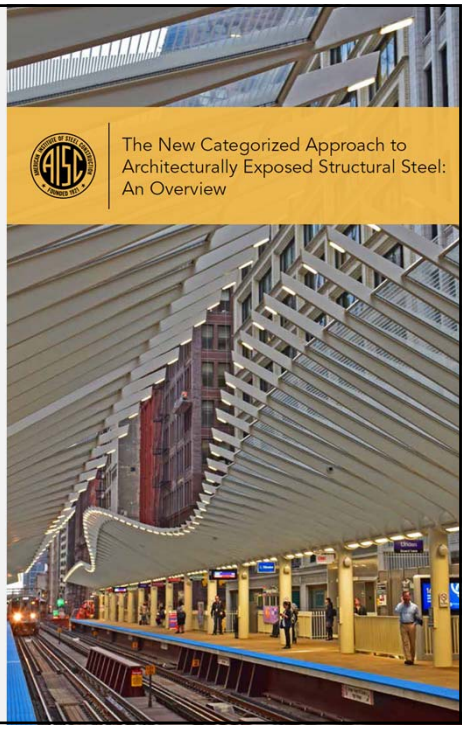
Shop Drawings

Architectural Record

- Categorized by Design

Modern Steel Construction Magazine

- Maximum Exposure
- AESS Comes of Age



A'18 AIA Conference on Architecture 2018
June 21-23, New York City

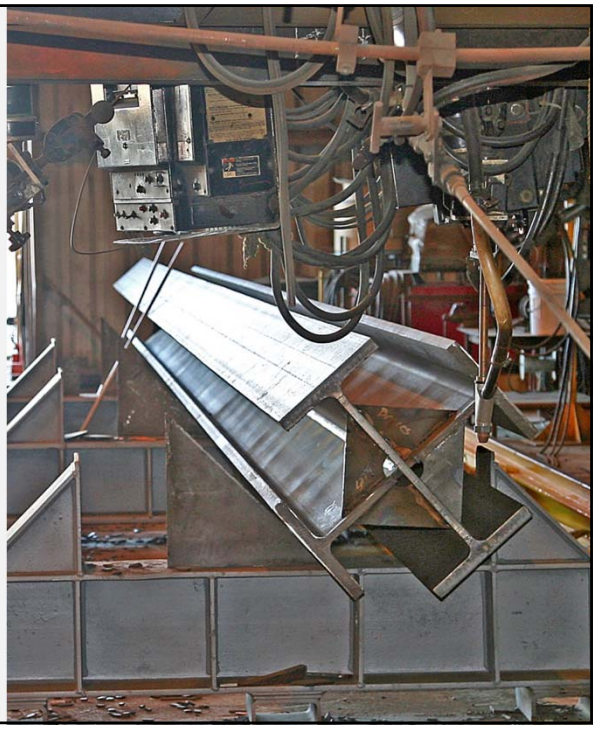
A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Steps to AESS Awareness

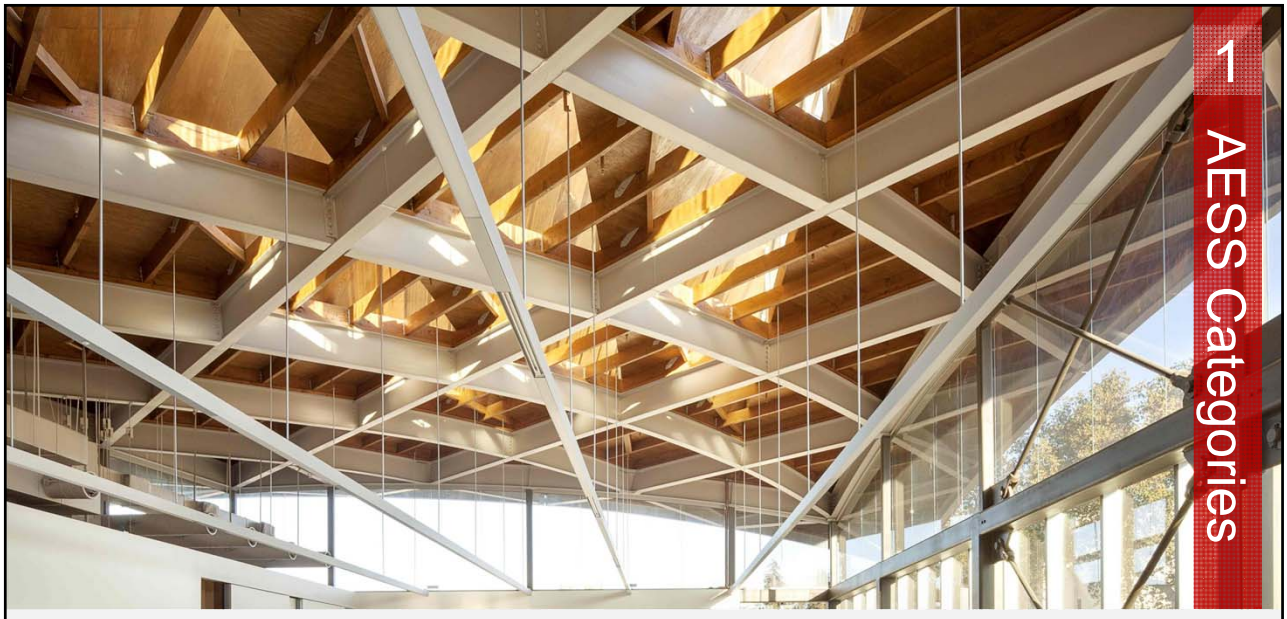
2016 AISC Code of Standard Practice

New Industry Publications

Steel Fabricator Tips



A'18 AIA Conference on Architecture 2018
June 21-23, New York City



A'18 AIA Conference on Architecture 2018
June 21-23, New York City

"Take the time to understand the different AESS levels and do not specify a higher level than necessary."

Code of Standard Practice: Section 10

AESS 1: Basic elements

AESS 2: Feature elements viewed at a distance greater than 20 feet

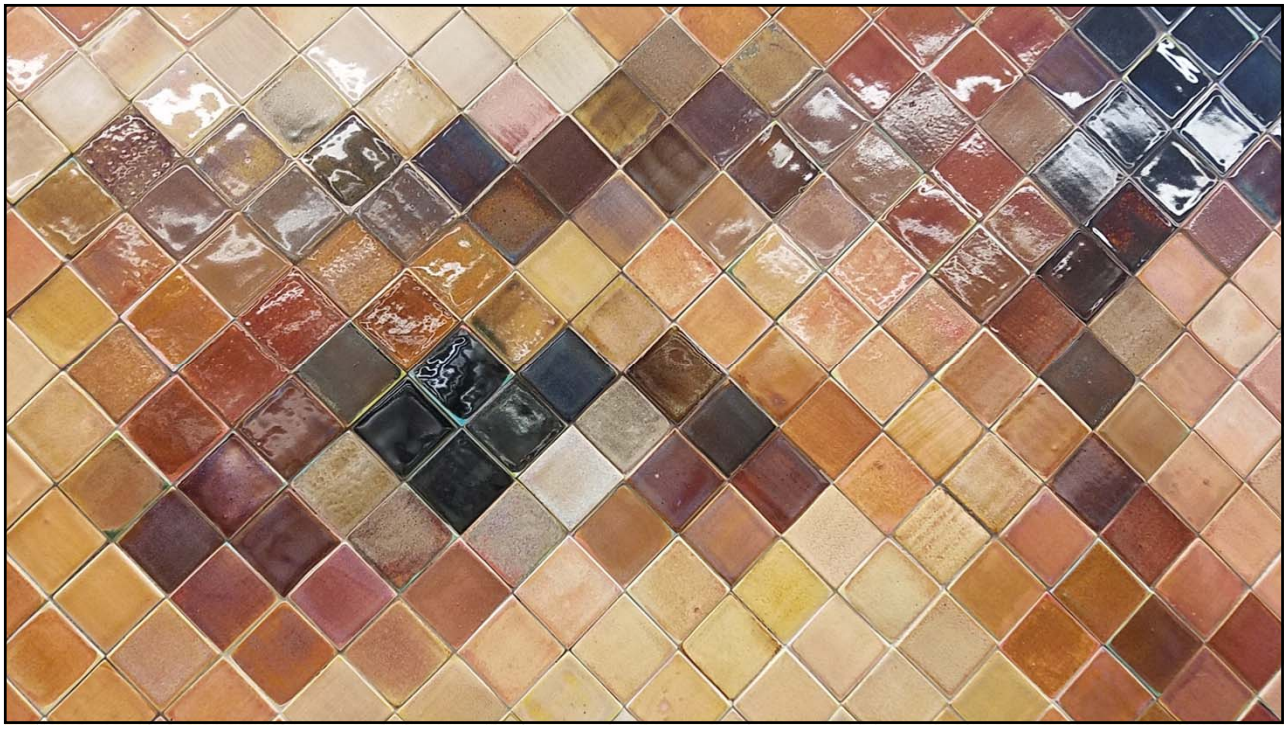
AESS 3: Feature elements viewed at a distance less than 20 feet

AESS 4: Showcase elements with special surface and edge treatment beyond fabrication

AESS C: Custom elements with characteristics described in the contract documents

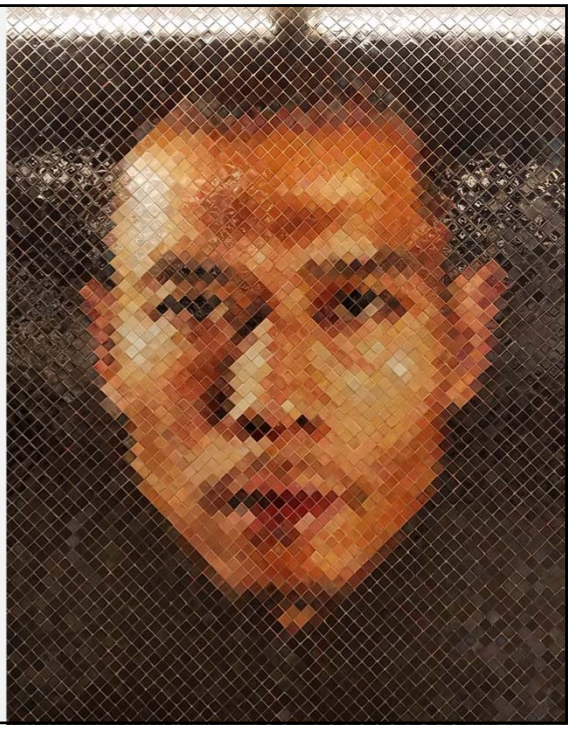
A'18 AIA Conference on Architecture 2018
June 21-23, New York City


A'18 AIA Conference on Architecture 2018
June 21-23, New York City



AESS 1

Basic elements are those that have workmanship requirements that exceed what would be done in non-AESS construction



AESS 1 – Basic Elements

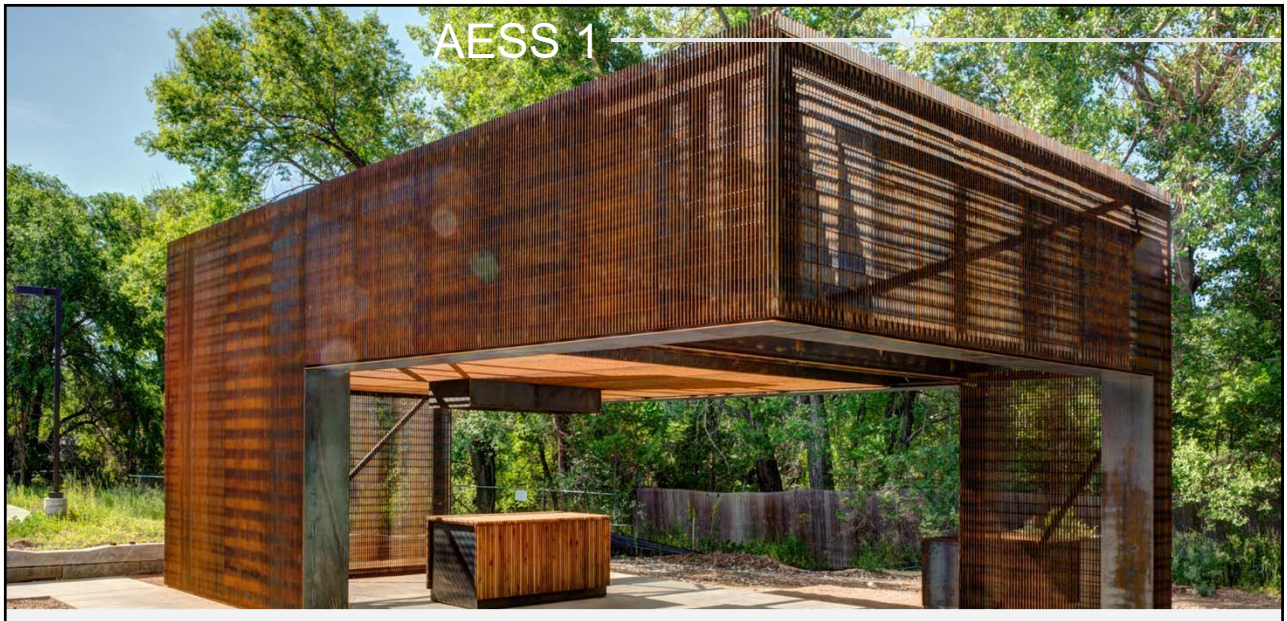
Sharp edges ground smooth

Weld splatter shall be removed

Continuous weld appearance

Commercial Blast Cleaning (SSPC SP6)

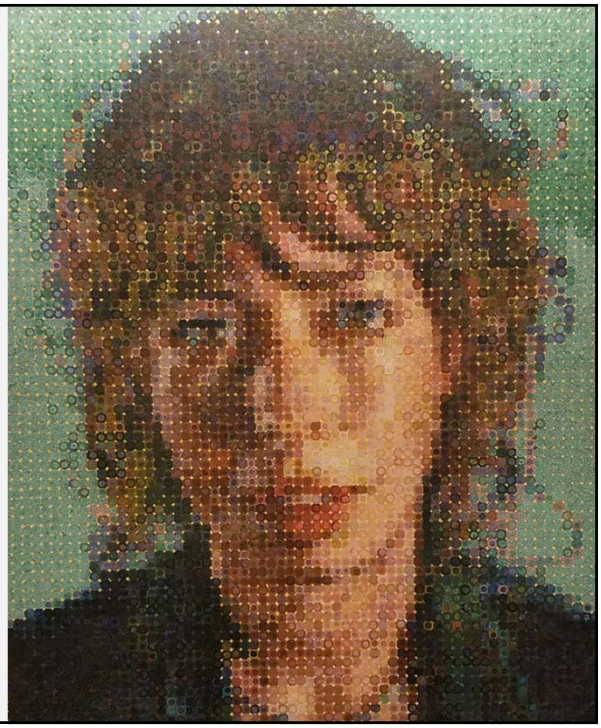
AESS 1



AESS 1

AESS 2

Achieved primarily through geometry without finish work, and treats things that can be seen at a larger viewing distance (>20 ft.)



AESS 2 – Feature Elements (> 20 feet)

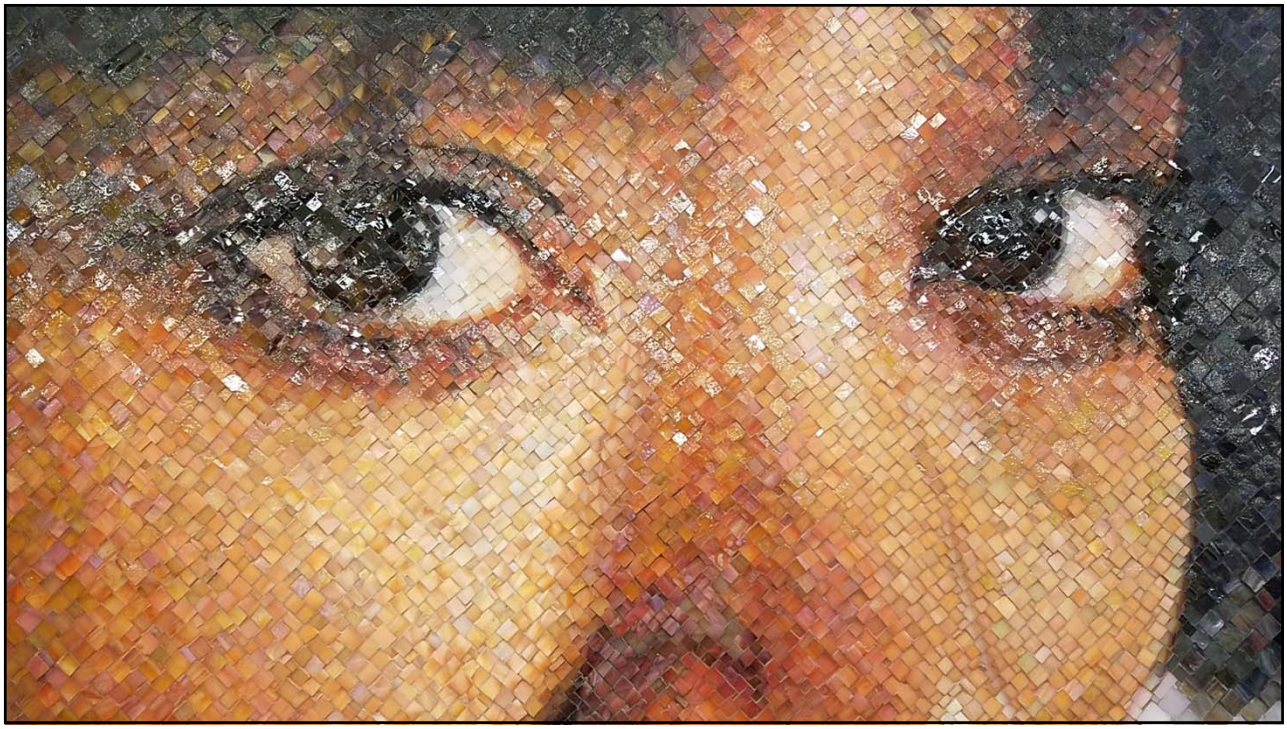
One-half the standard fabrication tolerances

Fabrication and erection marks not apparent

Welds uniform and smooth (not ground smooth or contoured)

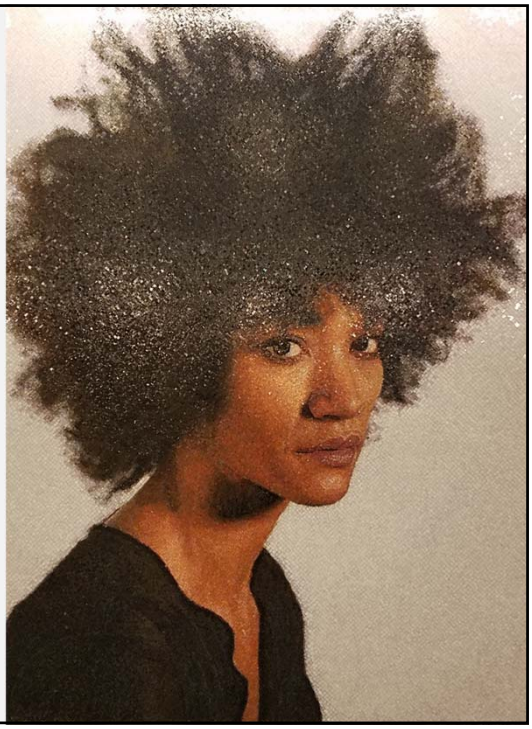
A'18 AIA Conference on Architecture 2018
June 21-23, New York City


AESS 2
A'18 AIA Conference on Architecture 2018
June 21-23, New York City



AESS 3

Achieved through geometry and basic finish work, and treats things that can be seen at a closer viewing distance or are subject to touch by the viewer (<20 ft)



AESS 3 – Feature Elements (< 20 feet)

Visual samples (mock-up) required

Mill marks removed

Butt and plug welds ground smooth and filled

HSS weld seam oriented for reduced visibility

Cross sectional abutting surface aligned

Open joint gap tolerances minimized

AESS 3

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

AESS 3

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

AESS 4

Showcase elements for which the designer intends that the form is the only feature showing in an element

AESS 4 – Showcase Elements

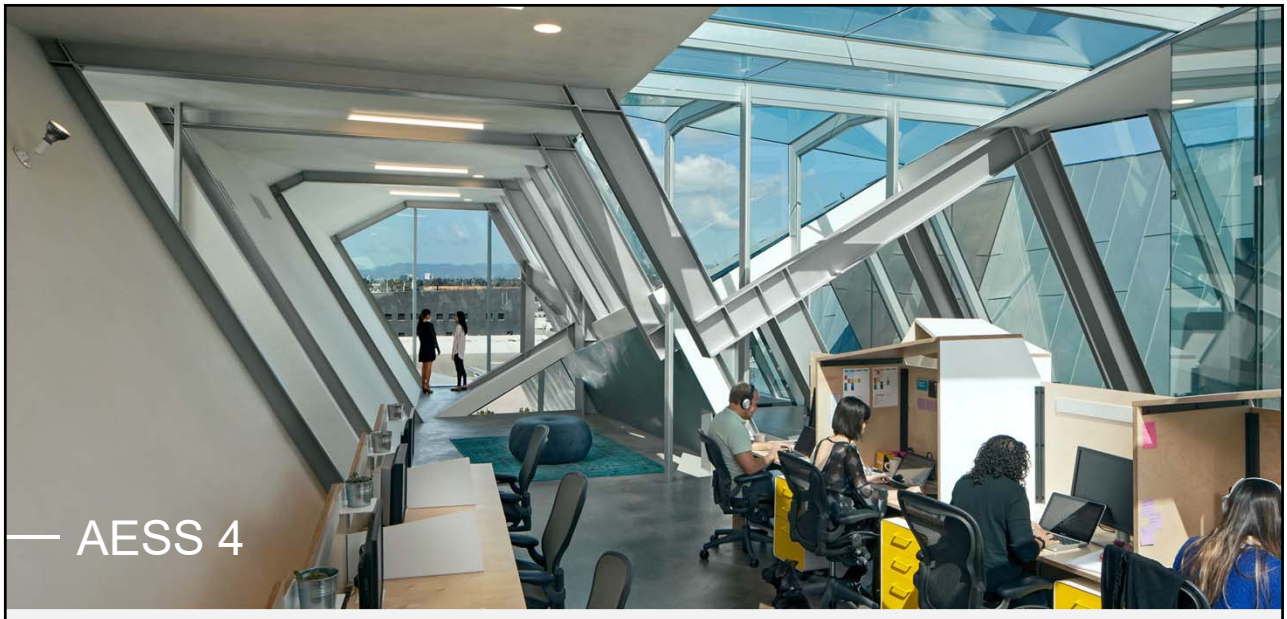
Visual samples required

Weld contoured and blended

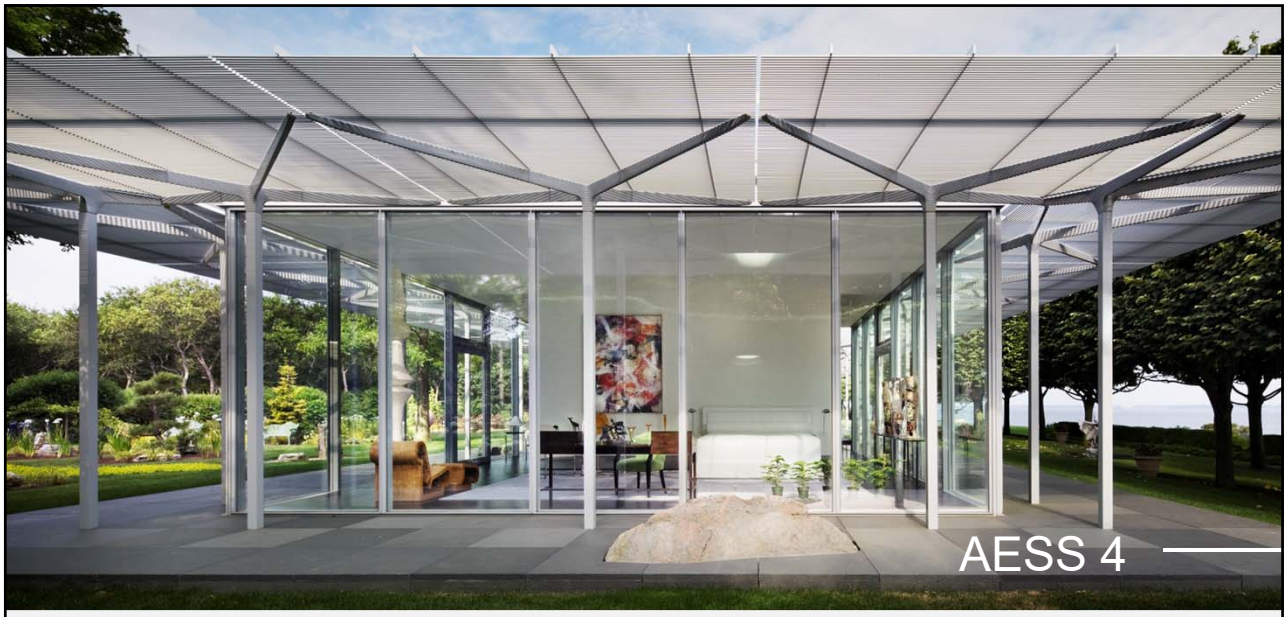
Surfaced imperfections filled and sanded to meet visual sample criteria

Weld show-through minimized

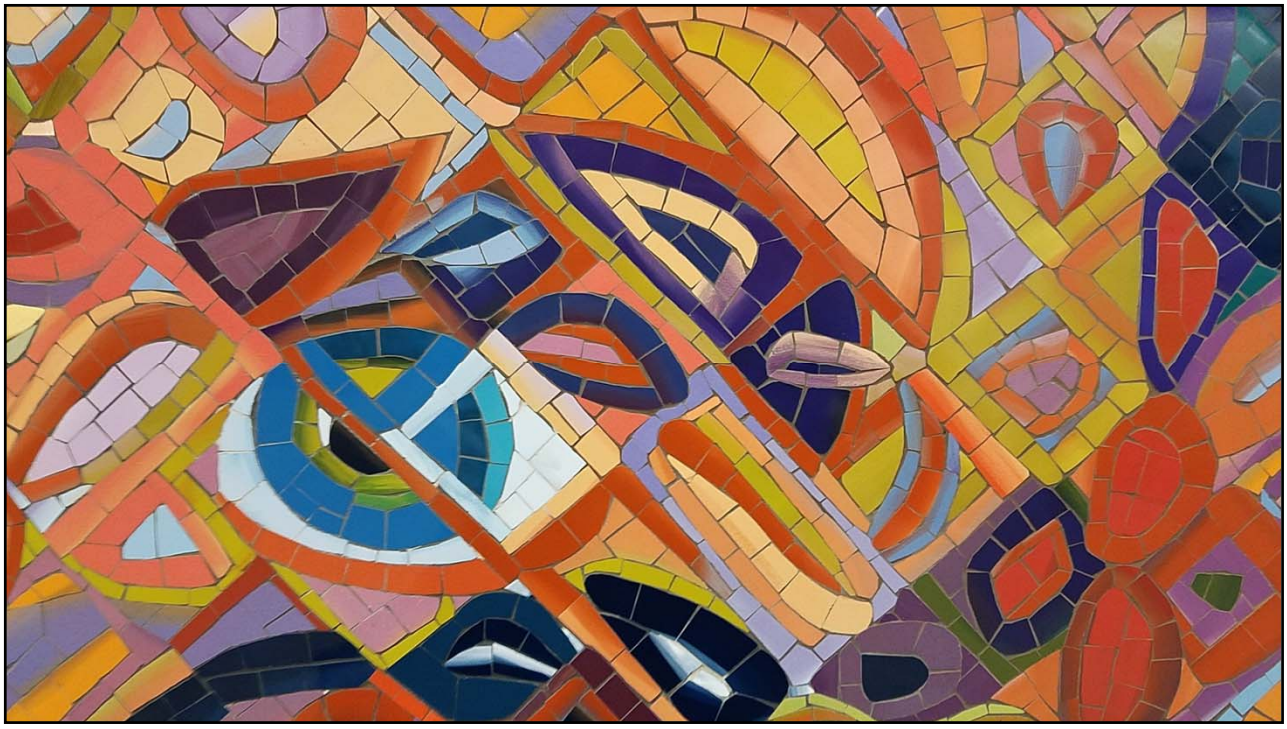
HSS seams treated



A'18 AIA Conference on Architecture 2018
June 21-23, New York City

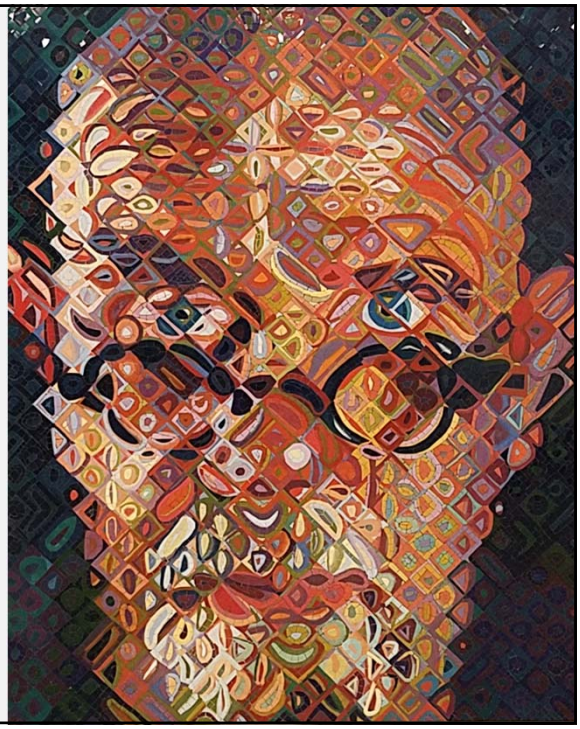


A'18 AIA Conference on Architecture 2018
June 21-23, New York City



AESS C (Custom)

Custom elements in AESS C are those with other requirements defined in the contract documents



A'18 AIA Conference on Architecture 2018
June 21-23, New York City

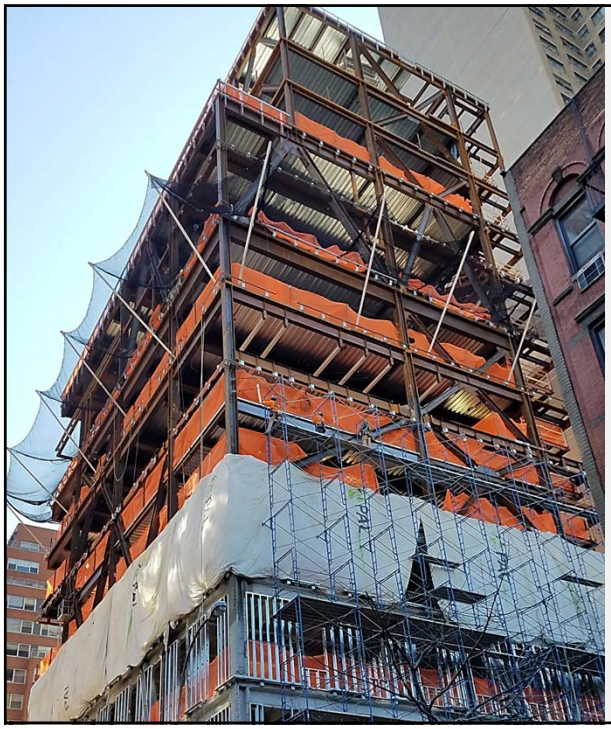
ID	Characteristics	AESS C Custom Elements	AESS 4 Showcase Elements	AESS 3 Feature Elements in close view	AESS 2 Feature Elements not in close view	AESS 1 Basic Elements	SSS Standard Structural Steel
1.1	Surface preparation to SSPC-SP 6		•	•	•	•	
1.2	Sharp edges ground smooth		•	•	•	•	
1.3	Continuous weld appearance		•	•	•	•	
1.4	Standard structural bolts		•	•	•	•	
1.5	Weld spatters removed		•	•	•	•	
2.1	Visual samples	mock-up required	mock-up required	mock-up required	optional		
2.2	One-half standard fabrication tolerances		•	•	•		
2.3	Fabrication marks not apparent		•	•	•		
2.4	Welds uniform and smooth		•	•	•		
3.1	Mill marks removed		•	•			
3.2	Butt and plug welds ground smooth and filled		•	•			
3.3	HSS weld seam oriented for reduced visibility		•	•			
3.4	Cross sectional abutting surface aligned		•	•			
3.5	Joint gap tolerances minimzed		•	•			
3.6	All welded connections		optional	optional			
4.1	HSS seam not apparent		•				
4.2	Welds contoured and blended		•				
4.3	Surfaces filled and sanded		•				
4.4	Weld show-through minimized		•				
C.1							
C.2							

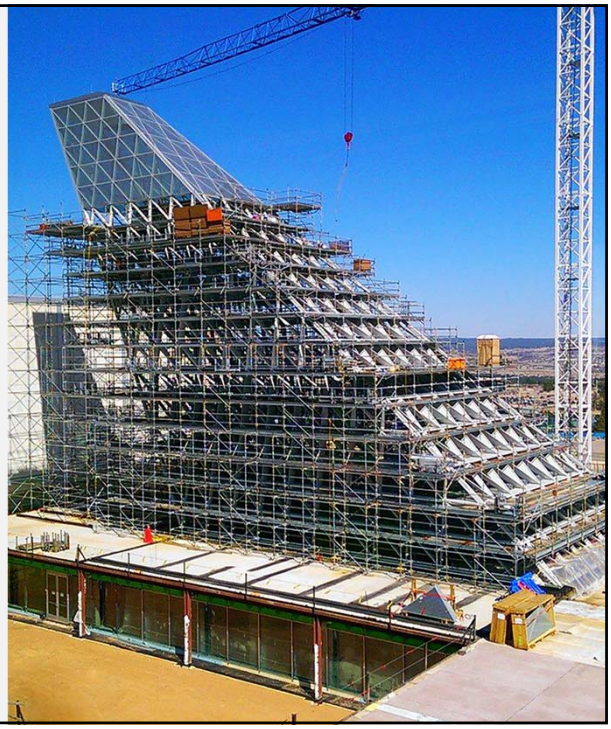
A'18 AIA Conference on Architecture 2018
June 21-23, New York City

2 Cost of Craftsmanship

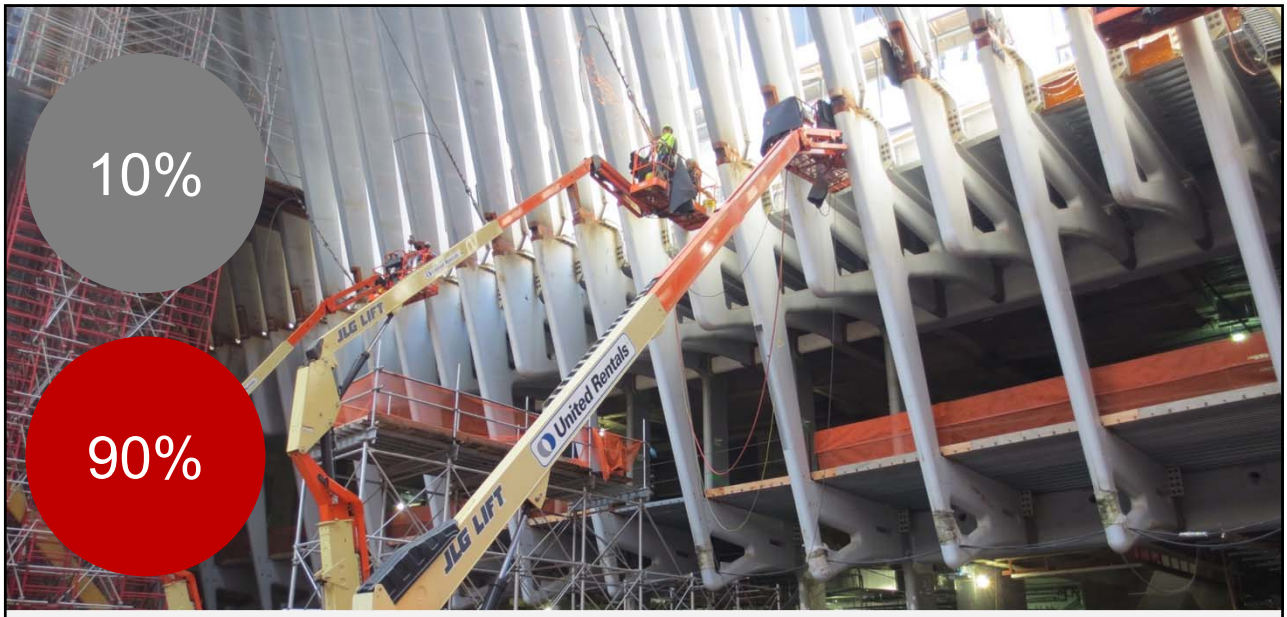
"Do not assume that an AESS project will have the same cost as a Walmart store."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



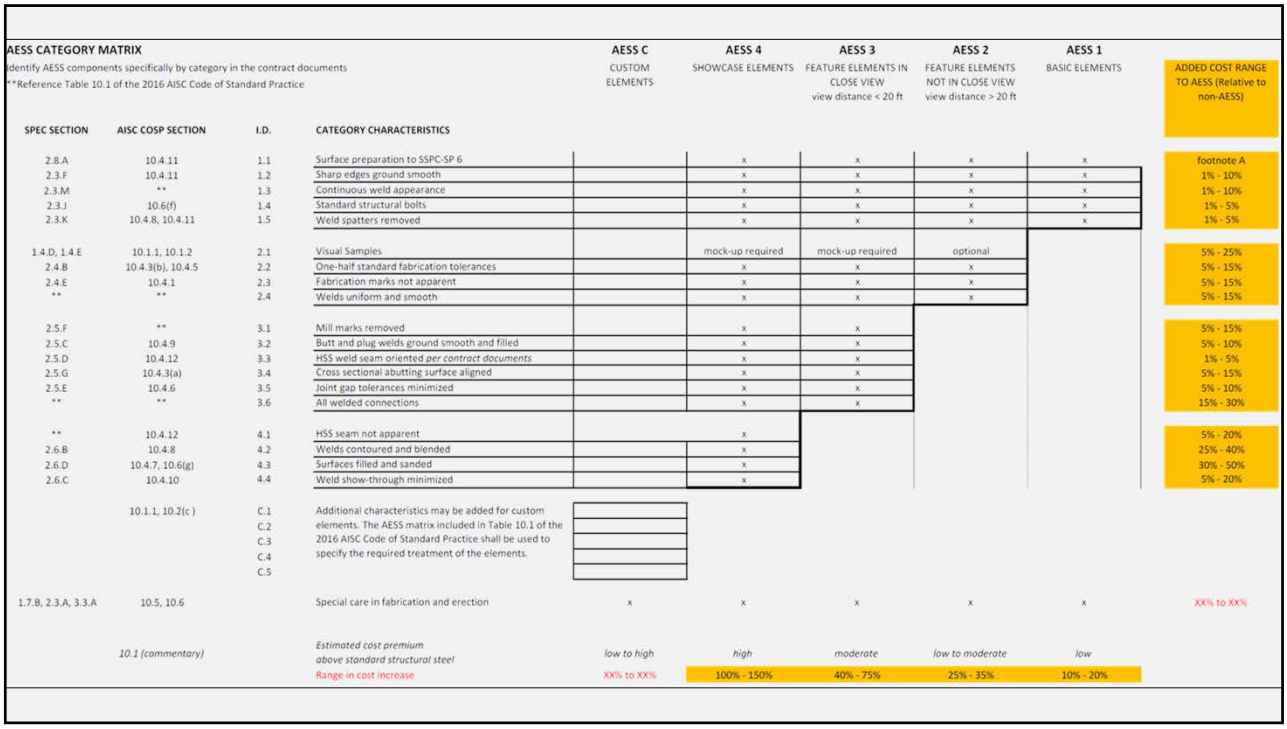


A'18 AIA Conference on Architecture 2018
June 21–23, New York City



"The design team needs to recognize that they will pay more for AESS and complex structures."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



AESS CATEGORY MATRIX

Identify AESS components specifically by category in the contract documents
**Reference Table 10.1 of the 2016 AISC Code of Standard Practice

SPEC SECTION	AISC COSP SECTION	I.D.	CATEGORY CHARACTERISTICS	AESS C CUSTOM ELEMENTS	AESS 4 SHOWCASE ELEMENTS	AESS 3 FEATURE ELEMENTS IN CLOSE VIEW view distance < 20 ft	AESS 2 FEATURE ELEMENTS NOT IN CLOSE VIEW view distance > 20 ft	AESS 1 BASIC ELEMENTS	ADDED COST RANGE TO AESS (Relative to non-AESS)
2.8.A	10.4.11	1.1	Surface preparation to SSPC-SP 6		x	x	x	x	footnote A
2.3.F	10.4.11	1.2	Sharp edges ground smooth		x	x	x	x	1% - 10%
2.3.M	**	1.3	Continuous weld appearance		x	x	x	x	1% - 10%
2.3.J	10.6(f)	1.4	Standard structural bolts		x	x	x	x	1% - 5%
2.3.K	10.4.8, 10.4.11	1.5	Weld spatters removed		x	x	x	x	1% - 5%
1.4.D, 1.4.E	10.1.1, 10.1.2	2.1	Visual Samples		mock-up required	mock-up required	optional		5% - 25%
2.4.B	10.4.3(b), 10.4.5	2.2	One-half standard fabrication tolerances		x	x	x		5% - 15%
2.4.E	10.4.1	2.3	Fabrication marks not apparent		x	x	x		5% - 15%
**	**	2.4	Welds uniform and smooth		x	x	x		5% - 15%
2.5.F	**	3.1	Mill marks removed		x	x			5% - 15%
2.5.C	10.4.9	3.2	Butt and plug welds ground smooth and filled		x	x			5% - 10%
2.5.D	10.4.12	3.3	HSS weld seam oriented *per contract documents*		x	x			1% - 5%
2.5.G	10.4.3(a)	3.4	Cross sectional abutting surface aligned		x	x			5% - 15%
2.5.E	10.4.6	3.5	Joint gap tolerances minimized		x	x			5% - 10%
**	**	3.6	All welded connections		x	x			15% - 30%
**	10.4.12	4.1	HSS seam not apparent		x				5% - 20%
2.6.B	10.4.8	4.2	Welds contoured and blended		x				25% - 40%
2.6.D	10.4.7, 10.6(g)	4.3	Surfaces filled and sanded		x				30% - 50%
2.6.C	10.4.10	4.4	Weld show-through minimized		x				5% - 20%
	10.1.1, 10.2(c)	C.1	Additional characteristics may be added for custom elements. The AESS matrix included in Table 10.1 of the 2016 AISC Code of Standard Practice shall be used to specify the required treatment of the elements.						
		C.2							
		C.3							
		C.4							
		C.5							
1.7.B, 2.3.A, 3.3.A	10.5, 10.6		Special care in fabrication and erection	x	x	x	x	x	XX% to XX%
	10.1 (commentary)		*Estimated cost premium above standard structural steel*	*low to high*	*high*	*moderate*	*low to moderate*	*low*	
			Range in cost increase	XX% to XX%	100% - 150%	40% - 75%	25% - 35%	10% - 20%	

Range in Cost Increase above SSS

AESS 1	10% - 20%	low
AESS 2	25% - 35%	low to moderate
AESS 3	40% - 75%	moderate
AESS 4	100% - 150%	high
AESS C	XX% to XX%	low to high

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Conceptual Cost Increase - $1,000 SSS

AESS 1	$1,100- $1,200	low
AESS 2	$1,250 - $1,350	low to moderate
AESS 3	$1,400 - $1,750	moderate
AESS 4	$2,000 - $2,500	high
AESS C	$?,??? - $???,???	low to high

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

AESS 1 Increase above SSS (10% - 20%)

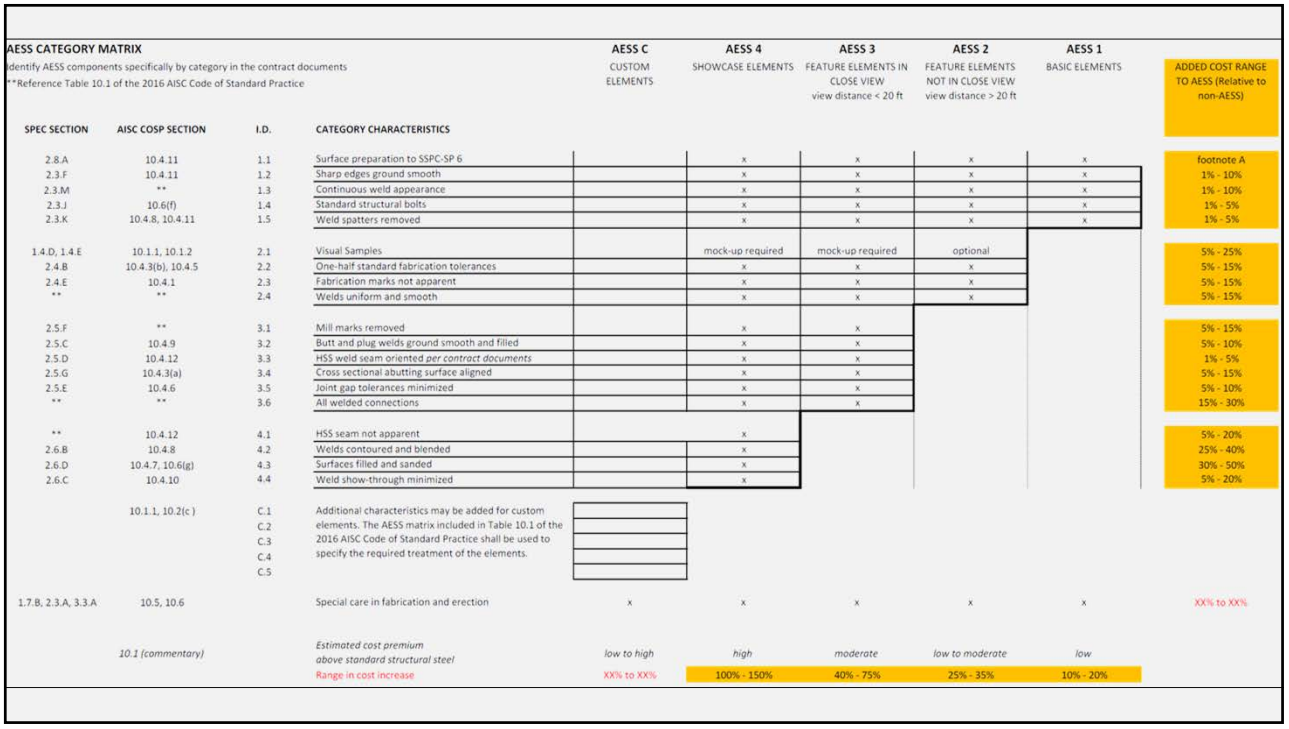
Sharp edges ground smooth	1% - 10%
Continuous weld appearance	1% - 10%
Standard Structural Bolts ←	1% - 5%
Weld Splatter Removed	1% - 5%
	4% - 30%

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Primer & Finish Coatings

Finish A: Interior Environment - low end finish	5% - 15%
Finish B: Interior environment - high end finish	15% - 30%
Finish C: Exterior environment - low end finish	20% - 40%
Finish D: Exterior environment - high end finish	30% - 50%
Finish E: Galvanizing	20% - 40%

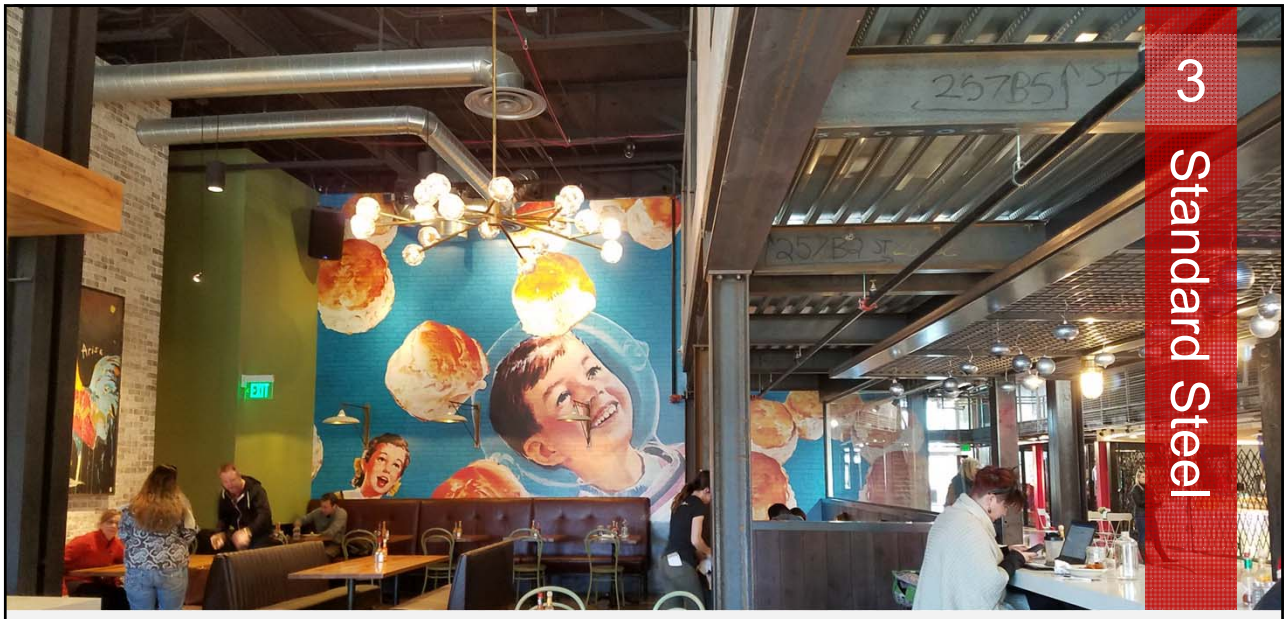
A'18 AIA Conference on Architecture 2018
June 21-23, New York City



AESS CATEGORY MATRIX

Identify AESS components specifically by category in the contract documents
**Reference Table 10.1 of the 2016 AISC Code of Standard Practice

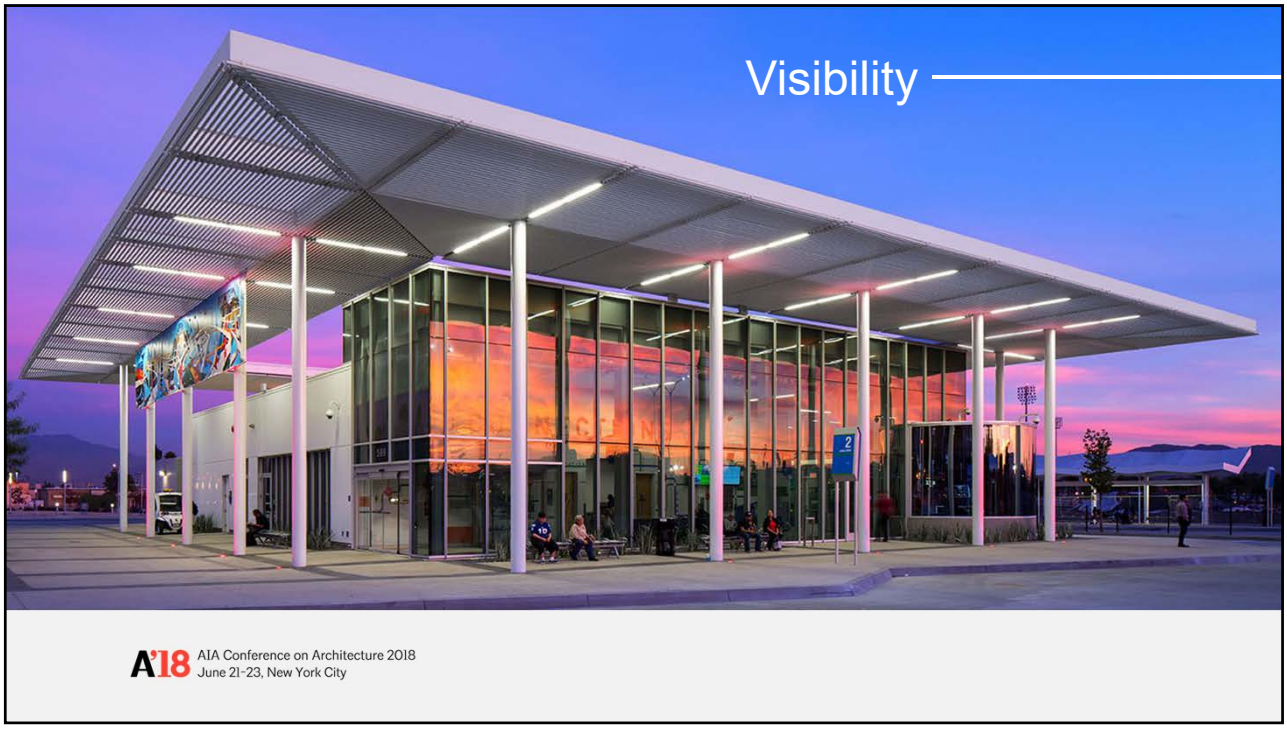
SPEC SECTION	AISC COSP SECTION	I.D.	CATEGORY CHARACTERISTICS	AESS C CUSTOM ELEMENTS	AESS 4 SHOWCASE ELEMENTS	AESS 3 FEATURE ELEMENTS IN CLOSE VIEW view distance < 20 ft	AESS 2 FEATURE ELEMENTS NOT IN CLOSE VIEW view distance > 20 ft	AESS 1 BASIC ELEMENTS	ADDED COST RANGE TO AESS (Relative to non-AESS)
2.8.A	10.4.11	1.1	Surface preparation to SSPC-SP 6		x	x	x	x	footnote A
2.3.F	10.4.11	1.2	Sharp edges ground smooth		x	x	x	x	1% - 10%
2.3.M	**	1.3	Continuous weld appearance		x	x	x	x	1% - 10%
2.3.J	10.6(f)	1.4	Standard structural bolts		x	x	x	x	1% - 5%
2.3.K	10.4.8, 10.4.11	1.5	Weld spatters removed		x	x	x	x	1% - 5%
1.4.D, 1.4.E	10.1.1, 10.1.2	2.1	Visual Samples		mock-up required	mock-up required	optional		5% - 25%
2.4.B	10.4.3(b), 10.4.5	2.2	One-half standard fabrication tolerances		x	x	x		5% - 15%
2.4.E	10.4.1	2.3	Fabrication marks not apparent		x	x	x		5% - 15%
**	**	2.4	Welds uniform and smooth		x	x	x		5% - 15%
2.5.F	**	3.1	Mill marks removed		x	x			5% - 15%
2.5.C	10.4.9	3.2	Butt and plug welds ground smooth and filled		x	x			5% - 10%
2.5.D	10.4.12	3.3	HSS weld seam oriented *per contract documents*		x	x			1% - 5%
2.5.G	10.4.3(a)	3.4	Cross sectional abutting surface aligned		x	x			5% - 15%
2.5.E	10.4.6	3.5	Joint gap tolerances minimized		x	x			5% - 10%
**	**	3.6	All welded connections		x	x			15% - 30%
**	10.4.12	4.1	HSS seam not apparent		x				5% - 20%
2.6.B	10.4.8	4.2	Welds contoured and blended		x				25% - 40%
2.6.D	10.4.7, 10.6(g)	4.3	Surfaces filled and sanded		x				30% - 50%
2.6.C	10.4.10	4.4	Weld show-through minimized		x				5% - 20%
	10.1.1, 10.2(c)	C.1 C.2 C.3 C.4 C.5	Additional characteristics may be added for custom elements. The AESS matrix included in Table 10.1 of the 2016 AISC Code of Standard Practice shall be used to specify the required treatment of the elements.						
1.7.B, 2.3.A, 3.3.A	10.5, 10.6		Special care in fabrication and erection	x	x	x	x	x	XX% to XX%
	10.1 (commentary)		*Estimated cost premium above standard structural steel*	*low to high*	*high*	*moderate*	*low to moderate*	*low*	
			Range in cost increase	XX% to XX%	100% - 150%	40% - 75%	25% - 35%	10% - 20%	

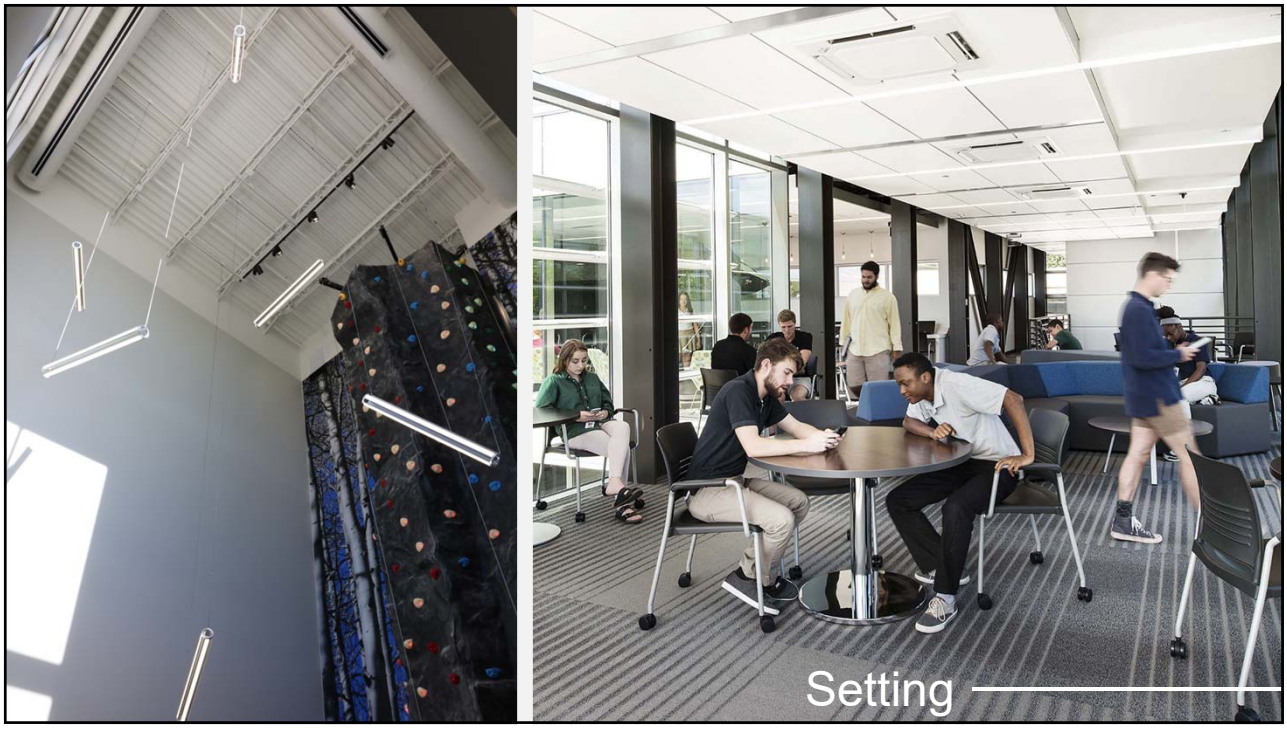


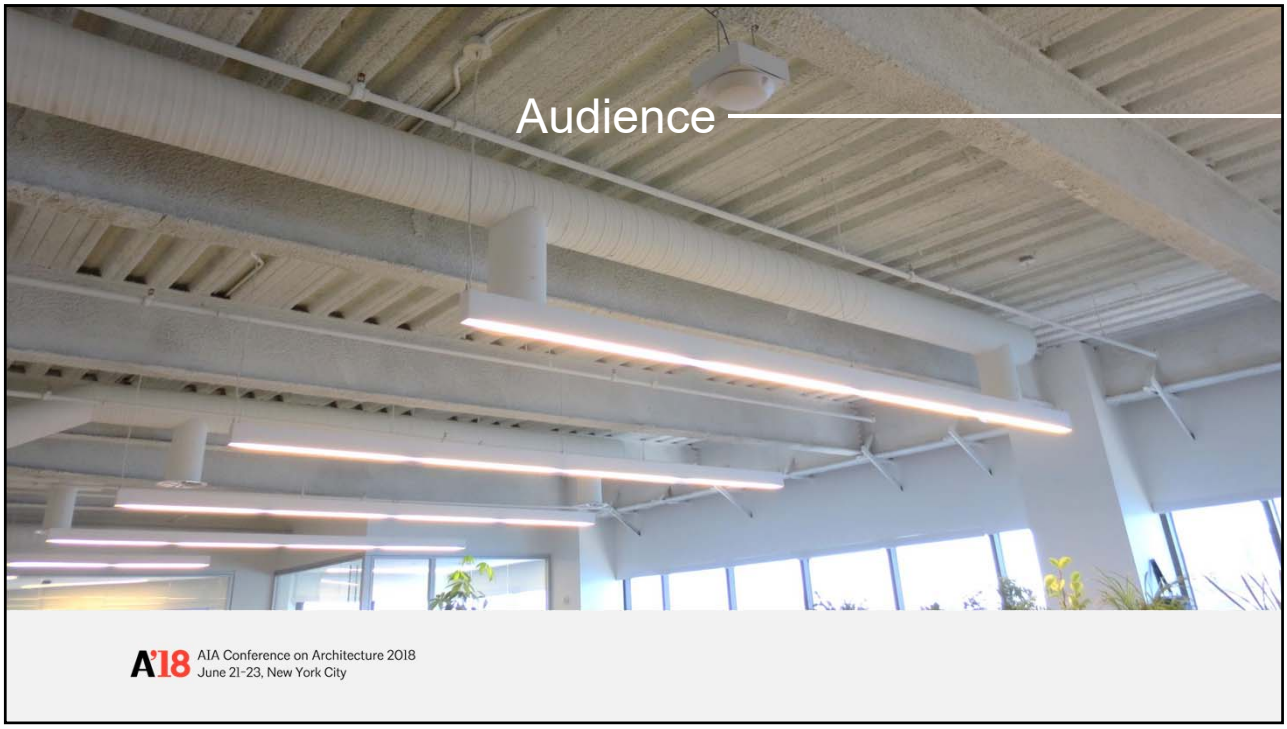
3 Standard Steel

"Many people consider all exposed steel to be AESS. This is not true or necessary."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City


Visibility
A'18 AIA Conference on Architecture 2018
June 21-23, New York City

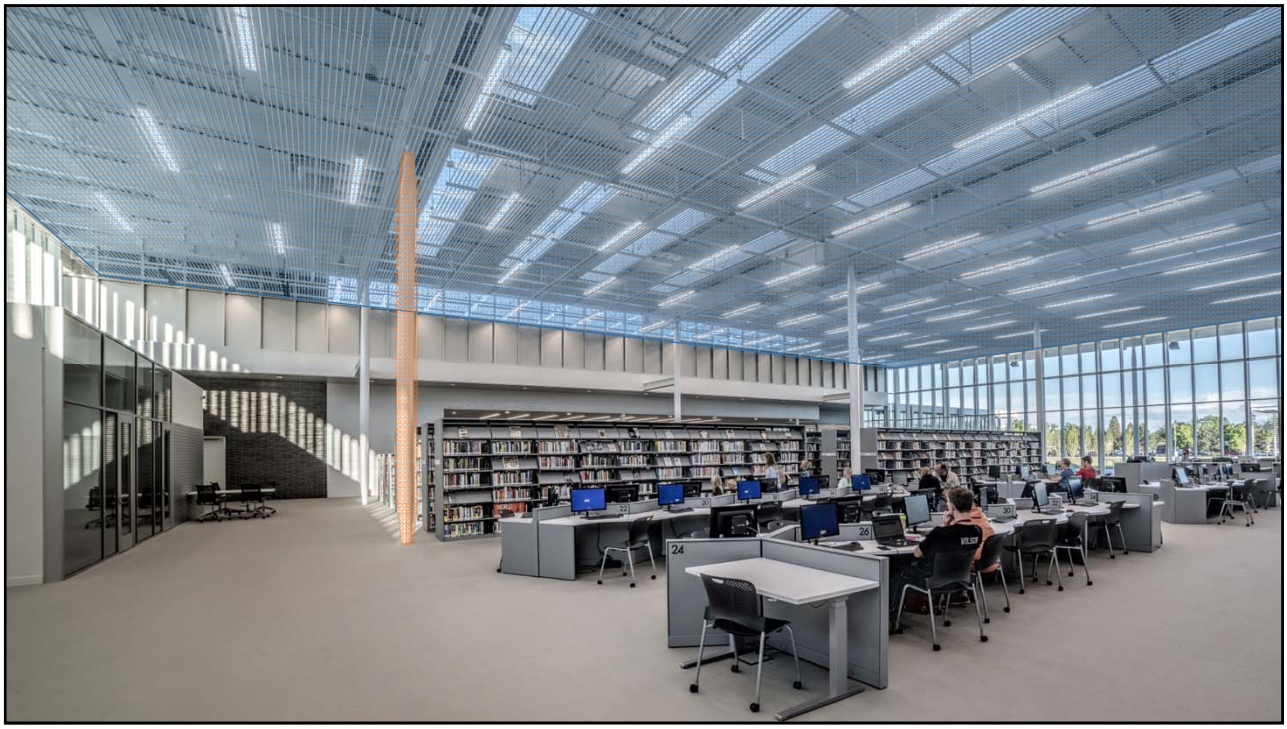

Setting


Audience
A'18 AIA Conference on Architecture 2018
June 21-23, New York City


Style

4 Visual AESS Mapping

ID	Characteristics	AESS C Custom Elements	AESS 4 Showcase Elements	AESS 3 Feature Elements in close view	AESS 2 Feature Elements not in close view	AESS 1 Basic Elements	SSS Standard Structural Steel
1.1	Surface preparation to SSPC-SP 6		•	•	•	•	
1.2	Sharp edges ground smooth		•	•	•	•	
1.3	Continuous weld appearance		•	•	•	•	
1.4	Standard structural bolts		•	•	•	•	
1.5	Weld spatters removed		•	•	•	•	
2.1	Visual samples	mock-up required	mock-up required	mock-up required	optional		
2.2	One-half standard fabrication tolerances		•	•	•		
2.3	Fabrication marks not apparent		•	•	•		
2.4	Welds uniform and smooth		•	•	•		
3.1	Mill marks removed		•	•			
3.2	Butt and plug welds ground smooth and filled		•	•			
3.3	HSS weld seam oriented for reduced visibility		•	•			
3.4	Cross sectional abutting surface aligned		•	•			
3.5	Joint gap tolerances minimzed		•	•			
3.6	All welded connections		optional	optional			
4.1	HSS seam not apparent		•				
4.2	Welds contoured and blended		•				
4.3	Surfaces filled and sanded		•				
4.4	Weld show-through minimized		•				
C.1							
C.2							




5 AESS Budget Mapping
INPUT
Start at monthly
Can we do

"Least Weight ≠ Least Cost"

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

AESS CATEGORY MATRIX

Identify AESS components specifically by category in the contract documents
**Reference Table 10.1 of the 2016 AISC Code of Standard Practice

SPEC SECTION	AISC COSP SECTION	I.D.	CATEGORY CHARACTERISTICS	AESS C CUSTOM ELEMENTS	AESS 4 SHOWCASE ELEMENTS	AESS 3 FEATURE ELEMENTS IN CLOSE VIEW view distance < 20 ft	AESS 2 FEATURE ELEMENTS NOT IN CLOSE VIEW view distance > 20 ft	AESS 1 BASIC ELEMENTS	ADDED COST RANGE TO AESS (Relative to non-AESS)
2.8.A	10.4.11	1.1	Surface preparation to SSPC-SP 6		x	x	x	x	footnote A
2.3.F	10.4.11	1.2	Sharp edges ground smooth		x	x	x	x	1% - 10%
2.3.M	**	1.3	Continuous weld appearance		x	x	x	x	1% - 10%
2.3.J	10.6(f)	1.4	Standard structural bolts		x	x	x	x	1% - 5%
2.3.K	10.4.8, 10.4.11	1.5	Weld spatters removed		x	x	x	x	1% - 5%
1.4.D, 1.4.E	10.1.1, 10.1.2	2.1	Visual Samples		mock-up required	mock-up required	optional		5% - 25%
2.4.B	10.4.3(b), 10.4.5	2.2	One-half standard fabrication tolerances		x	x	x		5% - 15%
2.4.E	10.4.1	2.3	Fabrication marks not apparent		x	x	x		5% - 15%
**	**	2.4	Welds uniform and smooth		x	x	x		5% - 15%
2.5.F	**	3.1	Mill marks removed		x	x			5% - 15%
2.5.C	10.4.9	3.2	Butt and plug welds ground smooth and filled		x	x			5% - 10%
2.5.D	10.4.12	3.3	HSS weld seam oriented *per contract documents*		x	x			1% - 5%
2.5.G	10.4.3(a)	3.4	Cross sectional abutting surface aligned		x	x			5% - 15%
2.5.E	10.4.6	3.5	Joint gap tolerances minimized		x	x			5% - 10%
**	**	3.6	All welded connections		x	x			15% - 30%
**	10.4.12	4.1	HSS seam not apparent		x				5% - 20%
2.6.B	10.4.8	4.2	Welds contoured and blended		x				25% - 40%
2.6.D	10.4.7, 10.6(g)	4.3	Surfaces filled and sanded		x				30% - 50%
2.6.C	10.4.10	4.4	Weld show-through minimized		x				5% - 20%
	10.1.1, 10.2(c)	C.1 C.2 C.3 C.4 C.5	Additional characteristics may be added for custom elements. The AESS matrix included in Table 10.1 of the 2016 AISC Code of Standard Practice shall be used to specify the required treatment of the elements.						
1.7.B, 2.3.A, 3.3.A	10.5, 10.6		Special care in fabrication and erection	x	x	x	x	x	XX% to XX%
	10.1 (commentary)		*Estimated cost premium above standard structural steel*	*low to high*	*high*	*moderate*	*low to moderate*	*low*	
			Range in cost increase	XX% to XX%	100% - 150%	40% - 75%	25% - 35%	10% - 20%	

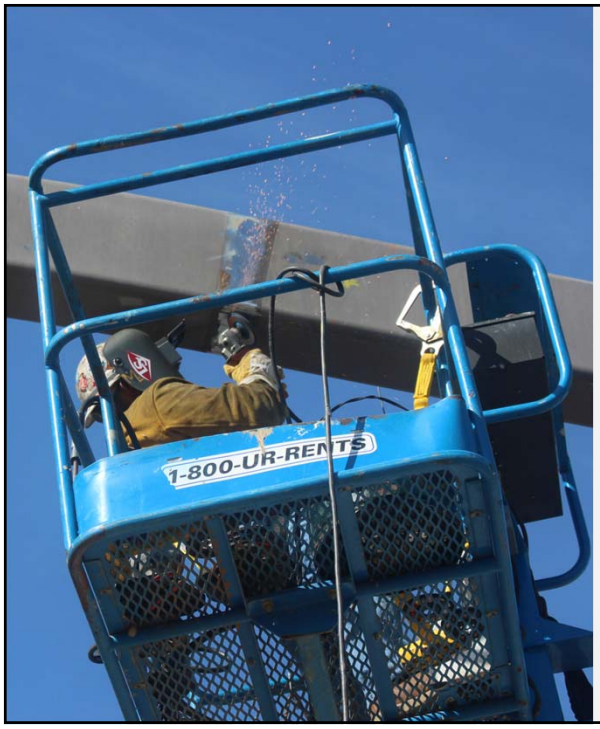
A'18 AIA Conference on Architecture 2018
June 21-23, New York City

"Put your money only where it counts. The lowest possible AESS category should be specified to meet the project requirements."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

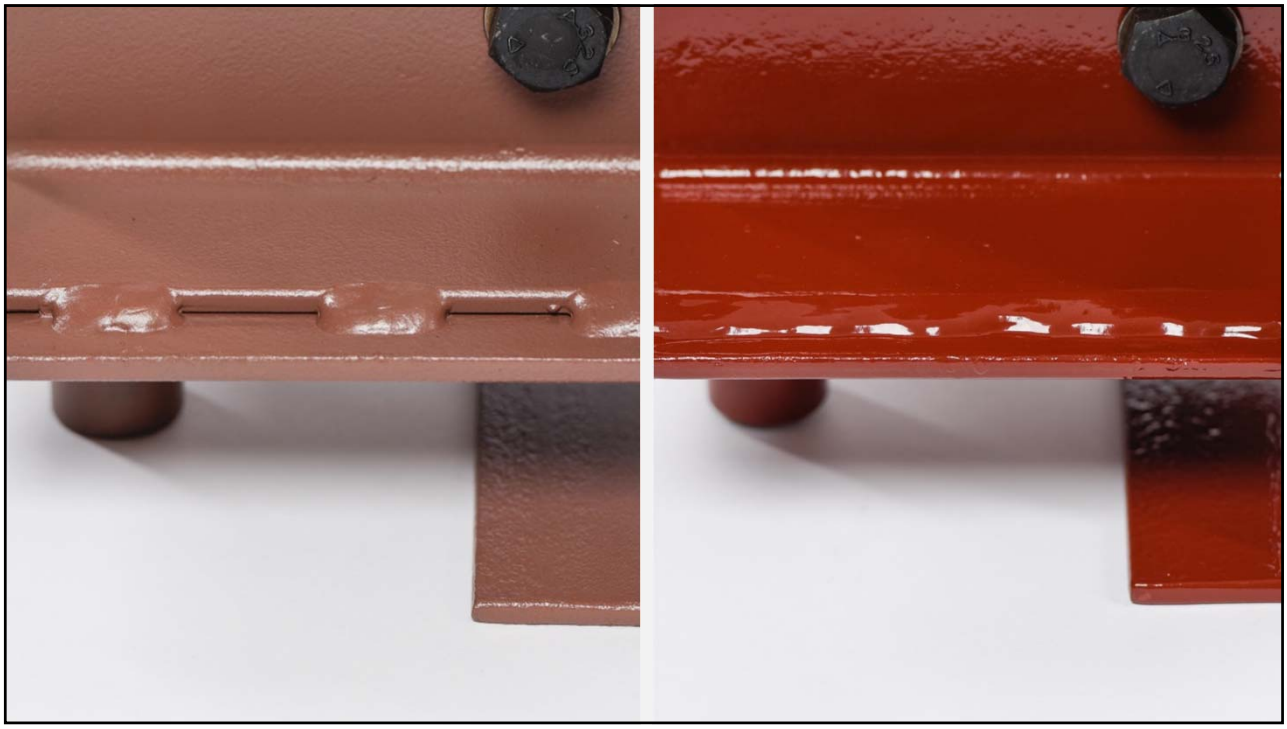

6 Think Like an Ironworker

"AESS fieldwork is harder to achieve than shop work, so specify that as much work as practical is performed in the shop."



“Bolt (instead of weld) in the field where at all possible.”

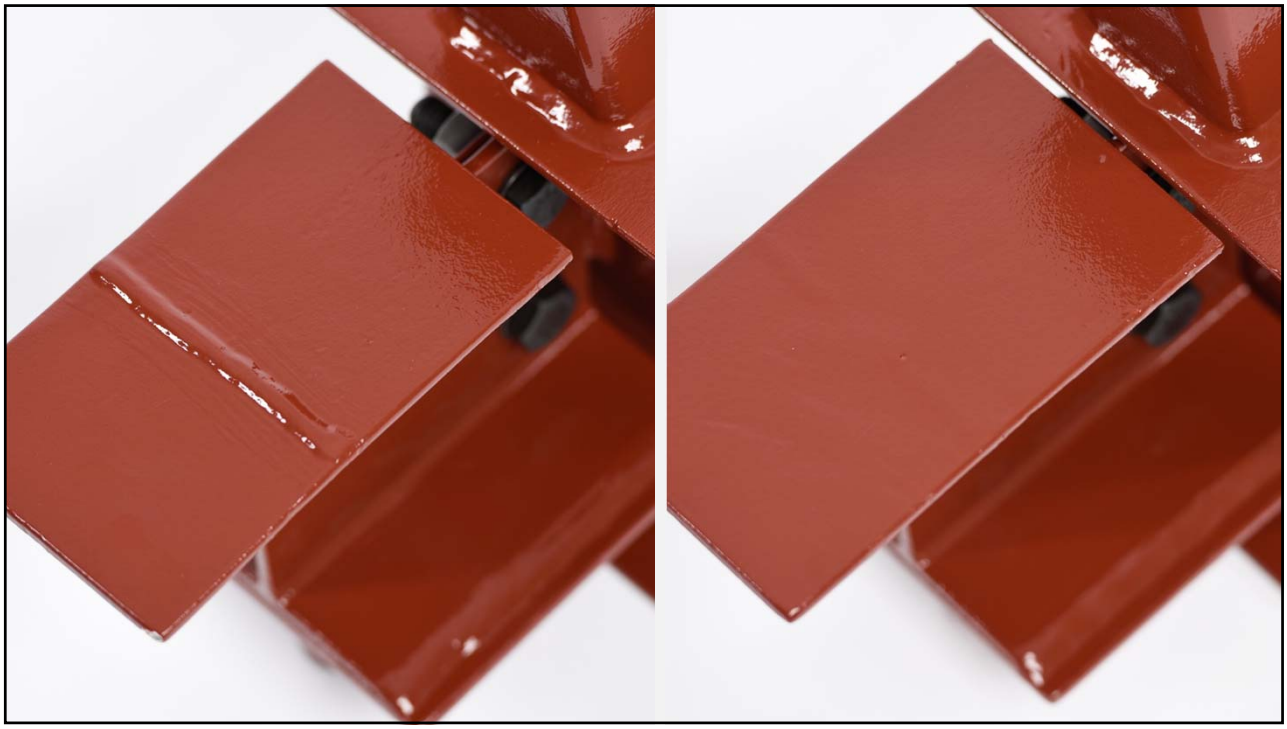

7
Connections



08 Finalizing Finishes

"Glossy coats tend to show every imperfection and surface variation"

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



"Consider applying the final coat of paint in the field because field touchup can leave blotches."

A'18 AIA Conference on Architecture 2018
June 21–23, New York City

A'18 AIA Conference on Architecture 2018
June 21–23, New York City

9 Contract Documents

"The AISC Steel Solutions Center sees a lot of situations where the parties assume that some condition is addressed in the Code of Standard Practice when it is not."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Contract Documents

Clear identification of AESS steel using the 5 categories

Indicate more restrictive tolerances

AESS C requires use of the AESS matrix

Identify variations from the COSP

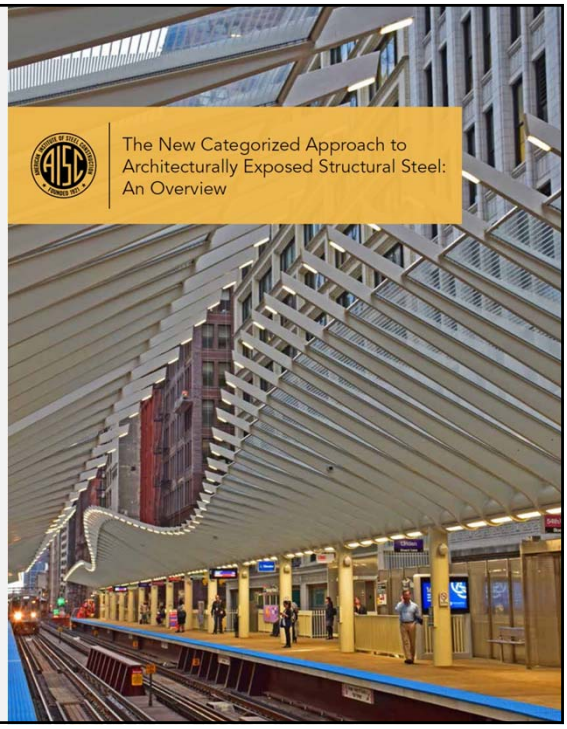
Orientation of HSS weld seams

Direction of bolt heads

Sample Specification

Section 05 12 13:

Architecturally Exposed Structural Steel



A'18 AIA Conference on Architecture 2018
June 21-23, New York City

ID	Characteristics	AESS C Custom Elements	AESS 4 Showcase Elements	AESS 3 Feature Elements in close view	AESS 2 Feature Elements not in close view	AESS 1 Basic Elements	SSS Standard Structural Steel
1.1	Surface preparation to SSPC-SP 6		•	•	•	•	
1.2	Sharp edges ground smooth		•	•	•	•	
1.3	Continuous weld appearance		•	•	•	•	
1.4	Standard structural bolts		•	•	•	•	
1.5	Weld spatters removed		•	•	•	•	
2.1	Visual samples	mock-up required	mock-up required	mock-up required	optional		
2.2	One-half standard fabrication tolerances		•	•	•		
2.3	Fabrication marks not apparent		•	•	•		
2.4	Welds uniform and smooth		•	•	•		
3.1	Mill marks removed		•	•			
3.2	Butt and plug welds ground smooth and filled		•	•			
3.3	HSS weld seam oriented for reduced visibility		•	•			
3.4	Cross sectional abutting surface aligned		•	•			
3.5	Joint gap tolerances minimzed		•	•			
3.6	All welded connections		optional	optional			
4.1	HSS seam not apparent		•				
4.2	Welds contoured and blended		•				
4.3	Surfaces filled and sanded		•				
4.4	Weld show-through minimized		•				
C.1							
C.2							

AESS CATEGORY MATRIX

Identify AESS components specifically by category in the contract documents

**Reference Table 10.1 of the 2016 AISC Code of Standard Practice

SPEC SECTION	AISC COSP SECTION	I.D.	CATEGORY CHARACTERISTICS	AESS C CUSTOM ELEMENTS	AESS 4 SHOWCASE ELEMENTS	AESS 3 FEATURE ELEMENTS IN CLOSE VIEW view distance < 20 ft	AESS 2 FEATURE ELEMENTS NOT IN CLOSE VIEW view distance > 20 ft	AESS 1 BASIC ELEMENTS	ADDED COST RANGE TO AESS (Relative to non-AESS)
2.8.A	10.4.11	1.1	Surface preparation to SSPC-SP 6		x	x	x	x	footnote A
2.3.F	10.4.11	1.2	Sharp edges ground smooth		x	x	x	x	1% - 10%
2.3.M	**	1.3	Continuous weld appearance		x	x	x	x	1% - 10%
2.3.J	10.6(f)	1.4	Standard structural bolts		x	x	x	x	1% - 5%
2.3.K	10.4.8, 10.4.11	1.5	Weld spatters removed		x	x	x	x	1% - 5%
1.4.D, 1.4.E	10.1.1, 10.1.2	2.1	Visual Samples		mock-up required	mock-up required	optional		5% - 25%
2.4.B	10.4.3(b), 10.4.5	2.2	One-half standard fabrication tolerances		x	x	x		5% - 15%
2.4.E	10.4.1	2.3	Fabrication marks not apparent		x	x	x		5% - 15%
**	**	2.4	Welds uniform and smooth		x	x	x		5% - 15%
2.5.F	**	3.1	Mill marks removed		x	x			5% - 15%
2.5.C	10.4.9	3.2	Butt and plug welds ground smooth and filled		x	x			5% - 10%
2.5.D	10.4.12	3.3	HSS weld seam oriented *per contract documents*		x	x			1% - 5%
2.5.G	10.4.3(a)	3.4	Cross sectional abutting surface aligned		x	x			5% - 15%
2.5.E	10.4.6	3.5	Joint gap tolerances minimized		x	x			5% - 10%
**	**	3.6	All welded connections		x	x			15% - 30%
**	10.4.12	4.1	HSS seam not apparent		x				5% - 20%
2.6.B	10.4.8	4.2	Welds contoured and blended		x				25% - 40%
2.6.D	10.4.7, 10.6(g)	4.3	Surfaces filled and sanded		x				30% - 50%
2.6.C	10.4.10	4.4	Weld show-through minimized		x				5% - 20%
	10.1.1, 10.2(c)	C.1	Additional characteristics may be added for custom elements. The AESS matrix included in Table 10.1 of the 2016 AISC Code of Standard Practice shall be used to specify the required treatment of the elements.						
		C.2							
		C.3							
		C.4							
		C.5							
1.7.B, 2.3.A, 3.3.A	10.5, 10.6		Special care in fabrication and erection	x	x	x			XX% to XX%
	10.1 (commentary)		*Estimated cost premium above standard structural steel*	*low to high*	*high*	*moderate*	*low to moderate*		
			Range in cost increase	XX% to XX%	100% - 150%	40% - 75%	25% - 35%	10% - 20%	

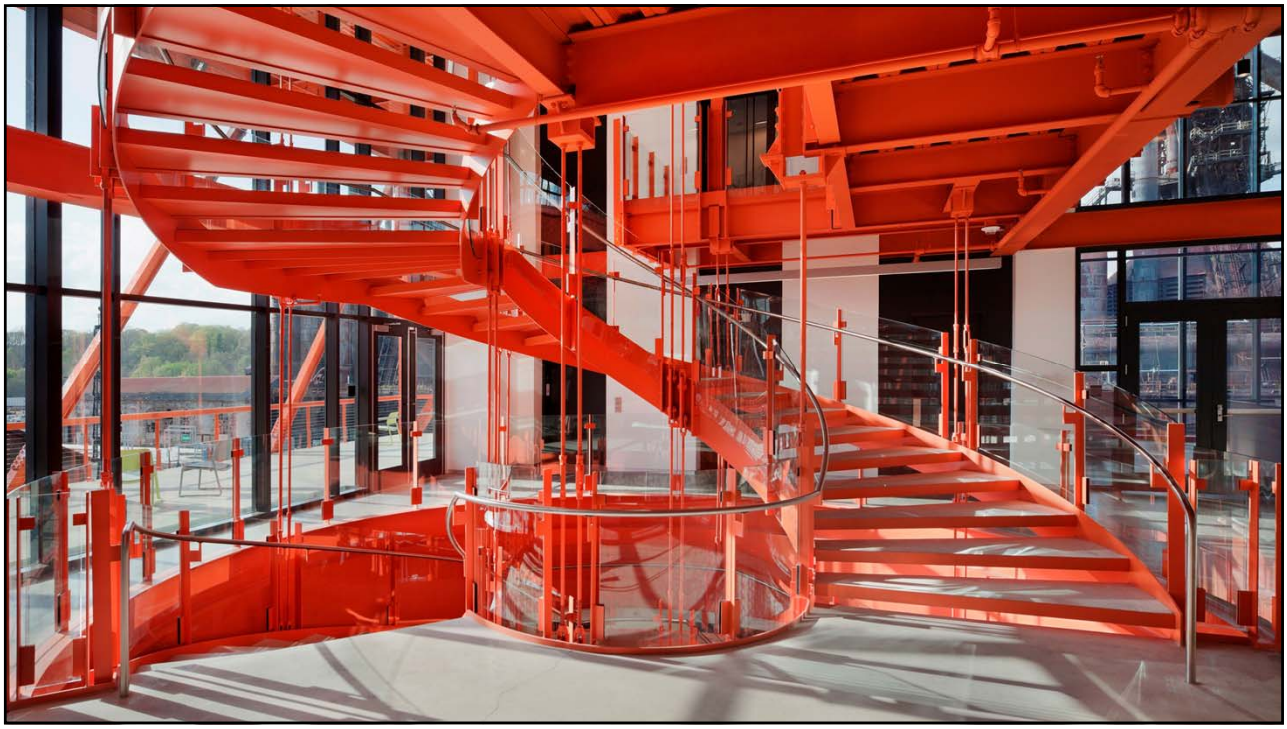
10 Ask the Steel Industry

"If you get low prices on difficult or complex work, ask questions. It may be that the requirements have not adequately been conveyed or interpreted."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

"The biggest thing they can do is to bring the fabricator into the process early and communicate with the fabricator. They will know better than anyone else what the cost impacts of various options will be."

A'18 AIA Conference on Architecture 2018
June 21-23, New York City



2016 COSP - Other Items

Cables

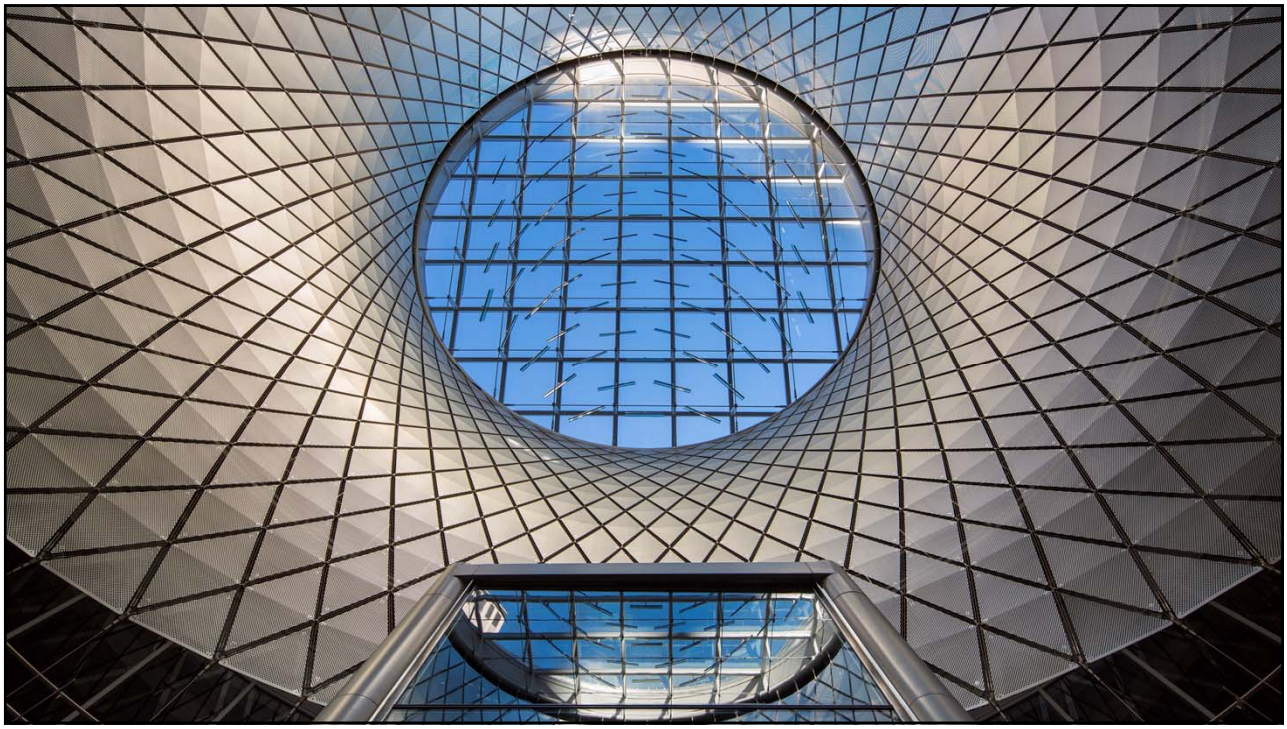
Castings

Cold-formed steel products

Handrails

Ornamental metal framing

Stairs



AISC Design Guide 27

Design

Practical Fabrication

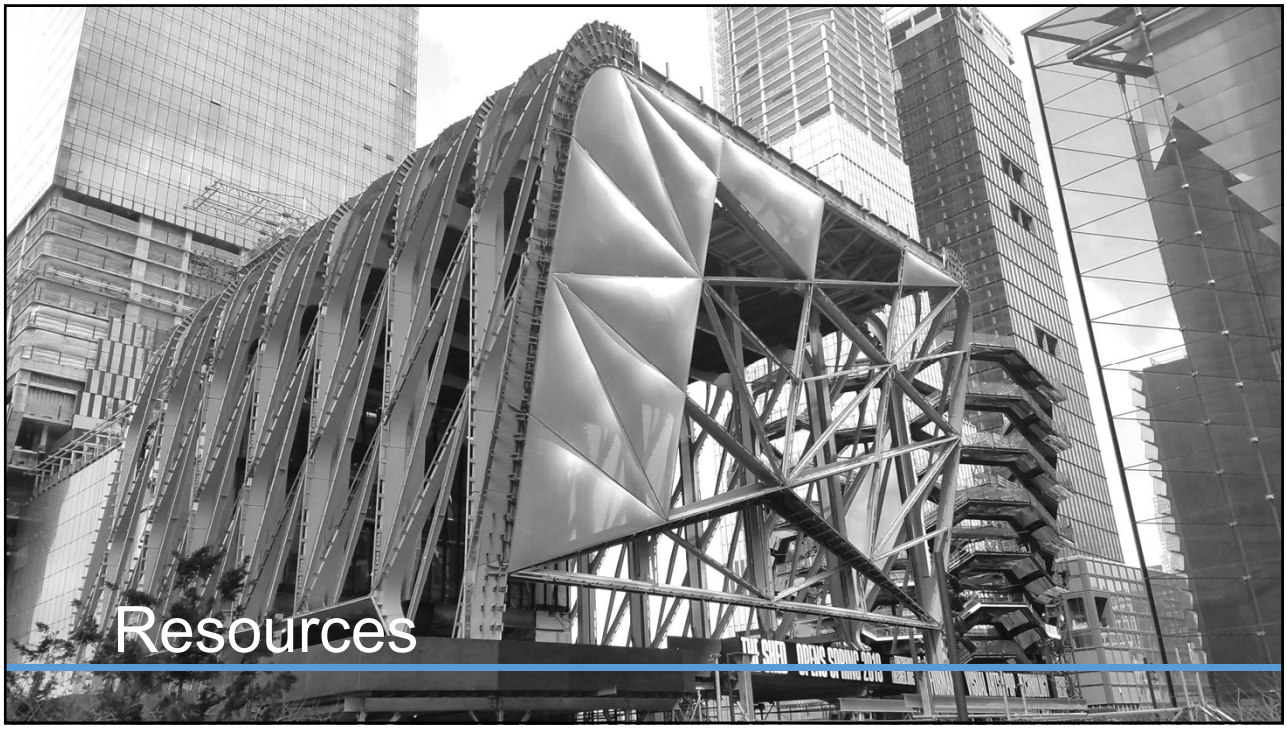
Installation

A'18 AIA Conference on Architecture 2018
June 21–23, New York City

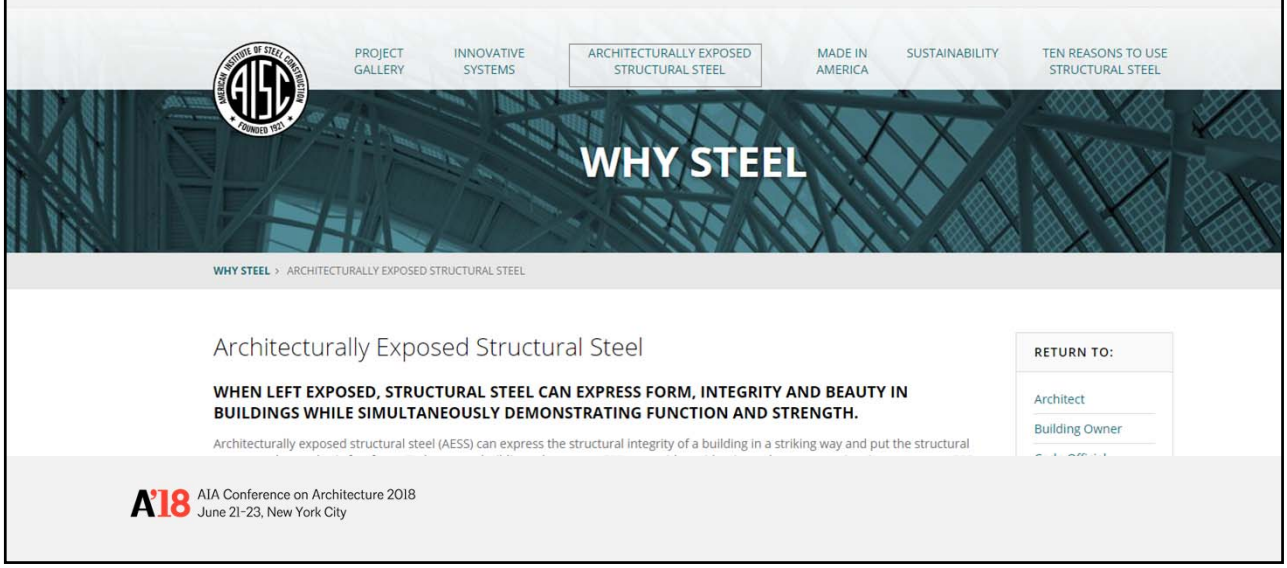
AISC SCI Steel Knowledge

27 Steel Design Guide

Structural Stainless Steel



www.aisc.org/AESS



AESS Samples

Tabitha Stine
stine@aisc.org

Jacinda Collins
collins@aisc.org

A'18 AIA Conference on Architecture 2018
June 21-23, New York City

Thank you!

A'18 AIA Conference on Architecture 2018
June 21-23, New York City