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THE BEST TOOL IN YOUR TOOL BOX:

What You Need to Know About the AISC Code of Standard Practice and How You Can Use it to Your Benefit

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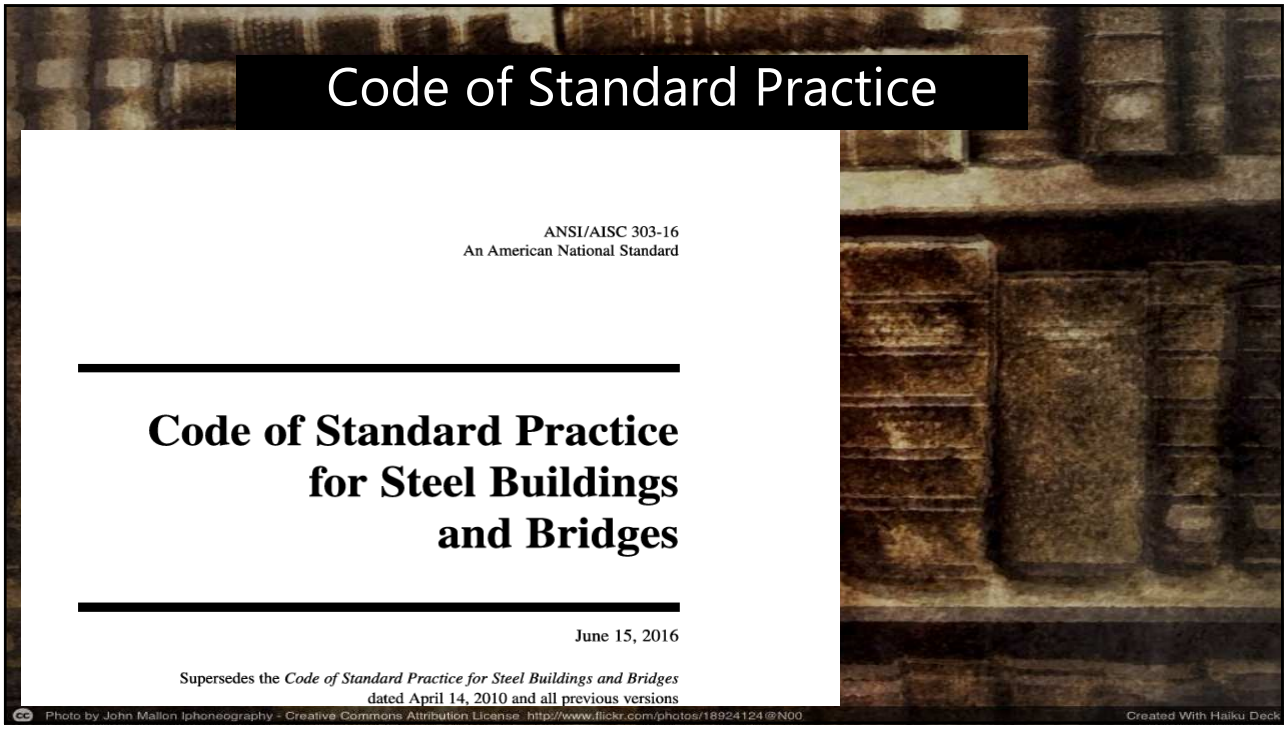
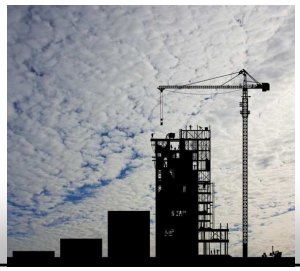
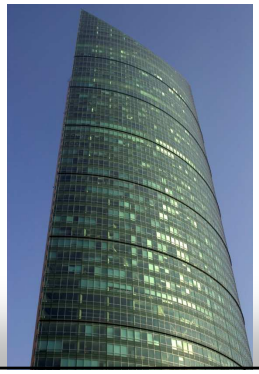
Code of Standard Practice



History & Background

- Dates back to 1921
- Companion to AISC Steel Specification
- Aid to Design, Specify and Erect Steel:
  - Structural Engineers,
  - Architects, and
  - Owners
  - Erectors





Interaction With Design Societies

- Council of American Structural Engineers
- National Council of Structural Engineers Associations
- AIA
- AASHTO
- NSBA
- State Structural Engineering Societies

Layout of the Code

- Section 1. General Provisions
- Section 2. Classification of Materials
- Section 3. Design Drawings and Specifications
- Section 4. Approval Documents
- Section 5. Materials
- Section 6. Shop Fabrication and Delivery
- Section 7. Erection
- Section 8. Quality Control
- Section 9. Contracts
- Section 10. Architecturally Exposed Structural Steel
- Appendix A. Digital Building Product Models

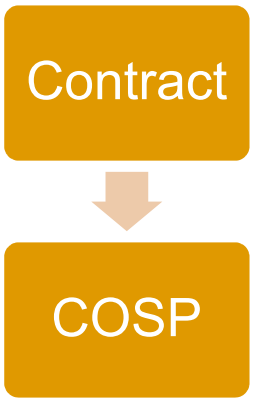
Application of the Code

1.1 Scope

This Code sets forth criteria for the trade practices involved in steel buildings, bridges and other structures, where other structures are defined as those structures designed, fabricated and erected in a manner similar to buildings, with building-like vertical and lateral force-resisting elements. In the absence of specific instructions to the contrary in the *contract documents*, the trade practices that are defined in this Code shall govern the fabrication and erection of *structural steel*.

Application of the Code

- Contract governs
- If contract silent - COSP governs
  - *Code § 1.1*
- "…not intended to…assign…any duty…inconsistent with the Contract Documents."
  - *Commentary to Code § 1.1*



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Contract Terms = CoSP

Contract Documents → Specifications → IBC & CoSP

Section 1: Contract Documents.

1.1 The Contract Documents for this Subcontract include this Agreement, the current executed Master Subcontract Agreement between Contractor and Subcontractor; the General Contract between Contractor and Signature [redacted] dated 2/14/2017 (the General Contract); the General, Supplementary and any other conditions of the General Contract; Drawings; Specifications; all Addenda issued before the execution of this Subcontract; the Project Schedule as may be amended from time to time, and any other documents referred to in the General Contract (the Contract Documents).

1.2 The Contract Documents form this Subcontract and are fully incorporated in this Subcontract as if fully set out herein.

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Contract Terms = CoSP

Contract Documents → Specifications → IBC & CoSP

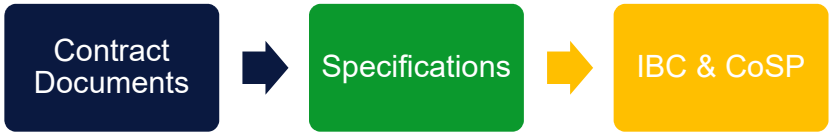
Specification Section 05120 Structural Steel Framing

1.2 REFERENCES, CODES AND STANDRADS: The following references, codes and standards are hereby made a part of this Section shall conform to the applicable requirements therein except as otherwise specified herein or shown on the Drawings. Latest edition of references and codes adopted by the Governing Agency shall apply. Nothing contained herein shall be construed as permitting work that is contrary to code requirements.

A. International Building Code (IBC) State of California Amendments (CBC).

B. AISC Standards - Code of Standard Practice for Steel Buildings and Bridges (AISC 303); Specification for Structural Steel Buildings (AISC 360); and Steel Construction Manual; Seismic Provisions (AISC 341) including Supplement No. 1 and Appendix W.

Contract Terms = CoSP



- IBC Chapter 22
  - Design must comply with AISC 360 A.4.
  - "The structural design drawings and specifications shall meet the requirements in the Code of Standard Practice."
  - Section 3.1 of CoSP provides the requirements for structural design drawings and specifications

Code of Ethics for Engineers

- "Engineers shall approve only those engineering documents that are in conformity with the applicable standards."
  - II. Rule of Practice 1(b)
- "Engineers shall not complete, sign, or seal plans and/or specifications that are not in conformity with applicable engineering standards."
  - III. Professional Obligations 2(b)
- Failure of structural design to comply with Section 3.1 = violation of Building Code and Code of Ethics

Legal Enforcement of the COSP

- Incorporated by reference into many contracts
  - AIA, Masterspec®, and many private, standard form documents.
- "statement of custom and usage"
  - Even if not expressly in contract
  - *Commentary to Code § 1.1*
- *You can and should incorporate it.*

Modification or Deletion of the COSP

- The COSP was intended to be applied as a unified document
  - Beware of exclusion of sections
  - Practical dangers in the structural engineer "deleting" the entire COSP from Contracts – may leave gaps

Section 1 – General Provisions

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Section 1 - General Provisions

- Responsibility for Design (1.6)

1.6.1. When the *owner's designated representative for design* provides the design, *design documents* and *specifications*, the *fabricator* and the *erector* are not responsible for the suitability, adequacy or building-code conformance of the design.

1.6.2. When the *owner* enters into a direct contract with the *fabricator* to both design and fabricate an entire, completed steel structure, the *fabricator* shall be responsible for the suitability, adequacy, conformance with *owner*-established performance criteria, and building-code conformance of the *structural steel* design. The owner shall be responsible for the suitability, adequacy and building-code conformance of the non*structural steel* elements and shall establish the performance criteria for the *structural steel* frame.

Section 1 - General Provisions

- Patents and Copyrights (1.7)
  - The entity or entities that are responsible for the specification and/or selection of proprietary structural designs shall secure all intellectual property rights necessary for the use of those designs.

Section 1 - General Provisions

- Existing Structures (1.8)
  - Demo and shoring – not in fabricator's scope
    - » Should not interfere or delay your work
  - Surveying – not in fabricator's scope

Erector responsible for erection means, methods and safety

1.9 Means Methods and Safety of Erection

1.9.1 The *erector* shall be responsible for the means, methods and safety of erection of the structural steel frame.

1.9.2 The *structural engineer of record* shall be responsible for the structural adequacy of the design of the structure in the completed project. The *structural engineer of record* shall not be responsible for the means, methods and safety of erection of the *structural steel* frame. See also Sections 3.1.4 and 7.10.

SER responsible for design only

Tolerances (1.10)

- If special tolerances are required – contract should specify
- "The absence of a tolerance . . . Does not mean that the tolerance is zero."

Fabrication Tolerances (6.4)

- Fabrication Tolerances shall be in accordance with 6.4.1-6.4.6.
- If you incorporated the COSP - make sure you understand your requirements

What does the CoSP Cover?

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Section 2 – Classification of Materials

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Materials (Section 2)

- Definition of Structural Steel:

Structural steel shall consist of the elements of the structural frame that are shown and sized in the structural *design documents*, essential to support the design loads and described as:

- Does Not Include Other Steel:

Structural steel shall not include other steel, iron or metal items that are not generally described in Section 2.1, even where such items are shown in the structural *design documents* or are attached to the *structural steel* frame. Other steel, iron or metal items include but are not limited to:

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Section 3 – Design Drawings & Specifications

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Structural Drawings and Specifications (3.1)

3.1 Structural Design Documents and Specifications

Unless otherwise indicated in the *contract documents*, the structural *design documents* shall be based upon consideration of the design loads and forces to be resisted by the *structural steel* frame in the completed project.

Structural Drawings and Specifications (3.1)

- Design shall clearly show or note the work:
  - The size, section, material grade and location of all members.
  - All geometry and working points necessary for layout.
  - Floor elevations.
  - Column centers and offsets.
  - The camber requirements for members.
  - Preset elevation requirements, if any, at free ends of cantilevered members relative to their fixed-end elevations.
  - Joining requirements between elements of built-up members.
  - When the requirements of ANSI/AISC 341 are applicable, the information required in ANSI/AISC 341 Section A4.
  - The information required in Sections 3.1.1 through 3.1.6.

Contract Terms = CoSP 3.1 Structural Design Documents and Specifications

- "The structural design documents shall clearly show or note the work that is to be performed
  - Watch your scope – you have probably incorporated all design documents not just structural
  - Mechanical Openings – USE ALLOWANCES
- and shall give the following information with sufficient dimensions
- to accurately convey the quantity and complexity of the structural steel to be fabricated:
  - (A) the size, section, material grade and location
  - (I) The information required in Sections 3.1.1 through 3.1.6
- The structural steel specifications shall include any special requirements for the fabrication and erection of structural steel.

CoSP 3.1.2 – Scope of Work

- **Permanent bracing, openings** in structural steel for other trades, . .
  - shall be . . . shown in sufficient detail in the structural design documents issued for bidding so that the quantity, detailing and fabrication requirements for these items can be readily understood.
- **Stiffeners, web doubler plates, bearing stiffeners, and other member reinforcement,** where required,
  - Away from connections, shall be . . . shown in sufficient detail in the structural design documents issued for bidding so that the quantity, detailing and fabrication requirements for these items can be readily understood.
  - At connections –
    - stiffeners shall be shown in bid docs or
    - (b) Option 3B: the owner's designated representative for design shall provide a bidding quantity of items required for member reinforcement at connections with corresponding project-specific details that show the conceptual configuration of reinforcement

CoSP 3.1.2 – Changes to Scope

- When the actual quantity and/or details of any of the foregoing items differ from the bidding quantity and/or details, the contract price and schedule shall be adjusted equitably in accordance with Sections 9.4 and 9.5.
- Any limitations regarding type and connection of reinforcing shall be clearly provided.

Discrepancies (3.3)

- **3.3 Discrepancies**

  When discrepancies exist between the *design documents* and *specifications*, the *design documents* shall govern. When discrepancies exist between scale dimensions in the *design documents* and the figures written in them, the figures shall govern. When discrepancies exist between the structural *design documents* and the architectural, electrical or mechanical design documents, or the *design documents* for other trades, the structural *design documents* shall govern. When discrepancies exist between the design drawings and the design model, the governing document shall be as identified per Section 1.4.

  When a discrepancy is discovered in the contract documents in the course of the fabricator's work, the fabricator shall promptly notify the owner's designated representative for construction so that the discrepancy can be resolved. Such resolution shall be timely so as not to delay the fabricator's work. See Sections 3.5 and 9.3.

  It is not the fabricator's responsibility to discover discrepancies, including those that are associated with the coordination of the various design disciplines.

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Intellectual Property (3.7)

- Any copyright or other property or proprietary rights owned by the owner's designated representative for design in any content included within the contract documents, whether created specifically for an individual project or otherwise made available for use on an individual project, shall remain the exclusive property of the owner's designated representative for design.

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Section 4 – Approval Documents

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Shop and Erection Drawings (Section 4)

- Owner shall furnish design drawings and specifications.

Commentary:
When the *owner* issues *design documents* and *specifications* that are *released for construction*, the *fabricator* and the *erector* rely on the fact that these are the *owner*'s requirements for the project. This release is required by the fabricator prior to the ordering of material and the preparation and completion of the *approval documents*.

To ensure the orderly flow of material procurement, detailing, fabrication and erection activities, on phased construction projects, it is essential that designs are not continuously revised after they have been *released for construction*. In essence, once a portion of a design is *released for construction*, the essential elements of that design should be "frozen" to ensure adherence to the contract price and construction schedule. Alternatively, all parties should reach a common understanding of effects of future changes, if any, as they affect scheduled deliveries and added costs.

Pre-Detailing Meeting (4.1 comm.)

- Owners encouraged to require pre-detailing meeting
  - Held after award of the structural steel fabrication contract
  - Suggested topics for inclusion in that conference are set out in detail
    - » Detailing and coordination needs
    - » Communication system

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Shop Drawing Review (4.4)

- ODRD to review in 14 calendar days
- Approval means:
  - You correctly interpreted the contract docs
  - ODRD reviewed connection details
  - Release to begin fabrication
- Approval does not mean:
  - Accuracy of dimensions
  - Fit-up of parts in the field

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Copyright Rights (4.2.2)

- Any copyright or proprietary rights owned by the fabricator and included within the approval documents remain the exclusive property of the fabricator.

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Approval (4.4)

- Approval documents MUST be returned in 14 calendar days.

Commentary:
As used in this Code, the 14-day allotment for the return of *approval documents* is intended to represent the *fabricator*'s portal-to-portal time. The intent in this Code is that, in the absence of information to the contrary in the *contract documents*, 14 days may be assumed for the purposes of bidding, contracting and scheduling. When additional time is desired, such as when *substantiating connection information* is part of the submittals, the modified allotment should be specified in the *contract documents*. A submittal schedule is commonly used to facilitate the approval process.

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Meaning of Approval 4.4.1

- "Approval" "Approval Subject to Corrections Noted" and "Similar Approvals" shall constitute the following:

  (a) Confirmation that the fabricator has correctly interpreted the contract documents in the preparation of those submittals.

  (b) Confirmation that the owner's designated representative for design has reviewed and approved the connection details shown in the approval documents and submitted in accordance with Section 3.1.1, if applicable.

  (c) Release by the owner's designated representatives for design and construction for the fabricator to begin fabrication using the approved submittals.

- Unless otherwise noted, any additions, deletions or revisions that are indicated in responses to RFIs or on the approved approval documents shall constitute authorization by the owner that the additions, deletions or revisions are released for construction. The fabricator and the erector shall promptly notify the owner's designated representative for construction when any direction or notation in responses to RFIs or on the approval documents or other information will result in an additional cost and/or a delay. (4.4.2)

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RFI Process (4.6)

Commentary:

The *RFI* process is most commonly used during the detailing process, but can also be used to forward inquiries by the *erector* or to inform the *owner's designated representative for design* in the event of a *fabricator* or *erector* error and to develop corrective measures to resolve such errors.

The RFI process is intended to provide a written record of inquiries and associated responses but not to replace all verbal communication between the parties on the project. RFIs should be prepared and responded to in a timely fashion so as not to delay the work of the *steel detailer*, *fabricator* and *erector*.

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Section 5 - Materials

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Mill Materials (5.1)

- Fabricator can order materials when released for construction drawings are received, unless otherwise noted in the contract documents.

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Section 6 – Shop Fabrication and Delivery

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Delivery of Materials 6.7.1

- Delivered in sequences to "permit efficient and economical fabrication and erection AND is consistent with the contract documents."

  Note: Most contracts allow GC to alter sequences; if this happens make sure your contract allows you to seek adjustment to contract sum and time for such changes.

- If owner or ODRD wishes to control delivery, must be specified in the contract documents.
- Fabricator to determine delivery sequence if not otherwise provided in the contract.

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Section 7 - Erection

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Erection (Section 7)

- 7.1 sets forth the method of erection: structural steel shall be erected using methods and a sequence that will permit efficient and economical performance of erection, that is consistent with the requirements of the contract documents.

- If owner or ODRD wants to change erection from the normal sequence, must be specified in the contract documents.

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CoSP 7.2 Job Site Conditions

- The owner's designated representative for construction shall provide and maintain the following for the fabricator and erector:
  - (A) Adequate access roads into and through the job site…
  - (B) A firm, properly graded, drained, convenient and adequate space at the job site…
  - (C) Adequate storage space, when the structure does not occupy the full available job site, to enable the fabricator and erector to operate at maximum practical speed.
- Otherwise, the owner's designated representative for construction shall inform the fabricator and erector of the actual job site conditions . . . Prior to bidding."

Section 8 – Quality Control/Inspections

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Quality Control (Section 8)

- Fabricator must maintain QC program (8.1.1)
- Owner may require more extensive QC procedures (8.1.3)
- Outside inspections (8.5)

8.5.1 The *fabricator* and the *erector* shall provide the *inspector* with access to all places where the work is being performed. A minimum of 24 hours notification shall be given prior to commencement of work.

8.5.2 Inspection of shop work by the *inspector* shall be performed in the *fabricator*'s shop to the fullest extent possible. Such inspections shall be timely, in-sequence and performed in such a manner as will not disrupt fabrication operations and will permit the repair of nonconforming work prior to any required painting while the material is still in-process in the fabrication shop.

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Section 9 - Changes

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Profit (or Lack Thereof)

CoSP 9.4.1 – Lump Sum Changes

- When the scope of work is changed, "an appropriate modification of the contract price shall be made."
- In computing the contract price adjustment, the fabricator and erector shall consider:
  - The quantity of work that is added or deleted
  - The modifications in the character of the work
  - And the timeliness of the change with respect to the status of material ordering, detailing, fabrication and erection operations.
    - » ALWAYS PAY ATENTION TO SCHEDULE IMPLICATIONS

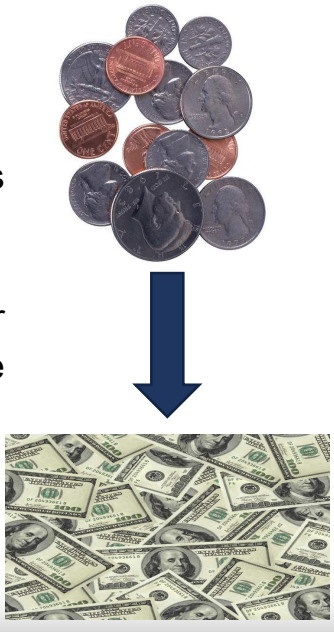
Change Orders

9.4.2 - Present change in timely manner.

- Contract CO and notice provisions govern

9.5.3 – If you are delayed "the fabricator and/or erector shall be compensated for the additional costs incurred."

- Contract will govern



CoSP 9.4.3 – Unit Price Changes

- "Price-per-pound and price-per-item contracts shall provide for additions or deletions to the:
  - quantity of work
    - » NOT CHARACTER
  - that are made prior to the time the work is released for construction.
- When changes are made:
  - to the character of the work at any time,
  - or when additions or deletions are made to the quantity of the work after it is released for detailing, fabrication, or erection,
  - the contract price shall be equitably adjusted."

CoSP 9.5.1 - Release for Construction Date

"The contract schedule shall state:

- When the design documents will be released for construction, if the design documents are not available at the time of bidding,
- And when the job site, foundations, piers and abutments will be ready, free from obstructions and accessible to the erector,
- So that the erection can start at the designated time and continue without interference or delay caused by the owner's designated representative for construction or other trades."
- Must notify of effect any revision has on the contract schedule (9.5.2)

CoSP 9.5.3 – Delays to Fabricator

"If the fabrication or erection is significantly delayed,

- due to revisions to the requirements of the contract,
- or for other reasons that are the responsibility of others,

the fabricator and/or erector shall be compensated for the additional costs incurred."

Terms of Payment (9.6)

9.6 Terms of Payment

The fabricator shall be paid for mill materials and fabricated product that is stored off the job site. Other terms of payment for the contract shall be outlined in the contract documents.

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