



Locked Incentive Date (LID) Evaluation Report

Submitted to the FHWA as part of Special Experimental Project No. 14 (SEP-14)

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EXECUTIVE SUMMARY

Innovative contracting techniques have reduced road and bridge construction related impacts to motorists, businesses and other key stakeholders. Mn/DOT has instituted several innovative contracting practices including design-build contracting, cost + time (A+B) bidding, and incentives/disincentives. Although many of these measures were successful, Mn/DOT desired additional tools to help insure critical projects were completed on-time.

In 2007, Mn/DOT developed a Locked Incentive Date (LID) specification. The LID pays a contractor an incentive for reaching a project milestone. Unlike traditional incentives, the LID does not allow a contractor to receive a time extension and receive the incentive payment. The LID also requires the contractor to waive all claims if they accept the incentive.

To date, Mn/DOT has used the LID specification on six projects:

- TH 36 – Reconstruction of TH 36 through North St Paul
- TH 10 –Reconstruction of TH 10 through Detroit Lakes
- I-35W – Emergency replacement of the Mississippi River bridge in Minneapolis
- TH 23 – Accelerated replacement of the Mississippi River bridge in St. Cloud
- TH 53 – Reconstruction of TH 53 in Duluth/Hermantown near Miller Hill Mall
- TH 12 –Concrete rehabilitation in Hennepin County

Overall, the LID was very effective in successfully delivering many of these projects within the anticipated project schedule. The LID motivated contractors to complete the work instead of asking for time extensions, eliminated claims, and improved the working relationship with Mn/DOT. Impacted stakeholders were very satisfied that Mn/DOT was able to meet construction commitment dates and reduce construction impacts. Mn/DOT staff noticed no or minimal decrease in the level of quality.

The case studies also identified several lessons learned to be used on future LID projects. Some key lessons learned include:

- The contract must clearly define LID milestone dates and the items that need to be completed in order to receive the incentive. Ambiguities will complicate contract administration.
- The LID amount needs to be high enough to offset acceleration and potential claim costs.
- Owners should not rely on the contractors meeting the LID date. Contingency plans need to be included in the contract.
- Traditional incentive/disincentive clauses or other innovative contracting techniques need to be thoroughly analyzed before including LID specification into contracts.





A—INTRODUCTION

The Minnesota Department of Transportation (Mn/DOT) submits this report under the provisions of Special Experimental Project No. 14 (SEP 14) summarizing the results of Mn/DOT’s Locked Incentive Date (LID) specifications. Mn/DOT LID’s specification is similar to a “no excuse bonus”, in which a contractor is paid an incentive for achieving a project milestone. In traditional incentive/disincentive clauses, contractors often seek time extensions due to excusable delays. In many of these cases, the project is completed later than the owner anticipated and the contractor still receives the incentive. The LID specification still allows the contractor to seek time extensions due to excusable delays, but the contractor is no longer eligible for any incentive. The LID specification also requires the contractor to waive all claims against the owner if they accept the incentive.

This report will document the results of six (6) pilot SEP-14 Locked Incentive Date projects. The projects were evaluation based on successful implementation of the specification, effectiveness of the LID to meet the project goals, and recommendations for using the LID on future projects.

As part of this report, Mn/DOT is requesting programmatic SEP-14 approval to use the LID specifications over the next five years.

B—BACKGROUND

In 2003, Mn/DOT established an Innovative Construction Initiative (ICI) to assist Mn/DOT districts with delivering projects through innovative approaches. The ICI unit developed specifications and promoted the use of several innovative contracting ideas such as A+B (cost + time) bidding, lane rental, warranty, design-build, incentive/disincentive, liquidated savings, and pay-for-performance specifications.

In 2005, ICI merged with Mn/DOT’s Office of Construction to form Mn/DOT Office of Construction and Innovative Contracting (OCIC). During the same year, OCIC published a report titled “Innovative Contracting in Minnesota, 2000 to 2005” documenting the lessons learned during this time period. Although the data was limited, Mn/DOT construction engineers indicated that the use of incentives had a positive impact on motivating contractor to complete projects early.

During follow-up conversations with Mn/DOT construction engineers, many indicated owner and third party delays resulted in contract time extensions. Even though the contract was completed later than anticipated, contractors were often paid incentives for completing the project in advance of the extension.

Mn/DOT construction engineers asked OCIC for innovative ways to eliminate these occurrences. Some suggested just requiring the contractor to meet the completion date with no time extensions. However, Minnesota State Statute 15.411, Subd 2 states:





“Any clause in a public works contract that waives, releases, or extinguishes the rights of a contractor to seek recovery of costs, or damages, or seek an equitable adjustment, for delays, disruption, or acceleration in performing contract is void and unenforceable if the delay, disruption, or acceleration is caused by acts of the contracting public entity or person acting on behalf of the public entity for which the public entity is legally responsible.”

In 2003, Mn/DOT learned about Florida’s success with “no-excuse bonus” specifications. Mn/DOT felt that the no-excuse bonus could have significant benefits on projects with major impacts. Projects often were scheduled for completion before winter, but extended into the following spring due to differing site conditions, additional work, weather, utility delays, or other impacts. A no-excuse bonus clause would offer incentives to complete these projects on-time or early, resulting in safer roadways.

Mn/DOT’s worked closely with the Minnesota Attorney General’s Office to develop a specification that mirrored the no-excuse bonus specification of the Florida DOT, but was compatible with Minnesota state laws. Because Mn/DOT typically uses the term incentive instead of bonus, the specification was title “Locked Incentive Date” (LID).

C—CASE STUDIES

CASE STUDY #1 (TH 36)

Mn/DOT first use of the LID specification occurred on the TH 36 “Highways for Life” project in North St. Paul. TH 36 is a major highway connecting downtown Minneapolis and downtown St. Paul to the eastern suburbs. Through North St Paul, TH 36 has an Average Annual Daily Traffic (AADT) (2006) of 48,000. Land use in the project area is primarily commercial/light industrial with a mix of residential. North St. Paul High School is on the north side of TH 36, and a bicycle/pedestrian trail (Gateway Trail) runs parallel to TH 36 along the south side of the corridor. The Gateway Trail is the most heavily used Minnesota Department of Natural Resources (DNR) trail in the state.

S.P. 6211-81

T.H. 36 (Between White Bear Avenue and TH 120 in the City of North St Paul

District: Metro

Letting: 2/7/2007

Bid Price: \$27,562,562

LID Amount: \$350,000



The project reconstructed approximately 2 miles of TH 36 between White Bear Avenue and TH 120. Construction converted this segment of TH 36 to a freeway facility by eliminating three signalized intersections and three unsignalized intersections. The project also include a new diamond interchange at McKnight Road, a new overpass at Margaret Street over TH 36, a pedestrian bridge over TH 36 at North St Paul High School, and a Gateway trail tunnel under Margaret Street.

The construction of TH 36 had numerous construction impacts with limited right-of-way for temporary bypasses. The project included a 20 foot cut section near Margaret Street, 20 foot fill section near McKnight Road, retaining walls along the north side, and construction of the Gateway Trail tunnel on the south side. Many pedestrians crossed the corridor, primarily to access North St Paul high school.

Very early in the project, Mn/DOT and the City of North St Paul considered options for construction staging. Businesses along TH 36 expressed concern about detouring traffic away from their stores for an extended period of time. North St. Paul high-school had safety concerns about students crossing a work-zone during the school year. Commuters wanted lane closures or full closure lengths minimized.



Figure 1 - TH 36 Construction

Traditionally, Mn/DOT would stage this project over multiple years by constructing temporary bypasses and keeping one-lane open to traffic in each direction. To improve safety, reduce the duration of construction, and minimize the cost of temporary construction, Mn/DOT evaluated the option of closing TH 36 for a complete construction season. The evaluation included constructability reviews with potential contractors to determine the feasibility of constructing it in one construction season. Mn/DOT also conducted market research to gage public/business reaction to closing down a major freeway for an extended period of time.

If TH 36 was closed, a substantial amount work needed to be completed within one year. Three bridges needed to be completed, 700,000 cubic yards of grading material needed to be moved, one mile of storm sewer needed to be constructed, one-quarter mile of 25 foot tall retaining wall needed to be constructed, and grading and paving would need to occur. Contractors indicated that it was possible to re-open TH 36 within five months, but they also expressed concern about weather, soil conditions, and utility delays to the project. The public was split 50%/50% on whether to close the road for a single season or keep it open to a single lane in each direction for at least two construction seasons. The business owners wanted assurances that the road would be closed for as minimal duration as possible.



Decision to use LID

The decision to close TH 36 during the 2007 construction season was made approximately one year prior to letting.

Contract time was determined through an analysis of anticipated construction operations and production rates, constructability reviews with contractors, and project risk. It was determined that it was reasonable to re-open TH 36 to a single lane in each direction within 5 months and re-open TH 36 to two-lanes in each direction by the end of the same construction season.

Stakeholders wanted assurances that the closure wouldn't exceed 5 months. They encouraged Mn/DOT to complete the project early, if possible. Mn/DOT evaluated alternative contracting options such as traditional incentives/disincentives and A+B contracting. Although these methods would reduce construction time, there was risk to construction delays. These risks included:

- Major excavation with poor soil conditions and high water tables
- Utility relocations
- Weather

In addition to the on-site project risks, TH 36 traffic was partially detoured via I-694. Interstate 694 at the interchange with I-35E was also under construction. Mn/DOT project staff had major concerns with how traffic in the eastern suburbs would flow with these projects occurring simultaneously.

To mitigate these risks and provide assurances to the stakeholders that this project will be completed as quickly as possible, a LID was included in the contract. If the contractor was able to re-open TH 36 within 145 days after the closure, the contractor would receive a lump sum incentive of \$350,000. In addition, the LID specification included an early completion incentive of \$75,000 for every five days that TH 36 was open to traffic, capped at a maximum incentive of \$650,000. The contract also included a disincentive of \$15,000 for each day that the contractor did not open the roadway within 145 days. The contractor was also required to waive all claims on the project if they accepted the LID.

Results

- The contractor re-opened TH 36 to one-lane in each direction within the 125 days and received the lump sum LID incentive of \$350,000 and early completion incentive \$300,000, for a total incentive of \$650,000 (maximum allowed). All claims were waived.

Observations

- Mn/DOT staff felt that an incentive approach was much more productive than a disincentive approach. Requiring the contractor to complete an extensive amount of work within a short-period of time using only disincentives would have been very difficult to achieve.
- The LID appeared to change the behavior of the contractor. Instead of requesting time



extensions, the contractor focused attention on finding ways to achieve the date.

- Mn/DOT field staff had difficulty recognizing the difference between additional work and a claim (i.e. contractor often was expected to perform extra work at no-cost in return for the LID incentive).
- Prior to construction, there was significant media attention on the full closure and anticipated duration. Opening the roadway on-time was well received by the public and media.
- Mn/DOT staff felt that the incentive amount was appropriate for the project. The amount of the LID was based on an estimate of recovering overtime costs.
- Mn/DOT staff did not believe there was any decrease in the level of quality.
- Two claims, excess dirt and an issue with the constructing staging, were partly diffused by the LID.
- The use of the Critical Path Method (CPM) was critical to the administration of the project. The CPM schedule assisted with determining impacts to the schedule.

CASE STUDY NO #2 (TH 10)

TH 10 is a major east-west link through the City of Detroit Lakes. This project reconstructed TH 10 from TH 59 to the eastern city limits. The primary purpose of the project was to improve safety and mobility along TH 10. The project included reconstruction and realignment of approximately three miles of TH 10, realignment of BNSF railroad tracks along the north-side of the project, construction of a Roosevelt Avenue underpass of TH 10 and the BNSF railroad, reconstruction of approximately one-half mile of TH 59 between TH 10 and TH 34, and construction of a frontage road around Big Detroit Lake from East Shore Drive to downtown Detroit Lakes.

S.P. 0301-47

T.H. 10

District: 4 (Detroit Lakes)

Letting: 2/23/2007

Bid Price: \$32,547,484

LID Amount: \$300,000

Keeping traffic flowing across the TH 10 work zone was critical to the businesses and residents along and adjacent to the corridor. Within the project limits, BNSF runs parallel to TH 10 along the north side of the corridor. There are three primary north-south connections across TH 10 and the railroad within the urban section of Detroit Lakes: TH 59, Washington Avenue, and Roosevelt Avenue. A fourth crossing, County Road 54 exists at the eastern limits of the project.



The contract required the reconstruction of all three primary crossings as part of this project. This included a new bridge on TH 59 over the BNSF line, an underpass under the BNSF line at Roosevelt, and a new crossing at Washington. Construction staging allowed the contractor to close Roosevelt and Washington Avenue, but not simultaneously. With an AADT (2006) of 12,400 on TH 59, traffic congestion was occurring at the intersection of TH 59/TH 10. The existing TH 59 bridge over the railroad track was only two lanes, resulting in significant delays to motorists. Traffic volumes on TH 59 were expected to significantly increase when Roosevelt or Washington Avenue were closed to traffic. Completing the widening of TH 59 and reconstruction of TH 10/TH 59 intersection was critical to accommodating the increase in traffic volumes.

Decision to use LID

During the development of the contract, differing contract time scenarios were assessed to complete the work on TH 59 over BNSF and the intersection of TH 10/TH 59. These assessment indicated that it is was possible to complete the TH 59 bridge within one construction season, but not all potential contractors had the resources to accomplish this.

To encourage competition during bidding, the contract required that completing construction of the TH 59 bridge over the BNSF and the intersection of TH 10 by June 29, 2008. But, there was a desire to provide an incentive if this work could be completed the 2007/2008 winter shutdown. Standard incentive clause for completing in late 2007 would not provide enough guarantee that excusable delays could push the completion back to the spring of 2008.

To minimize this risk, the contract offered a LID in the amount of \$300,000 if the work to open TH 59 to 4 lanes and complete the intersection of TH 10/TH59 was completed by December 1, 2007. The contract also included a disincentive of \$5,000 for each day that the contractor did not open the bridge by June 29, 2008. The \$300,000 was based on anticipated railroad flagging savings (anticipated at \$250,000 if construction extended into 2008) plus \$50,000 for reduced road user costs.



Figure 2 - TH 59 Bridge Construction

Results

- The work required to open the TH 59 bridge over BNSF and the intersection of TH 10/TH 59 was completed by December 1, 2007.
- The Contractor elected to receive the \$300,000 incentive and waive all claims on that portion of the project.



Observations

- The LID was viewed as a success. The contractor was able to mobilize additional crews and equipment to complete the work.
- Opening the bridge before the winter months improved safety and mobility along TH 10, TH 59 and surrounding roadways.
- The LID improved relations between the Contractor and Mn/DOT. Both parties were focused on completing a high quality project instead of resolving claims.
- The district did not see any reduction in quality.
- Stakeholders very concerned about the impacts of a multi-season project. When the intersection of TH 10/TH 59 was complete using the LID, stakeholders were confident that Mn/DOT was serious about minimizing construction related impacts.
- The overall contract had a completion date established using A+B bidding. Six contractors bid on the project. Three contractors bid roughly two years to complete, the other three bid roughly three years to complete the project. By the large variation in completion dates, it was likely that not all contractors had the ability to complete the bridge within one year.
- The use of a CPM schedule assisted in the administration of the contract. The CPM schedule allowed both Mn/DOT and the contractor to assess potential delays to the project.

CASE STUDY # 3 (I-35W Bridge)

On August 1, 2007, the I-35W bridge over the Mississippi River collapsed. With an AADT of 140,000 (2006), I-35W was a vital transportation link to downtown Minneapolis and the University of Minnesota. The closure of I-35W resulted in a road user cost impact of approximately \$400,000 per day.

The goal was to re-establish the vital transportation link by the end of 2008. To accomplish this, a design-build project was fast-tracked. A design-build Request for Proposals (RFP) was issued on August 23,

2007 and a contract was awarded on October 8, 2007. The scope of the design-build contract included constructing two bridges (a new five-lane northbound I-35W bridge, a new five-lane southbound I-35W bridge), reconstruction of the I-35W approaches between Washington Avenue and 4th Street, ITS, retaining walls, contaminated material removal, utility relocation, concrete and bituminous paving, bridge anti-icing systems, and other miscellaneous construction.

S.P. 2783-120

I-35W

District: Metro

Letting: 9/19/2007

Bid Price: \$233,763,000

LID Amount: \$7,000,000



The contract used A+B (cost + time) bidding in addition to a technical score to determine the winning contractor. Each contractor was allowed to bid between 337 and 437 Calendar Days to obtain Substantial Completion (all roadways fully open to traffic with no further temporary lane closures). A bid of 437 Calendar Days would have required the contractor to reach Substantial Completion no later than December 24, 2008.

Decision to use LID

Although A+B bidding was used to encourage contractors to minimize construction. Several risks had potential to significantly delay the project opening until the spring or summer of 2009. These risks include:

- Contaminated materials – The soils and groundwater in the project area were contaminated.
- Utilities – The project is located near downtown Minneapolis and the University of Minnesota. Many utilities were impacted, including high-pressure gas lines, fiber optic lines, sanitary sewer, watermain and various telecommunication lines.
- Geotechnical Conditions – There was limited geotechnical investigation performed on the contract. For safety reasons, it was not possible to perform geotechnical investigation during the first several weeks of the procurement. Design-build teams had limited information, primarily relying on data obtained during the 1950s. The limited geotechnical investigation had the potential for differing site conditions claims.
- Collapsed Bridge – The removal of the collapsed bridge #9340 was performed under a separate contract. Delays in removal of bridge #9340 could have directly impacted the design-builder schedule.
- Weather – Minnesota has a limited construction season due to harsh winter conditions. Any schedule delay could have resulted in delaying the opening from the fall of 2008 to the spring of 2009.
- The RFP was a very comprehensive complex document written in only three weeks. There was a potential for claims due to ambiguities within the contract documents.



Figure 3 - Bridge Collapse



To reduce the potential for claims and eliminate the potential of opening the bridge in the spring of 2009 instead of the fall in of 2008, a LID was included in the design-build contract. The LID consisted of a lump sum payment of \$7 million if the contractor met the completion date and waived all claims. In addition, the contractor was also eligible for an early completion incentive of \$2 million for every 10 days earlier the bridge was open to traffic, capped at \$20 million (100 days). The early completion incentive was based on 50% of the RUC (\$200,000 per day). The contract also included a disincentive of \$200,000 for each day that the contractor did not open the roadway on time.

Results

- The bridge was open by September 18, 2007 (90 days early). The contractor received a LID/early completion incentive of \$25 million and waived all claims.

Observations

- The contractor mobilized extra equipment and manpower to meet the LID completion date.
- The LID improved relations between the Contractor and Mn/DOT. Both parties were focused on completing a high quality project instead of resolving claims.
- Towards the end of the project, the contractor was very focused on opening the project to traffic in order to maximize the early completion incentive. Mn/DOT inspectors noticed a drop in quality on minor items necessary to open the roadway to traffic (e.g. painting).
- It was not possible to quantify anticipated claims that would have been submitted if there was no LID. Because of the large incentive, the contractor did not bring many potential claims to Mn/DOT’s attention.
- The use of the Critical Path Method (CPM) was critical to the administration of the project. The CPM schedule assisted with determining impacts to the schedule.

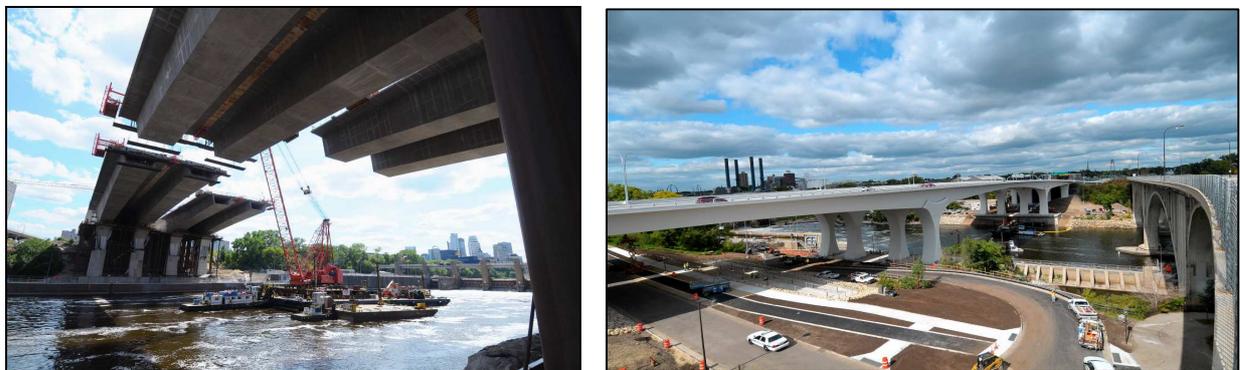


Figure 4 - 35W Bridge Construction & Completed I-35W Bridge



CASE STUDY #4 (TH 23 DeSoto Bridge)

In March of 2008, the DeSoto Bridge on TH 23 over the Mississippi River was closed due to structural safety concerns. This section of TH 23 is located in an urban area of St. Cloud and carries approximately 33,000 vehicles per day (2007 AADT). Traffic was detour to St. Germain Street, a local street three blocks north of TH 23 (2007 AADT of 13,000).

The closure of this bridge was unexpected; there were no construction plans ready to replace the existing structure. A bridge replacement project was accelerated which included two contracts: an early steel contract to begin fabrication of the new steel girders while the bridge plans were being finalized, and a bridge construction contract. The goal was to reopen this vital transportation link by the end of 2009.

S.P. 0503-78

T.H. 23

District: 3 (St Cloud)

*Letting: 6/6/2008 (Early Steel)
7/25/2008 (Construction)*

*Bid Price: \$7,277,515 (Early Steel)
\$12,205,581 (Construction)*

LID Amount: \$1,000,000

Decision to use LID

Several risks had potential to significantly delay the construction schedule. These risks included:

- Early steel contract. – Delays in the fabrication of the steel girders could delay the bridge construction contract, resulting in a claim for additional time by the bridge construction contractor.
- Utilities – A major gas-line was located directly under the existing bridge. Delays in the relocation of the line could impact the project schedule.
- Weather - Minnesota has a limited construction season due to harsh winter conditions. Any schedule delay could have resulted in delaying the opening from the fall of 2009 to the spring of 2010.
- Contract Changes - Due to the accelerated design, there was a potential for claims and extensions of contract time due to errors or ambiguities within the contract.
- Unforeseen Conditions - River conditions present an increased risk of differing site conditions.
- Project Coordination – TH 23 west of the project was concurrently under construction. The goal was to open both projects at the end of the 2009 construction season.



Other innovative contracting items such as design-build, A+B contracting, and traditional incentives were considered. Because of steel delivery timelines, steel could be ordered faster through an early steel contract versus a design-build contract. A+B bidding would not minimize the risk; there was no purpose in opening TH 23 earlier than November 1, 2009 due to adjacent construction on TH 23 to the west. Traditional incentives would not offset the risk of excusable delays extending the completion into 2010.

To meet the schedule goals of the project, the bridge contract included a \$1,000,000 LID incentive if the contractor re-opened the new bridge to four lanes by November 1, 2009. The contract also included a disincentive of \$20,000 for each day that the contractor did not open the roadway by November 1, 2009.



Figure 5 - Old DeSoto Bridge



Figure 6 - New TH 23 Bridge

Results

- The Contractor opened TH 23 prior to November 1, 2009 and received the LID of \$1 million. The Contractor also waived all claims on the project.

Observations

- The LID incentive kept the contractor working through winter conditions that normally would have resulted in a suspension of work. District staff felt that the winter conditions of 2008/2009 would have resulted in more lost time due to weather compared to a normal construction season.
- The contract experienced two issues which impacted the project critical path:
 - Delay due to the late delivery of steel. The early steel contractor was not able to meet several dates, resulting in delays to the bridge contractor's critical path.
 - Unforeseen conditions. An old bridge pier with timber piling was encountered, resulting in impacts to the project critical path.
- The LID was very effective in eliminating the early steel delay claim and mitigating the critical path impact of the unforeseen condition.





- Mn/DOT staff did not believe there was any decrease in the level of quality.
- The use of the Critical Path Method (CPM) was critical to the administration of the project. The CPM schedule assisted with determining impacts and mitigating claims.
- The contractor was very focused on receiving the LID. Weekly meetings with the contractor often focused on delivering tasks in order to complete the LID.

CASE STUDY # 5 (TH 53 Duluth)

The TH 53 is a major connector from Wisconsin to northern Minnesota, and is also the route from the Port of Duluth to northern Minnesota, western states and Canada. TH 53 also serves as a major commuter route from Duluth to the communities of Hermantown and rural lakes west of Duluth.

Within the cities of Duluth and Hermantown, TH 53 serves as the regional shopping center for northern Minnesota, northwestern Wisconsin and Canadian residents living close to the Minnesota border. The corridor had no frontage roads to service trips for local motorists between the numerous “big box” retailers in the project limits. Local streets and county roads surrounding the project could not serve the demand created by shoppers, creating congestion on TH 53.

To improve traffic flow and safety, a project was let to reconstruct TH 53, adjacent city streets, and county roads near Miller Hill Mall. The reconstruction of the local streets (Maple Grove and Burning Tree Roads) with new connections (Joshua Avenue and Cottonwood Avenue) acted as frontage roads for local trips, thus relieving congestion on TH 53.

Decision to use LID

Construction staging resulted in significant access impacts for local businesses. Mn/DOT wanted to limit the duration of construction, but did not want to limit competition. The project required all work to be completed on TH 53 by October 17, 2010 with a disincentive of \$5,000 per day. To eliminate suspending work during the winter of 2009/2010, the contract included a LID incentive of \$250,000 if work on the project (except maintenance and final clean-up) was completed by November 6, 2009.

S.P. 6915-129

T.H. 53

District: 1 (Duluth)

Letting: 6/27/08

Bid Price: \$23,499,262

LID Amount: \$250,000



Results

- The Contractor did not meet the LID date of November 6, 2009 and was not paid the LID incentive.
- Although the contractor did not meet the LID date, Mn/DOT still had a desire to complete the project in advance of the October 17, 2010 deadline. Mn/DOT staff was concerned that traffic impacts on TH 53 would increase due to a major construction project on I-35 scheduled to begin in 2010. Mn/DOT and the contractor agreed to a new completion date of July 3, 2010, which included an early completion incentive of \$50,000 plus a \$5,000 per calendar day incentive for each day the project was completed before July 3 (capped at \$100,000 total incentive).

Observations

- Early in the project, the contractor attempted to meet the LID date. However, as the construction season progressed, the contractor determined that resources needed to be moved to other projects. By moving resources to avoid monetary deductions on other projects, the contractor was not able to meet the LID date. This project did not have a monetary deduction for not meeting the November 6, 2009 date.
- The contractor requested payment for acceleration costs expended attempting to meet the LID date. The request was denied (the LID specification did not allow acceleration cost claims for attempting to meet the LID).
- There was no contingency plan within the contract to address the 2009/2010 winter traffic staging impact of not meeting the LID. The project team needed to react quickly to address this issue.
- Paying acceleration, or including a traditional daily traditional incentive/disincentive clause, would have been more effective on this project. The “all or nothing” lump sum incentive was not as effective as anticipated.
- Mn/DOT staff did not believe there was any decrease in the level of quality on the Mn/DOT project. However, they believe that quality of the adjacent local administered contract may have suffered (less experienced local staff dealing with impacts of project acceleration).
- Although the LID did not work on this project, the district would consider using a LID again.



CASE STUDY #6 (TH 12)

This project involved concrete pavement rehabilitation, bituminous mill and overlay, median barrier, drainage and bridge repair on T.H. 12 between CSAH 15 and I-494 in Hennepin County (Metro District). This section of TH 12 carries approximately 78,000 vehicles per day (2006 ADT) and is a heavy commuter route within the western suburbs of Minneapolis.

The TH 12 project required extensive concrete rehabilitation, which reduced TH 12 to a single lane in each direction. Due to the significant traffic congestion anticipated with this project, the goal was to limit the duration of lane closures.

S.P. 2714-139

T.H. 12

District: Metro

Letting: 5/16/2008

Bid Price: \$7,268,193

LID Amount: \$185,000

Decision to use LID

Due to the probability of quantity overruns, A+B contracting, lane rental and traditional incentives would have been difficult to administer. A LID was added to the offset acceleration costs (mobilizing additional crews, equipment, over-time) anticipated with meeting the milestone contract date. The LID was also used to provide incentives for keeping the project moving with minimal downtime during construction.

Unlike other LID specifications, this project did not include a lump sum payment. Instead, the LID was based on a daily rate. This LID specification was divided into two parts:

- LID 1 – Required completing Stage 1 (two inside lanes of TH 12 eastbound and westbound). The LID consisted of an incentive of \$17,500 for each Calendar Day that the Stage was completed in advance of September 3, 2008, capped at a maximum incentive of \$210,000.
- LID 2 – Required completing all work, except work at the west end which conflicted with a separate Mn/DOT project, to be completed by October 3, 2008.

If the contractor received a LID 1 incentive, the LID 2 completion date was advanced one day for each day the contractor received an incentive on LID 1. LID 2 consisted of an incentive of \$8,000 for each Calendar Day that the work was completed in advance of the completion date, capped at a maximum incentive of \$40,000.



Results

- The contractor received a LID incentive of \$185,000 on LID 1 and \$40,000 on LID 2.

Observations

- The project plans required multiple stages with flexibility in the closure of ramp/loops. Because of the linear operations associated with concrete rehabilitation (i.e. saw cut crew, removal crew, dowel crew, placement crew, finishing crew), the contractor progressed the project different than Mn/DOT's original expectations. This often meant working on multiple stages at the same time. It was difficult to determine when Stage 1 was completed.
- The LID was very effective in motivating the contractor to be efficient (minimal downtime).
- Mn/DOT project staff did not notice any decrease on the quality of the concrete rehabilitation, but other minor items such as drainage and barriers did not receive as much attention by the contractor (more focused on critical path items compared to minor items).
- The LID was difficult for Mn/DOT to administer because of the staging plans. The contractor progressed the project more efficiently than Mn/DOT anticipated, making documenting the plan stages associated with the LID more difficult.

D —LESSONS LEARNED / CONCLUSIONS

Lessons learned were developed from the above case studies.

- The contract must clearly define LID milestone dates and the items that need to be completed in order to receive the incentive. Ambiguities will complicate contract administration.
- The LID can be used to offer opportunities to advance milestone dates (see TH 10), or minimize the risk of extending completion deadlines (see TH 23).
- The LID was successfully used in combination with early completion incentives. However, the LID was most effective when the LID included a large lump sum for meeting the LID date, with smaller incremental volumes for earlier completion.
- The LID amount needs to be high enough to offset potential claims and acceleration costs.
- Owners should not rely on the contractors meeting the LID date. Contingency plans need to be included in the contract.
- Traditional incentive/disincentive clauses or other innovative contracting techniques need to be thoroughly analyzed before including LID specification into contracts.
- The incorporation of CPM schedules was very effective in mitigating project delays.
- The LID was very effective in focusing the project team (contractor and owner) on meeting the LID date instead of negotiating contract time changes.
- The LID was effective on minimizing claims. However, none of the projects had substantial



claims that influenced the contractor's decision to take the incentive or pursue the claims.

- Mn/DOT project staff administering LID contracts need to clearly understand the differences between claims and additional work.
- Diligent inspection is required to minimize the risk of lower quality products being produced in return for higher production.
- The LID can be used on design-build or design-bid-build projects

E—FUTURE IMPLEMENTATION

As shown in the case studies, the LID was successfully implemented on major transportation projects. Mn/DOT's goal is to continue the use of the LID specification on projects with substantial risk of major public impact due to delays.

A standardized LID specification has been developed based on the lessons learned (See Appendix A). The LID specification includes options for dealing with intermediate and substantial complete dates. The LID guidelines will also include requirements for Critical Path Method (CPM schedules).

As part of this SEP-14 report, Mn/DOT is requesting programmatic SEP-14 approval to use the LID specification for a period of three (3) years. If the LID specification significantly changes during this period (either for a specific project or program), Mn/DOT will request additional SEP-14 approval on the modifications. Mn/DOT's OCIC office will also prepare a final report at the end of the three year period documenting the usage of the LID specification and lessons learned.

OCIC will oversee the implementation of this specification. A LID screening checklist and approval process has been developed (Appendix B).





Appendix A (LID Specification)

{USE OF THIS SPECIFICATION REQUIRES THE APPROVAL OF JAY HIETPAS, INNOVATIVE CONTRACTING DIRECTOR (651-366-4210)}

The following need to be included in 1806 (DETERMINATION AND EXTENSION OF CONTRACT TIME).

All work required to {insert milestone events that need to occur} .

A "Locked Incentive Date (LID)" Payment is made available to the Contractor under the following conditions:

1. Subject to the conditions set forth below, the Department shall pay the Contractor a lump sum incentive of \$ (Dollars) if the work specified above in this Section is completed on or before , 20 (hereinafter the "Locked Incentive Date" or "LID").
2. The LID shall not be adjusted for any reason, cause or circumstance whatsoever, regardless of the cause of the delay, and even though it may have been caused by Mn/DOT, Contractor acknowledges and agrees that delays may be caused by or arise from any number of events during the course of the Contract. **Such delays or events and their potential impacts on the performance by the Contractor are specifically contemplated and acknowledged by the parties in entering into this Contract and shall not result in an extension of the LID set forth above.** Any and all costs or impacts incurred by the Contractor in accelerating the Contractor's work to overcome or absorb such delays in an effort to complete the work by the LID, regardless of whether the Contractor successfully meets the LID or not, shall be the sole responsibility of the Contractor in every instance.
3. If the Contractor fails to complete the work by the LID, the Contractor reserves the right to submit claims for additional compensation in accordance with Mn/DOT 1517, or for time extensions in accordance with Mn/DOT 1806, for work performed prior to the LID. The Contractor shall not, however, make a claim for any acceleration costs associated with attempting to meet the LID date.
4. The Contractor shall provide proper notification of all claims in accordance with MN/DOT 1517 to allow Mn/DOT the option of mitigating or documenting the extra costs, excluding acceleration costs.
5. If the Contractor completes the work by the LID, the following shall apply:
 - A. The Contractor must promptly request written verification from the Engineer that the required work was completed on or before the LID. The Contractor shall request this verification from the Engineer in writing on or before the LID.
 - B. The Contractor shall elect to either:
 - 1) Accept payment of the LID incentive; or
 - 2) Reject payment of the LID incentive and instead reserve the right to submit claims for additional compensation or time extensions (in which the Contractor shall not have the right to make a claim for any acceleration costs associated with attempting to complete Work on or before the Locked Incentive Date).





- C. The Contractor must provide written notice to the Engineer of its election to either accept or decline the LID incentive payment within 30 days of receiving the Engineer's verification that work was completed by the LID. If the Contractor does not notify the Engineer of its election within 30 days, the Contractor shall be deemed to have waived its right to accept the incentive, and shall retain the right to submit claims as specified above.
6. If the Contractor elects to accept the LID incentive payment, the following shall apply:
- A. The Contractor agrees that the incentive payment shall constitute full and final settlement of all claims for additional compensation or time extensions that the Contractor has submitted, could have submitted, or might otherwise hereafter submit, on behalf of itself or any subcontractor or supplier, for work performed up to and including the Locked Incentive Date. This includes all claims that may already be pending with the Department, or in any alternative dispute resolution process such as mediation or arbitration, or before a Dispute Review Board.
 - B. The Contractor releases and covenants not to sue the State based upon any claims, demands, charges or causes of action, accruing to the Contractor (including its subcontractors and suppliers) up to and including the Locked Incentive Date. This waiver of claims covers all known or unknown damages, losses, charges, expenses, delays or compensation of whatever nature or kind based upon or in any way arising out of any work performed or materials provided by the Contractor (including its subcontractors and suppliers) for this Project.
 - C. Payment of the incentive shall be made on the first partial estimate voucher processed after the Engineer receives the Contractors written request to accept the incentive.
7. Payment of the LID incentive is intended to insure to the Department and the public the benefits of early completion of the specified work and to eliminate claims disputes. Should this provision conflict with any other provision of the Contract, this provision shall prevail and the Contract shall be interpreted in accordance with it.



Appendix B - LID Screening Checklist and Approval Process

The following is a step-by-step procedure to determine if the use of LID is appropriate for your project. This procedure also outlines the process for the required approvals.

Step 1: Is My Project Suitable for LID?

YES	NO	
<input type="checkbox"/>	<input type="checkbox"/>	Are there substantial public impacts if this project does not meet the anticipated milestone date? Or, is there substantial public benefit if the LID is used to advance a milestone date?
<input type="checkbox"/>	<input type="checkbox"/>	Have the potential risks for project delay been identified? Have other options been considered to mitigate these risks?
<input type="checkbox"/>	<input type="checkbox"/>	Have you tried to mitigate these risk using items besides the LID (e.g. other innovative contracting, additional design).
<input type="checkbox"/>	<input type="checkbox"/>	Are you able to define clear LID milestone dates and events in the contract?
<input type="checkbox"/>	<input type="checkbox"/>	Have you developed a contingency plan if the contractor does not meet the LID date?
<input type="checkbox"/>	<input type="checkbox"/>	Will the public accept paying an incentive?
<input type="checkbox"/>	<input type="checkbox"/>	Is the amount of the incentive calculated based on risk and impacts? Is the amount of the incentive high enough to offset potential claims and accelerations costs? Is there funding for an incentive?

If the answer is **YES** to most of the above questions, the project may be suitable for LID. If you answered **NO** to some of the questions, your project may still be a good candidate for LID, but give careful consideration to the items with a **NO** response.

Step 2: Consult with Office of Construction and Innovative Contracting

The use of the LID incentive requires approval from the Office of Construction and Innovative Contracting (OCIC). Districts must submit a written request to OCIC prior to including within the Special Provisions.

Step 3: Special Provisions

OCIC will provide a copy of the specification template. The district will complete the specification and send it to OCIC for review and approval. OCIC will also require:

- A monetary deduction be included for 1807
- The incorporation of a Critical Path Method (CPM Schedule)

