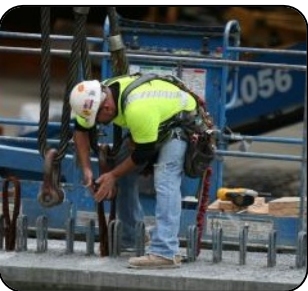
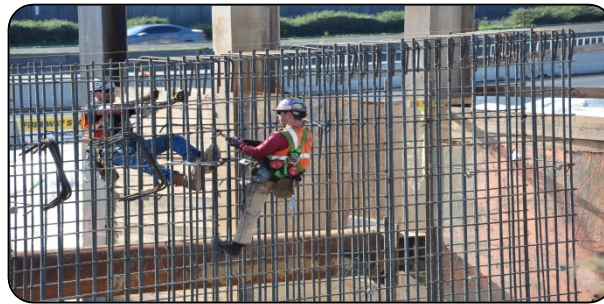


SR 520 Program

Floating Bridge and Landings

June 13, 2016



Roger Millar
WSDOT
Acting Secretary of Transportation

Julie Meredith
SR 520 Program
Program Administrator

Dave Becher
SR 520 Program
Director of Construction

Lawrence Spurgeon
SR 520 Program
Corridor Environmental Manager

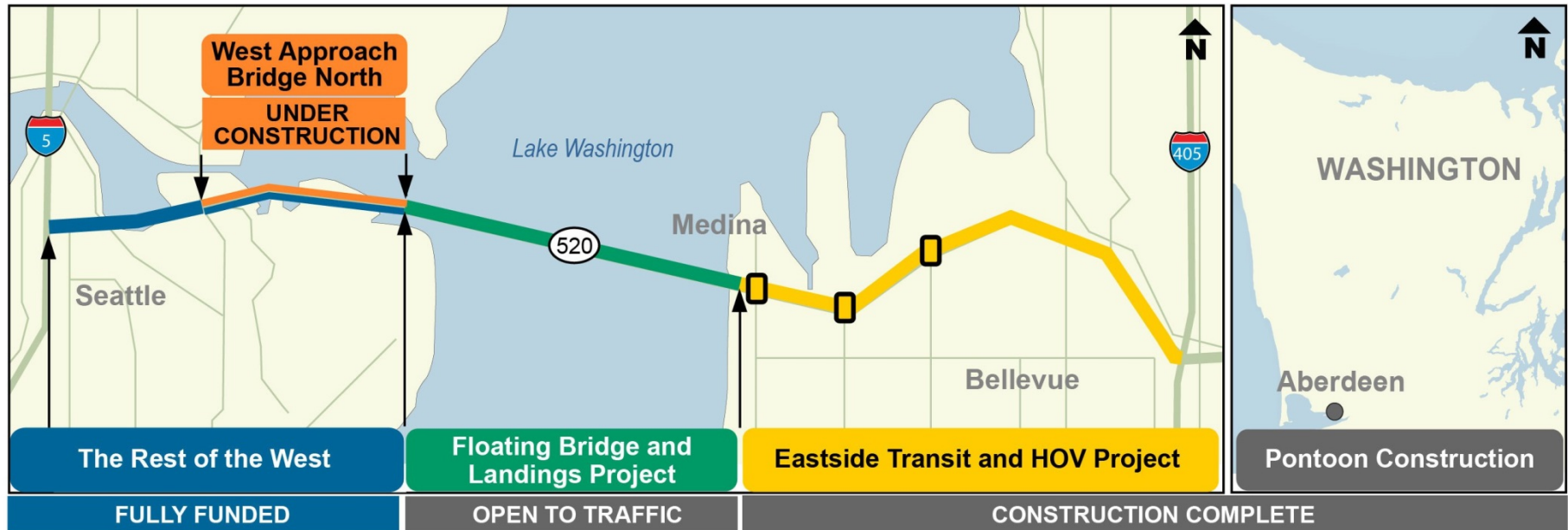
Medina City Council Briefing
June 13, 2016

Presentation overview

- SR 520 Program overview and timeline
- SR 520 bridge vulnerabilities and earthquakes
- SR 520 final environmental commitments
- SR 520 bridge expansion joints
- WSDOT analysis & outreach to date
- State and Federal noise policies
- Noise measurement findings
- Next steps



SR 520 Program overview and timeline



Program schedule

- Eastside Transit and HOV Project: Opened 2014
- Pontoon Construction Project (Aberdeen): Completed 2015
- New floating bridge: Opened April 2016
- **Decommissioning of old bridge: Expected through end of 2016**
- West Approach Bridge North: Construction began fall 2014; opening summer 2017
- I-5 to Lake Washington elements: Fully funded in 2015

SR 520 bridge is vulnerable to windstorms and earthquakes

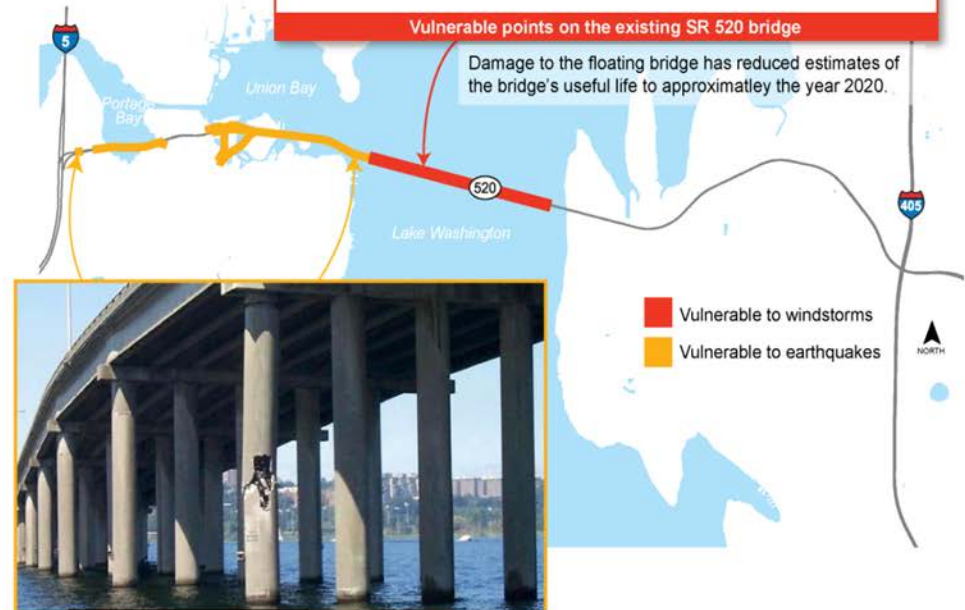
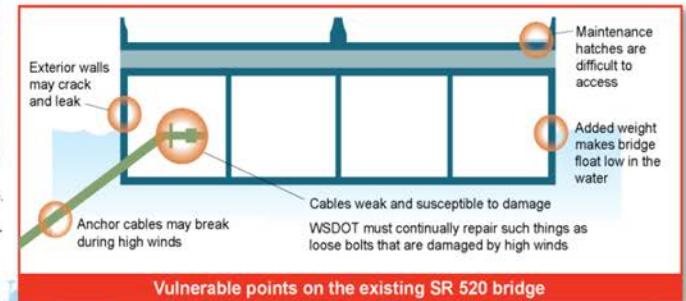


Waves batter the SR 520 bridge.

Current vulnerabilities



A torn cable joint found during a routine inspection in February 2006. The cables connect the floating bridge pontoons to their underwater lakebed anchors.



SR 520 environmental commitments

Corridor-wide commitments

- Encapsulating the expansion joints
- Using quieter concrete pavement
- Building noise walls to the extent reasonable and feasible

Section 106 Programmatic Agreement commitments (West side only)

- 4-foot-tall barrier with sound-absorptive material
- Quieter concrete pavement
- Acoustically absorptive materials around lid portals
- Speed limit reduction on the Portage Bay Bridge

SR 520 environmental commitments



Demonstration of noise absorptive material

SR 520 constructed to date

- Quieter concrete pavement along length of new bridge
- New bridge transition span expansion joints are encapsulated



Quieter concrete pavement on new floating bridge



In the encapsulation area under the large expansion joint

SR 520 constructed to date

- Noise walls on the north side of the bridge are complete
- Noise walls on the south side of the new bridge are still under construction – planned for completion in fall 2016



*Purple lines show the approximate location of noise walls west of
Evergreen Point Road*

- Dashed line represents wall still under construction. -



Concerns from neighbors

- Bridge opened to traffic April 2016
- Overview of concerns from neighbors
 - *“Clicking or thumping sound” is evident near homes in Seattle and the Eastside since bridge opened in April*
 - *Residents in Clyde Hill describe different noise west of NE 84th*
 - *After first update on April 29, Medina neighbors requested additional information including nighttime measurements and peak sound values*

Potential sources of sounds identified

- General roadway noise
- SR 520 bridge expansion joints
- Temporary tolling equipment just west of 84th Ave lid



Large expansion joint at east high-rise, looking south

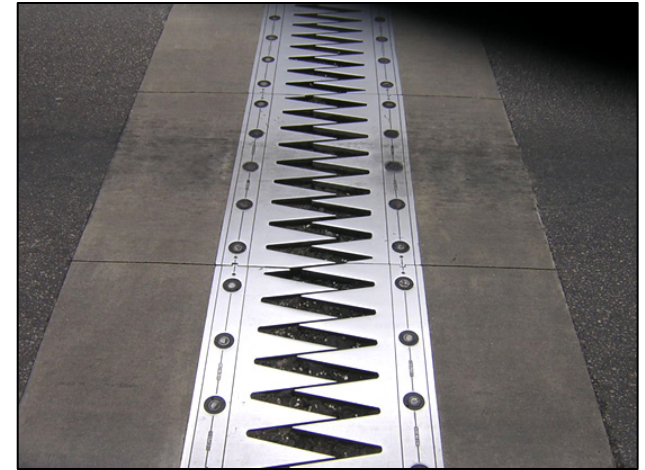


Temporary tolling treadles east of Evergreen Point Road Lid

Bridge expansion joints

What are bridge expansion joints?

- Expansion joints are a critical part of a bridge's infrastructure.
- The joints allow the bridge and its sections to move and flex with changing traffic, weather, and lake conditions, while also being durable to withstand long-term traffic loading.
- Types of expansion joints
 - Steel finger joints
 - Modular expansion joints
- Expansion joints on the new SR 520 floating bridge
 - Modular expansion joints
 - Encapsulation



Example of steel finger joints



Example of modular expansion joints

Temporary tolling equipment

- Temporary tolling equipment installed 2014/2015.
- Treadle modification Feb. 2016.
- Permanent tolling equipment will be installed summer 2016.
- Temporary tolling equipment will be removed by end of 2016.



WSDOT analysis and outreach to date

- April noise measurements
- April 21 info session
- April 29 noise email update with initial measurements
- May 3 Medina City Council Tour
- May and June additional noise measurements
- June 13 Medina city council presentation

Planned

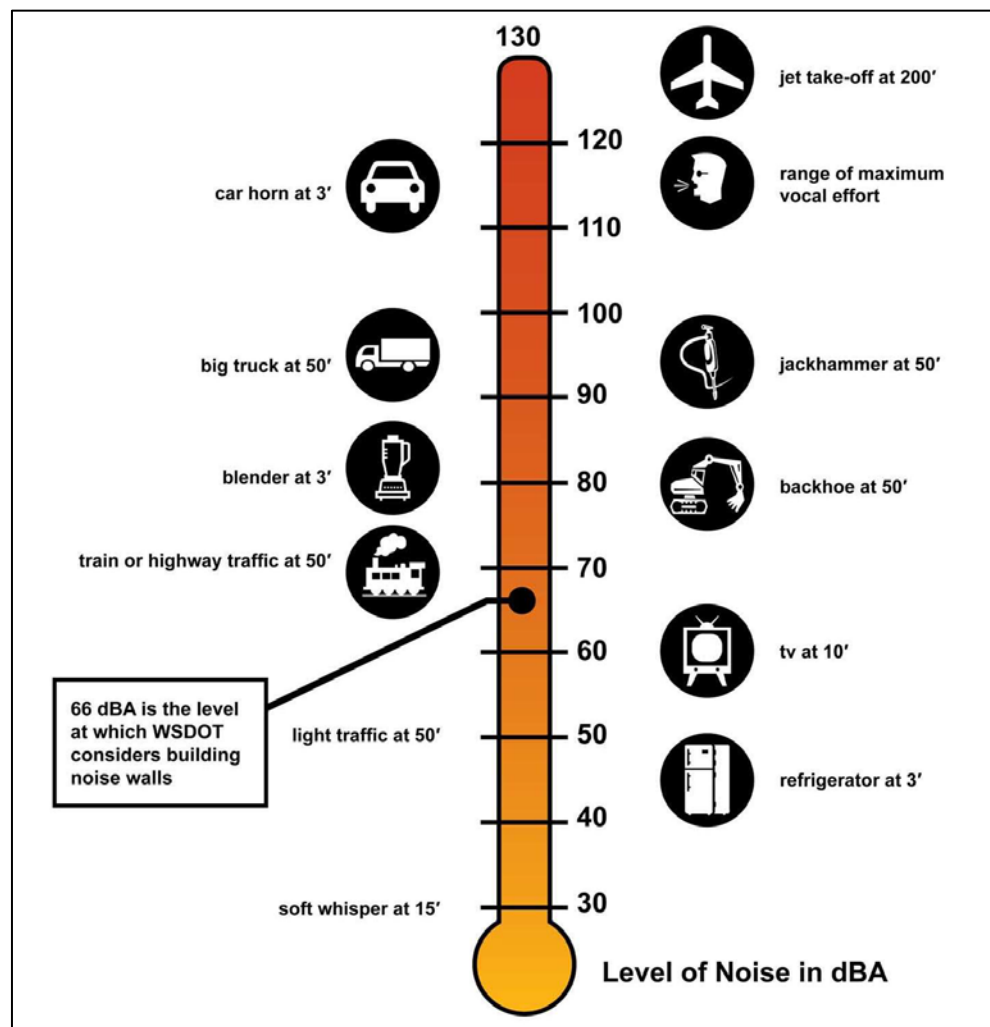
- June 14 Posting and distribution of updated findings



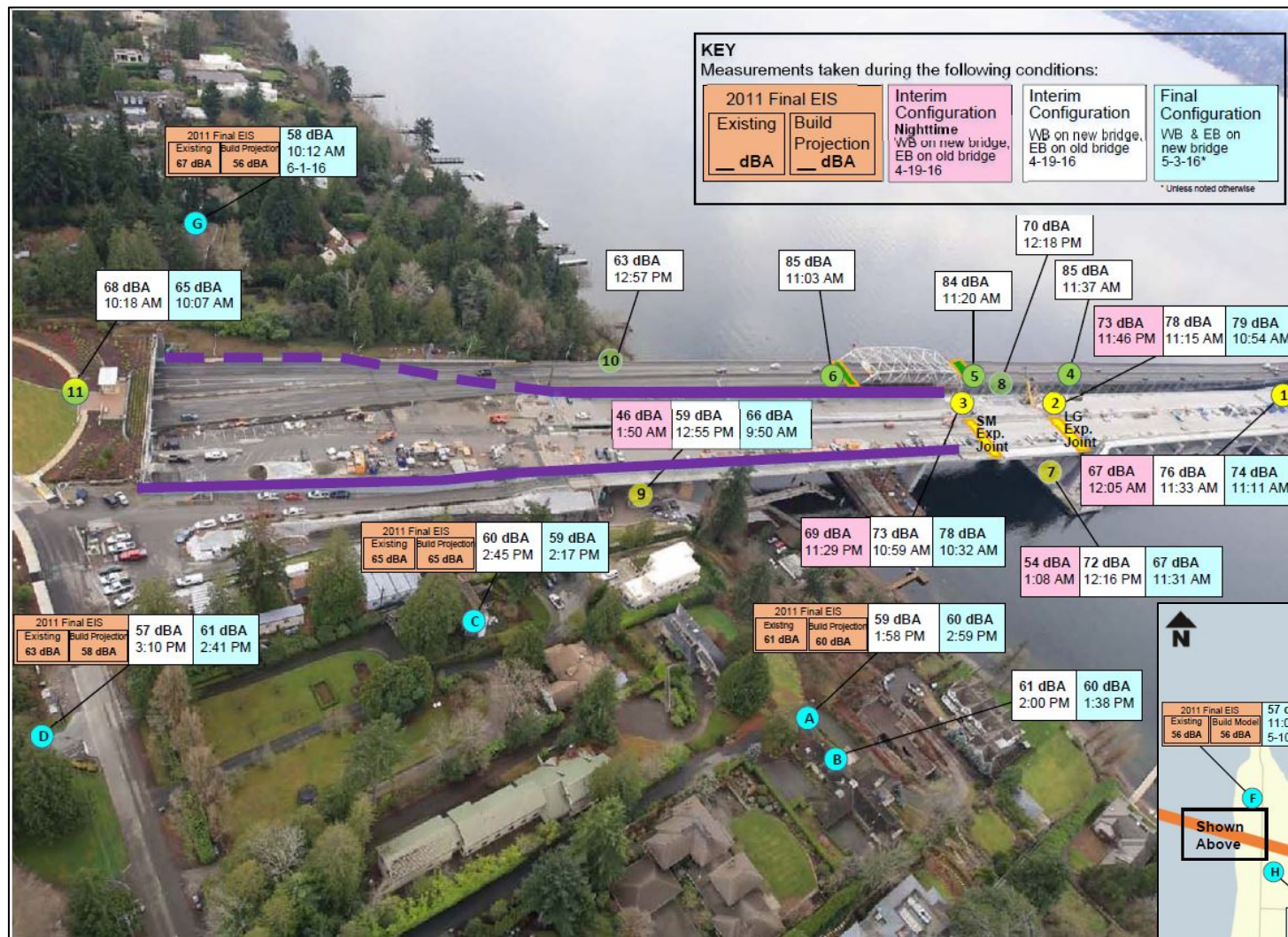
Noise background information

How is noise measured?

- Sound is measured in units called decibels (dBA).
- An average person's ear can perceive a 3 dBA or greater change in noise levels.
- Traffic noise is measured in L_{eq} , which is the time-weighted average generally taken over a period of 15 minutes.



Noise measurement findings

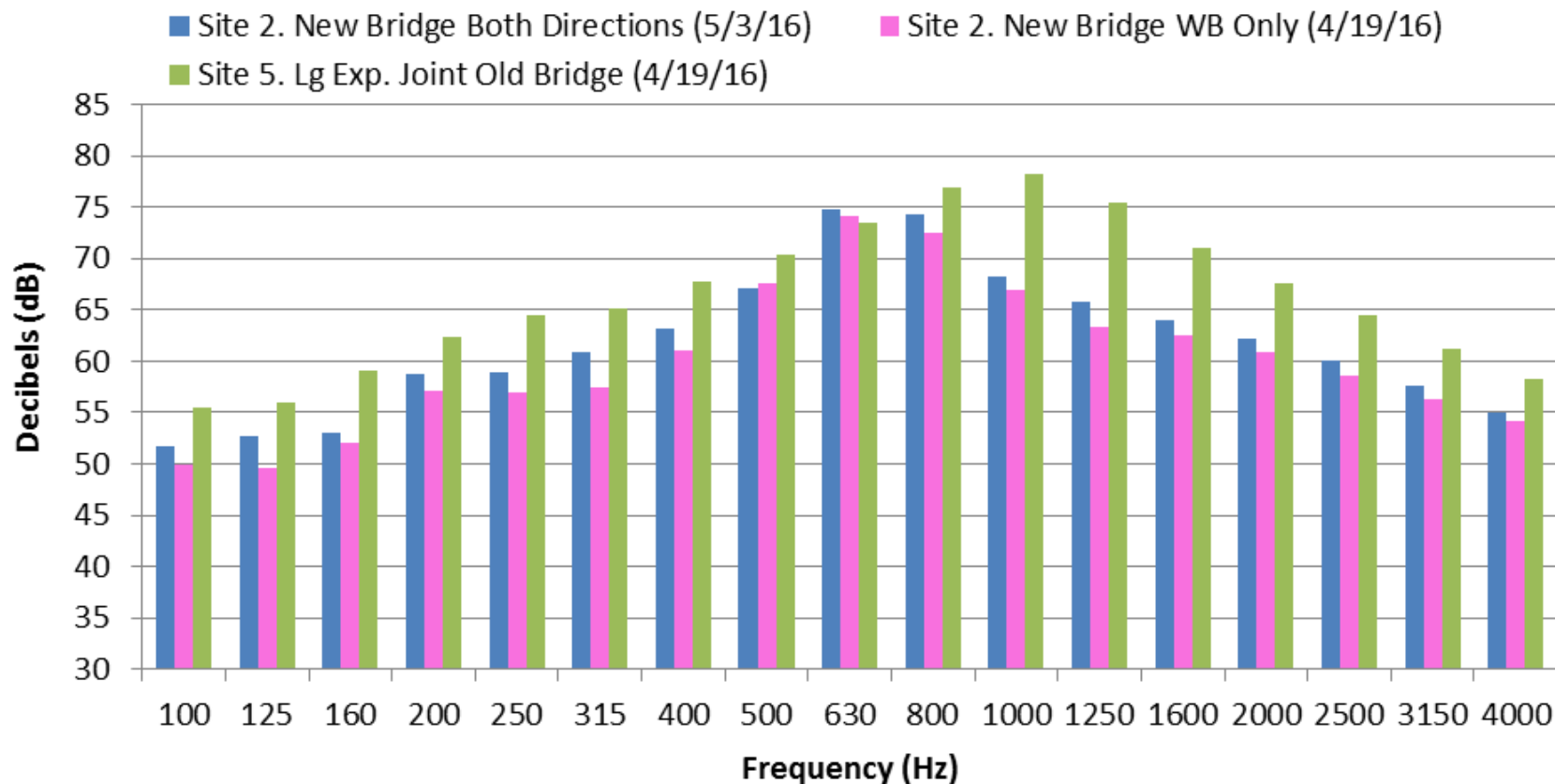


Analysis of findings

| Site number | Location | Date | Time | Leq (dBA) | Lmax (dBA) |
|-------------|--|---------|------------|-----------|------------|
| 1 | Pavement West of Exp. Joints | 4/19/16 | 11:33 a.m. | 76 | 93 |
| | | 4/19/16 | 12:05 a.m. | 67 | 90 |
| | | 5/3/16 | 11:11 a.m. | 74 | 89 |
| 2 | Large Exp. Joint | 4/19/16 | 11:15 a.m. | 78 | 92 |
| | | 4/19/16 | 11:46 p.m. | 73 | 92 |
| | | 5/3/16 | 10:54 a.m. | 79 | 91 |
| 3 | Small Exp. Joint | 4/19/16 | 10:59 a.m. | 73 | 86 |
| | | 4/19/16 | 11:29 a.m. | 69 | 88 |
| | | 5/3/16 | 10:32 a.m. | 78 | 92 |
| 4 | Pavement West of Exp. Joints (old) | 4/19/16 | 11:37 a.m. | 85 | 94 |
| 5 | Large Exp. Joint (old) | 4/19/16 | 11:20 a.m. | 84 | 94 |
| 6 | Small Exp. Joint (old) | 4/19/16 | 11:03 a.m. | 85 | 97 |
| 7 | Pontoon Under Large Exp. Joint | 4/19/16 | 12:16 p.m. | 72 | 99 |
| | | 4/19/16 | 1:08 a.m. | 54 | 69 |
| | | 5/3/16 | 11:31 a.m. | 67 | 75 |
| 8 | Pontoon Under Large Exp. Joint (old) | 4/19/16 | 12:18 p.m. | 70 | 86 |
| 9 | East Shoreline Under Bridge North Side | 4/19/16 | 12:55 p.m. | 59 | 71 |
| | | 4/19/16 | 1:50 a.m. | 46 | 66 |
| | | 5/3/16 | 9:50 a.m. | 66 | 80 |
| 10 | East Shoreline Under Bridge South Side (old) | 4/19/16 | 12:57 p.m. | 63 | 74 |
| 11 | West end Evergreen Point Lid | 4/19/16 | 10:18 a.m. | 68 | 80 |
| | | 5/13/16 | 10:07 a.m. | 65 | 80 |
| A | 3223 Evergreen Point Rd, Medina (Outside house) | 4/20/16 | 1:58 p.m. | 59 | 71 |
| B | 3223 Evergreen Point Rd, Medina (On 2nd floor balcony) | 5/3/16 | 2:59 p.m. | 60 | 72 |
| | | 4/20/16 | 2:00 p.m. | 61 | 72 |
| C | 3205 Evergreen Point Road, Medina | 5/3/16 | 1:38 p.m. | 60 | 71 |
| | | 4/20/16 | 2:45 p.m. | 60 | 75 |
| D | 3204 76th Ave NE, Medina | 5/3/16 | 2:17 p.m. | 59 | 71 |
| | | 4/20/16 | 3:10 p.m. | 57 | 76 |
| E | 8901 NE 34th St, Yarrow Point | 5/3/16 | 2:41 p.m. | 61 | 85 |
| | | 4/20/16 | 3:40 p.m. | 54 | 68 |
| F | 3245 Evergreen Point Road, Medina | 5/10/16 | 11:08 a.m. | 57 | 72 |
| G | 2839 Evergreen Point Road, Medina | 6/1/16 | 10:12 a.m. | 58 | 75 |
| H | Three Points Elementary School, Medina | 6/1/16 | 10:38 a.m. | 60 | 80 |

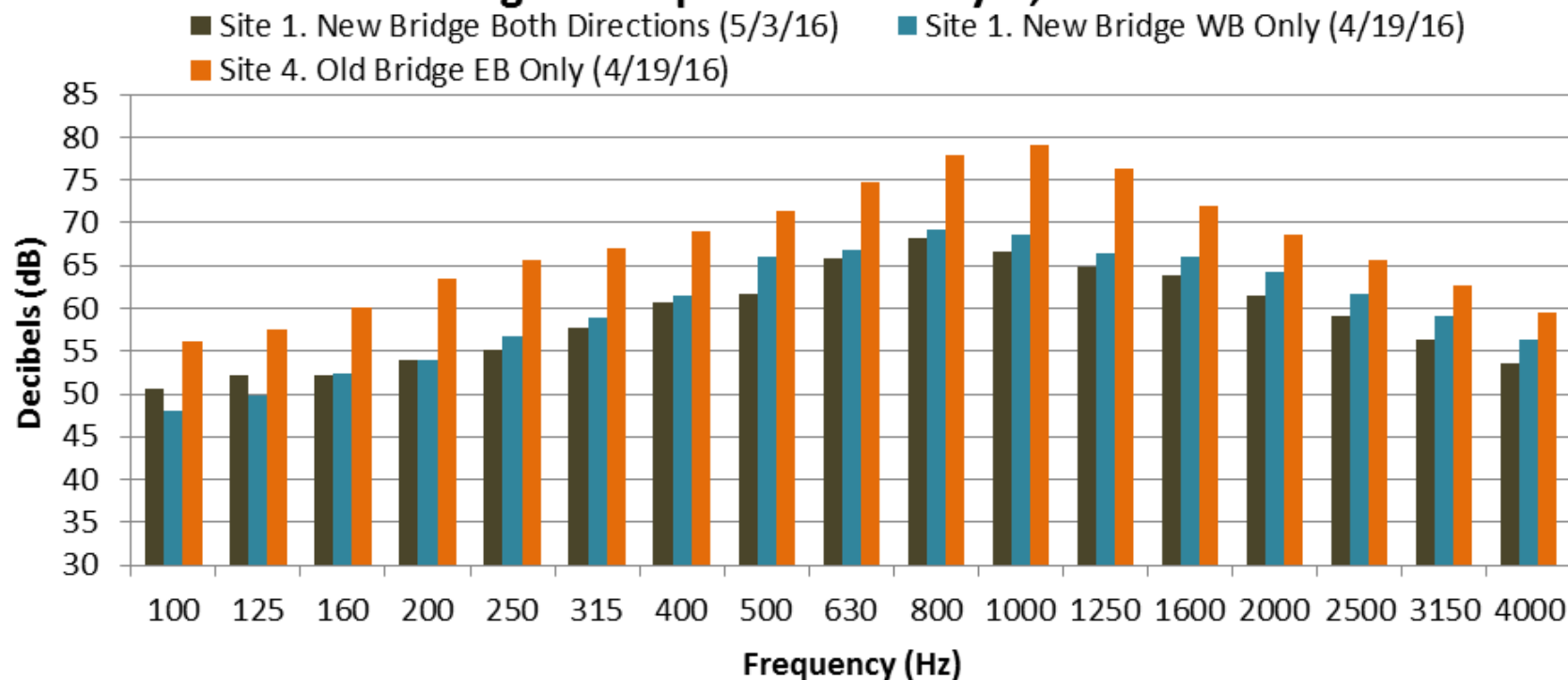
Analysis of findings

Comparison of Large Expansion Joint Noise Between Old and New SR 520 Bridges on April 19 and May 3, 2016

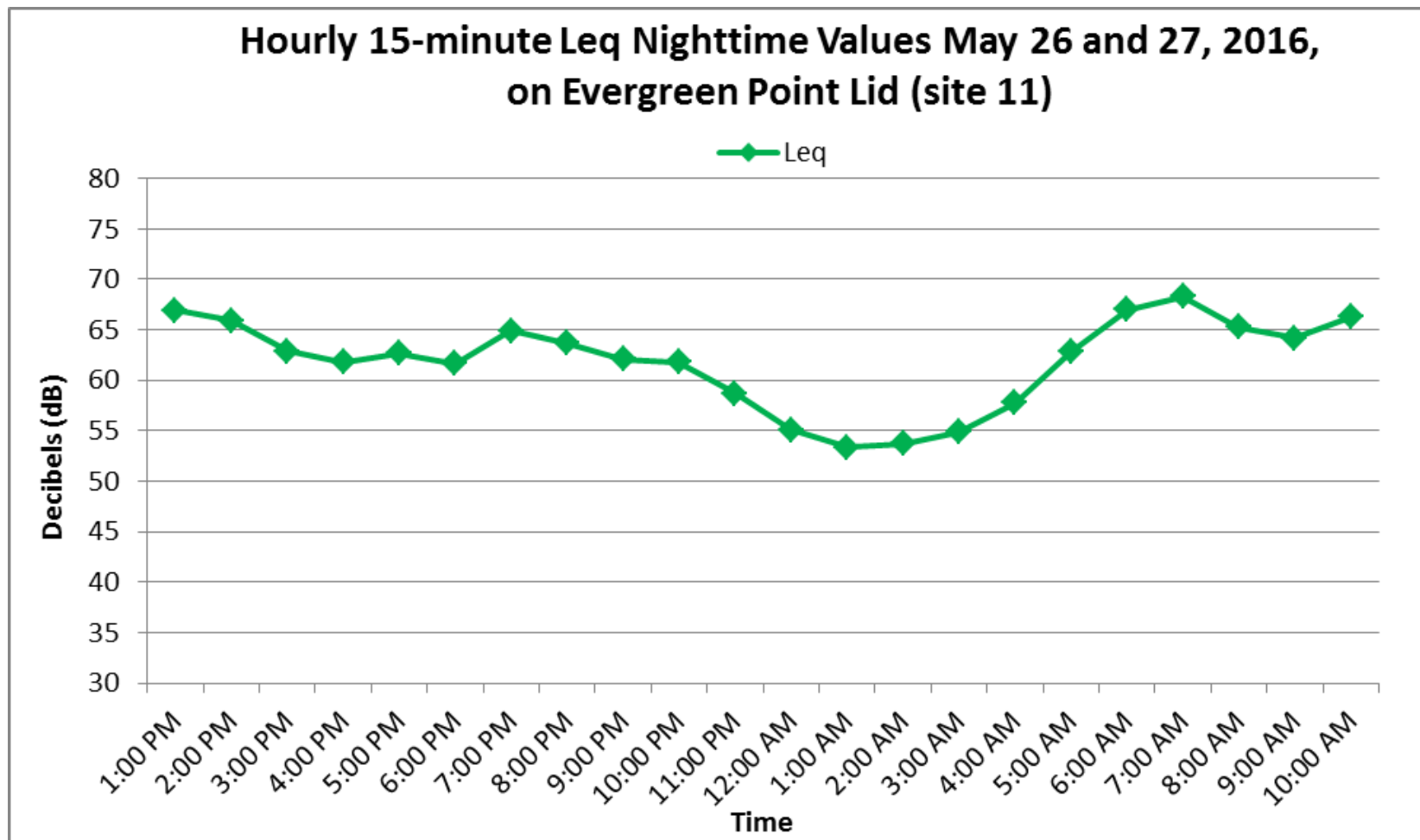


Analysis of findings

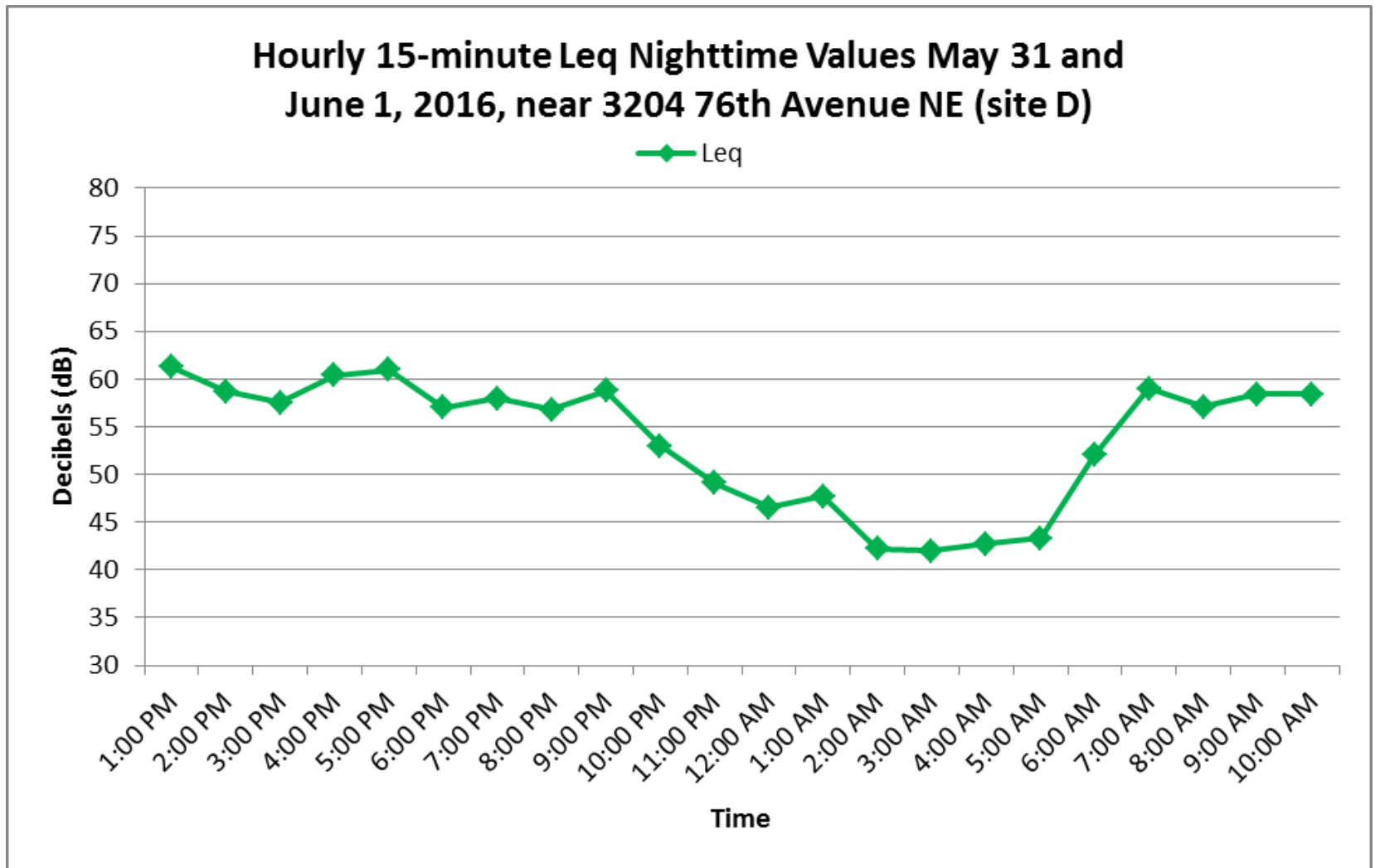
Comparison of Pavement Noise Between Old and New SR 520 Bridges on April 19 and May 3, 2016



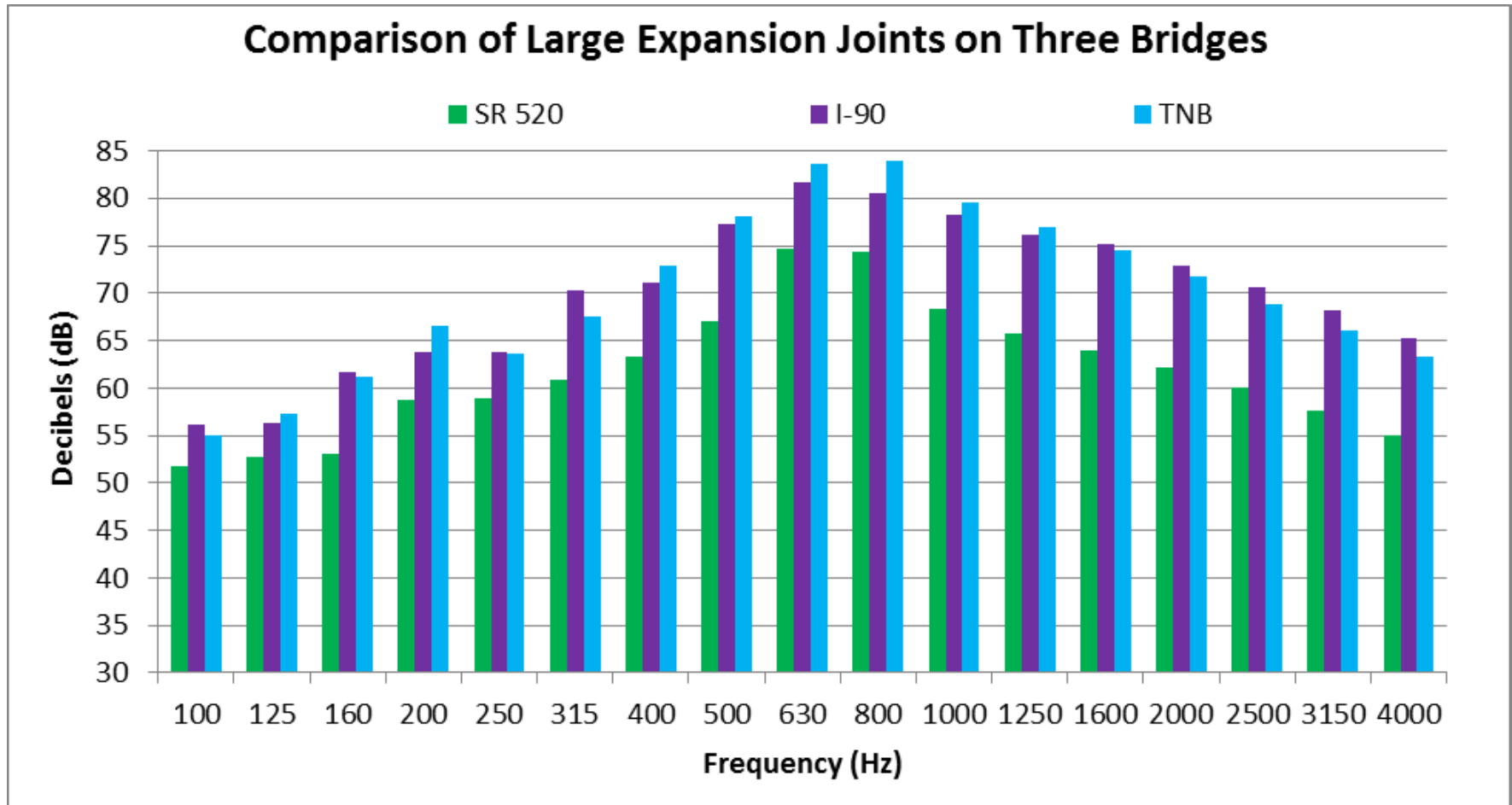
Analysis of findings



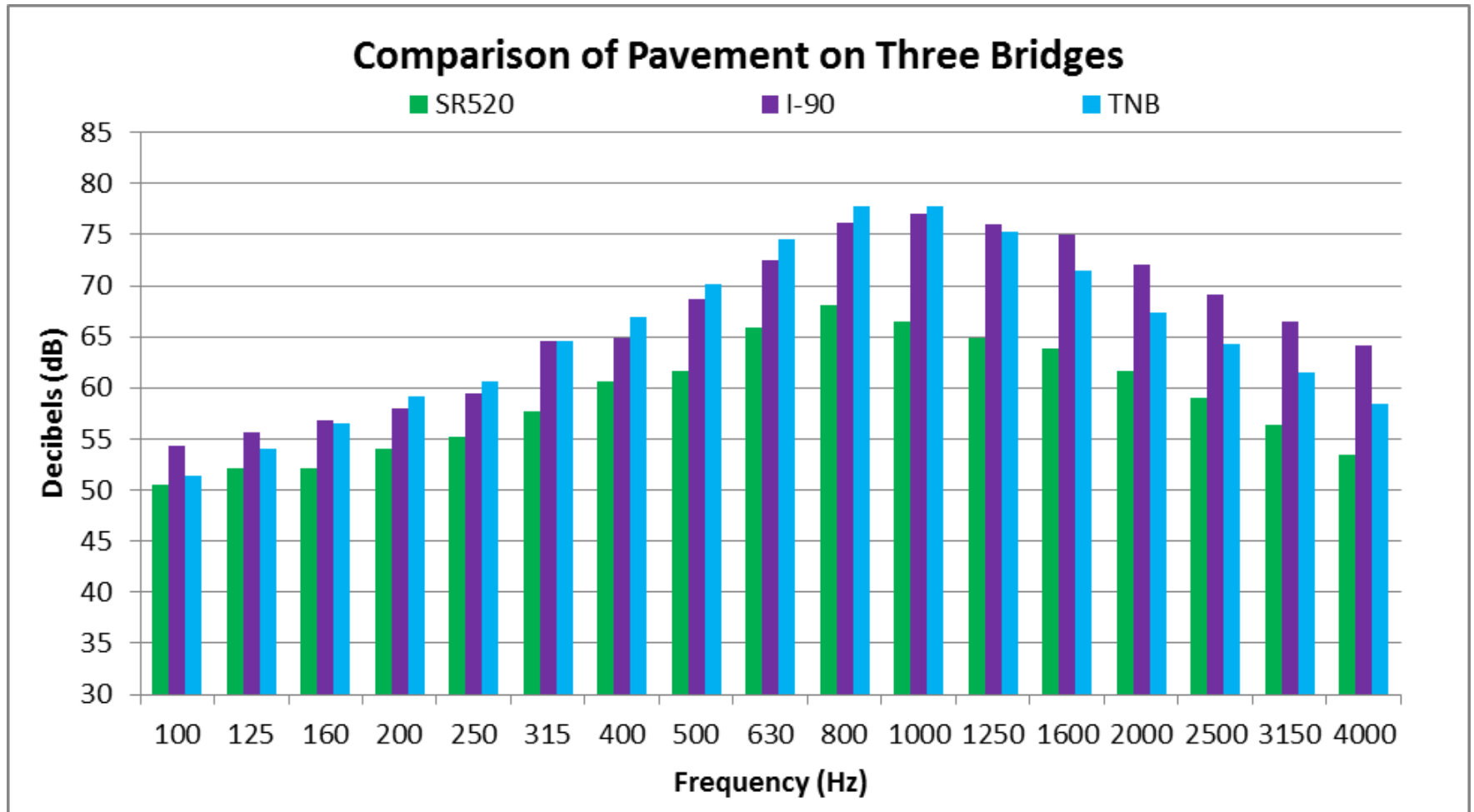
Analysis of findings



Analysis of findings

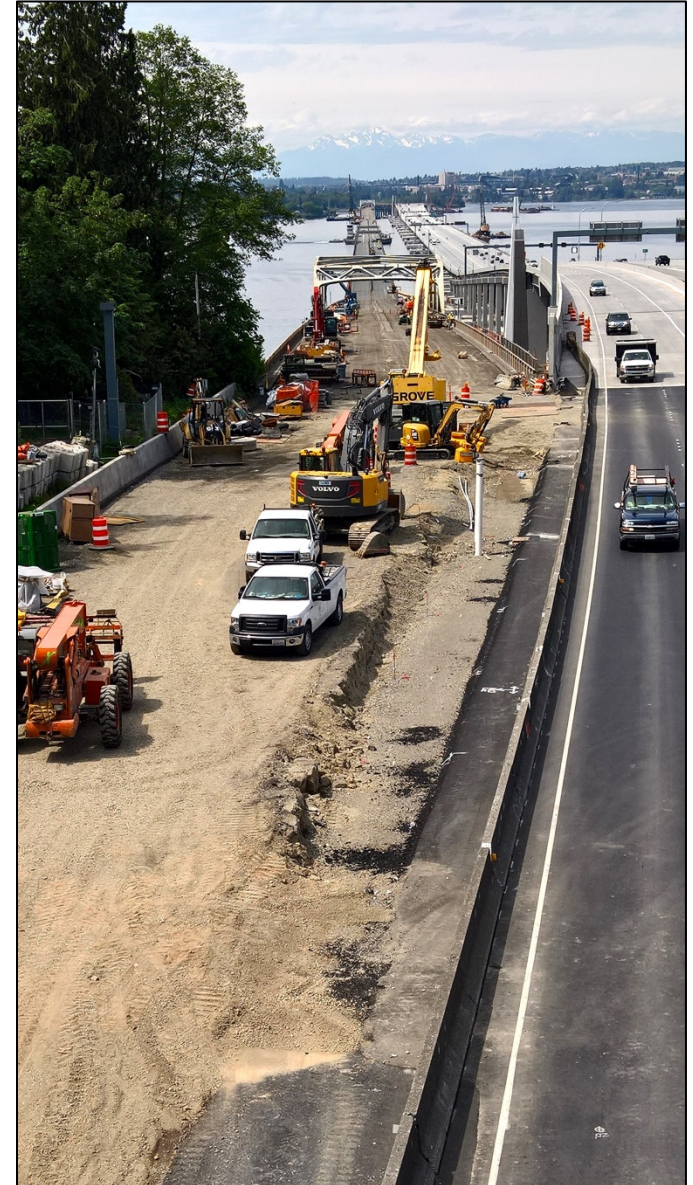


Analysis of findings



Next steps

- Construction work still ongoing
 - Old bridge decommissioning
 - South noise wall construction
 - Viewpoint trail and screening walls
- Additional measurements after south noise wall is complete
- Install permanent tolling equipment; remove temporary tolling equipment
- Commitment to continue working with the City, neighbors, and elected officials



Questions?

For more information and construction updates:

Visit the SR 520 Orange Page:

www.wsdot.wa.gov/Projects/SR520Bridge/520orangepage/

Floating Bridge and Landings project information:

<http://www.wsdot.wa.gov/Projects/SR520Bridge/BridgeAndLandings/>

E-mail:

SR520Bridge@wsdot.wa.gov

24-hour Construction hotline:

206-708-4657

