



DOWNTOWN ACCESS STRATEGY

Construction Mitigation Strategies Used by Other Cities

September 16, 2013

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EXECUTIVE SUMMARY

The Downtown Seattle Association (DSA), in partnership with Historic South Downtown (HSD) and the Seattle Department of Transportation (SDOT), are in the process of developing a Downtown Access Strategy to ensure that Downtown Seattle remains the economic engine of the region during the extraordinarily high level of transportation infrastructure activity scheduled over the next five years. As part of this effort, Heffron Transportation researched mitigation strategies and best practices that have been used by other major U.S. Cities that have undertaken large and/or concurrent major infrastructure projects.

This report provides an overview of various practices used in other cities to mitigate the impacts of large-scale construction presenting in essence a toolkit of tested strategies. Cities with a similar scale and scope of multiple, large construction projects were identified. These include Portland, Denver, San Jose, Salt Lake, Boston, New York, San Diego, Houston, Minneapolis-St. Paul, Dallas, and Phoenix. Each city studied had a combination of several types of projects including the construction and/or renovation or reconfiguration of light rail lines, bus malls, highways, on- and off-ramps, major arteries, waterfronts, piers, parks, and adjacent new private mixed-use development.

Based on our review and analysis of best practices in construction mitigation strategies, we have classified the strategies into five categories: business assistance; marketing; communications, engagement and education; contractor incentives, and construction practices. Within each of the categories, various mitigation strategies are identified and described in greater detail. This report provides examples of how they have been successfully (or unsuccessfully) been applied by other cities are also provided. The benefits and drawbacks are explored, as well as lessons learned discussed. It is noted that some of these strategies are already used on many projects in Seattle; therefore, it is the intent that the discussion add new ideas that could augment existing practices in Seattle or to show new ideas that could be tried. Contacts including both individuals and weblinks are detailed at the end of the report should any readers wish to follow up and find more information about a specific strategy.

Below is a list of the construction mitigation strategies evaluated. Those with starred bullets have unique elements that are not often used on Seattle projects.

Business Assistance

Business Loans

- *Small, low-interest loans*
Loans of up to \$25,000 at a rate of 3% mitigating temporary loss of revenue due to construction – “Float” businesses
- *Storefront improvement grants*
Matching grant funds for improvements to existing storefronts including painting, signage, new windows/awnings
- *Predevelopment loans*
Larger loans to cover soft costs of development – targeted at encouraging growth opportunities for existing businesses
- *Mitigation assistance (grants)*
Grants to cover losses due to construction

Technical Assistance

- *Business planning services*
On-going personalized consultation on business practices to improve capacity including creating financial statements and assisting in applying for loan programs
- ★ *Marketing/design assistance*
Free support for design of webpages, logos, signage, etc.
- *Classes and workshops*
- *Window washing/additional janitorial services to keep businesses clean*
- *One-on-one training (accounting, legal issues, tax issues, etc.)*
- *Networking events/referrals to potential clients and partners*

Marketing

Promotional Campaigns

- *Marketing Campaign*
Attract customers to impacted businesses with advertising, direct mailings, promotions/giveaways, reward cards, banners/signs, bus wraps, radio spots, and monthly drawings
- *Media/Social Events*
Hold large events to celebrate construction milestones – bridge dedications, public art dedications, tree planting ceremonies, street fairs, milestone events
- *On-Going Events*
Lunch-bus program bussing customers to impacted restaurants

Communications, Engagement & Education

Communication/Outreach

- *Designated outreach staff meeting regularly with residents/businesses*
- *Construction hotline*

- *News blasts – real time emails, tweets*
- *Website with construction updates/links to resources*
- *Public forums*
- *Directional signage*

Engagement

- *Community stakeholder groups*
Group of residents/businesses given administrative role in contract
- *Community/technical taskforces*
Representatives of affected areas/agencies build consensus on construction plan
- ★ *Civic organization*
Group of affected businesses, employers, and institutions serve as advocate for construction/design plans mobilizing private sector support
- ★ *Coordination/oversight agency*
Public agency in charge of coordinating all construction plans and schedules

Educational Campaigns

- *Alternative commute campaigns*
Increase awareness on how to avoid traffic congestion using alternative modes

Contractor Incentives

- ★ *Community-administered incentives*
Citizen group provides compensation for performance on quarterly basis based on direct evaluation/gathering input from community
- ★ *Community input on incentives*
Citizens provide input to project team on incentives via evaluation of contractor

Construction Practices

Phasing & Access

- *Split construction into segments to reduce impact on any one area*
- *Prohibit closure of more than one street/more than one intersection crosswalk*
- *Holiday moratoriums*
- *Timing of construction to support businesses*

Construction Guidelines

- ★ *Checklist of common sense principles for community friendly construction sites*

Managing Parking Supply

- *Require contractors to park off-site*
- *Reconfigure existing parking to increase supply*
Partner with private developments/encourage shared parking for businesses
- ★ *Provide access to additional parking through transportation*
Shuttle to waterfront locations provided as part of fee for public lots

I. INTRODUCTION

Seattle is facing unprecedented change in the next decade. Major new infrastructure is being constructed: the Alaskan Way Viaduct and Seawall replacement projects, Mercer Corridor project, and a new substation and power grid are the largest of these projects. Although outside of the downtown core, the extension of the Sound Transit Light Rail system to Northgate and the Eastside (of Lake Washington) will also affect downtown Seattle by eventually forcing buses out of the Downtown Seattle Tunnel (DST) and onto downtown streets. Add to this the high number of new development projects that are proposed to be constructed in the downtown core. There are also many smaller projects such as new cycle tracks and a potential streetcar connection through downtown that are still in the planning process, but could be constructed in this same time frame. Appendix A of this report includes a matrix of the known infrastructure and development projects that could affect downtown in the next decade.

A host of adverse impacts can result from long, drawn out, complex construction projects, particularly ones within the realm of transportation, that can significantly disrupt normal business operations. Potential impacts can include traffic diversions, lane reconfigurations, changes to traffic lights/signals, reduced accessibility for both vehicles and pedestrians, interruption or adjustments to transit stops and service, removal of sidewalks/blocking of entrances, reduced parking supply, decreased visibility, and interruption of utility services. Beyond these, there are often also psychological barriers in construction areas even if there is no actual decrease in physical access.

This report provides an overview of various practices used in other cities to mitigate the impacts of large-scale construction presenting in essence a toolkit of tested strategies. Cities with a similar scale and scope of multiple, large construction projects were identified. These include Portland, Denver, San Jose, Salt Lake, Boston, New York, San Diego, Houston, Minneapolis-St. Paul, Dallas, and Phoenix. Each city studied had a combination of several types of projects including the construction and/or renovation or reconfiguration of light rail lines, bus malls, highways, on- and off-ramps, major arteries, waterfronts, piers, parks, and adjacent new private mixed-use development.

We researched each city, identifying relevant recent large-scale construction projects then sought out information on the various methods used. We determined the advantages of using various methods and identified lessons learned and challenges posed. We then followed up with phone interviews with representatives at the various city agencies (transit, development, building, etc.) to gain additional information including any lessons learned and/or reflections on what could have been done better.

Based on our review and analysis of best practices in construction mitigation strategies, we have classified the strategies into the five following categories:

- **Business Assistance**, which includes project-sponsored business loans and technical assistance;
- **Marketing**, which includes promotional campaigns for affected areas;
- **Communications, Engagement, and Education**, describing various programs to keep the public informed about construction impacts;

- **Contractor Incentives**, which includes an innovative community-input approach to set a contractor's bonus;
- **Construction Practices**; which includes programs and standards related to limiting construction impacts and making construction sites better neighbors.

Within each of the categories, various mitigation strategies are identified and described in greater detail. Examples of how they have been successfully (or unsuccessfully) been applied by other cities are also provided. The benefits and drawbacks are explored, as well as lessons learned discussed. It is noted that some of these strategies are already used on many projects in Seattle; therefore, it is the intent that the discussion add new ideas that could augment existing practices in Seattle or to show new ideas that could be tried. Contacts including both individuals and weblinks are identified should any readers wish to follow up and find more information about a specific strategy.

II. BUSINESS ASSISTANCE

One of the primary concerns about Seattle's large slate of construction projects is the potentially negative effect on existing businesses. Seattle seeks to maintain a pro-business climate, balancing its support of existing businesses with making the improvements necessary to continue to attract new businesses. Businesses depend on access not only for customers but also for employees and deliveries. Reduced access due to construction, whether physically, visually, or psychological, translates into business losses. While these barriers to access will affect all businesses downtown, smaller businesses and businesses dependent on discretionary customer trips to downtown will be particularly vulnerable to disruptions.

In an effort to offset the financial impacts of construction including reduced sales revenue during and after construction, other cities have provided financial and technical assistance as a mitigation measure. Some strategies seek to mitigate the temporary negative effects of construction by offering small loans and/or grants whereas other strategies seek to build capabilities and promote entrepreneurship through pre-development loans, technical assistance, and storefront grants. Financial assistance tools have been well received by other cities' business communities; however, they are also some of the more controversial tools given the potential for defaults and/or difficulties in administration that can translate into high profile closures.

A. Business Loans

Cities surveyed provided a range of loan types based on the characteristics of existing businesses, as well as the length and extent of construction. The loans vary in both their approach (i.e., how they are funded and administered) and their objectives (i.e., to promote improved business practices or provide a cushion to allow businesses to survive during construction). The types of loans identified include:

- Small low interest loans, also called "micro-loans"
- Storefront improvement grants
- Predevelopment loans
- Mitigation assistance in the form of grants

Example Application: Tri-Met, the regional transit agency in the Portland, Oregon metropolitan area, was concerned about the impact of construction of a new light rail on businesses along the Interstate Avenue corridor. In order to address negative effects, Tri-Met partnered with the Portland Development Commission (PDC) and two private non-profit Community Development Financial Institutions (CDFI)—Albina Bank and Cascadia Revolving Fund—to offer a suite of programs, including existing loan and grant instruments. PDC assessed the condition of the business before and then immediately after construction to determine which businesses were eligible; those businesses whose cash flow was impacted and were not able to meet their obligations were then qualified for PDC’s programs. PDC offered existing programs of small business loans of up to \$100,000 for an 8-year term with a 3% interest rate and pre-development loans of up to \$150,000 intended to cover soft costs associated with developing a property. In addition, in partnership with the two CDFI’s, a short-term micro-loan fund was created to offer small loans of up to \$25,000 for small businesses and light industry at a rate of 3% for a period of 6 to 12 months. This program had minimum thresholds for qualification: in order to be eligible, businesses had to demonstrate that construction had negatively affected their revenues and be located along or one block off the corridor. The funds were targeted exclusively to mitigate the temporary loss of revenue during construction, providing sustaining capital. Key to the success of this specific loan program was its administration by Cascadia, which was perceived as an independent entity from Tri-Met. 12 businesses took advantage of these loans.

Additionally, PDC offered its existing storefront improvement grant program to assist property and business owners in rehabilitating their storefronts. Grants were for up to \$50,000. Improvements could include repainting, improved signage, and/or the purchase of new windows and awnings, among other improvements. PDC modified the grant program specifically to target businesses along Interstate Avenue, reducing the amount of matching funds required from 50% to 25%, with PDC taking on the majority of costs. 18 businesses received these grants.

Although a wide range of strategies were used to assist business owners, loans were a significant element of Tri-Met’s success. Only one business of 150 existing businesses failed as a direct-result of construction-related disruptions; three relocated to another area. Perhaps as a testament to the strength of support for businesses, over fifty new businesses were added to the corridor during or immediately after construction.

Salt Lake City offered comparable low interest loans of up to \$10,000 during the 2.5-mile expansion of its University light rail line. The program, however, was meant simply to “float” affected businesses. Therefore, qualifying for the program was fairly easy: businesses did not need to have strong credit; they only needed to be located within a block of construction and provide profit loss statements in order to be eligible. The program had mixed results, however, as five of nineteen recipients defaulted on their loans. According to Allison McFarlane of the City’s Economic Development Office, loans were established to float businesses during construction as opposed to providing more substantial long-term support like the more involved portfolio of business assistance tools offered by Tri-Met.

Valley Metro’s loan programs in Phoenix faced similar challenges. Partnering with various banks, chambers of commerce, credit unions, and non-profit agencies to provide small loans, Valley Metro found that many of the businesses most in need of financial assistance were not eligible due to strict require-

ments for qualifying for the loans. The Santa Clara Valley Transportation Authority (VTA) also struggled with developing an effective business loan program. The VTA partnered with the San Jose Redevelopment Association (RDA) to create a business assistance program. The RDA in turn contracted with a non-profit organization (The San Jose Development Corporation) to administer the program. Qualifying businesses were able to secure loans by borrowing against their existing assets in a process similar to a traditional bank loan but with the RDA as their lender. Ultimately though both the loan sponsors and the merchants were dissatisfied with the program, finding it too difficult to administer since each of the 187 loans was drawn up with different repayment terms depending on the agreement. Additionally RDA struggled as the loan administrator with collecting repayment and many businesses went into default and ceased operations during construction.

When developing its Central Corridor light rail line, the cities of Minneapolis and St. Paul developed a strategic plan focused on supporting existing businesses with a modest safety net while creating opportunities for long-term economic development. The Metropolitan Council, the regional agency responsible for planning and providing public transportation (among other services), developed a portfolio of loans with the goal of mitigating construction impacts while reinforcing business opportunities for locally-owned and minority-owned businesses. The portfolio included:

- Small business support loan fund - No interest forgivable loans of up to \$20,000 to small businesses (gross annual sales of less than \$2 million) that experience a loss in sales related to construction.
- Small business growth fund/building ownership fund - Loan, grant, and program-related investments (PRIs) to assist targeted businesses with significant growth opportunities and/or are in a position to buy or improve their buildings; this included loans for façade improvements.
- Parking loan program - Small, forgivable, low-interest loans for businesses to use to reach agreements with other businesses for shared parking or for limited construction to improve off-street parking.
- Alley improvements - In addition to \$350,000 in allocated funds in St. Paul's Capital Improvement Budget, the City created a grant program for business owners to improve alleys as means of access to businesses.

Loan programs reviewed were most effective when specifically created to mitigate impacts of construction. That way the loans can be structured and administered in a way that best meets the needs of affected businesses. For example, while the small business loans offered by Minneapolis-St. Paul were fairly typical of business assistance strategies used in other cities, their development of a loan program to address the specific impacts of light rail construction stands out. Due to the light rail design, businesses stood to lose 85% of their on-street parking. By addressing this unique condition, the city was able to respond to the needs of businesses above and beyond any standard forms of business assistance. According to a survey by the Central Corridor Business Resource Collaborative summarizing the participation in and success rate of their loan programs, businesses cited as the primary reasons for their participation in the program was that it met their specific needs and had favorable terms or requirements.

In order to take advantage of limited public funds, it is crucial for public agencies to partner with CDFIs and other private lenders. This allows the city to leverage its resources, provide a comprehensive package of assistance, and utilize the strengths of private lenders as more efficient and effective administrators of grants and loans. Additionally it is important to offer financial products different than the standard products available from banks. This can include grant programs, which may or may not have adjusted terms such as lower matching ratios, and/or loans with lower interest rates, terms for forgiveness, and technical support.

It is noted that loan programs have previously been used in Seattle. For the Link Light Rail along Martin Luther King Jr. Way S., Sound Transit provided mitigation grants through a \$50 million community development fund to assist businesses that could document a loss or were relocated to accommodate construction.

Opportunities / Keys to Success	Challenges
Loan programs are most effective when they are tailored specifically to the needs of the construction project/characteristics of impacted businesses as opposed to making use of existing loan programs that may be less flexible and/or relevant	Often those most in need of loans will not be eligible; a need exists to offer a range of loan types and amounts to address as many potential impacts as possible
Take advantage of existing loan/grant programs as they already have structures for administering	Requirements for loans should be structured keeping in mind the characteristics of those businesses targeted for loans to ensure they qualify
Partner with CDFIs in order to leverage additional funds and contract with them to provide more efficient administration of loan and grant programs	Finding the right partner to administer loan is key in order to reduce number of defaults/increase percentage of repayment
Independent non-profit and bank partners can be seen in a more positive light and therefore have better working relationships with loan recipients	A difficult balancing act between making loans flexible enough so that they meet needs of businesses without being so flexible that they are difficult to administer
Loan information should be provided in various languages to increase exposure	Those with limited language proficiency may be less comfortable going through a formal bank lending process
In order to track success rate of business assistance, collect data on number of business openings/closings/relocations during the construction project	Large effort needed to publicize loan programs and make sure eligible businesses are aware of program and understand how to participate.
	Must combat perception by businesses of ineligibility for loans

B. Technical Assistance

In addition to business assistance aimed at offsetting any loss in revenue due to construction, technical assistance programs seek to provide the means for existing businesses to improve their capacity and capture a greater share of the market. At a minimum these programs seek to publicize and connect businesses with existing resources and programs. Beyond that, technical assistance programs create additional non-financial resources such as marketing support, advocacy, and tutoring or mentoring. Technical resources can include:

- Business planning services
- Marketing/design assistance
- Classes and workshops
- One-on-one training on accounting, legal issues, tax issues, etc.
- Networking events/referrals to potential clients and partners

These mitigation efforts are often provided by non-profit or community development organizations. They present the opportunity to provide comprehensive resources for businesses when partnered with financial products.

Example Application: In addition to its partnership to offer business assistance, Tri-Met and PDC partnered with Cascadia Revolving Fund, Portland State University (PSU), and other technical assistance providers to offer on-going consultation on business practices including finance, accounting, marketing, and personnel and general management issues. Over 800 hours of personalized technical assistance was provided to 59 total businesses along the light rail corridor including assisting smaller companies in applying for PDC's business loans by helping prepare financial statements and identifying potential business partners. Tri-Met staff also partnered with the Business Outreach Program at PSU to offer workshops teaching business management skills and partner business owners with personal mentors to help provide business strategy advice throughout the construction process. Technical services such as developing business plans, bookkeeping training, and marketing were also offered.

Minneapolis St. Paul developed a similar range of technical assistance by partnering with several coalitions of community development organizations including the Business Resource Collaborative and the University Avenue Business Preparation Collaborative (or U7) to expand the resources already offered by its Great Streets Neighborhood Business District Program. These collaboratives of non-profits leveraging funding from the Metropolitan Council but also received grants from other organizations such as the Central Corridor Funders Collaborative, the St. Paul Foundation, and the Bigelow Foundation. U7 used this funding to expand its services, hiring small business consultants and a graphic designer.

In addition to providing financial support, both Collaboratives sought to help build the capacity of business owners while also connecting them to existing region-wide resources. For example, U7 offers a "Results Driven Marketing" program that provides businesses with free marketing design for tangible materials including webpages, logos, signage, and promotional materials. U7 also offers on-site business consulting with support in marketing, merchandising, financial record keeping, credit repair, and retail management. Additionally they offer free small business workshops and staff the Business Resource

Center that provides hands on information and help for businesses. The power of U7’s technical assistance lays in the organization’s ability to offer a range of services and tie into various streams of funding. For instance, Thai Café, a small, local business along the light rail corridor, received 120 hours of assistance including:

- Design of a new brand, menu, business cards, and website
- Facilitation of a micro-grant for more marketing assistance
- Maintenance and training on how to maintain a Facebook page and website
- Development of business strategy emphasizing catering to offset difficulties of accessing restaurant during construction
- Creation of flyers
- Coordination of façade improvement and new signage with new landlord

While some of these programs were directly funded through grants provided by U7, others were either matching funds, grants, or loan programs available through the Metropolitan Council that U7 helped business owners identify and apply for.

Another assistance program found in our research offered services like regular window washing windows and additional janitorial services to keep the area affected by construction clean and attractive for customers.

While any one public agency or non-profit organization may have pre-existing programs aimed at building technical skills, coalitions of service providers are able to offer a much broader and targeted portfolio of services. Just as PDC was able to more effectively meet the needs of small businesses by partnering with other sources of funding, the city of Minneapolis St. Paul was able to offer an enhanced toolkit of technical assistance by partnering with community development organizations. Universities should be targeted as potential partners not only to provide technical assistance but also to document and analyze the results of any assistance programs.

Opportunities / Keys to Success	Challenges
Technical assistance can increase the rate of success for business loan programs by improving the performance of businesses who receive loans	Participation rates depend in large part on the promotion of programs
Information packets i.e. “Survival Guides” can be distributed to businesses with contacts, construction schedules, parking information, and links to support services, loan programs, and business consultants	Collaborating and avoiding redundancy of multiple efforts by different organizations
Build partnerships with existing universities and non-profit or community development organizations to offer programs	Technical assistance programs should be supported by capital expenditures aimed at improving the physical appearance of business districts

III. MARKETING

As mentioned previously, maintaining a supportive climate for existing businesses while continuing to attract new businesses is a difficult balancing act. Beyond the financial and technical assistance summarized in Chapter II, agencies can support existing businesses through marketing. While less direct than loans or technical assistance, marketing is a lower-cost strategy that can prove very effective when structured in order to reach target markets and customers. Most of the surveyed marketing campaigns consisted of multiple elements addressing both how people access the business and attracting new customers. Promotional campaigns included special events, discounts, signage and other techniques to draw visitors to areas of construction. Some of the marketing campaigns utilized the construction itself as an attraction to bring people to the site. Signage can increase visibility and help address issues of access whether at the larger scale of banners or through flyers with relevant information widely distributed. Below is more detail on the marketing efforts used on large construction projects in other U.S. cities; it is noted that many of these programs are similar to those already being utilized for Seattle projects.

A. Promotional Campaigns

One of the biggest concerns of cities is the potential negative impact on existing businesses in construction areas. Barriers to pedestrian and vehicle access; traffic changes and ensuing confusion and frustration; increased noise, dust, and dirt from construction; and reduced visibility from construction barriers, scaffolding, etc. can affect customer access and customer desire to visit an area. Many businesses fear that the negative impacts of constructing new infrastructure may outweigh the potential future benefits associated with the project, and smaller businesses unable to maintain their customer base may close as a result.

A marketing campaign can spread the message that despite the impediments of construction, commercial areas are open for businesses. Marketing materials could include directional signage, banners/enhanced business signage, and/or flyers. Promotions to attract additional customers could include construction specials such as coupon books, publicized discounts, or special events.

Example Application: One of the most successful examples of a multi-pronged promotional campaign was Tri-Met's "Open for Business" effort in Portland, Oregon during the construction of a new light rail line through the existing Interstate Avenue business corridor. The promotional campaign sought to attract customers to existing businesses through advertising, direct mailings, and promotions. Advertising included banners and signs for businesses featuring the business name and the catch phrase "Open for Business" and ads on buses serving the area and in local papers. Full-page ads highlighted the stories of businesses and owners in the district. The businesses featured in ads were grouped geographically and timed to coincide with when construction began in front of their business. Tri-Met also developed mailers that were sent to 16,000 homes in the adjacent neighborhoods. These direct mailings included coupons and promotional advertisements for area businesses. As part of this effort, Tri-Met's communications and graphics staff partnered with small businesses to develop attractive logos in the hopes of making their advertisements more effective. Tri-Met also held monthly drawings, giving away transit passes to winners who provided receipts from Interstate Avenue businesses. Additionally, flyers and directional signage were used to assist customers in wayfinding. Flyers specifically addressed access

issues, providing information on parking, entrance, and detour directions. Throughout the construction period along the 5.8-mile corridor, only one business closed as a direct-result of construction disruptions and three relocated. According to Tri-Met, over fifty new businesses have opened along the corridor during or immediately after construction.

As a complimentary part of its marketing strategy, Tri-Met sponsored media and social events along the light rail corridor. The emphasis was on promoting the light rail line while simultaneously attracting crowds to the construction site to increase traffic to the business district. Events included bridge dedications, public art dedications, tree planting ceremonies, street fairs, and milestone events. Beyond these one-time special events, Tri-Met also sponsored on-going events such as a “lunch-bus” program. Tri-Met provided buses to transport city and transportation workers to restaurants along the light rail corridor, bringing large numbers of customers to restaurants impacted by construction.

While not as comprehensive as Tri-Met’s promotional campaign, other cities including Salt Lake, San Diego, Houston, Minneapolis St. Paul, and Phoenix offered marketing support to existing businesses. In Salt Lake, businesses negatively suffered from the impacts of construction of the City’s first light rail line, including the demolition and reconstruction of an existing viaduct with enhanced pedestrian and bicycle pathways. In response during the construction of its University Line, the City allocated marketing funds for promotional efforts. Federal Transportation Agency funds were used for business advertising and customer signage for a “Still in Business” campaign. Special sales promotions were also offered including coupons for a car wash to compensate for the construction dust. The City also funded promotional efforts by the Community Coordination Team (CCT). Marketing efforts were coordinated with the contractor’s public information staff and included over \$75,000 in coupons each worth \$1 that could be redeemed at businesses along the corridor disseminated through a radio station campaign, a “Go Forth” radio advertisement campaign featuring six businesses each month including a remote broadcast offering prizes, and monthly advertisements on the back cover of a local publication (Catalyst Magazine). Salt Lake chose its means of promotion based on a study of intended customer demographics of businesses along the light rail alignment. Additionally the City hosted mini-celebrations for the completion of the construction of each segment of the light rail line.

On a smaller scale, Phoenix, Houston, and San Diego have launched promotional campaigns to increase the patronage of businesses. In Phoenix, during the construction of a light rail line, Valley Metro created the METRO Max rewards program, offering special deals, promotions, and giveaways when customers used valid transit passes or METRO Max rewards card at locally participating businesses. Valley Metro distributes a brochure of all participating businesses and their offers. Valley Metro also created a mobile version of the savings program. Both the brochure and card are available for download off the Valley Metro website and available in physical form at participating businesses. Valley Metro also provided courtesy signage to be used for advertising, marketing, or directional purposes to any business along the light rail corridor with 48 hours from when it is requested (this was made possible by the temporary waiving of the existing sign ordinances along the corridor). In addition, Valley Metro used traffic guide signs and wayfinding signage to direct traffic to businesses.

In San Diego during the implementation of the North Embarcadero Visionary Plan, the City partnered with area businesses to promote and offer “construction specials” to attract customers. A monthly

newsletter was published both in hard copy and electronically announcing tenant news including any special discounts and a map of the current stage of construction indicating any changes to vehicle access or parking. Businesses offered discounts not only for visitors but also for construction workers and nearby employees. In Minneapolis St. Paul, a promotional campaign makes use of Facebook, Twitter, and mobile phone applications provided to businesses owners as a low-cost way to stay in touch with customers. The program allows businesses the opportunity to interact directly with customers and keep them up to date on any construction impacts.

Less effective programs include one in Houston for which METRO distributed coupon books to households along the project corridor; however, few of the coupons were redeemed. Additionally, Valley Metro provided free pre-printed postcards to businesses for their use in promotional mailings, but businesses had to cover the cost of custom printing and postage.

Some City agencies also leveraged their large employment base to support existing businesses. For example, a florist along the light rail construction alignment in Portland was suffering, so Tri-Met rallied employees to use the florist for all their Mother’s Day purchases. Additionally Tri-Met used area businesses for all its procurement needs for special events hosted during construction to provide additional business.

Promotional campaigns were most successful when they matched the mode of promotion with the intended demographic (i.e., if the majority of customers for businesses receive the local paper, then ads in the paper will reach them more effectively; but if it’s a younger resident population, then flyers at local coffee shops, radio spots, or web postings and tweets may be more effective). For best results, marketing efforts should be coordinated with community and business partners to ensure that materials and events are timed correctly, reach their target audience, and meet the needs of business owners. Finally, a multi-pronged approach seemed to be most effective using multiple elements including directional and promotional signage, advertised discounts, a media campaign, and special events.

Opportunities / Keys to Success	Challenges
Multi-pronged marketing campaign can improve visibility for businesses in the area	For highest rates of success, requires close collaboration and buy-in from area businesses
Directional signage and promotional materials can communicate means of access and parking	Matching the mode of promotion communication with the media preferences of business customers
New forms of media can be used to increase distribution of promotional offers (websites, mobile aps, Facebook, etc.)	Media coverage may be perceived as more credible than advertisements so special events and media coverage should be balanced with promotional campaigns
Marketing efforts can be geographically and temporally linked to construction phasing	Temporary signage may require the waiving of existing signage ordinances
Radio advertisements are perceived to be effective and popular	A successful marketing campaign with multiple elements will require coordination across agencies and departments

IV. COMMUNICATIONS, ENGAGEMENT & EDUCATION

Large-scale construction of the type planned for Seattle is lengthy, covers large areas, and has different phases translating into wide-ranging impacts that change over time and make it difficult for area businesses, residents and visitors to understand how to avoid major impacts. One of the least expensive, most direct ways to mitigate the impacts of construction is to advertise the potential effects. Communication can utilize various forms of media (websites, newsletters, broadcasts, signage, etc.) to notify those impacted of any pending construction activity, as well as announcing updates, allowing the City to provide updates as various phases of construction occur.

A. Communication / Outreach

The most successful construction processes we studied made use of multiple means of communication in order to publicize the impacts of construction. Some of the most common communication mitigation strategies widely used include:

- Designated outreach staff (city community relations staff, independent mitigators, designated on-call construction representatives)
- Construction hotline to allow people to express concerns/ask questions
- News blasts (email alerts, media announcements, flyers, project website, Facebook page) providing construction updates
- E-mail notifications
- Public forums to provide construction updates and solicit feedback
- Support for existing business associations
- Signage/wayfinding (static signs, movable/variable signs) notifying drivers and pedestrians of traffic impacts/route changes due to construction

Agencies in Seattle, including SDOT, the Washington State Department of Transportation (WSDOT), and Sound Transit, have used all of the different methods listed above to disperse information. Information about similar programs used by other cities is presented below to show similarities as well as some potential new methods that could be used in Seattle.

Although there are many means of communication, success was consistently defined by outreach that facilitated the development of working relationships. Communication should be a means not just to publicize construction impacts but partner with businesses and residents to mitigate impacts through creative solutions. Personalizing outreach through regular and frequent interactions and demonstrating the willingness to adapt the construction process is critical. If these relationships are developed early on, then even when some negative impacts occur, perception of their effects will be lessened due to community buy-in.

Example Application: Timing and frequency of visits by community/contractor representatives varied in our survey of best practices. In Portland, for example, Tri-Met's four dedicated community relations staff along with construction supervisors met daily with businesses during construction. All four community relations staff were also community residents so were available to residents and business own-

ers informally on a regular basis. In San Jose, the Santa Clara Valley Transportation Authority (VTA) during the development of the LRT system had the contractor hire a full-time Community Relations Officer who coordinated with city community outreach staff. The VTA then classified all stakeholders into a three-tier system with corresponding levels of communication, with each tier building on the level of outreach:

- Tier 3: all addresses within 30 square blocks of downtown – received information at key junctures via mailings. Could self-upgrade to Tier 2 status.
- Tier 2: interested and involved constituencies including news media, Downtown Association, Convention and Visitor’s Bureau, City agencies, Mayor’s office, local council members’ offices, transit riders, transit dependent communities such as senior centers, and other key downtown stakeholders – received all Tier 3 mailings plus regular email updates. Additionally they could request presentations by VTA staff at organized meetings.
- Tier 1: all businesses and properties directly impacted by construction activities – in addition to Tier 3 and 2 communications, received advance notice of invasive work and immediate and frequent access to VTA community outreach staff and contractor Community Relations Officer.

The VTA emphasized face-to-face communication with Tier 1 stakeholders. Every Friday during construction, the Community Relations Officer would hand deliver construction updates to businesses along the alignment. Key to the success of their communication strategy was partnering with businesses to address any issues with impacts of construction. The VTA met regularly with merchants and adapted construction to meet their needs. For example, many of the area restaurants depended heavily on lunchtime revenues and were concerned about negative impacts of construction noise on their dining atmosphere so the VTA limited invasive construction activities during lunch hours and erected noise barriers. Salt Lake City had similar success with an independent contractor serving as a construction mitigator, working with area businesses to resolve issues with construction. For example, parking areas for apartment buildings was reconfigured to help absorb street parking being removed.

Additional best practices in communication methods identified in our survey of other cities include:

- Provide area business owners with cell phone numbers and pictures of public involvement staff and construction coordinators so they know who to contact and have ready access to them.
- Conduct a survey prior to designing the construction process to determine needs during construction and meet individually with each business owner to establish good lines of communication.
- Attempt to notify all businesses up to a year in advance of construction schedule/plan so they have plenty of time to prepare.

- Invite business owners that have been affected by prior construction projects to speak at meetings of businesses soon to be affected by construction and mentor about best practices to reduce their business impact.

Consistently across the cities we studied the preference was for a single, designated point of contact for impacted businesses in addition to regular and frequent outreach to a wider network of stakeholders. The success of communication efforts are judged in large part by the quality of working relationships developed with area businesses. Agencies should seek to provide easy and consistent means of comment, building trust through collaborating with businesses to design and modify the construction process when possible.

Opportunities / Keys to Success	Challenges
Community representatives are most successful when they are integrated with the construction process i.e. supervise and/or administer incentives	Depending on the audience, may need to print communication materials in multiple languages and provide interpreters
Face-to-face contact with businesses and stakeholders is key in order to open lines of communication and create relationships that enable resolution of conflicts	Developing a schedule for outreach that provides opportunity for businesses to make adjustments to construction activities and give feedback about impacts
Preferable to have a single point of contact for consistency and to build trust	Remaining flexible in design of construction process in order to meet wide ranging needs of businesses
Designate, if possible, neighborhood residents or business owners as outreach coordinators to maximize opportunities for communication and build on existing relationships	Given large number of simultaneous construction projects with different clients, difficult for outreach staff/coordinator to collaborate and remain up to date on all processes and be able to respond to needs by adapting construction
Supplement city outreach staff with dedicated contractor outreach staff and/or an ombudsman responsible for immediately responding to construction issues and mitigating concerns	Communication methods must allow for frequent changes in impacts – this can be addressed through modern technology such as variable signs, news blasts, and a broad media platform
Provide some form of 24-hour community hotline that allows businesses/residents to cite issues as they arise	Engaging people effectively in public meetings/workshops to reach beyond the regular crowd
Solicit the input of community members' knowledge of local area to develop construction approaches that minimize impacts	

B. Engagement

More formal, on-going partnerships with business and community stakeholders can provide an opportunity to not only design responsive construction plans but also to adjust construction and mitigate impacts over the course of long projects. Committees, Task Forces, Coordination Teams, and etc. can comprise of community members (including residents and businesses), representatives from public agencies, leaders of institutions and businesses throughout the city representing major employers and civic institutions, and contractor staff. Regardless of their composition, the most successful working committees are established early, meet regularly, and provide members an opportunity to participate in the actual administration of construction. In addition, working groups/technical committees can help facilitate cooperation across multiple agencies and jurisdictions on larger scale, more complex projects.

Example Application: Of the construction projects surveyed, several models existed for the creation of stakeholder committees, varying based on the scale of the project and issues and local politics. Following is a summary of three efforts, each representing different aspects of stakeholder engagement.

Salt Lake City established a public forum and process to allow residents and businesses along the future light rail line an opportunity to voice their concerns about potential disruption from construction. This public participation process was included in construction documents. The City established a Community Coordination Team (CCT) composed of resident and business representatives, including one of each from each block of the corridor and two at-large representatives appointed by stakeholder agencies. The CCT was responsible for 1) allocating budget for business impact mitigation programs to be coordinated with contractor staff (see Section II for further description of these programs) and 2) establishing a contractor evaluation incentive fee system (see Section V).

The City of Dallas when faced with the formidable task of renovating the Central Expressway while constructing regional light rail lines, created a task force consisting of representatives from various affected cities, the County, the Department of Transportation, Dallas Area Rapid Transit, representatives of residential communities, and members of the business community. The North Central Task Force (NCTF) was created to bring various interest groups together in order to build consensus about a construction plan and to oversee the construction efforts – developing technical solutions that were politically acceptable. The NCTF was not just a policy organization; they were hands on in developing mitigation measures. For example, they studied customer access in detail during the design phase of construction. NCTF then partnered with Dallas Area Rapid Transit (the project managers of construction) to tweak the design and modify the construction schedule to mitigate impacts. They were able to avoid negative impacts during the holiday season. Even if construction wasn't able to respond to concerns, they were able to build buy-in from businesses and foster their understanding of why the plans had to proceed as they did. Another example was when the NCTF met with ARCO and was able to negotiate constructing a different exit from the company's parking garage as opposed to the existing exit, which would have been severely impacted by construction. The NCTF also formed a Mobility Task Force and hired a mobility coordinator specifically focused on maintaining maximum mobility during construction.

Perhaps the most extensively engaged stakeholder organization we identified was the Artery Business Committee (ABC) founded in Boston solely to address concerns about the "Big Dig." Given the unprecedented scale of the construction project and an existing void of civic involvement, two developers from a local company that owned many major buildings near the Central Artery founded ABC in 1989 to advocate for a design that would serve downtown and a construction process that would ensure businesses continued to function while the project was being built. The timing was right as other existing civic groups were on the wane. Within a year, ABC had successfully engaged 150 of the city's leaders in construction, design, permitting, and public relations, including representatives from virtually all of downtown's major property owners and employers. High membership dues (\$25,000) enabled ABC to hire professional staff and consultants. The group focused on shaping and monitoring construction mitigation, traffic management, construction means and methods, construction management, utility relocation, and highway architecture. Their successes include:

- Continued high-level political support for the project for over 17 years with leadership at critical junctures to resolve political and legal controversies.
- Created subcommittee bringing together representatives of utility companies and major employers to develop a utility relocation plan that did not disrupt service during construction.
- Throughout construction, ABC staff and committee members regularly visited sites and issued detailed report cards on whether contractors were following required mitigation plans translating into higher rates of mitigation efforts.
- Worked directly with major news outlets to portray the project in a positive light to challenge predominant focus on project controversies.
- Instrumental in designating two key parcels for the development of cultural institutions adjacent to parks in order to attract people to the area.
- Built consensus about the Charles River crossing as a landmark bridge to serve as an icon for the city and gateway to downtown.
- Secured additional federal funds for the project when costs rose above budget and successfully advocated with Congress to prevent cuts to Massachusetts highway aid.

ABC (now known as A Better City) continues to flourish after the Big Dig has reached completion. Today the group's Board of Directors has over 100 leaders from the City's largest businesses and institutions and an annual operating budget of almost \$1 million. Diverse membership and expertise is critical to the success of ABC, allowing them to mobilize private sector support to advocate for transportation, development, and environmental projects and policies that support the economic competitiveness of the Boston region. By having a membership of CEO's, such a civic organization instantly has credibility and gains access to senior elected and appointed officials. It also ensures that members are highly motivated to resolve problems and build support for workable solutions that meet not only their needs but also those of the large region as their success is inextricably linked to the success of the city.

In New York City, the state and city created the Lower Manhattan Construction Command Center (LMCCC) in November 2004. The LMCCC is charged with coordination and general oversight of all Lower Manhattan public and private construction projects (that have a value of more than \$25 million) in the area south of Canal Street. The Command Center's mission, set forth by the executive orders, is to facilitate construction activities, mitigate their impacts on the community and communicate with the public about the work and its impact. The agency works with project sponsors to help streamline design and construction schedules, negotiate priorities, coordinate logistics and plan the movement of construction workers, materials and equipment to the area. Some of their programs include:

- External relations including media, press communications, community relations, and outreach to residents, businesses, and property owners
- Coordination of daily logistics and scheduling of construction projects including availability and efficient delivery of materials, equipment, and labor
- Environmental compliance including monitoring air quality, noise and vibration

- Master schedule of all major construction projects and a GIS database of locations
- Traffic management through real-time information about traffic conditions that allows staff to identify problems and deploy personnel to address

All programs are created with the express purpose of coordinating and marshaling the resources of various city agencies to protect the quality of life of residents and businesses in Lower Manhattan while facilitating many large construction projects. For example, the master schedule and GIS database are used to generate maps showing anticipated street impacts, allowing the LMCCC to identify clusters of traffic impacts and then partner with project sponsors to try and phase projects to minimize the clustering of impacts before they occur. Additionally the LMCCC serves as a single point of contact for the community to obtain information and updates. The LMCCC meets with the local community board in Lower Manhattan once a month to help identify and resolve community concerns

What makes the LMCCC unique is its ability not only to coordinate construction activities but also to regulate them. Their Construction Permit Enforcement Taskforce (CPET) enforces permits issued by other city agencies. The LMCCC funds a core force of agents and inspectors within the Department of Transportation, Police Department, Department of Buildings, Department of Sanitation, and Department of Environmental Protection. These representatives form the CPET, and they meet daily to discuss permitting issues, address construction-related complaints, and coordinate field operations and permit issuance. With their singular focus on maintaining mobility, the CPET is able to coordinate across multiple agencies and prevent different agencies from working at cross-purposes while improving the quality and efficiency of rule enforcement.

Opportunities	Challenges
Most successful when partnerships translate into adapting construction to mitigate negative impacts	With some of the oversight models, agencies must relinquish some contract authority to community group.
Allow those impacted by construction direct input into administering contractor mitigation strategies in order to make contractor more responsive to community's needs	

C. Educational Campaigns

Beyond disseminating factual information about the impacts of construction, a successful communication campaign will seek to change behavior patterns to minimize the impacts of construction. For example, some campaigns educate commuters on alternative modes of transportation such as carpooling, vanpooling, and bicycling in order to reduce the number of peak-hour trips affected by construction. This type of campaign can be a successful tool to address one of businesses' biggest concerns—the negative impact of construction on employee commutes.

These educational campaigns are more successful if backed with the city's financial support. A campaign to change commuting patterns will have higher rates of participation if incentives are offered for participation such as reduced fare cards for public transportation or reserved parking spaces for carpool vehicles. Agencies can reach out to employers in the areas of construction to collaborate on educational campaigns in order to achieve the highest rates of success.

Example Application: When Denver simultaneously added 19 miles of additional light rail tracks and constructed a major expansion and renovation of the freeway, business owners cited their biggest concern was the ability to maintain and recruit employees and decreased employee productivity due to traffic congestion. In response, Denver's Regional Transportation District (RTD) worked with transportation demand management service provider TransOptions to develop educational campaigns providing information on how to avoid traffic congestion. The campaign encouraged use of alternative modes of transportation through transit and vanpool subsidies as well as education about construction impacts and transportation options. In addition, the project set up a project website and launched real-time instant email alert system to announce traffic impacts and offer details and assistance on travel routes and travel times. The total cost of the program was \$3 million funded by the Colorado Department of Transportation (CDOT) and the RTD. In 2006, the TransOptions program evaluated the impact of its measures. According to the study the subsidies accounted for a daily VMT reduction of 74,800 in 2006. Additionally they found that:

- 50% of commuters affected by construction used some of TransOptions TDM strategies;
- 14 employers purchased Eco Pass which resulted in over 1,200 employee Eco Pass holders;
- 464 commuters purchased subsidized transit pass products through various outlets;
- 179 vanpool riders received T-REX TransOptions subsidies, and 9 vanpools were formed.

The program built on successes of a Transportation Management Association (TMA) that has previously established demand-side programs implemented by local jurisdictions. Additionally the program was cited for its successful use of collaborative partnerships with agency partners and the use of a public relations firm. Marketing efforts included over 300 events attended by more than 20,000 people. This extensive outreach effort to increase employer and employee awareness was deemed just as important by the program as providing employers and commuters subsidies.

In Boston, ABC applied a similar educational/commuter subsidization campaigns to reduce traffic impacts of construction, which the organization continues to offer after the completion of the Big Dig based on the success of the program. Recently ABC initiated an Excellence in Commuter Options award to honor Boston businesses for their efforts to reduce drive-alone commute trips and coordinated with the TMA to plan the MassCommuter Challenge.

Opportunities	Challenges
Potential to reduce daily VMT by educating commuters about alternate modes of transportation	More effective educational campaigns require a high degree of coordination across agencies
Partner with local employers to provide transit subsidies and real-time alerts on traffic impacts	These efforts have higher rates of success if supported with public relations efforts, which increases overall cost
Educational campaigns should also market and educate regarding transit routes, stop locations, and schedules in order to enhance travel choices for alternative means of transportation	

V. CONTRACTOR INCENTIVES

Many large infrastructure projects offer contractor incentives or penalties associated with set milestones, usually for being on schedule. Two unique programs were found in our research in community stakeholders provided direct input for a contractor incentive. This type of relationship helps make the contractor more responsive to the needs of the community.

As described in the previous section, Salt Lake City’s established a Community Coordination Team (CCT) composed of resident and business representatives, including one of each from each block of the corridor and two at-large representatives appointed by stakeholder agencies. As part of its duties, the CCT was allowed to provide additional compensation for the contractor for performance above and beyond stated minimum requirements. Award amounts of up to \$200,000 could be allocated quarterly. The exact amount was determined through an evaluation system that took into account results from public surveys administered in person to neighborhood businesses and telephone surveys of those along the corridor (surveys were conducted by a consultant). In addition the contractor would provide a self-evaluation and a presentation to the CCT on mitigation strategies. Each CCT member would then rate the contractor based on all the input. The CCT then compared these scores to the scores from the contractor self-evaluation and from a similar review by the Utah Transit Authority. The CCT executive director then had the ability to determine an overall rating, which would be used to allocate a percentage of the total incentive. For example, a score of 50% would translate into a \$100,000 incentive payment. The contractor was seen as successfully mitigating construction impacts, receiving at least 90% of the incentive pay each quarter.

Phoenix used a similar contractor incentive evaluation process but, having reviewed the experiences in Salt Lake City, simplified the incentive pay system. Five Community Advisory Boards (CAB) set up by Valley Metro Rail (one for each line section of the light rail) were not directly responsible for determining contractor incentive payment; instead each CAB was able to provide input to the resident engineer for the project team on the performance of the contractor. CAB members were provided incident report forms that they could fill out, as well as distribute to stakeholders. CAB members would then fill out evaluation forms based on incident report forms and their own personal observation. Evaluation forms asked for feedback on a number of specific mitigation strategies. CAB members evaluation forms were reviewed with the contractor and engineers at monthly Project Team meetings.

Opportunities	Challenges
Allow those impacted by construction direct input into administering contractor mitigation strategies in order to make contractor more responsive to community’s needs	Need to develop a formula for administering incentive payments that is impartial but not too complicated

VI. CONSTRUCTION PRACTICES

Given the scale, complexity and number of projects slated for Seattle, certain impacts will be unavoidable. Tools that promote and utilize best practices in construction can minimize the scope and intensity of many impacts. By addressing the actual physical construction activities, these tools seek to mitigate the impacts of construction on adjacent neighbors. For example, guidelines may address how to make a worksite more attractive, requiring that trash be contained on-site, sidewalks maintained free of obstructions, and exhaust from equipment carefully monitored. Thoughtful, well-designed construction processes will not only mitigate some of the impacts of construction but also ensure that large construction zones remain attractive, functional parts of a city to the extent possible.

Compared with some of the other mitigation strategies previously outlined, construction practices are lower in cost and smaller in scale. They often provide the means for collaboration not only between public and private partners but across various public agencies and federal, state, county, and city jurisdictions. The construction processes we identified include:

- Phasing & Access
- Construction Guidelines
- Managing Parking Supply

A. Phasing & Access

Perhaps the most effective strategy of all the ones this study identified is reducing the length of construction while ensuring access to businesses. This can be done through various methods. Construction can be consolidated into a shorter overall period or structured in such a way that it only impacts any one location for a short period of time.

Example Application: In Portland, Tri-Met staged construction of light rail lines in “reaches” of four blocks in order to minimize the amount of time the street was under construction in front of any one business. Each reach had its own construction manager that oversaw construction and any impacts. Construction took a period of about eight weeks for each reach, including the reconfiguration of the outside lane with rails and the replacement of the sidewalk. Construction within each reach was completed before beginning construction in the adjacent reach. If, for any reason, there was ever a gap between phases of construction, Tri-Met would construct a temporary street and sidewalk. In addition, Tri-Met made a firm commitment to businesses to provide vehicle and pedestrian access at all times. At least one sidewalk would remain open within the reach at all times and three crosswalks would remain open in every signalized intersection. Tri-Met scheduled driveway and doorway reconstruction before or after business hours whenever possible. Additionally, Tri-Met implemented a moratorium on construction during the holidays to ensure that businesses would have access during the prime retail season. This included a moratorium on closing any traffic lanes.

The Utah Transit Authority (UTA) used a similar strategy during the construction of its first light rail line, limiting construction activities to two adjacent blocks at any one time while also always maintaining two lanes of traffic.

Houston put in place a traffic control plan aimed at minimizing disruptions to access. METRO determined when key intersections could be closed. When intersections were closed, METRO ensured that no two streets with the same directional cross traffic could be closed at the same time. In addition, when Main Street downtown was blocked for construction, METRO added an extra lane to an adjacent street in order to help move traffic and allow access. At a smaller scale, several cities took advantage of scheduling to reduce the impact of construction on both businesses and residents. For example both Denver and San Diego used night work to minimize impacts on businesses downtown.

The City of San Diego was able to take advantage of a large waterfront area to develop a phasing plan for the current on-going construction of their esplanade. The first phase of the North Embarcadero Visionary Plan began with relocating traffic lanes 60 feet to the east to allow for the construction of the waterfront promenade. The promenade was created initially with a temporary paved surface and two pavilions that will house new ticket kiosks, a café, and a visitor information center and bathroom. The temporary paved surfaces allows pedestrians and bicyclists to use the space initially.

Projects in Seattle have often had similar phasing requirements as part of the contracts. However, some agencies are reluctant to impose such conditions since it can affect a contractor’s means and methods of construction and inflate the price of the project. Performance-based requirements, rather than prescriptive measures are generally preferred. Potential performance requirements could include:

- Prohibiting closure of more than one street at a time (unless the streets are both one-way streets);
- Prohibiting closing more than one intersection crosswalk at a time;
- Expanding Downtown Seattle’s Holiday Moratorium area to include pockets of new retail space (e.g., along Westlake Avenue near Denny Way)
- Relaxing permit requirements to make it easier to perform nighttime construction.
- Specifying noise and air pollution limits for construction equipment, as well as limits on dust or mud that can be tracked from the site.

Opportunities	Challenges
Phasing plans should be developed in partnership with stakeholders, determining early in the process the ideal times for construction in order to minimize impacts.	While phasing and access strategies may reduce the impacts of construction, they will often still increase the negative impacts of traffic temporarily. They must be supported by extensive communication and education campaigns to shift modes.
Designate specific length of time for duration of construction and tie into contractor incentives/pay structure.	Changes to traffic must be well signed to reduce potential confusion and risk of accidents.
	Prescriptive requirements that dictate contractor means and methods have the risk of increasing bid prices.

B. Construction Guidelines

While many aspects of construction such as reduced access to businesses, noise, dust and interruptions to the pedestrian and bicycle network are unavoidable, the entity overseeing construction can partner with contractors to minimize their impacts. How construction is done matters. Construction guidelines are one tool that has been used successfully by other cities to address how construction is performed, utilizing thoughtful planning upfront to design a construction approach that mitigates impacts to the extent possible. These policy documents can be as simple as a checklist highlighting key best practices or standards for worksites or more broad-reaching construction plans that provide guidance to contractors and information on what to expect to the public. These guidelines go beyond any mitigation measures cited in environmental review documents, which more typically address concerns like erosion control and storm run-off, and provide details on construction policies and requirements for specific roadways.

Example Application: New York City is well aware of the negative impacts of construction given its high density of residents, businesses, and pedestrians and vehicles in close proximity to any construction site. A Better New York (ABNY), a non-profit organization consisting of business, labor, non-profit, and political leaders working to develop innovative ideas for the future growth of the city, has developed an initiative to address the negative impacts of construction. Their Construction For a Livable City (CLC) attempts to raise the bar for construction sites via a checklist of recommended practices. The list includes various topics such as operations, environmental impact, community relations, and image and design. The topics are organized into twenty-seven common-sense principles presented in a concise, easy to follow two-page format. For example, the checklist suggests that lighting be neatly wired, out of the way, and not disturbing to residential neighbors while truck deliveries should be scheduled and supervised in a way that minimizes their duration and impact on pedestrian and vehicular traffic. Also addressed is the design of temporary structures like scaffolding and overhead sheds and the availability of updates and responsiveness to community needs. Collectively, the practices outlined seek to ensure well-managed, clean worksites that are responsive to the community and reduce impediments to residents, commuters, and tourists. Currently the CLC checklist is self-electing. The hope is that as CLC is more widely used, it will become the standard for worksites in New York City. To this end, the initiative also includes a mechanism to recognize builders and developers who elect to use the checklist.

The CLC initiative is partially modeled on the Considerate Constructors Scheme. The CCS is an independent organization created by the construction industry in England. The CCS developed a Code of Considerate Practice to which participating worksites conform. Topic areas include enhancing the appearance of worksites, respecting the community, protecting the environment, securing everyone's safety, and caring for the workforce. The best performing sites are then recognized with annual awards.

Tri-Met develops construction guidelines or "Conduct of Construction" for its light rail projects. These more extensive standards serve the dual function of consolidating construction policies for contractors and communicating with the public about the details of the project. Developed in coordination with Tri-Met, Oregon Department of Transportation, and relevant city and county staff, a Conduct of Construction provides an overview of the project, including a map and schedule (both a text schedule and a graphic schedule), and specific details about what the public can expect from construction. For example for the west segment of the Portland-Milwaukie light rail, the Conduct of Construction designates three

segments and various work zones within them. The construction activities to take place in each work zone are then detailed along with the phases of construction and their expected duration, including the typical work schedule of crews. Additionally other major projects adjacent to the light rail line whose construction will be coordinated with that of the light rail are listed along with their anticipated schedules. Then general policies for construction are listed. These address issues such as maintenance of access, contractor parking, roadway requirements (including specific requirements for certain streets), how to handle special events, utility shutdown notification, noise mitigation, and safety and security. All tools for community members to learn more about the project and ask questions or voice concerns are listed, as well as contact information for all community affairs team members.

Our research also found many examples of using art, landscaping, fencing and decorative scrims to enhance the aesthetics of a construction area. This included:

- Using construction barriers as surfaces for temporary public art,
- Erecting large screens/semi-transparent scrims printed with images and information about future development to shield construction zones,
- Using temporary plantings/landscaping (including planters) to shield construction zones or improve visual interest along temporary pedestrian routes.

Construction guidelines present an opportunity to consolidate various regulations and policies including maintenance of access, roadway requirements, safety and security, noise mitigation, utility shutdowns, environmental concerns, and tree protection, among other topics. The very process of having to compile these guidelines will foster collaboration across various agencies and jurisdictions.

Successful guidelines, no matter their scale, should address the interface between construction and the community in order to emphasize the need for construction that is conscientious of impacts on surrounding neighbors. More extensive guidelines can incorporate references for community outreach and business assistance so as to provide a clearinghouse of information.

Construction guidelines are just that and not standards unless they are backed by some means of monitoring and enforcement. This could be peer-run such as the Construction for a Livable City, using a LEED-type model. Oversight could also be incorporated into contractor review by community/stakeholder groups. An entity with regulatory power, such as the Lower Manhattan Construction Command Center, is the most effective way to enforce guidelines. Such an agency also is structured to encourage collaboration and communication across various involved parties for a more centralized, efficient construction process that takes into account a large portfolio of simultaneous projects.

Opportunities	Challenges
Construction guidelines can consolidate various regulations and best practices into a single document that's easily accessible and understandable not only by the contractors but also to the public.	Compliance with guidelines needs to be monitored in order to be effective. This can be done by a community/stakeholder organization but may be better handled by an agency with regulatory powers.
Guidelines may be most successful when participation is rewarded either through monetary incentives or by publicizing successes.	Difficult to universally apply guidelines to projects of varying scale, type, and with different clients.
Construction guidelines could include best practices and innovative approaches such as printed scrim obscuring work sites in order to provide ideas to contractors on how to best perform. Use of these practices could be tied into how incentives/rewards are administered.	

C. Managing Parking Impacts

Large-scale construction not only limits access to commercial businesses, but also can negatively impact available on-street parking spaces for both customers and employees. Construction reduces the amount of on-street spaces directly through blocking off areas. It can also indirectly reduce the supply available for customers if construction workers, contractors, and other visitors to the construction site park in the already limited supply of spaces. Parking is a critical lifeline for businesses, important not only for their customers but also for deliveries and services. Although this is a very common outcome of construction, we found limited successful approaches elsewhere in the U.S. to mitigating the impacts of construction on parking supply. Strategies identified are listed below in order of effort (from least to most):

- Requiring contractors to park off-site/providing parking supply to reduce impact;
- Reconfiguring parking to increase supply i.e. shared parking or addition of private supply; and
- Facilitating access to parking off-site through transportation.

One of the largest programs of record is the recently-implements Parking Mitigation Plan for the SR 99 Replacement Project. That program includes many strategies, including helping to fund construction of new parking garages, partnering with existing garage operators to reduce the price of off-street parking, wayfinding improvements, creation of new on-street parking, and extensive marketing. Examples of what other cities have done are described below.

Example Application: The Met Council in Minneapolis St. Paul addresses this potential problem by requiring contractors to develop Employee Parking Plans to facilitate off-site parking. Construction employee parking plans must be developed, submitted, and approved by the Council as part of construction contracts. The goal of the plans is for contractors to identify off-site locations for parking and a program for overseeing their employees' compliance. According to non-conformance reports issued, how-

ever, contractors often failed to supervise their employees' parking practices and contractors used limited customer parking for businesses. Nearly all public project contracts in Seattle require contractors to provide off-site parking and encourage workers to use public transportation to access the site. The City also conditions most private development project to provide off-site parking for construction workers until a building's garage is available to accommodate them. The City often issues temporary occupancy permits to allow construction workers to park in an unfinished building's garage in order to reduce off-site impacts.

The Transit Agency in Salt Lake City followed a similar approach to Minneapolis St. Paul in seeking to identify ways to partner with private landowners to increase parking supply. Bill Knowles, an independent contractor who served as the City and Transit Agency's construction mitigator, worked with private apartment complexes and high rises in the area surrounding the light rail construction zone to reconfigure parking areas in order to absorb some of the street parking that was lost.

At the other end of the spectrum, San Diego developed a shuttle bus system to mitigate the decrease in parking along the waterfront during the construction of the North Embarcadero. The Big Bay Shuttle ferries people from parking locations to the waterfront. The strategy aimed to address people's fear of lack of parking during construction. After a limited trial run in 2012 was found to be highly successful with over 20,000 users, the Port expanded service in 2013. The shuttle is provided through a partnership between the Port and Ace Parking Management, a private operator. The shuttle is available for between ten and twelve hours a day (longer hours of availability are on the weekends) during the summer season from Memorial Day through Labor Day. The shuttle services eight locations along the waterfront for the cost of \$3 per day, allowing riders to use the service all day long. The shuttle bus service is also included in the price of parking if visitors park in any of the Port's parking lots. The shuttle buses are small 22-passenger vehicles that operate on compressed natural gas and are handicapped accessible. The Port widely publicized the shuttle service to combat public perceptions about the impacts of construction on parking and traffic. Additionally the Port has used the shuttle system during large events such as the Fourth of July firework display.

Opportunities / Keys to Success	Challenges
Requiring contractor parking strategies can be a low cost way to reduce the impact of construction workers on parking supply.	Difficult to track where construction workers park, making such requirements difficult to monitor and enforce.
Private parking supply presents an opportunity to replace on-street parking lost during construction.	A parking shuttle to off-site locations requires coordination and administration.
A shuttle bus system may be an effective means of reducing the perception of a lack of parking.	The cost of a shuttle and/or additional travel time may be a deterrent to some users. The price of tickets and location of stops must be carefully thought through in order to maximize customer use.

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VIII. CONTACTS

Contact information for representatives at relevant transportation and other agencies is listed below in case additional information is desired for any of the strategies listed. Contacts are organized by topic as presented in the report.

Business Assistance

Business Loans

Portland Development Commission: Fred Atiemo, Senior Business & Industry Finance Manager, 503.823.3304, atiemof@pdc.us

Fred has been the manager of the business assistance program for 15 years and oversaw the Interstate Avenue LRT efforts.

<http://www.pdc.us/for-businesses/financial-support.aspx>

City of St. Paul, Department of Planning and Economic Development: Nancy Homans, Business Support Fund, nancy.homans@ci.stpaul.mn.us, 651.266.8568

City of St. Paul, Department of Planning and Economic Development: Craig Blakely, Neighborhood Commercial Parking Program and Alley Improvements Program, craig.blakely@ci.stpaul.mn.us, 651.2666.6697

Technical Assistance

U7: Isabel Chanslor, Project Manager
651.379.8431, ichanslor@ndc-mn.org

U7: <http://universityseven.squarespace.com/>

Business Resources Collaborative: <http://www.funderscollaborative.org/partners/business-development-group/resources-BRC>

Marketing

Promotional Campaigns

TriMet: Ann Becklund, Director of Community Affairs, 503.962.2153

Metropolitan Council, Minneapolis – St. Paul: Anne Taylor, anne.taylor@metc.state.mn.us, 651/602.1449

<http://onthegreenline.com/>

<http://www.metrocouncil.org/Transportation/Projects/Current-Projects/Central-Corridor.aspx?source=child>

<http://www.readyforrail.net/>

Valley Metro, Phoenix:

http://www.valleymetro.org/getting_on_board/metro_max

Communications, Engagement & Education

Engagement

ABC: Thomas Nally, Planning Director, tnally@abettercity.org, 617.502.6243

Thomas Nally has served as the Planning Director for A Better City and its predecessor the Artery Business Committee since 1989.

<http://www.abettercity.org/index.html>

LMCCC: Joe Simenic, Acting Executive Director, jsimenic@lmccc.nyc.gov, 212.442.4356

<http://lowermanhattan.info/>

http://www.lowermanhattan.info/global/info_library/logistical.aspx

Educational Campaigns

TransOptions, Denver: Allison Hodge, Director, HodgeAM@trexproject.com

Contractor Incentives

Contractor Incentives

Valley Metro, Phoenix: Alex Albert, Central Mesa Community Advisory Board,

aalbert@metrolightrail.org, 602.980.0913

http://www.valleymetro.org/event/detail/central_mesa_community_advisory_board_meeting1

Utah Transit Authority: Steve Allnatt, Community Involvement Specialist, sallnatt@rideuta.com, 801.236.4734

Construction Practices

Phasing & Access

The Port of San Diego: Marguerite Elicone, Marketing and Communications Department,

melicone@portofsandiego.org, 619.686.6281

Construction Guidelines

Tri-Met, Portland: Claudia Steinberg, Manager Community Affairs, steinbec@trimet.org, 503.962.2154

<http://www.trimet.org/pm/construction/>

http://trimet.org/pdfs/pm/Construction/PMLR_West_Segment_CoC_Nov2011.pdf

New York Building Foundation: 212.481.9230

<http://www.nybuildingfoundation.org/livable-city-2010-01.html>

Considerate Constructors Scheme: <http://www.ccscheme.org.uk/>

Managing Parking Impacts

The Port of San Diego: Marguerite Elicone, Marketing and Communications Department,

melicone@portofsandiego.org, 619.686.6281

Ace Parking Management: <http://www.thelog.com/Local/Article/North-Embarcadero-Plan-Now-Under-Way>

Port of San Diego: <http://www.thebigbay.com/Big-Bay-Gems/big-bay-shuttle.html>