

METRIC
BY: dlee
PLOTED: 11 NOV 1999 11:42:4

MINIMUM PREHEAT AND INTERPASS TEMPERATURE

SHIELDED METAL-ARC WELDING WITH LOW HYDROGEN ELECTRODES, OR SUBMERGED ARC WELDING, OR FLUX CORED ARC WELDING

THICKNESS OF THICKEST PART AT POINT OF WELDING - (mm)	ASTM A-36, A-572, AND A-588 M103, M223, AND M222 ASTM A709, GRADE 36 ASTM A709, GRADE 50 ASTM A709, GRADE 50W
TO 19.1, INCL.	18°C
OVER 19.1 TO 38.1, INCL.	20°C
OVER 38.1 TO 63.5, INCL.	65°C
OVER 63.5	110°C

V.A.O.T. RECEIVED
NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W71X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A709 GRADES: 250, 345, 360, 420, 500
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING _____ 1G
FILLER METAL SPECIFICATION _____ AWS A5.23
WELD METAL CLASSIFICATION _____ F704-EM12K-N11
WIRE/FLUX _____ LINCOLN L61/AXXX10
WIRE DIAMETER _____ 2.0 mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC+
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4 mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	AMPS	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	405-495	3.2-4.5	32.7-38.0	432-635	B-L2c-S
2+	450-550	3.9-5.5	32.7-38.0	343-533	

PARAMETERS FOR PASS 1 MAY BE USED FOR CAP PASSES.

PROCEDURE QUALIFICATION RECORD MA-FCM-97-1 (EXPIRES 10/27/02)
PROCEDURE QUALIFICATION RECORD MA-FCM-97-3 (EXPIRES 11/11/02)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W44X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING _____ 2F
FILLER METAL SPECIFICATION _____ AWS A5.17
WELD METAL CLASSIFICATION _____ F7A2-EM12K
WIRE/FLUX _____ LINCOLN L61/761
WIRE DIAMETER _____ 2.381mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC-
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	WELDING CURRENT (AMPS)	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	360-440	2,896 - 3,788	29.0-36.0	279.4 - 685.4	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD FCM-96-2 (EXPIRES 1/10/01)
PROCEDURE QUALIFICATION RECORD FCM-96-5 (EXPIRES 4/15/01)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W2

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ SHIELDED METAL ARC WELDING
MANUAL OR MACHINE _____ MANUAL
POSITION OF WELDING _____ ALL (EXCEPT AS NOTED BELOW)
FILLER METAL SPECIFICATION _____ AWS A5.1 AND A5.5
WELD METAL CLASSIFICATION _____ E7018/E7028 (TACKING ONLY) E8018-C3
WIRE/FLUX _____ D.N.A.
POLARITY _____ DC+ OR AC
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ D.N.A.
SHIELDING GAS _____ D.N.A.

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PASS NO.	WIRE SIZE (mm)	CURRENT RANGE (DC+ AC)	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	3.2	90-150	110-170	TACK WELDS
1	4.0	120-190	135-225	

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE (DC+ AC)	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	4.0	170-240	180-270	GROOVE ROOT PASSES AND TACK WELDS

PASS NO.	WIRE SIZE (mm)	CURRENT RANGE (E8018-C3)	TRAVEL SPEED (mm/min)	JOINT DETAIL
1	4.0	130-190	140-225	GROOVE ROOT PASSES, REPAIR WELDS AND TACKS
ALL	4.0	130-190	140-225	
ALL	4.8	180-270	210-290	
ALL	4.8	250-330	270-378	

* WELD SIZE DETERMINED BY TRAVEL SPEED

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W14X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING _____ 2F
FILLER METAL SPECIFICATION _____ AWS A5.17
WELD METAL CLASSIFICATION _____ F7A2-EM12K
WIRE/FLUX _____ LINCOLN L61/960
WIRE DIAMETER _____ 2.4mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC-
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	AMPS	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	405-550	3.3-5.0	29.0-39.5	384-635	8mm FILLET WELD

PRIMARY USE:
WEB TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD 95-3 (EXPIRES 2/6/00)
PROCEDURE QUALIFICATION RECORD 95-4 (EXPIRES 2/17/00)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W54X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A709 GRADES: 250, 345, 360, 420, 500
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC
POSITION OF WELDING _____ 2F
FILLER METAL SPECIFICATION _____ AWS A5.17
WELD METAL CLASSIFICATION _____ F7A2-EM12K
WIRE/FLUX _____ LINCOLN L61/960
WIRE DIAMETER _____ 2.8 mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC+
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4 mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	AMPS	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	400-550	3.1-5.5	32.5-39.5	368-495	8 mm FILLET WELDS

PRIMARY USE:
CROSS FRAMES AND DIAPHRAGMS
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD 95-1 (EXPIRES 2/3/00)
PROCEDURE QUALIFICATION RECORD 95-2 (EXPIRES 3/3/00)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W6

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ FLUX CORED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC
POSITION OF WELDING _____ ALL POSITION TACK WELDS
FILLER METAL SPECIFICATION _____ AWS A5.20
WELD METAL CLASSIFICATION _____ E71T-1
WIRE/FLUX _____ ESAB DUAL SHIELD II
WIRE DIAMETER _____ 1.1mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC+
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 15.1mm
SHIELDING GAS _____ 100% CO2

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	WELDING CURRENT (AMPS)	WIRE FEED SPEED (mm/m)	VOLTS	GAS FLOW (l/m)	TRAVEL SPEED (mm/m)	JOINT DETAIL
1	245-290	10.0-12.7	26.7-30.0	608-635	18.9-23.6	TACK WELDS

FCAW MAY BE USED ONLY WHEN PRIOR AUTHORIZATION HAS BEEN GRANTED

PROCEDURE QUALIFICATION RECORD DS-2 (EXPIRES 9/17/03)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W34X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING _____ 2F
FILLER METAL SPECIFICATION _____ AWS A5.17
WELD METAL CLASSIFICATION _____ F7A2-EM12K
WIRE/FLUX _____ LINCOLN L61/960
WIRE DIAMETER _____ 2.4mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC-
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	AMPS	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	360-440	2.9-3.7	29.0-36.0	279-686	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO WEB
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD 95-3 (EXPIRES 2/6/00)
PROCEDURE QUALIFICATION RECORD 95-4 (EXPIRES 2/17/00)

WELDING PROCEDURE FOR AWS PREQUALIFIED JOINTS
W44X

PROCEDURE SPECIFICATIONS

MATERIAL SPECIFICATION _____ ASTM A-36, A-572, A-588
WELDING PROCESS _____ SUBMERGED ARC WELDING
MANUAL OR MACHINE _____ SEMIAUTOMATIC OR MACHINE
POSITION OF WELDING _____ 2F
FILLER METAL SPECIFICATION _____ AWS A5.17
WELD METAL CLASSIFICATION _____ F7A2-EM12K
WIRE/FLUX _____ LINCOLN L61/761
WIRE DIAMETER _____ 2.381mm
SINGLE OR MULTIPLE ARC _____ SINGLE ARC
POLARITY _____ DC-
ROOT TREATMENT _____ MANUAL CLEANING
PREHEAT AND INTERPASS TEMPERATURE _____ SEE PREHEAT CHART
ELECTRICAL STICK-OUT _____ 25.4mm
SHIELDING GAS _____ D.N.A.

NOV 23 1999
RESUBMIT BY DATE APPROVED ✓

PASS NO.	AMPS	WIRE FEED SPEED (mm/MIN.)	VOLTS	TRAVEL SPEED (mm/MIN.)	JOINT DETAIL
1	360-440	2,896 - 3,788	29.0-36.0	279.4 - 685.4	8mm FILLET WELD

PRIMARY USE:
STIFFENER TO FLANGE
(AND OTHER APPLICATIONS AS NEEDED)

PROCEDURE QUALIFICATION RECORD FCM-96-2 (EXPIRES 1/10/01)
PROCEDURE QUALIFICATION RECORD FCM-96-5 (EXPIRES 4/15/01)

METRIC 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
2. ALL WEIGHTS ARE IN KILOGRAMS.

FED. ROAD DIV. NO.	STATE	FED. AID PROJ. NO.
	VT	

RECEIVED
NOV 16 1999
AP
X ASMTD
12/14/99

DIRECT ALL QUESTIONS TO:
SCOTT W. KOPP, WELDING TECHNICIAN
HIGH STEEL STRUCTURES, INC.
PHONE: (717)390-4232

NO.	REVISION	BY	DATE

1770 Hempstead Road
Lancaster, PA 17605-0008
Phone 717/295-5211
HIGH STEEL STRUCTURES, INC. A Division of High Inroads, Inc.

WELDING PROCEDURES
VT. 116 OVER NEW HAVEN RIVER
VT. 116 STA. 1+255.00 TO STA. 1+299.00
TOWN OF BRISTOL, BRIDGE NO. 10
STATE OF VERMONT
AGENCY OF TRANSPORTATION

STATE CONTRACT OR REF. NO. PROJECT NO. ER 021-1(13) 078

CONTRACTOR BECK & BELLUCCI, INC.
IN CHARGE: ALLEN (IH) MADE BY: DWL CHK'D BY: DATE:

CONTRACT NUMBER: VT-99109-1 DRAWING NUMBER: WP1