



Stantec Consulting Services Inc.
601 Grassmere Park Road, Suite 22, Nashville, TN 37211-3681

October 28, 2015
File: 172675054

Attention: Mr. Mark Macy, PE

Metropolitan Government of Nashville and Davidson County
Department of Public Works
750 South 5th Street
Nashville, TN 37243

Dear Mr. Macy:

Reference: Review of Metro Public Works Health and Safety Program

At the request of Metro Department of Public Works (MPW), TriAD Environmental Consultants, Inc. (TriAD) and Stantec Consulting Services Inc. (Stantec) conducted a review of Metro Public Works' (MPW) current Health and Safety Program. MPW consists of the Engineering/Parking Division, the Waste Division (including recycle, trash, convenience centers, and hazardous materials), the Special Operations Division (includes compliance inspectors), the Call Center, Beautification, Roadway Response, the Signal Shop and the Sign Shop. There are currently 379 employees in MPW. The scope of this review consisted of the following elements:

- Review of applicable written programs, documents, and records for the past three years (2013 – 2015 year-to-date) including written plans, training records and materials, etc.
- Comparison of program elements and records to current Tennessee Division of Occupational Safety and Health (TOSHA) and Federal Occupational Safety and Health Administration (OSHA) regulatory requirements.

The primary purpose of this review was to evaluate existing documentation and procedures, interview safety training personnel, review regulatory requirements for gaps, identify observations by safety topic, and where appropriate, identify and propose best management practice recommendations.

Methodology

On August 11, 2015, a kickoff meeting was held at the 750 South 5th Street location with MPW staff Charles Boddie, Human Resources and Safety Manager, Edna Jones, Training Coordinator, Nancy Sullivan of TriAD, and Kent Evetts and Tony Speer of Stantec. Following the meeting, Mr. Speer initiated a review of training documentation and records. Subsequently, two additional meetings to review training records and meet with safety personnel were held on Friday, August 14, 2015 and Tuesday, August 18, 2015. A brief site walkthrough of the warehouse at 745 South 5th Street was performed the afternoon of August 18, 2015.



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This review covered the applicable regulatory requirements of the Occupational Safety and Health (OSHA) regulations 29 CFR 1910 for General Industry, 1928 for Agriculture and 1926 for Construction as identified in Chapter 0800-1-5, 'Safety and Health Provisions for the Public Sector' of the TOSHA rules. Due to the extensive nature of these regulations and to narrow the focus of the review, a meeting was held with Edna Jones and Phillip Jones on August 14, 2015 to identify the potentially applicable portions of these regulations. The resulting list of potentially applicable regulations that MPW staff identified is included in Attachment A of this report.

Documents Reviewed

1. Metropolitan Government of Nashville and Davidson County Safety Guidelines Manual, December 2012
2. Vehicle Backing Safety Guideline – undated
3. OSHA 300 Logs 2013, 2014 and 2015
4. Flagging Safety Job Safety Analysis, 7/15/2015
5. M&R Leader 2 Job Safety Analysis, 11/15/2014
6. Equipment Operator 3 Job Safety Analysis, 10/25/2014
7. Field Flagging Job Inspections and Safety Observations, various dates
8. Metro Safe Facility Checklist, PW Garage, 740 South 5th, 6/7/2014
9. Metro Safe Facility Checklist, West Center, 3800 Charlotte, 6/16/2014
10. Metro Safe Facility Checklist, East Center, 943 Richard Adams Drive, 5/28/2015
11. Annual Training Schedules, 2013, 2014 and 2015
12. Training Sign-In Logs, various dates
13. Chemical Inventory List for Public Works, revised August 2015
14. Certificates of Training, multiple for various employees and topics, various dates
15. Division of Public Works Job Descriptions – All
16. Past Injury Reports for two past incidents, one in 2014 and one in 2015
17. Metro Injury On-Duty (IOD) Policy
18. Metro IOD Report Form-101



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Summary

MPW utilizes the Metro-Wide Safety Manual for complying with its site-specific written program requirements. This manual includes several written programs that, according to site safety personnel, do not apply to Public Works. There are additional safety topics that are applicable but are not included in the manual. Overall, Stantec perceives that there is a good structure in place for performing and maintaining required safety documentation. There are knowledgeable and experienced personnel in place who know the system. Written plans had been updated to include recent OSHA changes, and training documentation had been completed.

A review of the OSHA 300 Logs for the past two years, and 2015 year to date, shows a significant opportunity for decreasing the number of recordable injuries. MPW has a well-documented injury recording and tracking system and appears to be maintaining a current OSHA injury log. MPW's implementation of a morning stretching routine is a positive step toward addressing the frequency of sprain and strain injuries.

Injury incidence rates for MPW were reviewed from 2013 to the current date and were compared to the most recent OSHA injury data on file for comparable industrial classifications. The OSHA 2013 incidence rate for Solid Waste Collection (NAICS 562111) was 6.3 per 100 employees. For Highway, Street and Bridge Construction (NAICS 2373), it was 4.2 per 100 employees. In comparison, the MPW calculated incidence rate for 2013 was 16.3, 19.6 for 2014 and is trending at an estimated 14.6 for 2015, year to date. The incidence rate represents the number of injuries per 100 full-time workers and was calculated as $[(N/EH) \times 200,000]$ where N = the number of injuries during the year; EH = the total hours worked by all employees during the calendar year, and 200,000 = the base for 100 equivalent full-time workers (working 40 hours per week at 50 weeks per year).

A review of the MPW OSHA injury logs for 2013 – 2015 YTD shows logged injuries as a result of lifting, being struck by, caught-in or between hazards, and slips, trips and falls. OSHA's construction industry outreach training has training lessons available that are designed to help employees to be more aware of the potential for these types of hazards.

In reviewing the applicable written programs, the lack of a Hearing Conservation Program (HCP) for the protection of employees against hearing loss was noted as a deficiency. Because employees in the department consistently use power tools and equipment that generate intense noise, they have the potential for exposure to noise. Even if used intermittently, the noise intensities related to specific pieces of equipment and operations may significantly reduce the exposure



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time allowed. For example, a concrete joint cutting saw generates a noise intensity range of 99-102 dBA. OSHA allows unprotected exposure at this intensity for 1 ½ - 2 hours. Reviews of a number of departmental job safety analyses (JSAs) indicated that noise is taken into consideration, but there is no exposure data (i.e. noise dosimetry) to utilize in determining the proper personal protective equipment (PPE) to mitigate the exposure to an acceptable level.

There were some additional gaps and opportunities identified that can help to improve the continuity of these data and to ensure proper follow-up and tracking of key elements of the safety program. Attachment B of this report is a table that summarizes Stantec's observations and suggested Best Management Practices (BMPs).

Conditions and Limitations

There is an element of uncertainty in evaluating and reporting every management system review due to limited time and resources and, therefore, resulting in limited data. Our use of standardized, internationally accepted procedures and qualified personnel is intended to reduce the risk of errors and omissions as much as possible, given the limited time and resources available to undertake the review.

The information and conclusions contained in this report are based upon work undertaken by trained professionals in accordance with generally accepted practices and were based upon observations of records provided for review at the property during the site visits. The conclusions and recommendations represent the best judgment of Stantec based on the data obtained during the review. Stantec has not conducted employee health/workplace exposure sampling and analysis in conjunction with this review. Stantec cannot be held responsible for omissions based on information that was not provided or other conditions that were not disclosed by Public Works personnel and cannot warrant against undiscovered occupational health and safety liabilities. Should additional information become available which differs significantly from our understanding of conditions presented in this report, we request that this information be brought to our attention so that we may reassess the conclusions provided herein.

Observations, and recommendations made in this document do not represent a legal opinion. The wording used in this report may differ from the text of regulations. For a more precise and complete understanding of regulatory obligations, the reader should refer to the legal text or seek advice from a legal advisor.



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Stantec greatly appreciates the opportunity to work with MPW on this project. Please contact Tony Speer at 615-829-5453 with any questions. We look forward to working with MPW to support the continuous improvement of your Health & Safety Program.

Sincerely,

A handwritten signature in blue ink that reads "Tony Speer".

Tony R. Speer, EI, CESCO
Senior Associate, Environmental Services
tony.speer@stantec.com

A handwritten signature in blue ink that reads "D. G. Feldt".

Dan Feldt, CIH
Senior Industrial Hygienist
dan.feldt@stantec.com

Attachment A: List of Potentially Applicable Regulations

Attachment B: Summary of Stantec's Observations and Recommendations

cc: Nancy Sullivan (TriAD)
Charles Boddie - MPW
Jenna Smith - MPW
Steve Cain - Metro Human Resources

ATTACHMENT A
LIST OF POTENTIALLY APPLICABLE REGULATIONS

Combined Standards List

(Note: Standards highlighted in yellow on the following pages are the standards that MPW staff stated was applicable to MPW at the time of the review. Plans and procedures applicable to these standards are recommended for updating and/or incorporation into the MPW Safety Program and policies, as deemed applicable through a more thorough review of MPW work practices and tasks.)

General Industry

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

Subpart A—GENERAL

- [§1910.1](#) Purpose and scope.
 - [§1910.2](#) Definitions.
 - [§1910.3](#) Petitions for the issuance, amendment, or repeal of a standard.
 - [§1910.4](#) Amendments to this part.
 - [§1910.5](#) Applicability of standards.
 - [§1910.6](#) Incorporation by reference.
 - [§1910.7](#) Definition and requirements for a nationally recognized testing laboratory.
 - [§1910.8](#) OMB control numbers under the Paperwork Reduction Act.
 - [§1910.9](#) **Compliance duties owed to each employee.**
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Subpart B—ADOPTION AND EXTENSION OF ESTABLISHED FEDERAL STANDARDS

- [§1910.11](#) Scope and purpose.
 - [§1910.12](#) Construction work.
 - [§1910.15](#) Shipyard employment.
 - [§1910.16](#) Longshoring and marine terminals.
 - [§1910.17](#) Effective dates.
 - [§1910.18](#) Changes in established Federal standards.
 - [§1910.19](#) Special provisions for air contaminants.
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Subpart C—[RESERVED]

Subpart D—WALKING-WORKING SURFACES

- [§1910.21](#) **Definitions.**
- [§1910.22](#) **General requirements.**
- [§1910.23](#) Guarding floor and wall openings and holes.

- [§1910.24](#) Fixed industrial stairs.
- [§1910.25](#) Portable wood ladders.
- [§1910.26](#) Portable metal ladders.
- [§1910.27](#) Fixed ladders.
- [§1910.28](#) Safety requirements for scaffolding.
- [§1910.29](#) Manually propelled mobile ladder stands and scaffolds (towers).
- [§1910.30](#) Other working surfaces.
-

Subpart E—EXIT ROUTES AND EMERGENCY PLANNING

- [§1910.33](#) Table of contents.
- [§1910.34](#) Coverage and definitions.
- [§1910.35](#) Compliance with alternate exit-route codes.
- [§1910.36](#) Design and construction requirements for exit routes.
- [§1910.37](#) Maintenance, safeguards, and operational features for exit routes.
- [§1910.38](#) Emergency action plans.
- [§1910.39](#) Fire prevention plans.
- [Appendix](#) [Appendix to Subpart E of Part 1910—Exit Routes, Emergency Action Plans, and Fire Prevention Plans](#)
-

Subpart F—POWERED PLATFORMS, MANLIFTS, AND VEHICLE-MOUNTED WORK PLATFORMS

- [§1910.66](#) Powered platforms for building maintenance.
- [§1910.67](#) Vehicle-mounted elevating and rotating work platforms.
- [§1910.68](#) Manlifts.
-

Subpart G—OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROL

- [§1910.94](#) Ventilation.
- [§1910.95](#) Occupational noise exposure.
- [§1910.97](#) Nonionizing radiation.
- [§1910.98](#) Effective dates.
-

Subpart H—HAZARDOUS MATERIALS

- [§1910.101](#) Compressed gases (general requirements).
- [§1910.102](#) Acetylene.
- [§1910.103](#) Hydrogen.

- [§1910.104](#) Oxygen.
- [§1910.105](#) Nitrous oxide.
- [§1910.106](#) Flammable liquids.
- [§1910.107](#) Spray finishing using flammable and combustible materials.
- [§1910.108](#) [Reserved]
- [§1910.109](#) Explosives and blasting agents.
- [§1910.110](#) Storage and handling of liquefied petroleum gases.
- [§1910.111](#) Storage and handling of anhydrous ammonia.
- [§§1910.112-1910.113](#) [Reserved]
- [§1910.119](#) Process safety management of highly hazardous chemicals.
- [§1910.120](#) Hazardous waste operations and emergency response.
- [§1910.121](#) [Reserved]
- [Dipping and Coating Operations](#)
- [§1910.122](#) Table of contents.
- [§1910.123](#) Dipping and coating operations: Coverage and definitions.
- [§1910.124](#) General requirements for dipping and coating operations.
- [§1910.125](#) Additional requirements for dipping and coating operations that use flammable liquids or liquids with flashpoints greater than 199.4 °F (93 °C).
- [§1910.126](#) Additional requirements for special dipping and coating operations.
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[Subpart I—PERSONAL PROTECTIVE EQUIPMENT](#)

- [§1910.132](#) General requirements.
- [§1910.133](#) Eye and face protection.
- [§1910.134](#) Respiratory protection.
- [§1910.135](#) Head protection.
- [§1910.136](#) Foot protection.
- [§1910.137](#) Electrical protective equipment.
- [§1910.138](#) Hand protection.
- [Appendix](#) [Appendix A to Subpart I of Part 1910—References for Further Information \(Non-mandatory\)](#)
- [Appendix](#) [Appendix B to Subpart I of Part 1910—Non-mandatory Compliance Guidelines for Hazard Assessment and Personal Protective Equipment Selection](#)
-

Subpart J—GENERAL ENVIRONMENTAL CONTROLS

- [§1910.141](#) Sanitation.
- [§1910.142](#) Temporary labor camps.
- [§1910.143](#) Non-water carriage disposal systems. [Reserved]
- [§1910.144](#) Safety color code for marking physical hazards.
- [§1910.145](#) Specifications for accident prevention signs and tags.
- [§1910.146](#) Permit-required confined spaces.
- [§1910.147](#) The control of hazardous energy (lockout/tagout).
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Subpart K—MEDICAL AND FIRST AID

- [§1910.151](#) Medical services and first aid.
- [§1910.152](#) [Reserved]
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Subpart L—FIRE PROTECTION

- [§1910.155](#) Scope, application and definitions applicable to this subpart.

- [§1910.156](#) Fire brigades.

Portable Fire Suppression Equipment

- [§1910.157](#) Portable fire extinguishers.
- [§1910.158](#) Standpipe and hose systems.

Fixed Fire Suppression Equipment

- [§1910.159](#) Automatic sprinkler systems.
- [§1910.160](#) Fixed extinguishing systems, general.
- [§1910.161](#) Fixed extinguishing systems, dry chemical.
- [§1910.162](#) Fixed extinguishing systems, gaseous agent.
- [§1910.163](#) Fixed extinguishing systems, water spray and foam.

Other Fire Protection Systems

- [§1910.164](#) Fire detection systems.
- [§1910.165](#) Employee alarm systems.

[Appendix](#) [Appendices to Subpart L of Part 1910—Note](#)

[Appendix](#) [Appendix A to Subpart L of Part 1910—Fire Protection](#)

[Appendix](#) [Appendix B to Subpart L of Part 1910—National Consensus Standards](#)

[Appendix](#) [Appendix C to Subpart L of Part 1910—Fire Protection References For Further Information](#)

[Appendix](#) [Appendix D to Subpart L of Part 1910—Availability of Publications](#)

Incorporated by Reference in Section 1910.156 Fire Brigades

[Appendix E to Subpart L of Part 1910](#)—Test Methods for Protective Clothing

Subpart M—COMPRESSED GAS AND COMPRESSED AIR EQUIPMENT

§§1910.166-1910.168 [Reserved]

[§1910.169](#) Air receivers.

Subpart N—MATERIALS HANDLING AND STORAGE

[§1910.176](#) Handling materials—general.

[§1910.177](#) Servicing multi-piece and single piece rim wheels.

[§1910.178](#) Powered industrial trucks.

[§1910.179](#) Overhead and gantry cranes.

[§1910.180](#) Crawler locomotive and truck cranes.

[§1910.181](#) Derricks.

[§1910.183](#) Helicopters.

[§1910.184](#) Slings.

Subpart O—MACHINERY AND MACHINE GUARDING

[§1910.211](#) Definitions.

[§1910.212](#) General requirements for all machines.

[§1910.213](#) Woodworking machinery requirements.

§1910.214 Cooperage machinery. [Reserved]

[§1910.215](#) Abrasive wheel machinery.

[§1910.216](#) Mills and calendars in the rubber and plastics industries.

[§1910.217](#) Mechanical power presses.

[§1910.218](#) Forging machines.

[§1910.219](#) Mechanical power-transmission apparatus.

Subpart P—HAND AND PORTABLE POWERED TOOLS AND OTHER HAND-HELD EQUIPMENT

[§1910.241](#) Definitions.

[§1910.242](#) Hand and portable powered tools and equipment, general.

[§1910.243](#) Guarding of portable powered tools.

[§1910.244](#) Other portable tools and equipment.

Subpart Q—WELDING, CUTTING AND BRAZING

- [§1910.251](#) Definitions.
- [§1910.252](#) General requirements.
- [§1910.253](#) Oxygen-fuel gas welding and cutting.
- [§1910.254](#) Arc welding and cutting.
- [§1910.255](#) Resistance welding.

Subpart R—SPECIAL INDUSTRIES

- [§1910.261](#) Pulp, paper, and paperboard mills.
- [§1910.262](#) Textiles.
- [§1910.263](#) Bakery equipment.
- [§1910.264](#) Laundry machinery and operations.
- [§1910.265](#) Sawmills.
- [§1910.266](#) Logging operations.
- [§1910.268](#) Telecommunications.
- [§1910.269](#) Electric power generation, transmission, and distribution.
- [§1910.272](#) Grain handling facilities.

Subpart S—ELECTRICAL

General

- [§1910.301](#) Introduction.

Design Safety Standards for Electrical Systems

- [§1910.302](#) Electric utilization systems.
- [§1910.303](#) General.
- [§1910.304](#) Wiring design and protection.
- [§1910.305](#) Wiring methods, components, and equipment for general use.
- [§1910.306](#) Specific purpose equipment and installations.
- [§1910.307](#) Hazardous (classified) locations.
- [§1910.308](#) Special systems.
- §§1910.309-1910.330 [Reserved]

Safety-Related Work Practices

- [§1910.331](#) Scope.

[§1910.332](#) Training.

[§1910.333](#) Selection and use of work practices.

[§1910.334](#) Use of equipment.

[§1910.335](#) Safeguards for personnel protection.

§§1910.336-1910.360 [Reserved]

[Safety-Related Maintenance Requirements](#)

§§1910.361-1910.380 [Reserved]

[Safety Requirements for Special Equipment](#)

§§1910.381-1910.398 [Reserved]

[Definitions](#)

[§1910.399](#) Definitions applicable to this subpart.

[Appendix](#) [Appendix A to Subpart S of Part 1910](#)—References for Further Information

[Subpart T—COMMERCIAL DIVING OPERATIONS](#)

[General](#)

[§1910.401](#) Scope and application.

[§1910.402](#) Definitions.

[Personnel Requirements](#)

[§1910.410](#) Qualifications of dive team.

[General Operations Procedures](#)

[§1910.420](#) Safe practices manual.

[§1910.421](#) Pre-dive procedures.

[§1910.422](#) Procedures during dive.

[§1910.423](#) Post-dive procedures.

[Specific Operations Procedures](#)

[§1910.424](#) SCUBA diving.

[§1910.425](#) Surface-supplied air diving.

[§1910.426](#) Mixed-gas diving.

[§1910.427](#) Liveboating.

[Equipment Procedures and Requirements](#)

[§1910.430](#) Equipment.

[Recordkeeping](#)

[§1910.440](#) Recordkeeping requirements.

[Appendix](#) [Appendix A to Subpart T of Part 1910](#)—Examples of Conditions

Which May Restrict or Limit Exposure to Hyperbaric Conditions

[Appendix B to Subpart T of Part 1910](#)—Guidelines for Scientific Diving

[Appendix C to Subpart T of Part 1910](#)—Alternative Conditions Under §1910.401(a)(3) for Recreational Diving Instructors and Diving Guides (Mandatory)

[Subparts U-Y \[Reserved\]](#)

§§1910.901-1910.999 [Reserved]

[Subpart Z—TOXIC AND HAZARDOUS SUBSTANCES](#)

[§1910.1000](#) Air contaminants.

[§1910.1001](#) Asbestos.

[§1910.1002](#) Coal tar pitch volatiles; interpretation of term.

[§1910.1003](#) 13 Carcinogens (4-Nitrobiphenyl, etc.).

[§1910.1004](#) alpha-Naphthylamine.

[§1910.1005](#) [Reserved]

[§1910.1006](#) Methyl chloromethyl ether.

[§1910.1007](#) 3, '-Dichlorobenzidine (and its salts).

[§1910.1008](#) bis-Chloromethyl ether.

[§1910.1009](#) beta-Naphthylamine.

[§1910.1010](#) Benzidine.

[§1910.1011](#) 4-Aminodiphenyl.

[§1910.1012](#) Ethyleneimine.

[§1910.1013](#) beta-Propiolactone.

[§1910.1014](#) 2-Acetylaminofluorene.

[§1910.1015](#) 4-Dimethylaminoazobenzene.

[§1910.1016](#) N-Nitrosodimethylamine.

[§1910.1017](#) Vinyl chloride.

[§1910.1018](#) Inorganic arsenic.

[§1910.1020](#) Access to employee exposure and medical records.

[§1910.1025](#) Lead.

[§1910.1026](#) Chromium (VI).

- [§1910.1027](#) Cadmium.
- [§1910.1028](#) Benzene.
- [§1910.1029](#) Coke oven emissions.
- [§1910.1030](#) **Bloodborne pathogens.**
- [§1910.1043](#) Cotton dust.
- [§1910.1044](#) 1, 2-dibromo-3-chloropropane.
- [§1910.1045](#) Acrylonitrile.
- [§1910.1047](#) Ethylene oxide.
- [§1910.1048](#) Formaldehyde.
- [§1910.1050](#) Methylenedianiline.
- [§1910.1051](#) 1, 3-Butadiene.
- [§1910.1052](#) Methylene Chloride.
- [§1910.1096](#) Ionizing radiation.
- [§1910.1200](#) **Hazard communication.**
- [§1910.1201](#) Retention of DOT markings, placards and labels.
- [§1910.1450](#) Occupational exposure to hazardous chemicals in laboratories.
- §§1910.1451-1910.1499 [Reserved]

Construction

PART 1926—SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION

Subpart A—GENERAL

- [§1926.1](#) Purpose and scope.
- [§1926.2](#) Variances from safety and health standards.
- [§1926.3](#) Inspections—right of entry.
- [§1926.4](#) Rules of practice for administrative adjudications for enforcement of safety and health standards.
- [§1926.5](#) OMB control numbers under the Paperwork Reduction Act.
- [§1926.6](#) Incorporation by reference.
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Subpart B—GENERAL INTERPRETATIONS

- [§1926.10](#) Scope of subpart.
- [§1926.11](#) Coverage under section 103 of the act distinguished.

- [§1926.13](#) Interpretation of statutory terms.
 - [§1926.14](#) Federal contract for “mixed” types of performance.
 - [§1926.15](#) Relationship to the Service Contract Act; Walsh-Healey Public Contracts Act.
 - [§1926.16](#) Rules of construction.
-

Subpart C—GENERAL SAFETY AND HEALTH PROVISIONS

- [§1926.20](#) General safety and health provisions.
 - [§1926.21](#) Safety training and education.
 - [§1926.22](#) Recording and reporting of injuries. [Reserved]
 - [§1926.23](#) First aid and medical attention.
 - [§1926.24](#) Fire protection and prevention.
 - [§1926.25](#) Housekeeping.
 - [§1926.26](#) Illumination.
 - [§1926.27](#) Sanitation.
 - [§1926.28](#) Personal protective equipment.
 - [§1926.29](#) Acceptable certifications.
 - [§1926.30](#) Shipbuilding and ship repairing.
 - [§1926.32](#) Definitions.
 - [§1926.33](#) Access to employee exposure and medical records.
 - [§1926.34](#) Means of egress.
 - [§1926.35](#) Employee emergency action plans.
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Subpart D—OCCUPATIONAL HEALTH AND ENVIRONMENTAL CONTROLS

- [§1926.50](#) Medical services and first aid.
- [§1926.51](#) Sanitation.
- [§1926.52](#) Occupational noise exposure.
- [§1926.53](#) Ionizing radiation.
- [§1926.54](#) Nonionizing radiation.
- [§1926.55](#) Gases, vapors, fumes, dusts, and mists.
- [§1926.56](#) Illumination.
- [§1926.57](#) Ventilation.
- [§1926.58](#) [Reserved]
- [§1926.59](#) Hazard communication.

- [§1926.60](#) Methylenedianiline.
 - [§1926.61](#) Retention of DOT markings, placards and labels.
 - [§1926.62](#) Lead.
 - [§1926.64](#) Process safety management of highly hazardous chemicals.
 - [§1926.65](#) Hazardous waste operations and emergency response.
 - [§1926.66](#) Criteria for design and construction of spray booths.
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Subpart E—PERSONAL PROTECTIVE AND LIFE SAVING EQUIPMENT

- [§1926.95](#) Criteria for personal protective equipment.
 - [§1926.96](#) Occupational foot protection.
 - [§1926.97](#) Electrical protective equipment.
 - §1926.98 [Reserved]
 - [§1926.100](#) Head protection.
 - [§1926.101](#) Hearing protection.
 - [§1926.102](#) Eye and face protection.
 - [§1926.103](#) Respiratory protection.
 - [§1926.104](#) Safety belts, lifelines, and lanyards.
 - [§1926.105](#) Safety nets.
 - [§1926.106](#) Working over or near water.
 - [§1926.107](#) Definitions applicable to this subpart.
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Subpart F—FIRE PROTECTION AND PREVENTION

- [§1926.150](#) Fire protection.
 - [§1926.151](#) Fire prevention.
 - [§1926.152](#) Flammable liquids.
 - [§1926.153](#) Liquefied petroleum gas (LP-Gas).
 - [§1926.154](#) Temporary heating devices.
 - [§1926.155](#) Definitions applicable to this subpart.
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Subpart G—SIGNS, SIGNALS, AND BARRICADES

- [§1926.200](#) Accident prevention signs and tags.
- [§1926.201](#) Signaling.
- [§1926.202](#) Barricades.

§1926.203 Definitions applicable to this subpart.

Subpart H—MATERIALS HANDLING, STORAGE, USE, AND DISPOSAL

§1926.250 General requirements for storage.

§1926.251 Rigging equipment for material handling.

§1926.252 Disposal of waste materials.

Subpart I—TOOLS—HAND AND POWER

§1926.300 General requirements.

§1926.301 Hand tools.

§1926.302 Power-operated hand tools.

§1926.303 Abrasive wheels and tools.

§1926.304 Woodworking tools.

§1926.305 Jacks—lever and ratchet, screw, and hydraulic.

§1926.306 Air receivers.

§1926.307 Mechanical power-transmission apparatus.

Subpart J—WELDING AND CUTTING

§1926.350 Gas welding and cutting.

§1926.351 Arc welding and cutting.

§1926.352 Fire prevention.

§1926.353 Ventilation and protection in welding, cutting, and heating.

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- [§1926.1001](#) Minimum performance criteria for rollover protective structures for designated scrapers, loaders, dozers, graders, and crawler tractors.
- [§1926.1002](#) Protective frames (roll-over protective structures, known as ROPS) for wheel-type agricultural and industrial tractors used in construction.
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[§1926.1110](#) Benzidine.

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- [§1926.1113](#) beta-Propiolactone.
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Agriculture

PART 1928—OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR AGRICULTURE

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- [§1928.21](#) **Applicable standards in 29 CFR part 1910.**
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Subpart C—ROLL-OVER PROTECTIVE STRUCTURES

- [§1928.51](#) **Roll-over protective structures (ROPS) for tractors used in agricultural operations.**
- [§1928.52](#) Protective frames for wheel-type agricultural tractors—test procedures and performance requirements.
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[Subpart I—GENERAL ENVIRONMENTAL CONTROLS](#)

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[Subpart M—OCCUPATIONAL HEALTH](#)

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ATTACHMENT B

SUMMARY OF STANTEC'S OBSERVATIONS AND RECOMMENDATIONS

Review of Health and Safety Program - Best Management Practice Recommendations
Metro Nashville Department of Public Works (MPW)

| No. | Priority | Category | Observation | Best Management Practice Recommendation | Proposed Completion Date | Assigned To |
|-----|----------|---------------------|---|--|--------------------------|-------------|
| 1 | 1 | Job Safety Analysis | The General Duty Clause of the OSHA Act, Section 5a, states that it is the responsibility of the employer to provide a safe workplace for its employees. As part of this responsibility, it becomes necessary to identify and quantify, where appropriate, the potential exposures of various jobs and tasks. Sometimes that requires a simple review of a chemical's Safety Data Sheet (SDS) and sometimes it may require industrial hygiene sampling. At a minimum, it requires a formal review of the activities to be performed, an assessment of the hazards and the identification of procedures, and PPE to be used to mitigate the potential risks of the task to an acceptable level. Metro has Job Safety Assessment (JSA) and Job Site Safety Survey forms for this purpose. | The Metro JSA forms are being used by MPW to perform analysis of both job positions and specific tasks. However, the analyses are not being maintained in one common location and it was not possible to establish the extent of the use of this tool during the review. It is recommended that a Job Safety Analysis be compiled and cataloged for each job position and where necessary for each key task of that position. These records should be maintained in one common repository for future reference when developing functional job descriptions and identifying appropriate levels of training that are required. | | |
| 2 | 1 | Management System | New Employee Orientation (NEO) training does not appear to have historically been documented and tracked accordingly. Until recently, it appears that new employees would be included in regularly scheduled training sessions, but would not necessarily receive all the required training elements before starting on the new job. | Recent changes implemented by the Training Department identify new employees through receipt of updated employee lists on a frequent basis, allowing them to be trained in a more timely basis before being placed in the job. When utilizing temporary employees through an agency, it is recommended that the agency be able to document for the employee a minimum level of basic safety orientation before being allowed to start work. It is also recommended that a documented pre-job and/or on-the-job orientation be performed for new employees by a trained, knowledgeable person. | | |

Review of Health and Safety Program - Best Management Practice Recommendations
Metro Nashville Department of Public Works (MPW)

| No. | Priority | Category | Observation | Best Management Practice Recommendation | Proposed Completion Date | Assigned To |
|-----|----------|----------------------|--|---|--------------------------|-------------|
| 3 | 1 | Hearing Conservation | <p>The Metro Safety Manual includes a written Hearing Conservation Plan (HCP), but it has not been implemented by MPW. Because employees in the department consistently use power tools and equipment that generate intense noise, they have the potential for exposure to noise. Even if equipment is used intermittently, the noise intensities related to specific pieces of equipment and operations may significantly reduce the exposure time allowed. For example, a concrete joint cutting saw generates a noise intensity range of approximately 99-102 dBA. OSHA allows unprotected exposure at this intensity for 1 ½ - 2 hours. Reviews of a number of departmental job safety analyses (JSAs) indicated that noise is taken into consideration, but there is no exposure data (i.e., noise dosimetry) determining the proper personal protective equipment (PPE) to mitigate the exposure to an acceptable level.</p> | <p>It is recommended that:</p> <ol style="list-style-type: none"> 1) An inventory of noise generating equipment used within the department should be developed and noise intensities measured. These noise levels should be used to evaluate if employees should have monitoring conducted to determine their 8-hour time weighted average (TWA) exposure for possible inclusion in the hearing conservation program. 2) Based on noise measurements of equipment at or above 85 dBA at a perimeter distance of 10 feet, equipment meeting or exceeding this limit should have labels/stickers/placards affixed to them stating "Hearing protection required when operating this equipment or when working within 10 feet of it". 3) Hearing protection should be mandatory when operating equipment that generates noise intensities consistently or intermittently above 90 dBA. 4) A hearing conservation plan should be implemented for personnel in accordance with OSHA requirements (i.e., with 8-hour TWA assessments at or above 85dBA). 5) Conduct noise monitoring on new equipment or tools as they are introduced into operations at MPW. | | |

Review of Health and Safety Program - Best Management Practice Recommendations
Metro Nashville Department of Public Works (MPW)

| No. | Priority | Category | Observation | Best Management Practice Recommendation | Proposed Completion Date | Assigned To |
|-----|----------|---------------------------------|---|---|--------------------------|-------------|
| 4 | 1 | Management System | Employee training records had gaps with regard to refresher training requirements. For example, one employee certified in hazardous waste operations is required to have annual 8-hour refreshers, but was missing documentation for the 2014 refresher period. Some training records are maintained by supervisors because they are connected with morning roll call sign-ins or are for specialized training like forklift training that is coordinated by the departmental supervisor. | <p>1) Training records are recommended to be stored with the safety training coordinator. This can be accomplished by using scanned copies of each roll call sign-in with toolbox training topic attached and by scanned copies of specialized training certificates as they are obtained.</p> <p>2) Having a consistent file naming structure and grouping files by training topic, by year, and by date would help when trying to locate current training status of employees by topic.</p> <p>3) Development of a job description training matrix to identify what training each position is required to have would help to simplify the process of confirming each employee gets the level of training required. This could include additional training that may only be task-specific and may not be required for all employees in that job description.</p> | | |
| 5 | 2 | Emergency Action Plan | MPW has a very extensive Emergency Response Plan that appears to cover the potentially hazardous conditions. Training on the Emergency Action Plan is completed as part of the annual refresher requirements. However, site maps and assembly locations for each work center are not posted showing the evacuation routes and designated assembly areas in the event of an evacuation. | Recommend that site maps be posted showing evacuation routes and designated assembly areas in the event of an evacuation or shelter in place requirement. | | |
| 6 | 2 | Asbestos and Lead Paint Surveys | Most of the MPW operations are in buildings that are old enough to be suspect for asbestos and lead paint exposures. Discussions with MPW safety personnel indicate that asbestos surveys have been completed in the past for the facilities, but this information is antiquated and needs to be updated. | It is recommended that the asbestos surveys and lead paint surveys be maintained with the Safety Department and be referenced when construction activities are scheduled to occur at MPW, both for MPW personnel and contractors. It is also recommended that MPW review and consider updates to all surveys. | | |

Review of Health and Safety Program - Best Management Practice Recommendations
Metro Nashville Department of Public Works (MPW)

| No. | Priority | Category | Observation | Best Management Practice Recommendation | Proposed Completion Date | Assigned To |
|-----|----------|------------------|---|---|--------------------------|-------------|
| 7 | 2 | Inspections | <p>MPW has the forms and procedures in place to perform and document work site inspections and equipment inspections.</p> <p>1) A review of documented off-site work inspections indicated a loose adherence to the use of the form and seems to focus primarily on adherence to traffic control implementation and the use of personal protective equipment (PPE). There was only one noted deficiency documented on the multiple forms that were reviewed.</p> <p>2) Equipment inspection forms were not reviewed. It was explained that these forms are maintained by the supervisors and not by the Safety Department.</p> <p>3) One of the site inspection forms for each of the centers was reviewed. These forms appeared to have a good checklist for the required facility safety elements needing to be inspected on a periodic basis. These inspections are only performed quarterly.</p> | <p>It is recommended that:</p> <p>1) The remote worksite inspection form be revised to simplify documentation of worksite observations by using check boxes for potential hazards and to possibly begin developing statistical documentation of compliance versus non-compliance observations.</p> <p>2) Copies of inspection forms documenting inspection of equipment be maintained and audited on a regular basis by the Safety Department to confirm that they are being completed daily before use.</p> <p>3) Facility inspection forms be performed on a more frequent basis and that the checklist be used to document each observation.</p> <p>4) MPW consider training additional personnel to assist with inspections.</p> | | |
| 8 | 2 | OSHA Injury Logs | <p>MPW has a well documented injury recording and tracking system and appears to be maintaining a current OSHA injury log. A review of the MPW OSHA injury logs for 2013 – 2015 YTD indicates a high percentage of injuries potentially as a result of lifting, being struck by, caught-in or between hazards, and slips, trips and falls. MPW's implementation of a morning stretching routine is a positive step toward addressing the frequency of sprain and strain injuries.</p> <p>Injury incidence rates for the department were reviewed from 2013 to the current date and were compared to the most recent OSHA injury data on file for comparable industrial classifications. The OSHA 2013 incidence rate for Solid Waste Collection (NAICS 562111) was 6.3 per 100 employees and for Highway, Street and Bridge Construction (NAICS 2373) was at 4.2 per 100 employees. In comparison, the MPW calculated incidence rate for 2013 was 16.3; 19.6 for 2014 and is trending at an estimated 14.6 for 2015 year to date.</p> | <p>In addition to the implementation of the other recommendations in this report, it is recommended that:</p> <p>1) MPW consider incorporating OSHA's construction industry training on the 'Focus Four' hazards of falls, caught-in or-between, struck-by and electrocution into the annual refresher training curriculum. This training consists of lessons designed to help employees to be more aware of the potential for injuries from these types of hazards.</p> <p>2) MPW implement a "Stop Work Authority" program to empower employees to speak up if they feel a situation is unsafe.</p> <p>3) MPW implement some form of employee feedback/suggestion forum for employees to offer suggestions for improvement and to provide a way to reward or recognize those employees who identify safety improvement opportunities.</p> | | |

Review of Health and Safety Program - Best Management Practice Recommendations
Metro Nashville Department of Public Works (MPW)

| No. | Priority | Category | Observation | Best Management Practice Recommendation | Proposed Completion Date | Assigned To |
|-----|----------|----------------------------------|--|--|--------------------------|-------------|
| 9 | 2 | Injury / Incident Investigations | MPW has a written plan for accident reporting and investigation. It was not clear how the incident investigation process proceeds after an injury incident. Usually there is a determination that the accident was either avoidable or unavoidable with some justification provided accordingly. If willful violation of a safety policy then enforcement is initiated. | It is recommended that the investigation process incorporate a root cause analysis of each injury to see what physical causes, human causes or organizational causes may have been involved. This information could be shared as appropriate to modify or change employee behaviors or MPW procedures to reduce the risk of repeat injuries. | | |
| 10 | 2 | Corrective Actions | Current inspection forms, incident investigations and other documents that offer the opportunity to identify corrective actions, do not appear to be tracked to completion. | It is recommended that a Corrective Action Log be developed so that corrective actions can be tracked to completion and promote timely completion. | | |
| 11 | 2 | Management System | Use of the Metro-Wide Safety Manual as the default for all safety programs does not address all of the needs of MPW. | It is recommended that MPW develop their own safety manual that is both compliant with the Metro-Wide safety manual and expanded to more adequately address required safety elements for jobs within the department. | | |
| 12 | 2 | Management System | Training for most of the required training elements is primarily being covered by a modified version of the OSHA 10-Hour General Industry (GI) Hazard Recognition training that is performed by the Safety Training Coordinator on an annual basis. This training does not satisfy the training requirements for each of the OSHA standards that are applicable, several of which are Construction Industry (CI) standards. OSHA 10 hr GI training is intended to improve employee hazard recognition and awareness in tasks where the various standards may be applicable but not for training employees on the required elements of compliance with those standards. Even though OSHA cards are not being provided through this training, by referring to this training as OSHA-10 hour, it is understood to satisfy the basic requirements of that training. The training does not include mandatory elements of training for Introduction to OSHA. | It is recommended that the annual compliance training be referred to simply as OSHA training and not refer to it as the OSHA 10-Hour training. The OSHA 10-hr training program is directed toward increasing employee hazard awareness and recognition. Training modules should satisfy the individual training requirements identified in each standard that is applicable. | | |

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|-----|----------|------------------------|--|--|--------------------------|-------------|
| 13 | 2 | Hazardous Materials | The workplace chemical list that was provided was a generic listing with no header. The last revision update was August 2015. | <p>1) It is recommended that MPW use the format identified in Appendix A (Page 16-12) of the Metro Hazard Communication Plan that is identified for this purpose. It is a table that includes the manufacturer, the product name, quantity on hand, work areas where the chemical is issued (as identified on the form being referenced), and a check box for confirming the presence of an SDS.</p> <p>2) Review this chemical list no less than annually and update as new materials are added.</p> <p>3) Implement a chemical review process in coordination with materials procurement requiring that new chemicals cannot be purchased or brought on site without a review and signoff by key personnel including the safety manager.</p> | | |
| 14 | 3 | Management System | Training documentation for the past three years did not consistently document information to identify the trainer name, topics covered, date, time and length of training, etc. | Develop a standardized form for this information to be included each time a training class is held. The Safety Training Coordinator has already made the necessary adjustments to the training sign-in sheets. | 8/14/2015 | E. Jones |
| 15 | 3 | Respiratory Protection | This program is not applicable to MPW with one exception- where employees are allowed to wear dust-filtering face masks, MPW is required to provide a copy of the language from Appendix D of the respiratory protection standard and have the employee sign it to document receipt. | Recommend that this be communicated and documented for all field employees. This training with sign-offs on the forms has been completed for field employees by the Safety Training Coordinator. | 8/18/2015 | E. Jones |