

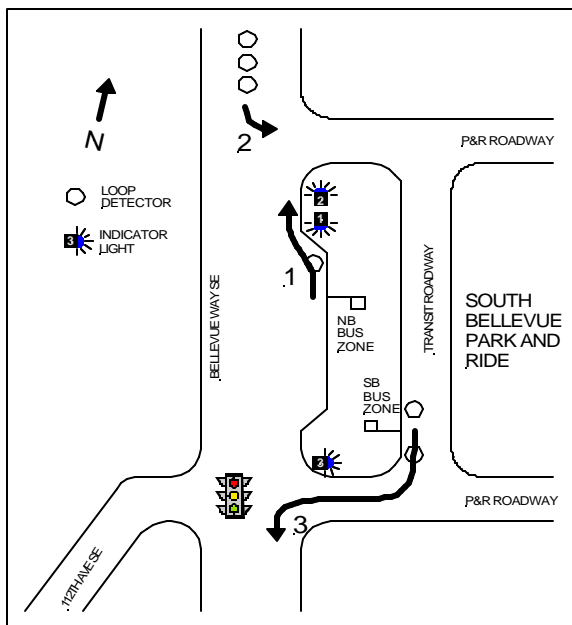
Transit Speed & Reliability

Spot Improvement Bi-Annual Report

December 2005

Transit Speed and Reliability (TS&R) continues its efforts to improve traffic operations problems that affect the daily operation of Metro buses. Spot improvements are low-cost, single location solutions that can be implemented to benefit transit with a minimum of impacts to other roadway users. Once reported and identified, spot improvements can take anywhere from a month to over two years to implement, depending on the nature of the problem, the solution, and agency staff resources. This bi-annual report highlights the spot improvements that have been completed within the past six months. A special effort for this period was preparing for the closure of the Downtown Seattle Transit Tunnel, and addressing problems that developed as buses were rerouted to the surface streets; three quick-fix type projects are highlighted below that were related to this effort.

South Bellevue Park & Ride



Problem Reported

Transit coaches experienced high levels of delay while accessing the S Bellevue P&R. Delays were due to heavy traffic flow on Bellevue Way SE, and long red lights at the 112th Avenue SE signal located at the P&R exit.

Assessment

Because Bellevue Way SE serves a heavy amount of traffic coming to and from I-90, it was not possible to adjust the normal signal timing to reduce delay to vehicles entering/exiting the P&R without adversely affecting traffic on Bellevue Way. A Transit Signal Priority system was proposed as a solution to reduce delay to buses accessing the P&R.

The Fix

In a partnership with Sound Transit and City of Bellevue, TS&R designed a Transit Signal Priority system that uses specially placed loop detectors for bus detection. Blue indicator lights were installed to notify transit operators when their bus is detected. When the signal priority system is activated signal timing is modified to reduce transit delay.

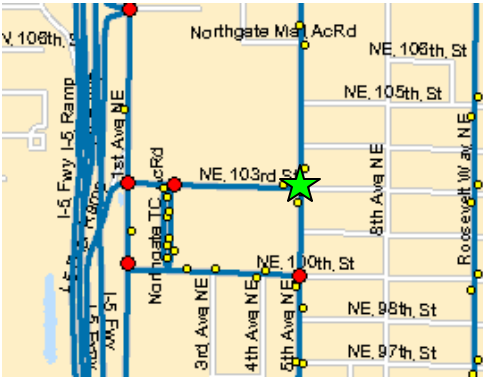
Resolution

Delay has been significantly reduced to southbound coaches that operate through the P&R. TS&R staff evaluated transit delays before and after the signal priority system was operational, and recorded an average savings of over one minute to SB coaches during the AM peak.

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5th Avenue NE & NE 103rd Street NE



Problem Reported

During a recent North Base visit by a Speed & Reliability engineer, Route 41 operators complained about a long delay while turning left from NE 103rd Street to 5th Avenue E.

Assessment

TS&R staff visited the location and confirmed that eastbound traffic had a long delay at this signal. Staff also observed that there was light traffic traveling on 5th Ave NE, and that the signal operated in coordination for north-south traffic only.

The Fix

TS&R staff reported the findings to a SDOT technician. Coordination was turned off for north-south traffic, which allows the signal more flexibility to adjust the timing based on traffic detected on other approaches.

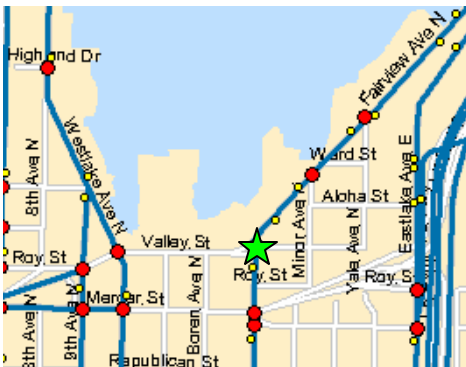
Resolution

The signal is now more responsive to traffic traveling eastbound on NE 103rd St. This reduces delay to the outbound Route 41 and other transit routes.

Agency Staff Contacts

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Fairview Avenue N & Valley Street



Problem Reported

Route 70 operators reported that the left-turn arrow at the intersection of Fairview Avenue and Valley Street was not operating correctly.

Assessment

TS&R visited the location and observed that the left-turn signal was timed to provide a protected left-turn arrow after a permissive left-turn phase. Staff observed that the signal would work better for buses if the arrow was displayed prior to the permissive phase.

The Fix

SDOT signal operations engineers had recently re-timed the signals in the area, and had made an adjustment to the phase order of the left turn arrow. Based on feedback received from TS&R, SDOT returned the signal to the original phase order.

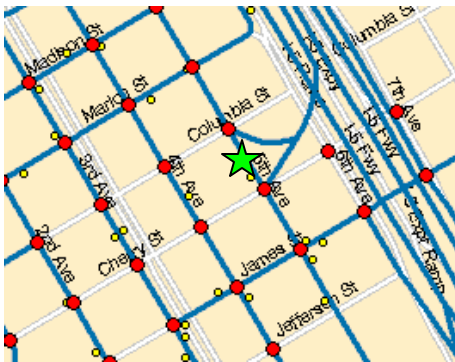
Resolution

Route 70 coaches can complete the turn during the protected left turn phase, or can turn during the permissive phase as gaps in oncoming traffic allow. Coordination between this signal and the next signal at Mercer Street is greatly improved.

Agency Staff Contacts

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5th Avenue & Columbia Street



Problem Reported

At a recent East Base visit, operators reported that vehicles were parking illegally just south of the load zone on 5th Avenue near Columbia Street, where the travel lanes make a shift to the right. These parked vehicles were encroaching into the travel lane, creating a safety hazard and impeding coach movement.

Assessment

TS&R Staff visited the site and confirmed that a recurring problem existed at this location. Staff noted that the load zone (yellow curb) was directly adjacent to a bus zone (red/yellow curb), and that the curb use designation was unclear to drivers.

The Fix

TS&R Staff contacted SDOT about the problem and suggested several ways to help prevent vehicles from parking in the troublesome spot. A 'NO STOPS' zone was installed between the loading zone and the bus zone, along with additional signs and red curb paint.

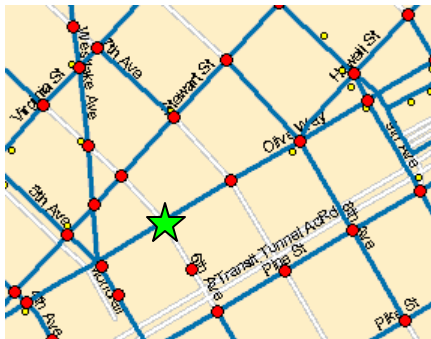
Resolution

The new curb use designations make it clear to drivers that parking is not permitted in this location. Metro and SDOT staff will continue to monitor the site to see if additional markings or enforcement efforts are warranted.

Agency Staff Contacts

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Olive Way & 6th Avenue



Problem Reported

After serving the busy bus stop nearside of 6th Ave on Olive Way, outbound Metro KC and Community Transit coaches were experiencing difficulty merging over 2 lanes of heavy traffic on Olive Way to get to Howell Street 2 blocks downstream.

Assessment

As part of the Olive Way Transit Priority improvements associated with the Downtown Transit Tunnel closure, King County and Seattle DOT visited the location to assess the feasibility of a queue jump and observe if signal timing could be allocated for transit priority. It was determined that a signal queue jump could be installed easily, at low cost, and without significant impact to traffic.

The Fix

Vehicle detectors and a signal display were installed and signal timing was adjusted by SDOT crews to provide transit vehicles with an early green queue jump during the PM period.

Resolution

The fix provides transit vehicles the opportunity to get an early green and conveniently merge over the 2 lanes of traffic without difficulty. Delays for other traffic movements are not adversely impacted.

Agency Staff Contacts

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Olive Way / Howell Street / 9th Avenue



Problem Reported

With the upcoming tunnel closure, high bus volumes were anticipated exiting and entering Convention Place Station (CPS) via 9th Ave. These increased volumes could potentially cause significant queuing and transit delay.

Assessment

Metro KC and Seattle DOT staff met together in the field to evaluate ways to reduce the queuing and delay for transit at this key intersection. It was identified that converting Howell Street to one-way operation could reduce overall delays by eliminating a phase from the signal cycle. Also, it was determined that the original transit queue jump signal for northeast-bound buses, which had been removed earlier, could be re-installed.

The Fix

The Howell contra-flow lane between 8th and 9th Aves was removed and replaced with on-street parking. The signal phase for this movement was eliminated. A signal display for the early green queue jump for transit was re-installed. Signal timing was reassigned so that transit vehicles entering and exiting CPS would receive more green time.

Resolution

The new traffic and timing changes improve transit mobility through the intersection and can more easily accommodate the new transit volumes rerouted from the tunnel closure.

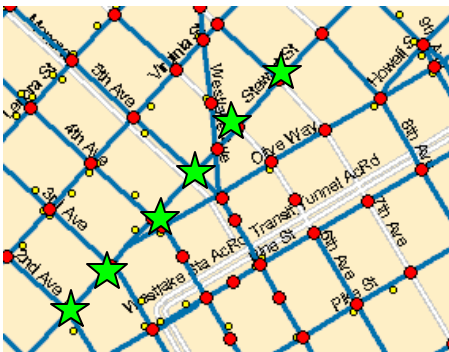
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Stewart Street Corridor



Problem Reported

With tunnel closure and increased traffic volumes on the Stewart Street corridor, long delays and congestion were reported by transit operators and customers. Transit vehicles were experiencing increased travel times of up to 30 minutes or more.

Assessment

Metro and SDOT staff observed transit and traffic operations along the corridor, and attributed the delays to high transit volumes, on-street parking, congested bus zones, and traffic signal delays. Some quick-fix items were identified to provide immediate relief.

The Fix

The quick-fix items that have been implemented include:

- * Restricting peak period parking at 12 stalls.
- * Moving some transit routes off of Stewart Street.
- * New pedestrian displays at Stewart & 2nd Ave
- * New skip-stop patterns for routes on Stewart Street.

Resolution

These fixes are currently being evaluated and assessed for effective transit travel time and congestion reduction. Metro and SDOT staff are continuing to monitor transit operations in the corridor. Other near-term improvements being considered are additional on-street parking restrictions, bus zone closure, and re-timing of traffic signals.

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