

SPECIFICATION GUIDE

Specification Language for Structural General Notes

Plug-in specification text for engineers of record. Includes system description, material standards, AISC 9th and 14th Edition references, and UL K912 fire rating language — ready for direct inclusion in project drawings.

SECTIONS AT A GLANCE

#	SECTION	USE WHEN
1	System Description	All projects — include on S0 or general notes sheet
2	Materials	Required — D-Beam®, plank, grout, reinforcing, structural steel
3	Design Standards & References	Required — AISC 9th Ed., 14th Ed., applicable codes
4	Fire Rating	UL K912 — all occupied floor/ceiling assemblies
5	Construction & Tolerances	Include on structural sheets; coordinate with precaster
6	Special Inspection	Required per IBC Table 1705

HOW TO USE THIS GUIDE

Each section contains specification language for direct inclusion in structural drawing general notes. Copy the shaded text blocks verbatim, then replace bracketed items (shown as [TEXT]) with project-specific values. Sections 1–3 apply to all projects. Sections 4–6 apply to most projects — confirm scope with CS3 before issuing for permit.

CS3 provides direct consultation to the engineer of record at no cost — design tools, standard details, and technical support throughout design and construction.

1 *System Description*

Include the following on the general structural notes sheet (S0.x). This language describes the system for reviewers, inspectors, and the construction team.

GENERAL NOTE — STRUCTURAL SYSTEM DESCRIPTION

GIRDER-SLAB® STRUCTURAL SYSTEM

The floor and roof framing system is the Girder-Slab® D-Beam® composite structural system, licensed and supported by CS3 — Composite Structural Steel Systems, LLC, Goleta, CA (girder-slab.com).

The system consists of custom-profiled structural steel D-Beam® girders bearing precast hollow-core concrete plank in the bottom flange, with grouted keyways forming a composite diaphragm. Steel framing and precast plank act compositely to resist gravity loads. The system is designed to minimize floor-to-floor height while meeting all applicable structural, fire, and acoustic requirements.

D-Beam® girder sizes, spans, and loadings are shown on the framing plans. Hollow-core plank is [8" / 10" / 12"] nominal depth as scheduled. Refer to CS3 Design Guide v3.5 and standard construction details for section conditions.

Modify plank depth in brackets to match specified sections. If multiple depths are used on the same project, list all or reference a plank schedule.

2 Materials

Include the following with your project's structural material schedule. Confirm specific grades with CS3 prior to issuing for bid.

2.1 D-Beam® Girders

MATERIAL NOTE — D-BEAM® GIRDERS

D-BEAM® GIRDERS:

Open-web dissymmetric structural steel girders manufactured under license from CS3 — Composite Structural Steel Systems, LLC. Fabricated from ASTM A992 or A572 Gr. 50 standard steel wide-flange sections with flat bar at top-flange. Shall meet AISC standards (except depth tolerance $\pm 1/8"$), unpainted unless specified. Cambering can be specified and built in during assembly.

Welds: E70XX electrodes, AWS D1.1.

Fabrication: Per AISC Code of Standard Practice.

Fabricator shall be authorized by CS3 prior to fabrication.

Contact: 1-888-487-1100 or girder-slab.com.

2.2 Precast Hollow-Core Plank

MATERIAL NOTE — HOLLOW-CORE PRECAST PLANK

PRECAST HOLLOW-CORE PLANK:

Prestressed concrete hollow-core plank conforming to PCI MNL-116. Available in 4 ft and 8 ft widths. Minimum 3" bearing unless noted.

Concrete: $f'c = [5,000]$ psi minimum at 28 days.

Prestress: Low-relaxation 270 ksi strand, ASTM A416.

Depth: [8"] nominal, as scheduled.

Plank designed by precast manufacturer's licensed engineer for loads and spans shown. Submit shop drawings to EOR for review prior to fabrication.

2.3 Reinforcing Steel

MATERIAL NOTE — REINFORCING STEEL

REINFORCING STEEL:

ASTM A615/A615M-24 Grade 60 deformed bars.

Reinforcing bars shall be placed through the D-Beam® web openings and into the hollow-core slab cores prior to grout placement. Bar size, spacing, and placement shall be as shown on the structural framing plans and details.

2.4 Grout

MATERIAL NOTE — KEYWAY AND CORE GROUT

CEMENTITIOUS GROUT:

Non-shrink, non-metallic grout, ASTM C1107.

Minimum compressive strength: 4,000 psi at 28 days.

Placed monolithically around and through D-Beam® web openings and into slab cores. Attain specified grout strength prior to topping placement (if used). Fill all keyways solid; consolidate by rodding or vibration.

2.5 Structural Steel — Columns and Supplemental Framing

MATERIAL NOTE — STRUCTURAL STEEL

Wide-flange shapes: ASTM A992.

HSS sections: ASTM A500 Gr. C.

Plates and bars: ASTM A36.

Anchor rods: ASTM F1554 Gr. 36, unless noted otherwise.

High-strength bolts: ASTM F3125 Gr. A325 or A490, as noted.

Welds: E70XX electrodes, AWS D1.1.

3 Design Standards & References

The Girder-Slab® system is compatible with both AISC 9th Edition (ASD) and 14th Edition (LRFD/ASD) design methods. Confirm applicable edition with CS3.

3.1 Applicable Standards

DESIGN REFERENCES — GIRDER-SLAB® SYSTEM

Comply with all applicable provisions of the following standards and codes:

- Girder-Slab Technologies, LLC — Design Guide v3.5
- American Institute of Steel Construction (AISC)
- American Welding Society (AWS)
- Precast Concrete Institute (PCI)
- American Concrete Institute (ACI)
- American Society of Testing and Materials (ASTM)
- Underwriters Laboratories Inc. (UL) — Fire Resistance Directory UL K912
- International Code Council Inc. (ICC) — International Building Code
- Other applicable codes and standards as required by jurisdiction

3.2 Design Method

DESIGN METHOD NOTE

D-Beam® girders are designed per CS3 Design Guide v3.5 using [LRFD / ASD] per AISC 360. The EOR shall verify all member selections for project-specific loadings, spans, and boundary conditions.

If shoring of the pre-composite assembly is required, leave in place until grout attains the specified strength.

Loads used for D-Beam® design (confirm with project load schedule):

Superimposed dead load: [20] psf

Floor live load: [40] psf residential / [80] psf corridors

Partition load: [15] psf (if applicable)

Select [LRFD / ASD] and confirm actual project loads in brackets before issuing for permit.

4 Fire Rating — UL K912

The Girder-Slab® system meets fire requirements through UL-listed assembly K912. Coordinate with architectural fire protection notes.

4.1 UL K912 Assembly

FIRE RATING NOTE — UL K912

The Girder-Slab® system shall be constructed in accordance with Underwriters Laboratories Inc., Floor-Ceiling Assembly Design No. K912 in order to meet fire classification standards and ratings set forth by ICC codes.

Floor/ceiling assembly fire rating: [2-hour / 1-hour] per UL Assembly K912.

Refer to UL Fire Resistance Directory, Design K912, for complete assembly details including protection type, thickness, and application requirements.

Approved fire protection methods per UL K912:

- Spray-applied fire-resistive material (SFRM) per UL K912 thickness schedule.
- Gypsum board enclosure per UL K912 drywall soffit assembly.

Select required rating in brackets based on IBC occupancy and construction type. Confirm method and thickness with fireproofing contractor and AHJ.

4.2 Spray Fireproofing (SFRM)

MATERIAL NOTE — SPRAY-APPLIED FIRE-RESISTIVE MATERIAL

Product: UL-listed SFRM, density per UL K912.

Thickness: As required per UL K912 for [2-hour / 1-hour] rating.

Application: Per manufacturer's written instructions and UL listing.

Substrate: Steel shall be clean, dry, and free of oil, grease, excessive mill scale, and loose rust prior to application.

Inspection: Special inspection required. See Section 6.

5 Construction & Tolerances

Include the following on the structural sheets. These address sequencing, bearing, and tolerances specific to the Girder-Slab® system.

CONSTRUCTION NOTES — GIRDER-SLAB® SYSTEM

1. COORDINATION: Steel fabricator, precast manufacturer, and GC shall coordinate shop drawings and erection sequences prior to fabrication. Submit D-Beam® and hollow-core shop drawings to EOR. CS3 shall review D-Beam® shop drawings.
2. BEARING: Minimum plank bearing on D-Beam® bottom flange: 3 inches. Minimum plank bearing on WF spandrel or interior beam: 3 inches. Do not reduce below minimums without written EOR approval.
3. KEYWAY GROUTING: Grout all keyways solid. Place monolithically around and through D-Beam® web openings and into slab cores. Attain 4,000 psi minimum prior to topping placement.
4. SHORING: If EOR requires shoring of the pre-composite assembly, leave in place until grout attains required strength.
5. ERECTION SEQUENCE: Do not load floors until keyway grout reaches 3,000 psi. Coordinate shoring for cantilevered and transfer conditions with EOR.
6. CAMBER: Plank will exhibit upward camber. Coordinate with flooring contractor. Self-leveling underlayment or topping may be required per finish schedule.
7. PENETRATIONS: Cut penetrations only as shown on approved drawings. Notify EOR and CS3 of any unplanned openings. Do not cut prestressing strands without EOR approval.
8. TOLERANCES: Plank erection: $\pm 3/4$ " plan; $\pm 1/4$ " differential camber between adjacent units. D-Beam® girder elevation: $\pm 1/4$ " from design elevation.
9. COMPLIANCE CERTIFICATE: The Girder-Slab® system supplier shall provide the Project Owner a Compliance Certificate upon completion of system assembly.

6 *Special Inspection Requirements*

Required under IBC Chapter 17. The EOR shall prepare the project-specific Statement of Special Inspections (SSI) per IBC Section 1705. The SSI takes precedence.

STRUCTURAL STEEL FABRICATION AND ERECTION

SPECIAL INSPECTIONS — performed by an approved inspection agency

- Material identification (mill certs for D-Beam® girders and WF members)
- Weld inspection: CJP/PJP welds — continuous; fillet welds — periodic
- High-strength bolt installation: periodic
- Erected steel frame: periodic

PRECAST CONCRETE

SPECIAL INSPECTIONS — PRECAST

- PCI-certified plant certification (continuous at plant)
- Review of precast shop drawings and prestress certifications
- Grout placement at keyways and column pockets: periodic

SPRAY-APPLIED FIRE-RESISTIVE MATERIAL (SFRM)

SPECIAL INSPECTIONS — SFRM

- Substrate condition prior to application: continuous
- Thickness and density of applied SFRM: periodic
- Adhesion/cohesion testing per UL listing requirements

Specification language provided by CS3 — Composite Structural Steel Systems, LLC for reference only. All language must be reviewed, adapted, and stamped by the licensed engineer of record.

Contact CS3 girder-slab.com
1-888-487-1100