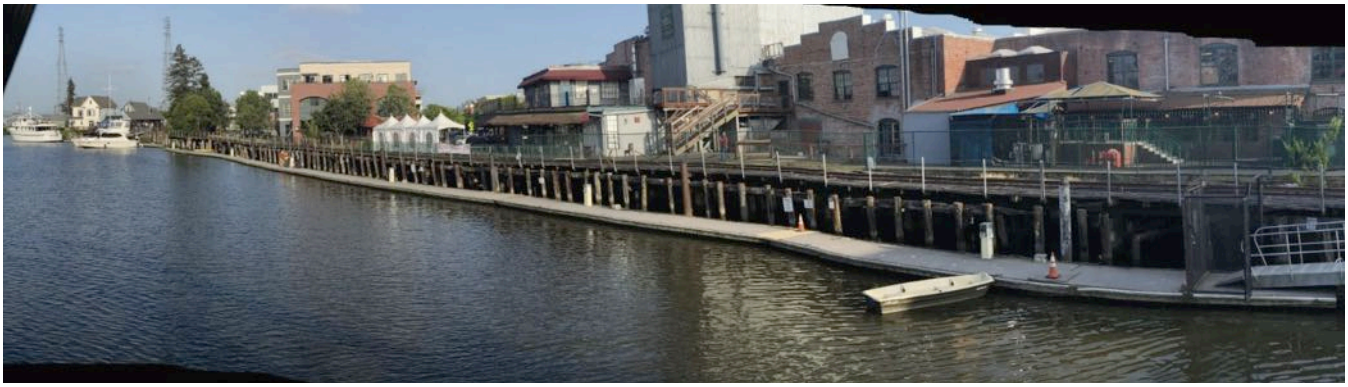
Report on:

Wood Condition Assessment of the
Petaluma Trestle, Petaluma, California



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July 14, 2023

WOOD CONDITION ASSESSMENT OF THE PETALUMA TRESTLE, PETALUMA, CA

INTRODUCTION

This report is based on a series of virtual meetings and fieldwork completed by the Porter & Associates assessment team, in coordination with Ms. Kristine Gaspar and Mr. Satish Chilka of GHD Inc., and City of Petaluma (the City) staff. The Petaluma Trestle (the Trestle) is located along Water Street in downtown Petaluma, fronting Petaluma Creek. It no longer supports rail traffic and the City is investigating whether it can be reused as a public walkway. Specifically, the City is concerned with a) the condition of the Trestle, b) determining allowable design values, and c) identifying suitable materials and methods for its repair.

Mr. Doug Porter and Mr. Ron Anthony met GHD staff and representatives of the City of Petaluma on December 22, 2022 to discuss the City's goals for the trestle, identify information needed by GHD to make informed repair/replacement recommendations to the City of Petaluma, and to make visual observations on the wood condition and the needs for any further assessment, including in-situ testing and logistics for accessing the trestle.

Based on the December 2022 site visit, Porter & Associates made the following observations:

- Wood species needs to be determined for various member types – timber piles, pile caps, stringers, braces, and ties.
- The timber piles exhibit a range of conditions from poor to good but could be assessed to determine remaining cross section, should that be needed by GHD or the City of Petaluma for structural reasons or to satisfy historic preservation requirements.
- The pile caps and stringers appear to be in good condition, generally.
- The ties could be viewed only from the bottom due to plywood and debris on the upper surface. From below, the ties appeared to be in fair to good condition.
- The structural grade(s) of the timber piles, pile caps, stringers, and braces are unknown but they affect the ability of the trestle to carry the anticipated loads.
- Plywood and vegetation should be removed from the surface of, and adjacent to, the deck.

Based on our December site observations, the City's goals for the trestle, and the information needed by GHD for making recommendations to the City, a more detailed

assessment based on the following scope of work was conducted from May 22 – 27, 2023.

SCOPE OF WORK

The assessment was designed to provide answers to specific questions raised by the City and the structural engineer about the condition, species, and grade of the structural members in the Trestle.

After more than a century of service, the condition of timber pilings, pile caps, sway braces, stringers, and decking that make up the Trestle varies broadly, from poor to excellent. The assessment was designed to establish where there is loss of structural cross section in key wood members (primarily pile caps and stringers) due to deterioration, biological or otherwise, and identify conditions that could result in continued loss of cross section.

Prior to this assessment, the species and structural grade of the various member types were unknown. The species and grade, along with condition, determine the amount of load each member can support. Species identification and visual grading provide a more reliable means of determining the allowable stresses and identifying structural members requiring reinforcement or replacement. Species identification and visual grading are also essential to identifying suitable repair materials in compliance with the Secretary of the Interior's Standards for Treatment of Historic Properties.

To collect this information, the wood condition assessment included the following tasks:

- Removal of 12 – 20 wood samples (approximately ¼" to ¾" by 1") from structural member types (piles, bracing, stringers, etc.) of concern to the structural engineer to identify the wood species or wood species groups for purposes of establishing allowable design values and specifying repair and/or replacement material consistent with the Secretary of the Interior's Standards,
- Conducting in-situ visual grading of a representative sample of each structural member type,
- Conducting a visual inspection of the structural members (that includes probing areas that have potential decay, insect, or marine borer damage),
- Taking moisture content measurements of a representative sample of structural members above water line (the superstructure) to determine whether conditions exist that are favorable to the growth of wood decay fungi,

- Quantifying internal deterioration in structural members using resistance drilling, focusing on timber pile caps and stringers, and a limited number of timber piles to augment GHD's pile assessment,
- Consulting with the structural engineer on replacement material and/or suitable repair options that may be required,
- Providing the findings of the field investigation in a brief written report,
- Annotating sketches to identify the species of the wood members, and
- Annotating sketches to identify the location and extent of decay present and loss of cross-section in the wood members, including areas in the vicinity of connections where there is wood-to-wood contact.

Prior to conducting the field work, GHD provided photographs and schematics of the Trestle for annotation by the assessment team.

Assessment Logistics:

- Access to the structural members of the trestle was known to be a limiting factor for the assessment. A floating dock, fender piles, miscellaneous pipes and other hardware, close proximity of the piles and stringers, fencing adjacent to the deck and tidal fluctuations made access challenging (Figure 1).

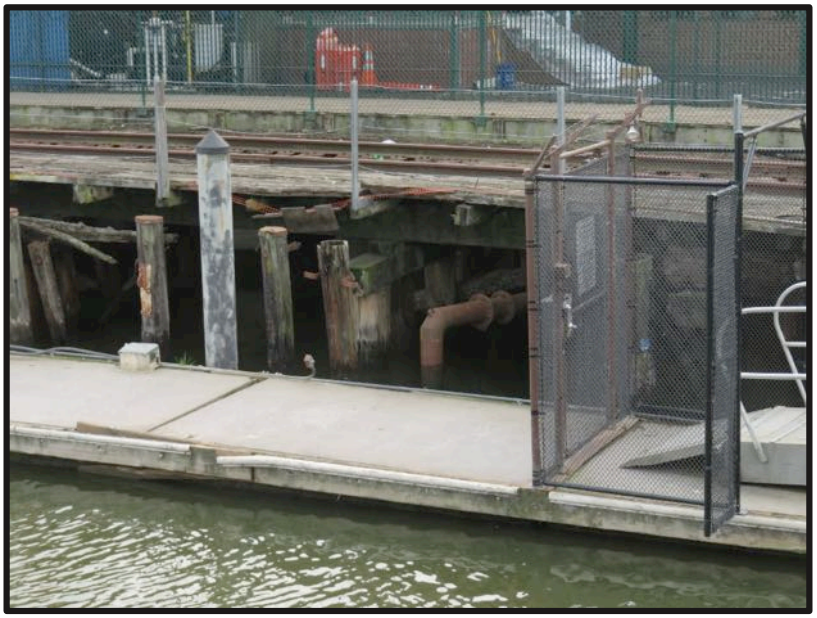


Figure 1. West end of the Trestle showing limited access for conducting the assessment.

- The City made arrangements for access to the site, including the clearing of brush and removal of plywood and debris on or adjacent to the Trestle deck

(between the rails) prior to the wood assessment so timbers and decking could be accessed from above as needed.

- The City provided access support in the form of a) three skiffs and three crew from the City's contractor for accessing the tops of the pile bents and the bottom surfaces of the trestle deck during high tide, b) two inflatable platforms for accessing piles during low tide, and c) removal of plywood from the portion of the deck between the rails for access to the stringers from above (wherever the gaps between the ties would allow).

- As a result, access to the trestle superstructure (tops of piles, pile caps, and stringers) which was the primary area of interest, was limited to high tides (when the superstructure could be reached from skiffs), and areas of the stringers that could be reached from above by angling a drill between the larger gaps between ties. Access was further limited by a reduction in the length of the work week to accommodate an event on the dock beginning May 25 and continuing through the rest of the week. Additionally, trees, brush, and a homeless encampment effectively precluded work in Bay 36-37.

FIELD PROCEDURES AND FINDINGS

Porter & Associates provided a team of wood inspectors and a wood scientist to conduct the wood condition assessment; the site visit was conducted from May 22 - 27, 2023. An onsite meeting with the structural engineer and City staff at the beginning of the field investigation verified the objectives based on engineering and historic preservation requirements, and established assessment priorities (which of the timber members warranted more detailed investigation). Results of the assessment can be used to conduct structural analyses based on established material properties, and to prioritize any repairs needed for the Trestle.

The investigative tasks were based on a combination of species identification, visual inspection and probing, moisture content measurements, visual grading, and resistance drilling. Figure 2 shows a typical bent where a substantial proportion of the inspection was conducted, often focusing on interfaces between timber members where trapped moisture could lead to decay over time. The methods used and the findings are described below.

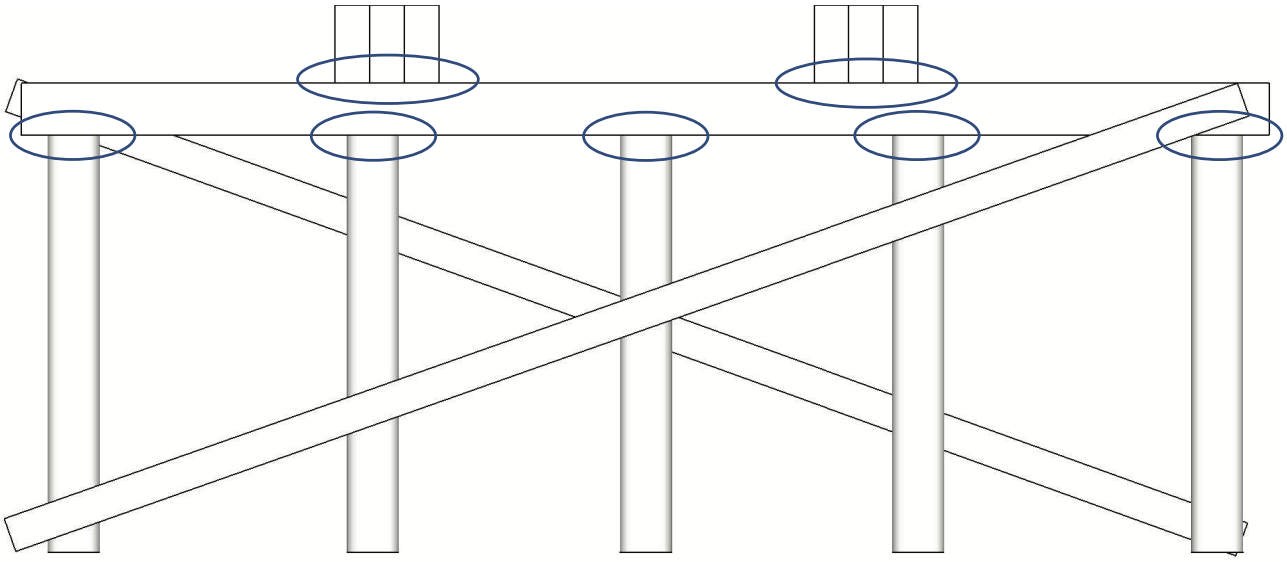


Figure 2. Schematic of a bent showing typical locations where tests were conducted.

Species Identification

Identifying wood species, along with determining the structural grade and condition, makes it possible to determine design properties for conducting a structural analysis and to identify compatible material for repairs. Wood species was identified by removing small samples from Trestle members, and the species or species group was identified based on microscopic examination (Figure 3). Twenty-three samples were removed to identify species of key structural wood elements to aid in completing structural analyses; results are included in Table 1.

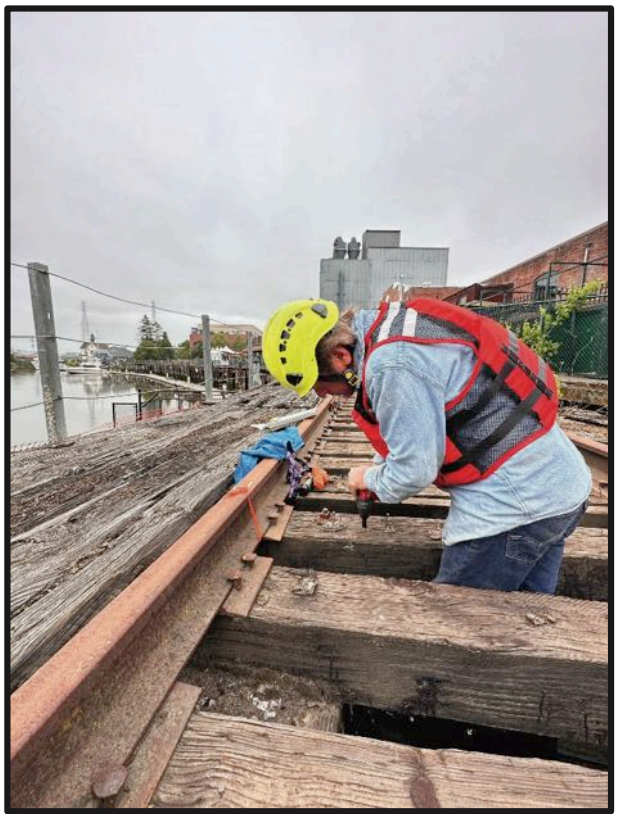


Figure 3. Using a portable drill and a ½″ plug cutter to remove a sample from a tie for identifying wood species.

Table 1. Species identification for Petaluma Trestle.

Sample Number	Member Type	Bent or Span ID	Member Number	Species	Comments
S05	Cap	33	n/a	Douglas-fir (*Pseudotsuga menziesii*)	
S22	Cap	32		Redwood (*Sequoia sempervirens*)	
S24	Cap	13		Douglas-fir	incised
S01	Stringer	15-16	3	Douglas-fir	
S03	Stringer		6	Douglas-fir	
S09	Stringer	1-2	3	Douglas-fir	
S11	Stringer	28-29	3	Douglas-fir	
S14	Stringer	13-14	3	Douglas-fir	
S15	Stringer	35-36	2	Douglas-fir	
S20	Stringer	32-33	6	Douglas-fir	
S23	Stringer	35-36	6	Douglas-fir	
S25	Stringer			Douglas-fir	
S04	Pile	32	5	Redwood	
S06	Pile	33	3	Redwood	Square pile

Sample Number	Member Type	Bent or Span ID	Member Number	Species	Comments
S17	Pile	32	3	Redwood	
S02	Tie	15-16		Douglas-fir	
S13	Tie	1-2		Douglas-fir	
S16	Tie	35-36		Douglas-fir	incised
S19	Brace	35		Douglas-fir	
S21	Brace	13		Douglas-fir	
S10	Outrigger	1		Douglas-fir	
S12	Outrigger	15		Douglas-fir	
S08	Decking	20		Douglas-fir	

Visual Inspection, Probing, and Sounding

Visual examination of the wood resulted in the identification of components that are missing, broken, or in an advanced state of deterioration. Missing components are those which have been removed or have fallen away because of deterioration, failure, or vandalism. None of the pile caps or stringers were missing. Visual inspection also allowed for the detection of past or current moisture problems, as evidenced by moisture stains on the exposed surfaces of the wood. Further, visual inspection enabled detection of external wood decay fungi, marine borers, and insect activity as determined by the presence of decay fruiting bodies, fungal growth, insect bore holes or wood substance removed by wood-destroying insects, and fire damage.

Internal decay and insect damage are often difficult to detect due to the lack of evidence on the exposed surface of the wood. Probing the wood with an awl or other sharp tool enables rapid detection of surface deterioration or voids in the wood that may not be visible on the surface (Figure 3). It can also indicate the approximate depth of any deterioration that is visible on the surface. Visual inspection and probing provided a rapid means of identifying areas that required further investigation, and identified areas of interest for additional inspection or consideration by the engineer, including: a) areas of exposure or loss that required additional examination with the resistance drill, including the tops of piles that extend beyond the pile caps and as a result have additional weather exposure (see Fig. 11), b) surface losses of unknown depth (see Figs. 13, 14; this is one of the ways that individual areas are prioritized for drilling), and; c) reductions in connection capacity associated with end splits, longitudinal splits, etc. (conditions noted on the schematics).

Sounding with a hammer is a means of rapidly evaluating whether a member has advanced decay. Sounding was used on the ties to aid in determining whether voids were present. In general, a dull thud is indicative of a hollow timber, while a higher-pitched ring is indicative of sound wood. Sounding is used for screening, rather than

quantifying loss of section in timbers and is conducted on repetitive members where individual load requirements may not be critical; sounding played a role in determining the percentage of ties that are likely to require replacement, for example.

Figure 4. Using a knife to probe the shell of a pile with loose wood fibers to determine the extent of surface deterioration.

Moisture Content Determination

Prolonged exposure to moisture can produce undesirable conditions and long-term maintenance issues for wood in a structure. Excessive shrinkage or swelling, checking, loose connections, and decay are typical problems. Moisture diagnostics were conducted to identify areas of elevated moisture content and to determine whether further investigation of potential areas of decay was warranted (Figure 5).

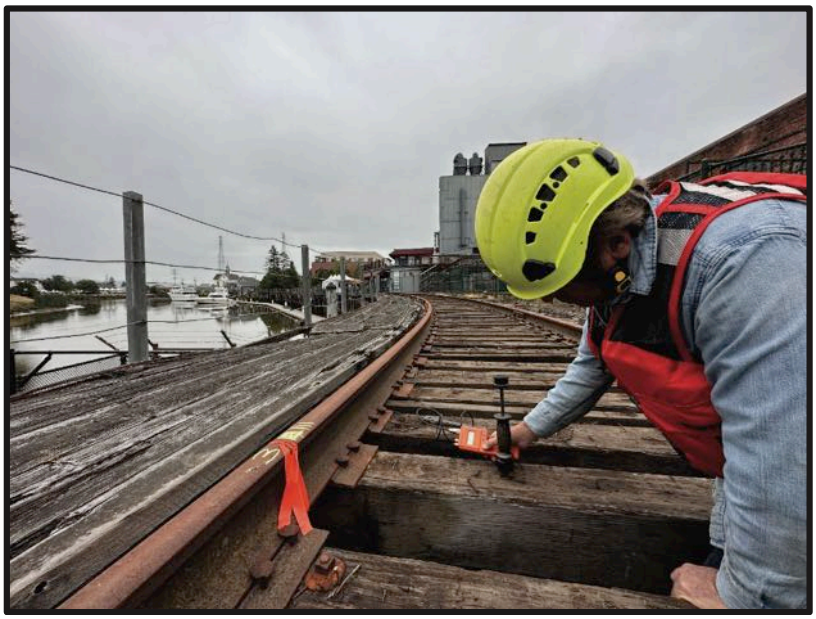


Figure 5. Taking a moisture content reading on a tie.

Moisture content measurements identify wood with favorable moisture levels for the growth of wood-decay fungi. Because the trestle is in a marine environment, it would not be unusual for elevated moisture levels to be present, particularly in the timber piles above high-tide level. The moisture determination focused on timber in the superstructure well above the high-tide level but the interpretation of the results should still allow for the presence of the marine environment that could produce higher values than typical for timber in ambient conditions in Petaluma.

Generally, if the moisture content is less than 20 percent wood-decay fungi are unable to grow. While fungi may be present at lower moisture contents, they are unable to continue to deteriorate the wood without sufficient moisture. Moisture contents from 20 to 30 percent indicate areas of concern where sufficient moisture is present for fungi to grow but not sufficient to indicate advanced decay. Moisture contents above 30 percent are often an indication of advanced decay with internal voids and / or surface deterioration.

Moisture content readings taken primarily on the stringers and ties indicate the conditions, at the time of the assessment, were not favorable for active wood decay. The area has not been unseasonably dry (if anything, it has been unseasonably wet) prior to the assessments so elevated moisture contents would not have been unusual. Additionally given that plywood covered a significant portion of the ties and deck but would have allowed for moisture from above to find its way to the stringers below, the readings would support the assumption that if the superstructure is exposed to the elements, the wood can get wet but then dry more easily than when it was covered by the deteriorated plywood. So long as a new covering, such as a pan with concrete, is not installed while the timbers are wet due to recent precipitation, the new cover will act as a roof for the timbers below, thereby extending their service life.

Timber Grading

Lumber and structural timbers used in new construction are intended to comply with the relevant building code for that jurisdiction. For wood construction, structural engineers rely on design values referenced in the building code to determine an acceptable species, size, and grade for a particular load condition. The design values given in the building code for solid wood products are established by the American Wood Council and published as the *National Design Specification for Wood Construction*.[1] The published design values are based on test data and procedures published by the American Society for Testing and Materials (ASTM) that demonstrate the engineering performance of the material.[2] Wood products are graded in accordance with procedures promulgated by one of several forest products industry associations, such as the Western Wood Products Association (WWPA), as shown in Figures 6 and 7).[3]

Figure 6. The size and location of the knots on the timber (shown by the arrows) were used to determine the structural grade of this pile cap.

[1] American Wood Council, 2018, *National Design Specification for Wood Construction*, Washington, D.C.
[2] American Society for Testing and Materials, *Annual Book of Standards*, Vol. 04.10: D245, Standard Practice for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber; D2555, Standard Test Methods for Establishing Clear Wood Strength Values. ASTM, West Conshohocken, Pennsylvania.
[3] Western Wood Products Association, *Western Lumber Grading Rules*, Portland, Oregon.

Figure 7. Slope of grain, as indicated by the angle of the seasoning checks, was used to determine the structural grade of this stringer. Seasoning checks are a natural characteristic of lumber and timber and do not affect the strength of the member.

For existing structures, the engineer often relies on assumed species and current standards to determine the adequacy of the wood members to remain in service. Since many structures were built before building codes or design values for wood products were established (and, thus, before grade stamps were used), engineers are often in a quandary when determining what design values are appropriate. Frequently an assumed species and grade are assigned, only to show that the wood members are structurally deficient. The result is often an overly conservative estimate of design values and unnecessary replacement and repair decisions with the associated unnecessary project costs.

Through in-situ visual grading of the structural wood members of interest to the structural engineer, Porter & Associates is providing grade information in Table 2 essential to the structural analyses required for determining the structural adequacy of the Trestle and the extent of any necessary repairs. Species and grade are provided for the diagonal sway braces to document historical construction and for specifying replacement material. Grade is not relevant for the ties for supporting the deck since, unlike pile caps and stringers, there is only one grade for ties.

In addition to the structural grade, replacement materials should be specified according to the appropriate American Wood Protection Association Use Category for pressure treatment, subject to relevant California environmental restrictions.

When multiple species are present for a member type, the species with the lowest reference design values is used for structural analysis to determine capacity and specifying repair and replacement material. This is the case for the timber pile caps, which were found to be a combination of Douglas-fir and redwood timbers. Similarly, samples removed from timber piles indicated that both Douglas-fir and redwood were used for the piles.

Table 2. Structural grades for superstructure member types in the Petaluma Trestle.

Member Type	Structural Grade
Timber pile caps	Select Structural, Redwood, Timbers
Timber stringers	Select Structural, Douglas Fir – Larch, Beams and Stringers
Diagonal sway braces	Select Structural, Douglas Fir – Larch, Visually Graded Dimension Lumber

Quantifying Deterioration using Resistance Drilling

Resistance drilling is a quasi-nondestructive technique for determining the relative density of wood. It is best suited for determining internal problems in large wood components which do not show obvious signs of deterioration. Any internal voids due to decay or marine borer damage at the location drilled can be detected by determining the relative density of the wood (Figures 8 and 9). The relative density is printed on a strip of paper as a small diameter needle penetrates the wood, as seen below (Figure 10) for (a) a solid section and (b) wood with internal decay (but not a void). Resistance drill results from our inspection of the trestle can be found in the Resistance Drilling Results tables in the Appendix.

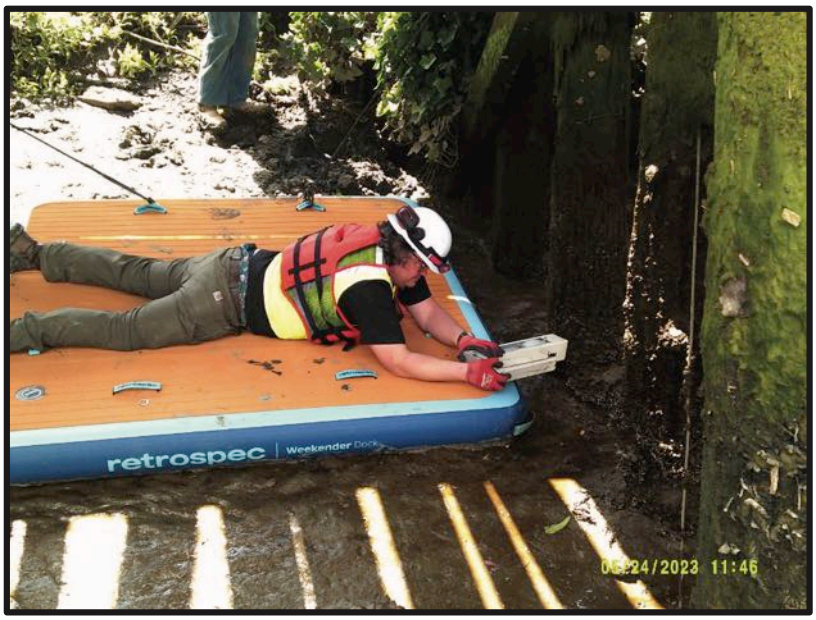


Figure 8. Resistance drilling of a timber pile near mudline at low tide.

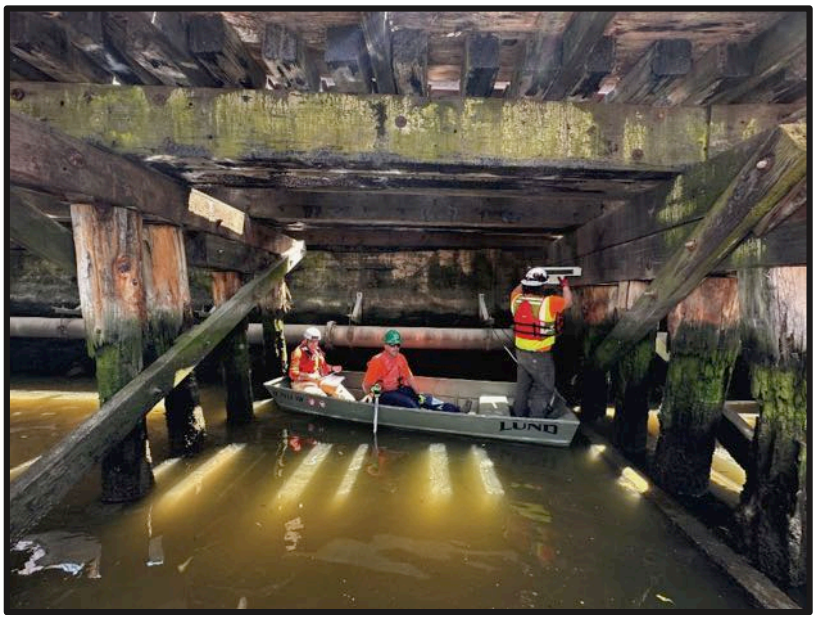


Figure 9. Resistance drilling of a pile cap.

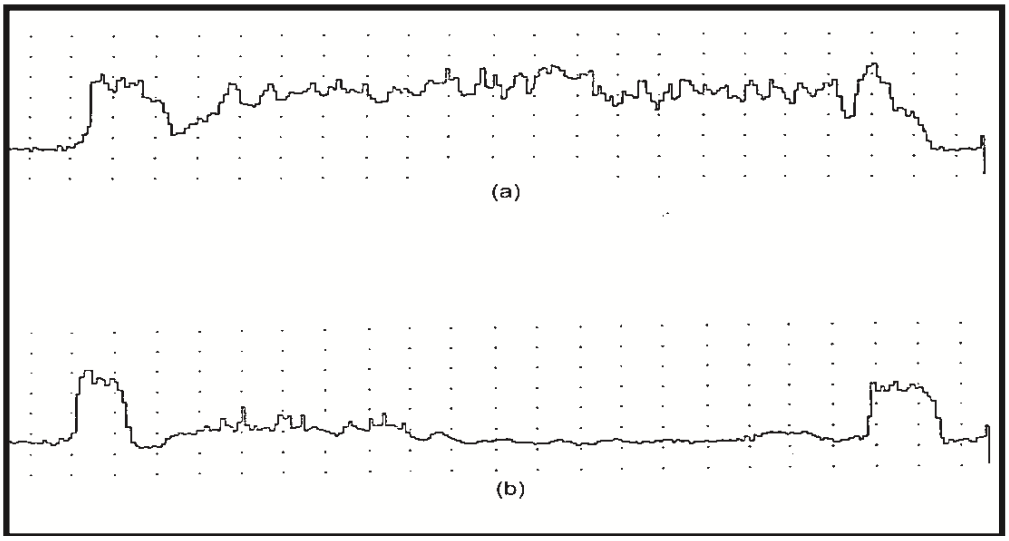


Figure 10. Typical resistance drilling results showing (a) solid wood and b) wood with solid shells on the exterior with internal decay (but not a void) that reduces the effective cross section.

TYPICAL CONDITIONS, CONCLUSIONS, AND RECOMMENDATIONS

This report presents a) photo-documentation of typical conditions, b) the findings of the wood condition assessment, and includes c) recommendations for repair. Findings and recommendations are organized according to member type (including piles, pile caps, sway braces, longitudinal braces, stringers, and deck). This summary presentation of results is followed by:

- A set of schematics annotated to identify current conditions, sample locations, and resistance drill locations (in the Appendix), and
- A table conveying the results of the resistance drilling survey (in the Appendix)

Photo-Documentation of Typical Conditions

Figure 11. Where the tops of piles are not completely protected by the pile caps, they are susceptible to weather and subsequent wood decay, as viewed from above. The inspection included resistance drilling of a representative sample across the diameter within a few inches of the top surface to detect decay voids.

Figure 12. Stringers are nominally 8 x 18, are arranged in sets of three stringers under each rail, and meet over pile caps.

Figure 13. Of the 35 pile caps we were able to inspect, we found nine that effectively have no surviving cross section in at least one location along the length and likely require replacement in kind, pending engineering review of wood assessment findings.

Figure 14. Approximately 23% of the ties have large internal decay voids, many of them accompanied by prominent drying checks on the top surface, along with holes left by spikes that seem to have accompanied an old switch. If left exposed to the elements, the large checks and holes provide a means of water ingress that can lead to additional decay.

Figure 15. Much of the framing south of the rails is unsalvageable and will require replacement in any repair scenario.

Figure 16. 'Stovepipe' condition in a fender pile; a condition where the wood on the pile interior has decayed, leaving only a shell, typically at the top of the pile. We encountered this condition in the piles that were subjected to resistance drilling in a single instance only.

Figure 17. Arrow points to an end split in a pile cap focused on a bolted sway brace – pile cap connection (on the left, or east side, of the cap). The split effectively reduces connection capacity.

Figure 18. Many of the sway braces are of high-quality wood and are in serviceable condition as is. Should there be a need to repair or replace the piles, the sway braces should be replaced in-kind. Note the extension of the bent, perhaps to carry a switch and second set of rails.

Figure 19. Some of the pile caps are doubled; note the necking down of some piles.

Assessment Findings

1. The wood species of the structural members in the Trestle (piles, pile caps, stringers, sway braces, and the ties and planks forming the deck) is a combination of Douglas-fir *(Pseudotsuga menziesii) and* redwood *(Sequoia sempervirens).* Of the major structural members, samples from the stringers were all Douglas-fir and samples from the pile caps and piles were a mix of species. It is not possible from the wood assessment to determine if the members are original or replacement members.

2. Because of the combination of species, the structural grade that can be assigned to the pile caps is Select Structural, Redwood Timbers, based on criteria established in ASTM D245, the Redwood Inspection Service, and the *Western Lumber Grading Rules 2017* promulgated by the Western Wood Products Association (WWPA).

3. The structural grade of the timber stringers is Select Structural, Douglas Fir - Larch Beams and Stringers, based on criteria established in ASTM D245 and the Western Lumber Grading Rules 2017 promulgated by WWPA.

4. The structural grade of the ties is not relevant to this project, only the condition, as the ties will likely be covered with a pan and continuous wearing surface, such as a concrete deck.

5. Sway braces consist of diagonal pieces of lumber attached to the piles on a given bent. The structural grade that can be assigned to the sway braces is Select Structural Douglas Fir – Larch Visually Graded Dimension Lumber.

6. The pile caps and stringers were pressure treated with creosote. The creosote treatment has largely been effective in protecting the pile caps and stringers against biodeterioration, except at the interface with other timber members (e.g., where the stringers bear on the pile caps and where the pile caps bear on exposed end grain of the timber piles). The exposed ends of the pile caps exhibit limited seasoning checks and splits but generally did not exhibit deterioration due to wood decay.

7. The condition of the pile caps is, generally, poor-to-excellent, with deterioration due to wood decay, with the most severe loss of section generally below a stringer, sometimes resulting in a shell and no sound wood on the interior. Of the 35 pile caps we were able to inspect, we found nine that effectively have no surviving cross section in at least one location along the length and possibly require replacement in kind, pending engineering review of wood assessment findings.

8. The condition of the stringers is, generally, fair-to-excellent with exceptions typically at the ends of stringers where they rest on the pile caps.

9. The condition of the ties making up the decking is, generally, poor-to-good, meaning that some deterioration due to wood decay is present in some areas of the Trestle. Approximately 23% of the ties have large internal decay voids, many of them accompanied by prominent drying checks on the top surface, along with holes left by spikes that seem to have accompanied an old switch. If left exposed to the elements, these large checks and holes can fill with debris and provide a means of water ingress that can lead to additional decay.

10. The condition of the timber piles was not within the scope of the wood assessment; however, limited assessment of the piles was conducted to augment the inspection by the structural engineer. Of the 44 piles assessed, approximately 75% were solid with no internal voids. This included drilling some piles at mud level, some in the necked-down zone, and some within a few inches of the pile

caps); the other piles had varying degrees of deterioration. This testing was not intended to be comprehensive but to augment the findings of the visual inspection of the piles conducted by GHD.

11. Many of the sway braces are of high-quality wood and are in serviceable condition as is. Should there be a need to repair or replace the piles, the sway braces should be replaced in-kind.

12. Although not within the scope of the wood assessment, the outriggers and planks outboard of the rails are, generally, in poor condition, meaning that severe deterioration due to wood decay fungi and/or weathering has occurred in most of the members.

13. Moisture content readings taken primarily on the stringers and ties indicate that conditions at the time of the assessment were not favorable for active wood decay.

Recommendations

1. Subject to engineering requirements, most of the pile caps can likely remain in service. Some reinforcement or replacement of those with large voids may be necessary.

2. Subject to engineering requirements, most of the stringers can likely remain in service. Repairs or reinforcement of deteriorated stringer ends where they bear on the pile caps should be considered by the structural engineer to provide adequate bearing for the deck, recognizing that there is considerable redundancy provided by the six stringers spanning between bents.

3. The sway braces will need to be replaced if the piles are repaired, in which case the replacement braces should be of Select Structural Douglas Fir – Larch Visually Graded Dimension Lumber.

4. Because of the close spacing of the ties, individual ties with minor deterioration can either be replaced or remain in service so long as remedial preservative treatment (such as borate rods[4]) is applied and the deck is covered with a

[4] Borates are low-level toxicity preservatives that are used to improve the durability of both new and in-service wood products. They require moisture to migrate through the wood so they are placed in the wood where conditions are favorable for wood decay, such as material interfaces. Available in a variety of formulations, most remedial treatments are based on fused rods (solids) that contain the borate preservative. Holes are drilled on the bottom or lateral face of the timber (to reduce the probability of moisture infiltration), the rods are inserted and the holes are filled with either a pressure-treated wood plug or a plastic threaded plug (to aid in inserting additional rods during

continuous wearing service. Individual ties with more severe deterioration could be replaced and groups of consecutive ties with severe deterioration should be replaced.

5. It is recommended that the outriggers and planks be replaced because of their poor condition.

future inspection cycles). The rods are placed in the wood where moisture absorption is a concern – near the exposed end grain, near the bottom face of wood close to ground contact (such as the columns) and at where stringers rest on pile caps. Borates can be used as part of a cyclic maintenance program.

APPENDIX:

This appendix includes:

1) A set of schematics with graphic representation of assessment results, based on typical bent elevations and stringer plans, and showing **a)** approximate locations of resistance drilling sites, numbered to correspond to the drill logs; **b)** the drill notation on the schematics is color-coded to indicate cross-section losses encountered at that individual drill site; for drill notation without color coding, no void was encountered; for drill notation color coded yellow, cross-section losses (SL) were less than 25%; for drill notation color coded orange, cross-section losses were between 25% and 50% (inclusive), and; for drill notation color coded red, cross-section losses were greater than 50%; **c)** for stringers, cross-section losses are expressed as percentages of the cross section of each stringer assembly (18" x 24"), and **d)** observations pertaining to structural grade, conditions that might affect the capacity of connections or individual members, and the presence of incising that may indicate repairs that occurred subsequent to original construction of the trestle. Grade information is expressed as S.S. (for Select Structural) and 1 Common (for #1 Common)

2) The resistance drilling logs (4 total), organized by member type (*pile caps* supporting the stringers, *stringers* supporting the ties, *piles* supporting the pile caps, and *ties* forming the deck) and drill number, and providing detailed information on drill location, drilling direction, and drilling results.

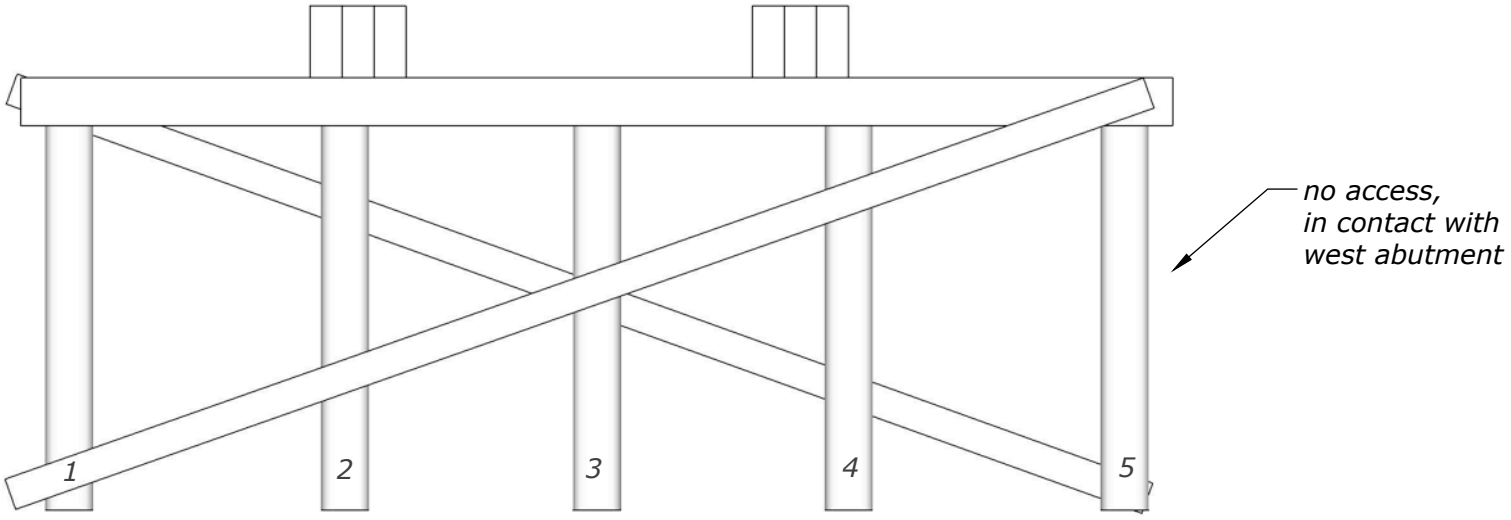
XXXX = <25% SL

XXXX = 25%-50% SL

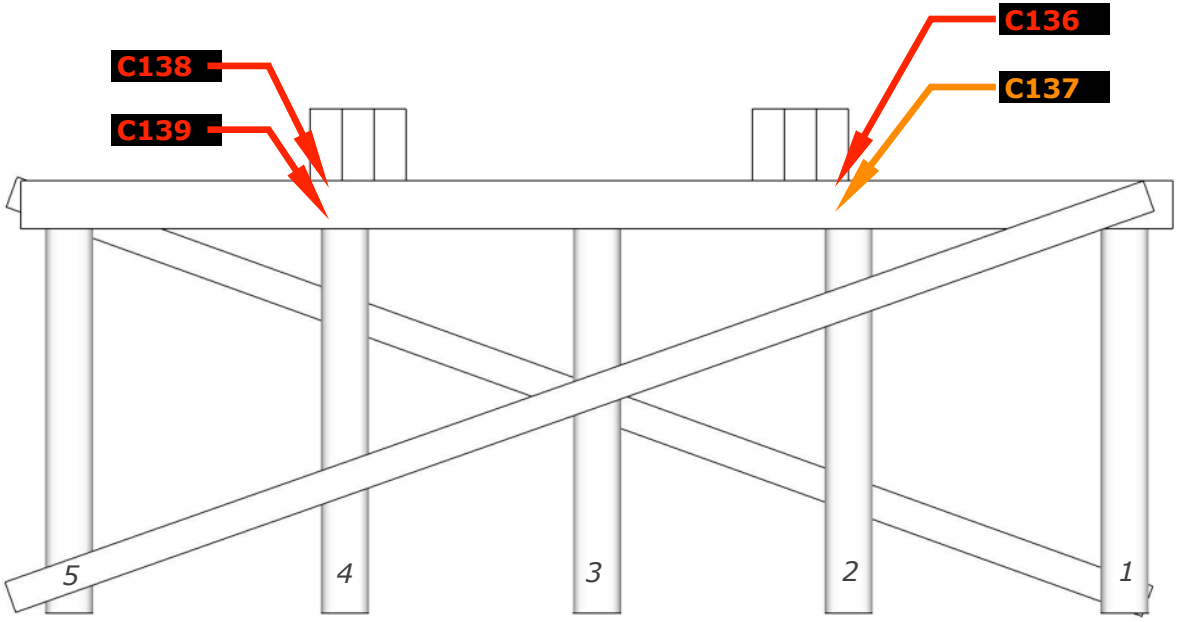
XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")

Notes:
Fascia stringers are unsalvageable



BENT 1 West Elevation



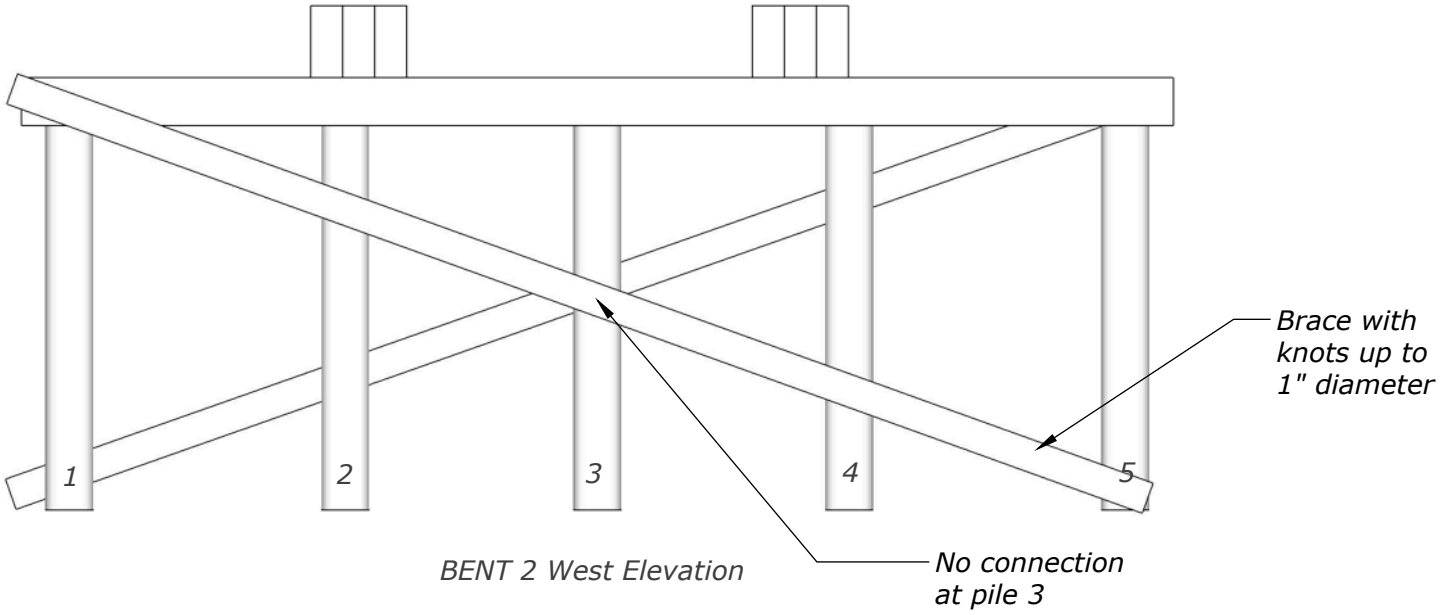
BENT 1 East Elevation

XXXX = <25% SL

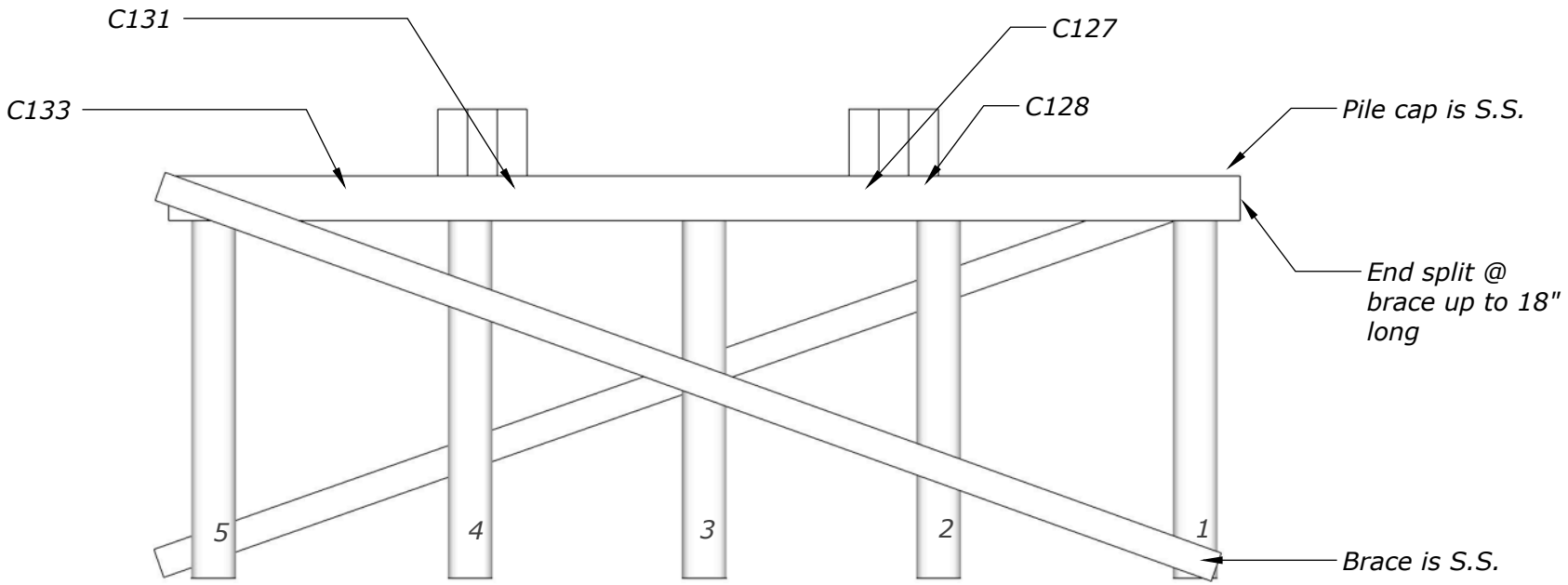
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 2 West Elevation



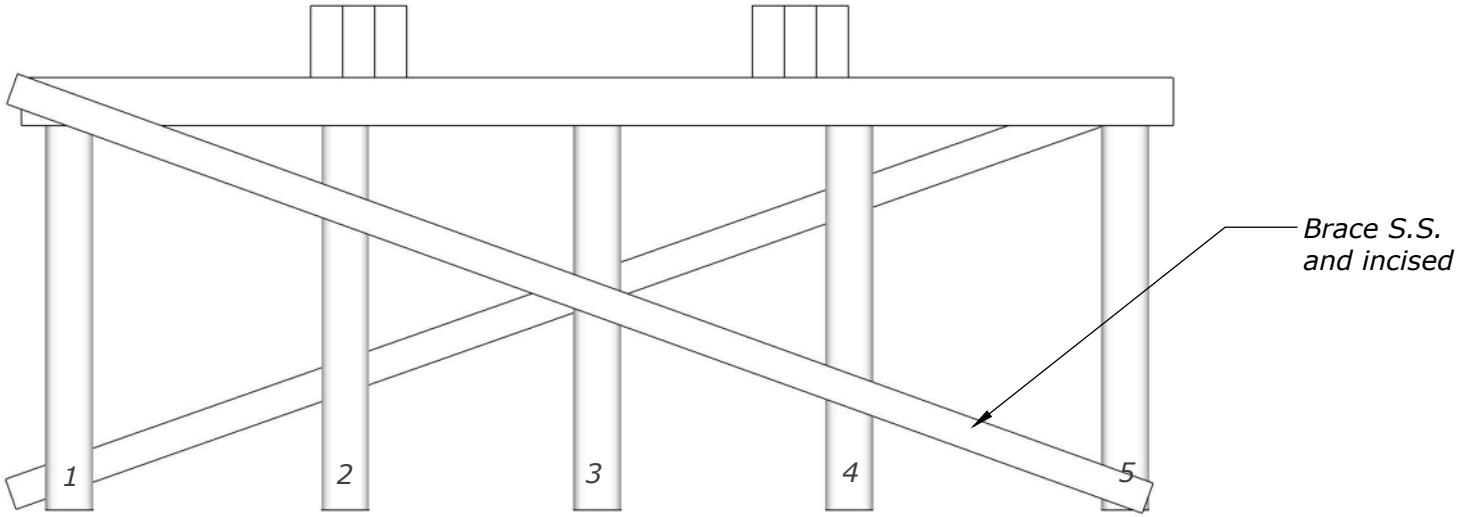
BENT 2 East Elevation

XXXX = <25% SL

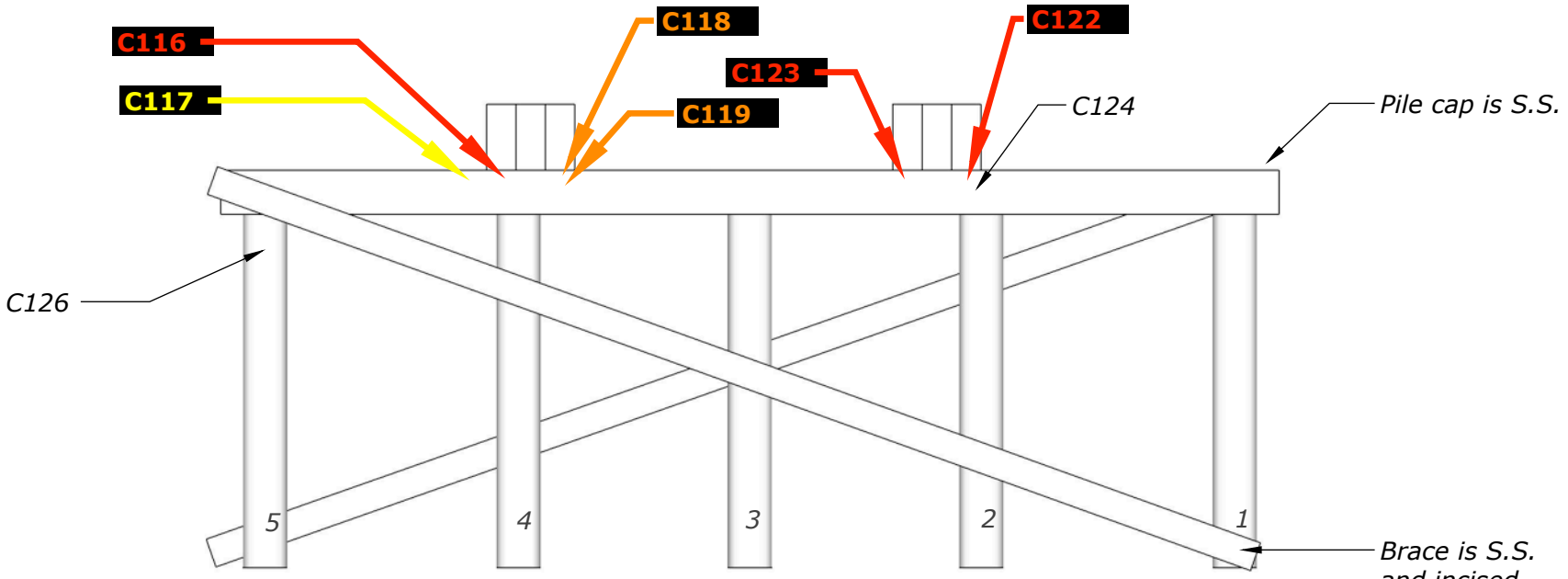
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 3 West Elevation



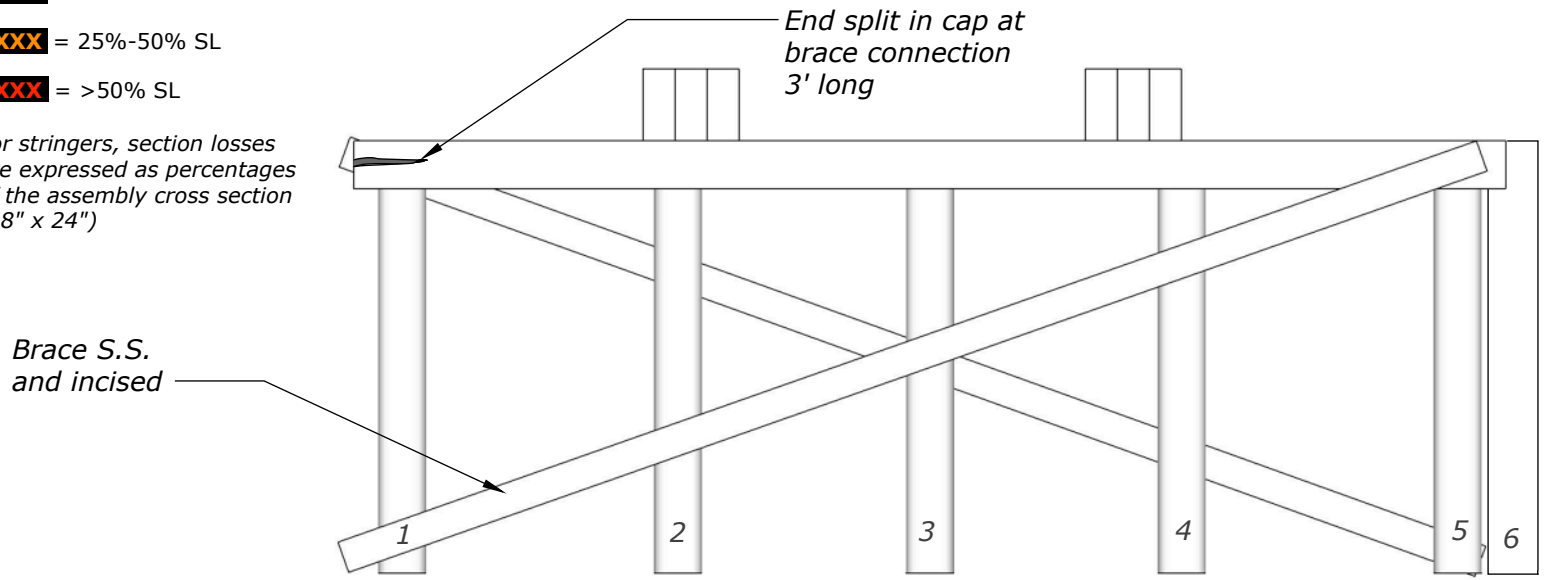
BENT 3 East Elevation

XXXX = <25% SL

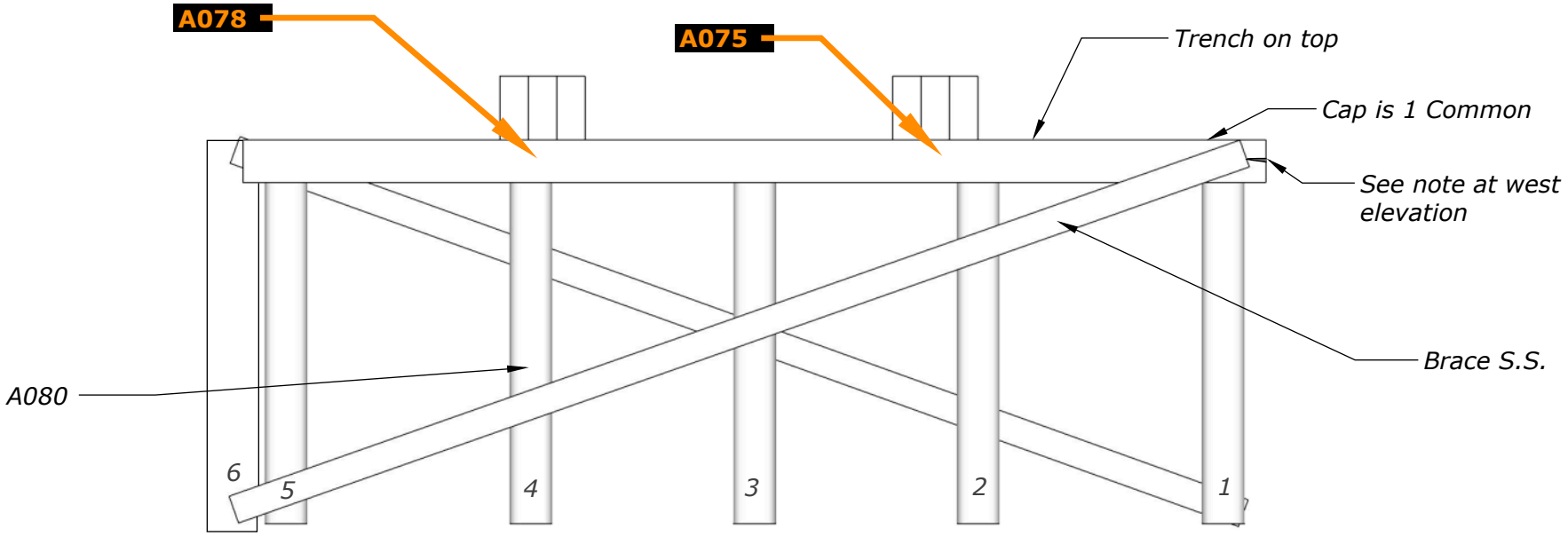
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 4 West Elevation



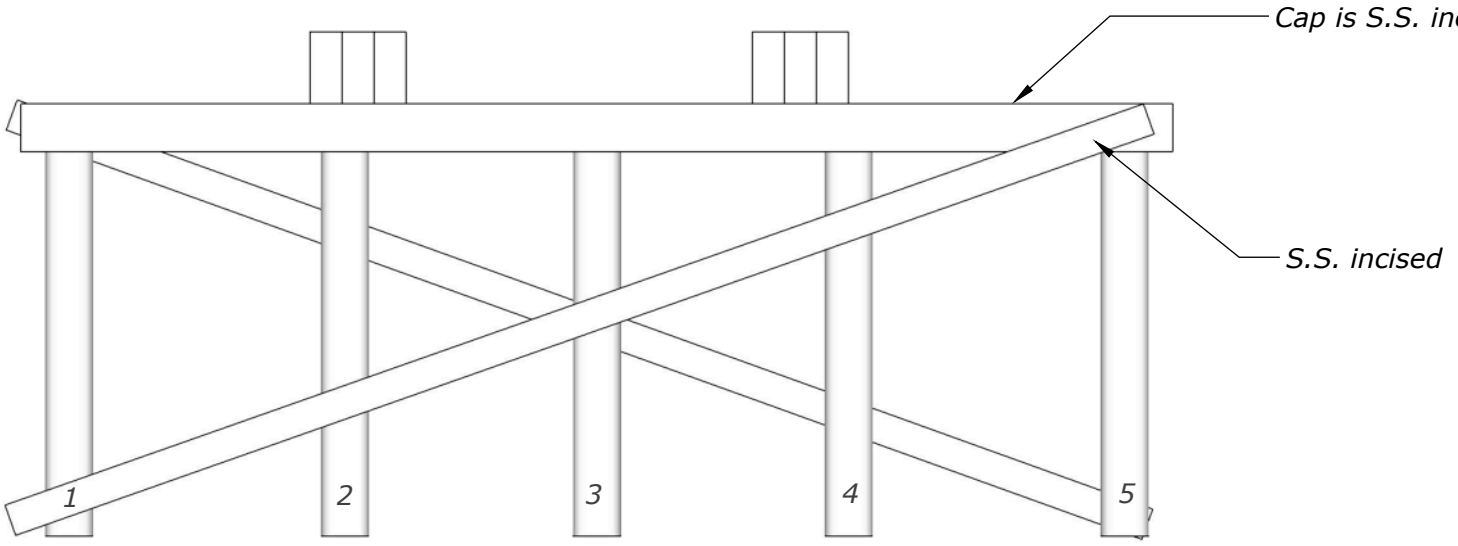
BENT 4 East Elevation

XXXX = <25% SL

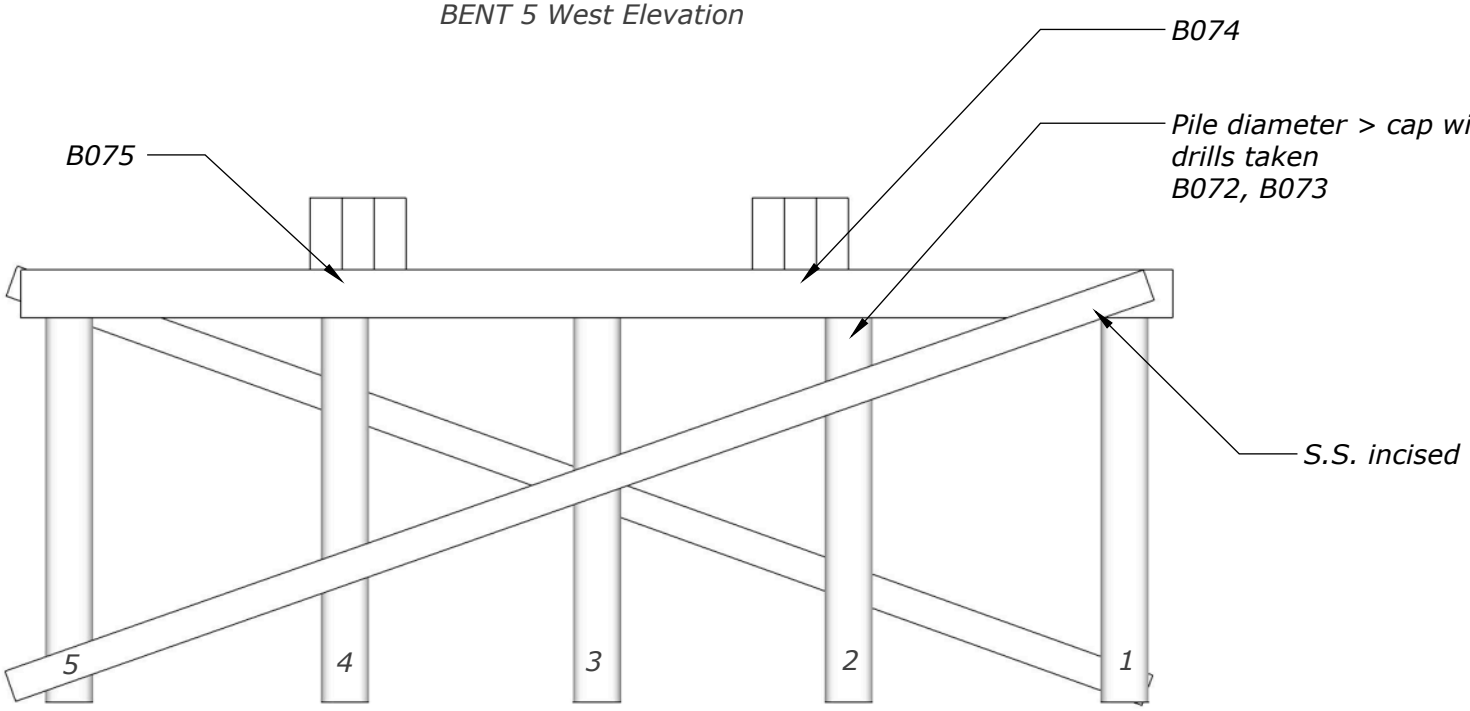
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 5 West Elevation



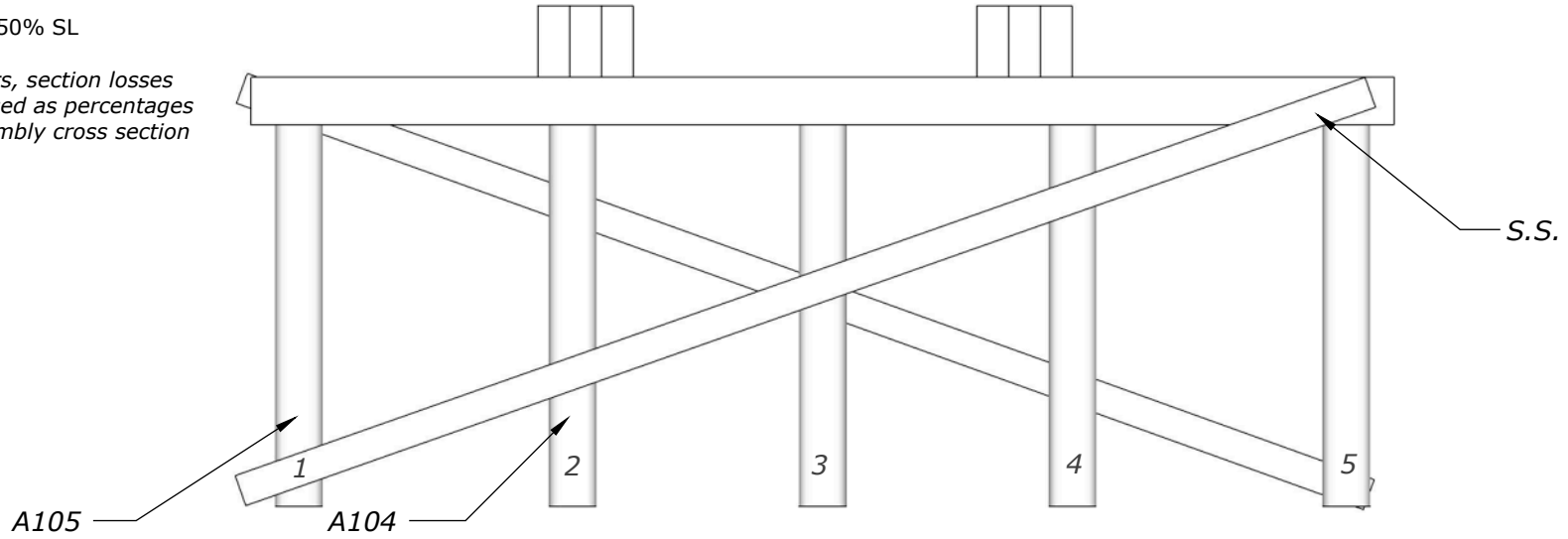
BENT 5 East Elevation

XXXX = <25% SL

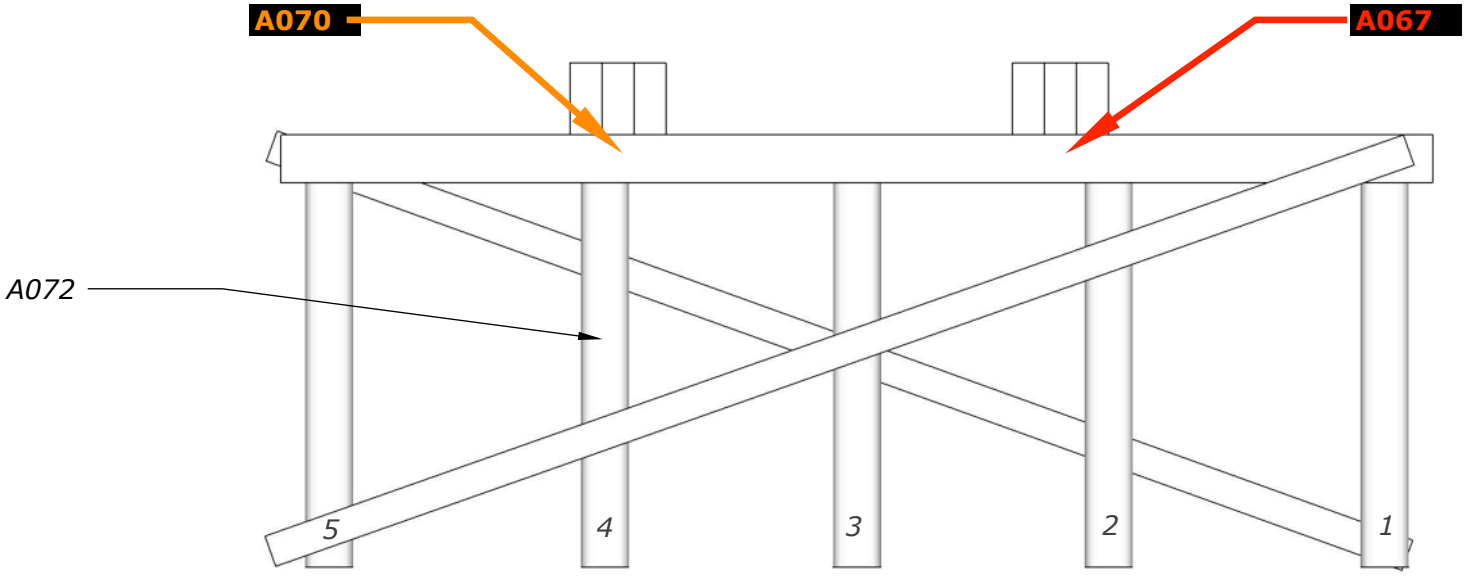
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 6 West Elevation



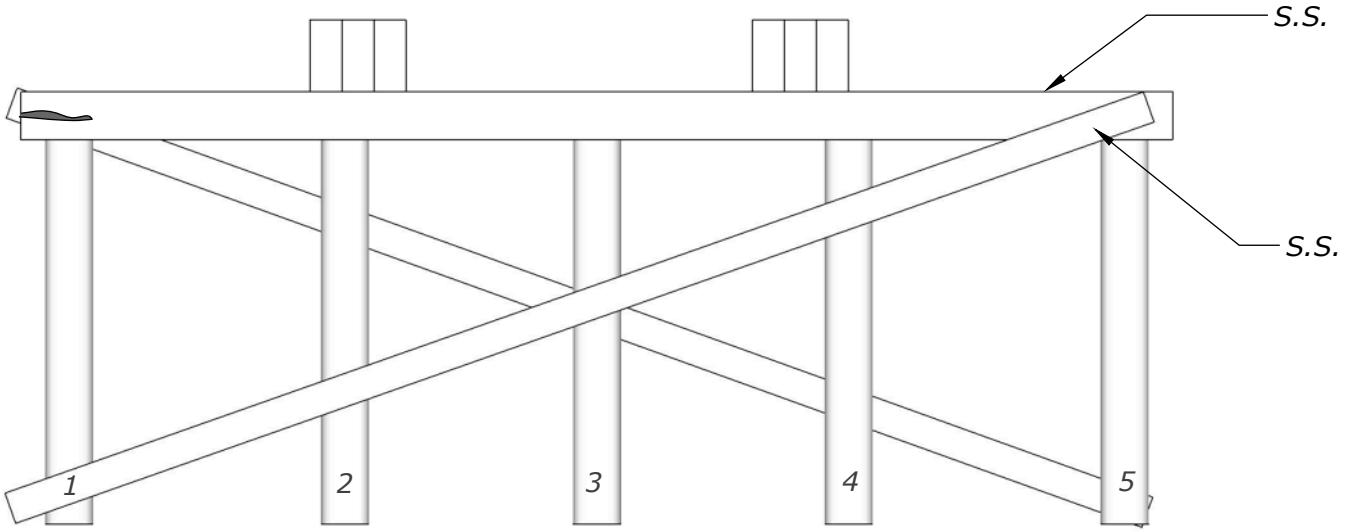
BENT 6 East Elevation

XXXX = <25% SL

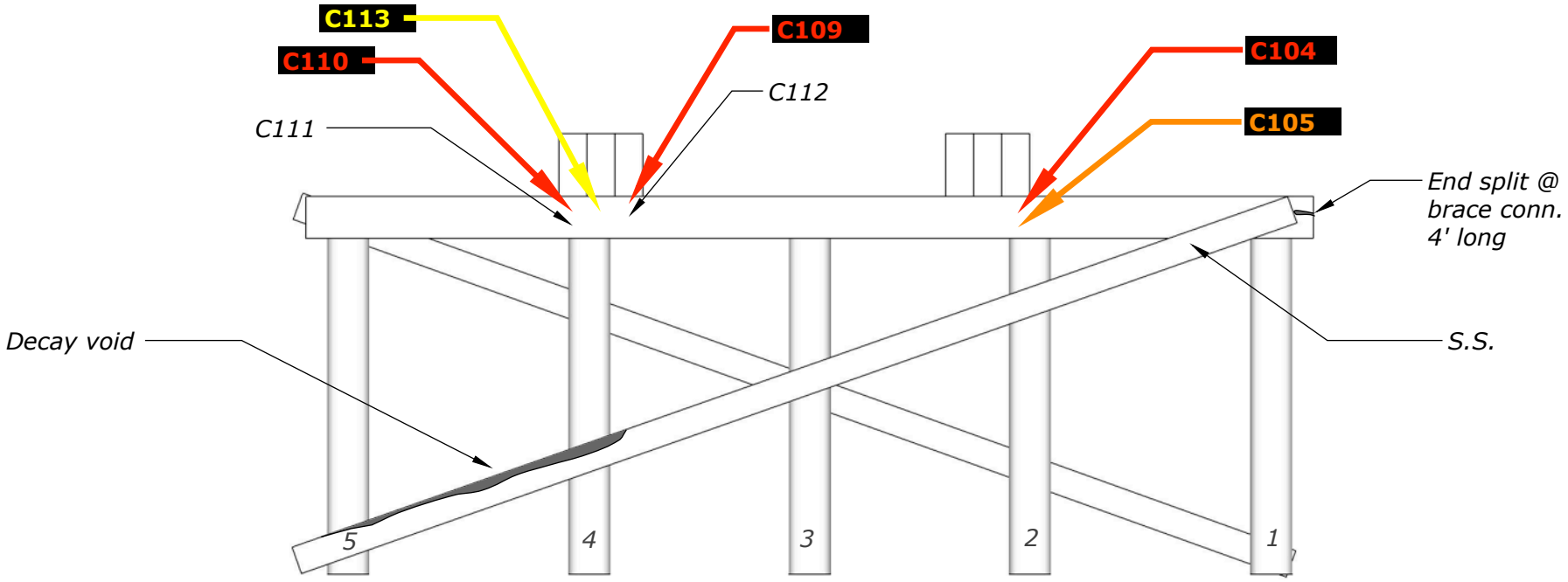
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 7 West Elevation



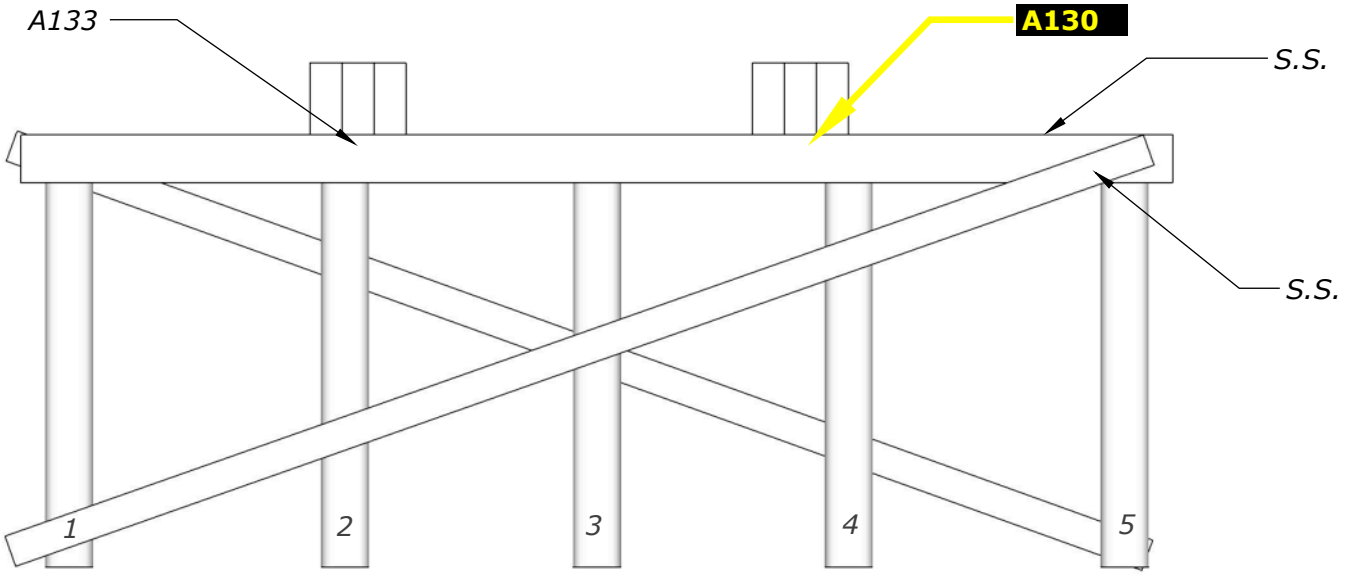
BENT 7 East Elevation

XXXX = <25% SL

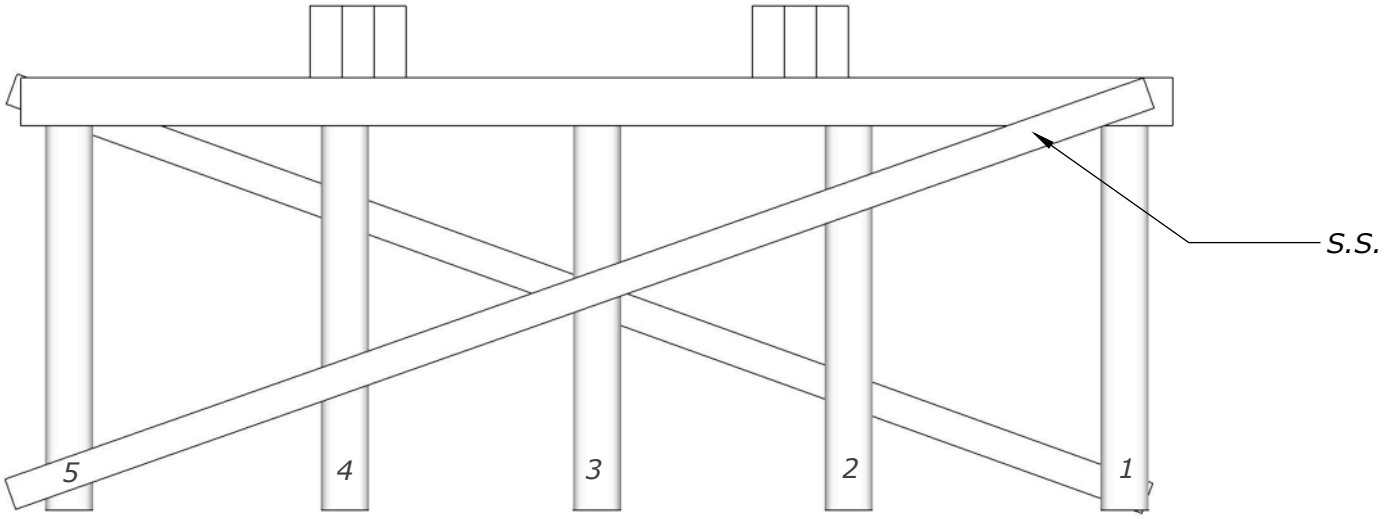
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 8 West Elevation



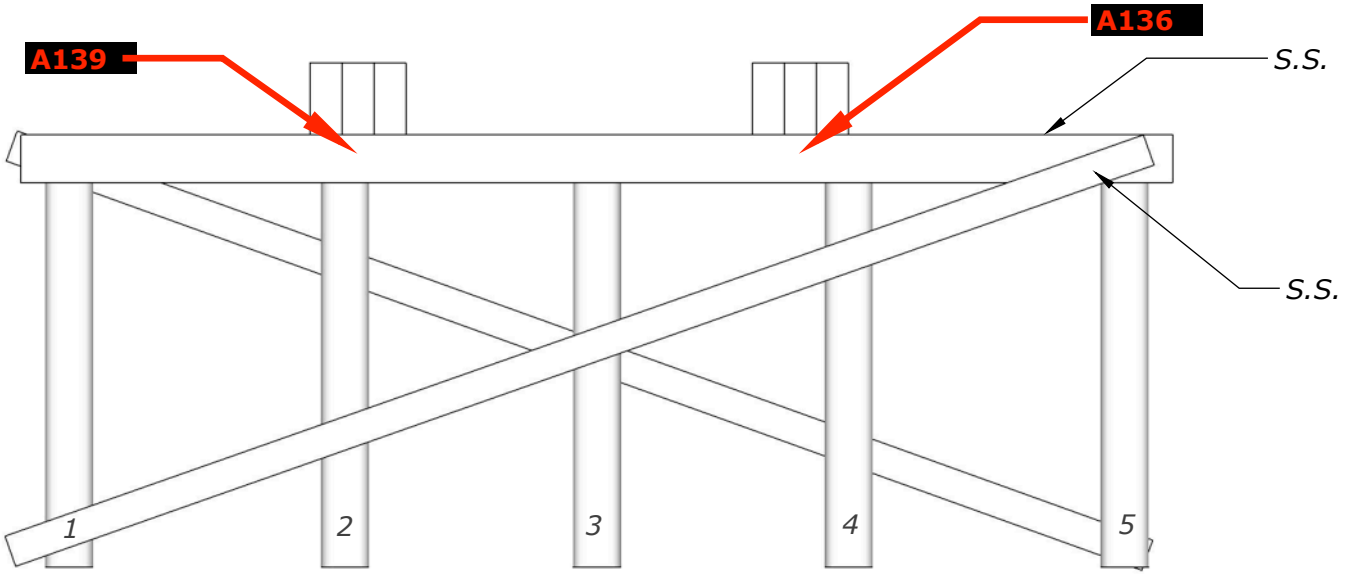
BENT 8 East Elevation

XXXX = <25% SL

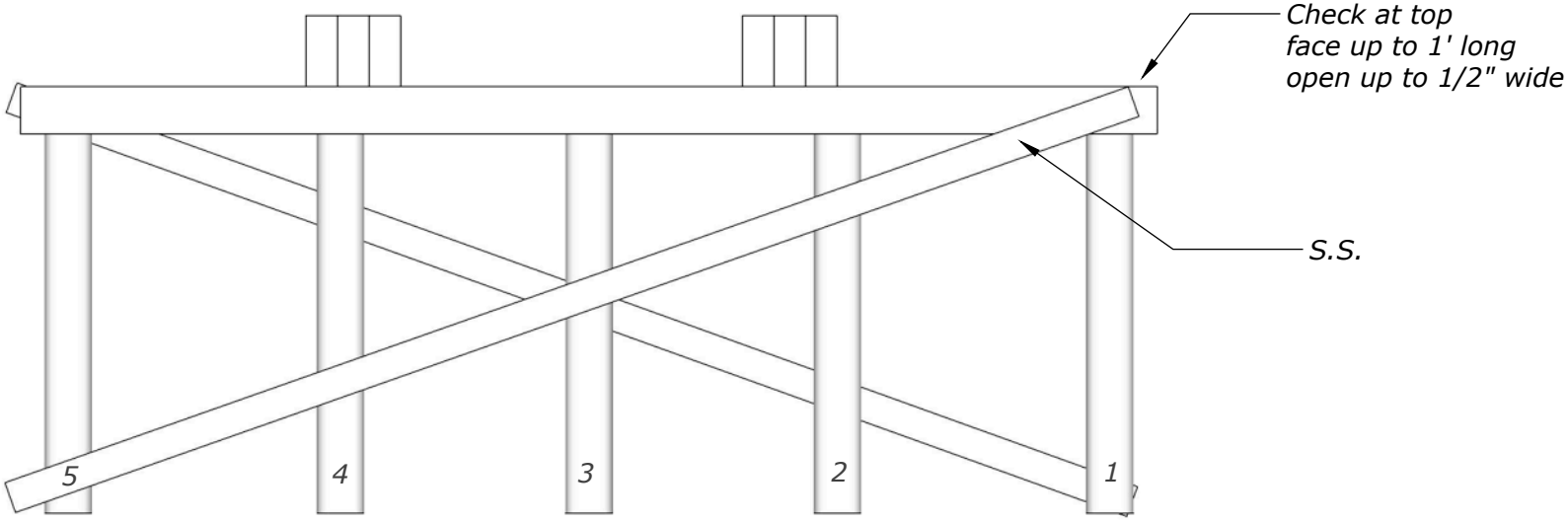
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 9 West Elevation



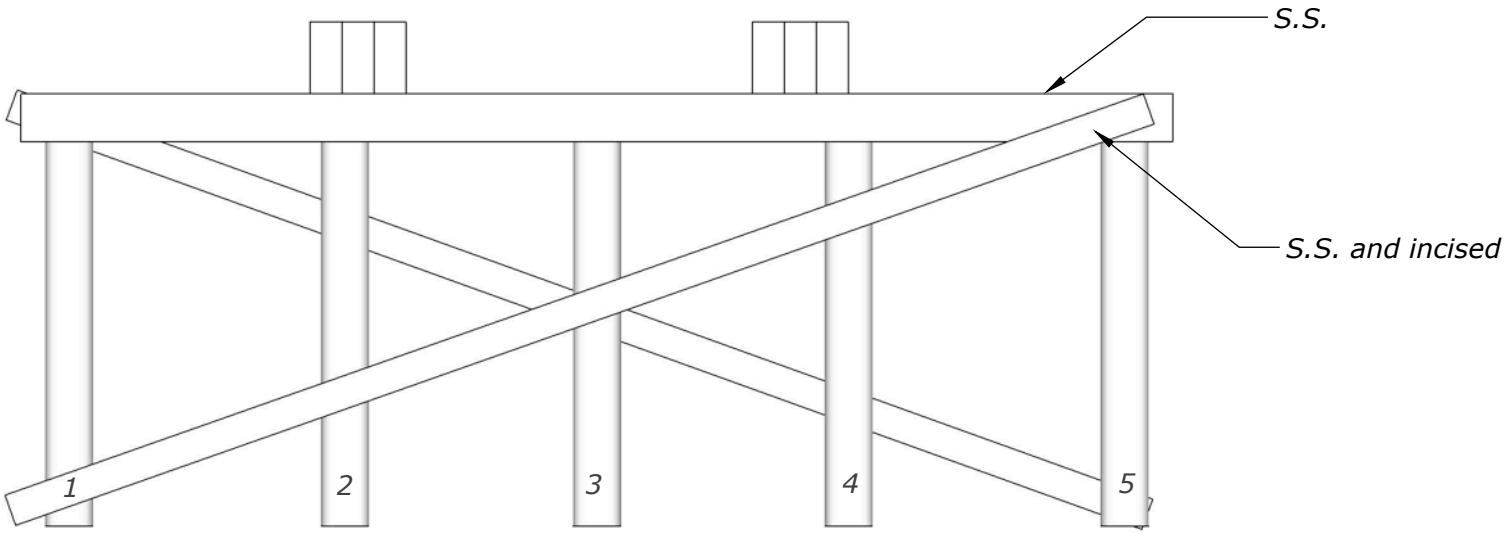
BENT 9 East Elevation

XXXX = <25% SL

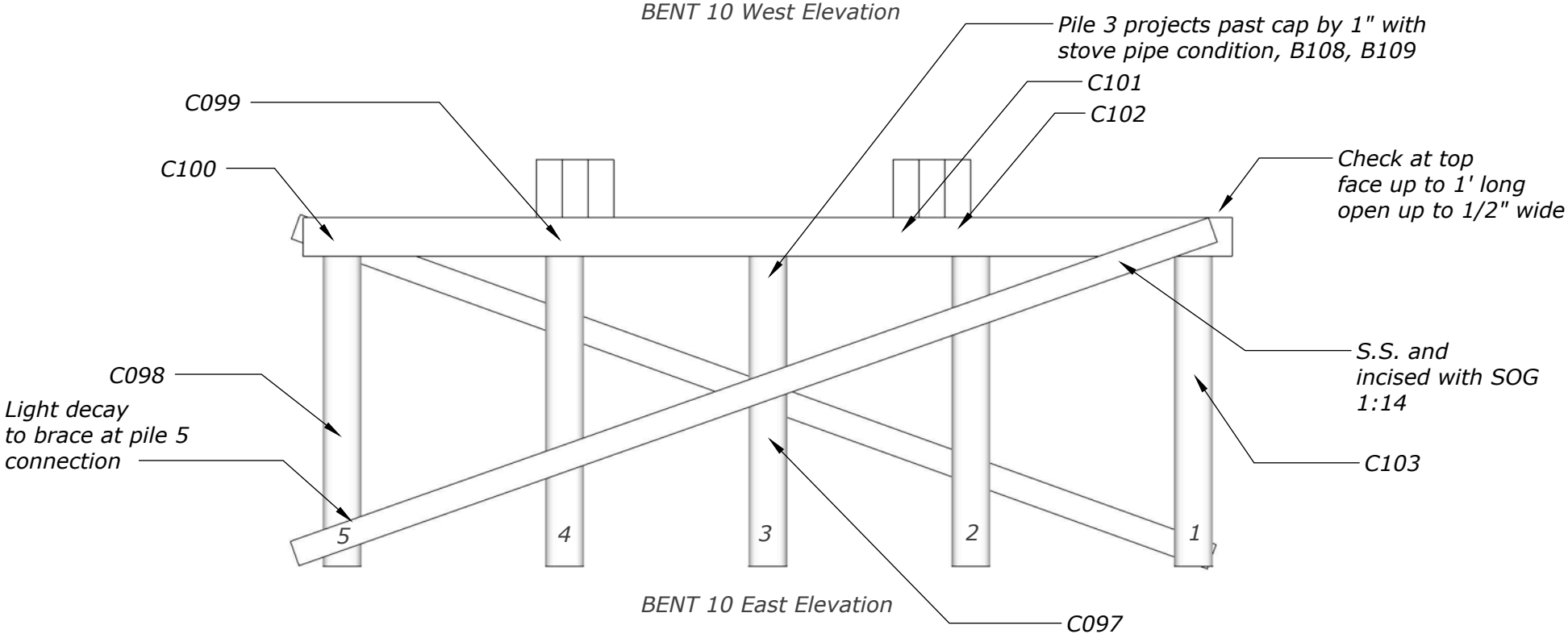
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 10 West Elevation



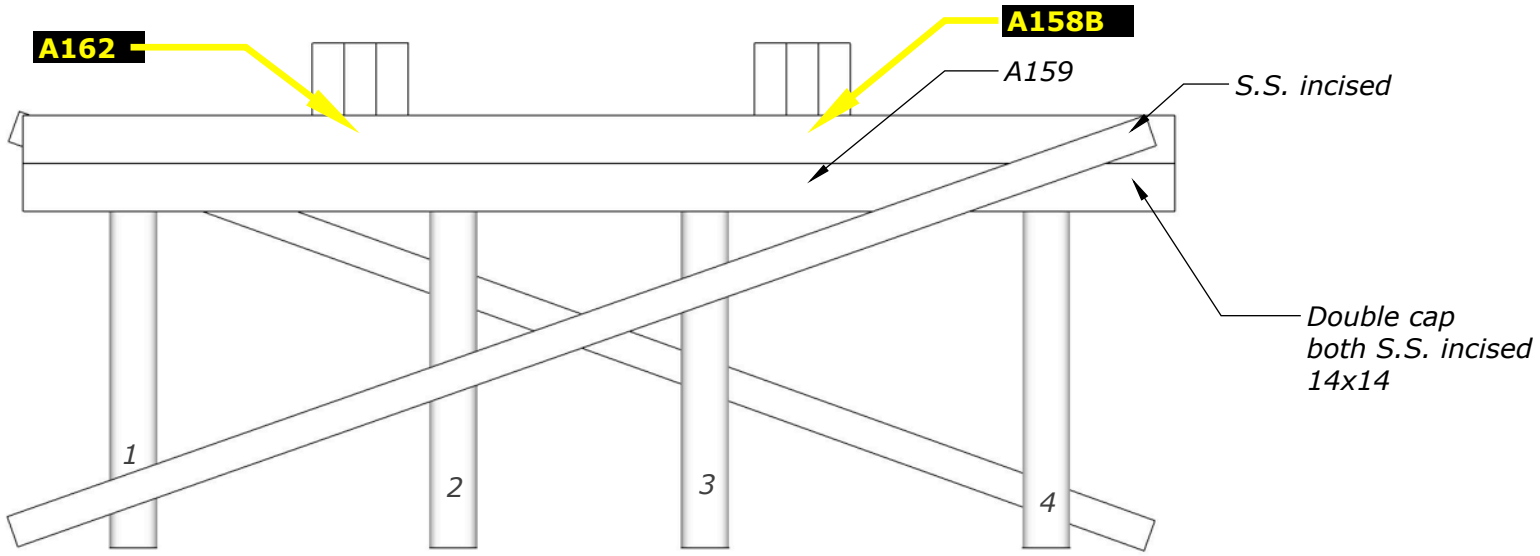
BENT 10 East Elevation

XXXX = <25% SL

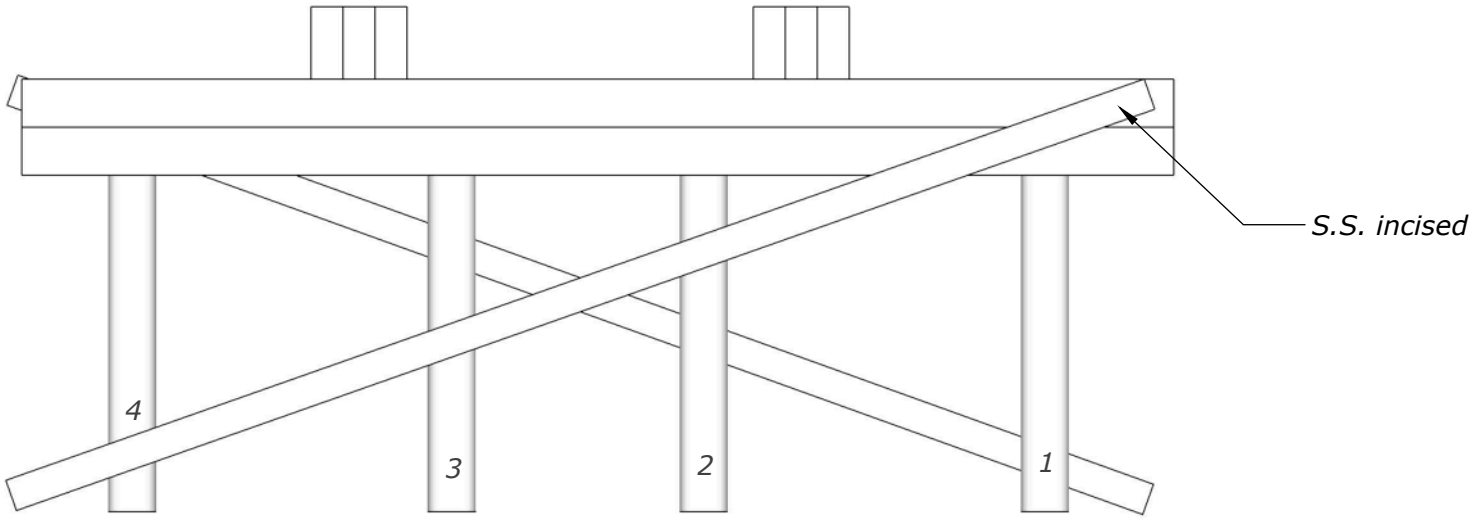
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 11 West Elevation



BENT 11 East Elevation

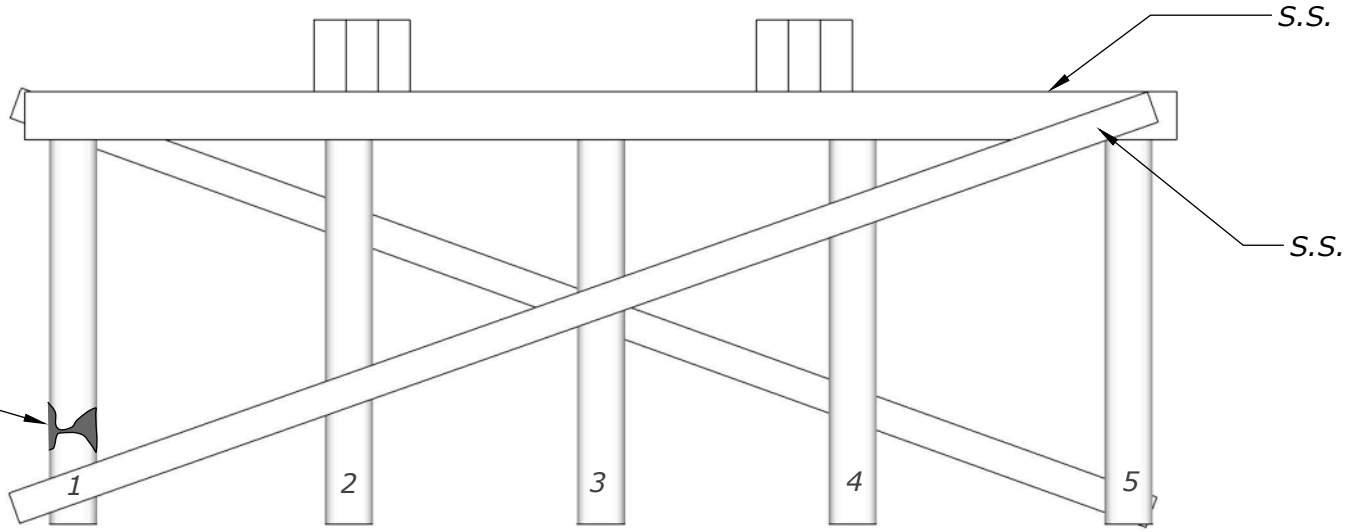
XXXX = <25% SL

XXXX = 25%-50% SL

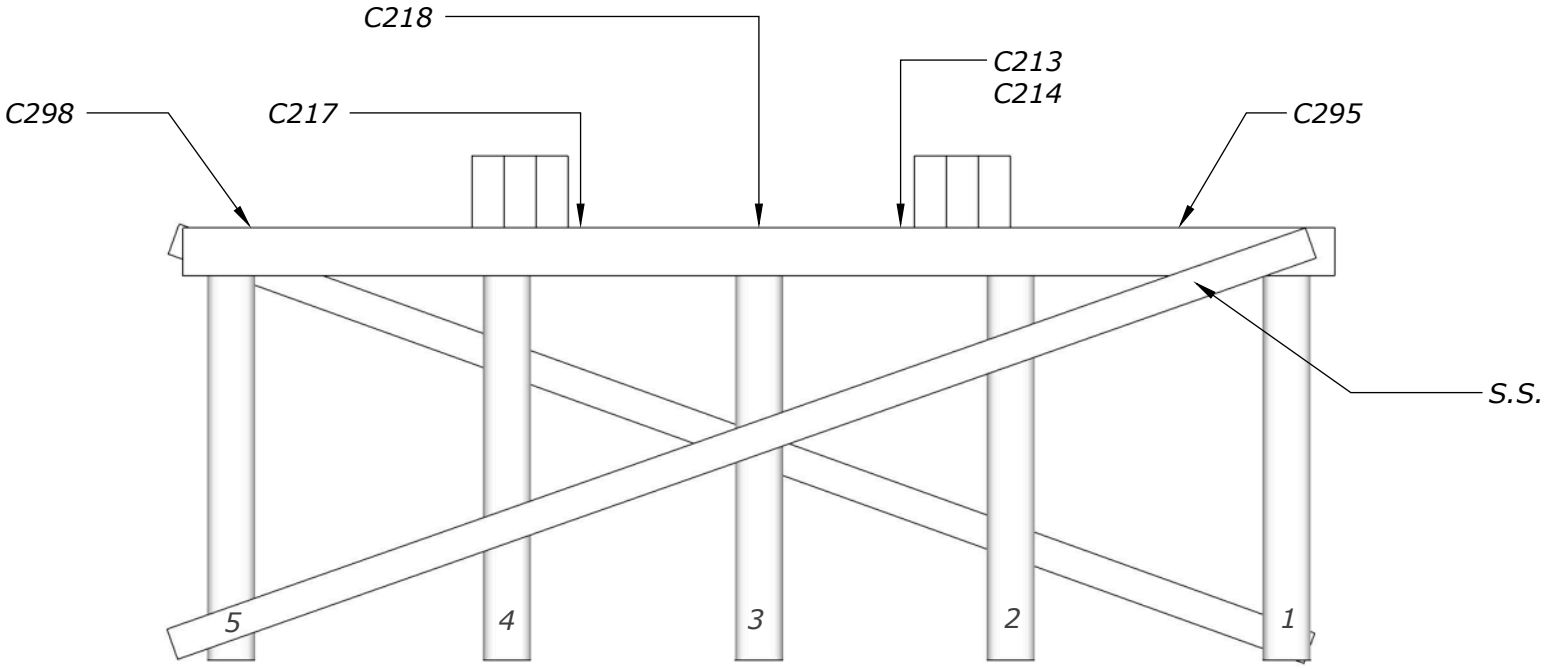
XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")

Typical necked down condition @ waterline with 3" diameter thru-hole



BENT 12 West Elevation



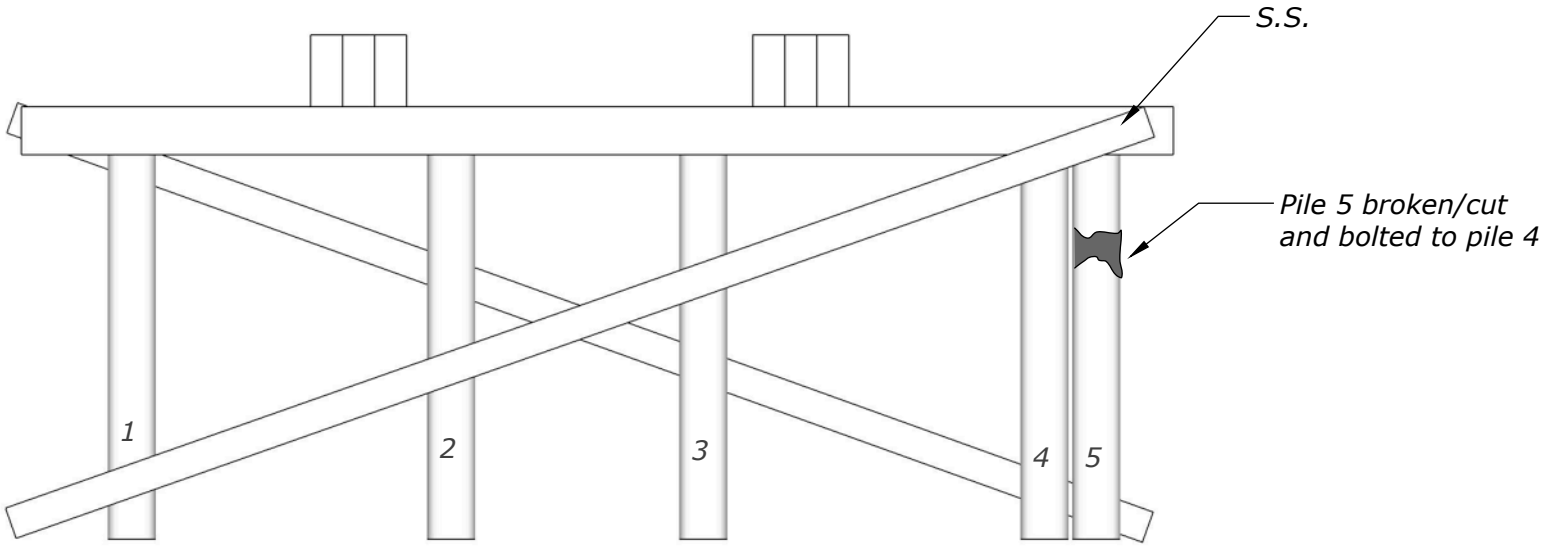
BENT 12 East Elevation

XXXX = <25% SL

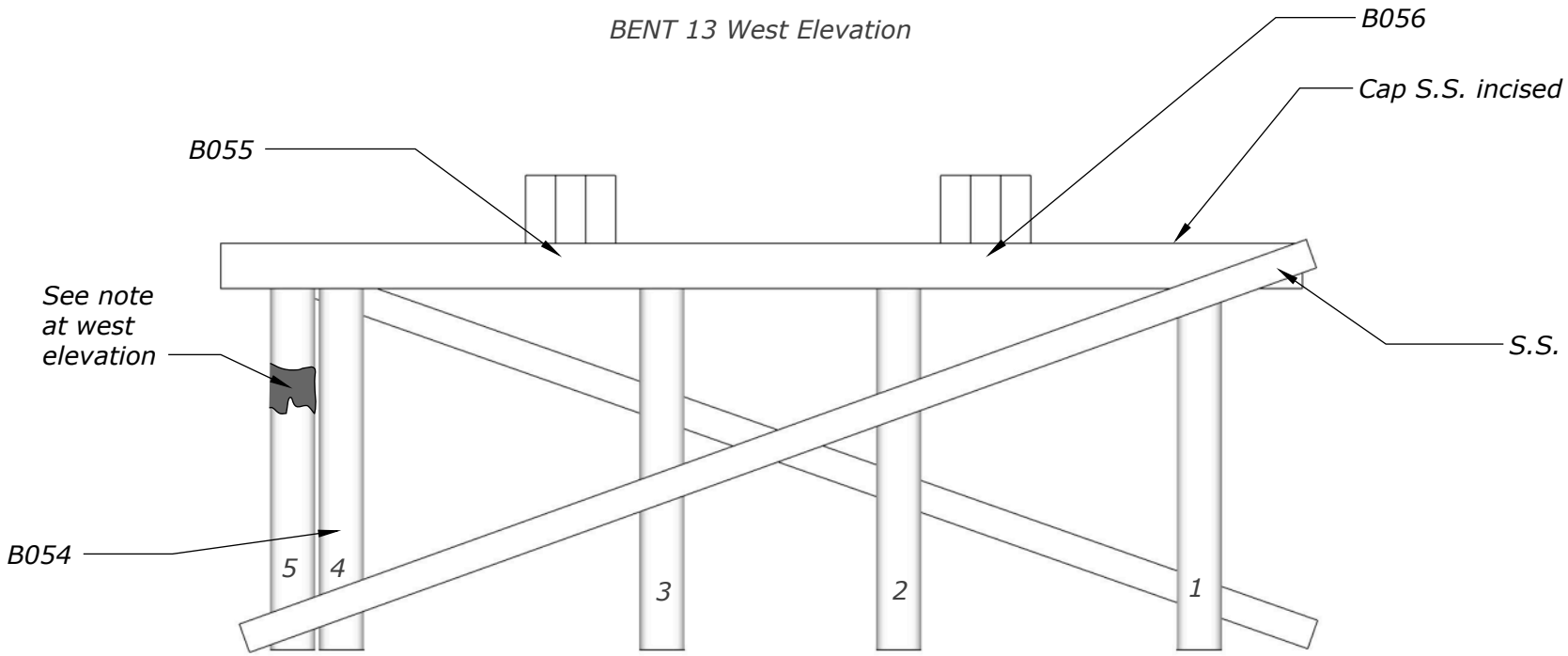
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 13 West Elevation



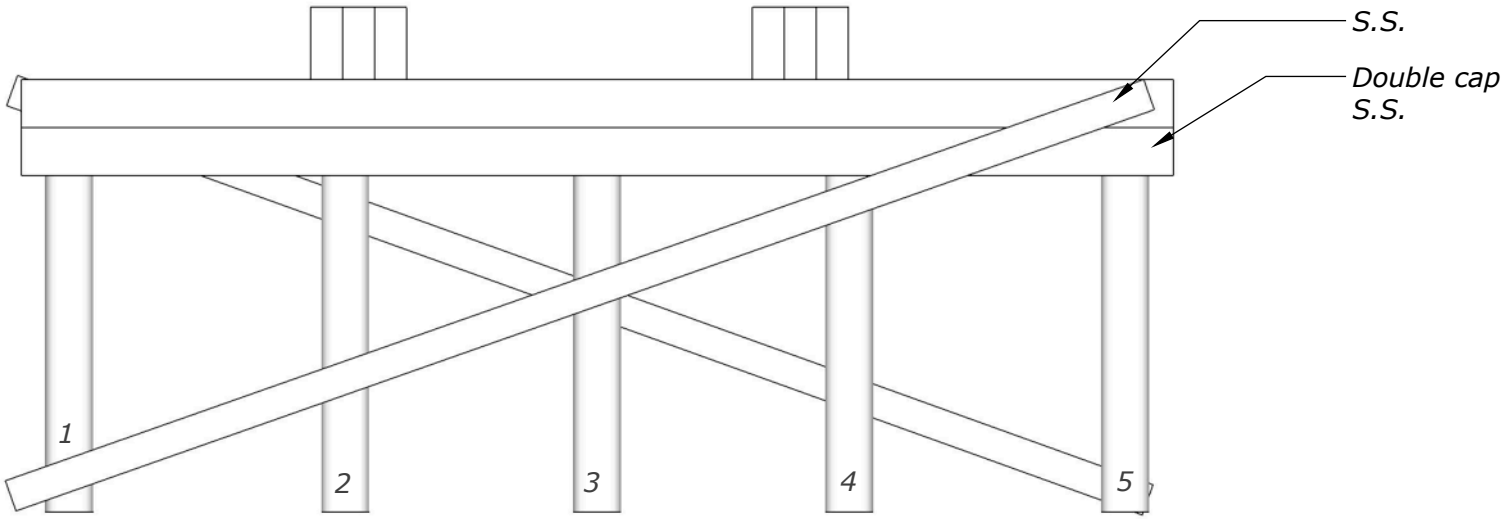
BENT 13 East Elevation

XXXX = <25% SL

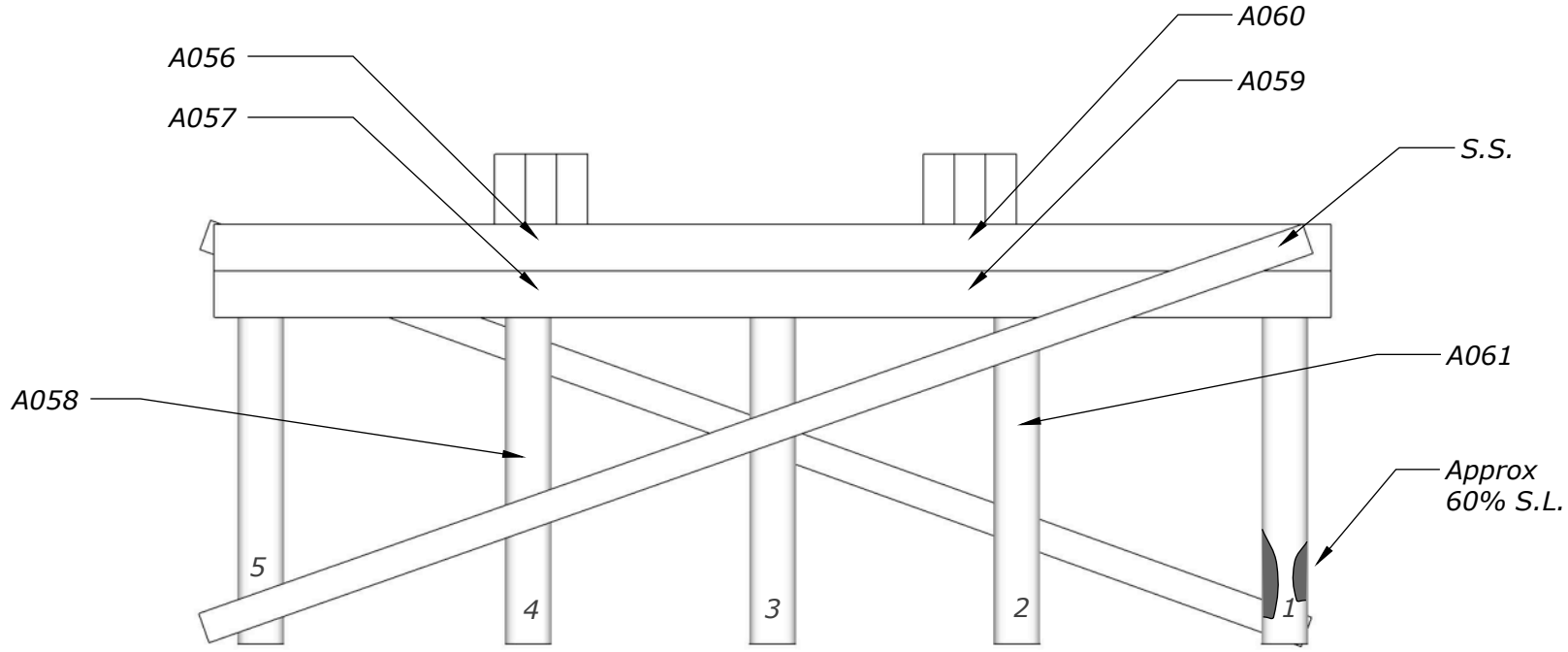
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 14 West Elevation



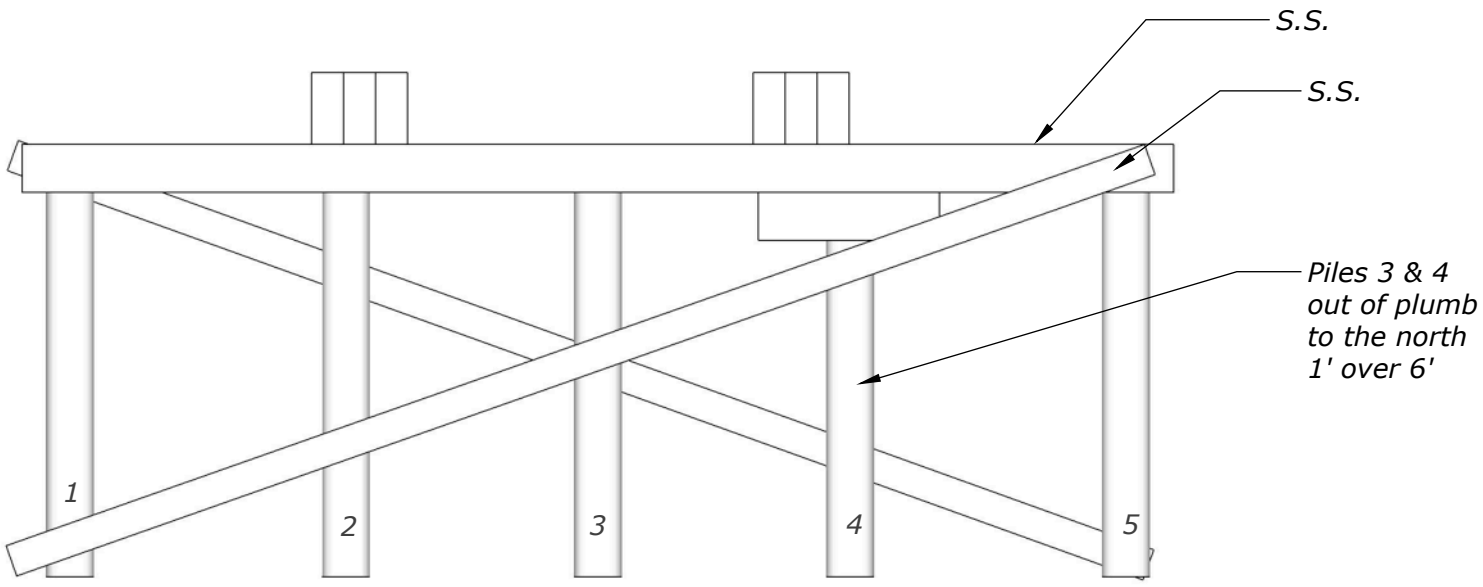
BENT 14 East Elevation

XXXX = <25% SL

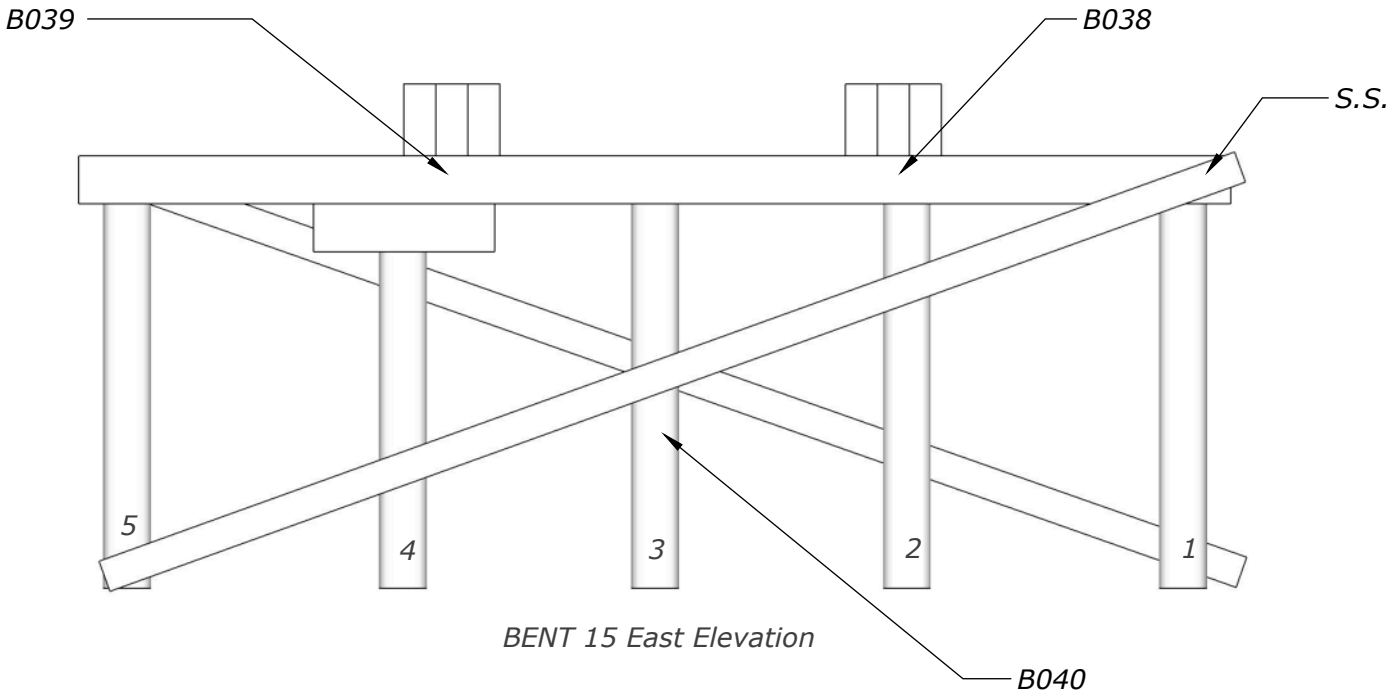
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 15 West Elevation



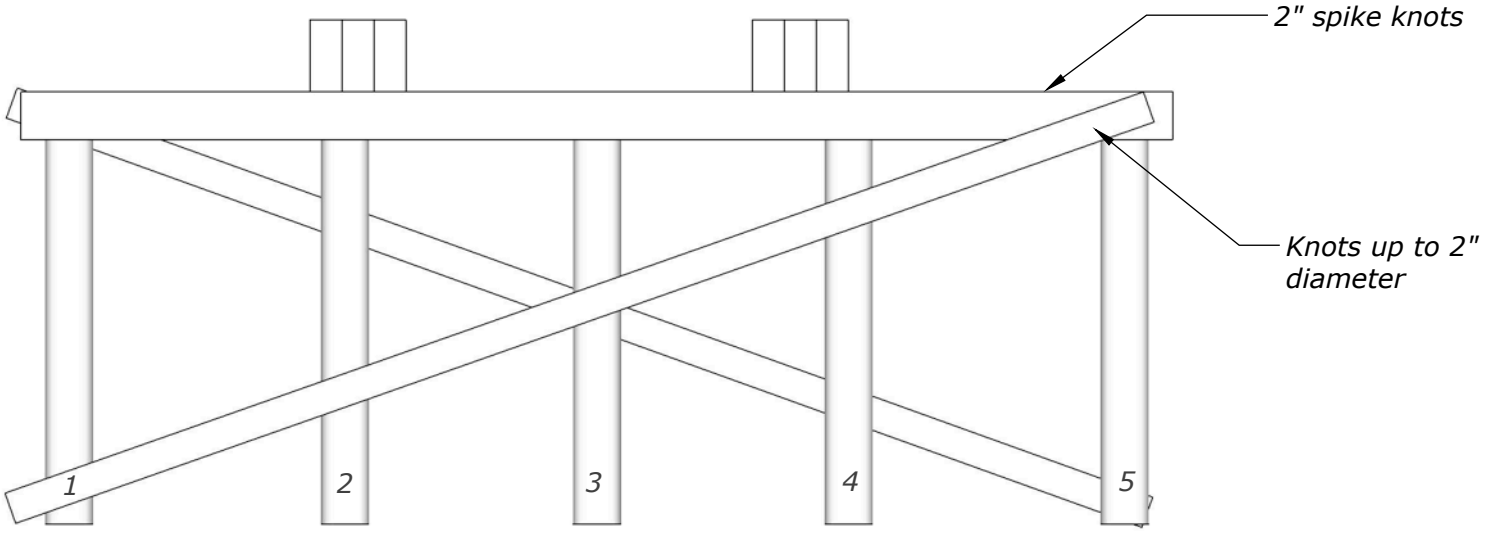
BENT 15 East Elevation

XXXX = <25% SL

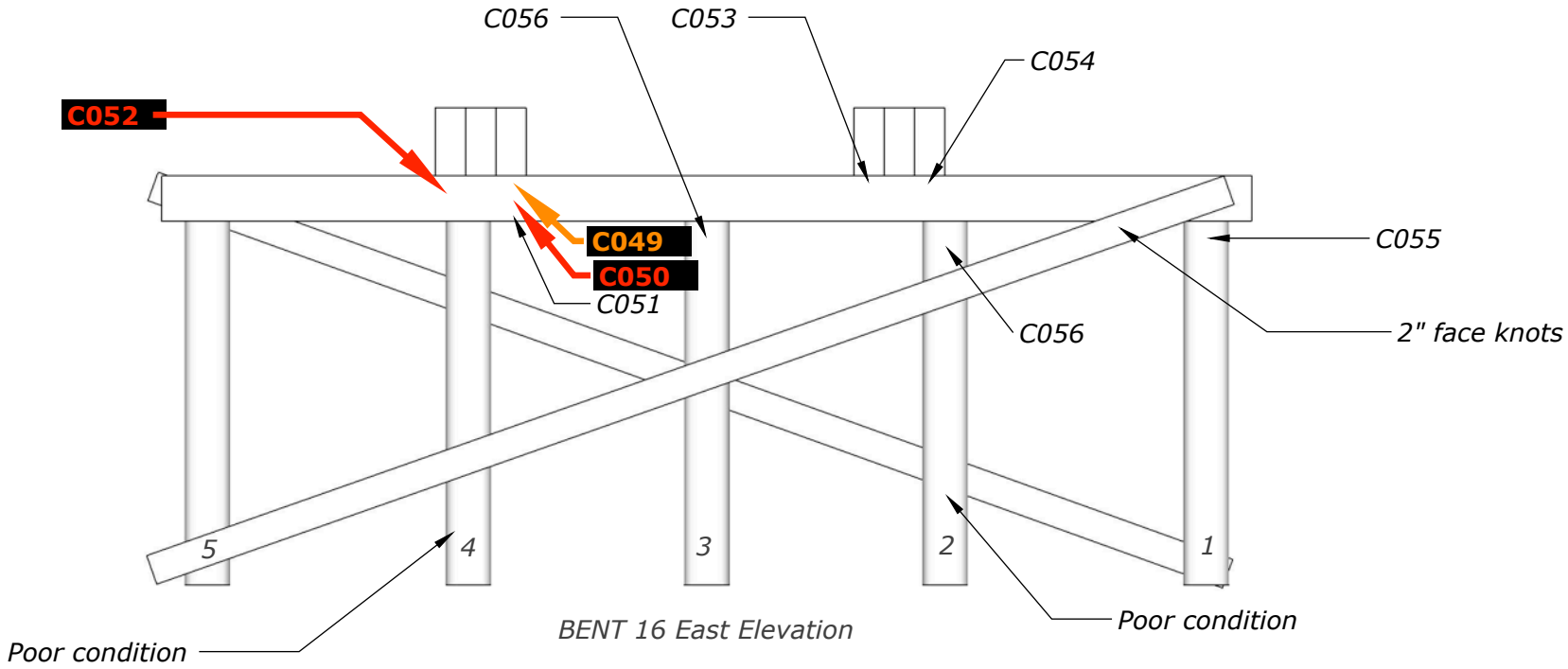
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 16 West Elevation



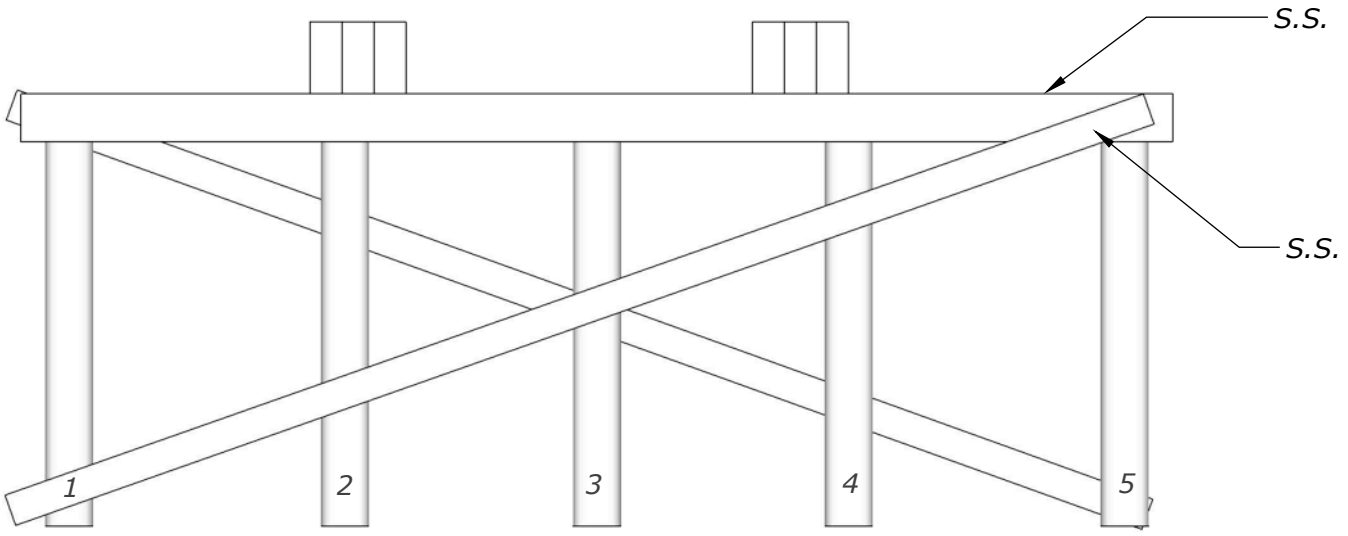
BENT 16 East Elevation

XXXX = <25% SL

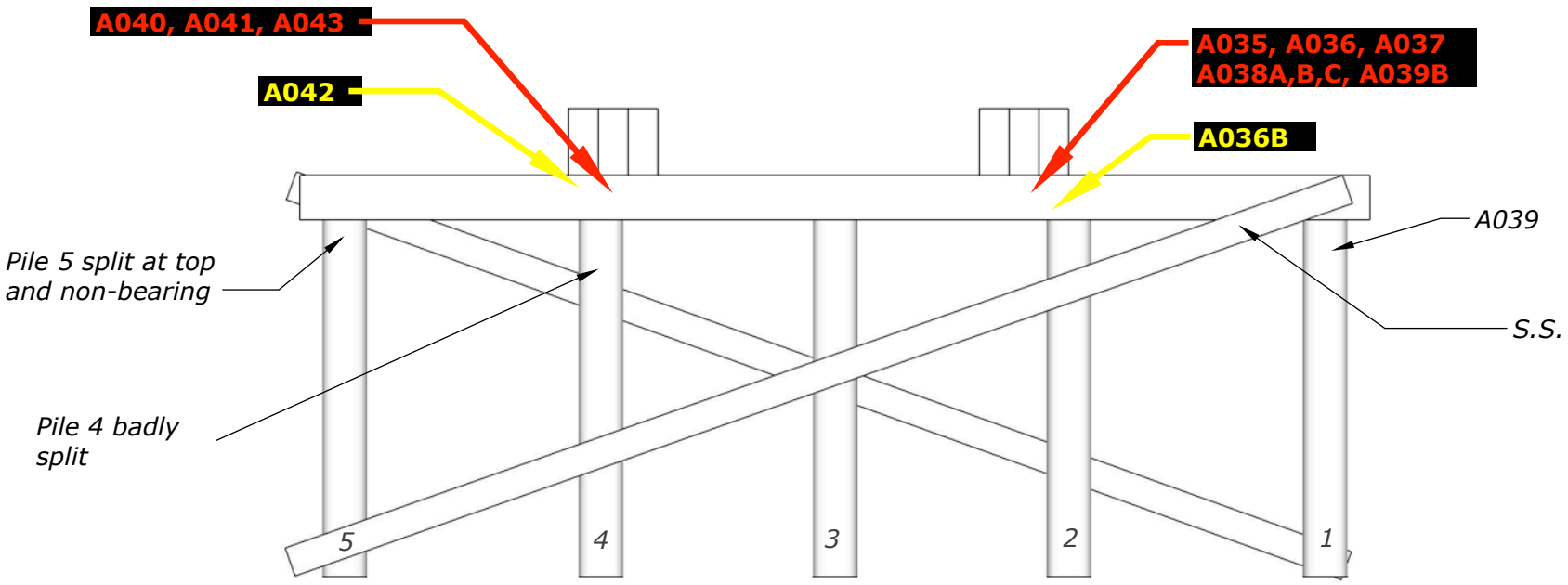
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 17 West Elevation



BENT 17 East Elevation

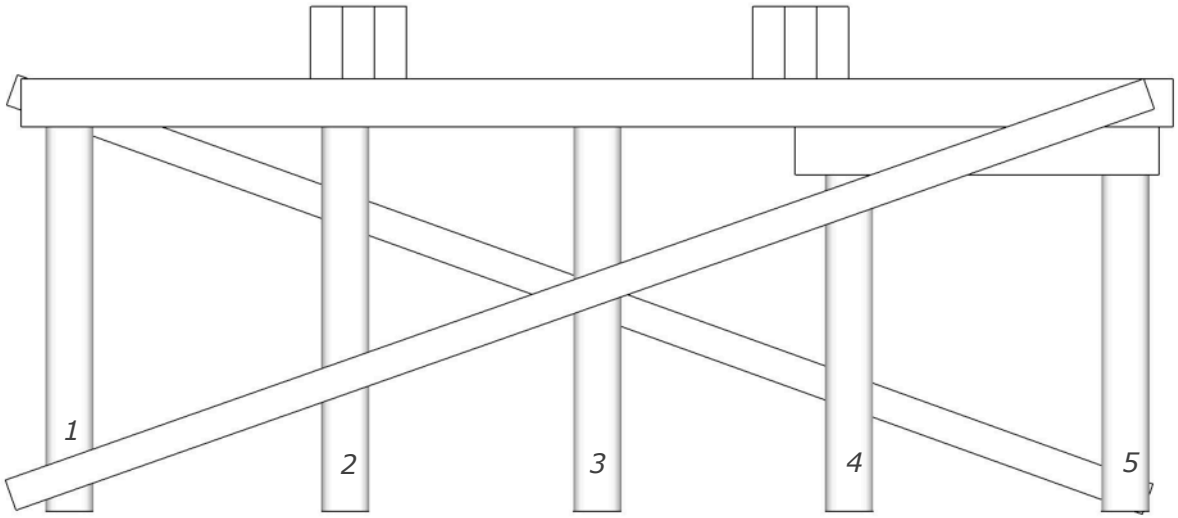
XXXX = <25% SL

XXXX = 25%-50% SL

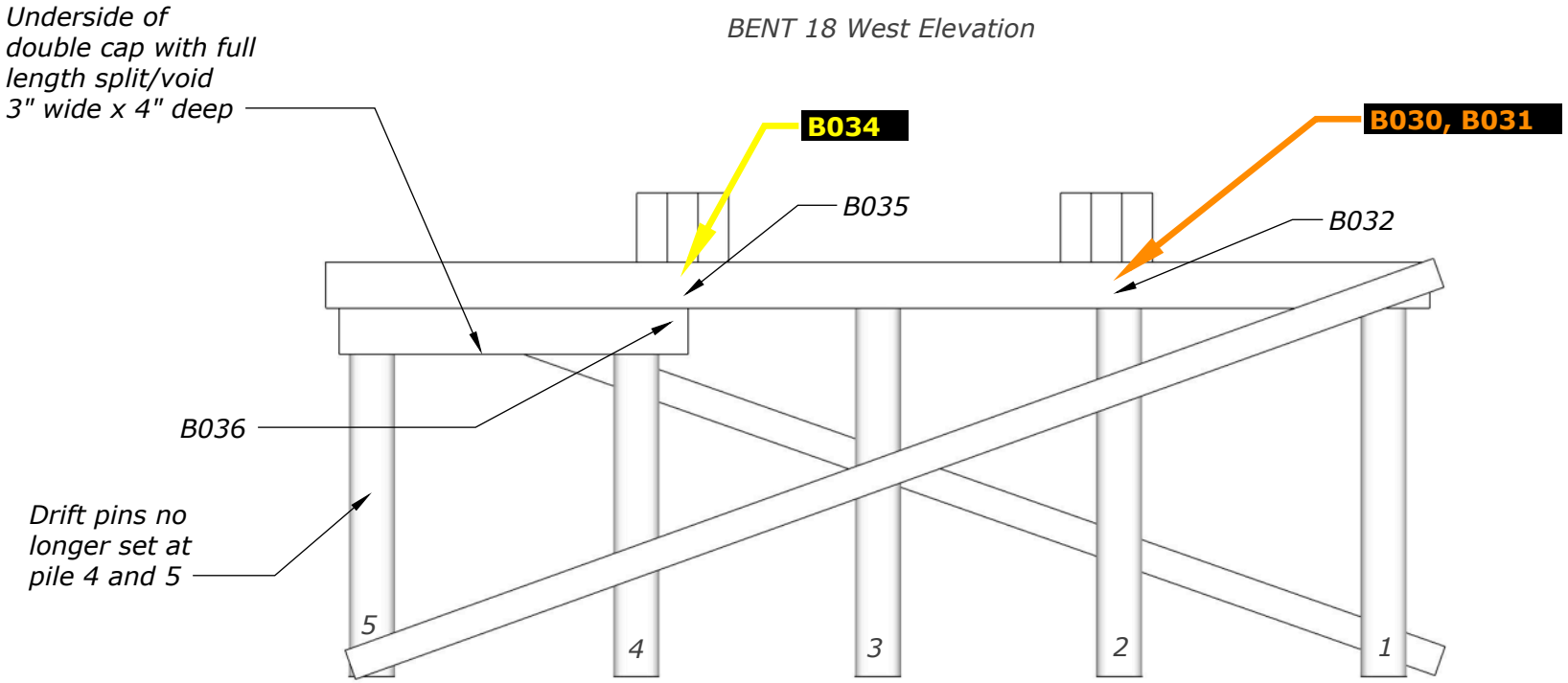
XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")

Notes:
Piles are split and open at the tops up to 5' long x 10" wide



BENT 18 West Elevation



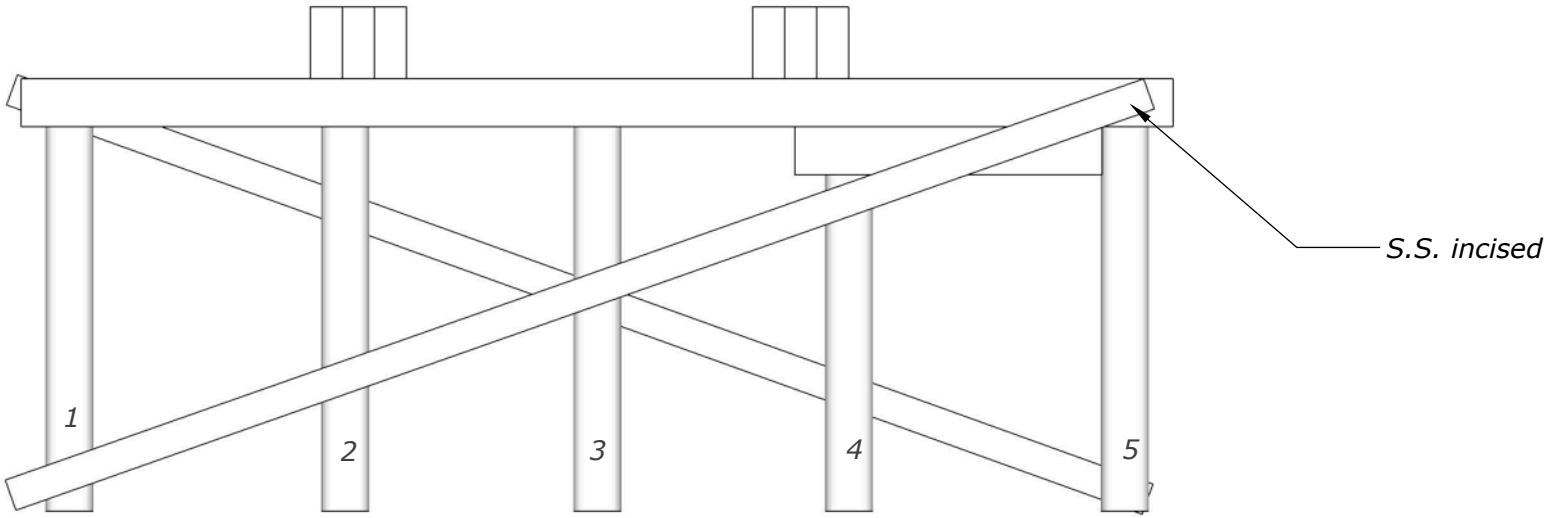
BENT 18 East Elevation

XXXX = <25% SL

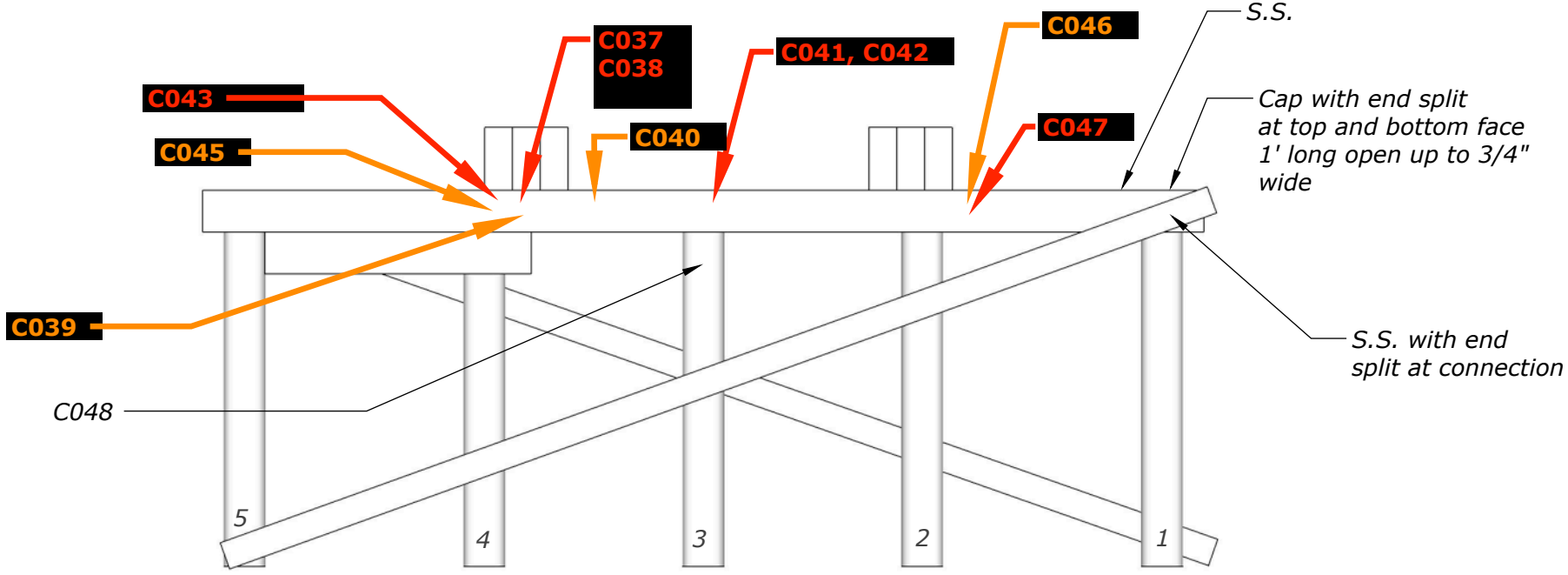
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 19 West Elevation



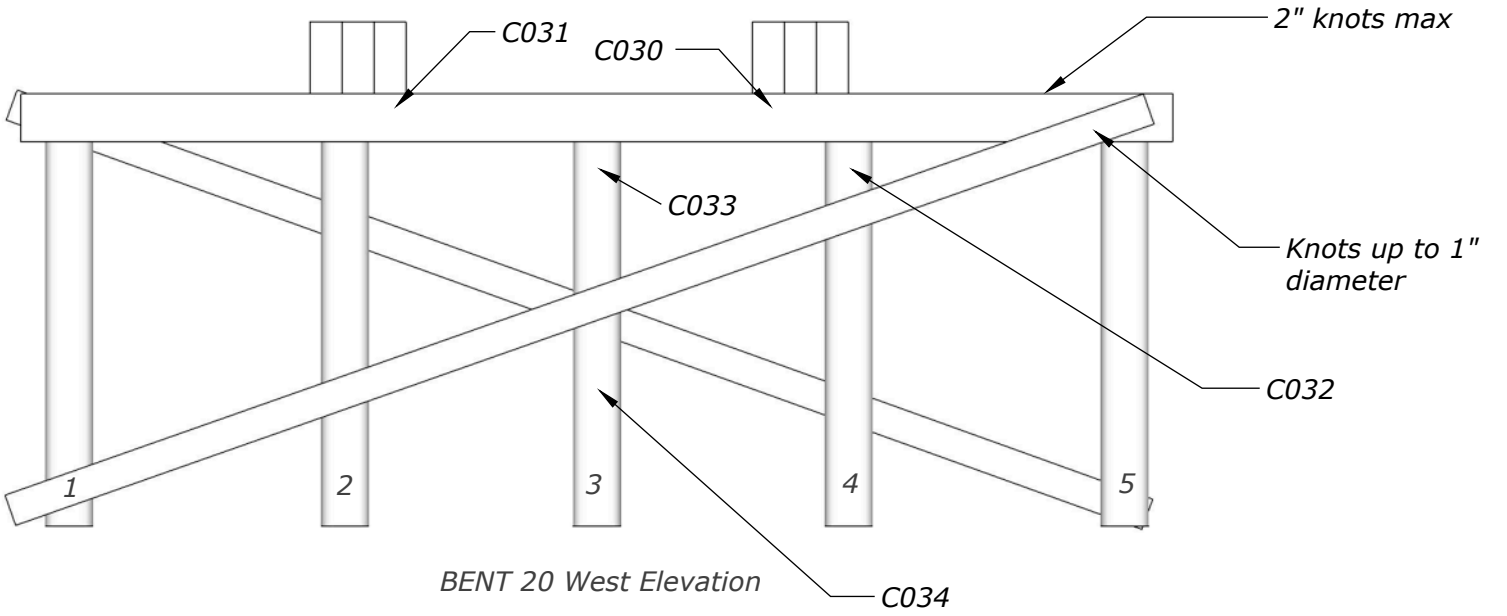
BENT 19 East Elevation

XXXX = <25% SL

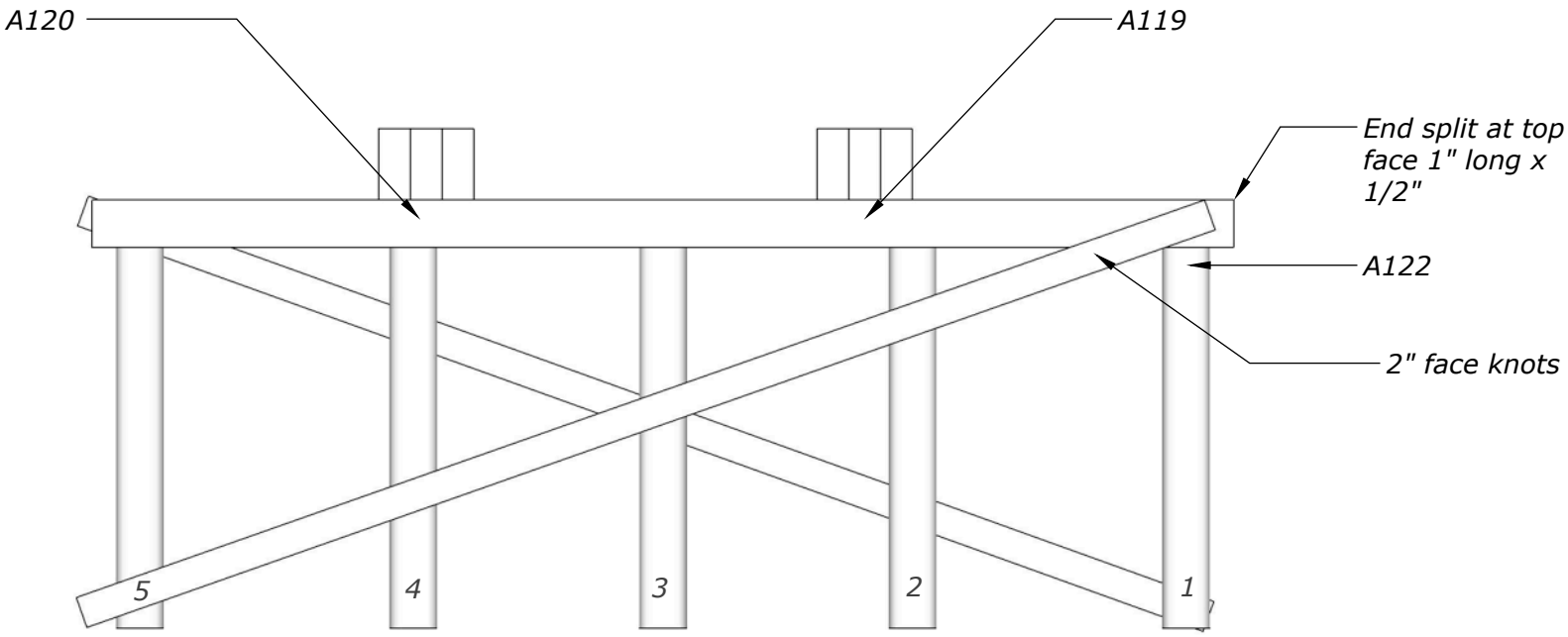
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 20 West Elevation



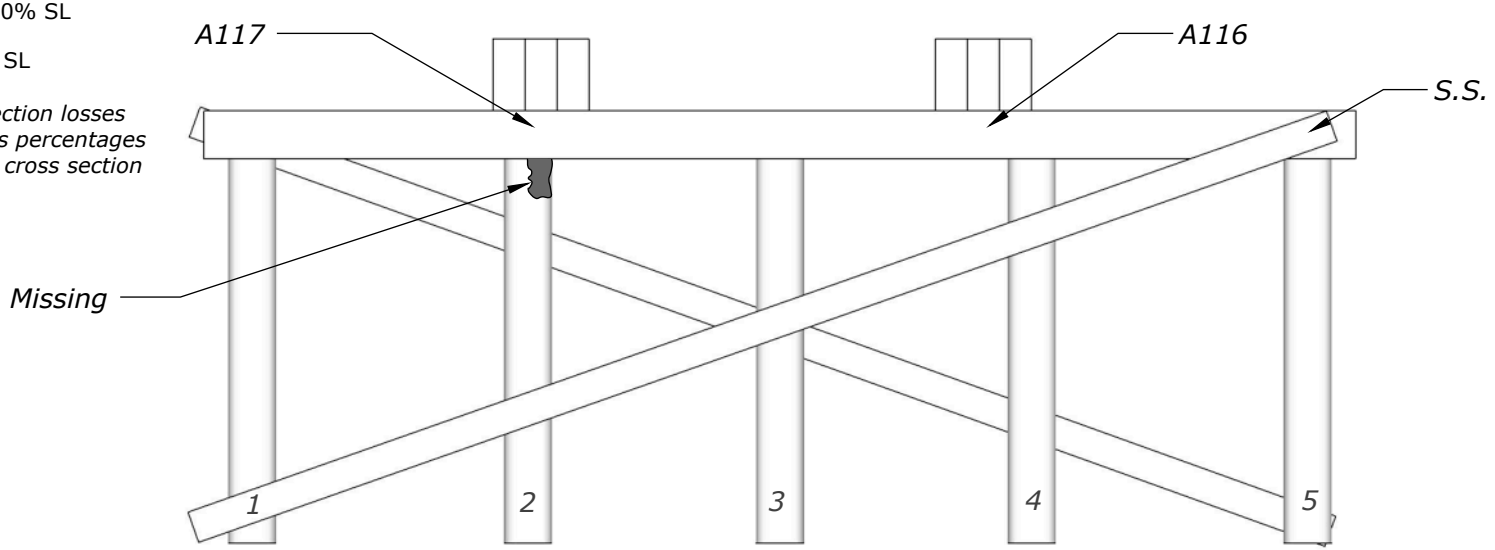
BENT 20 East Elevation

XXXX = <25% SL

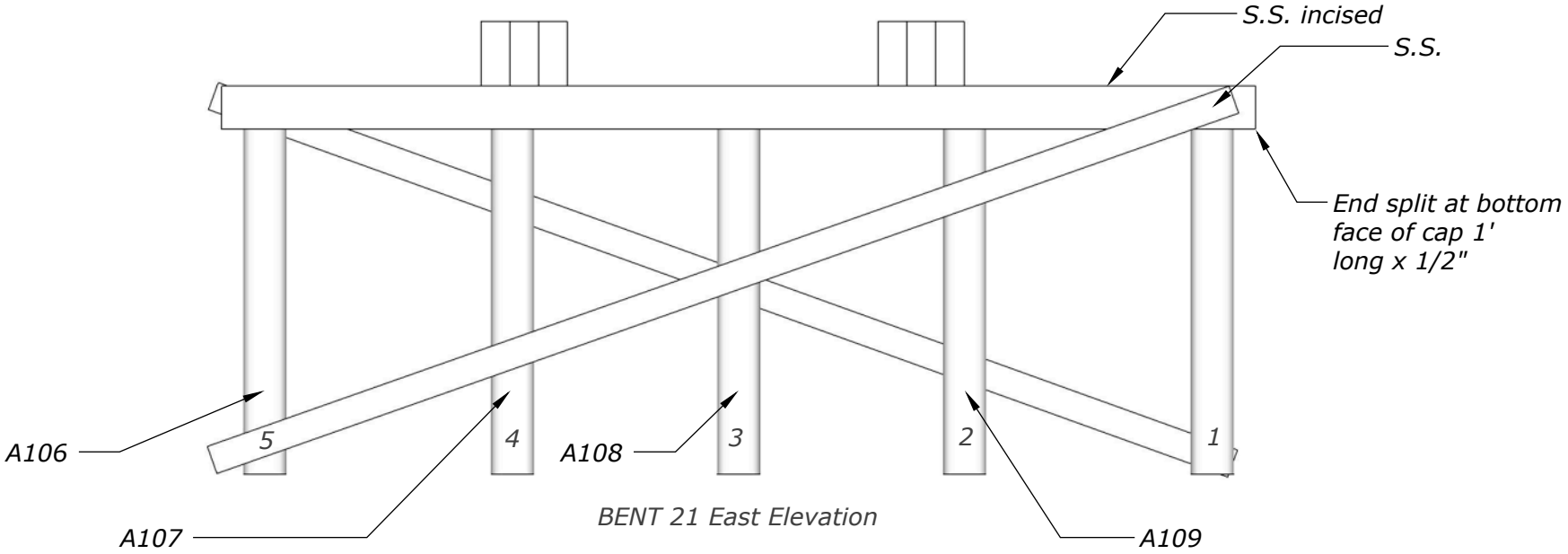
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 21 West Elevation



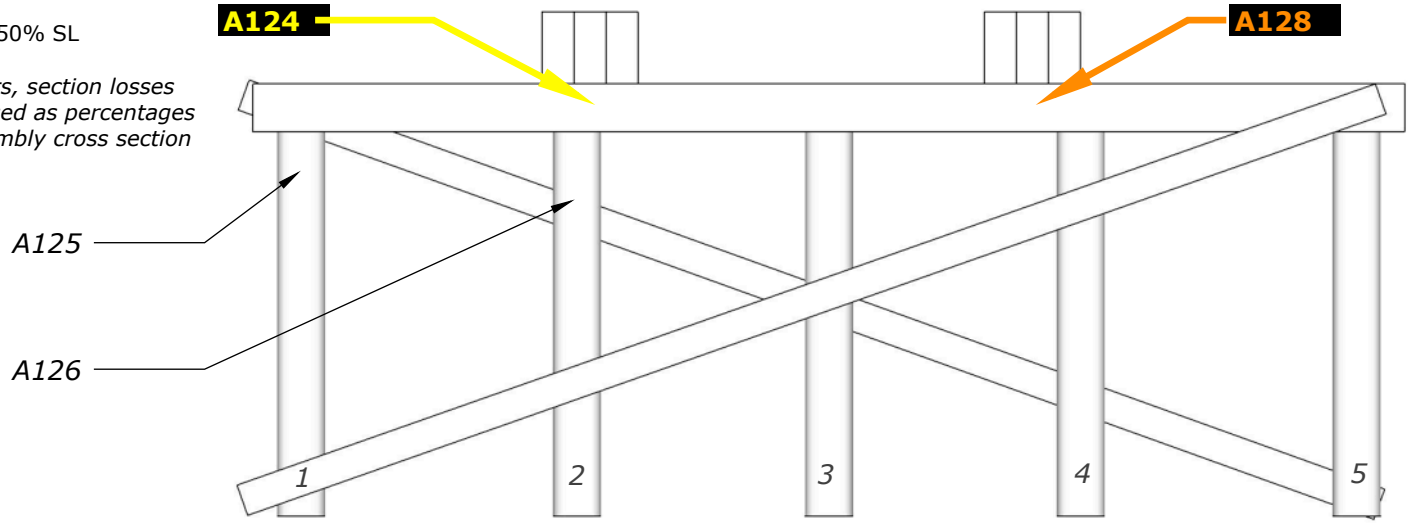
BENT 21 East Elevation

XXXX = <25% SL

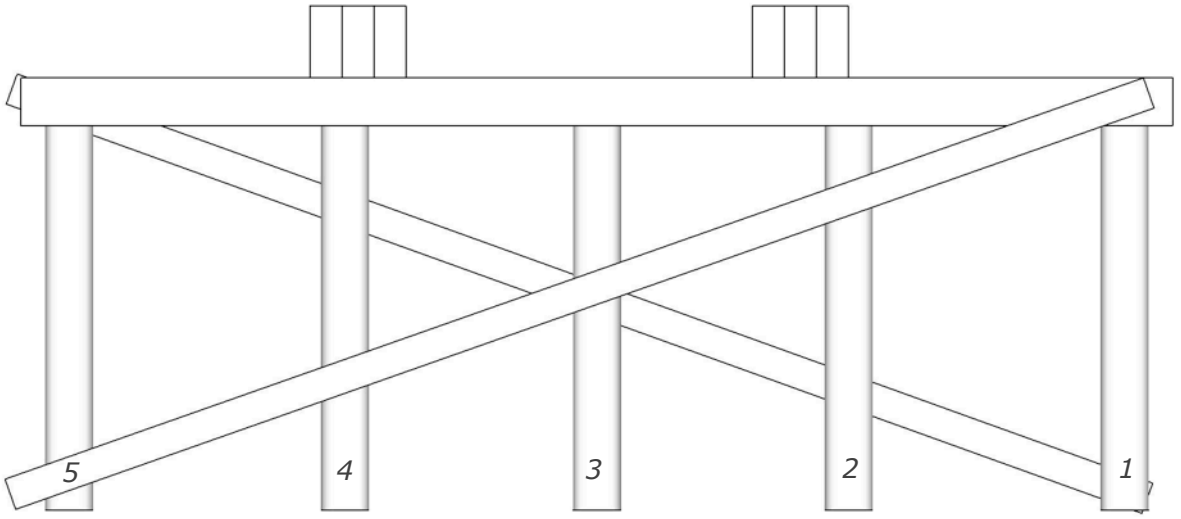
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 22 West Elevation



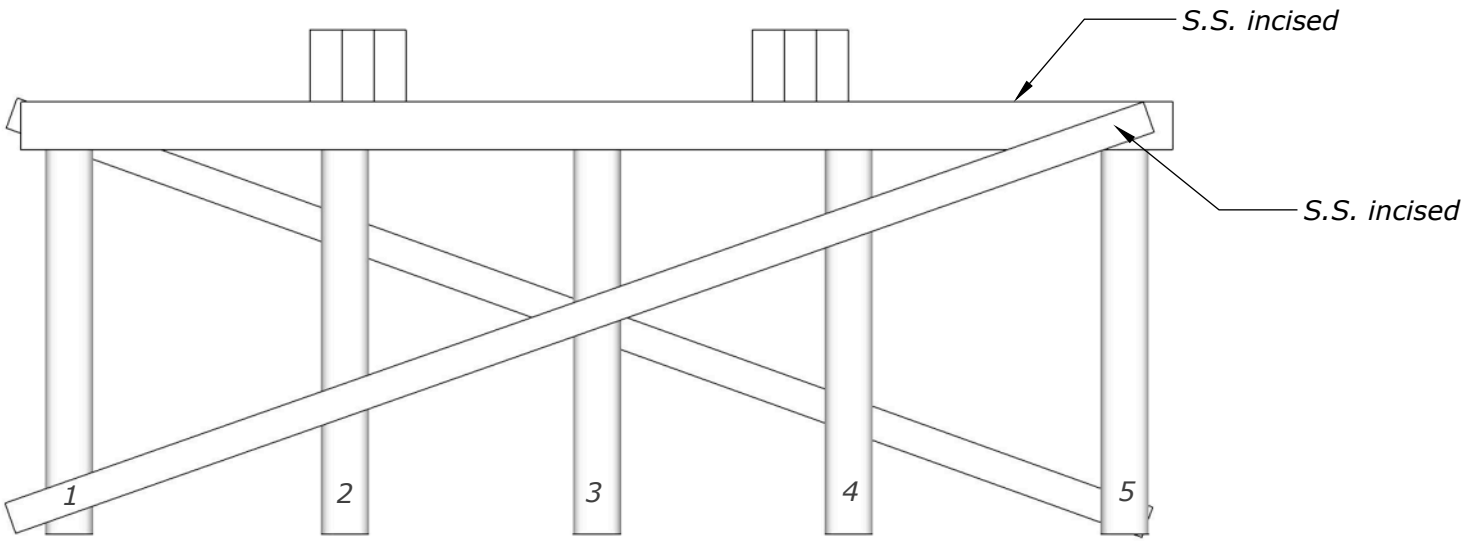
BENT 22 East Elevation

XXXX = <25% SL

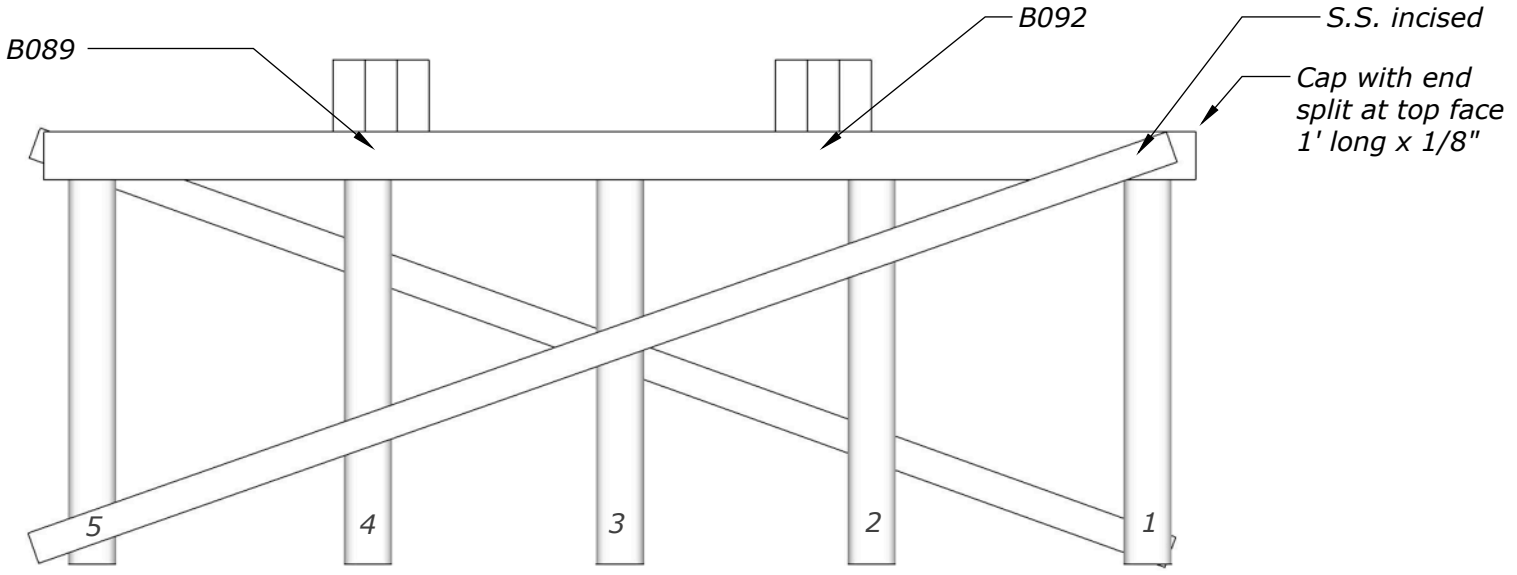
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 23 West Elevation



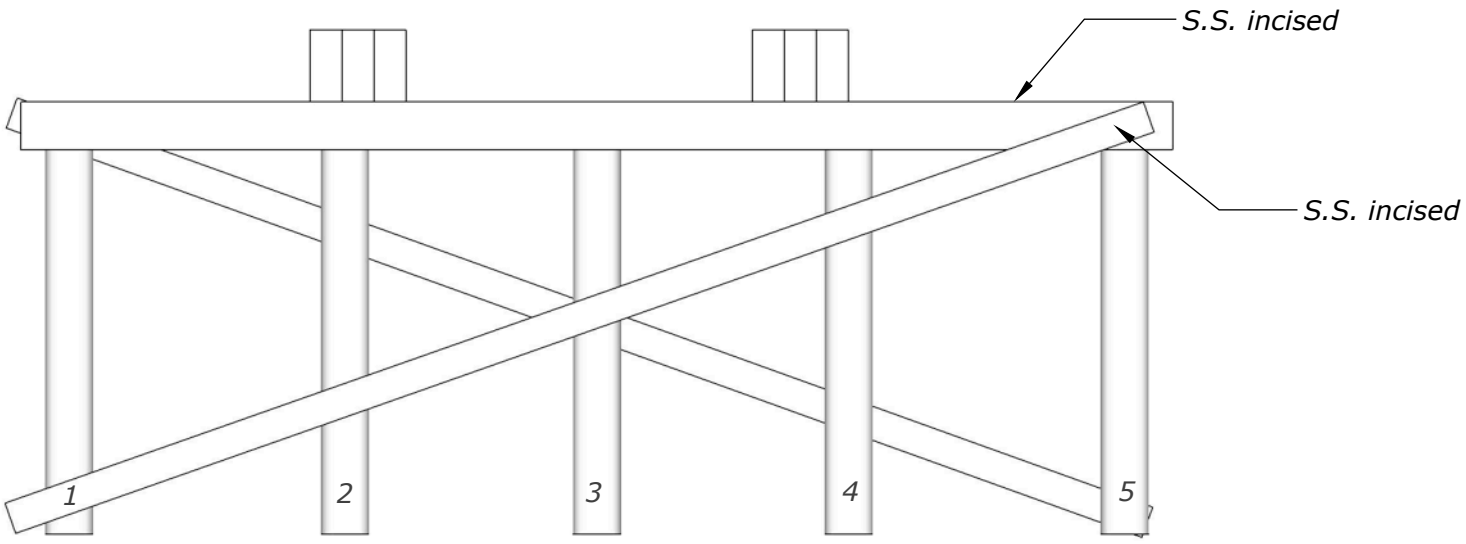
BENT 23 East Elevation

XXXX = <25% SL

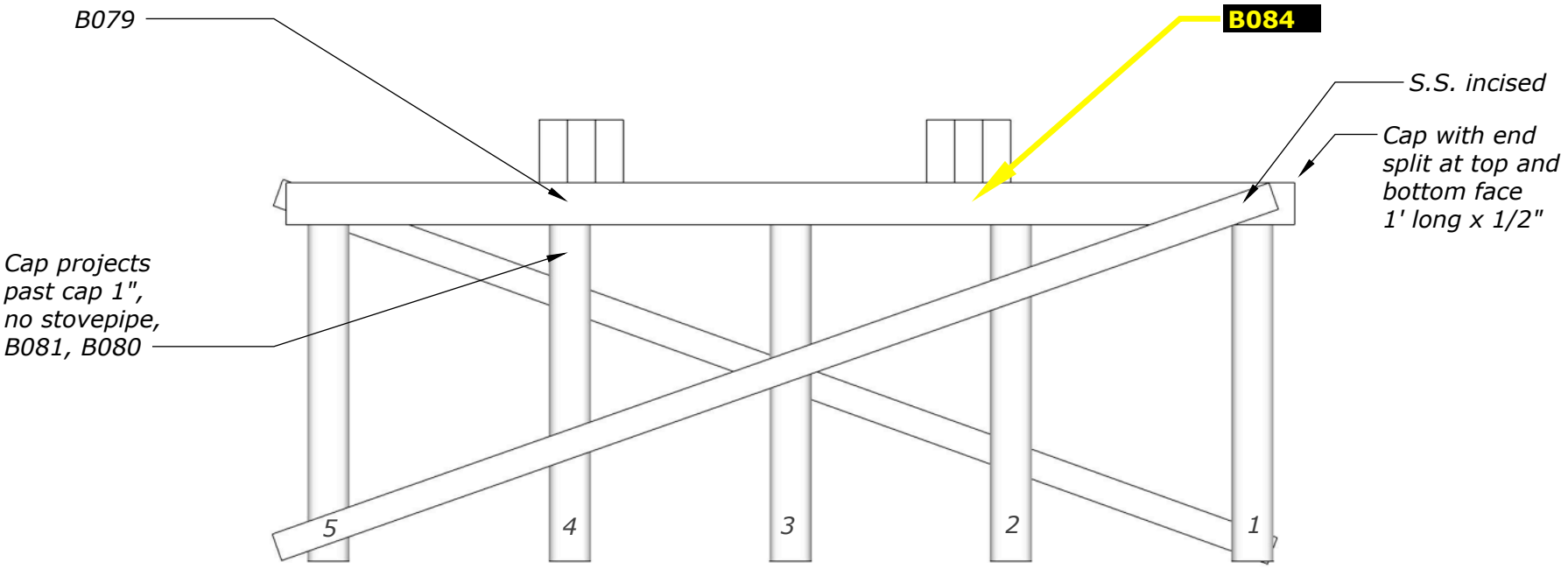
XXXX = 25%-50% SL

XXXX = >50% SL

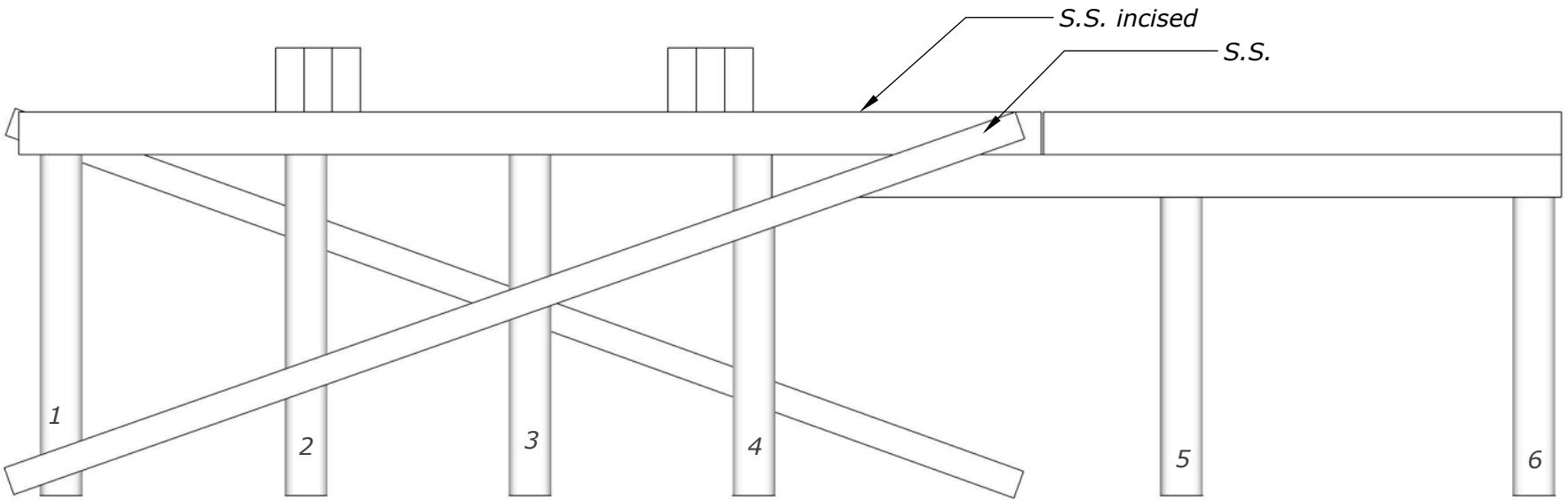
For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



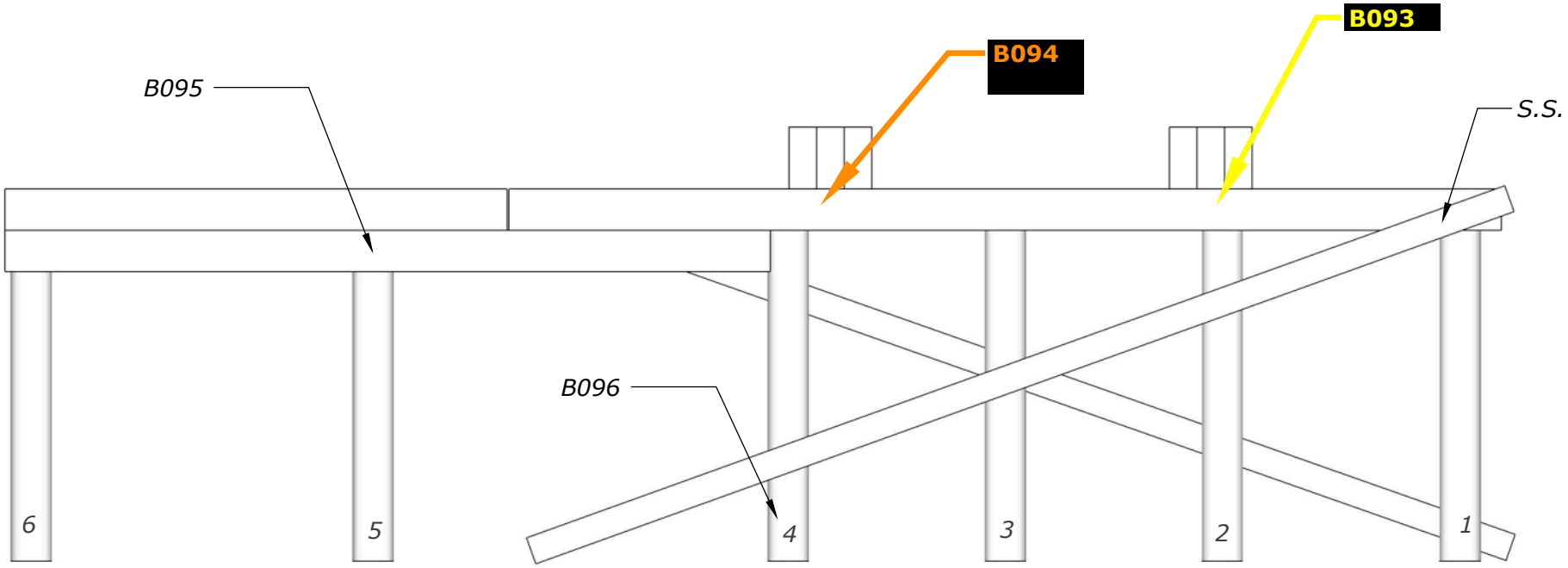
BENT 24 West Elevation



BENT 24 East Elevation



BENT 25 West Elevation



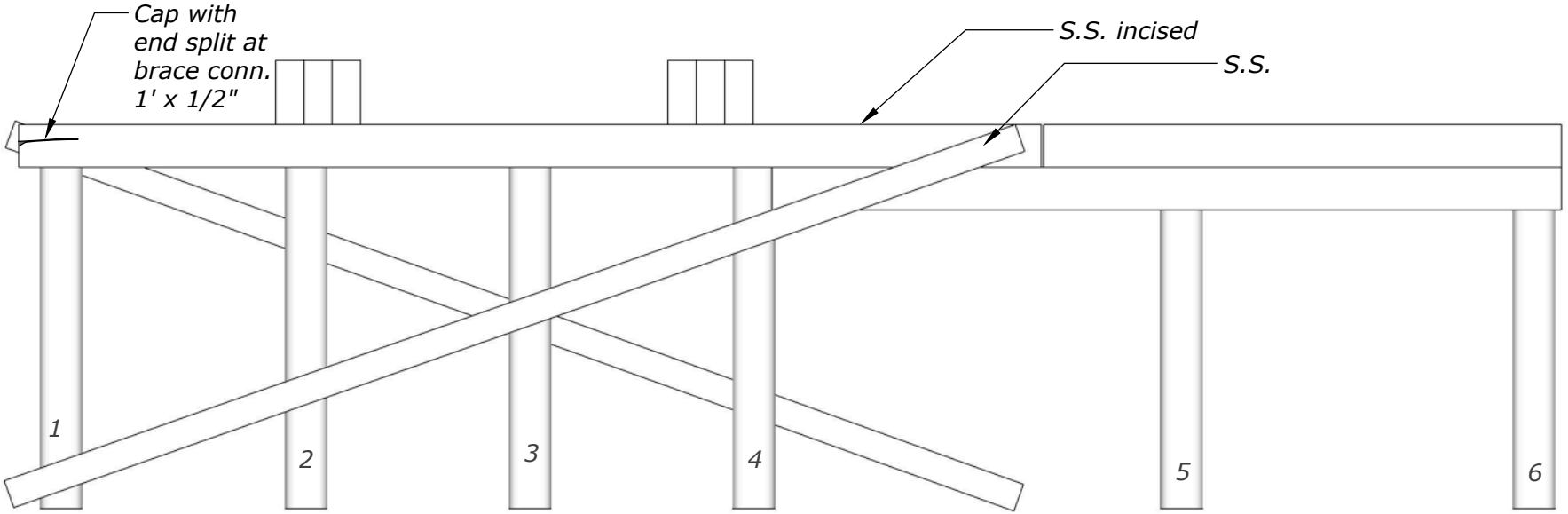
BENT 25 East Elevation

XXXX = <25% SL

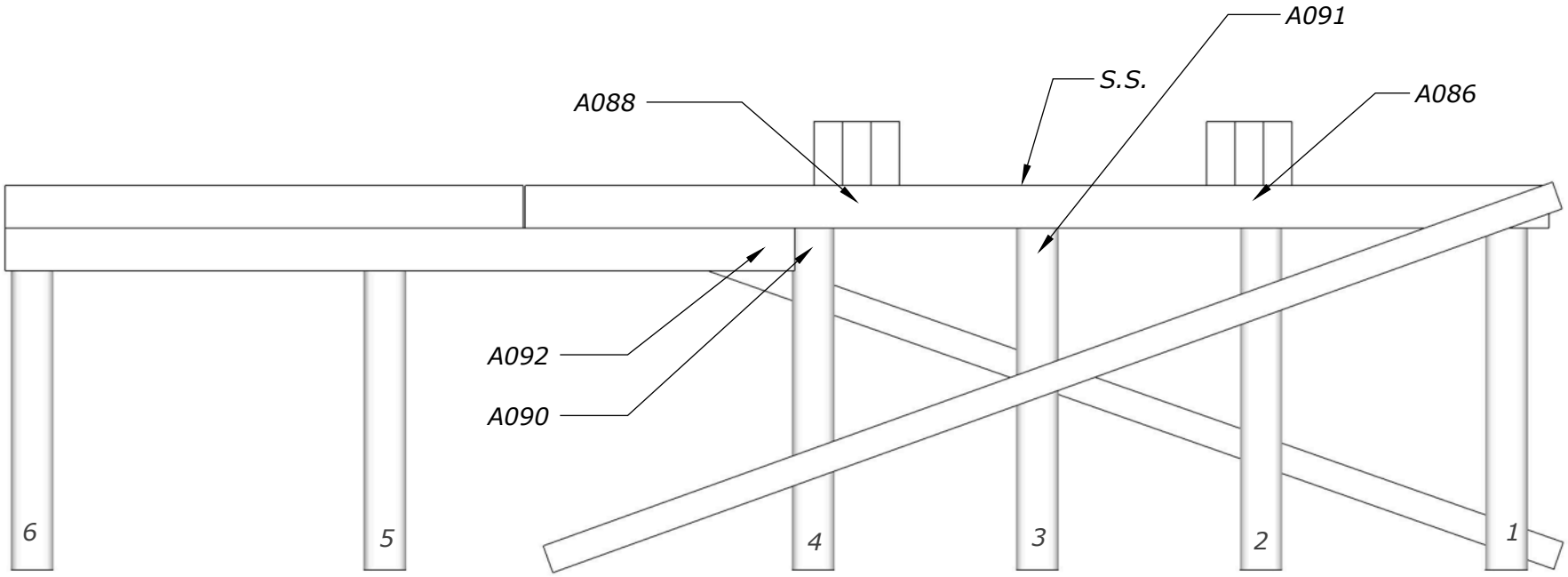
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 26 West Elevation



BENT 26 East Elevation

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

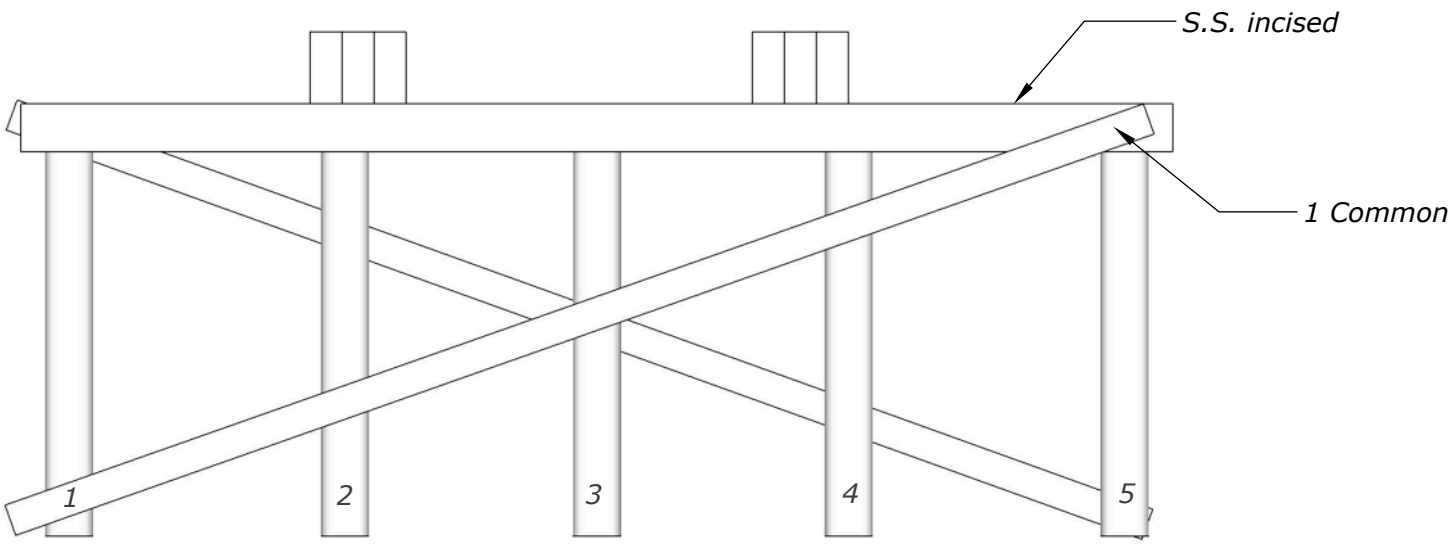
For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")

XXXX = <25% SL

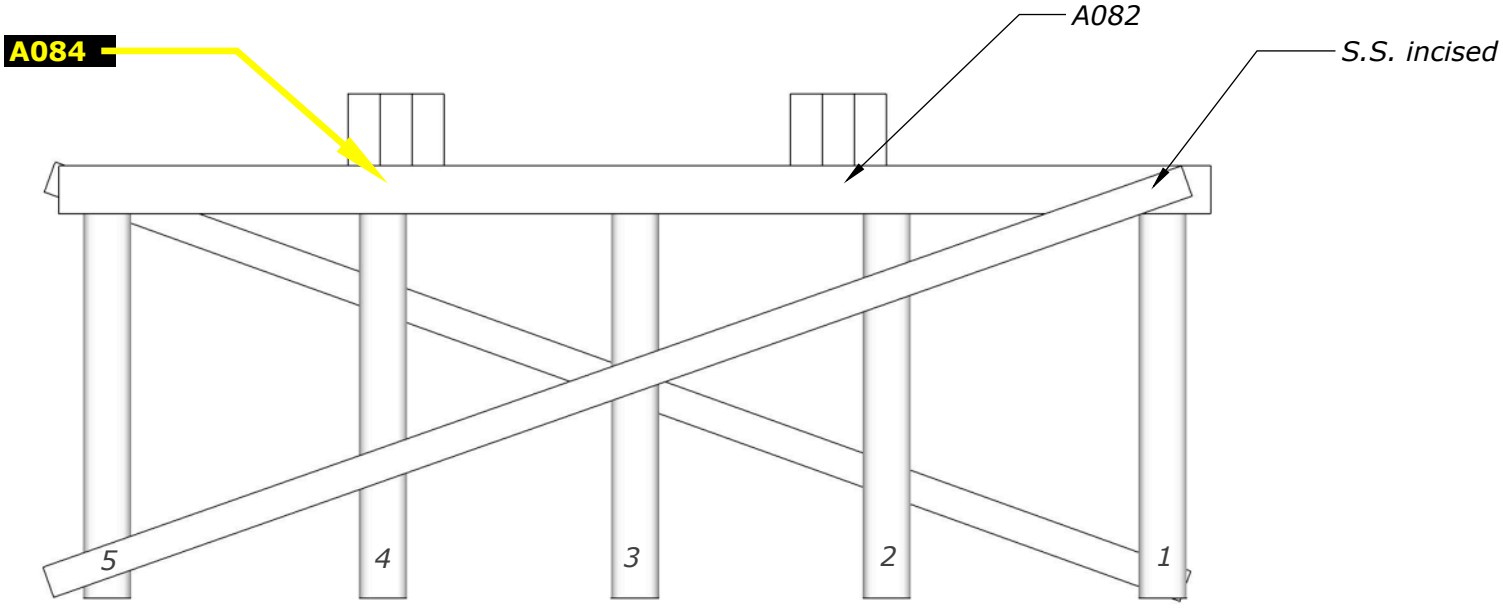
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 27 West Elevation



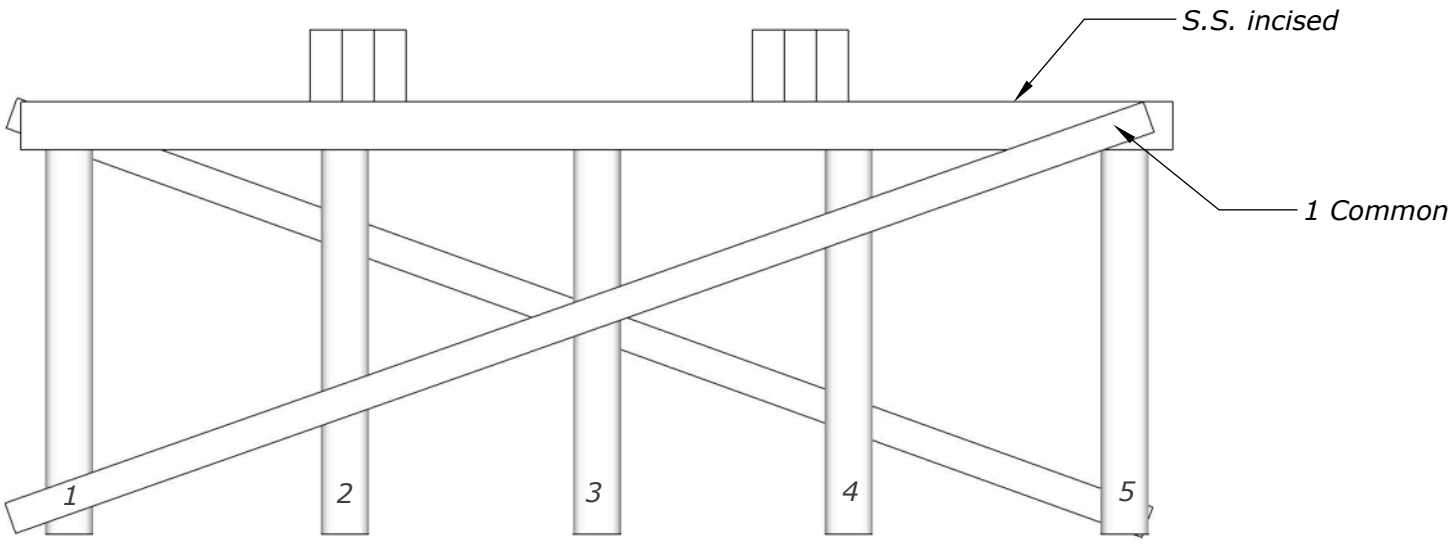
BENT 27 East Elevation

XXXX = <25% SL

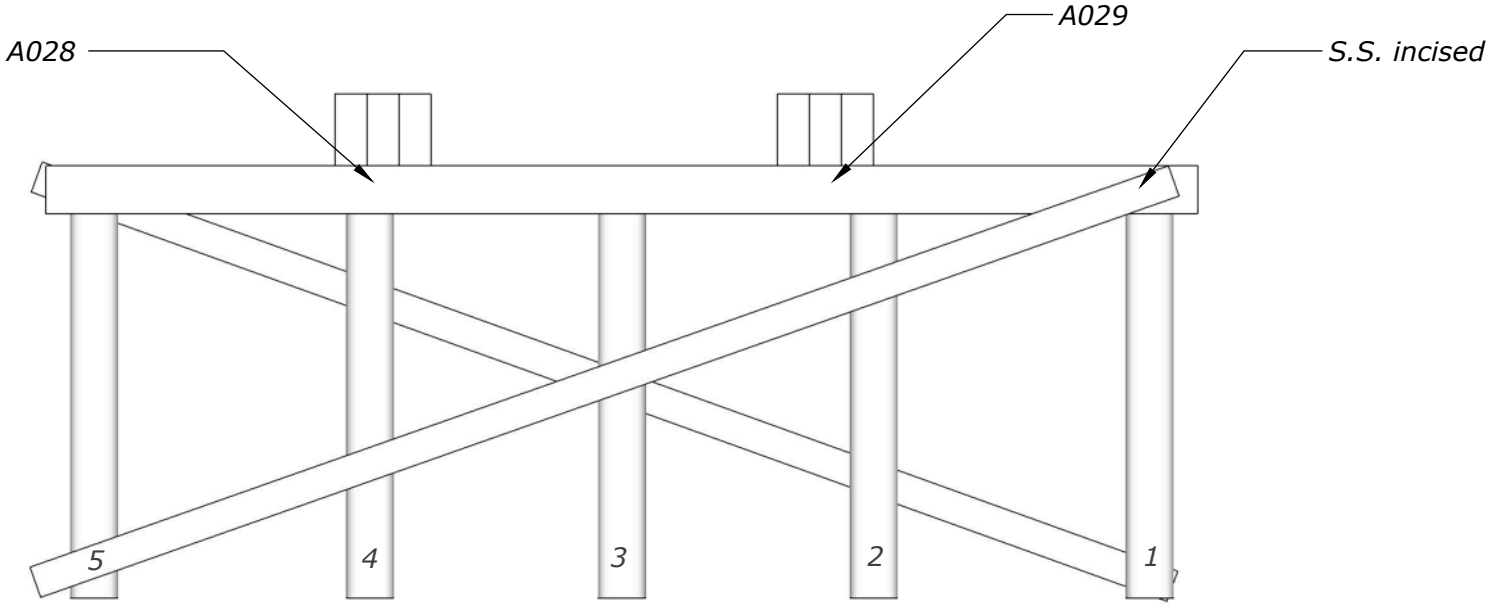
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 28 West Elevation



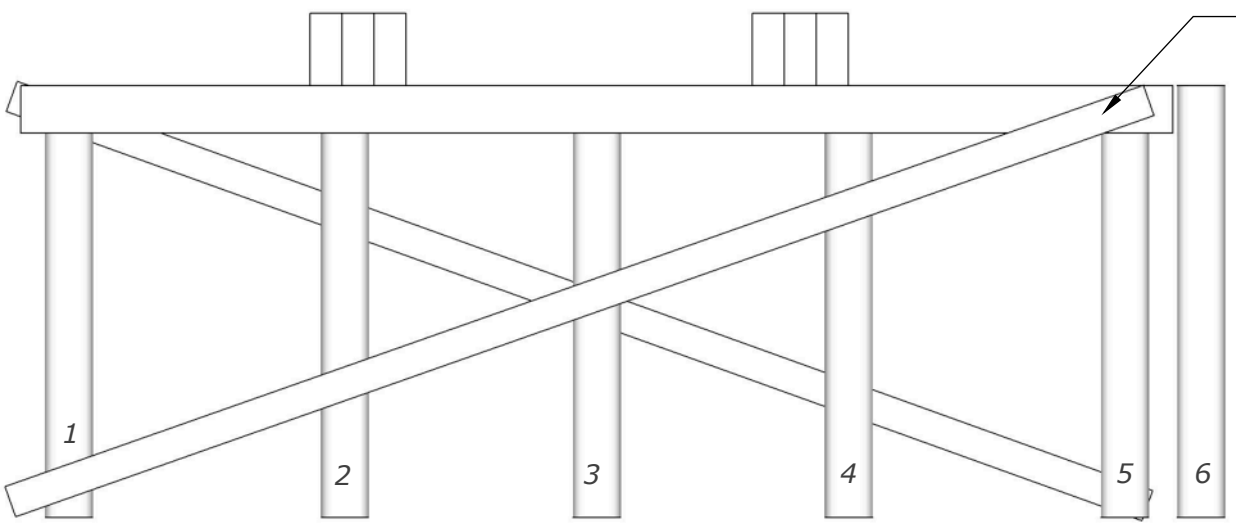
BENT 28 East Elevation

XXXX = <25% SL

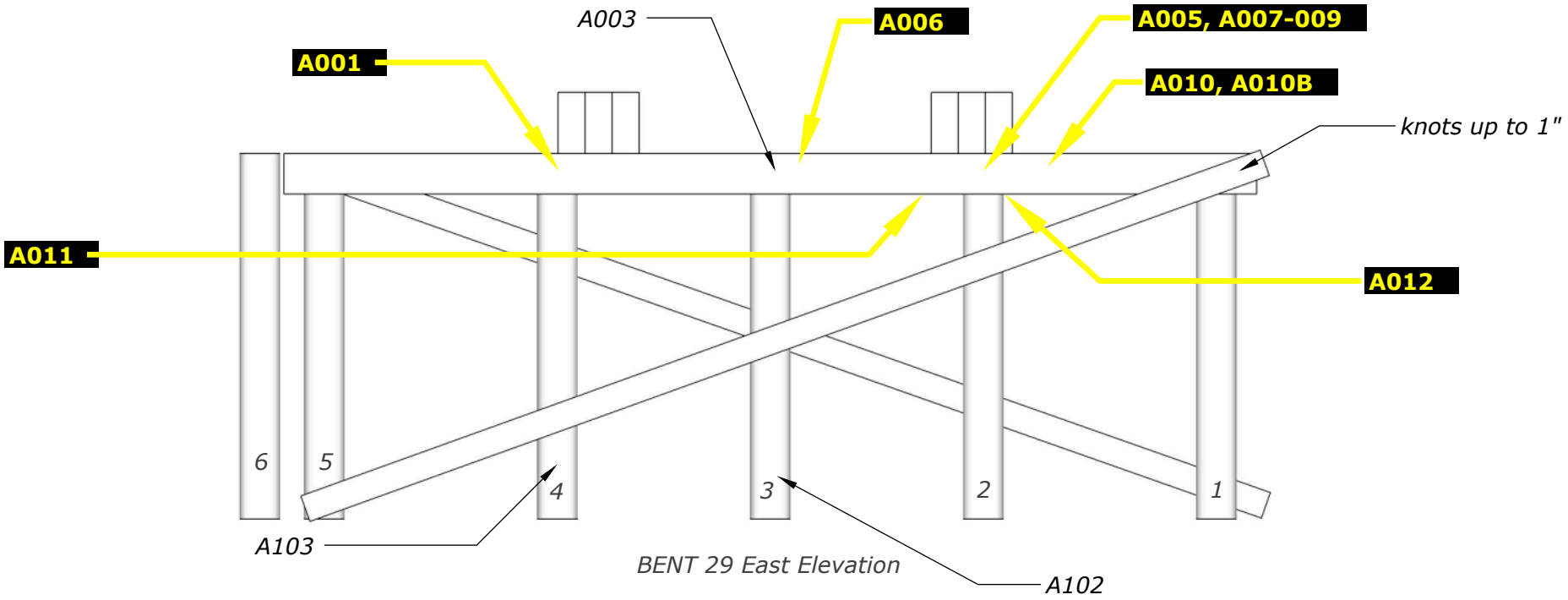
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 29 West Elevation



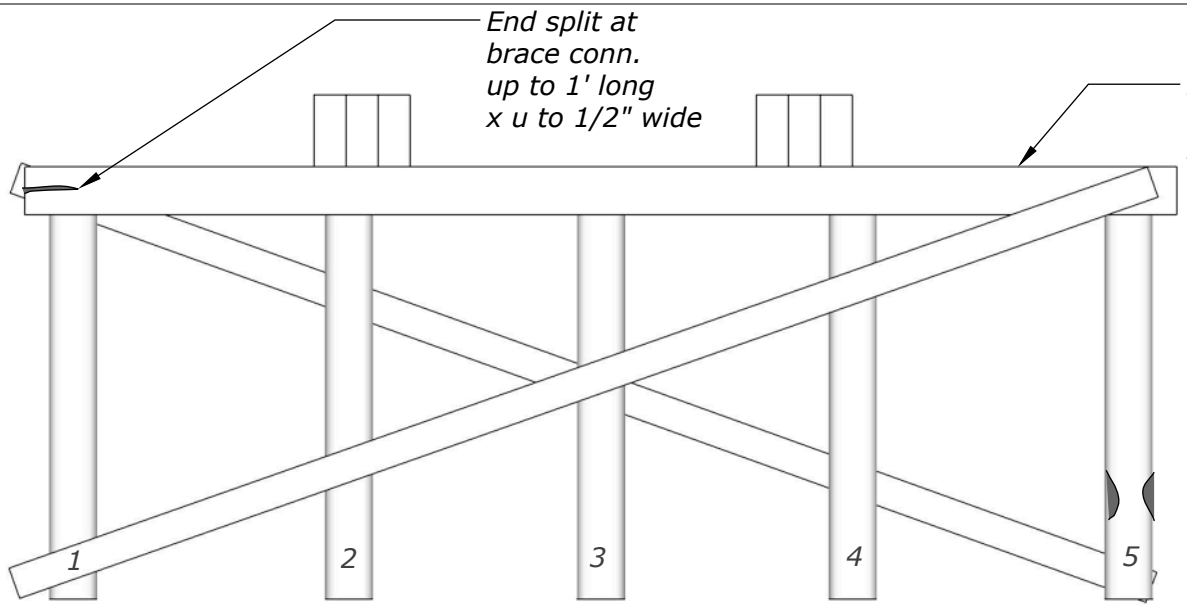
BENT 29 East Elevation

XXXX = <25% SL

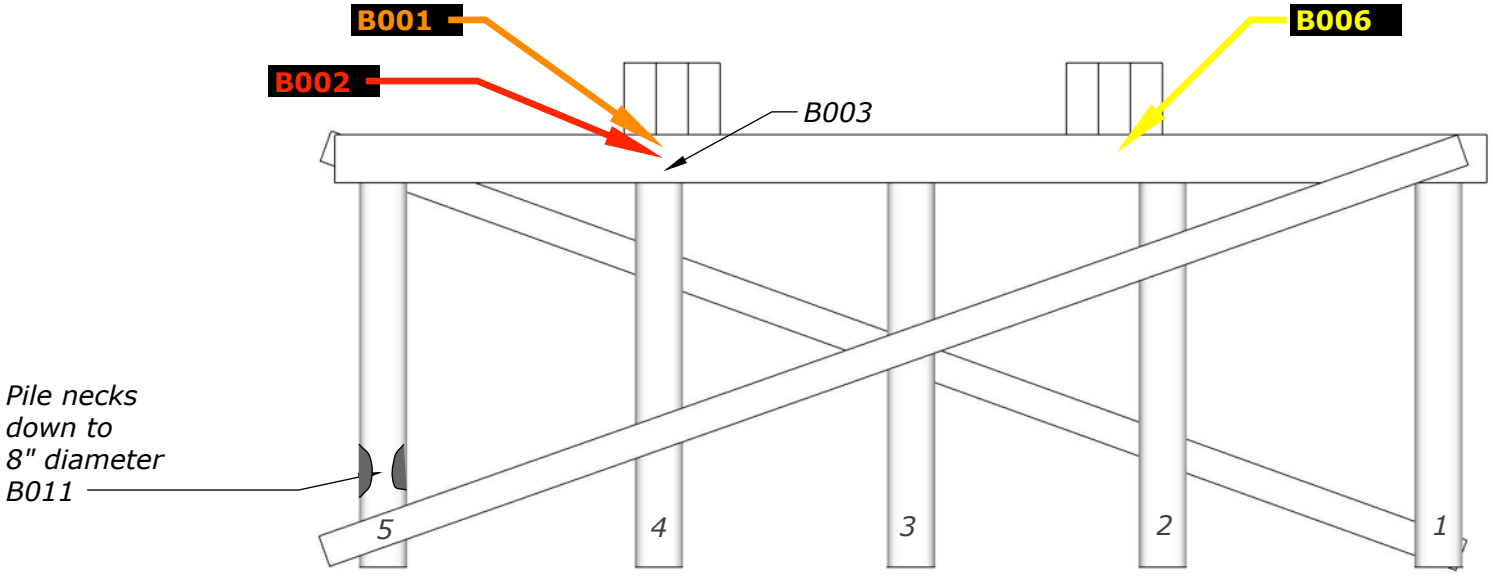
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 30 West Elevation



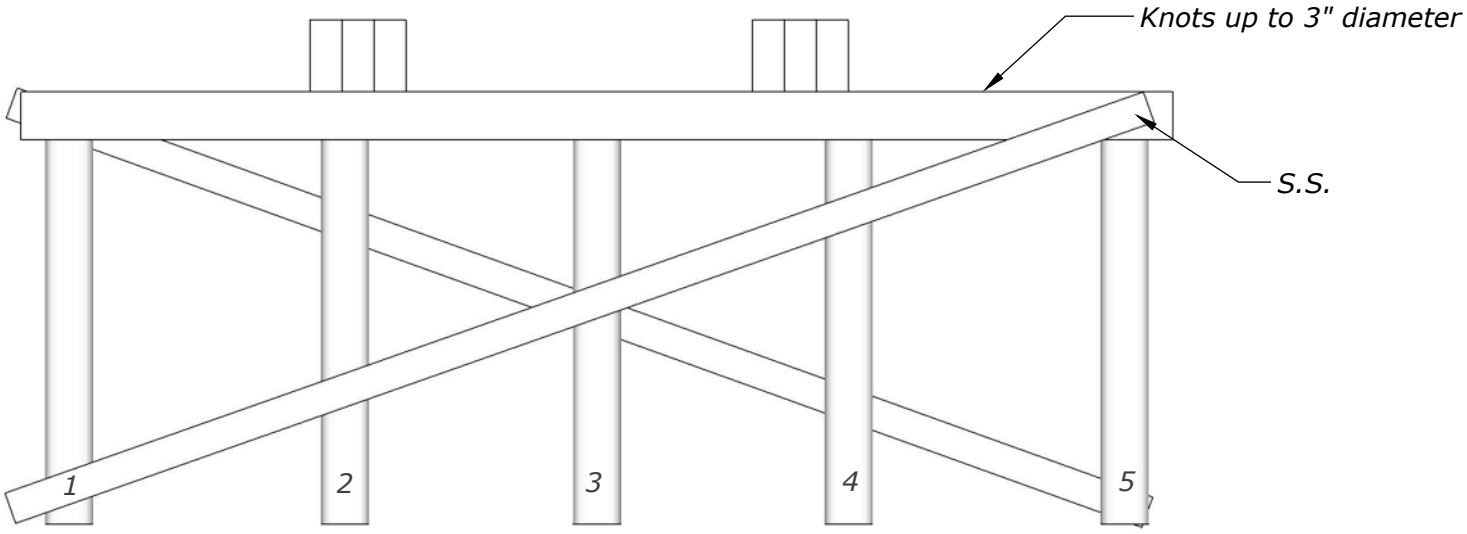
BENT 30 East Elevation

XXXX = <25% SL

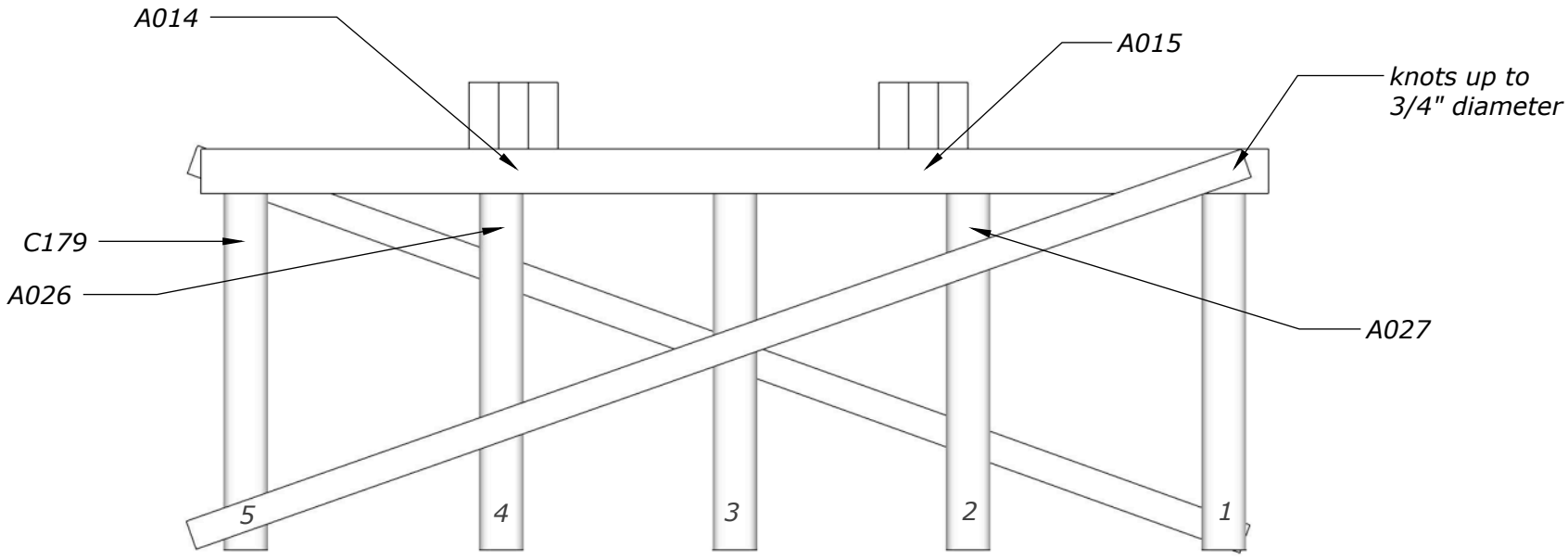
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 31 West Elevation



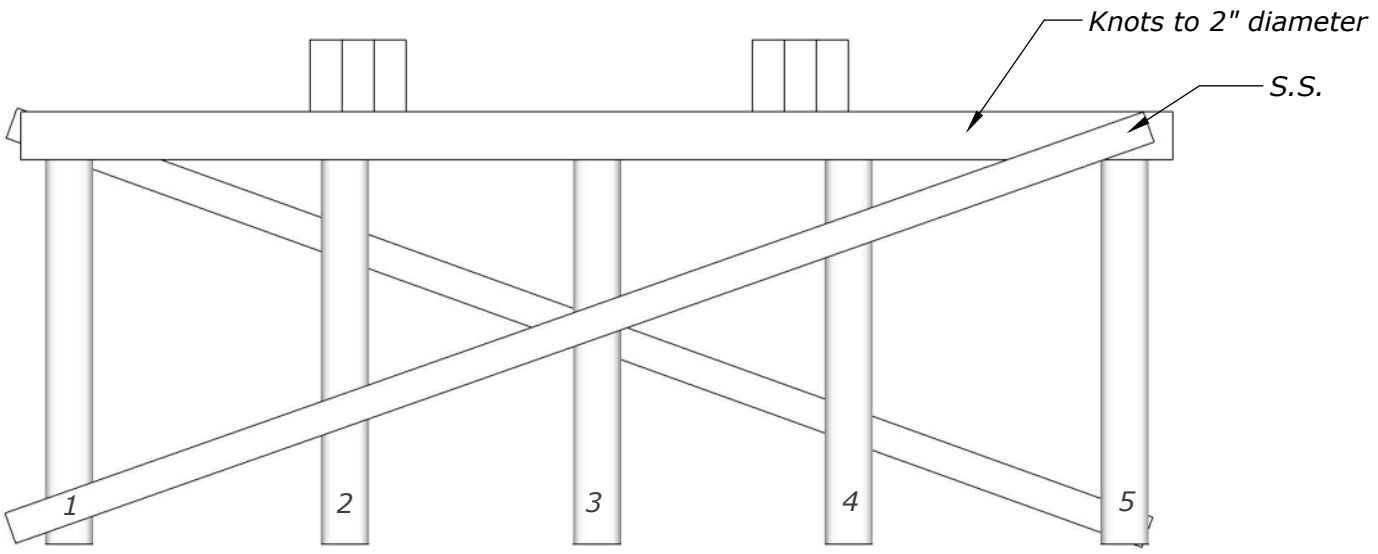
BENT 31 East Elevation

XXXX = <25% SL

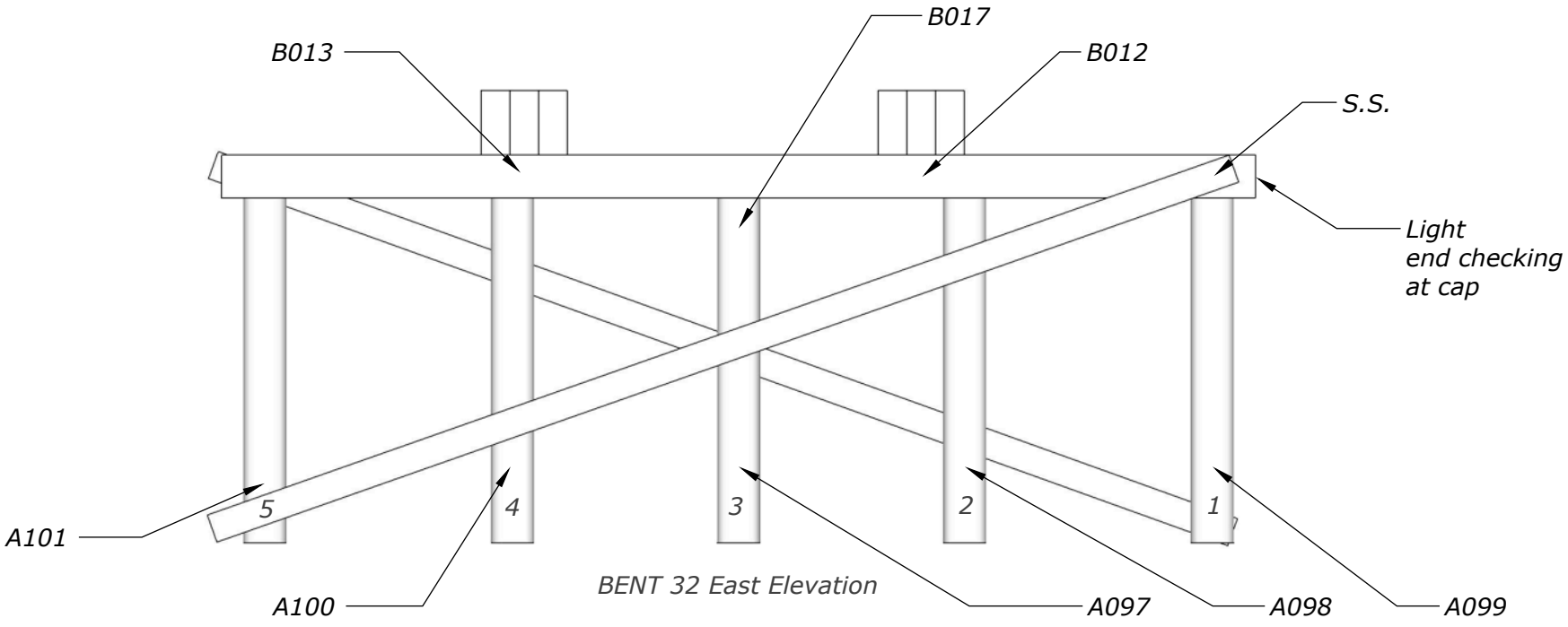
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 32 West Elevation



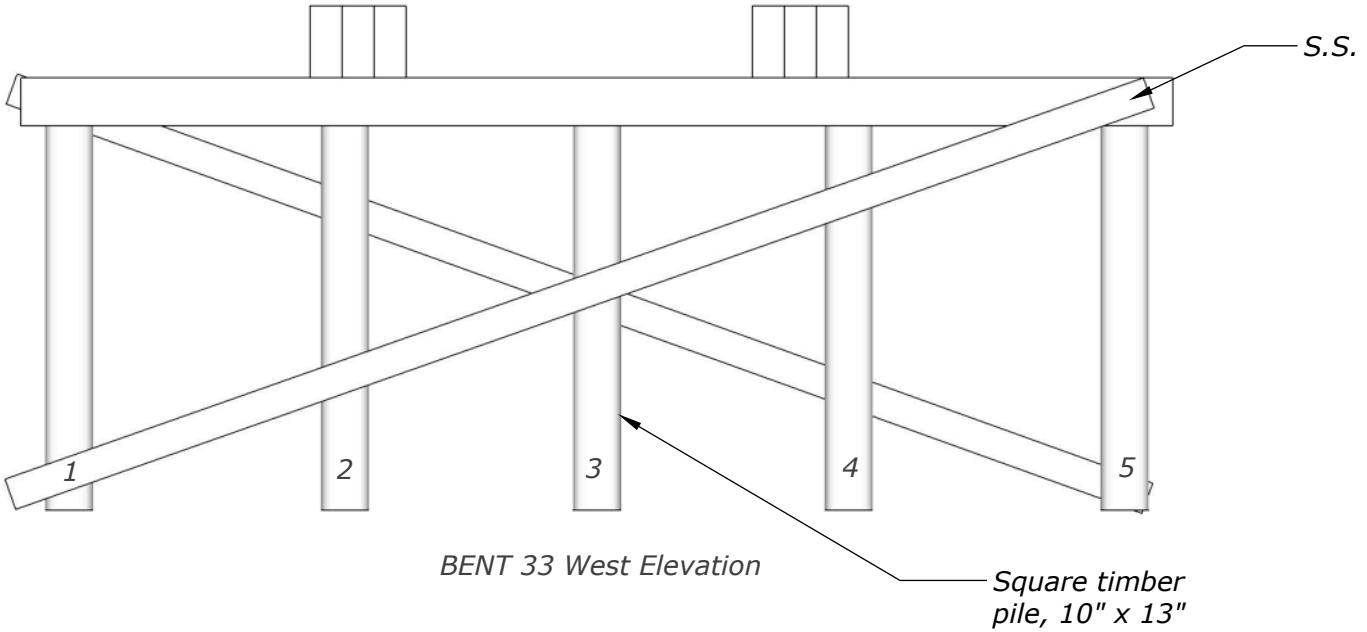
BENT 32 East Elevation

XXXX = <25% SL

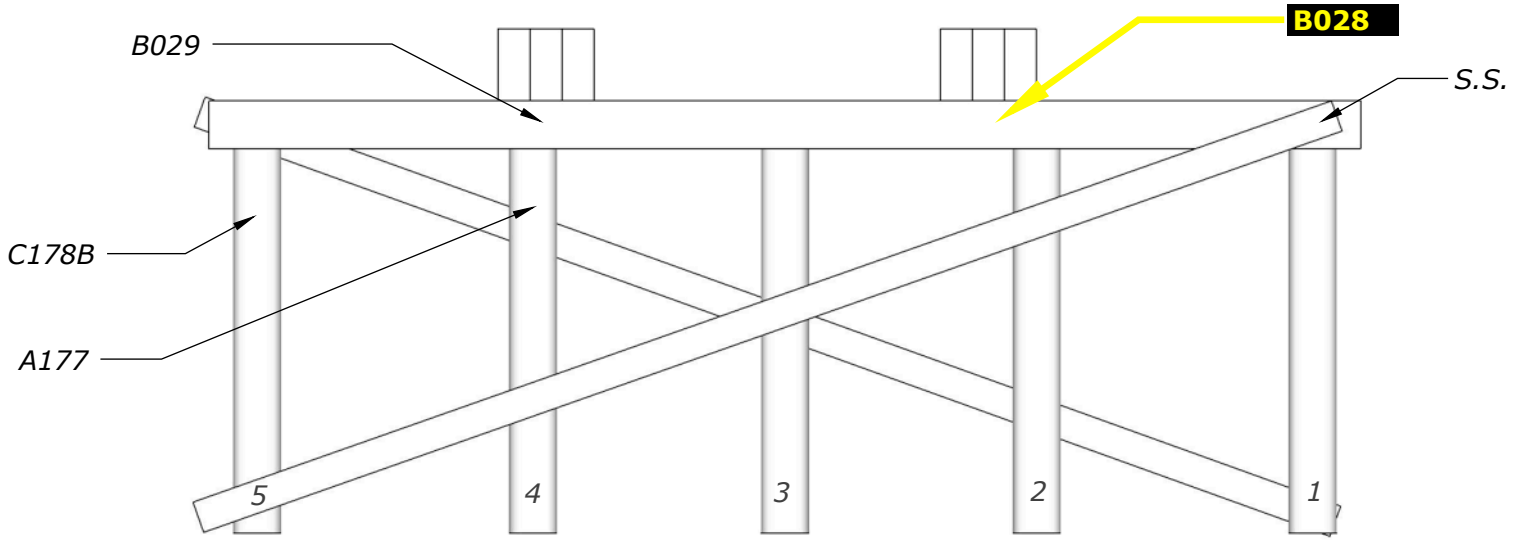
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 33 West Elevation



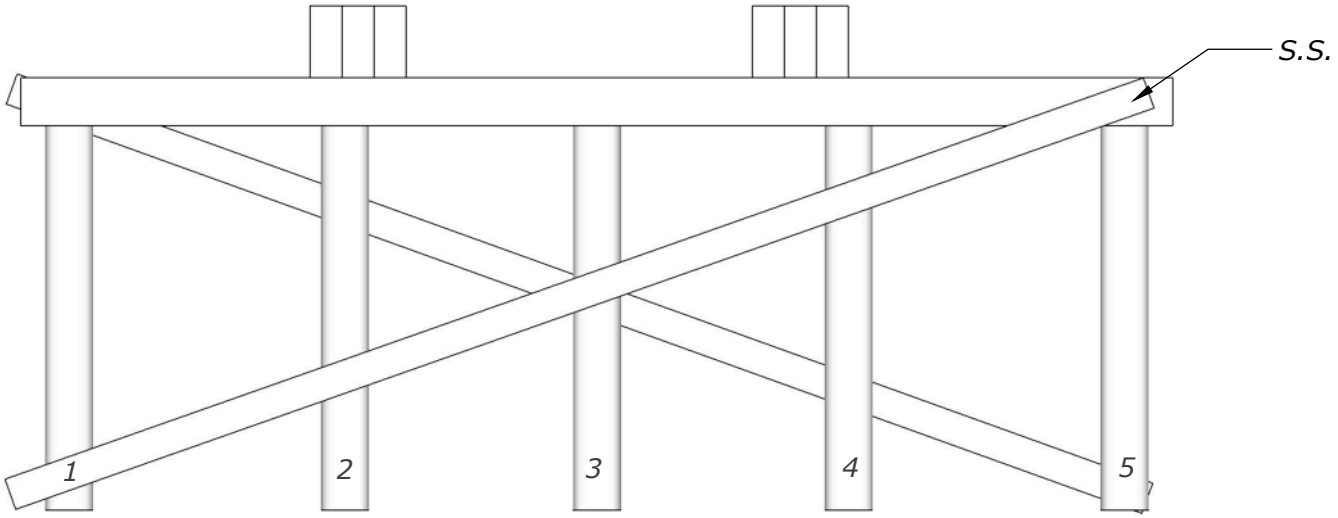
BENT 33 East Elevation

XXXX = <25% SL

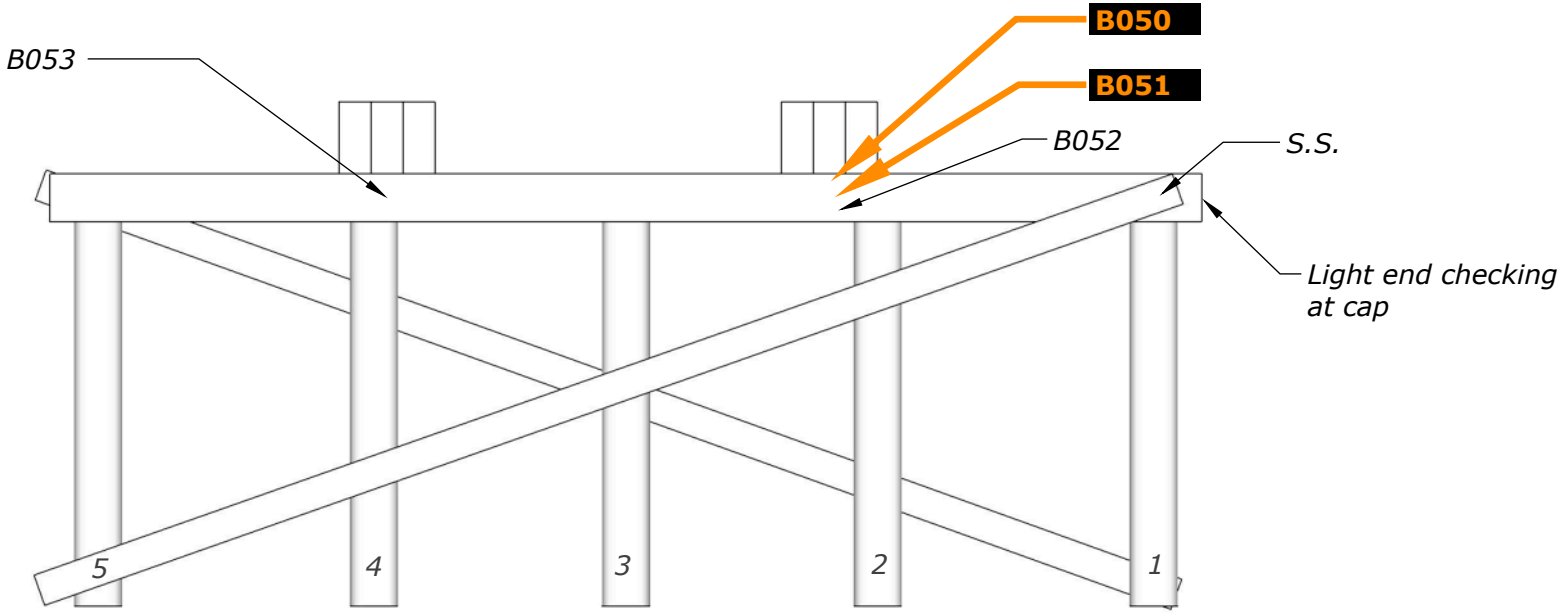
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 34 West Elevation



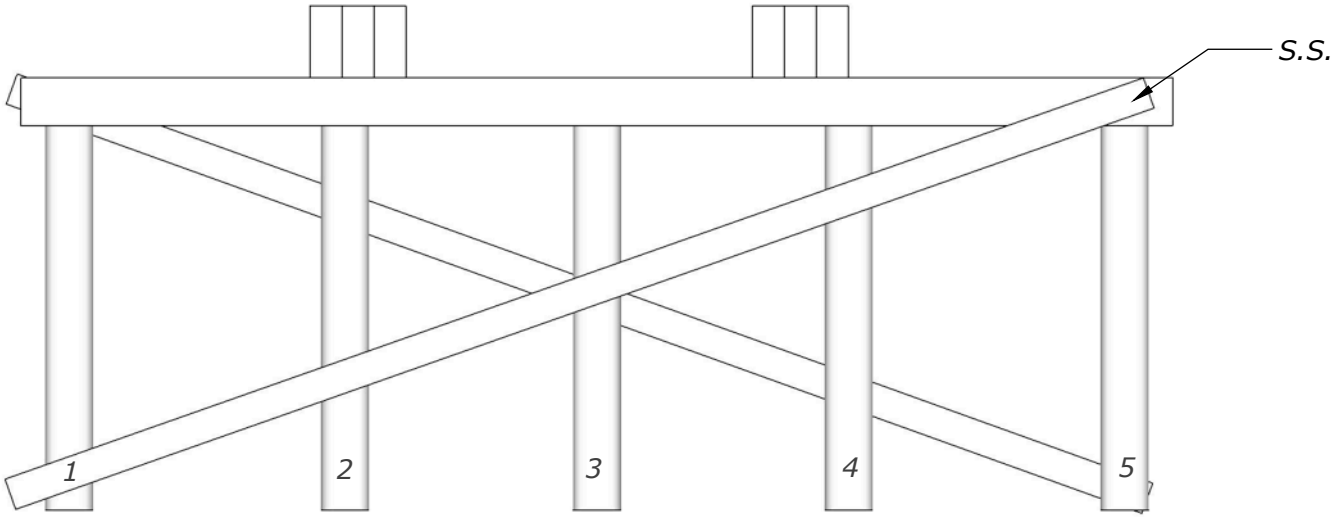
BENT 34 East Elevation

XXXX = <25% SL

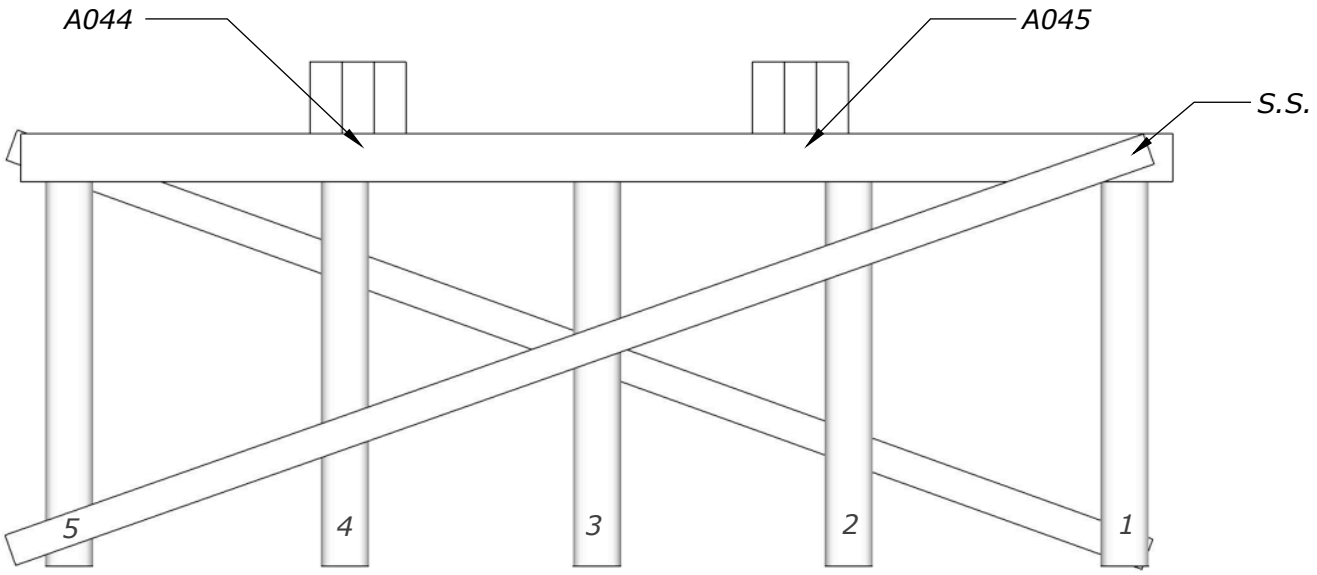
XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



BENT 35 West Elevation



BENT 35 East Elevation

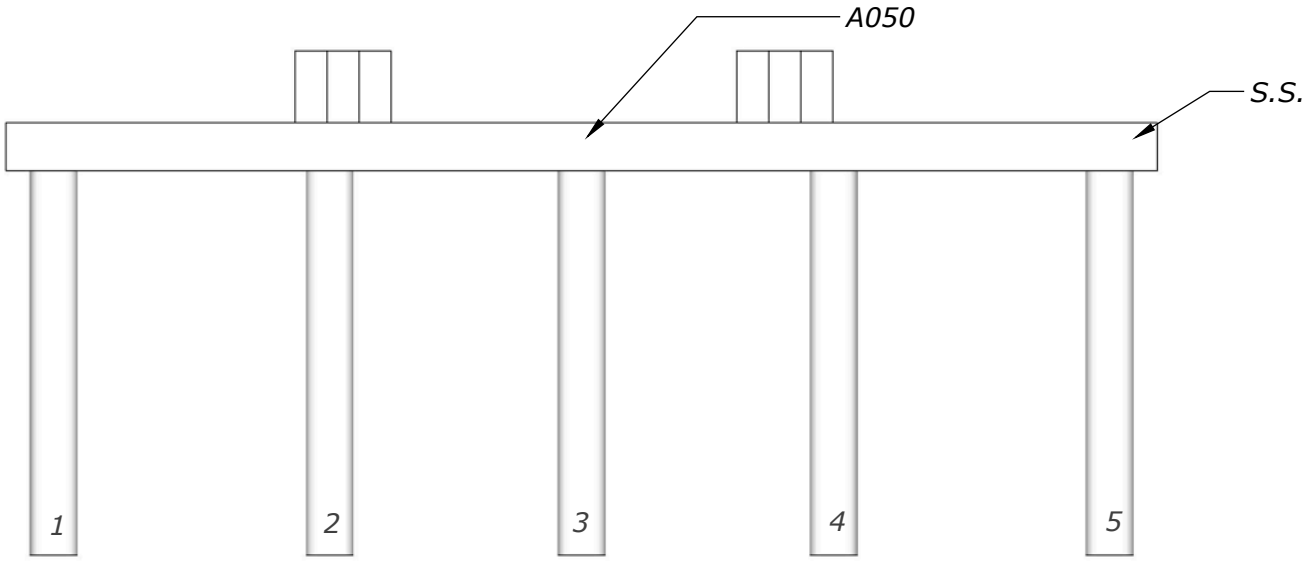
XXXX = <25% SL

XXXX = 25%-50% SL

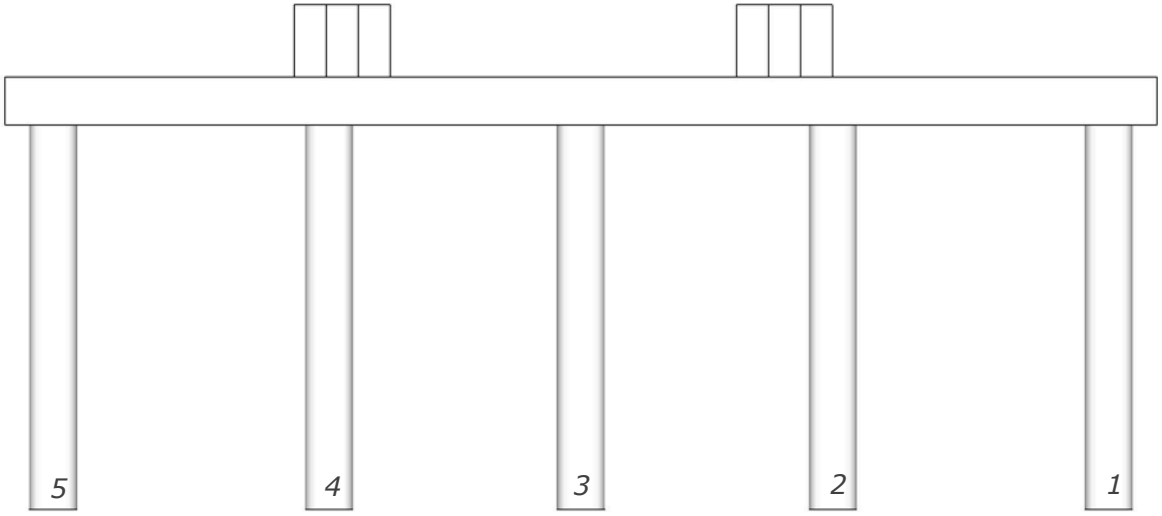
XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")

Notes:
No cross bracing
East elevation can not be inspected due to homeless encampment



BENT 36 West Elevation



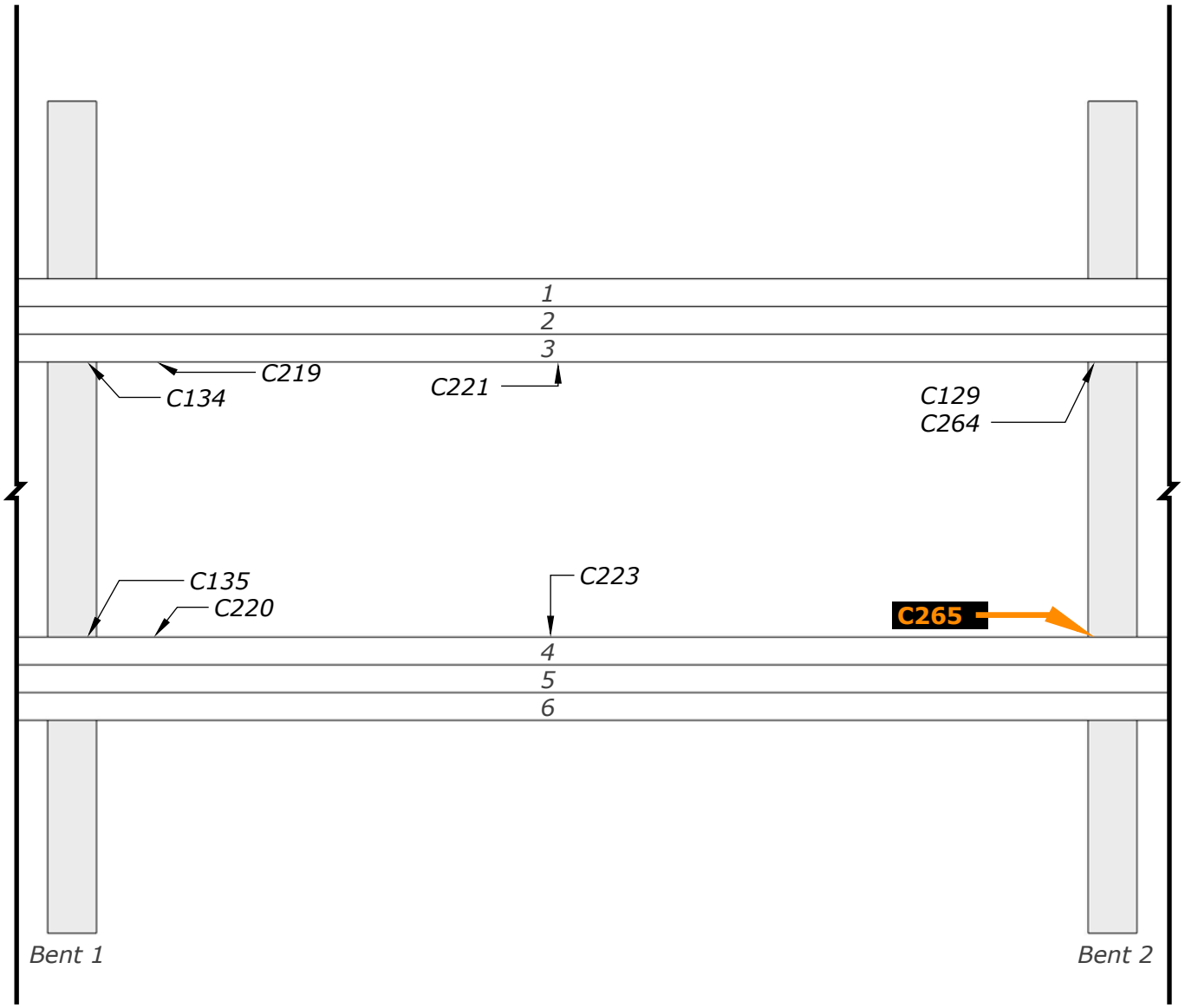
BENT 36 East Elevation

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



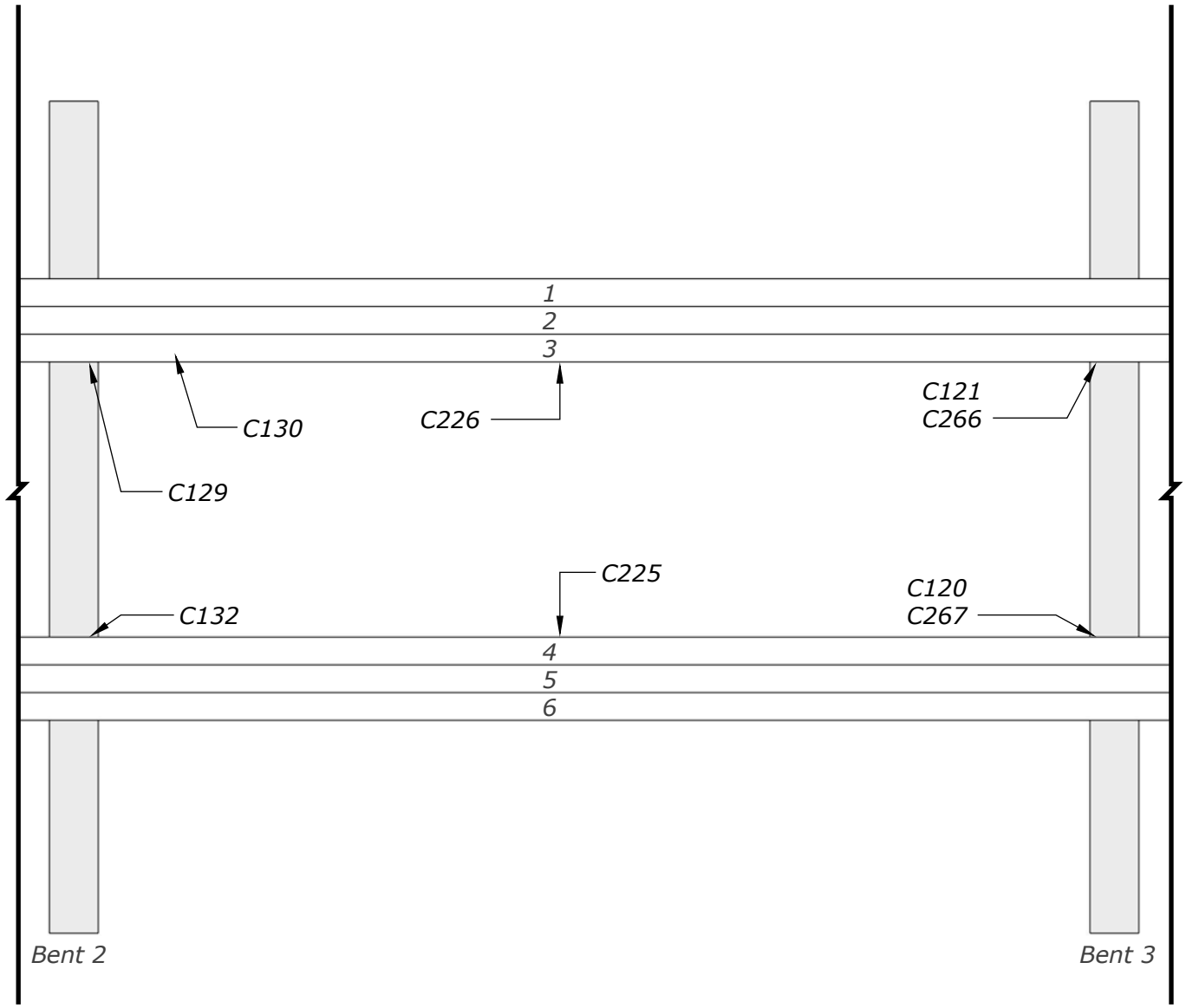
Span 1-2

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



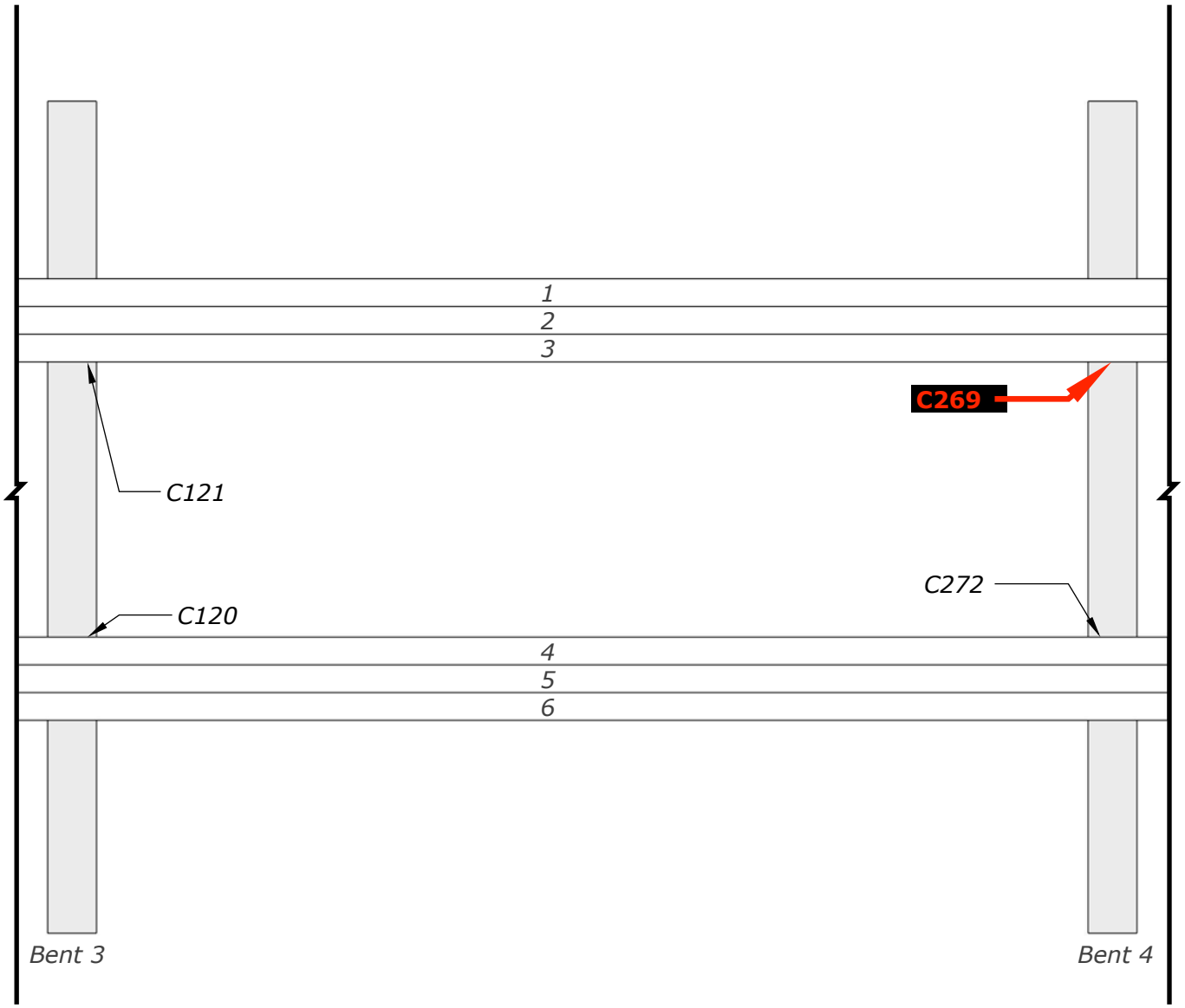
Span 2-3

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



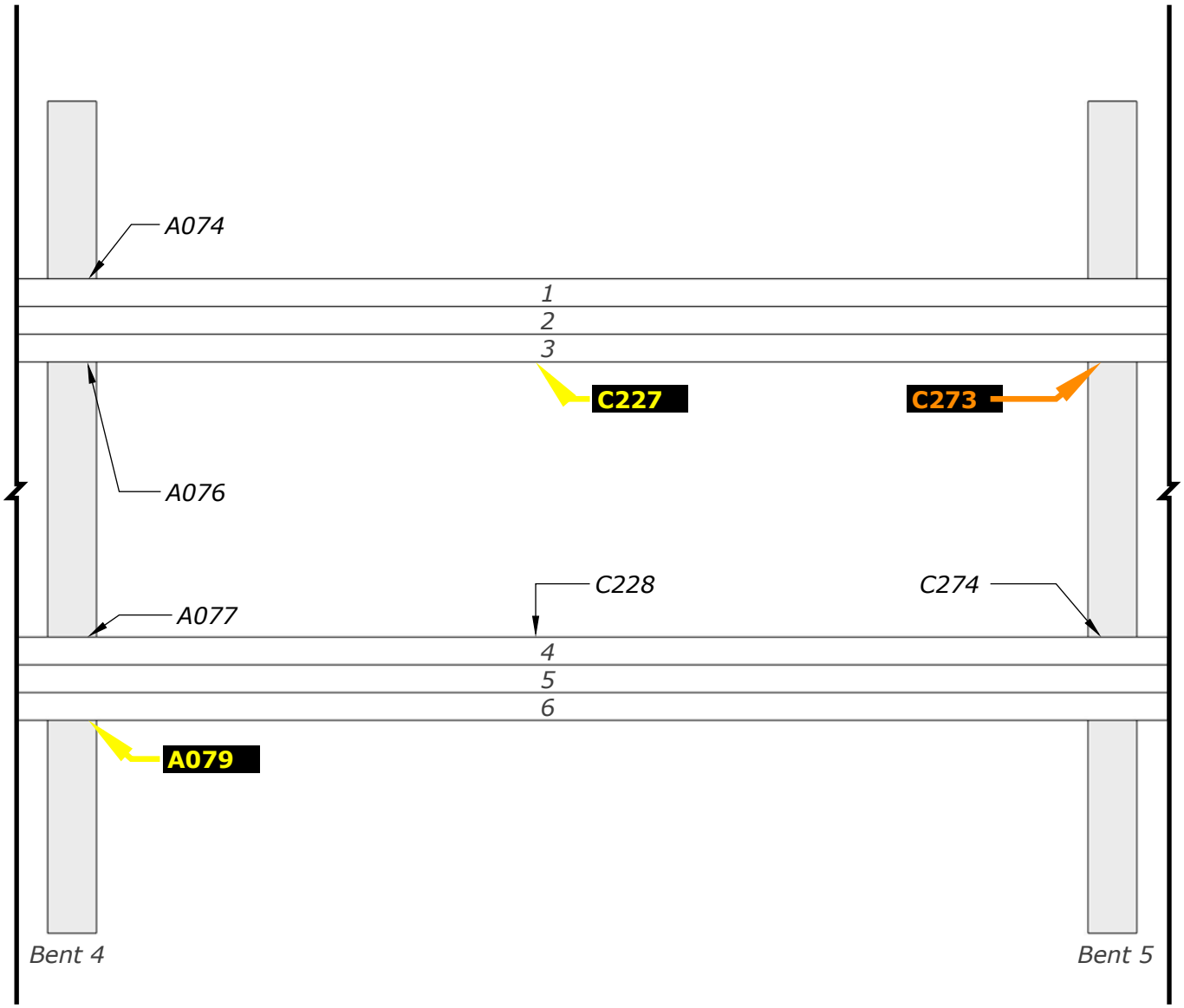
Span 3-4

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



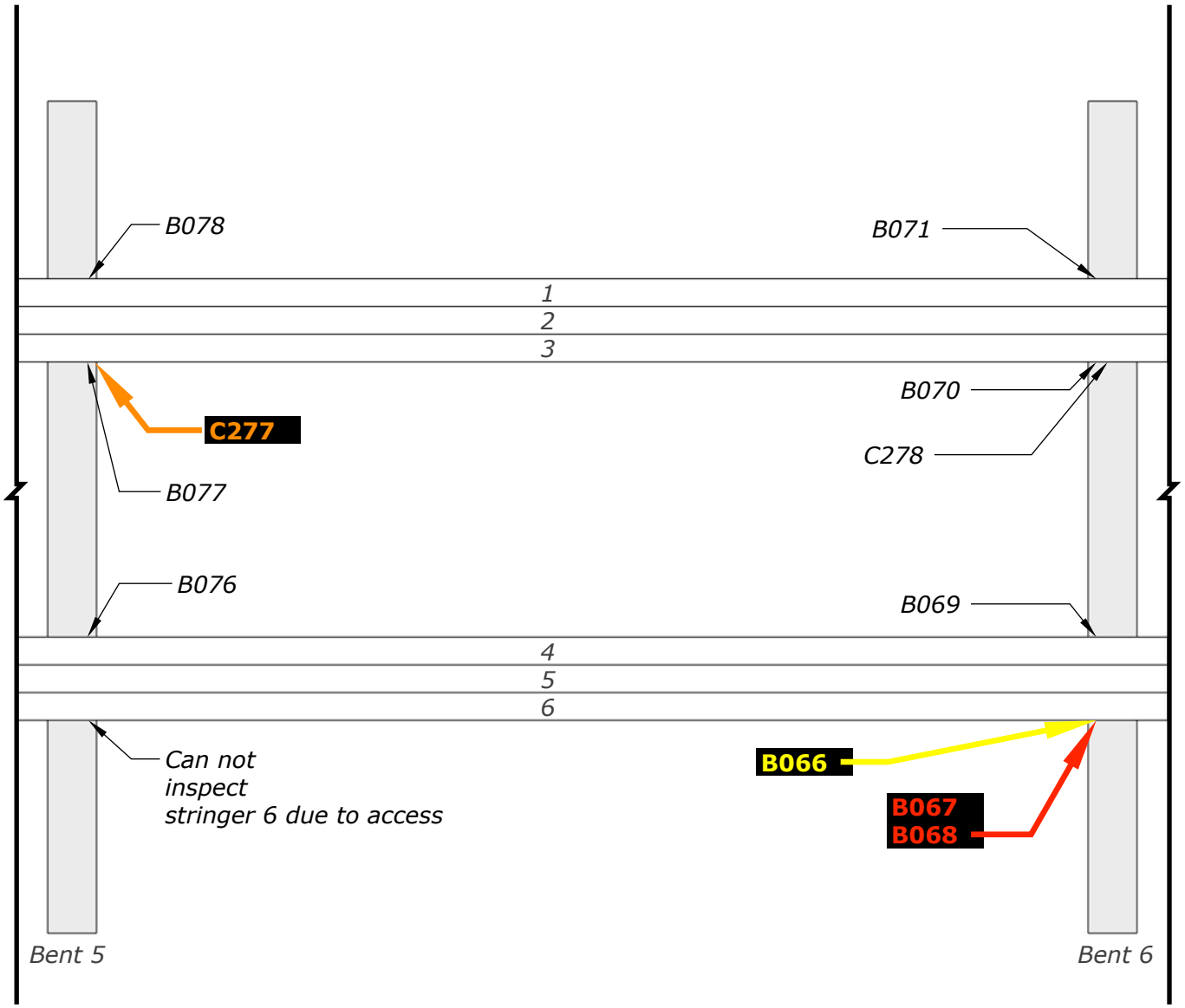
Span 4-5

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



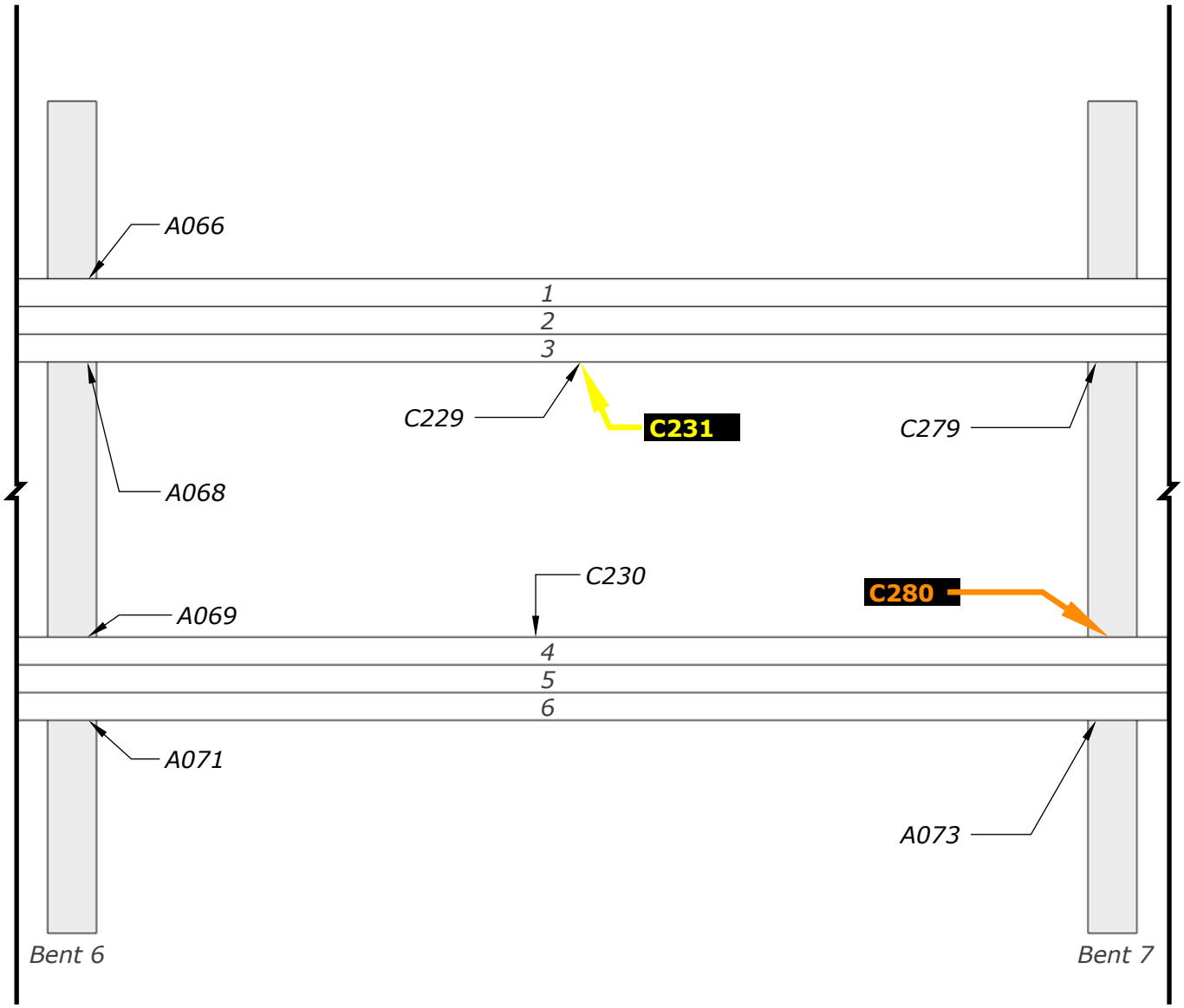
Span 5-6

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



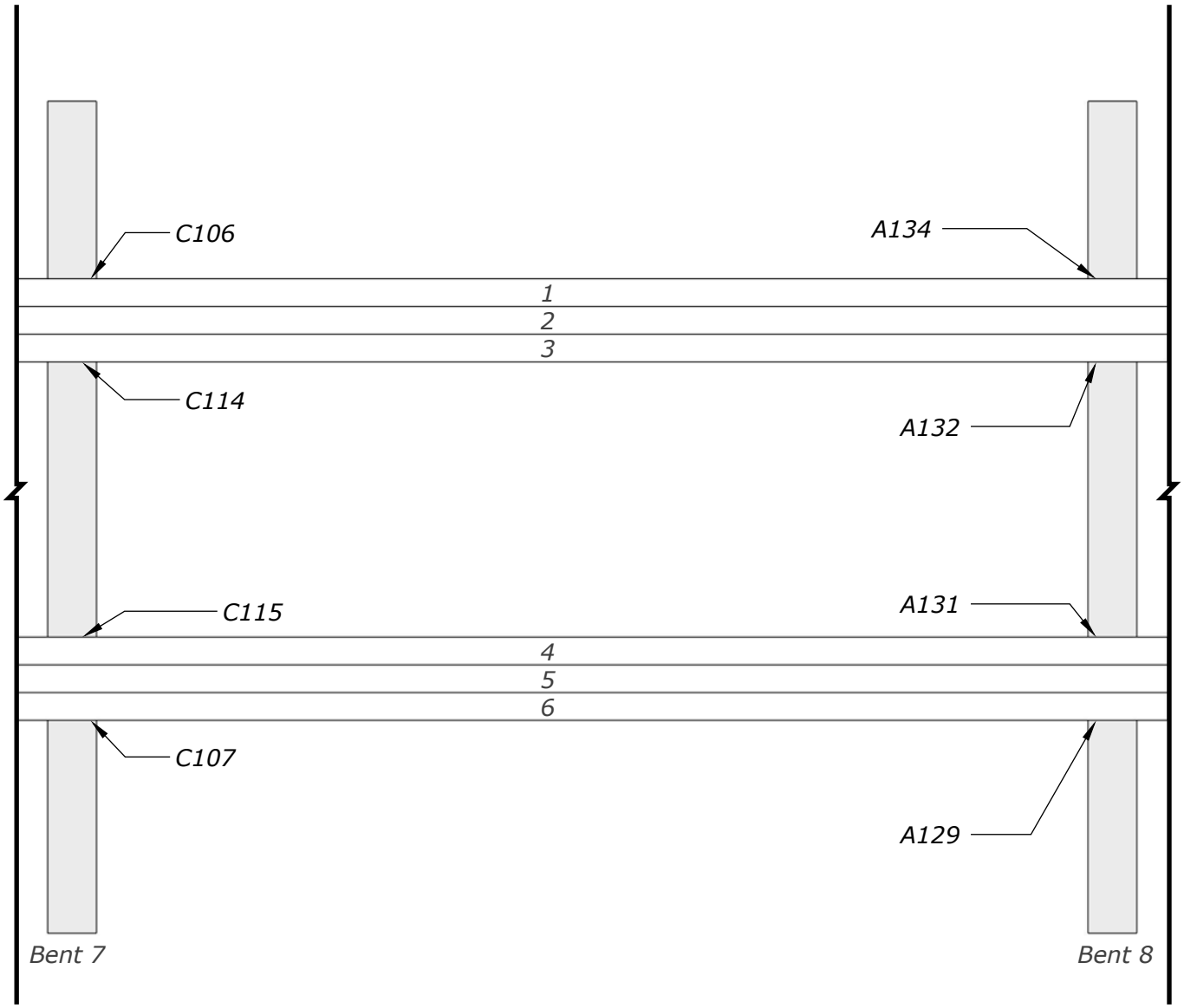
Span 6-7

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



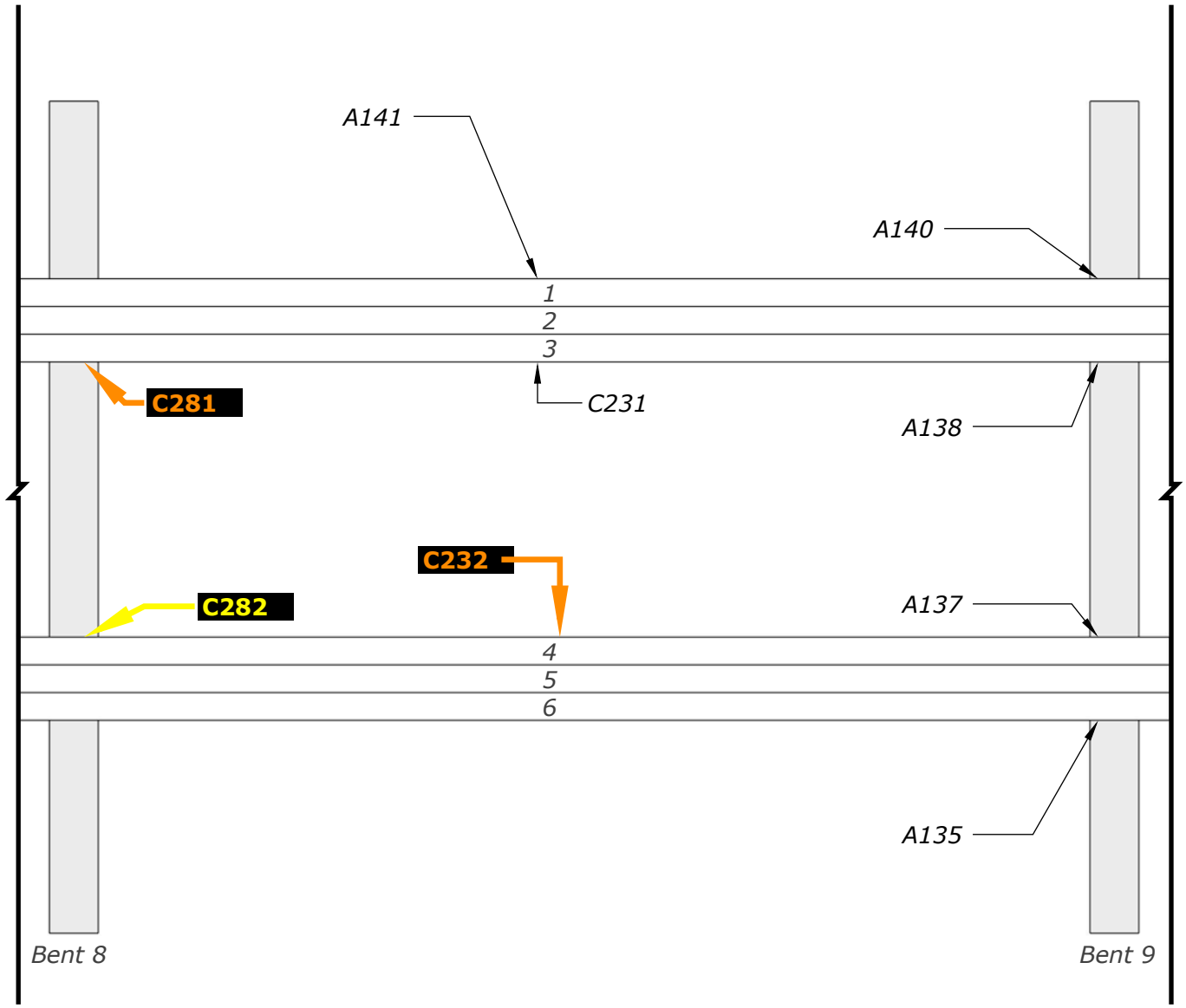
Span 7-8

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



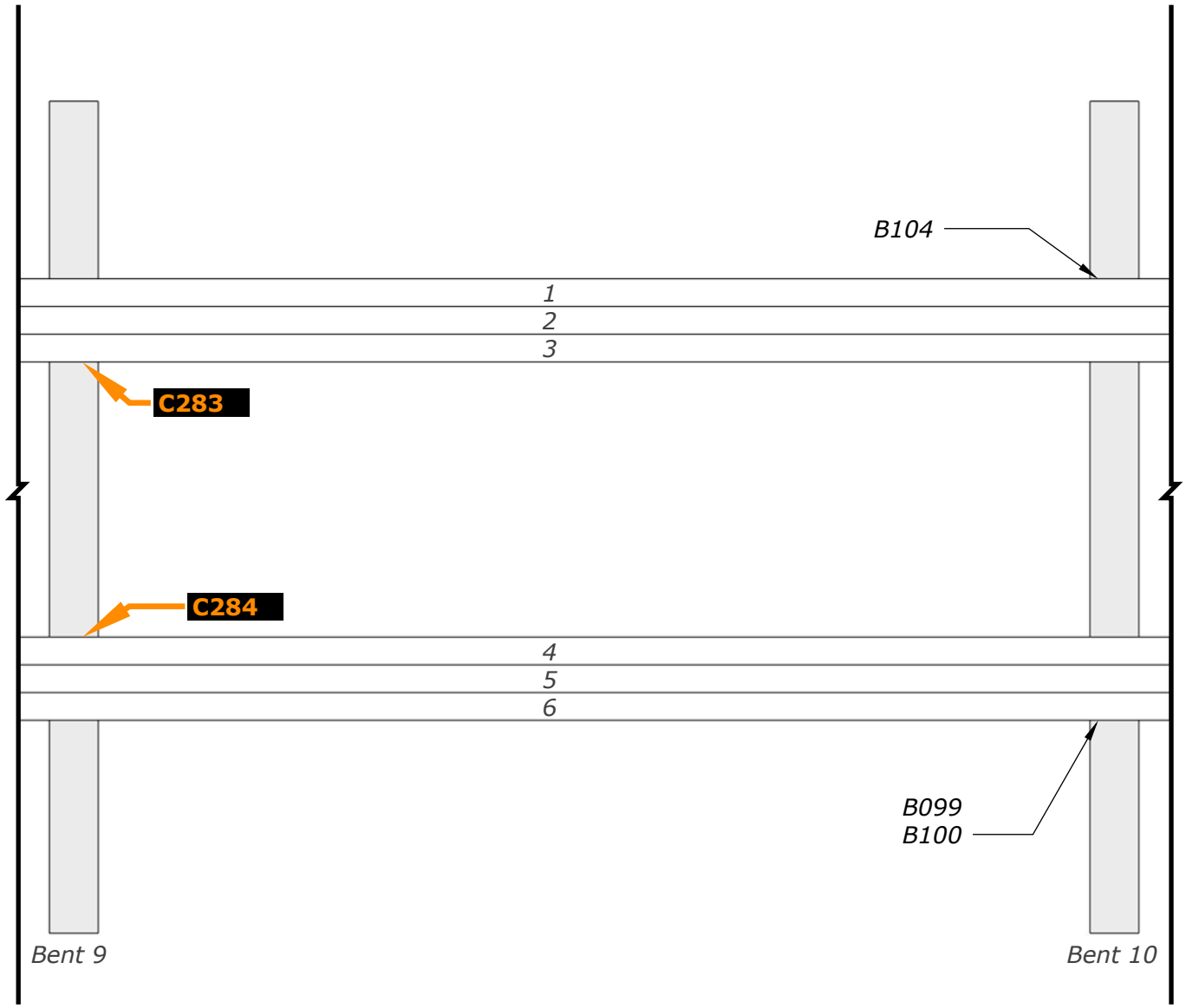
Span 8-9

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



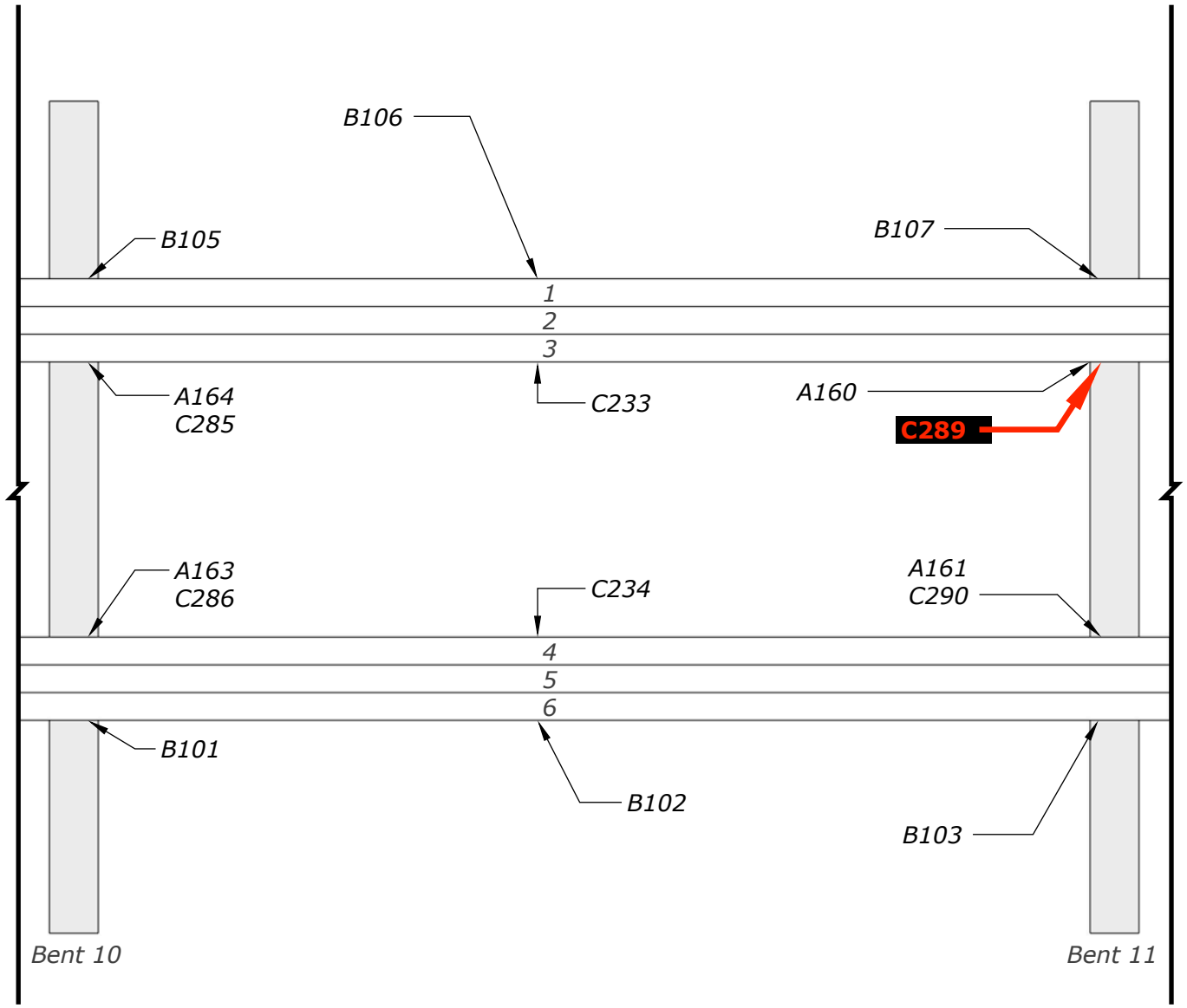
Span 9-10

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



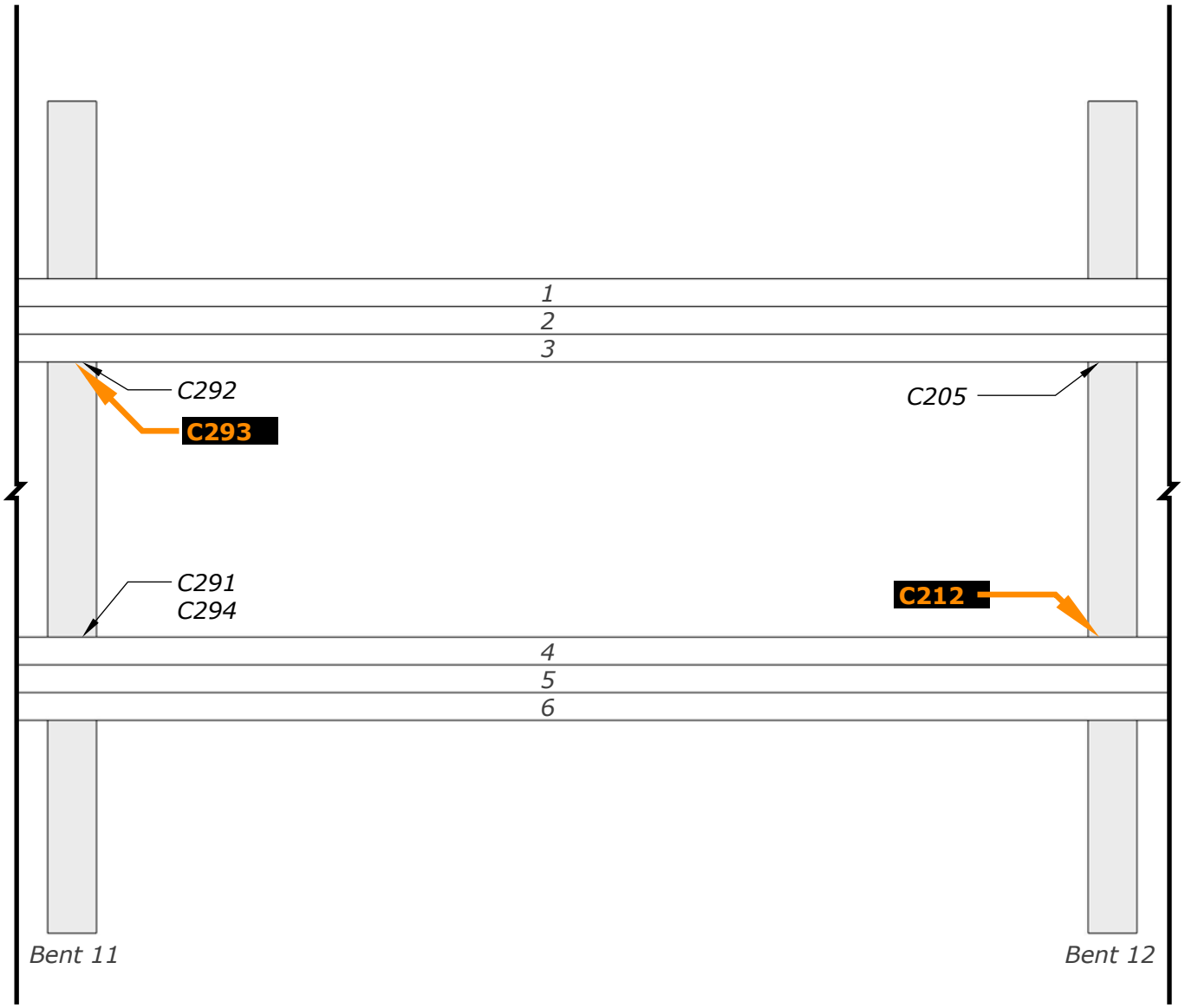
Span 10-11

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



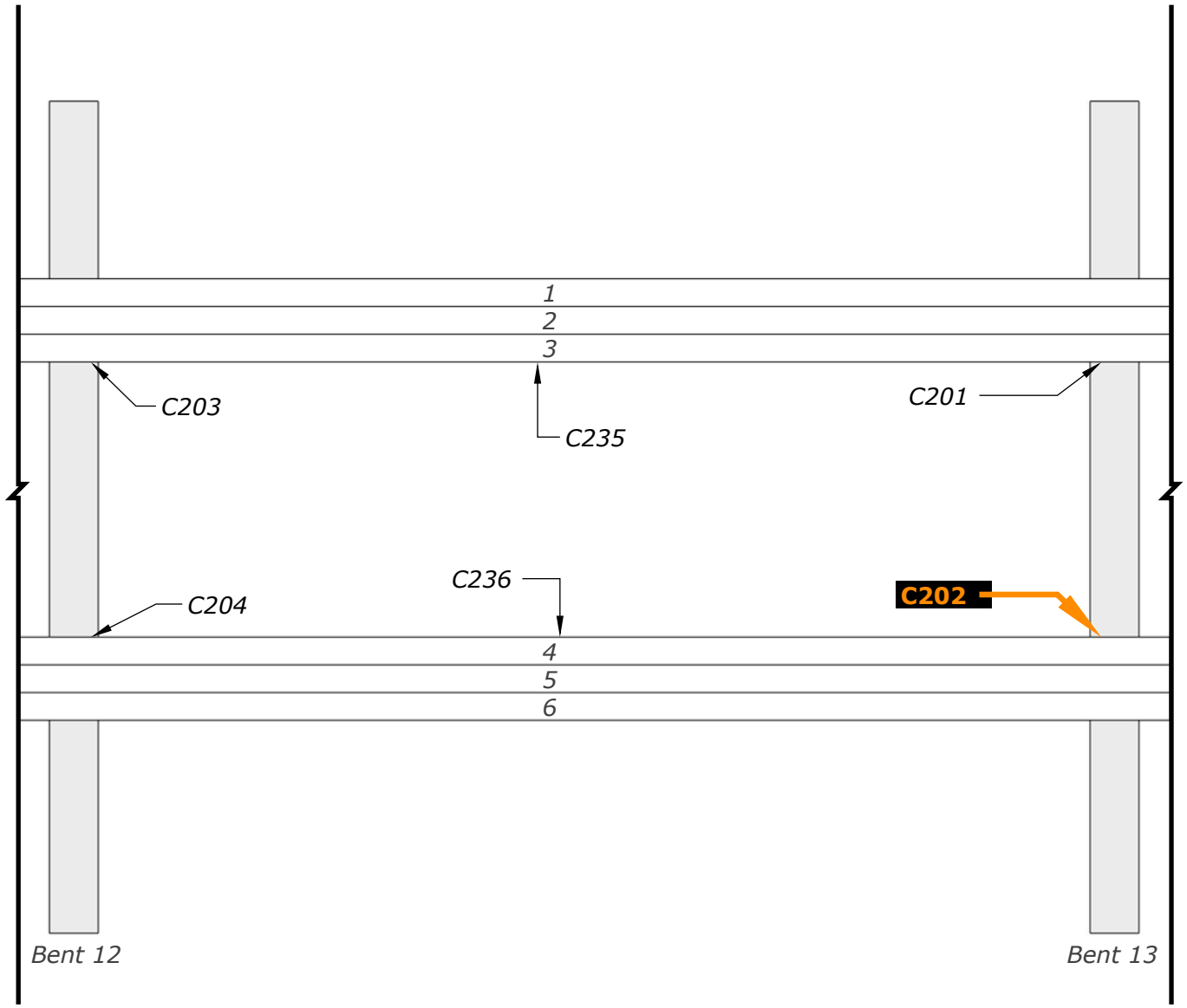
Span 11-12

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



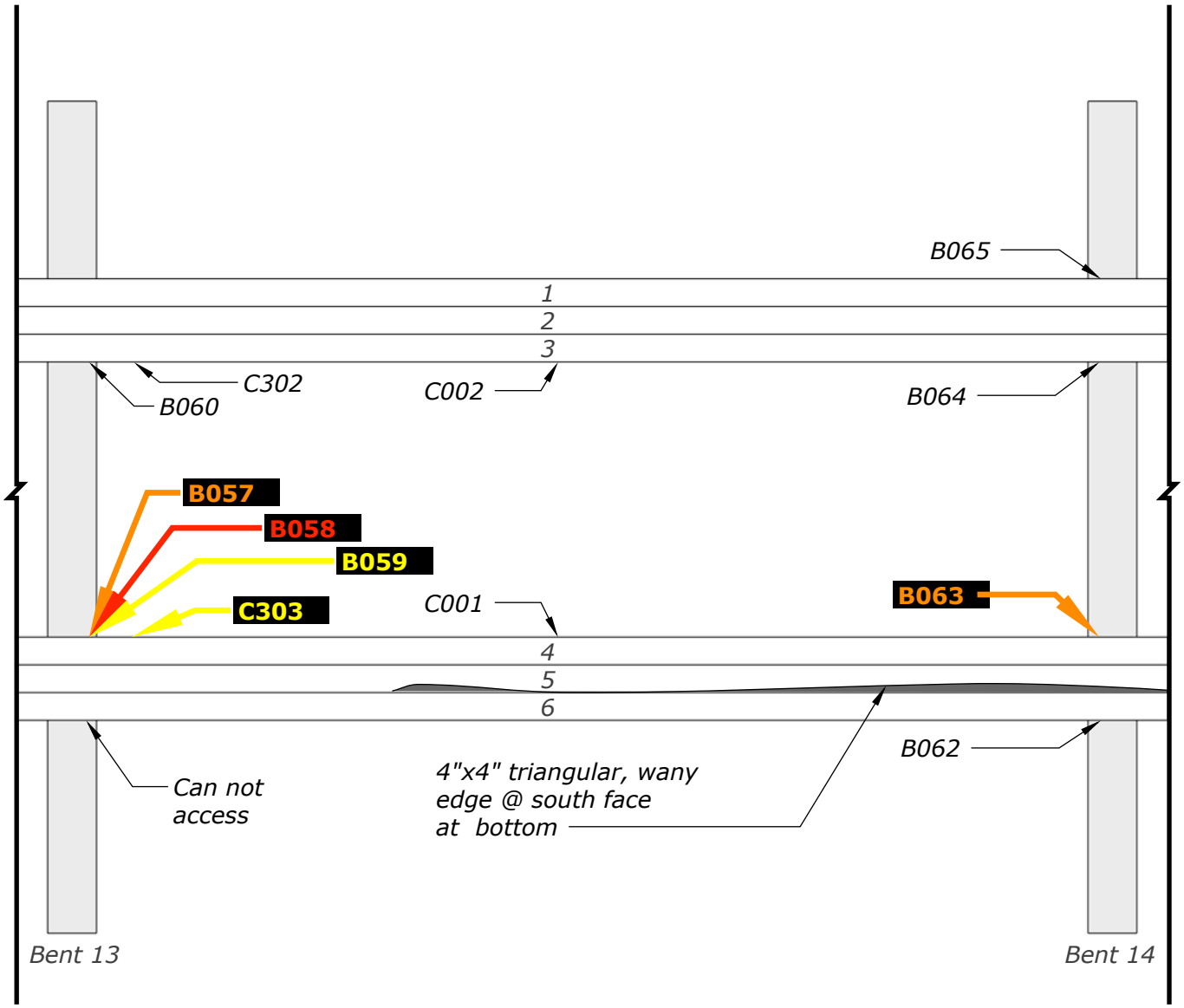
Span 12-13

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



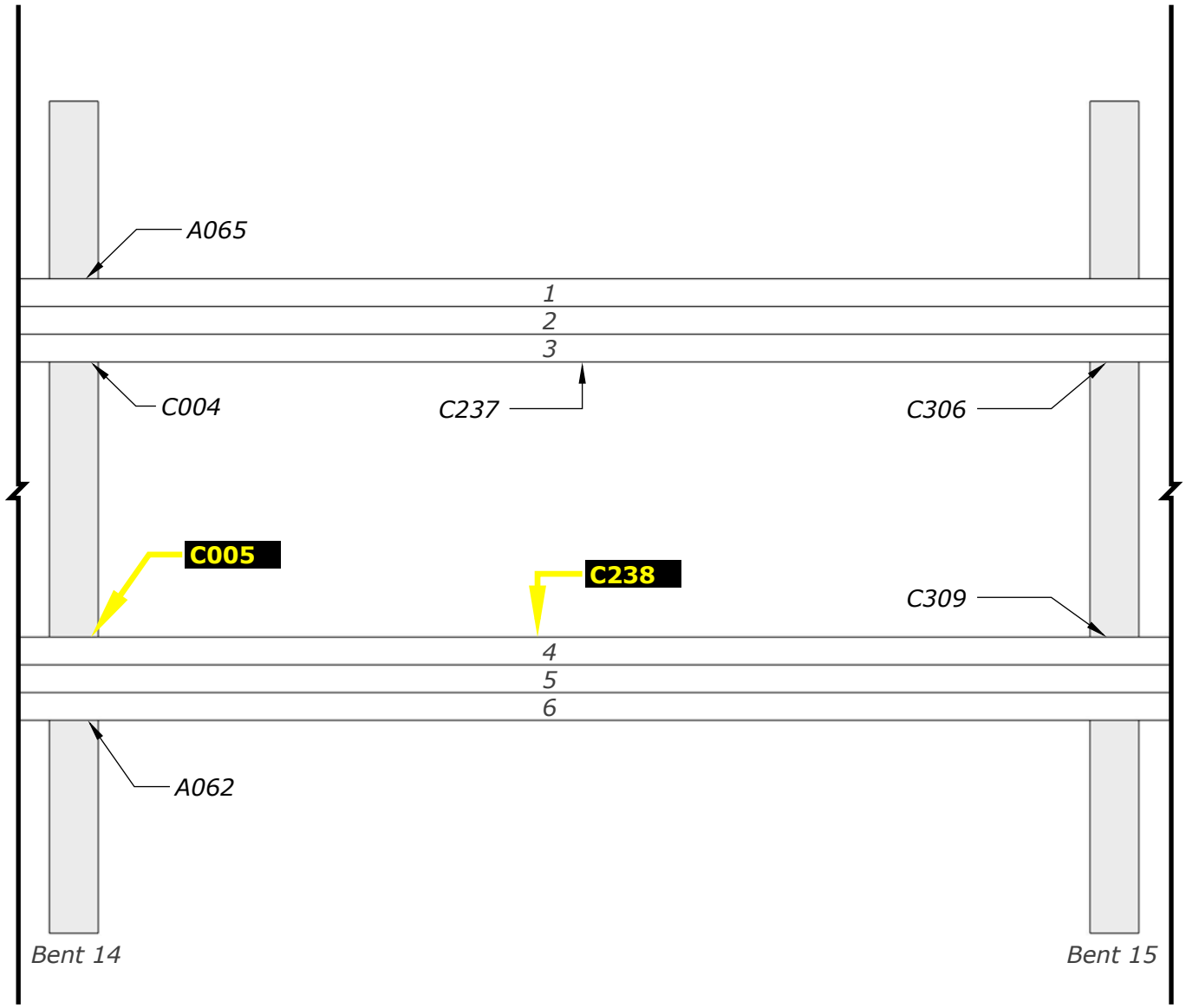
Span 13-14

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



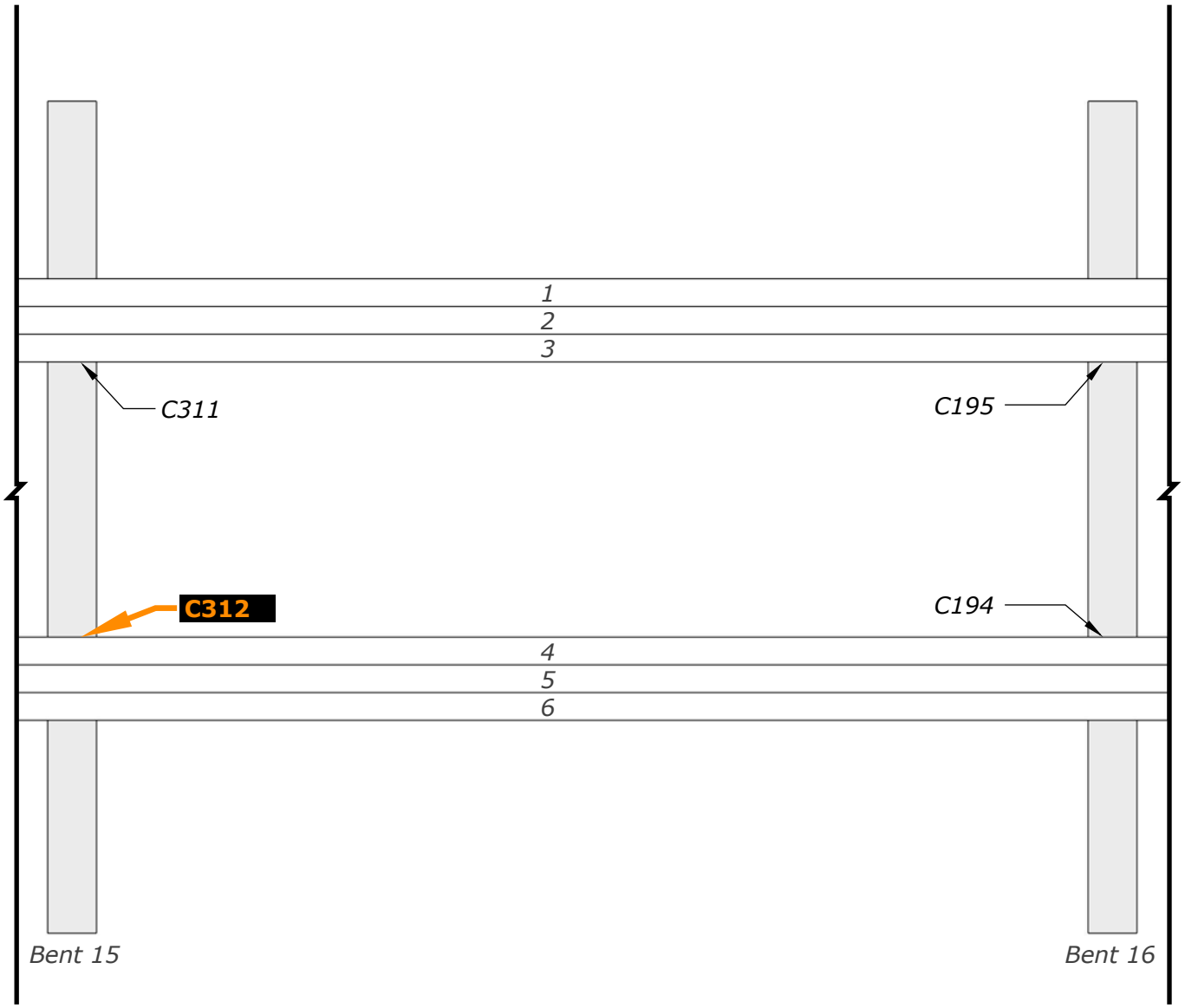
Span 14-15

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



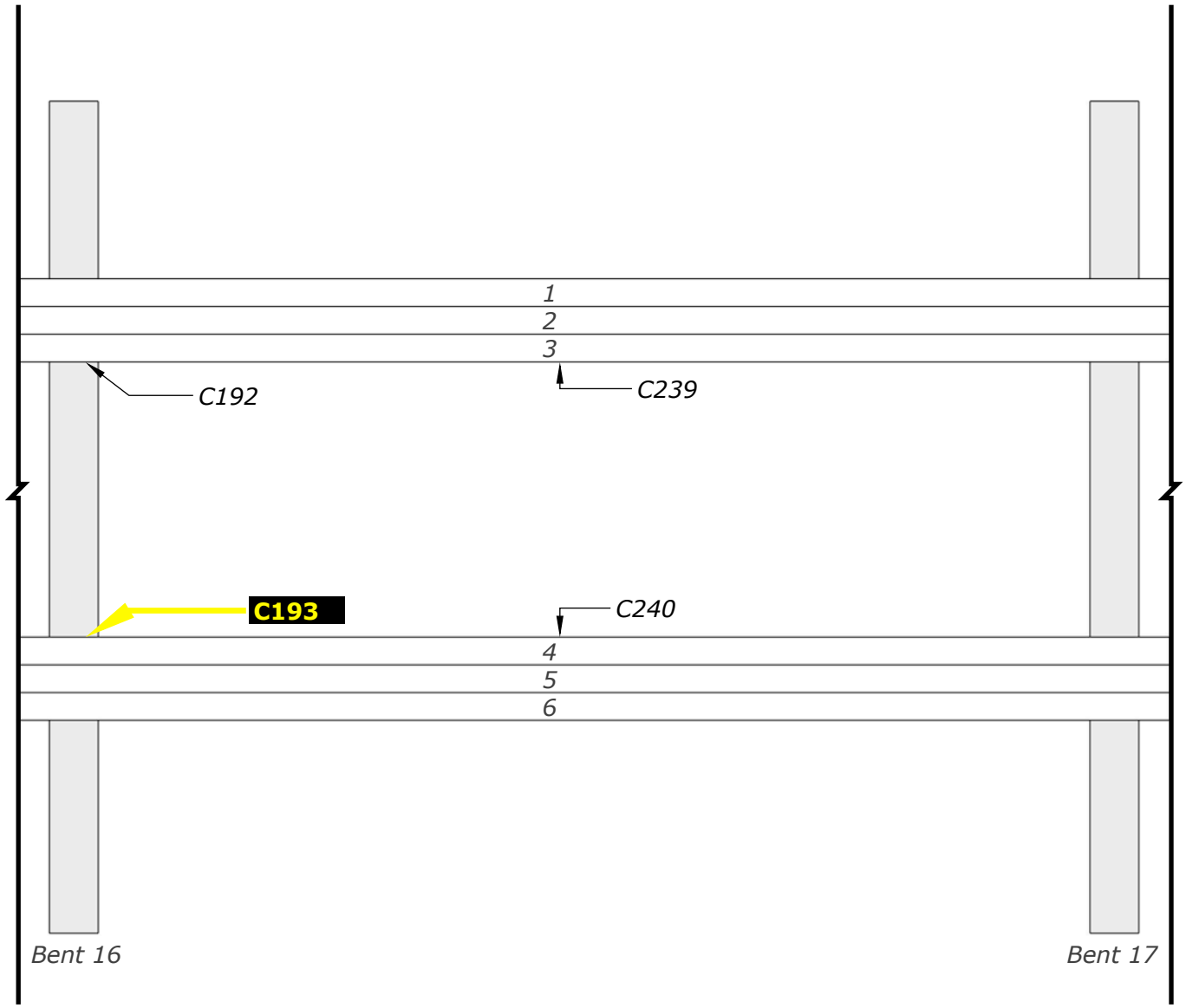
Span 15-16

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



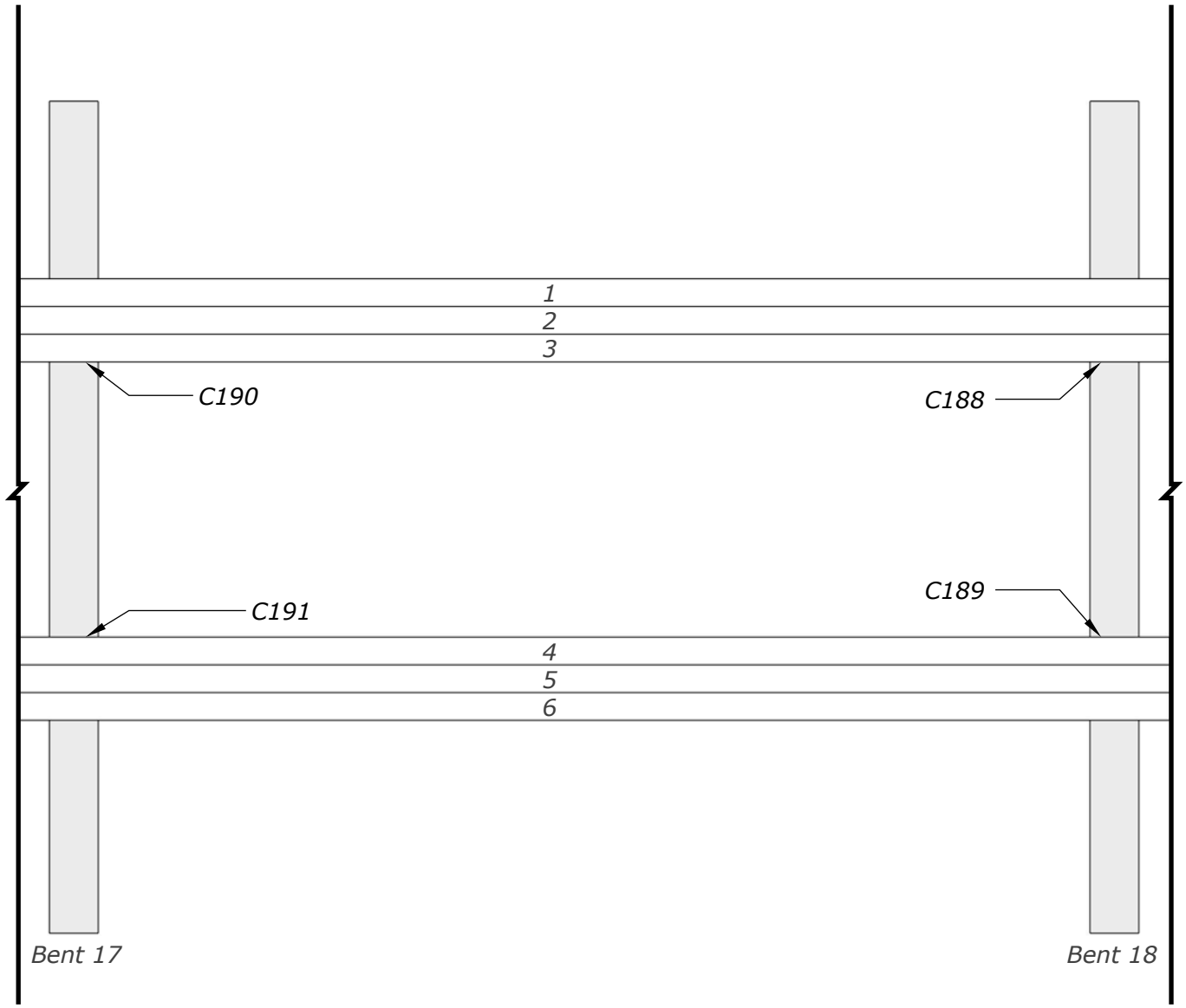
Span 16-17

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



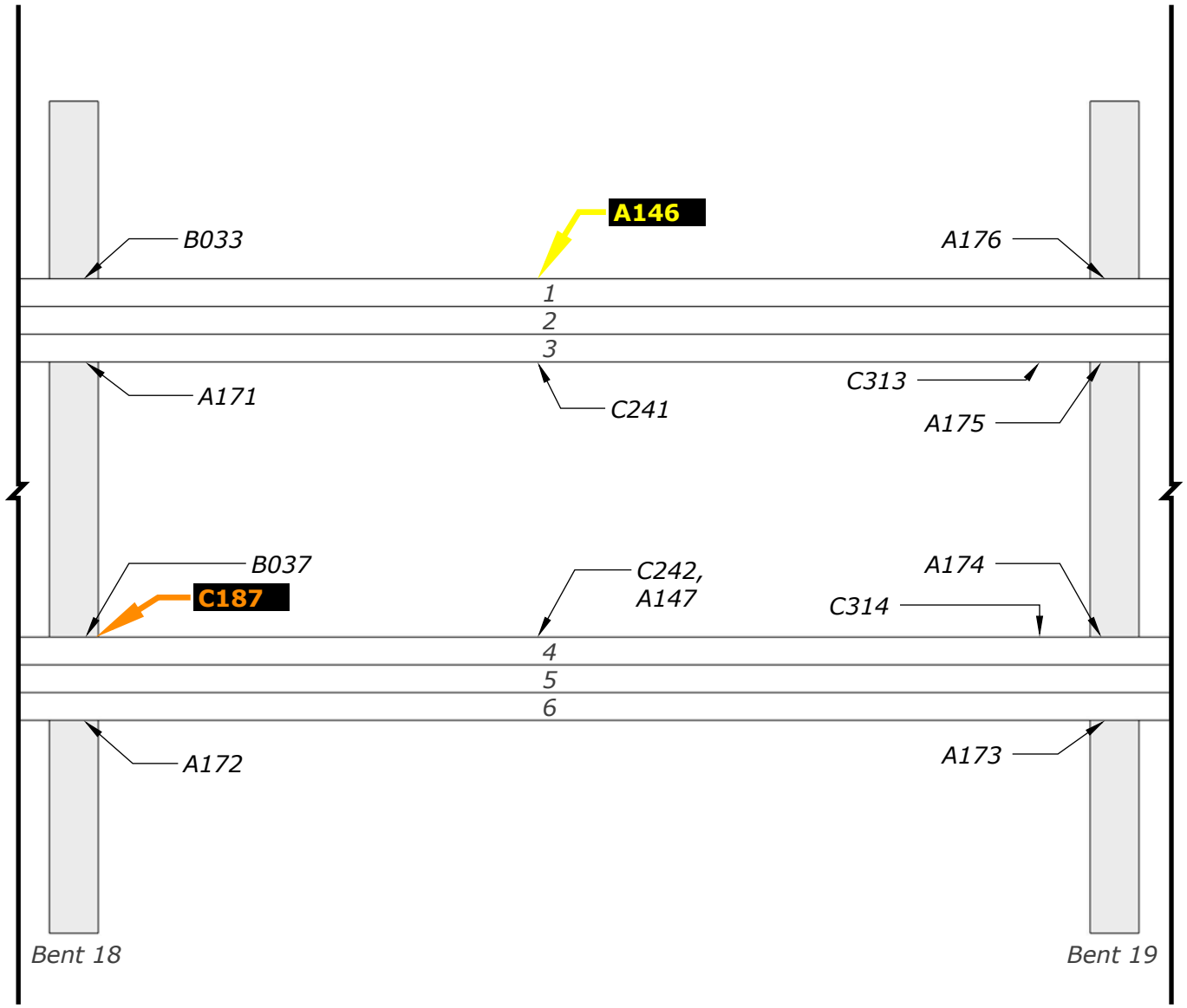
Span 17-18

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



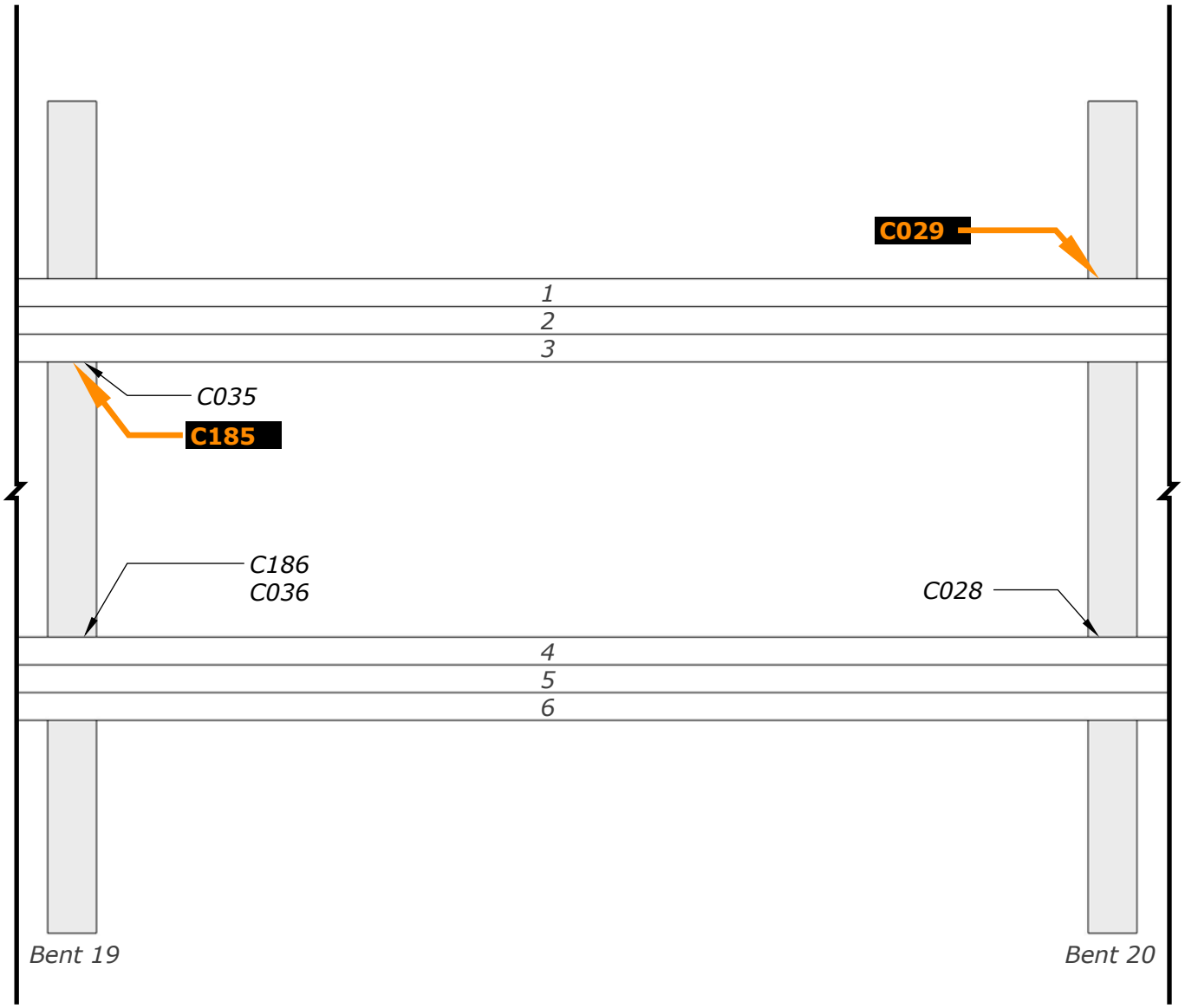
Span 18-19

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



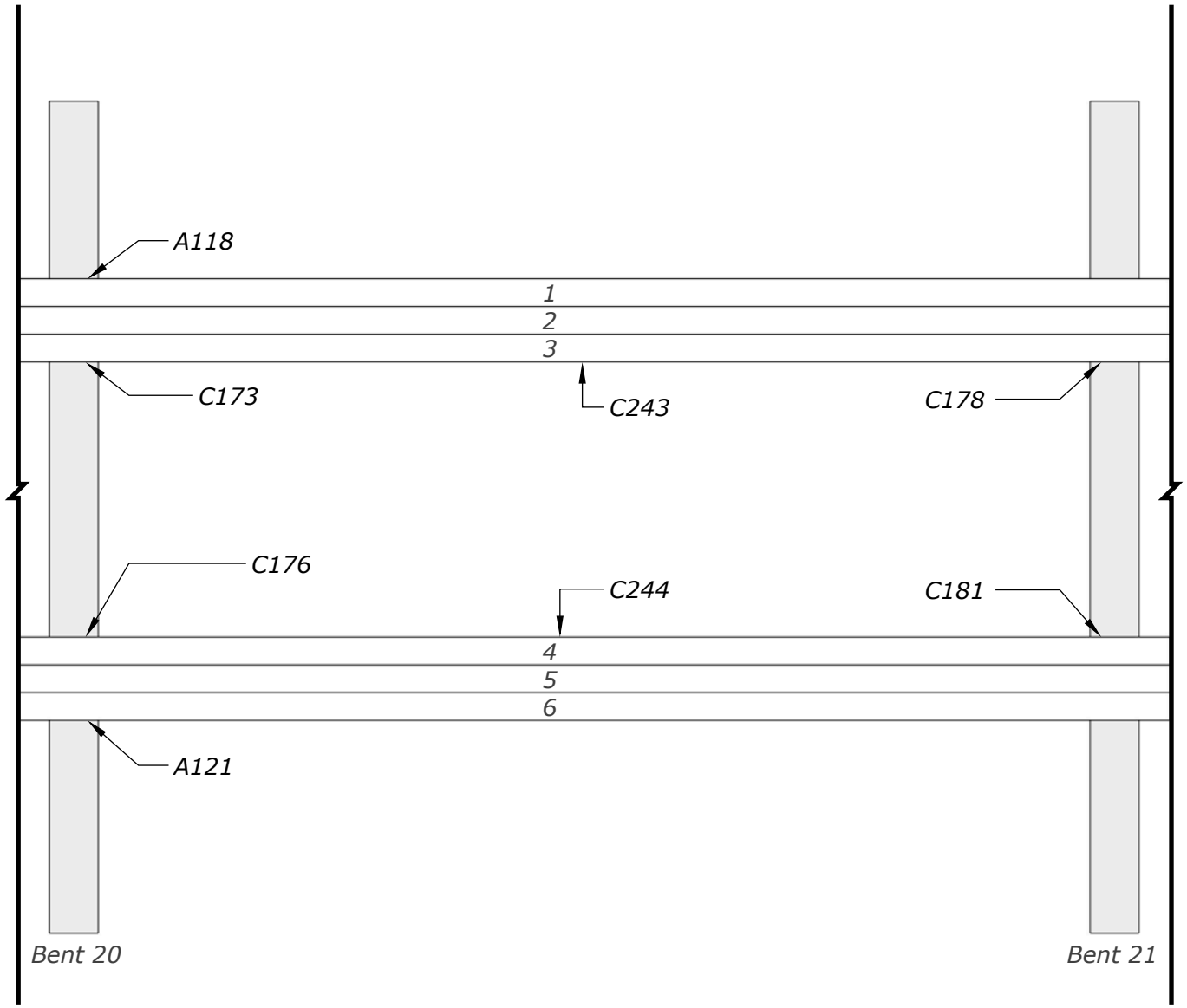
Span 19-20

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



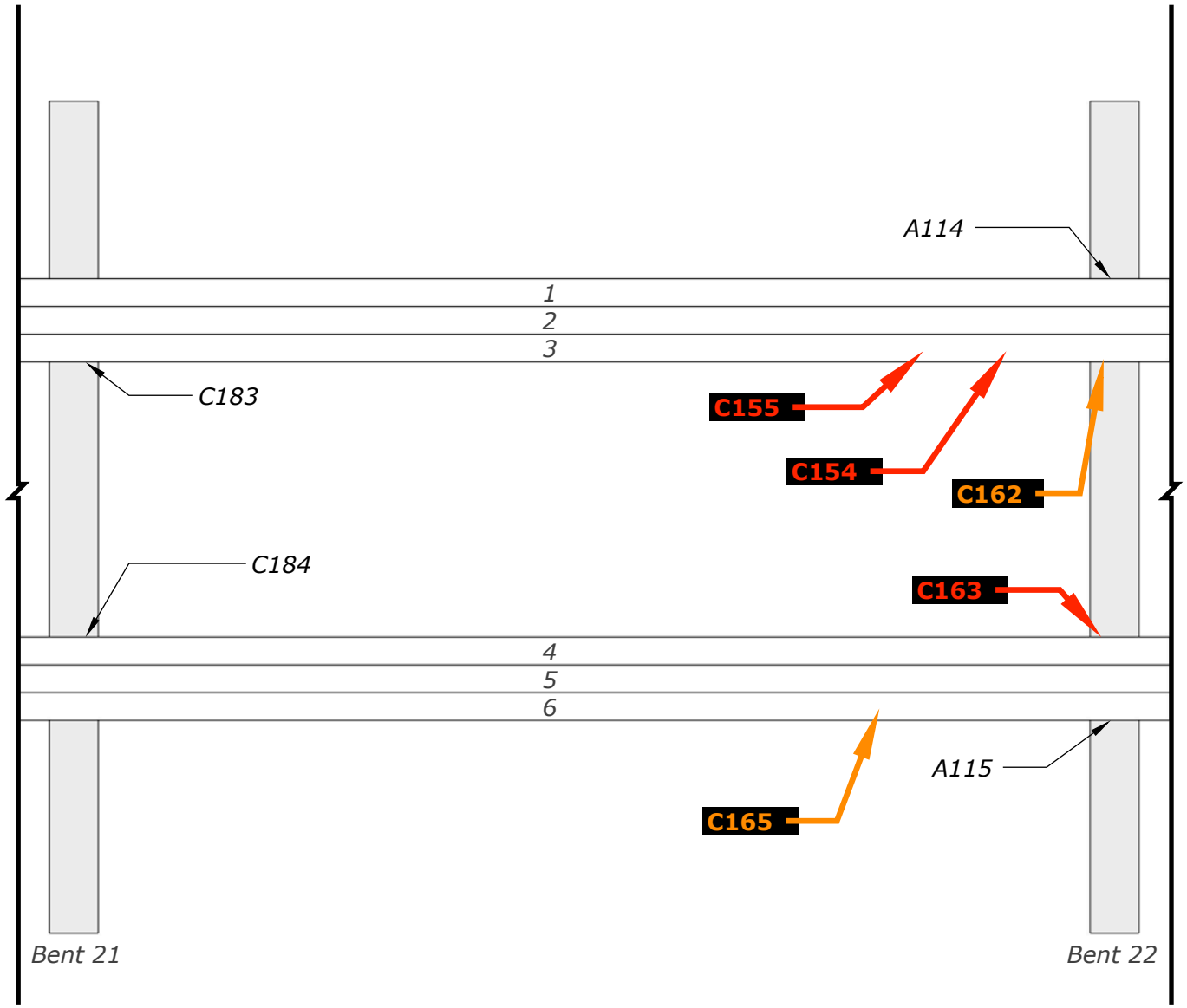
Span 20-21

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



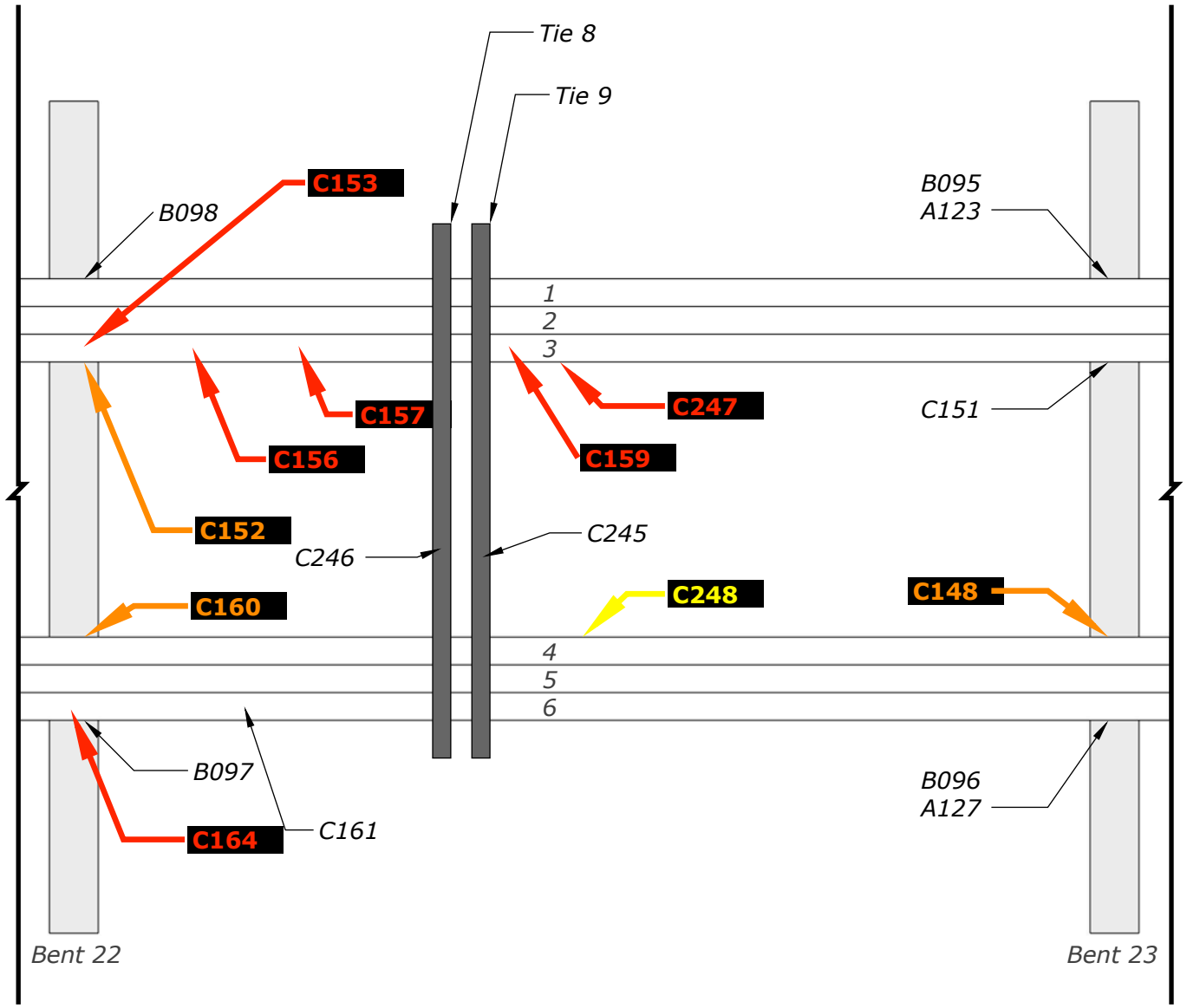
Span 21-22

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



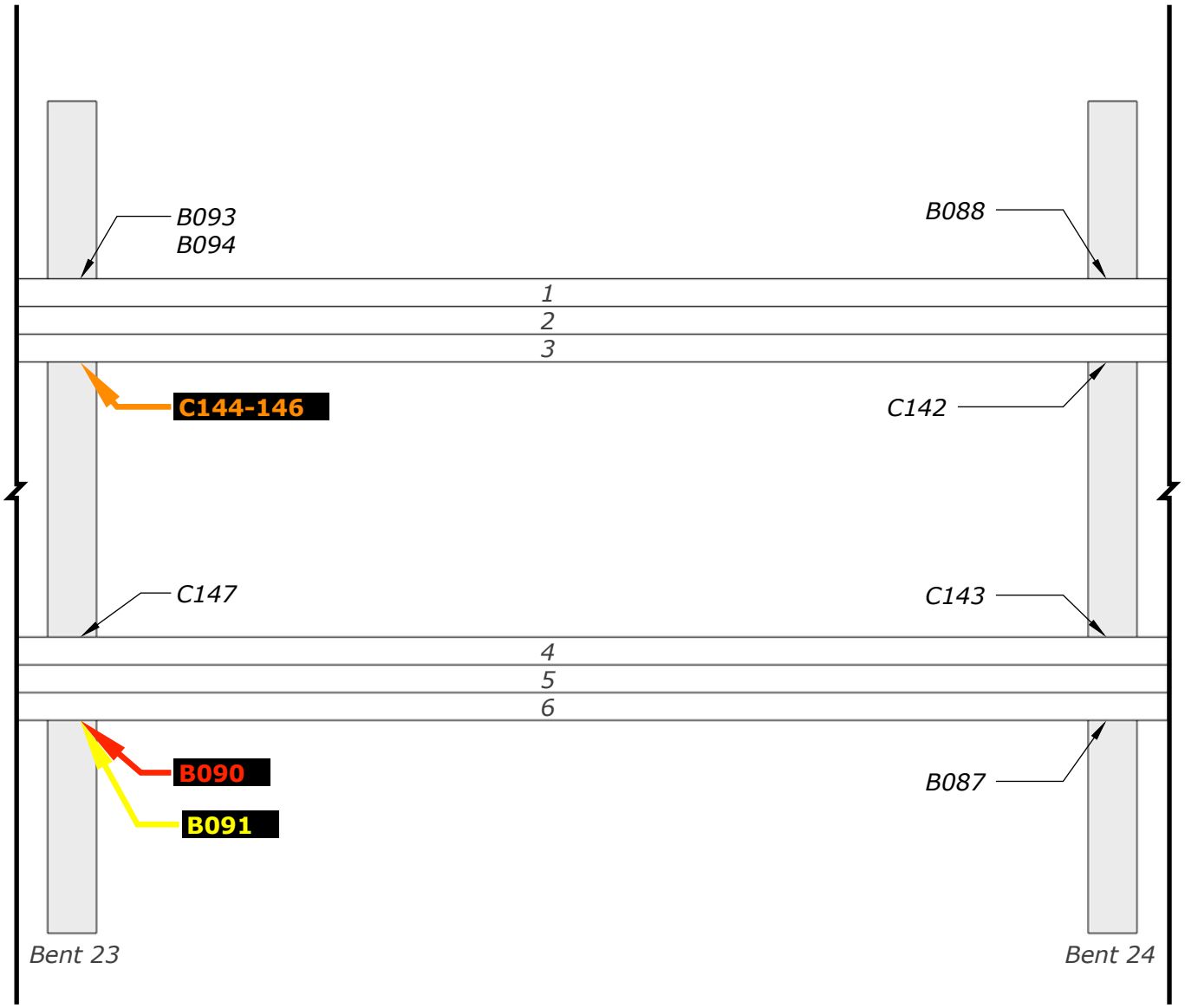
Span 22-23

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



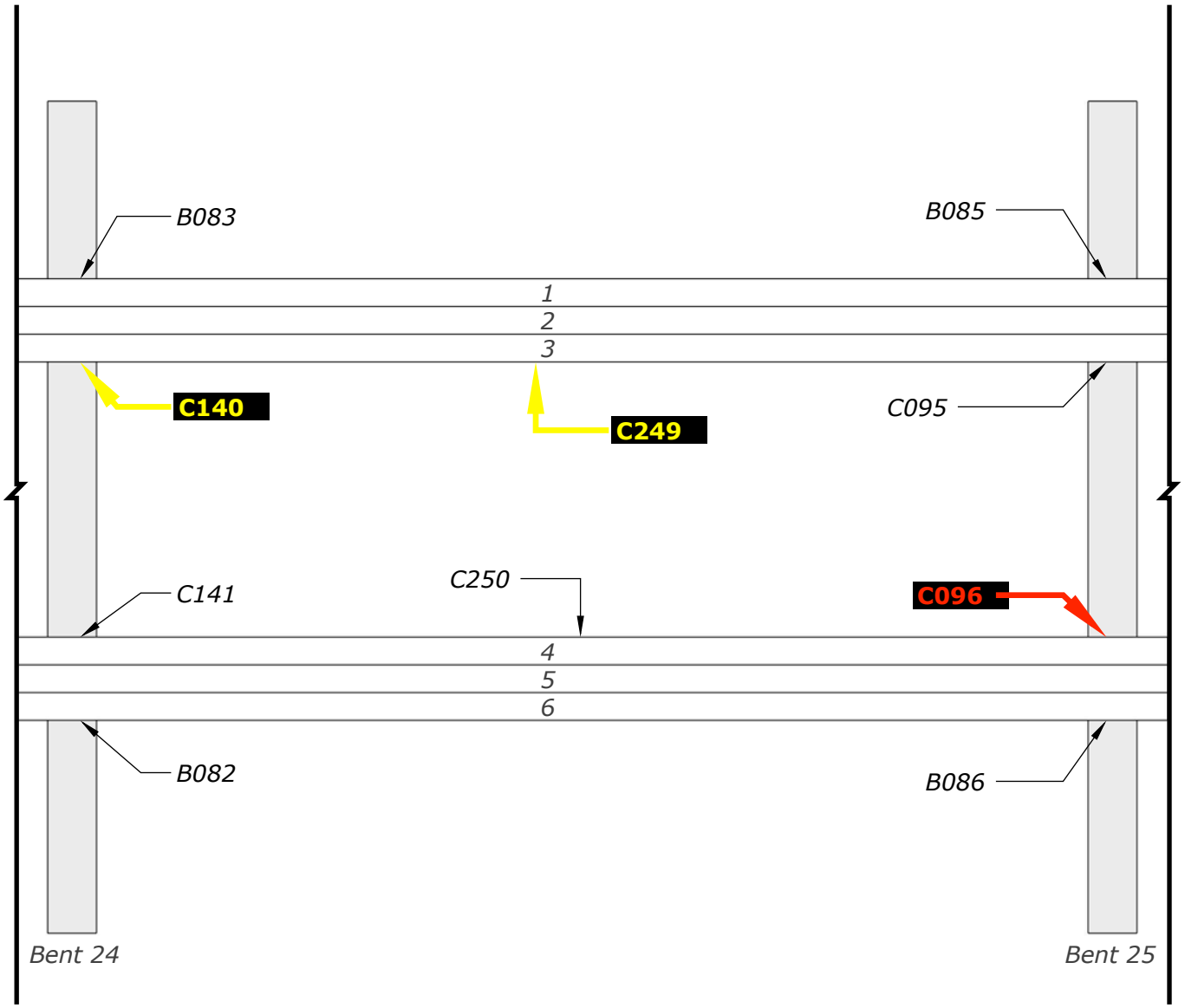
Span 23-24

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



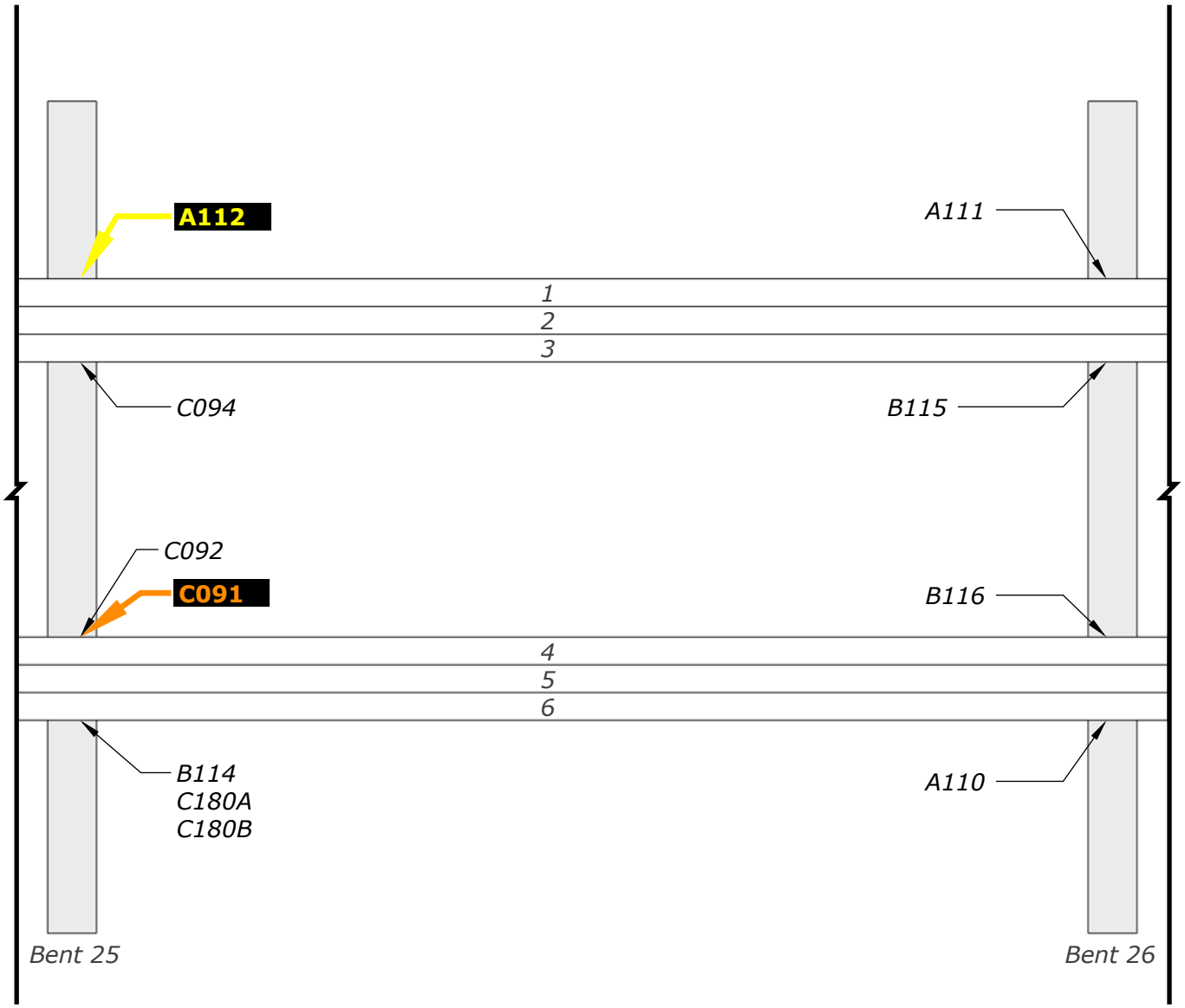
Span 24-25

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



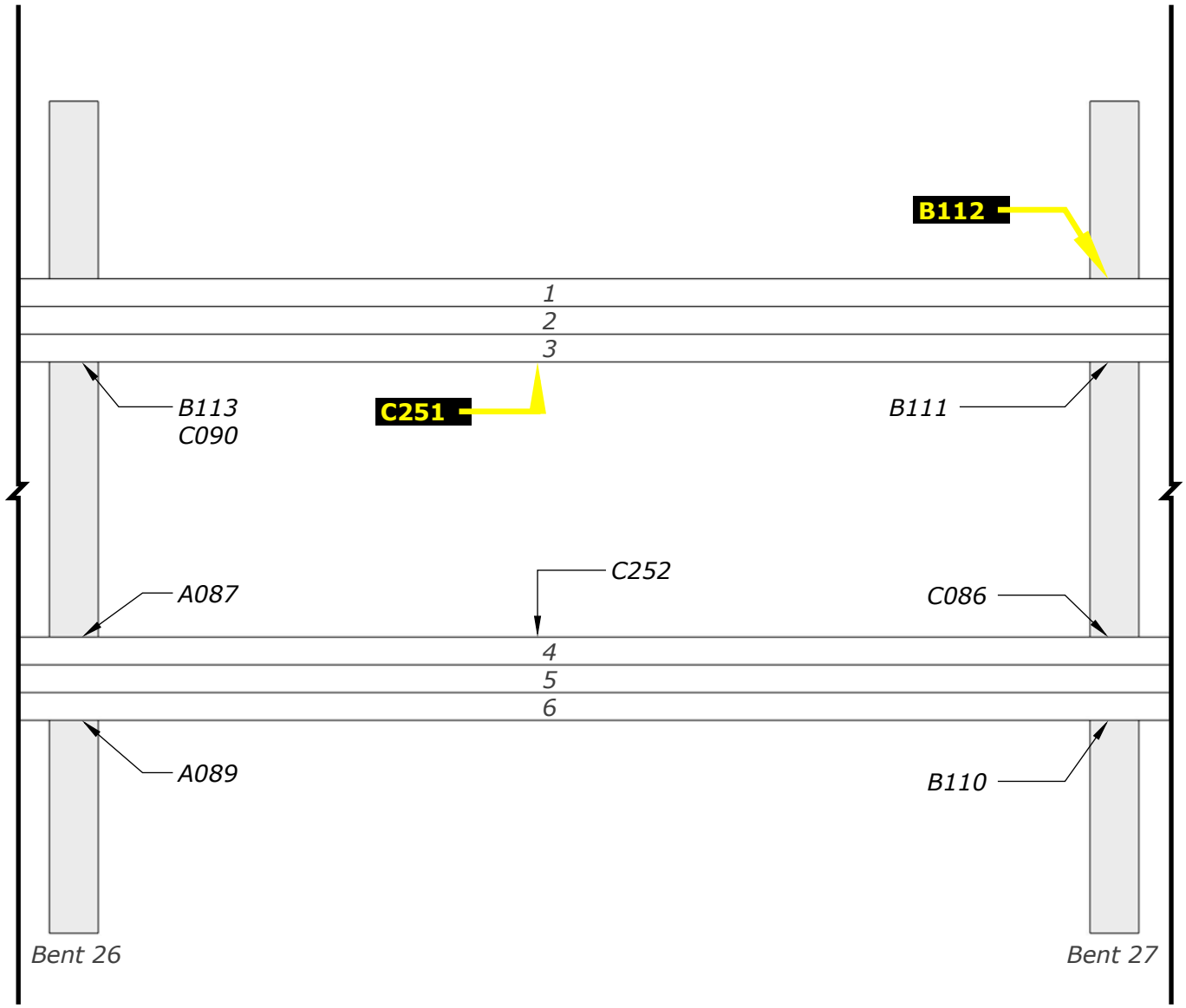
Span 25-26

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



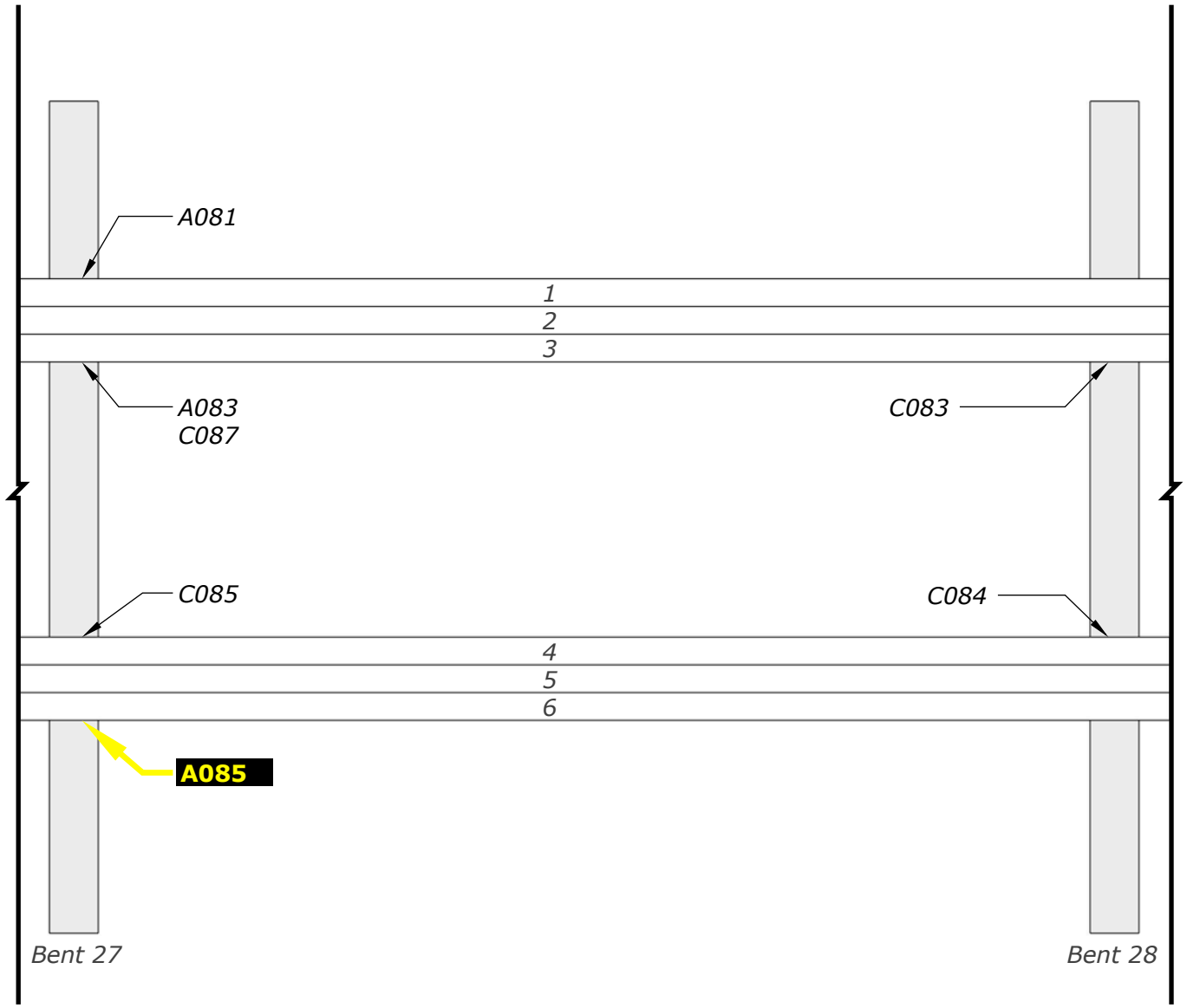
Span 26-27

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



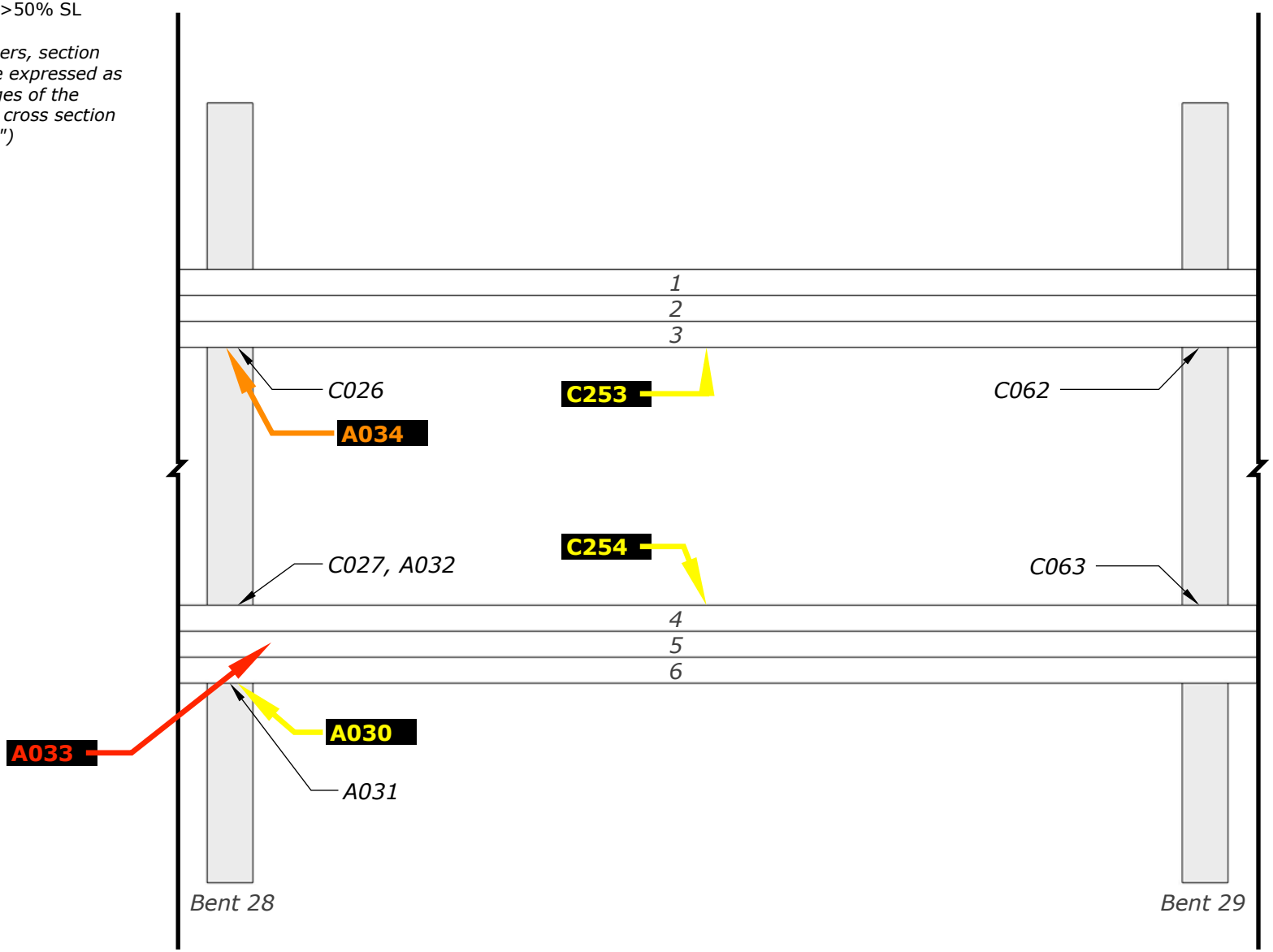
Span 27-28

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



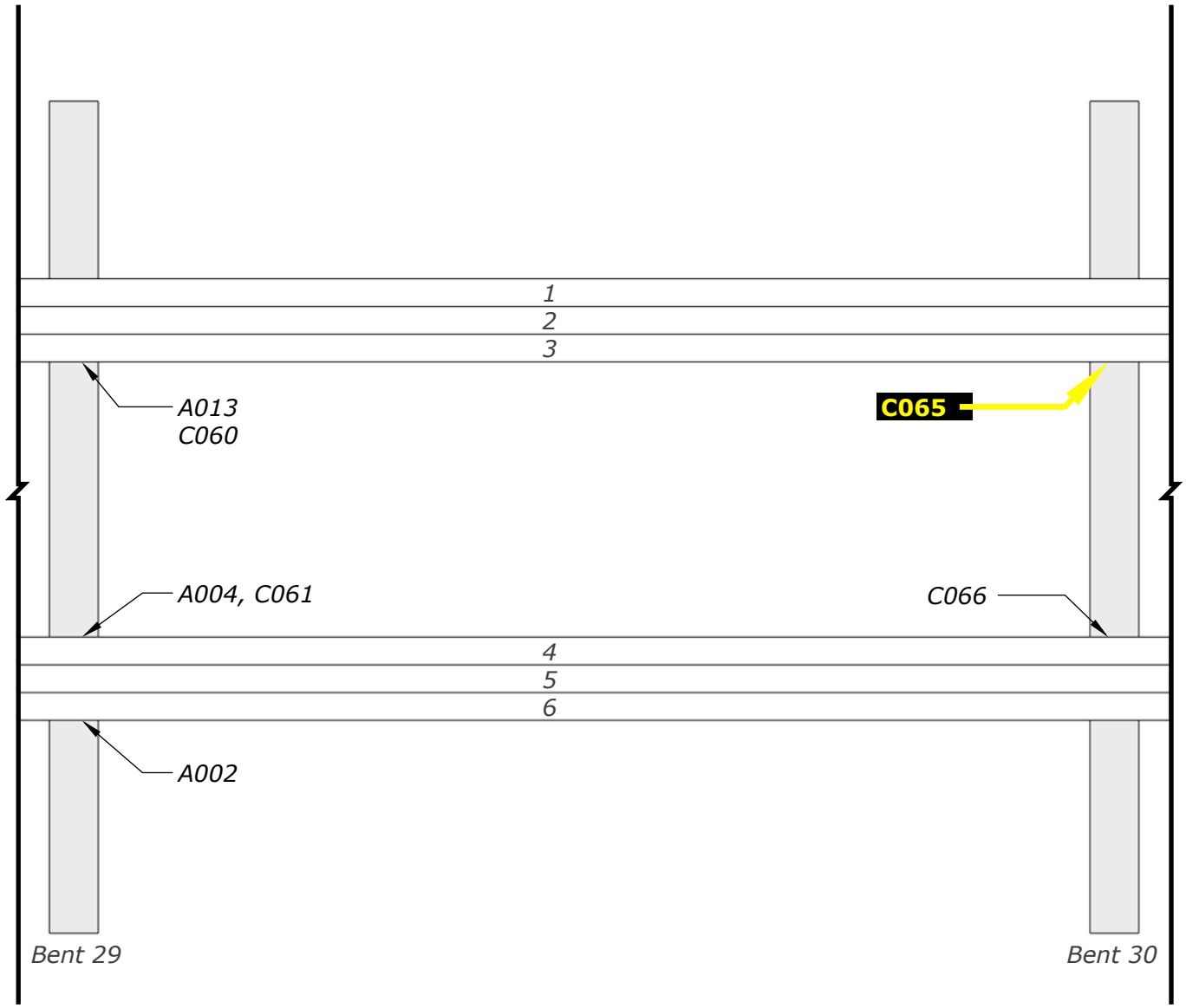
Span 28-29

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



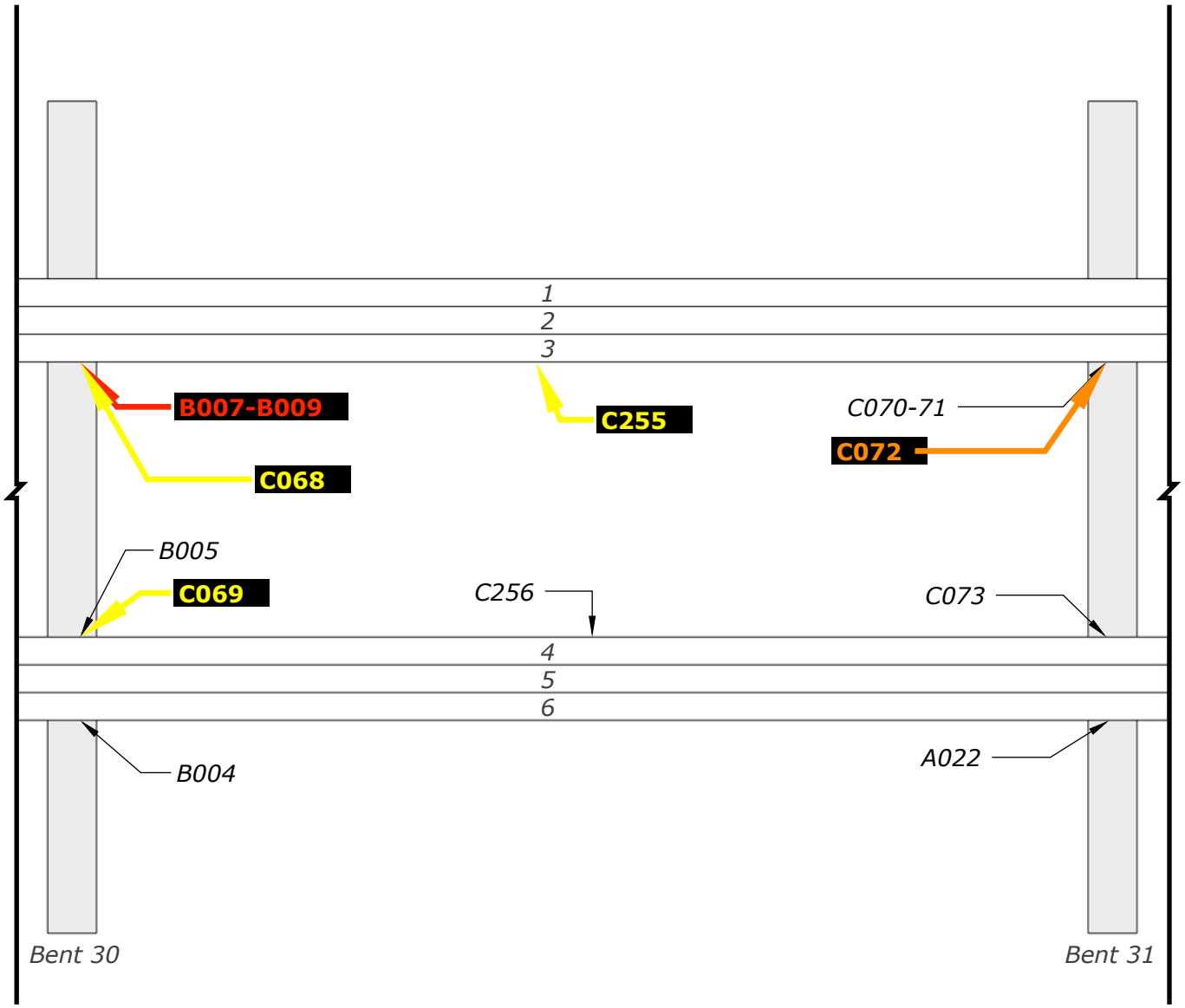
Span 29-30

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



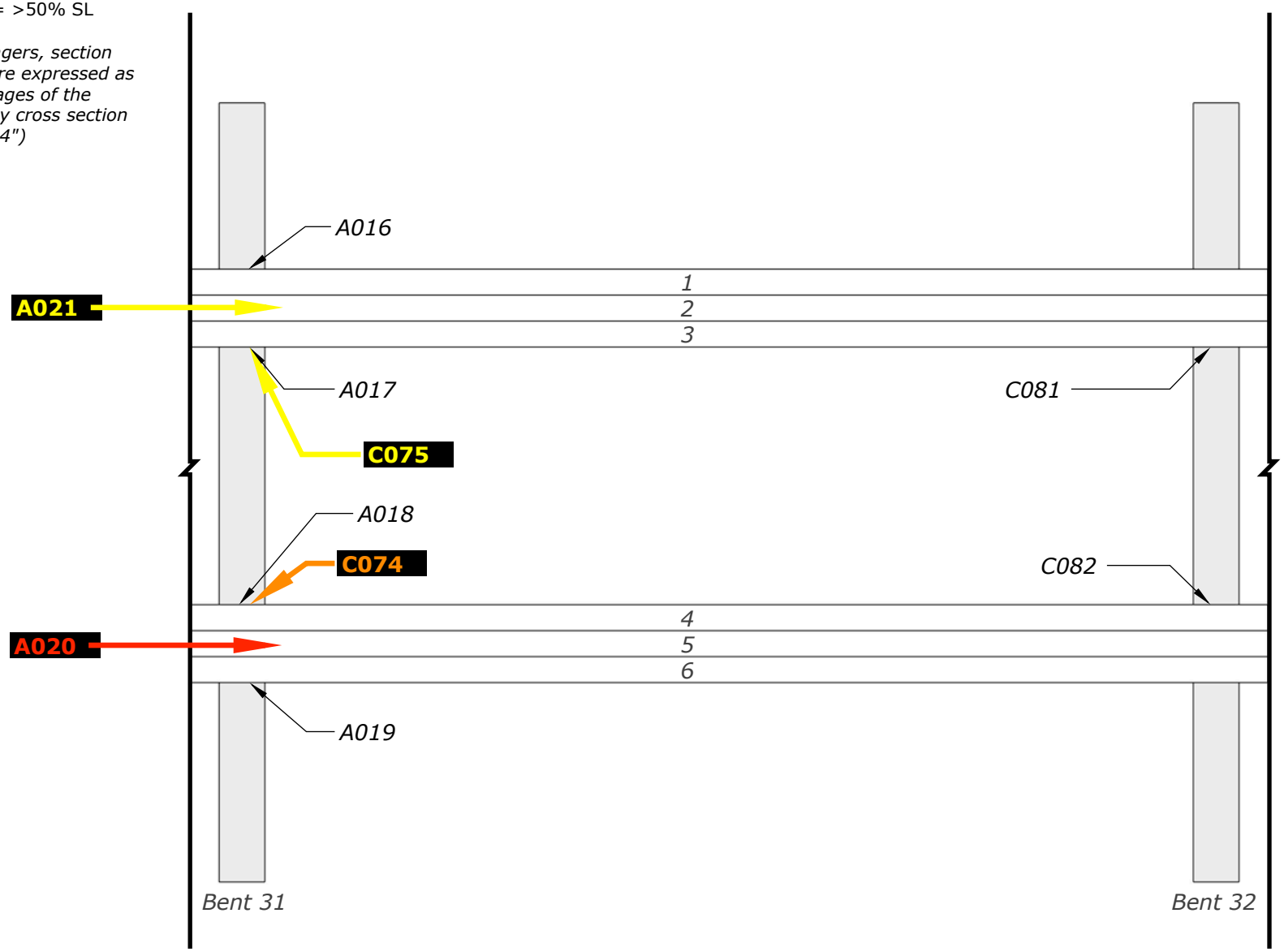
Span 30-31

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



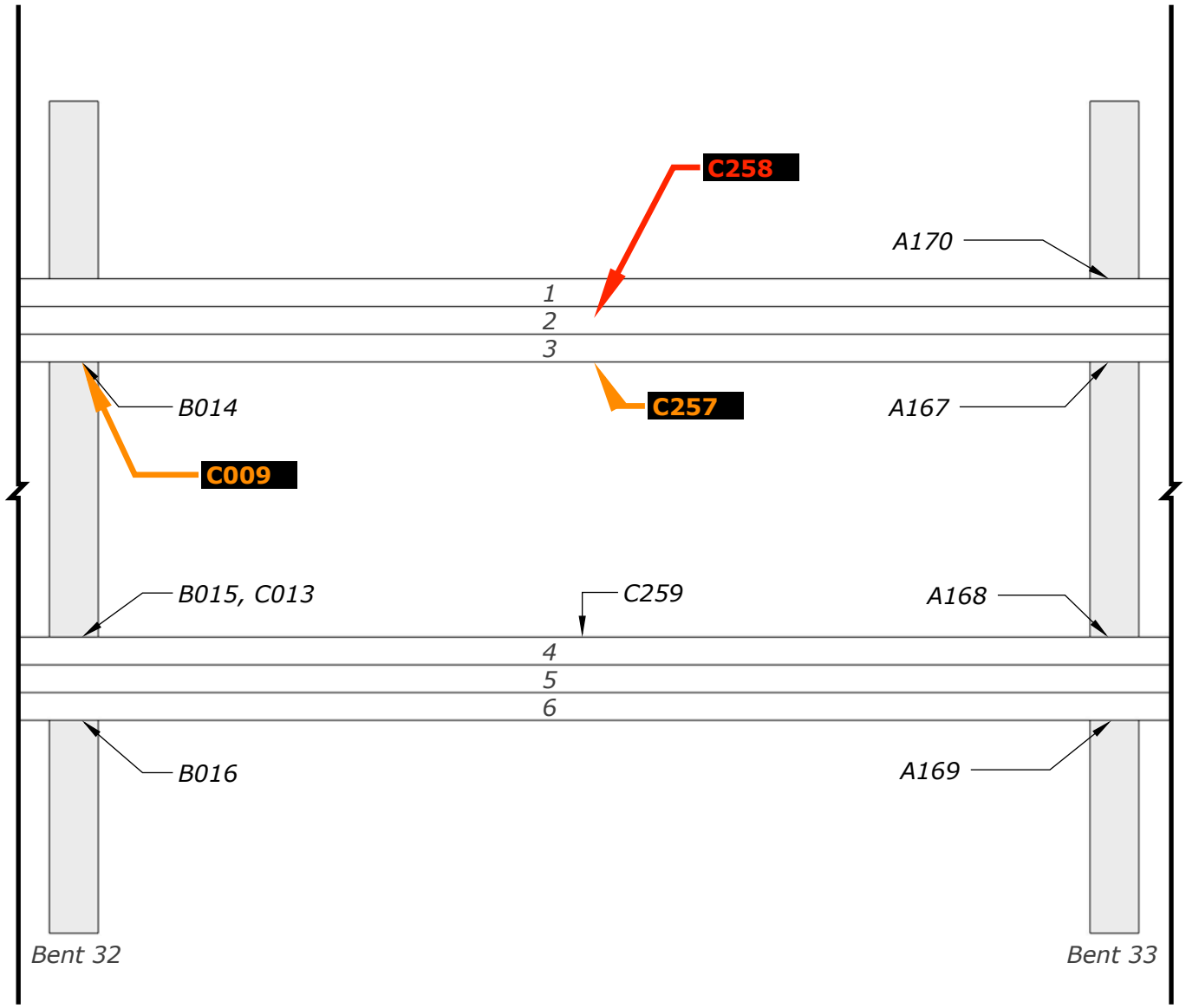
Span 31-32

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



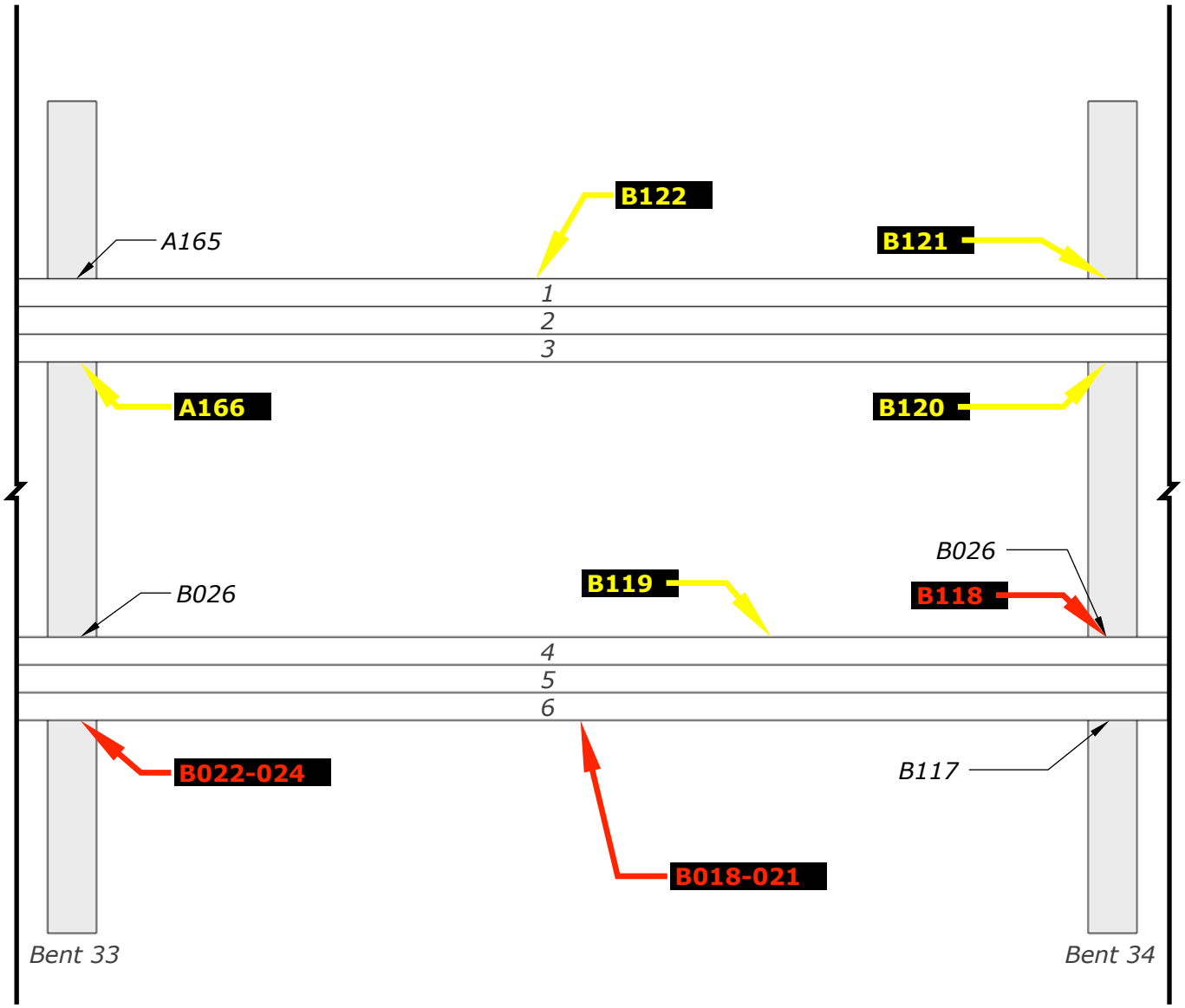
Span 32-33

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



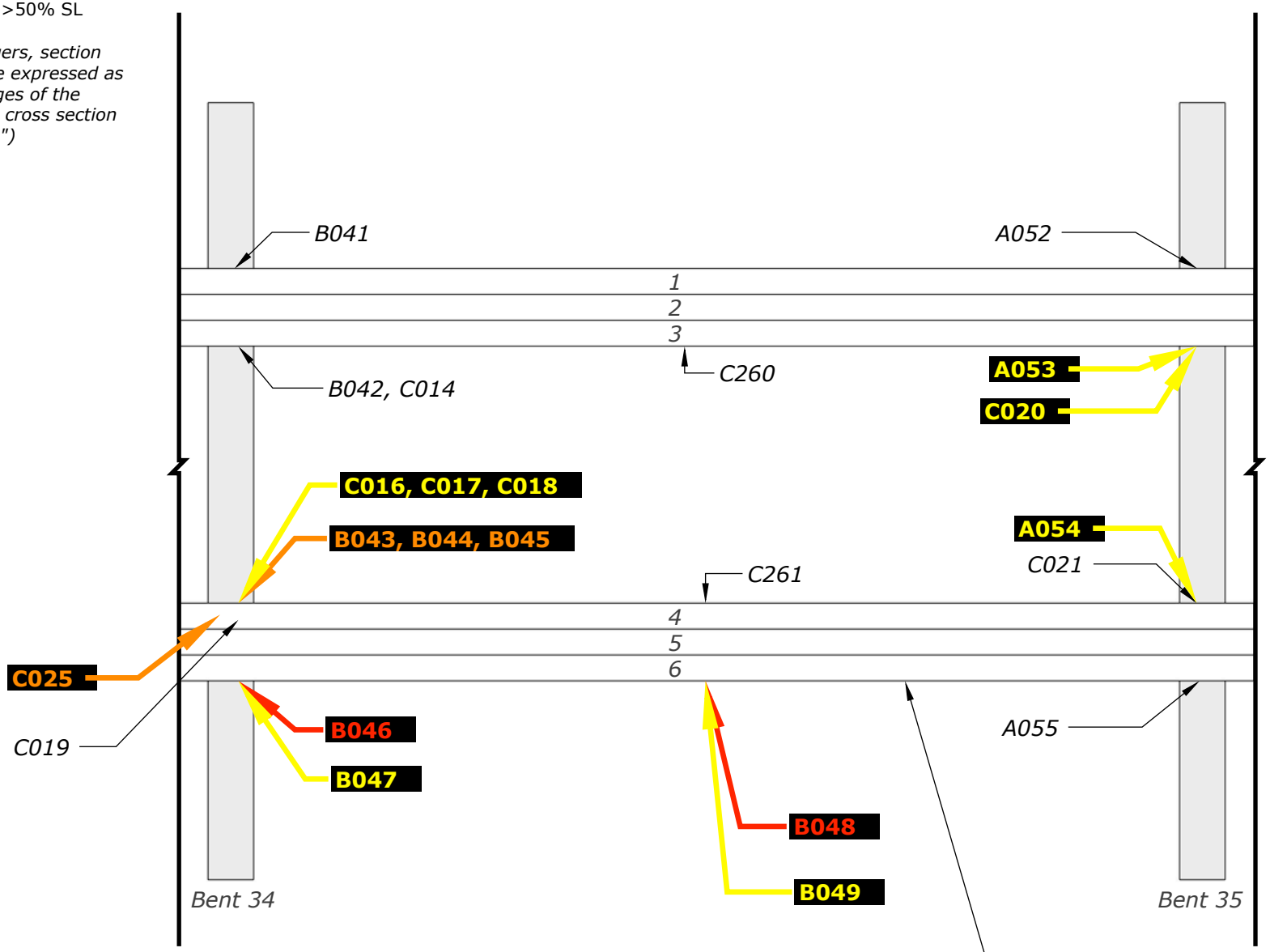
Span 33-34

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



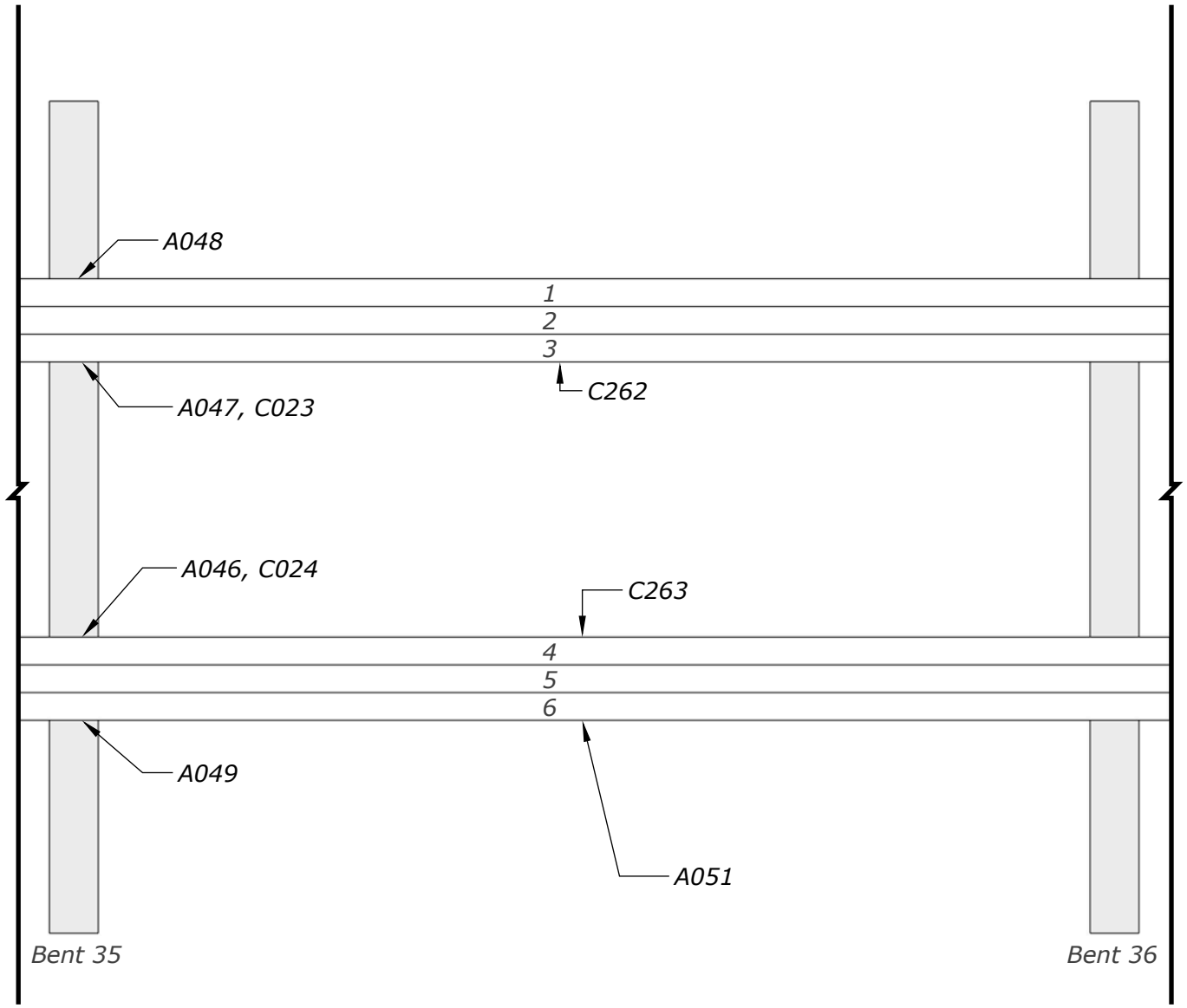
Span 34-35

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



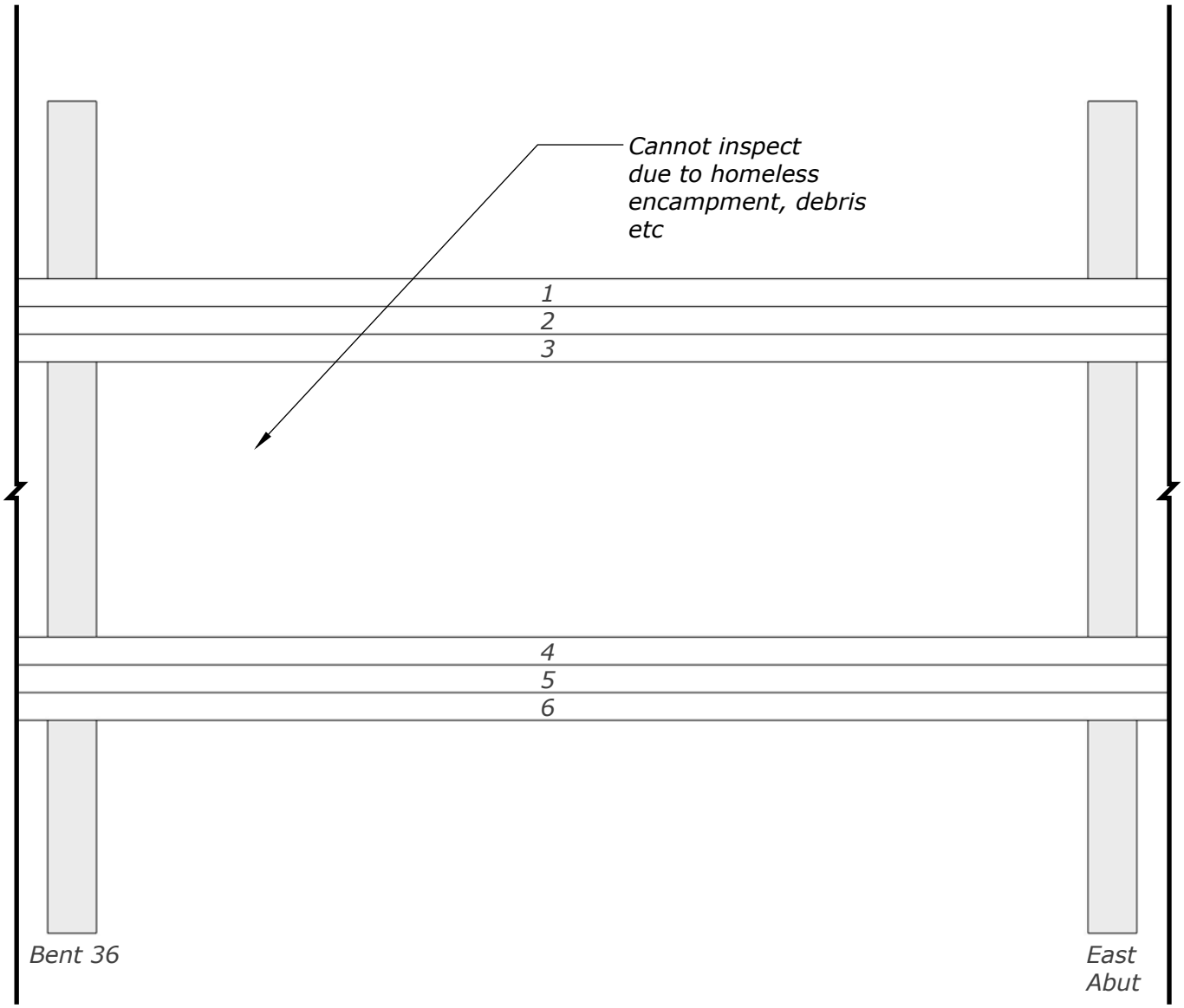
Span 35-36

XXXX = <25% SL

XXXX = 25%-50% SL

XXXX = >50% SL

For stringers, section losses are expressed as percentages of the assembly cross section (18" x 24")



Span 36-37

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C136	Cap	1	1	E-W	2" below Str 1, above Pile 2	8.75" void
C137	Cap	1	1	E-W	6" below Str 1, above Pile 2	4" total voids
C138	Cap	1	1	E-W	2" below Str 6, above Pile 4	12" void
C139	Cap	1	1	E-W	6" below Str 6, above Pile 4	shell
C127	Cap	2	2	E-W	below Str 3, 2" down	no void
C128	Cap	2	2	E-W	below Str 1, 2" down	no void
C131	Cap	2	2	E-W	below Str 4, 2" down	no void
C133	Cap	2	2	E-W	8" S of Str 6, 2" down	no void
C116	Cap	3	3	E-W	below Str 6, 3" down	shell, 2"solid, 8" void, then solid
C117	Cap	3	3	E-W	S of Str 6, 6" down	5.5" solid, 2.5" void, then solid
C118	Cap	3	3	E-W	below Str 4, 3" down	3" solid, 5.5" void, then solid
C119	Cap	3	3	E-W	below Str 4, 6" down	4.5" solid, 4" void, then solid
C122	Cap	3	3	E-W	below Str 3, 2" below top face	11" void
C123	Cap	3	3	E-W	below Str 3, 6" below top face, center	1.5" solid, 9.5" void, then solid
C124	Cap	3	3	E-W	below Str 1, 6" below top face, center	no void
A075	Cap	4	4	E-W	8" below top of cap at Str 2	4" void
A078	Cap	4	4	E-W	4" below top of cap	6" void @ 4" - 10"
B074	Cap	5	5	E-W	3" down at Str 2	no void
B075	Cap	5	5	E-W	3" down at Str 5	no void
A067	Cap	6	6	E-W	4" from btm at Str 2	0.5" shell, void
A070	Cap	6	6	E-W	centerline of cap under Str 5	4" void
C104	Cap	7	7	E-W	below Str 1, 2" down	1" shell, 9.5" void, then solid
C105	Cap	7	7	E-W	below Str 1, 9" down	5" solid, 6.5" void, then solid
C109	Cap	7	7	E-W	below Str 4, 2" down	1" shell, 9.5" void, then solid
C110	Cap	7	7	E-W	below Str 6, 2" down	1.5" solid, 9" void, then solid
C111	Cap	7	7	E-W	below Str 6, 10" down	no void
C112	Cap	7	7	E-W	below Str 4, 8" down	no void
C113	Cap	7	7	E-W	below Str 5, 6" down	2" solid, 2" void, then solid
A130	Cap	8	8	W-E	3" below Str 5	2" void @ 7" - 9"
A133	Cap	8	8	W-E	5" below Str 5	no void
A136	Cap	9	9	W-E	4" below at Str 5	12" void
A139	Cap	9	9	W-E	4" below Str 2	12" void
C099	Cap	10	10	E-W	above Pile 4, 2" down	hit knot at 7", no void
C100	Cap	10	10	E-W	above Pile 5, 2" down	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C101	Cap	10	10	E-W	below Str 3, 2" down	no void
C102	Cap	10	10	E-W	below Str 1, 2" down	no void
A158b	Cap	11	11	W-E	4" below Str 5, (DBL cap)	1" void @ 6" - 7"
A159	Cap	11	11	W-E	14" below Str 5, (DBL cap)	no void
A162	Cap	11	11	W-E	4" below Str 2	1.5" void @ 6.5" - 8"
C213	Cap	12	12	T-B	Cap adjacent to Str 3 on east	no void
C214	Cap	12	12	T-B	Cap adjacent to Str 3 on west	no void
C217	Cap	12	12	T-B	Cap adjacent to Str 4 on center	no void
C218	Cap	12	12	T-B	Cap center, center of member	no void
C295	Cap	12	12	T-B	north	no void
C298	Cap	12	12	T-B	south	no void
B055	Cap	13	13	E-W	3" down from Str 5	no void
B056	Cap	13	13	E-W	3" down from Str 2	no void
A056	Cap	14	14	E-W	midspan under Str 5	no void, double cap
A057	Cap	14	14	E-W	midspan under Str 5	no void, double cap
A059	Cap	14	14	E-W	centerline below Str 3	no void, double cap
A060	Cap	14	14	E-W	centerline below Str 3	no void, double cap
B038	Cap	15	15	E-W	3" below Str 2	no void
B039	Cap	15	15	E-W	3" below Str 5	no void
C049	Cap	16	16	E-W	below Str 4, 3" down	3.5" solid, 6" void, then solid
C050	Cap	16	16	E-W	below Str 4, 6" down, center	shell with 11" void
C051	Cap	16	16	E-W	below Str 4, 9" down	no void
C052	Cap	16	16	E-W	below Str 6, 6" down, center, above Pile 4	shell (>50% section loss)
C053	Cap	16	16	E-W	below Str 3, 6" down, center	no void
C054	Cap	16	16	E-W	below Str 1, 6" down, center	no void
A035	Cap	17	17	E-W	2" down at centerline of Str 2	1" shell, then void
A036	Cap	17	17	E-W	centerline of cap	3" solid, then void
A036b	Cap	17	17	E-W	2" from btm at Str1	2.5" void @ 3.5" - 6"
A037	Cap	17	17	E-W	2" from btm at Str1	7" solid,then void
A038	Cap	17	17	E-W	2" from top at Str 3	2" shell, then void
A038b	Cap	17	17	E-W	centerline of cap	2" shell, then void
A038c	Cap	17	17	E-W	5" down from top of cap	2" shell, then void
A039b	Cap	17	17	E-W	8" down under Str 5	1.5" shell, then void
A040	Cap	17	17	E-W	centerline of cap under Str 5	1.5" shell, then void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A041	Cap	17	17	E-W	9" from top of cap at Str 5	9" void @ 2" - 11"
A042	Cap	17	17	E-W	2" down under Str 6	3" void @1.5" - 4.5"
A043	Cap	17	17	E-W	2" down under Str 4	1" shell, then void
B030	Cap	18	18	E-W	3" below Str 2	4" total void
B031	Cap	18	18	E-W	6" below Str 2	3.5" void @ 4" - 7.5"
B032	Cap	18	18	E-W	9" below Str 2	no void
B034	Cap	18	18	E-W	3" below Str 5	1" void
B035	Cap	18	18	E-W	6" below Str 5	no void
B036	Cap	18	18	E-W	lower, under Str 2, 6" from top	no void
C037	Cap	19	19	E-W	below Str 5, 2" down	4" solid, 8" void, then solid
C038	Cap	19	19	E-W	below Str 5, 4" down	4" solid, 7.5" void, then solid
C039	Cap	19	19	E-W	below Str 5, 6" down, center	interim voids = 6"
C040	Cap	19	19	E-W	2" N of Str 4, 2" down	4.5" solid, 6" void, then solid
C041	Cap	19	19	E-W	midway between Str 3-4, 2" down	4" solid, 7.5" void, then solid
C042	Cap	19	19	E-W	midway between Str 3-4, 6" down, center	9.5" total voids
C043	Cap	19	19	E-W	2" S of Str 6, 2" down	5" solid, 8" total voids
C045	Cap	19	19	E-W	2" S of Str 6, 6" down, center	interim voids = 6"
C046	Cap	19	19	E-W	2" N of Str 1, 2" down	interim voids =4.5"
C047	Cap	19	19	E-W	2" N of Str 1, 6" down, center	3.5" solid, 8" void, then solid
A119	Cap	20	20	E-W	3" below Str 2	no void
A120	Cap	20	20	E-W	3" below Str 5	no void
C030	Cap	20	20	W-E	below Str 4, 2" down	no void
C031	Cap	20	20	W-E	below Str 3, 2" down	no void
A116	Cap	21	21	W-E	4" below Str 5	no void
A117	Cap	21	21	W-E	2" below Str2	no void
A124	Cap	22	22	W-E	4" below top of cap at Str 2	1.5" void @ 6.5" - 8"
A128	Cap	22	22	W-E	4" below cap at Str 5	5" void @ 5.5" - 10.5"
B089	Cap	23	23	E-W	3" from top at Str 5	no void
B092	Cap	23	23	E-W	3" from top at Str 2	no void
B079	Cap	24	24	E-W	3" from top at Str 5	no void
B084	Cap	24	24	E-W	3" from top at Str 2	1.5" void
A093	Cap	25	25	E-W	4" below S 2	1.5" void
A094	Cap	25	25	E-W	4" below S 5	4.5" void @ 4.5" - 9"
A095	Cap	25	25	E-W	Double cap, drilled in center of lower cap	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A086	Cap	26	26	E-W	centerline of cap under Str 2	no void
A088	Cap	26	26	E-W	3" below cap under Str 5	no void
A092	Cap	26	26	E-W	4" below top	no void
A082	Cap	27	27	E-W	4" below cap at Str 2	no void
A084	Cap	27	27	E-W	8" below cap at Str 5	2" void
A028	Cap	28	28	E-W	4" from top at centerline of Str 5	no void
A029	Cap	28	28	E-W	2" from top at centerline of Str 2	no void
A001	Cap	29	29	E-W	above Pile 4, 2" from top	1.5" void @ 4" - 5"
A003	Cap	29	29	E-W	above Pile 3, 2" from top	no void
A005	Cap	29	29	E-W	above Pile 2, 2" from top	2.5" void @ 5" - 7"
A006	Cap	29	29	E-W	centerline of cap	2.5" void @ 5" - 7"
A007	Cap	29	29	E-W	2" above pile 2 top	2" void @ 5" - 7"
A008	Cap	29	29	E-W	2" from top, 2" to Str 6	2.5" void @ 5" - 7"
A009	Cap	29	29	E-W	4" from top, 2" to Str 6	1" void at 7.5"
A010	Cap	29	29	E-W	4" from top, N of Str 1	2.5" void @ 5" - 7"
A010B	Cap	29	29	E-W	2" below top, flush N of Str 1	2.5" void @ 5" - 7"
A011	Cap	29	29	B-T	centerline of btm, S of Str 3	1" void at 3"
A012	Cap	29	29	B-T	centerline of btm,under Str 1	2" void @ 3"
B001	Cap	30	30	E-W	3" below Str 5	5" void
B002	Cap	30	30	E-W	6" below Str 5	8" void
B003	Cap	30	30	E-W	9" below Str 5	no void
B006	Cap	30	30	E-W	3" below Str 2	1" void
A014	Cap	31	31	E-W	2" below top, btm of Str 5	no void
A015	Cap	31	31	E-W	2" below top, btm of Str 2	no void
B012	Cap	32	32	E-W	3" below Str 2	no void
B013	Cap	32	32	E-W	3" below Str 5	no void
B028	Cap	33	33	E-W	3" below Str 2	0.75" void at 8" - 8.75"
B029	Cap	33	33	E-W	3" below Str 5	no void
B050	Cap	34	34	E-W	3" down from Str 2	5" total voids
B051	Cap	34	34	E-W	6" down from Str 2	4.5" total voids
B052	Cap	34	34	E-W	9" down from Str 2	no void, needle exited bottom of cap at 8.5"
B053	Cap	34	34	E-W	3" down from Str 5	no void
A044	Cap	35	35	E-W	2" down under Str 5	no void
A045	Cap	35	35	E-W	2" down under Str 2	no void
A050	Cap	36	36	W-E	midspan at centerline	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C134	Str	1-2	3-1	S-N	west end, 2" above cap	no void
C135	Str	1-2	4-6	N-S	west end, 2" above cap	no void
C219	Str	1-2	3-1	S-N	east end, 1'east of cap	no void
C220	Str	1-2	4-6	N-S	east end, 1'east of cap	no void
C221	Str	1-2	3-1	S-N	midspan, midmember	no void
C223	Str	1-2	4-6	N-S	midspan, midmember	no void
C264	Str	1-2	3-1	S-N	east end, 2" above cap	no void
C265	Str	1-2	4-6	N-S	east end, 2" above cap	Str 4 shell, Str 5 7" solid, Str 6 no void
C291	Str	1-2	3-1	S-N	west end, 2" above cap	no void
C292	Str	1-2	4-6	N-S	west end, 2" above cap	no void
C129	Str	2-3	3-1	S-N	west end, 2" above cap	Str 1 unknown, Str 2&3 no void
C130	Str	2-3	3	T-B	3' from west end	no void
C132	Str	2-3	4-6	N-S	west end, 2" above cap	no void
C225	Str	2-3	4-6	N-S	midspan, midmember	no void
C226	Str	2-3	3-1	S-N	midspan, midmember	no void
C266	Str	2-3	3-1	S-N	east end, 2" above cap	no void
C267	Str	2-3	4-6	N-S	east end, 2" above cap	no void
C120	Str	3-4	4-6	N-S	west end, 2" above cap	no void
C121	Str	3-4	3-1	S-N	west end, 2" above cap	no void
C269	Str	3-4	3-1	S-N	east end, 2" above cap	Str 1 no surviving cross section, Str 2 3" solid, then void, Str 3 no void
C272	Str	3-4	4-6	N-S	east end, 2" above cap	no void
A074	Str	4-5	1	N-S	west end, 4" above cap at centerline	no void
A076	Str	4-5	3	S-N	west end, 6" above cap	no void
A077	Str	4-5	4	N-S	west end, 6" above cap	no void
A079	Str	4-5	6	S-N	west end, 6” above top of cap	2" void @ 5" - 7"
C227	Str	4-5	3-1	S-N	midspan, midmember	Str 1&3 no voids; Str 2 3" solid, 2.5" void, then solid
C228	Str	4-5	4-6	N-S	midspan, midmember	no void
C273	Str	4-5	3-1	S-N	east end, 2" above cap	Str 1&3 no void, Str 2 shell
C274	Str	4-5	4-6	N-S	east end, 2" above cap	no void
B066	Str	5-6	6	S-N	3" down at Cap 6	1.25" void @ 6.75"-8"
B067	Str	5-6	6	S-N	6" down at Cap 6	Str 6 - 7" void, 4" of Str 5 no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
B068	Str	5-6	6	S-N	3" from bottom at Cap 6	Str 6 - 6.5" void, 4" of Str 5 no void
B069	Str	5-6	4	N-S	3" down at Cap 6	no void
B070	Str	5-6	3	S-N	3" down at Cap 6	no void
B071	Str	5-6	1	N-S	3" down at Cap 6	no void
B076	Str	5-6	4	N-S	3" from top at Cap 5	Str 4 no void, 4" of Str 5 no void
B077	Str	5-6	3	S-N	3" from top at Cap 5	Str 3 no void, 4" of Str 2 no void
B078	Str	5-6	1	N-S	3" from top at Cap 5	no void
C277	Str	5-6	3-1	S-N	west end, 2" above cap	Str 1&2 no voids, Str 3 8" void / shell
C278	Str	5-6	4-6	N-S	west end, 2" above cap	no void
A066	Str	6-7	1	N-S	west end, 6" above cap	no void
A068	Str	6-7	3	S-N	west end, 4" above cap	no void
A069	Str	6-7	4	N-S	west end, 4" above cap	no void
A071	Str	6-7	6	S-N	west end, 4" above cap	no void
A073	Str	6-7	6	S-N	west end, 6" above cap at centerline	no void
C229	Str	6-7	3-1	S-N	midspan, midmember	no void
C230	Str	6-7	4-6	N-S	midspan, midmember	no void
C231	Str	6-7	3-1	S-N	midspan, midmember	Str 1&2 no voids; Str 3 4" solid, 1" void, then solid
C279	Str	6-7	3-1	S-N	east end, 2" above cap	no void
C280	Str	6-7	4-6	N-S	east end, 2" above cap	Str 4&5, no void; Str 6, shell
C106	Str	7-8	1-3	N-S	3" from bottom face, above cap	no void
C107	Str	7-8	6-4	S-N	3" from bottom face, above cap	no void
C114	Str	7-8	3-1	S-N	2" from bottom face, above cap	no void
C115	Str	7-8	4-6	N-S	2" from bottom face, above cap	no void
A129	Str	8-9	6	S-N	west end, 4" above cap at Str 6	no void
A131	Str	8-9	4	N-S	west end, 3" above cap	no void
A132	Str	8-9	3	S-N	west end, 3" above cap	no void
A134	Str	8-9	1	N-S	west end, 4" above cap	no void
C232	Str	8-9	4-6	N-S	midspan, midmember	Str 4 - low density but no voids; Str 5 - 8" void, Str 6 - no void
C281	Str	8-9	3-1	S-N	west end, 2" above cap	Str 1 1" shell, Str 2&3 no void
C282	Str	8-9	4-6	N-S	west end, 2" above cap	Str 4 2.5" solid, 1" void, then solid, Str 5&6 no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A135	Str	9-10	6	S-N	west end, 4" above cap at Str 6	no void
A137	Str	9-10	4	N-S	west end, 4" above cap at Str 4	Str 4 no void (Str 5 void)
A138	Str	9-10	3	S-N	west end, 4" above cap at Str 4	no void
A140	Str	9-10	1	N-S	west end, 4" above cap	no void
A141	Str	9-10	1	N-S	midspan	no void
B099	Str	9-10	6	S-N	3" from top at Cap 10	Str 6 - no void (Str 5 - 4" void)
B100	Str	9-10	6	S-N	6" from top at Cap 10	no void
B104	Str	9-10	1	N-S	3" from top at Cap 10	Str 1 no void, 4" of Str 2, no void
C283	Str	9-10	3-1	S-N	west end, 2" above cap	Str 1&3 no void, Str 2 1" shell then void
C284	Str	9-10	4-6	N-S	west end, 2" above cap	Str 5 shell, Str 4&6 no void
A164	Str	10-11	3	S-N	west end, 4" above cap	no void
B101	Str	10-11	6	S-N	3" from top at Cap 10	Str 6 no void, 4" of Str 5, no void
B102	Str	10-11	6	S-N	3" from top, midspan	Str 6 no void, 4" of Str 5, no void
B103	Str	10-11	6	S-N	3" from top at Cap 11	Str 6 no void, 4" of Str 5, no void
B105	Str	10-11	1	N-S	3" from top at Cap 10	Str 1 no void, 4" of Str 2, no void
B106	Str	10-11	1	N-S	3" from top, midspan	Str 1 no void, 4" of Str 2, no void
B107	Str	10-11	1	N-S	3" from top at Cap 11	Str 1 no void, 4" of Str 2, no void
C233	Str	10-11	3-1	S-N	midspan, midmember	no void
C234	Str	10-11	4-6	N-S	midspan, midmember	no void
C285	Str	10-11	3-1	S-N	west end, 2" above cap	no void
C286	Str	10-11	4-6	N-S	west end, 2" above cap	no void
C289	Str	10-11	3-1	S-N	east end, 2" above cap	Str 1&2 essentially no cross section at this location, Str 3 no voids
C290	Str	10-11	4-6	N-S	east end, 2" above cap	no void
A160	Str	11-12	3	S-N	west end, 4" above cap	no void
A161	Str	11-12	4	N-S	west end, 4" above cap	no void
C205	Str	11-12	3-1	S-N	east end, 2" above cap	no void
C212	Str	11-12	4-6	N-S	east end, 2" above cap	Str 4&5 no void, Str 6 - shell
C293	Str	11-12	3-1	S-N	west end, 2" above cap	Str 1&3 no void, Str 2 shell
C294	Str	11-12	4-6	N-S	west end, 2" above cap	no void
A171	Str	11-12E	3	S-N	west end, 4" above cap	no void
A172	Str	11-12E	6	N-S	west end, 4" above cap	no void
C201	Str	12-13	3-1	S-N	east end, 2" above cap	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C202	Str	12-13	4-6	N-S	east end, 2" above cap	Str 4&6 - no voids; Str 5 - 6" void
C203	Str	12-13	3-1	S-N	west end, 2" above cap	no void
C204	Str	12-13	4-6	N-S	west end, 2" above cap	no void
C235	Str	12-13	3-1	S-N	midspan, midmember	no void
C236	Str	12-13	4-6	N-S	midspan, midmember	no void
A142	Str	13-14	1	N-S	midspan 14 to 13	no void
A143	Str	13-14	6	S-N	midspan 14 to 13	no void
B057	Str	13-14	4	N-S	6" down at Cap 13	3.5" void @ 3"-6.5"
B058	Str	13-14	4	N-S	10" down at Cap 13	Str 4 - 4" void (4" of Str 5 no void)
B059	Str	13-14	4	N-S	3" from bottom at Cap 13	1.5" void @ 4"-5.5"
B060	Str	13-14	3	S-N	3" down at Cap 13	no void
B061	Str	13-14	1	N-S	3" down at Cap 13	no void
B062	Str	13-14	6	S-N	6" down at Cap 14	no void
B063	Str	13-14	4	N-S	3" down at Cap 14	no void
B064	Str	13-14	3	S-N	3" down at Cap 14	Str 3 no void, and into Str 2 no void
B065	Str	13-14	1	N-S	3" down at Cap 14	no void
C001	Str	13-14	4-6	N-S	midspan 2" down	no void
C002	Str	13-14	3-1	S-N	midspan 2" down	no void
C302	Str	13-14	3-1	S-N	west end, 2" above cap	Str 1&3 no void, Str 2 0.75" drying check, then solid
C303	Str	13-14	4-6	N-S	west end, 2" above cap	Str 4 1" internal void, Str 5&6 no voids
A062	Str	14-15	6	S-N	west end, 4" above cap at Str 6	no void
A063	Str	14-15	4	N-S	west end, 4" above cap at Str 4	4.5" solid, 3.5" void
A064	Str	14-15	3	S-N	west end, 4" above cap at Str 3	no void
A065	Str	14-15	1	N-S	west end, 4" above cap at Str 1	no void
C004	Str	14-15	3-1	S-N	west end, 2" down	no void
C005	Str	14-15	4-6	N-S	west end, 2" down	Str 4 - 4" void, Str 5&6 no void
C237	Str	14-15	3-1	S-N	midspan, midmember	no void
C238	Str	14-15	4-6	N-S	midspan, midmember	Str4 4.5" solid, 3" void, then solid; Str 5&6 no void
C306	Str	14-15	3-1	S-N	east end, 2" above cap	no void
C309	Str	14-15	4-6	N-S	east end, 2" above cap	no void
A144	Str	15-16	1	N-S	midspan 16 to 15	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A145	Str	15-16	6	S-N	midspan 16 to 15	no void
C194	Str	15-16	4-5.5	N-S	east end, 2" above cap	no void
C195	Str	15-16	3-2.5	S-N	east end, 2" above cap	no void
C311	Str	15-16	3-1	S-N	west end, 2" above cap	no void
C312	Str	15-16	4-6	N-S	west end, 2" above cap	Str 5 no surviving cross section, Str 4&6 no voids
C192	Str	16-17	3-2.5	S-N	west end, 2" above cap	no void
C193	Str	16-17	4-5.5	N-S	west end, 2" above cap	Str 4 - 1" solid, 1.5" void, then solid; Str 5 - 0.5" solid, 1.5" void, then solid
C239	Str	16-17	3-1	S-N	midspan, midmember	no void
C240	Str	16-17	4-6	N-S	midspan, midmember	no void
C188	Str	17-18	3-2.5	S-N	east end, 2" above cap	no void
C189	Str	17-18	4-5.5	N-S	east end, 2" above cap	no void
C190	Str	17-18	3-2.5	S-N	west end, 2" above cap	no void
C191	Str	17-18	4-5.5	N-S	west end, 2" above cap	no void
A146	Str	18-19	1	N-S	midspan 19 to 18	1" void
A147	Str	18-19	4	N-S	midspan 19 to 18	no void
B033	Str	18-19	1	N-S	over Cap , 3" from top	Str 1 no void, 4" of Str 2 no void
C187	Str	18-19	4-5.5	N-S	west end, 2" above cap	Str 4 no void; Str 5-0.75" shell
C241	Str	18-19	3-1	S-N	midspan, midmember	no void
C242	Str	18-19	4-6	N-S	midspan, midmember	no void
C313	Str	18-19	3-1	S-N	east end, 2" above cap	no void
C314	Str	18-19	4-6	N-S	east end, 2" above cap	no void
B037	Str	18-19W	4	N-S	9" from top	Str 4 no void, 4" of Str 5 no void
C028	Str	19-20	4-6	N-S	east end, 2" down	no void
C029	Str	19-20	1-3	N-S	east end, 2" down	Str 2&3 no void, Str 1 - 1" shell,then void
C035	Str	19-20	3-1	S-N	west end, 2" above cap	no void
C036	Str	19-20	4-6	N-S	west end, 2" above cap	no void
C185	Str	19-20	3-2.5	S-N	west end, 2" above cap	Str 3 no void, Str 2 2" solid, then void
C186	Str	19-20	4-5.5	N-S	west end, 2" above cap	Str 4&5 no voids
A173	Str	19-20W	6	S-N	west end, 4" above cap	no void
A174	Str	19-20W	4	N-S	west end, 4" above cap	no void
A175	Str	19-20W	3	S-N	west end, 4" above cap	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A176	Str	19-20W	1	N-S	west end, 4" above cap	no void
A118	Str	20-21	1	N-S	west end, 4" above cap	no void
A121	Str	20-21	6	S-N	west end, 4" above cap	no void
C173	Str	20-21	3-1	S-N	west end, 2" above cap	no void
C176	Str	20-21	4-6	N-S	west end, 2" above cap	no void
C178	Str	20-21	3-1	S-N	east end, 2" above cap	no void
C181	Str	20-21	4-6	N-S	east end, 2" above cap	no void
C243	Str	20-21	3-1	S-N	midspan, midmember	no void
C244	Str	20-21	4-6	N-S	midspan, midmember	no void
A114	Str	21-22	1	N-S	west end, 4" above cap at Str 1	no void
A115	Str	21-22	6	S-N	west end, 6" above cap at Str 6	no void
C154	Str	21-22	3	T-B	3' W of Bent 22	shell
C155	Str	21-22	3	T-B	6' W of Bent 22	shell
C162	Str	21-22	3-1	S-N	east end, 2" above cap	Str 1&2 no voids, Str 3 shell
C163	Str	21-22	4-6	N-S	east end, 2" above cap	Str 4 - no voids, Str 5 - 3" solid then void through Str 6
C165	Str	21-22	6	T-B	6' W of Cap 22, above cap	10" solid, then void
C183	Str	21-22	3-2.5	S-N	west end, 2" above cap	no void
C184	Str	21-22	4-5.5	N-S	west end, 2" above cap	no void
A123	Str	22-23	1	N-S	4" above cap	no void
A127	Str	22-23	6	S-N	6" above cap	no void
B095	Str	22-23	1	N-S	3" from top at Cap 23	no void
B096	Str	22-23	6	S-N	3" from top at Cap 23	Str 6 no void, Str 5 no void
B097	Str	22-23	6	S-N	3" from top at Cap 22	Str 6 no void, Str 5 no void
B098	Str	22-23	1	N-S	3" from top at Cap 22	Str 1 no void, Str 2 no void
C148	Str	22-23	3-1	S-N	east end, 2" above cap	Str 1&3 no void, Str 2 shell
C151	Str	22-23	4-6	N-S	east end, 2" above cap	no void
C152	Str	22-23	3-1	S-N	west end, 2" above cap	Str 1&2 no voids; Str 3 shell
C153	Str	22-23	3	T-B	above cap at the bent	Str 3 = shell, top of cap is decayed
C156	Str	22-23	3	T-B	3' E of Bent 22	shell
C157	Str	22-23	3	T-B	9' E of Bent 22	shell
C159	Str	22-23	3	T-B	12' E of Bent 22	shell; >18' of Str 3 is hollow

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C160	Str	22-23	4-6	N-S	west end, 2" above cap	Str 4 - no voids, Str 5 - 1" void at Str 6, Str 6 at least 3" void
C161	Str	22-23	6	T-B	4' E of Bent 22	no void
C164	Str	22-23	6	T-B	over Cap 22	7" solid, then void
C247	Str	22-23	3-1	S-N	midspan, midmember	Str 1 - no void, Str 2&3 - 6.5" voids each
C248	Str	22-23	4-6	N-S	midspan, midmember	Str 4 - no void, Str 5 -2" void, Str 6 - 0.5" void
B087	Str	23-24	6	S-N	3" from top at Cap 24	Str 6 no void, Str 5 no void
B088	Str	23-24	1	N-S	3" from top at Cap 24	Str 1 no void, Str 2 no void
B090	Str	23-24	6	S-N	3" from top at Cap 23	4.5" void
B091	Str	23-24	6	S-N	9" from top at Cap 23	1.5" void @ 6"-7.5"
B093	Str	23-24	1	N-S	3" from top at Cap 23	no void
B094	Str	23-24	1	N-S	6" from bottom at Cap 23	no void
C142	Str	23-24	3-1	S-N	east end, 2" above cap	no void
C143	Str	23-24	4-6	N-S	east end, 2" above cap	no void
C144	Str	23-24	3-1	S-N	west end, 2" above cap	Str 1&3 no void, Str 2 shell
C145	Str	23-24	3-1	S-N	west end, 4" above cap	Str 1&3 no void, Str 2 shell
C146	Str	23-24	3-1	S-N	west end, 9" above cap (center)	Str 2 lost >50% of original cross section
C147	Str	23-24	4-6	N-S	west end, 2" above cap	no void
B082	Str	24-25	6	S-N	3" from top at Cap 24	no void
B083	Str	24-25	1	N-S	3" from top at Cap 24	no void
B085	Str	24-25	1	N-S	3" from top at Cap 25	no void
B086	Str	24-25	6	S-N	3" from top at Cap 25	no void
C095	Str	24-25	3-1	S-N	east end, 2" above bottom face	no void
C096	Str	24-25	4-6	N-S	east end, 2" above bottom face	Str 4 - no void, Str 5 - 4" solid, then void, Str 6 - shell
C140	Str	24-25	3-1	S-N	west end, 2" above cap	Str 1&2 no void, Str 3 5.5" solid, 1.5" void, then solid
C141	Str	24-25	4-6	N-S	west end, 2" above cap	no void
C249	Str	24-25	3-1	S-N	midspan, midmember	Str 1&2- no voids; Str 3 - 2.5" solid, 2" void, then solid
C250	Str	24-25	4-6	N-S	midspan, midmember	no void
A112	Str	25-26	1	N-S	west end, 4" above cap at Str 1	1.5" void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A113	Str	25-26	6	S-N	west end, 4" above cap at Str 6	no void
B114	Str	25-26	6	S-N	3" above Cap 25	no void
B115	Str	25-26	3	S-N	2" above Cap 25	no void
B116	Str	25-26	4	N-S	2" above Cap 25	no void
C091	Str	25-26	4-6	N-S	west end, 2" above bottom face	Str 4&5 no void, Str 6 shell
C092	Str	25-26	4-6	N-S	west end, 9" above bottom face, center	no void
C094	Str	25-26	3-1	S-N	west end, 2" above bottom face	no void
C180	Str	25-26	6	S-N	4" above cap	no void
A087	Str	26-27	4	N-S	west end, 4" above cap	no void
A089	Str	26-27	6	N-S	west end, 4" above cap	no void
A110	Str	26-27	6	S-N	west end, 4" above cap at Str 6	no void
A111	Str	26-27	1	N-S	west end, 4" above cap at Str 1	no void
B110	Str	26-27	6	S-N	3" from top at Cap 27	no void
B111	Str	26-27	3	S-N	3" from top at Cap 27	no void
B112	Str	26-27	1	N-S	3" from top at Cap 27	Str 1 no void, Str 2 void at 11"-12"
B113	Str	26-27	3	S-N	6" from top at Cap 26	no void
C086	Str	26-27	4-6	N-S	east end, 2" above bottom face	no void
C090	Str	26-27	3-1	S-N	west end, 2" above bottom face	no void
C251	Str	26-27	3-1	S-N	midspan, midmember	Str 1&3 no voids; Str 2 4.5" solid, 1" void, then solid
C252	Str	26-27	4-6	N-S	midspan, midmember	no void
A081	Str	27-28	1	N-S	west end, 4" above cap	no void
A083	Str	27-28	3	S-N	west end, 4" above cap	no void
A085	Str	27-28	6	N-S	west end, 4" above cap	1" void
C083	Str	27-28	3-1	S-N	east end, 2" above bottom face	no void
C084	Str	27-28	4-6	N-S	east end, 3" above bottom face	no void
C085	Str	27-28	4-6	N-S	west end, 2" above bottom face	no void
C087	Str	27-28	3-1	S-N	west end, 2" above bottom face	no void
A030	Str	28-29	6	S-N	west end, 4" from top of cap	Str 6 no void, Str 5 1" solid, then at least 1.5" void
A031	Str	28-29	6	S-N	west end, 4" from top of cap	no void
A032	Str	28-29	4	N-S	west end, 4" from top of cap	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A033	Str	28-29	5	B-T	west end, 2" from face cap	1.5" shell, then void
A034	Str	28-29	3	S-N	west end, center of cap	3" void
C062	Str	28-29	3-1	S-N	east end, 2" above bottom face	no void
C063	Str	28-29	4-6	N-S	east end, 2" above bottom face	no void
C253	Str	28-29	3-1	S-N	midspan, midmember	Str 1 - 1" shell, then at least 2.5" void, Str 2&3 no void
C254	Str	28-29	4-6	N-S	midspan, midmember	Str 4&6 - no void, Str 5 - 2" void
A002	Str	29-30	6	S-N	west end, flush with upper timber, 2" from top	no void
A004	Str	29-30	4	N-S	west end, flush with E face cap, 2" up	no void
A013	Str	29-30	3	S-N	west end, 2" above btm	no void
C060	Str	29-30	3-1	S-N	west end, 2" above bottom face	no void
C061	Str	29-30	4-6	N-S	west end, 2" above bottom face	no void
C065	Str	29-30	3-1	S-N	east end, 2" above bottom face	Str 3 - 4" solid, 3" void, then solid, Str 1&2 no voids
C066	Str	29-30	4-6	N-S	east end, 2" above bottom face	no void
A022	Str	30-31	6	S-N	west end, 6" from cap	no void
A023	Str	30-31	6	S-N	centerline 4" from west end	no void
A024	Str	30-31	4	N-S	4" up, 4" from west end	no void
A025	Str	30-31	3	S-N	4" up, 4" from west end	no void
B004	Str	30-31	6	S-N	2" down from top @ W end	no void
B005	Str	30-31	4	N-S	2" down from top @ W end	no void
B007	Str	30-31	3	S-N	2" down from top @ W end	5" void @ 2.5" - 7.5"
B008	Str	30-31	3	S-N	6" down from top @ W end	6.5" void @ 1" - 7.5"
B009	Str	30-31	3	S-N	9" down from top @ W end	5.5" void @ 2" - 7.5"
C068	Str	30-31	3-1	S-N	west end, 2" above bottom face	Str 1&3 no void, Str 2 3.5" void, then solid
C069	Str	30-31	4-6	N-S	west end, 2" above bottom face	Str 4&6 no void, Str 5 - 1.5" void at center
C072	Str	30-31	3-1	S-N	east end, 2" above bottom face	Srt 1 at least 3" void, Str 2 - 4.5" solid then 3.5" void, Str 3 - no void
C073	Str	30-31	4-6	N-S	east end, 2" above bottom face	no void
C255	Str	30-31	3-1	S-N	midspan, midmember	Str 2&3 - no void, Str 1 shell, then at least 2.5" void
C256	Str	30-31	4-6	N-S	midspan, midmember	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A016	Str	31-32	1	N-S	west end, 2" above cap	no void
A017	Str	31-32	3	S-N	west end, 2" above cap	no void
A018	Str	31-32	4	N-S	west end, 2" above cap	no void
A019	Str	31-32	6	S-N	west end, 2" above cap	no void
A020	Str	31-32	5	B-T	west end, 3" from cap	0.5" shell, then void
A021	Str	31-32	2	B-T	west end, 6" from cap	1" void @ 4" - 5"
C074	Str	31-32	4-6	N-S	west end, 2" above bottom face	Str 4 - no void, Str 5 - 6" void, Str 6 - 2" void
C075	Str	31-32	3-1	S-N	west end, 2" above bottom face	Str 1&3 - no void, Str2 - 1" void,
C081	Str	31-32	3-1	S-N	east end, 2" above bottom face	no void
C082	Str	31-32	4-6	N-S	east end, 2" above bottom face	no void
B014	Str	32-33	3	S-N	3" down from top @ W end	no void
B015	Str	32-33	4	N-S	3" down from top @ W end	no void
B016	Str	32-33	6	S-N	3" down from top @ W end	no void
C009	Str	32-33	3-1	S-N	west end, 2" down	Str 3 - no void, Str 2 - 7" void, Str 1 - no void
C013	Str	32-33	4-6	N-S	west end, 3" down	no void
C257	Str	32-33	3-1	S-N	midspan, midmember	Str 1&3 - no voids, Str 2 - 8" void
C258	Str	32-33	2	T-B	drilling S-N at 10" toward bottom	16" void
C259	Str	32-33	4-6	N-S	midspan, midmember	no void
A165	Str	33-34	1	N-S	west end, 4" above cap	no void
A166	Str	33-34	3	S-N	west end, 4" above cap	1" void @ 4" - 5"
B018	Str	33-34	6	S-N	3" down from top	Str 6 - 7" void, Str 5 - first 3" solid
B019	Str	33-34	6	S-N	6" down from top	6" void
B020	Str	33-34	6	S-N	12" down from top	5.5" void @ 2" - 7.5"
B021	Str	33-34	6	S-N	2" from bottom	4" void
B022	Str	33-34	6	S-N	3" from top	Str 6 - 7" void
B023	Str	33-34	6	S-N	12" from top	Str 6 - 6" void
B024	Str	33-34	6	S-N	2" from bottom	Str 6 - 6" void
B026	Str	33-34	4	N-S	3" from top at Cap 33	end splits up to 8", no void
B027	Str	33-34	3	S-N	3" from top	no void
B117	Str	33-34	6	S-N	3" above Cap 34	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
B118	Str	33-34	4	N-S	3" above Cap 34	5.5" void @1"-6.5", hollow sounding full height
B119	Str	33-34	4	N-S	3" from bottom, midspan	Str 4 2" void @ 2.5"-4.5"
B120	Str	33-34	3	S-N	3" from top at Cap 34	Str 3 no void, Str 2 void at 9"-12"
B121	Str	33-34	1	N-S	3" from top at Cap 34	Str 1 no void, Str 2 void at 9"-12"
B122	Str	33-34	1	N-S	3" from bottom, midspan	Str 1 no void, Str 2 void at 9"-12"
A167	Str	33-34W	3	S-N	west end, 4" above cap	no void
A168	Str	33-34W	4	N-S	west end, 4" above cap	no void
A169	Str	33-34W	6	S-N	west end, 4" above cap	no void
A170	Str	33-34W	1	N-S	west end, 4" above cap	no void
A052	Str	34-35	1	N-S	4" up from cap 35	no void
A053	Str	34-35	3	S-N	4" up from cap 35	1" void @ 3.5" - 4.5"
A054	Str	34-35	4	N-S	4" up from cap 35	1" void @ 3.5" - 4.5"
A055	Str	34-35	5	S-N	4" up from cap 35	no void
B041	Str	34-35	1	N-S	3" from top at Cap 34	Str 1 no void, 4" of Str 2, no void
B042	Str	34-35	3	S-N	3" from top at Cap 34	Str 3 no void, 4" of Str 2, no void
B043	Str	34-35	4	N-S	3" from top at Cap 34	Str 4 - 4.5" void, 4" of Str 5 no void
B044	Str	34-35	4	N-S	9" from top at Cap 34	Str 4 - 5.5" void, 4" of Str 5 no void
B045	Str	34-35	4	N-S	3" from bottom at Cap 34	Str 4 void @1.5"- 6", 4" of Str 5 no void
B046	Str	34-35	6	S-N	3" from top at Cap 34	Str 6 void @0.5"-7.5", 4" of Str 5 no void
B047	Str	34-35	6	S-N	12" from top at Cap 34	Str 6 void @2.5"-3.5", 4" of Str 5 no void
B048	Str	34-35	6	S-N	4" from top, mid-span	Str 6 - 6" void, 4" of Str 5 no void
B049	Str	34-35	6	S-N	12" from top, mid-span	2" void
C014	Str	34-35	3-1	S-N	west end, 2" down	no void
C016	Str	34-35	4-6	N-S	west end, 3" down	Str 4 - 1" shell, 4" void, rest no void
C017	Str	34-35	4-6	N-S	west end, 5" down	Str 4 - 1" shell, 4" void, rest no void
C018	Str	34-35	4-6	N-S	west end, 7" down	Str 4 - 1" shell, 5" void, rest no void
C019	Str	34-35	4	T-B	2" from S face of Str 4	no void
C020	Str	34-35	3-1	S-N	east end, 2" down	Str 3 - 0.5" void, rest no void
C021	Str	34-35	4-6	N-S	east end, 2" down	Str 4&5 no void; needle exited a check in Str 6-no result
C025	Str	34-35	4	T-B	3" from S face, Str 4	5" solid, 6.5" void, then solid
C260	Str	34-35	3-1	S-N	midspan, midmember	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C261	Str	34-35	4-6	N-S	midspan, midmember	no void
A046	Str	35-36	4	N-S	4" up, 4' from west end	no void
A047	Str	35-36	3	S-N	west end, 4" up from cap	no void
A048	Str	35-36	1	N-S	west end, 4" up from cap	no void
A049	Str	35-36	6	S-N	west end, 4" up from cap	no void
A051	Str	35-36	6	S-N	midspan 4" down	no void
C023	Str	35-36	3-1	S-N	west end, 2" down	no void
C024	Str	35-36	4-6	N-S	west end, 2" down	no void
C262	Str	35-36	3-1	S-N	midspan, midmember	no void
C263	Str	35-36	4-6	N-S	midspan, midmember	no void

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
C126	Pile	3	5	E-W	3" down	2" void
A080	Pile	4	4	E-W	2" below water line	no void
B072	Pile	5	2	E-W	4" down from cap	3.5" void @ 4.5"-8"
B073	Pile	5	2	E-W	12" down from cap	5.5" void
A072	Pile	6	4	E-W	6" below high water mark	no void
A104	Pile	6	2	W-E	at mud line	no void
A105	Pile	6	1	W-E	at mud line	no void
B108	Pile	10	3	E-W	3" from top at Cap10	6" voids
B109	Pile	10	3	E-W	12" from top at Cap10	7" void
C097	Pile	10	3	E-W	16" below brace	no void
C098	Pile	10	5	E-W	1' above brace	no void
C103	Pile	10	1	E-W	3' below brace	no void
B054	Pile	13		E-W	+/- 5' below cap at neck	0.5" void
A058	Pile	14	4	E-W	8" below high water mark	no void
A061	Pile	14	2	E-W	8" below high water mark	no void
B040	Pile	15	3	E-W	6" below cap at avg water line	no void
C055	Pile	16	1	E-W	below Str 1, 5" down	no void
C056	Pile	16	3	E-W	below Str 1, 3" down	1.5" void
A039	Pile	17	1	S-N	10" down	6" punky, then solid
C048	Pile	19	3	E-W	2" S of Str 1, 4" down	no void
A122	Pile	20	1	S-N	6" below btm of cap	no void
C032	Pile	20	4	W-E	3" down	2" solid, 1.5" void, then solid
C033	Pile	20	3	W-E	3" down	no void
C034	Pile	20	3	W-E	through center neck, 4' below cap	no void
A106	Pile	21	5	N-S	at mud line	no void
A107	Pile	21	4	N-S	at mud line	no void
A108	Pile	21	3	E-W	at mud line	no void
A109	Pile	21	2	E-W	at mud line	no void
A125	Pile	22	1	W-E	8" below btm of cap	4" solid, otherwise void
A126	Pile	22	2	N-S	8" below btm of cap	1" shell then void
B080	Pile	24	4	E-W	6" below Cap 24	3" void
B081	Pile	24	4	E-W	18" down from cap	4" void @ 0"-4"
A096	Pile	25	5	N-S	at mud line	no void
A090	Pile	26	4	E-W	4" below top	5" solid, 5" void, 1" shell

Drilling Number	Member Type	Bent or Span ID	Member Number	Drilling Direction	Location	Comments
A091	Pile	26	3	E-W	8" below top	1.5" void
A102	Pile	29	3	S-N	at mud line	no void
A103	Pile	29	4	N-S	at mud line	no void
B010	Pile	30	5	E-W	6" below cap	no void
B011	Pile	30	5	E-W	+/- 4' down @ neck	no void
A026	Pile	31	4	E-W	6" from top	8" solid, then void
A027	Pile	31	2	E-W	10" from top	8" solid
C179	Pile	31	5	E-W	12" below cap	no void
A097	Pile	32	3	N-S	at mud line	no void
A098	Pile	32	2	N-S	at mud line	no void
A099	Pile	32	1	S-N	at mud line	no void
A100	Pile	32	4	N-S	at mud line	no void
A101	Pile	32	5	E-W	at ground level	no void
B017	Pile	32	3	E-W	3" down from top	no void
B025	Pile	32	5	E-W	3" from top	no void
A177	Pile	33	4	E-W	12" below cap	punky
C178b	Pile	33	5	E-W	18" bottom of cap	no void

Drilling Number	Member Type	Bent or Span ID	Drilling Direction	Location	Comments
A158	Tie	8-9	T-B	midspan	0.5" punky, 5.5" void, 1" shell
A156	Tie	15-16	T-B	midspan	no void
A157	Tie	18-19	T-B	midspan	0.5" shell, 6" void, 1" shell
A155	Tie	19-20	T-B	midspan	0.5" punky, 5.5" void, 1" shell
A154	Tie	21-22	T-B	midspan	1" shell, 6" void, 1" shell
C245	Tie	22-23	T-B	in area of heaviest char	no void, depth of tie in the area of heaviest char= 7.25"
C246	Tie	22-23	T-B	in area of heaviest char	6.5" void
A153	Tie	23-24	T-B	midspan	1.5 " shell, 3" void, 1.5" shell
A152	Tie	25-26	T-B	midspan	1" shell, 5.5" void, 1" shell
A151	Tie	27-28	T-B	midspan	0.5" shell, 5.5" void, 1" shell
A150	Tie	29-30	T-B	midspan	1" shell, 6" void, 1" shell
A149	Tie	32-33	T-B	midspan	2" shell, 5" void, shell
A148	Tie	33-34	T-B	midspan	1" shell, void, 1" shell