Title of Report

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| **1. REPORT DATE** *(DD-MM-YYYY)* | | | **2. REPORT TYPE**  Technical Report | | | | | | **3. DATES COVERED** *(From - To)* |
| **4. TITLE AND SUBTITLE** | | | | | | | **5a. CONTRACT NUMBER** | | |
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| **9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)**  U.S. Department of Transportation  Federal Railroad Administration  Office of Railroad Policy and Development  Office of Research, Development and Technology  Washington, DC 20590 | | | | | | | | **10. SPONSOR/MONITOR'S ACRONYM(S)** | |
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| **13. SUPPLEMENTARY NOTES**  COR: | | | | | | | | | |
| **14. ABSTRACT** | | | | | | | | | |
| **15. SUBJECT TERMS** | | | | | | | | | |
| **16. SECURITY CLASSIFICATION OF:** | | | | **17. LIMITATION OF ABSTRACT** | **18. NUMBER OF PAGES** | **19a. NAME OF RESPONSIBLE PERSON** | | | |
| **a. REPORT** | **b. ABSTRACT** | **c. THIS PAGE** | |
| **19b. TELEPHONE NUMBER** *(Include area code)* | | | |

**Standard Form 298** (Rev. 8/98)

Prescribed by ANSI Std. Z39.18

METRIC/ENGLISH CONVERSION FACTORS

| **ENGLISH TO METRIC** | | | | | **METRIC TO ENGLISH** | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **LENGTH (APPROXIMATE)** | | | | | **LENGTH (APPROXIMATE)** | | | | | |
| **1 inch (in)** | **=** | **2.5 centimeters (cm)** | | **1 millimeter (mm)** | | **=** | | | **0.04 inch (in)** | |
| **1 foot (ft)** | **=** | **30 centimeters (cm)** | | **1 centimeter (cm)** | | **=** | | | **0.4 inch (in)** | |
| **1 yard (yd)** | **=** | **0.9 meter (m)** | | **1 meter (m)** | | **=** | | | **3.3 feet (ft)** | |
| **1 mile (mi)** | **=** | **1.6 kilometers (km)** | | **1 meter (m)** | | **=** | | | **1.1 yards (yd)** | |
|  |  |  | | **1 kilometer (km)** | | **=** | | | **0.6 mile (mi)** | |
| **AREA (APPROXIMATE)** | | | | | **AREA (APPROXIMATE)** | | | | | |
| **1 square inch (sq in, in2)** | **=** | **6.5 square centimeters (cm2)** | | **1 square centimeter (cm2)** | | **=** | | | **0.16 square inch (sq in, in2)** | |
| **1 square foot (sq ft, ft2)** | **=** | **0.09 square meter (m2)** | | **1 square meter (m2)** | | **=** | | | **1.2 square yards (sq yd, yd2)** | |
| **1 square yard (sq yd, yd2)** | **=** | **0.8 square meter (m2)** | | **1 square kilometer (km2)** | | **=** | | | **0.4 square mile (sq mi, mi2)** | |
| **1 square mile (sq mi, mi2)** | **=** | **2.6 square kilometers (km2)** | | **10,000 square meters (m2)** | | **=** | | | **1 hectare (ha) = 2.5 acres** | |
| **1 acre = 0.4 hectare (he)** | **=** | **4,000 square meters (m2)** | |  | |  | | |  | |
| **MASS - WEIGHT (APPROXIMATE)** | | | | | **MASS - WEIGHT (APPROXIMATE)** | | | | | |
| **1 ounce (oz)** | **=** | **28 grams (gm)** | | **1 gram (gm)** | | **=** | | **0.036 ounce (oz)** | | |
| **1 pound (lb)** | **=** | **0.45 kilogram (kg)** | | **1 kilogram (kg)** | | **=** | | **2.2 pounds (lb)** | | |
| **1 short ton = 2,000 pounds (lb)** | **=** | **0.9 tonne (t)** | | **1 tonne (t)** | | **=**  **=** | | **1,000 kilograms (kg)**  **1.1 short tons** | | |
| **VOLUME (APPROXIMATE)** | | | | | **VOLUME (APPROXIMATE)** | | | | | |
| **1 teaspoon (tsp)** | **=** | **5 milliliters (ml)** | | | **1 milliliter (ml)** | | **=** | | | **0.03 fluid ounce (fl oz)** |
| **1 tablespoon (tbsp)** | **=** | **15 milliliters (ml)** | | | **1 liter (l)** | | **=** | | | **2.1 pints (pt)** |
| **1 fluid ounce (fl oz)** | **=** | **30 milliliters (ml)** | | | **1 liter (l)** | | **=** | | | **1.06 quarts (qt)** |
| **1 cup (c)** | **=** | **0.24 liter (l)** | | | **1 liter (l)** | | **=** | | | **0.26 gallon (gal)** |
| **1 pint (pt)** | **=** | **0.47 liter (l)** | | |  | |  | | |  |
| **1 quart (qt)** | **=** | **0.96 liter (l)** | | |  | |  | | |  |
| **1 gallon (gal)** | **=** | **3.8 liters (l)** | | |  | |  | | |  |
| **1 cubic foot (cu ft, ft3)** | **=** | **0.03 cubic meter (m3)** | | | **1 cubic meter (m3)** | | **=** | | | **36 cubic feet (cu ft, ft3)** |
| **1 cubic yard (cu yd, yd3)** | **=** | **0.76 cubic meter (m3)** | | | **1 cubic meter (m3)** | | **=** | | | **1.3 cubic yards (cu yd, yd3)** |
| **TEMPERATURE (EXACT)** | | | | | **TEMPERATURE (EXACT)** | | | | | |
| **[(x-32)(5/9)] F** | | **=** | **y C** | | **[(9/5) y + 32] C** | | **=** | | **x F** | |

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For more exact and or other conversion factors, see NIST Miscellaneous Publication 286, Units of Weights and Measures. Price $2.50 SD Catalog No. C13 10286 **Updated 6/17/98**

Acknowledgements [Optional]

Note: FRA staff should not be acknowledged for providing funding. If appropriate, they can be acknowledged for technical contributions.

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Illustrations

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# Executive Summary

Enter Text [Maximum 1,000 words; approximately 1–1 ½ pages]

(Refer to *Guidelines for Writing Technical Reports*.)

# Introduction

Text [Introductory Paragraph]

## Background

Text

insert photo 
right-click to change image.
use "alt-text" for each image.

Figure . [ENTER CAPTION]

## Objectives

Text

## Overall Approach

Text

## Scope

Text

## Organization of the Report

Text

# Section 2 Title

Text [Introductory Paragraph]

## Subsection 1

Text

Table . [ENTER CAPTION]

|  |  |  |  |
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| Header 1 | Header 2 | Header 3 | Header 4 |
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## Subsection 2

Text

Sample footnote reference.[[1]](#footnote-1)

### Subheading 1

Text

Reference in text sample. (Author, Year)

Reference in text sample. (Author, Year)

Reference in text sample. (Author, Year)

Reference in text sample. (Author, Year)

### Subheading 2

Text

### Subheading 3

Text

#### Subheading 4

Text

##### **Subheading 5**

Text

# Conclusion

Maximum 500 words; approximately 1 page

# References

Author. (Year). Book Title. In B. Author, *Book Title* (p. Pages). City: Publisher.

Author. (Year). Conference Title. *Conference Publication Name* (p. Pages). City: Publisher.

Author. (Year). Journal Title. *Journal Name*, Pages.

Author. (Year, Month Day). *Name of Web Page*. Retrieved from Name of Web Site: URL

# Appendix A. Appendix Heading (Optional)

[Add information related to the Appendix. Insert file text here.]

# Abbreviations and Acronyms

|  |  |
| --- | --- |
| **ACRONYMS** | **EXPLANATION** |
| AAA | List in alphabetical order |
| BBB | List in alphabetical order |
| CCC | List in alphabetical order |
| DDD | List in alphabetical order |
| EEE | List in alphabetical order |
| FFF | List in alphabetical order |

1. [sample foot note reference] [↑](#footnote-ref-1)