

GENERAL NOTES ON WELDING

1- WELDING SHALL BE IN CONFORMITY WITH THE STANDARD CODE FOR ARC WELDING IN BUILDING CONSTRUCTION OF THE AMERICAN WELDING SOCIETY.

2- SURFACES TO BE WELDED SHALL BE FREE FROM LOOSE SCALE, SLAG, RUST, GREASE, PAINT AND ANY OTHER FOREIGN MATTER EXCEPT THAT A LIGHT COAT OF RUST PREVENTING PRESERVATIVE MAY BE DISREGARDED. JOINT SURFACES SHALL BE SMOOTH, UNIFORM AND FREE FROM FINS, TEARS AND OTHER DEFECTS. THESE SURFACES SHALL BE DRY DURING THE WELDING OPERATIONS.

3- ABUTTING PARTS TO BE JOINED BY BUTT WELDS SHALL BE CAREFULLY ALIGNED WHERE THE PARTS ARE RESTRAINED AGAINST BENDING DUE TO ECCENTRICITY IN ALIGNMENT. A MAXIMUM OFFSET AT 8" SHALL BE MAINTAINED AS A DEPARTURE FROM THE THEORETICAL ALIGNMENT. IN CORRECTING MISALIGNMENT IN SUCH CASES, THE PARTS SHALL NOT BE DRAWN IN TO A GREATER SLOPE THAN TWO DEGREES (1/16 INCH IN 1 INCHES).

4- TACK WELDS LOCATED WHERE THE FINAL WELDS WILL LATER BE MADE SHALL BE OF THE SAME QUALITY AS THE FINAL. WHERE TACK WELDS ARE ENCOUNTERED IN THE FINAL WELDING THEY SHALL BE CLEANED AND FUSED WITH THE FINAL WELD. DEFECTIVE, CRACKED OR BROKEN TACK WELDS SHALL BE REMOVED BEFORE FINAL WELDING.

5- WELDING SHALL BE DONE IN SUCH A MANNER THAT THE MAGNITUDE AND EXTENT OF RESIDUAL OR LOCKED-UP STRESSES IN WELDS AND STRUCTURAL MEMBERS WILL BE REDUCED TO A MINIMUM. CONTINUOUS LINES OF WELDING SHALL BE MADE BY BACK-STEP, CASCADE OR WANDERING SEQUENCE IN ORDER TO REDUCE LOCAL HEATING & RESULTANT WARPING. WELDING SHALL PROGRESS SYMMETRICALLY SO THAT THE SHRINKAGE ON BOTH SIDES OF THE STRUCTURE WILL BE EQUALIZED. ON MULTIPLE PASS BUTT WELDS, SUCCEEDING PASSES ARE TO BE RUN IN OPPOSITE DIRECTIONS.

6- NO WELDING SHALL BE DONE WHEN THE TEMPERATURE OF THE BASE METAL IS LOWER THAN 0°F. AT TEMPERATURES BETWEEN 32° & 0°F, THE SURFACE AT ALL AREAS, WITHIN 3 INCHES OF THE POINT WHERE A WELD IS TO BE STARTED, SHALL BE HEATED TO A TEMPERATURE AT LEAST WARM TO THE HAND BEFORE WELDING IS STARTED. WHEN WELDS ARE BEING MADE IN PARTS WHERE THICKNESSES OF MORE THAN 1 1/2 INCHES ARE INVOLVED, THE BASE METAL ADJACENT TO THE WELDING SHALL BE HEATED TO A TEMPERATURE OF NOT LESS THAN 70°F. ONCE THE WELDING OF A JOINT HAS BEEN STARTED ALL THE WELDING AT THE JOINT IN A PARTICULAR POSITION SHOULD BE A CONTINUOUS OPERATION, DO NOT ALLOW THE JOINT TO COOL SEVERAL TIMES DURING THE WELDING OPERATION. IF THE JOINT IS ALLOWED TO COOL, THEN THE METAL IS TO BE HEATED TO A MINIMUM OF 70° BEFORE PROCEEDING WITH WELDING.

7- NO WELDING SHALL BE DONE WHEN SURFACES ARE WET NOR DURING PERIODS OF HIGH WIND, UNLESS THE WELDING OPERATIONS AND THE WORK ARE PROPERLY PROTECTED.

8. THE WELDING CURRENT SHALL CONFORM, WITH RESPECT TO VOLTAGE & AMPERAGE, TO THE RECOMMENDATIONS OF THE MANUFACTURER OF THE ELECTRODE BEING USED.

THE GENERAL ELECTRODE USAGE SHALL BE THIS:

	POSITION	CLASSIFICATION	DIA	AMPERAGE
ROOT PASSES	DOWNHAND	E 6010	3/16	160-200
	VERTICAL	E 6010	5/32	130-150
	DOWNHAND	E 6012	3/16	160-220
OTHER PASSES	Do.	E 6012	5/32	200-300
	Do.	E 6012	1/4	280-400
	VERTICAL	E 6010	3/16	150-190

9- THE MAXIMUM PERMITTED SIZE OF ELECTRODE SHALL BE 3/16 INCH, EXCEPT THAT FOR HORIZONTAL FILLET WELDS IT MAY BE 1/4 INCH, AND IN FLAT POSITION WELDING FOR THE PASSES FOLLOWING A ROOT PASS IT MAY BE 5/16 INCH. THE MAXIMUM THICKNESS OF WELD METAL THAT MAY BE BUILT UP BEHIND THE ADVANCING ARC SHALL BE 3/8 INCH EXCEPT THAT A ROOT PASS OF A BUTT WELD MAY BE 1/2 INCH, AND EXCEPT THAT A SINGLE PASS FILLET WELD OR THE ROOT PASS AT A MULTIPLE PASS FILLET WELD MAY BE MADE AS FOLLOWS: THE MAXIMUM SIZE OF FILLET WELD THAT MAY BE MADE IN ONE PASS SHALL BE 3/16 INCH, EXCEPT THAT, FOR VERTICAL WELDS MADE UPWARD THE MAXIMUM SIZE MADE IN ONE PASS SHALL BE 1/2 INCH.

10- BEFORE WELDING OVER PREVIOUSLY DEPOSITED WELD METAL, ALL TRACES OF SLAG SHALL BE REMOVED FROM THE DEPOSIT BY CHIPPING IF NECESSARY. THIS REQUIREMENT SHALL APPLY NOT ONLY TO SUCCESSION LAYERS, BUT ALSO TO SUCCESSION BEADS AND TO THE OVERLAPPING AREA WHERE A JUNCTION IS MADE ON STARTING A NEW ELECTRODE.

11- ALL COMPLETE PENETRATION BUTT WELDS, EXCEPT WHEN PRODUCED WITH THE AID OF BACKING MATERIAL OR WELDED FROM BOTH SIDES IN SQUARE EDGE MATERIAL NOT MORE THAN 1/4 INCH THICK WITH ROOT OPENING NOT LESS THAN ONE HALF THE THICKNESS OF THE THINNER PART JOINED, SHALL HAVE THE ROOT OF THE INITIAL LAYER GOUNGED OR CHIPPED OUT ON THE BACK SIDE BEFORE WELDING IS STARTED FROM THAT SIDE. THE ARC AIR TORCH WHICH USES THE CARBON ARC AND COMPRESSED AIR, MAY BE USED FOR GOUNGING AND CUTTING.

12- THE ENDS OF BUTT WELDS ARE TO BE CHIPPED OR CUT DOWN TO SOLID METAL, AND SIDE WELDS ARE TO BE APPLIED TO FILL OUT THE ENDS TO THE SAME REINFORCEMENT AS THE FACES OF THE WELD.

13- THERE SHALL BE COMPLETE FUSION BETWEEN THE WELD METAL & THE BASE METAL AND BETWEEN SUCCESSIVE PASSES THROUGH OUT THE JOINT. WELDS SHALL BE FREE FROM OVERLAP AND THE BASE METAL FREE FROM UNDERCUTTING. ALL CRATERS SHALL BE FILLED TO THE FULL CROSS SECTION OF THE WELDS. BUTT WELDS SHALL BE PROVIDED WITH ONLY SUFFICIENT SURFACE CONVEXITY TO INSURE FULL CROSS SECTION AREA AT THE JOINT. THE HEIGHT OF REINFORCEMENT SHALL NOT EXCEED 3/8 INCH.

14- WHEN REQUIRED MULTIPLE-LAYER WELDS MAY BE PEENED WITH LIGHT BLOWS FROM A POWER HAMMER, USING AN ELONGATED ROUND-NOSED TOOL. PEENING SHALL BE DONE AFTER THE WELD HAS COOLED TO A TEMPERATURE WARM TO THE HAND. CARE SHALL BE EXERCISED TO PREVENT SCALING, FLAKING OR RUPTURING OF WELD AND BASE METAL FROM OVER-PEENING.

15- SIDE OR END FILLET WELDS TERMINATING AT ENDS OR SIDES, RESPECTIVELY, OF PARTS OR MEMBERS SHALL, WHENEVER PRACTICABLE, BE RETURNED CONTINUOUSLY AROUND THE CORNERS FOR A DISTANCE NOT LESS THAN TWICE THE NORMAL SIZE OF THE WELD. THIS SHALL APPLY TO SIDE AND TOP FILLET WELDS CONNECTING BRACKETS, BEAM SEATS AND SIMILAR CONNECTIONS AT THE TENSION SIDE AT SUCH CONNECTIONS ON THE PLANE ABOUT WHICH BENDING MOMENTS ARE COMPUTED.

16- ALL WELDING OPERATORS SHALL BE QUALIFIED BY TESTS AS PRESCRIBED IN THE STANDARD QUALIFICATION PROCEDURE OF THE AMERICAN WELDING SOCIETY.

17- SKIDS, WHICH SUPPORT TRUSSES THAT ARE ASSEMBLED, SHOULD BE SO ARRANGED THAT ALL TRUSS MEMBERS ARE SUPPORTED AT LOCATIONS VERY NEAR THE JOINTS WHICH ARE TO BE WELDED.

11/19/53	Cont. No. Chgd. From 4053 to 4053, 4190	CLP	
10-8-53	Cont. No. Chgd. From 4019 to 4053	WCS	510
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