

# *High-Visibility Safety Apparel in Work Zones*



# *Module Objectives*

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- ◆ Describe the three classes of apparel
- ◆ Discuss factors to consider for selecting apparel
- ◆ Discuss factors affecting wear and tear of apparel and when it should be replaced

# *Who Needs High-Visibility Safety Apparel?*

- ◆ “**All** workers within the right-of-way (ROW) of a Federal-aid highway who are **exposed** either to **traffic** (vehicles using the highway for purposes of travel) or to **construction equipment** within the work area shall wear high-visibility safety apparel.”<sup>1</sup>

# *Worker Definition?*

- ◆ “Workers” are people on foot whose duties place them within the right-of-way of a Federal-aid highway, such as:
  - ◆ Highway construction and maintenance forces
  - ◆ Survey crews
  - ◆ Utility crews
  - ◆ Incident responders
  - ◆ Firefighters
  - ◆ Law enforcement personnel.<sup>1</sup>

# *Limited Exemptions*

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- ◆ Limited exemptions exist for firefighters and other emergency responders when they are not directly exposed to flame, fire, heat, and/or hazardous materials.

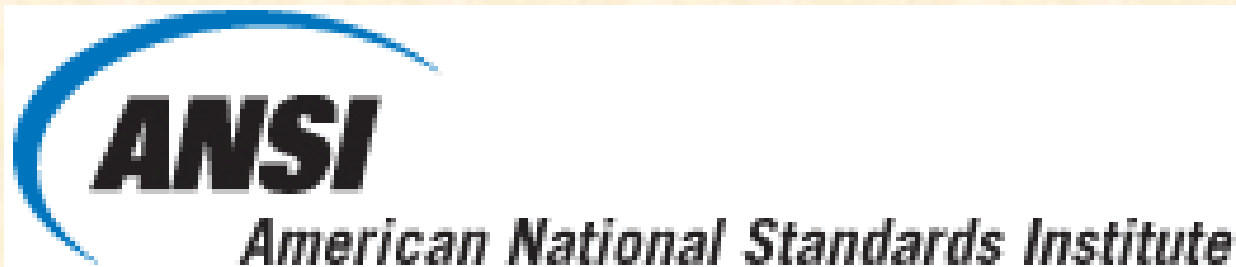
# *High-Visibility Safety Apparel*



- ◆ Definition from ANSI/ISEA 107-2004: "Personal protective safety clothing intended to provide conspicuity during both daytime and nighttime usage."
  - ◆ Designed to clearly identify the wearer as a person

# ***ANSI Requirements for High-Visibility Apparel***

- ◆ ***ANSI 107-2004, American National Standard for High-Visibility Safety Apparel***
- ◆ Included by reference in MUTCD



# ***ANSI/ISEA 107-2004***

- ◆ Specify minimum amounts of retroreflective materials, colors, and placement of materials
- ◆ Three types of apparel:
  - ◆ Class 1
  - ◆ Class 2
  - ◆ Class 3





# ***ANSI/ISEA 107-2004***



- ◆ Requires Class 3 apparel to have **sleeves**
- ◆ Identifies wearer as a person

# *Vest Characteristics*

- ◆ Background material
- ◆ Retroreflective material
- ◆ Combined performance material



# *Factors for Selecting Apparel*

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- ◆ Perform a hazard and safety assessment and consider:
  - ◆ Standards
  - ◆ Visibility with comfort
  - ◆ Roadway characteristics
  - ◆ Work environment

# *Standards and Regulations*

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- ◆ Check your Standards
  - ◆ National
    - ◆ ANSI/ISEA
    - ◆ MUTCD
  - ◆ State
  - ◆ Local

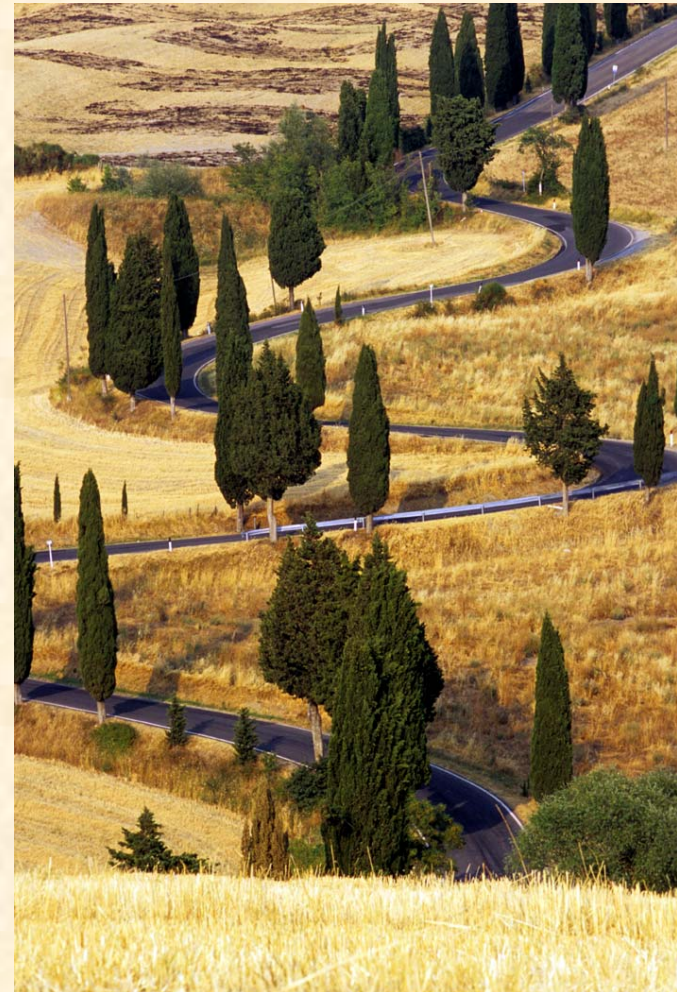
# *Visibility*

- ◆ Daytime
- ◆ Low-light (dawn or dusk)
- ◆ Nighttime
- ◆ Weather
- ◆ Background complexity



# *Roadway Characteristics*

- ◆ Sight or stopping distance
- ◆ Proximity to traffic
- ◆ Traffic speed and volume



# *Work Environment*

- ◆ Job type
- ◆ Specific needs of workers
- ◆ Worker comfort



# *Class 1 Apparel*

- ◆ Do not use
- ◆ Not acceptable for working near traffic





# *Class 1 Apparel*

- ◆ Provides minimum material to differentiate worker from their environment
- ◆ Check label



# *Class 2 Apparel*

- ◆ Class 2 apparel or better is required for **ALL** workers within the right-of-way
- ◆ Various colors allowed
- ◆ Check label



**Check your local standards!**

# *Class 2 Apparel*

- ◆ Provides superior visibility for wearers by additional coverage of the torso.



# *Class 3 Apparel*

- ◆ Recommended for nighttime operations
- ◆ Vest has sleeves
- ◆ Worker is visible from all angles
- ◆ Check label



Recommended  
for nighttime flagging!

# *Class 3 Apparel*

- ◆ Provides greater wearer visibility in complex backgrounds than Class I and II Apparel.






# *Class 3 Ensemble*

- ◆ Class 2 vest in combination with Class E trousers or shorts
- ◆ Provides visibility at a minimum of  $\frac{1}{4}$  mile
- ◆ Worker can be seen from all angles



# Review of Apparel

	Class 1	Class 2	Class 3
Background material	217 in <sup>2</sup>	755 in <sup>2</sup>	1240 in <sup>2</sup>
Retroreflective or combined performance material with background material	155 in <sup>2</sup>	201 in <sup>2</sup>	310 in <sup>2</sup>
Example Pictures			

# *Public Safety Apparel*

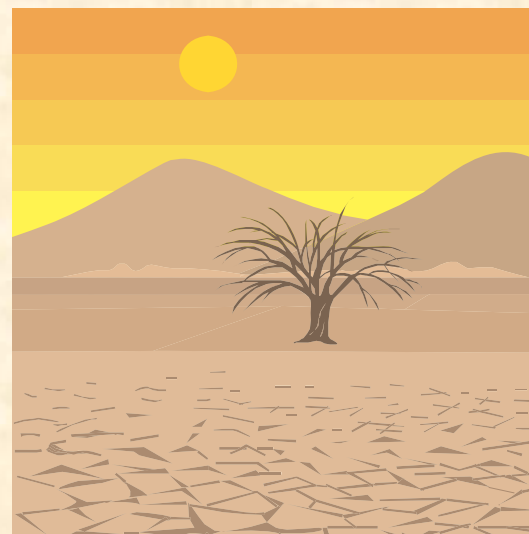
- ◆ Apparel utilized by fire, EMS, and law enforcement personnel
- ◆ ANSI/ISEA 207-2006 requirements





# *Factors Affecting Wear & Tear*

- ◆ Higher elevations
- ◆ Hot climates
- ◆ Type of work done while wearing apparel
- ◆ Care of the apparel
  - ◆ Washing
  - ◆ Storing



***Should you wear this apparel?***



# *Characteristics of Acceptable Apparel*

- ◆ Vivid color contrast
- ◆ High retroreflectivity
- ◆ Not faded or soiled
- ◆ Visible from 1,000 feet day or night



# *Characteristics of Unacceptable Apparel*

- ◆ Little or no reflectivity
- ◆ Soiled material
- ◆ Faded color with poor color contrast
- ◆ Not visible from 1,000 feet day or night
- ◆ Deteriorated reflective strips



# *When to Replace?*

- ◆ Apparel that is faded, torn, dirty, worn, defaced, or not visible at 1,000 feet by day or night
- ◆ Service life varies
  - ◆ Six months if worn daily
  - ◆ Up to three years if worn occasionally



If you think apparel is questionable,  
you should replace it.

# *When Apparel is Ready for Replacement:*

- ◆ Notify safety compliance officer or supervisor for replacement apparel
  - ◆ Note the type of work
  - ◆ Class of Apparel needed
- ◆ Discard old apparel
  - ◆ Cut old apparel in half



# *Purchasing Considerations*

- ◆ Working conditions
- ◆ Class of apparel needed
- ◆ ANSI/ISEA 107-2004 and 207-2006 compliance
- ◆ State and local standards and guidelines
- ◆ MUTCD section 6E



# *Module Recap*

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- ◆ Name the three classes of apparel.
- ◆ Which ones are appropriate for work within roadway right-of-way?
- ◆ Name two factors for selecting apparel.
- ◆ Name two factors that affect wear and tear.