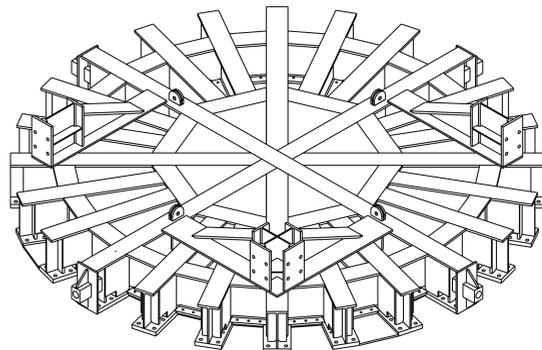
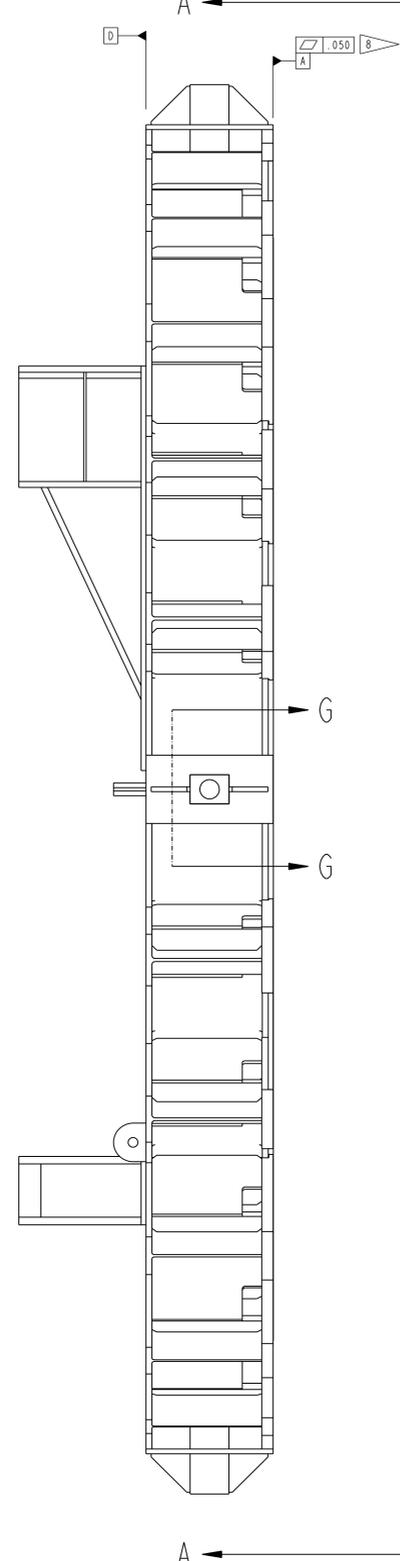
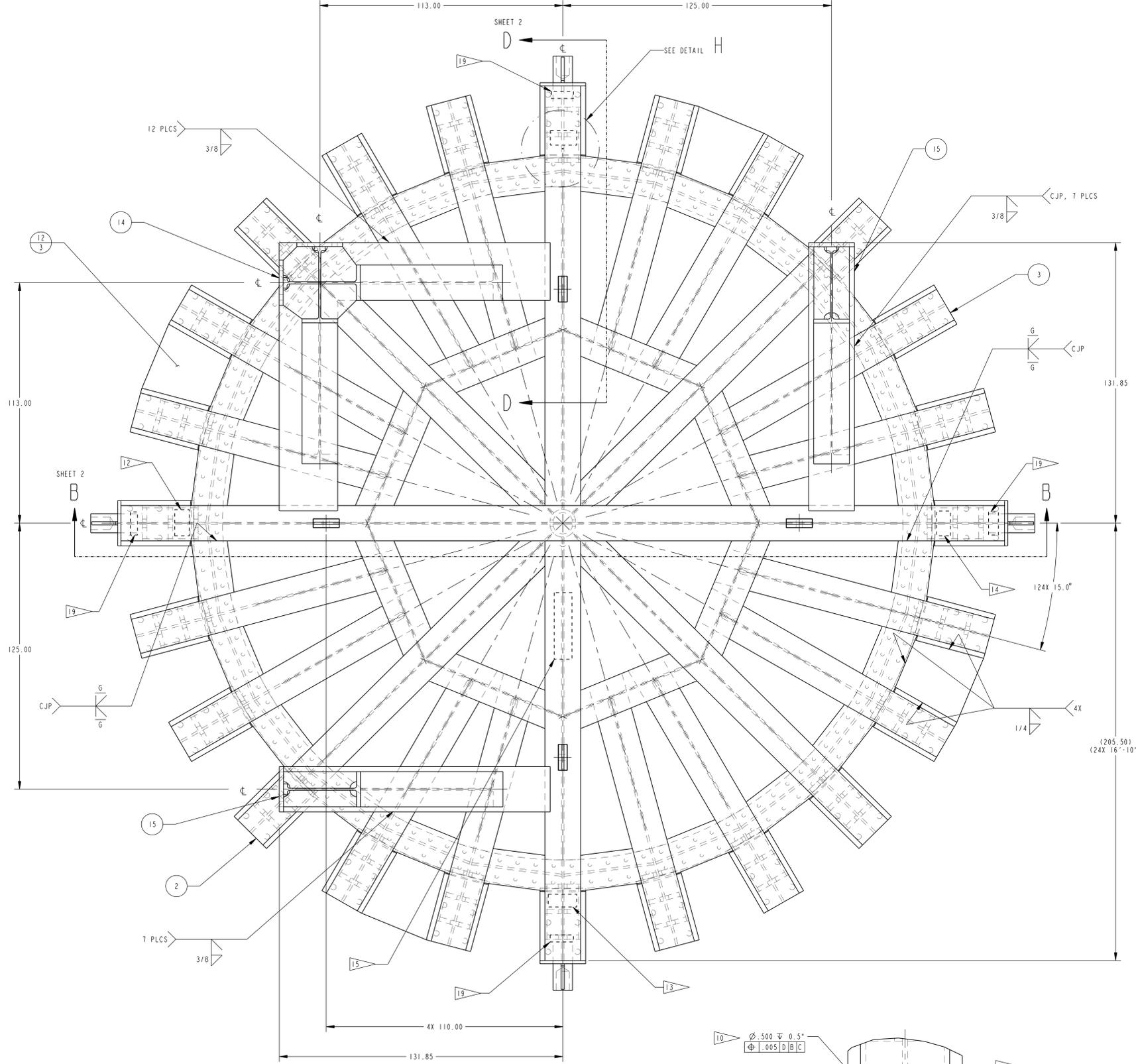


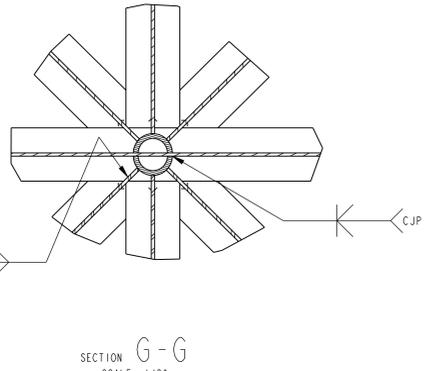
NOTICE: WHEN GOVERNMENT DRAWINGS, SPECIFICATIONS, OR OTHER DATA ARE USED FOR ANY PURPOSE OTHER THAN THAT FOR WHICH THEY WERE PREPARED, THE USER ASSUMES ALL LIABILITY FOR ANY AND ALL CONSEQUENCES. THE UNITED STATES GOVERNMENT THEREBY MAKES NO REPRESENTATION WITH ANY LIABILITY WHATSOEVER AND THAT THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMISSIONS AND AUTHORIZATIONS FROM THE APPROPRIATE AGENCIES AND OFFICIALS OF THE UNITED STATES GOVERNMENT. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMISSIONS AND AUTHORIZATIONS FROM THE APPROPRIATE AGENCIES AND OFFICIALS OF THE UNITED STATES GOVERNMENT. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMISSIONS AND AUTHORIZATIONS FROM THE APPROPRIATE AGENCIES AND OFFICIALS OF THE UNITED STATES GOVERNMENT.

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



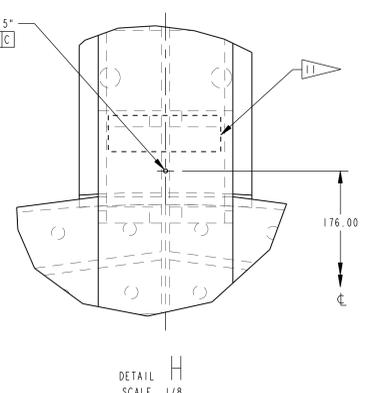
ISOMETRIC VIEW FOR REFERENCE ONLY

- GENERAL NOTES:**
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - COPED JOINTS AND WELD ACCESS HOLES SHALL BE PER THE EDITION OF ANSI/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" THAT IS CURRENT AT THE RELEASE DATE OF THIS DRAWING. NOTE THAT REQUIRED WELD ACCESS HOLES HAVE NOT BEEN SHOWN AT THE DETAIL LEVEL IN THIS DRAWING.
 - ALL STRUCTURAL STEEL SHAPES SHALL CONFORM TO THE DESIGNATIONS AND DIMENSIONS OF THE 14TH EDITION AISC "STEEL CONSTRUCTION MANUAL."
 - STEEL WELDING DESIGN, PROCEDURES, AND NON-DSTRUCTIVE EVALUATION SHALL BE PER ANSI/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" AND CURRENT AS OF THE RELEASE DATE OF THIS DRAWING. UTILIZE WELDING PRACTICES AND TECHNIQUES TO MINIMIZE DISTORTION. UNLESS OTHERWISE SPECIFIED, WELDS SHALL BE 100% VISUALLY INSPECTED.
 - PAINT ALL EXPOSED SURFACES PER MIL-STD-171F; SURFACE PREP PER 4.1 AND FINISH PER 24.17. FINISH COLOR GRAY NO. 16251 (OR SIMILAR GLOSSY SHADE) PER FED-STD-595C. DO NOT PAINT CONTACT SURFACES BETWEEN BOLTED PARTS OR OTHER INDICATED SURFACES. DO NOT PAINT HOLES OR THREADS. REFERENCE DRAWING 90M14230 AND 90M14270 FOR LOCATIONS OF BOLTED JOINT SURFACES. AREAS DAMAGED DURING ASSEMBLY OR INSTALLATION SHALL BE TOUCHED UP ON SITE. NO BLASTING OR SPRAYING PERMITTED OF ANY TYPE. PROTECT UNPAINTED SURFACES WITH TRI-FLOW.
 - ALL MACHINED MATING SURFACES OF BOLTED PARTS AND 500/ EDGES OF PLATES AND END CUTS OF AISC SHAPES.
 - AFTER WELDING AND PRIOR TO FINAL MACHINING, STRESS RELIEVE PER AMS 2759/11. WHEN FINISHED, FINAL MACHINE TO INDICATED FINISHED VALUES. A BRIGHT OR SCALE-FREE SURFACE IS REQUIRED FOR NOTED FAYING SURFACES.
 - REGION SPECIFIED TO APPLY .050 FLATNESS REQUIREMENT WITH A MINIMUM FINAL FLANGE THICKNESS OF "3.410 + .500/- .000".
 - SPOTFACE FAR SIDE OF HOLE AS REQ'D TO ENSURE A REMAINING MATERIAL THICKNESS OF 3.410 + .500/- .000 FOR A DEFINED FASTENER GRIP LENGTH. SPOTFACE DIAMETER TO BE 3.25 +/- .030.
 - REFERENCE FOR 4697 TEST STAND COORDINATE SYSTEM ONLY. 0.5" DIAMETER BENCHMARK HOLE LOCATES 0 DEGREES.
 - STENCIL REFERENCE COORDINATES, "4697, 0°" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - STENCIL REFERENCE COORDINATES, "4697, 90°" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - STENCIL REFERENCE COORDINATES, "4697, 180°" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - STENCIL REFERENCE COORDINATES, "4697, 270°" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - STENCIL PART NO. "90M14192" AND APPROXIMATE PART WEIGHT "215,000 LBS" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - INDICATED HOIST RING BLOCK TO BE USED WITH TECO HOIST RING, PART NO. AK41602, WITH A WORKING LOAD LIMIT OF 250,000 LBS. USE OF SPREADER BEAM REQUIRED IN ORDER TO NOT EXCEED BAIL PIVOT OF 180 DEGREES AS NOTED IN THE TECO SWIVEL HOIST RING WARNING AND APPLICATION INSTRUCTIONS.
 - INDICATED LIFTING SHACKLE POINTS TO BE USED WITH CROSBY LIFTING SHACKLE, MODEL G-2140CT, STOCK NO. 1260834, WITH A WORKING LOAD LIMIT OF 85 TONS.
 - WELDING DESIGN, PROCEDURES, AND NON-DSTRUCTIVE EVALUATION SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF ANSI/AWS D1.1/D1.1M-2005 FOR CLASS 1 WELDS. THE DESIGN STRENGTH OF WELDS SHALL BE, AT A MINIMUM, AS DEFINED IN PARA. 3-3.4 OF ASME BTH-1-2008, "DESIGN OF BELOW-THE-HOOK LIFTING DEVICES."
 - STENCIL "SPREADER BEAM REQUIRED" IN APPROXIMATE LOCATION INDICATED USING 2.0" HIGH CHARACTERS USING YELLOW PAINT.
 - DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5M-1994.



SECTION G-G SCALE 1/20

- PRELIMINARY -
THIS DRAWING HAS NOT COMPLETED THE REVIEW PROCESS AND IS SUBJECT TO CHANGE.
05-01-14
DATE



DETAIL H SCALE 1/8

ITEM NO.	CALLOUT	QTY	UNIT	DESCRIPTION	REMARKS
15	1	2	E	90M14199-1	LOX/FS UPPER LOAD SPIDER SINGLE WELDMENT ASSEMBLY
14	1	1	E	90M14198-1	LOX/FS UPPER LOAD SPIDER DOUBLE WELDMENT ASSEMBLY
13	2	3	F	90M14192-13	PLATE, STOCK THICKNESS AS DEEMED NECESSARY BY FABRICATOR
12	1	3	F	90M14192-12	PLATE, RECOVERY CATCH, 1.5" THICK
11	2	3	F	90M14192-11	PLATE, GUSSET, 1.5" THICK
10	2	3	F	90M14192-10	PLATE, LIFTING 9" THICK
9	2	3	F	90M14192-9	PLATE, ENDCAP, 1.5" THICK
8	2	3	F	90M14192-8	SECTION OF WEB FROM W36 X 330
7	2	3	F	90M14192-7	PLATE, INSIDE LIFTING LUG, 1.5" THICK
6	2	3	F	90M14192-6	PLATE, FLANGE DOUBLER END, 3.50" THICK
5	2	3	F	90M14192-5	PLATE, GUSSET COVER, 1" THICK
4	2	3	F	90M14192-4	PLATE, GUSSET, 2" THICK
3	1	1	E	90M14196-1	LOX/FS UPPER LOAD SPIDER CENTER ADD WELDMENT ASSEMBLY
2	1	1	E	90M14193-1	LOX/FS UPPER LOAD SPIDER CENTER CROSS WELDMENT ASSEMBLY
1	1	1	A	90M14192-1	LOX/FS UPPER LOAD SPIDER ASSEMBLY

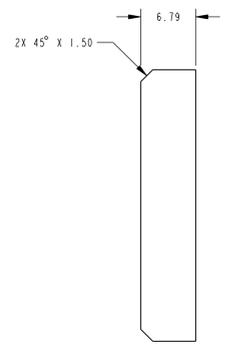
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14	1	1	E	90M14198-1	LOX/FS UPPER LOAD SPIDER DOUBLE WELDMENT ASSEMBLY
13	2	3	F	90M14192-13	PLATE, STOCK THICKNESS AS DEEMED NECESSARY BY FABRICATOR
12	1	3	F	90M14192-12	PLATE, RECOVERY CATCH, 1.5" THICK
11	2	3	F	90M14192-11	PLATE, GUSSET, 1.5" THICK
10	2	3	F	90M14192-10	PLATE, LIFTING 9" THICK
9	2	3	F	90M14192-9	PLATE, ENDCAP, 1.5" THICK
8	2	3	F	90M14192-8	SECTION OF WEB FROM W36 X 330
7	2	3	F	90M14192-7	PLATE, INSIDE LIFTING LUG, 1.5" THICK
6	2	3	F	90M14192-6	PLATE, FLANGE DOUBLER END, 3.50" THICK
5	2	3	F	90M14192-5	PLATE, GUSSET COVER, 1" THICK
4	2	3	F	90M14192-4	PLATE, GUSSET, 2" THICK
3	1	1	E	90M14196-1	LOX/FS UPPER LOAD SPIDER CENTER ADD WELDMENT ASSEMBLY
2	1	1	E	90M14193-1	LOX/FS UPPER LOAD SPIDER CENTER CROSS WELDMENT ASSEMBLY
1	1	1	A	90M14192-1	LOX/FS UPPER LOAD SPIDER ASSEMBLY

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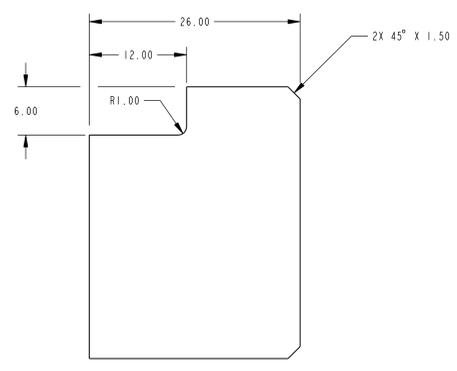
LOX/FS UPPER LOAD SPIDER ASSEMBLY
SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO
GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, D.C. 20546
90M14192
REV 1
3

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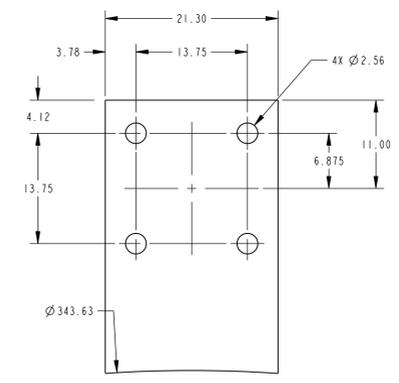
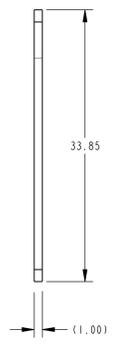
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



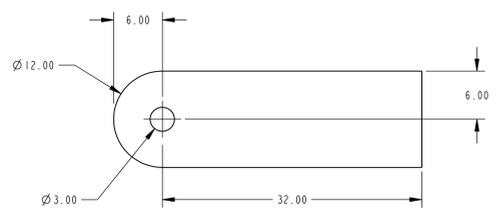
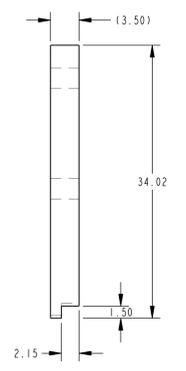
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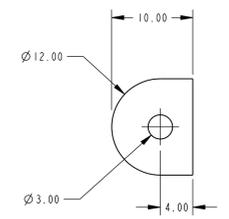
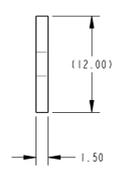
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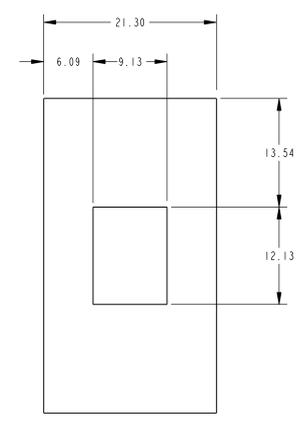
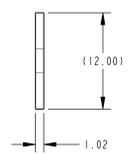
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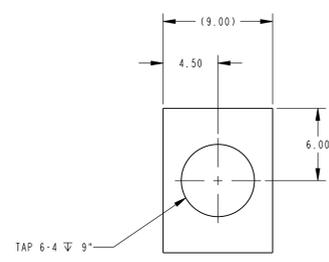
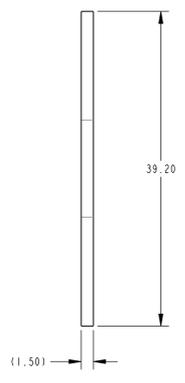
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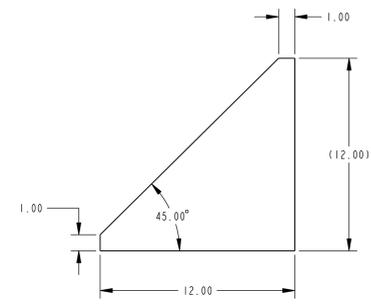
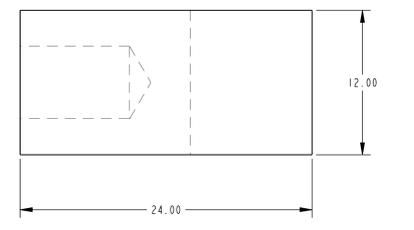
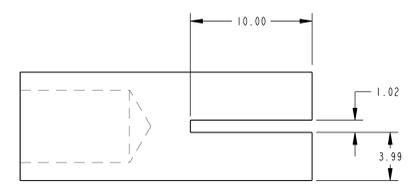
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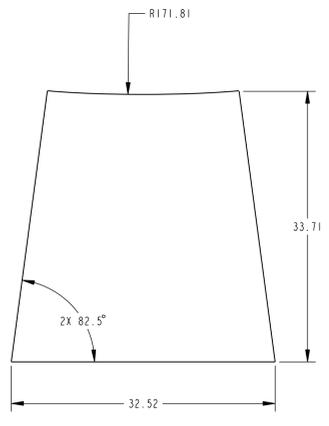
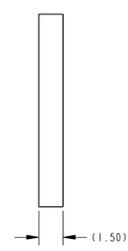
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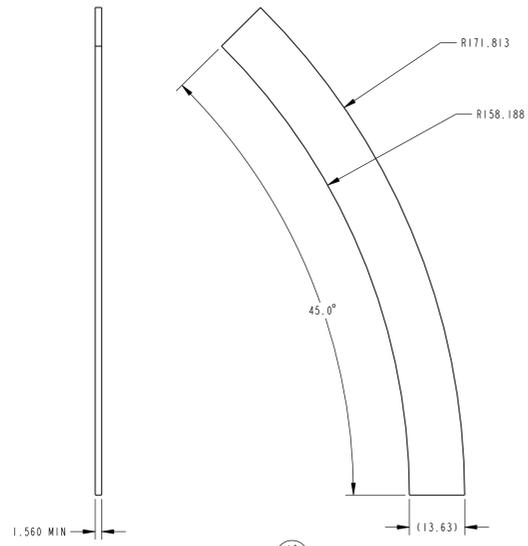
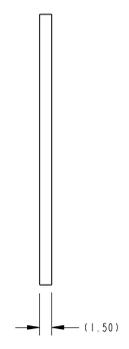
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FIND NO. $\frac{13}{2}$
SCALE 1/16

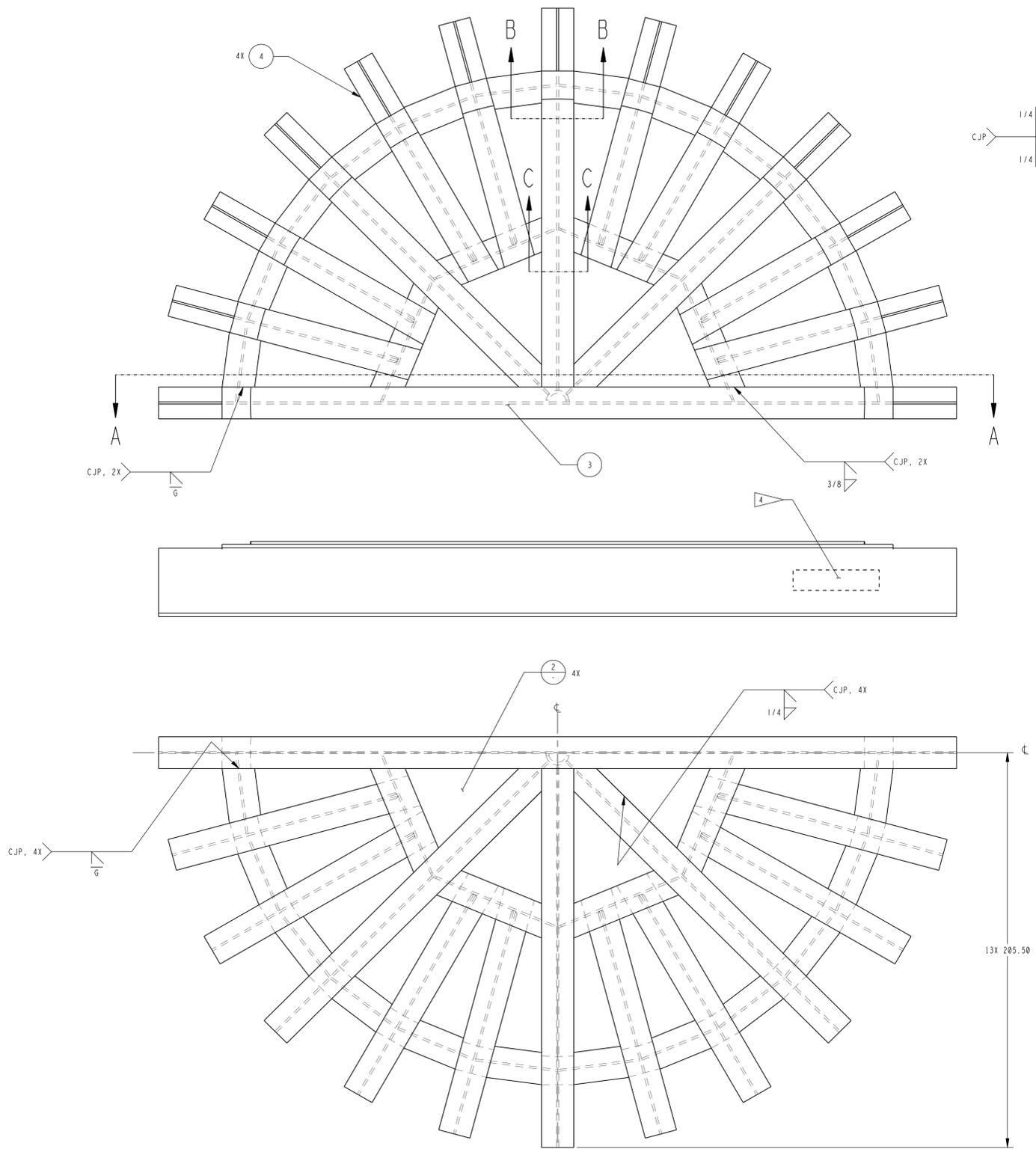
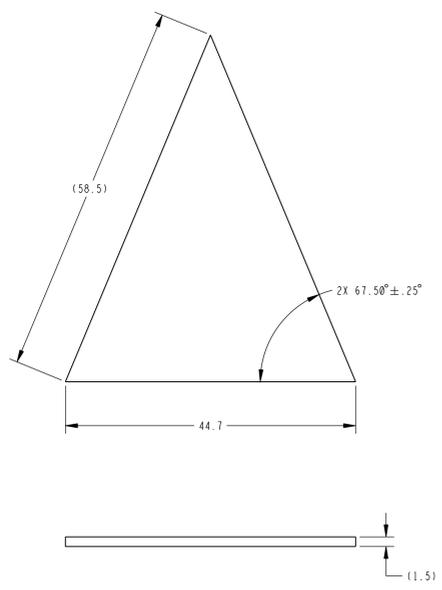
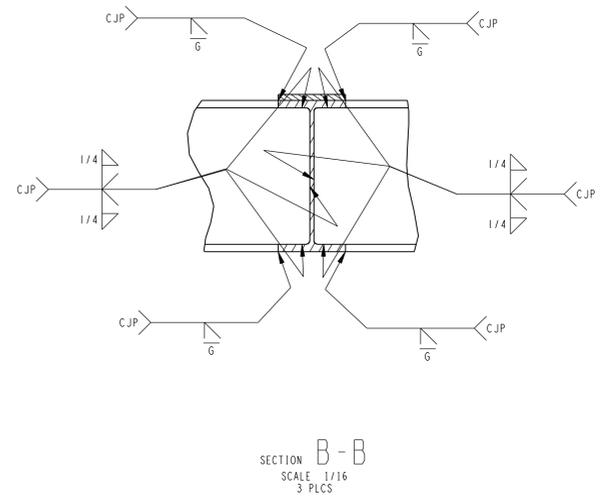
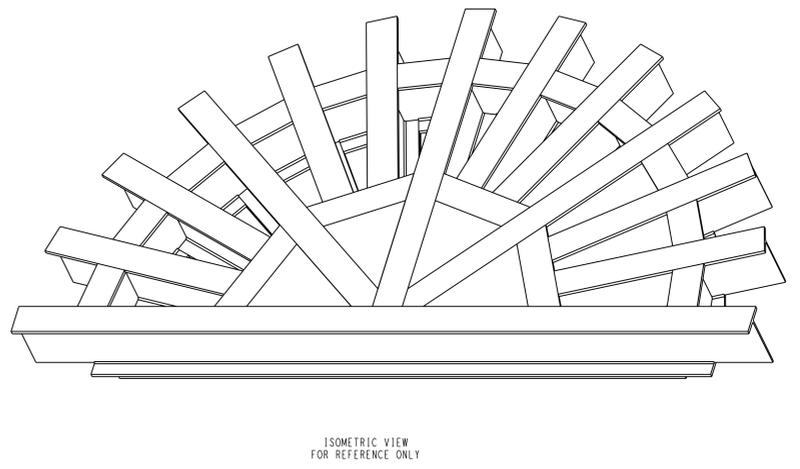
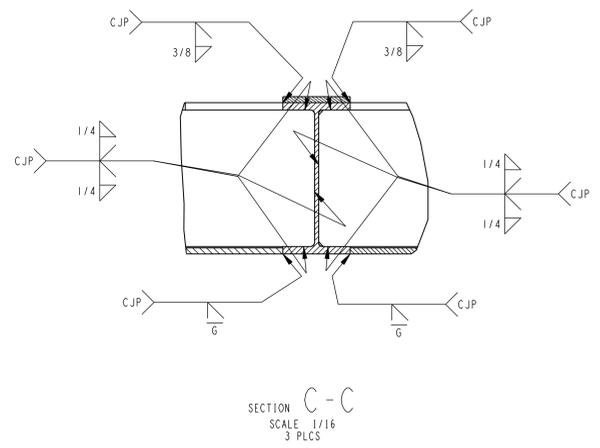
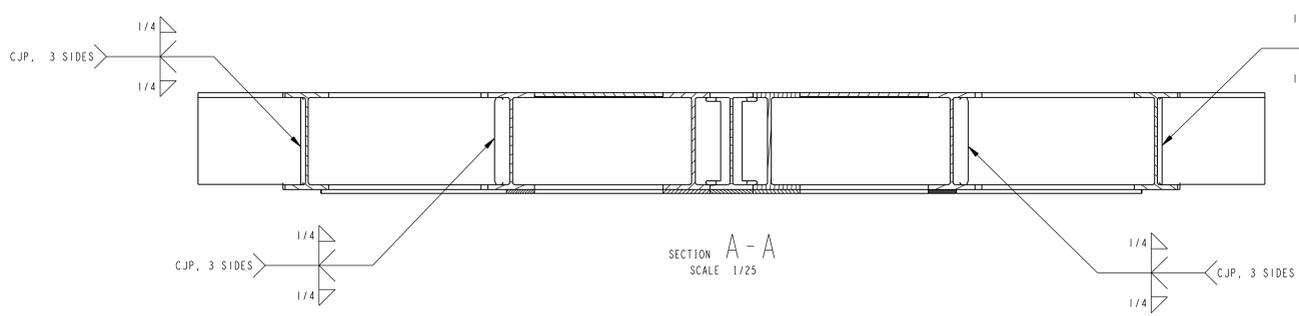
- PRELIMINARY -
THIS DRAWING HAS NOT COMPLETED THE
REVIEW PROCESS AND IS SUBJECT TO CHANGE.
05-01-14
DATE

LOX/FS UPPER LOAD SPIDER ASSEMBLY		SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION HUNTSVILLE, ALABAMA
90M14192		REVISION SEE SHEET
DATE	REV	BY
05-01-14	3	3

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05-01-14
DATE

- UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - 1/25 ALL MACHINED MATING SURFACES OF BOLTED PARTS AND 500 EDGES OF PLATES AND END CUTS OF AISC SHAPES.
 - DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5-1994
 - STENCIL PART NUMBER IN THE APPROXIMATE LOCATION SHOWN USING 2.0" TALL LETTERS AND YELLOW PAINT.
 - COPED JOINTS AND WELD ACCESS HOLES SHALL BE PER THE EDITION OF ANSII/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" THAT IS CURRENT AT THE RELEASE DATE OF THIS DRAWING. NOTE THAT REQUIRED WELD ACCESS HOLES HAVE NOT BEEN SHOWN AT THE DETAIL LEVEL IN THIS DRAWING.
 - STEEL WELDING DESIGN, PROCEDURES, AND NON-DESTRUCTIVE EVALUATION SHALL BE PER ANSII/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" AND CURRENT AS OF THE RELEASE DATE OF THIS DRAWING. UTILIZE WELDING PRACTICES AND TECHNIQUES TO MINIMIZE DISTORTION. UNLESS OTHERWISE SPECIFIED, WELDS SHALL BE 100% VISUALLY INSPECTED.
 - ALL STRUCTURAL STEEL SHAPES SHALL CONFORM TO THE DESIGNATIONS AND DIMENSIONS OF THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.

ASSEMBLY 1 5
SCALE 1/25

REV	NO.	DATE	DESCRIPTION	BY	CHKD	APP'D
4	1	-	4	E	90M14195-1	LOX/F5 UPPER LOAD SPIDER WELDMENT NO. 2 ASSEMBLY
3	1	-	1	E	90M14194-1	LOX/F5 UPPER LOAD SPIDER WELDMENT NO. 1 ASSEMBLY
2	1	1	4	F	90M14193-2	PLATE, 1.5" THICK
1	1	1	-	A	90M14193-1	LOX/F5 UPPER LOAD SPIDER CENTER CROSS WELDMENT ASSEMBLY

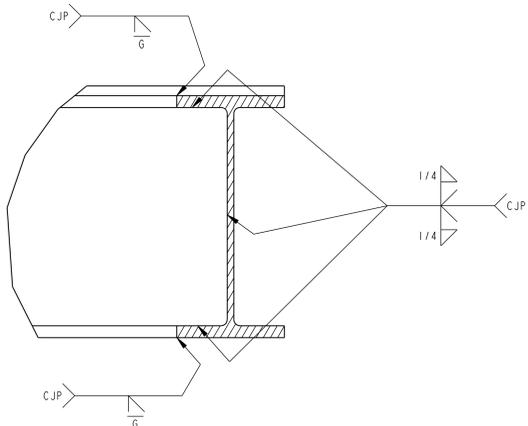
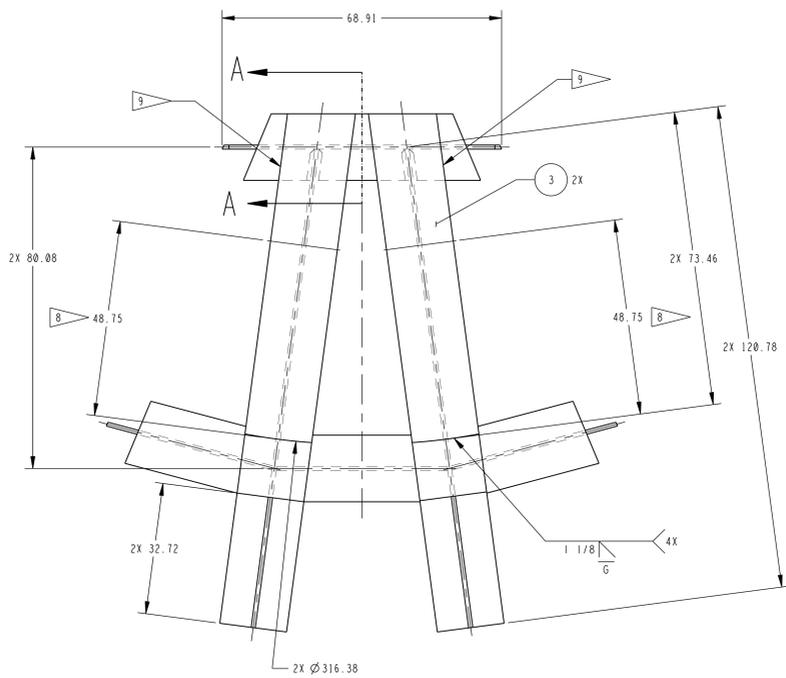
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3	1	-	1	E	90M14194-1	LOX/F5 UPPER LOAD SPIDER WELDMENT NO. 1 ASSEMBLY	
2	1	1	4	F	90M14193-2	PLATE, 1.5" THICK	MAT'L: ASTM A572, GR. 50
1	1	1	-	A	90M14193-1	LOX/F5 UPPER LOAD SPIDER CENTER CROSS WELDMENT ASSEMBLY	

ITEMS	DATE	PREPARED BY	DATE	UNLESS OTHERWISE SPECIFIED TOLERANCES ARE
MATERIALS	DATE	FOR CONSTRUCTION	DATE	FRACTIONS DECIMALS
MANUFACTURING	DATE	FOR CONSTRUCTION	DATE	1/16 ± 1/8 ± .06
SAFETY AND WELDING ASSURANCE	DATE	FOR CIVIL SERVICE	DATE	XXX ± .010
PERM TEST CONDUCTOR	DATE	FOR CIVIL SERVICE	DATE	< ± .50"
PERM TEST CONDUCTOR	DATE	FOR CIVIL SERVICE	DATE	(DIMENSIONS ARE IN INCHES, DO NOT SCALE DRAWING)
PERM TEST CONDUCTOR	DATE	FOR CIVIL SERVICE	DATE	LARRY MILLER 90M14192 12-03-13

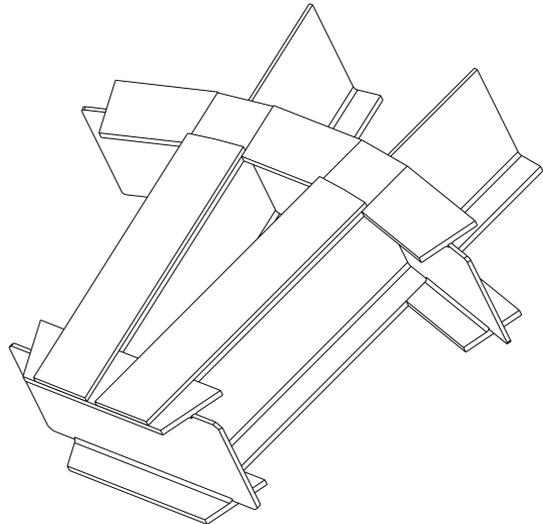
LOX/F5 UPPER LOAD SPIDER CENTER CROSS WELDMENT ASSEMBLY
90M14193
SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO
GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION WASHINGTON, DC 20546
DATE E 12-03-13

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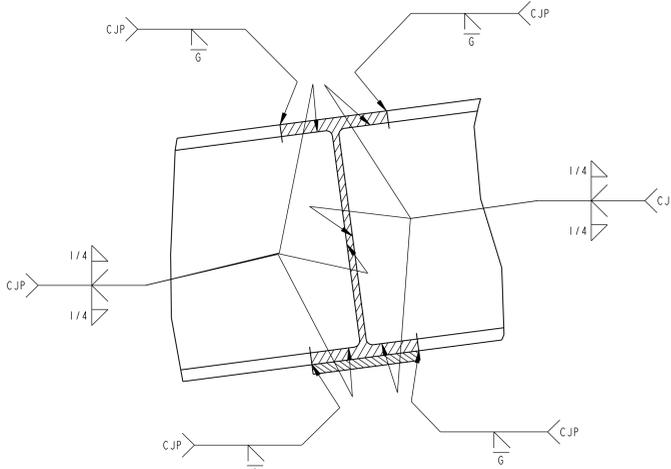
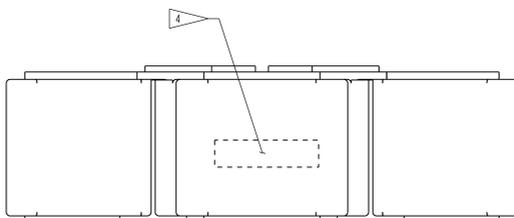
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



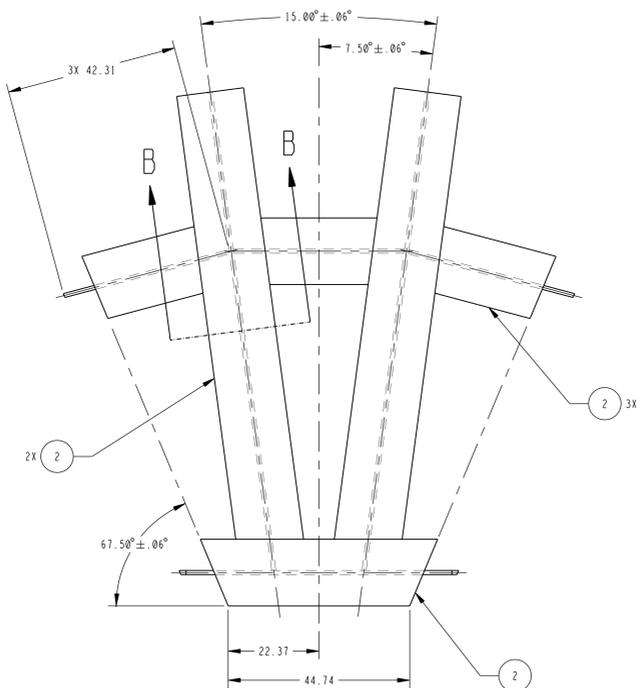
SECTION A-A
SCALE 1/10
ROTATED 90° CCW
2 PLCS



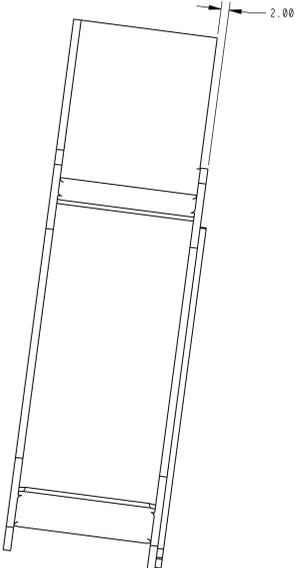
ISOMETRIC VIEW
FOR REFERENCE ONLY



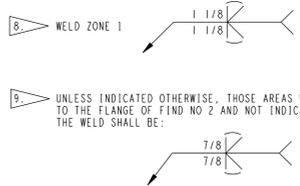
SECTION B-B
SCALE 1/10
2 PLCS



ASSEMBLY 1
SCALE 1/16



- UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - 125° ALL MACHINED MATING SURFACES OF BOLTED PARTS AND 500° EDGES OF PLATES AND END CUTS OF AISC SHAPES.
 - DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5-1994
 - STENCIL PART NUMBER IN THE APPROXIMATE LOCATION SHOWN USING 2.0" TALL LETTERS AND YELLOW PAINT.
 - COPED JOINTS AND WELD ACCESS HOLES SHALL BE PER THE EDITION OF ANSI/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" THAT IS CURRENT AT THE RELEASE DATE OF THIS DRAWING. NOTE THAT REQUIRED WELD ACCESS HOLES HAVE NOT BEEN SHOWN AT THE DETAIL LEVEL IN THIS DRAWING.
 - STEEL WELDING DESIGN, PROCEDURES, AND NON-DESTRUCTIVE EVALUATION SHALL BE PER ANSI/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" AND CURRENT AS OF THE RELEASE DATE OF THIS DRAWING. UTILIZE WELDING PRACTICES AND TECHNIQUES TO MINIMIZE DISTORTION. UNLESS OTHERWISE SPECIFIED, WELDS SHALL BE 100% VISUALLY INSPECTED.
 - ALL STRUCTURAL STEEL SHAPES SHALL CONFORM TO THE DESIGNATIONS AND DIMENSIONS OF THE AISC "STEEL CONSTRUCTION MANUAL", 14TH EDITION.



- PRELIMINARY -
THIS DRAWING HAS NOT COMPLETED THE REVIEW PROCESS AND IS SUBJECT TO CHANGE.
05-01-14
DATE

FIND NO.	CALLOUT SHT NO.	DETAIL SHT NO.	TOT REQ'D	PART NO.	DESCRIPTION	VEND NO.	REMARKS
3	1	-	A/R	P	90M14195-3	PLATE, 1.5" THICK	MAT'L: ASTM A572, GR. 50
2	1	-	A/R	P	90M14195-2	W36 X 330	MAT'L: ASTM A992
1	1	-	A	P	90M14195-1	LOX/FS UPPER LOAD SPIDER WELDMENT NO. 2 ASSEMBLY	

DATE	DESCRIPTION	DATE	DESCRIPTION

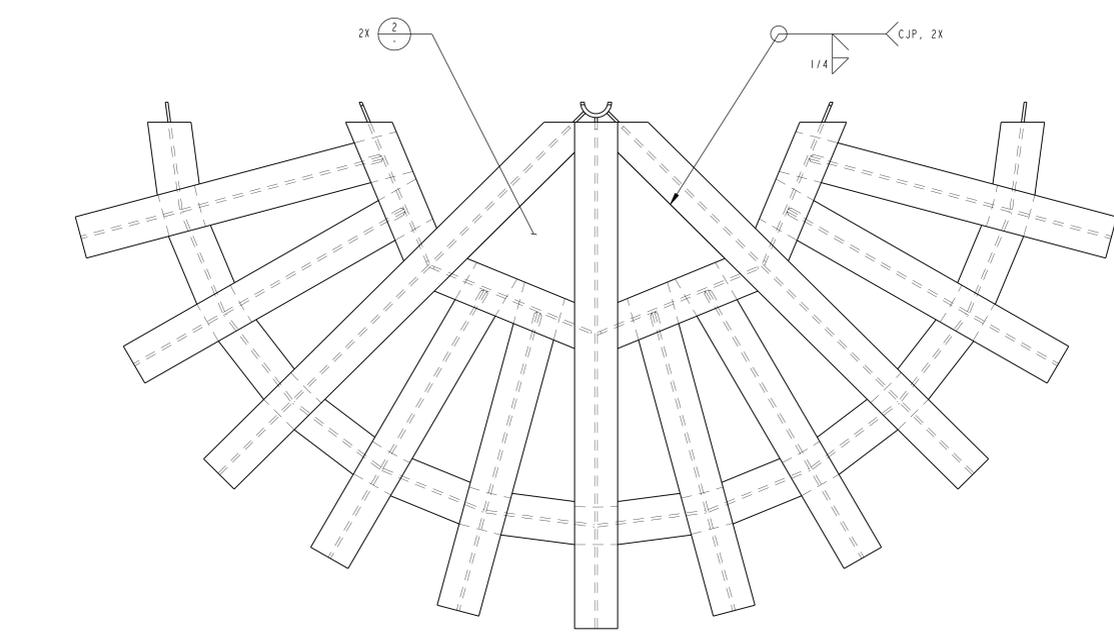
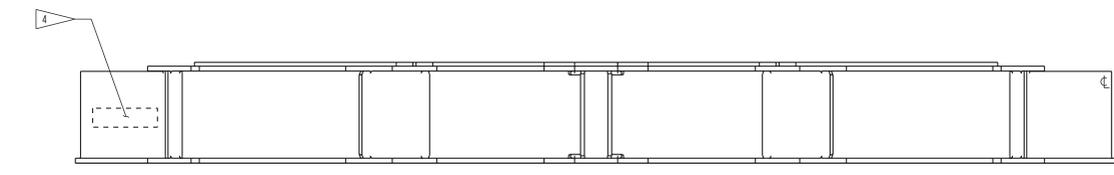
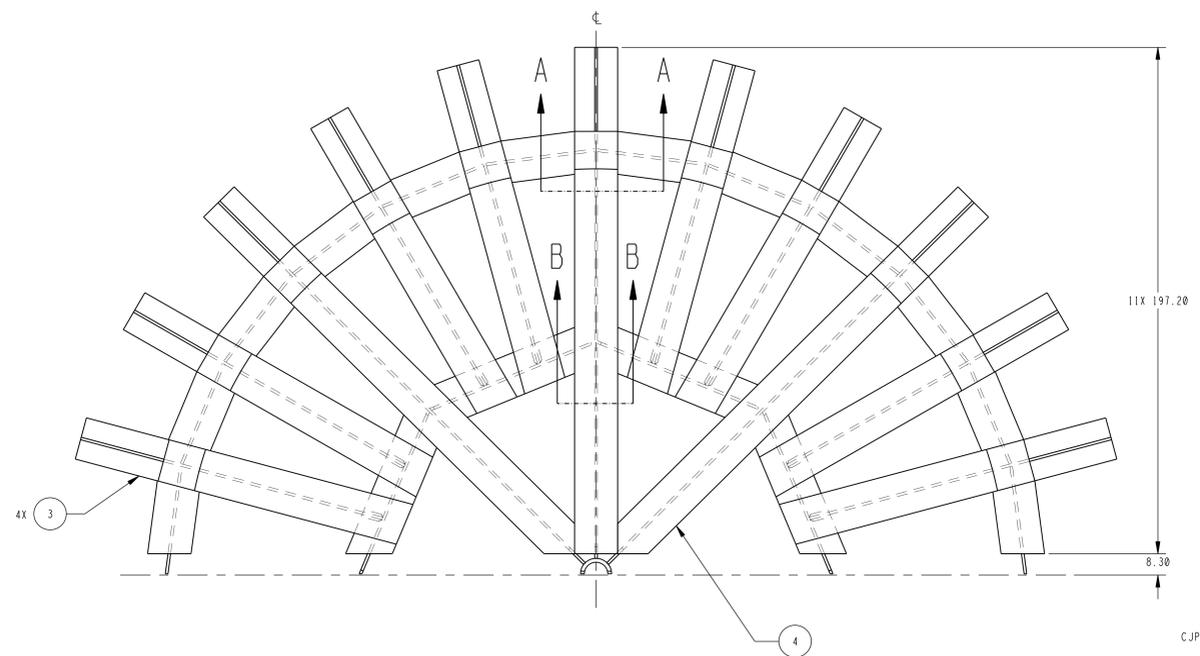
LOX/FS UPPER LOAD SPIDER WELDMENT #2 ASSEMBLY

90M14195

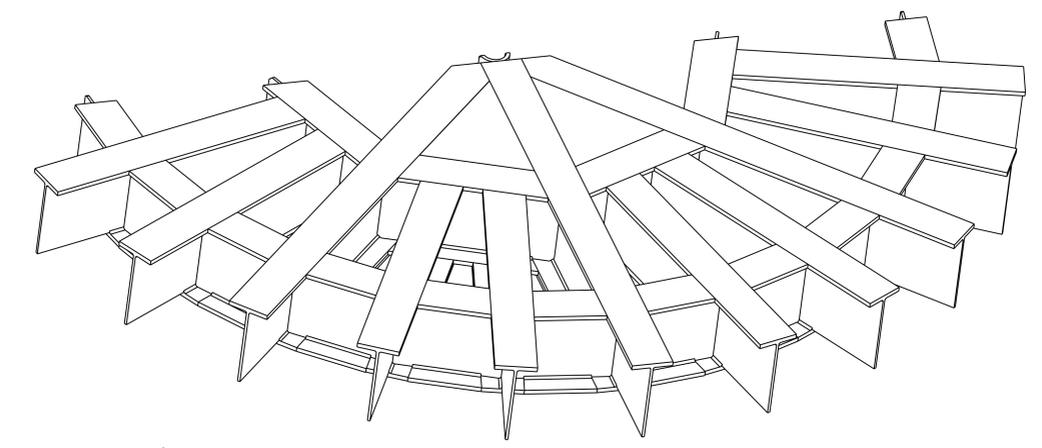
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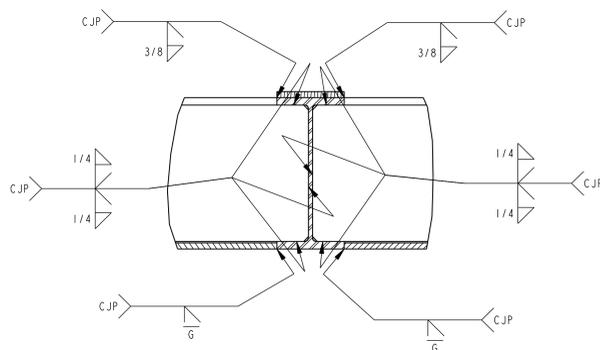
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



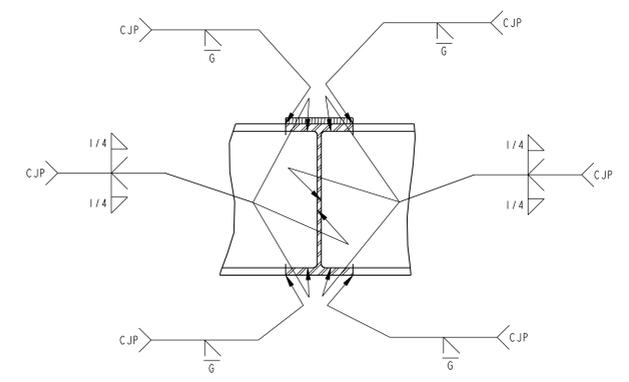
ASSEMBLY 1 5
SCALE 1/25



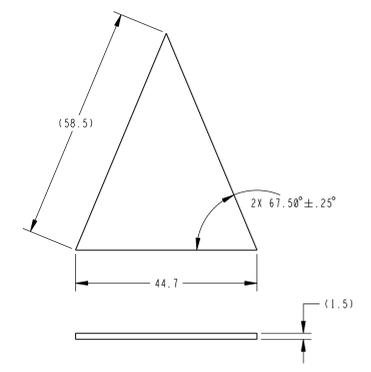
ISOMETRIC VIEW FOR REFERENCE ONLY



SECTION B-B
SCALE 1/16
3 PLCS



SECTION A-A
SCALE 1/16
3 PLCS



FIND NO. 2
SCALE 1/16

- PRELIMINARY -
THIS DRAWING HAS NOT COMPLETED THE REVIEW PROCESS AND IS SUBJECT TO CHANGE.
05-01-14
DATE

- UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - 125/ ALL MACHINED MATING SURFACES OF BOLTED PARTS AND 500/ EDGES OF PLATES AND END CUTS OF AISC SHAPES.
 - DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5-1994
 - STENCIL PART NUMBER IN THE APPROXIMATE LOCATION SHOWN USING 2" TALL LETTERS AND YELLOW PAINT.
 - COPED JOINTS AND WELD ACCESS HOLES SHALL BE PER THE EDITION OF ANSI/AWS D1.1/D1.1M "STRUCTURAL WELDING CODE-STEEL" THAT IS CURRENT AT THE RELEASE DATE OF THIS DRAWING. NOTE THAT REQUIRED WELD ACCESS HOLES HAVE NOT BEEN SHOWN AT THE DETAIL LEVEL IN THIS DRAWING.
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FIND NO.	CALLOUT	DETAIL SHT NO.	TOT REQ'D	PART NO.	DESCRIPTION	VEND NO.	REMARKS
4	1	-	1	E 90M14197-1	LOX/F5 UPPER LOAD SPIDER WELDMENT NO. 3 ASSEMBLY		
3	1	-	4	E 90M14195-1	LOX/F5 UPPER LOAD SPIDER WELDMENT NO. 2 ASSEMBLY		
2	1	1	2	F 90M14196-2	PLATE, 1.5" THICK		MAT'L: ASTM A572, GR. 50
1	1	1	-	A 90M14196-1	LOX/F5 UPPER LOAD SPIDER CENTER ADD WELDMENT ASSEMBLY		

ITEMS	DATE	PREPARED BY	CHECKED BY	DATE	OTHERWISE SPECIFIED TOLERANCES ARE
MATERIALS		FOR CONSTRUCTION DESIGN			FRACTIONS DECIMALS
STRUCTURAL SAFETY		FOR CIVIL SERVICE LEAD			1/16 ± 1/32 ± .06
SAFETY AND WELDING ASSURANCE		FOR CIVIL SERVICE LEAD			1/16 ± 1/32 ± .03
NON-TEST CONDITION		FOR CIVIL SERVICE LEAD			1/16 ± 1/32 ± .010
PRELIMINARY VERIFICATION NUMBER		FOR CIVIL SERVICE LEAD			1/16 ± 1/32 ± .50"

LOX/F5 UPPER LOAD SPIDER CENTER ADD WELDMENT ASSEMBLY

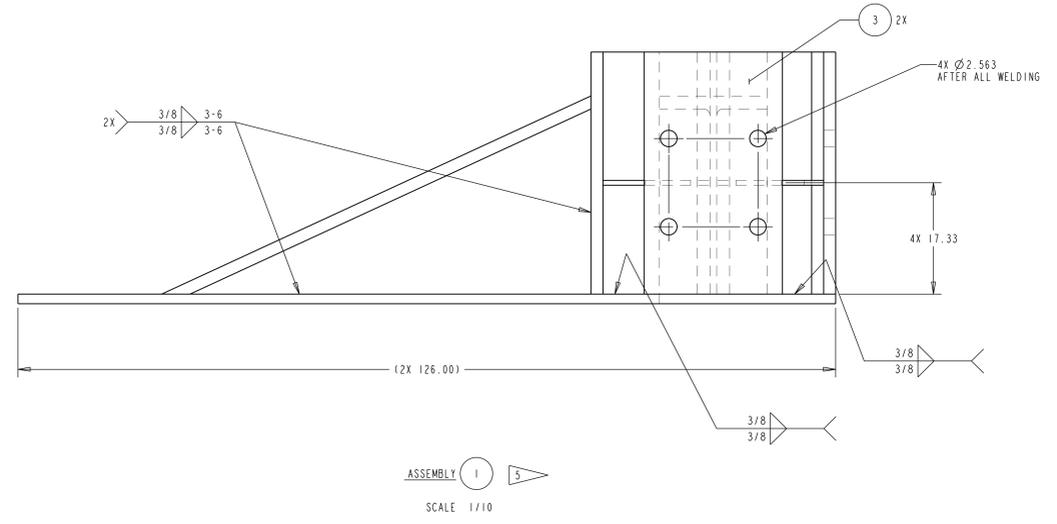
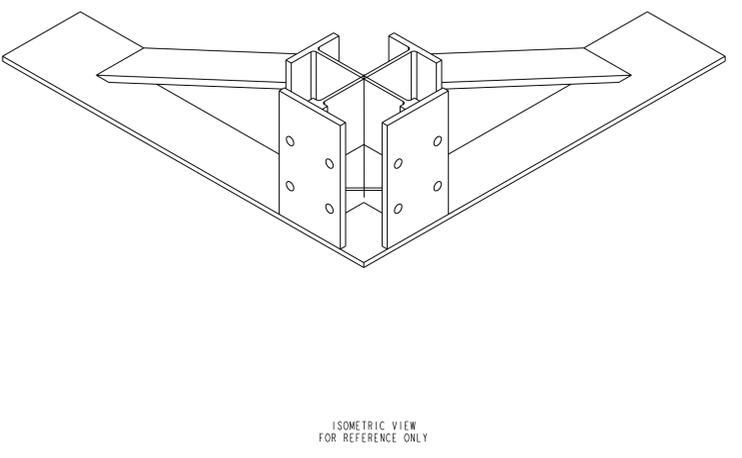
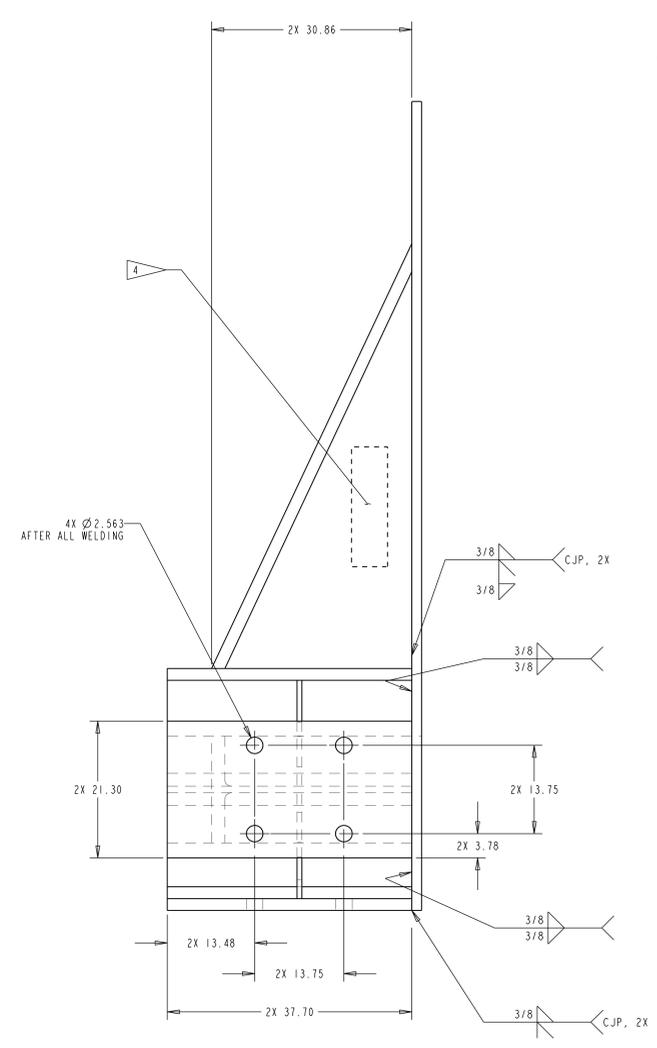
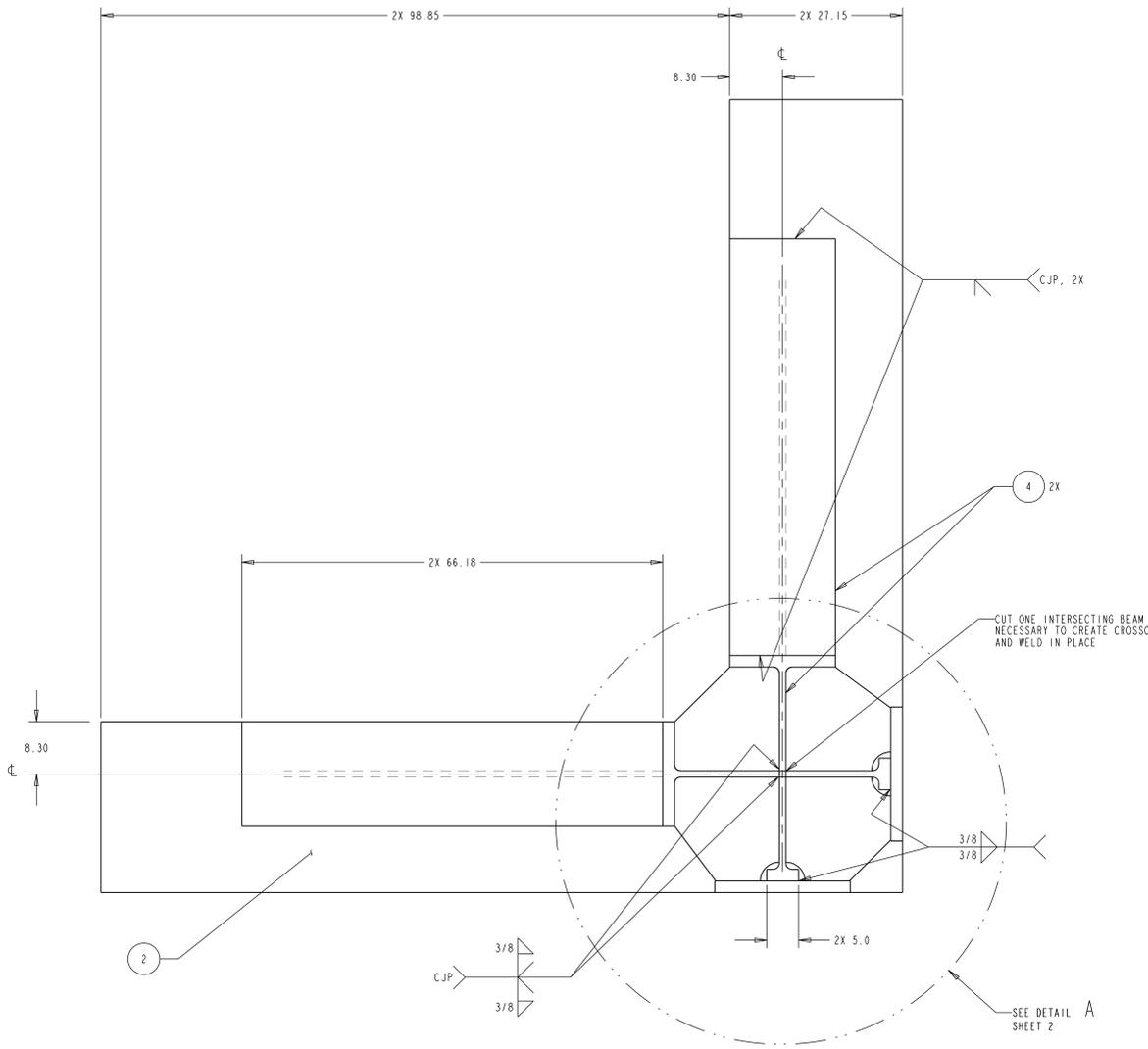
SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HUNTSVILLE, ALABAMA

90M14196

DATE: 12-03-13

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



- UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - $\frac{1}{2}$ ALL MACHINED MATING SURFACES OF BOLTED PARTS AND $\frac{500}{\text{EDGES}}$ OF PLATES AND END CUTS OF AISC SHAPES.
 - DIMENSIONING AND TOLERANCING IN ACCORDANCE WITH ASME Y14.5-1994
 - STENCIL PART NUMBER IN THE APPROXIMATE LOCATION SHOWN USING 2.0" TALL LETTERS AND YELLOW PAINT.
 - COPE TO FIT AS REQUIRED.
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- PRELIMINARY -
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 REVIEW PROCESS AND IS SUBJECT TO CHANGE.
 04-21-14
 DATE

ASSEMBLY 1 5
 SCALE 1/10

FIND NO.	CALLOUT SHT NO.	DETAIL SHT NO.	TOT REQ'D	PART NO.	DESCRIPTION	VEND NO.	REMARKS
7	2	2	1	F 90M14198-7	PLATE, GUSSET, .75" THICK		MAT'L: ASTM A572, GR. 50
6	2	2	1	F 90M14198-6	PLATE, GUSSET, .75" THICK		MAT'L: ASTM A572, GR. 50
5	2	2	2	F 90M14198-5	PLATE, GUSSET, .75" THICK		MAT'L: ASTM A572, GR. 50
4	1	-	A/R	F 90M14198-4	W36 X 330		MAT'L: ASTM A992
3	1	-	A/R	F 90M14198-3	PLATE, SHEAR SUPPORT, 2.0" THICK, 1.850 MIN AFTER MACHINING		MAT'L: ASTM A572, GR. 50
2	1	-	A/R	F 90M14198-2	PLATE, SHEAR SUPPORT BASE, 1.5" THICK		MAT'L: ASTM A572, GR. 50
1	1	1	-	A 90M14198-1	LOX/FS UPPER LOAD SPIDER DOUBLE WELDMENT ASSEMBLY		

ITEMS	DATE	PREPARED BY	CHECKED BY	DATE	DESCRIPTION
MATERIALS		TEST ENGINEER/INSPECTOR			
MANUFACTURING		FOR CONSTRUCTION REVIEW/LEAD			
SAFETY AND WELDING ASSURANCE		FOR CIVIL SERVICE LEAD			
PERM TEST CONDUCTOR		OWNER			
PERM TEST CERTIFICATION NUMBER		FOR CIVIL SERVICE REVIEW/LEAD			

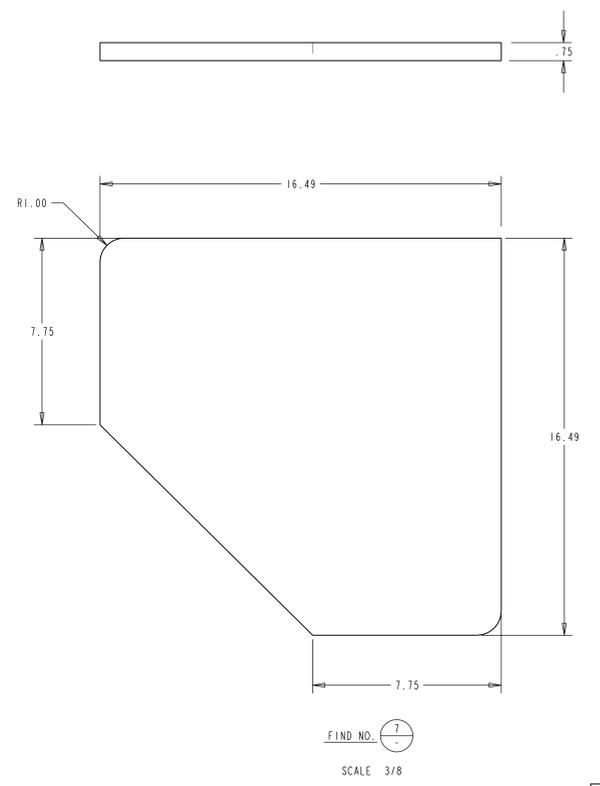
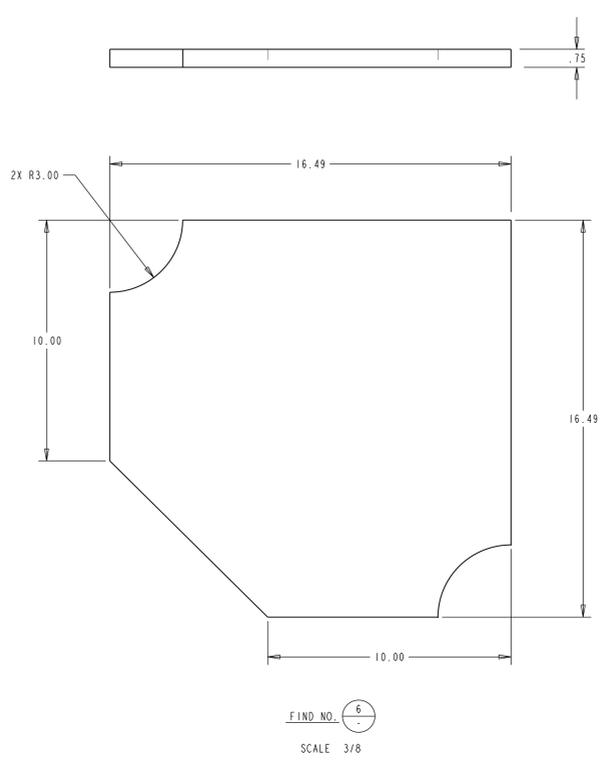
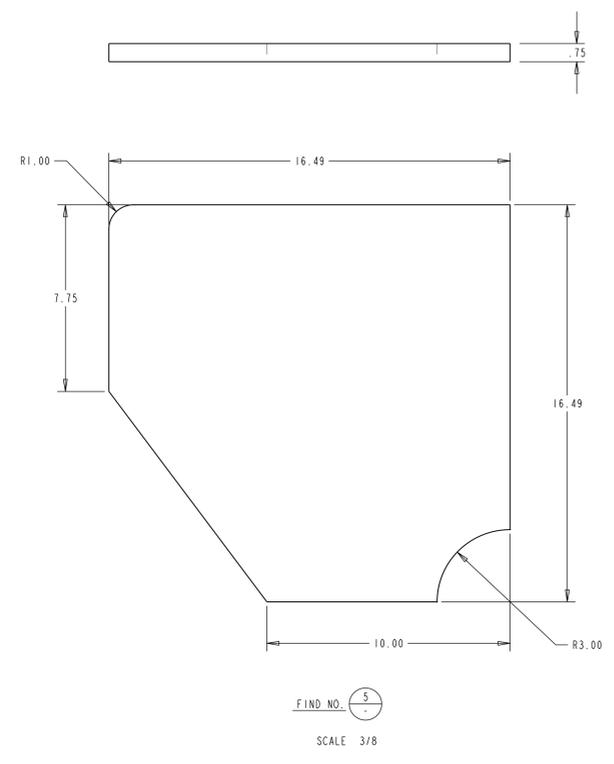
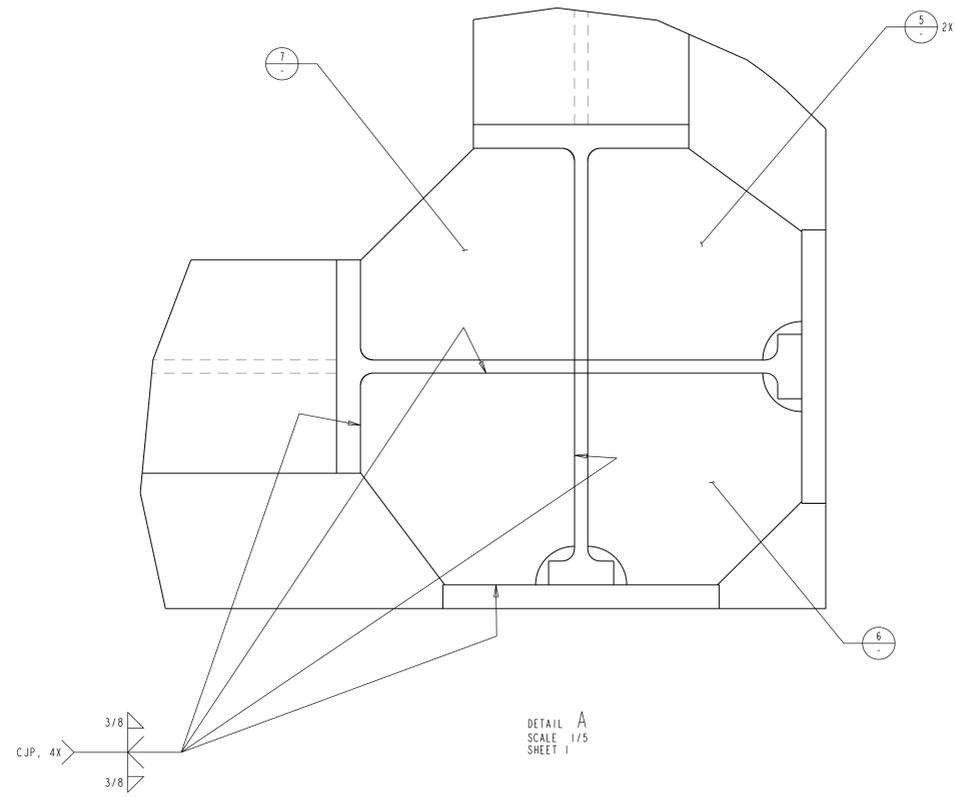
UNLESS OTHERWISE SPECIFIED
 TOLERANCES ARE:
 FRACTIONS DECIMALS
 ± 1/16 ± .005
 ± 1/32 ± .002
 ± 1/64 ± .001
 ± .0005 ± .0005
 ± .0005 ± .0005
 ± .0005 ± .0005
 DIMENSIONS ARE IN INCHES, DO NOT SCALE DRAWING

LOX/FS UPPER
 LOAD SPIDER
 DOUBLE WELDMENT
 ASSEMBLY

SPECIAL TEST EQUIPMENT
 DESIGN BRANCH - ETSO
 GEORGE C. MARSHALL
 SPACE FLIGHT CENTER
 NATIONAL AERONAUTICS
 AND SPACE ADMINISTRATION
 HUNTSVILLE, ALABAMA
 90M14198
 SHEET 1 OF 2

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REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



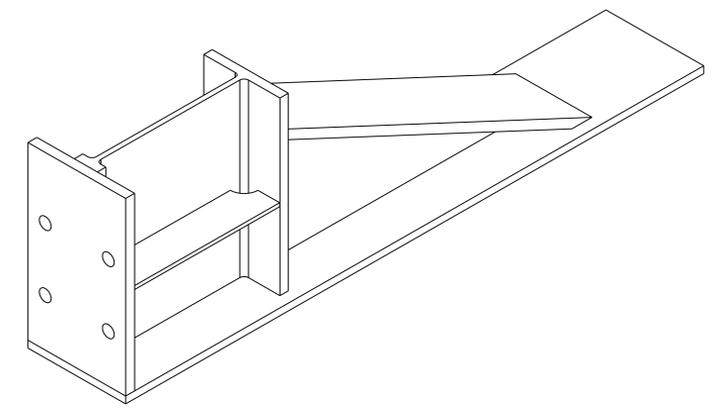
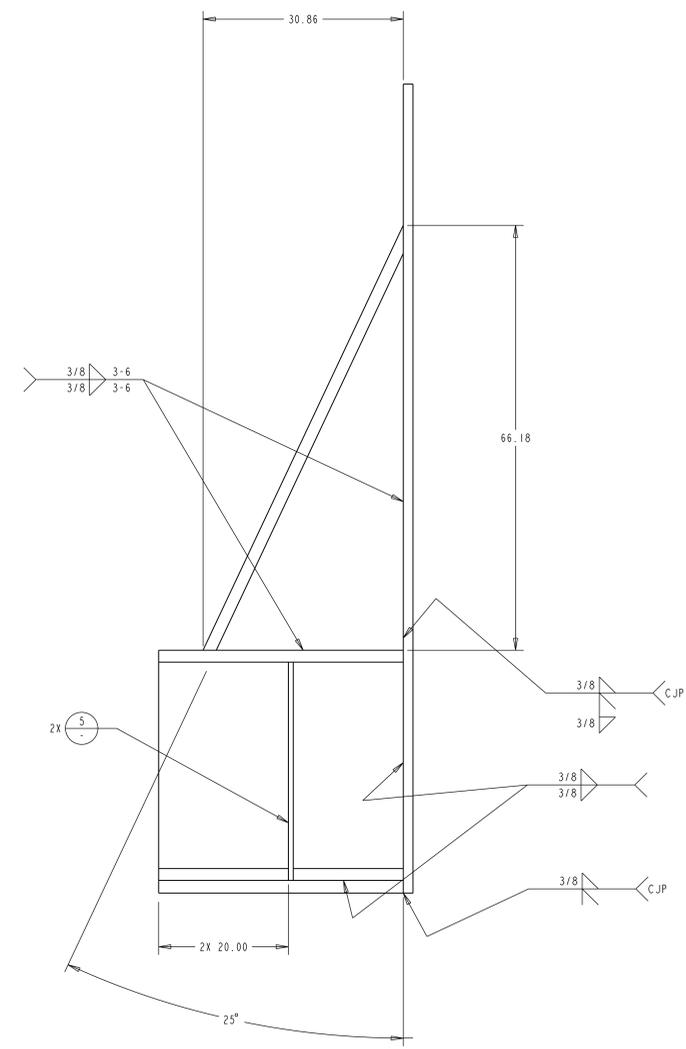
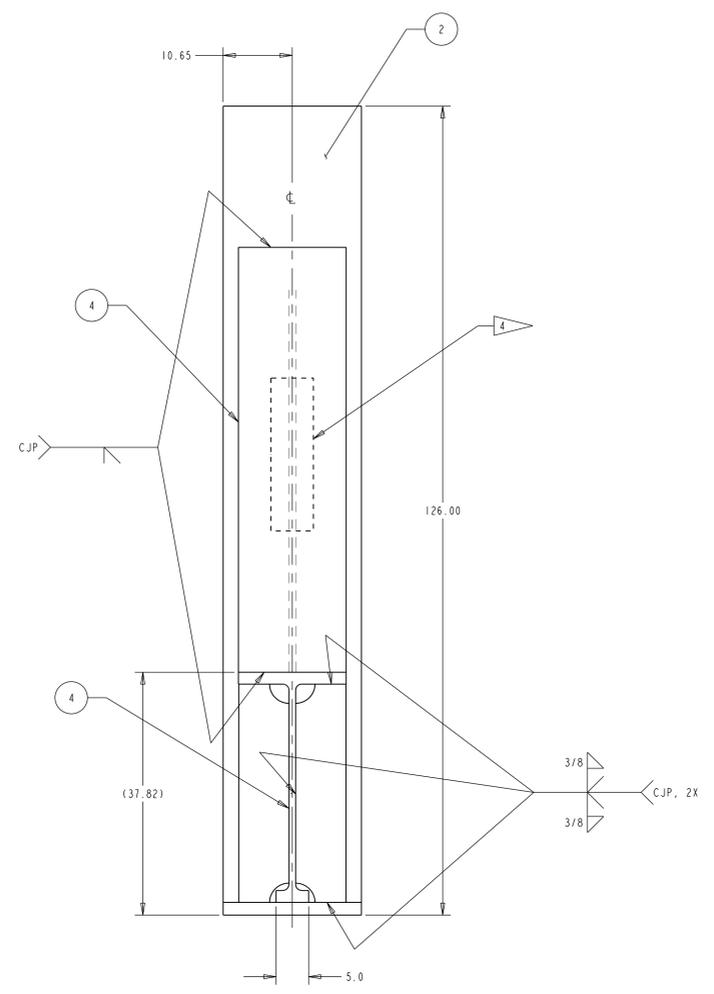
- PRELIMINARY -
THIS DRAWING HAS NOT COMPLETED THE
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04-01-14
DATE

LOX/FS UPPER LOAD SPIDER DOUBLE WELDMENT ASSEMBLY		SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO GEORGE C. MARSHALL SPACE FLIGHT CENTER NATIONAL AERONAUTICS AND SPACE ADMINISTRATION Huntsville, Alabama	
90M14198		REVISION	SEE SHEET
REV	E	2	2

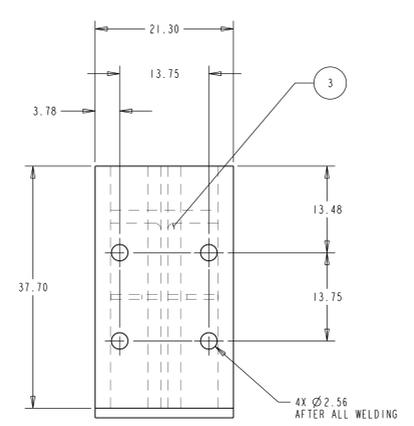
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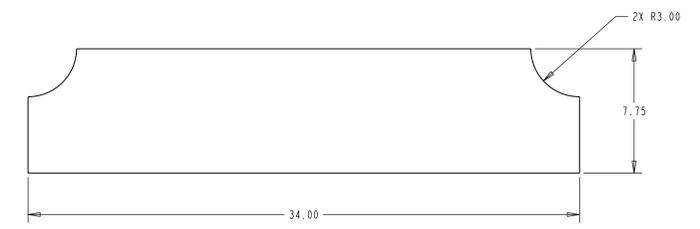
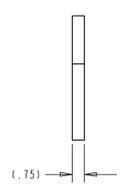
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL



ISOMETRIC VIEW FOR REFERENCE ONLY



ASSEMBLY 1
SCALE 1/10



FIND NO. 5
SCALE 1/4

- UNLESS OTHERWISE SPECIFIED:
- REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.
 - $12\sqrt{}$ ALL MACHINED MATING SURFACES OF BOLTED PARTS AND $500\sqrt{}$ EDGES OF PLATES AND END CUTS OF AISC SHAPES.
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04-21-14
DATE

REV	DATE	BY	DESCRIPTION	MATERIAL	
5	I	I	F	90M14199-5 PLATE, GUSSET, .75" THICK	MAT'L: ASTM A572, GR. 50
4	I	-	A/R	90M14199-4 W36 X 330, 10 FT	MAT'L: ASTM A992
3	I	-	A/R	90M14199-3 PLATE, SHEAR SUPPORT, 2.0" THICK, 1.850 MIN AFTER MACHINING	MAT'L: ASTM A572, GR. 50
2	I	-	A/R	90M14199-2 PLATE, SHEAR SUPPORT BASE, 1.5" THICK	MAT'L: ASTM A572, GR. 50
1	I	I	A	90M14199-1 LOX/FS UPPER LOAD SPIDER SINGLE WELDMENT ASSEMBLY	

ITEM	DATE	BY	DESCRIPTION	REVISION
MATERIALS	DATE	BY	DESCRIPTION	
MANUFACTURING	DATE	BY	DESCRIPTION	
SAFETY AND WELDING ASSURANCE	DATE	BY	DESCRIPTION	
PERMITS AND INSPECTION	DATE	BY	DESCRIPTION	
FINAL CHECK	DATE	BY	DESCRIPTION	

LOX/FS UPPER LOAD SPIDER SINGLE WELDMENT ASSEMBLY

SPECIAL TEST EQUIPMENT DESIGN BRANCH - ETSO
GEORGE C. MARSHALL SPACE FLIGHT CENTER
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
HOUSTON, TEXAS
90M14199
REV 5