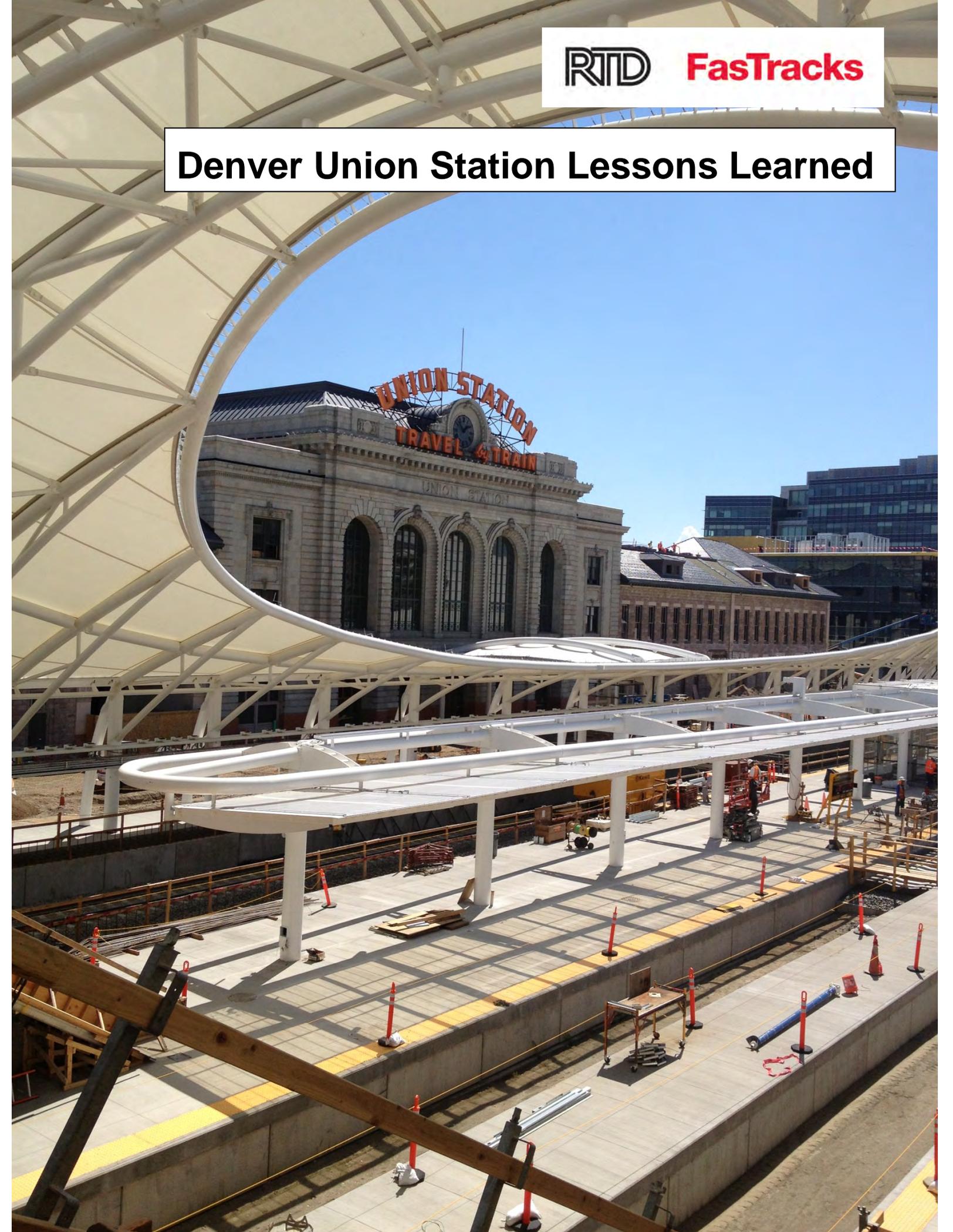


RTD

FasTracks

# Denver Union Station Lessons Learned



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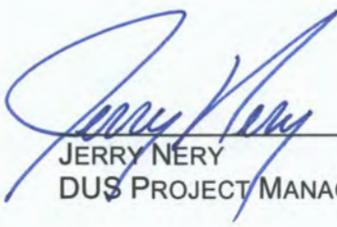
## EXECUTIVE SUMMARY

This report provides a selection of lessons learned associated with the development of the transit component of the redevelopment of the Denver Union Station in Denver, Colorado. The Capital Programs Department of the Regional Transportation District maintains a database of lessons learned for their capital projects. The selected lessons learned contained in this report were chosen as being likely beneficial to other transit agencies, as well as state and local governments.

## Project Description

The redevelopment of the Denver Union Station into a multi modal transit-oriented development hub that connects light rail, commuter rail, Amtrak rail, buses, free downtown shuttles, bicycles, taxis and pedestrians was substantially completed in early summer 2014. The \$484 million transit project anticipated to serve 200,000 passengers per day in 2030 includes an underground bus concourse with 22 gates, eight level boarding commuter rail platforms and two light rail platforms along with facilities to support charter buses, bicycles and taxis. Five acres of space is dedicated to public spaces including plazas and decorative gardens.

Development of the project included a partnership comprised of the Regional Transportation District, Colorado Department of Transportation, the City and County of Denver, and Denver Regional Council of Governments who formed the Denver Union Station Project Authority to manage the project on behalf of the partners. The project included 12 funding sources and was completed within budget and on schedule. Kiewit Western Company was hired to design and build the project. AECOM and Skidmore, Owings & Merrill LLP provided architectural and engineering support to Kiewit.



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JERRY NERY  
DUS PROJECT MANAGER

## LESSONS LEARNED BASICS

Lessons Learned (LL) are general statements that describe good practices or innovative approaches that are captured and shared to promote repeat application.

They may also be descriptions of adverse practices or experience that are captured and shared to avoid recurrence.

By definition, they document actions that have already occurred, not current issues that require resolution. Current issues should be resolved through an Improvement Action.

Lessons Learned should focus on the system as a whole, not the actions or inaction of specific individuals. Also, they should focus on those things that the RTD FasTracks team can control, not the internal processes of stakeholders, contractors, or other entities outside of the FasTracks Team.

Typical sources of Lessons Learned include:

- Improvement Actions
- Contract Changes
- Value Engineering Studies
- Partnering Reports
- Meeting Minutes
- Interviews
- Opinion Surveys
- RTD Board Actions
- Dispute Resolution Findings
- Claims/Lawsuits/Bid Protests
- FTA Lessons Learned Program
- Other Transit Agency Programs

Each lesson will include the same base information: Title, Overview, Background, Lesson and Step to Implement. This will be supplemented by additional information to provide context, querying, and reporting such as: Project, Phase, Additional Project Information, and Major Asset Type.

To facilitate the continuous collection, analysis, and sharing of Lessons Learned, the RTD FasTracks project team has deployed a web-enabled database application called, “The Lessons Learned Module” which is used to capture, review and approve Lessons Learned at the time and point where those lessons are realized.

The following pages were compiled from information collected in the database.

## Develop WBS Based on Funding Sources

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-1	Phase:	Construction
Date Submitted:	8/11/2011	Date Approved:	10/19/2011

### Overview

The DUS project has 12 different funding sources with 12 different sets of requirements. Payment of invoices is made more difficult and may be delayed or denied if the work breakdown structure and invoicing categories are not aligned with the assets funded by each of the funding sources.

### Background

Each different funding source on the DUS project is intended to be used for specific components/assets and each funding source also has requirements tied to the funding. The work breakdown structure for the DUS project was reduced to a 42 - 45 line item schedule of values, which was not based on the funding source requirements. As a result, some funding has been delayed or denied because of the difficulty in showing that the funding source requirements were met. It is best to create a work breakdown structure/schedule of values based on the various funding sources and associated requirement for use by the contractor when invoicing.

### Lesson

Make sure the contractor uses a work breakdown structure/schedule of values developed in accordance with the various funding sources and associated requirements to provide for more effective processing of payments.

## Change Order Management Process Meeting

<b>DUS</b>		Lesson Type:	Exceeded Expectations
Database LL #:	LL-DUS-2	Phase:	Construction
Date Submitted:	8/15/2011	Date Approved:	10/19/2011

### Overview

The DUS project has a complex ownership group consisting of many stakeholders. This resulted in many steps being required for the processing of change orders. A bi-weekly meeting was established with all stakeholders/project team members to discuss and approve, modify or reject all change orders for the project in a timely fashion.

### Background

The project has a complex ownership structure whereby the contractor is contracted to the owner (DUSPA), who has three primary members and who has hired a owner's representative to manage the change process on behalf of the ownership group. Originally, the owner's representative was meeting individually with all the stakeholders to determine if the change orders should be approved, modified or rejected. This process was not responsive and timely. A biweekly meeting with all project stakeholders attending was established to resolve change order requests in a timely and effective manner.

### Lesson

Projects including multiple stakeholders should establish periodic meetings including all stakeholders to vet change order requests in a timely and effective manner.

## Utility Coordination Meetings

<b>DUS</b>		Lesson Type:	Exceeded Expectations
Database LL #:	LL-DUS-3	Phase:	Construction
Date Submitted:	8/11/2011	Date Approved:	10/19/2011

### Overview

Regularly scheduled weekly/bi-weekly meetings were established with all involved with utility relocations, installations, and removals. These meeting began during design (before construction) and facilitated proper planning and coordination for timely utility work.

### Background

Bi-weekly meetings including all parties involved in utility work was established during design to support the design effort. Attendees included RTD, the design-builder, City and County of Denver, DUSPA, Xcel Energies, Qwest, Level 3, Denver Water Department, and all relevant subcontractors involved in utility work. Initially, this meeting was focused on the design of the relocations, removals and installation of the utilities along with permitting by the City and County of Denver and Utility Relocation Agreements (URAs) with RTD. Once construction started these meetings were held weekly due to the amount of coordination necessary to complete all the work in a timely fashion. The meetings even provided an effective forum that resulted in the joint use of trenches by differing utilities.

### Lesson

Regularly scheduled utility coordination meetings should be established at the start of design and conducted well into construction with all involved in utility work.

## Dedicated Project Team in Place at the Start of Design

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL	LL-DUS-7	Phase:	All
Date Submitted:	8/15/2011	Date Approved:	10/19/2011

### Overview

At the beginning of the DUS Project there was only one RTD person assigned to the project. A dedicated project staff was not in place until after the design-builder was beginning construction. It would have been beneficial for a dedicated RTD project team to be established at the project's preliminary design phase so issues could be understood from the start to finish.

### Background

The DUS project started with only one dedicated project team member. All other RTD resources needed for the project before the dedicated team was established were provided from the matrix management system when called upon. A dedicated project team was not put in place until the start of construction. Even with a design-build project delivery there is still a lot of leadership and coordination required by the owner during design of the project. The historic building, land acquisitions, railroad involvement and numerous third party utility work all required attention by RTD staff.

### Lesson

Establish a dedicated project team at preliminary design at the latest. Even if the matrix organization is still in place, have specific people within each department assigned to a specific project to be included from beginning to end.

## Discipline Task Force Meetings

<b>DUS</b>		Lesson Type:	Exceeded Expectations
Database LL #:	LL-DUS-10	Phase:	Design
Date Submitted:	8/15/2011	Date Approved:	10/19/2011

### Overview

Discipline task force meetings were created during design and continued into construction. The task forces met weekly or bi-weekly depending on the intensity of the project at the time. These meetings were very beneficial in solving design and construction issues because of the collaborative nature with all parties present including contractor, designer, owners and subcontractors.

### Background

The designer needed a forum to receive input from the various stakeholders of the project. Weekly/bi-weekly discipline task force meetings were implemented during the design phase for the designer to receive input. The meetings are co-chaired by representatives from design and construction and included owners and subcontractors. These meetings proved to be a collaborative approach to proactive problem solving and offered a unique perspective to solving design and then later construction issues.

### Lesson

Regularly scheduled discipline meetings led by the designer and attended by the owner, contractor and any subcontractors should be established at the start of design to address any questions or issues during design of the project.

## Independent Cost Estimate Scope Review Meeting

<b>DUS</b>		Lesson Type:	Exceeded Expectations
Database LL #:	LL-DUS-21	Phase:	All
Date Submitted:	4/11/2012	Date Approved:	1/15/2013

### Overview

The DUS project has generated many complex change conditions from the original project scope. To assure that pricing is fair and reasonable the DUS team performs an Independent Cost Estimate for each change item. A weekly meeting was established to discuss and review scope of change items to assure independent cost estimates were consistent with the scope of the contractor's proposal.

### Background

The team discovered early in the project that due to the complexity and often times conceptual design levels for a proposed change, that it was difficult to develop an independent cost estimate consistent with the scope of contractor's proposal. The result of the inconsistencies in the estimate process resulted in a weekly meeting with the design build contractor and ownership team to discuss upcoming changes and review the scope of changes in detail to assure the independent cost estimates were consistent with the scope of the contractor's proposal.

### Lesson

Projects with complex change conditions should establish a standing meeting to review the scope of the changes in detail to assure a full understanding of the scope of the change item and also allow for an accurate independent cost estimate.

## Budget Revisions

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-22	Phase:	All
Date Submitted:	8/20/2012	Date Approved:	8/27/2012

### Overview

The budget analyst develops a zero dollar budget transfer and obtains the signatures needed. The current budget process requires approval of \$0 budget transfers by the project manager, the Assistant General Manager, the budget office, and the grant accountant or accounting manager. Next the budget revision is assigned a budget revision number, then entered, submitted, and baselined. This was taking 2-3 months.

### Background

The DUS project is a guaranteed maximum price contract. This allows the contractor to move money freely among tasks within the contract as long as the total contract amount is not exceeded. For budget and actuals management, there is a constant flux in the budget that needs to be maintained in Oracle. This needs to be done within each monthly cycle to keep up with the reporting requirements of the project. Several RTD signatories were approving changes for a budget they had no control to approve or disapprove due to RTD not controlling spending of some awards. In establishing who was responsible for the funding source, we were able to follow up with the correct person to keep the revision moving through the process.

### Lesson

Authority was given to the RTD project manager to approve \$0 changes to the budget. Approval still needs to be obtained by the grant/accounting group. Then, the revision number is assigned. Upon getting the revision number from the budget office, we also obtained approval to enter the budgets into Oracle and submit for baselining. This reduced the processing period by a month and a half. For capital construction projects, allowing the budget analyst to enter the budget revisions speeds up the turnaround time for these. Discussion should take place between staff from the project and the budget/accounting departments to develop mutually beneficial/efficient methods of managing project funding.

## As-Built Survey for Underground Work

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-23	Phase:	Construction
Date Submitted:	2/13/2014	Date Approved:	3/13/2014

### Overview

Geographic Information Systems (GIS) maps for underground work should be created based on the changes made during construction. This ensures RTD Facilities and Operations & Maintenance personnel have access to the most current information available once the project enters revenue operations.

### Background

In the past, project team members have been reassigned to another project rather quickly once their area of responsibility has started to wind down. Unfortunately, the team has not documented the changes to underground work that occurred during construction on a GIS map.

### Lesson

It is easiest to create GIS maps toward the end of the construction and integrated testing phases of a project. The project team is still available and has not yet been reassigned to another project. In addition, the project knowledge is still fresh, making it easier to create the GIS maps which would be used by the RTD Facilities and Operations & Maintenance personnel once the project has been approved for revenue operations.

### Steps to Implement

Include contract language/specifications requiring field survey of underground conduits at the time of construction prior to backfilling. Develop a closeout checklist to include the step of creating as-built surveys for underground work.

## Membership to the Utility Notification Center of Colorado (UNCC)

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-25	Phase:	O&M
Date Submitted:	2/13/2014	Date Approved:	3/13/2014

### Overview

RTD has systems conduit and duct banks in public right-of-way (ROW), however RTD is not currently a member of the Utility Notification Center of Colorado (UNCC). Therefore, when a contractor working in public ROW contacts UNCC for a list of all the utilities located in a specific area, the contractor will not receive any information about RTD's utilities.

### Background

Since RTD has systems conduit and duct banks located in public ROW, there is a risk of damage to these utilities when there is construction in the ROW. This damage could result in communications for the light rail transit (LRT), bus operations, and/or camera feeds at park-n-Rides being disrupted.

These risks can be minimized by RTD becoming a member of UNCC. Once a member of UNCC, RTD would need to provide maps to document the location of its systems conduit and duct banks located in public ROW.

### Lesson

All RTD conduits and duct banks for systems should be listed with the UNCC to ensure contractors working on construction projects between Blake Street and the District Shops have access to the location of each RTD utility. This reduces the risk of damage to RTD's utilities and provides for contractor responsibility in the case of damage.

### Steps to Implement

Investigate the costs and benefits of joining the UNCC.

# Incorporate Funding Sources & Invoicing Requirements into the Contract

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-28	Phase:	Procurement
Date Submitted:	2/13/2014	Date Approved:	3/13/2014

## Overview

The funding sources and invoicing requirements for a project need to be defined through the work breakdown structure (WBS) prior to signing the contract so this information can be incorporated into the contract's invoicing structure.

## Background

The Denver Union Station (DUS) Project had Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) requirements that needed to be adhered to in order for the project to qualify for and receive Federal funding. At the beginning of the construction phase, these requirements were not being followed by the contractor or recognized by the DUS Project Authority (DUSPA) as contractual requirements.

Each project funding source only agrees to pay for specific construction activities. For example, RRIF funds limited funding for light rail to 13% and bus terminal to 20% of their costs with the remainder allocated for commuter rail. Therefore, invoices need to provide a sufficient level of detail for each source of funding to determine eligibility. These allocations should relate to the items in a WBS.

## Lesson

Funding and invoicing requirements should be organized using the WBS at the beginning of the project so it can be incorporated into the contract.

## Steps to Implement

Meet with legal department to encourage the implementation of this lesson into a boilerplate contract or the review process for new contracts.

# Turnover of Denver Union Station to Denver Transit Partners

<b>DUS</b>		Lesson Type:	Needs Improvement
Database LL #:	LL-DUS-34	Phase:	Start-Up/Testing
Date Submitted:	1/20/2015	Date Approved:	1/28/2015

## Overview

The turnover of the track and station work at Denver Union Station (DUS) to Denver Transit Partners (DTP) was difficult due to the lack of feedback from DTP until the late stages of close-out.

## Background

Included in the scope of the DUS contract which was awarded to Kiewit was the track and platform work at the station extending approximately to the 23rd Street and Wewatta intersection. The track and station work performed at DUS is of concern to DTP since the East and Gold lines tie into DUS and DTP will construct, operate, and maintain the lines.

Approximately six months before the work was complete, personnel from DTP were invited to start inspecting the work to make sure any problems were identified. This was not a priority for DTP at the time as they wanted to wait until all the work was complete. When the work was complete, DTP thoroughly inspected the track work and found a lengthy list of items they wanted addressed. The items are categorized as follows:

- Items that were not included in Kiewit's contract nor in DTP's contract
- Items that conformed to Kiewit's contract but varied from DTP's contract
- Items that were not conforming to Kiewit's contract

Category one items are the result of unforeseen scope gap. These items can be addressed through change orders if RTD decides they have merit. Category two items are not the responsibility of Kiewit but may need to be addressed through a change order to DTP's contract. Category three items should be addressed by Kiewit.

The feedback from DTP at such a late stage made it difficult to close out the project since Kiewit's staff and RTD's staff were transitioning off the project.

It should be noted that DTP bid on a defined set of plans and specifications for what would be available at DUS. There were several instances where changes were made during the course of the DUS project, but DTP was not consulted. Contractually, DTP had the right to expect the conditions defined in the original plans.

Once the interface issues were identified, RTD, DTP, and Kiewit engaged in focused, priority

meetings to ensure that the contractual turnover date was successfully achieved.

## **Lesson**

As described above, some of the punchlist items are clearly Kiewit's responsibility and others are not, so the process of resolving them involves meetings with DTP, Kiewit, and RTD where possible solutions can be discussed. These meetings should take place early and once an action plan is developed, there needs to be workers on-site to perform the work. Both of these activities would have been more easily accomplished while RTD and Kiewit were still on-site.

It is also important that any changes to the DUS requirements, no matter how small or large, receive the approval of DTP prior its implementation.

## **Steps to Implement**

Any project requiring turnover to a follow-on contractor or operator must ensure that the follow-on contractor is involved in all phases of the project. Any changes to the first contractor's work, affecting the follow-on contractor or operator's work, should be submitted for their approval.

The North Metro Rail Line Project is paying DTP to participate in plan review and intends to integrate DTP early on during construction and acceptance of the work constructed for the North Metro Rail Line.

## FTA and FRA Combined Loans

<b>DUS</b>		Lesson Type:	Unexpected Results
Database LL #:	LL-DUS-35	Phase:	EIS/BE/PE
Date Submitted:	4/10/2015	Date Approved:	4/10/2015

### Overview

Multiple funding sources were pursued for the Denver Union Station Intermodal Project (DUS) including securing \$145M from the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program (a part of the United States Department of Transportation for which the Federal Highway Administration (FHWA) was assigned responsibility), and \$155M from the Railroad Rehabilitation and Improvement Financing Program (RRIF) loan program. The financial plan for the project was complicated since this was the first time a TIFIA loan was combined with a RRIF loan (a part of the Federal Railroad Administration (FRA)) on the same project.

### Background

The Denver Union Station Project Authority (DUSPA) was the applicant for the TIFIA & RRIF loans. DUSPA is a non-profit (501)(3)(c) corporation formed as an instrumentality of government under the authorization of the City and County of Denver (the City). It has an eleven member Board consisting of representatives of the City, the Regional Transportation District (RTD), the Colorado Department of Transportation (CDOT), the Denver Regional Council of Governments (DRCOG), and a representative of Union Station Neighborhood Company (USNC), the master developer for the Denver Union Station Project. Repayment of the loans was committed from RTD through a note made to DUSPA combined with tax increment finance (TIF) revenue pledged by the City. Additionally, the City passed a contingent commitment resolution declaring it was willing to appropriate funds if TIF revenues, together with RTD bond payments, were insufficient in any year to pay debt service of the loans. Federal loans for the DUS Project were applied exclusively to transit elements. Although there was a master developer that acquired parcels for development and a historic station building that was renovated concurrent with development of surface transit elements, those private, "vertical" development elements were funded without federal funds.

### Lesson

1. TIFIA and RRIF loans have the eligibility and payment requirements of federal grants although they require repayment. Applicants should establish their timelines, environmental work, procurements, eligible costs, design and construction programs (design/build, design/bid/build,

GMP vs. Lump Sum, etc.) and application schedules similar to what they would allow for a capital grant. The program or project to be funded will require the same level of planning, governance, financial capacity, operating and technical capacity, and ongoing covenants for use and operation as a grant although funds need to be repaid.

2. Large capital projects may require funding from a variety of sources and agencies should have or retain competent financial advisors to develop a comprehensive funding and financing plan. DUSPA started with a view towards commercial financing and had to make numerous adjustments during project development to qualify for loans and ensure costs were eligible.

3. Although the loan process can be difficult, rates and favorable terms for TIFIA and RRIF loans make pursuing them as a financing tool worthwhile. Because a function of USDOT is to assist in the development of significant transportation projects, loans may be available when commercial financing is not.

4. Local government support and support from elected officials are critical to federal loans before, during and after loan negotiations, just as they are to federal grants. Make sure municipal, county and U.S. government elected officials from your region are well briefed in the benefits of your project. Mayors are generally on the front lines of large, urban projects, so make sure mayors and their staffs are fully engaged early and often.

- TIFIA process for DUS took approximately 2 years, but the DUS project is considered one of the most complicated financing structures anyone in DOT has seen. The project was complicated further with combining RRIF and TIFIA loans which had never been done.
- Political pressure is a useful tool, but should not be relied on as a solution to obtaining quick financing approval. It is a helpful, but not sufficient, component of obtaining federal loans. Agencies must be prepared to respond to each and every criteria set out in loan applications and respond to the US DOT credit council and financial advisors hired by the lending agencies reviewing project documents. Each lending agency is responsible for its portfolio, and to Congress. Regardless of political pressure, each lending agency must ensure loans meet all statutory eligibility requirements and are credit worthy.
- Be prepared to run multiple scenarios and risk models for the USDOT Credit Council as well as TIFIA and RRIF agency staff. Although you may have a worthwhile project, loans have to be supported by an adequate credit rating and risk premiums which will be assessed for RRIF loans. Your financing plan will be examined and tested for a variety of scenarios.
- Agencies are understaffed and the review and approval process may take significantly more time than anticipated. If your project schedule cannot accommodate delay, TIFIA allows a two year look back on costs and the agency may be able to proceed at risk with local funds and seek reimbursement after loan approval.

5. Project Timelines should allow for several delays beyond the lending agency's printed timetables for review. Questions will arise, and revisions will be required. Constant communication with lending agencies is advised to support their review of the application. The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant program process has an annual window for applications to be submitted. Identify these dates and submit timely.

6. TIFIA and RRIF Loan Offices may not be coordinated in their processing of the applications. Below are process steps that need to be followed.

- Record of Decision (ROD) – Receive prior to loan request. NOTE: Receipt of a NEPA decision document from one USDOT agency does not cover all USDOT agencies. Unless each agency from which you are seeking a loan was a sponsoring agency a new NEPA process may be required. Although RTD had a ROD from FTA and FHWA, FRA had to undertake a separate environmental review relying on other agency documents and issue a separate NEPA decision later.
- Letter of Interest (LOI) – Agency submits their LOI to TIFIA
- Invite to Apply – TIFIA issues an invitation to agency to apply for loan
- Application Submittal – Agency submits application to TIFIA
- Verbal Acceptance – TIFIA issues a verbal acceptance of application
- Agency Meetings – Identify specific areas of concern, review financial plans, in this case having two federal loans, coordination of materials, processing and discussion of potential drawdowns, security, and other creditor issues. This process may take several meetings, primarily in Washington, DC; although numerous phone conferences may be required. Be as liberal as possible in setting face-to-face meetings with the federal Agency hosting in Washington, D.C. The more familiar you are with those involved at the Agency level, the better you will fare in terms of project nurturing. Support USDOT agencies with their policy goals as well as your own in advancing the project. This may include jobs creation, civil rights, or integration of programs such as housing and transportation.
- Legal and Financial review – Applicant and federal lending agencies will hire financial advisors and legal advisors to assist in preparation of financial plans, model runs, risk analysis, and loan documents.
- Negotiate Loan Agreements – These negotiations will require addressing lending agency risk issues including allocation of payments, security in collateral accounts or assets, insurance, analysis of ability of applicant to discharge debts in bankruptcy, coverage ratio of applicant including other planned projects review of contract documents for construction project being funded, review of pledge agreements from other funding sources, review of property agreements to ensure constructability of projects. Negotiations will likely take several months.
- Credit Council Approval – This council is formed by the heads of all 13 DOT agencies. DOT staff presents to Credit Council with material from the application & with

guidance from the Independent Financial Advisors (IFA).

- OMB Approval – OMB is the final approving body. There will be an intense review of loan details. Communication is generally from OMB to federal agencies, not applicant. It will be difficult for the applicant to understand and address issues/concerns by OMB. On the project's day of closing, our team was still negotiating details with the OMB office.
- Closing Process – Final stage including multi-day trip to Washington, DC to finalize documents and to close on the loans.
- A Peer Review of the Feasibility Study may be requested and you should be prepared to conduct one.
- Identify and track Eligible Project Costs early so that these costs can be paid from TIFIA loan proceeds. The TIFIA statute (23 U.S.C. §601) defines eligible project costs. Eligible costs may include not only the construction phase, but also costs associated with pre-construction or development phase activities such as planning, feasibility analyses, preliminary engineering and design work, forecasting, environmental review, and permitting. It is permissible to incur costs prior to submitting an application for TIFIA loan assistance, but pre-application costs are eligible for TIFIA reimbursement only upon approval by the DOT. Generally, those eligible costs will be confined to development phase or right-of-way acquisition expenses incurred within 3 years of the date of application and procurement or right-of-way acquisition must have followed federal requirements. The eligibility determination will be made on a case-by-case basis, depending on the nature and timing of the costs. TIFIA administrative charges such as application fees, transaction fees. Loan servicing fees and credit monitoring fees will **not** be considered among the eligible project costs.
- Be sure to include federal certifications and requirements in all agreements and contracts that are expected to be paid from federal loan proceeds, such as Anti-Lobbying, access to records, Program Fraud, Debarment and Suspension, Incorporation of FTA Terms and Disadvantaged Business Enterprise inclusion.  
Project Progress – TIFIA allows a look back period for reimbursement of incurred costs, but borrower is completely at risk until loans are signed and specific draw items are approved as eligible for funding. If project is time sensitive due to operational needs or preserving bid prices, agency should have short term funding plan in case loan process takes longer than planned.

## 7. Ways to Improve

- Intercreditor issues between TIFIA and RRIF should be addressed early.
- Financing plan should allow for delays in loan closing. If tangible assets are not pledged as collateral, RRIF will require higher credit premium and agency may need to be creative to address risk issues such as adding USDOT to insurance policies and bonds, giving USDOT oversight over high dollar value contract changes, limiting ability to take on future debt unless certain credit tests are met.
- Facilitate by constantly setting up more face to face meetings and phone conferences.
- DUSPA had extremely complex project financing. From the very beginning, set up financial

plan in line with FTA coding structure.

- TIFIA would've liked to have federally eligible costs clarified up front through review of scoping and existing/draft contracts. Staffing limitations may limit their abilities to do it early.
- Remain nimble and create Plans B-Z to accommodate unforeseen delays in closing, additional requirements presented by the project (or the Lender(s)), or bumps in the best laid road map.

#### 8. Independent Financial Analysts (IFA)

- TIFIA (and RRIF) used an IFA to validate DUSPA's assumptions.
- Included real estate Feasibility Study commissioned by the City of Denver (first performed by CBRE).

#### 9. Reporting

- Expect PMO representation on project.
- Budget should have a % of project budget to pay for PMO.

#### 10. Financial Plan

- Have a preliminary financial plan mapping general repayment concept.
- Develop thorough Draw schedule (forecasting) which will require constant updating.
- Streamline by setting up project processes based on FTA procedures.
- DOT review of plan required going through the process multiple times to get acceptance.

#### 11. Funding Plan & WBS

- Set up Work Breakdown Structure (WBS) for invoicing in accordance with FTA's SCC coding structure. Organize work by "finished assets", not by "material types".
- Create a "Source & Uses" matrix summary very early. This summary will be helpful in communicating finances of the capital project.
- Lump Sum Contract type – FTA strongly recommends this type, and will ease reimbursement process.
- Pay contractor on EV (Earned Value) basis.
- Read the Code of Federal Regulations (CFRs) prior to contract signing.

## 12. Advantages of TIFIA and RRIF Loan

- Flexible repayment plan.
- Lower interest rates.
- In down market, there likely will be limited bond interest and tough banking rules for lending. Federal loans may be best or only choice.

## 13. PMOC

- Project Management Oversight Consultant (PMOC). For our project, the PMOC was selected by and worked for FTA & TIFIA. FRA's RRIF administrators agreed to the FTA to monitor the project through the PMOC and used their reports for updates.
- PMOC will be required to monitor activity and provide monthly status report of their findings.
- The typical charge for a PMOC is .5% of project budget to cover their costs.

## 14. Contingency

- FTA focuses heavily on Contingency amount. The project will have to start with a substantial % allocated for contingency.
- Several annual audits will be required. Prepare early for this reporting and review.

## 15. Buy America

- Require contractor to secure any Buy America waivers prior to beginning project.
- The Federal Government has drastically reduced the number of waivers issued and is currently requiring Presidential approval. Any waiver request will require substantial backup.