

AFRL-ML-TY-TR-2002-4604



F100 ENGINE NACELLE FIRE FIGHTING TEST MOCKUP DRAWINGS

JULY 2002

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**MATERIALS & MANUFACTURING DIRECTORATE
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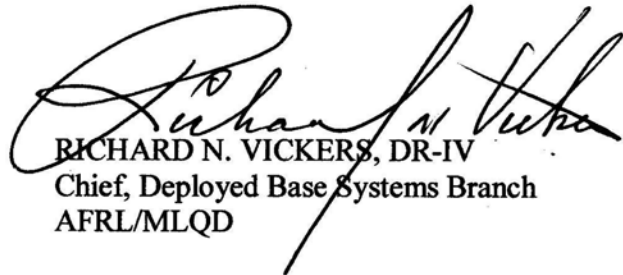
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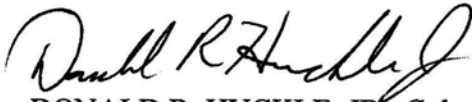
THIS REPORT HAS BEEN REVIEWED AND IS APPROVED FOR PUBLICATION.



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13. ABSTRACT <i>(Maximum 200 words)</i> This report contains drawings and a bill of materials for the construction of an F100 Engine Nacelle Test Fixture and a test pad. The test fixture is designed to produce three-dimensional, or running fuel, fires to simulate an aircraft engine fire. It is utilized for evaluating the effect of fire fighting agents when attacking a fire from the engine intake, tailpipe or access panels. The test pad is designed to contain fuel from evaluations and regulate the ground fire size with a sloped concrete surface. This is a supporting drawing package for TR# AFRL-ML-TY-TR-02-4540, "Minimum Performance Requirement for Air Force Flightline Fire Extinguishers: Extinguishing Performance Against 3-Dimensional and Hidden Fires".				
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PREFACE

This report contains drawings and a bill of materials for the construction of an F100 Engine Nacelle Test Fixture and a test pad. The test fixture is designed to produce three-dimensional, or running fuel, fires to simulate an aircraft engine fire. It is utilized for evaluating the effect of fire fighting agents when attacking a fire from the engine intake, tailpipe or access panels. The test pad is designed to contain fuel from evaluations and regulate the ground fire size with a sloped concrete surface.

F100 ENGINE NACELLE FIRE FIGHTING TEST MOCKUP



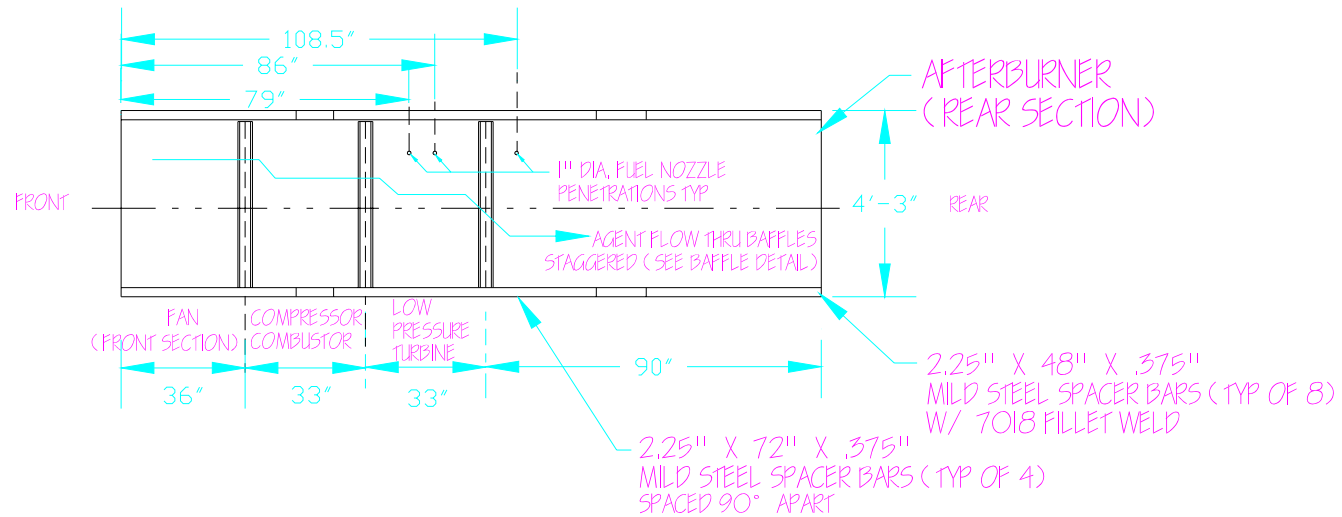
F100 ENGINE NACELLE



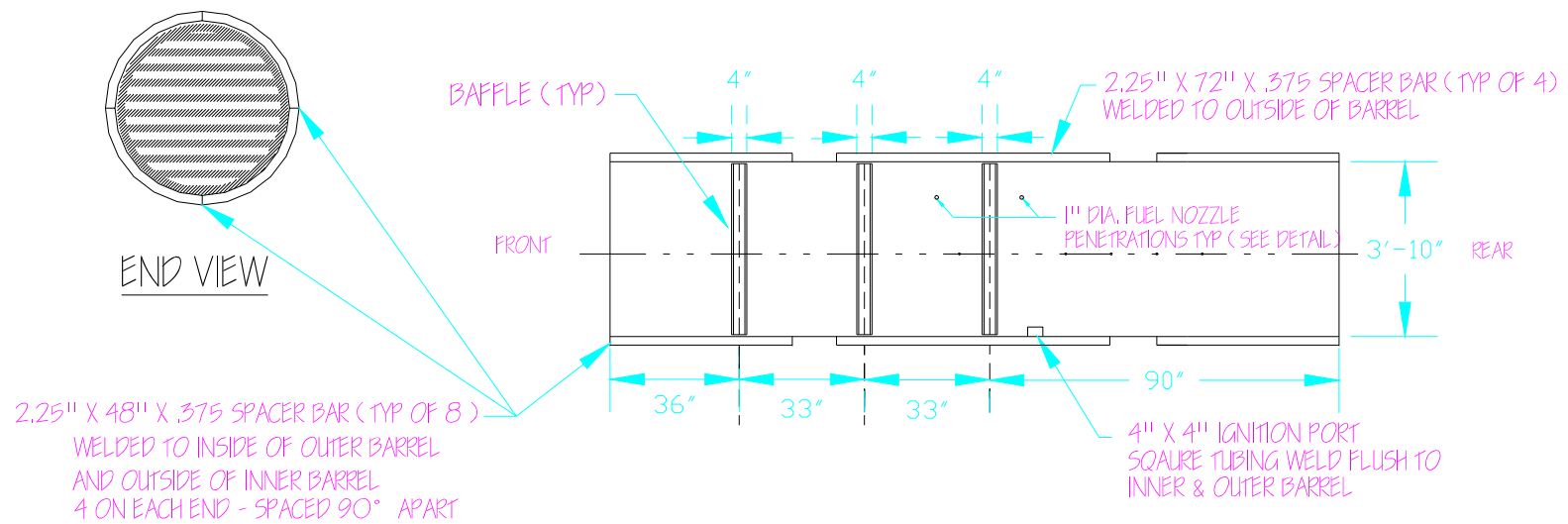
DRAWINGS

1. ENGINE NACELLE TOP VIEW (INNER & OUTER BARRELS)
2. ENGINE NACELLE TOP VIEW (INNER BARREL ONLY)
3. ENGINE NACELLE SIDE VIEW

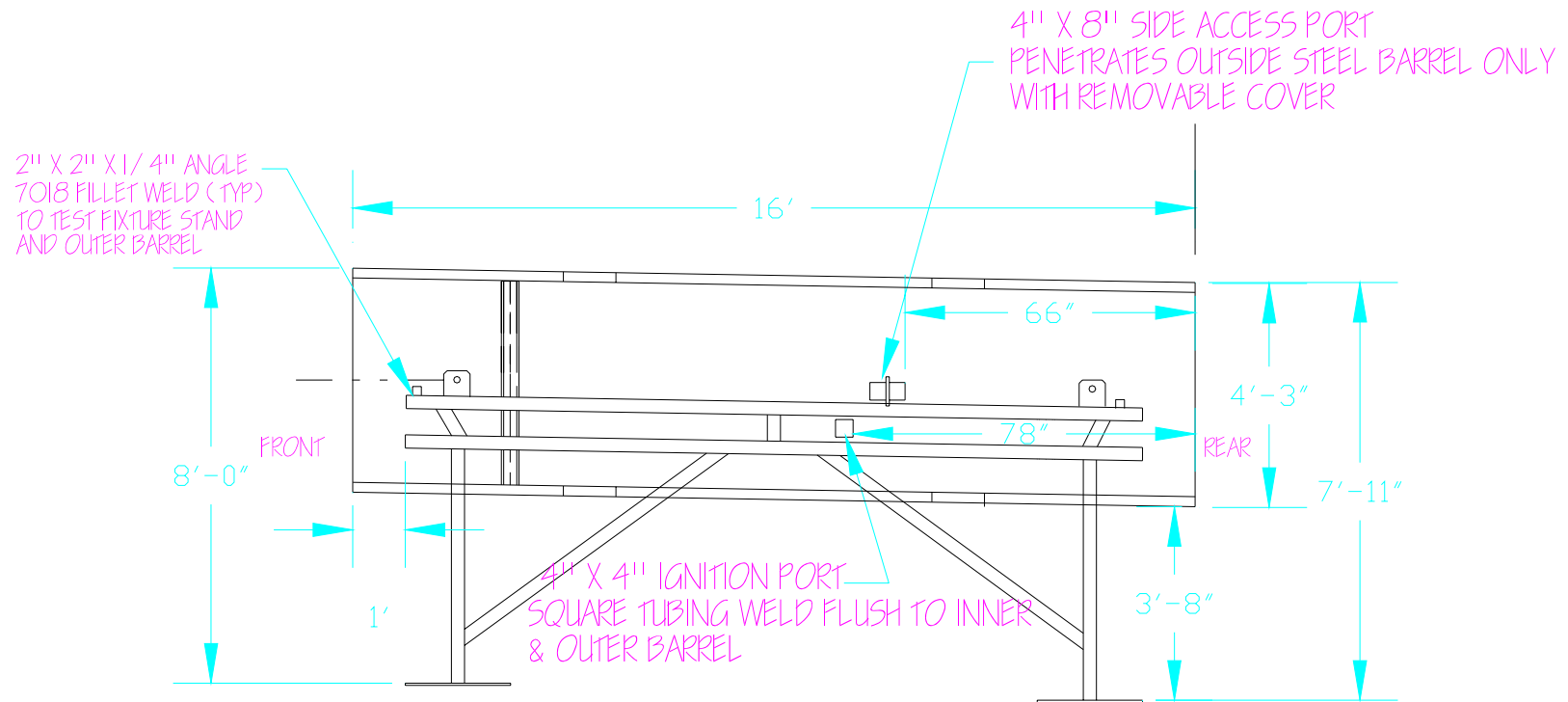
EACH BARREL FABRICATED SEPARATELY. COMPONENTS SINGLE VEE GROOVE WELDED TO FORM 16' TOTAL LENGTH



1. ENGINE NACELLE TOP VIEW (INNER & OUTER BARRELS)

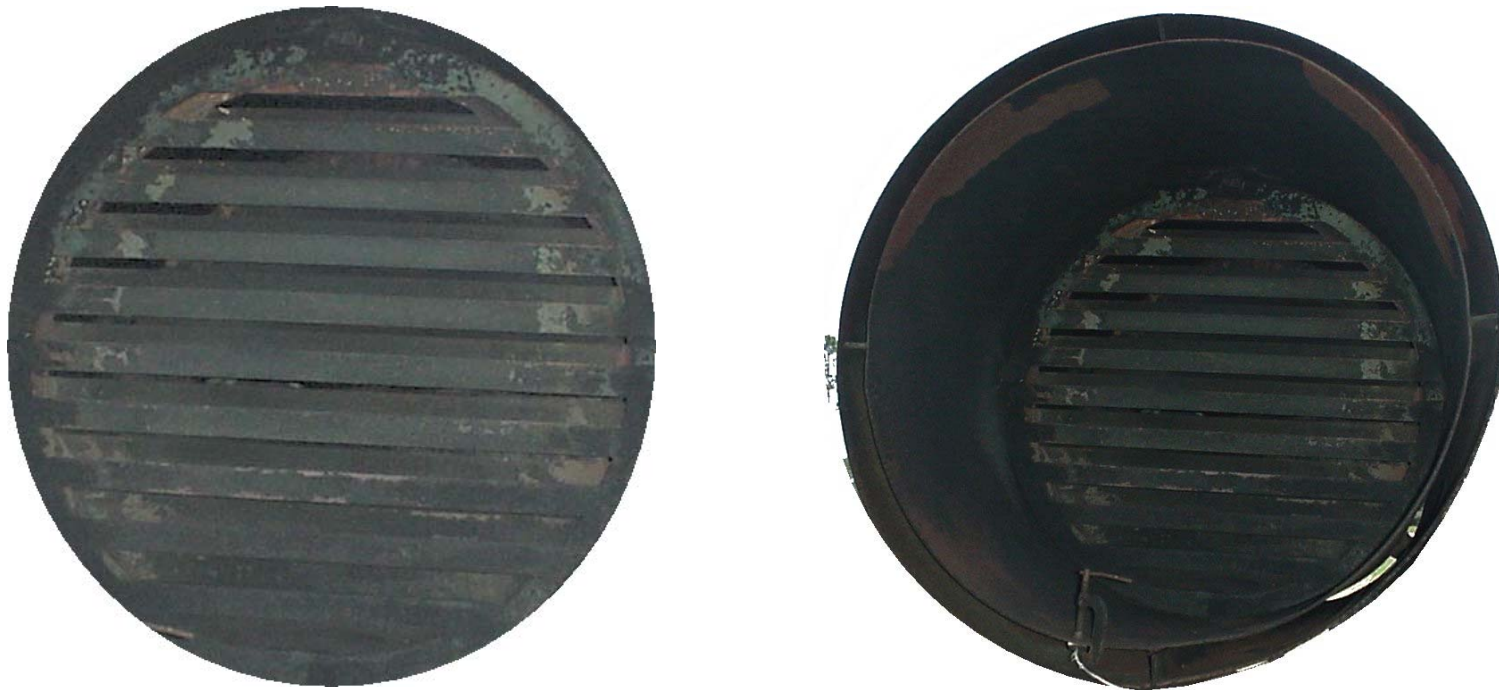


2. ENGINE NACELLE TOP VIEW (INNER BARREL ONLY)



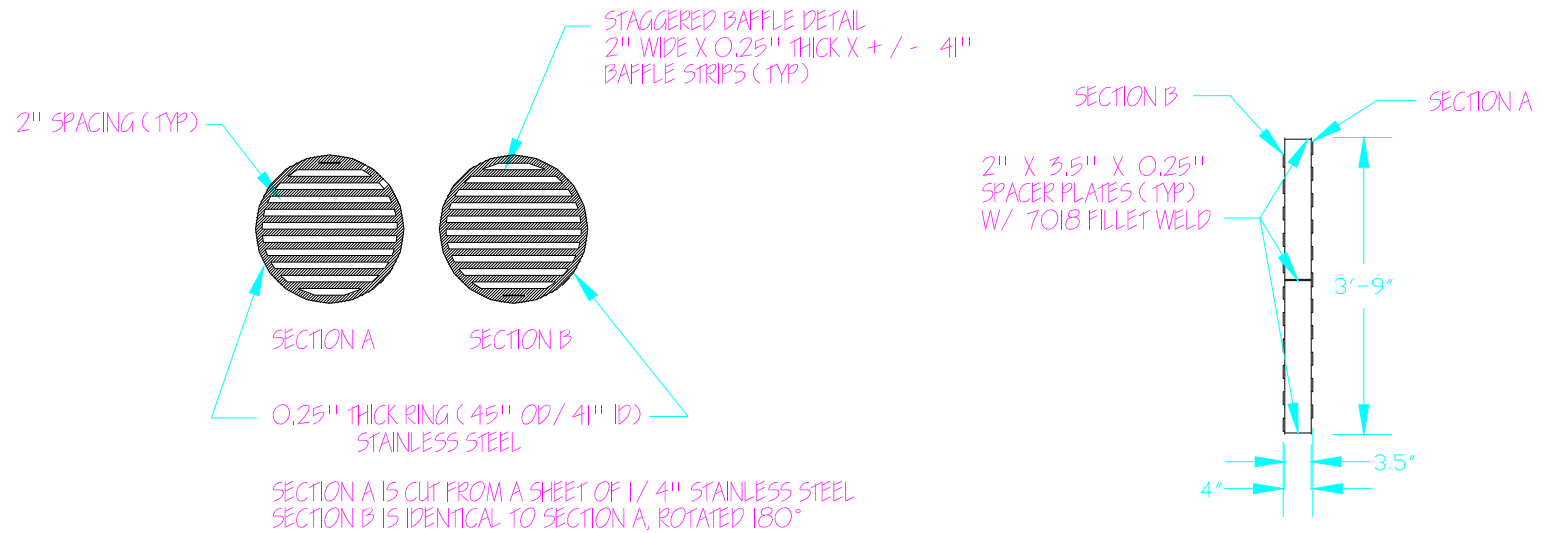
3. ENGINE NACELLE SIDE VIEW

ENGINE NACELLE BAFFLE



DRAWINGS

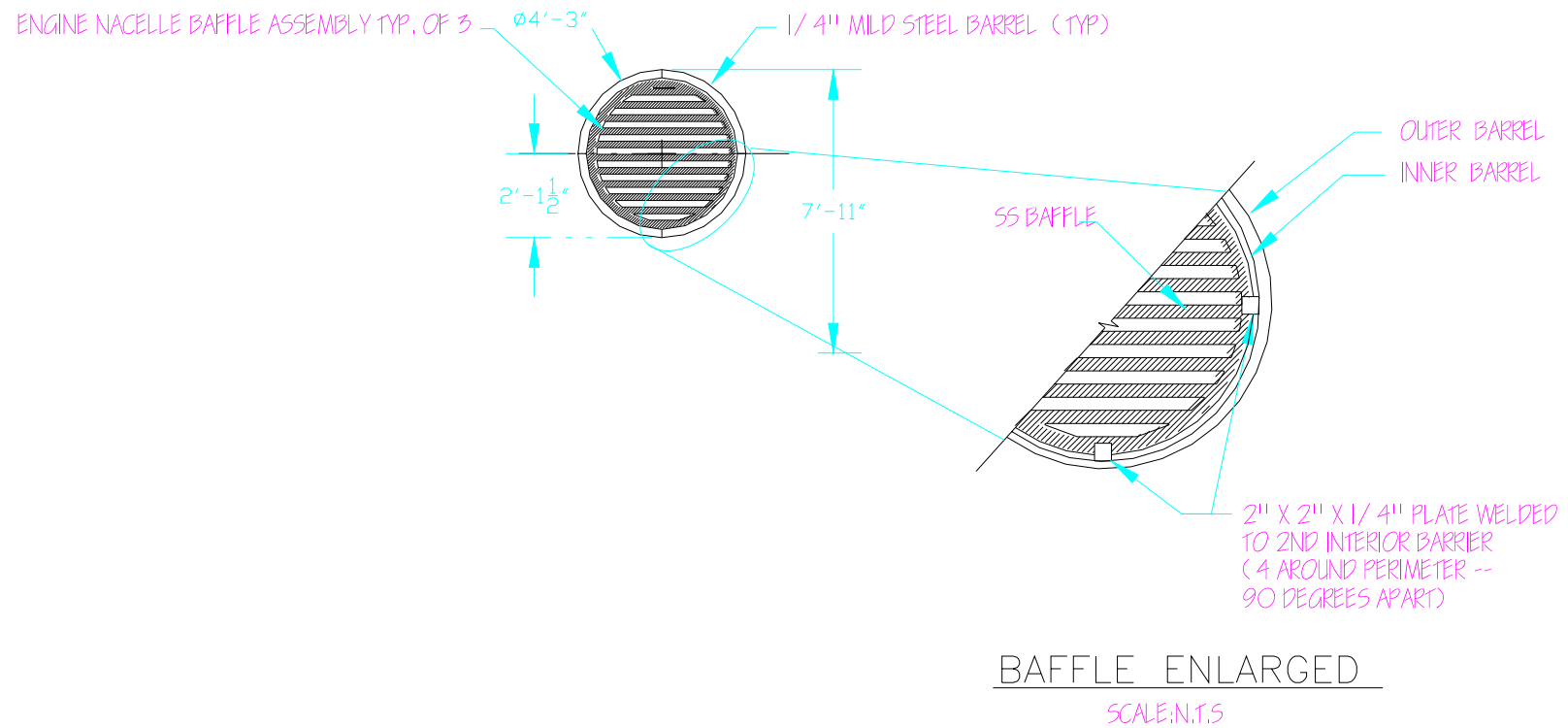
- 4. ENGINE NACELLE BAFFLE
- 5. BAFFLE INSTALLED IN NACELLE



BAFFLE ASSEMBLY SIDE VIEW

SCALE: N.T.S.

4. ENGINE NACELLE BAFFLE



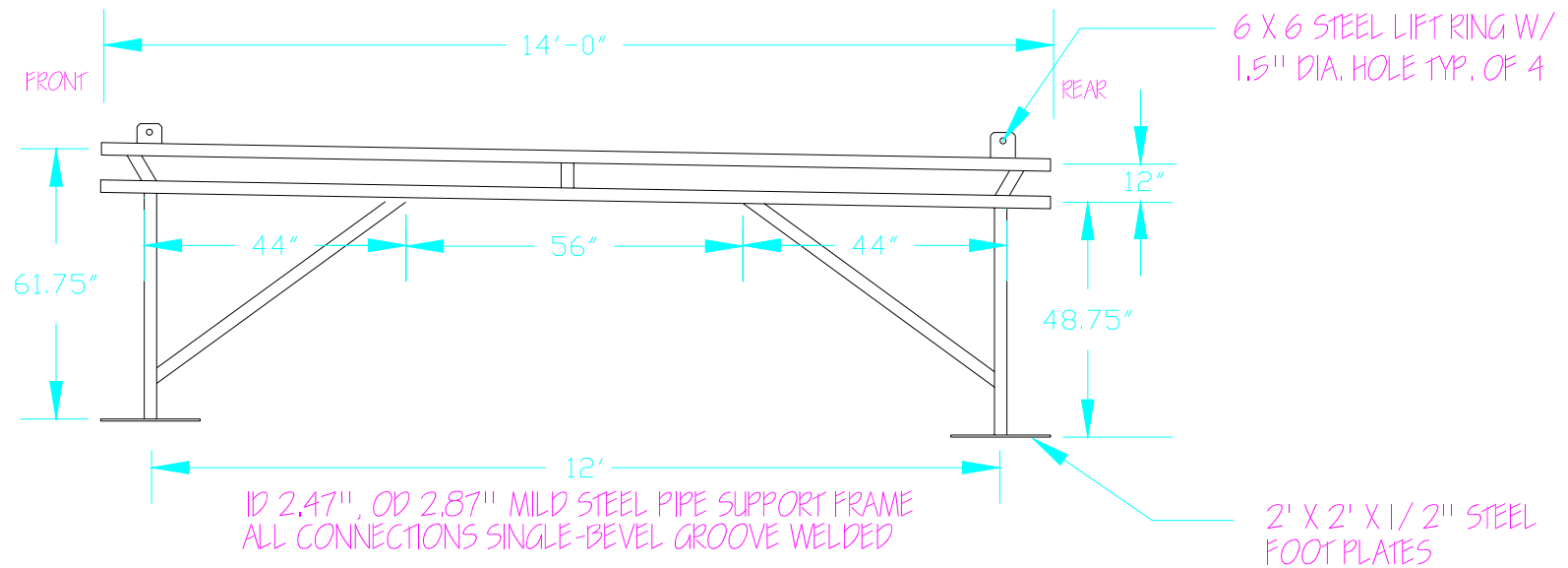
5. BAFFLE INSTALLED IN NACELLE

TEST FIXTURE STAND



DRAWINGS

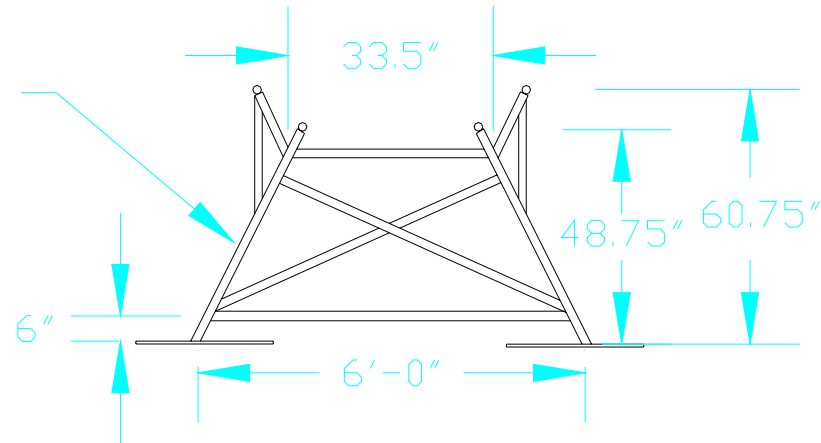
- 6. TEST STAND -- SIDE VIEW
- 7. TEST STAND -- REAR VIEW



SCALE: N.T.S

6. TEST STAND -- SIDE VIEW

MILD STEEL SUPPORT PIPE (TYP)



ID 2.47", OD 2.87" MILD STEEL PIPE SUPPORT FRAME
ALL CONNECTIONS SINGLE-BEVEL GROOVE WELDED

SCALE: N.T.S

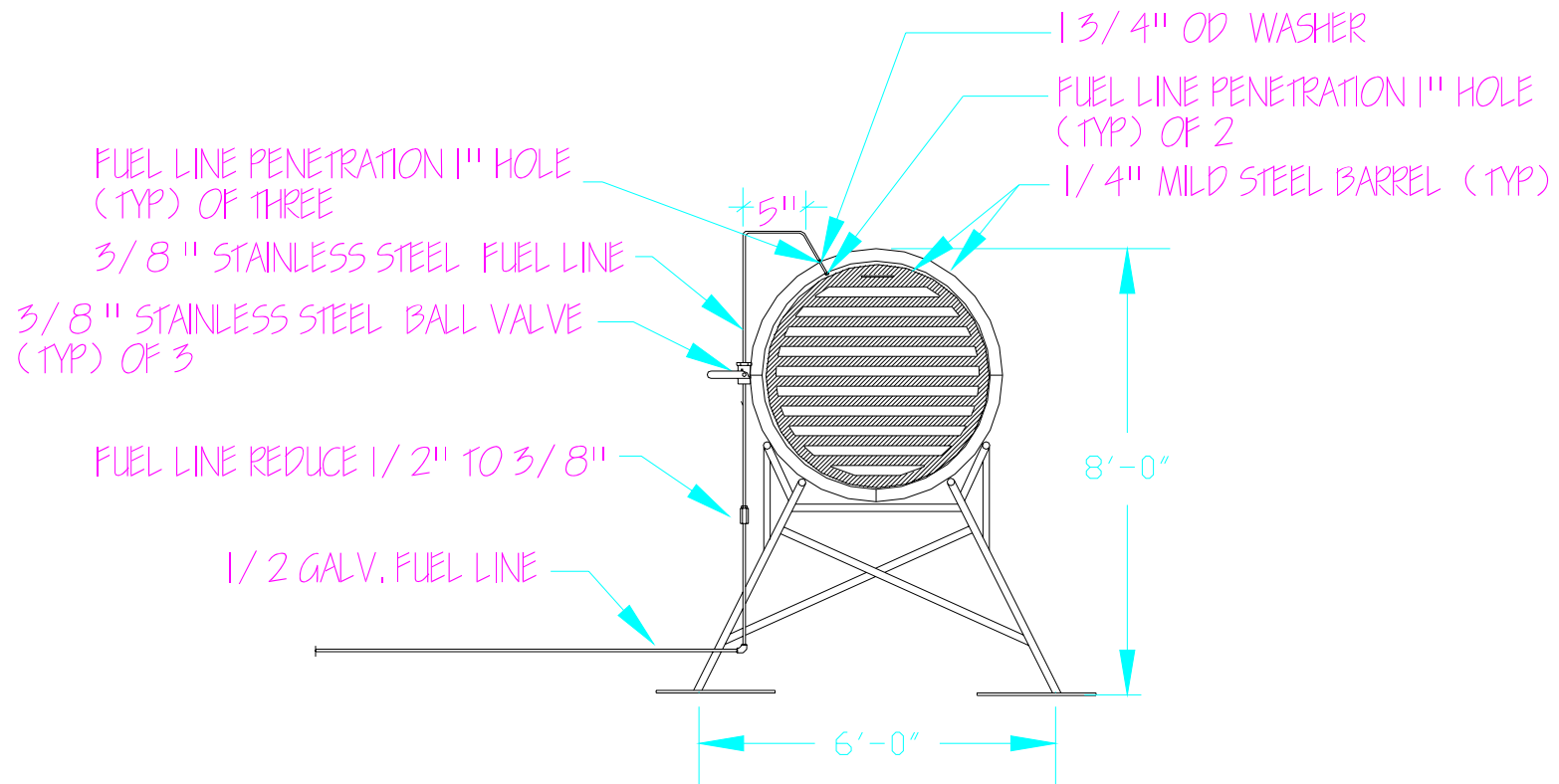
7. TEST STAND -- REAR VIEW

FUEL SUPPLY



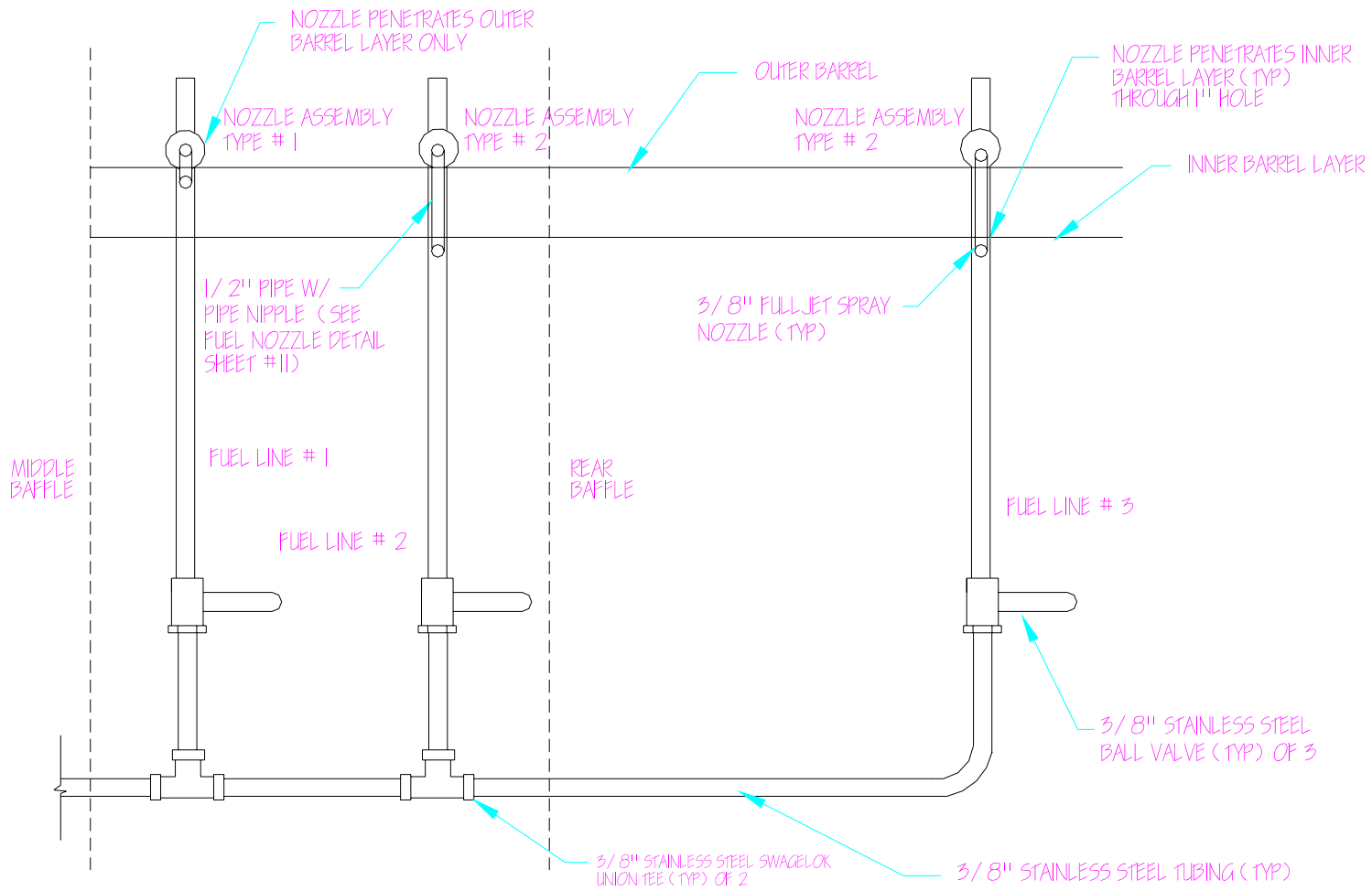
DRAWINGS

8. ENGINE NACELLE FRONT VIEW W/ FUEL LINES
9. ENLARGED VIEW OF FUEL SUPPLY LINE VIEW FROM CENTER OF NACELLE
10. ENGINE NACELLE SIDE VIEW W/ FUEL LINES
11. ENLARGED VIEW OF FUEL NOZZLE DETAIL

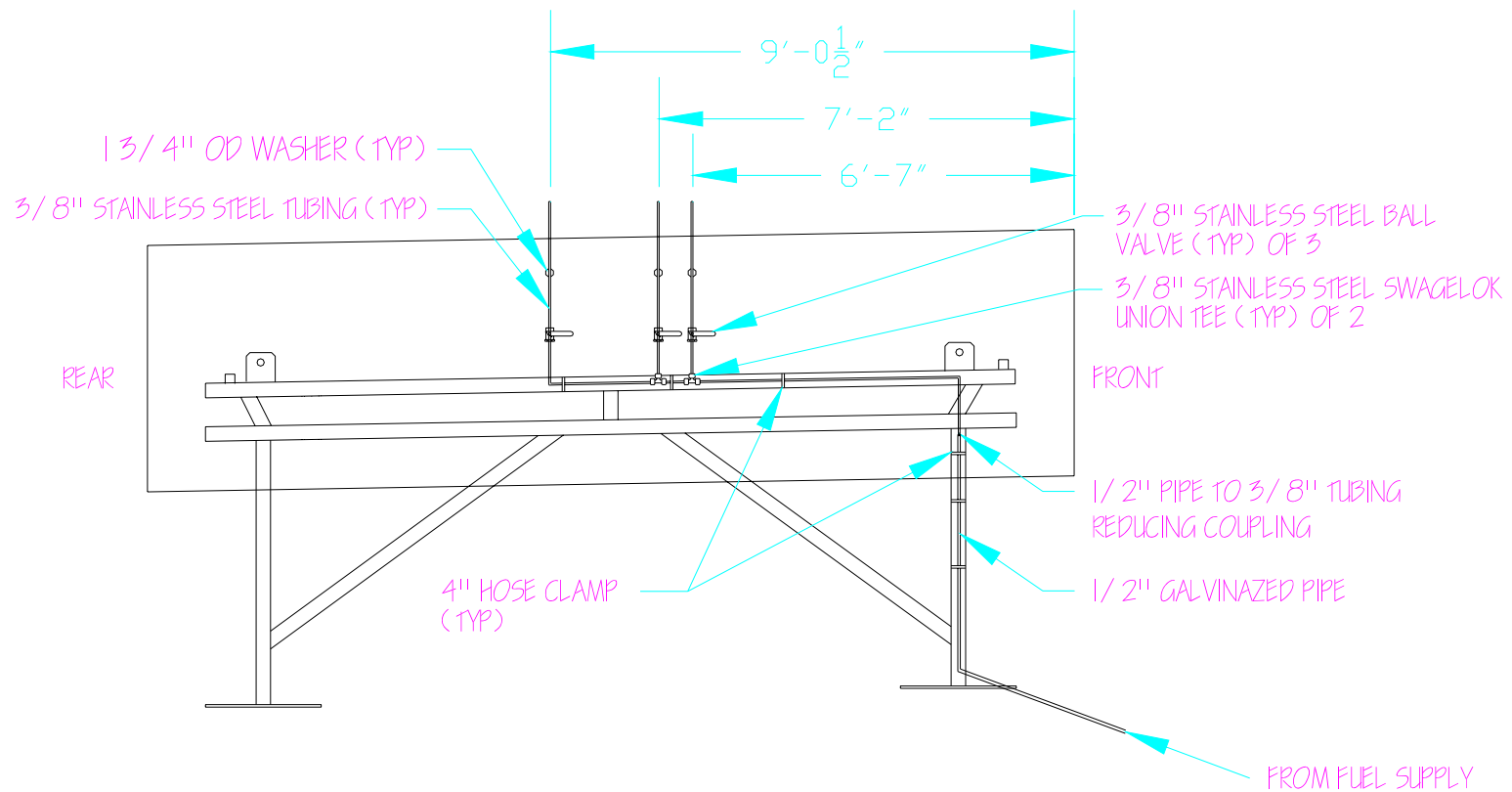


SCALE: N.T.S.

8. ENGINE NACELLE FRONT VIEW W/ FUEL LINES

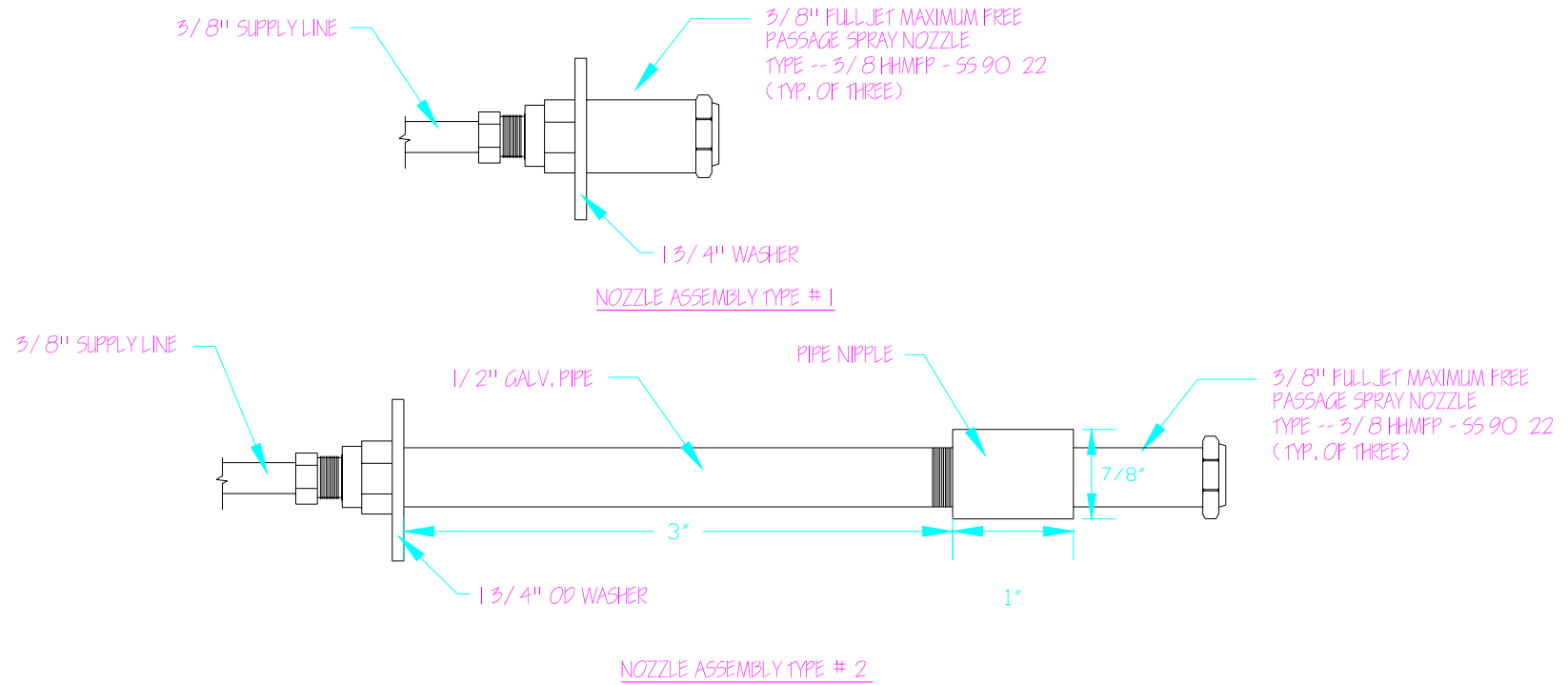


9. ENLARGED VIEW OF FUEL SUPPLY LINE VIEW FROM CENTER OF NACELLE



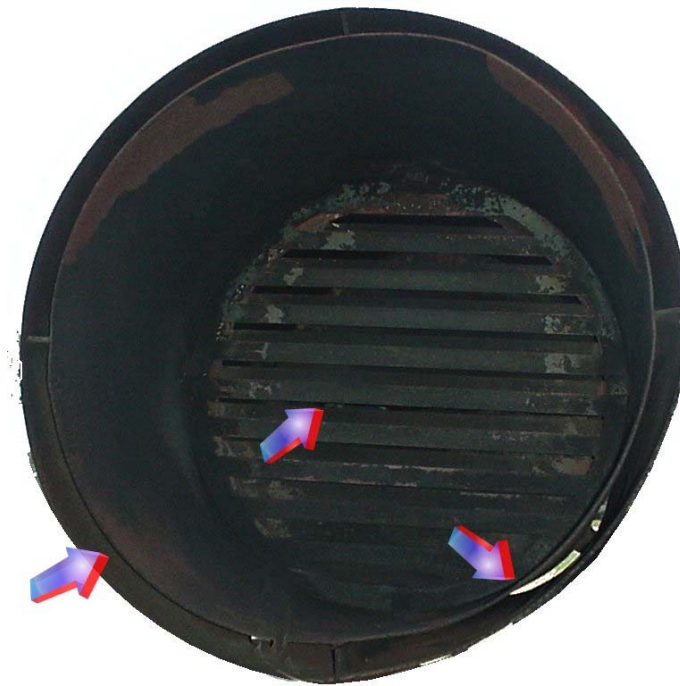
SCALE: N.T.S.

10. ENGINE NACELLE SIDE VIEW W/ FUEL LINES



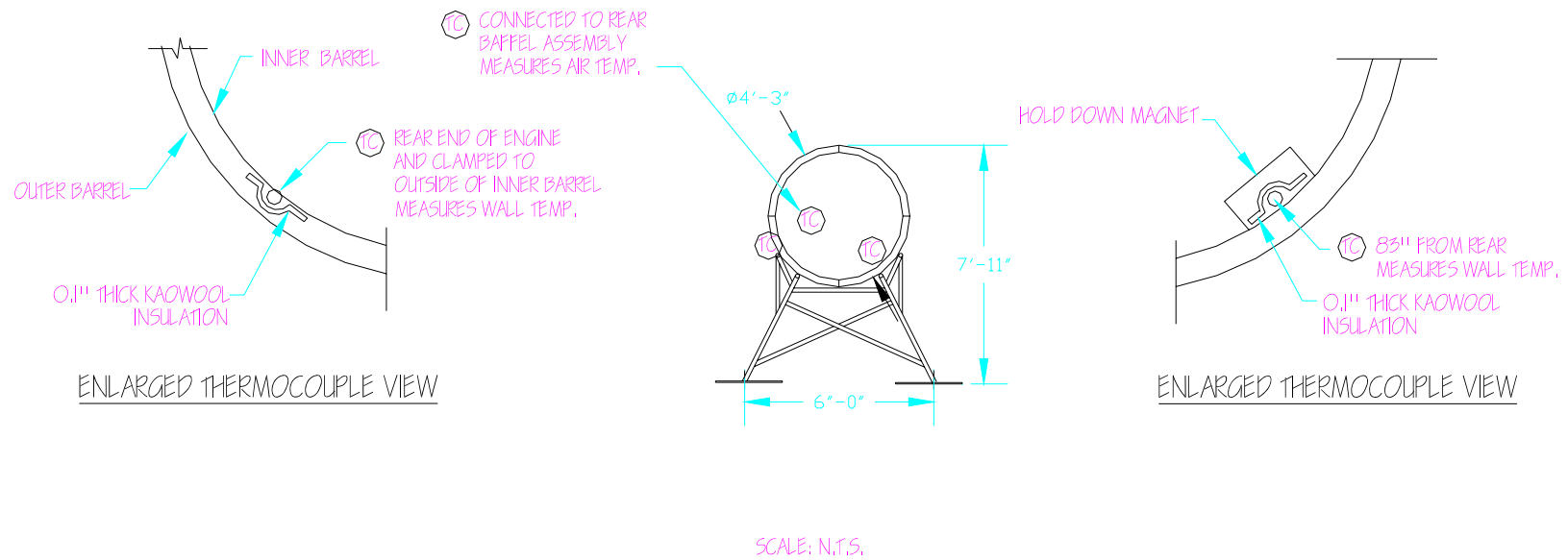
11. ENLARGED VIEW OF FUEL NOZZLE DETAIL

THERMOCOUPLE LOCATION

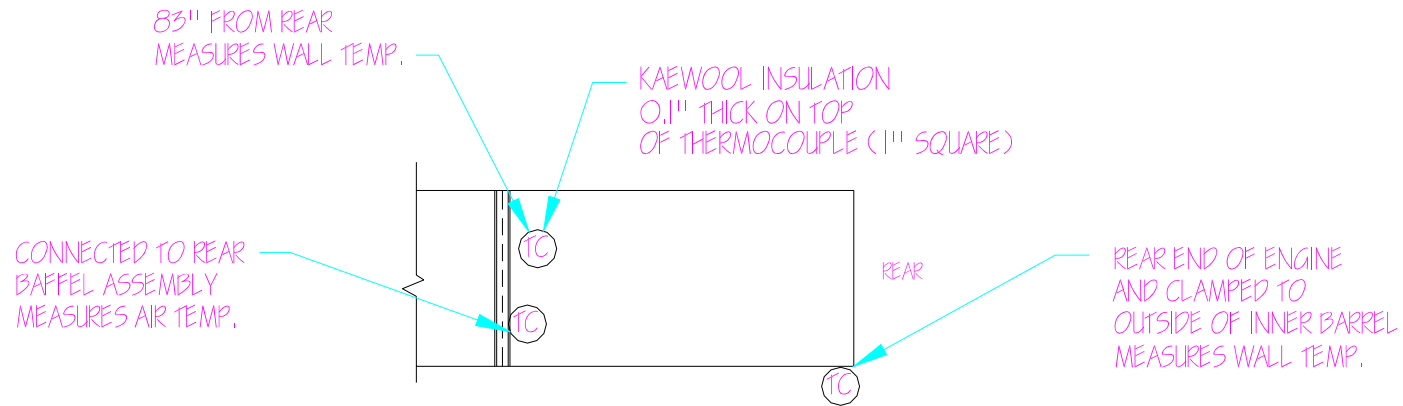


DRAWINGS

- 12. ENGINE NACELLE REAR VIEW - THERMOCOUPLE LOCATION
- 13. TOP VIEW THERMOCOUPLE LOCATION DETAIL



12. ENGINE NACELLE REAR VIEW - THERMOCOUPLE LOCATION



THERMOCOUPLE NOTES

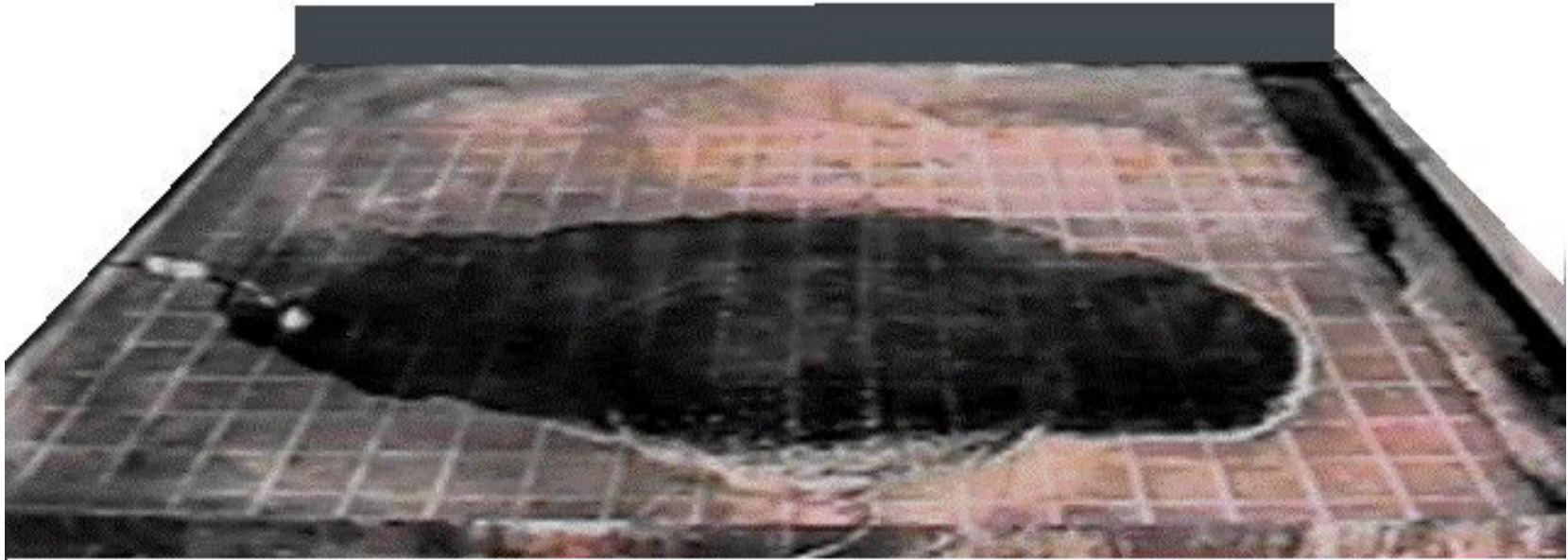
BARE WIRE THERMOCOUPLE W/
20 GA. TYPE K -- HIGH TEMPERATURE
SILICA SILICA INSULATION

LEGEND

⊙ INDICATES THERMOCOUPLE LOCATION

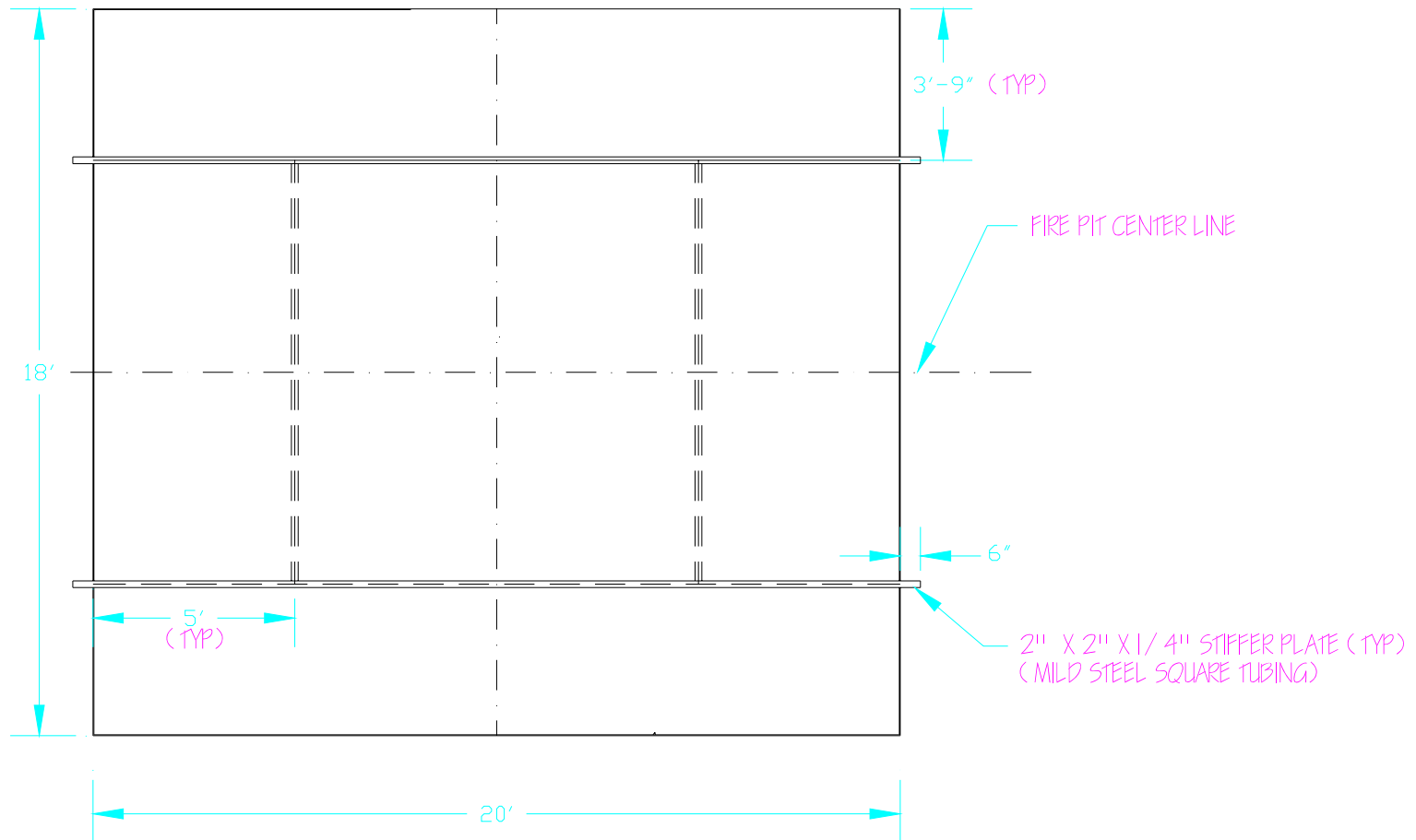
13. TOP VIEW THERMOCOUPLE LOCATION DETAIL

FIRE TEST PAN

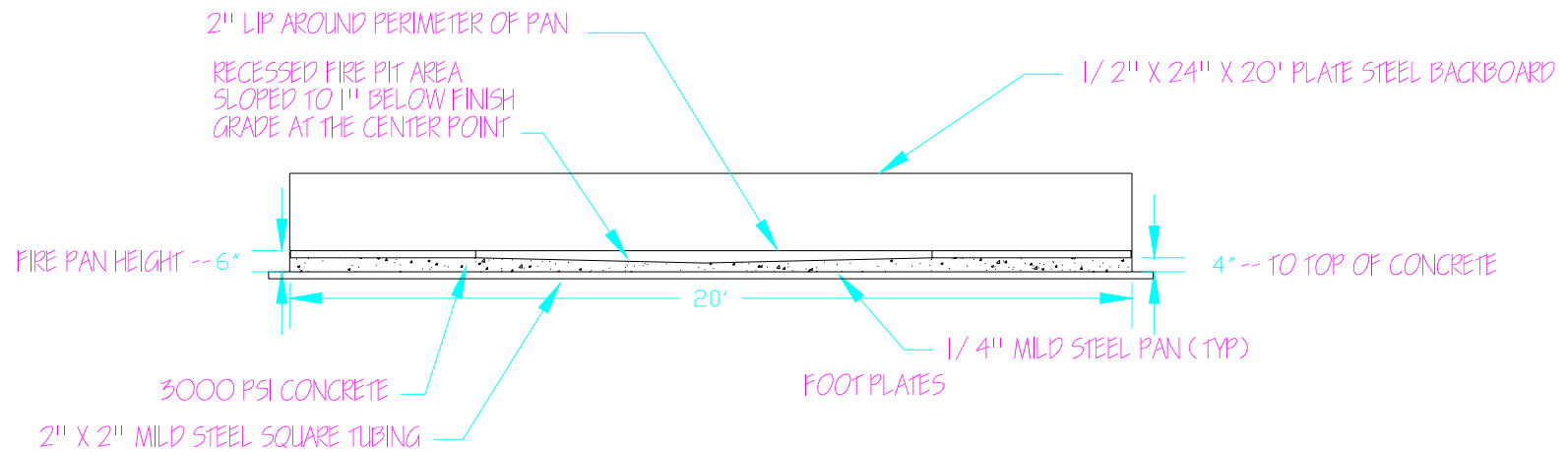


DRAWINGS

- 14. FIRE TEST PAN -- PLAN VIEW
- 15. FIRE TEST PAN -- BOTTOM VIEW
- 16. FIRE TEST PAN -- PLAN VIEW A-A



15. FIRE TEST PAN – BOTTOM VIEW



16. FIRE TEST PAN -- PLAN VIEW A-A

BILL OF MATERIALS

PART DESCRIPTION	QTY	Purpose
1/4 inch mild steel plate 10 foot x 10 foot	4 pcs	Fire Test Pan
6 x 4 x 1/4 inch mild steel angle iron – 20 ft. section	4 pcs	Fire Test Pan
2 x 2 x 1/4 inch mild steel square tubing – 20 ft section	3 pcs	Fire Test Pan
3000 psi concrete	5 cu. yards	Fire Test Pan
2 x 24 x 1/2 inch mild steel Plate – 20 ft section	1 pcs	Test Pan Backboard
1/4 inch mild steel plate 4 foot x 8 foot	7 pcs	Outer Barrel
1/4 inch mild steel plate 4 foot x 8 foot	6 pcs	Inner Barrel
1/4 inch stainless steel plate 4 foot x 8 foot	3 pcs	Baffle Material
4 x 1/4 inch mild steel square tubing – 1 ft	1 pcs	Ignition Port
1/2 inch mild steel plate 4 foot x 4 foot	1 pcs	4 – 2'X2' Feet
3" mild steel pipe ID 2.47", OD 2.87" – 20 ft section	7 pcs	Test Fixture Stand
3/8" Ball Valve	3 pcs	Fuel Supply
3/8" Stainless Steel Tubing	30 feet	Fuel Supply
3/8" Fulljet Maximum Free Passage Stainless Steel Spray Nozzles Type 3/8HHMFP-SS9022	3 pcs	Fuel Supply
Silfa Silica Insulated 20 ga. K-type Thermocouple wire	100 ft.	Temperature Measurements