



North Corridor Metrorail Extension Project

PROJECT MANAGEMENT PLAN

March 2007

**MIAMI-DADE TRANSIT and
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL TRANSIT ADMINISTRATION**

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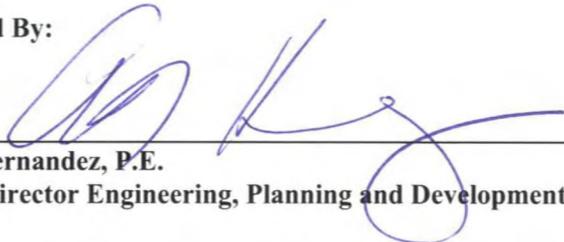
PROJECT MANAGEMENT PLAN
FOR THE
NORTH CORRIDOR METRORAIL EXTENSION

Revision 3: March 28, 2007



ENGINEERING, PLANNING AND DEVELOPMENT

Approved By:



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3/30/2007
Date

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PROJECT MANAGEMENT PLAN

FOR THE

NORTH CORRIDOR METRORAIL EXTENSION



REVISIONS

The North Corridor Metrorail Extension Project Management Plan is a dynamic, evolving document. As major revisions occur, the entire manual will be reproduced, bound, and distributed. For minor revisions, only the affected pages will be issued. Upon receipt, previous revisions of the document shall be destroyed.

Rev.	Date	Pages	Description
	07/99	All	Original Issue
1	08/26/04	All	Revision 1
2	12/13/05	All	Revision 2
3	03/28/07	All	Revision 3

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1.0 GENERAL INFORMATION

1.1 Introduction

The purpose of the North Corridor Metrorail Extension Project Management Plan (PMP) is threefold:

1. It establishes the framework for managing and administering this complex major capital project in accordance with the requirements of the Federal Transit Administration (FTA) mandated 49 U.S.C. §5327; Code of Federal Regulations, 49 CFR Part 633; and FTA Grant Management Guidelines, FTA Circular 5010.1C. In addition, it complies with FTA *Project and Construction Management Guidelines 2003 Update*.
2. It specifies the Project's management procedures and organizational structure within Miami-Dade Transit (MDT).
3. It provides a guideline for the orderly interaction of the multiple organizations, agencies and staff involved in, and committed to, the Project.

This Project Management plan is a framework. It provides an overview of the management requirements and systems needed to ensure implementation of an efficient and cost effective rail transit project. Certain detailed procedures necessary to fulfill these requirements will be developed separately and are incorporated herein by reference. Further, FTA requires the following items be included in the Project Management Plan:

- Adequate [grant] recipient staff organization with well-defined reporting relationships, statements of functional responsibilities, job descriptions, and job qualifications;
- A budget covering the project management organization, appropriate consultants, property acquisition, utility relocation, systems demonstration staff, audits, and miscellaneous payments the recipient may be prepared to justify;
- A design management process encompassing preliminary engineering (PE) and final design;
- A construction schedule for the project;
- A document control procedure and record-keeping system;
- A change order procedure that includes a documented, systematic approach to the handling of construction change orders;
- Organizational structures, management skills, and staffing levels required throughout the construction phase;
- Quality control and quality assurance functions, procedures, and responsibilities for construction, system installation, and integration of system components;
- Materials testing policies and procedures;
- Internal plan implementation and reporting requirements;
- Criteria and procedures to be used for testing the operational system or its major components;

- Periodic updates of the plan, especially related to project budget and project schedule, financing, ridership estimates, and status of local efforts to enhance ridership where ridership estimates partly depend on the success of those efforts;
- The recipient’s commitment to make monthly submissions on project budget and project schedule to the FTA; and
- The plan for establishing and administering an effective System Safety and Security Management Plan throughout the project life-cycle.

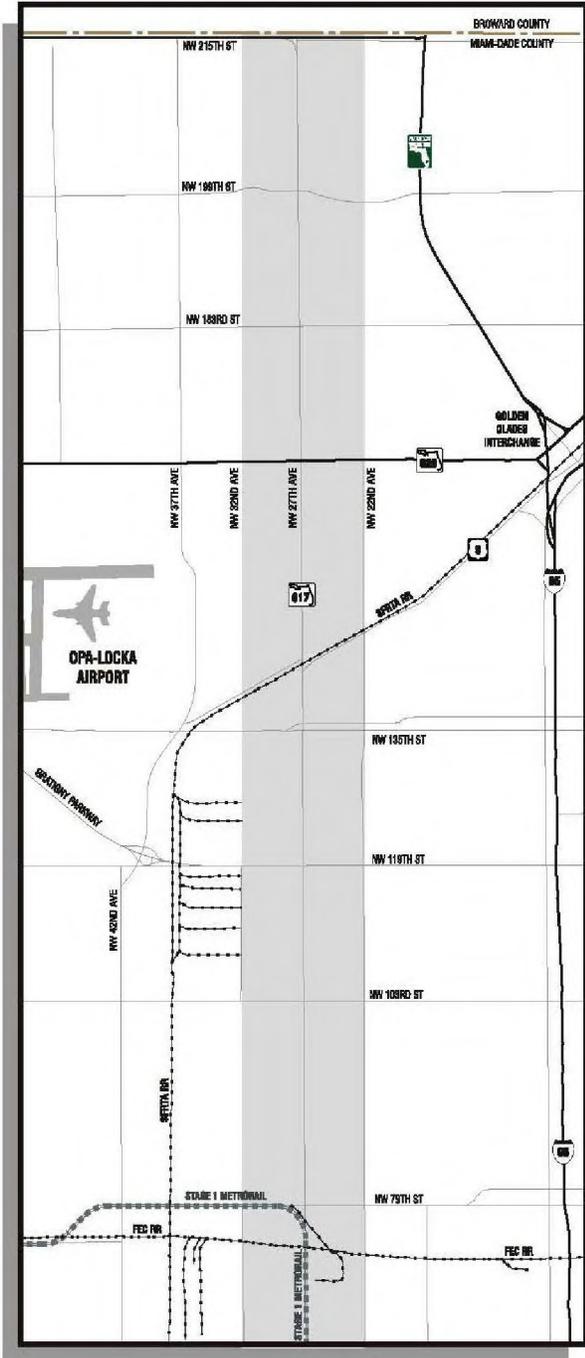
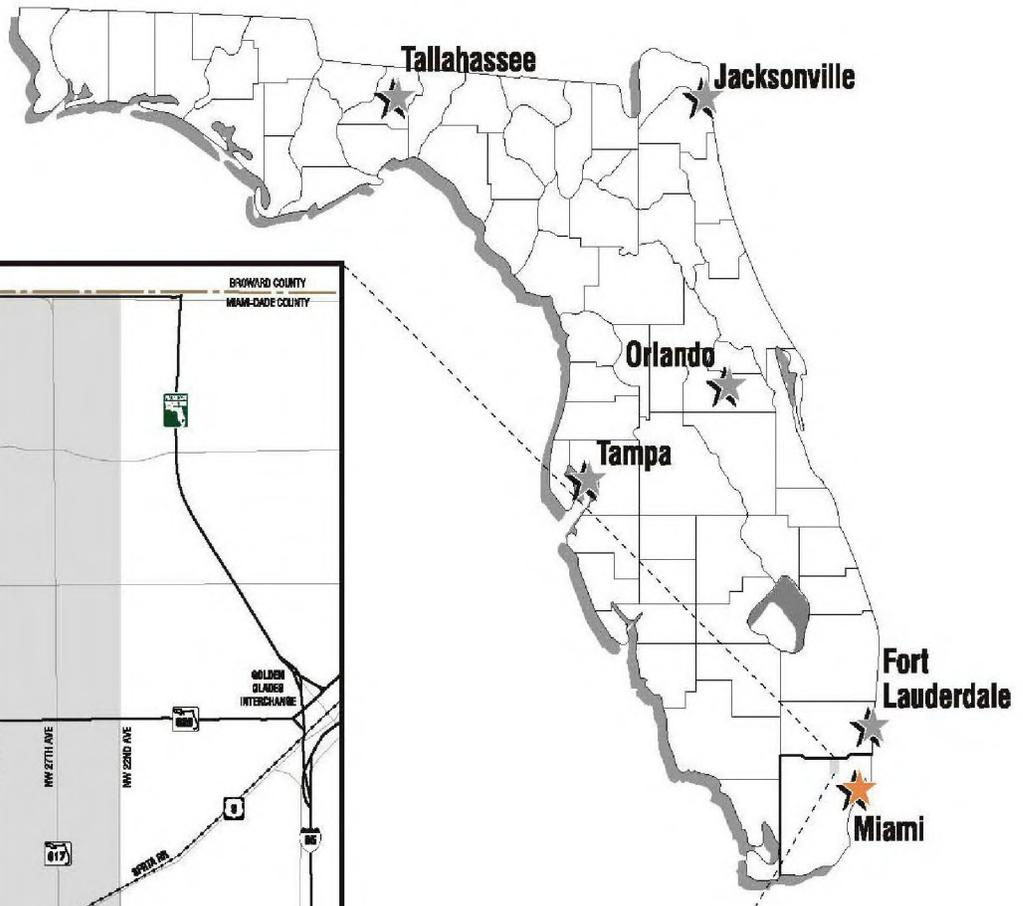
1.2 Project Background and Planning

In May 1985, the last segment of the existing 21-mile Metrorail system was opened for revenue service. With the exception of the addition of the Metrorail Tri-Rail station in 1988, and the opening of the Palmetto Metrorail Station Extension on May 30, 2003, no major extensions to Metrorail have been constructed. In December of 1993, the Miami-Dade County Board of County Commissioners (BCC) and the Miami-Dade Metropolitan Planning Organization (MPO) approved “... a Program of Interrelated Transportation Projects to collectively address the mobility, traffic congestion and related transportation needs of Dade County.” The North Corridor Metrorail Extension was included as one of the interrelated projects. The location of the North Corridor is shown in Figure 1-1.

On March 24, 1994, MDT commenced preparation of an Alternatives Analysis/Major Investment Study (AA/MIS) for the North Corridor. In November 1995, MDT completed the AA/MIS Study for the North Corridor and the MPO Board approved a Locally Preferred Alternative (LPA) choosing the NW 27th Avenue alignment without specifying a mode and added the Project to its Cost Feasible Year 2015 Long-Range Transportation Plan. On October 22, 1996, MDT commenced preparation of a Draft Environmental Impact Statement (DEIS). The DEIS was completed in January 1998 and in May 1998, the MPO selected the Metrorail Extension along NW 27th Avenue as the LPA.

NW 27th Avenue is one of the few continuous north-south arteries in Miami-Dade County and serves as an alternative to the severely congested north-south I-95 and State Route 826. The North Corridor Metrorail Extension will provide an additional travel alternative in the corridor that will have direct connections with the existing Metrorail system, Tri-Rail (regional commuter rail), the Miami Intermodal Center, and the Miami International Airport. The project is further intended to provide direct service to the Miami central business district (CBD) and Medical Center, as well as Miami-Dade Community College-North Campus and Dolphins Stadium. The Project would provide fixed guideway rapid transit in an area with a high percentage of households with low incomes that are transit-dependent.

In April 1999, the Preliminary Engineering/Final Environmental Impact Statement (FEIS) phase was completed and submitted to FTA for approval. However, the Project was placed on hold after a one-cent sales tax referendum, which was to be used as the dedicated local funding source, failed to receive voter approval in July 1999. The Environmental Impact Statement process was suspended shortly thereafter. Subsequently, it was then re-studied as a possible Bus Rapid Transit alternative between 2000-2002. In November 2002, Miami-Dade County successfully passed a half-percent sales surtax under the People’s Transportation Plan (PTP) initiative.



LEGEND

- North Corridor
- Stage 1 Metrorail Alignment



The passage of the PTP and the related half-percent sales surtax in November 2002, in part due to the active and strong support of the North Corridor area residents, enabled MDT to reactivate the Environmental Impact Statement (EIS) process. Because the DEIS was more than three years old, the proposed alignment was adjusted, and the corridor experienced a number of changes, preparation of a Supplemental DEIS (SDEIS) was required. The SDEIS, which updated all of the analyses of the 1998 DEIS, was started in 2002 and completed in April 2006. FTA approved the final SDEIS on May 9, 2006. The SDEIS was then circulated for review and two public hearings were held in June and July of 2006.

An FEIS for the Project is in the final stages of completion. FTA has completed their review of the FEIS and submitted it to the Environmental Protection Agency (EPA). The EPA published a Notice of Availability of the FEIS for public review in the Federal Register on March 9, 2007 and the FEIS was distributed to agencies that had previously commented on the DEIS and those that commented on the SDEIS. A Record of Decision (ROD) will be requested from FTA and following completion of the FEIS circulation period, FTA may issue a ROD. FTA will complete and sign a ROD no sooner than 30 days after publication of the FEIS notice in the Federal Register.

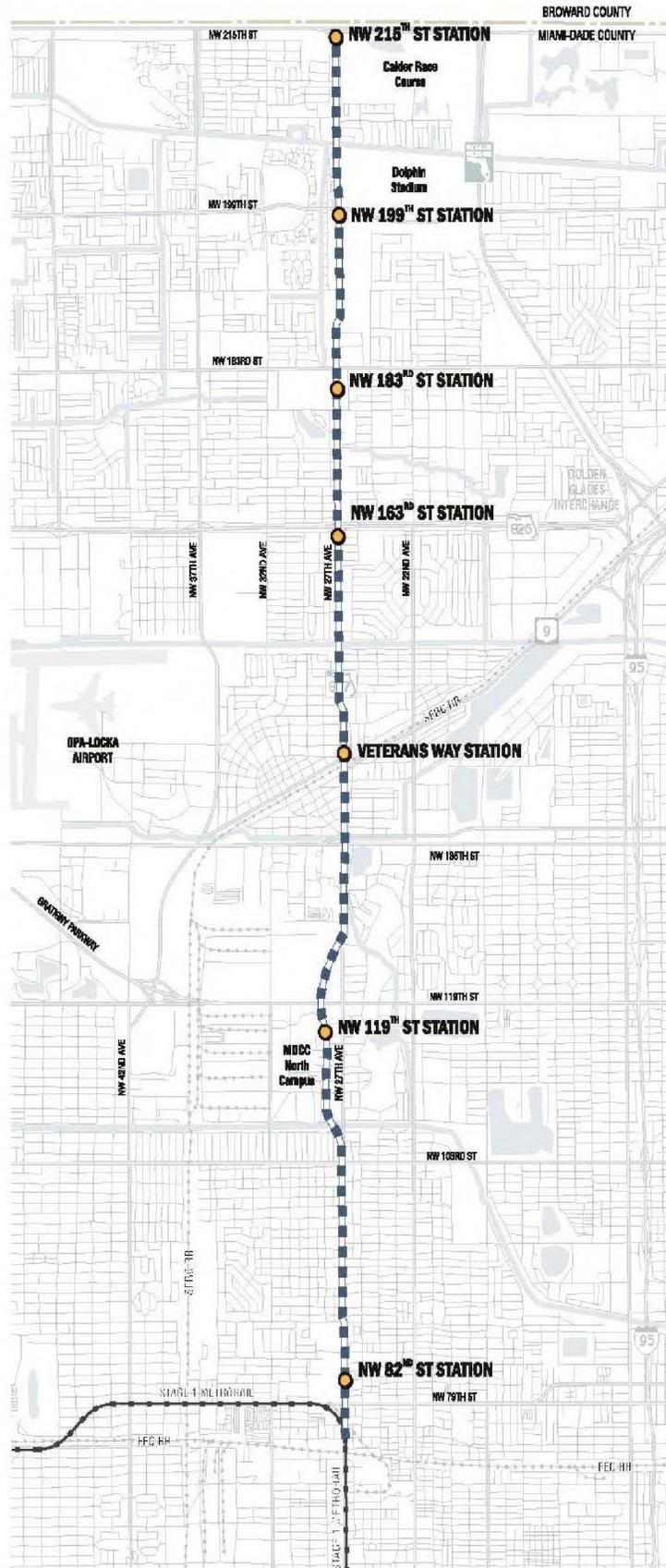
1.3 Project Description

The North Corridor Metrorail Extension, or the “Project”, is a 9.5-mile elevated heavy rail extension of the existing Metrorail system. The extension runs from the existing elevated guideway just north of the Martin Luther King Jr. Metrorail station at NW 62nd Street, serving the communities along the NW 27th Avenue corridor, Miami-Dade College’s North Campus and the sports venues at Dolphin Stadium and Calder Race Course, to a terminus at NW 215th Street just south of Florida’s Turnpike. The termination at NW 215th Street is designed so as to not preclude a future extension into Broward County.

1.3.1 Alignment

The North Corridor Metrorail Extension alignment and its relation to the existing Stage 1 Metrorail system is shown in Figure 1-2. The alignment and station locations are illustrated in detail in the plan and profile drawings contained in the preliminary engineering plans dated May 22, 2006.

The existing Stage 1 Metrorail alignment is located in the median of NW 27th Avenue from the existing Dr. Martin Luther King, Jr. Station north to approximately NW 76th Street where it curves to the west toward Hialeah. The Project alignment diverges from this area of the existing Stage 1 Metrorail alignment at two separate locations. The northbound guideway diverges from the existing Stage 1 Metrorail line at the start of its curve towards the west toward Hialeah. The Stage 1 construction included provisions for a switch and structural blockouts at this location so that the future northbound track could be easily be added at a later date.



LEGEND

- North Corridor Alignment
- Station Locations
- Stage 1 Metrorail Alignment



The southbound guideway diverges from the existing Stage 1 Metrorail line well south of this point at approximately NW 67th Street where the initial construction also included provisions for a switch and structural blockouts. From this point, the southbound track alignment moves to the west side of NW 27th Avenue and continues north for approximately 0.5 miles before “flying over” both tracks of the existing Stage 1 line where the existing line turns to the west toward Hialeah. The southbound track then descends to meet the northbound guideway at approximately NW 79th Street. North of this point both the northbound and southbound tracks follow the median of NW 27th Avenue from the merge to the first station at NW 82nd Street.

From the NW 82nd Street Station, the elevated line continues along the median beyond the Northside Shopping Center (NW 85th Street) where it curves to the west side of NW 27th Avenue. The alignment continues adjacent to the roadway and allows for a future side platform station just south of NW 103rd Street. At approximately NW 106th Street, the alignment curves 400 feet west into Miami Dade College’s North Campus. At the request of the campus administration, the alignment is located as much as possible over NW 27th Place, also known as the campus’ East Road. The NW 119th Street Station is located immediately south of NW 119th Street.

To the north of NW 119th Street, the alignment curves farther west through a large warehouse district. It then curves back to the east, crossing NW 27th Avenue near NW 133rd Street. The alignment then runs north along the eastern edge of NW 27th Avenue over SR 9 and the South Florida Rail Corridor (SFRC). A pocket track is located over the intersection of NW 27th Avenue and SR 9. An elevated center platform station is located just north of Veterans Way. From Veterans Way Station, the alignment continues on the east side of NW 27th Avenue to a center platform station located at NW 163rd Street.

From the 163rd Street Station, the alignment crosses over the Palmetto Expressway and remains on the western edge of NW 27th Avenue. At NW 171st Street the alignment moves into a median divider (separating the main roadway from a service road) located on the west side of NW 27th Avenue to the southern edge of the shopping center at NW 183rd Street.

The alignment continues through the parking lot of the shopping center to a center platform station in the existing lot just south of NW 183rd Street. The alignment continues along the median of NW 27th Avenue for approximately 1,000 feet to north of the Carol City Fire Station before moving to the east side of NW 27th Avenue. As the alignment continues north on the east side of NW 27th Avenue, it accommodates a center platform station that straddles NW 199th Street. Once the alignment crosses Snake Creek Canal, it moves slightly to the west to run between the roadway and the canal. At NW 210th Street, the alignment crosses to the east side of the canal and runs between the Calder Race Course and the canal. The terminal station is located just south of NW 215th Street.

1.3.2 Stations

Seven new stations will serve the extension at NW 82nd Street/Northside, NW 119th Street/Miami-Dade College, Veterans Way/Opa-Locka, NW 163rd Street/Bunche Park, NW 183rd Street/Miami Gardens, NW 199th Street/Dolphin Stadium, and NW 215th Street/Calder Race Course. Provisions will also be made to not preclude construction of a future station at NW 103rd Street.

Stations include facilities to enhance pedestrian access, bus-rail transfers, seven park and ride lots, and kiss and ride facilities. In addition, the Project incorporates opportunities for Transit Oriented Development (TOD), joint development and redevelopment of neighboring land uses.

1.3.3 System-wide Elements

The traction power distribution system consists primarily of substations and main line track power distribution facilities. The heavy rail transit power distribution system is based upon a 750 volt DC (direct current) contact rail system.

The signal system is an automatic train control (ATC), five-aspect system with cab signals compatible with the existing Metrorail system.

The communication and security facilities include emergency phones, closed circuit television (CCTV) and public address systems, as well as radio facilities. These functions would be connected to the existing Metrorail operations control center.

There will be an additional 36 new heavy rail transit vehicles required to operate service on the Project in concert with the existing Metrorail service. Operations would use both the modernized existing fleet and the additional new vehicles interchangeably on the existing Metrorail system and the North Corridor Metrorail Extension. The rail cars would be compatible with the existing Metrorail fleet.

The existing William Lehman Operations and Maintenance Center, located near the western terminus of the northern branch of Stage I Metrorail, is capable of servicing the 36 additional vehicles without modification to the existing shop facilities. The existing storage yard at Lehman will be expanded to store the 36 additional vehicles.

1.3.4 Fare Collection

Fare Collection on the Project will be handled by a Universal Automated Fare Collection system that will be comprised of ticket vending machines (TVM), ticket office machines (TOM) and fare gates. The fare collection equipment procured for the Project will be compatible with the current system but will be an upgrade in technology. The ticket vending machines will dispense magnetically encoded tickets for daily, weekly and monthly passes or other desired combinations. This will also add value to the smart card system. These ticket vending machines will accept cash and credit cards. The fare gates will operate with the magnetically encoded tickets and the smart cards. While the fare structure could change significantly during the design and construction of the project, these machines are versatile enough that they could be changed to various fare structures with minimum effort. The current base adult Metrorail and Metrobus fare is set at \$1.50.

1.3.5 Operating Plan

The operating plan assumes that the North Corridor Metrorail Extension will operate in revenue service seven days a week for 20 hours a day. Service frequencies will be as follows: 6.5 minute weekday peak headways; 10 minute weekday off-peak headways; and 30 minute weekday evening headways. Weekend service will operate at 20 minute headways. Variation may occur during special events.

1.3.6 Ridership Estimates

Current ridership estimates project 16,719 average weekday boardings in the opening year of 2014 and 20,317 average weekday boardings by the year 2030.

1.4 Goals and Objectives

The purpose of the Project is to support achievement of the PTP as well as the plans and priorities of Miami-Dade County and the State of Florida. The goals and objectives for the Project are as follows:

Goal 1: Maximize mobility for area residents and workers

Objectives:

- Improve transportation system accessibility and connectivity
- Reduce the time necessary to travel through the corridor for all modes of transportation
- Enhance access opportunities for current residents to jobs outside the corridor
- Improve transportation for socially, economically and physically disadvantaged groups
- Reduce dependency on automobiles
- Improve safety
- Minimize future travel delays and congestion

Goal 2: Support appropriate development and economic opportunities for corridor residents

Objectives:

- Maximize joint development and station area development opportunities
- Preserve and enhance livable communities
- Identify opportunities for innovative funding for joint public-private partnerships
- Support Community Development Block Grant (CDBG) areas
- Support regional urban in-fill policies

Goal 3: Minimize adverse impacts to the community and businesses

Objectives:

- Minimize loss of parking in commercial areas
- Minimize residential disruption
- Minimize takings of viable economic enterprises
- Minimize impacts during construction

Goal 4: Preserve and protect the environment

Objectives:

- Improve air quality by reducing automobile emissions and pollutants
- Protect sensitive areas such as wildlife habitats, wetlands, and historic and cultural sites
- Reduce traffic congestion
- Minimize additional noise impacts
- Minimize visual impacts to the community

Goal 5: Develop a consensus on a transportation plan for the corridor

Objectives:

- Provide equitable transportation services and benefits to all geographic areas and constituencies
- Involve the community in the decision making process by providing opportunities for public input
- Provide for equitable sharing of the costs of transportation improvements among those who benefit from them (environmental justice)

Goal 6: Maximize the efficiency of the transportation system in the study area

Objectives:

- Improve the people-carrying capacity of the existing roadway and transit system
- Avoid unnecessary duplication of transportation services
- Reduce conflicts between traffic to Dolphin Stadium and local traffic
- Increase transportation alternatives for north-south travel
- Improve access to Miami Dade College's North Campus, Calder Race Course and Dolphin Stadium
- Improve access to job opportunities within the corridor

Goal 7: Improve South Florida regional connections

Objectives:

- Improve north-south travel
- Improve access from the North Corridor to the Miami CBD, Civic Center area, and other areas served by the Metrorail line and potential future transit lines
- Improve local commerce

1.5 Legal and Statutory Authority

1.5.1 Agency Background and Overview

Miami-Dade Transit was created in 1974 by the Board of County Commissioners as an agency of the County. Its earliest predecessor, the Metropolitan Transit Authority (MTA), was created in 1960 by the Dade County Commission upon passage of an ordinance to unify the different transit operations into one countywide service. This ordinance provided for the purchase, development and operation of an adequate mass transit system by the County. The companies unified as a result of the ordinance included the Miami Transit Company, Miami Beach Railway Company, South Miami Coach Lines, and Keys Transit Company on Key Biscayne and would be managed by National City Management Company. Over the years and under various administrations, MTA evolved into the Metro-Dade Transportation Administration, the Metro-Dade Transit Agency, and the Miami-Dade Transit Agency.

Miami-Dade Transit is now the largest transit agency in the State of Florida and provides more than 50 percent of the trips taken on public transit in the state. It operates an accessible, integrated four-mode system of 100-plus Metrobus routes; the elevated 22-mile Metrorail; Metromover (an automated downtown people mover); and Paratransit all used by a total of nearly 300,000 passengers daily.

1.5.2 Statutory Authority

The Home Rule Charter for Miami-Dade County, adopted by referendum on May 21, 1957, grants certain authority and powers to the County. These include, but are not limited to, the following:

1. Article 1, Section 1.01.A.2 grants the County the authority to provide and operate public transportation systems.
2. Article 1, Section 1.01.A.10 grants the County the authority to levy and collect taxes and special assessments, borrow and expend money and issue bonds, revenue certificates, and other obligations of indebtedness.
3. Article 1, Section 1.01.A.17 grants the County the authority to enter into contracts with other governmental units within or outside the boundaries of the county for joint performance or performance by one unit in behalf of the other of any authorized function.
4. Article 1, Section 1.01.C grants the County the power of eminent domain and the right to condemn property for public purposes.

Concerning Miami-Dade Transit, Article XIX of the Miami-Dade County Code of Ordinances, specifically Ordinance No. 74-92, §§ 1, 2 adopted Oct. 15, 1974, sets forth the functions for Miami-Dade Transit. These include:

1. Routes, Schedules and Operations: Develop and maintain a system of routes consonant with the needs of the riding public; make and adjust schedules; carry on safety and training activities; maintain an information service; conduct passenger traffic route change and marketing studies; and market the services of the transit system.
2. Maintenance of the Fleet: Maintain, repair or modify the rolling stock of the fleet; conduct a preventative maintenance program; and keep such equipment cost accounts and

records as may be necessary to determine the life, effectiveness, or usefulness of the equipment.

3. **Damage Claims:** Investigate, adjust, compromise, settle or defend all damage claims arising from operation of the system in accordance with the procedures established by the County Manager.
4. **Sale of Advertising Space:** Promote the sale of advertising space in or on the buses, stations, shelters, or other suitable facilities of the system on a nondiscriminatory basis.
5. **Providing public transportation services and facilities for the physically disabled.**

1.6 Project Management Plan Maintenance

The seven basic phases of project development include: Planning; Preliminary Engineering (including Continuing and Extended PE); Final Design; Right-of-Way Acquisition; Bid and Award Process; Construction, and Testing and Start-Up. This Project Management Plan covers the Extended PE and Final Design phases in detail. It will be updated as necessary prior to the start of the Construction and Testing and Start-Up phases, or to address any other changes such as those that may be required to the MDT organizational structure, management controls, internal or external relationships, project schedule, etc. in the interim.

Requests for change to the Program Management Plan should be provided to the MDT Project Director. Once defined, the revision will only occur with the approval of the MDT Project Director. A copy of the updated PMP will be submitted to FTA for review and comment.

The Project Management Plan will also be available to staff in electronic format via the North Corridor Metrorail Extension ProjectSolve² website to assure that the most current version is continuously available.

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2.0 PROJECT ORGANIZATION AND STAFFING

This Chapter of the PMP describes the Project organization and staffing approach established for the North Corridor Metrorail Extension. Topics include organizational approach, project organization, project staffing, key personnel functions and responsibilities, use of consultants, and interface with other agencies. As implementation of the Project proceeds to Construction and through Testing and Start-Up, the organization will evolve to maximize the efficient use of personnel and adjust to the changing workload. The PMP will be updated prior to those phases to reflect changes in the organization.

2.1 Organizational Approach

The organizational principles established for carrying out the North Corridor Metrorail Extension are as follows:

1. Decision-Making and Coordination of Planning:
 - a. Involve senior managers from the County departments responsible for planning and zoning, engineering, roadway planning and traffic management in making policy and programmatic decisions for the project.
 - b. Coordinate with other City, County and State departmental staff on specific elements of the Project as appropriate in expected areas of involvement.
2. Project Implementation:
 - a. MDT will retain direct contractual control over all aspects and phases of the work.
 - b. The primary consultant contract for MDT is with the Program Management Consultant (PMC). As MDT has delegated to the PMC the responsibility for management of all technical aspects of the Project, the PMC will provide a significant number of the staff needed to manage the Project as well as support work on the other PTP projects under MDT's control.
 - c. The lines of communication between MDT and the PMC will run through the Project Director and the PMC Project Manager.
 - d. A select number of PMC staff will act as an extension of MDT staff and will be collocated with MDT staff at the County office building.
 - e. A traditional Design-Bid-Build method of procurement will be used for the Project's civil works and a Design, Furnish and Install method of procurement will be used for the Project's systems elements.
 - f. Preliminary Engineering, Fixed Facilities Final Design, Systems Procurement Package, and Engineering Services During Construction will be provided by a single Design Consultant contract.
 - g. Environmental Services for the preparation of the SDEIS and FEIS will be provided by a single Planning Consultant contract.
 - h. Construction Management will be performed through a Construction Engineering and Inspection (CE&I) Consultant contract.

- i. Additional consultants may be employed on a task-specific basis to supplement staff efforts.
- j. MDT will perform operation and maintenance of the Project improvements through a rail operations division utilizing primarily County employees supplemented by private contractors retained to perform specific functions; (e.g. station cleaning or landscape maintenance).

2.2 Project Organization

2.2.1 MDT's Organizational Structure within Miami-Dade County

Miami-Dade Transit's organizational structure is unique from other transit properties as it is housed under the auspices of Miami-Dade County's governmental structure. Miami-Dade County is responsible for providing a mechanism of transportation for the citizens within its boundaries. This three-tier governmental structure includes a County Executive Mayor and a Board of County Commissioners which are all elected officials and charged with the task of establishing policies and direction. Additionally, the County Manager oversees and administers the implementation of policy within county departments, which includes Miami-Dade Transit.

On November 5, 2002, the citizens of Miami-Dade County passed the People's Transportation Plan to provide a mechanism for transportation improvements. Subsequently, they mandated the Board of County Commissioners to establish the Citizen's Independent Transportation Trust (CITT). The CITT is the 15-member body created to oversee the PTP. The PTP is a \$17 billion voter-approved capital transportation expansion program funded by a half-percent sales surtax. This program includes the addition of 88.9 miles of new rapid transit lines, which includes the North Corridor Metrorail Extension.

Figure 2-1 depicts the functional relationship between the MDT, CITT and the other key County Departments involved in the Project. These Departments include Office of Capital Improvements (OCI), Office of Strategic Business Management (OSBM), General Services Administration (GSA), Public Works Department, Finance Department, Department of Business Development (DBD), County Attorney's Office (CAO), and Art in Public Places (APP).

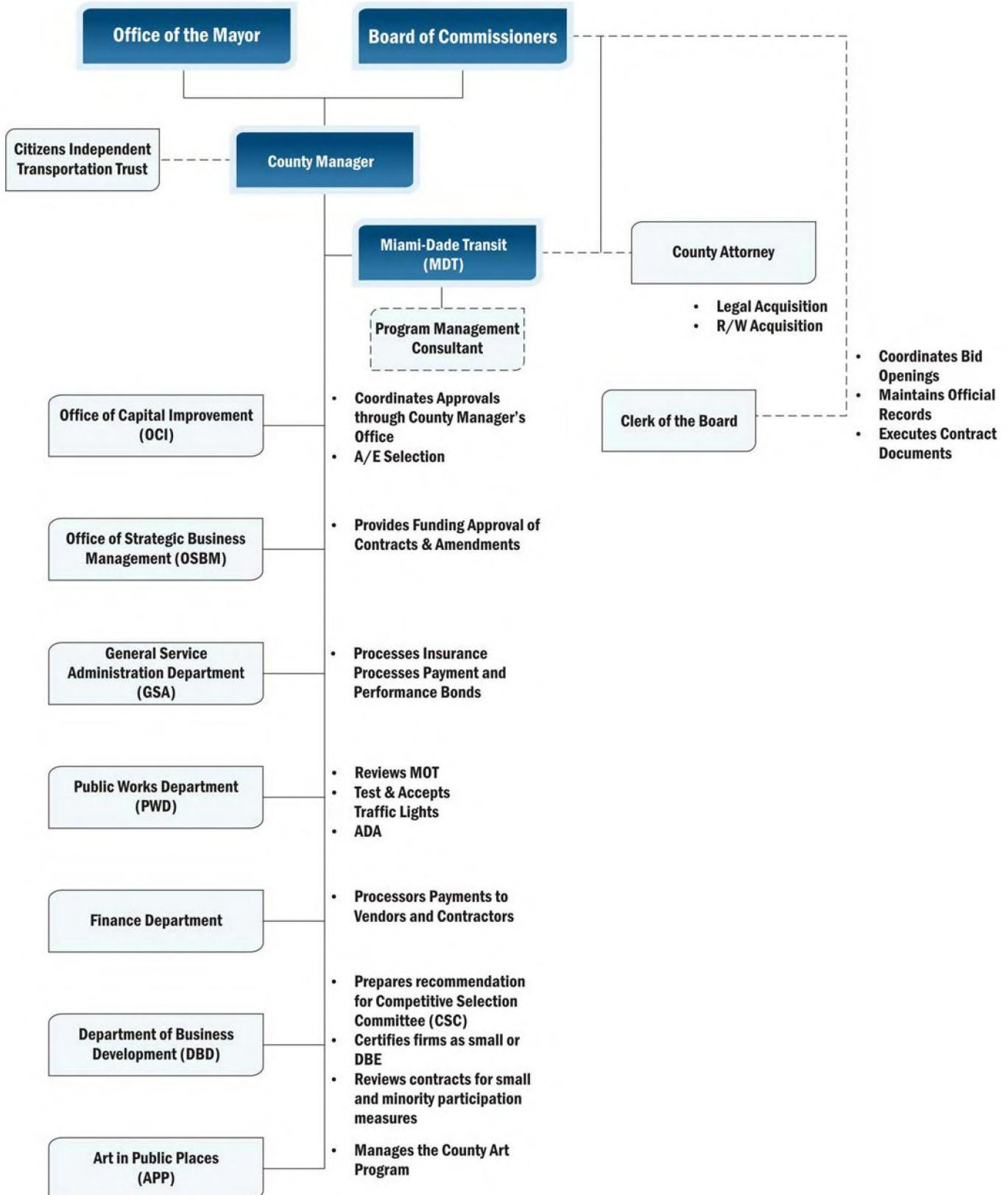
Under the organizational structure as described, MDT is the public entity with overall responsibility for implementation of the Project. This organizational hierarchy assists in the task of closely coordinating transit system development within Miami-Dade County and it provides a means for checks and balances for the citizens of Miami-Dade County.

2.2.2 Key County Departments and Entities

The key Miami-Dade County entities and departments with involvement in the Project are described in the following sections.

2.2.2.1 Board of County Commissioners

The County is served by a 13-member Board of County Commissioners. One County Commissioner is elected from each of Miami-Dade County's 13 districts to serve a four-year



term. Voters from the district in which the commission candidate lives choose commissioners in non-partisan elections. The Commissioners elect a Chairperson, and the Chairperson appoints the members, chairperson and vice chairperson of all standing committees.

The BCC reviews and adopts comprehensive development plans for the county; sets tolls and provides public transportation systems, regulates utilities, adopts and enforces building codes, establishes zoning controls, provides public health facilities, cultural facilities, and housing programs, etc. The Board has delegated the responsibility for the administration and implementation of the Project to the County Manager or his designated representative.

The North Corridor Metrorail Extension will affect BCC Districts 1 and 2.

2.2.2.2 Office of the Mayor

In a January 23, 2007 referendum vote, Miami-Dade County changed to a “strong” or Executive Mayor form of government. The Mayor is elected through a countywide vote and is not a member of the Commission. The Mayor has the power to veto actions of the Commission within ten days of their adoption. The Mayor appoints the County Manager, subject to the approval within 14 days of a majority of Commissioners. Both the Mayor and the Commission have the power to remove a County Manager, requiring a two-thirds vote of Commissioners then in office. Under the executive mayor system, the County Commission would need a two-thirds majority to overrule mayoral appointments and has no say in the firings of the County Manager or department heads.

2.2.2.3 County Manager

The County Manager is the highest-ranking non-elected employee in Miami-Dade County and answers to the Executive Mayor. The Manager is responsible for the day-to-day administration of the County government.

The day-to-day operation of the County Manager’s Office also includes providing overall management and oversight of Miami-Dade Transit’s major transportation programs. The County Manager’s Office provides direction in the planning, construction and implementation of activities for all work associated with the expansion of the existing Metrorail and Metromover systems including stations, garages and bridges.

2.2.2.4 Citizens’ Independent Transportation Trust

The CITT is the 15-member body created to oversee the People’s Transportation Plan funded with the half-percent sales surtax. The powers and responsibilities of the CITT include the following:

- Monitor, oversee, review, audit, and investigate implementation of the transportation and transit projects listed on the expenditure of surtax proceeds by the County under authority of Florida Statute 212.055;
- Assure compliance with any limitations imposed in the levy on the expenditure of surtax proceeds;
- Assure compliance with any applicable federal and state requirements;

- Require monthly reports from the Manager, County agencies and instrumentalities regarding the implementation of the projects funded by surtax proceeds;
- To file a report with the Mayor and the County Commission on a quarterly basis regarding the implementation of the projects funded by surtax proceeds; and
- To monitor, oversee and periodically report to the County Commission on the level of Community Small Business Enterprise (CSBE) and Community Business Enterprise (CBE) firms in contracts funded in whole or in part with surtax proceeds.

2.2.2.5 County Attorney

The County Attorney's Office is an "in-house" civil law firm representing Miami-Dade County. The County Attorney's Office represents the Mayor and Board of County Commissioners. Additionally, they provide counsel and representation to the County Manager, Department Directors and over 25,000 County employees.

The County Attorney's Office provides legal support to MDT and assists with Right-of-Way acquisitions.

2.2.2.6 Office of Capital Improvement

The County Office of Capital Improvements (OCI) provides policy support and analysis for the MDT and other County departments by maintaining a centralized information system that tracks capital improvement projects through all phases. OCI monitors the development of standard construction language, policies and procedures. It is responsible for soliciting architectural and engineering contracts and coordinating their approvals through the County Manager's Office. It is also responsible for the Equitable Distribution Program (EDP) which provides the County with a pool of architectural and engineering firms for miscellaneous design projects that do not exceed \$1 million in construction costs.

2.2.2.7 Office of Strategic Business Management

The Office of Strategic Business Management manages and administers Miami-Dade County's annual budget. They provide support to the County Manager and Department Directors. They are responsible for approving the funding for contracts and amendments.

2.2.2.8 General Services Administration Department

The General Services Administration provides operational support to MDT by providing assistance in the coordination of necessary documentation from contractors. They process insurance and payment and performance bonds.

2.2.2.9 Public Works Department

The Miami-Dade Public Works Department (MDPWD) is responsible for providing roads, bridges, sidewalks, street signs, pavement markings, traffic lights, and storm water drainage facilities for the citizens of Miami-Dade County. They also support MDT by reviewing roadway and maintenance of traffic plans, providing traffic lights, and assuring Americans with Disabilities Act (ADA) compliance of contracts.

2.2.2.10 Finance Department

The County Finance Department provides centralized financial, accounting, cash investment, and debt management services; collects taxes and services delinquent accounts; and through debt issuing authorities, issues tax exempt bonds for affordable housing, hospitals and educational institutions. They provide support to MDT and other County Departments by processing payments to vendors and contractors.

2.2.2.11 Department of Business Development

The Miami-Dade County Department of Business Development (DBD) works to increase the participation of small businesses on County contracts. The department coordinates and implements various small business programs to provide business opportunities and technical assistance to aid these firms in their growth and contribution to South Florida's economy. DBD also administers the federally-funded Disadvantaged Business Enterprise (DBE) Program. They are responsible for:

- Certifying firms as small or disadvantaged-owned businesses
- Reviewing proposed County purchases and contracts to determine if small or minority participation measures are to be applied
- Reviewing affirmative action plans (AAP) and monitoring contracts which include small or minority business participation measures to help ensure compliance with program regulations and guidelines.
- Reviewing construction contracts to determine if workforce goals are to be applied.

2.2.2.12 Art in Public Places

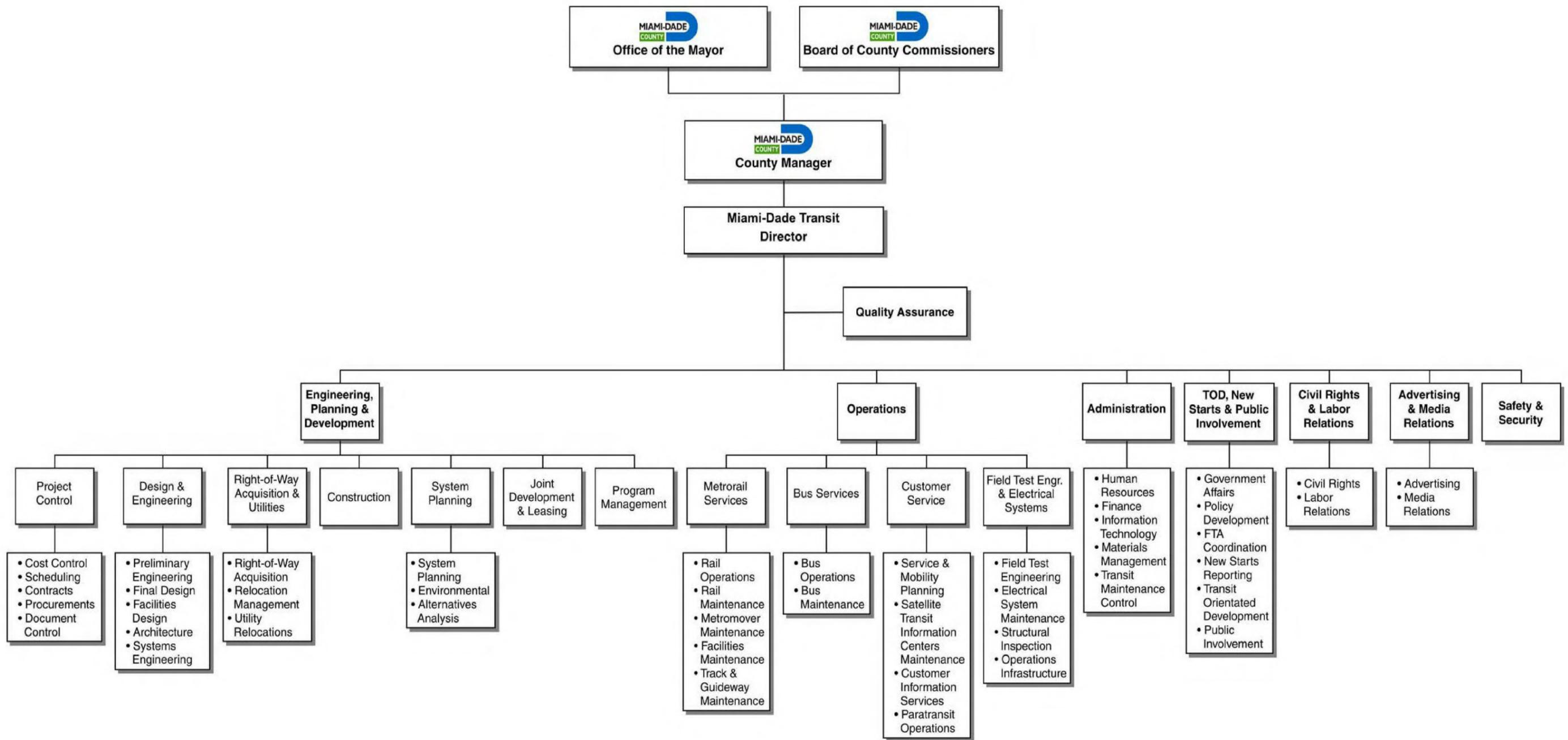
Miami-Dade Art in Public Places is the Agency responsible for managing the County Public Art Program. Miami-Dade Art in Public Places was established in 1973 with the passage of an ordinance allocating a minimum of one and one half percent of construction cost of new county buildings for the purchase or commission of artworks. Art in Public Places is overseen by a citizens' Trust appointed by the Board of County Commissioners. The Trust receives recommendations on acquisitions and commissions from the Professional Advisory Committee, an independent group of arts professionals. Refer to Chapter 14.0 for a discussion of the Public Art Program for the Project.

2.2.3 Agency Organization

A detailed functional organization chart, showing all key MDT positions, is shown in Figure 2-2. The organization is comprised of seven main divisions that are all involved to varying degrees in the planning, design and construction of the Project. Overall program oversight and coordination between the divisions is the responsibility of the MDT Director. Further definition of each division's role is provided in the following sections.

2.2.3.1 Miami-Dade Transit Director

The Director of Miami-Dade Transit is responsible for the overall allocation of funds and resources to carry out the Project concurrent with operating the existing rail, bus,



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peoplemover and paratransit system; making design, construction and procurement-related policy decisions and advancing staff recommendations to the County Manager and BCC for action; receiving and implementing the policies of the BCC; maintaining liaison with heads of other agencies involved in the Project and elected officials; and is ultimately responsible for the safety and security of the System and the completed Project.

2.2.3.2 Quality Assurance

Quality Assurance is responsible for the quality oversight of the Project. It is responsible for development and monitoring compliance of the MDT quality assurance and quality control (QA/QC) program for the Project; reviewing and approving all Contractor and Consultant Project quality plans; ensuring Project compliance with FTA quality requirements; and performing quality assurance audits.

2.2.3.3 Engineering, Planning and Development

Engineering, Planning and Development (EP&D) is responsible for the planning, design, and construction of MDT capital improvement projects. It is comprised of seven main divisions including Program Management, Joint Development and Leasing, System Planning, Construction, Right-of-Way Acquisition and Utilities, Design and Engineering, and Project Control Division.

The Program Management Division is responsible for overseeing the design management of the Corridors projects included in the PTP Program. These include the MIC/Earlington Heights Connector, East-West Corridor and the North Corridor Metrorail Extension. It is also responsible for FTA coordination on technical issues.

The Joint Development and Leasing Division is responsible for planning, directing and supervising activities pertaining to the joint development and leasing of MDT transit properties.

The System Planning Division is responsible for managing and coordinating planning studies related to new projects. This includes system planning, corridor planning, alternatives analysis, capital project development, land use planning, environmental studies, and other related work.

The Construction Division is responsible for managing the construction of MDT's construction projects from the date of award of each construction contract until contract acceptance. It will also administer the CE&I Consultant contract for the Project.

The Right-of-Way Acquisition and Utilities Division is responsible for overseeing the acquisition of all property for the Project in conformance with the approved Real Estate Acquisition Management Plan. It is also responsible for oversight and coordination of all private and public utility relocations and agreements throughout the development of the Project.

The Design and Engineering Division provides professional design and technical oversight for the management and development of MDT's capital improvement projects.

The Project Control Division is responsible for all project control elements as related to scope, schedule, and budget as well as contract administration. These include cost control, cost codes, schedule development and control, document control, and progress reporting. Contract administration elements include contracting for professional service, construction, procurements, and administration of MDT contracts.

2.2.3.4 Operations

Operations is responsible for operations, maintenance and system elements of MDT's rail, bus, peplemover, and paratransit systems. For the North Corridor Metrorail Extension it is responsible for procurement of the new heavy rail vehicles required to operate the service. It is also concerned with the plan for operations and maintenance of the Project, the design provisions made to facilitate operations and maintenance and the interfaces between the Project and rail and bus operations in several respects (integrated service, fares and transfers, startup, and training, etc.).

2.2.3.5 Administration

Administration is responsible for MDT's financial planning and annual budgets, grant applications, accounting, audits, staff expansion and related human resource matters. It is also responsible for providing information technology support to all MDT divisions, materials management, and transit maintenance control services.

2.2.3.6 Office of Government Affairs and New Starts Management

The Office of Government Affairs and New Starts Management is responsible for government affairs, policy development, FTA coordination on policy issues, Section 5309 New Starts reporting, transit orientated development, and community relations/public involvement. The office directly manages the operations of four program sections responsible for providing an array of services and programs. The four sections are:

1. The Government Affairs Section serves as a liaison between the MDT and all levels of government. The unit is organized into the areas of Federal Relations, State Relations and County and Local Relations. This section represents the MDT by building and maintaining relationships at the federal, state and local levels, and works to provide information and assistance to these entities when needed. The section coordinates transportation programs, funding requests and legislative initiatives.
2. The Project Development Section prepares and submits the annual New Starts Criteria Report to the Federal Transit Administration. This group also has responsibilities for federal policy coordination, project financial planning, and travel demand forecasting.
3. The Community Relations and Communication Section handles outreach activities to build partnerships between the office and the public. The section organizes meetings and public hearings; recruits, organizes and facilitates community advisory groups; produces publications and mailings, all targeted at providing the community and employees with current information about the Peoples Transportation Plan projects and initiatives including electronic communications and websites used by the public.
4. The Regional Development Section is responsible for MDT's Transit Oriented Development (TOD) effort and real estate marketing strategies. The TOD staff work

with cities and developers on mixed-use projects to strategically place housing, employment and shopping near transit services with the goal of reducing residents' dependence on driving and getting more vehicles off the road.

2.2.3.7 Civil Rights and Labor Relations

The Office of Civil Rights and Labor Relations is responsible for developing, implementing, and monitoring MDT's fair employment practices including Americans with Disabilities Act Compliance, Disadvantaged Business Enterprises and Contracts Compliance, Labor Relations, and Equal Employment Opportunity.

2.2.3.8 Advertising and Media Relations

Advertising and Media Relations is responsible for producing public information materials and for promoting awareness and use of MDT services. The division oversees the production of printed materials, customer, and public information and coordinates marketing and advertising programs. This division also supports media relations and represents the agency to the news media.

2.2.3.9 Safety and Security

The Office of Safety and Security is responsible for developing and implementing the safety and security programs of MDT. It is responsible for the establishment and implementation of comprehensive safety and security programs during the design, construction and operational phases of the Project.

2.2.4 MDT Project Management Organization

Building upon the principles outlined above in Section 2.1, Figure 2-3 shows MDT's organization structure adopted for the North Corridor Metrorail Extension. This organization recognizes the size, importance and nature of the Project, and responds by establishing dedicated resources for the Project, supplemented by part-time support from throughout the Engineering, Planning and Development Department. Ultimate responsibility for the successful completion of the Project rests with the Department's Deputy Director. Day-to-day coordination of all Project activities will be the responsibility of a full-time dedicated MDT Project Director.

Assisting with the Project will be other groups of professionals from elsewhere within the Agency and other County departments as described in Section 2.2.2. This "matrix" organization takes advantage of internal agency specialist in part-time support of the Project, facilitates leveraging of existing, unique system knowledge to the Project, and minimizes the need to staff dedicated Project positions.

Essentially, management organization for the Project will be comprised of Miami-Dade Transit and Program Management Consultant staffs working under the overall direction of the Deputy Director.

Table 2-1 contains a responsibility matrix showing key Project functions, areas of prime responsibility and support responsibility among the various MDT Divisions, County Departments and the PMC.

A Design Consultant has been secured to provide preliminary engineering, final design and design services support during construction for the Project. The PMC will be responsible for day-to-day technical management of the Design Consultant while MDT will be responsible for administrative and contractual management. In addition, a single Construction Engineering and Inspection Consultant will be procured to support construction management activities. This environment will provide effective project management and control throughout final design and construction. A more detailed discussion of the use of consultants on the Project is contained in Section 2.5.

2.3 Project Staffing

The North Corridor Metrorail Extension project team is composed of both full-time and part-time support from several MDT Departments with primary support coming from the Engineering, Planning and Development Department. The total number of staff engaged in the Project at any one time will vary with the phase in progress and the specialties required for that particular phase.

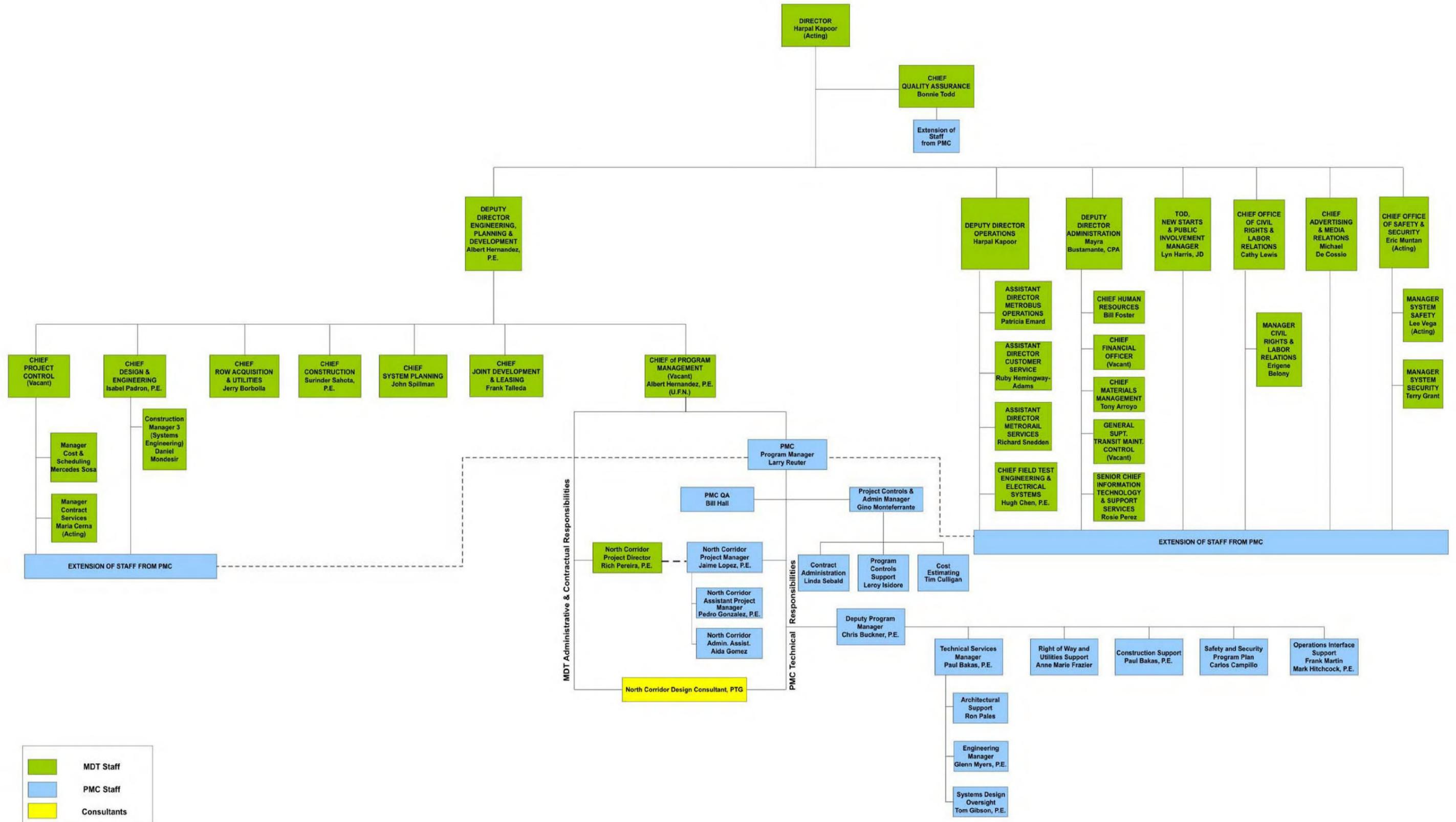
MDT's approach to staffing the Project will be to supplement current capabilities and fill voids in abilities in the current MDT staff. It is anticipated that some promotion-from-within will occur to fill Project staffing requirements. However, it is expected that some of the management and supervisory positions for the design and construction phases of the Project will have to be filled by new hires. The lead positions will require recruitment on a statewide, regional and national basis. All recruitment efforts and hiring will reflect the policies of MDT's Equal Employment Opportunity Program, the goals and timetable of the Affirmative Action Program, the stipulations of applicable labor agreements, and the National Section 13 (c) Employee Protection Agreement.

There will likely be some growth in MDT staff to meet changing needs in the future, but it is also anticipated that a substantial amount of work will be provided through Architectural and Engineering (A&E) consultant and construction engineering and inspection contracts.

For the design and construction phases of the Project, three key consulting teams will augment MDT staff. These include the Program Management Consultant, Design Consultant, and the Construction Engineering and Inspection Consultant. These contracts are described further in other sections of this Chapter.

Consultant positions will be filled in accordance with the hiring policies of the consultant firm filling the position.

Appendix B presents the qualifications and experience of the key staff responsible for managing the Project. This material is presented in order to demonstrate the technical capacity of the staff assigned to the Project.



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Table 2-1. North Corridor Extension Project Responsibility Matrix

Function	Program Management Consultant	Miami-Dade Transit												Miami-Dade County Legal Dept.
		Program Management Division	Construction Division	Design & Engineering Division	Systems Engineering Section of Design & Engr.	Project Control Division	Operations	Quality Assurance	Office of Safety & Security	Office of Gov't Affairs & New Starts	System Planning Division	Right-of-Way & Utilities Division	Grants Admin.	
Environmental Impact Statement	S	S	S	S	S	S				S	R	S	S	
Design Oversight - Technical	R	S	S	S	S	S	S	S	S			S		
Quality Assurance/Quality Control	S	S	S	S	S	S	S	R	S		S			
Construction Management	R*	S	S	S	S	S	S	S	S			S		
Design Oversight – Contractual & Admin.	S	R	S	S	S	S	S	S	S					
Operations Planning	S	S	S	S	S	S	R				S			
Transit System Planning	S	S		S						S	R	S		S
Value Engineering	R	S	S	S	S		S	S						
Safety & Security	S	S	S	S	S		S		R					
Systems Integration	R*	S	S	S	S		S		S					
Configuration Management	R	S	S	S	S	S		S						
Document Control	R	S	S	S	S	S		S						
Contract Administration	S	R	S	S	S	S		S						
Legal/Claims	S	S	R	S		S			S					S
Federal Programs	S	S				S				S	S		R	
Construction Safety	R*		S		S			S	S					
Start-Up	S	S	S		S		R							
Right-of-Way Acquisition	S	S										R		S
FTA Technical Coord.	S	R								S				
FTA Policy Coord.	S	S								R				
Financial Planning	S	S								R				

R = Responsible S = Support R* = Functional area of responsibility that will involve other entities such as the Design Consultant, CE&I Consultant and Contractors

NORTH CORRIDOR METRORAIL EXTENSION

2.4 Key Position Descriptions and Responsibilities

Director-level and other selected key MDT and PMC manager-level position descriptions and responsibilities are summarized in this section.

2.4.1 Deputy Director of Engineering, Planning and Development

The Deputy Director of Engineering, Planning and Development's function is to oversee the overall implementation of the Project. The Deputy Director is ultimately responsible for Project activities related to planning, design, right-of-way acquisition, construction, schedule, budget, and for bringing the Project to a successful conclusion on time, within budget, and in accordance with standards of quality.

The Deputy Director is responsible for reporting to upper management and his responsibilities include:

- Final approval of the Administrative and Technical configuration within the Project including: project work implementation packages, cost control, schedule networks, and budgets for the Project team.
- Authorization of expenditure for labor and direct expenses for tasks that are the responsibility of Miami-Dade County or its individual consultants.
- Approval and acceptance of changes in accordance with delegation of authority that the BCC may grant;
- Approval of all work completed in accordance with the Project planning and quality requirements.
- Approval of all Project invoices to the County for payment.
- The Deputy Director interfaces with the following entities:
 - County Manager's Office and the Director of Miami-Dade Transit.
 - Division chiefs working with him who have direct responsibility for the work.
 - Governmental agencies such as: FTA, Florida Department of Transportation (FDOT) and City municipalities.
 - Various County Departments such as: Public Works, GSA Risk Management, County Attorney's Office, Department of Environmental Resources Management (DERM), the Department of Business Development and the Office of Capital Improvement.

Because of the magnitude of the Project, the Deputy Director has delegated certain responsibilities to the Chief of Program Management and appointed a Project Director to manage the day-to-day coordination and integration activities of the Project.

2.4.2 Chief of Program Management

The Chief of Program Management reports to the Deputy Director of Engineering, Planning and Development and is responsible for overall management of the transit corridor projects for the People's Transportation Plan including the North Corridor Metrorail Extension. The Chief of Program Management's responsibilities include:

- Serving as the Contract Officer's Representative (COR), as delegated by the Deputy Director of Engineering, Planning and Development.
- Responsible for maintaining all corridor projects on schedule, budget and quality.
- Responsible for integrating all aspects of the Project regardless of the phase of the Project.
- Overseeing the Project Director and Design Consultant in the preparation of complete contract documents (plans and specifications) for the design, procurement and construction of the Project.
- Management of the Program Management Consultant as it relates to complex task assignments required for supporting the development of the Project.
- Supervise the review of contract drawings, shop drawings and answering contractor's request for information (RFI).
- Develop, implement and manage the annual budget for the Division.
- Reviews design criteria and ensure compliance with Local, State and Federal Regulations.
- Approves the *Quality Assurance Program Plan (QAPP)* for the Project.
- Coordinates Project elements with third party members such as permitting agencies and utility companies.

2.4.3 Project Director

The Project Director reports to the Chief of Program Management and is responsible for MDT's day-to-day coordination and integration functions required to assure the achievement of the overall Project objectives. The Project Director ensures integration and coordination between dedicated MDT Project staff and supporting agency staff. The Project Director's specific responsibilities include:

- Participates with the Chief of Program Management and Deputy Director for Engineering, Planning and Development and others to establish management policy.
- Monitors work plans for all activities needed for successful completion of the Project.
- Manages the administrative and contractual aspects of the Design Consultant's work.
- Provides day-to-day oversight of the PMC's work and authority to redirect the PMC if necessary.
- Represents the Project to external technical interests including local jurisdictions' engineering departments, permitting authorities, FDOT, and railroads.
- Ensures the safety and security requirements of the Project are met.
- Ensures implementation of the QAPP.
- Ensures Project compliance with FTA requirements.
- Coordinates closely with the PMC Project Manager.

2.4.4 PMC Project Manager

The PMC Project Manager, acting under the terms of the authority delegated by MDT to the PMC, is responsible for the management and oversight of all technical activities being performed by the Design Consultant for the Project. He manages, on a day-to-day basis, the technical activities conducted by the Design Consultant in accordance with the Design Consultant's contract scope of work. He monitors progress and compliance with MDT stated policies, design criteria and standards.

The PMC Project Manager provides technical management and oversight, and facilitates the resolution of technical issues of the Design Consultant in their preparation of engineering drawings, specifications, capital cost estimates, technical reports, and other Project deliverables.

The Design Consultant reports to and through the PMC Project Manager on a day-to-day basis for technical management regarding reviews, approvals, design changes, and technical interfaces with MDT.

The PMC Project Manager is the primary technical interface and reports directly to and through the PMC Program Manager on all Project technical aspects of scope, progress, schedule and capital cost to the MDT Chief of Program Management on a weekly basis or more frequently as necessary.

The PMC Project Manager reports to the PMC Program Manager and coordinates closely with the MDT Project Director.

2.4.5 Chief of Project Control

For the North Corridor Metrorail Extension, the Chief of Project Control is responsible for providing oversight on all project control elements as related to scope, schedule, and budget including cost control, cost codes, schedule development and control, document control and progress reporting. This position oversees the budget, reviews schedule of progress and checks billings and invoices for accuracy and reasonableness prior to forwarding them for approval and payment. Under the direction of the Deputy Director of Engineering, Planning and Development, the Chief of Project Control provides all necessary support to oversee and support the MDT administrative functions such as the monthly progress reports, PTP monthly coordination meetings and related tasks. Contract administration responsibilities of this position include contracting for professional service, construction, procurements, and administration of MDT contracts.

2.4.6 Chief of Design and Engineering

For the North Corridor Metrorail Extension, the Chief of Design and Engineering provides oversight on all technical criteria aspects of the Project's Preliminary Engineering and Final Design phases including elevated structures to support tracks, passenger stations, traction power and train control rooms, parking facilities, storage facilities, and the handling of architectural and ADA related technical compliance issues. This person reports to the Deputy Director of Engineering Planning and Development.

The major responsibilities of the Chief of Design and Engineering are as follows:

- Establishment and maintenance of the design criteria and standards for the preparation, review and approval of design and construction drawings;
- Participation in design reviews;
- Participation in Value Engineering activities of MDT Design and Engineering staff;
- Participation in constructability reviews;
- Provide assistance as required for engineering services during the construction phase of the Project;

2.4.7 Systems Engineering Manager

The Systems Engineering Manager reports to the Chief of Design and Engineering and is responsible for supporting the design oversight efforts of the Project as they relate to the systems elements of the line sections, stations, and storage yard expansion. This position is also responsible for coordinating with the MDT Operations Division during the design, manufacturing, and acceptance of the heavy rail vehicles to be procured for the Project by the Operations Division.

The major duties of the Systems Engineering Manager include:

- Participation in the technical design review process conducted during the systems design process.
- Oversight of systems design and installation, testing, start-up and acceptance activities managed by the PMC.
- Supports the MDT Project Director in the administration of the systems contracts.
- Oversight of development and implementation of the start-up and pre-revenue operations plans and procedures prepared by the PMC in close coordination with MDT Maintenance and Operations staff.
- Oversight of the start-up phase of the Project. In this effort, the Systems Engineering Manager will oversee consultant staff and coordinates activities with MDT Maintenance and Operations staff.

2.4.8 Chief of Right-of-Way Acquisition and Utilities

The Chief of Right-of-Way Acquisition and Utilities is responsible for all property acquisition and utility coordination activities necessary to support construction of the Project. Specific duties include managing of the right-of-way acquisition process and schedule, managing utility coordination and developing utility relocation agreements, and managing related Project permits and other related approvals. This position requires coordination with property owners, utility companies and local jurisdictions. The Chief of Right-of-Way Acquisition and Utilities is responsible for the day-to-day management of MDT for these activities. This position will report to the Deputy Director of Engineering, Planning and Development and works closely with the Project Director to resolve any design issues related to right-of-way acquisition and utility relocation.

2.4.9 Chief of Construction

For the North Corridor Metrorail Extension, the Chief of Construction provides oversight on the Project construction from the date of award of each construction contract until contract acceptance. This position will also be responsible for managing the contractual and administrative elements of the CE&I Consultant contract. The day-to-day technical management of the CE&I Consultant has been assigned to the PMC.

Prior to the construction contract awards, the Chief of Construction will participate in constructability reviews and special construction-related contractor requirements. Subsequent to the Final Acceptance of each contract, the Chief of Construction, will be responsible for enforcing compliance of warranties, maintenance provisions, contract documentation, as-built drawings, DBE compliance and contract close-out. (Although some of these areas are the responsibility of others, the Chief of Construction is responsible for enforcing those contractual requirements in the Contract).

2.4.10 Chief of System Planning

The Chief of System Planning reports to the Deputy Director of Engineering, Planning and Development. This position leads the System Planning Division and supervises managers for planning and design studies. The Chief of System Planning provides leadership, management and staff supervision for all future MDT project development including system planning, corridor planning and concept development, environmental studies, environmental mitigation and monitoring, and conceptual engineering studies.

2.4.11 Deputy Director of Operations

The Deputy Director of Operations oversees the functions of Rail Services, Bus Services, and Field Engineering and Systems Maintenance (FESM). Each will have a vital role throughout the life of the Project.

The Rail Services Division is responsible for Rail Operations, Vehicle Maintenance, Guideway Maintenance and Facilities Maintenance. The Bus Services Division is responsible for Bus Operations and Bus Maintenance. The Field Engineering and Systems Maintenance Section is responsible for:

- Serving as communications link between the design consultants and MDT operations and maintenance.
- Serving as Communication liaison on all requirements for operational needs to operate new system.
- Providing technical information on existing systems for consistent design of new systems to ensure compatibility.
- Development and implementation of the start-up and pre-revenue operations plans and procedures in close coordination with Design and Engineering Division staff.
- Integrated Testing and Start-up of the system.

2.4.12 Special Assistant to the Director in the Office of Government Affairs and New Starts Management

This position reports to the MDT Director and oversees the Transit-Orientated Development (TOD) efforts, Section 5309 New Starts Criteria reporting, Community Relations, Government Affairs, and FTA coordination on policy issues for the Project. This position is responsible for:

- Overseeing preparation of MDT’s annual Section 5309 New Starts reports to FTA for the Project.
- Serving as the MDT liaison on policy issues with FTA and the Program Management Oversight Consultant for the Project.
- Overseeing MDT’s Transit Oriented Development (TOD) effort and real estate marketing strategies. The TOD staff work with cities and developers on mixed–use projects to strategically place housing, employment and shopping near transit services with the goal of reducing residents’ dependence on driving and getting more vehicles off the road.
- Providing a plan for and leads all public and agency involvement activities; developing a business development assistance plan; and working with local elected officials and elected officials of other jurisdiction throughout the county, region and state to coordinate transportation programs, funding requests and legislative initiatives.

2.4.13 Chief of Quality Assurance

The Chief of Quality Assurance reports to the MDT Director and is responsible for the development and monitoring of a Project *Quality Assurance Program Plan* that meets FTA requirements. This position is responsible for ensuring the effective implementation of Project QAPP through performance of internal and external quality assurance audits and surveillances. This position reviews and approves all Consultant and Contractor Project Quality Plans to assure that they meet the requirements of the QAPP, this PMP Plan and FTA QA/QC requirements. The Chief of Quality Assurance will regularly report on the status and adequacy of the Project QA/QC program to the Director.

The Chief of Quality Assurance has independent authority to monitor, audit and evaluate all Project activities affecting quality to ensure that the full intent of project requirements are met

Additional responsibilities of the Chief of Quality Assurance include:

- Provides quality assurance oversight and monitoring for compliance of project engineering procurement, construction, inspection and testing activities, and government regulatory requirements with the QAPP.
- Ensures follow-up and solutions to quality problems, as identified, through management of the corrective action system.
- Participates in reviews of design, contract, and procurement documents to verify that quality characteristics have been considered.
- Ensures that quality activities are conducted as planned.
- Participates in the evaluation and disposition of non-conformances, deviations, and waivers involving potential changes to design and quality requirements.

- Ensures quality audits of project and management activities having an effect or potential effect on project quality are planned, scheduled and performed as defined in the QAPP.

2.4.14 Chief of Safety and Security

The Chief of Safety and Security reports to the MDT Director and is responsible for the maintenance and implementation of the System Safety Program Plan (SSPP), System Security and Emergency Preparedness Plan (SSEPP), Safety and Security Certification Plan (SSCP); and a Safety and Security Management Plan (SSMP) for the Project. The Chief of Safety and Security is also responsible for development of safety and security rules and procedures and overseeing safety-related tests, inspections, program audits, training and emergency drills.

The Chief of Safety and Security has independent authority to monitor, audit and evaluate all Project activities affecting safety to ensure that the full intent of project requirements are met. The Chief of Safety and Security reports directly to the MDT Director on the status and effectiveness of the construction safety certification programs.

Additional responsibilities of the Chief of Safety and Security include:

- Providing advice, assistance and coordination to various Project Groups, and developing and maintaining safety standards.
- Responsible for monitoring the Safety Certification of the System.
- Responsible for monitoring the contractors' compliance with the construction safety manual that forms part of all contract documents.

2.5 Use of Consultants

For the North Corridor Metrorail Extension, MDT prefers to perform as much management, engineering and administrative work as practical with MDT's own forces. However, given the magnitude of the Project, MDT has decided to use consultants to provide support to the Project in the following circumstances:

- For specialized expertise that is not available within MDT's internal staff;
- For short-term staff augmentation to assist MDT staff during peak work periods;
- For long-term services in support of major Project elements which can be more efficiently performed by outside services; and
- For independent assessment of Project events and conditions where MDT may benefit from outside perspective and objectivity.

2.5.1 Program Management Consultant

The PMC reports to the Chief of Program Management and acts as specialized support staff for MDT and those other County Departments engaged in the People's Transportation Plan project work. The PMC is responsible for services that shall be exclusive of design/and or construction inspection services but may include the following:

- Short and Long Range Transportation Planning: Assist in the preparation of feasibility studies for future transit projects. The PMC will evaluate alignments and technologies and recommend the most effective solution to MDT for its review and approval. The studies may include preparation of conceptual designs, traffic impacts, capital costs and operating costs necessary to assist MDT in determining whether or not to proceed with the subject project.
- Facilities Planning: Develop solutions to operational problems by recommending facility configuration and locations. This includes development of conceptual design for MDT's review and approval.
- Project Programming: Develop project scopes of work, budget and schedules for future transit projects and facilities subject to MDT's review and approval.
- Traffic Congestion Studies: Perform or oversee the performance by others of transit and highway operational studies to accelerate traffic flow and relieve congestion.
- Oversight of Alternatives Analysis and Major Investment Studies: Provide oversight of AA/MIS services performed by others and prepare, if requested by MDT, portions of AA/MIS.
- Design Oversight: Provide oversight of design consultants. Review the technical standards for all design documents to be produced by other design consultants throughout the program. Conduct reviews of environmental impact statements, preliminary engineering and final design and review designs to determine their suitability to construct, bid, operate, and maintain the facilities including formal constructability reviews, value engineering, and make recommendations as appropriate. These design reviews will mitigate change orders during construction. Establish and manage scope control procedures. Establish and manage criteria to evaluate design alternatives. Recommend cost-effective alternatives to MDT. Enforce the implementation of the MDT design criteria.
- Oversight of Construction, Engineering and Inspection Consultants: Provide oversight of Construction, Engineering, and Inspection and Construction Management consultants. Among the activities are oversight of resident engineering services, inspection services, scheduling and budget control.
- Quality System Planning and Implementation: Assist in the development of a Quality Management System that is applicable to the Operating Systems as well as Engineering and Construction projects under the People's Transportation Plan. The Quality Assurance Plan will provide a systematic approach to address all Quality Assurance elements, including management responsibilities, document quality system, configuration management, design control, document control, purchasing, process control, inspection and testing, training, corrective actions, and process improvements. Support QA Audits, as required, of all project participants in accordance with FTA requirements and operating areas as required by the MDT Quality Assurance Division.
- Design Criteria and Standards: Review and revise, as required, existing design criteria, standard and directive drawings, and construction specifications to comply with latest codes and regulations.
- Safety and Security: Prepare as required a System Safety Program Plan (SSPP), System Security and Emergency Preparedness Plan (SSEPP), Safety and Security Certification Plan (SSCP); and a Safety and Security Management Plan (SSMP) for the Project.

Support MDT as required in the development of safety and security rules and procedures and overseeing safety-related tests, inspections, program audits, training and emergency drills. Develop and implement the safety certifications program and the system safety program plan for the different projects included in the PTP as required by State and Federal agencies.

- **Construction Safety:** Provide oversight of the safety programs of the various construction contractors. Construction safety will be the responsibility of the construction contractors. Update the construction safety manual as required.
- **Testing and Start-up:** Assist County staff in preparing the system start-up plan. Provide oversight of the test and start-up activities of the contractors by reviewing test procedures, spot-checking test results, developing and implementing the safety certification program and safety certifying the system prior to opening for revenue service.
- **Value Engineering:** Coordinate with other Consultants performing the various designs. Perform value engineering in accordance with FTA and County requirements. Assist MDT in deciding which value-engineering measures identified during the Value Engineering process to incorporate.
- **Project Control:** Develop and maintain a project Master Project Schedule using Primavera Project Planner. This schedule will integrate all project activities, such as environmental efforts, preliminary engineering design, construction, property acquisition, etc. The Master Schedule will also be used to create a Master Summary Schedule focused on program and project milestones and interface points. The Master Schedule shall be linked to detailed schedules prepared by other consultants and contractors.
- **Cost Control Management System (funding sources, cash flow projections, budgets, and payment control):** The PMC will develop and maintain the cost control system, with oversight by the Project Control division, to trace and forecast costs to ensure budget adherence and update the Pro forma as required.
- **Contract Administration:** Provide MDT support services in the selection of design consultants and contractors. Assist MDT in the preparation of contracts, contract modifications, change orders, amendments, etc. for the other project consultants and contractors. Recommend innovative contracting methods when appropriate i.e. design/build incentives, etc. Assist MDT with the preparation of the non-technical specifications, including selection criteria, and assist MDT during the bid and award cycle. Assist MDT in the development of scopes-of-work for all contracts.
- **Estimating:** Prepare control estimates for all consultant selections and validate independent construction and project level estimates for design submissions. Develop estimated cost of proposed rail extensions and other projects to comply with the Pro forma. Perform cost and price analysis in accordance with FTA requirements.
- **Right-of-Way Acquisition and Relocation Activities:** Assist MDT staff in coordination with other County Departments for the successful completion of Right-of-Way (ROW) Engineering, Real Estate Acquisition and Residence/Business relocation activities. Ability to provide ROW acquisition services as required.
- **Utility Relocations:** Assist MDT staff in coordination with utility companies for the successful completion of utility relocations.

- **Diverse Technical and Engineering Skills:** Perform miscellaneous engineering services in support of the PTP as directed and authorized by MDT when the County Manager, or his designee, has determined that it would be in the best interest of the PTP and that the services could not be expeditiously or efficiently performed by the County's Equitable Distribution Program (EDP).
- **Bus Route Planning:** Perform bus route planning as required.
- **Operational and Maintenance Planning:** Perform analysis of existing system to recommend optimum operational options. Study integration of future extensions with existing system and recommend solutions to operational and maintenance issues. Prepare and update bus and rail fleet management plans.
- **Project Management Plans:** Prepare and maintain Project Management Plans (PMP) for all projects in accordance with FTA requirements.
- **Configuration Management and Document Control:** Revise existing Configuration Management procedures to address the needs of the Project. Maintain a computerized document control system. Establish Computer Aided Design (CAD) standards for the PTP compatible with County Information Technology standards and protocols. Ensure that as-built drawings are prepared for each project and that they are stored using methods approved by MDT.
- **Claims Administration:** Review and analyze all contractor claims to assist MDT in the timely resolution of same and make recommendations on issues of design errors and omissions. The PMC will provide expert testimony as required.
- **Preparation of New Starts Report:** The PMC may be required, with assistance from MDT, to prepare the 5309 New Starts Report on the transit element of the Locally Preferred Alternative (LPA). Technical assistance shall include but not be limited to the following tasks:
 - Calculate and assemble Mobility Improvement data;
 - Calculate and assemble Environmental Benefits data;
 - Calculate and report Operating Efficiency data;
 - Calculate and report Cost Effectiveness;
 - Calculate and report User Benefits data;
 - Describe, calculate, and report Transportation Supportive Land Use and Future Patterns, and other documentation as necessary.

The Consultant may be authorized to update the New Starts Report yearly or as required by FTA regulations to maintain the project in a nationally competitive range until the execution of a Full Funding Grant Agreement with FTA

- **Full Funding Grant Agreement (FFGA):** The PMC may be required to assist MDT in the negotiations for Full Funding Grant Agreements with FTA.
- **System Safety Program Plan (SSPP) and Safety Certification Program:** The PMC will be responsible for preparing each document under the general direction of the Office of Safety and Security.

2.5.2 Planning Consultant

The Planning Consultant reports to the MDT Planning Project Manager and is responsible for certain tasks associated with the preparation and submittal of an SDEIS and subsequently a revised FEIS. Tasks will include Transit Analysis, Capital, Operating and Maintenance Cost Estimates and Environmental Analysis/Impacts.

2.5.3 Design Consultant

The Design Consultant reports to the PMC Project Manager. The PMC Project Manager coordinates and resolves all technical issues and coordinates with the MDT Project Director to resolve administrative and contractual issues. The Design Consultant will provide design services in three main areas. These include the following:

- Preliminary and final design of the Project's fixed facilities;
- Preliminary and final design of the Project's systemwide elements; and
- Engineering services during construction for both fixed facilities and systemwide elements.

Fixed facilities design includes the design of civil and structural facilities, trackwork, utilities, stations, and landscaping. Systems design includes preliminary and final design of the Project's electrifications system, train signal system, train-to-central control communications system, fare collection, and storage yard revisions. Vehicle procurement for the Project will be managed by the MDT Operations Division. Engineering services during construction includes activities such as responding to requests for information, shop drawing review, and review of contractor value engineering and cost reduction proposals.

2.5.4 Construction Engineering and Inspection Consultant

The CE&I Consultant will report to the PMC and will provide MDT with staff augmentation during the fixed facilities construction phase, including resident engineering, office engineering and inspection services. Refer to Section 10.1.4 for a detailed discussion of the role and responsibilities of the CE&I Consultant.

2.6 Interface with Other Agencies

Final design and construction of the North Corridor Metrorail Extension will require the continuation of interface by MDT and its consultants with other agencies. As part of the planning and design development process, staff has built relationships with the affected agencies and these relationships will continue into the next phase of the Project. Depending on the issue being addressed, regular and ad hoc meetings have occurred between senior project staff and both private and public entities throughout the design development process phase of the Project. The continuation of these meetings will be critical to the success of the Project through final design and construction.

The MDT Director will have the ultimate responsibility for policy level interface between MDT and other agencies. Project level interface will be the responsibility of the Deputy Director of Engineering, Planning and Development with most of the day-to-day contact

provided by the Project Director or other designated staff for the Project, depending on the issue.

Formal technical agreements with each of the affected private and public entities will be executed where required. The agreements will list roles and responsibilities, requirements, day-to-day management concerns, limits, and compensations. Agreements between MDT and the private and public entities for permits and construction by each of the jurisdictions will be implemented as required. Key agencies, jurisdictions, and private entities affected by the Project include:

2.6.1 Federal Transit Administration

FTA administers grants and oversees the expenditure of federal funds for mass transit projects. FTA also contracts with a Project Management Oversight Consultant to act as an extension of its project management staff in monitoring the grantees' performance on the project. While the MDT Director will have ultimate responsibility for interface with the FTA, the Special Assistant to the Director will be the Project's point of interface with FTA and the Project Management Oversight Consultant on policy issues. The Deputy Director of Engineering, Planning and Development, Chief of Program Management, the Project Director and the PMC will interface on technical issues with FTA regional and headquarters staff and the Project Management Oversight Consultant.

As a continuing effort to provide for an ongoing relationship with FTA, Miami-Dade County will maintain open communications with FTA throughout the EIS/PE, Final Design, Construction, Start-up and Operations stages.

In accordance with its practices involving major investments, FTA has retained a Project Management Oversight Consultant (PMOC) to monitor and guide the Project on behalf of FTA. MDT and its Program Management Consultant (PMC) and Design consultants will cooperate with the PMOC, providing access to facilities, records, construction sites and other areas necessary to permit the desired oversight.

The County will continue to communicate with FTA staff and the PMO regarding key procurement matters in order to ensure that the Project remains eligible for federal funding.

2.6.2 State of Florida

The Project is being constructed in the State of Florida and is subject to state laws and regulations regarding safety, health, welfare, and the environment. Coordination will be necessary with various state agencies including the Florida Department of Transportation, Florida Department of Environmental Protection and the South Florida Water Management District.

As an extension of the current Metrorail system, the Project is subject to the State Safety and Security Oversight Requirements of the Florida Department of Transportation and the requirements of 49 CFR Part 659. The functions of the FDOT State Safety and Security Oversight function and its relationship to the Project safety and security programs are described in detail in the latest version of the North Corridor Metrorail Extension *Safety and Security Management Plan* as referenced in Section 15.0.

2.6.3 South Florida Rail Corridor and Florida East Coast Railroads

The Project crosses both the Florida East Coast Railroad and the South Florida Rail Corridor on a viaduct structure. Hence, it is expected that the Project would not have any impact on freight and commuter rail operations. The Project team will need to obtain a permit and flagging agreements from each railroad to enter upon their right-of-way and to secure permits for crossing over the railroad properties and tracks. The MDT Project Director will have the lead in this coordination.

2.6.4 Florida Power & Light

Florida Power & Light Company (FPL) provides electric services throughout Miami-Dade County and Florida. The Project will interface with this utility company in two ways. First, the utility will supply electric power for vehicle traction power as well as for lighting all electrically powered equipment, and signals, communications, and maintenance equipment. The Project team will coordinate with FPL to determine service requirements for traction power substations, passenger stations and other facilities. Second, the company will provide electric service through above ground and under ground transmission lines and related facilities to commercial and private customers throughout the Corridor. Construction will require relocation of lines affected by the Project. The Chief of Right-of-Way Acquisition and Utilities will have the lead in this coordination.

2.6.5 Miami Dade College

The Project is routed through portions of Miami Dade College North Campus which has a commuting student enrollment of 49,000. The Project team is coordinating with representatives of Miami Dade College to effectively and safely accommodate the needs of the College and minimize impacts during construction.

2.6.6 Local Municipalities

The North Corridor includes portions of both the City of Opa-Locka and the City of Miami Gardens. MDT has had extensive coordination to date with these two cities resulting in both municipalities unanimously passing resolutions in support of the Project. MDT will continue this coordination throughout the design, construction, testing and start-up phases of the Project.

3.0 MANAGEMENT CONTROL

A key element to the success of the Project is to establish effective Management Controls. The tools used for managing key elements critical to the success of the North Extension Project are described below including functional and technical control, work breakdown structure, schedule management, progress reporting, cost control, and document control.

3.1 Functional and Technical Control

3.1.1 General

Control of any capital improvement project can be subdivided into control of four interrelated and interactive variables. They are:

- Scope - The physical and functional scope of the project, including all work to be performed by MDT, plus all necessary work to be performed by other agencies.
- Schedule - The schedule for project development, from planning to the start of revenue operations.
- Capital Cost - The cost of the completed project.
- Quality of the Completed Project - The defined quality and life of materials and equipment items and the levels of operational service, efficiency, safety, security and reliability and the degree of maintainability.

Control of these variables starts when the Project Definition has advanced far enough to permit the project scope, quality, cost and schedule to be reliably defined and then baselined. Projects are controlled by managers who periodically check to determine whether the ongoing work, be it design, construction, procurements, installations or testing, is proceeding as planned, not only “within budget and on schedule”, but also as scoped and within agreed quality objectives. “Quality” in this usage should not be confused with the quality of the design, construction or fabrication workmanship, or materials as placed. In this usage, it is the quality inherent in the finished Project that is of concern. If a comparison between the baseline and actual conditions forecasts a significant difference, an exception report is produced which is intended to alert management to a variable which is straying from plan. This early warning is intended to give management time to assess the cause of the problem, to evaluate alternative courses of action to restore the project to plan and to order the concluded action be taken. When restoration to original plan or the current baseline is impractical, the baseline must be formally revised and updated and the impact of such change on the other baselines must be recognized.

For the purposes of project control, the baselining of the four variables will take place following the end of the Continuing Preliminary Engineering phase, or at about the 30 percent level of design development. At this stage, MDT will be able to approve the preliminary designs and specifications and to expect that the follow-on design, construction and procurements will follow consistent with the baselined definitions or values for scope, quality, price, and completion schedule. Continuing Preliminary Engineering will establish all the basic design definition, which will become the basis of follow-on design.

3.1.2 Technical Baseline/Configuration Control

Technical baseline control is achieved through configuration management, design reviews, and the quality assurance/quality control (QA/QC) program adopted for the Project. Configuration Management is discussed in Chapter 7.0 while the design review process is discussed in Section 6.6. The quality assurance/quality control program adopted for the Project is described below.

3.1.3 Quality Assurance and Quality Control

The objective of quality assurance and quality control for the North Corridor Metrorail Extension is to ensure that facilities are planned, designed, procured, constructed, inspected, and tested in accordance with established project design criteria, contract documents (including drawings and technical specifications), and applicable governmental and code regulatory requirements. To accomplish this objective, MDT has developed and implemented a *Quality Assurance Program Plan (QAPP)* for the Project which is an integral component of this PMP. The QAPP is a stand-alone document that is incorporated into this PMP in its entirety by reference.

The Chief of Quality Assurance is responsible for development, monitoring and oversight of the requirements contained in the QAPP. The Chief of Program Management is responsible for approval of the QAPP and the Project Director is responsible for implementing the requirements contained in the QAPP.

The QAPP is responsive to the recommendations contained within FTA's *Quality Assurance and Quality Control Guidelines*, FTA-IT-90-5001-02.1, February 2002. The quality requirements specified in the QAPP provide process controls for the design, procurement, construction, inspection and testing phases of the Project. The QAPP addresses the following fifteen Quality Management System (QMS) elements as recommended by FTA-IT-90-5001-02.1:

- Management Responsibility
- Documented Quality Management System
- Design Control
- Document Control
- Purchasing
- Product Identification and Traceability
- Process Control
- Inspection and Testing
- Inspection, Measuring and Test Equipment
- Inspection and Test Status
- Nonconformance
- Corrective Action
- Quality Records

- Quality Audits
- Training

In summary, the QAPP establishes a minimum set of guidelines and practices to be implemented by MDT, consultants, and contractors involved in the Project to assure that the products, equipment and services provided not only meet MDT's expectations, but do so in a cost-effective and timely manner. Refer to the latest version of the QAPP for particulars.

3.2 Work Breakdown Structure

Effective cost control requires a detailed budget, composed of accounts for the various items within a comprehensive Work Breakdown Structure (WBS). It also requires a means of allocating expenses to these accounts, a cost forecasting system and clear reporting formats.

MDT has developed a Work Breakdown Structure which addresses all cost categories associated with any specific project such as the North Corridor Metrorail Extension but is also suitable to address all projects within the PTP Program. Because the WBS is designed for a program with multiple projects it requires additional coding for project identification purposes in addition to the normal WBS coding. A graphical representation of the PTP Program WBS is shown in Figure 3-1 and described below.

The WBS primary coding levels are as follows:

- Level 1 – Project Identifier (North Corridor, etc)
- Level 2 – Identity Modifier (Construction Contract Unit (CCU))
- Level 3 – General Location (Station, Line Section, or Bldg.)
- Level 4 – Specific Location (Station, or Line Section Identifier)
- Level 5 – General Cost Category (Guideway, Station, Utilities, etc.)
- Level 6 – Specific Cost Category (Foundations, Elevators, etc.)
- Level 7 – Scheduling Actions (May be Used as Needed)
- Level 8 – Organizational Identifier (MDT, PMC, Design Consultant, Contractor)

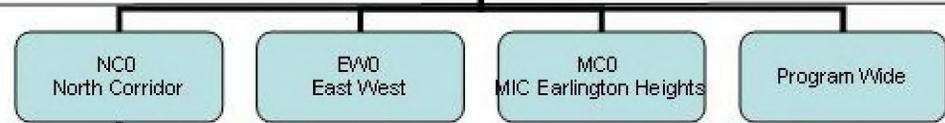
The WBS level 5 and 6 Cost Categories are WBS codes which were developed to coordinate with FTA guidelines for segregation of cost elements. These cost categories will be the basis for organizing the information presented in the Project's Cost Control Report (CCR), and in combination with the location codes, allows for an easy integration of cost information into the Project schedule to produce the Cash Flow Report.

The WBS will be used as the basic building block for aggregating work for both Schedule and Cost reporting purposes. Although planned down to a detailed level, the reporting capabilities will be able to roll-up accounts to report at any level within the WBS. Typical cost reporting will be at Level 3 or Level 4, based upon the detailed information provided by

Level 0 – Program



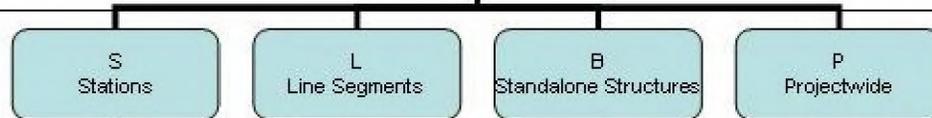
Level 1 – Project Identifier



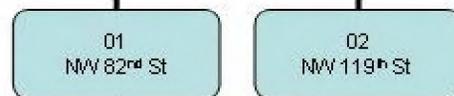
Level 2 – Identifier Modifier



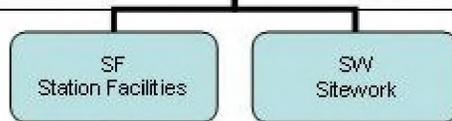
Level 3 – General Location



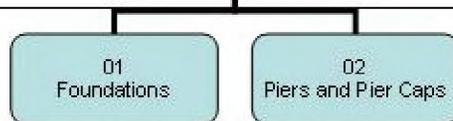
Level 4 – Specific Location Modifier



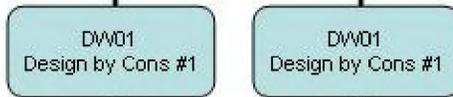
Level 5 – General Cost Category



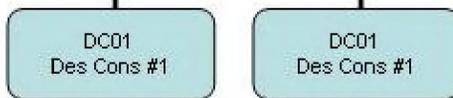
Level 6 – Specific Cost Category



Level 7 – Scheduling Actions



Level 8 – Organizational Identifier



the lower levels. Final formats and roll-up levels will be established for formal reporting purposes and to ensure consistency in published reports.

The complete WBS details are provided in Appendix C. A brief description of the eight WBS levels is as follows:

Level 1 - Project Identifier

All projects in the PTP Program must use a Project Identity. The WBS code for Project Identity has 3 characters reserved for project identification. The WBS code for the North Corridor Metrorail Extension is:

NC0 = North Corridor Metrorail Extension

Level 2 - Identifier Modifier

This WBS code is optional depending upon the complexity of the project. The North Corridor Metrorail Extension is a large and complex project and will involve multiple contracts and this code will be used to identify these contracts. The WBS code for Identifier Modifier will have 3 characters. The current design services contracts (DS) or construction contracts (Construction Contract Units (CCU)) for the North Corridor Metrorail Extension are:

DS1 = DS#1 Design Consultant Continuing PE

DS2 = DS#2 Design Consultant New Starts PE

DS3 = DS#3 Design Consultant Final Design

DS4 = DS#4 Design Consultant System Design

DS5 = DS#5 Design Consultant Engineering Services During Construction (ESDC)

CU1 = CCU #1 North Corridor (NC) Civil package #1

CU2 = CCU #2 NC Civil package #2

CU3 = CCU #3 NC Civil package #3

CU4 = CCU #4 NC Systems package

Additional DS's or CCU's will be added as needed.

Level 3 – General Location

This code indicates the location of the work which can involve a station site, line section, stand alone building, etc. All PTP projects will have a general location code. Although this code may be sufficient to locate specific work on simple projects, for complex projects such as the North Corridor Metrorail Extension, it is designed to be used with the level 4 WBS code. The combination of the Level 3 and Level 4 codes defines a more precise location of the work. Knowing a more precise location of the work is an important coding feature for integrating costs into the schedule. The WBS code for General Location requires only 1 character.

The General Location codes are:

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- S = Passenger Station
- L = Line Segment
- B = Stand-alone Building or Facility
- T = Traction Power Substation
- P = Project-wide

Level 4 – Specific Location

This code indicates a specific location of the work when a project has many station sites, line sections, stand-alone buildings, etc. As noted above, this code is used to expand upon the information provided by Level 3 code. This code is uniquely developed for each project by adding a two-digit numeric modifiers to the Level 3 code. A sample of the Level 4 code is provided below with additional information provide in Appendix C.

North Corridor Metrorail Extension **Line Sections** with General Location Code:

- L01 = Stationing 448+69 (MLK Station) to 82nd St. Station
- L02 = 82nd St. Station to 119th St. Station

North Corridor Metrorail Extension **Stations** with General Location Code:

- S01 = NW 82nd Street
- S02 = NW 119th Street

Level 5 – General Cost Category

This code indicates General Cost Category of the work. All PTP projects will use a General Cost code. Although this code may be sufficient to define costs on simple projects, for complex projects such as the North Corridor Metrorail Extension, it is designed to be used with the level 6 WBS code. The combination of the Level 5 and Level 6 codes defines a more precise cost for the work. Knowing a more precise cost of the work is an important coding feature for integrating costs into the schedule and cost reporting. The WBS code for General Cost Category requires 2 characters. A sample of the Level 5 code is provided below with additional information provide in Appendix C.

- GW = Guideway Facilities
- SF = Station Facilities
- BF = Other Facilities
- SW = Sitework, Infrastructure and Special Conditions

Level 6 – Specific Cost Category

This code indicates a specific cost category for the work. As noted above, this code is used to expand upon the information provided by Level 5 code. This code modifies General Cost Category code by adding two digit numeric modifiers to the Level 5 code. A sample of the Level 6 code is provided below with additional information provide in Appendix C.

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Guideway Facilities

- GW-01 = Guideway Foundations
- GW-02 = Guideway Piers and Pier Caps
- GW-03 = Guideway Superstructures
- GW-04 = Retained Cut Guideway Structures
- GW-05 = Retained Fill Guideway Structures
- GW-06 = Underground Cut and Cover Guideway Structures
- GW-07 = Tunneled Guideway Structures
- GW-08 = Guideway Noise walls
- GW-09 = Guideway Walkways
- GW-10 = Guideway Railings
- GW-11 = Miscellaneous Guideway Installations
- GW-XX = Other Guideway work items as needed.

Level 7 – Scheduling Actions

WBS Levels 1, 2, 3, 4, and 5 are intended to serve as a frame work for both progress reporting and cost loading at the Program Reporting Level. In order to status the progress and the costs at that level, the progress and cost tools for the construction related work requires the use of the Specific Cost Category Code 6. In special cases, further detail may be required which is provided by Code 7. As an example, the prior codes may have identified a major element such as a traction power rectifier/transformer. Codes 3 and 4 identify where the transformer is to be installed. Codes 5 and 6 identify that this item is an electrical element and part of the traction power equipment. If the contractor desires a major payment for placing the order, another for on-site delivery of this equipment, and a third payment for the installation of the equipment, then Code 7 would be used to define the actions that trigger those payments. The judicious use of Code 7 will allow the construction management team to assess progress and costs at a level which supports construction invoicing, as well as supporting Program Level Reporting. Code 7 is expected to be used in conjunction with the activity description which together provides a clear explanation of the work. A sample of the Level 7 code is provided below with additional information provided in Appendix C.

- ED01 = Equipment delivery
- IE01 = Installation of equipment
- TS01 = Field Testing (Post Installation Check Out)

Level 8 – Organizational Identifier

Having a WBS code for identifying a specific entity is useful, especially when dealing with large scale projects. A sample of the Level 8 code is provided below with additional information provide in Appendix C.

- CC03 = NC Contractor #1 (Civil)

CC04 = NC Contractor #2 (Civil)
 CC05 = NC Contractor #3 (Civil)
 SC01 = NC Contractor #4 (Systems)
 UT01 = FPL (Utility #1)

The MDT WBS is inclusive and flexible to respond to future projects and is an essential element for integrating costs with scheduling to meet all of the Project reporting requirements.

3.3 Schedule Management

The North Corridor Metrorail Extension presents some complex issues. The Project participants include federal and state governments, Miami-Dade County and local municipalities, public and private utility companies, consultants and subconsultants, and construction contractors and sub-contractors. The participants will look to the Master Project Schedule as a basis for their respective planning, as would the community, local businesses, and the news media. The Master Project Schedule will serve as the essential management tool for the planning, scheduling, coordination and control of the Project. The Master Project Schedule consists of numerous activities that will be summarized using the WBS into a Master Summary Schedule for most reporting purposes. The Master Project Schedule will be updated, distributed, and monitored on a monthly basis.

The Master Project Schedule revisions will be listed and outlined in a separate written narrative which accompanies the revised schedule and explains the changes to the schedule from the previous month's schedule. Schedules submitted from the various Consultants and Contractors will be integrated into the Master Project Schedule and will be represented in the Master Summary Schedule as well. The Master Project Schedule will reflect the input of all entities involved with the Project. The schedule will also have the ability to allow the various sub-projects to be rolled-up to depict the individual elements of the program. Any impacts or updates to the individual sub-projects will be reflected in the Master Project Schedule and the Master Summary Schedule.

This Section describes how the PMC, with oversight by the MDT Project Controls Division, will assist the Project Director in monitoring the progress of the work against the Master Project Schedule. It also addresses the scheduling philosophy on which the schedule is based, progress reporting, the schedule update process, recovery and mitigating alternatives, and the Master Project Schedule revisions.

3.3.1 Master Project Schedule Overview

3.3.1.1 General

The Master Project Schedule will evolve in complexity over the seven basic phases of the Project. These phases include: Planning; Preliminary Engineering (including Continuing and Extended PE); Final Design; Right-of-Way Acquisition; Bid and Award Process; Construction; and Testing and Start-Up. Each phase will present different project management challenges and is predominantly controlled by the work of different staff members. The level of detail contained in the Master Project Schedule is directly related to

the project phase. During the Planning phase, the schedule will consist of detailed planning activities with less detail provided for Final Design and Construction activities. As the Project advances more detail is added to the schedule consistent with the increase in design and construction information.

The Master Project Schedule is further developed in conjunction with funding availability. As information is developed and cash flow requirements are identified, financial consideration are evaluated more thoroughly and further refined throughout the process.

Maximum flexibility will be built into the Master Project Schedule whenever possible based on previous experience on major capital projects of similar complexity and in accordance with prudent project management practices.

3.3.1.2 Responsibility

The overall responsibility for developing and maintaining the Master Project Schedule rests with the PMC. The PMC updates the Master Project Schedule monthly based on information provided by the Project team members and more frequent updates will be provided as needed. The responsibility to provide scheduling support and progress information to the PMC Project Scheduler lies with the MDT Project Director and PMC Project Manager. The major support areas for each designated phase of the Master Project Schedule are as follows:

- Planning - Chief of System Planning
- Design (PE and Final) - Project Director
- Right-of-Way Acquisition - Chief of Right-of-Way Acquisition and Utilities
- Bid and Award - Chief of Project Control
- Construction - Chief of Construction
- Systems Installation and Testing - Chief of Construction and Manager of Systems Engineering

The PMC will also receive update information from the Design Consultant, CE&I Consultant, and contractors.

3.3.2 Schedule Types and Definitions

3.3.2.1 Master Project Schedule

The Master Project Schedule is typically presented in a bar chart format developed from the Critical Path Methodology schedule (CPM) identifying the major elements and activities of the Project. Other formats can be generated as needed. The Master Project Schedule is the official project schedule which is approved and endorsed by the MDT Director and represents the goal commitments for the Project. The Master Project Schedule and all consultant and contractor schedules will utilize the P5 version of Primavera Project Planner for Windows software as marketed by Primavera Systems, Inc., unless otherwise approved by the MDT Chief of Project Control. The North Corridor Metrorail Extension is in the Preliminary Engineering phase of project development. The current Master Project Schedule for the North Corridor Metrorail Extension is provided in Appendix D.

3.3.2.2 Master Summary Schedule

The Master Summary Schedule is typically presented in a bar chart format developed from the Master Project Schedule and is a direct summarization of the Master Project Schedule. The Master Summary Schedule is updated monthly along with the Master Project Schedule. The WBS will be the primary means for creating the Master Summary Schedule from the Master Project Schedule. The current Master Summary Schedule for the North Corridor Metrorail Extension is provided in Figure 3-2.

3.3.2.3 Planning Schedule

The Planning Schedule addresses the planning related activities. MDT and its Planning Consultant provide the information needed to prepare and maintain a detailed planning phase in the schedule in accordance with MDT scheduling procedures. The Planning Schedule is updated monthly until the Record of Decision is obtained and is incorporated into the Master Project Schedule. The Planning Schedule is discussed at all progress meetings during the planning phase of the Project. The Planning schedule is incorporated into the Master Project Schedule and follows the WBS and other scheduling practices.

3.3.2.4 Design Schedule

The Design Schedule deals with the activities during the Preliminary Engineering (included Continuing and Extended PE) and Final Design phases of project development. The Professional Services Agreement (PSA) between MDT and the Design Consultant specifies that the Design Consultant will prepare and maintain a detailed design schedule in accordance with MDT scheduling procedures. This schedule will be updated monthly and will be discussed at all design progress meetings. Information derived from the updated design schedule will be incorporated to update the Master Project Schedule. In addition to the detailed design schedule, an earned value system will be implemented that will provide project management with valuable design progress and performance indicators. The Design schedule is incorporated into the Master Project Schedule and follows the WBS and other scheduling practices.

3.3.2.5 Right-of-Way Schedule

The Right-of-Way Schedule is a separate schedule or progress tracking procedure which provides support to the Master Project Schedule. In general, these schedules focus in detail on a specific area such as right-of-way acquisition, business and residential relocations, or right-of-way related utility relocations and may be produced by outside groups using their specific scheduling practices. The Right-of-Way Schedule is incorporated into the Master Project Schedule and follows the WBS and other scheduling practices.

3.3.2.6 Construction Schedules

The Construction Schedule deals with the construction related activities of the Project. The underlying philosophy behind the Master Project Schedule is the requirement that all Contractors use a detailed CPM construction schedule to provide the details necessary to manage and implement the work for the Project. Elements of work will be organized in accordance with the WBS such that roll up reporting against the WBS provides a full scope accounting of the entire Project.

NORTH CORRIDOR METRORAIL EXTENSION			Summary Rollup Barchart					Page: 3 of 3																					
Activity ID	Activity Name	Original Duration	Schedule % Complete	Remaining Duration	Start	Finish	Total Float	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015	
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
	Precast	295	0%	295	16-Jun-10	02-Aug-11	55																						
	Substructure	521	0%	521	16-Jun-10	13-Jun-12	55																						
	Superstructure	381	0%	381	16-Feb-11	01-Aug-12	55																						
	Civil Construction - North CCU #3	791	0%	791	01-Aug-09	13-Aug-12	47																						
	Bid & Award Phase - Civil Package #3	250	0%	250	01-Aug-09	16-Jul-10	47																						
	Precast	287	0%	287	19-Jul-10	23-Aug-11	47																						
	Substructure	506	0%	506	19-Jul-10	25-Jun-12	47																						
	Superstructure	366	0%	366	21-Mar-11	13-Aug-12	47																						
	Signage & Graphics	611	0%	611	14-Aug-09	16-Dec-11	741																						
	Bid & Award Phase - Signage & Graphic's	204	0%	204	14-Aug-09	26-May-10	741																						
	Graphics & Signage	407	0%	407	27-May-10	16-Dec-11	741																						
	Fare Vending Equipment	719	0%	719	10-Jul-09	11-Apr-12	582																						
	Bid & Award Phase - Fare Vending Equip.	204	0%	204	10-Jul-09	21-Apr-10	582																						
	Fare Vending Equipment	515	0%	515	22-Apr-10	11-Apr-12	582																						
	Systems Integration	1864	0%	1864	01-Feb-07 A	08-Apr-14	161																						
	Design - MDT Deliverables	98	0%	98	15-Feb-07	02-Jul-07	107																						
	MDT Railcar Procurement	1864	0%	1864	01-Feb-07 A	08-Apr-14	161																						
	Yard Rehab / Expansion / Test Track	1232	0%	1232	05-Apr-07	24-Dec-11	758																						
	Central Control Upgrade	1104	0%	1104	01-May-07	23-Jul-11	757																						
	Comm Upgrade	1028	0%	1028	15-Feb-07	24-Jan-11	624																						
	ATC Modifications-Gov't Center to Overtown	417	0%	417	15-Feb-07	19-Sep-08	1608																						
	Trackwork Procurement & Installation	1048	0%	1048	10-Jul-09	16-Jul-13	0																						
	Bid & Award Phase - Trackwork	208	0%	208	10-Jul-09	27-Apr-10	47																						
	Trackwork	840	0%	840	28-Apr-10	16-Jul-13	0																						
	Systems Design, Fabricate & Installation - CCU #4	1399	0%	1399	10-Jul-09	19-Nov-14	0																						
	Bid & Award Phase - Systems	204	0%	204	10-Jul-09	21-Apr-10	49																						
	Train Controls	1074	0%	1074	21-May-10	02-Jul-14	2																						
	Traction Power	1074	0%	1074	21-May-10	02-Jul-14	2																						
	Train Start-up	295	0%	295	03-Oct-13	19-Nov-14	0																						

During each design phase, the Design Consultant will prepare a schedule for the construction work. With the advancement of the design documents, the Design Consultant will add additional detail to the construction schedule.

As the construction contracts are awarded and prior to issuing a Notice-To-Proceed (NTP) to the Contractor, a comprehensive and detailed CPM Construction Schedule will be prepared and submitted by the Contractor to MDT for review and approval. This CPM Construction Schedule will form the baseline and timeline for the work to be performed. Upon approval of the Contractor's CPM Construction Schedule, which lays out the time available to complete the major work elements and identifies milestones, it is incorporated into the Master Project Schedule. The detail for the construction phase of the Master Project Schedule will be derived directly from the Contractors' monthly CPM Construction Schedule updates. The PMC will integrate the construction schedule into the Master Project Schedule.

3.3.2.7 Systems Integration Testing and Start-Up Schedule

The Systems Integration Testing and Start-Up Schedule deals with the systems integration testing and start-up related activities. The schedule for these activities will require the input from MDT, the Systems Contractor, and the CE&I Consultant. The CE&I Consultant will coordinate with all involved parties and prepare and maintain a detailed Systems Integration Testing and Start-up Schedule in accordance with MDT scheduling procedures. This schedule will be updated monthly and will be incorporated into the Master Project Schedule by the PMC. The schedule will also be discussed at all system and start-up progress meetings.

3.3.3 Cost Loading the Master Project Schedule

Sound financial planning requires the use of a cost loaded schedule and that is one of the primary purposes for creating a cost loaded schedule.

MDT will make maximum use of the scheduling technique known generically as a cost-loaded schedule. In brief, this technique requires that activities in the Master Project Schedule be assigned a dollar value. The WBS is the primary tool which integrates the schedule information with the cost information in order to cost load the Master Project Schedule.

Using a cost loaded schedule is now typical through the construction industry and has been implemented on most recent major transit projects. MDT has also been successful in using the cost-loaded CPM on the Metromover Extension Project, which was completed on time and under budget. Based on these experiences, the project control procedures will define the protocols for cost loading the schedule.

The Design Consultant will have as part of their responsibilities to provide a cost loaded schedule to a specific WBS level and the contract specifications will require the Contractor to submit the construction schedule using the most detailed levels of the WBS. The Contractor's construction schedule will be submitted in two parts. The Part I submittal will be a summary-type bar chart (WBS Level 4 or 5 as applicable), submitted with the Contractor's bid to ensure MDT that the Contractor understands the scope of the contract and the resources required. The Part II will cover all the activities to be performed throughout the duration of the contract and will be submitted by the Contractor 10 days after NTP. No progress payments will be made before MDT has approved the cost loaded schedule.

3.3.4 Payment Using the Cost Loaded Master Project Schedule

Another primary reason for creating a cost-loaded schedule is to use it as the primary means for approving progress payments to the Contractor.

There are two important concepts to grasp with respect to cost-loaded schedules that are related to progress payments. First, only 100 percent completed activities are eligible for payment. This effort will encourage the Contractor to subdivide his activities by providing more details that will enhance control. Second, since the schedule update is the back-up for the progress payment, no payment can be made unless the Contractor's construction schedule is properly updated and approved by MDT.

At the end of each monthly pay period, the Contractor will update the construction schedule by assigning actual start and actual finish dates and remaining duration to activities in progress. The effects of delays, changes, accelerations and progress by the Contractor will be documented in the monthly schedule updates and will be further explained in the written Contractor monthly progress reports. The progress reports prepared by the Contractor are required by contract. The report will explain progress in general and specifically, or the lack thereof based on the critical path; it will also detail delays and present recovery actions, whenever necessary. All 100 percent completed activities will be tabulated and totaled by the Primavera software to form the back-up for the payment request. MDT's Resident Engineer and CE&I Consultant will verify the updated information and any activities, submitted for payment, which are not 100 percent completed to his satisfaction will be removed from consideration for payment.

3.3.5 Master Project Schedule Updates

The Master Project Schedule will be statused on a monthly basis by the PMC with detailed information obtained from Project staff including Consultants/Contractors in accordance with their assigned responsibilities. The PMC will canvas the Project staff for the latest information and update the schedule accordingly. During the updating process, the need for any required recovery or mitigating measures to keep the Project on scheduled will be discussed. The Project Director will be promptly informed if the PMC determines that insufficient progress has been made in a certain area.

The actual updating of the Master Project Schedule involves the assigning of actual start and finish dates, and remaining durations to activities in progress based on information provided by the Project staff and verified by the PMC and the Project Controls Division. Updating may require the addition of greater detail in certain areas of the schedule as deemed necessary by the PMC. As Contractor construction schedules are approved, the data will be incorporated into the Master Project Schedule.

After the Master Project Schedule has been updated and forwarded to the Project Control Division, the Chief of Project Control will draft a transmittal memorandum for the MDT Director's signature. Any proposed change in the revenue service date must be approved by the MDT Director. This memorandum will point out the salient features of the update and call attention to problem areas. After the memorandum has been signed to indicate that the Director concurs with the update information and any resultant impact on the Project's end date, the Master Project Schedule update will be issued as an attachment to the Project's Monthly Progress Report. Copies of the Master Project Schedule update will be kept on file

along with the computer back-up files on disk. This will allow for the accurate retroactive reconstruction of the Project schedules.

3.3.6 Recovery Plans

In the case of a construction delay, as part of their contractual obligation, the Contractor will submit a recovery plan whenever it falls behind the approved schedule, taking into account all granted time extensions. The recovery plan may become the basis for a revision to the Master Project Schedule. After a delay has been identified and communicated to the Project Director, and all the pertinent facts have been ascertained and analyzed, a decision will be made to either absorb the delay or attempt to accelerate the work element(s) to recover the lost time. Although the FTA and the PMOC will be notified of all Project delays through the various reports and schedules, if the delay is beyond the control of the MDT, then MDT will formally notify FTA.

3.3.7 Progress Reporting

Progress reporting is the process by which the status of the Project scope, cost and schedule is determined based on visual inspection and available cost and schedule data which is organized and analyzed in accordance with MDT project management/scheduling practices. Progress reports will be disseminated in a timely fashion in order to allow project management to make rational decisions.

Progress reporting will be accomplished through several basic reporting formats - the updated Master Project Schedule, the Monthly Progress Report, Quarterly Progress Reports, DBE Program Reports, and regularly scheduled project progress review meetings.

3.3.7.1 Responsibility

Progress reporting requires thorough knowledge and understanding of the Project scope, cost and schedule. The primary responsibility for overall reporting rests with the Chief of Project Controls. However, on complex projects the Chief of Project Controls is supported other staff in their assigned areas for reporting. The primary areas for progress reporting:

- Planning - Chief of System Planning
- Design (PE and Final) - Project Director
- Right-of-Way and Utilities - Chief of Right-of-Way Acquisition and Utilities
- Bid & Award - Chief of Project Control
- Construction - Chief of Construction
- Systems Installation & Testing - Chief of Construction and Manager of Systems Engineering

3.3.7.2 Monthly Progress Reports

The Monthly Progress Report will be prepared by the PMC and will be issued under the Chief of Project Control's signature. The report will be distributed to all affected County departments, the County Manager's Office, the Office of the Mayor, FHWA, the FDOT, FTA, Project Management Oversight Consultant and pertinent Consultants and Contractors, as determined by MDT.

The Progress Report will consist of a transmittal memorandum and sections that detail accomplishments during the period and planned accomplishments for the coming period. The report will cover the following topics and will also include attachments such as the latest Master Summary Schedule.

- Project budget versus expenditures
- Projections of costs to complete and total cost
- Progress made to date versus schedule progress
- Issues and changes
- Financial status of the Project
- Cash flow status and projections
- Any anticipated funding shortfalls

The monthly status reports generally are produced in two formats: a summary report for the benefit of the Project's funding agencies; and a more detailed report directed to the Project participants with narrative descriptions of progress, status, cost and schedule, and other issues as listed above.

3.3.7.3 Quarterly Progress Reports

The official means of communicating program forecasting, management and reporting to FTA is through the quarterly narrative progress reports. The Grants Administration section of MDT is responsible for coordinating with the Project Director in all phases of providing accurate and timely information to FTA. These include significant events, relevant grant activities, and any changes in the grant schedule or budget.

The MDT Grants Administration staff provides the Project Director with a reporting form approximately two weeks before the end of the current quarter. The form includes the Federal grant number and description, award date and dollar amount, and a column recapping what was submitted during the previous quarter. It also allows space for the Project Director to incorporate new or revised information into the report for the current quarter.

The Project Director then completes the information and returns it to Grants Administration, who prepares a compilation of all the reports and submits to FTA along with the necessary financial data as prepared by MDT's Controller's Office, within the 30 day due date following the end of the quarter.

The Project Director will prepare detailed monthly summaries that are distributed to FTA staff, the County Manager, Miami-Dade County Public Works, the Florida Department of Transportation, and others. This report, which includes an executive summary, accomplishments during the previous month, planned accomplishments for the coming month, and an updated Master Project Schedule, is also included as an attachment to the quarterly report prepared by Grants Administration.

Each calendar quarter, MDT will prepare and submit its Quarterly Progress Report to FTA, with copies to FDOT and other funding agencies and interested parties. At a minimum, each Quarterly Progress Report will provide the following:

- Narrative comments on each budget line item for the Project.
- Discussion of budget or schedule changes not requiring FTA approvals that were made during the past quarter.
- Comparison of scheduled activities and budgeted expenditures with actual accomplishments during the report period including, status of bid documents completion dates, bid solicitation, resolution of bid protests and contracts awarded.
- An analysis of significant project cost variances
- Discussion of completion and acceptance of construction, procured equipment, and other work, together with a breakdown of costs incurred and costs required to complete the Project.
- Reasons why any scheduled milestones or completion dates were not met, identifying problem areas and discussing how problems will be resolved.
- Discussion of expected impacts of project delays and the steps being implemented to minimize such impacts.
- List of all outstanding claims in excess of \$100,000 and all claims settled in the report period, with a brief description of the claims and their causes.
- Projected activities for the next quarter and steps planned for carrying them out.
- Expected or projected changes in scheduled activities.
- Pertinent graphics and photographs.
- Change Order Status

The Special Assistant to the Director is responsible for compiling and submitting quarterly reports to the FTA.

3.3.7.4 DBE Program Reports

Following the close of each calendar month, MDT will prepare a Disadvantaged Business Enterprises (DBE) Program Progress Report. This report is in addition to, and will be submitted as part of, the FTA-required Quarterly DBE Progress Report. The DBE Report updates others as to the status of the Project DBE program.

3.3.8 Progress Review Meetings

3.3.8.1 Coordination Meetings/Progress Meetings

During the life of the Project, management, design, and construction meetings will be held either bi-weekly and/or weekly. These coordination/progress meetings will be held to discuss planning, design and coordination issues. An agenda will be prepared and distributed in advance of each meeting. Meeting minutes with action items will be prepared within one week following each meeting. The minutes will identify and track issues, actions and responsibilities and identify date, time, location and attendees. Responsibility for preparing meeting minutes will rest with the entity conducting the meeting.

3.3.8.2 Project Management Meetings

Throughout the duration of this project, on-site quarterly project management meetings will be held to discuss pertinent issues and problems. There is no pre-set date for the meetings, which are scheduled in accordance with FTA staff. Because of the size of the Project, it will normally occupy the greatest portion of time for these quarterly meetings.

These meetings include staff from FTA's regional office in Atlanta, from Washington, DC, from the Project Management Oversight Consultant FDOT, MPO, MDT and PMC. Once a date is established for each meeting, the agenda and any necessary handout material is coordinated by the Grants Administration staff. Grants staff prepares minutes of the meeting, following its completion, and tracks action items until their submittal to FTA.

3.3.8.3 PTP Progress Meetings

The PTP Corridor Progress and Coordination Meetings are held monthly to discuss corridor status as well as outstanding issues related to the Orange Line and other PTP Corridors. Participants in this meeting include MDT, PMC, Public Works, Metropolitan Planning Organization staff, Florida Department of Transportation, the City of Miami, corridor consultants, and project managers. Also invited are Board of County Commissioners, Commissioners Aides and representatives from other municipalities.

3.3.8.4 Outside Agencies

Special purpose meetings will be held frequently with outside agencies, stakeholders, and designers of facilities that will be close to or in the same space as Project facilities. These meetings generally will be organized around an agenda, result in conclusions or assignments, and will be documented in meeting minutes.

3.3.8.5 Design Coordination / Progress Meetings

Refer to Section 6.6.3 for a discussion on Project Design Coordination/Progress Meetings.

3.3.9 Interface of Schedule with Cash Flow Report

As noted above, financial planning is one of the primary purposes for creating and using a cash loaded schedule. The Cash-Flow report is dependent on the Master Project Schedule. After each Master Project Schedule update, the cash-flow report will be reviewed to determine if changes to cash-flow expenditures are required.

3.3.10 Use of CPM Activity Codes

The Primavera software system allows for the assigning of WBS coding and other descriptive activity codes to activities so as to facilitate selective sorting, printing, plotting and reporting of chosen activities. Although the WBS will be the primary Primavera code, in certain cases it may be necessary to use other activity codes to report on a sub-networks of specific work elements or to create a special report. The Contractors may use activity codes to segregate activities into different work packages. For example, a subcontract may be divided into bid items representing the Construction Specifications Institute (CSI) divisions. The use of other coding is not prohibited by MDT.

3.4 Cost Management

The PMC will manage and the MDT Chief of Project Control will provide oversight of the Cost Management functions. During the design phase, the focus will be on establishing and tracking costs for planning and design services and the establishment of budget for future work including preparing budgets for program level activities, control estimates for design services, right-of-way estimates, and construction estimates. During construction, the focus shifts to cost reporting and forecasting, cash flow analysis, and change control. Cost reporting is performed throughout the life of the Project. This function will be accomplished by MDT in close coordination with other entities such as the Project Management Consultant and other consultants. The use of a cost-loaded CPM schedule is especially important for the monitoring of the construction costs after the award of the construction contracts.

The Cost Management portion of this section defines the means for monitoring project costs against the project budget, forecasting projected costs, and for reporting budget/cost variances. It describes the background and sources of funding for the project budget/cost accounts, cost updating and reporting, and financial management. All project cost reporting processes will be developed and maintained to meet FTA guidelines and requirements.

3.4.1 Responsibility

Although effective cost management depends on the cooperation of the entire Project team, the Deputy Director of Engineering, Planning and Development is ultimately responsible for bringing the Project to a successful completion for the lowest possible cost. In support of this overall goal, it is the responsibility of the PMC, with oversight by the Chief of Project Control to develop, implement and maintain effective project cost management systems that establish approved project budget baselines as well as quickly and effectively identify potential risks and exposures in terms of the approved budget baseline.

3.4.2 Budgets and Cost Estimates

The first step in cost management is to establish budgets for each aspect of the work. Similar to the scheduling process, budgets and the cost estimates used to establish budgets will be refined as additional information is developed and as the design work advances. The overall responsibility for developing and maintaining the Budget rests with PMC, with oversight by the Chief of Project Control. For each designated part of the Budget, the responsibility to provide cost estimate information to the PMC is defined. Cost estimates, when approved by the Project Director, become the basis for the Budget and the Budget cannot be changed unless approved by the MDT Director. The major cost support areas are:

- Planning costs - Chief of System Planning
- Design costs (PE and Final) - PMC
- Construction Estimates - Design Consultant
- Construction costs - CE&I Consultant
- Right-of-Way and Utilities costs - PMC
- Systems Installation and Testing - CE&I Consultant

3.4.2.1 Planning Phase - Project Budget

During planning phase, the project budget is initially established. The budget must cover all aspects of the work and MDT's Estimating manual provides guidance on establishing budget at an early phase. At this time additional efforts will be expended on developing control estimates for design and specialty consultants needed for the design phase.

3.4.2.2 Preliminary Engineering Phase - Project Budget

During preliminary engineering, the Design Consultant is required to provide MDT with a preliminary construction cost estimate, as per MDT's *Guidelines for Capital Cost Estimating*, and assist in the scope for the subsequent design. MDT or the PMC will prepare control estimates for the final design phase. The budget for design work will be updated as the design services contract are negotiated and awarded.

3.4.2.3 Final Design Phase - Project Budget

The initial budget for the Final Design effort will be established as an integral part of the Preliminary Engineering Estimate. The Final Design budget will be refined throughout the negotiations that result in contractual commitments are completed with the Design Consultant. The Design Consultant will be responsible for providing MDT with construction costs estimates and advancing the quality of the construction cost estimates as per the MDT *Guidelines for Capital Cost Estimating* as the design is advanced. The final estimate is the Engineer's Estimate used to evaluate the Contractor's bids.

3.4.2.4 Construction Phase - Project Budget

The Design Consultant will be responsible for providing MDT with construction costs estimates and the Engineer's Estimate. As construction contracts are awarded, the construction budgets will be revised as needed based on input provided by the CE&I Consultant. Since the construction phase involves the majority of costs, tracking construction costs is essential to control costs.

3.4.2.5 System Installation and Testing - Project Budget

The Design Consultant will be responsible for providing MDT with systems related costs estimates and the Engineer's Estimate. As systems contracts are awarded, the systems budgets will be revised as needed based on input provided by the CE&I Consultant. Since the systems work involves major costs, tracking these costs is essential to control costs.

3.4.3 Estimating

3.4.3.1 General

The most important and basic building block of cost management is cost estimating. Cost estimating for a transit project is specialized due to the nature of the facility design and equipment requirements. Cost estimates are prepared in increasing levels of detail as the design is developed and as more information is developed cost uncertainties are reviewed and each estimate becomes a control for the following stage of the project development. Refer to the latest edition of MDT's *Guidelines for Capital Cost Estimating* for a complete description

of the guidelines and methodologies to be followed in the preparations of Capital Cost Estimates for the Project.

The PMC will establish initial cost control by utilizing cost estimates developed under the direction of the Chief of Program Management. Initial estimates, progressively refined through the development of design and procurement phases will form the basis for the final estimate, prior to the bid phase of the construction contract. The control estimates for design services are prepared by the PMC and are approved by the Chief of Program Management. Construction estimates are prepared by the Design Consultant, reviewed by the PMC and are approved by the Project Director.

3.4.3.2 Construction Cost Estimate Formats

Construction Cost Estimates are developed during all phases of the design process by the Design Consultant using the MDT *Guidelines for Capital Cost Estimating* manual for direction of estimate requirements and formatting.

3.4.4 Cost Control Report

The Cost Control Report (CCR) is a tabulation of cost based on the Work Breakdown Structure and includes all the Project's cost accounts. The CCR represents the current projections for the allocation of the Project budget. It is the pivotal cost control/budget document and as such, it becomes the basis for all other cost control reports. It identifies each cost account using an agreed upon accounting numbering system, each account's approved budget value, earnings to-date, including retainage where applicable, and the remaining budget balance. All cost accounts in each cost category are subtotaled. All cost category subtotals are totaled at the bottom of the report to arrive at a Project total. Project contingencies that are developed and approved during the project cost estimating activities are an integral part of the CCR system. Section 3.4.13 of this Chapter deals with contingency management.

The current CCR uses the leading computer spreadsheet software, Microsoft Excel. Each cost account in the CCR is based on a separate detailed spreadsheet that records such data as the respective Contractor payments and approved change orders. These contractor cost account spreadsheets are consolidated into the Cost Control Report. When detailed information regarding a particular cost account is required, the detailed spreadsheet is consulted. However for budget reporting, the summary level of the CCR is usually sufficient. Each cost account is identified by several "cost codes". These cost codes are developed in coordination with MDT.

For the North Corridor Metrorail Extension, MDT will implement a more robust tool for managing the CCR due to the complex nature of the Project. This implementation will utilize PRISM, a database-based cost management software tool, which fully integrates with PRIMAVERA for managing and reporting Project cost and schedule management information via the WBS organized structure.

3.4.4.1 Updating the Cost Control Report

Every time an invoice is processed, by entering the appropriate invoice data into the individual cost account spreadsheet, the CCR is updated to reflect the new "earnings to-date"

amount and the balance. (Copies of procedures for processing Consultant and Contractor invoices are included in the Project Procedures Manual). By utilizing this technique, the CCR is always current as it displays the very latest information as new invoices are processed. (As previously mentioned, not all cost accounts pertain to Consultant/Contractor invoices. For example, project administration charges, those charges by the various County departments, are tracked and totaled by other County cost account reports. These reports are periodically made available to the Project Control staff and the information is then used to update the corresponding cost accounts).

The Cost Control Report will be produced at least monthly, on the closing date of the County's Financial Accounting Management Information System (FAMIS) report. Updated reports are given to the Project Director so that project management decisions can be made in concert with the Project's budget.

3.4.4.2 Reconciliation of FAMIS and Cost Control Report

To ensure that all project expenses are assigned to the correct cost account, the MDT Finance Division will reconcile the Cost Control Report (CCR) to the County's FAMIS report on a monthly basis.

3.4.5 Cash Flow Report

3.4.5.1 General

The Cash-Flow Report will be organized like the Cost Control Report into the same primary cost categories defined by the WBS. Each cost account will be listed under a cost category. Projected expenditures for each cost account will be allocated on a quarterly basis through the Project's scheduled end date, as applicable.

The projected cash flow for each cost account will be subtotaled for the calendar year and a "cost to-date" column will also be included for the year for each cost account. The total projected cash flow through the entire life of a cost account may vary from the budget amount. This can be explained by anticipated changes or projected overruns in a particular cost account.

For reporting purposes, each of the major cost categories will be summarized by year and then all cost categories are further totaled to yield a monthly projected cash flow for the Project.

3.4.5.2 Updating the Cash Flow Report

By using a cash loaded schedule, it is relatively easy to generate a cash flow from the Master Project Schedule and the Cash-Flow Report may be generated to reflect any update in the Master Project Schedule or when a new cost account is added, or when a significant change occurs, which may affect the projected cash flow. The cash-flow projections will be developed from many sources and will be consistent with the latest update of the Master Project Schedule. The civil construction and systems contracts will require cash loaded schedule which will allow the Master Project Schedule to generate cash flow reports. These cash-flow reports will include a projected tabulation of earnings based on the most recent schedule update. Prior to award of a construction contract, the cash flow feature inherent in

the Primavera software will be used to generate a cash-flow allocation. Post award, the approved cash flow projection from the contractors can be incorporated.

3.4.6 Changes Report

3.4.6.1 General

An integral part of any cost control system is the ability to provide early identification and reporting of potential cost impacts against the approved project budget that are generated by causes such as project scope changes (adds or deletions), detail design development, Contractor/Consultant proposals and changes, material and equipment pricing trends, labor productivity and project schedule delays or accelerations. The Changes Report will be developed to meet project management's requirements and to mitigate these cost impacts.

The Changes Report presents in detail and summary fashion a listing of all approved changes, outstanding proposals and claims, and anticipated changes for the major contracts in the Project. The approved change amounts are considered final and are incorporated into the Project Budget and are reflected in the appropriate budget and forecast values in the Cost Control Report. The proposal and claim amounts represent raw data received from Contractors and are subject to negotiations. These amounts shall be considered maximum exposure amounts.

The purpose of this report is to itemize maximum cost exposure and track outstanding proposals and claims to insure timely resolution of pending changes and identify potential cost overruns.

3.4.6.2 Updating the Changes Report

The information contained the Changes Report is provided by the CE&I Consultant with oversight by the Chief of Construction Division. The report will be updated monthly and copies given to the Project Director and the following Division Chiefs - Program Management, Design and Engineering, Right-of-Way Acquisition and Utilities, Quality Assurance, Construction, and Project Control Divisions.

3.4.7 Budget Revision Procedures and Authority to Authorize Changes

MDT, with support from the PMC, will conduct a semi-annual, in-depth review of all project facets to reaffirm or revise the baselined Project budget. Budget revisions proposed will be discussed with project partners and approved by the MDT Director. MDT Program Management, with support from the PMC, is responsible for monitoring any changes to the Project budget.

Any required revision of the baseline project budget will be recorded in the cost tracking system. Only limited staff from the Program Management Division, and the MDT Chief Financial Officer, will be authorized to make changes to budget values. Any budget revision so made will be printed out as a journal entry, signed by the MDT Director and Chief Financial Officer, and entered into the document control system to create a permanent record of the change.

3.4.8 Accounting

The primary objectives of the accounting system are: (1) to ensure that the record keeping system identifies separately the receipts, disbursements, assets, liabilities and fund balance for each grant; and (2) to provide a summary of financial information that will enable the preparation of periodic reports that are required by the federal and state grantor agencies.

3.4.8.1 Account Structure

Miami-Dade County's accrual based FAMIS (latest version) will be the "official book of record" used in the accounting of all financial activities for the project. Accordingly, all eligible participating expenses will be tracked by their respective grant(s). The various grant expenditures will be consolidated along with any non-participating expenses under one capital project number.

Within the Federal grant(s), the account structure includes major expense categories, which correspond to the "GMIS Activity Line Item Codes" that are used to identify the budget line items.

Each major expense category will be further broken down into subcategories (i.e., work orders), which are specific tasks/assignments that will be performed by staff or under third party contract within a [grant funded] project. They will be identified by unique index codes in FAMIS and will be tied to specific GMIS Activity codes. The Project Director, with the concurrence of the Grants Management and Finance managers, will create these "cost" codes as necessary for control purposes. All grant expenses will be recorded at the cost code level and cross-referenced with the capital project.

3.4.8.2 Accounting System

A computerized financial accounting system (FAMIS) will be utilized to monitor and account for the accrual of expenditures, and to charge the appropriate funding sources for such expenditures. Included will be a labor distribution subsystem, which will be designed to distribute staff labor charges and force account work including indirect costs to the appropriate funding sources. Indirect costs will be charged to the grant(s) as a percentage of direct labor charges per the Federal Transit Administration approved "Indirect Cost Rate."

Grant expenditures posted in the accounting system will be fully supported by documentation such as vendor invoices, requisitions, purchase orders, 3rd party contracts, payroll registers, staff time sheets, etc.

3.4.9 Processing Payables

There are three basic types of payables, which are processed for payment utilizing two different sets of procedures.

3.4.9.1 Purchase Order and Direct Payments

Purchase order payments represent the processing of payments for goods and/or services acquired through MDT and Miami-Dade County Procurement Department. Direct payments refer to the processing of payment for items such as utilities, petty cash, freight, permits, postage, training materials and publications which are not acquired through the procurement

departments. Although included in this category, payments related to the acquisition of real estate and/or property relocations will follow the procedures for "contract payments," without the "pre-audit".

All payments shall be in compliance with applicable Florida Statutes, Miami-Dade County Codes, Administrative Orders, and departmental procedures. With the exception of real estate items, billing requests for Purchase Orders and Direct Payments will be mailed by the vendor and received through the MDT Finance Division's post office box.

3.4.9.2 Contract Payments

Contract payments are processed similarly to direct payments except that billing requests are normally received PMC Project Manager who reviews and forwards the approved billing request to the MDT Project Director who in turn forwards it to the MDT Project Control Division. Contractor billing requests are subjected to a "pre-audit" by MDT Contracts Payable Section prior to submittal to Miami-Dade County Finance Department for payment.

3.4.9.3 Contract Pre-Audit

Contract Pre-audit is a financial analysis of contractor pay-requests to determine mathematical accuracy, financial appropriateness and whether the submitted costs are allowable and reasonable costs, prior to payment. Different processes are utilized in the audit to reflect the different contract types, fixed price and cost plus fixed fee contracts.

Construction and procurement contracts are considered fixed price contracts. Contractor pay requests will be reviewed against the percentage of completion for the contract line items and whether the submitted costs are allowable and reasonable costs as well as the appropriateness of expenditure items. The status of change orders and contract modifications will be investigated to determine the current contract amount and total payments will be reviewed to verify the contract balance.

Consultant/service contracts are typically cost plus fixed fee contracts. These contracts require billings for services rendered during the specified billing period, including any reimbursable expenses incurred. In addition to the above-mentioned audit procedures that are performed on fixed price contracts, a review of the supporting documentation, submitted as justification for claimed [reimbursable] expenses is performed.

3.4.9.4 Approval/Files

All work orders, encumbrance requests and disbursements require the prior written approval from authorized MDT Project Control, Budget, Grants Management and Finance personnel. The Finance Division maintains a list of authorized signatures. In addition, MDT Finance staff maintains files of all paid vendor/contractor invoices together with a detailed history of all disbursements by vendor/contractor.

3.4.10 Force Accounts

The Cost Allocation Time Sheet (CATS) will be used to distribute labor charges to appropriate cost codes for all eligible project administration labor. MDT Finance will enter payroll data into the FAMIS Labor Distribution Subsystem. Prior to data entry into the

system, CATS totals are balanced and subsequently checked against Miami-Dade County Payroll data. A detailed printout of the payroll distribution charges will be obtained from the system for all labor charges entered by pay period.

Cost allocation time sheets will be completed on a biweekly basis and submitted to MDT Finance by all Miami-Dade County staff for time properly chargeable to the Project. The Finance Division will maintain a detailed file for review by appropriate auditors.

A "Work Order" system has been established by which County units submit work order requests for force account work which are subsequently reviewed and approved by the Project Director, prior to any charges being made against the project. These work orders typically cover a one-year period and are reported through the "Cost Control Report" based on information contained in the various County accounting reports.

3.4.11 Cost Control for Construction Contracts

All the construction contracts will be fixed price contracts employing unit price pay items. Payment is made only for acceptable work, verified "in-place". Variations in unit quantities will be handled in accordance with Article 33 of the General Conditions.

To insure a balanced bid and the County's ability to adequately review bids and to facilitate payment, the bid forms will be structured using unit price pay items.

Each monthly invoice subtotals the "payment this period" and "payment to-date" for each contract pay item. This subtotalling is made academic by the CPM computer software. The CE&I Consultant will be responsible for verifying that invoice quantities were installed in accordance with the contract documents prior to recommending payment to MDT. Recommendations for payment will be reviewed and audited by MDT prior to payment.

3.4.12 Charges by Other County Departments

Although not as significant in terms of dollars as other project components, charges by County forces have been historically difficult to monitor and control. Section 3.4.10, Force Accounts, deals with the mechanics of the time sheets and the cost allocation. In this section the control techniques for these charges is discussed.

A "Work Order" system has been established by which County units submit work order requests to be subsequently reviewed and approved by the Project Director, prior to any charges being made against the Project. These work orders typically cover a one-year period and are reported through the "Cost Control Report" based on information contained in the various County accounting reports. Work order expenditures will be reviewed and approved on a monthly basis as part of the updated Cost Control Report.

3.4.13 Contingency

The Budget Estimate allows for a contingency line item that is calculated as the difference between the current project estimate and the total project budget. The contingency allowance is intended to cover:

- Areas of the budget estimate that have not been fully defined, as well as cost and quantity inaccuracies;

- Unforeseen escalation allowances over and above predicted increases in the cost of materials, labor and services, and the rate of exchange;
- Overruns in terms of time and cost in critical areas during project execution;

The contingency will be recorded in a separate cost account. Drawdown against the contingency is subject to approval by the Project Director. During the execution of the Project, the contingency allowance will fluctuate as the total project estimate is continually reviewed and revised; and the risk areas are eliminated, or new risks are identified. The status of the contingency will be included in the cost control report.

As an attachment to the cost control report, and for limited distribution only, will be prudent projected allocations for the available contingency amount. Applying historical percentages to the subtotals for the various cost categories drives the allocations.

3.4.14 Funding Background

The funding for this Project is expected to be derived from a combination of Federal, State DOT and County sources.

3.5 Document Control

3.5.1 General

Document Control is an integral part of the management control process. It involves the storage, retrieval, reproduction and distribution of those documents that reflect the current approved configuration of the system. Also included are correspondence control tasks. To ensure consistency and in support of total quality management, the North Corridor Metrorail Extension will include the implementation of standard file indexing to help reduce the cost effort and delays associated with logging and filing. Furthermore, all incoming and outgoing correspondence to consultants and contractors is sequentially numbered and logged. Project files are kept in standard filing cabinets in accordance with a frequently updated filing index. Appendix E provides a copy of MDT Project Procedure No. 004, "Filing System". (A copy of the latest filing index update is available from the MDT Manager of Contract Services). Access to Project files is restricted primarily to document control staff.

All original drawings, submitted by the Engineer of Record (EOR) on mylars for long-term storage, will be kept in fireproof cabinets for safekeeping. In addition, complete CADD files on CD-ROM will be made of all conformed drawings and subsequent revisions. These CADD CDs will be kept separate from the original mylars. Intermediate drawings, such as design review drawings will be retained in flat files for a period of three years after the close out of a design contract. All Project drawings will be logged in a master drawing log. This log will contain entries for all revisions of a drawing, in essence, the complete history of each drawing. A "document retrieval form" shall document retrieval of conformed documents. Generally, an original document can only be retrieved for the preparation of addenda during the bidding period, to conform drawings after contract award or to revise a drawing in compliance with an approved change request. In addition to requiring an approved change request, the release of any original document requires the signature of the Chief of Design and Engineering in whose care the drawing is entrusted while it is being revised. For additional details, refer to MDT Project Procedure No. 015, "Retrieving Controlled Drawing

Originals” contained in Appendix F. Routine reproduction of drawings will be the responsibility of the document control staff and will require the completion of a "printing request form". For additional details, refer to MDT Project Procedure No. 020, “Reproduction of Stored Drawings” contained in Appendix G. Depending on the magnitude of the request, printing will be performed by County reproduction staff or outside vendors as applicable.

The document control staff will perform distribution of reproduced documents. The distribution of controlled documents will be documented and logged to facilitate the distribution of future revisions.

Once the Project is complete, storage of original drawings will be for the life of the structure. Other documents and files will be stored for a period of not less than three years, in accordance with State and Federal guidelines. MDT will comply with FTA guidelines under the FTA Master Agreement (9) Section 8, Reporting, Record Retention, and Access and CFR Part 18.36 (i) (11), “Contract Provisions. The document control staff will coordinate long-term storage with the County's Records Management Division.

3.5.2 Contract Document Transmittal Reviews (CDTs)

MDT will utilize the PMC to maintain a tracking of submittals by consultants and contractors. The PMC will assist with the review of submittals and perform Quality Control surveillance of the Contractor's operations. The PMC will employ field staff that will receive and log all Contractor submittals. Copies of all transmittals will be sent to the MDT Project staff. The Copies of transmittals being returned to the Contractor with the review disposition will also be sent to the MDT Project staff. By being involved in the process through the review of transmittals and attendance at weekly progress review meetings, the Project staff will insure that the attempt to disguise a design error through the CDT review process by the consultant is minimized. By written agreement with the Design Consultant, the review cycle shall be consistent with what is specified in the construction contract, although certain predefined complex submittals may be allowed longer review times. The Design Consultant will maintain a record of all pertinent dates for each CDT submittal.

Any rejected submittals will immediately trigger a meeting with the Contractor to resolve any difficulties and assure prompt approval upon re-submittal. After completion of the contract, the consultant will box and catalog all CDTs and transmit them to MDT. CDTs are stored in the County archives for a period of three years after final contract acceptance. (The procedure for reviewing CDTs is included in the Project’s procedures manual).

3.5.3 Project Record Documents

Project Record documents are the extension of the baseline. The substantial portion of these documents are received at the conclusion of design and construction and are important to the support of MDT and are important during the start up and testing portion of the Project. Project Records may include but not be limited to the following:

- As Builts (Drawings, Specifications)
- Operations & Maintenance Manuals
- Parts Manuals

- Training Manuals
- Shop Drawings
- Construction Permits
- Warranties and Guarantees
- Construction Photographs (if applicable)
- Additional Reference Records (Design Reviews, Field Office Correspondence, Inspectors Daily Reports)

The Construction Contractor will be required to maintain accurate, up to date as built drawings as the work progresses in accordance with the Contractor's approved Quality Control Program Plan. (A copy of the County's Quality Control specifications is included as part of the construction Contract Documents). This contractually required plan is submitted by the Contractor for approval prior to commencing work. Periodically, the resident engineer will inspect the as built drawings to ascertain compliance with this requirement. Sufficient moneys will be identified in the contract for payment upon submittal of acceptable as built drawings.

Once the Contractor submits the as built, the CE&I Consultant's field office staff will perform a preliminary review to determine if they are complete and in compliance with contract requirements (stamped "as built", dated, signed, etc.). Subsequently, they will be sent to the Design Consultant's office for a detailed review. At this point, they will be sent to the Chief of Program Management for final review and acceptance as being in accordance with applicable procedures. As built drawings will be retained for the life of the structure.

4.0 PROCUREMENT AND CONTRACTS

4.1 General

MDT will be required to procure a variety of services and goods that will be utilized to implement the North Corridor Metrorail Extension. Effective procurement management and contract administration will be a fundamental priority for the successful implementation of the Project.

Contract administration is the day-to-day management of contracts and includes such areas as consultant selection, contract preparation and award, processing invoices and changes, grants administration, contract compliance and DBE administration. To resolve the overlap between contract administration and the responsibility of the Program Management Division and Construction Division Chiefs, who are ultimately responsible for the administration of the design and construction contracts, the contract administrator will be employed in a support role. (MDT also manages a "contracts and leasing" office who deal primarily with procurement type contracts such as buses but who will participate on the project in the areas of DBE and contracts compliance. These interfaces are explained in the following paragraphs).

Contract administration for the project shall be in accordance with the latest issue of FTA Circular 4220.1E, "Third Party Contracting Guidelines", as amended and the "Grantee Procurement System Self-Certification".

4.2 Responsibility

The contract administration duties will be the responsibility of the MDT Manager of Contract Services under the supervision of the Chief of Project Control Division.

4.2.1 Organization/Interfaces

The Manager of Contract Services will provide support to the Chiefs of Program Management, Design and Engineering, and Construction in the areas mentioned in the introductory paragraph. The Manager of Contract Services will coordinate, not only with these Chiefs, but also with the following individuals/entities:

1. The Chief of Right-of-Way Acquisition and Utilities;
2. The Construction Managers and Project Engineers;
3. Agencies and municipalities such as FTA, FDOT and other affected municipalities;
4. Clerk of the Board, OCI, CITT, BCC agenda coordinator and County Manager's Office;
5. Consultants and Contractors;
6. MDT DBE Administrator;
7. County Attorney's Office; and
8. Other County departments such as GSA's Risk Management and Office of Strategic Business Management.

4.3 Procurement

The following sections describe MDT's approach to the procurement of consultant services and the procurement of materials and equipment for the Project.

4.3.1 Procurement of Services

4.3.1.1 Consultant Selection

Miami-Dade County retains engineering, land surveying, architectural and landscape architectural consultants as stipulated by chapter 287.055 of the Florida Statutes (also known as the "Consultant Competitive Negotiation Act".) and Administrative Order 3-39. The process consists of three basic steps as described in the following sections.

4.3.1.2 Certification

Miami-Dade County maintains a technical certification program that annually reviews the qualifications of consultant firms interested in receiving County work. A certification committee of registered professionals meets at least monthly to review technical certification requests. The committee issues technical certifications in specific areas of work based on each firm's in-house resources and the experience and capabilities of its full-time employed, Florida registered professionals on staff.

4.3.1.3 Selection

The County Manager appoints a Competitive Selection Committee (CSC), upon the recommendation of DBD as per Chapter 2 of the Miami-Dade County Code. The CSC is made up of members from different County Departments with at least two members from MDT.

The process of selection adheres to the Florida Statutes two-tier system. During the first tier selection process, the Office of Capital Improvements (OCI) reports to the CSC on the certification status of the firms, which responded to the advertised selection notice. Based on the processes outlined in Administrative Order 03-39, each member of the CSC completes evaluation sheets for each proposer based on criteria outlined in the AO and generates a "short-list" of qualified firms to be interviewed at the second tier selection process, which may include a submittal of additional information and may involve an oral presentation.

At the oral presentation, the selection committee hears presentations from the "short-listed" firms and evaluates and ranks the interviewed firms. The selection committee prepares a report to the County Manager recommending the three most qualified firms, in ranking order, for the Manager's consideration as to order of preference for negotiation of a professional services agreement. The manager decides the order in which contract negotiations will be attempted with the recommended firms, and appoints a negotiation committee.

4.3.1.4 Negotiation

The Manager appoints the negotiation committee, made up of 3 members from the CSC including 2 representatives from MDT. This committee meets with the first-ranked firm and attempts to negotiate a mutually satisfactory agreement. OCI shall be responsible for

scheduling, coordinating and audio taping the meetings during negotiation. If successful, the CSC prepares a negotiation report to the County Manager.

Upon approval of the County Manager, the OCI shall file the documents with the Clerk of the Board, which includes the necessary materials for approval of the contract by the Board of County Commissioners. If unsuccessful with the first-ranked firm, the committee attempts negotiations with the second-ranked firm; and the third-ranked if unsuccessful with the second-ranked firm.

If a contract cannot be negotiated with any of the three top-ranked firms, the project is re-advertised and the entire certification, selection and negotiation process is repeated until a contract is negotiated and approved by the Board of County Commissioners (BCC) and the Citizen's Independent Transportation Trust (CITT). Figure 4-1, PTP Non-Expedite Consultant Selection Schedule, indicates the typical steps from completion of contract documents to contract notice-to-proceed.

After the BCC and the CITT approves a contract, authorization to proceed is issued to the consultant and the work is accomplished in the time frame and at the cost mutually agreed during contract negotiations.

4.3.2 Procurement of Equipment and Materials

4.3.2.1 Equipment

Equipment is generally procured through a competitive low bid process. In the case of highly specialized equipment, it may be procured through a competitive negotiation (RFP or RFQ/RFP). Most of the equipment for the Project will be procured through a competitive low bid process, unless circumstances justify an alternative procurement method.

4.3.2.2 Materials and Supplies

Purchase of materials and supplies is accomplished either by contract or purchase order (PO) procedures. These purchases tend to be more routine and smaller in value than most other procurements and competition for items less than \$25,000 is secured under small purchase procedures by verbal or written quote. In other cases, a bid or RFP process may be used.

Owner-Furnished Material

It is common on most rail transit projects that some material be purchased by the Owner and turned over to the appropriate contractors for installation or incorporation into the Project. This is done to meet schedule requirements by early purchase of "long lead" items, or to benefit from cost savings associated with large quantity purchases.

Early in the final design and construction phase, MDT will determine what, if any, materials will be owner-furnished.

Material Storage and Security

MDT will establish strict procedures for the receipt and storage of all spare parts and material procured for the Project. Receiving inspections will be conducted on all incoming material and supplies. For furnish-only contracted equipment, MDT Materials Management Division

will be responsible for receiving spare parts and materials. MDT Materials Management is also responsible for inspecting and accepting such deliveries. Once spare parts are delivered and accepted, the materials will be securely stored and issued in accordance existing Materials Management Division procedures.

System equipment procured early will be stored indoors when appropriate. Storage buildings and yards will be secured using locked doors and/or gates, fenced, lit, and patrolled as determined to be necessary by the MDT Materials Management Division.

The Materials Management Division will be responsible for warrantee administration in accordance with the applicable contractual requirements.

On the civil construction contracts, the contractors are responsible for the delivery and storage of all their equipment and materials prior to their incorporation into the work. The Chief of Construction is responsible for the verification of such stored equipment prior to processing payment for same. Proper certificates of insurance are required prior to payment of stored materials. The Chief of Construction may elect to employ the services of Materials Management for this verification or may elect to have the CE&I perform the work.

The Materials Management Division is also responsible for warrantee administration for civil construction contracts.

4.4 Construction Contract Preparation and Award

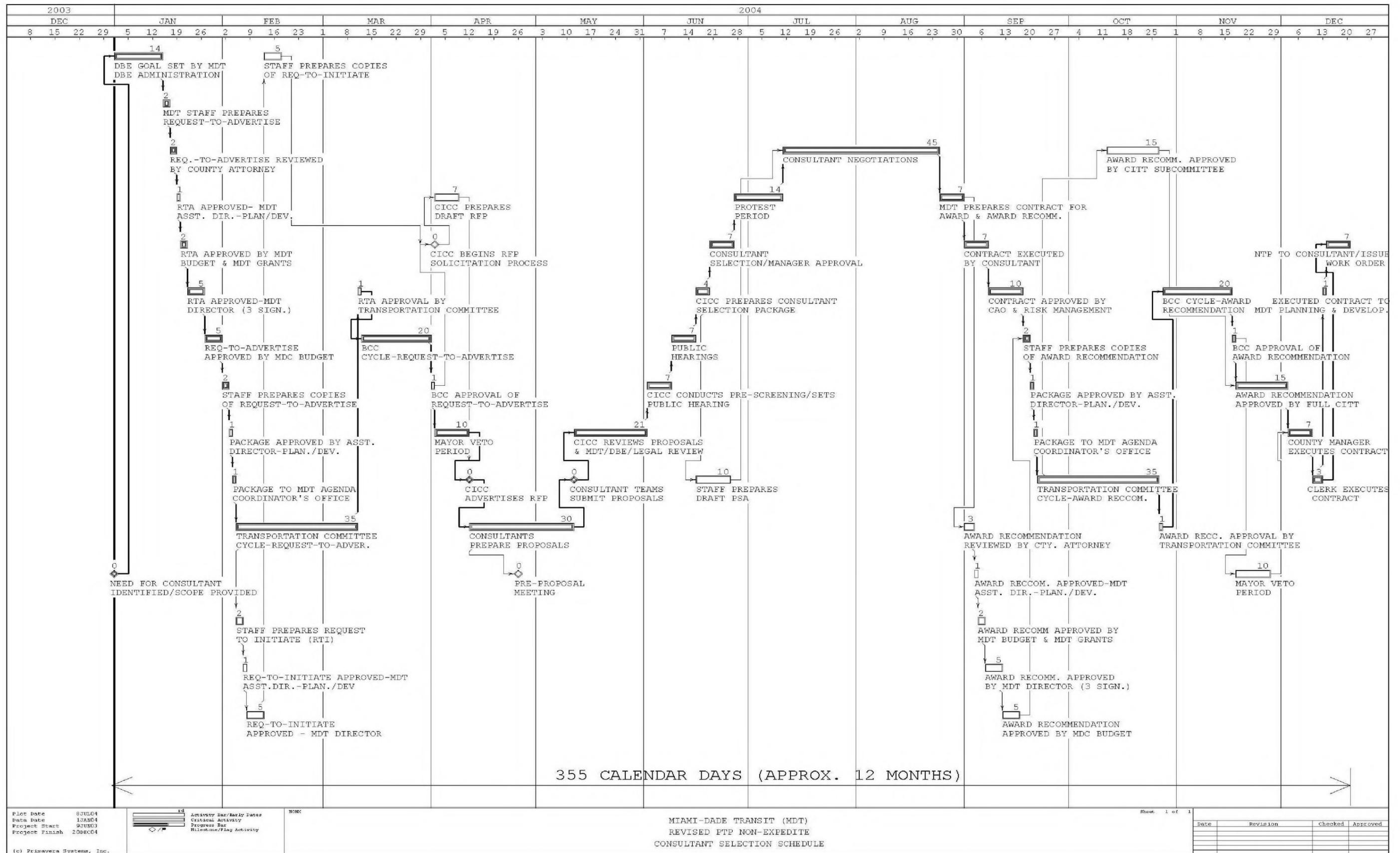
Even though some of this "contracts" work is performed for the Project by other departments or divisions, the responsibility to insure that the work is done on time and that all applicable procedures are followed rests with the Manager of Contract Services.

Although the preparation of the technical portions of the contract documents is the responsibility of the Chief of Program Management, the final packaging and preparation of the non-technical "front end" documents the responsibility of the Manager of Contract Services, is supported by the Chief of Program Management.

The Manager of Contract Services will prepare a "Request to Advertise" form to seek approval from the BCC prior to advertising every contract. This form must be approved by the County's budget office prior to presenting it to the BCC.

The Manager of Contract Services will coordinate all requests for additional information or clarifications during bidding as well as the preparation of addenda. The Chief of Program Management will coordinate with the Design Consultant on the actual preparation of addenda documents.

Bid protests are handled in accordance with Miami Dade County Code, Administrative Order 3-21.



Plot Date: 8JUL04
 Data Date: 13JUN04
 Project Start: 9JUN03
 Project Finish: 20DEC04

Activity Bar/Early Dates
 Critical Activity
 Progress Bar
 Milestone/Flag Activity

MIAMI-DADE TRANSIT (MDT)
 REVISED PTP NON-EXPEDITE
 CONSULTANT SELECTION SCHEDULE

Sheet 1 of 1

Date	Revision	Checked	Approved

(c) Primavera Systems, Inc.

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Once bids are opened, they are evaluated in accordance with the contract requirements and against the Engineer's estimate, prepared prior to bidding. Once the decision is made to award, the Manager of Contract Services will prepare an "Award Recommendation" form. All bid awards are subject to the approval of the BCC and CITT. This cycle of award is depicted Figure 4-2, PTP Non-Expedite Bid and Award Schedule. All interfacing with the MDT and MDC agenda coordinator, which is an employee in the County Manager's Office and who prepares the agenda for each BCC meeting and coordinates the review of all agenda items by the County Attorney's Office, will be done by the Manager of Contract Services.

4.5 Processing of Invoices

The processing of invoices is discussed in Chapter 3.0 of this PMP.

4.6 Processing of Change Orders

Processing of claims is covered in Chapter 11.0, Claims Management of this PMP. In addition, a copy of MDT's Change Control Procedure is provided in Appendix I. All interfacing with the Clerk of the Board, a County employee who coordinates the processing of all BCC items once the Board takes action on an item, such as executing and stamping of contracts and change orders, will be performed by the Manager of Contract Services.

4.7 Grants Administration

Grants management consists of charging the appropriate grants for expenses incurred, recording changes to grant budgets and ceiling levels, reporting financial status to state and federal government agencies, and billing the appropriate funding sources for grant reimbursements.

The Project is to be funded by a combination of federal and state grants, as well as local sources. Grant expenditures are monitored using FAMIS reports. Billings will be made on a monthly basis to the FTA via the Federal Electronic Clearing House Operation (ECHO) system for eligible expenses, for which disbursements have been made.

The State of Florida Department of Transportation is also billed on a monthly basis for eligible expenses, for which disbursements have been made. Reimbursement requests are based on monthly FAMIS reports. The County's Office of Strategic Business Management (OSBM) handle billings for local (Miami-Dade County) funds.

A quarterly Financial Status Report is submitted to the federal government (FTA) along with periodic financial reports as required by FTA, State of Florida Department of Transportation and Miami-Dade County.

The MDT Finance Division will maintain all necessary records regarding grant revenues and expenditures in accordance with the required federal regulations. The same type record keeping will be utilized in regards to applicable State participation grants and local funding.

The MDT Finance Division will make ECHO drawdowns and billings for State and local participation funds for eligible expenses, for which disbursements have been made. Detailed subsidiary records will be maintained for all Project revenues.

4.7.1 Budget Revisions and Amendments

The Grants Administration staff also prepares any necessary budget revisions or grant amendments that may be required. Other budget revisions and amendments due to reallocation of funds will also be submitted by the grants staff on an as needed basis.

4.8 Project Closeout

When the Project is completed, the Grants Administration staff will assist the PMC in the Project closeout, preparing a narrative summary of the Project. That summary will be included along with the required financial status report and final project budget prepared by the Controller's staff. During the closeout process, the Grants Administration staff will also review with the Controllers Office and the Project Director any outstanding line items with remaining funding and adjust the final budget accordingly. In compliance with Federal and State requirements, all grant-related files for this project will be retained for a three-year period following submission of the expenditure report at project completion.

4.9 Contract and Wage Rates Compliance

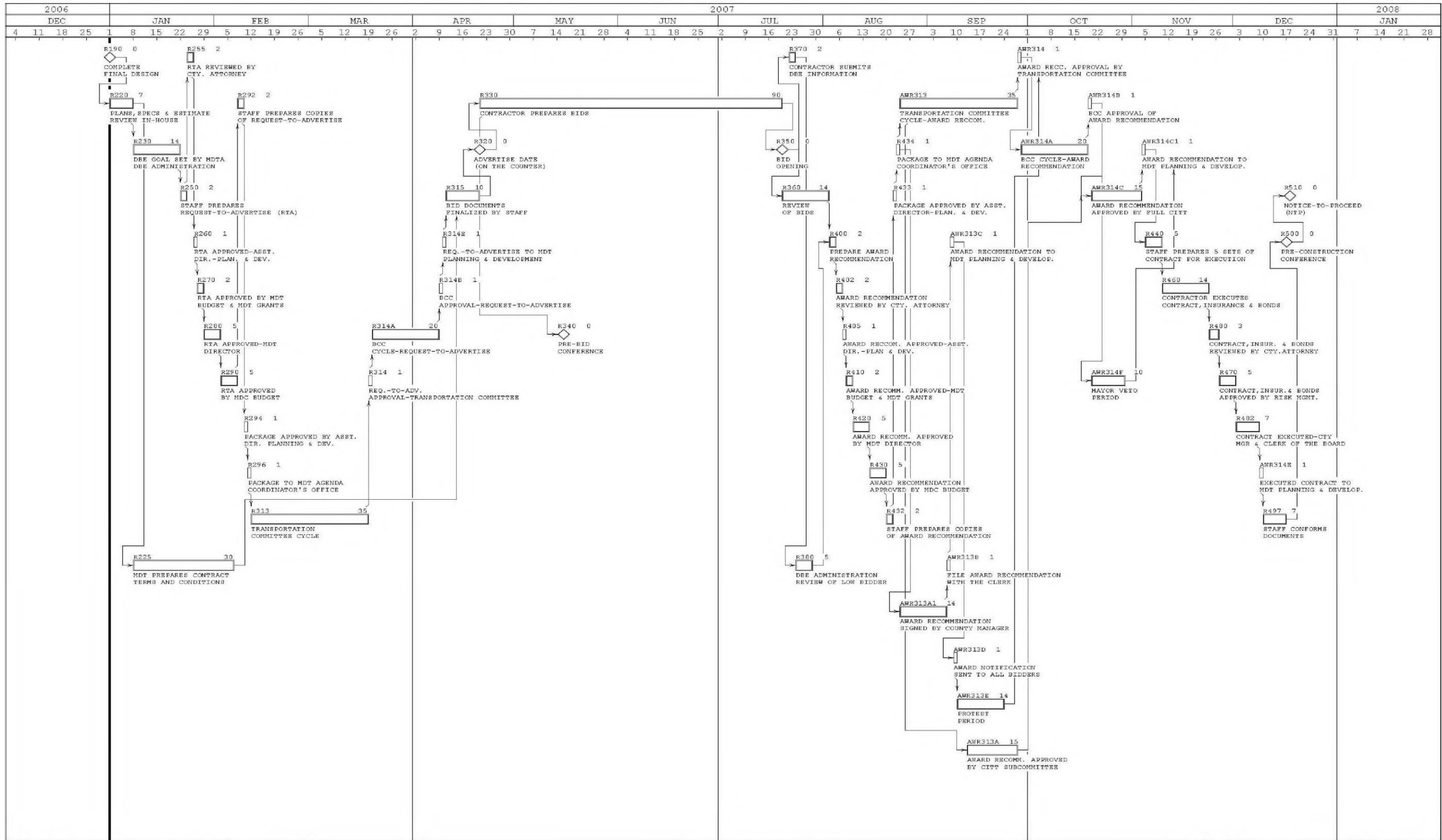
Contracts compliance will be the responsibility of the MDT Fair Employment and Labor Practice Office. Their primary duties include:

1. Review of Contractor submitted Certified Payrolls for Davis-Bacon compliance;
2. Interviews of Contractor/subcontractor employees to verify accuracy of Certified Payrolls;
3. Administer/resolve any Contractor Department of Labor violations in accordance with applicable regulations and laws;
4. Prepare reports as necessary to record and monitor Contractor compliance; and
5. Otherwise monitor the Contractor's activities to insure compliance with all applicable regulations and laws.

4.10 Education and Training

Well before revenue service, the education and training program will be developed through a combined effort of the Agency, consultants and systems suppliers. Training of MDT operations and maintenance staff will be specifically included in the systems supplier's scope-of-work.

Since this PMP covers an extension to an existing system, training will concentrate on any new aspects of the system. The Agency maintains an experienced staff of trainers, which will be included in the training program. Refer to Chapter 16.0, Testing and Start-Up, for a detailed discussion of the approach to education and training for the Project.



Plot Date 26MAR07
 Data Date 1JAN07
 Project Start 1JAN06
 Project Finish 17DEC07

act id rd
 Activity Bar/Early Dates
 Critical Activity
 Progress Bar
 Milestone/Flag Activity

PTPC

MIAMI-DADE TRANSIT (MDT)
 PTP NON-EXPEDITE CONSTRUCTION
 TYPICAL BID AND AWARD CYCLE

Sheet 1 of 1

PTP BID AND AWARD CYCLE			
Date	Revision	Checked	Approved

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5.0 ENVIRONMENTAL ASSESSMENT AND MITIGATION

5.1 General

The Chief of System Planning reports to the Deputy Director of Engineering, Planning and Development and is responsible for overseeing Project compliance with all federal, State, and local laws, and regulations relevant to the protection of the environment and historic preservation. Since the Project involves federal funding, the Chief of System Planning is responsible for ensuring Project compliance with the requirements of Council on Environmental Quality, the National Environmental Policy Act (NEPA), Clean Water Act, Clean Air Act, Federal Transit Laws, National Historic Preservation Act, and the Endangered Species Act.

The Chief of System Planning will be responsible for ensuring compliance with the NEPA process through the development of a tiered Environmental Impact Statement report. The environmental analysis component of the North Corridor Metrorail Extension involved an Alternative Analysis phase, followed by preparation of a Supplemental Draft Environmental Impact Statement which was completed in July 2006. The environmental analysis component of the Project will conclude with completion of the Final Environmental Impact Statement in April 2007.

5.1.1 Alternative Analysis/Draft Environmental Impact Statement

An Alternative Analysis was performed as the first-tier of a programmatic EIS resulting in the selection of a Locally Preferred Alternative. The results of the Alternative Analysis and the selected Locally Preferred Alternative were analyzed and developed, in compliance with the NEPA process and according to the New Starts planning provisions, through a Supplemental Draft Environmental Impact Statement (SDEIS).

Work on the SDEIS commenced in 2002 and was completed in April 2006. FTA approved the final SDEIS on May 9, 2006. The SDEIS was then circulated for review and two public hearings were held in June and July of 2006.

5.1.2 Final Environmental Impact Statement

The FEIS of the North Corridor Metrorail Extension addresses comments and questions generated from the public reviews of the DEIS and approved LPA. This phase of the study may require additional analysis and refinement of the selected LPA, including design and alignment resulting from the AA/DEIS. The completion of the Project's financial plan, project costs, benefits, and impacts focusing in the scope of mitigation measures to minimize environmental, socioeconomic and transportation impacts are also included in this phase of the environmental analysis.

MDT will provide firm commitments to implementing required mitigation measures specified in this document.

5.1.3 Preliminary Engineering

The NEPA process for the North Corridor Metrorail Extension will be completed during the PE phase of the project. During this phase, the environmental analysis will focus on addressing comments and questions generated from the public reviews of the AA/DEIS, approved LPA and the FEIS. Environmental activities may also include more detailed refinement of the selected LPA with a much higher degree of confidence to the extent necessary to complete the NEPA process.

5.2 Miami-Dade Transit Planning and Environmental Coordination

The planning and environmental studies coordination is carried out by the System Planning Division of Miami-Dade Transit, which will be involved in supervising the scope of work, methodology and technical results of the different tiers of analyses associated with each environmental study phase (AA, DEIS, FEIS).

The coordination effort will also require conformity with state and federal agencies requirements. This activity includes coordination with FTA, FDOT, US-EPA, inter-agency coordination with Miami-Dade County MPO, Broward County MPO, MDT Divisions (Design & Engineering, Service Planning, etc), Miami Dade County Departments (Department of Planning and Zoning, Department of Public Works, Department of Environmental Resources Management, etc), municipalities (Opa-Locka, Miami Gardens), private and local entities, and the public involvement process. The coordination activities include all transportation/environmental inputs originating with other organizations involved and/or impacted by the Project.

The MDT System Planning Division team, augmented by the Program Management Consultant, will supervise the above mentioned activities by having meetings on an “as needed” basis (or, at least, monthly) and having close follow-up on technical progress of the study’s components at different control points. The System Planning Division organization is described in Section 2.2 of this Plan. The Chief of the Division reports directly to the Deputy Director of Engineering, Planning and Development.

5.3 Planning Consultant Team

The Planning Consultant Team is organized by discipline, with key personnel responsible for each discipline. The team is headed by a prime consultant, and sub consultant firms specializing in a full range of disciplines. The consultant Project Manager is responsible for all work conducted by the consultant team and reports to the MDT Planning Project Manager.

5.4 Codes and Standards

Contract Documents must be prepared in full compliance with all applicable technical requirements, methodology, state-of-the-art analytical procedures and professional best practice, to ensure compliance with:

- Federal Transit Administration New Starts process
- National Environmental Policy Act process

5.5 Planning and Environmental Activities

The following major activities will be developed and documented at different levels of detail as part of the planning and environmental reports (AA, DEIS, FEIS):

- Purpose and Need for Action
- Description of Alternatives evaluated including LPA
- Affected Environment
- Transportation Impacts
- Environmental Consequences
- Financial Analysis
- Comparative Benefits and Costs
- Comments, Consultation and Coordination

The Environmental analysis results will provide accurate information and assessment on expected impacts, as well as mitigation actions on the following subjects:

- Socioeconomic and Land Use
- Environmental Justice
- Utilities and Railroads
- Relocation needs
- Archaeological and Historic Resources
- Pedestrian and Bicycle Facilities
- Parklands and other Recreational Facilities
- Visual and Aesthetic impacts
- Air Quality
- Noise and Vibration
- Energy
- Water Resources
- Wildlife and Habitat
- Farmlands
- Geology and Soils
- Contamination Impacts
- Impacts during Construction

In particular, the analytical process on transportation impacts involves, among others, the development of the following tasks: transit analysis, traffic analysis, capital, operating and maintenance cost estimates, ridership forecasts (modeling process), level of service analysis

public meetings, public hearings, response to comments, and quality assurance / quality control tasks.

Each major activity will be thoroughly documented in thematic chapters included in the report for further reviews and comments.

5.6 Study Review and Records Control

The submittals will consist of technical reports exhaustively documenting all pertinent information, methodology, analytical tools and results at the completion of the major activities listed above.

Reviews will be performed during and at the completion of each chapter and records of all key communications, decision and actions will be maintained.

The compendium of revised chapters will be submitted to MDT as a draft report to evaluate its conformity with FTA and NEPA process. Three reports are scheduled to be completed:

- Alternative Analysis / Locally Preferred Alternative Report
- Draft Environmental Impact Statement Report
- Final Environmental Impact Statement Report

A revised report on the FEIS may be developed during Preliminary Engineering, if necessary, to address comments and recommendations resulting from public hearings and/or technical refinements during design works.

As part of the process, preparation of an EIS may entail additional analysis to update and/or complement previously submitted information. As a result of adjustments required to consider developments occurring along NW 27th Avenue since the completion of the 1999 DEIS, the North Corridor Metrorail Extension DEIS has been the subject of several supplemental agreements to comply with these requirements. The additional work consists of preparing a Supplemental Draft Environmental Impact Statement and finalizing the FEIS based on the previously approved Metrorail Locally Preferred Alternative, as required by FTA. A new DEIS and a re-evaluation of the FEIS is necessary to conform to FTA and NEPA procedures for continued project funding.

As stated by FTA, once the Supplemental Draft Environmental Impact Statement has been completed and signed, a Notification of Availability (NOA) is published in the Federal Register by FTA and advertised through local media to solicit public comment by MDT. The DEIS is circulated to those agencies with jurisdiction by law, parties that have expressed an interest, either through the scoping process or in response to the NOA, and other entities potentially affected by any of the alternatives. The circulation period must last a minimum of 45 days and a public hearing must be held with at least 15 days prior notice.

After completion of the SDEIS circulation period, the FEIS will be prepared, including appropriate responses to all comments, commitments and adjustments received. Once the appropriate FTA official has approved the FEIS, it is concurrently filed by FTA with the US Environmental Protection Agency (US EPA) for publication of a notification of availability

for a 30-day circulation period in the Federal Register and it is distributed and advertised through local media by MDT.

Following completion of the circulation period, FTA may issue a Record of Decision stating that the NEPA process has been completed for the project. At this point, MDT may proceed starting the process to enter into Final Design.

5.7 Brief Description of the Role of the Planning Consultant

The Planning Consultant's scope of services includes certain tasks associated with the preparation and submittal of the SDEIS and subsequent revised FEIS. According to the scope of services, the consultant will provide professional and technical services to accomplish the following tasks:

- Transit Analysis and update
- Development of the No-Build Alternative
- Traffic Analysis and update
- Capital, Operating, and Maintenance cost estimates
- Environmental Analysis / Impacts
 - Air Quality analysis
 - Noise and vibration assessment
 - Contamination
 - Cultural Resources
- Modeling
- Prepare North Corridor Metrorail Extension SDEIS
- Meetings and Project Control – SDEIS/FEIS
- Respond to comments – SDEIS
- Public Meetings and Public Hearings – SDEIS
- Revise (for consistency with New Starts Application)/ Prepare FEIS
- Respond to comments – FEIS
- Quality Assurance / Quality Control

The DEIS/FEIS documents will address all the physical, social and economics impacts identified during the environmental/planning phase of the project.

5.8 Environmental Mitigation Monitoring

The Final Environmental Impact Statement for the North Corridor Metrorail Extension describes mitigation measures that will be implemented as part of the Project. The Record of Decision will include a Mitigation Plan to be implemented during final design. The plan will summarize the potential effects of the project, the measures to be taken to mitigate those

effects, the monitoring action and condition of approval required to insure that the measures are implemented. The plan will also identify the parties responsible for implementation and the key milestones for implementation.

The mitigation management process will require close coordination between MDT, PMC, the Design Consultant, the Chief of Construction, the cities in which the project is being developed, State and Federal regulatory/resource agencies. The management process will insure that mitigations identified in the environmental documents are effectively incorporated into the construction plans and specifications.

The mitigation management process will continue through construction to assure that mitigation measures requiring construction implementation are incorporated into the construction documents and implemented.

6.0 DESIGN MANAGEMENT

6.1 General

Design Management is an integral part of the design phases of the Project and is the key to the success of every project. Design Management for the North Corridor Metrorail Extension will require continuous monitoring of the design process by establishing methods of controlling project scope changes to assure that the Project progresses within budget and schedule and establishes design review levels at designated design control points. The primary objective of Design Management is to develop a detailed design that takes into account budgeting and scheduling considerations and that is reviewed and approved by reviewers from various groups. The goal is to produce contract documents for the bid phase and ultimately the construction phase of the Project.

The Program Management Division of Miami-Dade Transit is responsible for overseeing the design management function of the North Corridor Metrorail Extension. Responsibility for the overall design management effort has been delegated by MDT to the PMC.

6.2 The Design Process

There are two main phases that make up the design process: Preliminary Engineering (including Extended PE) and Final Design as described in the following sections.

6.2.1 Preliminary Engineering

The Preliminary Engineering phase of project development has historically been defined as the phase which takes a project from a planning state and brings it to approximately 30 percent level of design completion. FTA has recently redefined the PE phase within the New Starts program as the process of finalizing the project definition/scope, cost and the financial plan such that:

- all environmental impacts are identified and adequate provisions made for their mitigation in accordance with NEPA;
- all major or critical project elements are designed to the level that no significant unknown impacts relative to their costs will result; and
- all cost estimating is complete to the level of confidence necessary for the project sponsor to implement the financing strategy, including establishing the maximum dollar amount of the New Starts financial contribution needed to implement the project¹.

The above definition does not mean that all design must be completed in preliminary engineering. Rather, the definition means that engineering and other issues such as third party coordination are advanced such that the cost estimating process can specifically identify

¹ FTA Proposed Preliminary Engineering Exit Criteria, August 31, 2006.

the main components of the Project and add sufficient contingencies to cover the remaining design and cost uncertainties that will be addressed in Final Design.

6.2.2 Final Design

Upon satisfaction of the items described above, referred to as PE Exit Criteria, and compliance with all applicable environmental requirements, MDT will request FTA's approval for entry into Final Design. Upon FTA approval, the Project enters the Final Design Phase which is the last phase of the Project development prior to construction. The Final Design work within the New Starts program involves the completion of project definition, including resolution of design and/or market uncertainties, through refinement and elimination of minor uncertainties associated with design scope, and through the procurement process with the receipt of bids, the elimination of minor market risk.

During Final Design final drawings, technical specifications, and contract documents, required to obtain a construction contract are prepared. During this phase an engineer's estimate is prepared, an analysis of the construction bids is performed, and real estate acquisitions takes place.

Upon approval to enter into the Final Design phase, FTA may elect to commence negotiations with MDT for a Full Funding Grant Agreement.

6.3 Design Management and Coordination

The design management and coordination effort will be carried out the by the PMC, which will be involved in coordinating the objectives of the Project as defined in the Planning Phase and coordinating with all the project stakeholders, both external agencies and Miami-Dade Transit staff, as well as the public at large, identifying the needs for and coordinating Joint Participation Agreements, as required, and supervising and coordinating all day-to-day design activities. Division work force organization is described in Chapter 2.0 of this PMP. The PMC Program Manager is responsible for all work conducted by the PMC team and reports directly to the MDT Chief of Program Management.

The Program Management Consultant manages the above activities by means of bi-weekly meetings with the Design Consultant supplemented by more frequent meetings with individuals on specific issues and by design reviews at different control points. Coordination of the design will be achieved by joint technical meetings, which will resolve conflict issues and, under MDT guidance, will result in a unified approach to problem resolution.

Design reviews are explicitly included in the design schedule and are programmed as described in Section 6.6, Design Reviews.

6.4 Design Consultant Team

The Design Consultant Team is organized by discipline with a hierarchy of key personnel responsible for each discipline. The team is headed by a prime consultant, and subconsultant firms specializing in a full range of disciplines. The Design Consultant will provide design documents for both the Preliminary Engineering and Final Design phases.

The consultant Project Manager and Division Managers work together to coordinate team efforts; to provide direction for various tasks; and to oversee and review work activities and products for compliance with Project requirements. Work will be conducted with considerable communication and interaction among the various consultant firms, their employees, the PMC team, and County departments. Subconsultants are responsible for conducting their designated work and producing the required work product. The Consultant Project Manager is responsible for all work conducted by the consultant team and reports to the PMC Project Manager.

The Program Management Consultant is responsible for preparation of all required safety and security documents for the Project in accordance with industry standards and FTA requirements. See Chapter 15.0, Safety and Security and the North Corridor Metrorail Extension *Safety and Security Project Management Plan* for additional details.

6.5 Design Criteria and Standards

6.5.1 The Compendium of Design Criteria

MDT/PMC have prepared a *Rapid Transit System Extensions Compendium of Design Criteria* (CDC) for new line extensions to ensure that designs for its Metrorail system are developed in accordance with established requirements. The CDC will be used to guide the design of the Project. In addition, drafting and plans preparation standards and procedures have been prepared to standardize and guide the preparation of contract documents. As chapters are completed and approved by MDT for release, they will be provided to the Design Consultant. Once the update is complete, the CDC will be maintained and updated throughout the design process to reflect any changes or enhancements to the design basis.

The *Rapid Transit System Extensions Compendium of Design Criteria* relate the following elements of MDT's facilities:

Volume I - Systemwide Criteria

- Chapter 3 - Traffic Design Criteria
- Chapter 7 - System Safety Criteria
- Chapter 8 - System Security Criteria
- Chapter 9 - Fire/Life Safety Criteria

Volume II - Station Design Criteria

- Chapter 1 - Architectural Design Criteria
- Chapter 3 - Structural Design Criteria for Stations
- Chapter 4 - Electrical Design Criteria
- Chapter 5 - Mechanical Design Criteria

Volume III - Guideway Design Criteria

- Chapter 1 - Architectural
- Chapter 2 - Civil and Trackwork Design Criteria
- Chapter 3 - Structural Design Criteria for Aerial Guideway
- Chapter 4 - Electrical
- Chapter 5 - Mechanical Design Criteria for Aerial Guideway

Volume VI - Manual of Graphics Standards

Volume VII - System Equipment Criteria

- Chapter 1 - Traction Power Equipment
- Chapter 2 - Contact Rail and Protective Cover Board
- Chapter 3 - Traction Power Installation
- Chapter 4 - Fare Collection Equipment
- Chapter 5 - Passenger Vehicle
- Chapter 6 - Train Control
- Chapter 7 - Communications

It should be noted that the numbering shown above for the *Rapid Transit System Extensions Compendium of Design Criteria* has been held consistent with the original design criteria from the Stage 1 Metrorail System which contained more volumes and chapters.

Design variances may be made within the framework of the CDC to meet the requirements of a particular situation. However, any variance must be approved by MDT/PMC before it is included in the design. It is the responsibility of the Design Consultant to identify, explain, and justify any variance from the established criteria as to secure the necessary approvals from MDT's Engineering Review Board prior to proceeding with any design work that does not conform to the CDC.

The Project Control Division coordinates and distributes the proposed changes to appropriate reviewers. Approved changes are forwarded to appropriate personnel for change.

6.5.2 Codes and Standards

Contract Documents must be prepared in full compliance with the *Rapid Transit System Extensions Compendium of Design Criteria* and all applicable codes and standards including, but not limited to:

- Florida Building Code (FBC)
- National Electrical Code (NEC)
- National Fire Codes (NFC)
- American National Standards Institute (ANSI)
- Occupational Safety and Health Act (OSHA)
- American Association of Railroads (AAR)
- National Board of Fire Underwriters (NBFU)
- Underwriters Laboratory, Inc. (UL)
- American Association of State Highway and Transportation Officials (AASHTO).
- Federal, State and Local Accessibility Codes and Standards
- Rules and Regulations of the American with Disabilities Act (ADA)
- National Fire Protection Association (NFPA)
- National Environmental Protection Agency (NEPA)
- Federal Railroad Administration (FRA)
- American Railway Engineering and Maintenance of Way Association (AREMA)
- Florida Department of Transportation (FDOT)

6.5.3 Standard and Directive Drawings

Standard Drawings define and describe elements on the Project that will be used throughout the design of the North Corridor Metrorail Extension. Directive Drawings are developed to define the general configuration of the facilities and serve only as a guide to final design. The Standard and Directive drawings will be prepared and updated by the PMC and Design Consultant on an as needed basis.

6.6 Design Reviews

6.6.1 General

Design Reviews will be conducted by PMC staff, appropriate MDT divisions and County Departments, FTA, PMOC, FDOT and other state agencies, representatives from local jurisdictions, and others who have technical input or coordination interest as appropriate. The design reviews allow all parties to:

- Evaluate the design products (i.e., plans, specifications and estimates) as they progress;
- Measure them against the applicable design standards and criteria; and
- Reassess the design requirements and solutions as the design evolves.

Outside agencies will review the design from the perspective of permit compliance and compatibility with existing facilities or planned development in addition to technical reviews. The PMC will pay special attention to design comments from outside agencies which may indicate potential problems in maintaining the Project schedule or budget and will inform MDT for decision making.

6.6.2 Formal Design Reviews

Formal design reviews will be performed on the design work produced by the designer. Design reviews will be conducted on all contract units at the following Control Point milestone submittals:

- Preliminary Engineering (30 percent, 70 percent and 100 percent PE control points)
- Continuing Preliminary Engineering
- Extended (New Starts) Preliminary Engineering
- Pre-Final Review (90 percent)
- Final (100 percent)

The design documents expected at each control point are indicated in the Design Consultant's professional service agreement for the North Corridor Metrorail Extension. The design reviews occur under the supervision of the PMC Project Manager. This effort will include review of submittals to verify design concepts, that operational and functional objectives are met, cost estimates, constructability, policy and budgetary issues and adherence to project schedule. Design reviews are conducted by the Program Management Consultant, Program Management Division staff, MDT Divisions including but not limited to Operations, Maintenance, Safety and Security, Construction, Project Control, Planning, Right-of-Way,

Design and Engineering, Quality Assurance, Office of Civil Rights, Office of Public Involvement and Information Technology and external agencies. A standard form is sent to all reviewers, with the different control points, for their use in transmitting review comments back to the PMC Project Manager. All comments received are reviewed, verified, consolidated and transmitted to the Design Consultant for the evaluation, discussion and eventual incorporation in the design as warranted. Such discussions with the Design Consultant are carried out through Comment Resolution Meetings held among the representatives who provided the review comments, the Design Consultant, the PMC Project Manager the MDT Project Director. The PMC Project Manager acts as the coordinator for all design inputs originating with other organizations involved in the Project such as the following entities as a minimum:

- Federal Transit Administration
- Florida Department of Transportation
- Miami-Dade Transit Operations and Maintenance Divisions
- Florida Power & Light
- BellSouth Telephone
- City of Opa-Locka Public Works & Utilities
- Miami-Dade Water & Sewer Department
- North Miami Beach Utilities Company
- Florida East Coast Railway (FEC)
- US Environmental Protection Agency (US EPA)
- US Army Corps of Engineers
- South Florida Water Management District (SFWMD)
- Florida Department of Environmental Protection (FDEP)
- Miami-Dade County Department of Environmental Resource Management (DERM)

MDT has developed a systematic approach to review contract documents which is documented in MDT Procedure No. 045 - Reviews of Consultant Submittals. Refer to Procedure No. 045 in Appendix H for additional details on the formal design review process.

6.6.3 Bi-Weekly Design Coordination / Progress Meetings

Regular bi-weekly design coordination/progress meetings will be held. These coordination meetings will ensure efficiency in the design effort by facilitating continuous communications, thereby reducing the time spent on design options and variables. This will ultimately facilitate the more formal design review process. These meetings will include various disciplines, as appropriate, and will focus only on those design aspects of the Project that are undergoing development at that time.

6.6.4 Quality Assurance Audits

In addition to formal design reviews, MDT will conduct formal Quality Assurance audits at regular intervals. These audits will assess compliance with the North Corridor Metrorail

Extension *Quality Assurance Program Plan*. See Section 3.1.3, Quality Assurance and Quality control for details.

6.6.5 Safety and Security Reviews

At the Control Point milestone submittals, the Office of Safety and Security and PMC safety and security staff will conduct formal safety reviews of the design including written review comments of findings. These reviews will be conducted in accordance with MDT's North Corridor Metrorail Extension *Safety and Security Management Plan* (See Chapter 15.0) and will focus on the safety and security of the completed system. Contracted safety specialists may also be included in the reviews depending on the special features of the design under study.

6.6.6 Design Verification and Validation

Design verification and validation will be performed in accordance with planned arrangements to ensure that the design outputs have met the design input requirements. The PMC will verify that the Design Consultant has established and maintained procedures to control and verify the design of the Project in order to ensure that the design criteria, other specified requirements, and requirements of MDT and other relevant regulatory agencies are met.

The Design Consultant will prepare a plan for its design activities. The plan will identify who has responsibility for the different design parts, and who has the QA responsibility for design. It will also identify the various organizational interfaces required between various groups producing and commenting on the design, and specify the information to be documented, transmitted, and regularly reviewed. Finally, the plan will specify how the operating and maintenance departments of MDT will interface with those producing the design.

Design input requirements will be identified, documented, and reviewed by the Design Consultant. Design output will be documented to verify that it meets the input design requirements, include acceptance criteria, conforms to appropriate regulatory requirements whether or not these have been stated in the design input requirements, and identify those aspects of the design which are crucial to the safe and proper functioning of the final product or system.

The Design Consultant will assign to competent personnel those activities required to verify the quality of the design. Design verification activities will include the carrying out of alternative calculations, independent checks of design calculations, specifications, drawings, and contract documents, conducting and documenting design reviews, undertaking qualification tests and demonstrations, and comparing the design with a similar proven design, if available. Design reviews include reviews for constructability, operability, and maintainability.

Appropriate procedures will be established for the identification, documentation, review, and approval of all changes and modifications to the design. Refer to Chapter 7.0, Configuration Management.

6.7 Design Change Control

Changes during the design phase are those changes after the system baseline is established. See Chapter 7.0, Configuration Management. These changes will be reviewed verified and validated as appropriate and approved before implementation. The review of the design will include the evaluation of the effect of the changes on constituent parts (FTA Guidelines Section 2.2.3 Design Control).

6.8 Principal Design Interfaces

This section summarizes the principal design interfaces as they apply to the design task and may include several applicable permitting agencies and the FTA relative to the New Start Program Guidelines.

6.8.1 Florida Department of Transportation

- Joint Participation Agreement for project implementation and funding
- General review of design deliverables
- Impacts on state roads such as crossings and rerouting
- Granting of air rights, real estate easements and permits
- Bridge construction and inspection requirements
- Soils and foundations investigation and design requirements

6.8.2 Federal Highway Administration

The Project does not cross any Interstate Highway facilities and no direct involvement is expected with the Federal Highway Administration.

6.8.3 Utilities

Several utilities are affected by the North Corridor Metrorail Extension. The construction of the guideway and stations will require the rerouting, relocation and/or encasing of many utility ductbanks, cables, pipes or other facilities. The utilities affected are:

- Florida Power & Light (electric)
- BellSouth (telephone)
- Miami Dade Water & Sewer (water and sewer)
- City of Opa-Locka Public Works & Utilities
- North Miami Beach Utilities Co.

In addition, all applicable cable companies in the project area that have facilities attached to Florida Power & Light and Bellsouth poles.

6.8.4 MDT Operations Division Review and Input

A significant body of rail operating and maintenance experience has been assembled at MDT during the years since the opening of the Stage 1 Metrorail system. This extensive

knowledge will be applied to the North Corridor Metrorail Extension for the following reasons:

- Implementation of the Project will benefit from the lessons learned by MDT operations and maintenance staff.
- The Project's facilities and equipment must mesh with those already in place to support coordinated Metrorail operations.
- Rail and bus operations comprise a coordinated system, with many rail passengers using connecting bus lines.

MDT operating and maintenance staff will review and provide input to the North Corridor Metrorail Extension design and implementation process in the following ways:

- Participate in reviews of all designs to determine operability, maintainability, safety, and convenience.
- Review all design for compatibility of bus-rail passenger transfer facilities.
- Participate in establishing test requirements and provide requirements on test summary sheets for on-site tests (acceptance integrated, and pre-revenue).
- Coordinate MDT support requirements for onsite tests (contractor and MDT tests).
- Provide support to on-site acceptance testing as required.
- Actively participate in the planning, test procedure writing, management, and implementation of rail systems and pre-revenue tests.
- Establish test procedures including general operating rules for conducting test operations, equipment operating procedures, and test scheduling procedures.

6.9 Value Engineering

Value Engineering (VE), as defined in FTA C5010.1B, is a process of systematically applying standardized techniques to review designs, products, or services and to identify improvements, and means to achieve them, that will achieve the desired program functions at the lowest possible life cycle cost. By definition, any modifications resulting from the Value Engineering process must be consistent with established requirements for performance, maintainability, quality, safety, and community impacts.

The greatest potential savings will be found in the formative period of design for any project element, i.e., during Preliminary Engineering and specification of systems. Once Preliminary Engineering has been completed and approved for Final Design, further changes will be discouraged except where the design team may identify new Value Engineering topics for evaluation.

The initial Value Engineering effort on the Project was performed during the preliminary design phase after receipt of the 70 percent PE control point submittal. The Program Management Consultant Team conducted sessions utilizing a Value Engineering Specialist to design and conduct the sessions as the team leader. The VE session was performed by a multi-disciplined team of professionals specifically assigned to this effort and not part of the

Design Team. The sessions produced recommendations to reduce costs and to improve the effectiveness of the proposed Project.

During Preliminary Engineering (including Extended PE) and Final Design, the PMC Project Manager will be responsible to ensure that all agreed upon VE proposals are incorporated into the design documents. In addition, the Project Director may initiate additional VE studies if required.

Contractor VE proposals are another form of VE. In this case, MDT's construction and procurement contractors are invited by specification to conceive of and propose changes to their work that will produce cost savings to be shared between the contractor and MDT. MDT will permit value engineering change proposals via its special provisions, and will become involved in evaluations of such proposals, along with the PMC and Design Consultant.

Resident Engineers are responsible for administration of VE work during construction.

6.10 Peer Review

Peer reviews may be conducted as the need arises for specialized independent input to a particular issue that presents a unique problem or if an independent critique is desired. The need for Peer Reviews, during design, will be identified by the MDT Project Director, the PMC and appropriate members of the Design Consultant team.

6.11 Permits

The permitting effort begins during the Preliminary Engineering design phase and is carried through Final Design. The Design Consultant is responsible for determining which permits are required for the Project and coordinating their provisions with the PMC Project Manager and MDT Project Director and providing all necessary efforts to facilitate the process. Contractors are responsible for obtaining the necessary permits.

6.12 Contract Document Preparation

MDT's construction and procurement documents for civil works, as now foreseen, will be developed for contractor selection generally using traditional U.S. public works contracting practices, including award to the lowest responsible, responsive bidder. The vehicle contract, the traction power/train control/communications system contract, and fare collection contract will use a two-step RFP procurement process. MDT recognizes FTA's Third-Party Contracting Requirement (Circular 4220.1E) and its own Procurement Policies and Procedures as governing documents. Refer to Chapter 4.0, Procurement and Contracts for additional details.

MDT has previously engaged in construction and procurements for a number of other projects so its current standards for bidding contract documents are well established. However, there may be particular aspects of some of the Project contracts that will require amending the various elements that comprise a typical set of construction documents. MDT will review its General Conditions and other bidding contract documents for omissions and

inappropriate coverage and will prepare a set of Project-oriented "boiler-plate", as necessary. It is a MDT's objective to use as much of its established contract clauses as possible.

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7.0 CONFIGURATION MANAGEMENT

For the North Corridor Metrorail Extension, it is MDT's policy to develop written procedures for establishing, monitoring and revising baseline documentation during the design, construction, procurement, testing, and start-up phases of the Project.

During the design phase of the Project, MDT will employ a special process called Configuration Management to provide an additional restraint on design related changes. While it is important that the Design Consultant and project staff have the latitude to evolve the design during the design development process, certain project elements require an additional restraint such that only the senior levels of the Project can approve and/or revise these elements.

The senior level approval/revision process consists of three activities. The first activity is to define precisely which elements shall be subject to Configuration Management. Typically, documents such as Design Criteria and Standard and Directive Drawings are subjected to a Configuration Management process as well as key design data, such as the data which defines the interfaces between design/construction contracts. The Program Management Consultant (PMC) shall determine what elements are to be included in a Configuration Management process and a Configuration Management Plan will be developed to address the unique needs of these elements.

The second activity is the formal approval or adoption of an element subject to Configuration Management. This approval process is called "baselining". Once a document or data is ready for baselining, the document sponsor shall be responsible for submitting it to the approval entities. MDT shall define which entities shall be involved in the approval process for each configuration management procedure.

The third activity is similar to the baselining procedure but involves the approval of revisions or variances to a baselined document. The sponsor of the revision or variance is responsible for submitting the data for approval. This process is called "Change Control".

During the construction phase and especially for systems related work, another Configuration Management process is used to ensure that critical changes to equipment are controlled. This process is referred to as configuration control and requires that all proposed changes to specific equipment, that has been tested and accepted, or tested and not accepted, be subjected to a well defined approval process and documentation process.

In the strictest sense of the term "Configuration Management", the process is complete when a formal decision is rendered by the approving entities. However, since the follow-on activities such as notifying appropriate parties about that decision or distributing revised documents are very important to the overall success of the Configuration Management efforts, this Chapter will refer to those activities even through the procedures for this follow-on activity are typically addressed as a Document Control Procedure.

This Chapter focuses on the elements which are to be fully addressed in the Configuration Management Plan and its subsequent procedures. However, there is discussion included herein about schedule and cost control as well as control of contract documents. Although these items are treated in a similar manner as the items that are formally addressed in the

Configuration Management Plan, the procedures that will be applied to them will actually be developed as part of the Project Control Plan or as a contract administration procedure.

7.1 Configuration Management Plan and Policy

A well defined Configuration Management Plan and policy will help meet the following goals:

- Maintain the integrity of the Baseline Documents throughout all phases of the Project.
- Establish a process so that revisions to any Baseline Document at any point in time is known, clearly identified, accurately recorded, and provided to all project participants.
- Inform MDT staff and consultants about the Configuration Management process so that they can carry out their functional responsibilities related to Configuration Management activities in a coordinated and integrated manner.
- The coordination of approved changes between MDT, the Program Management Consultant, the Design Consultant, the CE&I Consultant and other participants is effective and timely.
- That proposed changes to the defined Baseline Documents are controlled and evaluated for impact on all related system aspects, and incorporated only after review and approval by the appropriate authority.
- That appropriate entities are notified of approved revisions of Baseline Documents and that any revised baselined documents are distributed in a timely manner to all project participants.

7.2 Responsibility

The overall responsibility for the Configuration Management of the North Corridor Metrorail Extension is assigned to the PMC with oversight by the Chief of Program Management and support by MDT Contract Services. The implementation of the Configuration Management Plan will be by the PMC who will develop the specific Configuration Management procedures for MDT adoption. The functional responsibility for complying with these procedures will be delegated to the appropriate staff and consultants.

The design for the North Corridor Metrorail Extension will involve multiple contracts and the Program Management Consultant will assist MDT with the Configuration Management processes needed to control the various contract interfaces throughout the Project.

The Systems contractors are responsible for the final design, procurement, installation and testing of the communication, electrification, fare collection and train control systems through performance specifications that require that the completed work be compatible with the existing Metrorail system. The Systems contractors will be responsible for configuration control of their design via established and approved procedures subject to surveillance and auditing by MDT.

The trackwork contractor is responsible for the procurement, installation and testing of the trackwork components through a combination of fully defined contract specifications and

performance specifications that require that the completed work be compatible with the existing Metrorail. The trackwork contractor will be responsible for configuration control of their work via established and approved procedures subject to surveillance and auditing by MDT.

7.3 Program Components

This section describes the following program components:

- Baseline Management
- Change Control
- Interface Control
- Conformance of Contract Documents
- Configuration Control

7.3.1 Baseline Management

The initial activities in Configuration Management involve the establishment of an approved baseline. The PMC will recommend to MDT which documents require Baseline Management. The PMC will then prepare the baseline procedures needed for approval. Baseline procedures will establish the process by which specific documents that are critical to the design and/or functional requirements for the North Corridor Metrorail Extension are approved. In addition to documents such as Design Criteria, items such as the Master Project Schedule and project budgets may involve a baseline procedure.

The PMC, as part of their established task for Configuration Management, will assist in the implementation of the Baseline Management processes which in some cases may involve document control functions such as preparing a holders list to ensure that revisions to baseline documents (Controlled Documents) are sent to and received by all holders. These Controlled Documents will be numbered and distributed by a special controlled copy procedure requiring the recipient to acknowledge receipt and return outdated materials.

7.3.2 Change Control

After a Controlled Document or other element is approved or baselined, any revision or variance to the approved or baselined document must undergo a process similar to the original approval process. The subsequent approval process for revisions or variances is generally referred to a Change Control Process. Many changes that occur during the course of the design, construction or testing and start-up phases of the Project can be accomplished routinely and are not subject to a formal change control process. The changes that must follow a formal change control process generally fall into the following categories:

- Changes which materially affect elements specified in the Configuration Management Plan
- Changes which materially affect elements specified in the Project Control Plan such as the Project's baseline cost or schedule

- Changes which materially affect an element of an awarded contract as specified in the contract administration procedures. These awarded contracts include:
 - Professional service contracts (e.g., design, property appraisals, etc.)
 - Construction contracts
 - Material/equipment procurement contracts

The PMC will develop the change control procedures and the PMC will also assist in implementing these procedures. The change control procedures will constitute a set of procedures that operate as a part of the Project's primary control systems for: Configuration Management, Contract Administration, Quality Assurance/Quality Control, Schedule Control, and Cost Control. Under certain circumstances, a proposed change may require more than one approval process. The procedures for change control within each of the primary control systems will include these common elements:

- Expedient evaluation of the necessary changes through effective delegation of authority.
- Timely identification of potential changes as soon as they become apparent.
- Prompt evaluation of the change's impact and justification.

Project staff will be required to institute a formal change proposal when a change in the ongoing work or a baseline design is being proposed or precipitated by project circumstances. The change control procedures will:

- Formalize the technical assessment by all appropriate entities of the proposed change.
- Identify cost and schedule impacts of making the proposed change.
- Advance the decision-making to the level of authority where approval or denial rests.
- Notification of appropriate parties of the decision.

7.3.3 Interface Control

Interface Control is a specific element of the Configuration Management process which focuses on the design interfaces by which the separate elements of the Project that have been designed by different designers and organizations fit together in a harmonious fashion. Interface Control is focuses on physical interfaces and should not be confused with systems integration which focuses on the functional integration of various subsystems.

The PMC along with MDT Chief of Program Management, Chief of Design and Engineering and Manager of Systems Engineering will work with the Design Consultant and others to identify critical design and performance interfaces and develop the appropriate procedures for baselining and change control of these interfaces.

7.3.4 Conformance of Contract Documents

The conformance of contract documents will include all modifications incorporated along with all approved changes for contract documents. Although all changes to a contract document will require an approval process typically this process, while similar to

Configuration Management, is not considered as part of Configuration Management but rather part of contract administration procedures. Conformance will occur after the contract is awarded. Typically, this requires that all addenda be incorporated into the bid documents and reissued as "conformed" contract documents. During the life of the contract all approved changes will be indicated and at contract completion all additional as-built changes will be incorporated into the Project Record Documents.

However, if a proposed change impacts an element cited in the Configuration Management Plan, the change must first be approved by the appropriate Configuration Management change control process before being forwarded through the Contract Administration change control processes.

As with controlled documents, conformed contract documents are sequentially numbered and logged to an appropriate tracking system to allow all future revisions to be distributed to original recipients.

7.3.5 Configuration Control

Configuration Control is a special Configuration Management process which typically applies to systems equipment but can also apply to other equipment if specified in the contract documents. Whereas previous Configuration Management sections were implemented by MDT, PMC or the Design Consultant, configuration control will be implemented by the system supplier and MDT will provide oversight and final approval. In addition, configuration control may involve testing of proposed equipment modifications as part of the approval process and special documentation requirements, similar to the controlled document process, in order to capture the specific equipment configuration which may vary from one specific piece of equipment compared to another similar but modified piece of equipment.

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8.0 PROJECT COMMUNICATIONS

The Miami-Dade Transit Office of Government Affairs and New Starts Management is responsible for developing and initiating the Communication and Community Relations Program for the North Corridor Metrorail Extension. Within the Office of Government Affairs and New Starts Management, the Community Relations and Communication Section handles outreach activities to build partnerships between the office and the public. The section organizes meetings and public hearings; recruits, organizes and facilitates community advisory groups; produces publications and mailings, all targeted at providing the community and employees with current information about the Peoples Transportation Plan projects and initiatives including electronic communications and websites used by the public.

8.1 Communications/Media Relations

The Community Relations and Communications Section is responsible for coordinating North Corridor Metrorail Extension internal and external communications for MDT, including media relations, publications and collateral materials, the Project website, general Project presentations, and community and special events. The Community Relations and Communications section will implement a strategic Communications Plan for the Project that will include a multi-faceted approach to reaching the Project's targeted Stakeholders. The mission of external communications for the Project is to generate public awareness and support for the Project by disseminating information about all aspects of the Project in a timely and proactive manner, advocating for the Project and its role in a comprehensive public transportation system, and to create and maintain a consistent system identity and image. The mission of internal Project communications is to keep the Project employees and participating cities' staffs informed about significant Project news in a timely and proactive manner, inform key employees and county staff of the Project's key messages to ensure consistent information is relayed to the public, as well as to improve or maintain employee morale by organizing Project staff social and other events.

External stakeholders include: the media, the general public, Project stakeholders (i.e., property owners, residents and businesses along the alignment), participating city staff not directly involved with the Project, the Federal Transit Administration, the Florida Congressional delegation, local universities and colleges, current MDT transit riders, etc.

8.1.1 External Communications

8.1.1.1 Mission

The mission is to:

- Disseminate information to the public about all aspects of the North Corridor Metrorail Extension in a timely and proactive manner
- Generate public awareness and approval of the Project
- Develop a system identity and image
- Advocate for the Project and mass transit

8.1.1.2 Goals

The goal is to create awareness of the Project among all the key stakeholders, specifically:

- Understanding of the key elements of Project
- Understanding of how the Project would look and function
- Awareness of the alignment and station locations
- Understanding of the benefits of the Project
- Familiarity with timelines for design, construction and implementation of the Project
- Understanding of the impacts of the Project on traffic and pedestrians
- Awareness of general safety principals and practices near the Project
- Generate favorable publicity for the Project
- Generate a favorable opinion of the Project among the key stakeholders
- Develop a consistent image and identity for the Project
- Develop relationships with key media personnel to generate significant, accurate and balanced coverage of the Project
- Effectively educate the media about the Project and who to contact with questions and requests for interviews
- Respond to media inquiries in a timely, consistent manner
- Coordinate with participating cities on the Project to ensure consistency of message and non-duplication of communication efforts
- Develop a crisis communications plan for the Project, and create familiarity of the plan with key Project staff
- Understand how to participate in the design process

8.1.1.3 Strategy

The strategy is to create a communications policy that includes:

- Improvement of quality, timeliness and distribution of information provided to external stakeholders, including information on the Project's website, news releases, newsletters, fact sheets and other collateral materials
- Development of a comprehensive media and stakeholders list and communicate regularly with all stakeholders through various methods, such as news releases, news conferences, publications, the website, presentations, etc.
- Key messages/talking points
- Identification of official spokespersons for the Project
- Media release approval procedures
- Collateral approval procedures
- Response times

- Other as needed

8.1.2 Internal Communications

8.1.2.1 Mission

The mission for internal communication is to:

- Ensure all employees and related city staff are informed of the latest Project developments, policies and the “official position” to avoid conflicts and misunderstandings, as well as misinformation reported about the Project
- Improve employee morale and teamwork to foster a unified vision and goal
- Improve communication and coordination between Project staff and other transit staff to develop a unified transit system and message

8.1.2.2 Goals

The goal of internal communication is to:

- Inform employees and city personnel of major Project developments, policies and facts about the Project
- Improve the relay of key information between project managers
- Improve coordination of information between Project staff and city staff
- Improve employee morale and teamwork
- Improve communication and coordination between Project staff and other transit staff

8.1.2.3 Strategy

The strategy for improving internal communication is to:

- Inform employees and city personnel of major Project developments, policies and facts about the Project
- Improve the relay of key information between project managers
- Improve coordination of information between Project staff and city staff
- Improve employee morale and teamwork
- Improve communication and coordination between Project staff and other transit staff

8.2 Public Involvement

8.2.1 General

The Community Relations and Communication Section of the Office of Government Affairs and New Starts Management is responsible for the public involvement functions for the North Corridor Metrorail Extension. These functions include the development and implementation of a comprehensive and inclusive public involvement program to apprise the public and

media of Project plans and developments. A key function will be keeping the community aware of planned construction activities to minimize disruptions during this period.

The PMC's System Planning and New Starts Manager, under direction of the office's Special Assistant to the Director, will be responsible for ensuring that public involvement activities support the goals and objectives of the Public Involvement Program and are closely linked and integrated with Project milestones, and that all stakeholder contacts are thoroughly documented in the Project files.

The primary objective of the Project public involvement program is to:

- To keep the business community aware of the Project status.
- Maintain contact with residents and businesses in the area before the Project commences and during the construction activities.
- Continued public information meetings during all phases of the Project.
- Media interface to provide updated project progress.
- Meetings with the public, community organizations and leaders.

To facilitate communications and issues resolution with the community during construction, a Community Relations Coordinator is assigned to the Project. The Coordinator serves as the public's first point of contact with the Project, the Project staff and contractors. All inquiries from the press, property owners, business owners and/or tenants will be directed to the Community Relations Coordinator.

Minimizing impacts to businesses, residents and traffic, involving the public and maintaining positive community relations are key elements to the successful completion of the Project. Successful public involvement requires that the Community Relations and Communication staff, Project staff and Project contractors be prepared to respond to public comment and concerns in an ongoing effort.

During design phase of the Project, the Community Relations Coordinator is working with the community to prepare them for what to expect during construction, to listen to their concerns regarding how they will be affected by the construction, and to share those concerns with the Project management and the design teams.

Prior to the start of construction, the Community Relations Coordinator will hold a kick-off meeting to introduce neighborhoods within the alignment to the Resident Engineers and Construction Contractors. In addition, periodic community update meetings will be held for stakeholders throughout the construction phase. These meetings will be noticed by e-mail to organized groups and by postcards being distributed to all property owners and tenants within one-quarter mile of the alignment, plus the contractors will be required to post meeting notices throughout the work zone.

The Community Relations Coordinator will maintain a high level of communication with the affected stakeholders. Serving as the one point of contact for stakeholders along the alignment, the Coordinators will be the conduit for communications among the public and the Project staff and contractors. As such, the Coordinator will be available to provide assistance to the public in resolving any Project issue or concerns.

A team of community leaders that will serve as a voice for the community during the project design and construction phase will be formed. The team will be known as the Community Advisory Board (CAB), and will participate in quarterly meetings organized by the Community Relations Coordinator. The CAB will provide community input into the development of the Project and will be a vehicle for citizens to address business and residential concerns.

During all phases of project development, Community Relations and Communication staff will continue to maintain the Project hotline and stakeholder databases coordinate and staff community events; and continue to coordinate and make presentations to various community groups along the alignment.

8.2.2 Business Development Assistance Program

The Office of Government Affairs and New Starts Management, with support from the Design Consultant, will develop and implement a Business Development Assistance Program (B-DAP) for the Project. The B-DAP will specifically target business and commercial developments in the North Corridor that will be affected by development of the Project to help those businesses prepare for construction and maintain their business throughout the construction phase.

The B-DAP will feature business courtesy signage, website advertising and a discount card program. The Program will also identify resources within the community from which business owners and managers can get technical assistance to help strengthen their businesses prior to and during construction. Under direction from the Special Assistant to the Director and the PMC's System Planning and New Starts Manager, the Business Outreach Specialist is responsible for implementing the B-DAP.

The B-DAP will be a link between the corridor community impacted by Project construction and the design, engineering, contractor and transit orientated development teams developing the Project. The B-DAP will address a variety of Project development issues and concerns for local businesses that continue operation in the North Corridor.

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9.0 RIGHT-OF-WAY ACQUISITION

This Chapter of the Project Management Plan provides an overview of the right-of-way engineering, property acquisition, and property management functions for the North Corridor Metrorail Extension. Refer to the latest versions of the MDT *Right-of-Way Procedures Manual* and *North Corridor Real Estate Acquisition and Relocation Management Plan* (RAMP) for a detailed description of these functions.

The RAMP contains a review of legislation which controls the acquisition and relocation activities; a description of MDT's proposed internal real estate process; and proposed policies and procedures relating to appraisal, acquisition, relocation, and property management functions.

The overall responsibility for right-of-way acquisition for the North Corridor Metrorail Extension is assigned to the PMC with oversight by the Chief of Right-of-Way Acquisition and Utilities.

9.1 Right-of-Way Process Overview

The right-of-way acquisition process consists of the following stages:

1. Land Surveying – establish baseline, locate section lines, and property lines;
2. Title Search – research the 100 year chains of title to determine ownership and parties of interest;
3. Right-of-way Engineering – prepare right-of-way maps, sketches and parcel data sheets;
4. Appraisal – written statement setting forth an opinion of the fair market value of the real estate, including cost to cure and severance damages if applicable;
5. Acquisition – acquisition of parcel through negotiated settlement or by eminent domain proceedings (condemnation);
6. Relocation of displaced residents, businesses and non-profit organizations and personal property signs; and
7. Property Management responsibilities begin on the date of possession. Once acquired, the property will be secured and any improvements will be demolished. Post-construction property administration will include the lease or sale of surplus land.

9.2 Right-of-Way Engineering

Preliminary right-of-way information is obtained from the preliminary alignment as shown in the Environmental Impact Statement or the Preliminary Engineering Drawings. A Baseline Control Survey (BCS) provides a base of survey control ensuring that both the right-of-way engineering and the design engineering are developed using a common coordinate system. BCS was performed in 1998 in preparation for the 1999 Environmental Impact Statement. The 1998 BCS will be resurveyed by the Design Consultant and any missing control monuments will be replaced.

Upon completion of the BCS survey, a survey of the Public Lands Section Lines is performed by the Design Consultant, which provides the fundamental level of control for the location of property lines on the right-of-way map.

Once the alignment centerline is finalized by the Design Consultant, the Design Consultant will provide the final alignment centerline to the PMC. A preliminary right-of-way map is then prepared by the Design Consultant and Property Title Search work for each affected property begins.

When the Project right-of-way requirements are determined by the Design Consultant, the PMC reviews and provides comments on the right-of-way requirements prior to their acceptance of the final alignment. For right-of-way purposes, final alignment means not only the alignment of the centerline of the Project, but also the right-of-way requirements. The final phase of right-of-way engineering cannot commence until the right-of-way requirements are received from the Design Consultant and accepted by the PMC and MDT Right-of-Way Acquisition and Utilities Division (ROWUD). If there are future changes to the alignment or the right-of-way requirements during the design stage, then the right-of-way engineering period will commence again on the date of the change.

9.3 Right-of-Way Map, Parcel Sketches and Parcel Data Sheets

After the baseline is re-established, the title work is completed and the final alignment is available. The Design Consultant prepares the following right-of-way engineering materials and submits them to the PMC:

1. Right-of-Way Maps:
 - a. The geometric relationship of the alignment to Section Lines and other subordinate property lines is computed.
 - b. Calculations of right-of-way lines are based on the integration of right-of-way requirements into existing property lines along the corridor.
 - c. The right-of-way map is drafted.
 - d. Additional field survey as required.
2. Parcel Sketches:
 - a. Areas are calculated for each parcel and parent tract.
 - b. A parcel sketch is drafted.
 - c. Relevant improvements are shown in the topographic and engineering survey performed by the Design Consultant.
 - d. The Parcel Sketch is reviewed in the field by the surveyor.
 - e. Additional field survey required as needed.
3. Parcel Data Sheets which include:

- a. The owner's name, address and the tax folio number of the parcel.
- b. The areas of the parcel and the parent tract.
- c. A legal description of the parcel.
- d. The ownership and parties of interest as determined by a review Title Search is reviewed by the right-of-way engineer (surveyor).
- e. Notations regarding the legal instruments needed to obtain clear title.

The PMC coordinates with the Miami-Dade County Attorney, the appraiser, acquisition staff and the consultants, verifies all necessary parcel information and confirms that the proposed right-of-way meets both legal and engineering design requirements.

Final submittal of right-of-way engineering documents initiates the commencement of appraisal and acquisition activities of the parcels by the PMC staff.

9.4 Authorizing Resolution

Upon completion of the right-of-way engineering requirements, a resolution(s) is presented to the Board of County Commissioners, authorizing the contracting of appraisers, environmental studies and acquisition of parcels at amounts to be determined by the appraisals. In the event that negotiated settlements are not possible, condemnation of the parcels must also be authorized by the resolution. MDT, with the support of the PMC, prepares a resolution package which is presented to the Transportation Committee, the Board of County Commissioners and Citizens Independent Transportation Trust by the Director of Miami-Dade Transit. Exhibits to the Resolution include a general Location Map and legal descriptions of each parcel to be acquired with the property interest to be acquired identified. In accordance with Ordinance 93-79 of the Miami-Dade County Code, a public meeting is scheduled prior to presenting any resolution to the BCC.

9.5 Appraisal

Solicitations are sent to all appraisers on the Miami-Dade County list of pre-qualified appraisers. The solicitation packages include Parcel Sketches, Parcel Data Sheets and Miami-Dade County Appraisal Requirements so that interested appraisers may prepare an informal bid proposal. The Miami-Dade County Appraisal Selection Committee selects the appraisers for the Project. A Review Appraiser will also be selected. A second independent appraisal is ordered for any parcel with an expected value greater than \$500,000 in accordance with Chapter 125.355(1)(b) Florida Statutes. After the resolution authorizing the hiring of appraisers is passed by the BCC and the appraiser selection is made, appraisers are notified to proceed. The appraisers submit to the PMC, a complete and extensive appraisal report for each parcel which is prepared in accordance with the Miami-Dade County appraisal requirements. Each appraisal is reviewed by the Review Appraiser prior to submitting the appraisals to MDT/ROWUD. Any parcel valued over \$250,000 is sent to the Federal Transit Administrator (FTA) by MDT ROWUD for review and concurrence.

9.6 Acquisition

Right-of-way acquisition begins when the PMC receives the reviewed and approved appraisals. Letters are sent to each affected property owner, notifying the owners of their rights under the law and offering to purchase the right-of-way at the appraised value. Property owners are given a minimum of 30 days to consider the offer before a condemnation proceeding is initiated, in accordance with Chapter 73.015(1) (b) Florida Statutes. When an owner makes a reasonable counter-offer for an amount higher than the appraised value previously authorized by the BCC, a recommendation to accept the counter-offer is brought to the BCC for its approval. When a settlement is reached, the property owner transfers clear and marketable title to the County and the County pays the negotiated amount as approved by the BCC. Instruments of conveyance are recorded in the Public Records.

9.7 Eminent Domain (Condemnation)

When a negotiated settlement cannot be reached, the MDT Chief of Right-of-Way Acquisition and Utilities transmits the parcel file to the County Attorney to begin Eminent Domain proceedings (condemnation). The MDT Right-of-Way Acquisition and Utilities Division, with support from the PMC, continues to provide support to the County Attorney's Office (CAO) in the form of title search updates, preparation of legal exhibits, research, participation in mediation, expert witness testimony and other services as may be requested by the CAO. Title to the right-of-way is vested in the County when funds are deposited in the Court's Registry in accordance with the Order of Taking. The Order of Taking and the notice of Deposit are recorded in the Public Records. Chapters 73 and 74 of the Florida Statutes govern the Eminent Domain procedures.

The Chief of MDT's Right-of-Way Acquisition and Utilities Division or designee represents MDT in the mediation conferences for real estate acquisitions through the eminent domain process and makes settlements in all negotiations for the real estate acquisitions.

9.8 Right-of-Way Certification and Recording of Right-of-Way Map

The right-of-way is certified when the acquisition is completed and the Miami-Dade Transit Right-of-Way and Utilities Division records the right-of-way map.

9.8.1 Relocation

For those acquisition parcels which require relocation assistance, relocation benefits will be provided in accordance with the 49 CFR Part 24 as amended on January 4, 2005 (1970 Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs).

The primary objectives for utilization of 49 CFR will:

1. Assure that owners of real property to be acquired for federal and federally-assisted projects are treated fairly and consistently, to expedite acquisition by agreements with property owners and minimize litigation, and promote a constructive experience for those affected by federally funded projects.

2. Assure that persons who are displaced as a direct result of Federal or federally-assisted projects are treated fairly, consistently and equally so that there is no disproportionate injury as a result of projects designed to benefit the public as a whole.

The fundamental factors of the relocation assistance program are:

- Timeliness of Notice Delivery
- Consistency of providing Relocation Advisory Services.
- Payment of Benefits

9.8.2 Utility Relocation

All work related to utility relocation is performed by the affected utility using their own forces or contractors and is partially or totally reimbursable. Before beginning the utility relocations, an agreement between Miami-Dade County and each utility company is executed and approved by the Board of County Commissioners unless an existing agreement is already in place. These agreements provide MDT with management authority to issue work orders for specific work tasks that specify cost ceilings and required schedules. Work orders require approval by the Board of County Commissioners. In addition, work orders are submitted to the Florida Department of Transportation for review and concurrence. Status of these tasks is reviewed periodically at meetings held by MDT with the utilities and status reports are issued. Field meetings and visits are scheduled as required to manage and assist with utility relocation work.

9.9 Property Management

The property management activities begin upon title and possession being transferred to Miami-Dade County and expire upon delivery to the contractor for construction. The preconstruction clearance of the right-of-way is handled by MDT/ROWUD with support from the PMC. When there are encroachments onto the right-of-way by adjacent property owners, registered letters are sent to the owners notifying them of the encroachment and of their obligation to remove their property from the right-of-way. Demolition and removal of major improvements are usually handled through contracts. Post-construction property management functions including the disposal of surplus land are governed by County procedures, State Law and FTA guidelines where appropriate.

9.10 Record Keeping

Extensive records are kept at every level of the right-of-way process including parcel files containing detailed information maintained by the Real Estate officers. These files contain statements and/or copies of the documents and information given to property owners, tenants and displacees as required by Local, State and Federal guidelines and laws.

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10.0 CONSTRUCTION MANAGEMENT

This Chapter describes the Construction Management program for the North Corridor Metrorail Extension. Although various facets of construction management are discussed in different sections of this PMP, several components require additional explanation. These are: organization, construction safety, and the day-to-day administration of the construction and inspection guidelines.

10.1 Responsibility

The overall responsibility for construction management for the North Corridor Metrorail Extension is assigned to the PMC with oversight by the MDT Chief of Construction.

10.1.1 Organization

The PMC will employ a core staff of experienced professional management and field representatives who will manage a Construction Engineering and Inspection Consultant (CE&I) workforce. Although the Contractor firms will be responsible for assuring the quality of their work, the CE&I will be responsible for the QA inspection of the construction. In addition, the Chief of Quality Assurance is responsible for conducting formal Quality Assurance audits at regular intervals. These audits will assess compliance with the North Corridor Metrorail Extension *Quality Assurance Program Plan*. See Section 3.1.3 of this PMP and the North Corridor Metrorail Extension *Quality Assurance Program Plan* for a more in-depth discussion of QA/QC.

10.1.2 Safety

Construction safety will be the sole responsibility of the Contractors. The CE&I will report to the Contractor and the PMC any observed non-compliance with the Contractor's approved Accident Prevention Program Plan. The Accident Prevention Program will be conducted in accordance with the Construction Safety Manual (Revision 4, December 1996) available from Document Control for reference. This manual is incorporated into every construction contract and requires that Contractors, among other things, designate a safety representative, hold regular "tool-box" meetings, submit for approval and conform to an Accident Prevention Program and follow the requirements of OSHA Construction Industry Standards 29 CFR Parts 1910 and 1926.

The Chief of Safety and Security is responsible for the overall Safety Certification of the system in accordance with the Safety Certification Program Plan. See Chapter 15.0 of this PMP for a more in-depth discussion of the role of the State Safety Oversight in the final acceptance or sign-off of the Project and the relationship between MDT and State Safety Oversight in the Safety Certification of the Project.

The CE&I and the PMC's construction staff will promptly notify the Contractor of any apparent safety violations.

10.1.3 Construction Management Guidelines

The conduct of the day-to-day management of the construction will be governed by the policies and procedures of this PMP, and as supplemented by the Resident Engineer's Manual prepared by the MDT Construction Division staff.

10.1.4 Role of Construction Engineering and Inspection Consultant

The CE&I services will be performed by a consultant under contract to the County. The primary functions of the CE&I will be to:

- Perform QA inspections of all Contractor activities to assure compliance with the contract documents;
- Review all Contractor contract document transmittals (CDTs/shop drawings) prior to incorporation into the work by the Contractor in conjunction with the Engineer of Record;
- Conduct weekly progress review meetings with the Contractor to ascertain job progress and identify and resolve problems;
- Review Contractor cost-loaded CPMs initially and monthly prior to recommending payment of monthly invoices;
- Review monthly Contractor invoices and recommend payment;
- Respond to all Contractor Requests for Information (RFI);
- Negotiate all changes with the Contractor and perform control estimates prior to such negotiations. The County shall participate in all change order negotiations;
- Maintain an accurate and up-to-date record of the daily construction progress. Such record shall include: inspector daily reports (IDRs), extensive use of photographs, minutes of all meetings and correspondence files (including all e-mails);
- Maintain CDT logs including date submitted by the Contractor, date returned to the Contractor and disposition code;
- Respond to every Contractor notice-of-potential claim and take all steps necessary to mitigate delays and damages;
- Analyze all Contractor claims and make recommendations to the County as to possible resolutions;
- Perform remedial or additional designs as may be necessary to resolve conflicts or problems arising out of the work.

The CE&I consultant will be compensated on a not-to-exceed basis through a work order system. The CE&I will be paid actual wages spent times an agreed upon multiplier. Different multipliers will apply to office and field staff.

10.1.5 Inspecting Guidelines

The CE&I will use only experienced, qualified inspectors in the performance of their duties. However, as a guide to inspectors, MDT will utilize the Resident Engineer's Manual to establish minimum standards.

10.1.6 Change Order Estimating

As mentioned above, all change order negotiations will be preceded by the preparation of a control estimate by the CE&I and a review of such estimate by the County. The control estimates shall be in sufficient detail to allow the negotiations to take place on an item-by-item basis. Profit will be negotiable based on the risk involved to the Contractor. Whenever possible, the negotiations will take place prior to the commencement of the change work. The County will participate in all change order negotiations. All change orders are subject to the approval of the Board of County Commissioners. In all change order negotiations, all the direct costs and the time costs for each change notice shall be discussed and agreed to as per the Contract documents. Refer to Chapter 4.0 for the change order processing procedure.

10.1.7 Value Engineering During Construction

Value Engineering during construction is governed by Article 38 - Contractor Proposals, of the Contract General Conditions. Briefly, the Contractor can propose changes to the work for MDT review. Any net savings resulting from adopted changes are shared 50/50 between the Contractor and MDT. This Article sets out the procedure for the preparation of the proposals and generally states that adopted changes will not alter the "... essential function or characteristic of the Work...".

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11.0 CLAIMS MANAGEMENT

It is recognized that claims are an integral part of the construction industry. Construction claims principally are caused by: unforeseen or changed project conditions; changes in the work; late provision of drawings, access, permits, equipment or materials; inadequate drawings or specifications; and interference in the work. The goal of effective claims management is to minimize MDT's claims exposure and fully resolve and document all claims.

11.1 Claims Prevention

11.1.1 Design

Claims may result from inadequate drawings and specifications. To minimize the potential of claims in this area, MDT has retained an experienced professional Design Consultant to develop the design of the Project. This consulting firm has extensive experience with work of this nature. The design will also be subjected to value engineering and constructability reviews. The design management program for the Project is covered in Chapter 6.0 of this PMP.

The end result of these well-coordinated and reviewed documents will be to minimize claims exposure to MDT.

11.1.2 Contract Clauses

Another step taken to minimize MDT's claims exposure is to utilize specific contract clauses designed to minimize risks and clearly establish the responsibilities of the parties. The following list of contract clauses are meant as a guide to allow the reader to understand the steps taken during contract document preparation to minimize the claims exposure but is not intended to be all-inclusive.

General Conditions

- Article 2 Interpretations
- Article 6 Liability and Indemnification
- Article 9 Contractual Relationships
- Article 15 Coordination and Access
- Article 17 Warranty of Work
- Article 21 Inspection
- Article 27 Progress Schedules and Requirements for Maintaining Progress
- Article 28 Suspension of Work
- Article 29 Final Inspection and Acceptance
- Article 30 Progress Payments
- Article 36 Changes

- Article 37 Differing Site Conditions
- Article 38 Contractor Proposals
- Article 39 Extension of Time
- Article 40 Notice of Potential Claims
- Article 41 Submittal of Claims
- Article 42 Disputes
- Article 43 Force Account Work
- Articles 44-47 Termination Clauses
- Article 48 Liquidated Damages

In addition to these clauses there is additional language in the General Conditions of the Contract pertaining to milestone dates and liquidated damages, all designed to minimize claims. All liquidated damages amounts are set after a calculation of the potential damages that MDT could suffer from the Contractor delay.

MDT's use of a cost-loaded CPM schedule during construction has been instrumental in MDT's claims management program on recent projects where its been used. The application of these techniques, explained in detail in Chapter 3.0 of this PMP, document the as-built conditions of the work through contractually required monthly CPM updates. As the CPM update forms the basis for the monthly progress payment, the Contractor is required to accurately update the schedule monthly. All time related claims are required to be documented with CPM reports as specified in Section 01310, "Construction Schedule" of MDT's Standard Division 1 Technical Specifications and Article 41, Submittal of Claims, of MDT's General Conditions of the Contract.

The review of Contractor contract document transmittals (CDT) has been grounds for possible claims in the past. To minimize this possibility, the time allowed for shop drawing reviews is specified in the contract and the Contractor will have to schedule the shop drawing production/review cycle on his CPM. The CE&I Consultant will be required to maintain a computerized CDT log to ensure prompt review of all shop drawings. MDT will spot check the shop drawing review process to ensure that Consultants are not masking potential errors during the shop drawing review process. This has also been the basis for past Contractor claims.

Contractor Requests for Information (RFIs) have been used by Contractors in the past to fabricate claims. However, some RFIs are valid and should be expeditiously responded to. To formalize the RFI process, a specification section has been developed, including a form, which the Contractor must use, to ensure quick resolution to all such requests. The specification allows MDT a certain period of time to review and respond to the request. This will minimize the potential for delays caused by last minute Contractor demands for information.

11.2 Claims Avoidance During Construction

The Master Project Schedule was prudently developed with the goal of having all right-of-way available prior to the start of construction of the civil line section contracts. This area has historically been the basis for delays.

Claims avoidance during construction is directly related to the quality of MDT's field representatives and the quality of the contract documents.

The CE&I employees will be selected on the basis of qualifications and appropriate related experience, subject to MDT's approval. MDT will have the right to remove any Consultant employee from the work for nonperformance.

The role of the CE&I is explained in Chapter 10.0, but with respect to claims management, the CE&I will:

- Document the work as it progresses using photographs, audio/video taping, Inspector Daily Reports (IDRs), Resident Engineer's letters and e-mails, reviewing and verifying the dates in the Contractor's CPM updates prior to processing monthly invoices, CDT log, RFI log, and minutes of all meetings.
- Immediately respond in writing to all Contractor notice of potential claims.
- Promptly analyze all Contractor claims and recommend in writing to MDT a possible course of action.
- Support MDT in negotiating the claim and preparing any subsequent change order as necessary.
- Mitigate damages and delays by suggesting solutions to the Contractor.
- Review all CDTs and RFIs in accordance within the time frames set forth in the contract.
- Comply with the Claims Management and Change Order procedures.
- In the event the Contractor fails to submit a time and/or cost claim on a timely basis as specified, the Engineer shall make his own determination based on the facts and issue a unilateral change order pursuant to the contract.

Some of these steps could be considered claims review, not claims avoidance, however, the quick resolution of a minor claim can often minimize the potential for the claim festering into a much more serious one. Therefore, some of these actions are also considered prudent claims avoidance.

The CE&I and all consultants and Contractors will be subjected to QA audits by the Chief of Quality Assurance to insure compliance with this process.

11.3 Claims Resolution and Administration

Included in Appendix J is MDT's Claims Management procedure which outlines how claims are resolved. This section will add more detail to that included in the procedure.

The goal of the claims resolution process is the prompt settlement of all claims after a careful and fair analysis of the facts. The owner is always better served by quickly resolving claims while the facts are fresh.

Specific contractual language is used to define the time limitations for notifying MDT of a potential claim and for submitting the completely documented claim. The contract also specifies the documentation required with each claim for it to be considered. The documentation process is meant to minimize frivolous claims and isolate the issues.

The CE&I will be responsible for analyzing the claim and recommending to MDT a negotiating strategy in coordination with the Engineer of Record. As part of the claims analysis process the Contractor's claim will be subjected to an audit conducted by MDT's Internal Audit Division. MDT will review the CE&I analysis prior to the start of negotiations. MDT will be involved in all claims negotiations. Any dispute between the Contractor and a determination or interpretation by Engineer shall be resolved by the Contracting Officer in accordance with Article 42 - Disputes of the General Conditions of the Contract. This contractual provision is considered an alternative dispute resolution technique designed to eliminate frivolous claims and litigation. All change orders and modifications will be subjected to a cost analysis in accordance with the latest issue of FTA Circular 4220.1E.

11.4 Change Orders

All claims negotiations will be subsequently reduced to writing in the form of a change order. After MDT's approval that a change is required, the CE&I will be required to prepare a control estimate. This control estimate shall be submitted to MDT prior to receiving the Contractor's proposal. Any change involving time must include a scheduling analysis by the CE&I approved by the Chief of Construction. Every attempt will be made to negotiate the issue of time as the direct costs of changes are negotiated. MDT is placed at a disadvantage by leaving the time elements of changes to be resolved at the end of the contract. Any changes, which affect the configuration of the system, will be subject to the change request process.

MDT will review and approve the CE&I control estimate prior to negotiations and will participate in all negotiations.

After negotiations, the CE&I will draft the change order for County approval prior to sending it to the Contractor for signature. After County approval of the draft, the change order is finalized and signed by the Contractor. If agreement is not reached with the Contractor, MDT will direct the Contractor to proceed under force account.

The change order will be reviewed and concurred to by the Project team prior to submittal to the Project Director for concurrence. Once the Project Director's concurrence is obtained, the change order is forwarded to the Board of County Commissioners or its authorized representative for approval.

All Project change orders will be processed in accordance with the requirements of 49 CFR Part 18.30 – Changes, and will also be consistent with FTA's Third Party Contracting Requirements as set forth in the latest version of FTA Circular 4220.1E.

When a change required by an error or omission in plans and specifications has a substantial monetary impact, MDT may seek compensation through the Design Consultant's errors and omissions (E&O) insurance. Refer to Section 13.4.6.1 for a discussion of MDT's E&O insurance requirements for the Project.

11.5 Reporting and Control

The reporting of claims, change orders and potential changes is covered in Chapter 4.0 of this PMP.

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12.0 LABOR RELATIONS AND POLICY

12.1 Statutory and Regulatory Requirements

MDT and its predecessors, the Metropolitan Transit Authority, Metro-Dade Transportation Administration, and the Metro-Dade Transit Agency have been in operation since 1960. With this history and experience, MDT is fully cognizant of all statutory or regulatory requirements related to labor relations and policy. Those regulations that constrain, control or otherwise impact the North Corridor Metrorail Extension are described in the following sections.

12.2 Federal Requirements

By use of Federal funds on the Project, MDT must conform to certain Federal requirements in the personnel/labor area and meet other Federal regulations which apply regardless of funding sources. Those cited here cover most of the applicable requirements that apply.

12.2.1 Civil Rights Requirements

MDT must comply with all civil rights program requirements that apply to transit-related projects. The applicable civil rights program areas include the following:

- Section 19 of the Surface Transportation Assistance Act of 1978;
- Title VI of the Civil Rights Act of 1964 (Service Delivery/Benefits);
- Equal Employment Opportunity (EEO);
- Disadvantaged Business Enterprise (DBE) Program (49 CFR Part 26); and
- Americans with Disabilities Act (ADA) of 1990.

All required civil rights program submissions must be approved by FTA and periodically updated in accordance with program guidelines.

12.2.1.1 Non-Discrimination

Section 19 of the Surface Transportation Assistance Act of 1978 states that no person shall be excluded from participation in, be denied the benefits of, or be subjected to discrimination on the basis of race, color, creed, national origin, sex, or age on any project, program, or activity funded in whole or in part through FTA financial assistance. This nondiscrimination provision applies to employment and business opportunities and is to be in addition to the provisions of Title VI of the Civil Rights Act of 1964.

12.2.1.2 Title VI (Service Delivery/Benefits)

In requesting federal financial assistance pursuant to FTA programs, FTA Circular 4702.1, "Title VI Program Guidelines for Urban Mass Transportation Recipients," MDT must adhere to Title VI requirements. Once the Title VI submissions have been approved, updates are required every three years unless otherwise requested by FTA.

12.2.1.3 EEO/Affirmative Action

MDT has an Equal Employment Opportunity Program that is maintained and updated periodically. MDT is committed to ensuring that the work force on the Project reflects the diversity of the local area and that businesses, Disadvantaged Business Enterprises (DBE) and small businesses are able to participate in the project to the greatest extent feasible.

MDT and its consultants, contractors and suppliers will comply with federal regulations dealing with equal employment opportunities, prevailing wages and other elements of affirmative action.

Miami-Dade County Ordinance No's. 82-37 and 98-30 require all firms with annual gross revenues in excess of \$5,000,000 and all firms licensed to provide engineering, architectural, landscape architectural, land surveying and mapping services (A&E) firms, to have an Affirmative Action Plan filed and approved by MDT. Firms are required to submit their Affirmative Action Plan and procurement policies annually and to provide for the periodic review of their plan and policies in order to determine their effectiveness in assuring the firm does not discriminate in its employment, promotion and procurement practices.

12.2.1.4 Disadvantaged Business Enterprises Administration

The DBE Administrator of MDT is responsible for assuring the Agency's compliance with the requirements of 49 CFR Part 26 and FTA Circular 4220.1E. The DBE Administrator reports directly to the MDT Director and is placed organizationally in the Contracts Section of the Materials Management Division. The major functions of the DBE Administrator include:

1. Setting DBE goals as appropriate for each contract for construction and procurement of goods and services;
2. Assuring the inclusion of all required clauses relating to DBE, Equal Employment Opportunity, Affirmative Action, and Title VI of the Civil Rights Act;
3. Certification of qualified firms as legitimate DBE firms under the provisions of 49 CFR Part 26;
4. Maintaining a directory of certified and potential DBE firms which may be available as contractors or subcontractors;
5. Issuing information on upcoming contracting opportunities to enable DBE firms to participate as contractors or subcontractors;
6. Providing to FTA Quarterly DBE Progress Reports, Annual DBE Goal, DBE Plan Annual Update; and
7. Acting as liaison and advocate as necessary in disputes between contractors and DBE subcontractors.

A complete description of the functions, responsibilities, and operations of the DBE Administrator are detailed in the latest FTA-Approved DBE Program Plan, available in the files for review.

12.2.1.5 Americans with Disabilities Act

MDT and its contractors must comply with all applicable requirements of the Americans with Disabilities Act of 1990; Section 2004 of the Rehabilitation Act of 1973, as amended; Section 16 of the Federal Transit Act, as amended; and the following regulations and amendments thereto:

- USDOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," (49 CFR Part 37)
- USDOT regulations, "Nondiscrimination of the Basis of Handicap in Programs and Activities Receiving or Benefiting from Federal Financial Assistance" (49 CFR Part 27)
- USDOT regulations, "Americans with Disabilities Accessibility Specifications for Transportation Vehicles," (49 CFR Part 38)
- Department of Justice regulations, "Nondiscrimination on the Basis of Disability in State and Local Government Services," (28 CFR Part 320)
- USDOT regulations, "Nondiscrimination on the Basis of Disability in Public Accommodations and in Commercial Facilities," (28 CFR Part 36)
- General Service Administration regulations, "Accommodations for the Physically Handicapped," (41 CFR Subpart 101-19)
- EEO Commission "Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act," (29 CFR Part 1630)
- Federal Communications Commission regulations, "Telecommunications Relay Services and Related Customer Premises Equipment for the Hearing and Speech Disabled, (47 CFR Part 64, Subpart F)
- FTA regulations, "Transportation for Elderly and Handicapped Persons," (49 CFR Part 609).

12.2.2 Wage and Hour Requirements

MDT must comply with all Federally decreed wage and hour requirements, including but not limited to the Davis-Bacon Act, 40 USC; the Copeland Act, 18 USC Section 874, et. Seq. as supplemented by Department of Labor regulations set forth in 29 CFR Parts 1, 3, 5, 6, and 7.

12.3 State and Local Requirements

The Project's participants, including the Program Management Consultant, Design Consultants, and contractors must identify and comply with all relevant Federal and State laws and regulations.

12.4 Local Labor Conditions

12.4.1 Existing Labor Agreements

Florida's right-to-work law provides that, except for persons employed on federal property or for a railway or airline, employees cannot be required to be members of a labor organization as a condition of employment and have a right to resign from union membership and not pay

union dues or fees. In addition, the right of employees, by and through a labor organization, to bargain collectively can not be denied or abridged. Finally, public employees do not have the right to strike.

MDT entered into an agreement with the Transport Workers Union of America, represented through Local 291, as of September 30, 2005. It is not anticipated that this will be a factor in the design and construction of the Project.

12.4.2 On-Site Construction

The labor conditions that will pertain to local construction of Project facilities and installation of equipment components are the same as for any heavy construction project in Florida. Because of the use of Federal funds, certain Federal Statutes will apply, including the classification of MDT contracts by the U.S. Department of Labor under the *Davis-Bacon and related Acts* minimum wage rates. MDT will request such classifications in advance of completing each set of bidding contract documents.

In addition to the above Federal requirements, certain wage related local wage ordinances will pertain the on-site construction of Project facilities and installation of equipment components. The provisions of Miami-Dade County's Responsible Wages and Benefits Ordinance 90-143 stipulate that all laborers and mechanics employed or working upon a project shall be paid the full amount of wages and fringe benefits (or cash equivalent thereof) computed at rates not less than those contained in the latest County Wages and Benefits Schedule. The current County Wages and Benefits schedule Reports for heavy, building and highway trade categories are available on the Miami-Dade County website. See: <http://www.miamidade.gov/dbd/reports-wages.asp>.

All MDT contracts will carry the federal and locally mandated clauses pertaining to employment and human relations.

12.4.3 Off-Site Manufacture/Assembly

Where a MDT contract will include the manufacturing and/or assembly of Project equipment items or components at sites remote from South Florida, the labor conditions and any bargaining unit representation will be matters of fact which cannot be influenced by MDT at such plant locations. All MDT contracts will carry the federally mandated clauses listed above.

13.0 RISK MANAGEMENT

13.1 General

This chapter of the PMP discusses MDT’s approach to risk management, the basic elements of MDT’s risk management process, and how MDT integrates risk management into each phase of the North Corridor Metrorail Extension planning and development process. The major risks related to the Project are briefly described, major responsibilities outlined and references provided.

Risk management is the long-term reduction of risks and costs. According to FTA, risk is defined...*in terms of an event (which may occur to the detriment of the project); its probability (how likely is the event to occur); and the amount involved (dollars of maximum possible loss or number of losses that could occur)*¹. The primary purpose for development of a comprehensive risk management program is to establish a framework and process for identifying and categorizing risks, and to implement strategies for reducing the cost impacts which risks may have on the Project.

13.2 Major Sources of Risk

Major sources of risk for the Project can be grouped into the following four categories:

- Design Risks
- Construction Risks
- Financing and Economic Risks
- External Political and Social Risks

While some risks may not impact the Project with the same intensity as others, all must be considered in order to reduce the likelihood of cost and schedule overruns.

13.2.1 Design Risks

Risks during final design on the Project may include the following:

- | | |
|-----------------------------|--------------------------|
| • Scope of work | • Constructability |
| • Schedule | • Design criteria |
| • Design standards | • Data reliability |
| • Design complexity | • Design completeness |
| • Accountability for design | • Engineering competence |

¹ FTA Project and Construction Management Guideline, 2003Update.

- Construction plans
- Environmental mitigation
- Material supplies and deliveries
- Quality & performance
- Regulatory requirements
- Cost estimating errors
- Site conditions
- Construction methods
- Safety program
- Real estate acquisitions
- External relations

Design activities on the Project critical path are subjected to special risk assessment, since any delays in completion of critical activities will impact Project milestone and completion dates. These risks have added potential costs associated with their occurrence.

13.2.2 Construction Risks

Potential risks related to the construction phase of the Project might include the following:

- Faulty workmanship
- Contractor competence
- Unforeseen site conditions
- Accidents
- Unidentified utilities
- Endangered species on site
- Lack of materials or equipment
- Subcontract problems
- Delays related to real estate or right of way acquisitions
- Design errors or omissions
- Weather, floods and fires
- Permitting delays
- Contract disputes
- Hazardous materials on site
- Interferences
- Other utility-related delays
- Archeological delays
- Third party litigation
- Design or scope changes

Many of these potential construction risks can be avoided or reduced through effective planning and other pre-construction measures. Of particular concern are tasks and activities on the Project critical path, which can delay the entire Project if they are at risk. MDT takes well-determined steps to share or transfer construction risks via appropriate contract terms or insurance policies.

13.2.3 Financing and Economic Risks

13.2.3.1 Financing Risks

Risks associated with the financing of the Project will be identified, assessed, and addressed by MDT's Chief Financial Officer. Financing risks are associated with potential shortfalls in funding from various sources of finance, including FTA and FDOT grants, and local sources of funds. Since revenues and Project financing were planned well in advance, these risks

were also addressed well in advance. In addition, funding is addressed on an annual basis in the MDT Financial Plan.

A potential risk associated with Project financing may occur if additional funds are needed to cover cost growth, additional scope, problems or delays encountered during construction of the Project. Since financing must be in place over the life of the Project, monitoring of projected costs and associated funding requirements requires close cooperation between the MDT's Finance Division and EP&D's Project Controls Division, which monitors estimated costs to complete the Project.

13.2.3.2 Economic Risks

Economic risks are associated with multiple revenue sources, and there are several public revenue sources for the Project. Tax revenues are often the most difficult to assess. With respect to construction costs, however, MDT will address the following potential risks:

- Potential contractor bankruptcies
- Local labor costs and availability
- Productivity changes
- Number of bidders on contracts
- Lack of competition
- Higher costs of materials
- Equipment costs and availability
- Inflation
- Workload of local contractors
- Pricing by MDT contractors

Economic risks will be addressed by MDT during both the capital cost estimating process performed during design and during the contracting process at which time bids are received and evaluated by MDT. Appropriate contract clauses and insurance programs will be established to cover many economic risks during the contracting process, while some economic risks may be accepted and borne by MDT.

13.2.4 External Political and Social Risks

External political and social risks affecting the Project during design and construction may be associated with the following:

- Relations with local municipalities,
- Relations with public and private utilities,
- Community relations in neighborhoods near the Project,
- Master agreements with utilities,
- Public interferences due to construction activities,

- Public response to accidents or incidents during construction,
- Relations with Miami-Dade County governing board members,
- Relations with FTA, FDOT, and other State and Federal Agencies,
- Changing environmental regulations, and
- Changes in laws affecting the construction or transit industries.

These and other similar risks can have an impact on Project costs, schedules and operations.

13.3 Elements of the Risk Management Process

Major elements of the Project Risk Management process include Risk identification, Risk Measurement, Risk Analysis, and Risk Acceptance, Allocation or Mitigation as described in the following sections. Figure 13-1 depicts the five-step approach for identifying and addressing Project risks.

13.3.1 Risk Identification

During the planning and preliminary engineering phase of the Project, general risks are identified with contingency factors applied to budgetary estimates and funding requirements. During Extended PE and Final Design, the EP&D Department will systematically review each element of the Project for risks (and uncertainties), applying specified levels of contingency to the cost estimates for those elements. This detailed review corresponds with the Project design review milestones identified in Chapter 6.0, at which time updated cost estimates are prepared.

As the Project design matures and proceeds through the development and review stages, risk factors and contingency estimates are also refined, based on completion of design, risk reduction actions, and resolution of previously unanswered questions. Prior to Invitation for Bids, EP&D representatives meet with procurement, risk management, and legal personnel to plan and prepare for the contracting process. At that time, construction and contracting risks are identified, and appropriate risk allocation strategies and actions are selected. By the time construction contracts are awarded, a majority of risks on the Project should be defined and addressed.

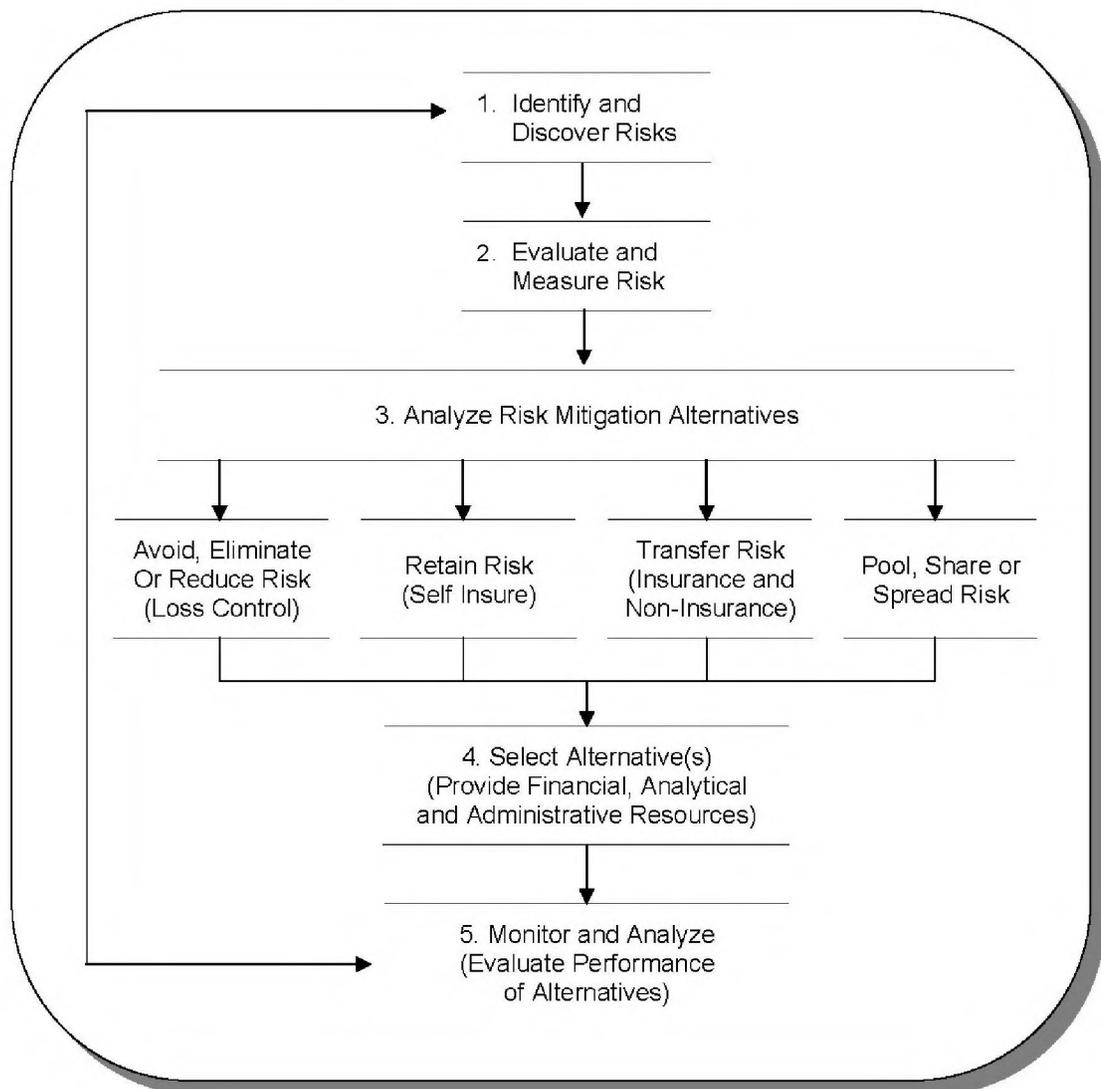
MDT must identify and secure financing for the Project well in advance of final design and construction. MDT's Finance Division will develop projections of population growth, local funding partners, fare box revenues, and other factors associated with estimating revenues. MDT's financial projections will be continuously reviewed to recognize and minimize the impacts that changes in projections may have on Project costs and schedules. If necessary, changes in investment strategies or Project objectives are implemented.

13.3.2 Risk Measurement

The EP&D Department will use a combination of approaches to measuring risks and to develop contingency estimates for covering those risks. The EP&D establishes a contingency factor and associated dollar contingency reserve, based on degree of uncertainty and potential cost impact of future changes, for each major element of the Project. The capital cost estimates developed by EP&D Design Consultant, corresponding to design review

milestones, represent the quantified measurement of Project risks at various stages of the Project. The cost estimates and contingency reserves are monitored and updated during the construction stage in order to ensure that new risks are incorporated, that unused contingency reserves become available for other uses, and that adequate funding or reserves are available to cover revisions, new scope or solutions to problems on the Project.

Figure 13-1. Risk Management Process



13.3.3 Risk Analysis

Risk analysis is the process of defining and qualifying a project risk, quantifying potential consequences, and determining risk avoidance, sharing or transfer options. Risk analysis will depend on whether the risks are related to planning, design, construction, financing, economic factors, or external political or social issues. Risks which are associated with design, engineering, project management, real estate, site conditions, construction planning

and other activities under the direct control of the EP&D can be fully assessed and addressed by the EP&D during design, prior to the award of construction contracts. Risks associated with construction work are generally evaluated and addressed in the context of contract terms and insurance programs.

Risk assessment related to potential accidental losses on capital projects is performed by MDT's Risk Management Committee, with assistance from Miami-Dade County's Risk Management Department and insurance brokers. The result of Risk Analysis is the selection of a Risk Mitigation alternative for each risk.

13.3.4 Risk Mitigation

Risk mitigation strategies include reduction, elimination, acceptance, transfer, or sharing of risks. In general, risk allocation and mitigation should be accomplished by assigning responsibility for the risk to the party that has the most capacity to manage that risk.

As the Project owner, MDT must assess the financial burden of many risks associated with the Project. MDT will use contract documents to address major risk allocation and mitigation issues, including the following:

- Quantify insurable risks and make recommendations for appropriate insurance programs to be incorporated into contracts. Depending upon the most cost-effective approach, either MDT, a contractor, or both may provide insurance coverage.
- Transferring design-related risks to design firms, which are required by contract to purchase project-specific professional liability insurance. When appropriate, MDT or the Design Consultant procures a project professional liability program to cover professionals working on the Project.
- Managing construction-related risks through several mechanisms, including contract requirements, insurance, on-site monitoring, and implementation of a comprehensive construction safety program. Contract documents are used by MDT to transfer responsibility to contractors for providing a safe work site for employees, the public and other contractors.

13.3.4.1 Risk Reduction or Elimination

MDT will take appropriate steps to reduce or eliminate as many risks as possible during the design and pre-construction stage on the Project. Many design and construction risks can generally be reduced or eliminated by completing the design prior to start of construction. The EP&D Department utilizes a comprehensive design review process, including constructability reviews, value engineering, operations and maintenance personnel reviews, senior management reviews, and third party independent reviews, to identify, qualify and address technical risks.

Site and environmental risks are reduced through site assessments, advance investigations of underground conditions, follow-up on all environmental issues identified in the FEIS analysis, and other actions by the EP&D's environmental compliance review. Risks associated with real estate acquisition, site access, interferences and logistics will be reduced with good planning, coordination and application of lessons learned on previous MDT projects and in the transit industry. Risks associated with quality, safety and security will be

reduced through the implementation of formal systems and procedures to ensure appropriate protection and quality on the Project, by all organizations involved. MDT maintains an aggressive community outreach program to reduce the risks of conflicts with local and regional stakeholders, including neighborhood groups, cities, and other government agencies. The EP&D also plans to reduce external risks through coordination with utilities and local city and other county engineering departments.

13.3.4.2 Risk Acceptance

MDT accepts risks associated with general economic, political, social, and legislative issues, including changes in laws and regulations, inflation, and relations with local stakeholders. Certain risks may be less expensively covered via self-insurance rather than requiring contractors to carry insurance, especially where policies and coverage can be closely monitored and changed as a project nears completion and risk levels are reduced.

13.3.4.3 Risk Transfer

Risk transfer is generally accomplished by allocating risks contractually to either:

- Contractor, designer, material supplier, subcontractor, or
- Insurance or bonding companies.

Equitable allocation of project risks is an important component in reducing cost and schedule overruns. Unfair allocation of risks to a contractor, however, may increase the bid price or reduce the number of potential bidders on a project. It may also result in an increase in the number of disputes and claims, both of which can lead to litigation and delays on a project.

Design related risks are contractually transferred to MDT's Design and CE&I Consultant's who are required by contract to procure project-specific professional liability insurance. This includes risks associated with errors and omissions. MDT transfers certain construction risks to contractors, for instance, related to quality, safety, security, licensing, materials, scheduling, and capacity. Both MDT and MDT contractors transfer certain risks to insurance companies via policies including property damage, bodily injury, indirect consequential loss, and general liability. Bonding is also used as a risk transfer mechanism where appropriate during construction.

13.3.4.4 Risk Sharing

Certain risks may be better managed through a "risk sharing" process, whereby MDT and a contractor both assume responsibility for bearing the costs of certain risks. Risks associated with quality, safety, schedule, inflation, and a number of other aspects of construction work may be shared. Some of the most common risk sharing techniques that will be considered by MDT are:

- Contract provisions that require construction contractors to indemnify MDT for negligent acts arising out of performance of the contracts.
- Alternative dispute resolution employed to manage potential economic and scheduling delays associated with contract claims.

- The use of an Owner Controlled Insurance Programs (OCIP), which requires construction companies to be responsible for a portion of claims paid to third parties for damages attributed to construction work.
- Incentives in contracts for safety records, schedule performance or quality.
- System designers and suppliers sharing risks during startup.

13.3.5 Risk Management Checklists

MDT, through the PMC, will develop a Risk Checklist reflecting the variety of perceived risks to the Project. The Checklist will be used by MDT to guide the risk management and planning process during the Extended PE phase of project development. Each area of risk will be ranked by degree and probability in terms of “low,” “moderate,” and “high”. MDT will use the suggested FTA areas of risk for its risk checklist as provided by FTA in their publication, *Risk Assessment in Fixed Guideway Construction*².

These general assessments will be more specifically developed and weighed as part of FTA’s formal risk assessment for the Project to be conducted upon completion of the Extended PE phase of project development.

13.4 Approach To Risk Management

Project risks are assessed beginning during the design phase and continuing through placement of the finished Project into service. During design, risk management activities include the identification of major risks during construction and startup; estimation of contingency reserves required; planning of procurement strategies in order to reduce, share or transfer risks; and implementation of insurance strategies to protect MDT from potential damages or losses during construction and startup. Comprehensive planning, including the development of this Project Management Plan, is fundamental to MDT’s approach to risk management. Major aspects of MDT’s approach to risk management include systematic risk planning and analysis, application of lessons learned, multi-organizational coordination, risk reduction during design, risk transfer and risk sharing during construction, development of insurance strategies, and contingency planning as described in the following sections.

13.4.1 Risk Planning and Analysis

Risks are systematically assessed during the design process, corresponding to design review milestones and updates to the cost estimates for each capital project. During the design review process, each element of a project is subjected to comprehensive technical reviews for completeness, accuracy, and other questions. An updated capital cost estimate is prepared, corresponding to the design review milestones described in Chapter 6.0, during which each element of a project is assessed for uncertainty. Contingency factors are then assigned to the cost estimate for each element; resulting in a contingency reserve based on the risks and

² *Risk Assessment in Fixed Guideway Construction, FTA, Report No. FTA-MA-26-0022, Northeastern University, January 1994.*

uncertainties associated with the status of a project. Prior to award of construction contracts, all aspects of a project are again reviewed, as a basis for establishing contract terms and conditions. At this time, appropriate insurance coverage will be determined for the Project, based on risk sharing and mitigation strategies. During construction, each project is subjected to technical, safety and quality reviews to prevent accidents, mistakes and other problems which might lead to cost growth or schedule delays.

13.4.2 Application of Lessons Learned

MDT will apply lessons learned from its implementation of the Stage 1 Metrorail system, past capital projects and the transit industry. These include experience with real estate acquisition, public involvement, local inter-agency agreements, interfaces with utility companies, bidding procedures for construction contracting, estimating costs of local construction labor, planning for on-site engineering and supervision, insurance strategies, schedule interfaces, and other issues. These lessons are incorporated into MDT's project planning estimating process, contracting process and schedules, budgets and insurance policies.

Lessons learned from within the transit industry are obtained by both MDT and MDT's consultants from other transit agencies around the USA, from FTA and from transit industry publications and organizations. Key new information related to design issues, including new features or technologies, will be incorporated into the Project and other facilities. Other industry-related lessons to be considered include incorporation of economic factors into Project cost and financing models, new insurance and contracting approaches, project teaming, and risk sharing methods being used elsewhere. This process is intended to reduce risks and costs on the Project.

13.4.3 Multi-Organizational Coordination

MDT's Finance Division has primary responsibility for developing plans to finance the cost of project risk. MDT's Executive Staff does most of the political and social risk assessments. MDT's Risk Management Committee is responsible for planning and implementing MDT's insurance programs and policies. During conceptual planning and preliminary engineering, MDT's System Planning Department has responsibility for initial identification of design and construction risks, and estimating associated contingency funds needed for the Project.

During the final design and construction of the Project, risk management is a multi-organizational, team-based process, led by the EP&D Department with the assistance of the Project Management Consultant. The EP&D Department will conduct detailed risk identification and assessment activities, in order to finalize cost estimates and schedules. This process requires close working relations between Program Management, Design & Engineering, Right-of-Way Acquisition and Utilities, Construction, Cost Estimating, Scheduling, Safety and Security, and other groups within the MDT. The EP&D Department then works closely with MDT's Procurement group and the Risk Management Committee to plan and implement appropriate construction contracts, procurement packages and the insurance program for construction, delivery, integration and startup of the Project.

During construction, close cooperation occurs between the EP&D, Finance Department, and Procurement group, to monitor and report on progress and projected final costs and delivery schedules.

13.4.4 Risk Reduction During Design

The EP&D Department will make every effort to reduce or eliminate risks during the design phase of the Project. Major elements of MDT's risk reduction process during design include thorough project planning; a comprehensive design review process; value engineering; constructability reviews; formal configuration management; safety and quality planning; completion of design prior to award of construction contracts; site assessments for hazards, contamination and general conditions; project systems integration and interface meetings; thorough construction planning; periodic bottom-up cost estimates corresponding to design milestones; engineering oversight of design work by consultants; quality reviews; safety reviews; and other activities. These activities and processes result in more complete and accurate cost estimates, risk transfer and insurance strategies related to known risks, prior to award of contracts for construction.

13.4.5 Risk Transfer and Sharing During Construction

Because the largest percentage of costs associated with the Project is expended during construction, this phase will receive considerable attention. Contract documents prepared by personnel who are fully knowledgeable of construction management and engineering issues and requirements are critical to the achievement of optimal risk allocation. During the final stages of the design process, and prior to the initiation of the Invitation for Bid process, the EP&D Department, MDT Procurement staff and the Risk Management Committee will meet to assess risks, determine risk transfer opportunities, and agree on contract clauses and insurance strategies which address risks during construction.

A Construction Safety Program that includes risk avoidance, risk retention and risk control techniques is required for each MDT capital project. Contract documents transfer responsibility for providing a safe work site for both employees and the public to MDT's construction contractors. Many construction-related risks can be avoided or reduced by thorough planning and other actions taken during pre-construction phases. The EP&D Department and Risk Management Committee review each contractor's safety program to verify that job-specific hazards have been identified and addressed prior to start of work.

13.4.6 Insurance Coverage

MDT will use a combination of risk transfer, risk retention (i.e., self-insure) and risk sharing to address the insurance needs on the Project. The most common risk transfer technique is the purchase of insurance. Currently, MDT carries property, liability, and workers' compensation insurance. MDT, with the advice and counsel of its Risk Management Committee, will review its insurance program and make modifications to help offset new risks presented by the Project. This includes the overall management of risks and identification of what new and additional coverage is warranted for MDT, its consultants and Contractors.

13.4.6.1 Design Period Risk Coverage

MDT develops and enforces insurance requirements for design professionals of every tier. All consultants and Contractors engaged by MDT to perform detailed or final design are required to have professional liability insurance coverage (sometimes called "errors and omissions" or E&O insurance). The primary design entity is required to have and maintain

E&O coverage for the benefit of MDT and all subconsultants. The limits of liability are determined by MDT after a review of the contract scope of services. E&O coverage will be provided by an insurer licensed to do business in the State of Florida. MDT's professional services contracts (and consultants' subcontracts) will stipulate the minimum terms of coverage required. Design team members must provide such coverage over the duration of the contract. They are required to disclose the terms of the coverage, including deductibles and limits. They are required to certify that such insurance is in place. In addition to E&O coverage, all design consultants and Contractors are required to carry:

- Workers' Compensation Insurance for all employees as required by Florida Statute 440;
- Public Liability Insurance, on a comprehensive basis; and
- Automobile Liability Insurance for bodily injury and property damage.

13.4.6.2 Construction/Installation Period Risk Coverage

Insurance

With the advice and counsel of its Risk Management Committee, MDT will develop and enforce insurance requirements for general Contractors. These requirements balance competitive interests of effectiveness, availability, cost, and third party requirements. At a minimum, general Contractors are required to maintain coverage for general liability, automobile liability, workers' compensation, and performance and payment bonds.

Since the Project will include the construction of two railroad overpass structures, the Contractors for those construction contracts will be required to provide Railroad Protective Public Liability and Property Damage Liability Insurance that will provide for and in behalf of the railroad company regular liability insurance providing coverage for bodily injury, death, and property damage.

The insurance companies providing coverage are required to name MDT as an additional insured on the liability policies and loss payee on the property policies. Waivers of subrogation are also required. It is the responsibility of the general Contractors to require and verify that subcontractors maintain appropriate insurance.

Bonding Requirements

A five percent bid bond, a 100 percent performance bond, and a payment bond in an amount in accordance with the latest FTA regulations, are required for all construction contracts. Approval of the payment and performance bonds, by the County Attorney's Office and the County's Risk Management Division, is a pre-requisite to issuing notice-to-proceed.

13.4.7 Contingency Planning

Contingency planning is conducted by MDT's EP&D Department during the cost estimating process for the Project, and updated periodically over the life of the Project. Contingencies and risks are assessed at each major design milestone during final design, and during the contracting process prior to construction. In general, the extent of contingency planning, including budgetary reserves, corresponds to the status and maturity of the design, as well as the stage of implementation, for any given capital project. Subjects receiving special

emphasis during the development of project contingency plans include indemnity, consequential damages, differing conditions, and delays.

13.4.7.1 Contingency Reserves in Cost Estimates and Budgets

MDT has established general guidelines for contingency reserves in project budget estimates during the final design stage as shown in Table 13-1. The percentages shown in Table 13-1 are the values that are normally recommended; however, slightly higher or lower values may be used if specific conditions warrant when approved in advance by MDT EP&D.

Table 13-1. Contingency Percentages for Estimates

Design Level	Allocated (Design) Contingency	Unallocated (Construction) Contingency
<30%	5 to 50%	10%
30%	0%	20%
60%	0%	15%
90%	0%	10%
100%	0%	10%

Source: *MDT Guidelines for Capital Cost Estimating*, May 2006.

13.4.7.2 Monitoring and Control

Project risks must be monitored after they have been identified, assessed and measured, and after risk allocation strategies have been selected and implemented. As the Project progresses and work is completed, the contingencies that need to be maintained generally decrease. In addition, the characteristics of certain risks may change over the life of the Project. For instance, site conditions may require additional risk analysis and contingencies; an accident may raise additional questions. The EP&D Department is responsible for monitoring risks and contingencies on the Project.

13.5 Organizational Responsibilities For Risk Management

13.5.1 Engineering, Planning and Development Department

MDT's EP&D Department has primary responsibility for risk planning and management on the Project, during the design, construction and startup phases. Within the EP&D Department, the primary responsibility for risk planning and management on the Project lies with the Chief of Program Management. The Chief of Program Management will interface and coordinate with other MDT divisions, including Risk Management, Finance, Procurement, Legal, and Operations which will provide a multi-disciplined approach to risk identification and analysis. This approach also allows for consideration of the interaction between the four major risk categories when assessing the impacts of potential risks.

The EP&D's Construction Division is responsible for construction planning for all capital projects. Identification of construction risks is a major aspect of the construction planning process, during which appropriate contracting and insurance strategies are defined. The Construction Division has the expertise and experience to identify both risks and ways to reduce those risks, via oversight, planning, or pre-construction actions. For instance, pre-construction surveys are conducted to document site conditions in order to mitigate third

party claims after construction has begun. MDT's Resident Engineers are responsible for oversight of construction contractors and for monitoring construction-related risks.

13.5.2 Risk Management

Miami-Dade County's Risk Management Division has overall responsibility for programs and activities that address accidental losses, and is the primary organization at Miami-Dade County responsible for planning, coordinating and implementing insurance programs for MDT. The Risk Management Division is the key organization, along with the EP&D, responsible for risk management on MDT's Capital Improvement Programs.

Insurance strategies are a significant element of MDT's risk management process, and are a means of transferring or sharing risks MDT itself cannot wholly control. Risk financing, risk transfer and risk control are techniques used to address accidental losses. The Risk Management Division coordinates these activities during the contracting process, by ensuring that risks are addressed and that appropriate insurance language is included in every major engineering and construction contract awarded by MDT.

The Risk Management Division works closely with MDT Program Management, Project Directors, Engineering & Design, Contract Services, County legal staff and other departments during the project planning process and during the Invitation to Bid/construction contracting process.

13.5.3 Contract Services

Ultimately, MDT relies on terms and clauses in contracts to reduce, share, or transfer project risks. The MDT Contract Services Section within the Project Control Division is responsible for providing support to the EP&D related to administrative and contractual aspects of managing the engineering and construction contracts on the Project. This includes assistance related to identification of procurement-related risks and risk allocation strategies appropriate to individual contracts. MDT Contract Services works closely with the Risk Management Division, County legal staff and the EP&D Department during the contracting process, in order to ensure that contracts conform to MDT plans and policies related to risk reduction and cost savings strategies.

13.5.4 Finance Department

The MDT Finance Department is responsible for addressing project-financing risks, and for ensuring that MDT has adequate funding for the Project. In addition, the Finance Department is responsible for generally assessing local economic risks that might impact capital project costs, and for communicating relevant economic information to other MDT organizations, including Contract Services and the EP&D Department. The Finance Department is also responsible for coordinating with the EP&D Project Controls Division for obtaining any needed capital cost estimates, or latest projected costs for ongoing projects, to support financing activities and preparation of MDT's annual Financial Plan.

13.5.5 Other MDT Organizations

Other MDT and County Departments may be involved in risk reduction or mitigation activities, including the Director, County Manager and Board of County Commissioners, depending on the size, nature or timing of the individual risks. The MDT Project Director is

responsible for identifying other organizations needed to adequately address risks on the North Corridor Metrorail Extension.

14.0 PUBLIC ART PROGRAM

14.1 Background

Miami-Dade Art in Public Places serves the community through the implementation of art installations and the educational programming dedicated to enriching the public environment and to preserving and enhancing the artistic and civic pride of Miami-Dade County. Miami-Dade Art in Public Places promotes collaboration and creative art projects that improve the visual quality of public places. At their most successful, these public art installations transform public spaces from ordinary civic areas to site that can lift the spirit and connect with the community.

One of the first public art programs in the Country, Miami-Dade Art in Public Places was established in 1973 with the passage of an ordinance allocating one and one-half percent of construction cost of new county buildings for the purchase or commission of artworks. Art in Public Places is overseen by a citizens' Trust appointed Board of County Commissioners. The Trust receives recommendations on acquisitions and commissions from the Professional Advisory Committee, an independent group of professionals in the field of art, art history, architecture, or architectural history.

Artworks are installed countywide at diverse sites including Miami International Airport, Metrorail and Metromover stations, Port of Miami, MetroZoo, Carnival Center for the Performing Arts, fire stations, libraries, police stations, public housing developments, and community health centers.

The focus of the program has been on site-specific, collaborative projects that involve the thinking of artists, landscape architects, historians, engineers and architects in a team approach. Creative problem solving through innovative collaborations has resulted in projects that validate, define and expand community identity.

14.2 Goals

The Goals of the program are several: to enhance the artistic heritage of Miami-Dade County, to give dimension to the public environment for residents and visitors, to increase public awareness to works of art, and to promote understanding and awareness of the visual arts. The Art in Public Places program has given Miami-Dade County national visibility in the arts and a leadership role in public programming. Through Art in Public Places, the County supports the development of a unique and vital civic environment.

14.3 Budget and Funding

The Miami-Dade County Art in Public Places program was established by County ordinance, revised February 8, 1994 as ordinance no. 94-12. It provides for acquisition of works equivalent in value to not less than one and one-half percent of the construction cost of new governmental buildings, to the extent of the total appropriation is not used for the acquisition of works of art for said buildings, the remainder may be used for:

1. Program administrative cost, insurance costs or for the repair and maintenance of any works of art acquired under the program.
2. To supplement other appropriations for the acquisition of works of art under the program or to place works of art in, on, or near government facilities which have already been constructed.

For the North Corridor Metrorail Extension, the magnitude of the public art program budget is based on one and one-half percent of the value of the station elements of the Project, including both design and construction costs. Miami-Dade Art in Public Places' management of the program is included in the budgeted amount.

If the selected art work is part of the project scope (i.e., some element such as flooring or wall enclosure, which would normally be constructed regardless of the Art in Public Places involvement), a credit for work not done for the base building as a result of the art installation will be negotiated and credited to the artist's budget.

14.4 Selection Process/Criteria

Artwork may be acquired by commissioning new work specifically for a site or by purchasing existing work. An independent Professional Advisory Committee (PAC) makes recommendations for acquisitions to the Art in Public Places Trust. PAC members are professionals in the field of art, art history, architecture or architectural history.

After establishing the nature and parameters of a given project, the PAC selection committee reviews all artist submissions and makes their assessments based on the artists' aesthetic as represented in the slides and/or other visual materials. The PAC then makes recommendations to the Art in Public Places Trust that certain artist be selected or "short listed". This design development phase is executed in accordance with a written agreement with the Trust and paid according to the scope of work. Artists are given additional information on the budget, site, and scope of the project and often tour the site and meet with architects and other designers. The artist returns to the PAC selection committee and presents his/her design proposal to the panel. Artists use a wide variety of means to communicate their ideas including blue prints, maquettes, drawings, computer-generated imagery and material samples. At this time, artists are expected to present a working budget for their project. The PAC then makes a recommendation to the Trust for proposals to be accepted and implemented.

With the acceptance of a proposal, a contract is negotiated between the Trust and the artist. This provides for the artist to design and execute a work and meet all related costs such as travel, materials, fabrication, transportation, insurance and installation of the work, within a mutually agreed time period for a fixed fee. Progress payments are made over the course of the contract obligation in accordance with a mutually agreed schedule. Compliance with financial arrangements between the artist and his/her art representative is the responsibility of the artist.

Since the PAC is responsible for selection of the art work, the design may not change significantly without reassessment of the selection, therefore, community input based on previous meetings, will be conveyed to the artist at the time of the initial proposal design phase. Further public involvement will be for information purposes only.

14.5 Responsibilities

The artists' contracts will be administered by Art in Public Places through Art in Public Places' Project Manager. The Art in Public Places Project Manager is responsible for coordinating the design phase work of the artist with Miami-Dade Transit, the PMC and the Design Consultant. MDT, through its CE&I Consultant, will coordinate installation of the artist's work as if it were one of its own contractors. Language will be included in the construction contracts that explicitly describes the working relationship with an artist commissioned through the Miami-Dade Art in Public Places Trust program.

Art in Public Places' Project Manager, with assistance from the PMC, will assist the artist in determining if a construction permit is required, depending on the type of art project.

14.6 Implementation

The artist's agreement with Art in Public Places will be in two phases. Phase I consists of conceptual design development, followed by a refinement process that includes samples of materials, budget and lists of potential fabricators if applicable. Permit requirements will be determined at this time and coordination with stakeholders and scheduling of the work will be done under the oversight of Art in Public Places Project Manager. Art in Public Places will reserve the right to withhold NTP for Phase II to address issues such as, but not limited to, changes in construction project scope and or construction schedule modifications. Delays in the Project's construction schedule that are beyond the control of the artist may have a negative impact on the artist's budget and ability to meet his/her own schedule. In these instances, MDT through the PMC will notify the Art in Public Places Project Manager in writing of the conditions and negotiate a mutually agreeable plan to continue the implementation of the art project.

Phase II of the work is for fabrication and installation which will vary depending on the type and complexity of the art work.

It is expected that most of the art work for the Project will be integral to the fabric of the station structure and will require collaboration and coordination with the Design Consultant for permitting and proper integration and scheduling of the work. In these cases, the design documents will make reference to the artist's artwork components to facilitate the permitting of the artist scope of work under the master permit(s) for the Project. Where the work is integrated in the design, the Design Consultant and Contractors for the subject construction contract may be contracted, at the discretion of the artist, to help prepare permit documents and oversee certain aspects of the fabrication and installation.

If the work of art is of a 'stand alone' nature, the artist may work independently through a Florida certified contractor and engineer hired by the artist.

14.7 Maintenance of Project Art Elements

Due to sun exposure, water damage, graffiti, pollution and structural problems, public art requires ongoing maintenance. Miami-Dade Art in Public Places is committed to maintaining its public art collection through partnerships such as Miami-Dade Transit and conservation programs. The Collection Specialist conducts an annual inspection on each work of art in the

Miami-Dade Art in Public Places' collection. A record is kept of the present condition of artwork and recommendations are made regarding needed maintenance and repair.

15.0 SAFETY AND SECURITY

15.1 General

MDT has developed a Safety and Security Management Plan (SSMP) for the North Corridor Metrorail Extension which is an integral component of this PMP. The SSMP is a bound, stand-alone document and is incorporated in its entirety by reference.

The SSMP describes the policies, procedures and activities to be followed by management, designers, consultants, contractors and associated Project team members to support identification and elimination of security threats and related safety hazards in all phases of the project life cycle. The SSMP is comprised of the following elements as mandated by FTA Circular 5200.1A:

- MDT’s management commitment and philosophy to actively sustain safe and secure transit operations;
- Description of safety and security philosophy;
- Integration of safety and security functions during design, construction, testing, and start-up phases of the project;
- Assignment of organizational safety and security responsibilities for the project;
- Hazard management process;
- Threat management process;
- Development of safety and security design criteria;
- Qualifications for operations and maintenance personnel;
- Process for verifying conformance with specified safety and security requirements during design, in equipment and materials procurements, and during testing/inspection and start-up phases;
- Construction safety management activities;
- Requirement and schedule for meeting State of Florida’s Safety and Security Oversight Program (49 CFR Part 659 and 341.061 Florida Statutes); and
- Formal, final safety certification to enter the revenue service phase.

In summary, the SSMP defines the process for the identification and communication of hazards and threats, verifying the incorporation of safety and security requirements into project documentation and reducing safety hazards and security vulnerabilities to an acceptable level. Refer to the latest version of the SSMP for particulars.

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16.0 TESTING AND START-UP

The Testing and Start-Up Phase of project development links the Construction and Revenue Service Phases. The purpose of this phase is to accept the newly constructed Project. Acceptance follows verification that the Project meets the contractual specifications by performing system, performance, and integrated testing. In addition, a period of pre-revenue service will follow the testing phase to familiarize MDT management, operations and maintenance personnel with the new extension of the system prior to beginning revenue service.

The overall responsibility for Testing and Start-up of the North Corridor Metrorail Extension lies with the MDT Manager of Systems Engineering and Assistant Director of Metrorail Services. Responsibility for certain activities as described herein are assigned to the PMC with oversight by the MDT Manager of Systems Engineering. The PMC, CE&I Consultant and Contractors will develop the Test Plans and respective tests based on MDT requirements for MDT adoption as described herein. The functional responsibility for complying with these procedures will be delegated to the appropriate staff and consultants.

This Chapter of the Project Management Plan contains a description of MDT's management approach to the Testing and Start-Up Phase of the Project. It includes a discussion of start-up preparations, test program planning, test program elements, preparations to be made for operations and maintenance, operations staffing, training, and safety and security requirements.

16.1 Start-Up Preparations

The PMC will develop a Rail Activation Plan sufficiently in advance of the revenue operations date and will also commence preparations for commissioning the new rail service and planning all start-up events at that time. As part of the planning effort, the PMC will prepare an Integrated Test Management Plan and the Rail Activation Plan.

16.2 Integrated Test Management Plan

Each agency contract for the Project will require the Contractor to demonstrate by tests – “contract acceptance tests” – that the scope of contract has, in fact, been provided. This is especially true of systems, systems components, rail vehicles, and other electrical-mechanical equipment items within the scopes of particular contracts. It is not enough, however, to conclude that each Contractor has met its requirements on a contract-by-contract basis, for the agency needs to know whether the entire rail line works well across contract interfaces. Therefore, there is need to test the integrated whole and that responsibility lies with MDT.

Where a system component of a Contractor interfaces with a facility or system component of another Contractor, the agency must conduct an overall series of tests to be assured the two elements are compatible and perform jointly as intended. Contract boundaries must incrementally be tested until the integrated whole has been demonstrated to be ready to run.

The PMC will draft and adopt an Integrated Test Management Plan, then implement the plan as scheduled in the Plan. Before any Contractor is awarded Final Acceptance, such

Contractor must assist in the implementation of an Integrated Test Management Plan, wherein that Contractor's work products are included in the test scope.

The Integrated Test Management Plan will be subdivided into two parts, the first concerning management of the plan and the second defining specific integrated tests to be performed. The outline of the plan, essentially the index of the Integrated Test Management Plan, is as follows:

Part 1 - Integrated Test Program Management:

- Introduction
- Test Program Organization and Roles
- Agency Staff
- Agency Consultants
- Integrated Test Team (ITT)
- Safety Certification Organization(s)
- Affected Contractors
- Acceptance Testing
- System Integrated Testing
- Test Program Management and Control

Part 2 - Specific Integrated Tests:

- Test Summary Sheet
- Subsystem Tests
- Vehicle Acceptance and Safe Braking Tests
- Traction Power Supply Integration Test
- Local Facility Monitoring and Control Test
- Supervisory Control and Data Acquisition (SCADA) Integration Test
- Radio Test
- Train Control/Signaling/SCADA Interpretation Test
- Other Communications Tests
- System Readiness Drills
- Rail Activation Plan Interface

An Integrated Test Management Plan will be drafted by PMC staff in accordance with the above outline, and then advanced within the agency structure for appropriate approvals and adoption. Once adopted, it will be implemented as planned including the detailing of the various tests.

16.3 Activation Planning

Beyond the Integrated Test Program described above, there are many other activities the Agency must perform to help assure that the Project is ready on the scheduled revenue operations date. The PMC will prepare a written Rail Activation Plan for MDT review and approval that will be combined with the Integrated Test Program, describing all activities beyond the tasks of construction and installation completion, contract acceptance testing and integrated testing. This Plan will be based in part upon MDT's successful opening of both the Stage 1 Metrorail system and the Palmetto Metrorail Station Extension in May 2003.

Development of the North Corridor Rail Activation Plan will commence at the end of the Final Design. The Plan will be prepared by the PMC with oversight provided by the MDT Manager of Systems Engineering and Assistant Director of Metrorail Services with support from the Field Test Engineering and Electrical Systems, Construction, Safety and Security, and Community Outreach Divisions. The approach to Plan development will be to list all elements and events that lead up to revenue service, then to develop a special start-up schedule network, demonstrating the activity logic and event durations.

The Rail Activation Plan will be organized into main topics of coverage such as:

- Scope of the Plan
- Management Requirements
- Integrated Test Team
- Other Agency Staff
- Agency Consultants
- Local Coordination Committee
- Organization of Agency
- Staffing and Training of Agency and Contractor Personnel
- Job Descriptions
- Recruitment/Mobilization
- Section 13-C Conformance (if applicable)
- Development of Training Programs
- Development of a System and Related Procedures to Control the Performance of Testing While Contractor Construction Work is Still On Going
- Liaison and Interface with Bus Operations
- Training Equipment, Facilities and Aids
- Off-Site Training
- In-House Training
- Pre-Revenue Operations Training
- Operations and Maintenance (O&M) Plan Updating

- Service Scheduling
- Rail Rule Book and Standard Operating Procedures
- Rail Safety Training
- O&M Cost Estimate Updating
- Fare Policy Adoption
- Revenue Estimate Updating
- O&M Performance Monitoring System
- Maintenance Scheduling
- Facility Availability
- Operational Safety and Security Program
- Negotiations of Local Agreements (Fire, Police, Emergency Medical Services (EMS))
- Negotiation of Power Supply Agreements
- Protection and Maintenance of Accepted Facilities
- Establishment of Utility Service Arrangements
- Stocking of Expendable Supplies and Spare Parts
- Purchase of Maintenance Tools and Equipment
- Temporary Storage of O&M Equipment and Supplies
- System Testing Coordination
- Contract Acceptance Tests
- Integrated Tests
- Pre-Revenue Simulations
- Utilities for Testing
- Redesign and Retrofit
- Verification of Safety and System Assurance
- Operational Permits and Clearances including nearby Railroad Operations
- Bus Network Changes
- Revised Bus Routes and Schedules
- New/Relocated Bus Stops and Shelters
- New Bus Destination Signs
- Reassignment of Operations and Equipment
- Public Information and Media Progress Notifications
- State Safety Oversight Review
- Expanded Advertising and Concession Programs

- Adoption of New Policies and Procedures
- Miscellaneous
- Opening Day Plans
- Ride-Free Break-In Period
- Revenue Operations Date Reschedule Plans
- Schedule of Start-Up Events
- Last Six Months of Planning
- D-Minus Ninety Days
- Documentation of All of the Above.

As for other written plans defining programs or sets of activities, an ad hoc Rail Activation Group formed of appropriate staff members of the PMC, MDT, the Design Consultant and other closely involved agencies will guide the PMC’s preparation of the Rail Activation Plan. The draft plan will be advanced within MDT for adoption and then will be implemented.

16.4 Operations and Maintenance Period

Any startup of a new rail system operation experiences a “burn-in” period wherein the newly assigned operations and maintenance personnel, the traveling public, the motor vehicle and pedestrian traffic, and other bodies learn to live with rail operations. During a break-in period there may be need to call back Contractors and suppliers to make adjustments, repairs, replacements, and perform other warranty and guarantee work. It also will be a period for verifying that the system assurance requirements are being met.

The burn-in period will also determine how the community is interfacing with rail operations, especially with at-grade rail/highway crossings. Any incidents that occur that reflect on safety or security will be thoroughly evaluated to determine whether the agency facilities, equipment, education program or operating procedures need improvement.

16.5 Systems Testing Procedures, Analysis and Results

This section describes the objectives, methodology, management controls, and major milestones in the conduct of a test program intended to verify the Project’s readiness for revenue operations.

16.5.1 Objectives

The objectives of the testing program are:

- Verification of contract compliance;
- Validation and demonstration of system performance;
- Demonstration of safety and service characteristics, including emergency response scenarios; and

- Training of new personnel, and integration of personnel, equipment, and procedures into the system operations.

16.5.2 Types of Tests

Five types of tests will be required under the System Testing and Start-Up Program. The following definitions include examples to distinguish the general uses of each of these types of tests.

16.5.2.1 Qualification or Design Verification Testing

Design verification tests are performed to prove that designs meet MDT's specification requirements. They will usually be performed on pre-production units or on the first unit of a production run. Examples are substation load tests, rail car body structure tests, and rail car climate room tests.

16.5.2.2 Manufacturing Tests

Manufacturing tests are a general category of tests that will be performed on a sampling basis or routine basis to verify adequate quality control and manufacturing process. They may represent milestones for continued assembly or construction activities.

16.5.2.3 Acceptance Tests

Acceptance tests will be performed on individual items, to verify performance at the equipment level, subsystem level, and complete system level, after installation or assembly. On equipment contracts, these tests will normally be identified as advanced milestones and are linked to contract progress payments. At the system level (e.g., vehicle acceptance), these tests require interface validation with other system elements (e.g., traction power system).

16.5.2.4 System Integrated Tests

System Integrated Tests are individual tests or series of tests that require the interface of more than one system or facilities element. They will be designed to verify the integration and compatibility between or among individual elements. A number of these tests will be contractually required tests of individual Contractors. Examples of these include the train control dynamic tests that integrate vehicles, traction power and train control. The tests that are beyond the contractually required tests of individual Contractors will be planned, performed, witnessed, reported, and documented by MDT. Individual systems contracts will provide additional support during Agency conducted Final Integrated Testing and will be held accountable for the integrated systems tests of their respective components. The tests are conducted to validate total system performance.

16.5.2.5 Pre-Revenue Tests

Pre-revenue tests are the series of tests that use the complete functional capabilities of all system elements. Such tests are beyond the contractually required tests of individual Contractors. Performance of these tests shall be performed prior to initiation of revenue service. They evaluate representative system schedules, personnel, procedures, and

equipment. These tests commence after system elements relating to systems operations are complete and accepted.

16.5.3 Test Management Approach

The management of the test program is divided into two categories. The first category consists of design verification, manufacturing and acceptance tests that will generally be managed by the CE&I's Resident Engineer responsible for the contract to which they relate. An exception to this will be made for any on-site acceptance test not in the category of equipment installation verification which will be the responsibility of the PMC's Test Program Coordinator. The Test Program Coordinator reports to the MDT Manager of Systems Engineering who is responsible for providing oversight of the overall test plan. The second category of tests, systems integration and pre-revenue, is also the responsibility of the Test Program Coordinator.

During the latter phases of the Project, schedule coordination and organization of other facilities or support elements will be the responsibility of the Test Program Coordinator.

There are four major activities for the performance of both categories of tests:

- Establish test requirements;
- Perform tests;
- Report test status, document, and analyze test results; and
- Develop plans to retest/correct any deficiencies found during tests.

16.5.3.1 Establish Test Requirements

The requirements for testing system elements are established based on consideration of several factors:

- Functional criticality
- Developmental nature
- Procurement/installation relative to construction sequences
- Historical experience including manufacturer recommendations

Each element of the system will be examined in terms of these factors and the established test requirements. Where test requirements relate directly to contract performance specifications, the tests shall be Contractor tests and will be included as part of the contract requirements.

Each Contractor will be responsible for submitting a test plan which will include procedures for each identified test including the pass/fail criteria for each test. The Test Program Coordinator will be responsible for assembling the individual contractor submitted test plans and combining them with MDT's tests into an overall Test Plan for the Project. Documented test results will be required for each test performed.

Where test requirements are beyond the contractual responsibility of any system or civil element Contractor (e.g., systems and pre-revenue types of tests), the tests shall be termed Agency tests and shall be managed accordingly.

The definition of Contractor tests, are the responsibility of the Design Consultant’s Project Engineer/Architect for the relevant contract. The PMC, the Systems Engineering Manager, and the agency operations and maintenance staff provide oversight and technical support. Coordination of support requirements (system facilities and interfaces with other system elements) is the responsibility of the CE&I’s Resident Engineer, but the Test Program Coordinator and MDT Operations and Maintenance staff will provide coordination assistance. The Test Program Coordinator will assure that all Contractor tests are compatible with MDT’s policy, system wide schedule and the requirements of other contracts.

The definition of agency tests, and the specific objectives and method of establishing them, will be developed by the Test Program Coordinator based on input from the various agency departments.

16.5.3.2 Perform Tests

Tests will be executed in one of three ways: Contractor off-site tests, Contractor on-site tests, and MDT tests. Each is described below.

Contractor Off-Site Tests

Tests assigned to the Contractors that are not performed at the point of final installation are termed off-site testing. Examples include most qualification and manufacturing tests.

There are four basic activities involved in off-site testing:

- Review of test plans, procedures and reports.
- Witnessing of the tests.
- Verification of test performance and results.
- Status reporting of submittals and tests and test completion reporting.

Review of test plans, procedures and reports is the responsibility of the CE&I’s Resident Engineer. The Test Program Coordinator may provide technical support. Test plans and procedures must be reviewed by the CE&I’s Resident Engineer to ensure that the specification requirements are met including all technical and agency requirements.

The Contractor will perform execution of the tests, in accordance with the contract specifications and the test plan and/or procedures, as approved. The Contractor shall provide test specimen(s), equipment and operating personnel.

Monitoring of the tests will be the responsibility of the CE&I’s Resident Engineer. Members of the PMC, MDT quality assurance staff and Design Consultant may request to witness these tests. Auditing or witnessing of tests by quality assurance may be performed on a spot check or random sample basis.

Status reporting of all significant Contractor off-site tests shall be the responsibility of the CE&I’s Resident Engineer.

Contractor On-Site Tests

Tests assigned to the Contractors that are performed at the point of final installation are termed on-site testing. Examples include acceptance tests and Contractor system tests.

Basic activities involved in Contractor on-site testing are:

- Review of test plans, procedures and reports
- Scheduling of tests
- Equipment operation or use of other system elements
- Witnessing of tests
- Verification of test performance and results

Review activities are again the responsibility of the CE&I's Resident Engineer, supported by the Test Program Coordinator.

The Test Program Coordinator, in conjunction with MDT's Rail Operations Division, will meet on a regular basis to coordinate the schedules and resolve potential problems associated with the on-site testing. As test plans and procedures are reviewed, the need for other system elements to be functioning will be identified and resources coordinated.

Actual test execution will be the responsibility of the Contractor who must provide the necessary test equipment, test operators and data recording. Where operation and/or maintenance of other system elements (equipment outside the Contractor's responsibility) is required, such operation shall be provided by agency personnel, or by other Contractors through coordination by the on-site test scheduling meetings.

Monitoring, execution, verification, status, and completion reporting are performed with similar responsibilities as described in off-site testing.

MDT Tests

The major activities in MDT tests (system and pre-revenue) are:

- Identification of requirements
- Preparation and review of test parameters and procedures
- Test supervision and execution
- Status and test completion reporting

Responsibility for these activities rests with the Test Program Coordinator. Responsibility for certain aspects of these tests is also vested in the Vehicle Procurement Resident Engineer and MDT Rail Operations and Rail Maintenance personnel. In general, the role of the Test Program Coordinator will vary with increasing responsibilities assumed by the MDT Rail Operations Division, particularly during the pre-revenue test phase.

There are three types of required agency tests, and they will occur in sequential order:

- Rail vehicle acceptance testing and burn-in
- Systems testing (integration of equipment, facilities, personnel, and procedures)
- Pre-revenue testing (operations of total system, simulating normal, abnormal, and emergency conditions)

Preparation of test procedures for vehicle acceptance testing will be the responsibility of the Vehicle Contractor with oversight of the Vehicle Procurement Resident Engineer. The Test Program Coordinator will review the procedures in conjunction with the MDT Vehicle Procurement Resident Engineer and Rail Operations Division.

Preparation of procedures for systems tests will be the responsibility of the Test Program Coordinator. Rail Operations, Rail Maintenance and other Agency staff, as required, will review procedures.

Rail Operations, Rail Maintenance, and the Test Program Coordinator will coordinate preparation of test procedures for the pre-revenue tests.

Test supervision and execution responsibilities will vary according to the type of test. Systems tests designed to verify the equipment integration will be the responsibility of the Test Program Coordinator using Rail Operations and Rail Maintenance personnel for equipment operation, security, and maintenance services. Pre-revenue tests will be planned and managed by the Test Program Coordinator and executed by Rail Operations personnel.

Test result reports of all agency tests shall be the responsibility of the person conducting the test. The Test Program Coordinator will keep documentation of all tests performed.

16.5.3.3 Status Reporting of Submittals and Tests

Effective test reporting has two objectives. First, an overall knowledge of test progress is vital for an understanding of the status of individual contracts and the system as a whole. Second, the status of tests that have relationships with other contracts or tests must be closely monitored to ensure coordination and prevent delays.

The primary responsibility for providing the input on test documentation submittals (test procedures and test results) and status of individual Contractor tests will be with the CE&I's Resident Engineer who will submit such data to the Test Program Coordinator for compilation. The Test Program Coordinator, in turn, has the responsibility to closely monitor testing and notify the CE&I's Resident Engineers when late or unsuccessful tests may interfere with other project activities. The reporting of test status, test results and test completion of systems tests will be done by the Test Program Coordinator or designee. Reporting of test status, test results, and completion of pre-revenue tests will be done by Rail Operations.

16.5.3.4 Test Documentation

The CE&I's Resident Engineers and Test Program Coordinator are responsible for assuring that all their test documentation is prepared and available for review. Documentation shall include a description of each test required in the contract documents, the results of each test including fail and pass dates, names of test witnesses, test reports, and the acceptance of the

test by the CE&I's Resident Engineer or Test Program Coordinator. The Test Program Coordinator will be responsible to maintain a master log of all tests required and their status. This log will become part of the back-up documentation necessary for safety certification.

16.5.3.5 Test Completion Reports

At the completion of each test, the individual responsible for approval of the test results will complete a test completion report and submit it to the Test Program Coordinator. Approval of, the test results will be reported on this form and any need for additional retests will be identified. The Test Program Coordinator will compile test completion reports.

16.6 Modifications or Retrofits

During system or pre-revenue testing, necessary changes to various project elements may be identified. Any such change will take the form of a modification or retrofit. Determination of the need for any modifications or retrofits will be based on the results of the system testing and start-up program, and must be carefully coordinated with the management of change orders and warranties.

Agreement on the scope of and assignment of financial responsibility for modifications and/or retrofits will be negotiated and administered by the CE&I's Resident Engineer, or through the claims resolution process described in Chapter 11.0 of this Program Management Plan.

16.7 Start-Up Planning

Start-Up of the Project is an inherently complex process requiring exceptional intra-agency coordination and planning. As the Project approaches revenue service, a confluence of coordination challenges brings multiple pressures. Among the anticipated challenges are:

- The Project construction and integrated testing phases will be nearing completion, a point in the overall process that is often exceptionally time sensitive and for which few “work-arounds” are available to deal with unresolved issues.
- New operations and maintenance personnel are needed in the Metrorail Services Department to operate and maintain the new-start line.

In advance of revenue operations, MDT will designate a Manager of Rail Activation. The function will reside in the MDT Metrorail Services Department and the Manager of Rail Activation will report to the Assistant Director of Metrorail Services throughout the start-up process. The position will be responsible for managing the identification, critical path scheduling, interdepartmental coordination, and progress reporting of all agency activities directly supporting the commencement of revenue operations. An initial task will involve assuring that a coordinated training program is implemented.

Each division involved will be accountable for its respective responsibilities during start-up. The most heavily involved divisions will include the Project staff, Rail Operations, Rail Maintenance, the Chief of Safety and Security, and Community Relations. Close coordination with the Bus Services Division will also be important.

16.7.1 Start-Up Plan

The Manager of Rail Activation will convene a Integrated Test Team (ITT) to oversee the start-up effort. The first priority of the ITT will be to guide the development of a comprehensive Rail Activation Plan (RAP). The plan will outline the requirements and tasks necessary to activate and operate the heavy rail line and the key steps and timetable required.

Preparation of the Rail Activation Plan will be the responsibility of the PMC with oversight by the Manager of Rail Activation. It will benefit in part from the experience gained in MDT's successful opening of both the Stage 1 Metrorail system and the Palmetto Metrorail Station Extension in May 2003. The Rail Activation Plan will be used as a guide during the activation of the rail line and as a reference manual in future operation. Progress reports on the entire scope of start-up activities will be issued monthly.

The start-up activities program will continue past the date of commencement of revenue operations until all identified open items in the program have been closed.

16.7.2 Start-Up Schedule

The schedule for implementation of the plan will be prepared as a separate document, referred to as the "Start-Up Schedule." Functional groupings of start-up activities will be represented. Activity groups will include:

- completion of construction;
- bus/rail service planning;
- operating budgets programming;
- personnel hiring and training;
- procurement parts and services;
- maintenance of facilities/equipment;
- system safety certification;
- systems activation; and
- marketing/customer services/community relations activities.

Those managers responsible for performance of the various functions will prepare the sequence and timing of activities in this schedule. The stated sequence and timing of events will be followed closely to meet the established date for the start of revenue service.

16.7.3 Start-Up Target Date

Progress toward the start-up date will be continually evaluated during the testing and start-up phases. The ultimate decision on the start-up date will be made by the MDT Director only after assurance of the system's safety, security and reliability is made. A fundamental requirement for determining the opening date will be the availability of the entire length of the line, including all line segments, vehicles, and system elements for a period of at least two months for purposes of testing, training, and simulated operation. Full revenue rail start-up will be integrated with the existing bus service.

16.8 Operations Planning

16.8.1 Basic Operating Plan

The basic information as to through line operations, the location of stations, the headways required to carry the expected passengers and other similar information was determined during preliminary engineering and will be set forth by the PMC in a Rail Operations and Maintenance Plan. The plan will assume the timing of peak headways and non-peak headways. Critical information on the means of achieving the service level will also be contained in the Rail Operations and Maintenance Plan.

The plan defines the work requirements and will set forth the personnel and training needs required to accomplish the project objectives. Changes in the basic operating plan are expected to be made from time to time as additional information becomes available as to ridership levels, vehicle characteristics, legal and regulatory directions, and other factors which may affect the operation.

16.8.2 Rail Transportation Plan

The Rail Transportation Plan in the Rail Operations and Maintenance Plan will define the operating requirements and hiring needs by time periods, including considerations of training and qualifications. This plan will take into account the demands for project operation and other capital and operating charges.

16.8.3 Rail Maintenance Plan

The Rail Maintenance Plan within the Rail Operations and Maintenance Plan will determine the work requirements by years for the Project operation. As a result of long-lead time in filling many of the jobs requiring apprenticeship training, hiring efforts for such positions will begin at least two years prior to revenue operation. A complete discussion of the maintenance needs and the times at which the employees must be brought into the system will be contained in the Rail Operations and Maintenance Plan. The maintenance items include rail vehicle maintenance, maintenance of way and systems maintenance.

16.9 Operations Staffing

The staffing of functions for train operators, rail vehicle maintenance, and plant/right-of-way maintenance will reside in the Rail Operations and Rail Maintenance divisions. Personnel requirements for the start-up and operational phases will be developed as part of the Rail Operations and Maintenance Plan. New personnel will be brought in and training programs will be developed.

The rail operations personnel will normally report to the William Lehman Operations and Maintenance Center. This facility will continue to serve as headquarters for MDT rail operations with the General Superintendents of Rail Operations and Maintenance and most support staff residing at that facility.

Operations hiring will begin even before the formal Start-Up Plan and Schedule are developed. Operations staffing must be available to respond to the following advance activities:

- Acceptance of the first rail car for revenue service;
- Substantial completion of all construction and procurement contracts prior to system start-up;
- System verification testing starting before pre-revenue service testing; and
- Simulated or pre-revenue service starting before full revenue service.

The entire Operations staffing program will be described in detail in the Rail Operations and Maintenance Plan, which will be updated to adjust to any operational changes. Increases in numbers of non-operational positions (e.g., accounting, revenue collection, community relations) will be considered early in the start-up period. Rail Operations and Rail Maintenance staff will work to ensure the timely hiring and training of all personnel.

16.10 Training

Prior to the start-up phase, an outline of the education and training program for the Rail Operations staff will be developed through a combined effort of suppliers, vendors, consultants, and MDT training staff.

MDT will benefit from the training programs developed for the successful startup of the Stage 1 Metrorail system and Palmetto Metrorail Station Extension. These will serve as an excellent base for developing the training needed to start-up and continue operations.

Specific course requirements, lesson plans, and detailed training materials will be created by agency and contractor rail training staff with support from engineering staff, equipment suppliers and Contractors, and engineering consultants. The training program will be finalized near the completion of construction to be ready to support the testing and start-up efforts.

As a part of each system and facility contract, a “train the trainer” program will be provided to educate MDT supervisory personnel in all details related to the safe operations and maintenance of their respective equipment. Training to MDT technical staff (maintenance and engineers) shall be at a factory certified level. Supervisory personnel, initially trained by the Contractor, will provide similar training in their discipline for other MDT or contractor personnel operating and maintaining equipment. The training program will be developed in Computer Based Training (CBT) format and provided to MDT Training, Maintenance and Engineering staff to enable them to perform future training sessions as needed. The training program will also include training manuals and instructor workbooks. Following the completion of initial Contractor training, MDT and its contractors will be responsible for providing, maintaining and updating the training program.

As required under individual contracts, and under the CE&I’s Resident Engineer’s coordination and monitoring, Contractors and suppliers will be responsible for the training that they provide. Once the initial training has been completed, the agency’s continuing training programs are the responsibility of the Rail Operations and Rail Maintenance Divisions.

16.10.1 Rail Transportation Training

The training program for project operations will include both classroom and field work for all controllers, supervisors and train operators. Principal reference documents to be used in the training program for the controller, supervisor, and operating training courses are the Metrorail Book of Operating Rules and Metrorail Standard Operating Procedures. Prior to the start-up phase, these documents will be reviewed and updated as required. Additional training materials will be identified and obtained as necessary.

16.10.2 Rail Maintenance Training

During delivery, initial testing, and burn-in operations, maintenance personnel will be trained to maintain and operate the vehicles and facilities. The vehicle maintenance group will also perform vehicle inspections, operate test vehicles as required, set up and use shop equipment, and perform other related functions. These personnel will be involved in car maintenance, testing, and modification as much as possible while working side-by-side with the car supplier's personnel.

Maintenance training will be provided through specialized courses prepared and conducted by equipment manufacturers and suppliers in accordance with the contract provisions. This training will include both classroom instruction and on-the-job training. The agency will be responsible for additional training to supplement Contractor training, and for on-going maintenance functions not covered by Contractor training.

16.10.3 Training Provided by Supply Contractors

16.10.3.1 Manuals

The preliminary submittal of the training and maintenance manuals will be at least 90 calendar days prior to the start of the training program. The manuals will be reviewed and approved by MDT staff to ensure that all contract requirements are met. The final submittal of the training and maintenance manuals will be at least 30 calendar days prior to the start of the training program.

Training Manuals

Contractors and suppliers will provide training manuals that present a step-by-step introduction to equipment functions and operation, including a full description of the basic safety and other design principles on which the system is based. These manuals will be suitable for use in the Contractor-run training program and for future staff training by the agency. Additional training materials will be developed to supplement the Contractor-supplied training materials for any identified specialized areas of operation or equipment functions.

Maintenance Manuals

Detailed procedures for all aspects of servicing, adjusting, testing, and repair will be provided in the maintenance manuals. These manuals will cover all levels of maintenance, from field adjustment, test and component replacement to shop adjustment, overhaul, and test of components or apparatus. The manuals will contain systematic failure isolation procedures.

Standard manufacturer maintenance instructions may be used for individual components or equipment, however, specific instructions and additional details in an operations and maintenance manual form will be provided for the integration of this equipment into an overall system maintenance plan.

16.10.3.2 Rail Vehicle Manuals

The rail vehicle supplier will be required to provide MDT with an educational program to ensure satisfactory use, service, and maintenance of the furnished equipment. The program will be designed for trainees having no prior knowledge of heavy rail vehicles or their features, and will bring trainees to a level of knowledge sufficient to ensure employee safety and knowledgeable performance of vehicle operations and maintenance. Training will be provided for three categories of personnel: engineering and supervisory personnel, maintenance personnel and train operating personnel.

The following minimum qualifications will be required of all trainees:

- Maintenance trainees must possess the basic mechanical and/or electrical skills pertinent to their craft, minimum level of education such as high school diploma or higher and a fundamental understanding of their responsibilities in terms of safety.
- Operator trainees must meet rail operator qualifications, as well as basic requirements in education, safety, and responsibilities as required by MDT (for example, Commercial Drivers' License).

Contractor-provided classroom instruction must include physical analysis and functioning of the equipment under discussion, but also the essentials of routine maintenance, including lubrication schedules, maintenance materials, and maintenance methods and procedures where applicable. The Contractor's recommendations for test frequency, limits and methods, including required instruments, will be covered in detail where applicable. The instructions will cover methods of access, removal, dismantling, or application when they are not self-evident. Since overhaul procedures are to be supplied in detailed maintenance manuals, they need not be included in the instructions.

At the conclusion of the classroom instructions, the Contractor will furnish MDT with a complete set of mock-ups, lesson plans, classroom notes, film, slides, tapes, and all other materials and teaching aids used in presenting the courses to a level equivalent to the Contractor courses, as approved by agency staff.

The formal classroom instruction will be conducted in a suitable classroom furnished by the agency.

The vehicle manufacturer must develop training courses and class schedules, as well as all other appropriate manuals and training materials.

16.10.3.3 Traction Electrification System

The Traction Electrification System includes the traction power substations, third rail power distribution system, associated feeder lines, and the return circuit.

The Systems Contractor will be required to provide a training program to ensure satisfactory inspection, use, servicing, and maintenance. A training program will provide participants with a level of knowledge to permit safe and knowledgeable operation and maintenance of the Traction Electrification System until adequate proficiency is demonstrated by all agency heavy rail staff. All MDT operations and maintenance staff will be trained in electrical safety. This training will be incorporated into all system familiarization courses for new heavy rail employees.

Substation training will consist of classroom instruction and demonstrations of equipment operation, inspection, routine maintenance, Traction Electrification System test procedures, switching, emergency operations, and safety procedures.

Third rail training will consist of classroom instruction and demonstrations of safe maintenance procedures, emergency and permanent repair for every type of third rail construction used in the Project, routine and surprise inspection procedures, identification of materials and tools, and safety procedures.

Return circuit training will consist of classroom instruction and on-site demonstrations of description of problems, inspection procedures, identification of return circuit materials and equipment, and safety procedures.

Traction Electrification System trainees (Technicians) must have prerequisite mechanical and electrical skills. The Contractor will submit a detailed outline and a course schedule prior to contract completion. Training manuals will be submitted to MDT prior to their first class. A major component of the Traction Electrification System training will be to increase the level of awareness for trainees of the importance of the system safety to MDT as well as the public.

16.10.3.4 Signal/Communication System

The signal system includes all equipment that governs train movement through the system including centralized signal control equipment and signals. The communication system includes fiber optic cable transmission system (CTS), supervisory control and data acquisition and centralized train control equipment.

The Systems Contractor will provide training for MDT. All of the trainees should have mechanical and electrical maintenance skills, as well as the basic requirements set forth by MDT. The training will include three parts:

- A thorough explanation of the function of the system and the basic safety principles involved, its various safety features, and the basic levels of required maintenance;
- Detailed instruction on all special maintenance functions required such as: microprocessor controllers and microprocessor based systems, relay test and adjustment, switch mechanism and adjustment, SCADA, track circuit maintenance; and
- Hands-on experience with maintenance and adjustment of equipment, participation in simulated installation and preliminary testing and actual adjustment where possible.

A plan for the various levels of training will be submitted to MDT for review prior to contract completion. Included in the plan will be sample lessons, descriptions of training aids, hours of instruction to be provided, and a preliminary schedule for training sessions.

16.10.3.5 Fare Collection System

Fare collection equipment includes ticket vending machines (TVM), ticket office machines (TOM), fare gates, and centralized revenue data collection equipment.

The fare collection equipment contractor will prepare instruction programs and materials and provide instruction necessary to train all MDT personnel involved in the operation and maintenance of the fare collection equipment.

Three levels of training effort are anticipated:

- Revenue service personnel to collect monies, replenish ticket stock and change, and accumulate record data;
- Maintenance personnel to perform scheduled maintenance and make field repairs to equipment; and
- Shop personnel to perform detailed overhaul and repair of components.

All revenue service personnel will be given a short training program to cover the routine service functions of collecting monies, replenishing ticket stock and change, clearing basic jams, and accumulating records data on ticket sales and validations. At least two courses will be held to cover different shifts.

A selection of maintenance technicians, who will perform the detailed overhaul, repair, and adjustment of fare collection equipment will be given a comprehensive factory certified instruction program in the operation and maintenance of the equipment. The length of the course will be recommended by the Contractor and subject to agency approval.

A plan for the various levels of training will be submitted to MDT for review and approval prior to the start of the training program. The plan will include sample lessons, proposed training aids, hours of instruction to be provided, and a preliminary schedule for training sessions.

Training and maintenance manuals will be provided with detail procedures for all aspects of fare collection equipment servicing, adjusting, testing, and repair. The manuals will cover all levels of maintenance from field adjustment, test and component replacement, to shop adjustment overhaul and test of components or apparatus. The manuals will contain systematic failure isolation procedures and diagnostic test procedures for all modules and electronic cards. The manuals will include detailed explanation of all equipment functions. These manuals will be suitable for use in the Contractor-run training programs and for future training for MDT's own staff by knowledgeable MDT personnel.

Standard manufacturer maintenance instructions may be used for individual components or equipment, but specific additional details will be provided for the integration of overall system maintenance.

The preliminary submittal of training and maintenance manuals will be prior to the start of the training program. These manuals will also be used in conjunction with this program and will be reviewed by MDT based on this pre-start-up use.

16.10.4 Track Maintenance Training

Contractor-provided training will include classroom instruction and field instruction. The courses must cover all aspects of track and special trackwork, inspection requirements, and repair procedure for all the various rail and track components used in the rail system.

The training will include instruction on:

- Emergency and permanent repairs to rail, switches and associated components;
- Procedures for cutting, drilling and welding of “T” rail sections;
- Methods for surfacing and aligning track; and
- Use of the track tools and equipment normally used in maintenance and repair operations.

The training course must include review of proper methods of track and switch inspection; Federal Railroad Administration (FRA), Association of American Railroads (AAR), and American Public Transportation Association (APTA) standards; gauging; and safety precautions. Discussions of the specialized requirements for rail construction and maintenance on an electrified transit system using third rails for power distribution, running rails for return circuits and track circuit signal control will be included.

Written and practical demonstration will be developed for certification.

16.10.5 Orientation for Employees

An orientation program will be developed for all MDT rail and selected other employees to enable them to function effectively and safely within the system. Such a program should include the following activities:

- Overview of agency operations: description of rail system (stations, track, traction electrification system, signals, fare collection equipment, and vehicles), instruction on safety rules, operating rules and emergency procedures.
- Inspection of vehicle; tour of system, including operations facility and yard; review of previous day’s classroom material, the equipment systems, materials, etc., discussed in the classroom.
- Instruction on communication systems: radio, telephone, central control, CCTV, and reporting procedures. Second review of operating rules and procedures.

Personnel from other agencies or Contractors who may have need to work on or near the facilities or right-of-way may be required to receive training in transit safety and procedures, with emphasis on the need to notify and obtain permission of the agency before entering upon MDT property or doing any work on the system.

16.11 Spare Parts and Inventory Control

MDT will establish strict procedures for the receipt and storage of all spare parts and material procured. Receiving inspections will be conducted on all incoming material and supplies. Once spare parts are delivered and accepted, the material will be securely stored and issued in accordance with MDT inventory procedures.

All capital assets procured by MDT will be controlled and managed in accordance with management and budget requirements. MDT's parts database will provide automated materials management with the capability for tracking receipt of goods, inventory accounting, and procurement forecasting.

16.12 Pre-Revenue Operations

The operational testing program, including simulation of regular operations and a variety of special and emergency situations, will be scheduled prior to the start of revenue service.

All agency and contractor rail transportation and maintenance personnel will participate in the operational testing program. Some of the tests will call upon fire, police, and rescue agencies, as well as utility personnel. Various operating situations will be simulated, and the adequacy of response relative to safety of people, protection of property, and maintenance of service will be measured.

Pre-revenue testing and simulated revenue operations will be performed in accordance with the requirements specified under the System Testing Procedures section of this Program Management Plan.

In analyzing pre-revenue performance and results, several items will be given consideration, including:

- Notification procedures
- Central control response
- Train schedule verification
- Transportation supervisory response
- Maintenance response
- Police/fire/rescue performance
- Power sectionalization
- Performance of re-railing equipment
- Accident investigation procedures
- Single-tracking performance
- Simulated bus bridge operations
- Train evacuation
- Assumption of authority
- Rescue train or car mover dispatch
- Continuation of service
- Simulated public notification

A preliminary listing of operational performance by days will be prepared when the system design has been completed.

16.13 Safety Certification

The Florida Department of Transportation is responsible for approving and certifying certain safety elements of the rail system. MDT staff will coordinate with FDOT to obtain the necessary approvals as described in Chapter 15.0 of this Project Management Plan and in the North Corridor Metrorail Extension *Safety and Security Management Plan*.

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17.0 JOINT DEVELOPMENT PROGRAM

FTA encourages transit systems to undertake joint development projects at and around transit stations where such projects are physically or functionally related to the provision of transit service, and where they increase transit revenues through proceeds from joint development. This Chapter describes the background and history of Miami-Dade's joint development program and MDT's joint development strategies for the North Corridor Metrorail Extension.

17.1 Program Background

Miami-Dade County recognized the importance of joint development as early as 1978, six years before the opening of the Stage 1 Metrorail system. In order to promote joint development, the Miami-Dade Board of County Commissioners adopted Ordinance # 78-74 (codified as Chapter 33C of the County Code) entitled "Fixed-Guideway Rapid Transit System – Development Zone."

The Commission also adopted a joint-use policy and provided a general policy framework for the implementation of joint-development projects in the County's Comprehensive Development Master Plan. During the planning stage for construction of the Stage 1 Metrorail system, the County, in conjunction with various municipalities, conducted a series of studies called Station Area Design and Development (SADD) which inventoried existing uses around station areas and established guidelines for future development.

In December 1982, MDT entered into its first joint-development lease at the Dadeland South Metrorail station. The project, known as Datan, consisted of a four-phase mixed-use project which evolved into three class A office buildings (over 550,000 sq. ft. total), a 305-room Marriott Hotel, and a shared-used parking garage containing 1,000 spaces for Metrorail riders.

During the early 1990s, MDT, with the full support of the Board of County Commissioners and the County Manager began establishing an aggressive joint-development program. In 1994, MDT closed on its second joint-development project at Dadeland North Station, and in 1998, subsequent to a Request For Proposals (RFP), MDT entered into a third lease for the South Miami Station.

MDT implemented its most aggressive joint-development effort in late 1998. On November 12, 1998, MDT held a development workshop attended by then-Federal Transit Administrator Gordon Linton, local and national developers, and many other interested parties from the transit and development industries. Immediately following the workshop, MDT released RFP #202 which offered nine Metrorail stations for joint development. Developers submitted 10 proposals for five stations. The proposals ranged from residential to mixed-use projects, including retail, hotels, office space, and affordable housing.

To date, leases have been awarded for three of the stations included in RFP #202. In addition, County commissioners awarded leases to a community development corporation for the Martin Luther King Jr. Station (subsequent to receipt of an unsolicited proposal) and to the Water and Sewer Department (another County department) at the Douglas Road Station. MDT will issue RFPs for at least three additional stations, an event eagerly anticipated by the local development industry.

17.2 North Corridor Joint Development Program

The MDT Regional Development Section is responsible for MDT's Transit Oriented Development (TOD) effort and real estate marketing strategies in the North Corridor. MDT anticipates that it will own several parcels of land at each of the North Corridor Metrorail Extension stations as part of the construction of the Project. Many of these parcels will be available for TOD and will form the basis of the master developer offering.

A Request for Qualifications will be issued for a master developer. MDT anticipates that the master developer(s) will act in partnership with MDT to develop the sites in ways that support transit activity and increased ridership. The selected master developer(s) will assemble resources and teams that can design, finance, construct and operate mixed-use, transit-oriented developments that are acceptable to the surrounding community as well as the various regulatory agencies. Some of the key responsibilities of the master developer are as follows:

- Assemble private land adjacent to the County-owned parcels that achieves a critical mass of land available for development.
- Guide the project through the entitlement process to receive all necessary municipal and agency approvals. This includes any environmental documentation, reports, and permitting. The developer will need to work with County and local government staff and local community members to incorporate their concerns and ideas into the project.
- Put together a public/private financing plan for the project and obtain all necessary debt and equity financing. This includes construction and permanent financing, and may also include off-site improvements, utilities and infrastructure and all predevelopment work such as soft costs (design, architecture and engineering), environmental reports, traffic analysis, and permit fees.
- In order to ensure the financial success of the project, the master developer(s) must undertake all marketing, sales and leasing activities or contract with a firm to do this work. This work should begin during the pre-development phase in order to strengthen project financing.
- The County envisions that the master developer(s) will ultimately own, operate and maintain all building and site improvements.

APPENDIX A

GLOSSARY OF ACRONYMS AND DEFINITIONS

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APPENDIX A GLOSSARY OF ACRONYMS AND DEFINITIONS

ACRONYMS

AA	Alternative Analysis
AAP	Affirmative Action Plan
AAR	American Association of Railroads
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
A&E	Architecture & Engineer
ANSI	American National Standards Institute
APTA	American Public Transportation Association
AREMA	American Railway Engineering and Maintenance of Way Association
ATC	Automatic Train Control
BCC	Board of County Commissioners (Miami-Dade County)
BCS	Baseline Control Survey
B-DAP	Business Development Assistance Program
CAB	Community Advisory Board
CAD	Computer Aided Design
CAO	County Attorney's Office
CATS	Cost Allocation Time Sheets
CBE	Community Business Enterprise
CCB	Change Control Board
CCR	Cost Control Report
CCTV	Closed Circuit Television
CDBG	Community Development Block Grant
CDT	Contractor Document Transmittals
CCU	Construction Contract Unit
CDC	Compendium of the Design Criteria
CE&I	Construction Engineering and Inspection
CFR	Code of Federal Regulations
CICC	Office of Capital Improvements Construction Coordination
CITT	Citizens Independent Transportation Trust
CM	Construction Management
CO	Contracting Officer
COR	Contracting Officers Representative
CPM	Critical Path Method
CSBE	Community Small Business Enterprise
CSC	Competitive Selection Committee
CSI	Construction Specifications Institute
CTS	Cable Transmission System
DBD	Department Business Development
DBE	Disadvantaged Business Enterprises
DEIS	Draft Environmental Impact Statement
DERM	Department of Environmental Resource Management

DOT	Department of Transportation
E&O	Errors and Omissions
ECHO	Electronic Clearing House Operation
EDP	Equitable Distribution Program
EEO	Equal Employment Opportunity
EMS	Emergency Medical Services
EOR	Engineer of Record
EP&D	Engineering, Planning and Development
EPA	Environmental Protection Agency
EIS	Environmental Impact Statement
FAMIS	Financial Accounting Management Information System
FBC	Florida Building Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEC	Florida East Coast Railway
FEIS	Final Environmental Impact Statement
FESM	Field Engineering and Systems Maintenance
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FPL	Florida Power & Light Company
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GMIS	Grants Management Information System
GSA	General Services Administration (Miami-Dade County)
IDR	Inspector Daily Report
ITT	Integrated Test Team
JPA	Joint Participation Agreement
LPA	Locally Preferred Alternative
LRV	Light Rail Vehicles
MDC	Miami-Dade County
MDT	Miami-Dade Transit
MDPWD	Miami-Dade Public Works Department
MIS	Major Investment Study
MOT	Maintenance of Traffic
MPO	Metropolitan Planning Organization
MTA	Metropolitan Transit Authority
NBFU	National Board of Fire Underwriters
NEC	National Electrical Code
NEPA	National Environmental Policy Act
NFC	National Fire Codes
NFPA	National Fire Protection Association
NOA	Notification of Availability
NTP	Notice to Proceed
O&M	Operations and Maintenance
OCI	Office of Capital Improvement
OCIP	Owner Controlled Insurance Programs
OMB	Office of Management and Budget
OSBM	Office of Strategic Business Management (Miami-Dade County)

OSHA	Occupational Safety and Health Act
PAC	Professional Advisory Committee
PDS	Power Distribution System
PE	Preliminary Engineering
PE/EIS	Preliminary Engineering/Environmental Impact Statement
PHA	Preliminary Hazard Analysis
PMC	Program Management Consultant
PMOC	Project Management Oversight Consultant
PMP	Project Management Plan
PO	Purchase Order
PSA	Professional Services Agreement
PS&E	Plans Specification & Estimate
PTP	People’s Transportation Plan
QA	Quality Assurance
QA/QC	Quality Assurance and Quality Control
QAPP	Quality Assurance Program Plan
QC	Quality Control
QMS	Quality Management System
RAMP	Real Estate Acquisition and Relocation Management Plan
RAP	Rail Activation Plan
RE	Resident Engineer
RFI	Request for Information
RFP	Request for Proposal
ROD	Record of Decision or Revenue Operations Date
ROW	Right-of-Way
ROWUD	Right-of-Way Acquisition and Utilities Division
RTC	Regional Transportation Committee of the BCC
SADD	Station Area Design and Development
SCADA	Supervisory Control and Data Acquisition
SCP	Safety Certification Plan
SDEIS	Supplemental Draft Environmental Impact Statement
SFRC	South Florida Rail Corridor
SFWMD	South Florida Water Management District
SSCP	Safety and Security Certification Plan
SSEPP	System Security and Emergency Preparedness Plan
SSMP	Safety and Security Management Plan
SSPP	System Safety Program Plan
TOD	Transit Oriented Development
TOM	Ticket Office Machines
TVM	Ticket Vending Machine
UL	Underwriters Laboratory
UMTA	Urban Mass Transportation Administration (FTA)
US	United States
USDOT	United States Department of Transportation
VE	Value Engineering
WBS	Work Breakdown Structure

DEFINITIONS

1. **Change Order**: A formal modification to the scope of work of the project, often involving cost or schedule adjustments.
2. **Cost-Loaded CPM**: A technique using the critical path method in which activities in the schedule are assigned discrete dollar amounts. Payment of these amounts is made upon the completion of said activities.
3. **Contracting Officer (CO)**: The Director of the Miami-Dade Transit.
4. **Contracting Officer's Representative (COR)**: The person or persons designated by the Contracting Officer to act on his behalf in the administration of the contract within the limits of their respective authorization.
5. **Full Funding Grant Agreement (FFGA)**: Agreement between the federal government FTA and Miami-Dade County that sets forth the scope of the Project that will be constructed using Federal and Non-Federal funds, establishes a financial ceiling with respect to FTA's participation in the project, establishes a time for completion and specifies the mutual understandings, terms and conditions relating to the construction and management of the Project.
6. **Master Project Schedule**: The primary schedule developed by the Project team which includes and coordinates the work of the various project segments and contractors.
7. **Milestone**: A discrete segment of the Project which when complete, represents identifiable and important progress.
8. **Project Control Division**: The project management team assisting the Project Director in all aspects of cost, schedule, contract administration and configuration management.
9. **Project Management**: The set of functions which implement a project, safeguarding quality, time and cost.
10. **Project Management Team**: Project Director and first line managers collectively responsible for ROW, engineering, construction, administration and finance, quality assurance and project control for the Project.
11. **Project Management Plan (PMP)**: The dynamic document, which establishes the framework for administering implementation of the Project.
12. **Punch List**: List of items to be completed by a contractor to meet closeout quality control standards.
13. **Resident Engineer**: The person responsible for the field administration of each civil and systems construction contract.
14. **Schedule**: The tool for managing and tracking of Project activities. It includes the Master Project Schedule, which governs all aspects of project work, detail schedules and individual phase schedules.

15. **Quality Assurance Program Plan (QAPP):** The Quality Assurance Program Plan defines applicable quality policy for the project and applicable quality procedures. Quality Assurance Program Plans are developed consistent with all other requirements of a grantee's quality management system. Contractors need to comply with the QAPP and applicable sections of the Quality Procedures. Vendors, consultants, and contractors of the organization are required to develop, implement and maintain that plan.

Note: Additional terms are defined in the applicable sections of this Project Management Plan and in respective contracts.

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APPENDIX B

QUALIFICATIONS OF KEY STAFF

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APPENDIX B QUALIFICATIONS OF KEY STAFF

This appendix of the PMP presents the qualifications and experience of the key MDT and PMC staff responsible for managing the Project. This material is presented in order to demonstrate the technical capacity of the staff assigned to the Project.

Albert A. Hernandez, P.E. – Deputy Director of Engineering, Planning and Development

Mr. Hernandez has 22 years of experience in the transportation engineering field. Prior to joining MDT, Mr. Hernandez was employed with a local consulting engineering company where he served as executive vice president and chief operating officer. He was responsible for the day-to-day company operations, finances, marketing and administration. In addition, he was employed for ten years with the Florida Department of Transportation (FDOT), District Six in various capacities including Assistant District Structures Maintenance Engineer, senior design engineer, and project manager. Mr. Hernandez also served as senior project manager for the project development, environmental assessment, permitting, and development of the design-build criteria package for the new \$100 million Fort Lauderdale International Airport's terminal access roadway project.

Mr. Hernandez received a master's degree in business administration from Florida International University and a bachelor of science degree in civil engineering from the University of Miami. Mr. Hernandez is a registered engineer in Florida and New York. His professional affiliations include the Florida Institute of Consulting Engineers (FICE) and Florida Engineering Society (FES).

Chief of Program Management

(Position Vacant)

Richard L. Pereira, P.E. – Project Director

Mr. Pereira has nearly 27 years of experience in the engineering and construction industry with an emphasis in Transportation. He was employed at the Florida Department of Transportation for 23 years where his duties included managing consulting engineering teams on major public infrastructure investment projects in South Florida. This experience includes preparing planning studies, National Environmental Policy Act documents and contract plans for major roadway and bridge projects. While an employee of the FDOT Mr. Pereira worked in the South Florida Rail Corridor (SFRC) Office for five years helping to manage the 73-mile rail corridor. He coordinated with the South Florida Regional Transportation Authority (Tri-Rail), CSX Transportation (CSXT) and AMTRAK during the double-tracking of the SFRC. Mr. Pereira prepared several planning and capital needs studies while at the SFRC and participated in the initial planning for assuming maintenance and dispatching responsibilities from CSXT.

Mr. Pereira is a registered Professional Engineer in the state of Florida and holds a Bachelor of Science Degree in Civil Engineering from the University of Florida.

Jaime Lopez, P.E. – PMC Project Manager

Mr. Lopez has nearly 15 years of experience in the management, planning and design of major public transportation infrastructure projects for numerous clients including Florida Department of Transportation, Texas Department of Transportation and the Puerto Rico Highway and Transportation Authority (PRHTA). He has held senior project management roles on high-profile capital programs, most recently serving as project manager with the General Engineering Consultant to the Miami-Dade Expressway Authority (MDX). In this capacity, he managed the planning, design and construction of the State Road (SR) 836 Extension Improvement Projects. The Design-Build project delivery method was used on these three projects with construction costs in excess of \$250 million. Mr. Lopez managed the project development and design-build phases and oversaw all aspects of the design effort, inclusive of right-of-way (ROW) acquisition and utility relocation. He was instrumental in the negotiation of joint participation agreements with FDOT, the CSX Railroad, major utilities within the corridor and numerous permitting agencies. Mr. Lopez also served as the railroad coordinator for the \$1 billion MDX capital improvement program. Additionally, he served as Project Manager for the SR 836/SR 112 Interconnector Project planned to link two major expressways and spanning the South Florida Rail Corridor, which carries Tri-Rail, Amtrak and freight. The planning phase of the project involved intensive coordination with Miami-Dade Transit's (MDT) MIC-Earlington Heights Metrorail Connector and resulted in joint ROW acquisition between MDX and MDT.

Mr. Lopez is a Professional Engineer and holds a B.S. degree in Civil Engineering from the University of Miami. He has completed over 30 course credits towards a M. S. degree in Civil Engineering at the University of Miami and Florida International University. He is a member of the American Society of Civil Engineers (ASCE) and a past-president of the ASCE Miami-Dade Branch. Mr. Lopez is an active member of the National Society of Professional Engineers and the Florida Engineering Society. He has completed FTA-sponsored courses including *Managing the Environmental Process* and *Management of Transit Construction Projects*.

Chief of Project Control

(Position Vacant)

Maria H. Cerna – Manager of Contracts Services Section

Ms. Cerna has more than 17 years of extensive project planning, scheduling and contractual experience with a proven track record of results in managing and executing large-scale construction projects of government owned entities. She has very strong analytical abilities with well developed communication and interpersonal skills. She has been responsible for the management of all contract documents for all the Transit Construction and Architectural/Engineering contracts, ranging in size from \$50K to \$44M, since 2000. During her tenure with Transit, she has assisted with the major corridor projects and all contract documents for Transit Capital projects including the preparation of non-technical specifications, configuration control of all documents, solicitation, evaluation and award recommendations of Transit Capital projects and Consultants Professional Service Agreements to ensure that all contracts are in compliance with local, state and federal regulations. In addition to managing the contract documents and monitoring monthly progress, she has also been responsible for preparing baseline project schedules.

Ms. Cerna holds a Masters Degree in Business Administration and a Bachelor of Science Degree in Industrial and Systems Engineering from Florida International University.

Mercedes Sosa – Manager of Costs and Scheduling Section

Ms. Sosa has over 14 years of project management experience with an emphasis on cost control and project scheduling work. In addition to this direct Project Management experience, Ms. Sosa has an additional 7 years of administrative and supervisory work experience overseeing planning, design and construction personnel for capital improvement projects. Ms. Sosa has been directly responsible for and/or involved with over half a billion dollars worth of public-related capital improvement construction projects over the last 20 years. As MDT's Manager of Costs and Scheduling Section, Ms. Sosa is responsible for the development, implementation and updating of all design and construction schedules for transit capital projects. Responsibilities include preparing scheduling specifications, reviewing and approving contractor and consultant schedules, monitoring progress of contractors against baseline schedules, advising superiors of delays or other issues which could affect projects, and preparing progress reports and other reports concerning the status of transit capital projects. The incumbent exercises considerable independent judgment in monitoring transit projects to identify delays which could affect completion dates and project costs. General supervision is received from a professional superior who holds the incumbent responsible for the effective management of transit capital project scheduling and related activities.

Ms. Sosa has a Bachelor of Science in Engineering from the University of Central Florida and also holds a State of Florida General Contractor's License from the Florida Construction School.

Isabel Padron, P.E. – Chief of Design and Engineering

Ms. Padrón has 25 years of experience in the planning, design, design management, construction management and supervision of technical personnel for rail transit facilities, transportation and commercial projects. She has served in project management roles as well as structural engineer and construction administration support roles for large engineering consulting firms. Some of the major projects include engineering design of the Metromover-Omni Extension Stations and Bus Terminal in Miami, Florida; the Miami International Airport (MIA) Expansion of Concourse C and MIA Hotel Renovation; construction support services for the Metromover-Brickell Extension Stations; toll collection facilities for the Orlando-Orange County Expressway Authority; East-West Expressway and Bee Line Expansions in Orlando, Florida; and preparation of bridge inspection reports for the 1991/1993 Florida Department of Transportation, District 5 Local Government Bridge Inspection Program.

Ms. Padrón joined MDT in 1995 in the capacity of project manager. Major projects, with MDT, include the 20-mile long South Miami-Dade Busway, implemented in Phases; the Federal Transit Administration Bus Rapid Transit Demonstration Program from 1999-2002; the MIC/EHT Connector Draft Environmental Impact Statement (DEIS), a 2.4-mile extension of Metrorail to the Miami International Airport leading to the Locally Preferred Alternative selected on September, 2003; and various MDT miscellaneous capital projects. As Chief of the MDT Design & Engineering Division, she is currently involved in the management and supervision of a group of professional staff that negotiates, manage and administer engineering service contracts of transit projects in the People's Transportation Plan (PTP) and Non-PTP Capital Projects. Some of the major projects currently under development include approximately twenty-one (21) miles of Metrorail extension under design and the extension of the South Miami-Dade Busway, pedestrian overpasses, Park & Ride Lot Facilities.

Ms. Padrón is a Professional Engineer and holds a B.A. degree in Civil Engineering and a M.S. degree in Civil Engineering from the University of Miami. She published a technical paper on the Effect of Synthetic Fibers on Volume Stability and Cracking of Portland Cement Concrete and Mortar and has

made presentations on the design and lessons learned regarding the South Miami-Dade Busway, the most recent presentation was made at the 2006 FDOT Design Conference.

Daniel Mondesir – Systems Engineering Manager

Mr. Mondesir has 22 years of experience in systems engineering design, installation, maintenance and the supervision of technical project personnel, consultants, contractors and vendors; quality control field supervision and inspections for maintenance, operations and special systems projects. Major projects include the design and implementation of Metromover-Omni and Brickell Extension traction power, train control, data transmission, vehicles, and Central Control; management of MDT 800 MHz and CAD/AVL radio system; management of MDT Bus procurement process from 1997 to September 2005; management of the MDT Field Engineering section and responsible of the maintenance program for all equipment and systems from 1998 to 2005; support to the Rail Modernization project; management of the Universal Automated Fare Collection System project.

Daniel graduated from Rutgers University in 1985 and holds a B.S. degree in Electrical Engineering. He is also certified Dade County Public Schools instructor.

Jerry Borbolla – Chief of Right-of-Way Acquisition and Utilities

Mr. Borbolla has experience in managing, supervising and coordinating all aspects of right-of-way engineering activities. The major activities pertaining to R/W engineering include R/W surveys, right-of-way mapping and fieldwork, title searches, parcel sketches and parcel data sheets. Other related activities include review of cost estimates, preparation of R/W budgets and schedules, preparation and updating R/W progress reports. Manage ROW consultants and ensure all work performed is in accordance with all applicable federal and state law rules and regulations.

Manage, supervise and coordinate all right-of-way acquisition activities and provide relocation assistance services in accordance with Uniform Act policies. Project Development Engineering tasks related to capital grant projects dealing with all phases of mass transportation including Rapid Transit, Downtown People Mover, and bus facilities Perform civil and transit engineering duties as required, including studies of transportation modes, costs estimates, conceptual designs, master planning, consultant selection, plans review right-of-way mapping, and development of grant applications and reports. Assist the Design and Engineering Department with technical support in the area of Civil Engineering. Coordination of the Metrorail Access Roads Program, which consisted of roadway improvements leading to and around Metrorail Stations and at grade parking facilities, design support during construction, and project coordination with FDOT.

Mr. Borbolla has a Bachelor of Science degree in Engineering Technology from Florida International University and an Associate of Science degree in Architectural Technology from Miami-Dade Community College.

Surinder S. Sahota, P.E – Chief of Construction

Mr. Sahota has 38 years of experience in both private and government agencies in planning, design and construction related to Metrorail, Metromover and Busway Rapid Transit systems; Environmental Remediation; Power Plants; Water Treatment Plants; Access Roads and Industrial facilities. His responsibility entails the preparation of Requests for Proposal (RFP) and Professional Services Agreements (PSA) for the design and construction engineering and inspection (CE&I) consultants; the

conducting of proposal negotiations including contract administration; the administration of the design and construction projects including resident engineering and the co-ordination during the NEPA process and right-of-way acquisition including constructability reviews and the negotiation and resolution of claims. Major projects include: People’s Transportation Plan (PTP) Phase 1 projects; 20 miles Metrorail Phase 1; 1.4 miles Metrorail Extension to the Palmetto Expressway; 11.5 miles Busway Extension to Florida City; 2.5 miles Metromover Extension; Environmental Remediation Projects; Miscellaneous Capital Projects (Miami); 40 miles Metrorail Extension (WMATA – Washington) and thermal power plant and industrial plant construction (India). In total, Mr. Sahota has been responsible for over \$850 million in construction contracts.

Mr. Sahota is a State of Florida Professional Engineer and holds a B.S. in Civil Engineering and has completed post-graduate courses (offered by the University of Miami) in Advanced Structural Design & Plastic Design. In addition, Mr. Sahota has completed Project Management and Design-Build workshops sponsored by U.S. DOT, FTA and FDOT.

John Spillman – Chief of System Planning

Mr. Spillman has more than 30 years of professional experience in transit system development and management, including all aspects of transit planning, project financing, and project implementation. Over the past 20 years, he has been involved in projects in more than 25 cities, including assignments in Los Angeles, Miami, Dallas, Newark, San Diego, St. Louis, Sacramento, Portland, and Bangkok, Thailand. Specific Assignments Include: planning and preliminary engineering for the Metro Red Line in Los Angeles, alternative analysis studies for the Dallas Area Rapid Transit, and the station location analysis for the St. Louis Light Rail Transit. Mr. Spillman served as the Director of Planning and Real State and Development for Miami-Dade Transit for Stage I Metrorail and Metromover.

Mr. Spillman received a BA degree from John Carroll University and a Master of City Planning (MCP) from the College of Engineering of the Ohio State University.

Lyn Harris, J.D. – Special Assistant to the Director in the Office of Government Affairs and New Starts Management

As the Special Assistant to the Director in the Office of Government Affairs and New Starts Management, Ms. Harris is responsible for developing and initiating the Communication and Community Relations Program for the agency. The role of the Office of Government Affairs and New Starts Management is to establish policy direction, provide leadership and assist in ensuring Miami-Dade Transit carries out its vision, mission and goals of providing high-quality services in an efficient and effective manner. The Government Affairs and New Starts Management Office also works closely with other Miami-Dade County departmental staff, elected officials, government agencies, communities and the public, as it develops Miami-Dade Transit’s programs and activities. The office directly manages the operations of four program sections responsible for providing an array of services and programs.

Previously, Ms. Harris served with the Office of the Chair at Miami-Dade County. She was responsible for legislative affairs with local, state, and federal elected officials. Routinely advising the Chair and the Miami-Dade Board of County Commissioners on legislative policy and preparing responsive actions.

Ms. Harris obtained her Juris Doctorate and Bachelor of Arts from the University of Florida.

Bonnie Todd – Chief of Quality Assurance

Ms. Todd has 27 years of experience in maintenance management, transportation operations, system safety and quality assurance oversight in bus, light rail, heavy rail, people mover, and commuter rail environments. She started her career as an avionics technician in the United States Marine Corps and was promoted to supervisor and quality assurance collateral duty inspector before she finished her tour of duty. She was hired by the Washington Metropolitan Area Transit Authority (WMATA) as an electronics bench technician repairing communications, fare collection and train control electrical and electronic equipment. She was later promoted to the shop supervisor position. From there Ms. Todd was selected to be one of the first members of the WMATA, Rail Service, Quality Assurance Division. She was charged, along with three others, with establishing the first rail quality assurance program, where her area of focus was in systems maintenance with quality assurance oversight of train control, communications, traction power, fare collection, and track operating divisions as well as quality assurance oversight of those same systems in new rail construction.

Ms. Todd went on to become a system safety engineer in the WMATA Office of Safety where she was involved with system safety oversight of the rail, bus and construction divisions at WMATA. Hazard identification and mitigation as well as accident investigation and industrial safety were all components of her work there. Ms. Todd was then hired as the Director, Rail Safety Programs at the American Public Transit (now Transportation) Association (APTA). Ms. Todd was responsible for conducting quality assurance type, system safety management audits of member rail transit agencies who at the time were engaged in self-regulation of system safety through APTA. The members included heavy rail, light rail and commuter rail systems. The audits focused on operations, maintenance, engineering management and construction management and included document control and configuration management. She was later tasked with conducting pilot audits of bus transit systems, and personally developed the first Bus Safety Management Program standards for the bus transit members of APTA.

Ms. Todd was subsequently hired by the Miami-Dade Transit (Agency) where she served for nine years as the Chief of Safety and Security responsible for MDT's compliance with all rules and regulations of federal, state, and local agencies which govern the safety and security of passengers, personnel and property. She was responsible for oversight of all operating, maintenance and engineering divisions as pertain to safety and security management. She was also responsible for the operational and safety verification and certification, including testing, design review and system safety engineering analyses for all new construction and operating system modifications. Ms. Todd chaired the Rail Change Review Board which reviewed and approved/disapproved proposed configuration changes to the Rail and Mover systems. Ms. Todd was also responsible for the security operations for all MDT transit modes which included a 20 million dollar annual security program for Metrobus, Metrorail, and Metromover systems with 315 armed, contracted officers. Of particular note, Ms. Todd personally developed the MDT Hurricane Manual, which won national recognition last year by the National Association of Counties.

Ms. Todd has a Masters of Business Administration from Florida International University and a Bachelor of Science in Management from the University of Maryland.

Eric Muntan – Acting Chief of Safety and Security

Eric Muntan has more than 15 years experience in the safety profession, specifically transit safety oversight for large, multi-modal transit agencies. Mr. Muntan was appointed to the Acting Chief, Office of Safety and Security position in August 2006. Prior to holding this position, he was hired by Miami-Dade Transit (MDT) in November 2000, as the MDT Office of Safety and Security's System Safety

Manager. As his current role dictates, Mr. Muntan is responsible for the oversight of all transit safety and security practices for MDT. This four-mode system includes Metrobus, Metrorail, Metromover, and Paratransit Operations. He is also responsible for ensuring MDT's compliance with all federal, state, and local safety and health regulations; providing recommendations to top-level management on all safety related matters within the transit agency; representing the OSS on various senior-most level committees and task forces; overseeing and assisting in performing in-depth hazard analyses and hazard assessments; overseeing and assisting in performing comprehensive accident/incident investigations; and annually reviewing, revising and monitoring the compliance of all activities as set forth in the MDT System Safety Program Plan and MDT Hurricane Manual. Mr. Muntan is also tasked with the responsibility to ensure that all of the aspects of the multi-million dollar security contract with The Wackenhut Corporation are strictly enforced and met by the contractor.

Prior to joining the MDT department, Mr. Muntan served as a System Safety Specialist IV for over 7 years in New York City Transit's Office of System Safety. While serving in this capacity, one of Mr. Muntan's responsibilities was providing Office of System Safety oversight of the recently completed, \$645 million, New York City Transit 63rd Street-Queens Boulevard Connection project.

Mr. Muntan holds a Bachelor of Science Degree in Business Administration from Clarion University of Pennsylvania and a Master of Science Degree in Safety and Environmental Management from West Virginia University.

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APPENDIX C

WORK BREAKDOWN STRUCTURE (WBS)

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APPENDIX C WORK BREAKDOWN STRUCTURE (WBS)

The WBS shall be used by Project Control to integrate cost data and schedule data for the purpose of establishing the financial needs of the North Corridor Metrorail Extension and the PTP program. The general approach to the WBS involves six elements that integrate costs with scheduling. An additional two other potential WBS items are also identified. The six basic WBS elements and two potential WBS elements are listed below:

1. Project Identifier
2. ID modifier
3. General Location
4. Specific Location
5. General Cost Category
6. Specific Cost Category
7. Scheduling Actions
8. Organizational Identification

What follows is a narrative description of how these elements are to be reflected in a coding scheme suitable for cost accounting and scheduling tools. Following the narrative description is a graphical description of the WBS. The WBS is set up for a program with a wide variety of projects and yet is suitable for large projects. Small PTP projects do not have to use to the optional levels of the WBS. This approach anticipates modifications and customizing to meet special needs.

CODE 1 - PROJECT IDENTITY

First set of Character(s), (Code 1) = Project Identity (North Corridor, MIC/EHT, etc)

All projects must use a Project Identity

The WBS will use 3 characters for Project Identity. The intent is to use the first 2 characters to describe the Project Identity and the third character will be rarely used. Unless there is a reason to use a third character, the third character would be a place holder with the number 0. It is preferred to use two Alpha characters followed by 0 or another number if needed.

- PW0 - Program Wide
- NC0 - North Corridor
- MC0 - MIC-Earlington Heights Corridor
- EW0 - East West Corridor
- XX0 - as required

CODE 2 - IDENTITY MODIFIER

Second set of Character(s) (Code 2) = Identity Modifier are intended to modifier Code 1.

This code is optional and during early stages of a project a general coding is provided to identify the basic phases of a project such as planning, design, construction, and construction engineering and inspections.

The intent is that as a project evolves the general coding will be replaced with coding for each specific planning, design, construction, CE&I or special contract. The WBS will have 3 characters. The intent is to use the first 2 characters to describe the Identity Modifier and the third character will be used as needed.

Unless there is a reason to use a third character, the third character would be a place holder with the number 0.

- 000 = not applicable
- PL0 = Planning (general)
- DS0 = Design (general)
- CU0 = Construction (general)
- CI0 = CE&I (general)
- SC0 = Special Contracts (general) - if any.
- PL1 = HNTB planning contract
- DS1 = PTG Continuing PE contract
- DS2 = PTG New Starts PE contract
- DS3 = PTG Final Design (fixed facilities) contract
- DS4 = PTG Systems Design (includes DSDC) contract
- DS5 = PTG DSDC (fixed facilities) contract
- CU1 = CCU #1 NC Civil package #1
- CU2 = CCU #2 NC Civil package #2
- CU3 = CCU #3 NC Civil package #3
- CU4 = CCU #4 NC Systems package

CODE 3 GENERAL LOCATION OF WORK

Third set of Character(s) (Code 3) = General Location of Work (Passenger Station (S), Line Segment (L), Building (B), TPSS (T), or Project wide (P)). This code indicates the location of the work which can involve station sites, line sections, standalone buildings, etc.

All projects must use a General Location Code

The WBS will have 1 character.

It is preferred to use one Alpha character.

- S = Passenger Station
- L = Line Segment
- B = Standalone Building or Facility
- T = TPSS
- P = Project wide

CODE 4 SPECIFIC LOCATION OF WORK

Fourth set of Characters (Code 4) = optional location modifiers to Code 3 to uniquely identify a Specific Location where work is occurring (actual Station, building or line section etc). Although it is an optional WBS code, it is highly likely that most projects will include this code. The code will consist of two numeric characters such as 01, 02, 03 etc with 00 being not applicable.

- 00 = Project wide/not applicable
- 01 = first station, line section, etc
- 02 = second station, line section, etc

This code (Code 4) has no meaning without the General Location code (Code 3) and when combined they would look like the following;

North Corridor **Line Sections** with General Location Code

- L01 = Stationing 448+69 (MLK Station) to 82nd St. Station
- L02 = 82nd St. Station to 119th St. Station
- L03 = 119th St Station to Veterans Way Station
- L04 = Veterans Way Station to 163rd St. Station
- L05 = 163rd St. Station to 183rd St. Station
- L06 = 183rd St. Station to 199th St. Station
- L07 = 199th Street Station to 215th St. Station
- L08 = 215th St. Station to Sta. 581+14.60 (pocket track area)

North Corridor **Stations** with General Location Code

- S01 = NW 82nd Street
- S02 = NW 119th Street
- S03 = Veterans Way Station
- S04 = NW 163rd Street
- S05 = 183rd Street Station
- S06 = 199th Street Station
- S07 = 215th Street Station

North Corridor Project wide with modifiers

- P01 = NC Vehicles

CODE 5 - GENERAL COST CATEGORY

The fifth set of Character(s) (Code 5) = the General Cost Category (Station cost, Guideway cost, Electrical cost, etc). All projects must have use a General Work Category. The WBS will use 2 Alpha characters. Most of the Code 5 codes are used to identity cost for specific type of work such as station work or electrical work but in some cases, such as MDT and PMC, the codes are organization based.

General Work Category codes are:

- GW = Guideway Facilities
- SF = Station Facilities
- BF = Other Facilities
- SW = Sitework, Misc. Infrastructure, and Special Conditions
- HW = Highways and other public Roadways
- UT = Utilities
- TW = Trackwork and other Guideway Equipment
- EP = Electrical Power Supply and Distribution
- TC = Automatic Train Control
- CS = Communications, SCADA and Security
- FC = Fare Collection
- VL = Vehicles
- MM = MDT Project Management and Administration
- MO = Operations and Maintenance
- MP = PMC Project Management and Administration
- MC = Contractor Project Management and Administration
- CM = Construction Management (CE&I)
- PL = Planning and Environmental

- FD = Facilities Design
- SD = Systems Design
- RW = Right-of-Way and Other Environmental Cleanup

CODE 6 - SPECIFIC COST CATEGORY

The sixth set of Character(s) (Code 6) = the Specific Cost Category (foundations, station electrical costs). Code 6 is intended to be used as part of the progress tracking tools needed to summarize the work to the Program level. Code 6 is highly developed for use in construction contracts or similar work. Code 6 for non-construction work will be used as a cost accounting element. This code (Code 6) has no meaning without the General Location code (Code 5) and when combined they would look like the following;

Second and Third Characters = Detailed Work Category This level is optional for small projects

Guideway Facilities

- GW-01 = Guideway Foundations
- GW-02 = Guideway Piers and Pier Caps
- GW-03 = Guideway Superstructures
- GW-04 = Retained Cut Guideway Structures
- GW-05 = Retained Fill Guideway Structures
- GW-06 = Underground Cut and Cover Guideway Structures
- GW-07 = Tunneled Guideway Structures
- GW-08 = Guideway Noise walls
- GW-09 = Guideway Walkways
- GW-10 = Guideway Railings
- GW-11 = Miscellaneous Guideway Installations
- GW-XX = Other Guideway work items as needed.

Station Facilities, Including Aerial Connection Bridges, As Applicable

- SF-01 = Foundations (guideway and station foundations within station limits if shared substructure)
- SF-02 = Piers and Pier Caps (guideway and station piers/caps within station limits if shared substructure)
- SF-03 = Guideway Girders (within station limits and are shared structures)
- SF-04 = Other Structures for Stations
- SF-05 = Exterior Wall Systems
- SF-06 = Interior Wall Systems
- SF-07 = Interior Finishes
- SF-08 = Fire Protection Systems
- SF-09 = Plumbing Elements
- SF-10 = HVAC Elements
- SF-11 = Electrical Elements
- SF-12 = Elevators, Escalators, and Moving Walkways
- SF-13 = Signage
- SF-14 = Art Program
- SF-XX = Miscellaneous Station Related Installations as needed

Other Buildings and Facilities (such as stand alone traction power buildings)

- BF-01 = Foundations, Slabs and Aprons (within limits of facility)

NORTH CORRIDOR METRORAIL EXTENSION

- BF-02 = Structures (within limits of facility)
- BF-03 = Exterior Wall Systems
- BF-04 = Interior Wall Systems
- BF-05 = Interior Finishes
- BF-06 = Fire Protection Systems
- BF-07 = Plumbing Elements
- BF-08 = HVAC Elements
- BF-09 = Electrical Elements
- BF-10 = Public/Passenger Elevators, Freight Elevators, and Escalators
- BF-11 = Signage
- BF-12 = Standard Shop Equipment
- BF-13 = Special Shop Equipment
- BF-14 = Facility Furnishings and Equipment
- BF-XX = Miscellaneous Building Related Installations as needed

Sitework, Infrastructure, and Special Conditions

- SW-01 = Non Public Streets and Construction, Relocation or Modifications
- SW-02 = Parking Lot Facilities
- SW-03 = Protection or Modification of Existing Facilities during construction
- SW-04 = Clearing, Demolition, and Miscellaneous Sitework for construction
- SW-05 = Excavation, grading, and subgrade for construction
- SW-06 = Temporary Facilities for Construction
- SW-07 = Special Environmental Mitigation for Construction
- SW-08 = Maintenance of Traffic during Construction
- SW-09 = Drainage installations
- SW-10 = Fencing
- SW-11 = Landscaping and Irrigation systems
- SW-XX = Miscellaneous infrastructure work as needed

Highways and Public Roads

- HW-01 = Highway Foundations
- HW-02 = Highway Piers and Pier Caps
- HW-03 = Highway Superstructures
- HW-04 = Other Highway Structures
- HW-05 = Highway at-grade Street Construction, Relocation or Modifications
- HW-06 = Reserved
- HW-07 = Clearing, Demolition, and Miscellaneous Sitework for Highway related Construction
- HW-08 = Reserved
- HW-09 = Reserved
- HW-10 = Reserved
- HW-11 = Reserved
- HW-12 = Reserved
- HW-XX = Miscellaneous work for the Highway related work as needed

Utilities

- UT-01 = Water Systems
- UT-02 = Storm Water Sewer Systems
- UT-03 = Sanitary Sewer Systems

- UT-04 = Electric Power Supply Systems
- UT-05 = Communications Systems
- UT-06 = Street Lighting Systems
- UT-07 = Traffic Control Systems
- UT-08 = Cable Television Systems
- UT-09 = Gas Systems
- UT-10 = Aviation Fuel Systems
- UT-11 = Telephone Systems
- UT-12 = Railroads
- UT-XX = Miscellaneous work for the Utility related work as needed

Trackwork and Other Guideway Equipment

- TW-01 = Running Rail
- TW-02 = Special Trackwork Ballasted including switch ties
- TW-03 = Ballast
- TW-04 = Subballast
- TW-05 = Concrete Ties
- TW-06 = Standard Ballasted Track fasteners
- TW-07 = Special Trackwork Direct Fixation including Fasteners
- TW-08 = Second Pour Plinth Pads
- TW-09 = Standard Direct Fixation Fasteners
- TW-10 = Trackwork Appurtenances and Miscellaneous Track Materials
- TW-11 = Bumping Posts and Buffers
- TW-12 = Restraining Rail and Emergency Guard (if applicable)
- TW-13 = Contact Rail and Cover Board
- TW-XX = Miscellaneous work for the Trackwork or Contact Rail related work as needed

Electrical Power Supply and Distribution System (PDS)

- EP-01 = Traction Power Equipment and installations for TPSS
- EP-02 = Auxiliary Power Equipment and installations
- EP-03 = Wayside Traction Power Equipment (disconnects)
- EP-04 = Signal Power Distribution Equipment
- EP-05 = Uninterruptible Power Supplies
- EP-06 = Grounding and Cathodic Protection
- EP-07 = Lightning Protection
- EP-08 = Power Distribution Monitoring and Control Systems
- EP-09 = Emergency Generators
- EP-10 = Emergency Trip Stations
- EP-11 = Miscellaneous lighting
- EP-XX = Miscellaneous work for the electrical power supply and distribution as needed

Automatic Train Control

- TC-01 = Vehicle Borne ATC Equipment
- TC-02 = Wayside ATC Equipment
- TC-03 = Wayside ATC Cables
- TC-04 = ATC Monitoring and Control Systems
- TC-XX = Other ATC Equipment or work as needed

Communications and SCADA

- CS-01 = Communications and SCADA Systems, Non-Recurring Activities
- CS-02 = Public Address Systems
- CS-03 = Telephone Systems
- CS-04 = Radio Communications Systems
- CS-05 = Closed Circuit Television Systems
- CS-06 = Communications Recording Systems
- CS-07 = Communications Transmission Infrastructure and cables
- CS-08 = Safety and Security Systems
- CS-09 = Other Monitored Systems
- CS-10 = Data Collection, Analysis and Archiving Systems
- CS-XX = Other Communication Equipment or work as needed

Fare Collection

- FC-01 = Fare Collection Equipment
- FC-02 = Fare Vending Machines
- FC-03 = Other Fare Array Gates or barriers
- FC-04 = Network Control and Reporting Systems
- FC-05 = Fare Processing Equipment (if required)
- FC-XX = Other Fare Equipment or work as needed

Vehicles

- VL-01 = Rail Vehicles - Non-recurring activities
- VL-02 = Rail Vehicles - Recurring activities on a per-vehicle basis
- VL-03 = Non-revenue vehicles (e.g., trucks, cars)
- VL-04 = Special Maintenance vehicles (e.g., rail cranes, rail grinders, tampers)
- VL-05 = Buses
- VL-XX = Other Vehicle related Equipment or work as needed

MDT Project Management and Administration

- MM-05 = Project Management and Administration 2005
- MM-06 = Project Management and Administration 2006
- MM-07 = Project Management and Administration 2007
- MM-08 = Project Management and Administration 2008
- MM-09 = Project Management and Administration 2009
- MM-10 = Project Management and Administration 2010
- MM-11 = Project Management and Administration 2011
- MM-12 = Project Management and Administration 2012
- MM-13 = Project Management and Administration 2013
- MM-14 = Project Management and Administration 2014
- MM-XX = Other MDT Management activities as needed

MDT Operations and Maintenance

- MO-05 = Operations and Maintenance 2005
- MO-06 = Operations and Maintenance 2006
- MO-07 = Operations and Maintenance 2007
- MO-08 = Operations and Maintenance 2008
- MO-09 = Operations and Maintenance 2009

- MO-10 = Operations and Maintenance 2010
- MO-11 = Operations and Maintenance 2011
- MO-12 = Operations and Maintenance 2012
- MO-13 = Operations and Maintenance 2013
- MO-14 = Operations and Maintenance 2014
- MO-XX = Other MDT O&M Management activities as needed

PMC Project Management and Administration

- MP-05 = Project Management and Administration 2005
- MP-06 = Project Management and Administration 2006
- MP-07 = Project Management and Administration 2007
- MP-08 = Project Management and Administration 2008
- MP-09 = Project Management and Administration 2009
- MP-10 = Project Management and Administration 2010
- MP-11 = Project Management and Administration 2011
- MP-12 = Project Management and Administration 2012
- MP-13 = Project Management and Administration 2013
- MP-14 = Project Management and Administration 2014
- MP-XX = Other PMC Management activities as needed

Contractor Construction Management and Administration

- MC-01 = Contractor's General Requirements
- MC-02 = Mobilization (if paid separately)
- MC-03 = Demobilization (if paid separately)
- MC-04 = Bonds
- MC-05 = Permits (allowance account item)
- MC-06 = Insurance
- MC-XX = Other Contractor Construction Management activities as needed

Construction Management (CE&I Consultant)

- CM-01 = Construction Management and Administration
- CM-02 = Mobilization of Construction Management Resources
- CM-03 = Quality Control
- CM-04 = Construction Safety
- CM-XX = Other Construction Management related Activities as needed

Planning and Environmental

- PL-01 = Planning and Environmental Management and Administration
- PL-02 = Mobilization of Planning and Environmental Resources
- PL-XX = Other Planning and Environmental Activities as needed

Facilities Design

- FD-01 = Facilities Design Management and Administration
- FD-02 = Mobilization of Facilities Design Resources
- FD-03 = Conceptual Design
- FD-04 = Preliminary Design (30%)
- FD-05 = Final Design (60%)
- FD-06 = Final Design (90%)

- FD-07 = Final Design (100%)
- FD-08 = Facilities Standard and Directive Drawings
- FD-09 = Data Gathering (Survey, mapping, Geotechnical Field Explorations)
- FD-10 = Special Facilities Design Submittals (Design Build)
- FD-11 = Facilities Engineering Services During Construction
- FD-XX = Other Facilities Design Tasks as needed

Systems Design

- SD-01 = Systems Design Management and Administration
- SD-02 = Mobilization of Systems Design Resources
- SD-03 = Conceptual Design
- SD-04 = Preliminary Design
- SD-05 = Intermediate Design
- SD-06 = Final Design
- SD-07 = Reserved
- SD-08 = Systems Standard and Directive Drawings
- SD-09 = Data Gathering (needs assessments, studies)
- SD-10 = Special Systems Design Submittals (Design Build)
- SD-11 = Systems Engineering Services During Construction
- SD-XX = Other Systems related Activities as needed

Right-of-Way and Environmental Remediation Activities

- RW-01 = Construction Staging Areas (site rental or easement)
- RW-02 = Property Acquisition
- RW-03 = Environmental Investigations
- RW-04 = Environmental Clean-up Activities
- RW-05 = Relocation
- RW-06 = Property Demolition and Site Clearing (pre contractor)
- R-XX = Other Right of Way and Environmental Remediation related Activities as needed

CODE 7 - SCHEDULING ACTIONS

WBS Codes 1, 2, 3, 4, and 5 are intended to serve as a frame work for both progress reporting and cost loading at the Program Reporting Level. In order to status the progress and the costs at that level, the progress and cost tools for the construction related work requires the use of the Specific Cost category Code 6 and even more detail which is provided by Code 7. Code 7 will allow the construction management team to assess progress and costs at a level which supports construction invoicing as well as supporting Program Level Reporting.

Code 7 for non-construction activities will be 0000.

Code 7 is expected to be used in conjunction with the activity description which together provides a clear explanation of the work.

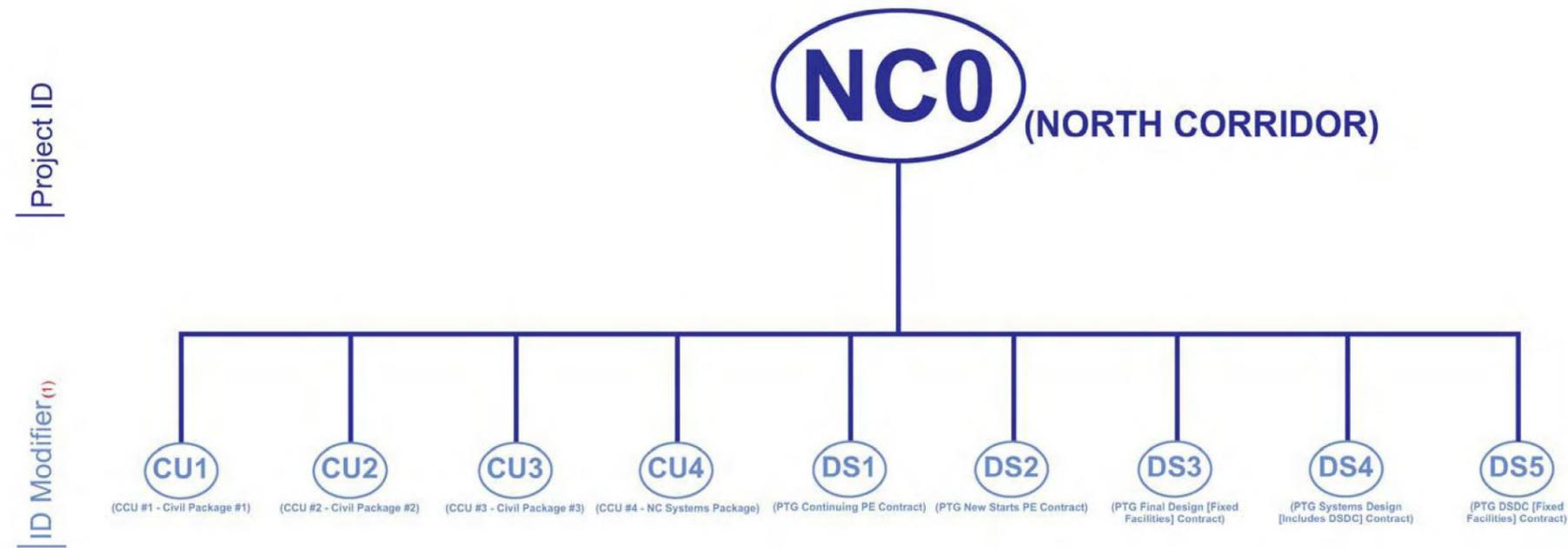
It is suggested the four places be reserved for scheduling actions.

- DW01 = Design Work by the Contractor
- SB01 = Submittal by the Contractor
- PR01 = Procurement
- ED01 = Equipment delivery
- MD01 = Material delivery
- IE01 = Installation of equipment
- CW01 = Construction Work
- QC01 = Quality Control Activity
- CI01 = Construction Inspection
- TS01 = Field Testing (Post Installation Check Out)
- AT01 = Acceptance testing
- FT01 = Factory testing
- XX01 = Other scheduling actions as needed

CODE 8 - ORGANIZATIONAL IDENTIFICATION

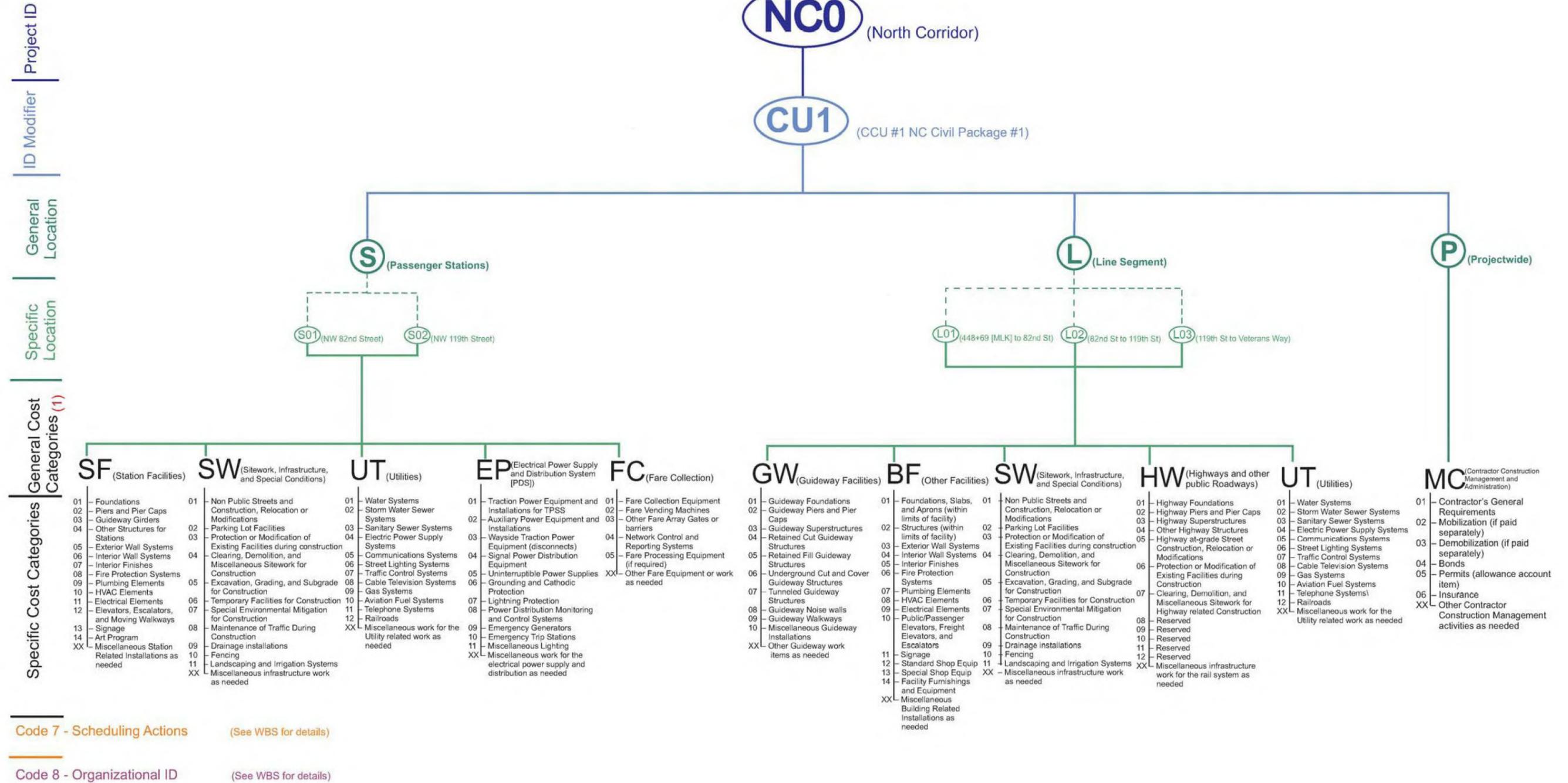
Identifying the organization involved is included in the WBS. It is suggested that four characters be reserved for organizational identification.

- MD01 = MDT EP&D Division
- MD02 = MDT Construction Division
- MD03 = MDT Operations and Maintenance Division
- CC01 = MIC Contractor #1
- CC02 = MIC Contractor #2 (placeholder if multiple contractors)
- CC03 = NC Contractor #1 (Civil)
- CC04 = NC Contractor #2 (Civil)
- CC05 = NC Contractor #3 (Civil)
- SC01 = NC Contractor #4 (Systems)
- UT01 = FPL (Utility #1)
- DC01 = URS (Planning or Design Consultant #1)
- DC02 = PTG (Planning or Design Consultant #2)
- DC03 = HNTB (Planning or Design Consultant #3)
- SS01 = Special Services (legal, right of way etc.)
- AG01 = FDOT (Agency #1)
- AG02 = FTA (Agency #2)
- AG03 = CSX Railroad
- PM01 = PMC (Program Management Consultants #1)
- OT01 = Others



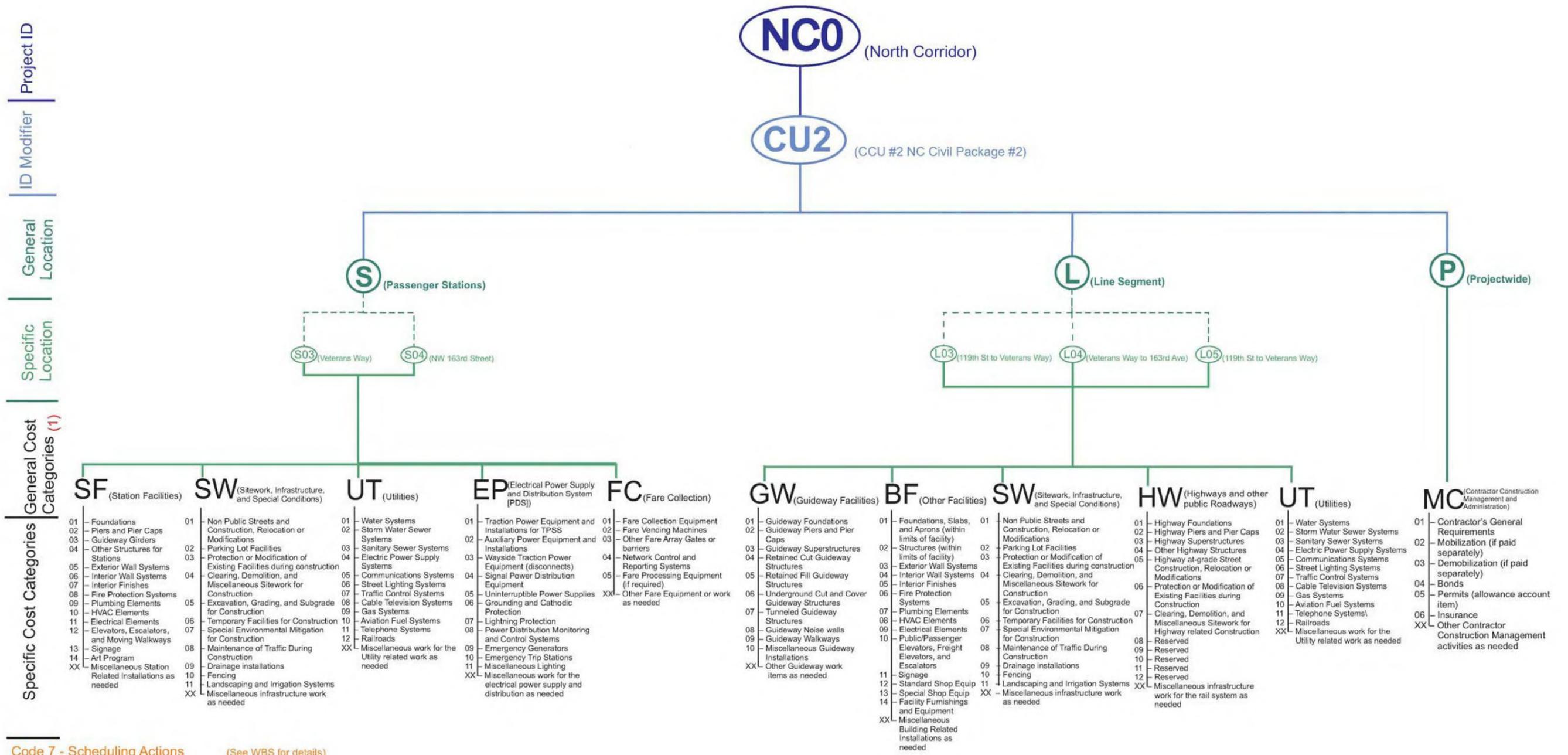
(1) Update ID Modifiers as required

NORTH CORRIDOR METRORAIL EXTENSION



(1) Additional General Cost Categories are available
See WBS for details

NORTH CORRIDOR METRORAIL EXTENSION

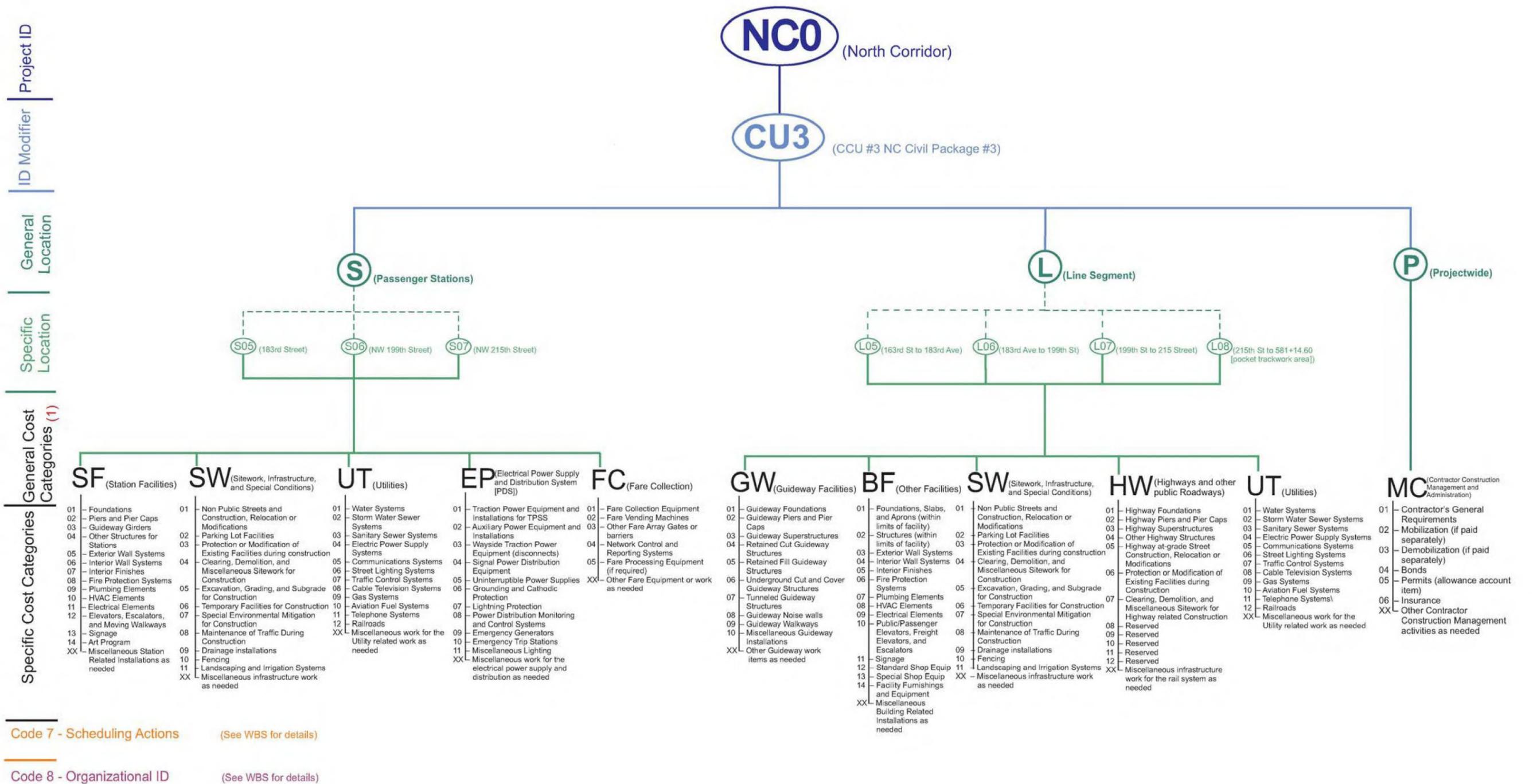


Code 7 - Scheduling Actions (See WBS for details)

Code 8 - Organizational ID (See WBS for details)

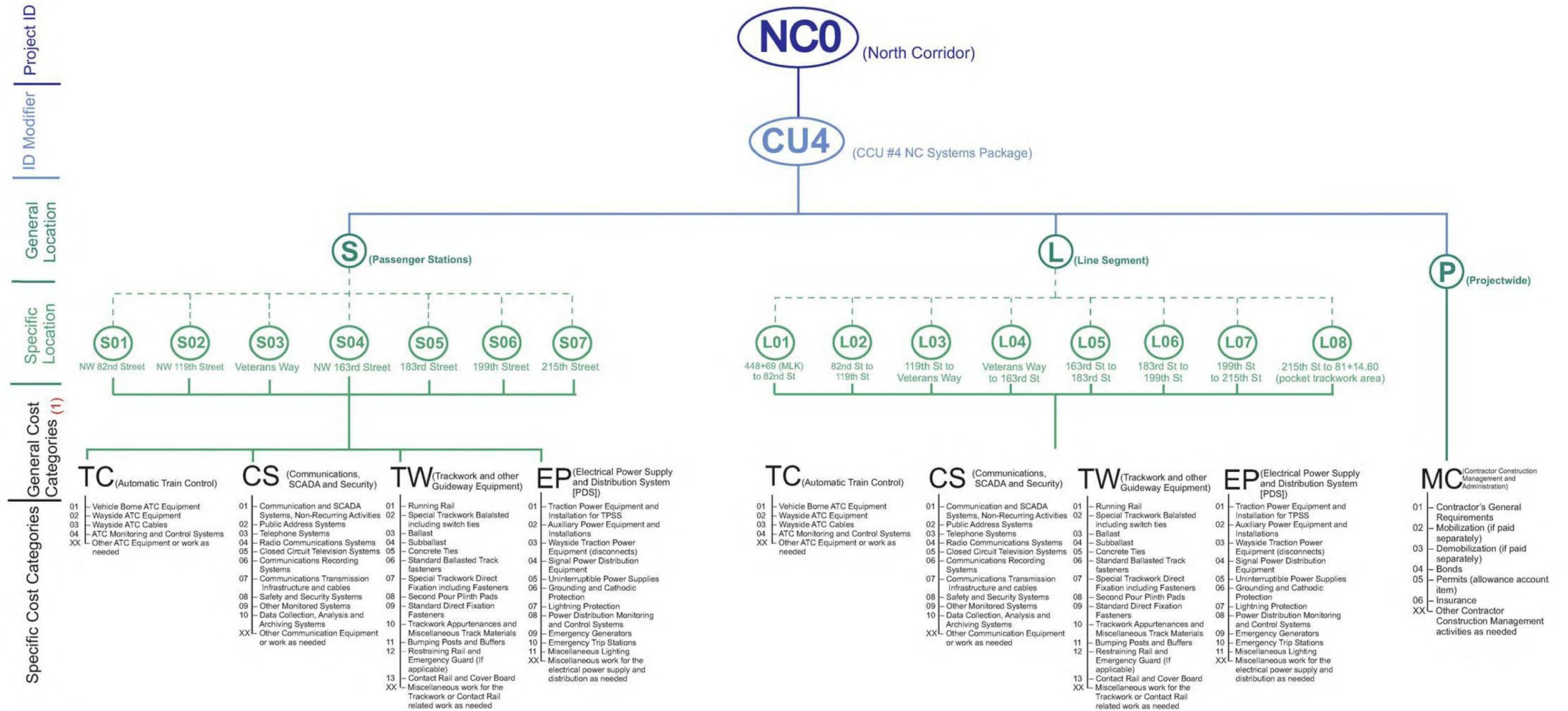
(1) Additional General Cost Categories are available
See WBS for details

NORTH CORRIDOR METRO RAIL EXTENSION



(1) Additional General Cost Categories are available See WBS for details

NORTH CORRIDOR METRORAIL EXTENSION

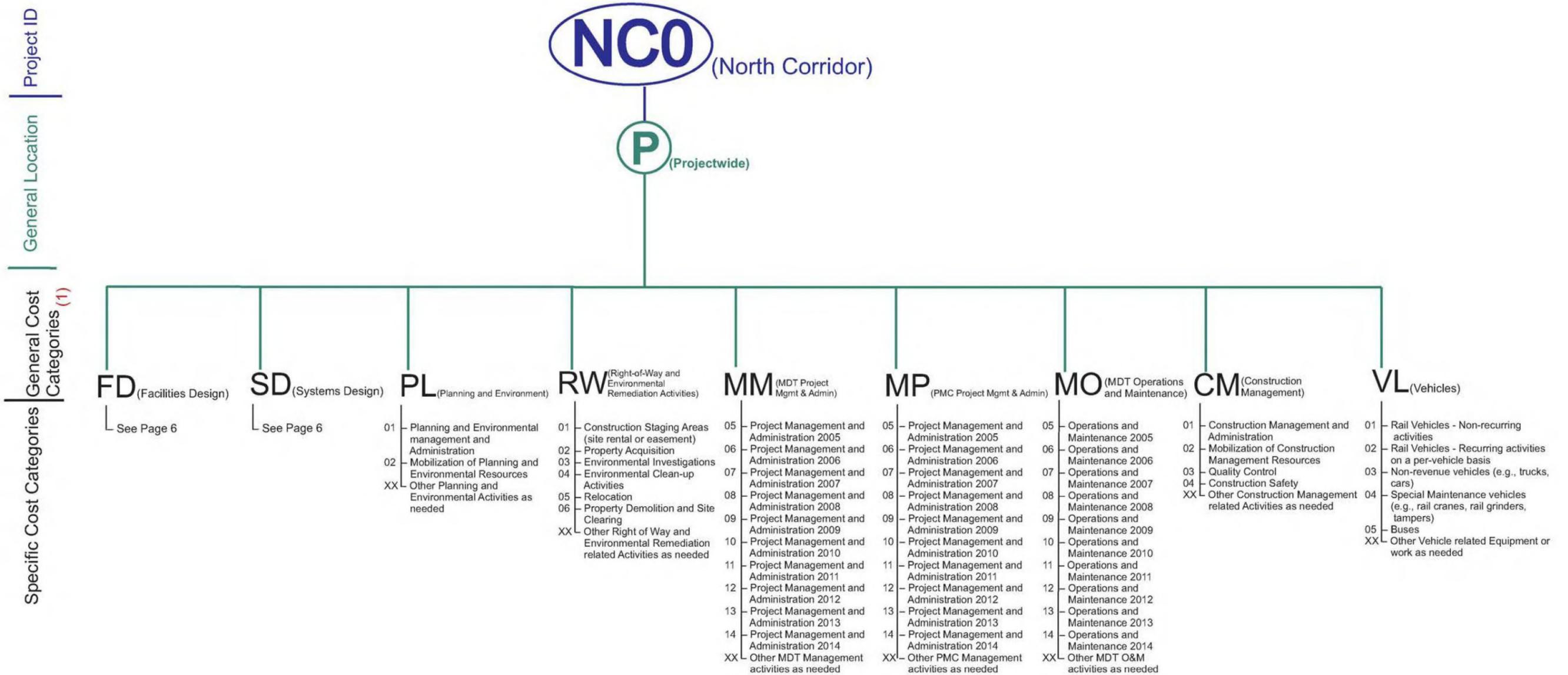


Code 7 - Scheduling Actions (See WBS for details)

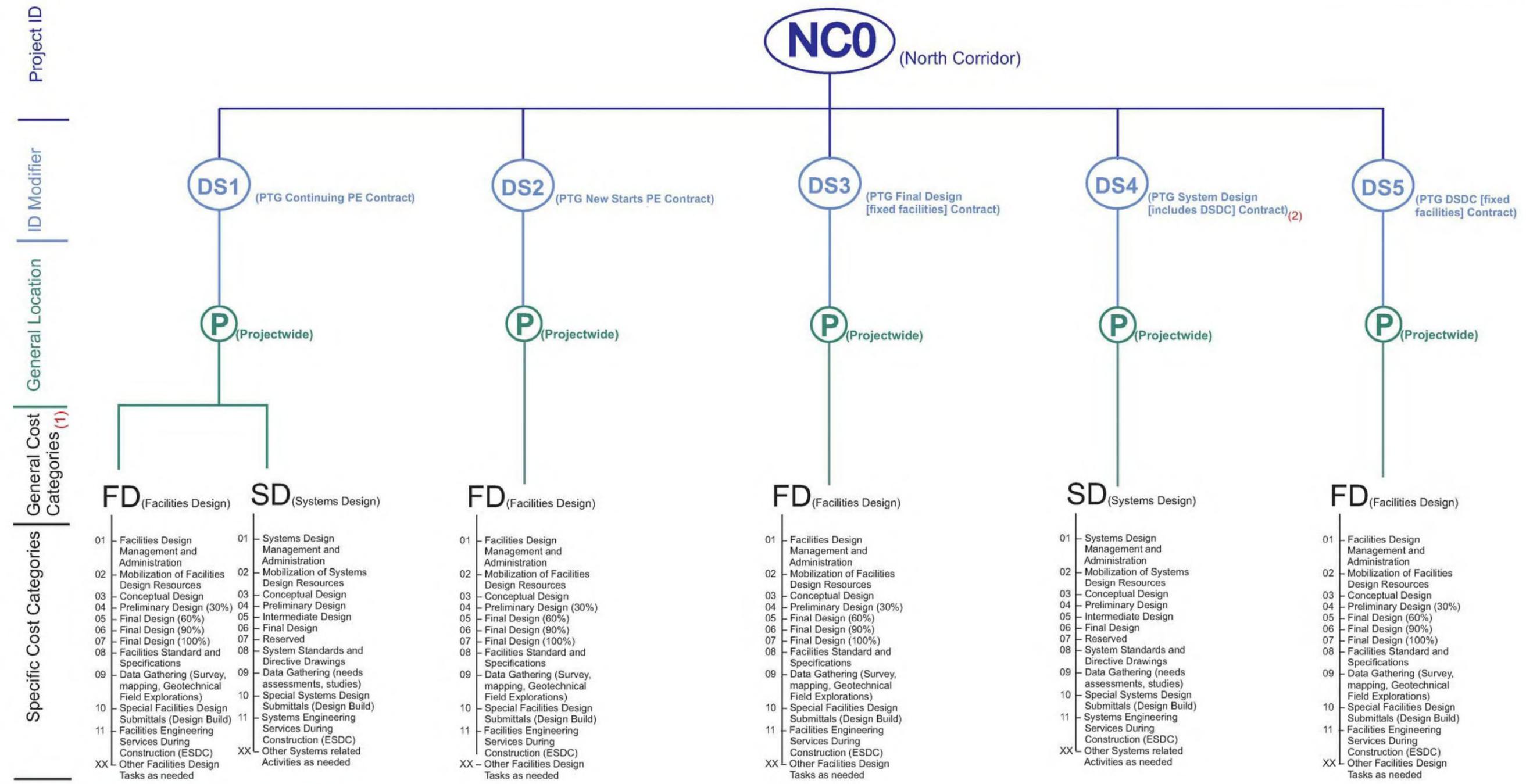
Code 8 - Organizational ID (See WBS for details)

(1) Additional General Cost Categories are available
See WBS for details

NORTH CORRIDOR METRORAIL EXTENSION



NORTH CORRIDOR METRORAIL EXTENSION



Code 7 - Scheduling Actions (See WBS for details)
Code 8 - Organizational ID (See WBS for details)

(1) Additional General Cost Categories are available See WBS for details
(2) Work in DS #4 includes New Starts PE for system's design, final design for systems works and engineering services during construction.

NORTH CORRIDOR METRORAIL EXTENSION

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APPENDIX D

MASTER PROJECT SCHEDULE

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Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
PEP 185	MDT Comments on Mitigation to HNTB	2	0	100%	30-Jun-06 A	03-Jul-06 A	94																								
PEP 190	Develop Responses-Public Hearing/Agency Com...	20	0	100%	12-Jul-06 A	08-Aug-06 A	94																								
PEP 195	QA/QC	16	0	100%	19-Jul-06 A	09-Aug-06 A	94																								
PEP 200	Submit Draft FEIS for MDT Review	1	0	100%	24-Jul-06 A	24-Jul-06 A	94																								
PEP 205	MDT/PMC Review	13	0	100%	24-Jul-06 A	09-Aug-06 A	94																								
PEP 210	Revised Draft FEIS to MDT	10	0	100%	31-Jul-06 A	11-Aug-06 A	94																								
PEP 215	MDT Director Sgnature of Revised FEIS	1	0	100%	15-Aug-06 A	15-Aug-06 A	94																								
PEP 220	Submit Draft FEIS to FTA Review	1	0	100%	15-Aug-06 A	15-Aug-06 A	94																								
PEP 225	Address & Submit EPA Responses to FTA	1	0	100%	31-Aug-06 A	31-Aug-06 A	94																								
PEP 230	FTA Review of FEIS	5	0	100%	15-Aug-06 A	21-Aug-06 A	94																								
PEP 235	Receive FTA Comments	1	0	100%	21-Aug-06 A	21-Aug-06 A	94																								
PEP 240	Reponses of EPA & FTA Review Comments	21	0	100%	21-Aug-06 A	18-Sep-06 A	94																								
PEP 245	Submit Revised FEIS to FTA for Approval	1	0	100%	19-Sep-06 A	19-Sep-06 A	94																								
PEP 250	FTA FEIS Approval (Email T. Dittmeier)	1	0	100%	05-Oct-06 A	05-Oct-06 A	94																								
PEP 255	MDT Signs FEIS Cover Letter and Transmits to FTA	1	0	100%	05-Oct-06 A	05-Oct-06 A	94																								
PEP 260	FTA's Direction to Revise FEIS	1	0	100%	14-Nov-06 A	14-Nov-06 A	94																								
PEP 265	Telcon w.FTA & Development of Revision Plan	1	0	100%	15-Nov-06 A	15-Nov-06 A	94																								
PEP 270	Submit Revision Plan to FTA	1	0	100%	15-Nov-06 A	15-Nov-06 A	94																								
PEP 275	FTA Approval to Proceed with Revision Plan	1	0	100%	20-Nov-06 A	21-Nov-06 A	94																								
PEP 280	Revise Summary Ch 2, 4, 6 and 7	4	0	100%	20-Nov-06 A	04-Dec-06 A	94																								
PEP 285	QA/QC of All Changes made to Chapters	2	0	100%	05-Dec-06 A	08-Dec-06 A	94																								
PEP 290	Submit Revised FEIS Chapters to MDT	4	0	100%	08-Dec-06 A	11-Dec-06 A	94																								
PEP 295	MDT Review	1	0	100%	11-Dec-06 A	14-Dec-06 A	94																								
PEP 300	Submit Revised FEIS Chapters to FTA	1	0	100%	15-Dec-06 A	15-Dec-06 A	94																								
PEP 305	FTA Review of FEIS Revised Chapters	19	0	100%	18-Dec-06 A	31-Jan-07 A	132																								
PEP 310	Receive FTA Comments	0	0	0%	02-Jan-07 A	31-Jan-07 A	94																								
PEP 315	Response to FTA Review Comments	0	0	0%	31-Jan-07 A	02-Feb-07 A	94																								
PEP 320	Submit Revised FEIS to FTA for Approval	2	2	0%	15-Feb-07	16-Feb-07	94																								
PEP 325	FTA Regional Admin. Signs FEIS Cover Letter	3	3	0%	20-Feb-07	22-Feb-07	94																								
PEP 340	Distribution of FEIS - List of Recipients (200+)	2	2	0%	23-Feb-07	26-Feb-07	94																								
PEP 330	Final Printing of Final Document	16	0	0%	12-Feb-07 A	27-Feb-07	94																								
PEP 335	Filing Copies of FEIS to MDT	2	2	0%	27-Feb-07	28-Feb-07	94																								
PEP 345	Submit to TPE	2	2	0%	27-Feb-07	28-Feb-07	94																								
PEP 350	Filing FEIS with EPA	4	4	0%	01-Mar-07	06-Mar-07	94																								
PEP 355	Federal Register Notice of FEIS Availability	0	0	0%	09-Mar-07		94																								
PEP 360	Local Newspaper Notice of FEIS Availability	0	0	0%	09-Mar-07		94																								
PEP 365	FEIS 30 Day Circulation Period	32	32	0%	09-Mar-07	09-Apr-07	132																								
PEP 370	Record of Decision (ROD) Process	10	10	0%	10-Apr-07	23-Apr-07	94																								
PEP 375	ROD Issued by FTA	0	0	0%		23-Apr-07	94																								
Public Involvement		2066	2024	0%	07-Mar-05 A	18-Nov-14	1																								
Public Involvement		2066	2024	0%	07-Mar-05 A	18-Nov-14	1																								
PUB 005	Public Involvement Support During Planning & De...	1294	642	3.4%	07-Mar-05 A	31-Jul-09	47																								
PUB 010	Public Involvement Workshop for 60% Submittal	0	0	0%		03-Dec-07	481																								
PUB 015	Public Involvement Workshop for 90% Submittal	0	0	0%		06-Apr-09	132																								
PUB 020	Public Involvement Workshop for 100% Submittal	0	0	0%		08-Jun-09	86																								
PUB 025	Public Involvement Support During Construction	880	880	0%	20-May-10	02-Oct-13	197																								
PUB 030	Public Involvement During Testing & Startup	294	294	0%	03-Oct-13	18-Nov-14	1																								
New Starts Annual Reporting		559	464	0%	02-May-05 A	06-Feb-09	1361																								

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016	
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
FY 2007 New Starts Annual Reporting		1	0	0%	02-May-05 A	07-Feb-06 A	53																								
FY07 005	Prepare FY 2007 New Starts Criteria Report Update	1	0	100%	02-May-05 A	15-Aug-05 A	53																								
FY07 015	Submit FY 2007 New Starts Criteria Report Update	0	0	100%		15-Aug-05 A	53																								
FY07 025	FTA FY 2007 New Starts Review	1	0	100%	16-Aug-05 A	07-Feb-06 A	53																								
FY07 035	FY 2007 Annual Report on New Starts Released	0	0	100%		07-Feb-06 A	53																								
FY 2008 New Starts Annual Reporting		19	0	0%	02-May-06 A	07-Feb-07 A	53																								
FY08 045	Prepare FY 2008 New Starts Criteria Report Update	1	0	100%	02-May-06 A	15-Aug-06 A	53																								
FY08 055	Submit FY 2008 New Starts Criteria Report Update	0	0	100%		15-Aug-06 A	53																								
FY08 065	FTA FY 2008 New Starts Review	1	0	100%	16-Aug-06 A	07-Feb-07 A	53																								
FY08 075	FY 2008 Annual Report on New Starts Released	0	0	100%		07-Feb-07 A	53																								
FY 2009 New Starts Annual Reporting		199	199	0%	01-May-07	02-Feb-08	63																								
FY09 004	Start New Starts Annual Reporting	0	0	0%	01-May-07*		0																								
FY09 005	Make the Case Document	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 015	Project Description Worksheet (NS Template 1)	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 025	Agency Self-Certification of Technical Methods, Pl...	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 035	Project Justification Templates (NS Templates 3-7...	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 045	SCC Worksheets Annualized Costs (Build and B...	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 055	Land Use Supporting Documentation	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 065	Local Financial Commitment Worksheet (NS Tem...	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 075	Checklist for Financial Submittals	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 085	Project Finance Plan and Supporting Documentati...	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 095	Local Endorsement of Financial Plan	102	102	0%	01-May-07	10-Aug-07	88																								
FY09 110	Submit FY 2009 Annual New Starts Criteria Report	0	0	0%		10-Aug-07	88																								
FY09 120	FTA FY 2009 New Starts Review	176	176	0%	11-Aug-07	02-Feb-08	88																								
FY09 130	FY 2009 Annual Report on New Starts Released	0	0	0%		02-Feb-08	88																								
FY 2010 New Starts Annual Reporting		202	202	0%	01-May-08	06-Feb-09	1361																								
FY10 104	Start New Starts Annual Reporting	0	0	0%	01-May-08*		0																								
FY10 105	Make the Case Document	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 115	Project Description Worksheet (NS Template 1)	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 125	Agency Self-Certification of Technical Methods, Pl...	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 135	Project Justification Templates (NS Templates 3-7...	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 145	SCC Worksheets Annualized Costs (Build and B...	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 155	Land Use Supporting Documentation	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 165	Local Financial Commitment Worksheet (NS Tem...	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 175	Checklist for Financial Submittals	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 185	Project Finance Plan and Supporting Documentati...	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 195	Local Endorsement of Financial Plan	107	107	0%	01-May-08	15-Aug-08	1907																								
FY10 015	Submit FY 2010 Annual New Starts Criteria Report	0	0	0%		15-Aug-08	1361																								
FY10 025	FTA FY 2010 New Starts Review	125	125	0%	18-Aug-08	06-Feb-09	1361																								
FY10 035	FY 2010 Annual Report on New Starts Released	0	0	0%		06-Feb-09	1361																								
Federal Funding		270	270	0%	29-Sep-08	09-Oct-09	1333																								
Full Funding Grant Agreement (FFGA)		1	1	0%	29-Sep-08	30-Sep-08	1334																								
FFGA 002	FY 2009 New Starts Rating/Final Design Approval	0	0	0%		29-Sep-08	1335																								
FFGA 003	FFGA Application Workshop	1	1	0%	29-Sep-08	30-Sep-08	1867																								
FFGA Precursor Plans/Documents		36	36	0%	30-Sep-08	19-Nov-08	1333																								
FFGA 006	Annual Certifications/Assurances (Electronic)	50	50	0%	30-Sep-08	19-Nov-08	1867																								
FFGA 007	Bus Fleet Management Plan Update	50	50	0%	30-Sep-08	19-Nov-08	1867																								
FFGA 008	Civil Rights Program Review	50	50	0%	30-Sep-08	19-Nov-08	1867																								

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	2005				2006				2007				2008				2009				2010				2011				2012				2013				2014				2015				2016			
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q								
CEI 055	CICC BEGINS RFP SOLICITATION PROCESS	0	0	0%	21-Dec-08	21-Dec-08	239																																																
CEI 060	CICC PREPARES DRAFT RFP	7	7	0%	21-Dec-08	27-Dec-08	239																																																
CEI 065	CICC ADVERTISES RFP	0	0	0%	28-Dec-08	28-Dec-08	239																																																
CEI 070	CONSULTANTS PREPARE PROPOSALS	30	30	0%	28-Dec-08	26-Jan-09	239																																																
CEI 075	PRE-PROPOSAL MEETING	0	0	0%	11-Jan-09	11-Jan-09	2139																																																
CEI 080	CONSULTANT TEAMS SUBMIT PROPOSALS	0	0	0%	27-Jan-09	27-Jan-09	239																																																
CEI 085	CICC REVIEWS PROPOSALS & MDT/DBE/LEG...	21	21	0%	27-Jan-09	16-Feb-09	239																																																
CEI 090	CICC CONDUCTS PRE-SCREENING/SETS PUB...	7	7	0%	17-Feb-09	23-Feb-09	239																																																
CEI 095	PUBLIC HEARINGS	7	7	0%	24-Feb-09	02-Mar-09	239																																																
CEI 100	CICC PREPARES CONSULTANT SELECTION P...	4	4	0%	03-Mar-09	06-Mar-09	239																																																
CEI 105	STAFF PREPARES DRAFT PSA	10	10	0%	03-Mar-09	12-Mar-09	270																																																
CEI 110	CONSULTANT SELECTION/MANAGER APPRO...	7	7	0%	07-Mar-09	13-Mar-09	239																																																
CEI 115	PROTEST PERIOD	14	14	0%	14-Mar-09	27-Mar-09	239																																																
CEI 120	DEVELOP SCOPE OF WORK	16	16	0%	28-Mar-09	12-Apr-09	239																																																
CEI 125	CONSULTANT NEGOTIATIONS	45	45	0%	13-Apr-09	27-May-09	239																																																
CEI 130	MDT PREPARES CONTRACT FOR AWARD & A...	7	7	0%	28-May-09	03-Jun-09	239																																																
CEI 135	AWARD RECOMMENDATION REVIEWED BY C...	3	3	0%	04-Jun-09	06-Jun-09	240																																																
CEI 140	CONTRACT EXECUTED BY CONSULTANT	7	7	0%	04-Jun-09	10-Jun-09	239																																																
CEI 145	AWARD RECCOM. APPROVED-MDT ASST. DI...	1	1	0%	07-Jun-09	07-Jun-09	240																																																
CEI 150	AWARD RECOMM. APPROVED-MDT BUDGET ...	2	2	0%	08-Jun-09	09-Jun-09	240																																																
CEI 155	AWARD RECOMM. APPROVED BY MDT DIREC...	5	5	0%	10-Jun-09	14-Jun-09	240																																																
CEI 160	CONTRACT APPROVED BY CAO & RISK MANA...	10	10	0%	11-Jun-09	20-Jun-09	239																																																
CEI 165	AWARD RECOMMENDATION APPROVED BY ...	5	5	0%	15-Jun-09	19-Jun-09	240																																																
CEI 170	STAFF PREPARES COPIES OF AWARD RECO...	2	2	0%	21-Jun-09	22-Jun-09	239																																																
CEI 175	PACKAGE APPROVED BY ASST. DIRECTOR-P...	1	1	0%	23-Jun-09	23-Jun-09	239																																																
CEI 180	PACKAGE TO MDT AGENDA COORDINATOR'S...	1	1	0%	24-Jun-09	24-Jun-09	239																																																
CEI 185	TRANSPORTATION COMMITTEE CYCLE-AWA...	35	35	0%	25-Jun-09	29-Jul-09	239																																																
CEI 190	AWARD RECOMM. APPROVED BY CITT SUBC...	15	15	0%	15-Jul-09	29-Jul-09	261																																																
CEI 195	AWARD RECC. APPROVAL BY TRANSPORTAT...	1	1	0%	30-Jul-09	30-Jul-09	239																																																
CEI 200	BCC CYCLE-AWARD RECOMMENDATION	20	20	0%	31-Jul-09	19-Aug-09	239																																																
CEI 205	BCC APPROVAL OF AWARD RECOMMENDATI...	1	1	0%	20-Aug-09	20-Aug-09	239																																																
CEI 210	MAYOR VETO PERIOD	10	10	0%	21-Aug-09	30-Aug-09	244																																																
CEI 215	AWARD RECOMMENDATION APPROVED BY F...	15	15	0%	21-Aug-09	04-Sep-09	239																																																
CEI 220	COUNTY MANAGER EXECUTES CONTRACT	7	7	0%	05-Sep-09	11-Sep-09	239																																																
CEI 225	CLERK EXECUTES CONTRACT	3	3	0%	12-Sep-09	14-Sep-09	239																																																
CEI 230	AWARD RECOMMENDATION TO MDT PLANNI...	1	1	0%	15-Sep-09	15-Sep-09	239																																																
CEI 235	NTP TO CONSULTANT/ISSUE WORK ORDER	7	7	0%	16-Sep-09	22-Sep-09	239																																																
Civil Construction - South CCU #1		882	882	0%	02-Jun-09	17-Oct-12	0																																																
Bid & Award Phase - Civil Package #1		250	250	0%	02-Jun-09	17-May-10	0																																																
CCU1 005	PLANS,SPECS & ESTIMATE REVIEW IN-HOUS...	7	7	0%	02-Jun-09	08-Jun-09	0																																																
CCU1 010	DBE GOAL SET BY MDT DBE ADMINISTRATION	14	14	0%	09-Jun-09	22-Jun-09	0																																																
CCU1 015	MDT STAFF PREPARES CONTRACT TERMS A...	30	30	0%	09-Jun-09	08-Jul-09	63																																																
CCU1 020	MDT STAFF PREPARES REQUEST-TO-ADVER...	2	2	0%	23-Jun-09	24-Jun-09	0																																																
CCU1 025	REQUEST-TO-ADVERTISE REVIEWED BY CO...	2	2	0%	25-Jun-09	26-Jun-09	0																																																
CCU1 030	REQ.-TO-ADVER APPROVED-MDT DEPUTY DI...	1	1	0%	27-Jun-09	27-Jun-09	0																																																
CCU1 035	REQ.-TO-ADVER. APPROVED-MDT BUDGET &...	2	2	0%	28-Jun-09	29-Jun-09	0																																																
CCU1 040	REQ-TO-ADVERTISE APPROVED-MDT DIREC...	5	5	0%	30-Jun-09	04-Jul-09	0																																																
CCU1 045	REQUEST-TO-ADVERTISE APPROVED BY MD...	5	5	0%	05-Jul-09	09-Jul-09	0																																																

Activity ID	Activity Name	Original Duration	Remaining Duration	Schedule % Complete	Start	Finish	Total Float	2005		2006		2007		2008		2009		2010		2011		2012		2013		2014		2015		2016					
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
								Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q
CCU3 005	PLANS,SPECS & ESTIMATE REVIEW IN-HOUS...	7	7	0%	01-Aug-09	07-Aug-09	67																								PLANS,SPECS & ESTIMATE REVIEW IN-HOUSE (100% FD)				
CCU3 010	DBE GOAL SET BY MDT DBE ADMINISTRATION	14	14	0%	08-Aug-09	21-Aug-09	67																								DBE GOAL SET BY MDT DBE ADMINISTRATION				
CCU3 015	MDT STAFF PREPARES CONTRACT TERMS A...	30	30	0%	08-Aug-09	06-Sep-09	130																								MDT STAFF PREPARES CONTRACT TERMS AND CONDITIONS				
CCU3 020	MDT STAFF PREPARES REQUEST-TO-ADVER...	2	2	0%	22-Aug-09	23-Aug-09	67																								MDT STAFF PREPARES REQUEST-TO-ADVERTISE				
CCU3 025	REQUEST-TO-ADVERTISE REVIEWED BY CO...	2	2	0%	24-Aug-09	25-Aug-09	67																								REQUEST-TO-ADVERTISE REVIEWED BY COUNTY ATTORNEY				
CCU3 030	REQ.-TO-ADVER APPROVED-MDT DEPUTY DI...	1	1	0%	26-Aug-09	26-Aug-09	67																								REQ.-TO-ADVER APPROVED-MDT DEPUTY DIR.-PLAN/DEV.				
CCU3 035	REQ.-TO-ADVER. APPROVED-MDT BUDGET &...	2	2	0%	27-Aug-09	28-Aug-09	67																								REQ.-TO-ADVER. APPROVED-MDT BUDGET & MDT GRANTS				
CCU3 040	REQ-TO-ADVERTISE APPROVED-MDT DIREC...	5	5	0%	29-Aug-09	02-Sep-09	67																								REQ-TO-ADVERTISE APPROVED-MDT DIRECTOR				
CCU3 045	REQUEST-TO-ADVERTISE APPROVED BY MD...	5	5	0%	03-Sep-09	07-Sep-09	67																								REQUEST-TO-ADVERTISE APPROVED BY MDC BUDGET				
CCU3 050	STAFF PREPARES COPIES OF REQUEST-TO-...	2	2	0%	08-Sep-09	09-Sep-09	67																								STAFF PREPARES COPIES OF REQUEST-TO-ADVERTISE				
CCU3 055	PACKAGE APPROVED BY ASST. DIR PLANNIN...	1	1	0%	10-Sep-09	10-Sep-09	67																								PACKAGE APPROVED BY ASST. DIR PLANNING & DEV				
CCU3 060	PACKAGE TO MDT AGENDA COORDINATOR ...	1	1	0%	11-Sep-09	11-Sep-09	67																								PACKAGE TO MDT AGENDA COORDINATOR OFFICE				
CCU3 065	TRANSPORTATION COMMITTEE CYCLE	35	35	0%	12-Sep-09	16-Oct-09	67																								TRANSPORTATION COMMITTEE CYCLE				
CCU3 070	REQUEST-TO-ADV. APPROVAL - TRANS COM...	1	1	0%	17-Oct-09	17-Oct-09	67																								REQUEST-TO-ADV. APPROVAL - TRANS COMMITTEE				
CCU3 075	BCC CYCLE - REQUEST-TO-ADVERTISE	20	20	0%	18-Oct-09	06-Nov-09	67																								BCC CYCLE - REQUEST-TO-ADVERTISE				
CCU3 080	BCC APPROVAL REQUEST-TO-ADVERTISE	1	1	0%	07-Nov-09	07-Nov-09	67																								BCC APPROVAL REQUEST-TO-ADVERTISE				
CCU3 085	REQ-TO-ADVERTISE TO MDT PLAN & DEVELO...	1	1	0%	08-Nov-09	08-Nov-09	67																								REQ-TO-ADVERTISE TO MDT PLAN & DEVELOPMENT				
CCU3 090	BID DOCUMENTS FINALIZED BY MDT STAFF	10	10	0%	09-Nov-09	18-Nov-09	67																								BID DOCUMENTS FINALIZED BY MDT STAFF				
CCU3 095	ADVERTISE DATE (ON THE COUNTER)	0	0	0%	19-Nov-09		67																								ADVERTISE DATE (ON THE COUNTER)				
CCU3 105	CONTRACTORS PREPARE BIDS	90	90	0%	19-Nov-09	16-Feb-10	67																								CONTRACTORS PREPARE BIDS				
CCU3 110	PRE-BID CONFERENCE	0	0	0%	13-Dec-09		133																								PRE-BID CONFERENCE				
CCU3 115	BID OPENING	0	0	0%	17-Feb-10		67																								BID OPENING				
CCU3 120	MDT REVIEW OF BIDS	14	14	0%	17-Feb-10	02-Mar-10	67																								MDT REVIEW OF BIDS				
CCU3 125	CONTRACTOR SUBMITS DBE INFORMATION	2	2	0%	19-Feb-10	20-Feb-10	72																								CONTRACTOR SUBMITS DBE INFORMATION				
CCU3 130	MDT DBE ADMINISTRATION REVIEW OF LOW ...	5	5	0%	21-Feb-10	25-Feb-10	72																								MDT DBE ADMINISTRATION REVIEW OF LOW BIDDER				
CCU3 135	MDT STAFF PREPARES AWARD RECOMMEN...	2	2	0%	03-Mar-10	04-Mar-10	67																								MDT STAFF PREPARES AWARD RECOMMENDATION				
CCU3 140	AWARD RECOMMENDATION REVIEWED BY C...	2	2	0%	05-Mar-10	06-Mar-10	67																								AWARD RECOMMENDATION REVIEWED BY CTY. ATTORNEY				
CCU3 145	AWARD RECCOM APPROVED-MDT DEPUTY D...	1	1	0%	07-Mar-10	07-Mar-10	67																								AWARD RECCOM APPROVED-MDT DEPUTY DIR.-PLAN./DEV.				
CCU3 150	AWARD RECOMM APPROVED-MDT BUDGET ...	2	2	0%	08-Mar-10	09-Mar-10	67																								AWARD RECOMM APPROVED-MDT BUDGET & MDT GRANTS				
CCU3 155	AWARD RECOMM. APPROVED BY MDT DIREC...	5	5	0%	10-Mar-10	14-Mar-10	67																								AWARD RECOMM. APPROVED BY MDT DIRECTOR				
CCU3 160	AWARD RECOMMENDATION APPROVED BY ...	5	5	0%	15-Mar-10	19-Mar-10	67																								AWARD RECOMMENDATION APPROVED BY MDC BUDGET				
CCU3 165	STAFF PREPARES COPIES OF AWARD RECO...	2	2	0%	20-Mar-10	21-Mar-10	67																								STAFF PREPARES COPIES OF AWARD RECOMMENDATION				
CCU3 170	PACKAGE APPROVED BY DEPUTY DIRECTOR...	1	1	0%	22-Mar-10	22-Mar-10	67																								PACKAGE APPROVED BY DEPUTY DIRECTOR-PLAN./DEV.				
CCU3 175	PACKAGE TO MDT AGENDA COORDINATOR'S...	1	1	0%	23-Mar-10	23-Mar-10	67																								PACKAGE TO MDT AGENDA COORDINATOR'S OFFICE				
CCU3 180	AWARD RECOMMENDATION SIGNED BY COU...	14	14	0%	24-Mar-10	06-Apr-10	72																								AWARD RECOMMENDATION SIGNED BY COUNTY MANAGER				
CCU3 185	TRANSPORTATION COMM CYCLE-AWARD RE...	35	35	0%	24-Mar-10	27-Apr-10	67																								TRANSPORTATION COMM CYCLE-AWARD RECCOM.				
CCU3 190	FILE AWARD RECOMMENDATION WITH THE ...	1	1	0%	07-Apr-10	07-Apr-10	72																								FILE AWARD RECOMMENDATION WITH THE CLERK				
CCU3 195	AWARD RECOMMENDATION TO MDT PLANNI...	1	1	0%	08-Apr-10	08-Apr-10	72																								AWARD RECOMMENDATION TO MDT PLANNING & DEVELOP.				
CCU3 200	AWARD NOTIFICATION SENT TO ALL BIDDERS	0	0	0%	09-Apr-10		72																								AWARD NOTIFICATION SENT TO ALL BIDDERS				
CCU3 205	PROTEST PERIOD	14	14	0%	09-Apr-10	22-Apr-10	72																								PROTEST PERIOD				
CCU3 210	AWARD RECOMM. APPROVED BY CITT SUBC...	15	15	0%	13-Apr-10	27-Apr-10	89																								AWARD RECOMM. APPROVED BY CITT SUBCOMMITTEES				
CCU3 215	AWARD RECC APPROVAL-TRANSPORTATION...	1	1	0%	28-Apr-10	28-Apr-10	67																								AWARD RECC APPROVAL-TRANSPORTATION COMMITTEE				
CCU3 220	BCC CYCLE-AWARD RECOMMENDATION	20	20	0%	29-Apr-10	18-May-10	67																								BCC CYCLE-AWARD RECOMMENDATION				
CCU3 225	BCC APPROVAL OF AWARD RECOMMENDATI...	1	1	0%	19-May-10	19-May-10	67																								BCC APPROVAL OF AWARD RECOMMENDATION				
CCU3 230	MAYOR VETO PERIOD	10	10	0%	20-May-10	29-May-10	72																								MAYOR VETO PERIOD				
CCU3 235	AWARD RECOMMENDATION APPROVED BY F...	15	15	0%	20-May-10	03-Jun-10	67																								AWARD RECOMMENDATION APPROVED BY FULL CITT				
CCU3 240	AWARD RECOMMENDATION TO MDT PLANNI...	1	1	0%	04-Jun-10	04-Jun-10	67																								AWARD RECOMMENDATION TO MDT PLANNING & DEVELOP.				
CCU3 245	STAFF PREPARES 5 SETS OF CONTRACTS F...	5	5	0%	05-Jun-10	09-Jun-10	67																								STAFF PREPARES 5 SETS OF CONTRACTS FOR EXECUTION				
CCU3 250	CONTRACTOR EXECUTES CONTRACT,INSUR...	14	14	0%	10-Jun-10	23-Jun-10	67																								CONTRACTOR EXECUTES CONTRACT,INSURANCE & BONDS				
CCU3 255	CONTRACT,INSUR. & BONDS REVIEWED BY ...	3	3	0%	24-Jun-10	26-Jun-10	67																								CONTRACT,INSUR. & BONDS REVIEWED BY CTY.ATTORNEY				

APPENDIX E

FILING SYSTEM PROCEDURE

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APPENDIX E FILING SYSTEM PROCEDURE

FILING SYSTEM PROCEDURE No. 004

Issue Date: _____

Approved: _____

Reference:

Incoming Correspondence Procedure No. 008
Configuration Management Plan Procedure No. 050

Purpose:

The purpose of this procedure is to specify the orderly process by which project staff will interface with the project files.

Objective:

The objective of this procedure is to institute, control and protect all Capital Project Records.

General Procedure:

Responsibilities

It shall be the responsibility of each correspondence originator to ensure that all correspondence be assigned appropriate file numbers, from the central filing index system in order to maintain consistency. It is also the originator's responsibility to fill and provide a file request form to the Document Control Specialist for purposes of updating the filing Index.

All incoming correspondence shall be assigned appropriate file numbers by the Engineering Services recipient. All originals shall be filed in the project files.

All reports, studies, submittals and the like will also be filed in the project files. Only large drawings submittals and other bulky records will be permitted alternate storage arrangements. Any alternate storage shall fully comply with the intent of this procedure.

Filing Index:

The attached filing index is arranged in decimal format with main headings starting with whole numbers such as: 1.00,3.00, etc.

Most documents will be filed in more than one (1) file to assure adequate cross referencing and document redundancy. For example, correspondence sent to FTA would be filed under reading file/chronological, to/from FTA and a separate subject file.

All documents shall be kept in the centralized project files. Any working copies to be kept in personal files must always be in addition to official file copies.

Changes/Additions to Filing Index:

It is recognized that a filing index to be effective must be a dynamic instrument. Changes and additions to the filing system will be authorized on an as-needed basis. All request for revisions to the filing system shall be coordinated with the Manager of Contract Services. Revised filing indexes will be issued once changes are incorporated.

Records Management:

Upon completion of the project and after project close out, all records shall be retained in accordance with applicable MDC regulations and FTA Circular 5010.1C, Dated October 1, 1998.

APPENDIX F

RETRIEVING CONTROLLED DRAWING ORIGINALS PROCEDURE

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APPENDIX F RETRIEVING CONTROLLED DRAWING ORIGINALS PROCEDURE

RETRIEVING CONTROLLED ORIGINAL DRAWINGS

PROCEDURE No. 015

Issue Date: _____

Approved: _____

Reference:

Configuration Management Plan Procedure No. 050

Purpose:

The purpose of this procedure is to establish the guidelines for the release of controlled original drawings from document control and their reintegration into the system once said drawings are returned.

Objectives:

The objective of this procedure is to insure that all controlled original documents are kept in document control and will only be released to authorize personnel, when an Original Document Form is submitted to Document Control with an approved change request number.

General Procedure:

Generally, an original can only be removed for preparation of an addenda during the bid period, to conform drawings to a previously issued addenda, or for compliance with an approved change request.

1. To remove an original drawing from Document Control, the engineer or any other authorized representative shall fill out the Original Document Request Form (DC-112) and submit form to Document Control, citing one of the above stated reasons and providing change request number, if applicable. The Chief of Design and Engineering shall signal his approval or denial of the request for release of the documents by initialing the Request.
2. The Project Document Control Staff Shall:
 - A. Stamp form as to date and time received.
 - B. Note the current revision level of the drawing on the Original Document Request Form.
 - C. Retrieve the drawings from the vault and give them to the engineer or his representative.

3. The Document Control Engineer shall give the copy of the Original Document Request to the Requestor and file the original Request Form in a pending file until the original mylar drawings are returned, normally within 30 days.
4. The Chief of Design and Engineering shall forward the original drawings to the cognizant Consultant for the necessary changes to be made to the drawings.
5. The Chief of Design and Engineering shall return the original drawings to Document Control, only after verifying that drawings containing a change have a new revision level assigned.
6. Upon return of the original drawings, Document Control Engineer shall:
 - A. Record on the original Document Removal Form on file, the new revision level assigned to the drawings and the date the drawings were returned.
 - B. Log the new revision level into the Master Drawing Log.
 - C. Arrange for distribution of revised drawings.
 - D. Return drawings to the vault.

APPENDIX G

REPRODUCTION OF STORED DRAWINGS PROCEDURE

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APPENDIX G REPRODUCTION OF STORED DRAWINGS PROCEDURE

REPRODUCTION OF STORED DRAWINGS

PROCEDURE NO. 020

Issue Date: _____

Approved: _____

Reference:

Configuration Management Plan Procedure No. 050

Purpose:

The purpose of this procedure is to provide copies of stored documents, as requested, in an organized and expeditious manner involving the most practical and economical alternatives.

General Procedure:

1. Individuals requesting reproduction of stored documents shall submit a request to the Document Control Engineer either in the form of a letter from a Consultant, (listing the Contract Number, the Drawing numbers and the Revision Number) or a written request from the person requesting the Documents. The Document Control Engineer will fill out the Printing Request Form (DC-111), for the individual who requested the drawings.
2. The Document Control Engineer shall stamp the form as to the date and time received.
3. A copy of the printing request is given to the originator at the time the request is made, if applicable.
4. The Document Control Engineer will check the Master Drawing log to ascertain that the document revision being requested is the latest revision.
5. If the Drawings are being requested in support of a Consultant task:
 - a) The consultant shall make arrangements with a printer for the printer to pick up the originals from Document Control.
 - b) After the drawings are reproduced, the printer will return the originals to Document Control and bill the Consultant.

- c) The Consultant will be reimbursed under the work order issued to initiate his work.
6. If the reproductions are being requested by County employees for use in-house, where consultants are not involved:
- a) Document Control will either make the reproductions in-house or contact a County Blanket Vendor to make the copies.
 - b) Document Control will forward the copies to the requesting party.

APPENDIX H

REVIEWS OF CONSULTANT SUBMITTALS PROCEDURE

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APPENDIX H REVIEWS OF CONSULTANT SUBMITTALS PROCEDURE

REVIEWS OF CONSULTANT SUBMITTALS

PROCEDURE NO. 045

Issue Date: _____

Revision: _____

Approved: _____

Revised: _____

Reference:

DMC Procedure – Procedure No. ____
Configuration Management Plan Procedure No. 050

Purpose:

The purpose of this procedure is to describe the process by which design submittals/documents are reviewed, and comments returned to the design consultants.

Objectives:

The objective of this procedure is to ensure that all design documents are subjected to a thorough review, comments expeditiously screened and returned to the design consultants and that all comments and documents are stored for future reference.

General Procedure:

1. The MDT Project Manager, in close coordination with the Consultant Project Manager will schedule, at the onset of the project, the date for the receipt of the progress review documents. To ensure compliance, the MDT Project Manager, will review the contractual requirements with the Consultant to determine the documents, drawings and specifications and the number of sets required for the submittal.
2. The Consultant delivers the review documents on the scheduled date to MDT per Procedure No. ____.
3. Upon receipt of the design/submittals/documents from DMC using a predetermined distribution list developed by the MDT Project Manager, the MDT Project Manager or designee will distribute copies of the review documents to all reviewers accompanied with the letter of transmittal and the standard Comment Form (D045-2005) for reviewer's use in

submitting comments back to the MDT Project Manager. The “Comment Form” is also sent electronically to all reviewers to facilitate responses.

(See Attachment 1) The letter of transmittal will specify how much time is allowed for the review and submission of comments back to the MDT Project Manager. The distribution list is also used to log at a minimum, should track date received from Consultant, date sent to reviewer and dates comments due date received from reviewer and, date sent to consultant. This log is kept updated by the Project Manager or designee.

4. A copy of the review documents will be retained in the project files, per DMC Procedure No. ___ for future reference.
5. The length of the review is dependent on the specific project.
6. Review comments are addressed to the MDT Project Manager, and are submitted electronically and/or in hard copy using the standard Comment Form. Upon expiration of the review cycle the Project Manager, TD&E will document outstanding comments and will follow-up with reviewers for final submission.
7. The MDT Project Manager or designee will send to DMC a copy of all review comments for filing.
8. The MDT Project Manager, in coordination with applicable project staff, will review and screen all review comments to identify which ones will require Consultant response.
9. After screening comments, the MDT Project Manager, or designee will transmit comments to the Consultant for their response. The MDT Project Manager will send to DMC a copy of these comments for filing. These comments will be used to check the next progress submittal.
10. The consultant has the opportunity to review the comments and discuss them with the MDT Project Manager, as required.
11. The Consultant will respond in writing to the proposed disposition of the comments in a format predetermined and agreed to by MDT Project Manager and Consultant. It is left up to the MDT Project Manager to hold a comment resolution meeting to address the disposition of the comments. The applicable comments are then incorporated into the design.
12. The MDT Project Manager will respond in writing to the proposed disposition of the comments that were not sent to the Consultant because they require MDT action or policy decisions.

APPENDIX I

CHANGE CONTROL PROCEDURE

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APPENDIX I CHANGE CONTROL PROCEDURE

CHANGE CONTROL

PROCEDURE NO. 055

Issue Date: _____

Approved: _____

Reference:

Retrieving Controlled Original Drawings, Procedure No. 015
Change Order Procedure No. 057A and 057B
Change Management Procedure No. 053

Purpose:

To establish an orderly method by which proposed change requests are prepared, reviewed and approved by an interdisciplinary board of County officials and Consultant's staff as required, prior to authorizing changes to conformed documents.

Objective:

To solicit input from responsible County staff, record changes to approved documents, and more importantly, to insure that only the latest document revisions will be incorporated into the work.

Change Control Board Meeting Schedule:

Change Control Board meeting will be held every Thursday at 10:30 A.M. unless otherwise announced.

Applicability:

Generally, a Change Request is needed to document changes to conformed documents that also affect the permanent configuration of a system element. This interpretation is in keeping with the requirements for configuration control. (For example, a change to the location of a configuration fence would not require a change request, since, even though it affects a conformed document, does not affect the permanent configuration of a system element. Changes to contract dates would likewise not require a change request). It should be understood that a change request does not legally modify an executed contract; this can only be accomplished through a change order. Every change request does not result in a change order. Every change order does need a change request.

Furthermore, to streamline the management of changes and minimize unnecessary consultant expenses, minor changes to contract documents that can typically be expected for the type of work being performed, will not require a Change Request. These types of changes can be handled through the as-built drawing process.

Examples of these changes are minor changes in pile locations and minor deviations of underground utilities to avoid existing conflicts.

The Change Control Board coordinator and the Chief Project Control will interpret this section. Any disputes will be settled by the Project Director, who has the authority to approve deviations from this procedure on a case by case basis.

General Procedure:

1. A change will arise due to either a design change or a field adjustment.
2. A change request form will be initiated by the originator and sent to the Change Control Coordinator for processing. All change request package must be submitted to the Coordinator no less than seven (7) working days prior to the meeting. If submitted after this deadline, the CR will be heard at the following meeting. (A copy of the Change Request form is attached for reference. Any questions regarding the Change Request Form shall be referred to the Change Control Coordinator). All change requests must be signed by the cognizant Division Chief prior to submittal to the Change Control Coordinator to show his concurrence that a change is necessary and insure compliance with this procedure. The originator shall indicate his opinion as to schedule impact, Contractor and Consultant cost resulting from the Change Request.

The originator, shall not fill in the area related to backcharges. This will be completed by the Chief of Design & Engineering Division as a recommendation. If the Change Request is taken to a Board meeting, the Board will review and comment on the possibility of backcharges. In that case, the Project Director has final approval authority on backcharges.

The Chief of Design & Engineering shall maintain a file of all potential backcharges for settlement with the consultant prior to Contract close-out. The Chief of Design & Engineering shall place the cognizant consultant on notice of the County's determination of a potential backcharge.

The originator shall prepare an order of magnitude estimate of the contractor and designer costs associated with the Change Request and include it in the CR package. (Detailed Contractor estimates are not required since the CE&I will prepare a detailed control estimate prior to the Change Order Negotiations).

3. In the event that the Chief of Construction or the Chief of Design & Engineering in the case of AWTS, identifies the need for a change of such an urgency as to be critical to the timely completion of the Project, he shall direct the change prior to consultation with the Board. The cognizant Division Chief shall be responsible for promptly presenting the change to the Board and shall be able to justify the urgent nature of his actions.

Before the cognizant Division Chief authorizes a change prior to Board action, the Resident Engineer shall complete a "Directed Field Change" form (See attached form). This form will identify the change, reason for change, potential time and cost impact and must be signed by the RE, County Project Engineer prior to approval by the cognizant Division Chief. This form shall be attached to the subsequently required Change Request package.

4. The Change Control Coordinator, the Manager of Contract Services, under the supervision of the Chief of Project Control, will log in the change request, assign a change request number, determine the priority level for the change request and make copies and distribute them to the

Review Board Members with a memorandum stating the date the Board will meet to discuss the change. The CR package will be distributed for comments/impacts no less than five (5) working days prior to the meeting. The Change Control Coordinator will maintain a suspense file with all pending change request.

The Change Control Board (CCB) shall be composed of the following members:

- Project Director - Chairperson
- Chief of Design & Engineering
- Chief of Construction
- Chief of Project Control
- Chief of Office of Safety and Security
- Assistant Director of Metrorail Services or designated appointee.
- Change Control Coordinator (Non-voting Member)

The priority codes for Change Request are as follows:

Priority Criteria:

Priority 3: No Schedule Impact
No cost Impact
No Impact to Operations and/or
Maintenance

Priority 3 may be approved by the Chief of Design & Engineering, the Chief of Construction or the Project Director. The Board will not have to meet for a Priority 3 change request unless one of the members finds it necessary and informs the Coordinator that a meeting should be arranged.

Priority 2: Cost Impact

Priority 2 must be approved by the Project Director. The board will not have to meet for a Priority 2 change request unless one of the members finds it necessary and informs the Coordinator that a meeting should be arranged.

Priority 1: Safety Impact
Schedule Impact
Impact to Operations

Priority 1 must be approved by the Project Director only, after full review and consideration by the Board Members.

If doubt exists in assigning priority codes, the CCB Coordinator, shall consult with the Chief of Project Control who shall discuss the proposed change request with other Project Division Chiefs and Project Director for input.

5. For a priority 1 change request, the Change Control Coordinator will set a date for the Change Control Board to meet to consider the Change Request, at which time all of the members will bring their comments to be discussed. Meetings will be held every Thursday at 10:30 A.M. unless otherwise announced. At the Board meeting, the Division Chief originating the change request will be allowed to explain the change, after which time all of the board members will be allowed time to present and discuss their concerns. The Board members will receive copies of all change

requests notwithstanding their priority codes after they have been approved for their file. After careful consideration of the views of the Board members, the Project Director makes the final decision.

- A. If a change request is disapproved, the Change Control Coordinator will notify the originator of the Board's decision.
- B. If the change request is approved, the Change Control Coordinator will reproduce and distribute the approved change request and note the approval in the CR log.
- C. All requests for retrieval of conformed documents from document control must include an approved change request number prior to processing. For retrieval of conformed original drawings see procedure No. 015, "Retrieving Controlled Original Drawings".

APPENDIX J

CLAIMS MANAGEMENT PROCEDURE

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APPENDIX J CLAIMS MANAGEMENT PROCEDURE

Issue Date: _____

No. 095

Approved: _____

Revision No. 2

August 10, 1998

Reference:

Change Control Procedure No. 055

Change Order Procedure No. 057

RE Manual

Purpose:

The purpose of this procedure is to minimize the County's claims exposure, insure prompt resolution of all Consultant/Contractor claims, establish proper safeguards and recordkeeping practices consistent with prudent project management principles, provide a standardized method by which Contractor claims are analyzed and negotiated and to define the claims analyst's role in these efforts.

Objective:

It is the policy of the County to minimize claims exposure through specific contract language, design reviews, exploratory utility excavation and relocation of all conflicting utilities and the timely acquisition of all required right-of-way prior to beginning construction. When claims are filed by Contractors, the County intends to resolve them early while facts are still fresh. Those charged with the day-to-day management of the work are required to maintain accurate records such as photographs, inspector daily reports, submittal logs, Notice-of-Potential Claim (NPC) logs, minutes of meetings, schedules and diaries to document all pertinent facts. These documented facts will form the basis of a claims resolution strategy.

Responsibility:

The Chief of Project Control is responsible for the resolution of Contractor claims with support from the appropriate Project Manager (PM) or Division Chief as required.

General Procedure:

If a Contractor or a Consultant (the terms are used interchangeably in this procedure) feels that an act or omission by the County or its agent causes the Contractor to incur additional costs or to experience delays, the Contractor may submit a claim for additional compensation and/or a time extension. The contract documents have specific requirements as to the time set for filing notices of potential claims (NPCs), time limitations for submittal of claims and the documentation necessary to allow the Engineer and/or County to review the claim. The Resident Engineer (RE)/Contracting Officer Representative (COR), either a County employee or a Consultant acting on behalf of the County (the terms are used interchangeably), will immediately acknowledge in writing all Contractor notices of potential claims or claims. All NPCs shall be assigned consecutive numbers for reference and a log of all NPCs shall be kept by the RE/COR. If an NPC is not submitted in sufficient detail to allow the RE/COR to determine what the potential claim entails, the NPC will be returned to the Contractor along with a request for the Contractor to resubmit the NPC with the necessary information. Upon receipt of a clear and specific NPC, the RE/COR shall log the date that the NPC was submitted and monitor the contractual deadline

for submittal of a claim (30 days after the delaying event). If no claim is submitted by the specified deadline, the RE/COR shall notify the Contractor in writing that he has waived his rights under the Contract to submit a claim for the NPC in question.

The procedures for claims administration and management are outlined in the following paragraphs:

CLAIMS ADMINISTRATION PROCEDURE

I. INTRODUCTION

MDT may choose any one of the following options for the purpose of analyzing claims: (1) Charge the resident engineer (RE) with the task of analyzing claims; (2) perform the claims analysis tasks in-house; or (3) secure the services of a dedicated claims consultant to perform the claims analysis work for a particular claim. This decision will be dependent on various factors including, but not limited to the amount being claimed, the complexity of the claim or any combination thereof. In any event, the term “claims analyst” (CA) and “claims consultant” shall be used interchangeably in this procedure when referring to any of the above three possibilities.

The following paragraphs outline the procedures for claims analyst selection, if applicable, and claims analysis for projects administered by the Miami-Dade Transit's Construction Division. This procedure assumes that the claims analyst, if the decision is made to use a dedicated claims consultant, will be selected prior to construction NTP and will be involved in the project throughout its duration. This effort shall be performed under the direction of the MDT Chief of Project Control.

II. BACKGROUND

Claims analyst (CA), if an outside consultant, should be selected prior to construction Notice-to-Proceed (NTP) and should be retained during the performance of the work.

The CA, if a dedicated claims consultant is selected to perform the analysis, should be a firm with a minimum of ten (10) years experience in claims analysis, defense, negotiation, litigation and resolution. The selected firm should have a wide range of experience in different types of construction to include capital transit projects. Prior to beginning their work, the CA will submit a preliminary budget for work to be performed on the project in question for approval by MDT staff. Once the budget is approved, the CA will be directed to begin work on the project. During the performance of the work, the CA will review the Contractor's baseline schedule for contract compliance, analyze MDT's liquidated damages rates and non-technical provisions as required, perform schedule impact analyses for change requests, change notices, Notices of Potential Claims (NPCs), Contractor Drawing Transmittals (CDTs) and any other tasks as may be required. The CA will review the Contractor's monthly schedule updates, and make comments and/ or recommendations as required. The CA will also attend weekly progress meetings and any other meetings which may affect, directly or indirectly, the progress of the work and which may lead to Contractor claims in the future. The CA should also be copied on all correspondence. This will allow the CA to become very familiar with the history of the project and will reduce the time required for project familiarization that would otherwise be required if the consultant was retained later in the project.

III. RECEIPT OF CONTRACTOR CLAIM (REJECTION)

Upon receipt of a claim package from the Contractor, the CA, in consultation with the RE or PM will review the claim for completeness to determine if the claim has been submitted in accordance with the contract documents and has been submitted within the proper contractual time limitations. This process will involve a cursory review by the CA to verify items such as the Contractor's CPMs, documentation of additional costs, proof of delays, correspondence logs, NPCs, submittal logs or any other additional information that is required to analyze the claim. If the claim is found to be lacking in any of the aforementioned areas, the RE or PM will: (1) notify the Contractor in writing of the claim's rejection; (2) return the claim to the Contractor; and (3) provide the Contractor with a detailed explanation, based on the CA's cursory review, listing the lacking information and referencing the appropriate sections of the contract documents pertaining to the reasons for rejection. If the claim has not been submitted within the contractual time limitations, the claim will be rejected and returned to the Contractor without further review.

IV. RECEIPT OF CONTRACTOR CLAIM (ACCEPTANCE)

If the Contractor's claim is found to be complete and submitted in accordance with the contract documents, the RE or PM will assign the claim a log number and title and will log the claim in for control purposes. Copies of the claim will then be forwarded to the CA and the affected Division Chiefs for review and comment. The CA will then perform a thorough technical analysis of the claim. This analysis will be performed in consultation with the RE or PM and any other project and County staff as deemed necessary by the Chief of Project Control and/or the CA.

V. PROCEDURE FOR CLAIMS ANALYSIS (DRAFT/FINAL REPORT)

The CA, after consulting with the Chief of Project Control, will develop a timetable for completing the analysis of the Contractor's claim and for the submission of the CA's report. This will include any travel requests, if applicable, to be approved by the Chief of Project Control prior to any travel. **Upon completion of the analysis, the CA will provide MDT or the PM with a draft report and a cover letter/memo, addressed to the Chief of Project Control, listing general recommendations and findings and signed by the CA's representative-in-charge (RIC), if applicable.** The draft report shall include, but not be limited to: (1) an executive summary; (2) an explanation of the CA's methodology for the analysis; (3) the CA's conclusions; (4) the CA's recommendations and assumptions; and (5) all pertinent supporting information supporting the CA's conclusions and recommendations. All claims requesting a time extension or acceleration costs shall include an analysis of the Contractor's planned, as-built and as-planned CPMs to determine entitlement to time-related claims. The CA's conclusions and recommendations shall include specific negotiation strategies, including recommended entitlement amount and allowable time extensions. All recommendations for time extensions shall identify whether the delay is concurrent, compensable or excusable. Upon receipt of the CA's draft report, the Chief of Project Control and the PM will review the draft report and cover letter/memo and provide the CA with comments as required. The CA will then prepare a **final** report and cover letter/memo and transmit this information to the Chief of Project Control and the PM for distribution and filing.

VI. PROCEDURE FOR PROVIDING CONTRACTOR WITH CA FINAL CLAIM REPORT

Upon receipt of the final claim analysis report from the CA, the PM will draft a letter transmitting the CA's cover letter/memo and report to the Contractor. The Contractor will be given a reasonable

amount of time, as determined by the PM, to respond to the findings in the CA's report. Any public records the Contractor requires to prepare his response, prior to reaching the litigation stage, if applicable, must be requested in a letter addressed to the Project Director.

VII. CONTRACTOR'S RESPONSE

Upon receipt of the Contractor's response, a copy of this response shall be sent to the CA for review and comment. The PM will then schedule a meeting to discuss the CA's findings and the Contractor's response. Attendees to this meeting should include the PM, the Chief of Project Control, the CA or his RIC, if applicable, and any other CA staff as required, the Contractor's staff and claims consultant, if applicable, and any other pertinent staff as deemed necessary by the PM. A qualified individual, as determined by the Chief of Project Control, will be assigned to take minutes of this meeting. In this meeting, the Contractor will be allowed to state his views regarding the CA's findings and to refute these findings if he so desires. Any action items resulting from this meeting will be addressed by project staff, their consultants and the Contractor in a reasonable amount of time agreed to by all parties. After considering these action items and all other applicable factors, including budget, master schedule and impacts to follow-on Contractors, if any, the County, in consultation with the CA, will finalize a negotiating strategy.

VIII. NEGOTIATIONS

The County, with the support of the CA and any other project staff, as deemed necessary by the Project Director, will enter into formal negotiations with the Contractor. (The actual lead in the negotiations is dependent on the magnitude of the claim. However, the County may elect to participate in all negotiations.) All negotiating strategies and offers shall be approved by the Project Director. The FTA Project Management Oversight (PMO) consultant shall be invited to attend all negotiation sessions, if applicable.

IX. AGREEMENT

After successful negotiations and upon reaching an equitable agreement with the Contractor, the County will reduce the agreement to writing in the form of a Change Order in accordance with the Change Order Procedures stipulated in the contract documents. The COR's approval is required on all agreements prior to presentation to the BCC. In the event an agreement with the Contractor is not possible, the Contractor shall diligently continue with the work and exhaust all administrative avenues, such as the "Disputes" provisions included in the contract documents. If necessary, the Contractor will be directed to proceed with the work on a "Force Account"/Time and Material basis.

X. DISPUTES

If the Contractor wishes to contest the decision of the project staff, he must request in writing from the Project Director that the claim follow the disputes provisions of the contract. The disputes provisions allow for the Contractor to present his views to the Contracting Officer. The project staff, supported by MDT consultants as required, will present the staff's recommendation. The Contracting Officer will render an opinion based on his interpretation of the facts.

XI. LIMITED JUDICIAL APPEAL AS ALLOWED UNDER ARTICLE 42

In the event that a resolution to the Contractor's claim cannot be achieved through the contract's disputes provisions, the Contractor has the right to seek limited judicial review as per Article 42. In the

event the Contractor chooses to seek this limited appeal through the appropriate court, the project staff along with the CA will provide support services to the County Attorneys Office (CAO) in preparation for the appeal. This support will include but not be limited to meetings, correspondence, exchanges of information, consultation and any other support service the CAO may require. **After the Contractor has filed his appeal, all contact with the Contractor regarding the claim in question must be made through the County Attorneys Office (CAO). Any requests by the Contractor for public records after the filing of the suit must also be made through the CAO.**

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