



Republic of the Philippines
Department of Education
National Capital Region
Schools Division Office – Muntinlupa City

SPECIAL PROGRAM FOR TECHNICAL VOCATIONAL EDUCATION [SPTVE]
SHIELDED METAL ARC WELDING 9
Quarter 3: Week 6

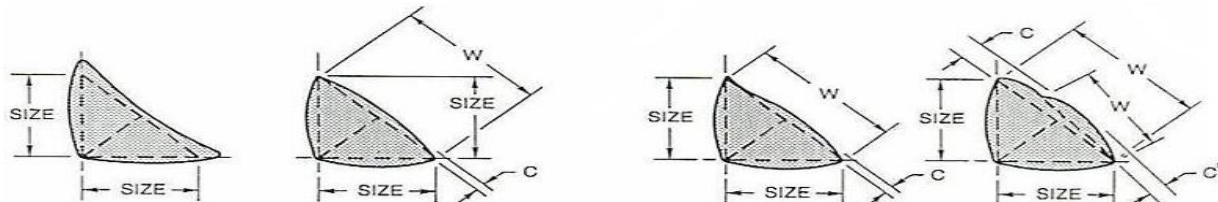
I. **Topic:** Visual Inspection on Acceptable Weld Profiles

II. **Objectives:**

1. Illustrate the acceptable fillet weld and butt weld profiles.
2. Perform inspection on the finished weldment based on acceptable standard.
3. Appreciate the importance of acceptable weld profiles.

III. **Brief Introduction of the Lesson:**

The external geometry plays an important role in the acceptability of a weld, since weld geometry is directly related to its load resistance, or nominal load capacity. Two factors that influence the external geometry are weld size and profile. Weld profiles represents the overall geometric configuration of the weld bead. Two acceptable weld profile according to AWS Structural Welding Code, are shown below.



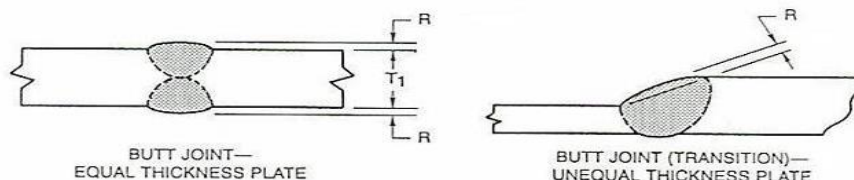
(A) DESIRABLE FILLET WELD PROFILES

(B) ACCEPTABLE FILLET WELD PROFILES

NOTE: CONVEXITY, C, OF A WELD OR INDIVIDUAL SURFACE BEAD WITH DIMENSION W SHALL NOT EXCEED THE VALUE OF THE FOLLOWING TABLE:

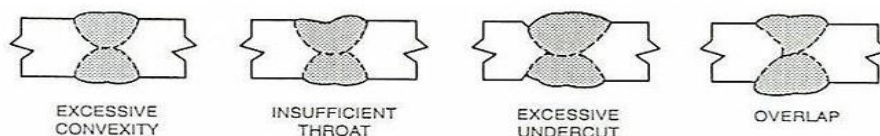
WIDTH OF WELD FACE OR INDIVIDUAL SURFACE BEAD, W		MAX CONVEXITY, C
$W \leq 5/16$ in. (8 mm)		1/16 in. (1.6 mm)
$W > 5/16$ in. TO $W < 1$ in. (25 mm)		1/8 in. (3 mm)
$W \geq 1$ in.		3/16 in. (5 mm)

(C) UNACCEPTABLE FILLET WELD PROFILES



NOTE: REINFORCEMENT R SHALL NOT EXCEED 1/8 in. (3 mm). SEE 5.24.4.

(D) ACCEPTABLE GROOVE WELD PROFILE IN BUTT JOINT



(E) UNACCEPTABLE GROOVE WELD PROFILES IN BUTT JOINTS







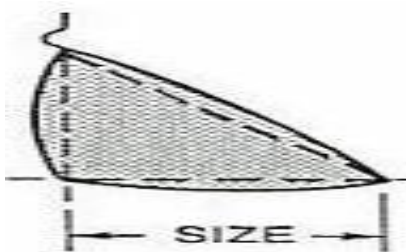
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- A. 1/8 in. B. 1/16 in. C. 1/32 in. D. 1/38 in.
3. Excess penetration shall be limited to _____.
A. 1/8 in. B. 1/16 in. C. 1/32 in. D. 1/38 in.
4. The excess root penetration shall be limited to the lesser of _____.
A. 1/8 in. B. 1/16 in. C. 1/32 in. D. 1/38 in.
5. Your weld should be _____.
A. weld cracked C. with fine ripples
B. slag inclusions D. with abrupt ripples

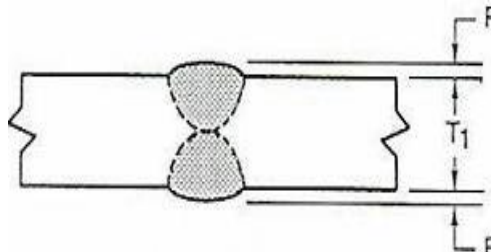
B. Directions: Put a check mark [/] if the statement tells acceptable weld and cross-out [X] the statement if it is unacceptable weld. Write your answer using a separate sheet of paper.

- _____ 6. No cracks are permitted.
- _____ 7. Have an undercut that exceeds 1/32 inch.
- _____ 8. Even thickness plate.
- _____ 9. Root surface shall reduce the total thickness of the joint.
- _____ 10. The finished welds are suitable for the proper interpretation of destructive examination.

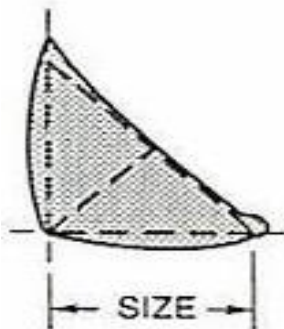
Activity 3: Directions: Write acceptable weld or unacceptable weld by examining the weld profiles as shown below. Write your answer in a separate sheet of paper.



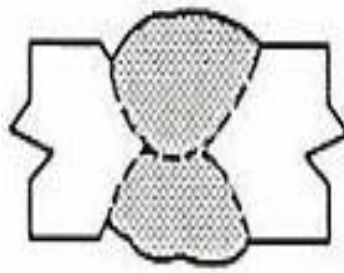
1. _____



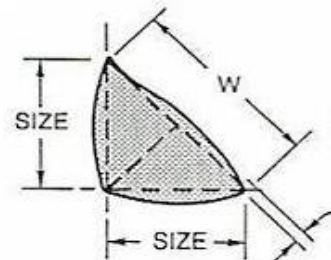
2. _____



3. _____



4. _____



5. _____





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V. Assessment:

Directions: Write TRUE if the statement is correct and change the underlined word if the statement is false. Use separate paper for your answer sheet.

1. Weld should be free from coarse ripples, grooves, overlaps, abrupt ridges, undercut, and valleys.
2. Undercuts shall not exceed 1/8 in. and shall not encroach on the minimum required section thickness.
3. Concavity of the root surface shall be equal the total thickness of the joint.
4. The excess root penetration shall be limited to the lesser of 1/32 in. or 25% of the nominal wall thickness of the thinner component being joined, down to ¼ in. wall thickness.
5. The excess penetration shall be limited to 1/16 in.
6. The surface condition of the finished welds shall be suitable for the proper interpretation of non-destructive examinations.
7. Socket and fillet welds may vary from convex to concave.
8. Weld reinforcement greater than the amounts specified in the weld reinforcement table shall be considered unacceptable.
9. In cases where there is a question regarding the surface condition on the interpretation of a radiographic film, the film shall be compared to the actual weld surface for interpretation and determination of acceptability.
10. When inside surface of the weld is readily accessible, or the weld has been radiographed.

VI. Reflection:

Why students must learn to visually inspect their weldment if it is acceptable weld or not?
Can they re-demonstrate for acceptable weld profile when face to face/ hands on will go on?
What is the importance of acceptable weld profile after visual inspection?

References:

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Welding Guide Fabrication Shop, Ismael V. Palabrica
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Welding Principles and Applications, Larry Jeffus and Harold V. Johnson

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