

**MONORAIL PROXIMITY GUIDELINES AND REQUIREMENTS FOR
DEVELOPMENT ADJACENT TO CITY OF SEATTLE MONORAIL LINE
(Revised May 2023)**



Purpose

Consistent with the City's ownership of and responsibility for the Monorail System, the landmark status of the Monorail System, and the status of the Monorail System as a "City Treasure", the City is hereby requested to apply these Proximity Guidelines for the purpose of determining appropriate conditions, limitations, restrictions and allowances that will protect the Monorail System; ensure safe, reliable and efficient operation of the Monorail System; maximize the safety of employees, patrons, and the general public; and prevent actions that would thwart those objectives.

This set of guidelines should supersede the documents of February and July 2015 as well as December 2017 and August 2022.

Issue: Avoid ground disturbance affecting the Monorail System pier footings. Footings hold the beams in place and are ten feet wide and extend twenty-five feet below ground level.

Guideline: Adjacent to Seattle Monorail columns, excavations shall be restricted within 5.5 ft. of the center of each column at street level and extending outward and downward at 45 degrees. Nearby excavations shall be monitored to assure footing stability. Any work to be performed in or near the restricted area must have prior approval from Seattle Center Director.

At or above grade: The piers above ground level shall not be moved, nor can any item such as lighting or signage be attached to the piers without prior written consent from the Seattle Center Director. Construction equipment must remain outside of the 14-foot-operational envelope from each side of the beam at all times except for permitted work windows when allowed by the Seattle Monorail facilities. Contractors must employ spotters and consider stringing warning lines from pier to pier under the beams to delineate the operational envelope when any construction activity occurs within 25 feet of the beams. For notification requirements for adjacent to Seattle Monorail facilities, see Section 1-07.28(11).

Issue: The Monorail System piers cannot be modified.

Guideline: The piers above ground level cannot be moved, nor can any item such as lighting or signage be attached to the piers without prior written consent from the Seattle Center Director. Piers will not be painted nor have any landscaping done to them without prior written consent of the Director. Monorail piers shall not be painted. Landscaping shall not occur adjacent to piers or within 10 feet of a Monorail structure without prior written consent of the Seattle

Center Director. Any construction activity in the area of the power rails must comply with OSHA guidelines and must comply with W.A.C. 296.45 for working around high voltage.

Issue: On the inside surface of both beams there are high voltage (700v) power rails.

Guidelines: Any construction activity in the area of the power rails must follow OSHA guidelines for working around high voltage. Prior notice of such work is required given the potential impact on Monorail System operations.

Issue: The beams vary in height from the ground level depending on location along 5th Avenue with a maximum height of 30 feet.

Guidelines: Design criteria and project approval must take into account differences in beam height. During construction adjacent to the Monorail System, construction equipment must be aware of and take beam height into account. Contractors should string warning lines from pier to pier under the beams as a guide. Spotters must be employed when any construction activity occurs within 25 feet of the beams.

Issue: The safe operational envelope for the Monorail System is considered to be 14 feet horizontally from each side of the beams and stretching from the bottom of the pier footings to a point 15 feet above the top of the beam.

Guidelines: Intrusions into the operational envelope must be avoided. If intrusions into the operational envelope are necessary, advance approval of and coordination with the Seattle Center Director is required. The Director may require additional contractual and liability obligations by the contractor and building owner to assure the safety of the Monorail System.

Issue: Proximity of bucket trucks and other equipment and vehicles adjacent to the operational envelope of the Monorail could result in contact with a moving train or distraction to a Monorail driver.

Guidelines: Contractors, construction personnel, utility and service workers, and drivers of associated vehicles must operate within guidelines. Construction personnel must communicate with Monorail operations staff before the start of any activity that has the potential for impacting public safety.

Issue: Proximity to the moving trains and distractions to the Monorail drivers during ongoing operations (i.e., after construction is complete) must be addressed during the project design and approval phase.

Guidelines:

1. Window cleaning and exterior building maintenance must not interfere with train operations.
2. All cleaning and maintenance activity occurring within or immediately adjacent to the operational envelope must be coordinated with Monorail operations prior to beginning work.
3. Intrusions into the operational envelope must be avoided. Windows that open, balconies, and other projections from the building along or above the Monorail tracks could present public and individual safety issues. A minimum safe horizontal

- distance of fourteen feet should be maintained between the outside edge of the closet monorail beam and the outer edge of any openings in the adjacent building.
4. All exterior lighting, neon, mirrored surfaces or video screens should be mounted on adjacent buildings in a manner that avoids distracting or interfering with the vision of the Monorail operators.
 5. Loudspeakers or other devices which create noises that could distract Monorail operators should not be placed near the operational envelope. See traffic code citation.
 6. Light fixtures should be restricted from entering the Monorail envelope.
 7. Designers and building maintenance employees must be made aware from the beginning that carbon dust from the electrical collectors will settle on any structures underneath the path of the Monorail, and that oil from gear boxes can occasionally leak.
 8. Nothing should be put in place, either temporarily or permanently that will restrict the ability of maintenance or emergency vehicles from performing their duties.

Issue: The Monorail makes a significant amount of noise when traveling and the horn may need to be honked anywhere along the route to warn of the trains approach.

Guideline: Buildings should be designed to insulate adjacent residences, hotel rooms, and office spaces to minimize noise concerns of occupants.

Issue: Rain and ice dropping from overhanging structures affects train operations. Ice build-up on the beam or power rail from dripping overhanging appurtenances is a safety risk.

Guidelines: Building overhangs higher than the train must take into account the position of the trains. The edge of an overhang that is higher than the operational envelope may not locate within 3 feet of the edge of a train. If a design situation occurs where the overhang extends completely over the Monorail System, the far edge must extend a minimum of 3 feet beyond the edge of the trains.

Seattle Monorail Services Contact Information:

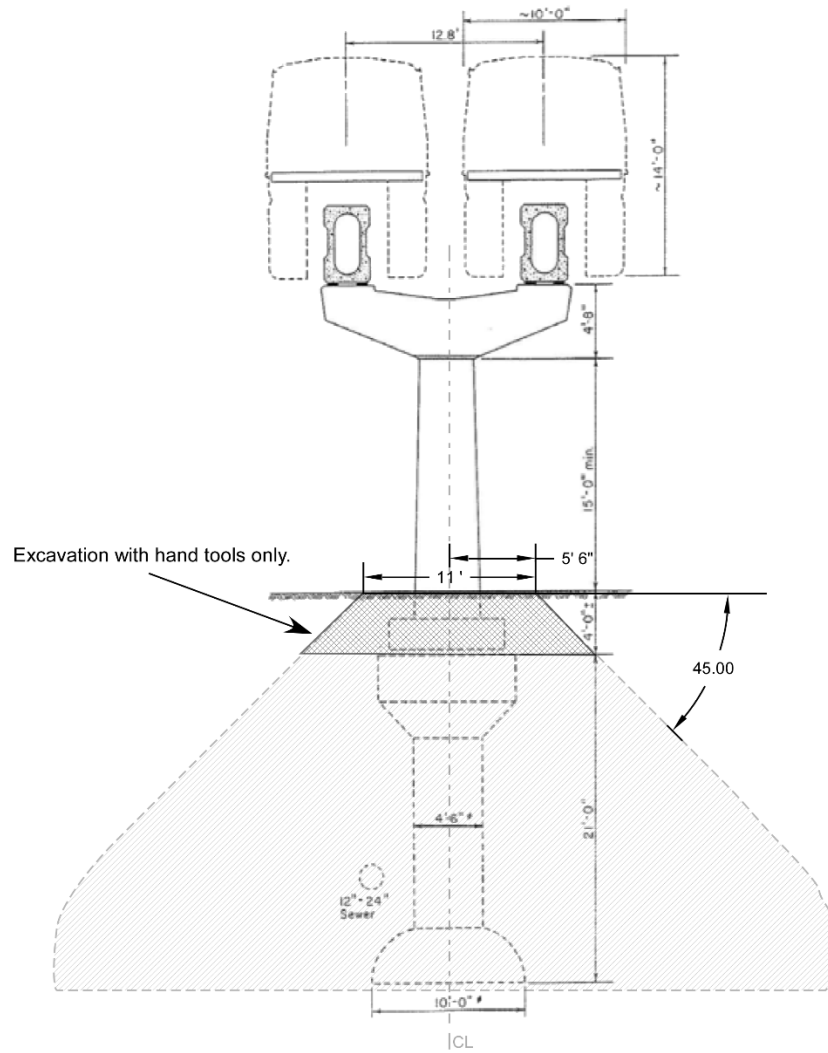
- SMS Chief Systems Engineer, Eno Yliniemi, enoy@seattlemonorail.com
- SMS Chief Safety Officer: Megan Ching, meganc@seattlemonorail.com
- SMS On-Duty Operations Supervisor: 206-396-5009
- Additionally, for plan review for work occurring near the guideway, please notify review@seattlemonorail.com with sufficient time for a full engineering analysis and response

Seattle Center Monorail Foundation Critical Excavation Zones

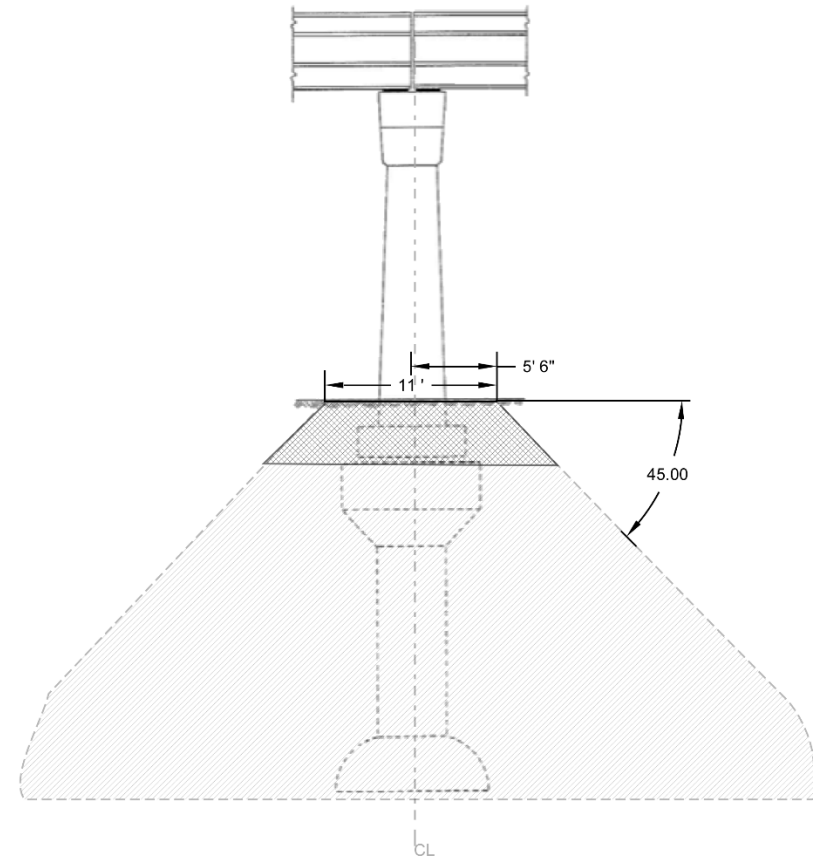
11ft x 11ft at street centered on column moving downward & outward at 45 deg.
No work shall be done around Monorail pier foundations without prior approval from Seattle Center and Seattle Monorail Services.

Any and all queries must be sent to review@seattlemonorail.com at least 10 Working Days in advance of construction.

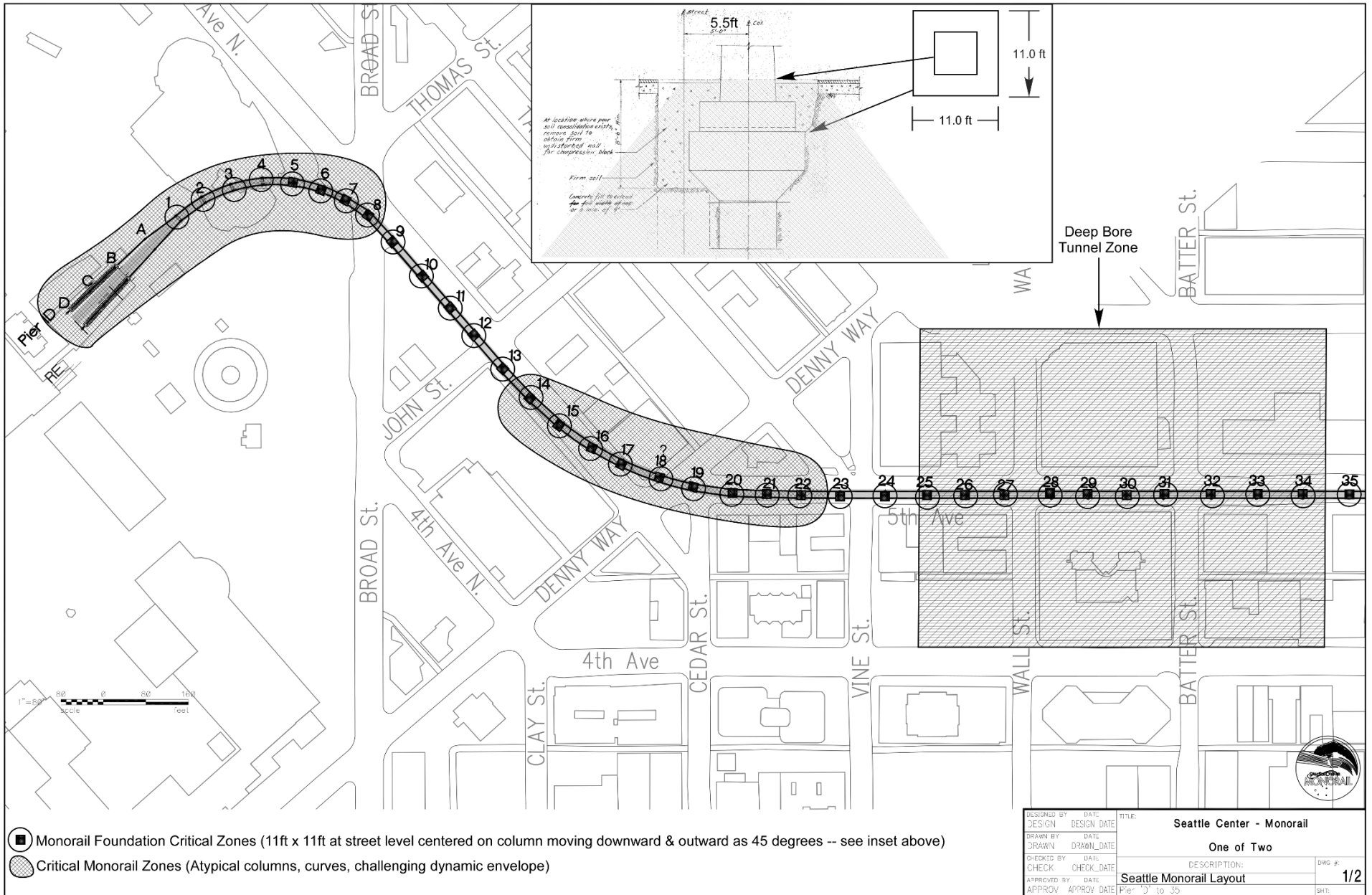
For emergency communications only, you may call 206-396-5009 to speak with the SMS Operations Supervisor currently on shift.



Typical Pier Front View

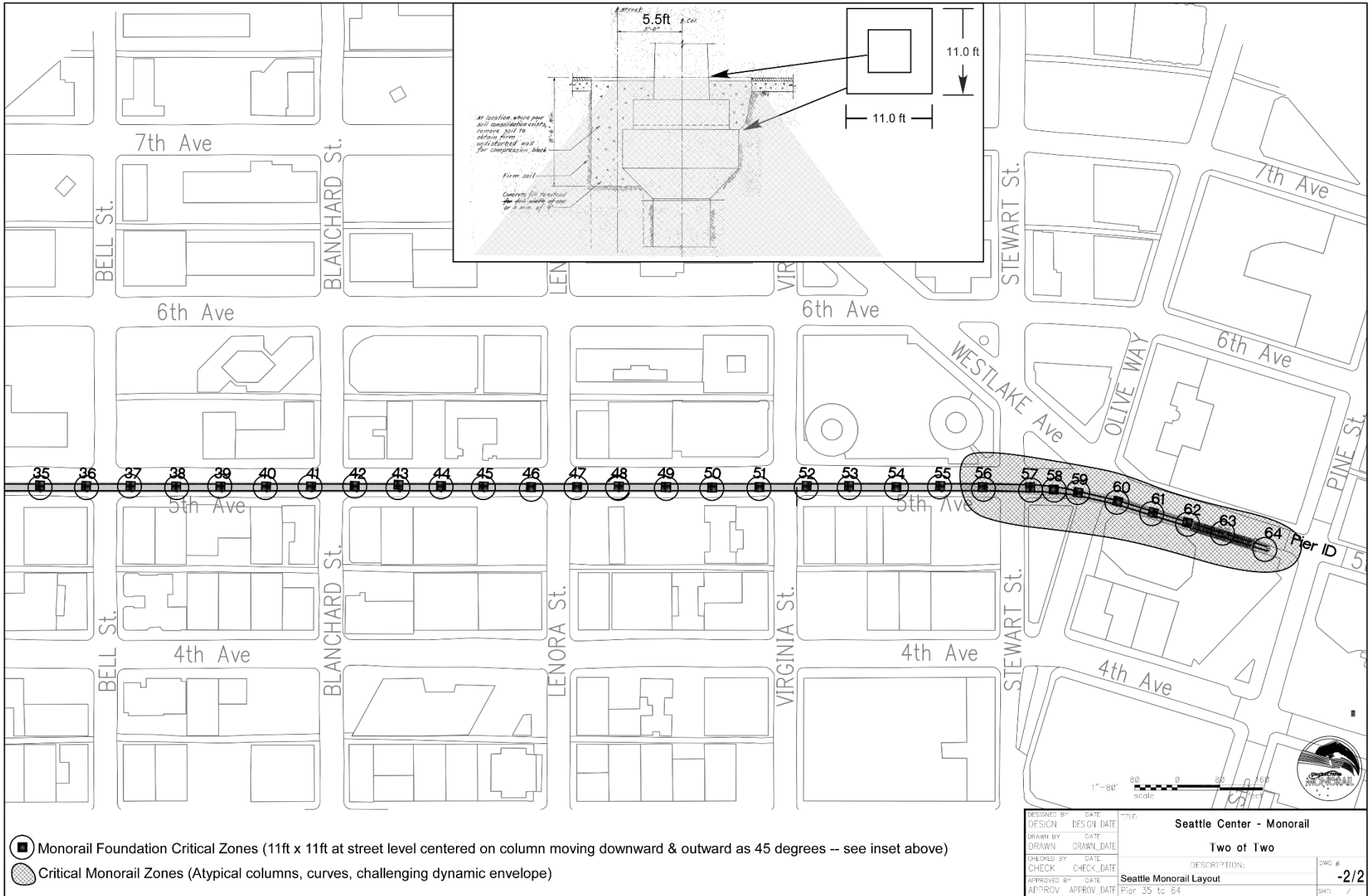


Typical Pier Side View



- Monorail Foundation Critical Zones (11ft x 11ft at street level centered on column moving downward & outward as 45 degrees -- see inset above)
- Critical Monorail Zones (Atypical columns, curves, challenging dynamic envelope)

DESIGNED BY	DATE	TITLE	Seattle Center - Monorail
DESIGN	DESIGN DATE		
DRAWN BY	DATE	One of Two	
DRAWN	DRAWN DATE		
CHECKED BY	DATE	DESCRIPTION:	DWG #
CHECK	CHECK DATE	Seattle Monorail Layout	1/2
APPROVED BY	DATE	Pier 'D' to 35	SHT:
APPROV	APPROV DATE		



- Monorail Foundation Critical Zones (11ft x 11ft at street level centered on column moving downward & outward as 45 degrees -- see inset above)
- Critical Monorail Zones (Atypical columns, curves, challenging dynamic envelope)