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Working at Height:
Rope Descent System – OSHA's Final Rule

Objectives

Agenda and Objectives

1. Understand how the Final OSHA Rule affects you
2. Understand the OSHA difference between maintenance vs. construction
3. Understanding OSHA compliance
4. Understand inspection, testing, and certification requirements for RDS
5. Provide a summary of the presentation

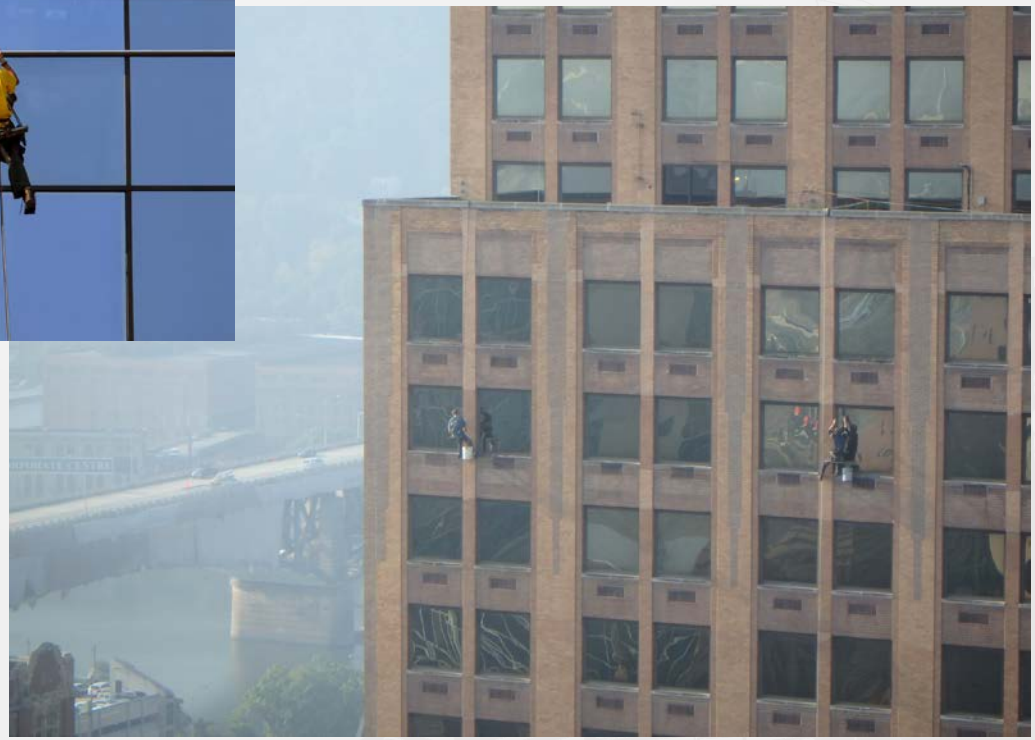
Disclaimer:
The information presented herein shall not be used for specific fall protection design; a qualified person shall be consulted for all site specific fall protection evaluation and design efforts. Furthermore, the information provided corresponds to the applicable code and regulatory provisions up to December, 2017; reader is advised that these provisions are constantly being updated and should always reference the most recent code provision requirements at the time of use.

Final OSHA Rule

So you've got dirty windows and you want to clean them….

Final OSHA Rule

A Rope Descent System (RDS) is used for access…..



Final OSHA Rule

How does this affect you?

- November 20, 2017
- MEMORANDUM FOR: REGIONAL ADMINISTRATORS
- THROUGH: LOREN SWEATT, Deputy Assistant Secretary
- FROM: Thomas Galassi, Director
- Enforcement Guidance for General Industry Rope Descent System (RDS) Anchorage Requirements (29 CFR 1910.27(b)(1))
- This memorandum provides guidance to Compliance Safety and Health Officers (CSHOs) for enforcing the new **RDS anchorage requirements** in the final rule revising the general industry Walking-Working Surfaces and Personal Protective Equipment (Fall Protection Systems) ("Walking-Working Surfaces") standards (29 CFR part 1910, subparts D and I).
- OSHA published the Walking-Working Surfaces rule on November 18, 2016, and it became effective January 17, 2017 (81 FR 82494). The rule gave employers and building owners until **November 20, 2017**, to comply with requirements for inspecting, testing, and certifying **Rope Descent System (RDS) anchorages** before any worker uses an RDS.

Maintenance vs. Construction

OSHA

- Standard 1910.66 Appendix C – Personal Fall Arrest System
  - Sub Part D – Walking Working Surfaces
  - Appendix F – Powered Platforms
- Standard 1926.500 Sub Part M – Duty to Have Fall Protection
- OSHA Interpretation Letters

ANSI

- ANSI/IWCA I-14.1
- ANSI/ASSE Z359

ASME

- ASME A120.1
  - Model/National Building Code
- IBC Mechanical Code
- IBC Existing Buildings Code
  - Local Building Codes*
- Cal OSHA
- NY OSHA
- NYC and City of Chicago
- State of Washington
- Per OSHA website “25 states, Puerto Rico, and the Virgin Islands have adopted ***their own*** standards and enforcement policies”

Maintenance vs. Construction

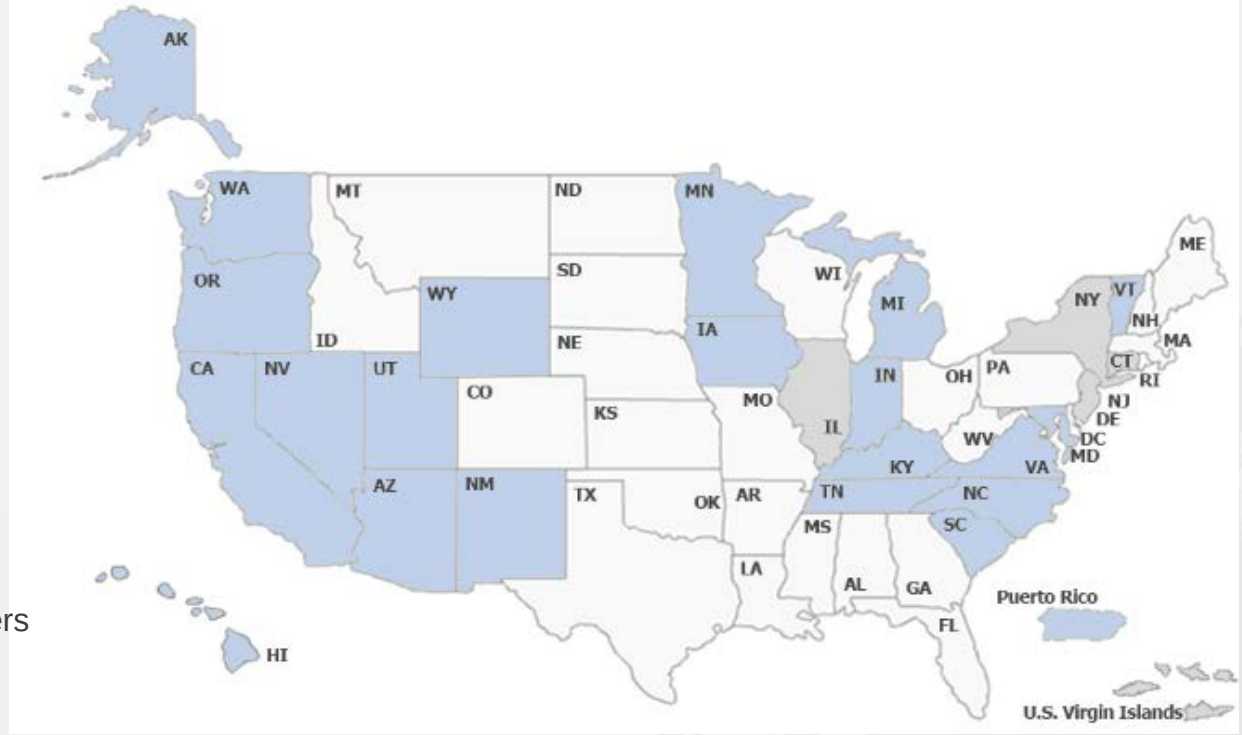
OSHA Map of Local/State Plan Adoptions
(source: https://www.osha.gov/dcsp/osp/index.html)

Twenty-six states, Puerto Rico, and the Virgin Islands have OSHA-approved State Plans (A). Twenty-two State Plans (21 states and one U.S. territory) cover both private and state and local government workplaces (B). The remaining six State Plans (five states and one U.S. territory) cover state and local government workers only (C).

A — OSHA-approved State Plans

B — Private, State, Local Government Workplaces

C — State, Local Government Workers



Maintenance vs. Construction

OSHA 1910 Appendix C (General Industry Regulation – The General Duty Clause)

- Defines a fall hazard as an unprotected elevated area which is four feet or more above a lower level surface
- Anchorages to which personal fall arrest equipment is attached shall be capable of supporting at least 5000 lbs per employee attached
- Fall arrest systems shall be rigged so that an employee can neither fall more than six feet nor contact a lower level
- Confirms that these fall arrest systems must be inspected prior to each use
- As of November, 2017, 1910 includes MAINTENANCE:
  - Pointing and caulking
  - Window washing
  - **No longer is the building owner allowed to push the requirements for life safety anchorage off to the contractor as "contractor-provided equipment".**
  - **ISA required for work over 150-ft**
    - ISA = Intermittent Stabilization Anchors; to be spaced 30-ft on-center vertically to prevent stage from being pulled away from the face of building

Maintenance vs. Construction

OSHA 1926 Sub Part M (Construction Regulation)

- Defines a fall hazard as an unprotected elevated area which is six feet or more above a lower level surface
- Confirms that the fall protection may be by the use of guardrail systems, safety net systems, or personal fall arrest systems
- Reiterates the fall height as six feet and that an employee can fall no more than six feet when attached to a personal fall arrest system
- Identifies the maximum arresting force on an employee to 1800 lbs
- Note: since the fall distance and requirements for arresting force are defined differently in the construction regulation vs. the general duty clause, a system designed for one purpose may not meet the requirements for the other purpose

Maintenance vs. Construction

OSHA General Duty Clause

The General Duty Clause, Section 5(a)(1) of the Occupational Safety and Health Act, requires the following:

<u>Each Employer:</u>

- Shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees; and
- Shall comply with occupational safety and health standards promulgated under this Act.

<u>Each Employee:</u>

- Shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions

Maintenance vs. Construction

OSHA General Duty Clause

The General Duty Clause can be used by OSHA only when there is specific regulation with OSHA that applies to a particular hazard to which an employer has exposed its employees. All of the following elements are necessary for OSHA to prove a general duty clause:

- The employer fails to keep the workplace free of a hazard to which its employees are exposed;
- The hazard was recognized;
- The hazard has caused, or will likely to cause, death or serious physical harm;
- There was a feasible and useful method to correct the hazard (Consensus Standards such as IWCA, ANSI, ASME, and ASSE)

Maintenance vs. Construction

Consensus Standards: ANSI I-14.1

- Applicable for window cleaning safety (most well referenced standard for window cleaning at height operations)
- Provides comprehensive guidance for rope descent systems (RDS)
- Two part standard (Shared Responsibility)
  - Part A is dedicated to Users
  - Part B is dedicated to Building Owners
- Update coming pending new General Duty clause

Maintenance vs. Construction

From all that we arrive at the following:

- Different regulations apply to maintenance vs. construction
- The safety of maintenance workers is the responsibility of the building owner
- Window washing is considered maintenance
- Maintenance requires a managed fall protection program including a use plan
- There’s more to consider than just the RDS and window washing in order to be compliant with OSHA

Maintenance vs. Construction

- FOR WINDOW WASHING RDS
  - Layout and reach limited by IWCA
  - Loads controlled by OSHA general duty clause
  - Responsibility falls on the building owner to provide safe work area for maintenance
  - Workers descend only
- FOR SWINGS FOR RESTORATION
  - Layout has more flexibility
  - Loads controlled by OSHA construction standard
  - Responsibility falls to GC to provide safe work area for construction workers
  - Workers ascend and descend

OSHA Compliance

What kind of Roof Anchors do you have?

- Anchors for RDS primary support and life safety
- Anchors for swing stage work life safety
- Anchors for swing stage primary support
- Anchors for rooftop maintenance worker safety
- Anchors that are exposed portions of the building structure
- Anchors that are part of an abandoned or uncertified permanent roof rig
- Anchors to stop a fall or anchors to prevent a fall

- **All of the above must be identified on a Use Plan or else Compliance cannot be achieved.**

OSHA Compliance

What kind of Roof Anchors do you need?

- Do you need to design a permanent system?
  - Yes, if you want to wash windows by RDS you have to provide life safety anchors
- Do you need to wash windows by RDS?
  - No, not if you can find another way and develop a safe Use Plan
    - Man-lift
    - Operable windows
    - Extension poles
    - Robotics
    - Don't wash windows
- Do you need to be concerned with fall hazards on your roof?
  - Yes, you must ensure that no work occurs within 6-feet of an unprotected edge.
  - Yes, you must be sure no MEP equipment is within 10-feet of an unprotected edge.
- Do you have to install rooftop anchors for fall protection?
  - No, not if you can move the equipment or create a 42-inch high protected edge.
- How do you make sense of all of the above?
  - **Perform a Compliance Audit**

OSHA Compliance

Working at Height

- For all buildings with exteriors accessed from elevated areas ***proper anchorage*** points shall be provided.
  - ***Proper anchorage = primary support + life safety tiebacks + ISA***
- For buildings less than 300 feet in height, temporary support systems (scaffolds, bosun chairs, etc.) may be provided by the contractor. ***Fall protection anchors are still required to be provided by the building!***
  - Suspended scaffolds used to service a building on a temporary basis.
  - Must be tied-back to an appropriate permanent anchorage to prevent falls
- Buildings greater than 300 feet require a permanent stage system unless constructed prior to 1991. If prior, may be temporary. ***Fall protection anchors are still required to be provided by the building!***
  - Components or installations permanently dedicated to building maintenance.
  - Explicitly defined as an ***Owner provided and maintained system***. Each worker performing suspended maintenance must have two independent lines
- Buildings 300 feet or greater cannot be cleaned via Bosun's chair!

OSHA Compliance

- Each worker performing suspended maintenance must have two independent lines
  - Primary line is for suspension, either direct rigged to an anchor, davit arm, rigging sleeve or outrigger beam
  - Secondary line is for user safety in the event that the primary line fails
- Lines must attached to independent rooftop anchorages
- Maximum distance apart for rooftop anchors is 12’ (ANSI/IWCA I-14.1)
- Anchors cannot be offset greater than 15° (ANSI/IWCA I-14.1)
- Angulation and distance is designed to protect a worker from falling a distance of greater than 6’ and to to minimize the pendulum-like motion during a fall (ANSI Z359)
- Pedestrian barrier systems shall have a minimum height of 42”
- Equipment brought to the site by the contractor falls under different OSHA regulations for Construction.

OSHA Compliance

- Fall protection products include the following:
  - Guard rails
  - Safety net systems
  - Warning lines
  - Personal fall arrest systems / Suspended maintenance systems
  - Horizontal lifelines

OSHA Compliance

Load Requirements

System	Design Ultimate Load	Test Load
Pedestrian Guardrails	200 lbs concentrated load or 50 lbs/ft	
Fall Arrest Systems	5,000 lbs instantaneous load	2,500 lbs for 15-20 minutes
Restraint & Travel Systems (usually includes suspended scaffolding rated load)	4xRated Load (usually 4,000 lbs)	Rated Load (Usually 1,000 lbs)
Horizontal Lifelines	2x Max Tension Developed in Lifeline during a fall arrest event	
Rescue Systems	5xRated Load	Rated Load (Usually 3,000 lbs)

Inspection, Testing, & Certification

- General Requirements (ANSI/IWCA I-14.1):
  - Section 3.9 – *"Building owners and window cleaning contractors shall not allow suspended work to be performed unless it has been determined that the building has provided, identified, and certified anchorages…"*
  - Section 9.1.9 – *"Anchorages shall be inspected annually by a qualified person. Anchorages shall be re-certified when re-roofing or renovating, or at periods not to exceed 10 years."*

Inspection, Testing, & Certification

General Requirements (ANSI/IWCA I-14.1):

- Section 8.1 – General Inspections
  - All aspects of the installation shall be serviced and maintained in strict accordance with its manufacturer's frequency and instructions and shall be further inspected, maintained, and tested in accordance with Section 7.3.
  - If testing is deemed necessary, a registered professional engineer shall prescribe a test procedure and certify its results
  - Upon completion of the inspection and testing, a thorough description of findings and/or test results shall be entered into the equipment's logbook and dated.

Inspection, Testing, & Certification

RDS Anchors

- Before any rope descent system is used, the building owner must inform the window cleaning company, in writing that the building owner has identified, tested, certified, and maintained each **anchorage** so it is capable of supporting the 5,000 pound ultimate load (268 kg), in any direction, for each employee attached.
- The information must be based on an annual inspection by a qualified person and certification of each anchorage by a qualified person, as necessary, and at least every 10 years.
- Before each use, all components of a window cleaning equipment support system permanently dedicated to the building shall be visually inspected by a competent person. Any signs of excessive wear, weld or material cracks, bent distressed or rusted metals, corrosion, or abraded fibers shall be cause for more extensive testing before continued use.
- Any missing components shall be documented and the system shall not be used until such components are replaced or repaired by the equipment owner.
- Replacement of parts or components shall be of like strength, finish and durability of that originally provided. A record of all inspections, testing certifications, modifications, and repairs shall be documented in a dedicated log book.
- A certified system includes an initial stamped and sealed load test, annual visual inspections, and stamped and sealed certification records on 10-year intervals.

Inspection, Testing, & Certification

Building Owner's Responsibility

- All fall protection products are to be **inspected annually** and maintained so as to ensure they are safe and operating properly
- All fall protection products are to be **re-certified (pull tested) according to the manufacturer's recommended schedule (most are every 10-years) and testing is required after re-roofing** so as to ensure they are safe and operating properly
- Keep a log of inspections on record
- Provide assurance to a contractor in writing that the installation of the products/system meets regulatory standards pertinent to the contractor's scope of work
- Provide assurance in writing that the installation has been inspected and maintained and that all safety equipment functions properly
- Provide contractor all relevant documentation and available information, including shop drawings, test data and equipment specifications.
- Provide contractor with the system's operations manual and other institutional safety requirements

Inspection, Testing, & Certification

Owner Sample Letter

Building Owner Sample Letter

The sample document below is to be provided by the Building Owner/Property Manager on their own letterhead to the Contractor.

We, (Building Owner) represent to (Maintenance Contractor) that the installed fall protection system, and all related components have been installed in accordance with the manufacturer's drawings and specifications, and meets regulatory standards pertinent to your scope of work.

We also represent that the installation has been inspected and maintained in accordance with the manufacturer's inspection requirements, and all products are safe and operational.

Building Owner

_____
(Print Name)

_____
(Sign Here)

_____

_____

_____
(Address)

_____
(Date)

Inspection, Testing, & Certification

Contractor's Responsibility – Owner's Risk Management

- Owner's should require that Contractor's:
  - Submit a written form that certifies employees have been trained and have capability in the operation of products in accordance with recommendations and shop drawings.
  - Review and acknowledge Owner's Fall Protection Program Documents and usage/certification logs
  - The Contractor shall also provide a written "Plan of Service" (Use Plan) which addresses utilizing Contractor-provided suspended equipment and Owner-provided life safety anchors.
- Where contractor provides transportable or person fall protection equipment, that equipment shall be designed maintained and inspected in accordance with all applicable regulatory codes and standards.
- Contractor's "Plan of Service" (Use Plan) should also include a rescue plan.

Inspection, Testing, & Certification

Contractor Sample Letter

Maintenance Contractor Sample Letter

This sample document or similar is to be provided by the Maintenance Contractor on their own letterhead to the Building Owner/Property Manager.

We, (Maintenance Contractor) represent to (Building Owner/Property Manager) that all employees are properly trained and proficient in the safe use of the fall protection equipment installed on this project. Additionally, all employees are trained and proficient regarding codes and practices set forth in OSHA, ANSI and ASME standards as related to our scope of work on this project.

We also represent that we have completed an inspection of the safety and rigging equipment, and shall inspect the equipment before each use to verify that all equipment is safe and operational.

Attached are the written work plan and procedure for the intended rigging and safety methods we expect to apply, and information concerning our communications system that will be used to expedite rescue in conformance to ANSI I-14.1/2001, Section 1.7 Standard.

We have reviewed the system restrictions and limits as noted on the shop drawings and will work in strict accordance with these requirements.

MAINTENANCE CONTRACTOR:

(Print Name)

(Sign Here)

(Date)

Inspection, Testing, & Certification

Initial Inspection (Owner's Responsibility)

- New installation shall be initially inspected and where necessary tested in the filed to determine all parts are safe and operating properly before being placed into service.

Periodic Inspections (Owner's Responsibility)

- Fall protection systems should undergo periodic (annual) inspections by a qualified person according to OSHA 1910.66.
- Equipment shall require inspection every 12 months under normal use conditions.
- Record inspections in the Inspection and Certification Log.
- In addition to the annual inspection program, Ownership is responsible to ensure the equipment is functioning, maintained and that users are completing a safety check each time the equipment is used.

Inspection, Testing, & Certification

User Inspections (Contractor's Responsibility)

- All products/equipment should be inspected by the user who qualifies as an OSHA defined competent person
- Before use, users should review maintenance and/or inspection logs to verify maintenance and inspections have been completed

Recertification (Owner's Responsibility)

- Owner must recertify at intervals not to exceed 10 years
  - Note: if a system incorporates epoxy anchors, recommended recertification interval is 5 years.
- When equipment shows signs of wear, distress or damage during inspection.
- When re-roofing or renovation occurs
- Record re-certifications in the Inspection and Certification Log

Usage Log (Owner's Responsibility)

- Owner to provide a Usage Log to be completed and signed by the equipment user.

Summary

- Developing a Compliant RDS system takes consideration of**more** than just how we wash windows, it involves a thorough review of the rooftop for fall hazards.
  - Consideration of rooftop fall hazards in conjunction with RDS window washing systems allows for the building Owner to protect themselves from others risks and to get multi-purpose use out of the anchors once installed.
  - Use plans for RDS are often neglected or missing, resulting in non-compliant systems.
  - **OSHA Compliance** requires an on-going cycle of assessment and re-assessment; testing and re-testing; and continual understanding of code changes.
    - A complete review of rooftop safety concerns (**Rooftop Compliance Audit**) is recommended in order to achieve OSHA Compliance.
- Development of RDS rooftop anchorages requires structural engineering and a thorough review of the existing roof structure along with the original building drawings.
- The loads involved are ultimate and it is possible to have a system save a life, but also become permanently damaged and require replacement.

Questions and Thank you!