APPENDIX B
STRUCTURAL STEEL NOTES

B.1 GENERAL

Certain notes pertaining to the fabrication of structural steel are required to be shown on the plans. The actual notes required depend on the girder classification. Girder classifications shown below, and the notes required for each classification, are listed in TABLE B-1.

Note No. 13 should be used as required when the ratio of the unsupported top flange length (feet) to the top flange width (feet) at the section of maximum compressive stress is equal to or greater than one hundred (100).

Steel box girders require the same notes as for welded girders. In addition, Note No. 14 should be used for all box girder structures. Additional notes may be required for special conditions required by box girders.

B.2 GIRDER CLASSIFICATIONS

B.2.1 Simple Spans

- Class “A” - Rolled Beams.
- Class “B” - Welded Girders.
- Class “C” - Welded Girders with Field Splices.
- Class “D” - Welded Curved Girders with Field Splices (Heat curving allowed).
- Class “E” - Welded Curved Girders with Field Splices (Heat curving not allowed).
- Class “F” - Welded Curved Girders w/o Field Splices (Heat curving allowed).
- Class “G” - Welded Curved Girders w/o Field Splices (Heat curving not allowed).

B.2.2 Continuous Spans

- Class “H” - Rolled Beams.
- Class “I” - Curved Rolled Beams.
- Class “J” - Welded Girders.
- Class “K” - Welded Curved Girders (Heat curving allowed).
- Class “L” - Welded Curved Girders (Heat curving not allowed)

TABLE B-1: GIRDER CLASSIFICATIONS

	A	B	C	D	E	F	G	H	I	J	K	L
1	x	x	x	x	x	x	x	x	x	x	x	x
2	x	x	x	x	x	x	x	x	x	x	x	x
3	x	x	x	x	x	x	x	x	x	x	x	x
4				x		x					x	
5					x		x					x
6		x	x		x		x			x		x
7				x		x					x	
8	x	x	x	x	x	x	x	x	x	x	x	x
9		x	x	x	x	x	x			x	x	x
10		x	x	x	x	x	x			x	x	x
11		x	x	x	x	x	x			x	x	x
12	x	x	x	x	x	x	x	x	x	x	x	x
13	x	x	x	x	x	x	x	x	x	x	x	x

x designates notes that must be included on the plans.

B.3 LIST OF STRUCTURAL STEEL NOTES

1. For Non-Fracture Critical bridge members use one of the following notes:

"Structural Steel (Low Alloy) shall conform to AASHTO M270, Grade 50 T2"
"Structural Steel (Low Alloy) shall conform to AASHTO M270, Grade 50 WT2"

For Fracture Critical bridge members use one of the following notes:

"Structural Steel (Low Alloy) shall conform to AASHTO M270, Grade 50 F2"
"Structural Steel (Low Alloy) shall conform to AASHTO M270, Grade 50 WF2"

Where corrosion resistant steel is required:

" * shall conform to AASHTO M270, Grade 50 WT2"
(* Insert component parts, such as bearings, expansion dams, troughs, etc.)

2. "Welding details, procedures and testing methods shall conform to the ANSI/AASHTO/AWS D1.5-(year) - *Bridge Welding Code*, unless otherwise noted on the plans."

3. "Field splices will not be allowed except with the written permission of the Engineer prior to the submission of shop drawings. If allowed, these splices shall be designed by the Contractor and approved by the Engineer. The cost of these splices, including the cost of design, shall be at no extra expense to the State."

or

"Bolted field splices, other than those indicated on the plans, will not be allowed except with the written permission of the Engineer prior to the submission of shop drawings. If allowed, these splices shall be designed by the Contractor and approved by the Engineer. The cost of these splices, including the cost of design, shall be at no extra expense to the State. Welded field splices will not be allowed."

4. "All welded girders shall be fabricated to the required horizontal curvature by heat curving or by cutting the flanges from larger size plates. Where curvature is provided by cutting the flanges, the Contractor shall indicate on the shop drawings the location of any additional splices required."

5. "All welded girders shall be fabricated to the required horizontal curvature by cutting the flanges from larger size plates. Heat curving will not be allowed. The Contractor shall indicate on the shop drawings the location of any additional splices required."

6. "All web to flange, web to bearing stiffener and bearing stiffener to flange fillet welds shall be inspected by the magnetic particle method."

7. "All web to flange, web to bearing stiffener and bearing stiffener to flange fillet welds shall be inspected in their entirety by the magnetic particle method after heat curving."

8. "Multiple pass welds, inspected by the magnetic particle method shall have each pass or layer inspected and accepted before proceeding to the next pass or layer, as determined by the Engineer."

9. "Shop flange splices shall be located a minimum of 6 inches from web splices."

10. "Flange or web splices shall be located a minimum of 6 inches from stiffeners and connection plates."

11. "Ends of beams shall be vertical after the application of full dead loads."

or

"Bearing stiffeners and the ends of girders shall be vertical after the application of full dead loads."

or

"Bearing and intermediate stiffeners and the ends of girders shall be vertical after the application of full dead loads.

12. For non-fracture critical members, include use one of the following notes:

"Structural steel fabricators shall be certified under the AISC Certification Program Category for either Bridge Fabricator Simple (SBR)" or "Bridge Component QMS (CPT)."

Typical work includes:

1. Bridge cross frames for straight bridges with skew angles less than 30 degrees
2. Highway sign structures
3. Bridge inspection catwalks
4. Grid decks
5. Scuppers
6. Expansion joints
7. Bearings

"Structural steel fabricators shall be certified under the AISC Certification Program Category Bridge Fabricator Simple (SBR)."

Typical work includes:

1. Straight simple un-spliced rolled beams

"**Structural steel fabricators shall be certified under the AISC Certification Program Category Bridge Fabricator Intermediate (IBR)."**

Typical work includes:

1. Rolled beam with field or shop splices, straight or with radius over 500 ft.
2. Built up I-shaped plate girder with constant depth except for dapped ends, with or without splices, either straight or with radius over 500 ft.
3. Built up I-shaped plate girder with variable depth, either straight or with a radius over 1000 ft
4. Truss with a length over 200 ft or less that is entirely pre-assembled at the certified facility and shipped in no more than three sub-assemblies

"Structural steel fabricators shall be certified under the AISC Certification Program Category Bridge Fabricator Advanced (ABR)."

Typical work includes:

1. Tub or trapezoidal box girders, closed box girder bridges
2. Curved girder with radius under 500 ft.
3. Large or no-preassembled trusses, arches
4. Moveable bridges
5. Cable stayed bridges

or

For fracture-critical members, include one of the following two notes:

"Structural steel fabricators shall be certified under the AISC Certification Program Category Bridge Fabricator Intermediate with Fracture Critical endorsement (IBR, F)."

Examples:

1. *Rolled beam with field or shop splices, straight or with radius over 500 ft.*

2. *Built up I-shaped plate girder with constant depth except for dapped ends, with or without splices, either straight or with radius over 500 ft.*
3. *Built up I-shaped plate girder with variable depth, either straight or with a radius over 1000 ft.*
4. *Truss with a length over 200 ft or less that is entirely pre-assembled at the certified facility and shipped in no more than three sub-assemblies*

"Structural steel fabricators shall be certified under the AISC Certification Program Category certified Bridge Fabricator Advanced with Fracture Critical endorsement (ABR, F)."

Examples:
1. Tub or trapezoidal box girders, closed box girder bridges
2. Curved girder with radius under 500 ft.
3. Large or no-preassembled trusses, arches
4. Moveable bridges
5. Cable stayed bridges

13. "The Contractor shall take the proper precautions to ensure the stability of all structural elements until the total structure is in being."

14. "It shall be the Contractor's responsibility to provide any additional temporary bracing required to maintain the geometry of the individual box girders, as well as the total steel structure, throughout all phases of construction including placement of the concrete deck."