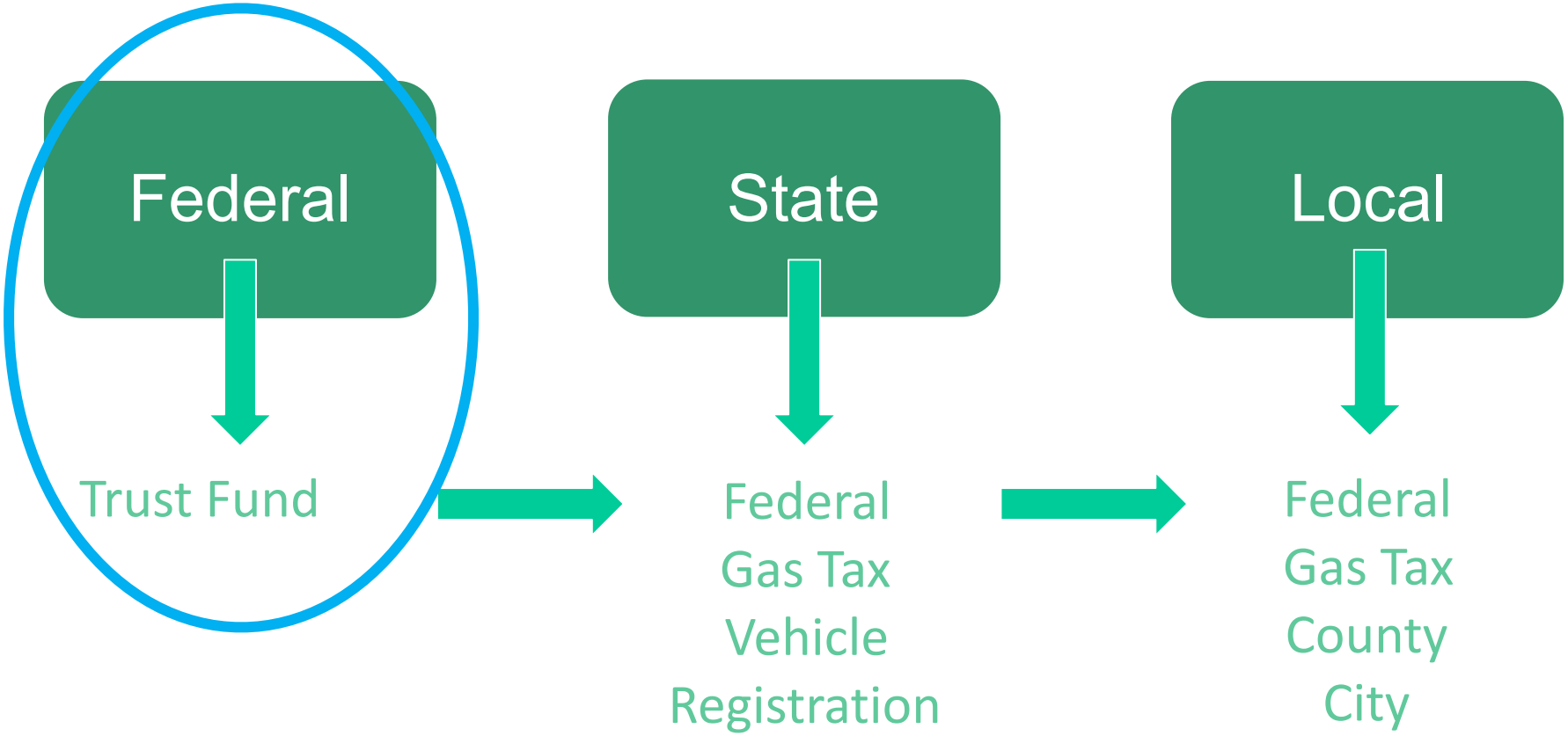
MAP 21 / FAST ACT Update

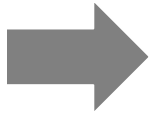
2017 NWPMA Conference
October 16-19, 2017
Vancouver, WA

The BIG Funding Picture



Funding (and why I care?)

- Highway Trust Fund
  - Funds highway, intermodal programs, and mass transit
  - Primary source is Federal fuel taxes
    - $0.184/gallon gas
    - $0.184/gallon gasohol
    - $0.244/gallon diesel



85.5% – Highways
14% – Mass transit
0.5% – Storage Tank

  - ~25% of spending on highway infrastructure and transit projects

NCE

Authorization Bills

- MAP-21:
  - **M**oving **A**head for **P**rogress in the **21**st Century (FY 2013-2014)
- FAST Act:
  - **F**ixing **A**merica's **S**urface **T**ransportation **A**ct (FY 2016-2020)

NCE

MAP-21 Details (just a few)

- $105B (FY 2013-14)
- No significant funding increase, but a few reforms
  - Speed-up environmental review process
  - Bike/Ped funding reduced and included in "Transportation Alternatives"
    - ½ to MPO's; ½ to DOTs
  - National freight policy
  - Ease tolling on federal highways

NCE

MAP-21 Details (continued)

- National Highway Performance Program
  - Asset management plan
  - Performance measures
    - Pavement and bride condition – "state of good repair"
    - Fatalities and serious injuries
    - Traffic congestion
    - On-road mobile source emissions
    - Interstate freight movement

NCE

Fast-Act Details (just a few)

- Extends **MAP-21**
  - Performance-based
  - Improve safety
  - Infrastructure condition
  - Reduce congestion
  - Improve freight movement
  - Protect the environment
  - Reduce project delivery delays

Program	Funding
Highway	$226.3B
Transit	$ 60.1B
Railroad	$ 10.3B
Traffic Safety	$ 4.7B
Motor Carrier	$ 3.2B
Haz. Materials	$ 0.4B
	$305.0B

NCE

Effective February 17, 2017

What it Impacts

- National Highway System (NHS)
  - Approved by Congress in 1995
  - Highways important to the nation's economy, defense, and mobility
  - Consist of 4% of nation's roads
    - > 40% traffic
    - > 75% heavy truck
    - > 90% tourist traffic

NCE

NHS Highways

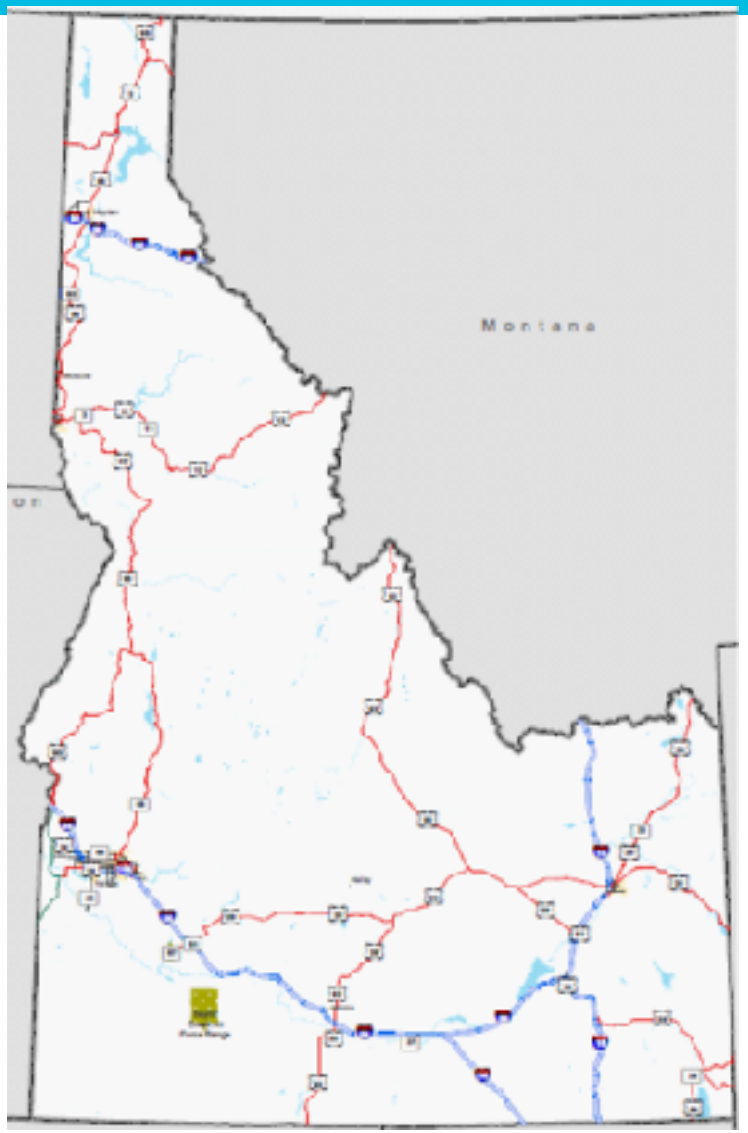
- Interstate
- Other principal arterials
  - Access to major port, airport, public transportation, other intermodal facilities
- Strategic highway network
  - Defense policy
- Major strategic highway connectors
  - Major military installations and strategic highway network
- Intermodal connectors
  - Major intermodal facilities and the other fours subsystems

NCE

NHS Routes

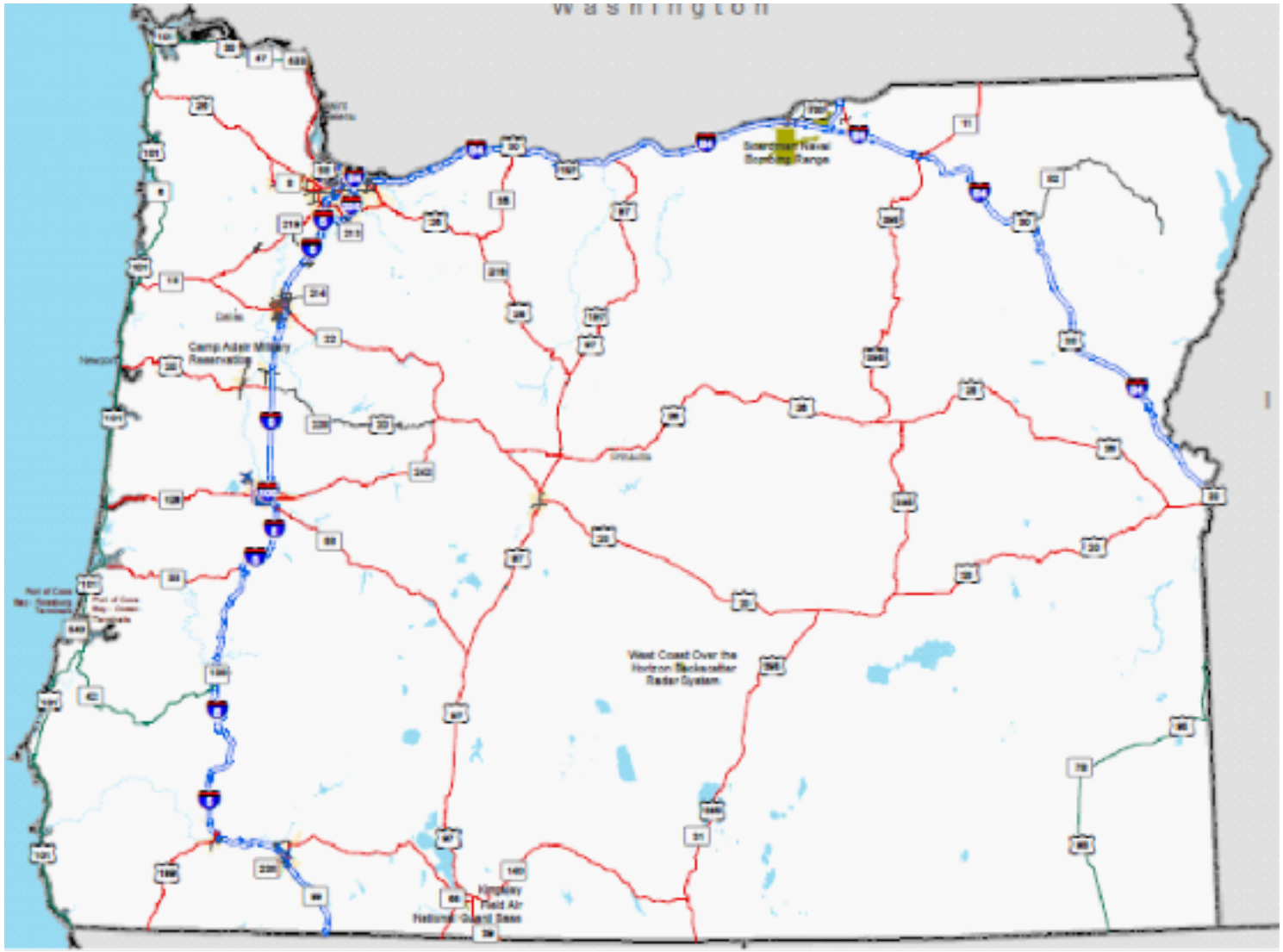

Canada
Mexico
Canada
Eisenhower Interstate System
Other NHS Routes
Non-Interstate STRAHNET Route
STRAHNET Connector
Intermodal Connector
Intermodal/STRAHNET Connector
Unbuilt NHS Routes
MAP-21 NHS Principal Arterials
Census Urbanized Areas
Department of Defense
Water

Idaho NHS Routes



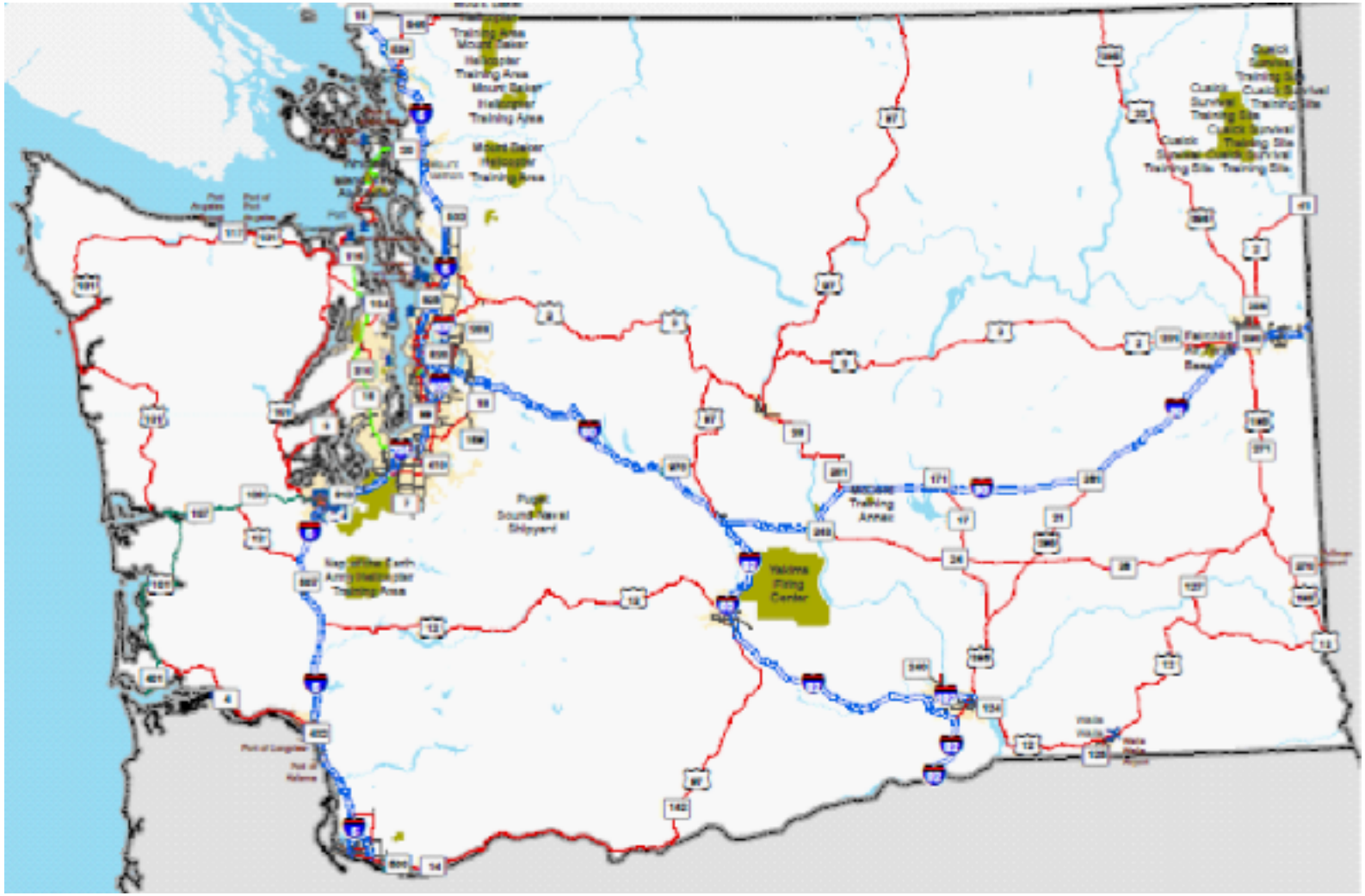
Boise
Coeur d'Alene
Idaho Falls
Lewiston
Nampa
Pocatello

Oregon NHS Routes



Albany
Bend
Corvallis
Eugene
Grants Pass
Medford
Portland
Salem

Washington NHS Routes



Bellingham
Bremerton
Kennewick-Richland
Longview
Marysville
Mount Vernon
Olympia-Lacey
Seattle
Spokane
Walla Walla
Wenatchee
Yakima

NHS - Pacific Northwest

	Lane Miles		
Route	Idaho	Oregon	Washington
Interstate	2,531	3,129	4,026
Principal Arterial	5,074	8,808	10,606
Minor Arterial	51	76	85
Major Collector	0	15	38
Minor Collector	0	1	0
Local	0	17	5
Total	7,657	12,047	14,761

390 ln-mi Local Agency

275 mi Local Agency

3327 ln mi Local Agency

Source: Highway Statistics 2015

NCE

Performance Measures

- **Where?**
  - NHS
  - Federal-aid
- **Why?**
  - State of good repair
- **How?**
  - Asset management plans
- **What?**
  - Bridge condition
  - Pavement condition

NCE

Asset Management Plan

- Pavement & bridge condition
- Objectives & measures
- Performance gap identification
- Lifecycle cost & risk management analysis
- Financial plan
- Investment strategies

Initial plan due to FHWA April 30, 2018

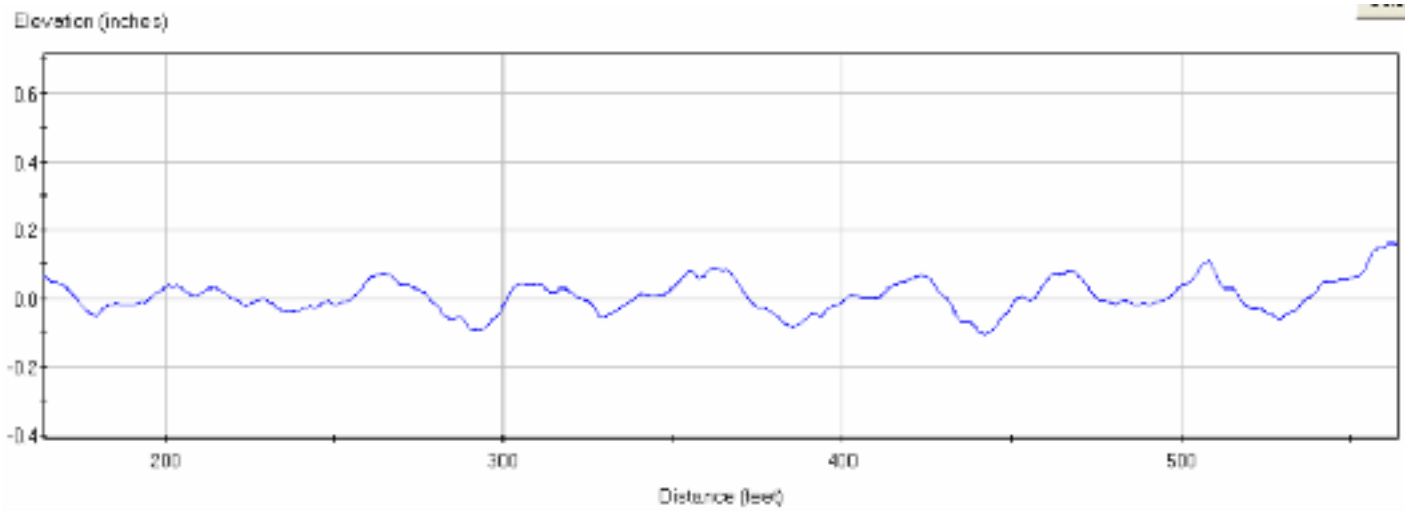
NCE

Pavement Condition

- International Roughness Index (IRI)
- Cracking
- Rutting
- Faulting
- Present Serviceability Rating (PSR)

IRI

- Estimate amount of roughness in a measured longitudinal profile
- Main factor used by traveling public for rating pavement condition
- **All** pavement types



IRI *(continued)*

- Specifications
  - AASHTO M328 (equipment)
  - AASHTO R57 (procedure)
  - AASHTO R43 (calculation)

point

Roline

NCE

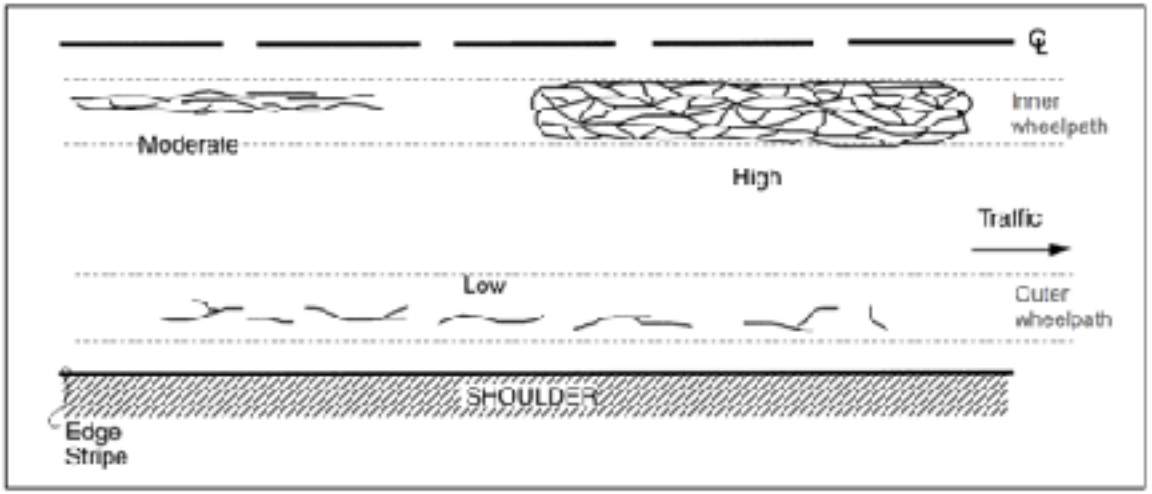
Asphalt Pavement Cracking

- Visible cracks
- Percent total area
- AASHTO R55, PP67, PP68
  - Automated data collection

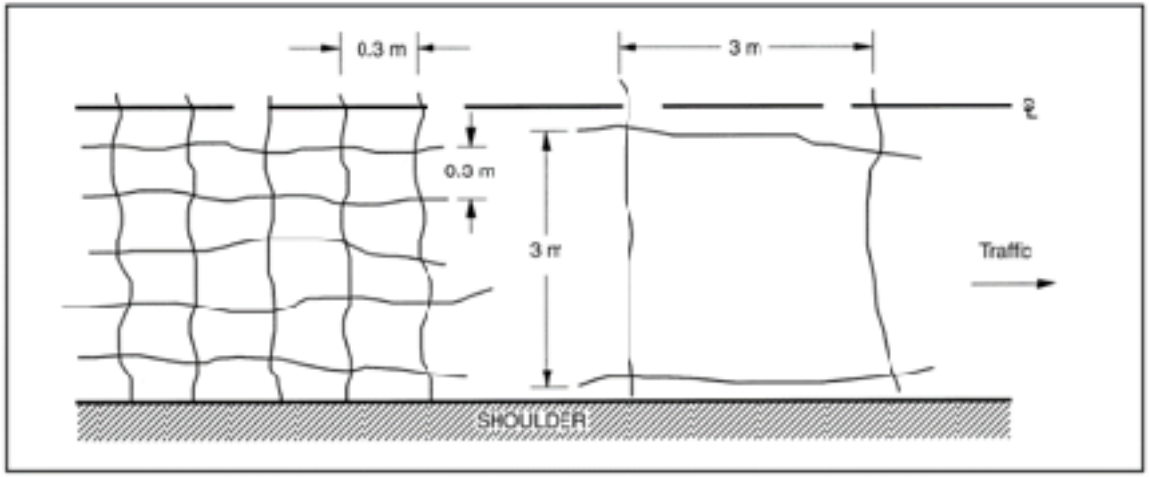
NCE

Asphalt Cracking *(continued)*

Fatigue Cracking

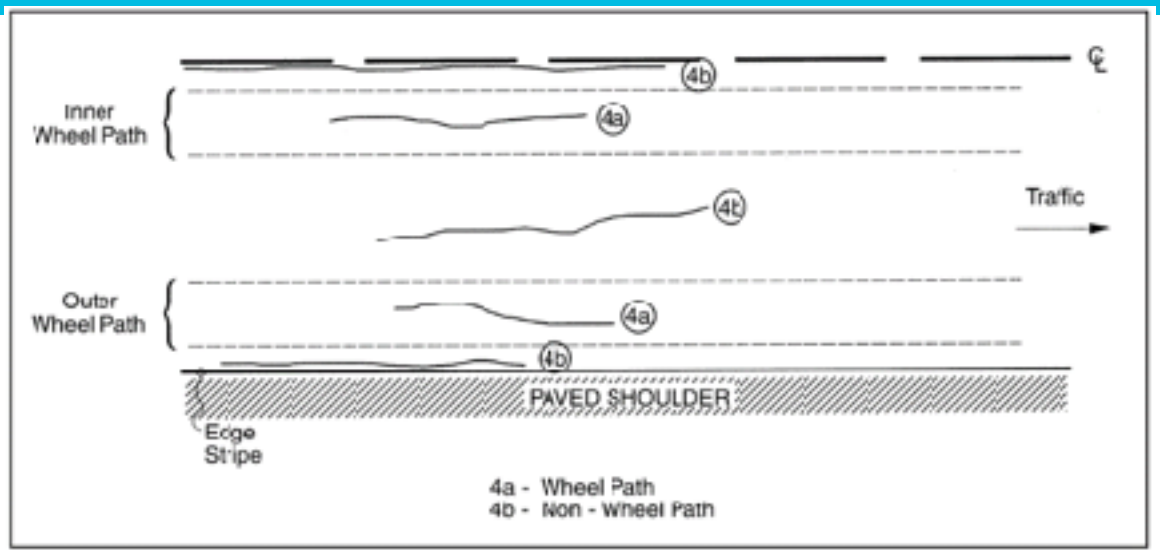


Block Cracking

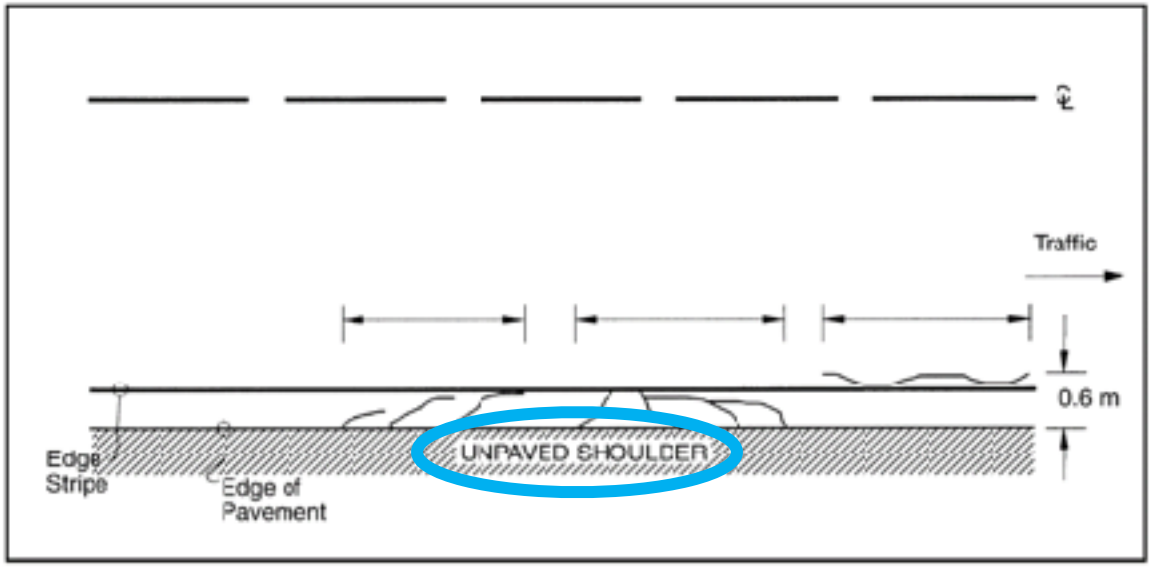


Asphalt Cracking *(continued)*

Longitudinal Cracking

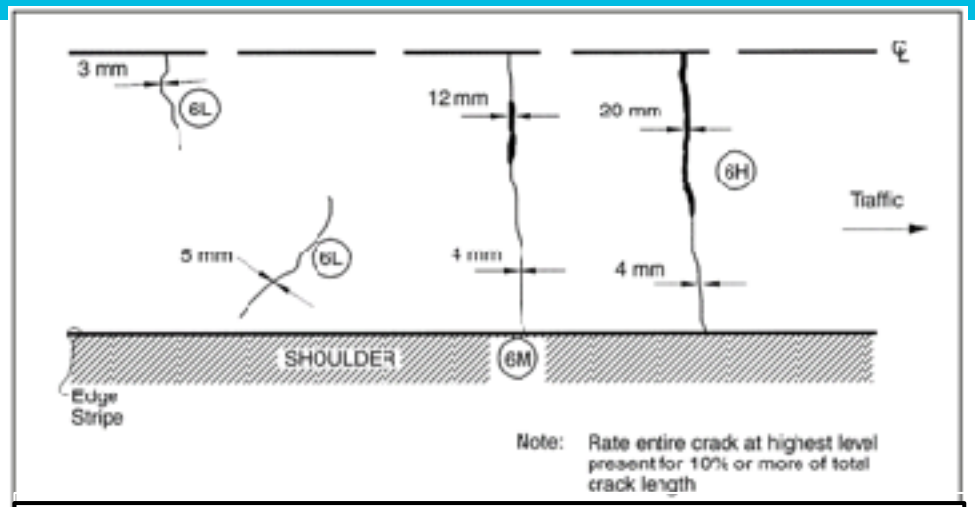


Edge Cracking

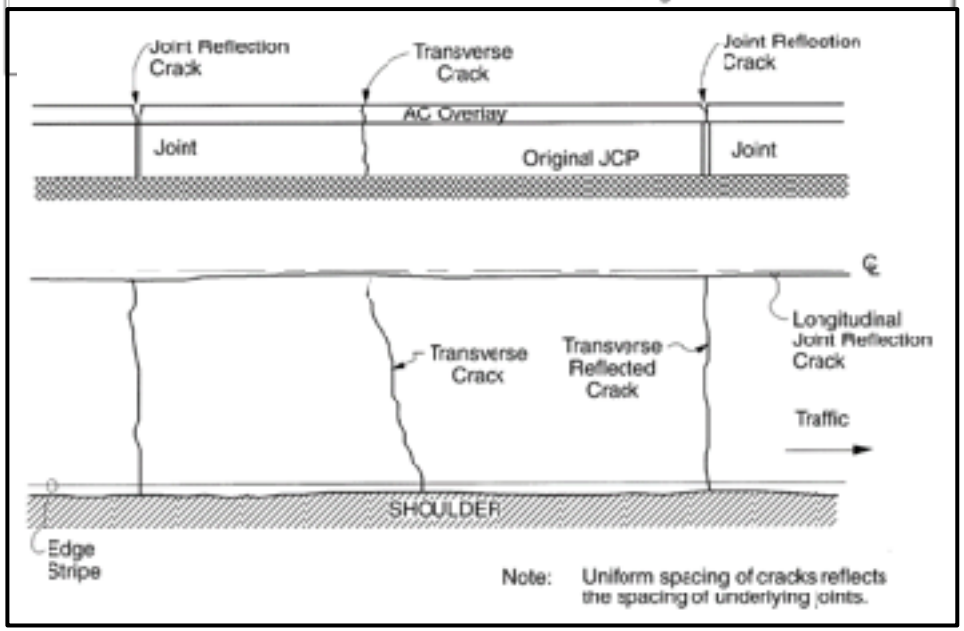


Asphalt Cracking *(continued)*

Transverse Cracking

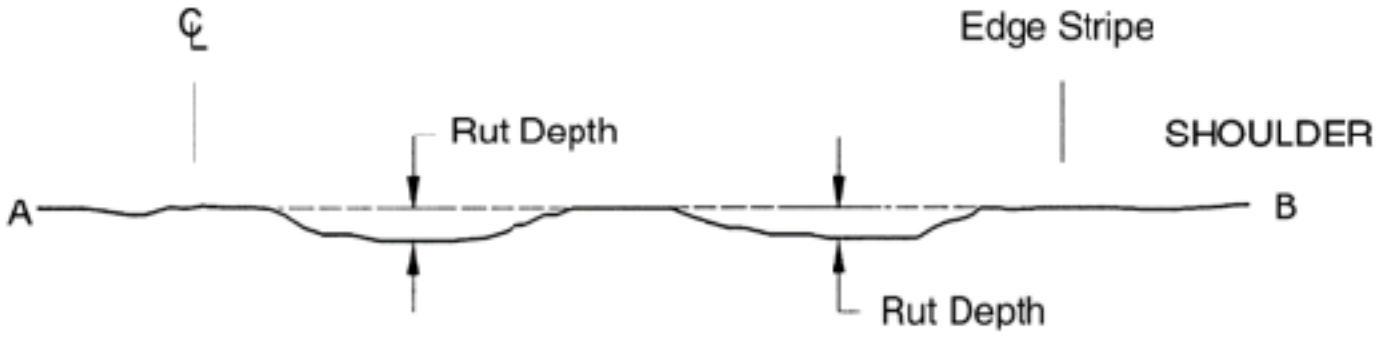


Reflection Cracking



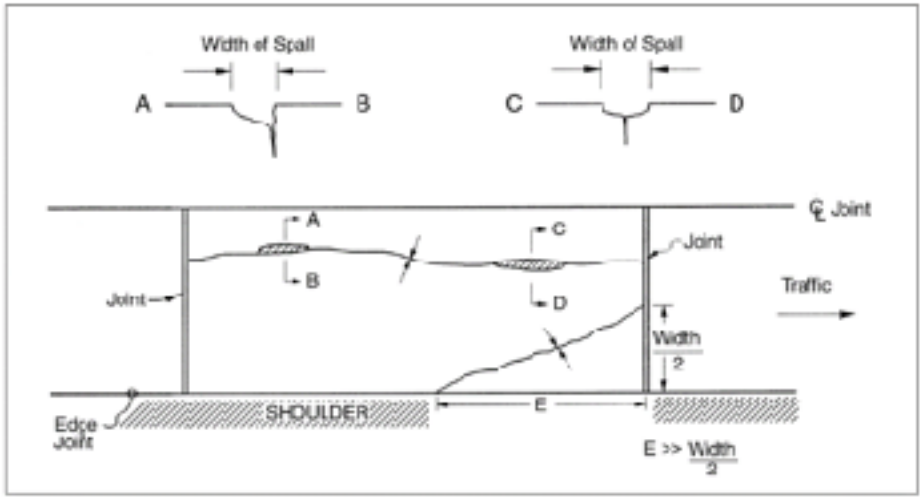
Asphalt Pavement Rutting

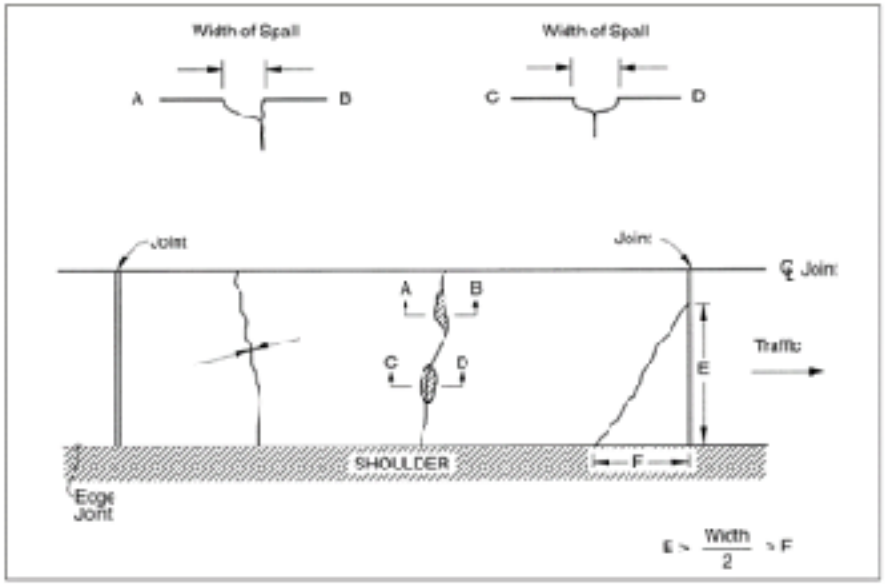
- Average both wheelpaths
- Asphalt pavements
- AASHTO R48 (or PP69 & PP70)
  - Measured from transverse profile
  - No fewer than 5 profile points
  - Spaced no more than 12 inches apart



Plain Jointed Concrete Cracking

- Percent of slabs that exhibit cracking
- Includes partial slabs when majority of length is cracked



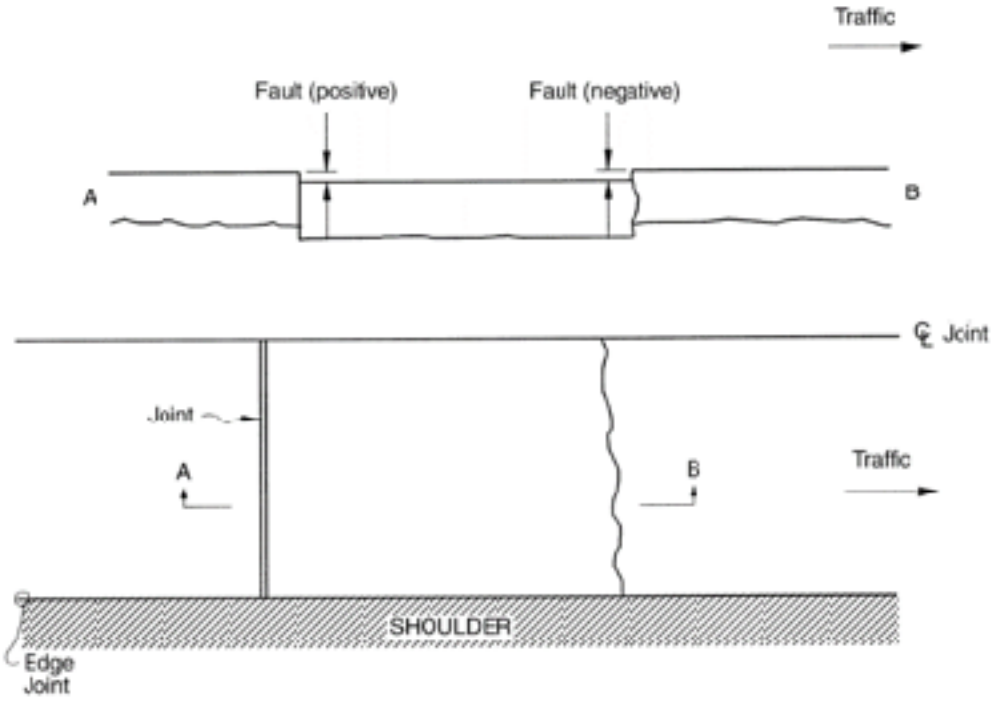


Plain Jointed Concrete Cracking
(continued)

- Manual or automated
  - Identifies at least 85% of all cracks
- Fissure or discontinuity
  - Does not need to be full-depth

Plain Jointed Concrete Faulting

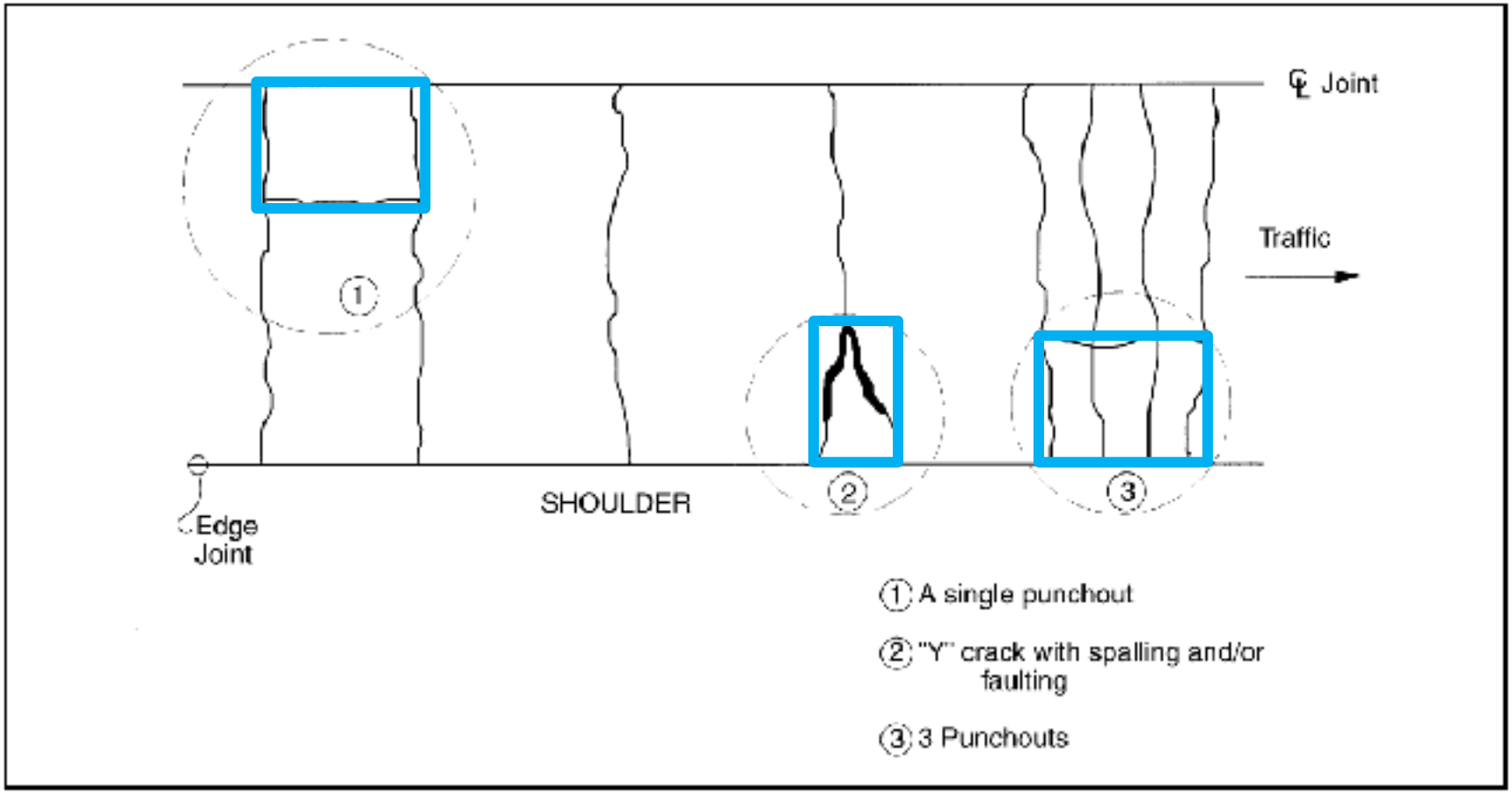
- AASHTO R36
  - Manual measurement not recommended
  - Right wheelpath
  - Exclude faulting at cracks



Continuously Reinforced Concrete Percent Cracking

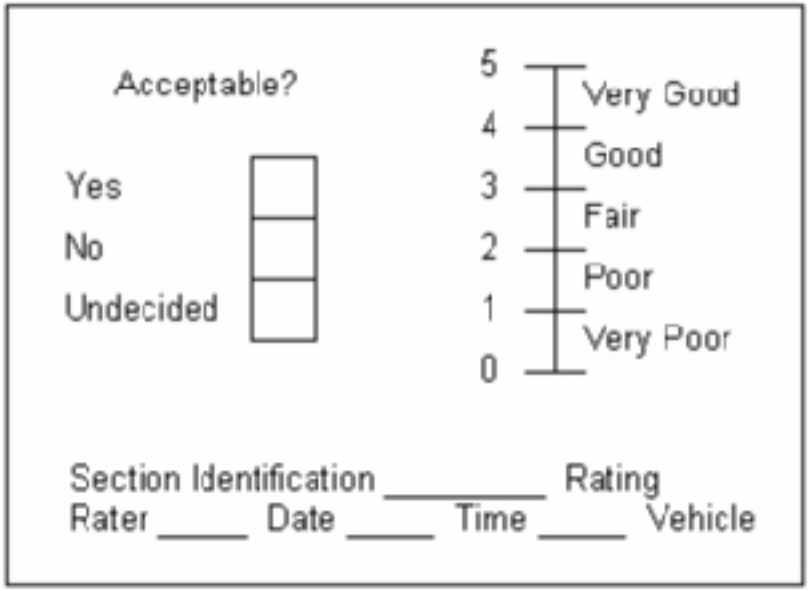
- Longitudinal cracking
  - length x 1 foot width
- Punchouts (see next slide)
- Spalling
- Other visible defects
- Excludes transverse cracking
- Automated or manual data collection

Punchouts


℄ Joint
Traffic
1
2
3
SHOULDER
Edge
Joint
1 A single punchout
2 "Y" crack with spalling and/or faulting
3 3 Punchouts

Present Serviceability Rating (PSR)

- Non-Interstate NHS < 40 mph
- In lieu of IRI, cracking, rutting, and faulting
- FHWA approval to correlate with other methods
- "Ride quality" based on observers (AASHO Road Test)



PSR *(continued)*

PSR	Description
5.0 – 4.0	New (or nearly new) pavements that are smooth and distress free.
4.0 - 3.0	First class ride, few if any distress. Asphalt: evidence of rutting and fine random cracks. Concrete: evidence of minor cracks and spalling.
3.0 – 2.0	Noticeably inferior ride quality compared to new pavements. Asphalt: rutting, map cracking, extensive patching. Concrete: few joint failures, faulting, cracking, some pumping.

NCE

PSR *(continued)*

PSR	Description
2.0 – 1.0	Distress affects the speed of free-flow. Asphalt: raveling, cracking, rutting > 50% of surface. Concrete: spalling, patching, cracking, scaling, pumping, faulting
< 1.0	Extremely deteriorated condition. Passable only at reduced speeds, with considerable ride discomfort. Large potholes and deep cracks. Distress ≥ 75% of surface.

NCE

Condition Data Collection

- Non-Interstate NHS
  - Continuous data collection
  - In one direction
  - Biennial frequency
  - Sampling not allowed
  - Averaging across directions not allowed
  - Reported in 0.10-mile segments

NCE

Data Collection on Non-State NHS Routes

- Idaho Dept. Transportation
  - Collect ALL NHS routes, indefinitely
- Oregon DOT
  - Collect ALL NHS routes, in 2018 and potentially longer (TBD)
- Washington DOT
  - Collect ALL NHS routes, indefinitely

NCE

Distress Collection

- All Interstate highways beginning in **Jan 1, 2018**
- All non-Interstate NHS routes beginning in **Jan 1, 2020**

NCE

State of Good Repair

Asphalt Pavements

Measure	Good	Fair	Poor
IRI (in/mi)	< 95	95 – 170	> 170
Rutting (in)	< 0.20	0.20 – 0.40	> 0.40
Cracking (%)	< 5	5 – 20	> 20
PSR	≥ 4.0	2.0 – 4.0	≤ 2.0

Interstate < 5% missing/incomplete data

NCE

State of Good Repair *(continued)*

Concrete Pavements

Measure	Good	Fair	Poor
IRI (in/mi)	< 95	95 – 170	> 170
Faulting (in)	< 0.10	0.10 – 0.15	> 0.15
JPCP Cracking (%)	< 5	5 – 15	> 15
CRCP Cracking (%)	< 5	5 – 10	> 10
PSR	≥ 4.0	2.0 – 4.0	≤ 2.0

Interstate < 5% missing/incomplete data

NCE

Overall Condition

Condition	Asphalt	JPCP	CRCP
Good	Good all 3 conditions; PSR ≥ 4.0		Good for both conditions; PSR ≥ 4.0
Fair	Not good or poor condition; PSR > 2.0 and < 4.0		Not good or poor condition; PSR > 2.0 and < 4.0
Poor	Two or more ratings are in poor condition; PSR ≤ 2.0		Poor ratings for both conditions; PSR ≤ 2.0

NCE

Establishing Targets

- DOTs and MPOs shall establish performance targets for all measures
- DOTs shall coordinate with MPOs to ensure consistency (as practicable)
- The MPOs shall establish 4-year targets

NCE

Minimum Target Levels

- Interstate
  - < 5 percent lane miles in poor condition
- Non-Interstate NHS
  - As established by each DOT

NCE

…and if targets are not met?

- States must document the actions they will take to achieve the targets
- Interstate pavement condition
  - If condition falls below minimum value
  - State must devote specified resources to improve condition
  - and each year thereafter until above minimum target level

NCE

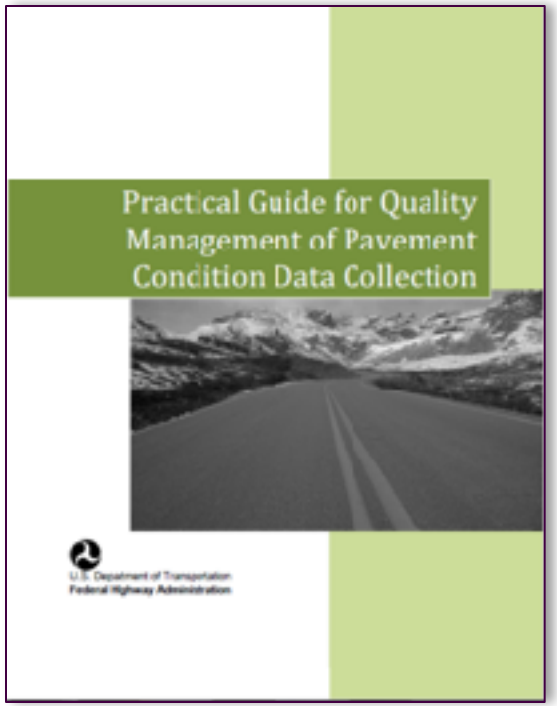
Quality Management Plan

- Equipment calibration & certification
- Certification process for persons performing manual data collection
- Quality control measures (before & during data collection)
- Sample, review & check processes
- Error resolution procedures
- Data acceptance criteria

NCE

Quality Management Plan

- Required for each DOT
- FHWA approved
  - Submit by **January 18, 2018**
  - DOT shall use to collect & report data
  - DOTs shall submit significant changes to plan for FHWA approval



NCE

Performance Reporting

- DOT's
  - Baseline (**est. by May 20, 2018**)
  - Mid-point (2020)
  - Full (2022)
- MPO's
  - Set targets **180 days after DOT**
  - Baseline condition & progress toward targets in metropolitan transportation plan

NCE

What's the Impact?

- Data collection requirements
  - AASHTO test procedures
- Distress types
  - IRI, cracking, rutting, faulting, or PSR (< 40 mph)
- Good, fair, & poor criteria
- Data quality management plan

NCE

For More Information

- FAST Act
  - https://www.fhwa.dot.gov/fastact/
- National Highway Performance Measures
  - https://www.fhwa.dot.gov/specialfunding/nhpp/
- HPMS Field Manual
  - https://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/

NCE

Questions?

Linda Pierce
Principal Engineer
lpierce@ncenet.com
(505) 603-7993

NCE