

March 15, 2024

City of Mercer Island
Office of Community Planning & Development
Attn: Gareth Reece
9611 SE 36th St
Mercer Island, WA 98040

Ref: Project 2202-257: Proposal for Code Equivalent Alternate

Greetings,

This letter is in reference to the new home project at 8480 85th Ave SE. Per the approved plan set, note 14 of page S1.1 states:

“Structural steel shall be fabricated by an AISC certified fabricator, and a copy of their QA/QC plan and requirements shall be provided to the engineer and building department prior to fabrication.”

In an effort to adhere to the intent of the requirements set forth by the CoMI while acting in the best interests of the project and our client, we are requesting a code alternate for method of construction under MICC 104.11 and we propose the following measures as an acceptable equivalent to Note 14:

1. Critical structural elements as noted in 1.a – 1.b to be fabricated by an AISC certified shop per approved plans
 - a. Brace frames as shown per S5.3 to be fabricated by a certified shop per Note 14.
 - b. All custom beam sections fabricated from plate steel (such as 7/S5.7) to be fabricated by a certified shop per Note 14.
 - c. QA/QC plans of the AISC shop to be submitted to CoMI
2. Lateral system components as noted in 2.a – 2.d to be fabricated by a non-AISC shop, but will meet AISC360 Chapter N inspection criteria per 2.e
 - a. Drag connections attached to braced frames (at the ends of drag struts)
 - b. Custom moment connections at hip-ridge connection
 - c. Any additional locations highlighted by the Engineer of Record per the below plans
 - d. See below Chapter N tables N5.4-1, N5.4-2, and N5.4-3 with fabricator responses to meet inspection task standards; fabricator QA/QC manual included below.
 - e. Components fabricated by a WABO-certified welder specializing in residential construction

3. All other structural steel to be fabricated by a non-AISC shop
 - a. Components to be fabricated per the attached standards per 2.e, QA/QC manual, and inspected per the approved plan set
 - b. Components fabricated by a WABO-certified welder specializing in residential construction

The design and construction team aims to be good stewards of Mercer Island by adhering to all national, state, and local codes while best serving our clients who are members of the community. We believe the proposed measures best satisfy the regulatory requirements while accounting for all facets of the design and construction of the home at 8480 85th Ave SE.

Thank you,

Bree Medley
The Brandt Design Group
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Tom Gooding
Schultz Miller
tgooding@schultzmiller.com



DESIGN: HAA, SRW
 DRAWN: NHD
 CHECKED: SRW
 APPROVED: BDM

REVISIONS
 Revision 1 Oct. 4,

ARCHITECTURAL APPROVAL STAMP:



PROJECT TITLE
8480 Residence
 8480 85th Ave SE
 Mercer Island, WA 98040

ARCHITECT
 Brandt Design Group
 66 Bell Street, Unit 1
 Seattle, WA 98121
 PH: 206.239.0850
 brandtdesigninc.com

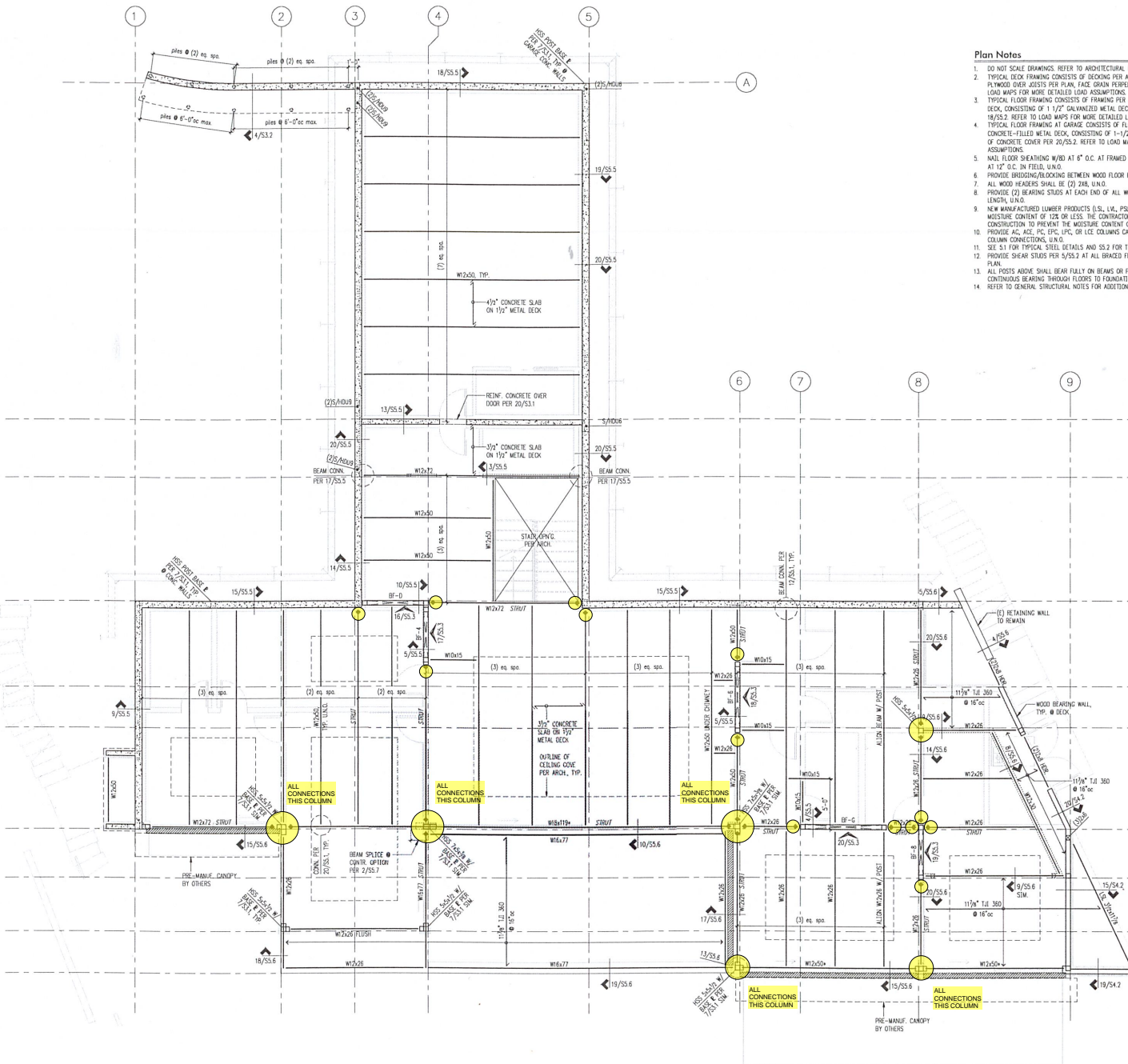
PERMIT

SHEET TITLE

Main Floor Framing Plan

SCALE: 1/4" = 1'-0" U.S.
 DATE: March 11, 2022
 PROJECT NO: 01519-2021-09

SHEET NO: **S2.2**



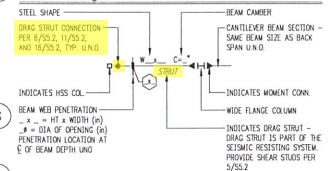
Plan Notes

- DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL FOR ALL DIMENSIONS.
- TYPICAL DECK FRAMING CONSISTS OF BEACING PER ARCHITECT OVER 1/4" 16g APA RATED PLYWOOD OVER JOISTS PER PLAN. FACE GRAIN PERPENDICULAR TO JOISTS. U.N.G. REFER TO LOAD MAPS FOR MORE DETAILED LOAD ASSUMPTIONS.
- TYPICAL FLOOR FRAMING CONSISTS OF FRAMING PER ARCHITECT OVER CONCRETE-FILLED METAL DECK, CONSISTING OF 1 1/2" GALVANIZED METAL DECK WITH 3 1/2" OF CONCRETE COVER PER 18/55.2. REFER TO LOAD MAPS FOR MORE DETAILED LOAD ASSUMPTIONS.
- TYPICAL FLOOR FRAMING AT GARAGE CONSISTS OF FLOORING PER ARCHITECT OVER CONCRETE-FILLED METAL DECK, CONSISTING OF 1-1/2" GALVANIZED METAL DECK WITH 4-1/2" OF CONCRETE COVER PER 20/55.2. REFER TO LOAD MAPS FOR MORE DETAILED LOAD ASSUMPTIONS.
- NAIL FLOOR SHEATHING W/ABD AT 8" O.C. AT FRAMED PANEL EDGES AND OVER SHEARWALLS AND AT 12" O.C. IN FIELD. U.N.G.
- PROVIDE BRIDGING/BLOCKING BETWEEN WOOD FLOOR FRAMING AT 8'-0" O.C. MAX.
- ALL WOOD HEADERS SHALL BE (2) 2x8, U.N.G.
- PROVIDE (2) BEARING STUDS AT EACH END OF ALL WOOD HEADERS AND BEAMS OVER 3'-0" IN LENGTH. U.N.G.
- NEW MANUFACTURED LUMBER PRODUCTS (S.L., L.V., P.S., Q.) SHALL BE INSTALLED WITH A MOISTURE CONTENT OF 12% OR LESS. THE CONTRACTOR SHALL MAKE PROVISIONS DURING CONSTRUCTION TO PREVENT THE MOISTURE CONTENT OF INSTALLED BEAMS FROM EXCEEDING 12%.
- PROVIDE AC, ACE, PC, EPC, LPC, OR LCE COLUMNS CAP AND BASE AT ALL WOOD BEAM TO COLUMN CONNECTIONS. U.N.G.
- SEE S.1 FOR TYPICAL STEEL DETAILS AND S.2 FOR TYPICAL STEEL DECK DETAILS.
- PROVIDE SHEAR STUDS PER 5/55.2 AT ALL BRACED FRAME BEAMS AND DRAG STRUTS NOTED ON PLAN.
- ALL POSTS ABOVE SHALL BEAR FULLY ON BEAMS OR POSTS BELOW AND SHALL HAVE FULL CONTINUOUS BEARING THROUGH FLOORS TO FOUNDATION. REFER TO GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

Legend

- STRUCTURAL WALL OR POST BELOW
- CONCRETE WALL BELOW
- STRUCTURAL WALL OR POST ABOVE
- NON-STRUCTURAL WALL BELOW
- SHEARWALL PER 20/54.1
- SPAN DIRECTION
- EXTENT OF JOISTS
- HEADER/BEAM PER PLAN
- HANGER
- INVERTED HANGER
- Bx BEAM PER SCHEDULE, THIS SHEET
- XX HOLDDOWN PER 5/53.1
- ROLLER SHADE PER ARCH. TYP.
- BF-x BRACED FRAME - ALL BRACED FRAME BEAMS AT THIS LEVEL TO HAVE W.H.S. PER 5/55.2
- ASSUMED MAX. LL DEFLECTION = 1/40 WINDOW SHALL NOT BE INSTALLED UNTIL ALL FRAMING, DRYWALL, & ROOFING COMPLETED. DOOR MANUF. TO VERIFY
- o P.F. FILE (to total this sheet)

Steel Beam Legend



Main Floor Framing Plan
 Scale: 1/4" = 1'-0"



DESIGN	HAA, SRW
DRAWN	NFD
CHECKED	SRW
APPROVED	BDM

REVISIONS		
1	Revision 1	Oct. 4, 2022

ARCHITECTURAL APPROVAL STAMP

REVIEWED FOR CODE COMPLIANCE
 December 27, 2022
SITE COPY

PROJECT TITLE
8480 Residence
 8480 85th Ave SE
 Mercer Island, WA 98040

ARCHITECT
 Brant Design Group
 66 Bell Street, Unit 1
 Seattle, WA 98121
 PH: 206.239.0850
 brantdesign@brantdesign.com

ISSUE
PERMIT

SHEET TITLE
Roof Framing Plan

SCALE: 1/4" = 1'-0" U.S.M.
 DATE: March 11, 2022
 PROJECT NO: 01519-2021-09
 SHEET NO:

S2.3

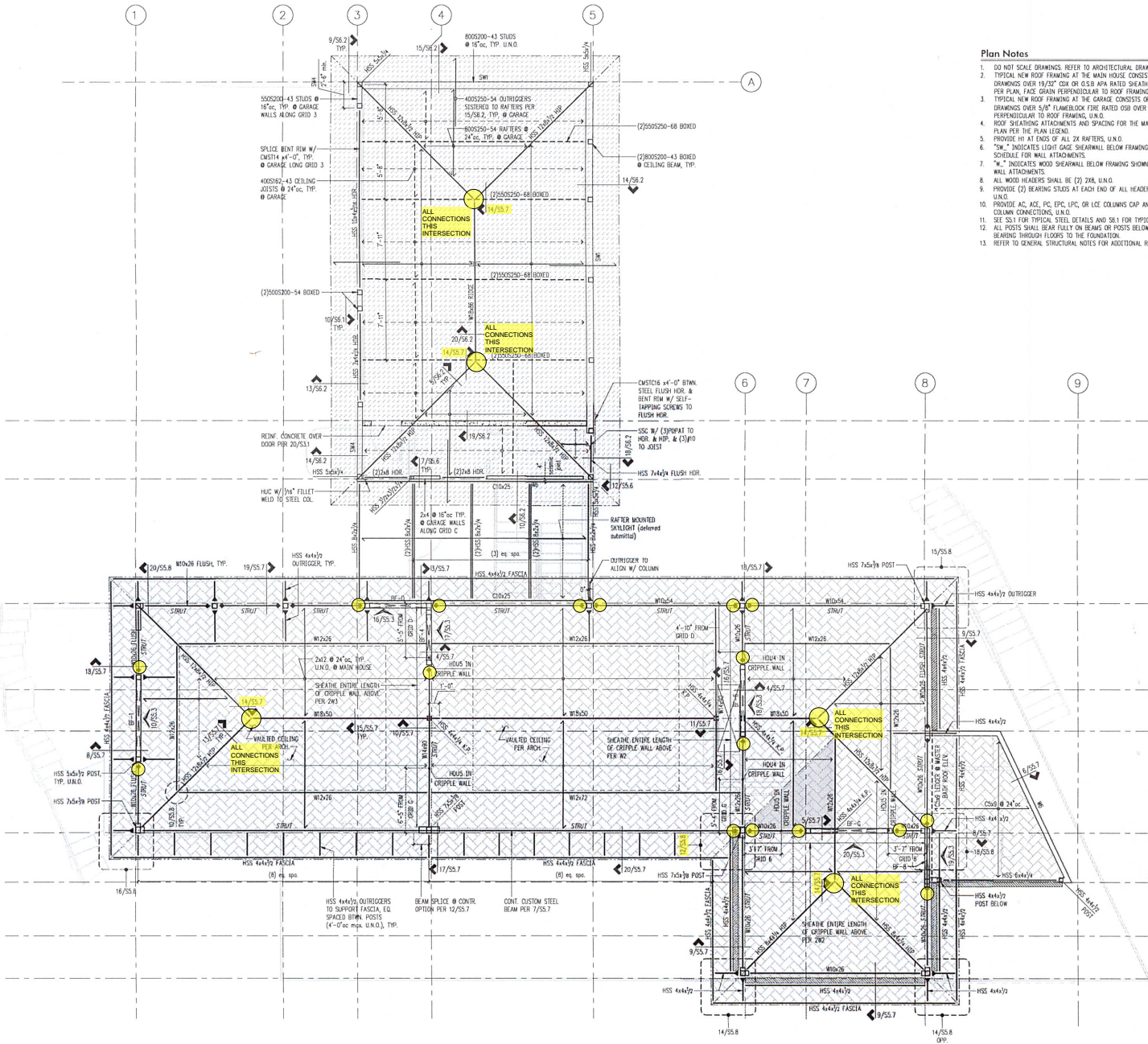
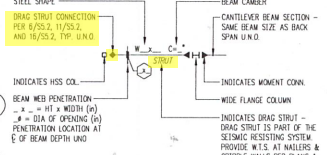
Plan Notes

- DO NOT SCALE DRAWINGS. REFER TO ARCHITECTURAL DRAWINGS FOR ALL DIMENSIONS.
- TYPICAL NEW ROOF FRAMING AT THE MAIN HOUSE CONSISTS OF ROOFING PER ARCHITECTURAL DRAWINGS OVER 19/53.7 OSB OR Q.S.B APA RATED SHEATHING, (EXPOSURE 1) OVER ROOF FRAMING PER PLAN, FACE GRAIN PERPENDICULAR TO ROOF FRAMING, U.N.O.
- TYPICAL NEW ROOF FRAMING AT THE GARAGE CONSISTS OF ROOFING PER ARCHITECTURAL DRAWINGS OVER 5/8" FLAMEBLOCK FIRE RATED OSB OVER ROOF FRAMING PER PLAN, FACE GRAIN PERPENDICULAR TO ROOF FRAMING, U.N.O.
- ROOF SHEATHING ATTACHMENTS AND SPACING FOR THE MAIN HOUSE AND GARAGE IS NOTED ON PLAN PER THE PLAN LEGEND.
- "SW" INDICATES LIGHT GAUGE SHEARWALL BELOW FRAMING SHOWN. REFER TO SHEARWALL SCHEDULE FOR WALL ATTACHMENTS.
- PROVIDE H1 AT ENDS OF ALL 2X RAFTERS, U.N.O.
- "S.W." INDICATES LIGHT GAUGE SHEARWALL BELOW FRAMING SHOWN. REFER TO SHEARWALL SCHEDULE FOR WALL ATTACHMENTS.
- "*." INDICATES WOOD SHEARWALL BELOW FRAMING SHOWN. REFER TO SHEARWALL SCHEDULE FOR WALL ATTACHMENTS.
- ALL WOOD HEADERS SHALL BE (2) 2X6 U.N.O.
- PROVIDE (2) BEARING STUDS AT EACH END OF ALL HEADERS AND BEAMS OVER 3'-0" IN LENGTH, U.N.O.
- PROVIDE AC, ACE, PCE, EPC, LPC, OR LCE COLUMNS CAP AND BASE AT ALL WOOD BEAM TO COLUMN CONNECTIONS, U.N.O.
- SEE SS3 FOR TYPICAL STEEL DETAILS AND SS1 FOR TYPICAL LIGHT GAUGE DETAILS.
- ALL POSTS SHALL BEAR FULLY ON BEAMS OR POSTS BELOW AND SHALL HAVE CONTINUOUS FULL BEARING THROUGH FLOORS TO THE FOUNDATION.
- REFER TO GENERAL STRUCTURAL NOTES FOR ADDITIONAL REQUIREMENTS.

Legend

- STRUCTURAL WALL OR POST BELOW
- CONCRETE WALL BELOW
- NON-STRUCTURAL WALL BELOW
- SHEARWALL PER 20/54.1
- LIGHT GAUGE SHEARWALL PER 15/55.1
- SPAN DIRECTION
- EXTENT OF JOISTS
- HEADER/BEAM PER PLAN
- HANGER
- INVERTED HANGER
- BEAM PER SCHEDULE, THIS SHEET
- OVERFRAME W/ 2x6 @ 24"oc POST DOWN TO FRAMING BELOW @ 48"oc MAX.
- BLOCKED ROOF DIAPHRAGM: 43 GAUGE #10" WIDE FLAT STRAPPING AT ALL PLYWOOD PANEL EDGES. ATTACH ALL PLYWOOD PANEL EDGES W/ #8 SCREWS @ 24"oc AND 12"oc FIELD.
- BLOCKED ROOF DIAPHRAGM: 2x4 BRG AT ALL PLYWOOD PANEL EDGES. NAIL ALL PLYWOOD PANEL EDGES W/ #6 @ 2"oc & 12"oc FIELD.
- ROLLER SHADE PER ARCH. TYP.
- BRACED FRAME - AT BRACED FRAME BEAM AT THIS LEVEL, PROVIDE W.T.S. AT WALLERS AND CRIPPLE WALLS PER PLAN AND DETAILS.

Steel Beam Legend



Roof Framing Plan
 Scale: 1/4" = 1'-0"

Table N5.4-1 Inspection Tasks Prior to Welding			
Inspection Tasks Prior to Welding	QC	QA	
Welder qualification records and continuity records	P	O	A 3rd party inspector verifies our welders certification (WABO) cards prior to beginning any job with us to make sure they are current and appropriate. We have worked with most inspection agencies in this area over the years.
WPS available	P	P	See included Custom Steel Fabricators, Inc. Quality Manual
Manufacturer certifications for welding consumables available	P	P	We maintain all steel mill-certs for material we purchase in each job file. See Chapters 9 & 11 of the attached CSFI Quality Manual for complete list of recorded, stored, and verified documentation.
Material identification (type/grade)	O	O	
Welder identification system <ul style="list-style-type: none"> • Fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. • Die stamping of members subjected to fatigue shall be prohibited unless approved by the engineer of record. 	O	O	We only use one welder as the primary welder for all work.
Fit-up of groove welds (including joint geometry) <ul style="list-style-type: none"> • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) • Backing type and fit (if applicable) 	O	O	Each part and layout is double checked at fit-up, prior to welding. This is our standard operating procedure per our Quality Manual.
Fit-up of CJP groove welds of HSS T-, Y-, and K-connections without backing (including joint geometry) <ul style="list-style-type: none"> • Joint preparations • Dimensions (alignment, root opening, root face, bevel) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) 	P	O	All full-penetration welding is double checked, then inspected by a 3rd party inspection company at fit-up for conformance prior to welding.
Configuration and finish of access holes	O	O	
Fit-up of fillet welds <ul style="list-style-type: none"> • Dimensions (alignment, gaps at root) • Cleanliness (condition of steel surfaces) • Tacking (tack weld quality and location) 	O	O	Each part and layout is double checked at fit-up, prior to welding. This is our standard operating procedure per our Quality Manual.
Check welding equipment	O	-	Equipment is maintained per manufacturer's recommendations. See Chapters 12 & 14 of the attached CSFI Quality Manual.

As a minimum, welding inspection tasks shall be in accordance with Tables N5.4-1, N5.4-2, and N5.4-3. In these tables, the inspection tasks are as follows:

- (a) Observe (O): The inspector shall observe these items on a random basis. Operations need not be delayed pending these inspections.
- (b) Perform (P): These tasks shall be performed for each welded joint or member.

TABLE N5.4-2 Inspection Tasks During Welding			
Inspection Tasks During Welding	QC <small>QC is fabricator (CSFI)</small>	QA <small>QA is 3rd party</small>	
Control and handling of welding consumables <ul style="list-style-type: none"> • Packaging • Exposure control 	○	○	See Chapters 10, 11, & 17 of the attached CSFI Quality Manual for all procurement, handling, storage, & delivery of all materials
No welding over cracked tack welds	○	○	We do not weld over cracked tack welds.
Environmental conditions <ul style="list-style-type: none"> • Wind speed within limits • Precipitation and temperature 	○	○	All welding is completed in an enclosed building where wind speed and direct precipitation are not a factor.
WPS followed <ul style="list-style-type: none"> • Settings on welding equipment • Travel speed • Selected welding materials • Shielding gas type/flow rate • Preheat applied • Interpass temperature maintained (min./max.) • Proper position (F, V, H, OH) 	○	○	All noted info is included in WPS forms WPS forms to be up to date and presentable for the inspection companies
Welding techniques <ul style="list-style-type: none"> • Interpass and final cleaning • Each pass within profile limitations • Each pass meets quality requirements 	○	○	Our welders all have current WABO cards and 15+ years welding experience. All of our welding is inspected by certified 3rd party when required on occasion under observation. They have always complied and passed.
Placement and installation of steel headed stud anchors	P	P	Placement and location of studs is part of the fit up process. Designated Quality Control Inspector (QCI) and Quality Assurance Inspector (QAI) shall be continuously present for installation. Installation of studs is done using a specialized stud welding machine which fully and consistently welds studs which are also visually inspected after welding and randomly physically (nondestructively) tested by QAI.

As a minimum, welding inspection tasks shall be in accordance with Tables N5.4-1, N5.4-2, and N5.4-3. In these tables, the inspection tasks are as follows:

- (a) Observe (O): The inspector shall observe these items on a random basis. Operations need not be delayed pending these inspections.
- (b) Perform (P): These tasks shall be performed for each welded joint or member.

**TABLE N5.4-3
Inspection Tasks After Welding**

QC is fabricator
(CSFI) ↓
QA is 3rd party ↓

Inspection Tasks After Welding	QC	QA	
Welds cleaned	O	O	After inspection all material is hand cleaned by CSFI prior to finishing.
Size, length, and location of welds	P	P	The 3rd party inspects all other welds per approved drawings prior to final approval. After welding is complete, the 3rd party inspector will visually inspect as well as UT the welds. See Chapters 12, 13, 14, & 15 of the attached CSFI Quality Manual for further fabrication procedures.
Welds meet visual acceptance criteria <ul style="list-style-type: none"> • Crack prohibition • Weld/base-metal fusion • Crater cross section • Weld profiles • Weld size • Undercut • Porosity 	P	P	
Arc strikes	P	P	
<i>k</i> -area ^[a]	P	P	
Weld access holes in rolled heavy shapes and built-up heavy shapes ^[b]	P	P	
Backing removed and weld tabs removed (if required)	P	P	
Repair activities	P	P	
Document acceptance or rejection of welded joint or member ^[c]	P	P	The only written documentation is the final welding inspectors letter.
No prohibited welds have been added without the approval of the engineer of record	O	O	Fabrication will follow the approved design drawings. CSFI is not responsible for items modified in field.
^[a] When welding of doubler plates, continuity plates, or stiffeners has been performed in the <i>k</i> -area, visually inspect the web <i>k</i> -area for cracks within 3 in. (75 mm) of the weld. ^[b] After rolled heavy shapes (see Section A3.1d) and built-up heavy shapes (see Section A3.1e) are welded, visually inspect the weld access hole for cracks. ^[c] Die stamping of members subjected to fatigue shall be prohibited unless approved by the engineer of record.			

As a minimum, welding inspection tasks shall be in accordance with Tables N5.4-1, N5.4-2, and N5.4-3. In these tables, the inspection tasks are as follows:

- (a) Observe (O): The inspector shall observe these items on a random basis. Operations need not be delayed pending these inspections.
- (b) Perform (P): These tasks shall be performed for each welded joint or member.



QUALITY MANUAL

CUSTOM STEEL FABRICATORS INC.

3530 RAINIER AVE S.

SEATTLE, WA 98144

206-723-1997 | www.customsteelfabinc.com

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Purpose

The purpose of this manual is to outline the criteria within Custom Steel Fabricators Inc. (CSFI), to meet the American Institute of Steel Construction (AISC) certification.

Scope

It allows customers and outside functions a means to understand Custom Steel Fabricators Inc's Quality Management System, when such a system is required in full or in a segmented approach as required by the customer and project.

References

Custom Steel Fabricators Inc. has made every effort to have the applicable reference documents, standards, codes, or other applicable documents readily accessible to the individuals who need them. Custom Steel Fabricators Inc. has also made every effort to ensure that these references are both current and meet the requirements of customer contracts. References utilized are in 7.2.1 of this manual.

Definitions

Custom Steel Fabricators Inc. has made every effort to emulate the definitions as outlined by AISC's Building Certification Standard. Any definitions which are unique to the Corporation will be listed below as determined necessary.

Management Responsibility

Custom Steel Fabricators Inc's executive management is responsible for developing a commitment to quality, directing the corporation to achieve that quality, providing personnel and resources as applicable, and overseeing the Quality Management System in an effort to comply with its quality directives.

Commitment (Policy)

Custom Steel Fabricators Inc. has established and implemented a company policy with respect to quality. Policy Statement – CSFI's policy is to produce steel components to achieve customer contracts with the fewest possible errors, and to maintain a commitment to the satisfaction of customer requirements. This policy statement is disseminated to personnel affecting quality by displaying it throughout the facility. The target is to ensure that personnel are aware of the company's commitment to quality.

Direction and Leadership

CSFI recognizes that effective leadership begins at the top with the executive management. Their commitment to the highest quality standards is made evident to the people who report directly to them. These people in turn carry on that leadership to the people reporting to them and so on all the way to the personnel on the shop floor. This commitment to quality applies equally to all personnel regardless of the position they hold within the company.

To demonstrate the effectiveness of the program, executive management evaluates the established goals as outlined in the quality policy. These goals will be evaluated according to a predetermined schedule, which will determine the current level versus the desired outcome. Based on the goal or the data utilized by executive management, the demonstrated plan can take any form, such as a trend chart, computer printouts, pictorial diagrams, or any means which executive management determines is most applicable.

The quality management system is reviewed annually by executive management to ensure its continuing adequacy and effectiveness. Changes or additions to the system are made in accordance with a perceived opportunity for improvement in attaining customer satisfaction. Records of management reviews are maintained in a Quality Management System Review Log (QForm 5.2), and include such information as: audit results, customer feedback, and information from previous management review (outputs) which include product conformity reports and improvement of product quality and resources needed.

Management Representative

The Quality Manager of Custom Steel Fabricators Inc. is responsible for ensuring that procedures are established, implemented, and maintained for the quality management system. These procedures should be in accordance with the AISC Standards of Certification for Steel Building Structures. The Quality Manager submits a written, annual report to executive management on the performance of the quality management system and any need for change or improvement. The report is reviewed by executive management who determine whether or not it is in the company's best interest to act on the CEO's recommendations for improvement. All improvements are implemented to reduce the occurrence of nonconformities.

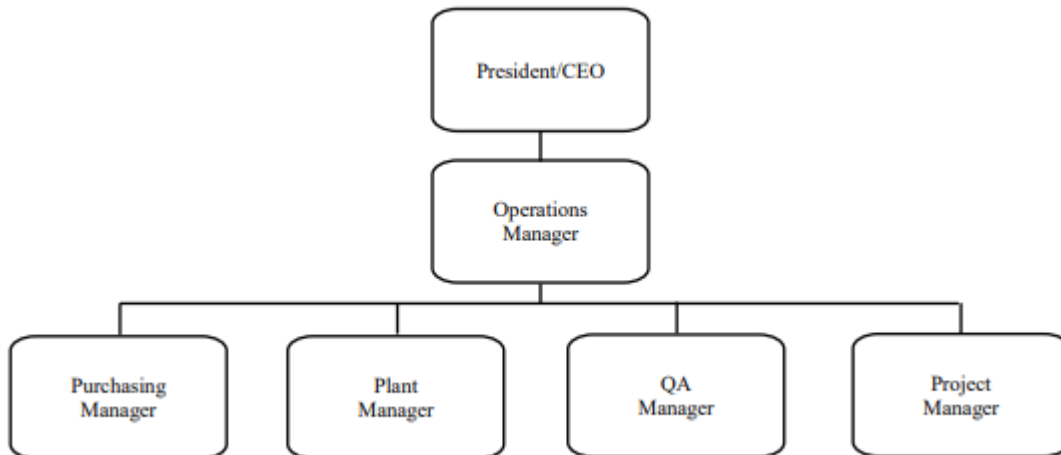
Resources

Executive management provides the resources necessary to achieve conformity to contract specifications. Such resources include personnel, workspace equipped with appropriate utilities, and equipment. Product evaluations and internal audits are conducted to ensure that resources remain adequate to produce quality products.

5.4.1. Personnel

Minimum qualifications exist for all personnel, including the Quality Assurance and Quality Control personnel. The personnel responsible for the performance of work affecting quality, and their interrelationship with other employees within the corporation are defined and documented using organization charts. Personnel can be assigned to more than one function, provided they are qualified to perform each job.

Annual performance reviews are conducted by department supervisors to ensure that the qualifications of the personnel performing specific duties are concurrent with changing job requirements. On-the-job training is employed for those individuals whose job functions are enhanced to ensure that all employees have a thorough understanding of and ability to perform their specific job requirements.



5.4.2. Buildings, Workspace and Associated Utilities

Custom Steel Fabricators Inc. has adequate workspace within their buildings to provide the amount of space necessary to produce quality products. There is ample space provided for administration, as well as shop functions such as fitting, bolting, welding, painting etc. Areas suitable for the storage and shipping of materials are also provided.

5.4.3. Process Equipment (both hardware and software)

Custom Steel Fabricators Inc. provides adequate equipment to produce quality products and the maintenance of corresponding records. Such equipment includes shop machinery, as well as computers with appropriate software to maintain adequate records of equipment, products, processes, production schedules and personnel. Equipment is tested periodically and repaired or updated whenever the need arises. Equipment is maintained to ensure conformance to the manufacturer's standards.

Internal Communication

Executive management has established internal communications procedures to ensure that all information regarding the quality management system's standards and processes reach all individuals within the corporation whose job functions directly impact product quality. Such communication may take the form of written policies and procedures, postings in relevant areas of the shop floor, emails, and/or verbal instruction or commentary during department meetings.

Documentation Requirements

5.6.1. General Requirements

Custom Steel Fabricators Inc's Quality Management System consists of documentation conducive to the production of a quality product. Such documentation provides a written policy statement with stated goals and objectives, written procedures and corresponding quality records, and a written quality manual.

5.6.2. Quality Manual

Custom Steel Fabricators Inc's written Quality Manual contains documentation outlining the requirements of the Quality Management System. Such documentation includes, but is not limited to, a quality policy with stated goals and objectives, written procedures and corresponding quality records, and any other documents needed to ensure the effective operation of the quality management system. The Quality Manual also describes the communication processes that exist to effectively disseminate information between departments in order to ensure that all personnel possess the most current product requirement information. Such effective transfer of information is necessary to reduce the occurrence of nonconformities due to outdated information being used within a department.

5.6.3. Organization

The Custom Steel Fabricators Inc's Quality Manual contains the Corporation's organizational chart as well as detailed policies and procedures necessary to maintain an effective Quality Management System. Such documents demonstrate strict compliance to AISC's Certification Standard for Steel Building Structures. The Quality Manual is reviewed annually to ensure that all information contained within it is current. Any outdated information is removed and discarded immediately.

5.6.4. Approval

Custom Steel Fabricators Inc's Quality Manual is approved by the Chief Executive Officer of the Corporation. Any and all changes to any of the documents contained in the manual are approved first by

the Quality Control Manager and then submitted to the Chief Executive Officer for his approval and signature.

Contract and Project Specification Review and Communication

Custom Steel Fabricators Inc. implements a system for contract and project specification review. All contracts and project specifications are reviewed when they are received in order to determine the resources necessary to fulfill the contract requirements. When required, a Contracts Specification Sheet (QForm 6) is then drawn up to provide a record of all contracts received and reviewed and the resources required filling the order. The specific project requirements are recorded and distributed to the appropriate personnel for planning and implementation. Once it is determined that the resources and technology exist to complete the order, the purchase order is signed by the Sales Department and forwarded to the Project Manager for planning and implementation of the project. A schedule is then developed for the implementation and completion of the ordered project.

Any changes or modifications to the original contract are sent through the Sales Department where they are reviewed and signed by the Salesperson who then forwards the changes to the Project Manager for his knowledge and implementation. Any considerations or changes to the contract specifications will take into consideration the functions of:

Quality management system

Detailing

Purchasing

Fabrication Process

Quality Assurance

Quality Control

All contracts that have been accepted for work are maintained in the Sales Department.

Detailing

Detailing Procedures

7.1.1. Preparation of Shop Drawings and Erection Drawings

When required, Custom Steel Fabricators Inc. implements a system which explains how shop and erection drawings are developed and produced. These drawings incorporate project specifications, codes and customer requirements, and ensure that they are in compliance with the relevant AISC Standards. The system also identifies how information is tracked and communication with the customer is maintained via RFI's (Requests for Information), as well as construction change documents.

7.1.2. Detailing Standards

Custom Steel Fabricators Inc. utilizes detailing standards which describe CSFI's preferred methods for the selection of material and the means to identify how holes, fasteners, washers, cuts and copes, etc. are listed on the print. The Standards also include how mill order lists are prepared, which include sizes, appropriate ASTM specification references, special ordering information, whether there are any allowances or tolerances, and any special instructions necessary to fabricate and erect the project.

7.1.3. Checking of Shop and Erection Drawings

All shop and erection drawings are checked by the Project Manager to ensure compliance with contract specifications. He then signs the drawing and releases the drawing for fabrication.

For computer-generated shop drawings, calculation formulas and other variables are checked to ensure the accuracy of the software. The software will be checked and documented (when required) by the detailing manager verifying that the check was made and what specific components were checked will be kept by the detailing manager.

Any subcontracted detailing packages that are received will be checked to ensure that:

- Print layouts comply to CSFI's corporate requirements;

- Bill of Materials are included;

- Drawings have identification as to who drew the print and who checked it;

A sampling (based on project) will be taken of the prints and a cursory review of the dimensions and pictorial layout will be conducted for constructability.

7.1.4. Customer Approval of Shop Drawings

Shop drawings released for fabrication are first approved by the customer. All drawings contain the written signature of the customer or authorized representative approving the drawings before the drawing is logged into the Shop and Erection Drawing Log Book and released for fabrication. This is applicable whether the drawing is done in-house or by a subcontractor. If the customer elects to waive approval of the drawings, a request to the customer will be made to document this waiver in writing.

Detailing Function Resources

7.2.1. References (required library)

Custom Steel Fabricators Inc. maintains the following references within their library in order to educate applicable company personnel as to the pertinent codes and specifications required for the work to be performed:

- Selected ASTM Standards for Structural Steel Fabrication

- AISC Construction Manual which include the following specifications and codes:

Specification for Structural Steel Buildings

Specification for Structural Joints Using ASTM A325 or A490 Bolts

AISC Code of Standard Practice for Steel Buildings and Bridges

ANSI/AWS D1.1 Structural Welding Code – Steel

ANSI/AWS A2.4 Symbols ANSI/AWS A3.0 Terms and Definitions

7.2.2. Personnel

Custom Steel Fabricators Inc. employs an Engineering Manager who is responsible for ensuring that all detailing functions are carried out according to the specifications of the AISC Standard for Structural Steel Buildings and customer contract requirements.

1. 7.2.3. Detailing Management

The Engineering Manager oversees the production of shop and erection drawings. His responsibilities include coordinating with production schedules, transmitting contract requirements to designers, developing drafting standards and detailing procedures, coordinating and incorporating fabrication requirements, and the training of detailers and checkers.

To fulfill these job requirements, the Engineering Manager is required to have training and experience in the area of structural steel fabrication, including detailing and checking shop and erection drawings, steel design and connection design, and coordinating customer requirements for a variety of structures and services that the corporation provides.

Custom Steel Fabricators Inc. will verify the competence of the Engineering Manager through review of his resume, work history and/or experience documented in his personnel folder.

2. 7.2.4. Detailing Functions

Detailers and checkers responsible for the inspection of shop and erection drawings require experience and/or training in the corporation's typical project drawings. They report to the Engineering Manager who, in turn, reports to the Project Manager. All shop drawings are checked for compliance to company and customer contract requirements.

Detailers and checkers in training work under the direct supervision of the Engineering Manager, to assure compliance to the strict quality standards and requirements of the corporation, or customer contract.

3. 7.2.5. Connection Consultation

Personnel who supervise detailers performing connection detailing are required to have one or more of the following qualifications:

 experienced in sizing connections and the detailing and checking of shop and erection drawings for steel structures;

trained in courses with a written curricula in steel and connection design;

graduate engineers with experience related to structural steel fabrication; and/or

A licensed P.E. or S.E., with recent experience related to structural steel fabrication.

7.2.6. Subcontract Services

Custom Steel Fabricators Inc. may utilize subcontract services for detailing, connection consultation, checking of shop and erection drawings, and the training of detailers and checkers. The Project Manager ensures that all subcontract services utilized by the Corporation are qualified according to AISC certification criteria, and have knowledge of the Corporation's specifications for producing quality products.

The Project Manager also ensures that customer contract requirements are communicated to subcontract services to assure compliance to all contract specifications.

7.2.7. Customer Supplied Shop Drawings

Custom Steel Fabricators Inc. implements a system for documenting the receipt, revision and control of customer supplied shop drawings. Shop drawings received from the customer are maintained by the Project Manager. Such information includes the customer name, the date the drawing was received, along with the latest approval, revisions and dispositions.

Document and Data Control

Custom Steel Fabricators Inc. implements a system for the control of documents and data affecting quality. Such documents and data include the Quality Manual, contract documents, shop, and erection drawings, documented procedures required by the Standard, and all documents and data affecting quality.

Review and Approval

The Quality Manager reviews and approves all documents affecting quality. Revisions to the Quality Manual and other quality management system documents are reviewed by the Quality Manager, approved by executive management and signed by the Chief Executive Officer of the corporation prior to implementation. All quality documents, including the Quality Manual are reviewed annually and updated as required.

Customer Requirements

The Project Manager receives and documents customer requirements and contract changes as they occur throughout the production process. This includes the receipt, approval, and distribution of original and revised shop and erections drawings to the appropriate departments and personnel within the corporation, as well as to all subcontractors and/or suppliers as required.

Revision Control

The Quality Manager ensures that all implementing documents within the Quality Manual have a cover page which contains the document's date of origin, a current revision date, and an approval signature. The Quality Manager maintains a master list of all changes and revisions, both electronically and in a hard copy format, to ensure that the most current revisions are utilized. This list is distributed to all quality personnel, as well as shop supervisors. This is also applicable for contract revisions and job specifications. All current documents are readily accessible and maintained within the QA department of the shop to avoid the use of obsolete procedures in the production process.

Access

The Quality Manager ensures that the most current policies, procedures, and contract revisions are distributed to the appropriate personnel within each department. Department managers ensure that all documents relevant to specific areas of operation are accessible to applicable personnel within that area who are responsible for performing work affecting product quality.

Obsolescence and Transmittal

All controlled documents under the Quality Manager's care and control that are obsolete are marked, segregated and removed from the work area to prevent their inadvertent use within the production process.

All projects have prints issued to the shop floor, the number of which varies according to the complexity of the project requirements. The number of sets issued to the shop for each project is recorded in a log within the Project Manager's office (QForm 8.5). Once a drawing is considered obsolete, all copies of that drawing are collected from the appropriate areas and compared to the number written in the log to ensure that all obsolete copies have been collected.

When transferring quality sensitive documents between CSFI and outside parties (i.e. the customer, contractors, coordination with other trades, subcontractors, etc.) a transmittal (QForm 8.5.1) will accompany the documents. A copy of the transmittal will be placed in the Project's Correspondence file.

Control of Quality Records

Custom Steel Fabricators Inc. implements a system for the identification, collection, storage, maintenance, retention and disposition of quality records.

Quality assurance records shall be generated and completed in accordance with the customer's contract, drawings and specifications. A quality control representative shall collect all job records, review the records for completeness, legibility and identification. Corrections to records shall be accomplished by line-through, initial and date of entry. Records shall not contain correction fluid. All quality records are stored at CSFI in a way that prevents damage, deterioration or loss. They are labeled for easy identification and retrievability. Retention times are established and recorded for records retained for any purpose. The retention periods will be at least long enough to permit evaluation of the records during the course of the project. Records will be transmitted to the owner in accordance with the contract.

Logs of quality records are maintained by the Quality Manager and includes the name of the document, the date of issuance, the retention period and the date of destruction (if applicable). These logs are reviewed and updated annually for accuracy.

Records that document quality typically include:

- inspection records
- NDT reports
- drawing logs
- MTR's (Material Test Reports)
- CofC's (Certificates of Compliance/Conformance)
- design changes
- RFI's (Requests for Information)
- mill and consumable purchase orders.
- records or summaries of nonconformance reports
- corrective action reports
- internal and external quality management system audits

Purchasing

Custom Steel Fabricators Inc. implements a system to ensure that purchased products, subcontractors, materials, and services conform to project requirements. Purchase orders, records of the qualification of subcontractors and suppliers, and records of the periodic evaluation of suppliers are maintained within the Purchasing Department.

Purchasing Data

Custom Steel Fabricators Inc. clearly describes subcontracted work and the purchased products, materials and services ordered in purchasing documents. Purchasing documents may contain the following information, as applicable:

- Type of service, material, class, grade, and other unique identification

- Project specifications, drawings, process requirements and inspection instructions that may apply.

- Delivery instructions and date

- Certificate of Compliance/Conformance, mill test reports and/or NDT reports as required.

- Compliance with ASTM A6, as appropriate

- Special instructions or any other information pertinent to the product ordered.

Selection of Subcontractors and Suppliers

Subcontractors and suppliers are evaluated annually by conducting an audit or through documented past experience of providing similar products or services (QForm 10.2).

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- Special instructions or any other information pertinent to the product ordered.

Selection of Subcontractors and Suppliers

Subcontractors and suppliers are evaluated annually by conducting an audit or through documented past experience of providing similar products or services (QForm 10.2).

The Project/Purchasing Manager selects subcontractors and suppliers on the basis of their ability to meet subcontract requirements, the CSFI's quality management system, the requirements of the AISC Standard, project requirements and any specific inspection requirements. The subcontractor shall have the required level of AISC Certification on projects that require such certification. Otherwise, use of a non AISC certified subcontractor must be approved (in writing) from the Customer or Engineer of Record. At a minimum, subcontractors must deliver finished products of high quality in a timely and appropriate manner.

Verification of Purchased Product, Materials and Services

The Purchasing/Project Manager ensures inspection of all incoming product and material to ensure that it conforms to the purchase order, as well as to project requirements. When required by the project, test reports, certificates of compliance and other evidence of quality control are kept on file in the Purchasing Department.

Customer Verification of Fabricated Product

The customer sometimes requests the right to verify the conformance of the final product to the project requirements at the corporation. This is typically documented in the contract drawn up before the actual project work begins. This verification can include anything from hands-on involvement, observation or audit. Custom Steel Fabricators Inc. cooperates with the customer fully in this regard.

Control of Customer-Supplied Material

If materials are supplied by the customer, the Project Manager is responsible for ensuring that the material is stored and maintained properly so as to avoid loss, damage or misuse of the material. All customer supplied material is inspected to ensure that the material is appropriate for the intended project and meets the quality requirements. Any material nonconformance or loss, damage or misuse of the material is recorded and reported to the customer.

Material Identification

Custom Steel Fabricators Inc. implements a system for identification of material. This system adheres to the guidelines stated in the AISC Code of Standard Practice and contract documents. This system also provides a method for material traceability when invoked by contract. At a minimum, material identification is maintained until the first fabrication operation when our project numbering system takes over. Purchasing documents for materials furnished to ASTM specifications include the information required in the "Order Information" section of the ASTM Standard.

CSFI retains test reports, manufacturers' test reports, and certificates of conformance for base materials, bolts, welding consumables and coatings for one year past project completion. All materials used in the production process are identified with a CSFI project number. Our system provides the ability to associate a report provided by our supplier with our order using project numbers. Our system also describes a method to provide full, specific traceability when required by contract. The purchasing manager is responsible for invoking the appropriate level of control for each order and each contract.

11.1 Receiving Inspection

Upon receipt of purchased material, the inspector will:

Compare the material and documentation to the purchase order, ensuring that it is the proper material and that all required documentation is present.

Compare the certifications to the purchase order and applicable specifications. The receiving inspector will place a check mark beside each specification requirement on the certification as it is verified.

11.1.1. Release or Dispositioning of Material

Conforming - When a lot of material is found to be totally conforming, the Inspector will sign and date the receiving report, tag or segregate material, then send P.O. and accompanying documentation to QM for filing. Nonconforming - When a lot of material is found to be nonconforming it will be identified, segregated and dispositioned in accordance with Section #15

11.1.2. Material Storage

Upon release of material from Receiving Inspection, all material will be identified and stored. The lot or batch number will be traceable to all material or parts. Lots of material will not be mixed in individual bins, boxes, or containers. Material will be stored in the environment required by the customer or specification.

11.2 Acquisition and Receiving Customer Furnished Material (CFM)

Upon receipt, receiving inspector will review and examine the CFM for: transit damage, completeness and proper type to drawings, contract data, etc. for proper identification and quantity. The receiving inspector will report any discrepancies to their supervisor, who will notify the appropriate customer authority.

Transit Damage - Any shipping damage will be noted and described in detail (including photographs and sketches). Any transit damage will be reported to the Project Manager.

Completeness and Proper Type - Visual inspection of any components and comparison of certifications to material and test specification will be performed to ensure that the CFM meets the requirements of the drawing or contract. Any nonconformance will be reported to the Project Manager.

11.2.1. Internal Control

Upon receipt of materials from receiving inspection, CSFI will identify and store all materials ensuring segregation from any and all like material. Customer furnished material will be identified and controlled through the process by use of standard travelers.

11.2.2. Utilization

CFM will be used only for the purpose authorized by the contract or purchase order. Any other usage will be with written authority from the customers contracting authority.

In the event of shortage, loss, damage, deterioration, or excess to requirements, the appropriate customer authorities will be notified as soon as the condition occurs or is discovered.

CFM will not be altered in any manner without prior written approval from the proper customer authority.

Upon completion of a contract all relative CFM will be inventoried, cleaned, and protected in accordance with contract documents.

At contract completion and when CFM is no longer required, the Project Manager will notify the appropriate customer authority and request disposition instructions.

Fabrication Process Control

Custom Steel Fabricators Inc. has established and implemented documented procedures (OP 12 rev 0) necessary to produce a finished product with a quality level that meets the requirements of the codes and specifications set forth in the AISC Standard for Steel Building Structures. This includes any “special procedures” that might be performed during the production process. At a minimum, effective implementation of the following procedures is required.

Welding

When code welding is required, an evaluation of existing welding procedures will be performed by the Quality Manager or Project Manager to determine which procedure(s) will be applicable to the project. If it is determined that an additional procedure is required, it shall be developed and qualified in accordance with the applicable code/customer specification.

Material Preparation for Application of Coatings

CSFI subcontracts the services associated with coating preparation and application.

Equipment Maintenance

CSFI implements a documented preventative maintenance program for equipment critical to product quality (Qform 12.3). This includes maintenance of welding machines in accordance with manufacturer’s recommendations.

Inspection and Testing

Custom Steel Fabricators Inc. implements a program for inspection and testing of material and services to ensure that the product quality meets the project requirements. The Quality Control Inspector is responsible for inspections at various intervals during the production process, depending on the complexity of the project. When required, these inspections may be subcontracted to an outside agency. The level and frequency of inspections will be as directed by the contract documents but may be increased at any time if it is determined that the required level of quality is not being met. The inspection program includes incoming materials, in-process and final inspection of all products furnished to a project. Records of such inspections are compiled and maintained in the Quality Manager’s office.

Assignment of QC Inspections and Monitoring

Qualification Standards and Certifications granted by recognized industry organizations related to structural steel fabrication can be used to establish a basis for the assignment of Quality Control inspectors.

Quality Control inspectors are required to be trained in proper inspection methods and acceptance criteria specified for the material they are inspecting. They are aware of their responsibilities and are given time to perform their inspection responsibilities. Their inspections are monitored by qualified QC personnel. Quality Control inspectors do not inspect their own work.

Production personnel may be assigned to QC inspection duties under the following conditions:

*They shall be trained in both knowledge and practice in proper inspection methods and acceptance criteria specified for the material they are inspecting. *Their inspections are monitored by qualified QC personnel.

Inspection Program

The Inspection Program at Custom Steel Fabricators Inc. includes provisions for the following:

13.2.1 Material Receipt Inspection

Materials received are compared to the purchase order requirements. The person receiving the incoming product checks the material, required documentation, grade and quantity and looks for visible signs of shipping damage. Shapes and plates are also inspected for obvious deviations from the requirements of purchase order specifications.

13.2.2. In-Process Inspection

In-process inspections are conducted to ensure that project processes are compliant with specified requirements and inspection acceptance criteria. Materials are inspected for specification and grade, workmanship and tolerances using appropriate codes, standards, or a documented plan before production begins. Compliance with documented bolting procedures, WPS's, preheats and welder qualifications are monitored. Production personnel inspect each product or subassembly before sending it to the next level in the production process.

13.2.3. Final Inspection

Quality Control inspectors perform the final inspection of products after the fitting, welding and coating operations, but prior to delivery of the finished product. These inspectors are specifically trained to perform these inspections. Any nonconformity discovered during the final inspection process is documented and processed according to the nonconformance procedure (Ref. Section #15).

13.2.4. Inspection Records

All inspection records, whether incoming, in-process, or final, are maintained in a file in the Quality Control Manager's office. Inspections by production personnel are verifiable until the final inspection of the product.

Calibration of Inspection, Measuring and Test Equipment

Custom Steel Fabricators Inc. implements a program to calibrate and maintain inspection, measuring and test equipment used to determine the conformance of product to the specified requirements of the quality system. Such calibration is a subcontracted service and is done through the use of equipment certified to an internationally or nationally recognized standard. Where such standards do not exist, the basis used for calibration is documented.

Calibration of inspection, measuring and test equipment is performed annually to ensure continuing conformance to the standards set within the Quality Management System. The Quality Manager is responsible for maintaining all calibration records. Such records will include a description of the equipment, manufacturer, serial number, date of calibration, date when next calibration is due and the inspector's name (Qform 14.0).

Inspection, measuring and test equipment is stored in a locked room, free from dust, excessive temperature variations, or other environmental influences which may affect the accuracy or fitness for use.

Calibrated equipment is identified with a special tag which contains the date the last calibration was performed. This prevents the inadvertent use of equipment that is not calibrated, when such calibration is required. Any equipment that is out of balance, damaged, or is not functioning properly is immediately removed from service pending an investigation to determine its potential impact on the product. The investigation, results and corrective action are documented on a Nonconformance Report which is also maintained in the Quality Manager's office. The malfunctioning equipment is tagged with an "Out of Service" sticker and/or segregated to prevent its accidental use.

Control of Nonconformance

Custom Steel Fabricators Inc. has a written procedure (OP 15.0) which prevents product that does not conform to the specified requirements of the quality management system from being used in the production process. When such nonconforming product is identified, it is immediately segregated, documented and tagged as nonconforming to prevent its accidental use in the production process. The product is then inspected to determine whether it should be reworked, repaired, or disposed of.

In some cases, after further inspection and testing, the product can be used as is, depending on the nature of the nonconformance. If the nonconformance directly impacts the customer, the customer is informed and they can then determine whether or not to approve the product for use. If the nonconforming product is approved for use by the customer, such approval is documented and a record retained in the NCR file.

Detailed records are kept of all nonconformance and stored in the Quality Control Manager's office. Such records include the nature of the nonconformance, what, if any, follow-up inspection and testing is conducted, and the resulting disposition of the product.

Corrective Action

Custom Steel Fabricators Inc. has a written procedure (OP 16.0) for the initiation of a corrective action. A corrective action is defined as any action taken to eliminate the causes of nonconformance. The determination as to whether or not to issue a corrective action depends upon the degree to which a nonconformance jeopardizes the production of a quality product.

A corrective action is issued after periodic reviews of records or internal and external quality audit reports determine critical nonconformity to quality standards. Once a corrective action report is generated, quality management personnel determine and implement a course of action to take to correct the noted nonconformity. Periodic reviews are then conducted to ensure the corrective action is being performed and is effective.

Corrective Action Reports (CARs) are documented and maintained in a Corrective Action Report File located in the Quality Manager's office.

Handling, Storage and Delivery of Product and Materials

Custom Steel Fabricators Inc. has developed a means of handling, storing and delivering products and materials. Material is stored, handled and shipped in such a way as to avoid damage and deterioration. Material is also labeled for easy identification on shipping documents and potential traceability.

If a shipping agreement exists between Custom Steel Fabricators Inc. and the customer or the subcontractor, material is packaged and shipped in compliance with the agreement. This may include delivery sequencing that complies with the customer's needs. When applicable, shipments by subcontractors are coordinated and monitored for compliance with shipping instructions.

Training

Custom Steel Fabricators Inc. has developed a means to ensure that personnel responsible for the quality of products and services receive initial and periodic training in their specific job functions. Periodic training may occur whenever there is a change in their specific duties or a procedural change in a particular job is implemented. Such personnel include operators (welders, machinists, etc.), inspection personnel, receiving personnel, dealers, purchasing agents, shop supervisors, and management personnel. This training ensures that the individual possesses the understanding necessary to perform the functions of their job in an efficient and productive manner. Training results for these personnel are documented and reviewed on a periodic basis to ensure compliance to job qualification specifications.

Personnel receive training whenever changes to the requirements of their assigned job function occur. Such training is documented and maintained in their individual personnel files located in the Human Resources Department.