



Appendix D.5

LBJ Development Partners Preliminary Project Management Plan for the IH 635 Managed Lanes Project



Table of Contents

CHAPTER 1 PROJECT ADMINISTRATION 1

1.1 Organization 1

 Developer’s Sub-Organizations 2

 D&B Team Organization..... 7

1.2 Personnel..... 10

 Named Key Personnel..... 10

 Responsibilities of Key Management Positions 10

 Responsibilities of Task Managers 15

1.3 Contractors 20

1.4 Project Baseline Schedule..... 21

1.5 Quality Control 22

1.6 Audit 25

1.7 Project Management Plan Update..... 30

1.8 Document Management 30

CHAPTER 2 QUALITY MANAGEMENT 32

2A. Design Quality Management 32

 2A.1 Organization 33

 2A.2 Personnel 36

 2A.3 Offices and Equipment 41

 2A.4 Contractors..... 41

 2A.5 Interfaces 43

 2A.6 Environmental 44

 2A.7 Procedures..... 48

 2A.8 Quality Control..... 50

 2A.9 Audit 55

 2A.10 Document Management 56

2B. Construction Quality Management 59

 2B.1 Organization 59



2B.2	Personnel	61
2B.3	Offices and Equipment	66
2B.4	Contractors	67
2B.5	Interfaces	67
2B.6	Procedures	68
2B.7	Quality Control.....	76
2B.8	Audit	86
2B.9	Document Management	89
2C.	Operations Quality Management.....	91
	Introduction.....	91
	Quality Policy.....	95
	Commitment	96
	Definitions.....	96
	References and Standards.....	98
2C.1	Organization	103
2C.2	Personnel	107
2C.3	Procurement.....	110
2C.4	Offices and Equipment	110
2C.5	Contractors.....	110
2C.6	Interfaces	111
2C.7	Environmental	113
2C.8	Schedule	114
2C.9	Complaints	114
2C.11	Traffic and Ridership	116
2C.12	Procedures.....	121
2C.13	Quality Control.....	126
2C.14	Audit	131
2C.15	Performance Standards	131
2C.16	Document Management	132
2C.17	Response to Maintenance.....	133



2C.18	User Satisfaction	133
2C.19	Emergency Response	134
2C.20	Toll Operations	136
2D.	Maintenance Quality Management.....	138
	Definitions.....	138
2D.1	Organization.....	140
2D.2	Personnel.....	145
2D.3	Procurement.....	148
2D.4	Offices and Equipment.....	148
2D.5	Contractors.....	149
2D.6	Interfaces	149
2D.7	Environmental	151
2D.8	Schedule	151
2D.9	Complaints	151
2D.11	Traffic and Ridership	153
2D.12	Procedures.....	153
2D.13	Quality Control.....	159
2D.14	Audit.....	164
2D.15	Performance Standards	164
2D.16	Document Management	165
2D.17	Response to Maintenance.....	166
2D.18	User Satisfaction	187
2D.19	Emergency Response	188
2D.20	Toll Operations.....	190
2E.	Winter Service Plan.....	191
	Definitions.....	191
	References and Standards.....	193
	Systems and Procedures	197
	Roles and Responsibilities	197
	Plan-Specific Procedures	199



Operations.....	200
Escalation and Area Contingency Plans.....	205
Weather Forecasting	206
Records	207
Mutual Aid	208
Review Procedures	208
Road Weather Information System (RWIS).....	209
Winter Strategy.....	209
CHAPTER 3 ENVIRONMENTAL MANAGEMENT.....	211
A. Design and Construction Phase	211
3.1 Organization.....	211
3.2 Environmental Contact Tree.....	217
3.3 Personnel.....	218
3.3 Contractors.....	219
3.5 Environmental	224
3.6 Quality Control.....	229
3.7 Audit.....	231
3.8 Document Management	232
B. Operations and Maintenance Phase.....	233
Systems and Procedures	242
Environmental Roles and Responsibilities.....	242
Comprehensive Environmental Protection Plan	244
Pollution Response Plan	250
CHAPTER 4 PUBLIC INFORMATION AND COMMUNICATIONS	252
Definitions.....	253
References and Standards.....	255
4.1 Organization	258
4.2 Personnel.....	260
4.3 Offices and Equipment	266
4.4 Contractors	266



4.5	Interfaces	266
	Liaison with the Public, Media and Other Customer Groups / Coordination with Stakeholders	266
4.6	Procedures	276
4.7	Quality Control	276
	Quality Control Procedures	276
	Ensuring Accuracy, Completeness and Quality of Submittals	276
	Continuous Improvement	276
4.8	Audit	276
	Developer’s Representative	276
	Supporting Quality Management Staff.....	276
4.9	Document Management	276
	Maintenance of Records.....	276
	Document Management Procedures	277
CHAPTER 5:	SAFETY	278
5.1	General Safety Policies and Procedures – Design and Construction	278
5.1.1.	Health and Safety Policy Statement	278
5.1.2	Safety Management	279
5.1.3	Safety Program	280
5.1.4	Mandatory Written Programs.....	281
5.1.5	The D&B Team - Written Programs.....	288
5.1.6	General Safety and Health	291
5.1.7	Basic Safety Rules	294
5.1.8	Special Programs	299
5.1.9	The D&B Team - Training Programs	308
5.2	General Safety Policies and Procedures – Operations and Maintenance	310
5.2.1	Purpose of Plan.....	310
5.2.2	Definitions	311
5.2.3	References and Standards.....	313
5.2.4	Systems and Procedures	318
5.2.5	Roles and Responsibilities	318



5.2.8	Safety-Specific Roles and Responsibilities.....	320
5.2.9	Hazard Identification & Risk Assessment.....	322
5.2.10	Legal and Other Requirements	323
5.2.11	Health and Safety Objectives	323
5.2.12	Training and Awareness.....	324
5.2.13	Performance Measurement and Monitoring	326
5.2.14	Accident and Near Miss Reporting and Investigation	326
5.3	Incident Notification Procedures	327
	Exhibit 5.1: Trench/Excavation Safety Plan.....	328
CHAPTER 6	COMMUNICATIONS MANAGEMENT	333
6.1	Communications Policies and Procedures.....	333
6.1.1	Purpose of Plan.....	333
6.1.2	Definitions	335
6.1.3	References and Standards.....	337
6.1.4	Systems and Procedures	340
6.1.5	Roles and Responsibilities	340
6.1.6	Internal Communication Channels	341
6.1.7	External Communications Channels	343
CHAPTER 7	ROW ACQUISITION MANAGEMENT.....	346
7.1	Organization	346
7.2	Personnel.....	346
7.3	Contractors	347
7.4	Interfaces	347
7.5	Relocation	349
7.6	Environmental	349
7.7	Schedule	350
7.8	Procedures.....	350
	Corridor Preservation Techniques.....	352
7.9	Quality Control	352
	Quality Control Procedures	352



Ensuring Accuracy, Completeness and Quality of Submittals	352
Continuous Improvement	353
7.10 Audit	353
7.11 Document Management	353
Maintenance of Records.....	353
Document Management Procedures	354
CHAPTER 8 COST MANAGEMENT	355
8.1 Cost Management and Reporting Procedures.....	355
CHAPTER 9 D&B TEAM PROCESS PROCEDURES MANUAL	357
1 Management Review	357
1.1 Purpose and Scope.....	357
1.2 Definitions	357
1.3. References.....	357
1.4. Responsibilities (for this procedure)	357
1.5. Procedure.....	358
1.6 Records.....	359
2 Design & Build Contract Review	359
2.1 Purpose and Scope.....	359
2.2 Definitions	359
2.3 References.....	360
2.4 Responsibilities (for this procedure)	360
2.5 Procedure.....	360
2.6 Further Design and Build Agreement Reviews	361
3 Documents and Data Control	362
3.1 Purpose and Scope.....	362
3.2 Definitions	363
3.3 References.....	363
3.4 Responsibilities	363
3.5 Procedure.....	364
4 Procurement (Materials and Supplies)	365



4.1	Purpose and Scope.....	365
4.2	Definitions/Acronyms.....	365
4.3	References.....	365
4.4	Responsibilities	366
4.5	Procedure.....	366
4.6	Records.....	367
5	Procurement (Subcontractor).....	367
5.1	Purpose and Scope.....	367
5.2	Definitions	367
5.3	References.....	368
5.4	Responsibilities (for this procedure)	368
5.5	Subcontractor Procedure	368
5.6	Records.....	370
6	Traffic Management.....	370
6.1	Purpose and Scope.....	370
6.2	Definitions	371
6.3	References.....	371
6.4	Responsibilities (for this procedure)	371
6.5	Procedure.....	372
7	Procurement (Design).....	374
7.1	Purpose and Scope.....	374
7.2	Definitions	374
7.3	References.....	374
7.4	Responsibilities (for this procedure)	375
7.5	Procedure.....	375
8	Construction Management	377
8.1	Purpose and Scope.....	377
8.2	Definitions	377
8.3	References.....	378
8.4	Responsibilities (for this procedure)	378



8.5	Procedure.....	378
9	Control of Non-Conforming Products	382
9.1	Purpose and Scope.....	382
9.2	Definitions	382
9.3	References.....	383
9.4	Responsibilities (for this procedure)	383
9.5	Procedure.....	383
10	Corrective and Preventative Action.....	388
10.1	Purpose and Scope.....	388
10.2	Definitions	388
10.3	References.....	388
10.4	Responsibilities (for this procedure)	389
10.5	Procedure.....	389
11	Internal Audits	391
11.1	Purpose and Scope.....	391
11.2	Definitions	391
11.3	References.....	392
11.4	Responsibilities (for this procedure)	392
11.5	Procedure.....	392
12	Developer Complaints and Compliments.....	396
12.1	Purpose and Scope.....	396
12.2	Definitions	396
12.3	References.....	396
12.4	Responsibilities (for this procedure)	396
12.5	Procedure.....	396
12.5	Records.....	397
13	Health and Safety	397
13.1	Purpose and Scope.....	397
13.2	Definitions	398
13.3	References.....	398



13.4	Responsibilities (for this procedure)	398
13.5	Procedure.....	398
14	Control of Quality and Environmental Records.....	400
14.1	Purpose and Scope.....	400
14.2	Definitions	400
14.3	References.....	400
14.4	Responsibilities (for this procedure)	400
14.5	Procedure.....	400
14.6	Records.....	401
15	Training.....	402
15.1	Purpose and Scope.....	402
15.2	Definitions	402
15.3	References.....	402
15.4	Responsibilities (for this procedure)	403
15.5	Procedure.....	403
16	Utility Relocation.....	403
16.1	Purpose and Scope.....	403
16.2	Select Definitions.....	403
16.3	References.....	408
16.4	Responsibilities (for this procedure)	408
16.5	Procedure.....	409
17	Quality Assurance Management.....	412
17.1	Purpose and Scope.....	412
17.2	Definitions	412
17.3	References.....	414
17.4	Responsibilities (for this procedure)	414
17.5	Procedure.....	415
18	Geotechnical Investigation.....	418
18.1	Purpose and Scope.....	418
18.2	Definitions	418



18.3	References.....	418
18.4	Responsibilities (for this procedure)	419
18.5	Procedure.....	419
18.6	Records.....	420
19	Aesthetics and Landscaping.....	420
19.1	Purpose and Scope.....	420
19.2	Definitions	420
19.3	References.....	420
19.4	Responsibilities (for this procedure)	421
19.5	Procedure.....	421
19.6	Records.....	422
CHAPTER 10	INCIDENT MANAGEMENT PLAN	423
A.	General Information	423
A.1	Purpose of Plan.....	423
A.2	Definitions	424
A.3	References and Standards.....	426
B.	Plan-Specific Information	430
B.1	Roles and Responsibilities	430
B.2	Plan-Specific Procedures	432

Chapter 1: Project Administration

CHAPTER 1 PROJECT ADMINISTRATION

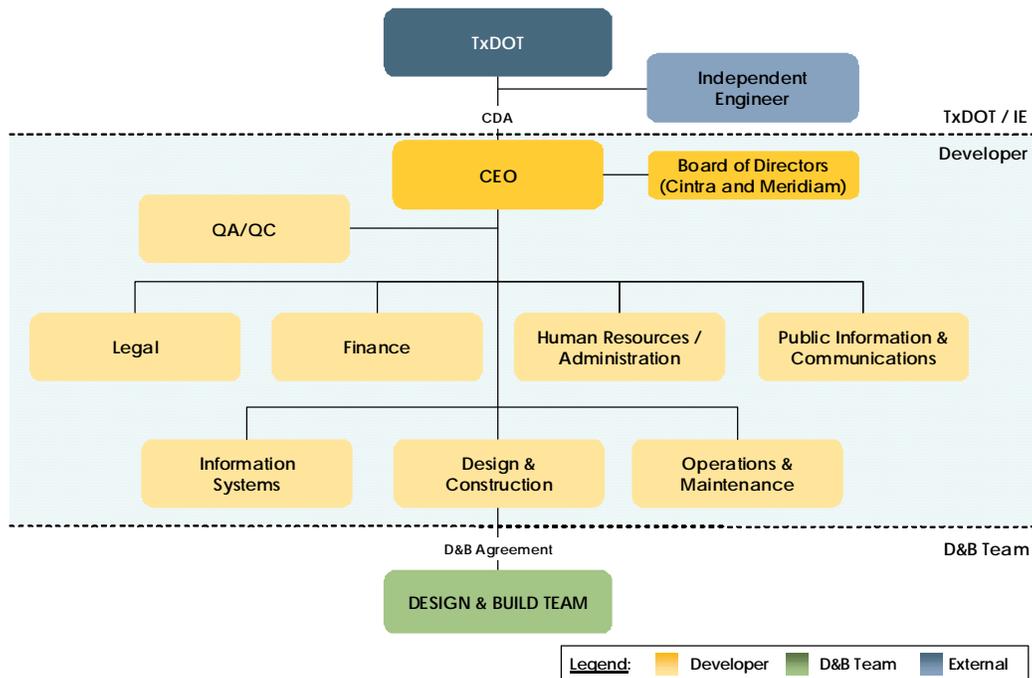
1.1 Organization

LBJ Development Partners will establish a Development Organization (Developer) that will ensure a fast, safe, and reliable transportation route serving millions of commuters and various industries and geographical markets. To achieve these goals, the organization's management will be divided into the following eight areas of responsibility:

- | | |
|-------------------------------------|--|
| 1. Quality | 5. Information Systems |
| 2. Design and Construction (D&C) | 6. Human Resources and Administration |
| 3. Operations and Maintenance (O&M) | 7. Legal |
| 4. Finance | 8. Public Information and Communications |

The leader of each of these areas of responsibility will report directly to the CEO, as shown in Figure 1.

Figure 1: Developer's Organization Chart – Management



This organization will be responsible for maintaining continuous, 24-hour-per-day, 365-day-per-year operations of the highest quality, consistent with the best toll road management practices and the Terms and Conditions of the Comprehensive Development Agreement (CDA). In addition, it will direct, coordinate, evaluate, and amend, when necessary, the responsibilities of the Developer's sub-organizations. This organizational structure was designed to implement the project from its Effective Date to the End of Term and will include eight sub-organizations corresponding to each area of responsibility outlined above. The details of each sub-organization are shown below.

Chapter 1: Project Administration

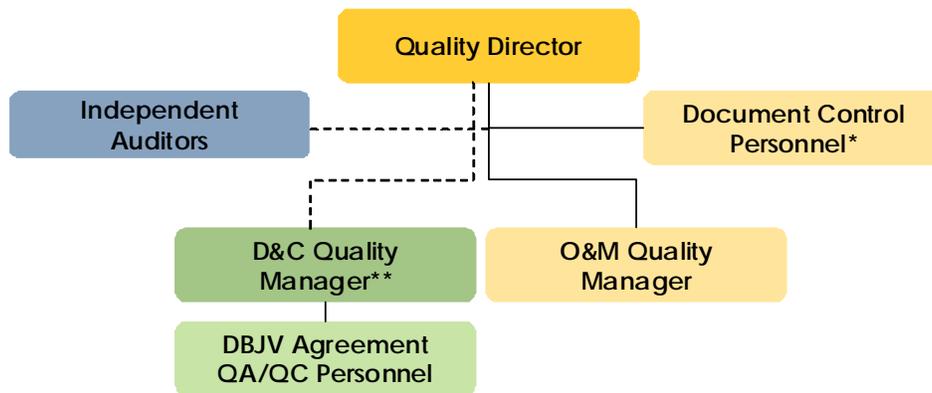
Developer’s Sub-Organizations

Quality

Active throughout the duration of the project, this sub-organization will develop and enforce procedures, carry out audits and impose corrective action to ensure that all phases of the IH 635 Managed Lanes Project adhere to Developer quality standards, legal standards and the CDA. This sub-organization also includes dedicated safety personnel who will conduct safety training and audits and enforce safety-related corrective action.

As shown in Figure 2, The Quality Director will lead the Quality sub-organization, which is comprised of personnel dedicated to design quality, construction quality and O&M quality.

Figure 2: Developer’s Sub-Organization Chart – Quality



**Two Document Control Personnel - one for construction only*

*** The D&C Quality Manager reports directly to the Construction Manager, with dotted-line reporting to the Quality Director*



Design & Construction (D&C)

Active only during the initial construction period, this sub-organization ensures that the Design & Build Team (D&B Team) builds all segments of the Project on time and in compliance with quality requirements. Responding to the nature of the agreement between the Developer and the D&B Team, this sub-organization will be active only during the Design and Construction Phase, to take place from Effective Date to TxDOT’s Final Acceptance of all Segments. Among the main functions of this sub-area, the most important will be to advise the CEO on the progress of the work carried out by the D&B Team and to ensure that this work is in full compliance with the CDA.

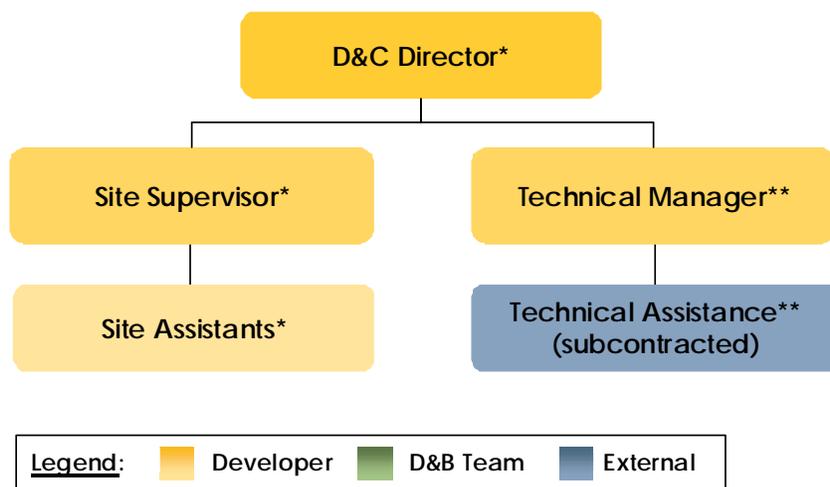
The D&C Director will oversee the performance of the D&B Team, ensure adherence to Developer quality standards, legal standards, and the CDA. Figure 3 shows how the D&C sub-organization will include the following

Chapter 1: Project Administration

essential staff who will report to the D&C Director. As shown in Figure 3, the sub-organization defined to oversee the performance of the D&B Team will consist of the following essential Developer employees reporting to the D&C Director.

- Technical Manager
- Site Supervisor / Assistants
- Technical Assistance Group (subcontracted)

Figure 3: Developer's Sub-Organization Chart – Design and Construction



(*) Active only during the initial construction period

(**) Technical Manager and Technical Assistance Group will also be active during O&M (Renewal work)

Operations and Maintenance (O&M)

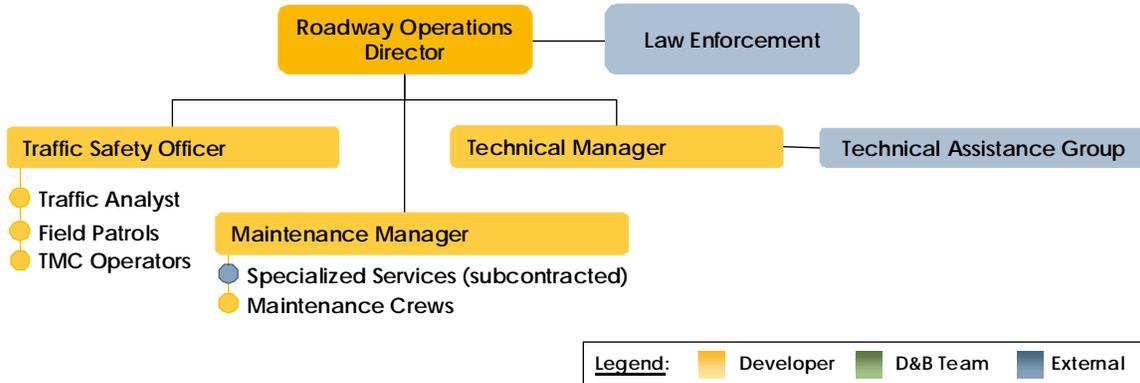
This sub-organization will be responsible for operating and maintaining the IH 635 Managed Lanes Project in a manner that ensures safe, well-maintained roadway facilities, smooth traffic operations and prompt response to accidents as well as compliance with the CDA Performance Requirements. The O&M sub-organization will define and coordinate the necessary work to accomplish these tasks, between in-house personnel and subcontractors.

The Roadway Operations Director (ROD) will lead the O&M sub-organization. Figure 4 shows essential staff who will report to the ROD.

- Traffic Safety Officer
- Technical Manager
- Maintenance Manager
- Technical Assistance Group (subcontracted)

Chapter 1: Project Administration

Figure 4: Developer’s Sub-Organization Chart – Operations and Maintenance

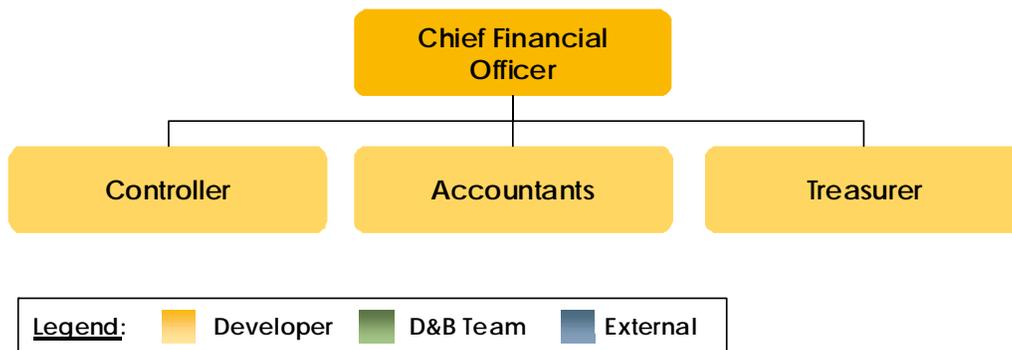


Finance

Active throughout the duration of the Project, this sub-organization will be responsible for overall financial management and control of the IH 635 Managed Lanes Project, including controlling the finances of the concession, managing budgets and forecasts and ensuring that working capital and operating cash flow are optimized. As shown in Figure 5, essential employees of the Finance sub-organization, reporting to the CFO include:

- Controller
- Treasurer
- Accountants

Figure 5: Developer’s Sub-Organization Chart - Finance



Information Systems

Because open toll roads rely heavily on sophisticated technological equipment, a strong Information Systems group is essential. This sub-organization will ensure that all systems are operational at all times, providing for the ongoing

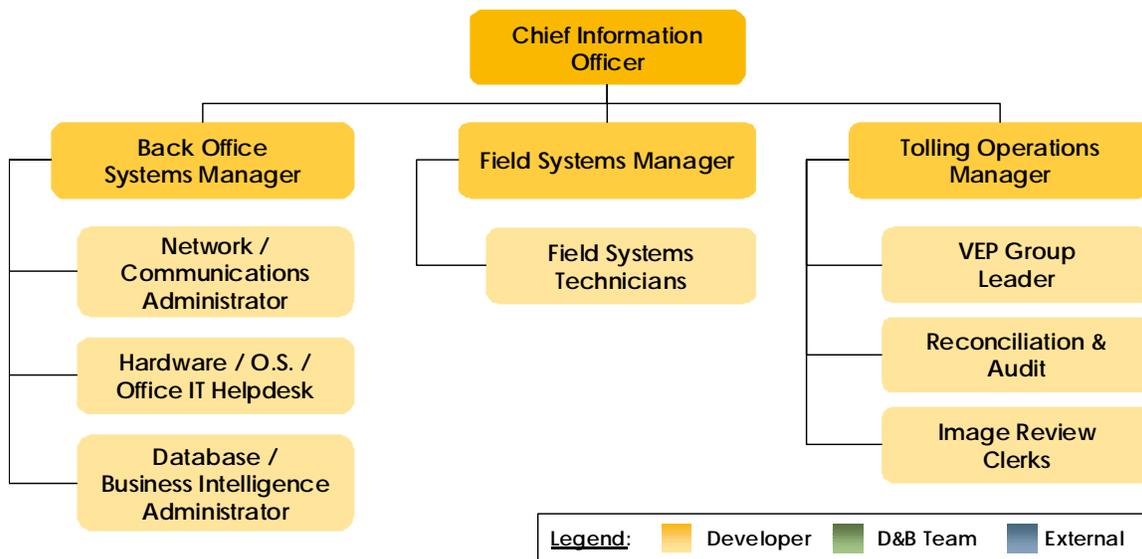
Chapter 1: Project Administration

O&M of the toll, ITS and communication systems and hardware. This sub-organization will define and coordinate the necessary work to accomplish these tasks, between in-house personnel and subcontractors.

The Chief Information Officer (CIO) will lead the Information Systems sub-organization, ensuring that all systems are operational, and that information to be transferred to NTTA and customers is available and accurate. As shown in Figure 6, the Systems sub-organization includes three key positions reporting to the CIO:

- Tolling Operations Manager
- Field Systems Manager
- Back Office Systems Manager

Figure 6: Developer's Sub-Organization Chart – Information Systems

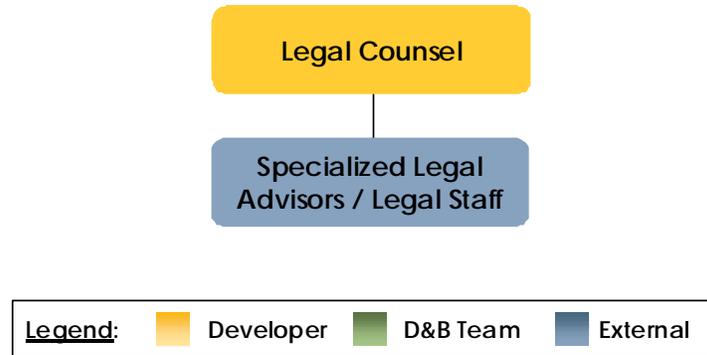


Legal

This sub-organization will advise Developer management on all legal issues related to the Project. The Legal Counsel will liaise with management of all areas of responsibility to ensure legal compliance. As shown in Figure 7, the Developer's Legal Counsel will be supported by subcontracted legal advisors and other legal support as needed.

Chapter 1: Project Administration

Figure 7: Developer’s Sub-Organization Chart – Legal

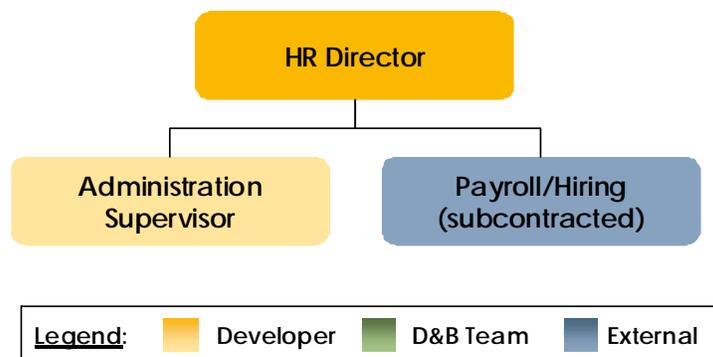


Human Resources and Administration

This sub-organization encompasses all regular support functions typical of any business, including benefits administration, recruiting, and training. This department will also oversee building administration and will provide administrative and clerical staff to support the Developer’s other sub-organizations. As shown in Figure 8, the Human Resources/Administration sub-organization will include the following personnel:

- Human Resources Director
- Administration Supervisor
- Payroll / Hiring (subcontracted)

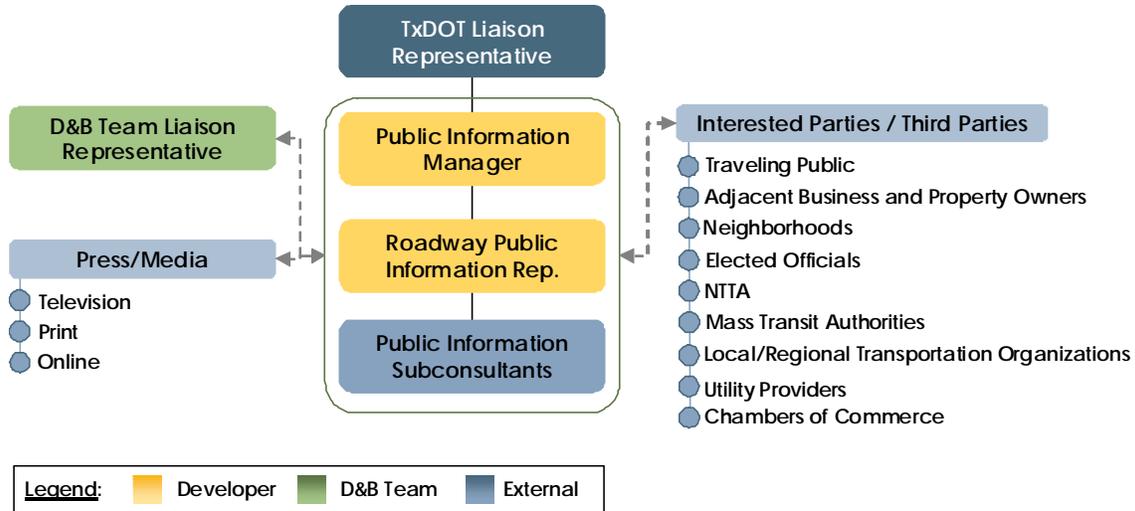
Figure 8: Developer’s Sub-Organization Chart – Human Resources / Administration



Public Information and Communications

This sub-organization will develop and implement the Public Information and Communications Plan, coordinate public meetings, liaise with all relevant stakeholders and maintain communications materials such as the project website and informational brochures. As shown in Figure 9, the Public Information Manager will lead this sub-organization, supported by subconsultants.

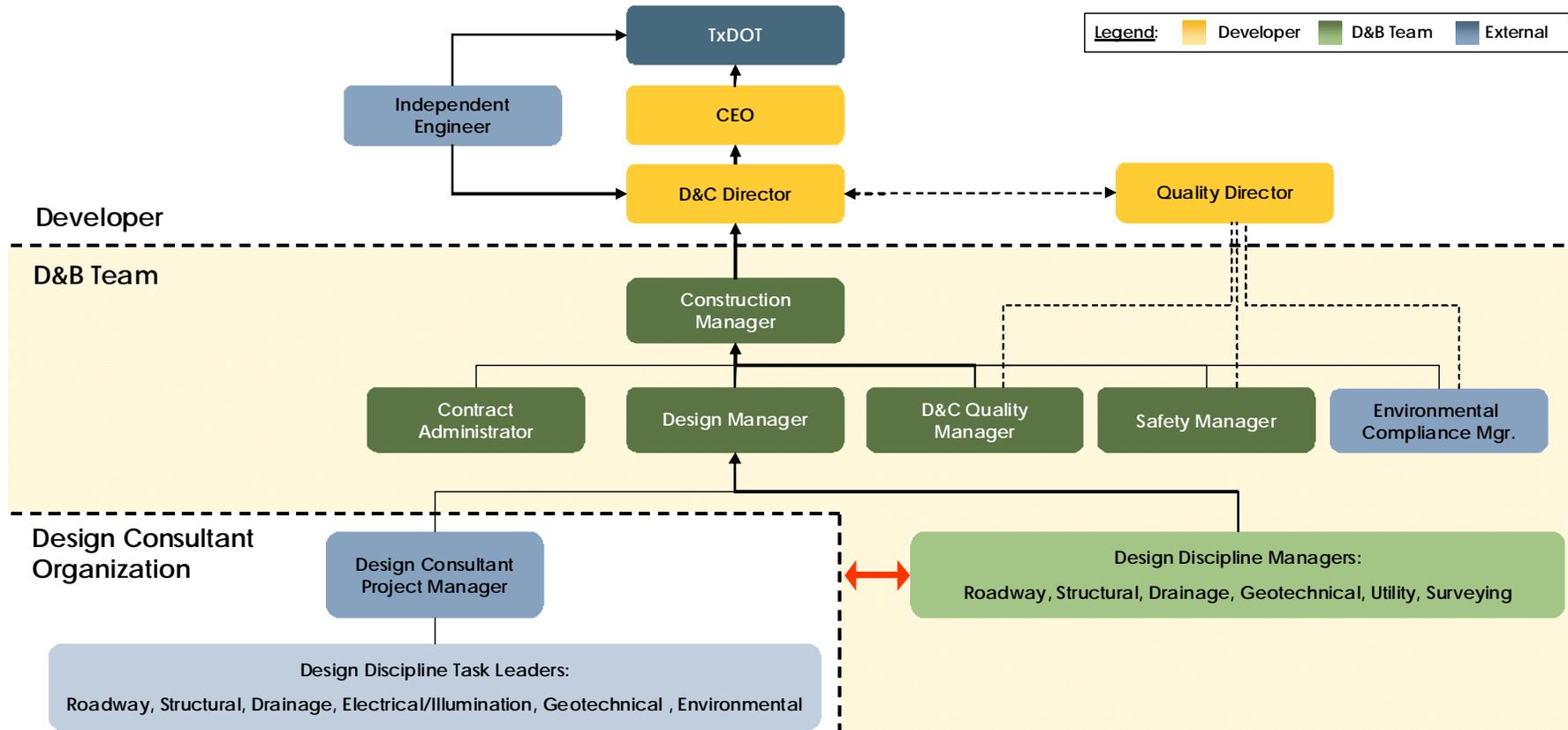
Figure 9: Developer’s Sub-Organization Chart – Public Information



D&B Team Organization

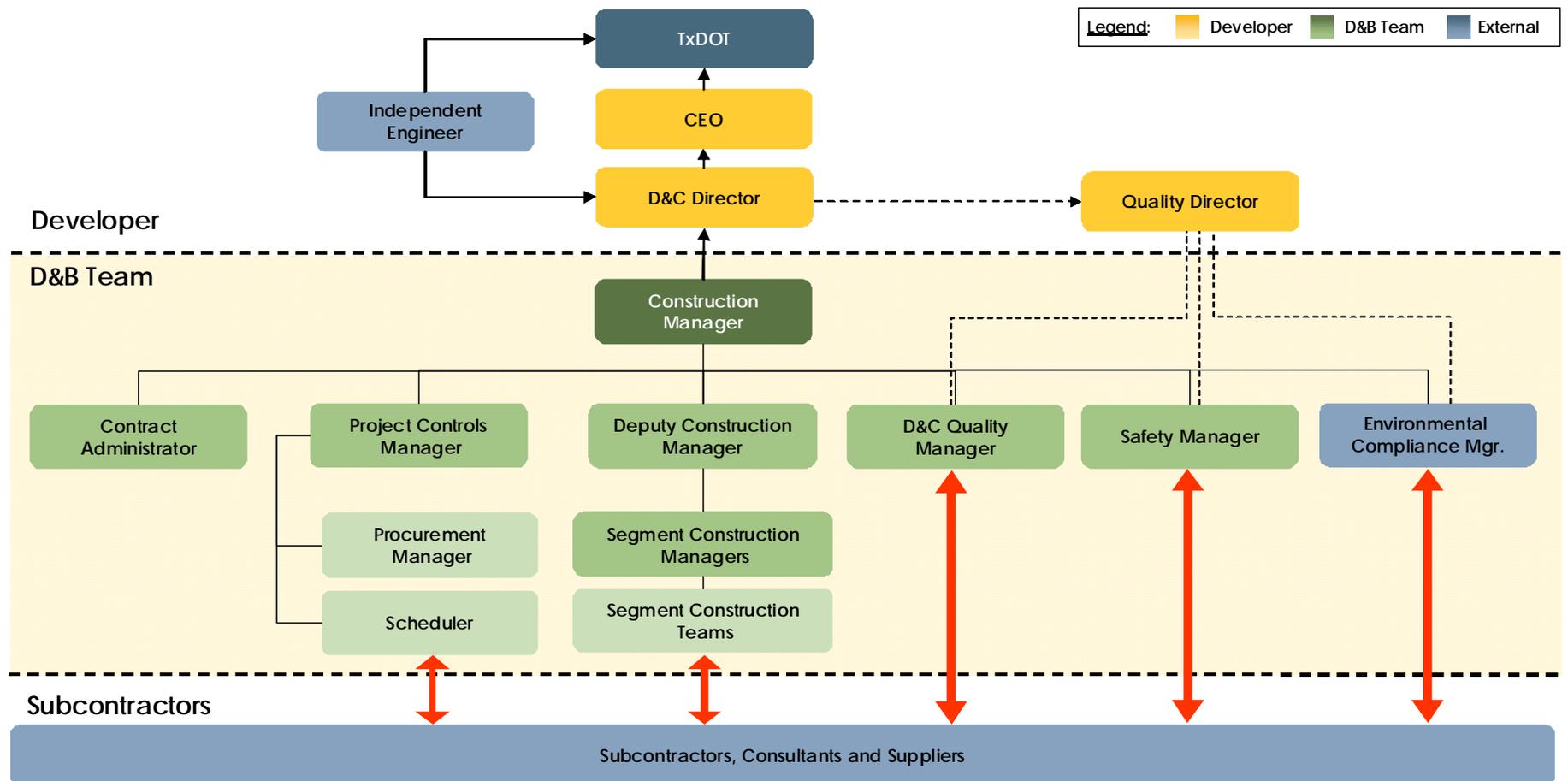
The organizational structures to be implemented by the D&B Team from Effective Date to TxDOT’s Final Acceptance of all Segments are shown in Figure 10 and Figure 11.

Figure 10: D&B Team's Design Phase Organization Chart



Chapter 1: Project Administration

Figure 11: D&B Team's Construction Phase Organization Chart



Chapter 1: Project Administration

1.2 Personnel

Named Key Personnel

The following chart shows how the currently approved Key Personnel fit into the Developer's organization.

Table 1: Key Personnel

CDA	Developer's PDP	Name	% of Time
CEO	Chief Executive Officer (Developer)	Fernando Redondo	100%
Financial Manager	Chief Financial Officer (Developer)	Massimo Fiorentino	100%
Public Information Manager	Public Information Manager (Developer)	Patrick Rhode	100%
Design Manager	Design Manager (D&B Team)	Fidel Saenz de Ormijana	100%
Construction Manager	Construction Manager (D&B Team)	Jose Carlos Esteban Blein	100%
Quality Manager	Design and Construction Quality Manager (D&B Team)	Esteban Trigueros Castaño	100%
	O&M Quality and Environmental Manager (Developer)	Jason Sipes	100%
Environmental Compliance Manager	Environmental Compliance Manager (D&B Team)	William Proctor	100%
Operations Manager	Roadway Operations Director (Developer)	Javier Martinez Ordóñez	100%
Maintenance Manager	Maintenance Manager (Developer)	Belen Marcos	100%

Responsibilities of Key Management Positions

Chief Executive Officer (CEO)

The CEO will lead the IH 635 Managed Lanes Project management team and will be fully responsible for the execution of all work, including design, construction and O&M work. The CEO will begin work between Conditional Award and Effective Date. The CEO will:

- Bear ultimate responsibility for complying with the Developer's operational and financial objectives;
- Manage the Project environment by coordinating the design, construction, operations, commercial and financial aspects of the Project;

Chapter 1: Project Administration

- Reviewing and approving the Project Management Plan;
- Ensure that quality and environmental objectives are achieved and attend Management Reviews to assess the effectiveness of the Quality Management System;
- Recruit and supervise the Developer's management staff;
- Serve as the principal point of contact on behalf of the Developer in all matters responding to the IE, TxDOT or its Authorized Representatives;
- Be the ultimate decision-maker, on behalf of the Developer, in emergency situations
- Report regularly to the Board of Directors.

Chief Financial Officer

The CFO will begin work at Effective Date. The CFO will:

- Establish the finance function and ensure that the equipment, resources and skills are present to provide the set of necessary services;
- Manage accounts and financial functions to ensure that project financial accounting follows U.S. GAAP;
- Advise the CEO on any financial issues that might affect roadway operations;
- Control the finances of the concession;
- Ensure optimization of working capital and operating cash flow;
- Manage compilation and review of annual budgets and forecasts;
- Manage contracts with financial, legal and tax advisors and consultants and approve payments for services provided;
- Approve all quality and environmental documents that may impact financial issues;
- Take part in Management Reviews to assess the effectiveness of the Quality Management System.
- Prepare and submit financial statements, such as income statements, balance sheet, cash flow statement and provide input as requested on these issues
- Ensure that records are properly maintained and that continuous and regular reports of financial information available.

Public Information Manager

The Public Information Manager will lead the Public Information sub-organization, handle all public statements and will also:

- Lead the production, implementation, audit, quality control/quality assurance and update of the Public Information and Communications Plan (PICP);
- Advise the CEO on the status of the PICP;
- Serve as a liaison with relevant stakeholders, including government authorities, relevant persons, interested parties, the public, the press and the media;
- Advise TxDOT's Nominated Liaison Representative on public relations issues;

Chapter 1: Project Administration

- Arrange meetings with TxDOT, landowners, resident groups and other parties regarding traffic control, construction and other public relations matters;
- Review and approve the relevant sections of any quality and environmental documents that may impact public relations, informational issues and press-related matters;
- Facilitate communication between the Developer and TxDOT personnel, including TxDOT's Public Information Officers and Customer Groups;
- Interact with affected Customer Groups and represent the interests of the Project at associated public meetings and other formal and informal occasions;
- Develop a first-hand feel for public concerns and reactions regarding the Project and the Public Information Program, and incorporate that knowledge into improving the PICP
- Serve as a liaison with the person assigned to coordinate the initial response to any Incident or Emergency and any Governmental Entity that may have jurisdiction in an Emergency.

Design and Construction (D&C) Director

The D&C Director will lead the Design & Construction sub-organization, overseeing the D&B Team's activities under the D&B Agreement. The D&C Director will begin work at Effective Date and the position will be discontinued upon TxDOT's Final Acceptance of all Segments. The D&C Director will:

- Advise the CEO on the progress of the work carried out by the D&B Team to fulfill the construction program;
- Supervise the D&B Team to ensure that best efforts are made to achieve all scheduled completion dates and ensuring that all work carried out is in full compliance with the CDA;
- Approve all quality and environmental documents that may impact design and build issues;
- Review inspection programs for the different design and build phases and assist in ongoing development of the Developer Supervision Plan;
- Meet with the QA/QC Assistant for the management of queries and complaints as appropriate and manage the implementation of any corrective actions arising from audits;
- Attend Management Reviews to assess the effectiveness of the Quality Management System;
- Approve Progress Payments for work performed during each period by the D&B Team;
- Approve, if appropriate, the design variations proposed by the D&B Team so they are in compliance with TxDOT standards
- Serve as a liaison with TxDOT's Representatives, the IE, D&B Team and any other third parties in relation to any issues that fall within his or her responsibilities.

Design Manager

The Design Manager is responsible for managing the Design Team. He will:

- Ensure that specific packages for design and related specifications meet the requirements of the CDA and D&B Agreement;

Chapter 1: Project Administration

- Ensure that the design is functional and fulfils the specified criteria for safety, constructability, quality, cost-effectiveness and environmental guidelines within the project schedule;
- Coordinate interdisciplinary requirements within the various Design Consultants and require Design Consultants to certify that the design products have been completed in accordance with specified requirements;
- Provide technical assessment of proposers prior to award of any procurement package related to design or professional services;
- Provide engineering support to the project team to provide technical input during the procurement process and for reviewing change proposals;
- Review design packages from Design Consultants prior to issue for construction
- Establish an effective design review process to ensure that interdisciplinary requirements have been completed prior to issue for procurement and, subsequently, for construction.

Construction Manager

The Construction Manager is responsible for managing all construction-related aspects of the Project. The Construction Manager will:

- Take overall responsibility for site administration and coordination of site operations, site surveying and control; quality control and testing;
- Perform progress monitoring and verification of quality and quantity of work completed by subcontractors,
- Manage health and safety for field operations;
- Manage construction budgets and cost control measures;
- Affirm that work has been completed in compliance with the specified requirements upon completion of each construction phase;
- Ensure that all pertinent construction records are collected and prepared for archiving
- Assess bidders' competency to perform the work prior to award of any procurement package related to construction/installation.

Quality Director

The Quality Director will lead the Quality sub-organization, which is comprised of personnel dedicated to design quality, construction quality and operations and maintenance quality. The Quality Director will be active throughout the duration of the Project. The Quality Director will:

- Oversee quality management personnel dedicated to design, construction, operations and maintenance, as well as the Safety Manager and document control personnel;
- Advise the D&C Director, ROD, Environmental Compliance Manager and Safety Manager on implementing appropriate quality procedures and corrective actions within their areas of responsibility;
- Lead periodic Management Reviews to assess the effectiveness of the Quality Management System;
- Advise the CEO on audit results, corrective action and changes to quality procedures;

Chapter 1: Project Administration

- Review Subconsultants' quality plans and procedures for compatibility with the Developer's quality plans;
- Ensure that appropriate personnel receive training on the Quality Management System and safety;
- Update the Quality Management section of the Project Management Plan as necessary
- Liaise with external/independent quality auditors to schedule audits and review results.

Environmental Compliance Manager

The Environmental Compliance Manager will:

- Direct the work of the Environmental Compliance Team;
- Review required environmental submittals for quality and accuracy;
- Monitor, document and report environmental compliance of the work
- Report any violations or noncompliance that represent an imminent danger to human health or the environment to TxDOT and the Developer immediately
- Report appropriate recommendations for corrective action to TxDOT and the Developer, including stoppage of Work
- Review and submit all necessary environmental documentation and monitoring reports to appropriate Governmental Entities and/or TxDOT

Roadway Operations Director (ROD)

The ROD will lead the Roadway Operations sub-organization, which is responsible for roadway maintenance, traffic operations, emergency response and winter operations. The ROD will begin work between Conditional Award and Effective Date. The ROD will:

- Advise the CEO on the general operation of the facility;
- Supervise day-to-day routine and preventive maintenance;
- Manage emergency situations on behalf of the Developer;
- Supervise roadway renewal projects performed during regular operation of the facility to ensure that best efforts are made to meet scheduled completion dates;
- Meet with the QA/QC Assistant regarding roadway-related management of queries and complaints as appropriate and managing the implementation of any corrective actions arising from audits;
- Manage roadway contracts with external providers of materials and services, ensuring that subcontractor work is carried out in full compliance with the CDA, and approve progress payments for work performed during each period by subcontractors;
- Approve all quality and environmental documents that may impact operational issues;
- Attend Management Reviews to assess the effectiveness of the Quality Management System;
- Coordinate with the O&M Quality and Environmental Manager and Technical Manager to optimize operational performance
- Serve as a liaison between the Developer and TxDOT's Representatives, the IE, the D&B Team and any other third parties in relation to roadway issues.

Maintenance Manager

The Maintenance Manager will:

- Manage maintenance crew and field patrol members;
- Manage maintenance budgets;
- Ensure that all maintenance crew and patrol members are trained in safety, environmental compliance, recognizing category defects and appropriate procedures for emergency incident situations
- Develop all required plans, cooperating where appropriate with local responsible entities.

Responsibilities of Task Managers

Design and Construction

Technical Manager (Developer)

Reports to: D&C Director

Required Qualifications and Experience:

- Bachelor's Degree or higher in Civil Engineering or closely related discipline
- Texas P.E. license holder preferred
- At least five years of experience with TxDOT highway projects, as a CEO or Task Leader
- At least three years of experience in direct supervision of design engineers.
- Experience on projects developed under a Quality Control Plan
- Experience in consulting with agencies, municipalities, public interest groups, and the public.
- Experience in obtaining permits and approvals related to civil work according to Texas standards.

Design Consultant CEO (D&B Team Subconsultant)

Reports to: Design Manager

Required Qualifications and Experience:

- Ten years' minimum experience in transportation design.
- Five years' minimum supervisory experience.
- Bachelor's degree or equivalent in Civil Engineering or closely related discipline
- Texas P.E. license preferred
- Experience on projects developed under a Quality Control Plan

Segment Construction Managers (D&B Team / Subcontractors)

Report to: Construction Manager

Required Qualifications and Experience:

- At least five years of experience in construction supervision for TxDOT highway projects
- Excellent supervisory and communications skills
- A strong record of, and commitment to, jobsite safety

Deputy Design Manager (D&B Team Subconsultant)

Reports to: Design Manager

Required Qualifications and Experience:

- Bachelor's Degree or higher in Civil Engineering or closely related discipline
- Texas P.E. license preferred
- At least 10 years of experience in civil engineering design
- At least five years of experience with TxDOT highway projects, as a CEO or Task Leader
- Previous supervisory experience
- Excellent communication and organizational skills
- Experience on projects developed under a Quality Control Plan

Utility Manager (D&B Team)

Reports to: D&C Director

Required Qualifications and Experience:

- Bachelor's degree in a relevant field of study
- Solid general knowledge and experience of major aspects of design and construction projects including highways, bridges, utilities.
- Four years of relevant experience in coordinating and solving complex utility adjustments on highway improvement projects.
- Excellent communication and organizational skills
- Experience in coordinating activities in a design-build environment.

Roadway Design Manager (D&B Team)

Reports to: Design Manager

Required Qualifications and Experience:

- Bachelor's Degree or higher in Civil Engineering or closely related discipline
- Texas P.E. license preferred
- At least 10 years of experience in roadway design
- At least five years of experience with TxDOT highway projects, as a CEO or Roadway Design Task Leader

Structural Design Manager (D&B Team)

Reports to: Design Manager

Required Qualifications and Experience:

- Bachelor's Degree or higher in Civil or Structural Engineering
- Texas P.E. license preferred
- At least 10 years of experience in design of bridges and other highway structures
- At least five years of experience with TxDOT highway projects, as a CEO or Structural Design Task Leader



Chapter 1: Project Administration

Chief Surveyor (D&B Team)

Reports to: Design Manager

Required Qualifications and Experience:

- Associates Degree or higher in Land Surveying
- Licensed as a Texas Registered Professional Land Surveyor
- At least 10 years of experience in land surveying for highway projects
- At least five years of experience with TxDOT highway projects, as a Surveying Task Leader

Geotechnical Engineering Manager (D&B Team)

Reports to: Design Manager

Required Qualifications and Experience:

- Bachelor's Degree or higher in Civil or Geotechnical Engineering
- Texas P.E. license preferred
- At least 10 years of experience in geotechnical engineering and pavement design
- At least five years of experience with TxDOT highway projects, as a Geotechnical Engineering Task Leader

Project Controls Manager (D&B Team)

Reports to: D&C Director

Required Qualifications and Experience:

- At least five years of experience in construction planning, forecasting, scheduling and cost accounting for large construction projects
- Knowledge of Dallas-area market conditions, contractors and suppliers
- Strong communication and computer skills, including knowledge of Primavera software
- Knowledge of document control systems and procedures

Procurement Manager (D&B Team)

Reports to: D&C Director

Required Qualifications and Experience:

- At least five years of experience in procurement for large construction projects
- Knowledge of Dallas-area market conditions, contractors and suppliers
- Strong communication and computer skills

Operations and Maintenance

Technical Manager (Developer)

Reports to: Roadway Operations Director

Required Qualifications and Experience:

- Ten years' minimum experience with state DOT, toll authority, county or city operations and maintenance programs



Chapter 1: Project Administration

- Five years' minimum supervisory experience.

Traffic Safety Officer (Developer)

Reports to: Roadway Operations Director

Required Qualifications and Experience:

- Certified by Texas Engineering Extension Service (TEEX) in "Work Zone Traffic Control"
- Two years of progressive and relevant experience in traffic control
- Strong communications and organizational skills.

Roadway Public Information Representative (Developer)

Reports to: Roadway Operations Director

Required Qualifications and Experience:

- Three years of experience in customer service disciplines and communication systems.

Quality

Safety Manager (D&B Team)

Reports to: Quality Director

Required Qualifications and Experience:

- At least five years of construction safety experience or a combination of documented safety training/education and construction experience.
- Excellent communications and organizational skills
- Previous supervisory experience
- Experience on projects developed under a Quality Control Plan

Finance

Controller (Developer or Subconsultant)

Reports to: CFO

Required Qualifications and Experience:

- Bachelor's Degree or higher in Finance or Accounting, MBA preferred
- At least 10 years of experience in Financial Administration
- Commercial experience with lending institutions.
- Experience working with public authorities and agencies.

Treasurer (Developer or Subconsultant)

Reports to: CFO

Required Qualifications and Experience:

- Bachelor's Degree or higher in Finance or Accounting, MBA preferred
- At least 10 years of experience in Financial Administration



Chapter 1: Project Administration

- Commercial experience with lending institutions.
- Experience working with public authorities and agencies.

Accountants (Developer or Subcontractor)

Report to: CFO

Required Qualifications and Experience:

- Texas Certified Public Accountant license
- At least five years of experience in project accounting
- Previous experience with State of Texas contracts

Information Systems

Chief Information Officer (Developer or Subconsultant)

Reports to: CEO

Required Qualifications and Experience:

- Bachelor's Degree or higher in Information Technology or related discipline
- At least 10 years of experience in IT systems administration
- At least three years of experience in IT management of freeway traffic
- Recent experience in the administration of a traffic management plan for at least one major highway construction project valued at least \$10M.

Toll Operations Manager (Developer or Subconsultant)

Reports to: CIO

Required Qualifications and Experience:

- At least five years of supervisory experience for a call center or similar operation
- Excellent organizational and communication skills
- Proficiency in Microsoft Office

Field Systems Manager (Developer or Subconsultant)

Reports to: CIO

Required Qualifications and Experience:

- Associates Degree or higher in Information Technology or related discipline
- At least five years of experience troubleshooting and maintaining electronic toll collection devices
- Previous supervisory experience

Back Office Systems Manager (Developer or Subconsultant)

Reports to: CIO

Required Qualifications and Experience:

- Associates Degree or higher in Information Technology or related discipline
- At least five years of experience as a systems manager or network manager



Chapter 1: Project Administration

- Previous supervisory experience

Legal

Legal Advisor (Developer Subconsultant)

Reports to: CEO

Required Qualifications and Experience:

- Attorney-at-law licensed to practice in Texas
- At least 10 years of experience as an attorney
- Previous experience with transportation PPPs

Human Resources/Administration

Human Resources Manager (Developer)

Reports to: CEO

Required Qualifications and Experience:

- Bachelor's degree or higher in business or related discipline
- At least 10 years of experience, including five years of supervisory experience, in the field of human resources
- Experience administering corporate safety programs

Public Information

Public Information Associates (Developer Subconsultants)

Report to: Public Information Manager

Required Qualifications and Experience:

- Bachelor's degree or higher in communications or related discipline
- At least five years of experience in the field of public relations

1.3 Contractors

Design and Construction

The D&B Team is aware of the value that first-class subcontractors can bring to the project, and for that reason, it has established contact with a large pool of subcontractors and suppliers including many qualified DBE firms to conduct the construction pricing exercise for this Proposal. However, the D&B Team's approach is to wait until TxDOT awards the project to enter into exclusive agreements with subcontractors. Contacted subcontractors are fully aware of the D&B Team's methodology in this regard as well as the strong interest from the D&B Team to obtain their services after project award. Postponing subcontractor commitment until after project award and full identification of schedule constraints will result in a more competitive procurement process. The D&B Team

Chapter 1: Project Administration

anticipates that the following highly specialized project disciplines will be subcontracted: electrical, signing, pavement marking, drill shafts and landscaping.

Finance

Macquarie Capital (USA) Inc. (MCUSA) is a Major Participant, serving as the LBJ Development Partners' principal Financial Advisor. MCUSA has acted as financial advisor to the Proposer throughout the development of this Proposal. MCUSA is an indirect, wholly owned subsidiary of the Macquarie Group Limited ("Macquarie"), and along with Macquarie Capital Group Limited, its direct and indirect subsidiaries (which include MCUSA) and the funds (or similar vehicles) that they manage, is a member of the Macquarie Capital Group. The Macquarie Capital Group is a global infrastructure finance expert, and plays numerous roles in the sector including financial advisor, debt arranger and equity arranger. The Macquarie Capital Group runs one of the world's largest infrastructure advisory businesses, offering advisory services that include project financing, PPP structuring, and other corporate, strategic and financial advice. MCUSA has one of the largest dedicated private-sector PPP teams in the U.S., and has committed significant resources to undertaking its role as Financial Advisor for the LBJ Development Partners.

Operations and Maintenance

During the O&M phase, the Developer will also outsource some minor tasks such as specialized inspections, signage renewals, landscaping and towing, as described in Section C.3. The Proposer has contacted several individual firms and they have indicated their interest in performing these functions; however, the Proposer has not initiated a formal request for these services as of the submittal date.

Public Involvement

ROSS Communications (ROSS) will serve as the the Developer's principal public information and communications firm. Founded in 1993, ROSS is an Austin-based public affairs and strategic communications firm serving local, state and national clients. In the field of transportation public affairs and media relations, ROSS has played an instrumental role in raising awareness about the role and benefits of PPPs and has worked with Cintra on the TTC-35 Master Development Plan; SH 130, Segments 5 and 6; and the technical proposal for SH 121 in North Texas. ROSS offers its clients customized solutions for internal and external communications, media relations and training, grassroots advocacy and coalition building, creative services, online communications and public opinion research.

1.4 Project Baseline Schedule

Our approach to the Preliminary Facility baseline schedules for all segments is to facilitate commencement of design and construction of each successive segment prior to completing the previous segment to maintain a state of continuous development. This approach maximizes the financial and schedule value to TxDOT while minimizing the traveling public's exposure to construction hazards. For example, during design and construction of one segment, the Developer would begin Pre-Development activities for the next segment, such as environmental permitting and schematic design. Additional activities, such as Subsurface Utility Engineering; utility conflict analysis and conceptual relocation plans; geotechnical and hazardous materials investigations; design surveying and aerial mapping could be performed at risk prior to NEPA approval or immediately following NEPA approval. Performance

Chapter 1: Project Administration

of these activities at an early stage of development will help to advance the overall schedule for design and construction of each successive segment and thus facilitate the stated approach of continuous development.

Another anticipated advantage of this integrated approach will be the progressive increases in efficiency and skill of the workforce due to the continuous nature of the project development. The Developer will develop and continuously improve relationships with governmental agencies and third parties through partnering efforts.

Many project-wide activities must occur prior to commencing construction. These activities received careful attention in the preliminary baseline schedules. The Developer's general approach is to submit the most critical items as early as possible.

1.5 Quality Control

The Proposer has wide experience in partnering in Concession contracts. We are committed to, and actively promote, partnering and continuous improvement. We enjoy the benefits that successful partnering relationships bring to all involved. These include:

- Promotion and delivery of business objectives;
- Mutual understanding and common purpose;
- Focus on the customer;
- Clear responsibilities;
- Streamlined reporting;
- Development of each partner's staff;
- A framework to deal with contractual concerns;
- Improved systems;
- Progression towards Best Value;
- The promotion of winning themes and innovation;
- Better service;
- Teamwork.

Design and Construction

During Design and Construction, the D&B Team will pursue a policy of continuous improvement of this Quality Management System via Internal Audits and review of Non-Conformance Reports, among other methods.

The D&B Team has established and maintains a procedure (see Process Procedures Manual Section 9, in Chapter 9 of this document) used for identifying any non-conformance (i.e. an occurrence not in conformance with procedure) within the Quality Management System. Such occurrences require the implementation of corrective actions where evidence of failure within the Quality Management System is apparent, or where the possibility (potential) of failure within the Quality Management System exists.

Chapter 1: Project Administration

Corrective action is taken in accordance with established procedures to:

- Review and investigate the cause of non-conforming products or work by analysis of all relevant processes, work operations, concessions, quality records, audit observations, complaints and initiate corrective action to prevent recurrence;
- Initiate preventive actions to deal with problems including Developer complaints to a level corresponding to the risks encountered;
- Apply controls to ensure that corrective actions are taken and are effective;
- Implement record and review changes resulting from corrective and preventative actions in the procedures, and for general improvement of the Quality Management System.

In general, the Quality Manager will raise the CARs (Corrective Action Request/Report). The procedure 10 Corrective and Preventative action elaborates further on the raising and resolution of CARs.

D&B Team personnel are encouraged to seek out improvements for existing practices. Management personnel will review recommendations for improvement and implement, monitor and control them as appropriate. They will have the necessary authority, technical support, training and resources for implementing the changes associated with the improvements.

Operations and Maintenance

During Operations and Maintenance the Developer will support TxDOT in developing an integrated project team, working closely with supply chain partners, emergency services and other key stakeholders. We are committed supporters of the an integrated project team and will ensure that our representatives think “outside the box”, challenge current performance, promote change and foster the right environment.

The ethos of partnering and continuous improvement is embedded in our culture and all our operations and procedures. This is the key to the development of long-term relationships and is the measure by which we define our uniqueness, exceptional service and added value.

Partnering will benefit all parties through the agreement and promotion of:

- Mutual Objectives that help to promote commitment, fairness, trust and ownership. These will be contained within a Partnering Charter, signed by all parties;
- Problem Resolution Processes through a twinning of organizational structures, and an understanding of the issues important to the other partners;
- Continuous Improvement Measures. These ensure the constant improvement of service delivery to satisfy, and exceed, the contracts' Key Performance Indicator requirements;
- Innovation. We are committed to the principle of working as one team and will sign up to and take ownership of innovation and nurture ‘step change’ ideas;

To keep the focus on partnering and continuous improvement, we will urge all partners' staff to be involved in regular partnering and improvement workshops facilitated by continuous improvement “Champions”. This affords an opportunity for all to contribute and openly communicate their ideas and concerns.

Chapter 1: Project Administration

In addition to our work on the integrated project team with TxDOT, we will promote the establishment of a Partnering Board and 'Continuous Improvement Forum' involving key stakeholders and our supply chain partners to facilitate the delivery of the benefits outlined above.

In addition, continuous improvement will:

- Act as a think tank and brainstorming unit;
- Promote and develop innovative ideas;
- Support and guide the Partnering Board that will deal with day to day issues and support partnering processes;
- Develop a resource of mentors, advisors and specialists;
- Help the team deliver high-quality work;
- Review and feedback on our processes.

The results of the quality audits and management reviews will be used to identify areas of improvement. Corrective Action Requests (CARs) and observations generated from these reviews will be continually monitored to identify reoccurring events and the effectiveness of corrective actions.

Each major service area will nominate a Continuous Improvement Champion to sit on a Continuous Improvement Forum. Performance will be monitored through dashboard and feedback provided by the O&M Quality and Environmental Manager to the Continuous Improvement Forum and senior management team.

Figure 12 and Figure 13 further illustrate the Proposer's approach to continuous improvement.



Chapter 1: Project Administration

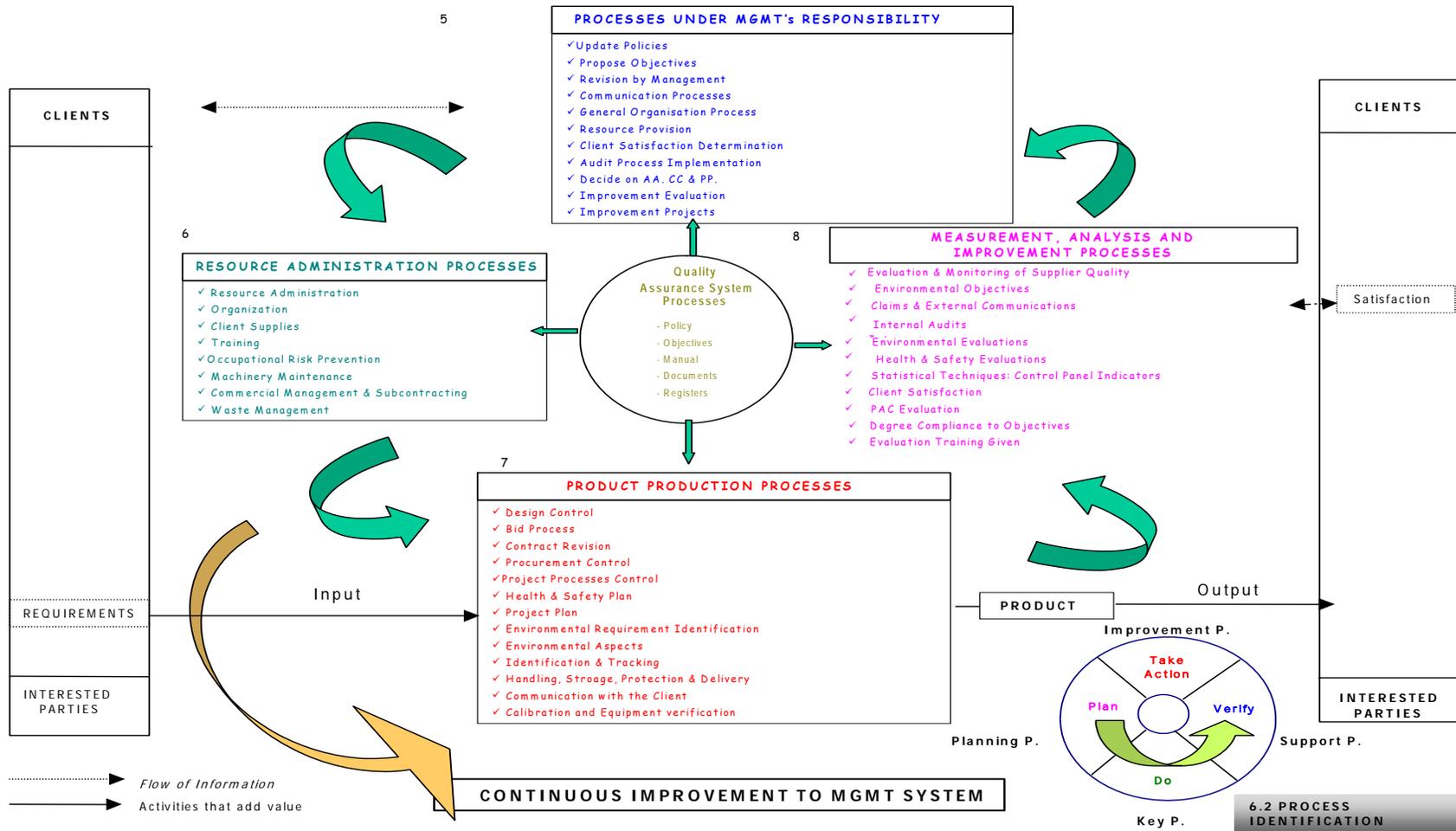
1.6 Audit

Procedures to Facilitate Review and Audit

The objective of auditing is to assess whether the system is being implemented as planned and whether it continues to be effective. The D&B Team procedure for quality audits will be followed. The Developer will be notified of audits and given the opportunity to participate/observe.

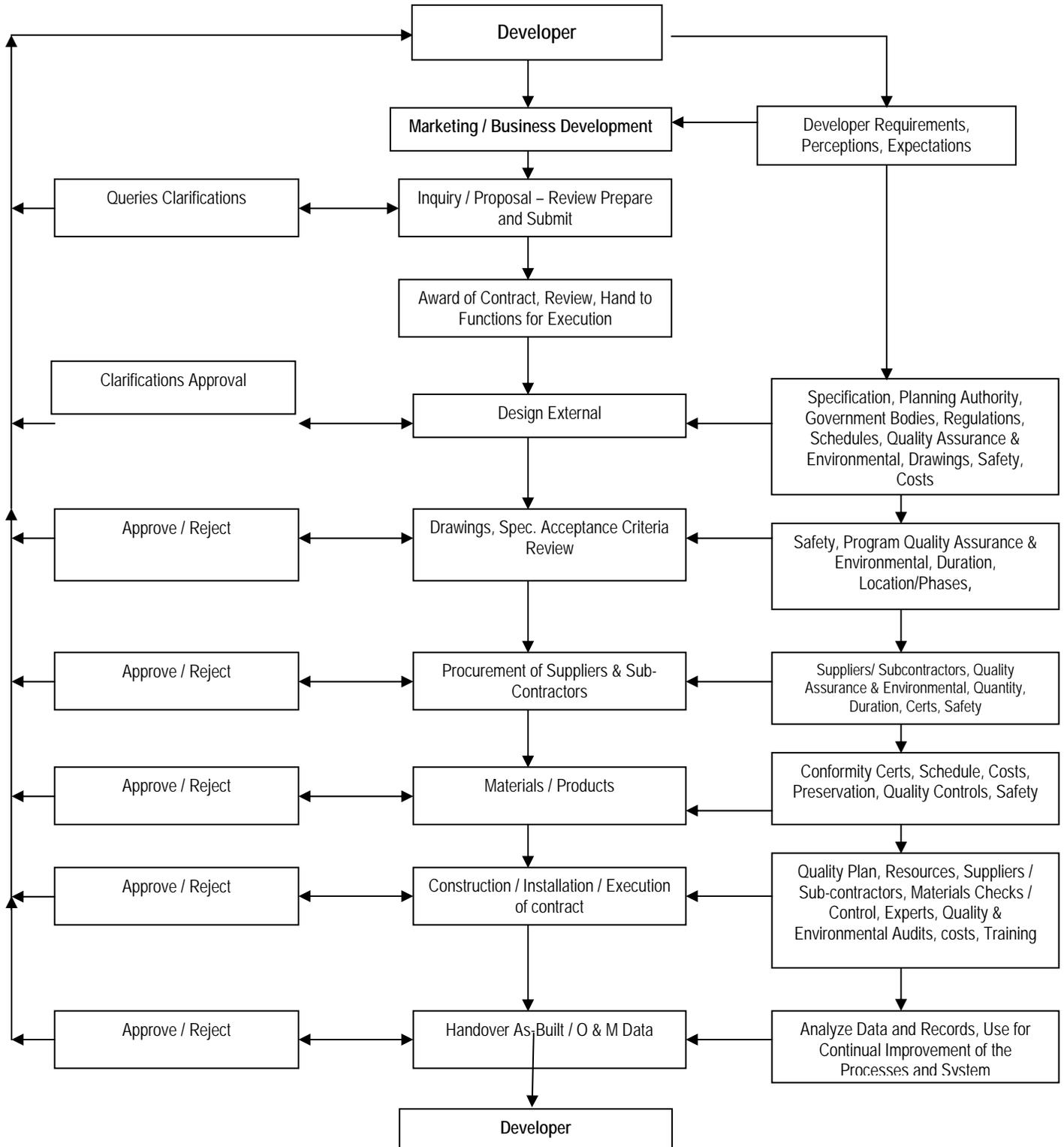
The Developer will provide TxDOT and the IE with safe and prompt access to the project-related office facilities and documents in accordance with CDA Section 9.3 and the Independent Engineer Agreement. The CEO will facilitate the IE's involvement during the all phases, which will include audit inspections, Owner Verification Tests, input on the Renewal Work Schedule, review of submittals to TxDOT, attendance at tests and inspections, auditing books of Key Contractors, investigating safety compliance and other oversight and auditing activities.

Figure 12: Continuous Improvement through Integrated Processes



Chapter 1: Project Administration

Figure 13: Business Process



Chapter 1: Project Administration

The findings of all audits will be considered at the semester Management review and other meetings held by the Supervisory Board, for verification of compliance to the Developer and D&B Teams' quality systems and opportunities for improvement, if any.

Developer's Activities

The Developer and D&B Team maintain the effectiveness of the Quality Management System by conducting formal internal audits. Quality Management System Audits enable the Developer to verify that the Quality Management System is functioning to specified requirements, and to confirm its continued suitability. These audits provide confidence within the Team, and act as an assurance to external organizations that the Developer is using an effective quality management system. Quality Management personnel will analyze the audit findings and use the data for continuous improvement of the Quality Management System.

Staff independent of the activity at hand will carry out internal audits. Audits are scheduled based on the status and importance of the activity. The Quality Manager will prepare an audit schedule on a predetermined basis. The frequency of audits will be at least annually for a department's activity. Contracts will also be audited at least annually if their duration is longer than three months, otherwise records will be reviewed.

The process of auditing and conducting follow-up actions is performed in accordance with Section 11 of the Project Procedures Manual (see Chapter 9 of this document). The results of the audits are documented and brought to the attention of management representative of the section audited for timely corrective action. Copies are also distributed to the General Manager.

Auditors will complete audit reports for each audit and forward copies to the CEO, General Manager and/or Quality Manager, as appropriate. The original will go to Document Control. The Supervisory Board will consider the findings of all audits, verify compliance with the QMP and discuss opportunities for improvement at biannual Management Review meetings.

The procedure relevant to this section of the plan, Process Procedures Manual Chapter 11, can be found in Chapter 9 of this document.

Auditing Contractors' Activities and Management Procedures

Design and Construction

The D&B Team is constantly seeking out best practices that will lead to superior performance in satisfying Developer needs and the D&B Team's internal cost effectiveness. Towards this goal, the D&B Team is establishing a relationship with its Subcontractors to create a list of preferred Subcontractors. Subcontractor performance is therefore monitored on various items, e.g. safety, Non-conformances, on the contract. This data will be analyzed and used for establishing reliable relationships.

The Construction and Design Managers will monitor Subcontractor performance on a regular basis while the works are being carried out on site. Any problems, difficulties, failures, or queries, which bring into question matters within

the scope of this procurement procedure will be identified and resolved jointly with the Procurement Manager in conjunction with other relevant personnel.

To control the performance of Subcontractors, the relevant Project Controls Representative will review Subcontractor progress payments and the General Manager will authorize them.

Upon completion of a Subcontractor's work, the Construction Manager, with input from the Procurement Manager, will complete a Subcontractor's Performance Survey and distribute copies of the document to the Document Control System so that it may be recorded in the Subcontractor database for future reference.

Operations and Maintenance

During Operations and Maintenance, inspections will audit the compliance and effectiveness of activities performed by subcontractors. The following principles will guide the conduct of subcontractor audits:

- Subcontractor audits, for both office-based and site activities, will be planned and programmed in an Audit Schedule to ensure the full scope of the system is adequately sampled and tested on a regular basis;
- Additional audits, not shown on the issued Audit Schedule, may be arranged in response to the requirements of the organization at any time;
- The Audit Schedule details the auditor(s) assigned to carry out the audit and the audit reference number.

Audit Preparation

- The auditor agrees a date and time for the audit with the subcontractor;
- The auditor uses a prepared audit checklist.

Audit Conduct

- The auditor records the evidence collected and decides if any non-conformities should be reported as CARs or observations;
- Serious deficiencies that require urgent attention are referred immediately to the O&M Quality and Environmental Manager or nominated representative for advice;
- A reviewer nominated by the O&M Quality and Environmental Manager reviews sample reports;
- The reviewer is responsible for reviewing the completeness of the audit.

Recording and Resolution of CARs

- The auditor agrees the completion date for the CARs with the subcontractor personnel during the audit.
- The subcontractor accepts the CAR on the database and specifies the actions to be taken to correct and prevent recurrence of the non-conformity.
- Follow up checks and recommendations for closure of CARs are recorded on the database.
- The O&M Quality and Environmental Manager or nominated representative closes the CARs.
- The Roadway Operations Director is notified of audit results and takes corrective action with subcontractors as necessary.

Chapter 1: Project Administration

1.7 Project Management Plan Update

Preparation and Submittal of Amendments

The Developer will submit the component parts of the final PMP to the Independent Engineer and TxDOT for approval in accordance with Section 6.3 of the CDA and the timeline set forth in Attachment 1 to the Technical Provisions. Any proposed changes, additions or revisions to the PMP are also subject to IE and TxDOT review and approval in accordance with CDA Section 6.3.

The IE will provide independent reports to TxDOT and the Developer to recommend acceptance or otherwise of Developer's additions and amendments to the PMP.

The Independent Engineer will report annually to TxDOT and the Developer regarding the Developer's compliance with the PMP, including suggestions for amendments or updates to the PMP. The Developer will also modify the PMP following routine internal audits, or in the event that it is assessed Noncompliance Points, to protect against future similar breaches or failures.

If the Developer finds it necessary to deviate from the approved PMP, the Developer will send TxDOT a written request for a Deviation, specifically identifying and labeling the Deviation and explaining how the Deviation constitutes sound and safe practices consistent with Good Industry Practice and achieves or substantially achieves TxDOT's applicable Safety Standards and criteria.

Deviations will not be undertaken unless they are approved in writing by TxDOT. If requests for Deviations are not approved within 14 days, they will be considered denied or disapproved. The Developer understands that TxDOT may elect to process the application as a Change Request under CDA Section 14.2 rather than as an application for a Deviation.

1.8 Document Management

Maintenance of Records and Document Management Procedures

The Developer will employ an electronic Document Management System (DMS) that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will include user-friendly navigational tools such as index, contents and search features, to facilitate information retrieval. The Developer will review usage of the DMS regularly and will survey staff to ensure that it meets their requirements. The DMS Coordinator will administer changes to the system. Staff can complete Change Control forms to activate changes after the appropriate manager has given his or her approval.

The DMS will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.



Chapter 1: Project Administration

The Developer will also implement a secure Project Extranet system, which enables all team members to access and store project data, draft text and drawings. The Project Extranet system will link to the Document Management System, allowing users to access many of the same documents through either the Document Management System or Extranet site.

Photographs will supplement progress records as directed by the D&B Team and Developer. Applicable record forms will be formatted specifically for the project.

Chapter 9 of this document is the D&B Team Process Procedures Manual (PPM), which contains specific procedures related to maintenance of records and document management. The procedures relevant to this section of the plan are:

- PPM Section 3 Documents and Data Control
- PPM Section 8 Construction Management
- PPM Section 14 Control of Quality and Environmental Records.

Documentation of All Required Plans

The Developer will develop additional plans in accordance with the Technical Provisions. These plans will be considered supplements to the PMP, and will be subject to the same document control procedures as the PMP. Read-only copies of the PMP and supplemental plans will be available through the Developer's electronic Document Management System. These plans will include, but will not be limited to:

- Aesthetics and Landscaping Plan;
- Traffic Management Plan;
- Safety Plan;
- Acceptance Test Plan;
- Emergency Response Plan;
- Incident Management Plan;
- Electronic Toll Collection System Plan;
- Maintenance Management Plan (MMP);
- Haul Route Plan;
- ITS Implementation Plan;
- Comprehensive Environmental Protection Program and its component plans (Environmental Compliance and Mitigation Plan, Compliance Action Plan, Environmental Protection Training Plan, SWPPP, etc.);
- Quality Management Plan (QMP);
- Operations Management Plan (OMP);
- Handback Plan;
- Residual Life Methodology Plan.

CHAPTER 2 QUALITY MANAGEMENT

2A. Design Quality Management

The IH 635 Managed Lanes Project is a large PPP project requiring a significant design effort. Proper planning, coordination, and execution of design activities will be critical to ensure delivery of the overall design in the desired quality and required timeframe. Concurrently, a high degree of flexibility will be necessary to accommodate the changes that inevitably occur in a project of this magnitude.

The Design Quality Management section of the preliminary PMP has been prepared in accordance with the D&B Team's Quality Manuals. Its purpose is to define the design management systems for the design element of the IH 635 Managed Lanes Project. Specifically, it outlines how the D&B Team will achieve, control, assure, demonstrate and manage the design of the Project. The General Manager and other key personnel will keep copies of the QMP and Process Procedures Manual on site.

The procedures and principal design activities associated with the Project will generally follow the work tasks and approach as outlined in current TxDOT manuals and publications. The D&B Team will augment these procedures with specific requirements from the CDA, Technical Provisions and other contract documents that apply solely to this project. The D&B Team will use the following TxDOT manuals and publications, including references made to other FHWA and AASHTO guidelines and standard practices, as a basis of all activities and procedures:

- Project Development Process Manual
- Bridge Project Development Manual
- Bridge Design Manual
- Bridge Detailing Manual
- PS&E Preparation Manual
- Roadway Design Manual
- Hydraulic Design Manual
- Geotechnical Manual
- Landscape and Aesthetic Design Manual
- Traffic Operations Manual, Railroad Operations Volume
- Environmental Manual
- Highway Illumination Manual
- Utility Manual
- Pavement Design Manual, Pavement Marking Manual
- Freeway Signing Handbook
- ROW Acquisition, Signs and Markings Manual
- Texas Manual on Uniform Traffic Control Devices

The D&B Team will perform numerous design activities on this project. The principal design activities will include:

Chapter 2: Quality Management

- Roadway Design;
- Structural Design;
- Drainage and Hydraulic Design;
- Geotechnical; and
- Environmental.

This document sets out the main roles, duties and activities with regard to Design Quality Management for the IH 635 Managed Lanes Project, and outlines the lines of communication between the Developer's Representative and the D&B Team. It also includes organizational and management structures for D&B Team personnel.

2A.1 Organization

Contractual Arrangements

The "D&B Team", is a Limited Liability Company formed by Ferrovial Agroman US Corp. and W.W. Webber Construction Corporation as its members, with overall responsibility for the design and construction of the IH 635 Managed Lanes Project.

The D&B Team will subcontract certain design services to qualified designers, in accordance with Section 7 of the D&B Team's Process Procedures Manual (See Chapter 9 of this document).

The D&B Team is responsible to the Developer for design work. The D&B Team will be subject to the applicable requirements of the CDA. The D&B Team's Design Consultants will be contractually subject to similar requirements with respect to the CDA, and especially the Technical Provisions, as part of the provision of their services.

Organizational Structure

The Developer's Quality sub-organization will develop and enforce procedures, carry out audits and impose corrective action to ensure that all phases of the IH 635 Managed Lanes Project adhere to Developer quality standards, legal standards and the CDA. This sub-organization also includes dedicated safety personnel who will conduct safety training and audits and enforce safety-related corrective action. During the design phase, the Quality sub-organization will include the following essential staff:

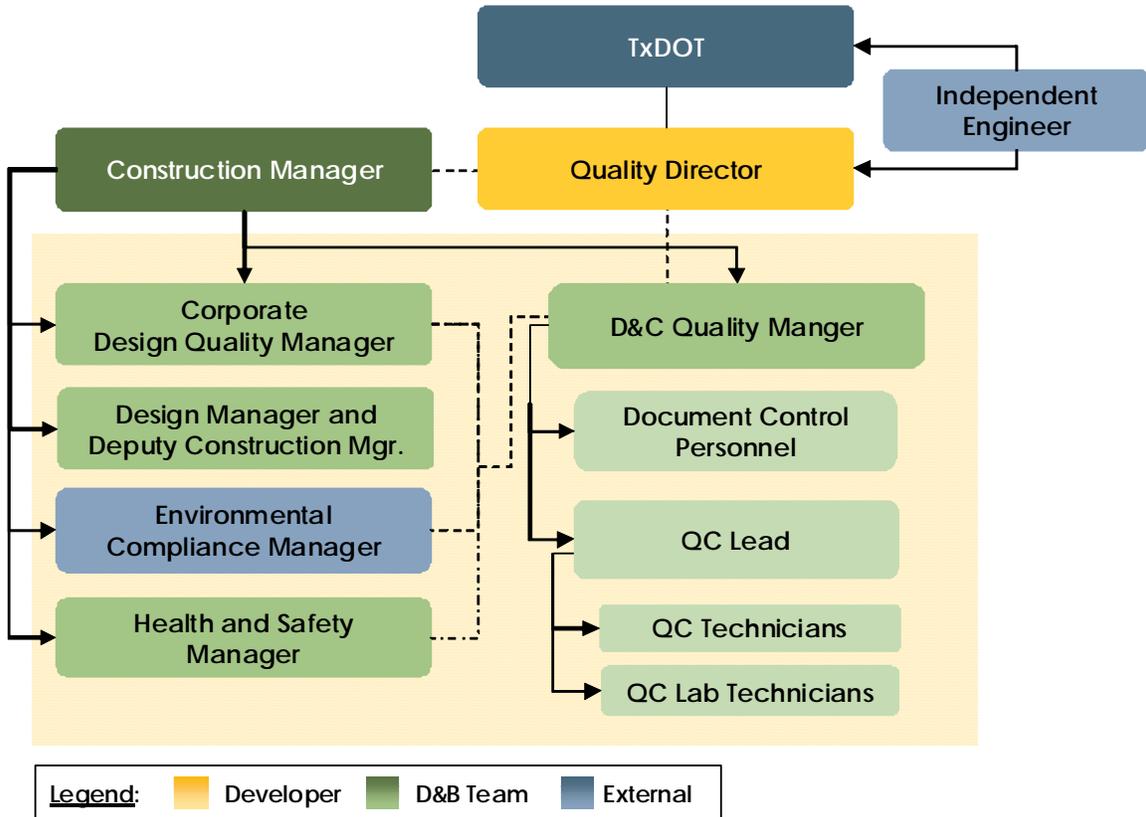
- **Quality Director:** The Quality Director will oversee quality management personnel dedicated to design, construction, and O&M, as well as the Health and Safety Manager. The Quality Director will advise the D&C Director, ROD, Environmental Compliance Manager and Safety Manager on implementing quality procedures and corrective actions; advise the CEO on audit results, corrective action and changes to quality procedures; review Subconsultants' quality plans and procedures for compatibility with the Developer's quality plans; ensure that appropriate personnel receive training on the Quality Management System and safety; and liaise with quality auditors to schedule audits and review results.
- **Design and Construction Quality Managers (Developer and D&B Team):** QA/QC professionals with recognized experience in similar projects, the D&C Quality managers will manage routine QA/QC checking

Chapter 2: Quality Management

and pre-submittal design reviews; oversee construction inspection, equipment inspection and materials testing during initial construction; ensure that design subconsultant and construction subcontractor work adheres to Developer quality standards; coordinate internal audits of D&B Team activities; control quality records; and direct corrective action and continuous improvement initiatives.

- **Health and Safety Manager:** The Health and Safety Manager manages provision of safety training to employees and Subcontractors, directs safety inspections and audits during all phases of work, ensures that Subcontractor work adheres to Developer standards, controls health and safety records, updates the Safety chapter of the PMP as necessary, communicates safety issues to management and directs safety-related corrective action and continuous improvement initiatives.
- **Document Control:** Document Control Personnel control distribution, filing, retention, revision tracking, indexing of project-related documents, and ensures that personnel has access to document control forms such as Document Transmittal Sheets. Documents may include but are not limited to manuals, design plans, quality records, safety records, environmental documents, etc. Documents may be a hard or electronic copy.
- **Quality Control Leads (QC Leads):** QC Leads will control laboratory deliverables and fieldwork. Leads will be qualified engineers with specific QA/QC experience.
- **Quality Control Technicians (QC Technicians):** Senior technicians with specific experience in QA/QC.
- **Laboratory Technicians:** A team of Lab technicians proficient in TxDOT laboratory procedures. The technicians will have applicable TxDOT certifications.

Figure 14: Design and Construction Quality Organization Chart



2A.2 Personnel

Resource Plan

The D&B Team's design resources will consist of two groups:

- The D&B Team's Design Team, led by the Design Manager, will manage the design.
- The Design Consultant Organization will execute the design, reporting to and under the management of the D&B Team's Design Team.

The D&B Team's Design Team consists of the main discipline managers shown in Table 3. The D&B Team's Design Team will be located at the D&B Team's project office.

The Design Consultant Organization will be an integral part of the Design Team. The Design Consultant CEO will lead this organization and will integrate the work of segment managers and design task leaders responsible for teams of engineers. The D&B Team will allocate ample resources to ensure timely completion of the activities delineated in the design schedule. The Design Consultant CEO and main discipline leaders will work in an offsite design office.

To facilitate work progress, the D&B Team and Design Consultants will communicate in an orderly manner, following the chain of command shown in the D&B Team organizational charts. All formal interaction and communication between the Design Consultants and TxDOT and its representatives will flow through the D&B Team's Design Manager, under the coordination of the Developer. Informal communications will also occur. Managers, design coordinators, and design task leaders shall use their best judgment to determine when work will progress most efficiently through informal communication, and when formal communication is necessary.

The D&B Team, under the coordination of the Developer, will conduct monthly design management meetings with the Independent Engineer and TxDOT, and as defined in the CDA, to discuss design work in progress and coordinate auditing of design products.

The D&B Team will submit design work products and deliverables to the Developer, who in turn will deliver them to the Independent Engineer, and to TxDOT as defined by the CDA (The Developer may delegate this function to the D&B Team.). Documents will be transmitted via Document Control with a transmittal cover sheet.

Interaction with TxDOT and its Consultants

The D&B Team's Design Manager will coordinate the design elements with TxDOT, the Independent Engineer, and between the various Design Consultants. The D&B Team's control the design's technical performance and costs, and oversee Design Consultants and manage QA/QC controls for their work to ensure compliance with the CDA requirements and Design and Build Agreement. The D&B Team will implement a rigorous quality control plan at all levels of the design effort to achieve quality management goals in the development of the IH 635 Managed Lanes Project. The D&B Team will produce a final IH 635 Managed Lanes Project Design Manual and appoint a Consultant Design Quality Manager (DQM) to oversee all design quality management activities. The DQM will lead

Chapter 2: Quality Management

a Design Quality Management Team (DQMT) in controlling the all levels of design quality. The DQMT will be composed of five groups, each assigned to control/verify the quality of design produced by all Task Teams working on the IH 635 Managed Lanes Project. They are:

- Roadway (DQM-R),
- Bridges/Structural (DQM-B),
- Drainage (DQM-D),
- Illumination/Traffic Control(DQM-IT)
- Environmental/Landscaping (DQM-EL).

Some of the DQMTs' principal tasks include:

- Building the QA/QC process into the design schedule.
- Conducting QA/QC reviews prior to submittal of deliverables to Internal Review Meetings and the D&B Team.

Regular weekly meetings will occur at the following levels:

- Task Teams
- Consultant Discipline Leaders and Task Leaders
- Design Consultant CEO and Segment Design Managers
- Design Consultant CEO and D&B Team Design Manager

Table 2: Design Consultant Reporting and Communication Relationships

Role	Reporting to	Communications with
Design Consultant CEO	D&B Team Design Manager	Segment Design Managers (SDM)
Segment Design Managers (Roadway, Structures, Drainage, Environmental, Electrical, Geotechnical)	Design Consultant CEO	Other SDMs, Consultant Task Leaders, and D&B Team counterparts as needed
Consultant Task Leaders	Segment Design Managers	Consultant Task Team members
Consultant Task Team members (Roadway, Structures, Drainage, etc.)	Consultant Task Leaders	Other Task Team members

Key Personnel

Table 3 shows how the currently approved Design Phase Key Personnel fit into the Developer's organization. Additional key personnel will be named in the final PMP. Job roles and experience required for key Design Phase positions are listed following Table 3.

Table 3: Key Personnel

CDA	Developer's PDP	Name	% of Time
Design Manager	Design Manager (D&B Team)	Fidel Saenz de Ormijana	100%
Quality Manager	Design and Construction Quality Manager (D&B Team)	Esteban Trigueros Castaño	100%
Environmental Compliance Manager	Environmental Compliance Manager (D&B Team)	William Proctor	100%

Design Manager

The Design Manager is responsible for managing the Design Team. He will:

- Ensure that specific packages for design and related specifications meet the requirements of the CDA and D&B Agreement.
- Ensure that the design is functional and fulfills the specified criteria for safety, constructability, quality, cost-effectiveness, and environmental guidelines within the project schedule.
- Coordinate interdisciplinary requirements within the various Design Consultants and require Design Consultants to certify that the design products have been completed in accordance with specified requirements.
- Provide technical assessment of proposers prior to award of any procurement package related to design or professional services.
- Provide engineering support to the project team to provide technical input during the procurement process and for reviewing change proposals.
- Review design packages from Design Consultants prior to issue for construction.
- Establish an effective design review process to ensure that interdisciplinary requirements have been completed prior to issue for procurement, and subsequently for construction.

Construction Manager

The Construction Manager is responsible for managing all construction-related aspects of the Project. He will:

- Take overall responsibility for site administration and coordination of site operations, site surveying, quality control, and testing.
- Perform progress monitoring and verification of quality and quantity of work completed by subcontractors.

Chapter 2: Quality Management

- Manage health and safety of field operations.
- Manage construction budgets and cost control measures.
- Affirm that work has been completed in compliance with the specified requirements upon completion of each construction phase.
- Ensure that all pertinent construction records are collected and prepared for archiving.
- Assess bidders' competency to perform the work prior to award of any procurement package related to construction/installation.

Quality Director

The Quality Director will lead the Quality sub-organization, which is comprised of personnel dedicated to design, construction, operations, and maintenance quality. The Quality Director will be active throughout the duration of the Project. The Quality Director will:

- Oversee quality management personnel dedicated to design, construction, operations, maintenance, the Safety Manager, and document control.
- Advise the D&C Director, ROD, Environmental Compliance Manager, and Safety Manager on implementing appropriate quality procedures and corrective actions within their areas of responsibility.
- Lead periodic Management Reviews to assess the effectiveness of the Quality Management System.
- Advise the CEO on audit results, corrective action, and changes to quality procedures.
- Review Subconsultants' quality plans and procedures for compatibility with the Developer's quality plans.
- Ensure that appropriate personnel receive training on the Quality Management System and safety.
- Update the Quality Management section of the Project Management Plan as necessary.
- Liaise with external/independent quality auditors to schedule audits and review results.

Environmental Compliance Manager

The Environmental Compliance Manager will:

- Direct the work of the Environmental Compliance Team.
- Review required environmental submittals for quality and accuracy.
- Monitor, document and report environmental compliance of the work.
- Report any violations or noncompliance that represent an imminent danger to human health or the environment to TxDOT and the Developer immediately.
- Report appropriate recommendations for corrective action to TxDOT and the Developer, including stoppage of Work.
- Review and submit all necessary environmental documentation and monitoring reports to appropriate Governmental Entities and/or TxDOT.

Design Consultant CEO (DCPM)

The DCPM's responsibilities include:

Chapter 2: Quality Management

- Providing overall design management and D&B Team liaison.
- Soliciting D&B Team involvement and comments on items such as constructability issues.
- Responding to Independent Engineer comments and queries as directed by the Design Manager.
- Attending D&B Team meetings.
- Conducting weekly progress meetings with Segment Design Managers.
- Chair milestone review meetings.
- Providing internal advisory and final issue resolution to Design Consultant Organization.
- Submitting monthly progress reports and invoices to D&B Team.

Segment Design Managers (SDM)

The D&B Team will appoint SDMs for major disciplines including but not limited to roadway, structures, drainage, electrical, traffic, environmental, geotechnical and utilities. SDMs will manage interaction between disciplines. Their responsibilities include:

- Reporting to and communicating with the DCPM.
- Keeping track of inputs, outputs, and design changes.
- Disseminating new information as appropriate within the Design Consultant Organization.
- Spot-checking deliverables during the design process and reviewing and signing off on deliverables prior to internal review meetings and milestone submittals.
- Assisting the DCPM in communicating with the D&B Team Design Manager.
- Reviewing data collection needs with Consultant Task Leaders and providing lists of required information to fellow SDMs under the supervision of the DCPM.
- Preparing technical letters and responses to the Independent Engineer for the DCPM.
- Leading regular weekly progress meetings and conference calls with the Consultant Task Leaders.
- Directing and advising the Consultant Task Leaders.
- Monitoring and enforcing the schedule for their respective disciplines.

Consultant Task Leaders (CTL)

CTLs will be responsible for the staff producing specific task deliverables within the Task Team. Responsibilities include:

- Reporting to and communicating with respective SDMs.
- Meeting deliverable schedules.
- Implementing and monitoring compliance with the CDA, Technical Provisions, and relevant TxDOT and industry standards.
- Assisting the SDM with responses comments from the to D&B Team and Independent Engineer.
- Providing technical leadership during design and helping to resolve issues and conflicts.
- Safety monitoring.

Chapter 2: Quality Management

- Reviewing, approving, signing, and sealing task deliverables. Including construction drawings and reports.

Consultant Task Teams: Task Teams will typically consist of three to five designers led by the Task Leader to produce deliverables such as designs, reports, details, analysis and calculations within a specific discipline. Task Teams will conduct their own internal quality control measures before submitting deliverables to the Segment Design Manager.

Contractor / Third-Party Principal Personnel

Names and contact details of principal Contractor and Third Party personnel will be provided in the final Project Management Plan.

General Design Consultants: The scope of services of the Design Consultants includes design services for the construction of all applicable work within the IH 635 Managed Lanes Project as defined by the CDA and Technical Provisions. Detailed Design Services include all design elements required for complete construction of the project and associated work.

Utility Design Consultant:

The consultant will:

- Perform Subsurface Utility Engineering (SUE) work in the corridor to identify and locate existing utilities.
- Coordinate relocation designs with the General Design Consultant.
- Facilitate completion of Master Utility Assembly Agreements between the D&B Team and affected utility companies.

2A.3 Offices and Equipment

To be provided in final Project Management Plan.

2A.4 Contractors

Contractor Control Procedures

To ensure that design work progresses efficiently and on schedule, the Design Consultant CEO will assign each member of the Design Consultant Organization a clear role and responsibilities. Table 2 illustrates the reporting and communication relationships within the Design Consultant Organization. Documentation will be important to ensure prompt and clear communication. The D&B Team and Design Consultant Organization will use schedule and cost controls and drawing/document exchange and control software to manage the project.

The Lead Design Consultant's management procedures and quality processes (e.g. checklists) will supplement the final Design Quality Plan.

Chapter 2: Quality Management

The Design Consultant CEO (DCPM) will report directly to the D&B Team Design Manager (Design Manager) and will keep the D&B Team updated on the status of each project at all times. The DCPM will assume overall responsibility for the Design Consultant Organization, including Subconsultants. Specific personnel roles and responsibilities are detailed below.

Responsibility of Contractors and Affiliates

The responsibilities of the Design Consultants involve design services for the construction of all applicable work within the IH 635 Managed Lanes Project as defined by the CDA and Technical Provisions.

Detailed Design Services include all design elements required for complete construction of the project and associated works, including but not limited to:

- Roadway Alignment
- Traffic Management
- Retaining Walls
- Pavement
- Landscape
- Erosion Control
- Noise Walls
- Permanent and Temporary Traffic Signs Including Gantries
- Pavement Markings
- Roadway Lighting and Electrical Works
- Traffic Signals
- Safety Barriers
- Drainage and Storm Water Management
- Utility Relocation
- Temporary Designs During Phased Construction
- Demolition of Existing Facilities
- Structures
- Toll Facilities
- Geotechnical Services

Ensuring Contract Satisfaction

The D&B Team will implement a vigorous quality control plan at all levels of the design effort to ensure that contractors and suppliers meet the obligations imposed by their respective contracts. The D&B Team will appoint a Consultant Design Quality Manager (DQM) to oversee all design quality management activities. The DQM will lead a Design Quality Management Team (DQMT) in controlling all levels of design quality. The DQMT will be composed

Chapter 2: Quality Management

of five groups, each assigned to control the quality of design produced by all Task Teams working on the IH 635 Managed Lanes Project. They are:

- Roadway (DQM-R)
- Bridges / Structural (DQM-B)
- Drainage (DQM-D)
- Illumination / Traffic Control (DQM-IT)
- Environmental / Landscaping (DQM-EL)

Some of the DQMTs' principal tasks include:

- Building the QA/QC process into the design schedule.
- Conducting QA/QC reviews prior to submittal of deliverables to Internal Review Meetings and the D&B Team.

Regular weekly meetings will occur at the following levels:

- Task Teams
- Consultant Discipline Leaders and Task Leaders
- Design Consultant CEO and Segment Design Managers
- Design Consultant CEO and D&B Team Design Manager

Table 4: Design Consultant Reporting and Communication Relationships

Role	Reporting to	Communications with
Design Consultant CEO	D&B Team Design Manager	Segment Design Managers (SDM)
Segment Design Managers (Roadway, Structures, Drainage, Environmental, Electrical, Geotechnical)	Design Consultant CEO	Other SDMs, Consultant Task Leaders, and D&B Team counterparts as needed
Consultant Task Leaders	Segment Design Managers	Consultant Task Team members
Consultant Task Team members (Roadway, Structures, Drainage, etc.)	Consultant Task Leaders	Other Task Team members

2A.5 Interfaces

Interface between Developer, Contractors, and Independent Engineer

Design: The contractual relationship between the Design Consultants and the D&B Team is as follows:

Chapter 2: Quality Management

- The D&B Team will enter into a contract to carry out the design and construction of the IH 635 Managed Lanes Project and will perform its obligations according to the Design and Build Agreement. The CDA is included by reference in D&B Agreement.
- The D&B Team will delegate responsibility for design and design quality to the Design Consultants via subcontracts. These subcontracts will incorporate by reference the Design and Build Agreement, Comprehensive Development Agreement, Technical Provisions, and other relevant contract documents.

ROW Acquisition: The Developer, through an appropriately qualified TxDOT ROW Acquisition Services provider, will acquire new parcels required for the construction of the Project, without the direct participation of TxDOT. However, ROW acquisition is subject to TxDOT's right of review, approval, audit, and enforcement.

Utility Adjustment Work: The Utility Manager will coordinate the interface between the D&B Team, SUE subcontractors, Design Consultants, Utility Owners and other third parties during utility adjustment work. The Utility Manager will report directly to the Design Manager and will coordinate utility adjustment design with the overall highway design features during the planning, design and construction phases. The Utility Manager's major duties, per the Technical Provisions, are:

- Procure and manage SUE contractors, Design Consultants and surveying companies to perform utility investigation and adjustment work.
- Coordinate utility design and utility adjustment effort with TxDOT, utility owners and third parties.
- Review and approve utility-related documents.
- Manage all utility construction and field changes.

Coordination with Utility Owners

The Utility Manager will coordinate and communicate all activities, in cooperation with the Developer, the respective utility owners, and other potentially affected entities, to ensure that all utility adjustment work is performed properly and according to Project requirements (See Project Procedures Manual Section 16, in Chapter 9 of this document). The D&B Team will prepare, negotiate, and execute all agreements with utility owners.

The D&B Team will conduct periodic coordination meetings with utility owners' representatives. The frequency of such meetings will be appropriate to the matters under discussion with each utility owner. The D&B Team will notify the Developer, the Independent Engineer and TxDOT at least two business days in advance of each meeting with a utility owner and will allow the Developer the opportunity to participate in the meeting. The D&B Team will produce minutes of all meetings related to utility adjustment work.

The procedure relevant to this section of the plan is Process Procedures Manual Chapter 16: Utility Relocation (See Chapter 9 of this document).

2A.6 Environmental

The D&B Team will implement the proposed Project design and environmental mitigation in accordance with the Environmental and Governmental Approvals that TxDOT has negotiated with Governmental Entities including the:

Chapter 2: Quality Management

- U.S. Environmental Protection Agency (USEPA)
- Texas Commission on Environmental Quality (TCEQ)
- Texas Historical Commission (THC)
- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Service (USFWS)
- Texas Parks and Wildlife Department (TPWD)
- The North Central Texas Council of Governments (NCTCOG)

Procedures to address environmental requirements for roadway design activities are described below. The Environmental Compliance Manager (ECM) will develop the Environmental Protection Training Program (EPTP), in accordance with CDA requirements and with the approval of the D&B Team General Manager.

The ECM (or his/her designee) will train consultants on environmental issues and precautions to take in the field before they engage in field activities such as geotechnical work and design surveying. Personnel who have participated in such training will receive certificates of completion and the ECM will devise a way to easily identify those who have participated in the training, such as labels to be displayed on their hardhats.

Coordinating the Project Alignment to Minimize Project Impacts

To minimize environmental impacts and meet legal requirements, the Developer will review proposed roadway alignments for compliance with NEPA Approvals, any further EIS Reevaluation and special conditions of Section 404 of the Clean Water Act.

The Developer will review schematic designs to identify opportunities to minimize environmental impacts. The ECM will coordinate such roadway design revisions with the design team and document their implementation.

The following activities aim to minimize roadway construction impacts to jurisdictional wetlands and other Waters of the U.S. and aquatic habitats:

- Minimizing vegetation clearing in the construction area.
- Using best management practices (BMPs), including an erosion and sedimentation control plan.
- Using re-vegetated swales to minimize runoff, sedimentation, turbidity, soil nutrient leaching and petroleum leaching from pavement and waste material.
- Minimizing use of flow-altering structures that may change established wetland, drainage, or flooding patterns.

Water Quality, Sedimentation, and Erosion Control Measures

The Developer will incorporate sedimentation and erosion control measures into project designs to minimize temporary and permanent impacts to water quality. The Developer will coordinate temporary and permanent erosion control measures to ensure the use of BMPs and TxDOT standards during the construction and post-

Chapter 2: Quality Management

construction period. The Developer will prepare erosion control designs to meet the TCEQ's Section 401 Water Quality Certification requirements.

To minimize impacts to streams along the roadway alignment, the Developer will design vegetated swales and supplementary water quality treatment design features, based on TCEQ Section 401 permit requirements. The vegetated swales will be designed so that the water velocities are low enough and retention times are long enough to allow suspended solids to deposit at the bottom of the drainage-way. Where flat-ditch grades are unattainable, the D&B Team will place permanent rock filter dams (RFD) across the vegetated swales as check dams to reduce the ditch slopes and velocities. The D&B Team will modify the TxDOT Standard Drawing for RFD to make it adequate for permanent water quality control.

Grading will not occur within the jurisdictional streams or tributaries' plane of ordinary high water mark or normal high bank, defined as Waters of the U.S. in USACE Section 404 Permit requirements.

The Developer will incorporate several measures into the design and construction of the project to minimize soil erosion and sedimentation. Temporary and permanent erosion control methods will provide BMPs during and after construction. Permanent erosion control features will be installed at the earliest practicable time. Some additional temporary and permanent erosion control methods are as follows:

- **Temporary Erosion Control Plans:** These plans will follow TxDOT standard practices including use of standard drawings for RFDs and silt control fences around inlets. During the construction phase, the Environmental Compliance Team (ECT) will monitor and maintain temporary controls regularly and after major rain events. After completion, some of the RFDs will be permanent.
- **Grass Cover:** Establishing grass cover on all non-paved areas within the ROW, including ditches, will provide permanent erosion control. Disturbed areas will be seeded or sodded after construction grading is finished as part of the Storm Water Pollution Prevention Plan (SWPPP). Seed mixes, mulch and watering will follow TxDOT standard specifications. Because grass typically cannot be established on the stream bridge header banks, these slopes will be concrete riprap, per TxDOT Standard Drawing CRR. This will eliminate the potential for water or wind erosion of the header bank. Permanent erosion control features will be based on TxDOT standards and specifications.

Threatened or Endangered Species Studies and Mitigation

Environmental Approvals for endangered species habitats are in place under NEPA approval for the Facility, but not for additional properties. TxDOT, as the FHWA agent for projects receiving federal funds or with a federal permit, must comply with the provisions of Section 7 of the Endangered Species Act (ESA). The Developer will conduct studies on any additional properties not covered under the NEPA Approvals or Re-evaluation to determine if protected resources in those areas trigger Section 7 of the ESA. The Developer will ensure compliance with the coordination, permitting, and environmental documentation requirements of the ESA and the Fish and Wildlife Coordination Act (FWCA) for any additional properties.

Where no protected species are identified on the additional properties, the Developer will monitor any changes to the Work and immediately advise TxDOT if it observes evidence of a listed species or its critical habitat. Where the Project may affect a protected species or critical habitat, TxDOT may hold informal consultations with the USFWS.

Chapter 2: Quality Management

Whenever informal consultations result in recommendations for Project modifications to eliminate impacts to listed species, the Developer will undertake design efforts to accommodate those recommendations. If it is determined that the Project may affect listed species, Formal Consultation with USFWS and FHWA will be necessary. The Developer will prepare a Biological Assessment and Mitigation Plan for all listed species in the Project area, including those impacted by the additional properties, and submit the assessment to TxDOT for review and processing. TxDOT will submit the Biological Assessment and Mitigation Plan to the FHWA for submission to the USFWS. The Developer, FHWA, and TxDOT will meet formally with USFWS as needed throughout the consultation process. The Developer will ensure implementation of the Project as described in the Biological Assessment and Mitigation Plan and approved in the USFWS Biological Opinion. If the USFWS Biological Opinion includes non-binding conservation recommendations, the Developer will consult with TxDOT and FHWA concerning implementation of such recommendations.

If additional properties require review by the USFWS for Federal Wildlife Conservation Act (FWCA) compliance, the Developer will conduct studies on additional properties, and TxDOT will submit the studies to the TPWD for review. When the USFWS provides comments or recommendations on the Project regarding to the FWCA, the Developer will fully consider the comments, along with any comments or recommendations from the TPWD, and consult with TxDOT concerning implementation of such recommendations.

Cultural Resource Studies and Mitigation

Subsequent to issuance of NTP1, if modifications result in additional properties required outside the Project ROW shown on the schematics as defined in the original NEPA approval, the Developer will perform all necessary cultural resource surveys, evaluations, testing and mitigation in the potentially affected areas. TxDOT will ensure compliance for the additional properties according to current procedures for implementing Section 106 of the National Historic Preservation Act and the Antiquities Code of Texas. The Developer will undertake historical surveys of the expanded area of potential effect (APE), and coordinate these surveys through TxDOT. The Developer will perform mitigation as developed between the Developer, State Historic Preservation Office (SHPO), FHWA, and TxDOT.

Noise Mitigation

The D&B Team will use the most recent traffic noise model approved by TxDOT (TNM 2.5) and the methodologies outlined in TxDOT's "Guidelines for Analysis and Abatement of Highway Traffic Noise (June, 1996, with revisions in 1997 and an April 27, 2005 memorandum on using TNM 2.5) to identify any feasible and reasonable noise barriers along the project. Noise studies will occur following confirmation of horizontal and vertical alignments.

The D&B Team will implement noise mitigation measures to minimize construction-related and long-term impacts of the work through the construction of noise walls. All proposed noise walls shall be constructed during the early phases of construction to help minimize construction noise. Noise walls to be constructed are listed in the FONSI Re-Evaluation, Interstate Highway 635 from Luna Road to US 75, June 2008. Prior to initiating Construction Work on any portion of Frontage Roads, Managed Lanes or General Purpose Lanes located in the vicinity of a portion of a required noise wall, the contractor shall construct the required noise wall. Provisions in the plans and

specifications will require the contractor to make reasonable efforts to minimize short-term construction noise through abatement measures such as work-hour controls, and proper maintenance of muffler systems.

Light Intrusion and Mitigation

Near neighborhoods and community facilities, the D&B Team will take reasonable measures to prevent light from shining onto adjacent properties. The D&B Team will incorporate measures to minimize light intrusion on adjacent properties into the final project designs following confirmation of horizontal and vertical alignments.

2A.7 Procedures

Geotechnical Site Investigation

Geotechnical Engineering is an essential part of the design process. A detailed and comprehensive geotechnical field and laboratory investigation is required as part of the detail design and constitutes one of the early activities in the design process. All Geotechnical Engineering activities will comply with the IH 635 Managed Lanes Project CDA and Technical Provisions.

The initial stage will consist of developing field and laboratory investigations, taking into account the geotechnical knowledge gained in previous phases. D&B Team consultants will analyze the results of the field and laboratory investigations to determine the basic geotechnical design parameters required and produce geotechnical recommendations for the design. Recommendations specific to each foundation (e.g. structures, retaining walls) and to each cut and fill along the alignment will address the following issues:

- Soil characterization
- Consolidation (deferred settlement) properties
- Strength
- Compaction characteristics
- Swelling properties
- Settlement
- Groundwater
- Global and local stability (fill slopes, retaining walls, etc.)
- Suitability of excavated soils for reuse as fills
- Soil chemistry (sulfate content)
- Suitability of external borrows
- Lime stabilization
- Structure foundation design
- Pavement

D&B Team consultants will prepare geotechnical and pavement design reports based on the results of the field and laboratory work. These reports will include the following main sections:

Chapter 2: Quality Management

- Earthworks and Retaining Walls
- Bridge Foundations
- Culvert Foundations
- Miscellaneous Structure Foundations (sign and toll gantries, high-mast lighting, buildings, etc)
- Pavement

It may be necessary to issue initial drafts or partial reports for later completion and confirmation as fieldwork and lab work progress. Geotechnical engineers will exercise special care in considering all possible interfaces and interferences with other design disciplines to ensure timely and adequate geotechnical input.

The procedure relevant to this section of the plan is Process Procedures Manual Chapter 18 (see Chapter 9 of this document).

Surveys and Mapping

All instruments used for establishing horizontal and vertical controls will be maintained at an acceptable calibrated status. A log will be kept of instruments used on site noting the instrument number, make, model, calibration date, calibration method, and any other regular checks carried out. Also refer to Process Procedures Manual Chapter 8 (see Chapter 9 of this document).

Survey books will be maintained legibly, and in such order as would enable them to be understood by other engineers.

Monthly checks will be implemented to verify the accuracy of survey control stations. Survey tolerances will be identified and complied with. Any non-compliance will be resolved through the procedure for Corrective and Preventive Actions. Refer to Process Procedures Manual Chapter 8 (see Chapter 9 of this document). Site Engineers and their supervisors will ensure compliance to the above requirements.

Survey checks will be carried out on certain critical elements of the works as they proceed to verify that the elements have been constructed as per the contract. Results of survey checks will be recorded and stored in document control.

Environmental Management

Please refer to Section 2A.6.

Safety Audit

The D&B Team Safety Manager will conduct monthly inspections and periodic health and safety audits to determine the effectiveness of health and safety management procedures, recommend corrective measures where appropriate, report results to the appropriate managers, and update safety manuals as needed.

Chapter 2: Quality Management

Structural Audit

Early on, the Developer will identify opportunities to modify the current schematic to improve bridge constructability and economy. We will develop the limits (beginning and end) of all bridge construction, consistent with our optimization studies and develop limits of all permanent and temporary retaining wall construction. Abutment and interior bent locations will avoid utility conflicts to the extent possible. We will identify all utility conflicts with abutment and bent locations and include them in the initial development of the Utility Tracking Report. Bents will be located to optimize the use of prestressed beam spans and to use straddle bent construction where feasible to minimize longer spans requiring the use of structural steel.

Checking

The Design Team will conduct Design Quality Control Reviews and Technical Reviews as required by the Design Consultant's Quality Manager, with assistance from the D&B Team's Quality Manager, to ensure a documented, comprehensive and systematic examination of the design carried out at appropriate stages.

Section 2A.8 contains more information on Design Reviews.

2A.8 Quality Control

Quality Management Plan

The Design Team is committed to applying responsible and professional quality control for all project deliverables, including Subconsultant deliverables, to ensure accuracy, completeness, and adequacy for the intended purpose. The Design Consultant CEO (DCPM) will be fully responsible for all aspects of design quality control, including the Subconsultant work and will ensure quality by following the Design Quality Plan (DQP).

Professionally qualified individuals will perform all design activities, and will be required to comply with the DQP. The Design Team will communicate and control design information through minutes of meetings and engineering drawings.

Design quality control includes management and monitoring of design inputs and outputs. All documents cited below such as procedures and checklists, will be supplemental to this Design Quality Plan and will be included in the QMP upon development.

- Design Inputs – the DCPM will maintain a list of design inputs that require control, such as survey, geotechnical, traffic, as-built drawings, reports, technical standards, specifications, and codes. The Design Quality Manager verifies that the inputs are addressed and develops specific quality procedures to address their adequacy and accuracy where required. The D&B Team will employ checklists, independent reviews and verification procedures, utilizing the expertise of the Task Leaders and other design supervisors to achieve this goal.
- Design Outputs - design engineers will be responsible for ensuring that design outputs can be verified and validated against input requirements. Specifically, engineering drawings and other design outputs, such as

Chapter 2: Quality Management

plans, specifications, calculations, and reports, must contain or make reference to acceptance criteria and must identify those characteristics of the design that are crucial to the safe and proper execution of the project, safe and proper operation of the highway and compliance with environmental requirements. The DCPM will maintain a design checklist to ensure that design engineers adopt a consistent format and content and to ensure consistency of the information delivered to the follow-on designers and contractors.

Design Reviews

The Design Team will conduct Design Quality Control Reviews and Technical Reviews as required by the Design Consultant's Quality Manager, with assistance from the D&B Team's Design Quality Manager, to ensure a documented, comprehensive, and systematic examination of the design carried out at appropriate stages.

Design reviews are an integral part of the corresponding design stage. They will include an initial "scoping session" before start of each activity and a formal review at the end of each design phase: Preliminary, Intermediate and Final. Review points may change due to changes in the schedule or the D&B Team's requirements. Separate drawings Issued for construction may be necessary, in which case the Design Team will adopt an equivalent schedule of reviews based on partial design deliverables. However, the design quality control process for submittals will remain as outlined below.

Design review meetings shall include representation of the parties with significant input to the design, and shall verify that all required inputs have been incorporated into the work and that design outputs meet all input requirements. Table is a resource table for monitoring and auditing all design services and reviews.

Table 5: Quality Review Resource Table

Type of Design Quality Review	Performed by	Activity	Responsibility
Internal checking	Design Task team members	Quality control	Segment Design Managers
Independent review	Senior staff outside design team	Independent quality control	Segment Design Managers
Internal review	Design Quality Managers Team	Design verification/validation	Design Quality Manager
Quality Audit	Quality auditor	Quality assurance	Design Quality Manager

Note: All references to personnel in this table refer to Design Consultant personnel

The Design Team will conduct design verification to ensure that design outputs at each stage meet relevant input requirements including usability to the recipient. In addition to scheduled design reviews, design verification may include performing alternative calculations (e.g. some quantities may be obtained from GEOPAK and checked by manual calculation), comparison with similar proven designs, independent reviews of the design, and its documentation prior to release, as determined by the Segment Manager. Design verification occurs continuously

Chapter 2: Quality Management

throughout the design process. Ongoing feedback between design disciplines and construction will produce design inputs and outputs that are more efficiently integrated into the next design phase and more easily implemented during construction.

The design outputs that each discipline provides to the overall highway section design of shall be verified to ensure that they meet requirement of the next user. For example, geotechnical recommendations provided to the highway designer must be in a format that can readily be used to develop the road or structural design. The road design package must meet contractor's need for clarity, accuracy, and consistency of presentation.

Design Validation is a demonstration that the project, or part of it, conforms to defined user needs and requirements. The Task Leaders and the DCPM will ensure user acceptability of various elements to prevent duplication of any shortcomings elsewhere in the project. Section L.4 details the process for providing signed and sealed plans.

Due to the size of the project, the design may be split into several packages per geographic Segments with milestones as noted above and a design team per Segment.

Task Leaders will be responsible for ensuring that quality control reviews occur at the design team level and are built into the overall design schedule. Task Leaders shall ensure that appropriate action is taken on all comments and issues arising from the quality control reviews.

Task Leaders will directly supervise their assigned project design elements and will certify, sign and date all design plans, reports and submittals for each element. These individuals will cooperate with and assist the Design Quality Control Engineers.

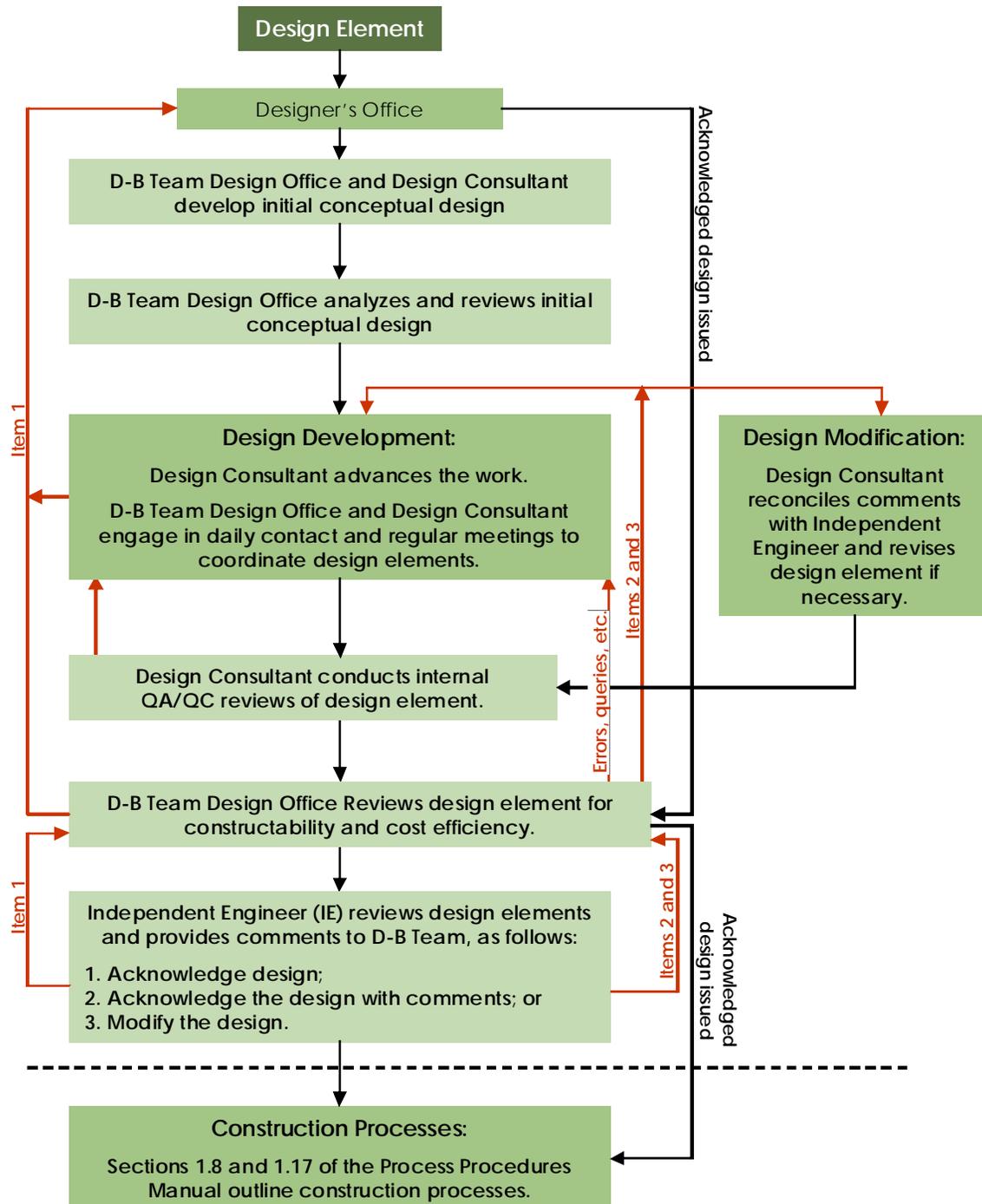
All drawings, specifications, studies, reports, calculations and deliverables will be subject to a three-stage internal review process prior to any milestone submittal:

- **Internal checking** – Continuous activity by members of the design team consisting of checking design calculations, specifications, and reports. Using checklists at appropriate milestones and signing off on checked work products prior to Independent/Internal Reviews. Appropriate staff will sign off on relevant checklists (“done by”, “checked by”). The Task Leader will review each work product and checklist, file them in the Task Team's quality file and send a copy to the DCPM.
- **Independent Technical Review** – Senior engineers outside of the Task Team will conduct independent technical reviews to complete quality control, at the Task Team location prior to submittal for Internal Review. The Task Leader will provide the reviewer with all relevant project materials such as drawings, calculations, and reports. The reviewer will follow an Independent Review Checklist (or selected items thereof) and will consider the work product in the context of the “big picture” of the IH 635 Managed Lanes Project. The reviewer will prepare a concise report and discuss it with the Task Leader, Segment Manager and DCPM. The Independent Technical Review checklist and report will be filed in the Task Team's quality file and a copy sent to the DCPM.
- **Internal Review Meeting** – Convened by the DCPM, or his or her designee, with representatives from all disciplines, prior to submittal to Design Manager. Minutes will be taken with action items clearly stated.

Chapter 2: Quality Management

Any drawings, specifications, reports, or other design documents to be submitted between formal milestone submittals will be checked by a second person prior to submittal.

Figure 15: D&B Team Design Flowchart



Chapter 2: Quality Management

Environmental Compliance Procedures

The D&B Team will implement the proposed Project design and environmental mitigation in accordance with the Environmental and Governmental Approvals that TxDOT has negotiated with Governmental Entities including the:

- U.S. Environmental Protection Agency (USEPA)
- Texas Commission on Environmental Quality (TCEQ)
- Texas Historical Commission (THC)
- U.S. Army Corps of Engineers (USACE)
- U.S. Fish and Wildlife Services (USFWS)
- Texas Parks and Wildlife Department (TPWD)
- The North Central Texas Council of Governments (NCTCOG)

Specific procedures for environmental compliance are found in Chapter 3 – Environmental Management.

Establishing Design Hold Points

Regularly scheduled design task force meetings and utility coordination meetings are held as directed by the Design Manager. Action Item Logs are updated and design directives issued to document significant design actions, as necessary.

Topics of the meetings include:

- Tracking and resolution of design issues.
- Discussion/agreement on project requirements related to design objectives.
- Performance of ongoing constructability reviews.
- Communication of construction priorities and schedules.
- Tracking progress of design development.

Designated representatives from TxDOT may be asked to perform informal reviews at any time during the life of the project. The reviews are not hold points that restrict the progress of design, but give TxDOT the opportunity to provide comments and feedback or simply to examine the progression of the design. The Developer provides unrestricted access to all activities within its quality program, for greater efficiency. Prior to reviews by TxDOT electronic or hard copies of the design element to be reviewed will be provided.

Ensuring Accuracy, Completeness and Quality of Submittals

Task Leaders will review all work performed by Subconsultants to ensure that it conforms to CDA requirements and will integrate appropriately with other design elements. Subconsultants will be required to review and professionally seal all work that they produce in accordance with applicable laws and regulations. Subconsultants shall perform internal quality control reviews on their products and certify them as meeting the requirements of the Design Team's Quality Plan and Project specifications.

Continuous Improvement

The Design Consultant Quality Manager (DCQM) will establish and maintain a system of internal audits and will train and supervise internal auditors.

Qualified personnel, independent of those having direct responsibility for the activity being audited, will perform internal quality audits. Internal audits will take place after following completion of internal checking and Independent Technical Reviews, and prior to Internal Design Reviews. Quality audits will also occur prior to submittal of “Issued for Construction” documents. The auditor reviews relevant documents and interviews personnel using an audit checklist.

The DCQM will ensure that audit results are recorded and brought to the attention of appropriate personnel such as Task Leaders and Segment Managers. Managers responsible for the activity being audited will ensure that prudent and timely corrective action is taken to resolve all identified deficiencies. Follow-up audits will serve to verify the corrective action taken and its effectiveness.

If any recurring problems exist, the DCQM will bring them to the attention of the DCPM. Quality audit results will also serve as a tool to review and implement continuous improvement to the DQP and design activities.

Other procedures for evaluating continuous improvement contemplated as part of this project can be found in the Process Procedures Manual (Chapter 9 of this document):

- PPM Section 1: Management Review
- PPM Section 10: Corrective and Preventative Action
- PPM Section 11: Internal Audits
- PPM Section 17: Quality Assurance Management

2A.9 Audit

The object of auditing is to assess whether the D&B Team is implementing Design Quality Plan appropriately and whether it continues to be effective. Auditors will follow the D&B Team procedure for quality audits. The General Manager will determine the frequency of the audits, jointly with the Quality Manager. The D&B Team will notify the Developer of audits so that the developer may participate or observe.

The Developer or other permissible third parties may, with prior notice, perform external audits on the D&B Team.

The audit team will complete a report for each audit and forward a copy to the General Manager. Personnel independent of the activity at hand will carry out all internal audits.

The Supervisory Board will consider audit findings at the Management Reviews and other meetings, to verify compliance with the D&B Team's quality system and opportunities for improvement, if any.

Chapter 2: Quality Management

Corrective Action: The Quality Manager will monitor all non-conformities raised by surveillance, inspection, test and audit to identify adverse trends or recurring problems. The Quality Manager shall investigate the root cause with the staff involved and document any required improvements to the system.

Preventative Action: Preventative action, such as competency requirements, training identification and the auditing schedule all contribute to reducing errors and omissions that result in non-conformance.

The Process Procedures Manual (Chapter 9 of this document) contains the following procedures that are relevant to this section of the plan:

- PPM Section 11: Internal Audits
- PPM Section 10: Corrective and Preventative Action

Developer's Representative and Quality Management Staff

The name of the Developer's representative(s) with defined authority for establishing, maintaining, auditing, and reporting on the PMP will be provided in the final Project Management Plan, along with the names, titles, roles, and responsibilities of supporting quality management staff reporting to the person with defined authority.

2A.10 Document Management

Maintenance of Records

Quality Records are objective evidence that specified quality control procedures and quality assurance processes were performed. The D&B Team will submit these records in accordance with CDA requirements.

To ensure accuracy, completeness, and quality in submittals, all project drawings/reports during development of the design/report, including formal reviews, will serve as evidence along with all applicable checklists, that design control was performed and will be handled as follows:

All review drawings/plans/reports (formal or informal) will be marked up as follows:

- Red pen/pencil by reviewer
- Performed revision will be marked with yellow highlighter by the reviser
- The reviewer will verify the correctness of the revision with blue highlighter

The Design Manager will maintain an onsite drawing/document register for the duration of the design phase and update it continuously as new drawings are issued. Document Control personnel will maintain archived copies of the register.

All design check sets will be labeled, sequentially numbered, and stored by the DCPM to create a design development trail. Each check set will be marked "Superseded" with date once new check set is created. All internal milestone review check sets will be labeled as appropriate (e.g. "30% Design Review"). Only one design check set will be available at any time to ensure that reviewers are all working on the latest set. Roll plans for milestone

Chapter 2: Quality Management

internal/independent reviews will be handled as noted above. The DCPM will file all review reports and meeting minutes in the appropriate Quality file. The DCPM and Task Leaders will be responsible for enforcing the above-outlined procedures.

The Developer will employ an electronic Document Management System (DMS) that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will include user-friendly navigational tools such as index, contents and search features, to facilitate information retrieval. The Developer will review usage of the DMS regularly and will survey staff to ensure that it meets their requirements. The DMS Coordinator will administer changes to the system. Staff can complete Change Control forms to activate changes after the appropriate manager has given his or her approval.

The DMS will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.

The Developer will also implement a secure Project Extranet system that will enable all team members to access and store project data, draft text, and drawings. The Project Extranet system will link to the Document Management System allowing users to access many of the same documents through either the Document Management System or Extranet site.

Document Management Procedures

Personnel responsible for the compiling and maintaining Project records are identified in the procedures listed below. Photographs will supplement progress records as directed by the D&B Team and Developer. Applicable record forms will be formatted specifically for the IH 635 Managed Lanes Project.

Chapter 9 this document is the D&B Team Process Procedures Manual, which contains specific procedures related to maintenance of records and document management. The procedures relevant to this section of the plan are:

- PPM Section 3 Documents and Data Control
- PPM Section 8 Construction Management
- PPM Section 14 Control of Quality and Environmental Records.

Environmental Documentation and Reporting

As required by the CDA, the Developer will create a Comprehensive Environmental Protection Program (CEPP), which will be applicable throughout the Term of Agreement. This document will establish the approach, requirements and processes for protecting the environment during the performance of the work to minimize impacts on the environment from the Project's design, construction, maintenance, operation and rehabilitation activities. The CEPP will satisfy applicable TxDOT, U.S. Department of Transportation, FHWA and resource agency requirements including those commitments described in the Environmental Approvals. Procedures and processes for environmental compliance will be set forth in the CEPP guidance documents, including:

- Environmental Management System;

Chapter 2: Quality Management

- Environmental Compliance and Mitigation Plan:
 - Compliance Action Plan (CAP)
 - Environmental Permits, Issues, and Commitments (EPIC) Sheets
 - Clean Water Act - Sections 404 and 401: Waters and Wetlands of the United States
 - Clean Water Act - Sections 402: Texas Pollutant Discharge Elimination System (TPDES)
 - State Listed Species and Unregulated Habitat
 - Standard Operating Procedures
 - Endangered Species Act and Fish and Wildlife Coordination Act
 - Traffic Noise
 - Well Impacts and Requirements
 - Cultural Resource Studies
 - Public Involvement
 - Floodplain Requirements
- Environmental Protection Training Plan and Schedule
- Compliance Action Plan
- Hazardous Materials Management Plan
- Communication Plan
- Construction Monitoring Plan
- Tunnel Emissions Mitigation Plan
- Recycling Plan

The CEPP will also include:

- Environmental team resumes.
- Staffing and availability of ECM and all ECT personnel.
- Environmental contact tree including primary and secondary contacts.
- ECT staff response times.

2B. Construction Quality Management

This chapter is a preliminary discussion of the Developer's organization and procedures related to Construction Quality Management. The procedures relevant to Construction Quality Management are listed below. The Process Procedures Manual (PPM) is included as Chapter 9 this document.

- PPM Section 1: Management Review
- PPM Section 2: Contract Review
- PPM Section 4: Procurement (Material)
- PPM Section 10: Corrective and Preventative Action
- PPM Section 11: Internal Audits
- PPM Section 12: Developer Complaints/Compliments
- PPM Section 17: Quality Assurance Management

2B.1 Organization

Contractual Arrangements

"The D&B Team" is a Limited Liability Company formed by Ferrovial Agroman U.S. Corp. and W.W. Webber Construction Corporation as its members, with overall responsibility for the design and construction of the IH 635 Managed Lanes Project. The contractual relationship between the Design Consultants and the D&B Team is as follows:

The D&B Team will enter into a contract to carry out the design and construction of the IH 635 Managed Lanes Project and will perform its obligations according to the Design and Build Agreement. (CDA included by reference in D&B Agreement).

Organizational Structure

The Developer's Quality sub-organization will develop and enforce procedures, carry out audits and impose corrective action to ensure that all phases of the IH 635 Managed Lanes Project adhere to Developer quality standards, legal standards and the CDA. This sub-organization also includes dedicated Safety personnel who will conduct safety training and audits and enforce safety-related corrective action. During the Construction phase, the Quality sub-organization will include the following essential staff:

- **Quality Director:** The Quality Director will oversee quality management personnel dedicated to design, construction, and O&M, as well as the Health and Safety Manager. The Quality Director will advise the D&C Director, ROD, Environmental Compliance Manager and Safety Manager on implementing quality procedures and corrective actions; advise the CEO on audit results, corrective action and changes to quality procedures; review Subconsultants' quality plans and procedures for compatibility with the

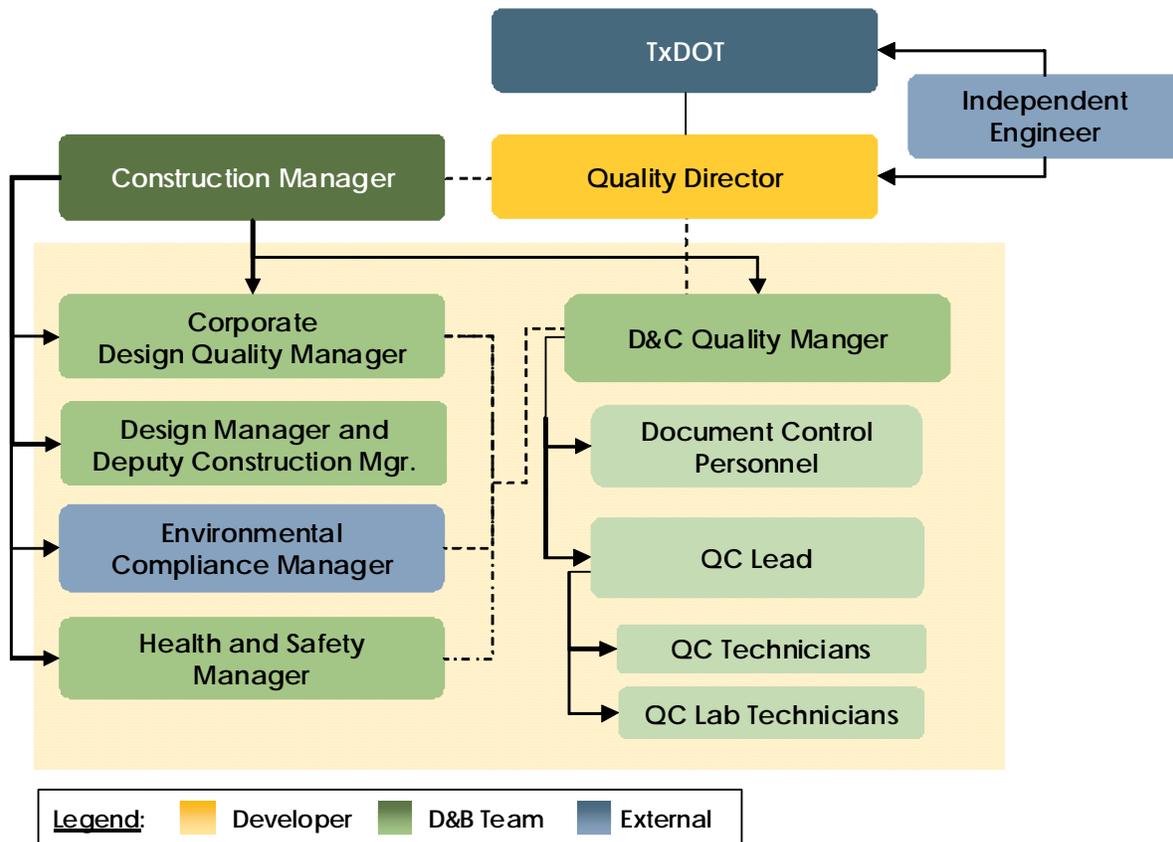
Chapter 2: Quality Management

Developer's quality plans; ensure that appropriate personnel receive training on the Quality Management System and safety; and liaise with quality auditors to schedule audits and review results.

- **Design and Construction Quality Managers (Developer and D&B Team):** QA/QC professionals with recognized experience in similar projects, the D&C Quality managers will manage routine QA/QC checking and pre-submittal design reviews; oversee construction inspection, equipment inspection and materials testing during initial construction; ensure that design subconsultant and construction subcontractor work adheres to Developer quality standards; coordinate internal audits of D&B Team activities; control quality records; and direct corrective action and continuous improvement initiatives.
- **Health and Safety Manager:** The Health and Safety Manager manages provision of safety training to employees and Subcontractors, directs safety inspections and audits during all phases of work, ensures that Subcontractor work adheres to Developer standards, controls health and safety records, updates the Safety chapter of the PMP as necessary, communicates safety issues to management and directs safety-related corrective action and continuous improvement initiatives.
- **Document Control:** Document Control Personnel control distribution, filing, retention, revision tracking, indexing of project-related documents, and ensures that personnel has access to document control forms such as Document Transmittal Sheets. Documents may include but are not limited to manuals, design plans, quality records, safety records, environmental documents, etc. Documents may be a hard or electronic copy.
- **Quality Control Leads (QC Leads):** QC Leads will control laboratory deliverables and fieldwork. Leads will be qualified engineers with specific QA/QC experience.
- **Quality Control Technicians (QC Technicians):** Senior technicians with specific experience in QA/QC.
- **Laboratory Technicians:** A team of Lab technicians proficient in TxDOT laboratory procedures. The technicians will have applicable TxDOT certifications.

Chapter 2: Quality Management

Figure 16: Design and Construction Quality Organization Chart



2B.2 Personnel

Resource Plan

The ultimate responsibility for Quality and the provision of resources during construction rests with the D&B Team General Manager. The D&B Team's Construction Quality Manager is responsible for the development and maintenance of the D&B Team's Quality Management System, and for ensuring that all employees conform to its requirements. The Quality Manager is responsible to identify quality problems, initiate solutions and eliminate recurrence.

The quality documentation stresses the need for effective communication within the organization, and the importance of meeting Developer, statutory, and regulatory requirements. D&B Team managers are responsible for ensuring that the activities they control function effectively in accordance with this Manual and the associated Procedures Manual. The Quality Assurance System defines how every member of the staff contributes to fulfilling

Chapter 2: Quality Management

the D&B Team's Quality Policy. Ultimately, the responsibility for Quality rests with all D&B Team employees. The management system contains procedures for monitoring the competence of all personnel.

Interaction with TxDOT and its Consultants

The success of the IH 635 Managed Lanes Project depends on the Developer and D&B Teams' ability to work with TxDOT toward common goals. Our relationship with TxDOT will thrive on consistent, proactive and clear communications on project issues and solutions. TxDOT's involvement in these issues will be facilitated through project meetings, monthly reports, written updates, immediate notification on high-priority issues and a review process on public communications and participation as a member of the complaint resolution team. The D&B Team will define high-priority issues and publications review procedures in consultation with TxDOT.

The Developer will prepare and agree to a task-specific Consultation & Liaison Strategy with the TxDOT CEO, and the D&B Team will be subject to the guidelines outlined in this strategy during Design and Construction. The Liaison Strategy that the Developer intends to establish with TxDOT and the Independent Engineer (IE) will include the following concepts:

- TxDOT or IE Requests for Information – TxDOT or the IE may issue Requests for Information (RFI) to the Developer to obtain more information on an issue and the Developer will respond promptly.
- Meetings with TxDOT and the IE:
 - Periodic Design and Construction progress meetings. Attendees will include TxDOT, the Developer, the D&B Team and the IE. Subcontractor representatives may also attend these meetings as necessary.
 - The Developer's representative will arrange other meetings as necessary, on topics such as traffic control and public relations matters. Attendees at these ad hoc meetings may include relevant governmental entities, road users, public transportation operators, resident associations, public representatives, landowners and other interested parties.

The secure Project Extranet site will enable authorized team members to access and store project data, progress meeting minutes, draft text and drawings. It will contain an e-mail list server to notify Project personnel of significant upcoming events and emergencies. The Extranet will also allow serve as a clearinghouse to request information from other team members. The Developer and D&B Team will regularly post project-related documents on the Project Extranet for review by TxDOT and other stakeholders.

Key Personnel

Table 6 shows how the currently approved Construction Phase Key Personnel fit into the Developer's organization. Additional key personnel will be named in the final Project Management Plan.

Table 6: Key Personnel

CDA	Developer's PDP	Name	% of Time
Construction Manager	Construction Manager (D&B Team)	Jose Carlos Esteban	100%



Chapter 2: Quality Management

		Blein	
Quality Manager	Design and Construction Quality Manager (D&B Team)	Esteban Trigueros Castaño	100%
Environmental Compliance Manager	Environmental Compliance Manager (D&B Team)	William Proctor	100%

Construction Manager

The Construction Manager is responsible for managing all construction-related aspects of the Project. He will:

- Take overall responsibility for site administration and coordination of site operations, site surveying, and quality control and testing.
- Perform progress monitoring and verification of quality and quantity of work completed by subcontractors.
- Manage health and safety for field operations.
- Manage construction budgets and cost control measures.
- Affirm that work has been completed in compliance with the specified requirements upon completion of each construction phase.
- Ensure that all pertinent construction records are collected and prepared for archiving.
- Assess bidders' competency to perform the work prior to award of any procurement package related to construction/installation.

Quality Director

The Quality Director will lead the Quality sub-organization, which is comprised of personnel dedicated to design quality, construction quality and operations and maintenance quality. The Quality Director will be active throughout the duration of the Project. The Quality Director will:

- Oversee quality management personnel dedicated to design, construction, operations and maintenance, as well as the Safety Manager and document control personnel.
- Advise the D&C Director, ROD, Environmental Compliance Manager, and Safety Manager on implementing appropriate quality procedures and corrective actions within their areas of responsibility.
- Lead periodic Management Reviews to assess the effectiveness of the Quality Management System. Advise the CEO on audit results, corrective actions, and changes to quality procedures.
- Review Subconsultants' quality plans and procedures for compatibility with the Developer's quality plans.
- Ensure that appropriate personnel receive training on the Quality Management System and safety.
- Update the Quality Management section of the Project Management Plan as necessary.
- Liaise with external/independent quality auditors to schedule audits and review results.

Chapter 2: Quality Management

Environmental Compliance Manager

The Environmental Compliance Manager will:

- Direct the work of the Environmental Compliance Team.
- Review required environmental submittals for quality and accuracy.
- Monitor, document, and report environmental compliance of the work.
- Report any violations or noncompliance that represent an imminent danger to human health or the environment to TxDOT and the Developer immediately.
- Report appropriate recommendations for corrective action to TxDOT and the Developer, including stoppage of Work.
- Review and submit all necessary environmental documentation and monitoring reports to appropriate Governmental Entities and/or TxDOT.

Construction (Including Surveying, Utilities and Planning)

The D&B Team Construction Manager is responsible for ensuring that all aspects of construction work occur according to the contract documents, within budget and schedule, and in accordance with current environmental and Health & Safety legislation. The Construction Manager reports to the General Manager and will liaise on an ongoing basis with all other D&B Team staff members to ensure fulfillment of the requirements of the Design-Build Contract.

The procedures mainly relevant to this section of the plan are:

- PPM Section 8: Construction Management
- PPM Section 16: Utility Relocation

Procurement

The Controls Manager and Procurement Managers will optimize purchasing during the project, establishing rules that guarantee that the products and services purchased meet the contract requirements with the Developer, taking into account price, schedule, quality, and overall best value. The Procurement Manager will report to the Controls Manager and will be responsible to produce, maintain and enforce the procurement policy defined by the Supervisory Board and the CDA.

The procedures mainly relevant to this section of the plan are:

- PPM Section 4: Procurement (Materials)
- PPM Section 5: Procurement (Subcontractors)
- PPM Section 7: Procurement (Design)



Chapter 2: Quality Management

Administration and Accounting

The Administration Manager will be responsible for the proper administration of accounts relating to the business performance of the Design and Build Agreement and the D&B Team in accordance with corporate policies and applicable laws and regulations.

The Administration Manager will execute the business administration for the D&B Team and have care and custody of its funds, securities, evidences of indebtedness, and all personal property and deposit in accordance with the instructions received by the General Manager and the Supervisory Board. The Administration Manager is responsible for accounts payable, accounts receivable, maintaining payrolls, and all other financial matters pertaining to the project.

Interrelation between Disciplines/Functional Areas

Meetings between the discipline and functional area managers are the primary means to disseminate information and control their efforts. At these meetings, managers will provide progress updates and highlight issues arising during execution of the Work.

The procedures relevant to this section of the plan can be found in Chapter 9 of this document, in PPM Section 17: Quality Assurance Management.

Contractor and Third-Party Key Personnel

The Proposer’s labor and materials sourcing strategy embodies preferences in offering subcontractor-designated work to qualified DBEs including small, small disadvantaged, women-owned, HUBZone, and service disabled veteran business concerns as feasible. Human resource managers and project management personnel will identify the work activities that the Proposer’s own workforce will perform based on best value assessments of each work activity and labor resource.

The Proposer is familiar with DBE requirements from its work in Texas and other areas. Co-General Contractor W.W. Webber has completed numerous TxDOT highway and aviation projects in compliance with TxDOT DBE requirements, including many in the Dallas-Fort Worth area.

The Proposer and D&B Team have already contracted a number of potential subcontractors who may help the Proposer meet the DBE goals. Although the Proposer and D&B Team will not award contracts or purchase orders until the design is more fully advanced, the D&B Team has contacted 18 DBE subcontractors and suppliers who are potential participants in the project. Table 7 is a list of those already contacted:

Table 7: Potential Subcontractors Contacted by Proposer and D&B Team

Subcontractor	Trade/Material
S & J Electrical Service	Electrical
Jona Contracting, Inc.	MBGF

Chapter 2: Quality Management

Subcontractor	Trade/Material
Odum Services, LP	MBGF
Statewide Guardrail Service	MBGF
J. H Painting	Painting
Striping Technology, Inc.	Striping
Breda Company, Inc.	Rebar
Esssary, Hart & MacWilliam Reinforcing	Rebar
Indus Construction, LP	Rebar
Highway Pavement Specialties, Inc.	Saw & Seal
Cen-Tex Seeding, Inc.	Seeding / Erosion Control
Texas Environmental	Seeding / Erosion Control
Brenda Price Trucking	Trucking
Clemons Trucking Company	Trucking
McRyan Hauling, Inc.	Trucking
K & S Utility Contractors, Inc.	Underground
Renaissance Contractors, Inc.	Underground
Choctaw Erectors, Inc.	Concrete Structures

Environmental Protection Training Plan Implementation

Developer will develop and implement an Environmental Protection Training Program (EPTP) that will include methods and procedures documented in the Environmental Compliance and Mitigation Plan (ECMP). The length of training sessions and their frequency will be sufficient to achieve the requirements of the EPTP. Training will occur on the first day of work for each worker, prior to commencement of work.

The EPTP will educate personnel who engage in field activities to recognize the importance of environmental issues throughout construction, operation and maintenance and to recognize the various environmental sensitivities associated with the Facility. Every worker will be trained to recognize environmentally sensitive resources that may be encountered during work, avoid or take appropriate action to minimize environmental impacts from the work, and understand the required actions, practices and procedures regarding environmental resources.

2B.3 Offices and Equipment

To be provided in final Project Management Plan.

2B.4 Contractors

Contractor Control Procedures / Ensuring Contract Satisfaction

The D&B Team is constantly seeking out best practices that will lead to superior performance in satisfying Developer needs and the D&B Team's internal cost effectiveness. Towards this goal, the D&B Team is establishing a relationship with its Subcontractors to create a list of preferred Subcontractors. Subcontractor performance is therefore monitored on various items, e.g. safety, Non-conformities, on the contract. This data will be analyzed and used for establishing reliable relationships.

The Construction and Design Managers will monitor Subcontractor performance on a regular basis while the works are being carried out on site. Any problems, difficulties, failures, or queries that bring into question matters within the scope of this procurement procedure will be identified and resolved jointly, with the Procurement Manager in conjunction with other relevant personnel.

To control the performance of Subcontractors, the relevant Project Controls Representative will review Subcontractor progress payments and the General Manager will authorize them.

Upon completion of a Subcontractor's work, the Construction Manager, with input from the Procurement Manager, will complete a Subcontractor's Performance Survey and distribute copies of the document to the Document Control System so that it may be recorded in the Subcontractor database for future reference.

Responsibility of Contractors and Affiliates

The contractual relationship between construction subcontractors and the D&B Team is as follows:

The D&B Team will enter into a contract to carry out the design and construction of the IH 635 Managed Lanes Project and will perform its obligations according to the Design and Build Agreement. (CDA included by reference in D&B Agreement).

The D&B Team will delegate responsibility for certain elements of construction and construction quality to contractors via subcontracts. These subcontracts will incorporate by reference the Design and Build Agreement, CDA, Technical Requirements, and other relevant contract documents.

The procedures/documents mainly relevant to this section of the plan are:

- PMP Chapter 9, PPM Section 17: Quality Assurance Management
- PMP Chapter 2A: Design Quality Management

2B.5 Interfaces

The Developer will provide the IE with safe and prompt access to the Project and its related office facilities and documents in accordance with CDA Section 9.3 and the Independent Engineer Agreement. The CEO will facilitate the IE's involvement during the O&M phase, which will include audit inspections, Owner Verification Tests, input on

the Renewal Work Schedule, review of submittals to TxDOT, attendance at tests and inspections, auditing books of Key Contractors, investigating safety compliance and other oversight and auditing activities.

2B.6 Procedures

Project-Specific Construction Procedures

The overall objectives of the proposed construction staging and traffic management design are to provide for safe and expeditious flow of traffic through the Project area, reduce impacts on local stakeholders, guarantee access to neighborhoods and businesses, communicate upcoming construction activities to stakeholders effectively, and maximize the safety of construction and inspection personnel. The proposed traffic control plans were developed to safely route traffic at a controlled speed near or around construction areas with geometrics and traffic control devices as similar as possible to those used during normal operating situations, while providing room for efficient construction work. The intent of the traffic control plan is to produce as minimal an effect as possible on traffic operations, by minimizing the frequency of and time consumed by, impediments to normal traffic flow.

Highway construction projects of this magnitude present many challenges in addition to traffic control. Two key issues that must be considered in advance pertain to utilities and drainage. It is essential that existing utilities located within the project corridor are either well-protected or relocated prior to construction activities that may damage them, possibly resulting in service outages. Existing utilities have been identified throughout the length of the project corridor, and potential conflicts with the roadway improvements and associated amenities have been identified. In those instances where conflicts cannot be avoided, utility relocation plans will be developed. Provisions for utility relocations have been carefully coordinated within the proposed sequence of construction to ensure not only that these utilities are out of harm's way for each construction phase, but also that scheduling this work will not result in construction delays.

The construction phasing and traffic control are two of the Project's most critical elements. Several goals stated in the RFP are directly tied to the implementation of an effective and efficient construction phasing and traffic control. The Proposer has developed construction phasing and traffic control plans to satisfy the following objectives:

- Maintain mobility through the Project area during construction while minimizing impacts to businesses, communities, and adjacent property owners
- Implement safe construction, operations, and maintenance.
- Maintain the existing IH 635 bridge section over the Dallas North Tollway.
- Maintain at least two lanes of traffic on frontage roads at all locations.

The minimum number of lanes to be maintained will equal the number of existing General Purpose lanes currently available on each controlled-access facility. The number of roadway lanes may be lowered during off-peak and lowest-volume periods. Lane closures on other roadways may be considered within reason, as long as all traffic patterns and accesses are maintained.

The overall approach for construction staging and traffic control centers around providing sound concepts that achieve the requirements described above, while maximizing the cost-effectiveness of their implementation. At all

Chapter 2: Quality Management

times during construction, access to all residences and businesses will be maintained. All business, airport and residential access points will remain open through the use of construction stages and temporary driveways. To minimize the need for temporary pavement throughout all phases of construction, traffic will be routed onto a combination of existing pavement and newly constructed pavement to the greatest extent possible.

Storm water drainage is also an important issue during construction that must be coordinated within construction staging concepts. The proposed permanent drainage system for this project was schematically designed based on the sequencing of the various construction phases for the highway and bridge work. This was done to ensure a logical and cost-effective layout of the storm sewer system, and to enable use of permanent drainage elements as early in the construction process as possible. While the sequencing of the placement of the permanent drainage features takes into consideration the accommodation of site-specific storm water runoff, temporary drainage measures have also been identified to ensure positive drainage during all phases of construction. The construction sequencing and traffic management plans were developed considering:

- Removal of all culverts crossing IH 635 except the two culverts at DNT (Sta 255+73 and Sta 268+90). Segments of the two culverts over the proposed Managed Lanes are to be removed and replaced with steel aqueduct sections at the same grade and elevation that will be constructed in phases in accordance with other IH 635 construction. Temporary drainage will be handled using existing ditches at all locations other than DNT.
- Closure of all HOV lane operations at the onset of the project and provisions for four 11-foot lanes for each direction on IH 635.

The Developer will notify the community in advance of upcoming construction activities through the use of a Project website, Dynamic Message Signs, radio, newspapers and local authorities, as specified in the Public Information and Communications Plan.

Detailed Construction Procedures for Major Activities

Pavement

LBJ Development Partners recognizes the long-term benefits of properly designed and constructed pavement sections. A well-designed and properly constructed pavement segment will reduce maintenance costs and maintenance-related delays, thereby increasing safety and traffic mobility on the Project, and reducing long-term life cycle costs.

The Proposer has developed preliminary flexible and rigid pavement designs for the pavement sections for the Managed Lanes, Main Lanes and Frontage Roads. The design information is based on a review of several reports provided in the Reference Information Documents and also on additional borings and tests conducted by the D&B Team for this proposal. Pavement designs were developed using AASHTO design procedures and DARwin software.

To provide the most reliable data, the Proposer developed separate designs for the different subgrade geologies present beneath the Managed Lanes, Main Lanes, and Frontage Roads. Instead of developing one design based on the worst-case profile. For purposes of this preliminary pavement design, subgrade modulus values were

Chapter 2: Quality Management

obtained for the different soil types encountered including Alluvium, weathered and unweathered Austin Chalk, and Eagle Ford Shale. Eagle Ford Shale and Unweathered Austin Chalk are present in the depressed section of the Managed Lanes. These moduli are the worst cases from the soils tested for this project. Additional laboratory testing and non-destructive field testing (Falling Weight Deflectometer) will be utilized to determine the most accurate values for final design. The rigid pavement design was performed using a 300-pound per cubic inch coefficient of subgrade reaction based on the use of four inches of HMAC bond breaker and lime stabilization beneath the concrete. Lower design moduli than typically recommended by AASHTO and TxDOT were also used for the flexible base and the lime-treated soils to provide more conservative designs.

A minimal thickness of the subgrade soils will be replaced with non-expansive fill in the zone immediately beneath the pavement section as required to reduce the Potential Vertical Rise (PVR) to specific values. This depth of fill has also been determined for each specific geologic formation (both weathered and un-weathered). A one-inch PVR (i.e. the PVR of the final section) is used for all of the General Purpose and Managed Lanes (controlled-access freeways). On the remainder of the roadways, a one-inch PVR design was incorporated for lanes expected to accommodate more than 25,000 ADT and 1.3 inches was used for lanes expected to accommodate less than 25,000 ADT. **This is in excess of the minimum TxDOT requirements**, which are 1.5 inches for rigid and two inches for flexible pavement sections. Spoil from Austin Chalk excavations is to be used for the non-expansive fill soils beneath the pavements where required. This material has greater strength values than lime-treated clay soils. This results in a design that will exceed project requirements of RFP Books 2A and 2B, Chapter 8. LBJ Development Partners' proposed pavement design will provide lower maintenance costs and greater mobility for the Project.

All below-grade Managed Lane pavement sections will be constructed with a drainage blanket and under-drain system along the roadway edges of pavement to prevent subgrade erosion due to groundwater intrusion, as observed on borehole data, thus reducing maintenance and enhancing smooth operation and mobility.

With respect to the traffic-loading approach, LBJ Development Partners performed a traffic analysis for the General Purpose Lanes, Frontage Roads, Managed Lanes, ramps, and cross streets. The design traffic (ESAL) was calculated from the ADT and traffic profile (percent trucks), and truck factors for each type and roadway within the scope of the Project to be rebuilt.

For the final design, additional borings and testing will be necessary at 500-foot intervals due to the possible presence of sulfates, to meet the spacing requirements of the TxDOT *Pavement Design Guide*. The existing samples indicate low probability of sulfates, but all of the geologies found along the project are known to be sulfate-bearing to some degree (generally found in veins in the soil matrix). These veins of sulfates will be identified for removal during construction. The Developer will employ specific methods for identifying high-sulfate areas during construction and will apply already-identified remedial measures to avoid sulfate-induced distress.

LBJ Development Partners is well versed in cutting-edge Mechanistic-Empirical Pavement Design Guide (ME-PDG) procedures, which will be utilized to verify and optimize the final design. The Developer will employ construction procedures to ensure a better-than-average ride quality of the initial sections. Higher initial ride quality should prolong the intervals between maintenance overlays and increase the lifespan of the pavement. This approach improves mobility by minimizing downtime for maintenance. Table 8 defines the pavement structure considered for the IH 635 Managed Lanes Project.

Chapter 2: Quality Management

Table 8: Proposed Pavement Structure

Description	Classification	SMA / HMA	CRCP / Base Layer
IH 635 General Purpose Lanes	Urban Interstate	•	
IH 635 General Purpose Lanes (at Depressed Managed Lanes)	Urban Interstate		•
IH 635 Managed Lanes at grade	Urban Interstate	•	
IH 635 Managed Lanes Depressed (Underdrains and Drainage Blanket Provided)	Urban Interstate	•	
IH 635 Frontage Roads	Minor Arterial	•	
IH 35E Frontage Roads	Minor Arterial	•	
Cross Streets	Arterials/Collectors	•	

LBJ Development Partners will use a Stone Matrix Asphalt (SMA) layer on all flexible pavement roadways listed in Table 8. Its implementation will bring the benefits of a more durable, rut-resistance, and long lasting pavement compared to standard hot asphalt mix layers. SMA is also a smoother, quieter, safer pavement surface than Continuously Reinforced Concrete Pavement (CRCP). Research in the United States and Europe shows that a SMA layer will reduce highway noise by three to five Decibels Adjusted (dBA), when compared to traditional hot mix asphalt (HMA) or CRCP. A reduction of three to five dbA is equivalent to doubling the distance of the observer to the source of the noise. By reducing highway noise, LBJ Development Partners will exceed TxDOT's goal stated in ITP Section 1.2 (a) by reducing impacts to communities and adjacent property owners.

Structures

Bridge widths were determined from the roadway geometric requirements according to the TxDOT lane configurations, and shoulder widths specified on schematics. LBJ Development Partners presented ATC 3 to TxDOT. This ATC had the intention to obtain a design speed deviation from the requirements of Book 2A Section 11.2.2 for some direct connectors as indicated below:

Direct Connect	ATC Requested Design Speed
Alignment Name	(mph)
I35 SB to I635 EB	35
I635 WB to I35 NB	40
I635 WB to 35 SB Managed Lanes	45

Chapter 2: Quality Management

The above direct connectors have curves that according to the environmentally approved design schematics, and taking into account the right of way limits and other constraints, could not be made to meet Stopping Sight Distance requirements for the design speed of 50 mph required for direct connectors according to the CDA Book 2A, Section 11.2.2 Table 11-1A without a very significant widening of the inside shoulder beyond the widths required in Book 2A according to standard TxDOT practice. LBJ Development Partners will reference the electronic schematic roll plots provided by TxDOT on such problem areas to provide values equal to those utilized in such document as allowed by last paragraph of RFP section 11.2.2. LBJ Development Partners will also use the shoulder widths as laid on the electronic schematic files provided by TxDOT for the Managed Lanes bridge over IH 35E. At this location the outside shoulders are only 2ft wide instead of 10ft as required by RFP book 2A (FHWA has given TxDOT a design exception dated January 18, 2008 for this shoulder width).

LBJ Development Partners bridge layouts differ from TxDOT's schematic drawings at the DNT intersection. In order to reduce the time required to build all the improvements required at this intersection, the Proposer submitted ATC 2 and ATC 4. For the Developer to implement these ATC's, overpasses had to be added on the existing loop ramps to and from the Dallas North Tollway and at the Mainlanes for the same highway.

Drainage

The major connecting waterways located within the Project are Farmers Branch, White Rock Creek and Bachman Branch. The existing drainage system carries the runoff through ditches, inlets, culverts and to outfalls. The existing runoff from Midway, west of the Dallas North Tollway (DNT) mainly conveys to Farmers Branch. Drainage areas from Midway to Preston, and large offsite drainage areas at DNT, flow to the south and connect to Bachman Branch. The existing runoff from east of Preston near DNT areas conveys to White Rock Creek. The proposed surface water collection system is designed to preserve and optimize existing drainage patterns.

The proposed drainage design conforms to the criteria set out in Attachments 12-1a and 12-2a of the Technical Provisions and good industry practices. The drainage design consists of curbed inlets, curb grate inlets, barrier inlets, drop inlets, cross-drainage box culverts, aqueducts, piping networks and ditches to convey internal drainage to outfalls. Drainage design is also based on the guidance from the drainage design report, "Proposed IH 635 (LBJ Freeway) Improvements West Section-Luna Road to Skillman Street" dated October 2006.

Outfalls: The Developer will mitigate runoff from the increase in impervious area by constructing a detention pond between the IH 635 / IH 35 interchange and outfall locations. Three major outfalls are proposed:

- West of DNT – this outfall will collect runoff from west of DNT, drain into a ditch and then outfall to Farmers Branch Tributary.
- DNT Area – this outfall collects runoff from offsite areas in the DNT area, drains to the south and joins at the beginning of Bachman Area.
- East of DNT – this outfall collects runoff from east of the DNT area and conveys to a tributary of White Rock Creek through a series of culverts.

Inlets and Conveyance to Outfalls: The storm drainage design has been developed according to appropriate standards and governing criteria as provided by Technical Provisions, Attachments 12-1a and 12-2a and good industry practice. Based on typical internal drainage areas, inlets are placed on frontage roads, Managed Lane

Chapter 2: Quality Management

direct connectors and other parts of roadways. The proposed inlets are placed at all low points, flanking locations and various locations to suit ponding width criteria.

Storm water treatment units are proposed under Managed Lanes to pre-treat all water discharged from the depressed Managed Lane drainage system to fulfill the requirements of Section 25.2.3.2 of the Technical Provisions. Bridge drains will be installed on direct connectors and bridges and the runoff will be conveyed to a proposed drainage system, which conveys to the outfalls. There are three main trunk line systems along the corridor to convey the runoff to the project outfalls: Westbound and eastbound, which will cross DART areas and Harry Hines Blvd, and managed lanes.

Traffic Management Plan

The proposed traffic management plan is developed in conjunction with the Health and Safety Manager, Construction Manager, and the Segment Managers. All matters relating to arrangements, timing, and communications with the public and other stakeholders will be discussed with the construction team, after which a general plan will be drawn up and forwarded to the Developer and relevant governmental entities. Any recommendations, suggestions or conditions they may have will be considered and applied, as applicable, to the traffic management plan. These plans are also discussed at the periodic construction, traffic management, and safety meetings.

Definitions

Traffic Management Plan (TMP): Means the work associated with Traffic Management during the Project.

Process Procedure (PP): A Process Procedure is a document that details the purpose and scope of a generic activity, and specifies how it is to be carried out. The Quality Manual describes the intent (i.e. "what" is to be done), the procedure details not only "what" but also "who, how, when, where and why". The output from a procedure provides objective evidence (in the form of records) of the compliance to the Specification and Developer requirements.

Method Statements /Work Plans: Written instructions for individual construction activities.

Traffic Control Plan (TCP): A licensed Professional Engineer will prepare TCPs, which consist of sets of drawings that show the flow of traffic in construction zones and the location of proposed traffic control devices. The TCP is used in conjunction with, and will comply with the requirements of the Texas Manual on Uniform Traffic Control Devices.

References

- The D&B Team Quality Assurance Manual and Process Procedures Manual
- The D&B Team Health and Safety Plan.=
- Contract specific documents such as Specifications and Drawings.
- The D&B Team Material and Subcontract Procurement Procedures
- The Texas Manual on Uniform Traffic Control Devices, 2006 edition

Chapter 2: Quality Management

Responsibilities (for this procedure)

- Preparation by the Quality Manager
- Review by the Construction Manager
- Approval by General Manager
- Specific Responsibilities
 - Traffic Safety Officer (TSO): The appointed Traffic Safety Officer will oversee traffic management issues. The Traffic Safety Officer will supervise all aspects of Traffic Management during the Project's Design and Construction. Third-party consultants may be employed to provide this service. The TSO will supervise the activities of Segment Traffic Representatives to implement the Facility wide procedures and requirements at Segment Level. The TSO reports to the Construction Manager.

Procedure

The D&B Team provides Traffic Management for the execution of the Work in accordance with the Design and Build Agreement, CDA, Technical Requirements (Section 18), and Texas Manual on Uniform Traffic Control Devices for Streets and Highways 2006 Edition.

Traffic control is accomplished by applying the engineered Traffic Control Plan in conjunction with the standards defined in the Texas Manual on Uniform Traffic Control Devices for Streets and Highways 2006 Edition.

Prior to commencement of work in a specific area, a notification system will be used to ensure that Developer, governmental agencies, local businesses, residents, and the traveling public are advised of upcoming changes to traffic patterns, e.g. lane closures.

Each Segment will have designated traffic control representatives, reporting directly to the Traffic Safety Officer and the Segment Managers, who are responsible for the accurate implementation, communication and recording of the individual Segment plans. These representatives will work directly with the Segment Manager to ensure compliance with the guidelines of the individual Segment traffic management plan.

A licensed P.E. will review proposed changes to the signed and sealed Traffic Control Plan, and sign and seal these modifications if approved prior to field issue.

Traffic Management and Control Plan Outline.

I. Introduction

A. Overview

1. Safety criteria
2. Public awareness programs
3. Local agencies/stakeholders involvement
4. Traffic Management Plan
5. Impact areas
 - a. residences

Chapter 2: Quality Management

- b. businesses
- c. other

II. Organization and Management Structure

A. Key Personnel

- 1. Roles and Responsibilities
 - a. Construction Manager
 - b. Segment Manager
 - c. Traffic Safety Officer

B. Traffic Management Plan

- 1. Pre-planning
- 2. Updates

C. Subcontractors and Vendors

- 1. Selection process
 - a. services and responsibilities
 - b. qualifications
- 2. Traffic control maintenance
- 3. Courtesy Patrol

D. Dedicated traffic control staff

- a. Roles and responsibilities
- b. Qualifications
- c. Monitoring and coordination of subcontractors
- d. Reporting and recording responsibilities
- e. Roles and responsibilities in roadway maintenance

E. Contractual arrangements

- 1. Reporting and recording requirements
- 2. Design and Build Agreement pass-thru terms and conditions

III. Procurement

A. Uniform standards—TMUTCD

B. Equipment

- 1. Signage
 - a. permanent
 - b. temporary
- 2. Message boards
- 3. Barrier
- 4. Traffic signals
 - a. permanent
 - b. temporary
- 5. Pavement markings
- 6. Other

IV. Schedule

- A. Preliminary planning
- B. Schedule updating
- C. Segments

Chapter 2: Quality Management

V. Traffic Control Procedures

- A. Subcontractor and vendor procurement
- B. Coordination
 - 1. Community awareness
 - 2. Local/state agencies and stakeholders
- C. Quality control
- D. Traffic control request forms

2B.7 Quality Control

Construction Quality Management Plan

The D&B Team is committed to the application of responsible and professional quality control for all project deliverables, including subconsultant deliverables, to ensure accuracy, completeness and adequacy for the intended purpose. Quality Control includes management and monitoring of construction inputs and outputs. Professionally qualified individuals will carry out the construction activities in compliance with the design-build QMP.

Comprehensive Environmental Protection Program Integration

The Developer will develop and implement a Comprehensive Environmental Protection Program (CEPP), applicable throughout the Term of the Agreement to establish the approach, requirements and procedures to be employed to protect the environment. All component parts shall reflect in order of priority: impact avoidance, minimization and as last resort mitigation. The CEPP will satisfy applicable FHWA, TxDOT and resource agency requirements, including those detailed as commitments in any Environmental Approvals.

At a minimum, the CEPP will include the following component parts:

- Environmental Management System (EMS)
- Environmental Compliance and Mitigation Plan (ECMP)
- Environmental Protection Training Plan (EPTP)
- Hazardous Materials Management Plan (HMMP)
- Communication Plan (CP)
- Construction Monitoring Plan (CMP)
- Recycling Plan (RP)

We are committed to improving the sustainability of the highway operations. This requires the consideration and assessment of environmental issues for all activities. The assessment involves balancing the impacts of the activities in a way that sustains both environmental protection and promotes efficient operations.

Our goal is to deliver increased sustainability via the promotion of environmental awareness throughout our team. We will monitor progress towards delivery of this commitment via the development of Performance Indicators and appropriate benchmarking.



Chapter 2: Quality Management

We are aware that some products and activities cause environmental damage. We commit to use products and employ procedures that minimize this damage and provide environmental protection. We will work to evaluate the true environmental cost of the products we use and the activities we carry out.

We recognize the continual change in environmental stewardship and legislative obligations and will enhance environmental awareness among our staff and supply chain partners.

Our commitment to enhanced environmental management of our works processes is demonstrated by our development of our Integrated Management System that embodies the ISO 14001 Environmental Management Systems. We will apply internal indicators and benchmarks to support the delivery of our policy objectives.

Control of Materials

The General Manager, through the Construction Manager, will ensure that responsibility for control, identification and traceability of materials is allocated to the Segment Managers and their staffs for inspecting ordered materials, carrying out receipt inspections, verifying any product conformity certificates applicable to the supplied materials and ensuring Material Safety Data Sheets are supplied for their safe use.

If a material storage yard manager is appointed, he or she will be responsible for the safe and proper storage of material. Any damaged or unacceptable products will be subject to the Control of Non-Conforming Products procedure until resolved. Isolation areas will be used to segregate such materials from the works.

Traceability of products will be documented to the extent specified by the Design and Build Agreement, or as required by statute.

The Inspection and Test Plan and relevant Method Statements will identify cases in which the Developer requires inspections before incorporation of products into the work. Developer-supplied materials, if any, must also be inspected, and, if found unacceptable, the Developer will be informed in writing.

The procedures related to control of non-conforming products are located in Section 9 of the Process Procedures Manual, found in Chapter 9 of this document.

Examinations and Audit of Construction Work

The object of auditing is to assess whether the system is functioning as planned and whether it continues to be effective. The Developer or other interested third parties may perform external audits on the D&B Team with prior notice. The General Manager will determine the frequency of internal audits jointly with the Quality Manager.

Auditors will complete reports for each audit and forward copies to the General Manager and Quality Manager. The original will go to Document Control. Persons independent of the activity under audit will carry out internal audits.

The Supervisory Board will consider the findings of all audits, verify compliance with D&B Team Quality Plans and discuss opportunities for improvement at biannual review meetings.

Testing of Materials and Workmanship will be in accordance with the Contract documents. The CDA defines oversight by the Independent Engineer and by TxDOT. The D&B Team will carry out testing and sampling.

Section 11 of the Process Procedures Manual (Chapter 9 of this document) contains procedures for internal audits.

Test and Inspection Procedures

Testing of Materials and Workmanship will be in accordance with the Contract documents. The CDA defines oversight by the Independent Engineer and by TxDOT. The D&B Team will carry out testing and sampling.

The Inspection and Test Plans for each work activity will identify specific “Hold Points” if required. The issued procedures describe the process of inspection, testing, reporting, and the control of non-conformances.

Product conformity certificates and external test results are acceptable. The D&B Team will maintain all proving records for verification and release of Hold Points as required.

The D&B Team will calibrate and maintain measuring equipment at intervals recommended by the equipment supplier, and at minimum intervals required to maintain accreditation. Inspectors will record the results on Instrument Checklist documents.

Section 9 of the Process Procedures Manual (in Chapter 9 of this document) details the action necessary upon discovery of a non-conformance.

Remedial and preventative actions taken in accordance with non-conformances, will receive the concurrence of the Quality Manager.

The D&B Team will maintain a register of ITPs generated throughout the project.

Construction Quality Control Procedures

The D&B Team is committed to the application of responsible and professional quality control for all project deliverables including subconsultant deliverables to ensure accuracy, completeness, and adequacy for the intended purpose. Quality Control includes management and monitoring of construction inputs and outputs. Professionally qualified individuals will carry out the construction activities in compliance with the design-build QMP.

Progress Reporting to the Developer

The D&B Team will prepare monthly Progress Reports and submit them to the Developer no later than five working days after the end of each calendar month. The report will detail the progress achieved in the previous month and will compare actual progress to planned progress. The discussion will also include recovery plans if applicable.

Work Plans/Method Statements

Work Plans and Method Statements define the proposed method of executing an element of work taking into account the particular requirements of the project including: Site conditions, safety hazards, the contract drawings, specifications, and industry practice. The plan and statement define the proposed use of equipment, labor, and materials. Work Plans and Method Statements identify needed permits and may include supplemental drawings, sketches, and product data as necessary.

The principle aim of a Method Statement is to ensure that:

- Risks are assessed, safe working methods defined, and workers involved are made aware of the risks associated with the task.
- Tasks are thought out in advance of field performance.
- Resources are available prior to task commencement.

Work Plans will:

- Cover key activities identified through the schedule and be task-specific.
- Identify responsible personnel.
- Identify the required control measures and preparations.
- Be prepared in accordance with the safety standards outlined in the Health & Safety Plan and Risk Assessment.

Managers will discuss the details of Work Plans in safety awareness meetings prior to commencing work on a new task considering environmental and security issues where appropriate.

Following is a non-exhaustive list of activities that may require work plans:

- Traffic Management segregated into each traffic management operation, including traffic diversions, traffic rerouting, and permanent and temporary diversions.
- Demolition and site clearance.
- Safety fences, safety barriers, and pedestrian guard rails.
- Drainage and service ducts.
- Earthworks including method statements for different materials.
- Road pavements including instructions for different materials.
- Curbs, Footpaths, and Paved areas.
- Traffic signs.
- Road lighting.
- Electrical work.
- Structures, each being broken down into each main element.
- Landscape operations, including the monitoring, stripping, preservation and re use of topsoil.
- Accommodation works.

Chapter 2: Quality Management

- Service diversions.
- Environmental management including treatment of habitat areas and all areas where there is any risk or potential risk of environmental damage.
- Special activities.

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Chapter 2: Quality Management

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- Road pavements including instructions for different materials.
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- Structures, each being broken down into each main element.
- Landscape operations, including the monitoring, stripping, preservation and re use of topsoil.
- Accommodation works.
- Service diversions.
- Environmental management including treatment of habitat areas and all areas where there is any risk or potential risk of environmental damage.
- Special activities.

Responsibility for Preparation, Issue, Review and Approval

The following personnel are responsible for preparation, issue, review and approval of work plans:

- Preparation/Compilation: Discipline Foreman
- Review: Segment Manager
- Approval: Construction Manager

All work plans will follow a standard format.

The D&B Team will maintain a register of work plans generated throughout the project.

During the course of construction, amendments and alterations may be required to the work plans. The Work Plan Register will contain records of changes.

The D&B Team will liaise with the Developer and will coordinate its activities within the Developer's Public information and Communications Plan.

Amendments to the Quality Plan

The Quality Manager will keep the various Quality Plans under review, incorporate necessary changes and reissue revised Quality Plans, as appropriate. Document Control staff will maintain a record of the revisions and forward them to the General Manager.

During the course of construction, amendments and alterations may be required to the ITPs. The D&B Team will maintain records of changes on file in the ITP Register.

The procedures/documents mainly relevant to all this section of the plan are:

Chapter 2: Quality Management

- PPM Section 8: Construction Management
- PPM Section 17: Quality Assurance Management

Establishing Construction Hold Points

The Inspection and Test Plans for each work activity will identify specific “Hold Points” if required. The issued procedures describe the process of inspection, testing, reporting, and the control of non-conformances.

Ensuring Accuracy, Completeness and Quality of Submittals

To ensure accuracy, completeness and quality in submittals, all project drawings/reports, including formal reviews, will serve as evidence along with all applicable checklists that quality control was performed, and will be handled as follows:

All review drawings/plans/reports (formal or informal) will be marked up as follows:

- Red pen / pencil by reviewer.
- Performed revision will be marked with yellow highlighter by the reviser.
- The reviewer will verify the correctness of the revision with blue highlighter.

Continuous Improvement

The Developer will pursue a policy of continuous improvement of this Quality Management System via Internal Audits and review of NCRs, among other methods.

Corrective and Preventative Action:

The D&B Team has established and maintains a procedure (PPM Section 9) used for identifying any non-conformance (i.e. an occurrence not in conformance with procedure) within the Quality Management System. Such occurrences require the implementation of corrective actions where evidence of failure within the Quality Management System is apparent, or where the possibility (potential) of failure within the Quality Management System exists.

Corrective action is taken in accordance with established procedures to:

- Review and investigate the cause of non-conforming products or work by analysis of all relevant processes, work operations, concessions, quality records, audit observations, complaints, and initiate corrective action to prevent recurrence.
- Initiate preventive actions to deal with problems including Developer complaints to a level corresponding to the risks encountered.
- Apply controls to ensure that corrective actions are taken and are effective.
- Implement record and review changes resulting from corrective and preventative actions in the procedures, and for general improvement of the Quality Management System.



Chapter 2: Quality Management

In general, the Quality Manager will raise the CARs (Corrective Action Request/Report). The procedure 10 Corrective and Preventative action elaborates further on the raising and resolution of CARs.

Continuous Improvement of the Organization:

D&B Team personnel are encouraged to seek out improvements for existing practices. Management personnel will review recommendations for improvement and implement, monitor and control them as appropriate. They will have the necessary authority, technical support, training and resources for implementing the changes associated with the improvements.

Figure 17: Continuous Improvement through Integrated Processes

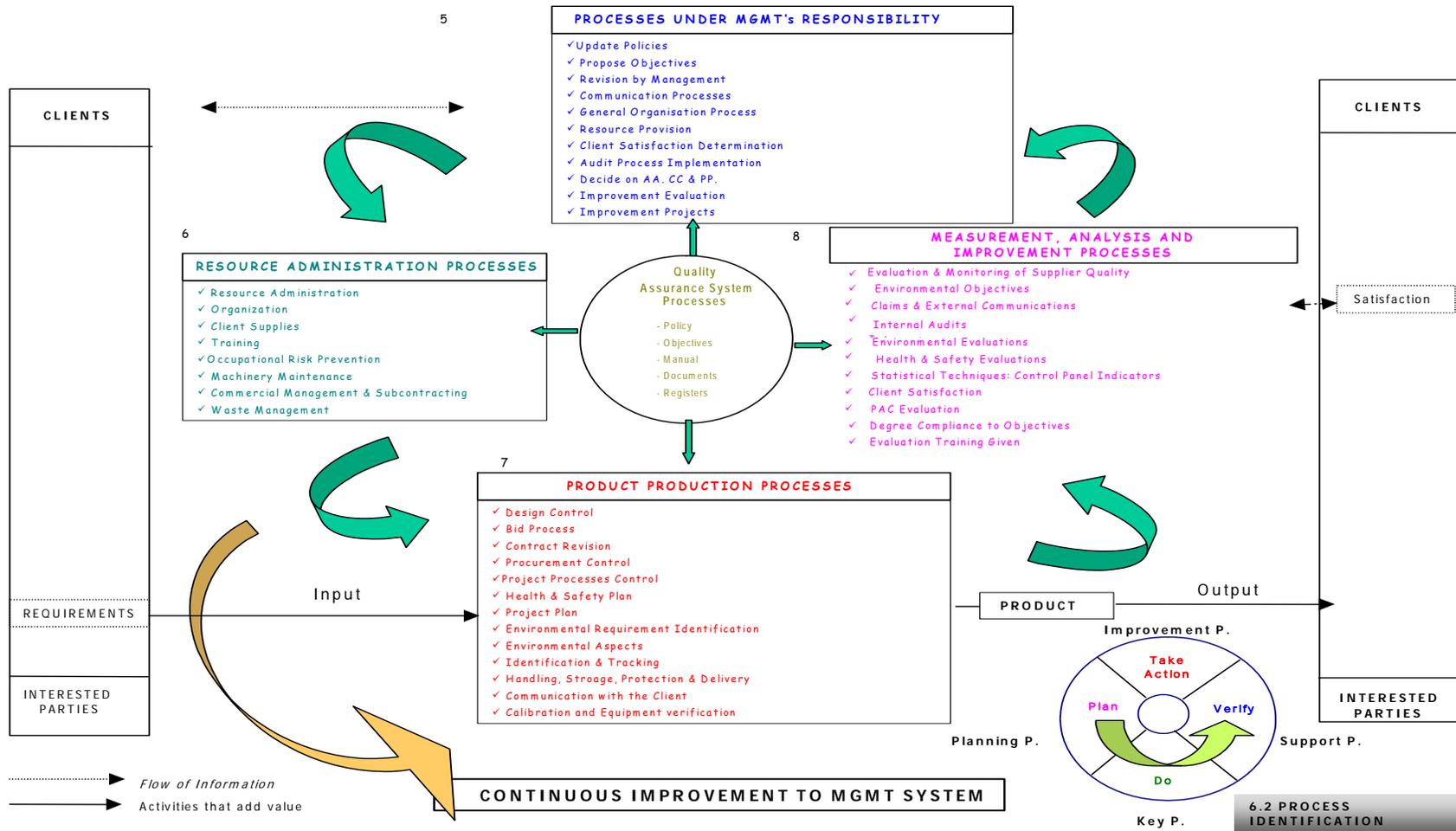
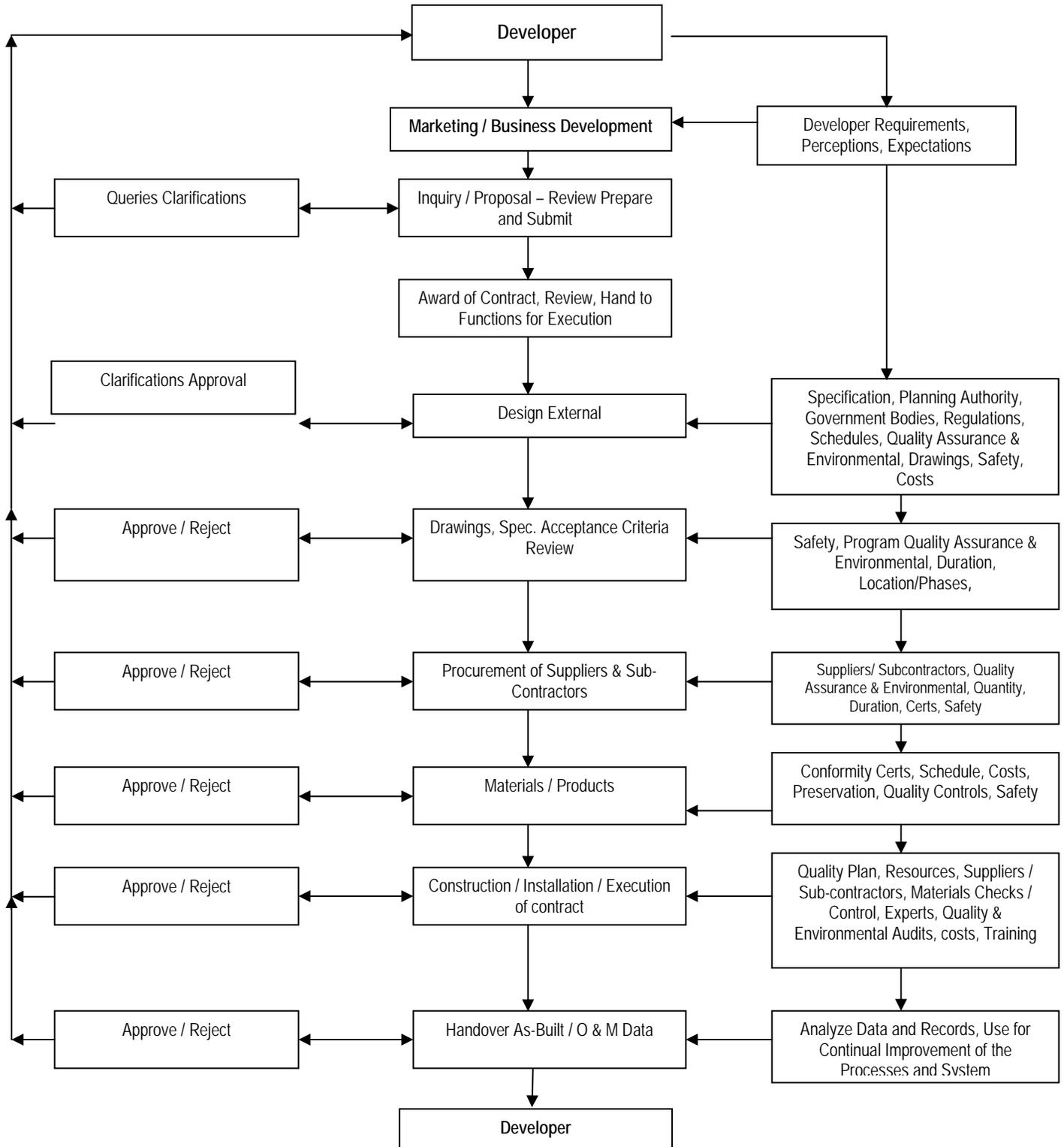


Figure 18: Business Process



2B.8 Audit

The D&B Team maintains the effectiveness of its Quality Management System by conducting formal internal audits. Quality Management System Audits enable the D&B Team to verify that the Quality Management System is functioning to specified requirements, and to confirm its continued suitability. These audits provide confidence within the D&B Team, and act as an assurance to external organizations that the D&B Team is using an effective quality management system. Quality Management personnel will analyze the audit findings and use the data for continuous improvement of the Quality Management System.

Staff independent of the activity at hand will carry out internal audits. Audits are scheduled based on the status and importance of the activity. The Quality Manager will prepare an audit schedule on a predetermined basis. The frequency of audits will be at least annually for a department's activity. Contracts will also be audited at least annually if their duration is longer than three months, otherwise records will be reviewed.

The process of auditing and conducting follow-up actions is performed in accordance with Process Procedures Manual Section 11: Internal Audits (see Chapter 9 of this document). The results of the audits are documented and brought to the attention of management representative of the section audited for timely corrective action. Copies are also distributed to the General Manager.

The Quality Manager may perform an unscheduled audit under special circumstances. The Developer or other interested third parties may perform external audits on the D&B Team with prior notice. The General Manager will determine the frequency of internal audits, jointly with the Quality Manager.

Auditors will complete audit reports for each audit and forward copies to the General Manager and Quality Manager. The original will go to Document Control. Persons independent of the activity under audit will carry out internal audits.

The D&B Team's supervisory board will consider the findings of all audits, verify compliance with D&B Team Quality Plans and discuss opportunities for improvement at biannual review meetings.

The procedure/document mainly relevant to all this section of the plan is:

- PPM Section 11: Internal Audits

Inspection and Test Plans

Within the Process Procedures Manual (Chapter 9 of this document), the D&B Team has established, and maintains, procedures to ensure that:

- D&B Team receiving personnel accept incoming products by signing the delivery ticket. Upon delivery, staff will visually inspect the product and note any damage or discrepancy on the delivery ticket. When inspection is impossible (due to bulk delivery, for example) receiving personnel may make a note on the delivery ticket stating "not checked".

Chapter 2: Quality Management

- When a product requires urgent release for production purposes, receiving personnel will positively identify and record it to permit immediate recall if construction personnel find that the product is unsuitable for use.
- When a product will undergo inspection and checking at the supplier's premises, the D&B Team will specify the checking and compliance criteria to be fulfilled prior to product release.
- Effective in-process checks, inspections, and tests are in place and identified in the Project Quality Plan. The Quality Plan will identify the records that the D&B Team must maintain as evidence that the product has passed these inspections and tests. The D&B Team will identify and remedy any non-conforming product as described in Section 5. Suppliers' and Subcontractors' quality documents will provide for the D&B Team's "Hold Point" within the process, as appropriate.
- When traceability of a product is required, records containing the unique identification, status and location of the product are maintained.
- Quality plans prepared by the D&B Team will allow the Developer (or his/her representative) to insert their "Hold" point, if contractually required. "Hold" - No further activity to progress until cleared by signing off. (Verbal clearance may be accepted if the Developer does not practice signing off process, but, the D&B Team must retain contemporaneous records).
- Prior to handover to the Developer, all construction undergoes final inspection and tests in accordance with the Quality Plan and records collated to provide evidence of conformance of the finished product to the specified requirements. Normally, the D&B Team (in conjunction with the Developer), will produce a punch list of items requiring remedial action. Completion of such punch-listed work constitutes final satisfactory inspection. The Developer or its representative will sign off on punch lists to confirm substantial completion of work items.
- The records will identify persons authorizing the release / acceptance.

Control of Inspection, Measuring and Test Equipment

The D&B Team has established, and maintains, procedures to ensure effective control of measuring and test equipment, as follows:

- The D&B Team will implement procedures for maintaining and calibrating equipment used for inspection, measurement and testing. Users will produce informative measurements, relative to specified tolerances, by understanding each instrument's limits of accuracy and taking measurements under appropriate environmental conditions. Comparing results with other calibrated equipment may be satisfactory in some cases if the reference instrument's calibration records are complete.
- The D&B Team's testing standards will meet the requirements of known and acceptable standards.
- All measuring equipment having a bearing on quality will have a tag, sticker or other marking, indicating its calibration status. Inspection and testing personnel will handle, present and store measuring and test equipment properly to maintain its fitness for use.
- Records of the results of the calibration tests of the measuring equipment are maintained and will include: Details of equipment, type, frequency of checks, check method, acceptance criteria, and actions taken when results are unsatisfactory, e.g. re-testing.
- Templates, profiles and other equipment are subject to regular maintenance checks and related recordkeeping, where appropriate.

Chapter 2: Quality Management

- The D&B Team will confirm the capabilities of any computer software planned for use in monitoring and measuring specified requirements, both prior to initial use and during use.

In addition to survey equipment, the above requirements will apply to equipment such as concrete batch plants, weigh stations, laboratory equipment and pressure gauges. If the D&B Team procures these services from external sources, they are subject to procedures for the control of Suppliers.

Inspection and Test Status

The D&B Team Quality Management System ensures, via established procedures, that the inspection and test status of each part of the work is evident at all stages of construction.

Inspection records generated on a contract show either compliance to the specification or non-compliance via Non-Conformance Reports until resolved.

The D&B Team will issue an NCR to report items or parts of the work that do not conform to specified requirements. The NCR notifies all relevant personnel of the time, date, location and nature of the non-conformance. These items or parts of the work will not be implemented prior to satisfactory resolution of the NCR.

Completion of a particular part of a project is achieved only when the appropriate records identify completion of work together with any inspections and proving tests that have been completed, giving acceptable records.

Where traceability is a requirement, the D&B Team will control and record the unique identification and location in works to the extent specified in the Contract documents. This will apply to non-conforming products released after satisfactory inspections/tests, as applicable.

Handling, Storage, Packaging, Preservation and Delivery

Generally, this requirement will not apply to construction contracts, but if required, the D&B Team will establish procedures to provide:

- Methods and means of handling so as to prevent damage or deterioration.
- Secure storage area pending use or delivery, stock assessment at frequent intervals to detect deterioration, methods for authorizing receipts, and dispatch from storage yards.
- Control on packing, preservation and marking processes to the extent necessary to ensure conformance to specified requirements.
- For the protection of the product after final inspection and test until handover to the Developer. The protection will include delivery to destination where specified.

Note: Partially or fully completed sections of works are protected until handover to the Developer. This is part of the Construction Management Process.

Developer's Representative and Quality Management Staff

The name of the Developer's representative(s) with defined authority for establishing, maintaining, auditing, and reporting on the PMP will be provided in the final Project Management Plan, along with the names, titles, roles, and responsibilities of supporting quality management staff reporting to the person with defined authority.

2B.9 Document Management

The D&B Team has established, and maintains, a procedure to comply with the Quality Management System and Contract requirements. Many documents qualify as Quality Records including Minutes of Contract Review Meetings, Inspection and Test Results, Product Conformity Certificates, Confirmations of Verbal Instructions, Resolved Non-Conformance Reports, Data on Computer Disks, etc. The D&B Team demonstrates compliance as described below:

- The D&B Team prepares and maintains Quality Records to verify that the Work meets Specification and that the Quality Management System is operating effectively.
- Pertinent Supplier and Subcontractor Quality Records also form part of this data.
- The D&B Team will agree upon the scope and retention of Quality Records with the Developer. Quality Records will be available to the Developer or its representative as specified in the Contract.
- The D&B Team will apply a systematic approach to the storage, protection and retrieval of Quality Records. The D&B Team will retain records for a minimum period determined by CDA, D&B Agreement and legal requirements.

The Developer will employ an electronic Document Management System (DMS) that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will include user-friendly navigational tools such as index, contents, and search features to facilitate information retrieval. The Developer will review usage of the DMS regularly and will survey staff to ensure that it meets their requirements. The DMS Coordinator will administer changes to the system. Staff can complete Change Control forms to activate changes after the appropriate manager has given his or her approval.

The DMS will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.

Document Control personnel will control Issuance of Construction drawings. Drawings (and other similar construction documents) will be marked "Issued for Construction" or with similar wording to denote that they are suitable for issuance to construction personnel.

The Developer will also implement a secure Project Extranet system, which enables all team members to access and store project data, draft text and drawings. The Project Extranet system will link to the Document Management System, allowing users to access many of the same documents through either the Document Management System or Extranet site.



Chapter 2: Quality Management

Personnel responsible for the compiling and maintaining Project records are identified in the procedures listed below. Photographs will supplement progress records as directed by the D&B Team and Developer. Applicable record forms will be formatted specifically for the IH 635 Managed Lanes Project.

Chapter 9 this document is the D&B Team Process Procedures Manual, which contains specific procedures related to maintenance of records and document management. The procedures relevant to this section of the plan are:

- PPM Section 3: Documents and Data Control
- PPM Section 8: Construction Management
- PPM Section 14: Control of Quality and Environmental Records

Chapter 2: Quality Management

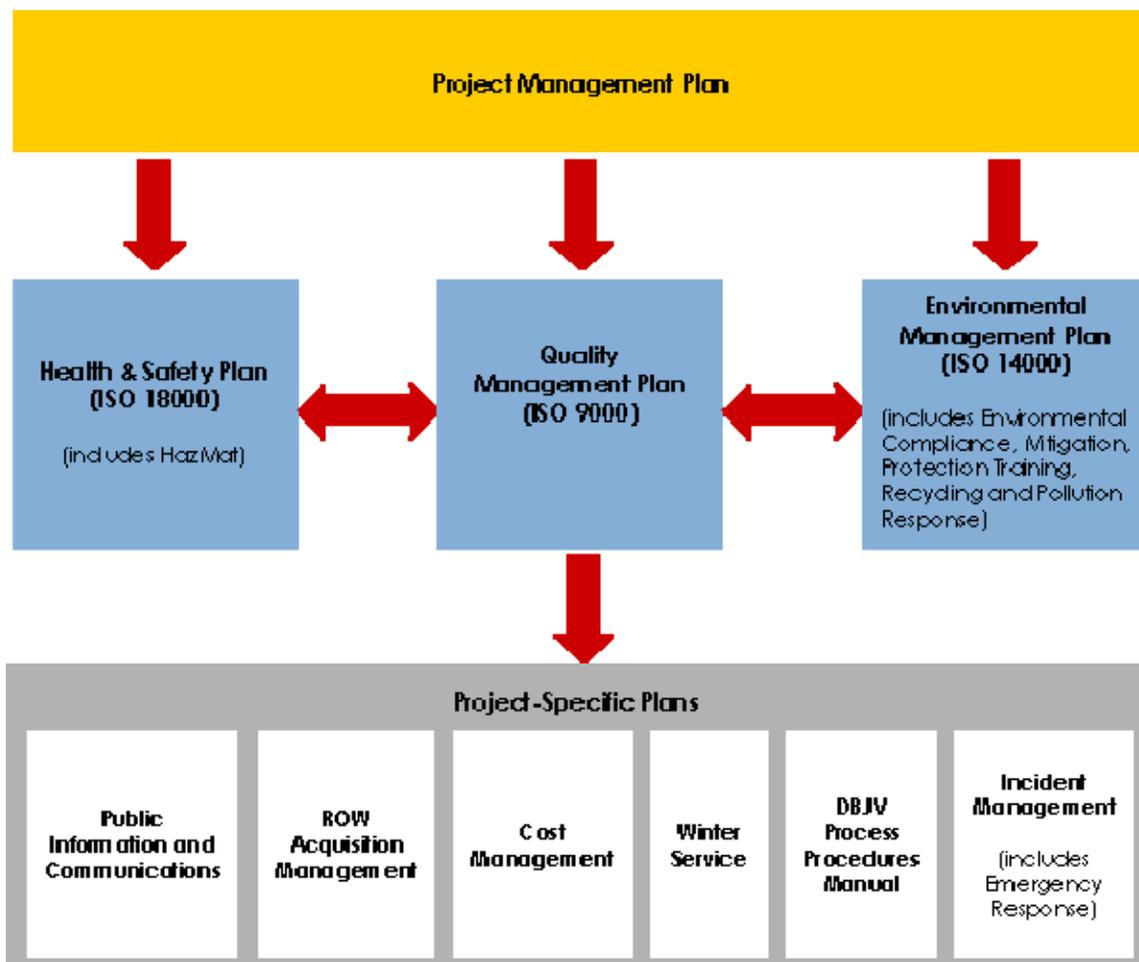
2C. Operations Quality Management

Introduction

This Quality Management Plan describes the systems, policies, and procedures that address the Work and provide documented evidence that the Work has been performed in accordance with the CDA documents

The Quality Management Plan is a key component of our mandatory Integrated Management System (IMS) that embodies ISO 9001:2000 Quality Management Systems, ISO 14001 Environmental Management Systems and our Safety Management System that complies with the requirements of OHSAS 18001.

Figure 19: Integrated Management System



Chapter 2: Quality Management

Developer staff has an important role to play that will influence the quality of our service. The Quality Management Plan has been developed for the management of projects so that the staff knows what they are expected to do, and how their work will be monitored and checked. It also provides a framework for measuring performance with a view to identify areas for improvement.

Each individual has a responsibility to carry out his or her work in accordance with the Quality Management Plan. The Quality Management Plan contains general processes and procedures and is supported by the following Plans:

Table 9: Plans Supporting the QMP

SECTION	CONTENTS	PLAN
ORGANIZATION	DEVELOPER'S MAIN CONTRACTUAL ARRANGEMENTS	
	ORGANIZATIONAL STRUCTURE COVERING THE ACTIVITIES TO BE PERFORMED IN ACCORDANCE WITH THE CDA DOCUMENTS	QMP
PERSONNEL	RESOURCE PLAN FOR THE DEVELOPER AND ITS CONTRACTORS	QMP
	ARRANGEMENTS FOR COORDINATING AND MANAGING STAFF INTERACTION WITH TXDOT AND ITS CONSULTANTS INCLUDING COLLOCATION OF KEY PERSONNEL AND DESCRIPTION OF APPROACH TO COORDINATING WORK OF OFF-SITE PERSONNEL	QMP
	NAMES AND CONTACT DETAILS, TITLES, JOB ROLES OF PRINCIPAL PERSONNEL FOR CONTRACTORS AND ANY THIRD PARTY WITH WHICH DEVELOPER WILL COORDINATE ITS ACTIVITIES	QMP, OMP, MMP, IMP, EMP, H&SP, WSP
	NAMES AND CONTACT DETAILS, TITLES, JOB ROLES OF KEY PERSONNEL	
PROCUREMENT	PROCEDURES FOR PROCUREMENT OF SERVICES, MATERIALS AND PRODUCTS INCLUDING METHODS TO ENSURE BEST VALUE	QMP
OFFICES & EQUIPMENT	DESCRIPTION OF THE NECESSARY OFFICES AND OFFICE EQUIPMENT TO BE PROVIDED BY DEVELOPER DURING THE OPERATING PERIOD	QMP
CONTRACTORS	OVERALL CONTROL PROCEDURES FOR CONTRACTORS, INCLUDING CONSULTANTS AND SUB-CONSULTANTS	
	RESPONSIBILITY OF CONTRACTORS AND AFFILIATES	QMP
	STEPS TAKEN TO ENSURE SUBCONTRACTORS AND SUPPLIERS MEET THE OBLIGATIONS IMPOSED BY THEIR RESPECTIVE CONTRACTS	
INTERFACING	PROCEDURES FOR IMPLEMENTATION OF ENVIRONMENTAL PROTECTION TRAINING PROGRAM FOR EMPLOYEES OF CONTRACTORS	EMP
	INTERFACING BETWEEN THE DEVELOPER, CONTRACTORS AND INDEPENDENT CERTIFIERS DURING THE OPERATING PERIOD	QMP
	COORDINATION WITH UTILITY OWNERS	OMP



Chapter 2: Quality Management

SECTION	CONTENTS	PLAN
	PROCEDURES TO MINIMIZE THE IMPACT OF THE PROJECT'S OPERATIONS ON NEIGHBORING FACILITIES	OMP
	PROCEDURES TO ENSURE ENFORCEMENT (PERMITTING) OF OVERLOADED/OVERSIDED VEHICLES	OMP
	CONTROL OF THE INTERFACE BETWEEN ENVIRONMENTAL REQUIREMENTS AND THE OPERATION AND MAINTENANCE OF THE PROJECT	
	PROCEDURES TO IMPLEMENT PHASE I AND PHASE II STORM WATER MANAGEMENT PLANS (SWMP), INCLUDING STORM WATER POLLUTION PREVENTION PLANS (SW3P)	
	PROCEDURES FOR THE SPILL PREVENTION, CONTROL AND COUNTERMEASURES PLAN (SPCC) B	
ENVIRONMENTAL	DETAILED PROCEDURES FOR THE HAZARDOUS MATERIALS MANAGEMENT PLAN IN ACCORDANCE WITH SECTION 4	EMP
	DETAILED PROCEDURES TO IMPLEMENT THE POLLUTION PREVENTION PLAN (P2 PLAN),	
	RECYCLING PROGRAM AND WASTE MANAGEMENT IN ACCORDANCE WITH SECTION 4	
	EMERGENCY RESPONSE PLAN (ENVIRONMENTAL) DURING THE OPERATING PERIOD	
SCHEDULE	RENEWAL WORK SCHEDULE	MMP
COMPLAINTS	IN COMPLIANCE WITH SECTION 22 (OPERATIONS), PROCEDURES TO RESPOND TO COMMENTS AND/OR COMPLAINTS RECEIVED FROM USERS AND OTHERS	COMMS PLAN
	EQUIPMENT SERVICING REQUIREMENTS	
EQUIPMENT	PROCEDURES TO ENSURE PERFORMANCE, CONDITION AND AVAILABILITY OF EQUIPMENT (INCLUDING COMMUNICATION EQUIPMENT, DATA RECORDING EQUIPMENT, PROJECT SIGNAGE AND FARE COLLECTION, TOLLING AND ELECTRONIC MEASUREMENT EQUIPMENT)	QMP
TRAFFIC & RIDERSHIP	PROCEDURES TO COLLECT AND VERIFY TRAFFIC AND RIDERSHIP DATA	MMP
PROCEDURES	PROCEDURES DESCRIBING HOW THE PRINCIPAL ACTIVITIES WILL BE PERFORMED DURING THE OPERATING PERIOD: TO INCLUDE ROUTINE MAINTENANCE, RENEWALS, TRAFFIC MANAGEMENT, INSPECTIONS REGIME, MAIN OPERATIONAL REQUIREMENTS AND TOLL OPERATIONS	OMP, MMP
	OPERATIONS TRAFFIC MANAGEMENT PLAN	OMP



Chapter 2: Quality Management

SECTION	CONTENTS	PLAN
QUALITY CONTROL	EXAMINATIONS AND AUDIT OF O&M WORK, REVIEW OF EXAMINATION AND AUDIT, ISSUE OF CERTIFICATES OF COMPLIANCE	QMP
	OBSERVATION AND REPORTING OF ALL TESTS IN COMPLIANCE WITH SECTION 2	MMP
	PROCEDURES FOR ENVIRONMENTAL COMPLIANCE	EMP
	QUALITY CONTROL PROCEDURES INCLUDING A RESOURCE TABLE FOR MONITORING AND AUDITING ALL O&M WORK	QMP
	PROCEDURES TO ENSURE ACCURACY, COMPLETION, AND QUALITY IN SUBMITTALS TO TXDOT AND GOVERNMENTAL ENTITIES	QMP
	PROCEDURES TO ESTABLISH AND ENCOURAGE CONTINUOUS IMPROVEMENT	QMP
AUDIT	NAME OF DEVELOPER'S REPRESENTATIVE WITH DEFINED AUTHORITY FOR ESTABLISHING, MAINTAINING, AUDITING AND REPORTING ON THE PMP	QMP
	NAME, TITLE, ROLES AND RESPONSIBILITIES OF SUPPORTING QUALITY MANAGEMENT STAFF REPORTING TO THE PERSON WITH DEFINED AUTHORITY	QMP
PERFORMANCE STANDARDS	PROCEDURES TO BE FOLLOWED BY DEVELOPER PURSUANT TO SECTION 19 TO MAINTAIN ALL PROJECT PERFORMANCE STANDARDS	MMP
DOCUMENT MANAGEMENT	THE MANNER IN WHICH RECORDS WILL BE MAINTAINED IN COMPLIANCE WITH THE TECHNICAL PROVISIONS, INCLUDING ANY SPECIFIC SYSTEMS DEVELOPER WILL USE	QMP
	DOCUMENT MANAGEMENT PROCEDURES IN COMPLIANCE WITH THE TECHNICAL PROVISIONS SECTION 2	QMP
	IDENTIFY ENVIRONMENTAL DOCUMENTATION AND REPORTING REQUIREMENTS	QMP, EMP
RESPONSE TO MAINTENANCE	PROCEDURES SETTING OUT DEVELOPER'S RESPONSE TO MAINTENANCE ISSUES THAT IMPAIR USE, RELIABILITY OR AVAILABILITY OF THE PROJECT IN A TIMELY MANNER	OMP
USER SATISFACTION	PROCEDURES TO COLLECT AND TRACK USER SATISFACTION	QMP
EMERGENCY RESPONSE	INCIDENT MANAGEMENT PLAN	IMP
	EMERGENCY PLAN OUTLINE (OPERATIONS)	
	EMERGENCY PLAN (OPERATIONS)	IMP, OMP
PROCEDURES SETTING OUT HOW DEVELOPER WILL RESPOND TO		



Chapter 2: Quality Management

SECTION	CONTENTS	PLAN
	ACCIDENTS AND INCIDENTS ON THE PROJECT	
	PROCEDURES TO ESTABLISH PROTOCOLS WITH EMERGENCY SERVICES AND OTHERS IN EMERGENCY	

Legend:

- QMP = Quality Management Plan;
- H&SP = Health & safety Plan;
- EMP= Environmental Management Plan;
- OMP = Operations Management Plan;
- MP = Incident Management Plan;
- Comms Plan = Communications Plan;
- WSP = Winter Service Plan;
- MMP = Maintenance Management Plan

Quality Policy

We deliver comprehensive, integrated quality services in the operation and maintenance of the network. Our aim is to be the preferred choice of TxDOT, their customers, and our supply chain partners. Working with them through the application of best practice technology and innovation, we will deliver a service that embraces and anticipates the evolving needs of TxDOT and its customers.

DEVELOPER POLICY STATEMENT

DEVELOPER is committed to a policy of delivering quality services to its clients and to achieving continuous improvement throughout our business to the benefit of all our stakeholders: Customers, shareholders, employees, vendors, and society at large.

DEVELOPER aims continuously to improve the quality of service that we deliver. We are focused on enhancing client satisfaction and maintaining excellent long-term relationships with clients that we are able to meet the aspirations of all our stakeholders. We place great importance on understanding our clients' needs and on obtaining feedback from our clients on our performance.

Our people are central to the quality of the services that we deliver. We promote a culture of Continuing Professional Development amongst all our employees. We ensure that our people are appropriately qualified and well trained and have at their disposal processes and tools that they need to do the job.

Chapter 2: Quality Management

Commitment

The delivery of quality and customer satisfaction in a safe and environmentally friendly manner is fundamental to all work we undertake. We believe that quality, safety and environmental management are intrinsically inter-linked in the delivery of sustainable solutions. We are therefore committed to a combined policy that:

- Achieves, maintains and continually improves overall organizational and personal performance standards and capabilities
- Identifies and meets our obligations, the needs and expectations of the road users and other stakeholder parties in an effective and efficient manner
- Manages all our activities ensuring that they are “right first time”
- Adds value throughout with commitment and contribution from our teams and those of our supply chain partners and other stakeholders.
- Minimizes the impact of our works upon the environment by being in the forefront of the development and implementation of best practice from concept stage to the completion of our works
- Improves the built environment and focuses on sustainability of resources
- Ensures that all works are planned and carried out safely to minimize the impact on the road user
- Works with communities to improve quality of life

Definitions

Table 10: Quality-Specific Definitions

Quality terminology, unless defined or modified elsewhere in the CDA Documents, shall have the meaning defined in ISO 9001. Terms used in ISO 9001 shall have the meanings defined below:

Chapter 2: Quality Management

CUSTOMERS	THE USERS OF THE ROADWAYS, TxDOT, CUSTOMER GROUPS AND KEY STAKEHOLDERS
ORGANIZATION	THE DEVELOPER'S ORGANIZATION, INCLUDING ANY AFFILIATES AND CONTRACTORS THAT HAVE AN ADJACENT PROPERTY INTEREST OR CONNECTING ROADWAY
PRODUCT	THE WORK
QUALITY CONTROL	THE PART OF QUALITY MANAGEMENT FOCUSED ON FULFILLING QUALITY REQUIREMENTS
SUPPLIERS	CONTRACTORS

Table 11: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.

Chapter 2: Quality Management

Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

References and Standards

Quality Standards

ISO 9001: 2000 – Internationally accepted quality standard issued and administered by International Organization for Standardization which specifies requirements for a quality management system where an organization:

- Needs to demonstrate its ability to consistently provide product that meets customer and applicable regulatory requirements.
- Aims to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable regulatory requirements.

Chapter 2: Quality Management

Table 12: Technical Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system. Required to be used by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Chapter 2: Quality Management

Table 13: Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 14: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-	Provides procedures and practices related to environmental analysis and decision-making
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Chapter 2: Quality Management

	<p>info/gsd/manuals/env.pdf)</p>	<p>with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.</p>
Water Quality Control	<p>TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)</p>	<p>Details the process for all related environmental documentation which includes water quality. Chapter 3 Section 8 provides content details for documentation.</p>
	<p>Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgmt.html)</p>	<p>Provides rules, policy and legislation for water quality control.</p>
	<p>US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tlpg02e.htm)</p>	<p>Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.</p>
Noise	<p>TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)</p>	<p>Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.</p>
	<p>TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/resources/TxDOTnoise96.pdf)</p>	<p>Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.</p>
Air Pollution	<p>TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)</p>	<p>Section 4 describes roles and responsibilities related to air quality. The manual details the process for all related environmental documentation. Section 8 provides content details for documentation.</p>
	<p>TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf</p>	<p>Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language useful in</p>

Chapter 2: Quality Management

		developing environmental documentation.
	TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf	Describes air quality requirements with respect to project planning.
	TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html	Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.
Vegetation	Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm	Issued to prevent and control the introduction and spread of invasive species
	Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf	Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development, a synthesis of current information and design practices related to development of landscape, and aesthetic components for different classifications of roadway facilities.

Table 15: Required Operations and Environmental Permits

	Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc.htm	Table 4.1 in Book 2A lists all environmental permit requirements and the name of the coordinating agency. Chapter 6 in Book 2A describes utility adjustment requirements and procedures.
	Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm	Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.

Table 16: Insurance Standards

Comprehensive Development	Section 9 provides the insurance coverage
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Chapter 2: Quality Management

Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm	required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.
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2C.1 Organization

Contractual Arrangements

The Developer has established an O&M sub-organization that will ensure a fast, safe and reliable transportation route serving millions of commuters and various industries and geographical markets. This Team will be responsible for maintaining continuous 24/7 year-round operations of the highest quality, consistent with the best toll road management practices and the Terms and Conditions of the CDA. This Team will remain functional from the Project Effective Date through the End of Term.

Based on extensive past experience in toll road operations and maintenance, the Developer will retain responsibility for Operation and Maintenance (O&M) of the IH 635 Managed Lanes Project and will not subcontract the obligations. Through this approach, the Developer will guarantee:

- Effective application of the Developer's technical expertise and experience, based on its history of maintaining 23 concessions worldwide including Greenfield, Brownfield and transferred projects.
- Improved communication levels regarding O&M issues between the Developer, TxDOT and the IE.
- Significant operational cost reductions due to the experience curve effect arising from the Developer's long-term, hands-on approach to O&M.
- Close control of the risks associated with the O&M of the Project, allowing rapid response to unexpected operational situations.
- Direct alignment of TxDOT and Developer's interests to maintain a safe and reliable transportation system at all times.

The Developer's O&M sub-organization will monitor and ensure the effective O&M of the Project, supporting the Developer's goals of providing a safe and reliable transportation corridor to its users. The Roadway Operations Director's responsibilities will include:

- Ensuring proper communication between areas of the Developer's organizational structure.
- championing and updating the Operations Management Plan.
- Hiring and training specialized O&M personnel.
- Acquiring in-house maintenance equipment.
- Ensuring proper operational transition from TxDOT to the Developer including coordination with existing O&M subcontractors, utility providers, adjacent landowners, and other third parties as needed.

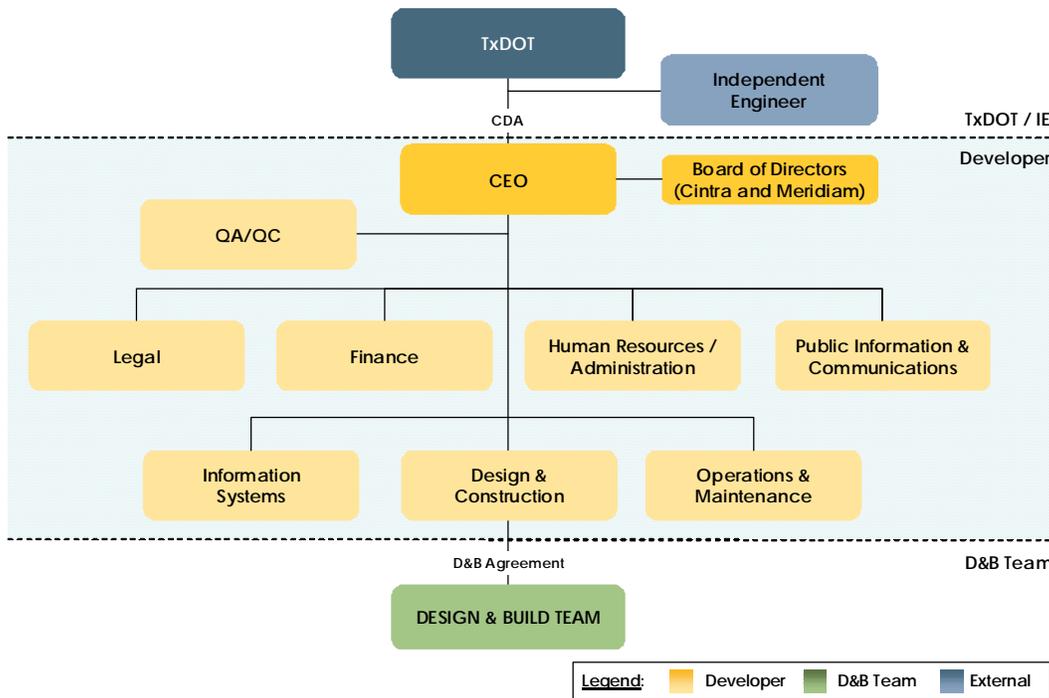
Organizational Structure

To ensure effective implementation of the philosophies and methodologies detailed in the Project Development Plan, the Developer proposes to form an organizational structure comprising the following main sub-organizations:

- Quality
- Design and Construction (D&C)
- Operations and Maintenance (O&M)
- Finance
- Information Systems
- Legal
- Human Resources and Administration
- Public Information and Communications

The leader of each of these areas of responsibility will report directly to the CEO, as shown in Figure 20.

Figure 20: Level 1 Organization



This organization will be responsible for maintaining continuous 24/7 year-round operations of the highest quality, consistent with the best toll road management practices and the Terms and Conditions of the CDA. In addition, it will direct, coordinate, evaluate and amend, when necessary, the responsibilities of the Developer's sub-

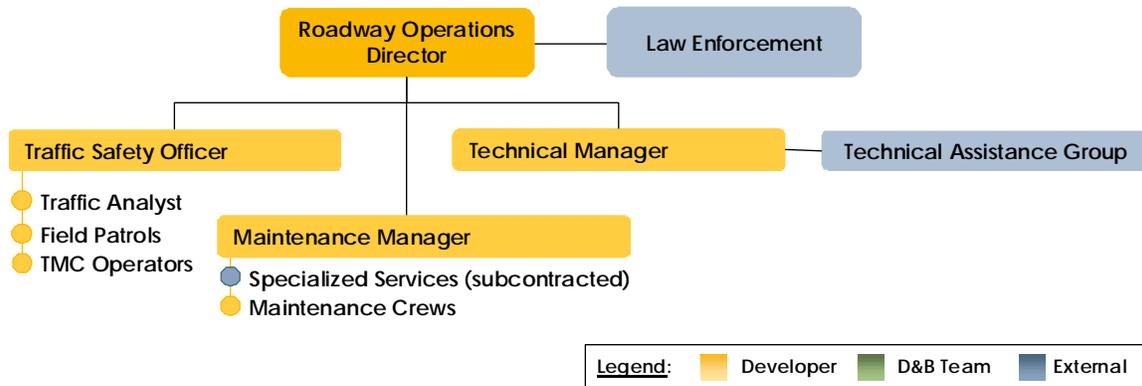
Chapter 2: Quality Management

organizations. This organizational structure was designed to implement the Project from its Effective Date through the End of Term, and will include the following key full-time management positions:

- CEO (CEO)
- Chief Financial Officer
- Public Information Manager
- Design and Construction (D&C) Director
- Design Manager
- Construction Manager
- Quality Director
- Environmental Compliance Manager
- Roadway Operations Director
- Maintenance Manager

The responsibilities and minimum requirements for key employees of the Operations and Maintenance Team are presented in Figure 21 and Table 17.

Figure 21: Operations and Maintenance Organization



(*) Active only after construction completion

Table 17: Staff Responsibilities and Requirements – Operations and Maintenance

Staff	Minimum Requirements	Roles/Responsibilities
Traffic Safety Officer	Certified by Texas Engineering Extension Service (TEEX) in “Work Zone Traffic Control”. Two years of progressive and relevant experience in traffic control Strong communications	Ensures uninterrupted monitoring of the facility. Defines and enforces internal traffic control procedures and reports on facility condition and incidents. The Traffic Safety Officer will be available or on standby 24 hours per day, seven days a week

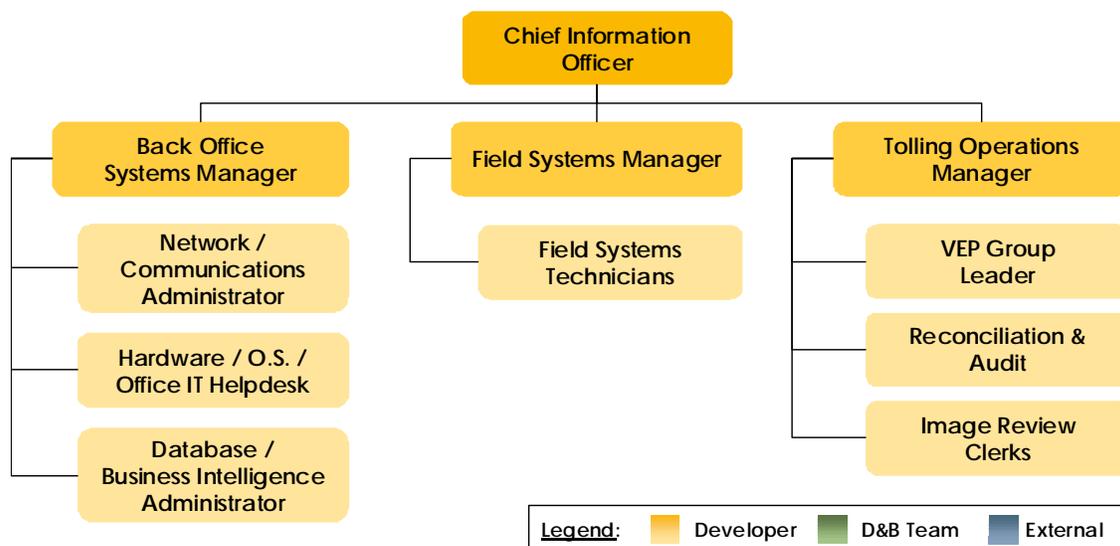
Chapter 2: Quality Management

and organizational skills.

Technical Manager	Ten years' minimum experience with state DOT, toll authority, county or city operations and maintenance programs. Five years' minimum supervisory experience.	Direct construction and asset renewal activities during the O&M phase. Manages subcontracts with service providers. Coordinates QA/QC with O&M Quality and Environmental Manager.
Maintenance Manager	10 years' minimum experience with state DOT, toll authority, county or city maintenance programs; five years' minimum experience in pavement repair design, drainage design, sign design, maintenance materials, emergency weather/spills prevention planning and managing equipment fleets.	Demonstrated ability to know when to call in expert specialized consultant or contractor. Coordinates with all other managers on O&M team. Responsible for ensuring that all crew and patrol members receive training in environmental compliance, recognizing category defects and appropriate procedures for emergency incident situations. Responsible for the development of all required plans, coordinating where appropriate with local responsible entities

The responsibilities and minimum requirements for key employees of the Systems Team are presented in Figure 22 and Table 18.

Figure 22: Developer's Sub-Organization Chart – Information Systems



Chapter 2: Quality Management

Table 18: Systems Department Staff Responsibilities and Requirements

Staff	Minimum Requirements	Roles/Responsibilities
Back Office Systems Manager	Five years of experience in operation and maintenance in back office systems in the transportation or financial industry.	Ensuring that the control center is up and running on a 24/7 basis and that the information flows between the field elements, the control center and external third parties (NTTA and other regional TMCs) are permanent and fluid.
Tolling Operations Manager	At least five years of supervisory experience for a call center or similar operation. Excellent organizational and communication skills. Proficiency in Microsoft Office	Oversees Video Exception Processing Group. Serves as main point of contact with NTTA and ensures NTTA's satisfaction with tolling data provided by the Developer.
Field Systems Manager	Associates Degree or higher in Information Technology or related discipline. At least five years of experience troubleshooting and maintaining electronic toll collection devices. Previous supervisory experience	Supervises field maintenance technicians. Ensures fulfillment of required response times for repair of field systems through effective management of available resources, including performance of the programmed maintenance activities. Additionally, this position needs to make possible to meet the accuracy and availability levels required by TxDOT for the Toll Collection System.

2C.2 Personnel

The following identified Key Personnel will be active during O&M. The Developer will identify additional personnel in the final Project Management Plan.

Table 19: Key Personnel

CDA	Developer's PDP	Name	% of Time
Quality Manager	O&M Quality and Environmental Manager (Developer)	Jason Sipes	100%
Environmental Compliance Manager	Environmental Compliance Manager (D&B Team)	William Proctor	100%
Operations Manager	Roadway Operations Director (Developer)	Javier Martinez Ordóñez	100%
Maintenance Manager	Maintenance Manager (Developer)	Belen Marcos	100%

Chapter 2: Quality Management

We believe that our employees are our most important asset and key to business success. Our culture promotes training, personal development and workplace safety, and thereby encourages everyone to perform to their potential in a safe and controlled manner.

Resource Plan

As one of the key resources needed throughout the project, a detailed plan is required to ensure that the right staff will be available and have the necessities to perform their roles to the fullest. We have established the following key initiatives and will promote them throughout the team:

Staff Development and Opportunities

All employees, irrespective of position, location, or previous employer, have access to comparable and relevant training and development opportunities. We will ensure that all employees are inducted into our ethos.

All employees are encouraged to achieve vocational and professional qualifications. Competency-based Personal Development Appraisals are used to identify training needs, which are developed through the appraisal process and realized through Personal Development Plans.

Career Progression

We recognize the value of planned career progression and the importance of minimizing employee turnover. We have progression systems and effective retention strategies for career development and promotion of employees. We engender an environment and culture that nurtures talent and where people want to work. Our business requires the development of long-term relationships and capabilities. We are a business that people, staff and consultants, want to work for.

Promotion of Best Practices

Employees will have access to training sessions, technical workshops, literature and other publications relevant to their discipline. This ensures that the best and most consistent methods of working are practiced and a continuous improvement culture promoted.

Communications

We promote positive employee relations by developing transparent HR policies and procedures. Teams will be engaged in regular communications and "change management" activities to deliver a smooth and seamless transition. Effective communications will be enhanced through briefing techniques such as Team Talks, intranet and newsletters, ensuring that our strategy, policies and procedures are easily accessible to employees.

The management team shall be responsible for the provision of adequate resources to meet the contract demands. The management team will review future workload at regular intervals, identify the resources needed, and take appropriate action to ensure their availability. Wherever possible, the Developer will directly employ staff and labor. All staff will be dedicated to the project.

Chapter 2: Quality Management

Interaction with TxDOT and its Consultants

The Developer will prepare and agree to a task-specific Consultation and Liaison Strategy with the TxDOT CEO to ensure that effective communication and consultation occur at the appropriate time, and in a systematic and consistent manner. The Liaison Strategy that the Developer will establish with TxDOT and the Independent Engineer (IE) will include:

- TxDOT or IE Requests for Information – TxDOT or the IE may issue Requests for Information (RFI) to the Developer, and/or
- Meetings with TxDOT and the IE.

A secure Project Extranet site will enable authorized team members to access and store project data, progress meeting minutes, draft text, and drawings. It will contain an e-mail list server to notify Project personnel of significant upcoming events and emergencies. The Extranet will also allow serve as a clearinghouse to request information from other team members. The Developer will regularly post project-related documents on the Project Extranet for review by TxDOT and other stakeholders.

During the Operations phase of the project, the Roadway Operations Director will be the primary point of contact between the Developer and TxDOT for operations-related issues. This clear channel of communication ensures a fluid and controlled flow of information concerning project development.

Contractor and Third-Party Key Personnel

The Operations Team will be comprised of a dedicated in-house staff. This strategy will ensure a stable and long-term process to operate the highway at peak efficiency.

It may be necessary to supplement these requirements with external resources at times of peak workload. External resources are to be subjected to a rigorous evaluation system prior to appointment. This is to ensure that the most suitable and competent resources are used.

Environmental Protection Training Plan Implementation

The Developer will develop and implement an Environmental Protection Training Program (EPTP) that will include methods and procedures documented in the Environmental Compliance and Mitigation Plan (ECMP). The length of training sessions and their frequency will be sufficient to achieve the requirements of the EPTP. Training will occur on the first day of work for each worker, prior to commencement of work.

Periodic training sessions at key times (e.g., prior to construction or major maintenance in sensitive areas or construction timing restrictions to protect threatened and/or endangered species) will be used to update workers on specific restrictions, conditions, concerns, and/or requirements. All field staff will be required to participate in the EPTP and will keep accurate records documenting attendance, as well as materials presented.

2C.3 Procurement

The Process Procedures Manual (PPM) is included as Chapter 9 this document. Section 7 of the PPM describes general procedures for procuring services and products. General procedures for overall control of subcontractors and consultants are described in PPM Sections 1.5, 1.10, 1.11, 1.13, 1.16, 1.17, 1.18, and 1.19.

2C.4 Offices and Equipment

Highway operations are dependent on many services. To ensure optimal efficiency, core equipment used for highway patrol and incident management includes:

- Sport Utility Vehicles
- Pick Up Trucks
- Barrier Truck with Crash Attenuator and Arrow Board
- Service Truck
- Traffic Control Barrels
- Portable Arrow Boards
- Portable Freeway Message Signs
- Cellular Telephones
- Truck Radios

Traffic Management Center Equipment

To support TMC operators' tasks, the Developer will equip the TMC with the following elements (excluding the needed servers in which the different TMC applications will run and data and video backed up):

- Operational workstations with state-of-the-art personal computers.
- A video wall capable of displaying CCTV images as well as a schematic representation of the roadway.
- Shared printers and fax machine.

Additionally, the meeting room will be equipped with a PC workstation for TxDOT staff, with access to the same video feed and applications as the TMC operators.

2C.5 Contractors

The Operations Team will comprise in-house staff. Specialist contractors and consultants will be retained on an as required basis. All contractors will be subjected to a rigorous evaluation system to ensure that the most suitable and competent contractor is selected.

Contractor Control Procedures

The supervision of contractors is an important step to ensure that requirements are met in a competent manner. The contracts will be monitored as outlined in the quality management plan implement for this concession.

Responsibility of Contractors and Affiliates

Each Contract will include terms and conditions sufficient to ensure compliance by the Contractor with the requirements of the CDA Documents, and shall include those terms that are specifically required by the CDA Documents to be included therein, including, to the extent applicable, those set forth in Exhibit 8 - Federal Requirements for Federal-Aid Construction Projects and any other applicable federal requirements.

Notwithstanding, the retention of Contractors by Developer will not relieve Developer of its responsibilities hereunder or for the quality of the Work or materials or services provided by it.

Ensuring Contract Satisfaction

Contractors will be subject to the requirements of the quality management plan implemented for this concession. The Operations Team will monitor all contracts and confirm compliance.

Environmental Protection Training Plan Implementation

The Developer will develop and implement an Environmental Protection Training Program (EPTP) that will include methods and procedures documented in the Environmental Compliance and Mitigation Plan (ECMP). The length of training sessions and their frequency will be sufficient to achieve the requirements of the EPTP. Training will occur on the first day of work for each subcontractor worker, prior to commencement of work.

Periodic training sessions at key times (e.g., prior to construction or major maintenance in sensitive areas or construction timing restrictions to protect threatened and/or endangered species) will be used to update subcontractor workers on specific restrictions, conditions, concerns, and/or requirements. All field staff will be required to participate in the EPTP and will keep accurate records documenting attendance, as well as materials presented.

2C.6 Interfaces

The Developer will coordinate access to the Project by companies and Governmental Entities that have a legitimate need to work within the Project ROW, including Utility operators.

A unique aspect of the CDA approach is that the Developer has integrated the design, construction, operations, and maintenance functions so that those responsible for each activity will specifically consider their actions' effects on the other activities. For instance, because the builder of a project will also operate the project, all interfaces with stakeholders during the construction phase bear in mind the impacts to those same stakeholders in the O&M phase. Accordingly, the approach to interfacing with the above stakeholders for purposes of O&M is very similar to the approach utilized. For example, interfacing with stakeholders in the Construction or Design phases.

Chapter 2: Quality Management

Interface between Developer, Contractors, and Independent Engineer

Prior to transition, a partnering session will take place between the Developer's personnel, TxDOT and its consultants where technical information and contact information will be exchanged, communication channels established and potential operational problems and proposed solutions identified.

Third Parties

Existing third party agreements will be maintained in accordance with the CDA. This includes the preexisting agreement with the Cities of Dallas and Farmers Branch to operate and maintain the existing and temporary traffic signals for the Project prior to Service Commencement, as well as the existing and future traffic signals subsequent to Service Commencement.

Tolling Integration with Other Tolling Agencies

Tolling integration with other agencies defined as, the necessary exchange of data to support statewide interoperability as mandated by TxDOT, will be managed through the Back Office System. Most Back Office functions will be performed through the Tolling Services Agreement with NTTA, and all valid transactions will be submitted to NTTA for toll collection purposes, including the transactions involving non-NTTA-valid tags. Therefore, interoperability will be achieved through NTTA.

Coordination with Utility Owners

The Utility Manager will coordinate and communicate all activities, in cooperation with the Developer, the respective utility owners and other potentially affected entities to ensure that all utility adjustment work is performed properly and according to Project requirements (Project Procedures Manual Section 16, the CDA and Technical Provisions). The Developer will prepare, negotiate and execute all agreements with utility owners during the O&M Phase.

The Developer will conduct periodic coordination meetings with utility owners' representatives. The frequency of such meetings will be appropriate to the matters under discussion with each utility owner. The Developer will notify the Independent Engineer and TxDOT at least two business days in advance of each meeting with a utility owner. The Developer will produce minutes of all meetings related to utility adjustment work.

Minimizing Impacts on Neighboring Facilities

Notification will be deliberate and consistent, rather than being the result of crisis management. Well-directed advanced notification prior to commencing roadwork has been found to be beneficial. Local residents often show greater tolerance of noise and disruption when they have prior knowledge concerning its timing and duration.

Experience indicates that the distribution of information leaflets and other helpful information to all affected residents will always be considered. For more intrusive works, personal visits to affected homes and businesses can produce higher levels of acceptance and cooperation. Such courteous notification to members of the public will always be considered and normally provided.

Overloaded/Oversized Vehicle Enforcement

The Developer will manage the routing of oversize loads on the Project. The Developer will work with freight haulers to program and police the movement of oversize loads. Scheduling such transport during periods of light traffic whenever possible to minimize impacts to drivers. Arranging convoy and traffic management requirements and, in exceptional circumstances, removing and reinstalling roadway components.

2C.7 Environmental

Environmental Management during Operations and Maintenance

During Operations, the Developer will execute its duties in a manner aligned with protecting the environment. Including the fulfillment of current legal and project environmental requirements. The Developer will achieve this objective by:

- Complying with all applicable local, state, and federal environmental regulations.
- Achieving all environmental commitments set forth in TxDOT-provided approvals and environmental approvals.
- Educating and training all Project personnel to:
 - Recognize the overall importance of environmental issues to achieve successful construction of the Project.
 - Appreciate the Project's environmental sensitivities.
 - Recognize environmentally sensitive resources that may be encountered during work activities.
 - Avoid or take appropriate action to minimize environmental impact from work activities.
 - Understand the required actions, practices, and procedures regarding regulated resources.
- Conveying a commitment to the Project's environmental quality to all employees.
- Conveying a commitment to zero tolerance for violations.

Applying the above principles will ensure that the Project follows the principles of sustainable development and that the natural environment, natural resources, local communities and economic development are considered and protected during the Project.

During operations, the Maintenance Manager will direct all Field Patrols and will be ultimately responsible for cleanup and disposal of spilled materials, in consultation with the O&M Quality and Environmental Manager. The Maintenance Manager will report any apparently abandoned vehicles or other property found within the Project limits to the appropriate law enforcement officers. Upon their approval, the contracted towing service will remove the abandoned property. The O&M Quality and Environmental Manager will contract with a certified environmental services firm to the clean up and dispose of any spilled materials.

The Developer will establish an Environmental Management System (EMS) that reflects the principles of the International Organization for Standardization (ISO) 14001:2004. The EMS provides a structured, documented approach to managing an organization's environmental performance and responsibilities. It is a management tool

Chapter 2: Quality Management

that enables us to implement our environmental policy, achieve continuous improvement through setting and review of environmental objectives, identify the environmental impacts we can control or influence, and communicate environmental standards across all aspects of the business.

Storm Water Pollution Prevention Plans (SW3P)

The Developer will adhere to the SW3P established in the Project Management Plan during operations and maintenance work. Project-specific amendments will be developed for any significant renewal work not covered by the existing SW3P. The SW3P will cover all phases of Facility development and staging, including off-site plans, controls and reporting from borrow sites, waste sites, and plant location sites.

Spill Prevention Control and Countermeasures Plans (SPCC) and Hazardous Materials Management Plans (HMMP)

The Developer will adhere to the SPCC and HMMP established in the Project Management Plan during operations and maintenance work. Project-specific amendments will be developed for any significant renewal work not covered by the existing plans. The SPCC will contain operating procedures to prevent spills, control measures to prevent spills from reaching navigable waters and countermeasures to contain, clean up, and mitigate the effects of any spills. The HMMP will contain provisions for the safe handling, storage, treatment and/or disposal of Hazardous Materials, whether encountered at or brought onto the Project Site by the Developer, encountered or brought onto the Project site by a third party, or otherwise.

Pollution Prevention Plan (P2 Plan)

The Developer will adhere to the P2 Plan established in the Project Management Plan during operations and maintenance work. Project-specific amendments will be developed for any significant renewal work not covered by the existing plans. The P2 Plan will record the Facility's toxic substance use, emissions and waste from current work practices, and will contain provisions for reducing the use of toxic substances at the source, minimizing generation of hazardous waste and preventing the release of pollutants to the environment.

2C.8 Schedule

Effective timing of the renewal of the major assets is important to ensure that they continue to meet or exceed all performance requirements. A detailed renewal work schedule will be included in the final Project Management Plan.

2C.9 Complaints

Procedures to Respond to Comments and/or Complaints Received from Users and Others

The Developer proposes a multi-pronged approach to capturing, resolving, and documenting questions and concerns from the public. We will implement an Audience & Stakeholder Database. An interactive system proven to simplify and improve the public interface on projects. It will define audiences and stakeholders, including their contact details and agreed-upon liaison protocols. It provides an auditable trail of contacts made, minutes of

Chapter 2: Quality Management

meetings and details of concerns and issues as well as a register of inquiries and complaints. The database will contain an Electronic Comment Management System, which will record actions taken and correspondence with complainants.

The general methodology includes:

- Maintaining an Audience & Stakeholder Database of all citizen communications (calls, e-mails, letters, etc) and responses to these communications.
- Routing questions and complaints to the appropriate person, or group, for resolution.
- Distributing comment cards at meetings, briefings and at the Public Information Office.
- Capturing, logging and responding to questions or concerns raised but not answered at public meetings.
- Documenting resolution of all inquiries and complaints in the project records.
- Distributing a monthly report summarizing the communications and outcomes to TxDOT and all other relevant parties.

Prior to initiation, the Developer will seek TxDOT's review and approval of its proposed methodology. Complaint-handling and reporting procedures are detailed in PMP Chapter 4, Public Information and Communications.

Equipment Servicing Requirements

Maintenance and servicing of commercially available equipment will be in general accordance with Original Equipment Manufacturers' service manuals.

Ensuring Performance, Condition, and Availability of Equipment

The first line of defense against Traffic Management Center (TMC) equipment failure is a maintenance program through a capable in-house maintenance crew that will be required to respond to any inquires within four hours (phone) and 24 hours (onsite) respectively. The Developer will train additional TMC operations and support staff to carry out minor spare part replacements, including replacing lamps and filters for video wall equipment. Workstation console failures are very rare and are typically due to operator error. Proper training of operations staff will help to prevent such failures.

The Developer will purchase TMC equipment, including the video projection equipment, computers and communications equipment related to the Automated Traffic Management System (ATMS) software with a full manufacturer's warranty that includes onsite repair or replacement within four hours. The system operators and administrators will receive training on how to initiate actions required immediately, such as restarting applications, rebooting computers and performing minor reconfigurations necessary to work around failed equipment. The computer equipment proposed for this project will include sufficient redundancy to minimize or eliminate the need for a complete shutdown of the system. A "cold standby" server is included to provide sufficient spare capacity, should there be an equipment failure that cannot be restored in less than two hours by onsite staff or within four hours by warranty support. The performance of the TMC will be measured against the same requirements used for the field ITS devices as detailed in Attachment 19-1a to the IH 635 Managed Lanes Project Technical Provisions.

Chapter 2: Quality Management

The operators and system administrators will conduct periodic inspections and system reviews as a part of a comprehensive backup and disaster recovery process. The recommended backup procedure will include full weekly backups of all computers including all databases. Daily incremental and full backups assure that minimal data is lost in the case of system failure. Standard operating procedures for the TMC staff will require that computer and video wall maintenance meet or exceed manufacturer recommendations for preventative maintenance. In the case of device malfunction or failure, the ATMS software will allow the TMC staff to initiate maintenance trouble calls. Operators will document trouble calls and use them to dispatch additional support when required.

The sensitive video wall equipment will be purchased with a preventative maintenance program that includes routine preventive maintenance visits, which will be scheduled in advance, to clean, inspect, align and adjust all systems and components to ensure that all electronic systems are maintained to manufacturer standards. Mechanical items such as workstation consoles will be subject to regular inspections to ensure their continuous operation.

To provide for uninterrupted service of the video wall and the computer hardware in the TMC, the facility must address both the procedures to handle spare parts and replacement of the actual spare parts. Both the TMC software and the computer hardware are designed for redundancy and disaster recovery.

The procedures for handling service requests for video and computer hardware equipment will include the following steps:

1. The operations staff detects a problem and places a service call to the installation vendor.
2. The installation vendor opens a service ticket and contacts the assigned Field Engineer.
3. The assigned Field Engineer system calls the operations staff representative back within four hours to assess the problem and coordinate onsite support as required.
4. The Developer will ensure that emergency onsite response occurs within 48 hours and will schedule routine issues.
5. Upon completion of the service call the operator closes the service ticket.
6. Any spare parts used during the service call response will be sent to our installation vendor for replacement. So, that within a short period of time, typically one week after sending, the number and type of spare parts will be restocked.

2C.11 Traffic and Ridership

Data Collection and Verification

Analysis of Vehicular Accident Patterns

Early identification of network hotspots for accident clusters will be led by the Maintenance Manager. Assessing junction and link sites to determine the quantity and geographic spread of injury accidents, from a rolling five-year record of injury accidents. Establishing which sites exhibit an accident or severity level higher than the national average for the respective route type.

Chapter 2: Quality Management

A prioritized list of injury accident sites will be developed to focus scheme identification proposals. This gives greater confidence in study outputs and their development to a robust and effective roadwork program.

We will provide quality real-time information to the traveling public as they approach accident hot spots, extending this to other locations to inform drivers of changing weather conditions that affect safe driving, such as the possibility of ice or torrential rain.

We will utilize high-impact informational signs such as “Number of Vehicle Collisions This Year Compared to Last Year”, measuring improvements year by year. We will promote the use of speed-actuated speed limit signs at collision hot spots, high-severity accident areas, and at Temporary Traffic Management locations.

Our safety engineers and accident investigators will work alongside emergency services investigators to determine if the condition of the roadway network contributed to the incident. For example, did an inadequate maintenance regime fail to identify and clear a blocked drainage inlet leading to flooding that caused a driver to lose control?

A roadwork portfolio established from statistical analysis of network accident sites, and supported by operational input such as feedback from Field Patrols and Control Center will be documented and analyzed, to highlight trends and contributory factors arising from network incidents.

Quarterly routine police liaison and accident working groups established with emergency services providers will further document incident trends. These forums will be encouraged to identify and prioritize areas of perceived risk. Where either the accident statistics are non-representative, or where the risks are so apparent that the majority of regular users employ greater care. Stakeholder input and feedback will be formalized to ensure that all parties are aware of progress towards improvements at high-risk sites.

Field Patrols and crews will receive workshop training in safety scheme identification and development to ensure accurate and usable feedback from the incident management process and to establish a greater understanding of network accident trends and risks.

Historical Data Analysis

Historical Data Analysis based on information gathered during operations (traffic, weather, etc) has proven to be a very effective tool for identifying and addressing recurring issues. Particularly when they can be predicted under certain circumstances to improve safety and comfort on the Project.

This proposal includes a record system that will be uploaded into a software package to assist the Accident Information and Prevention Systems as well as to the Incident Management Plan. The main data to be recorded and stored for analysis is summarized in Table 20.

Accident Investigation and Prevention Studies

An effective approach accident management through Accident Investigation and Prevention (AIP) studies has been developed through years of experience in collecting and analyzing accurate accident data. This allows numerous highway projects to be implemented with immediate benefits in terms of safety. Although the design of highways

Chapter 2: Quality Management

and frontage roads is reviewed from a safety point of view at several stages, we feel that it is important to implement this tool as circumstances may change during the term of operation.

The proposed AIP system is based on:

- Identifying hot spots along the Project (main lanes and frontage roads) in terms of the number of accidents and their yearly evolution.
- Statistically analyzing accident data through a Chi-square test.
- Carrying out onsite evaluation of possible solutions.
- Proposing corrective measures for outstanding issues.
- Prioritizing corrective measures according to their expected benefits.

As previously mentioned, the key element of this analysis is the collection of accident data from all available sources. Accident reports for each incident will be input into an easy-to-update and maintain database, through which information can be requested for each section of the Project.

The necessary input for the system will be received mainly from two different sources – operations data-gathering equipment and close collaboration with police departments. Our proposal is based on the assumption that only the first source will be available initially, but we will make all endeavors to build up a strong relationship with the relevant police departments to gather as much information as possible to improve study data and results.

Table 20: Historical Data Analysis Topics

Incident coefficient	
Unit	Value
Incidents per million vehicle-miles	
Incidents leading to a lane closure per hour per lane x mile	
Incidents leading to a lane closure for longer than 45 minutes per 100 million	

Capacity Reductions			
Incident	Number of Lanes	Closed lanes due	% Capacity Reduction
Incidents on the shoulder			
Vehicle damage only			
Accidents with injuries			
Accidents			

Typical Capacity in work sites

Chapter 2: Quality Management

Number of	Closed lanes	Average	% width	% Capacity Reduction

Database

The essential data necessary for a thorough Accident Analysis and Prevention Study are listed below:

- Date and time of incident
- Exact location
- Direction of travel
- Weather conditions
- Visibility (night/day/fog)
- Severity of accident (extent of injuries and property damage)
- Number of people injured/fatalities
- Number and type of vehicles involved
- Incident classification by principal cause, for example:
 - Vehicle parked on the shoulder
 - Flat tire
 - Dangerous passing
 - Failure to yield
 - Driving under the influence of alcohol or drugs
 - Speeding
 - Objects or oil slicks on the roadway
- A one-line brief description of the incident
- A “stick diagram” depicting the interactions between vehicles involved in the accident

Other relevant information that could be useful although not critical for the analysis includes the age of the driver(s) and the age of any injured parties.

Cluster Identification

Clusters are areas or hot spots where the majority of incidents occur, and therefore where corrective measures will be studied. A typical cluster would encompass a 100 m (109-yd) radius, and therefore all accidents in a 200 m (218-

Chapter 2: Quality Management

yd) section would fall into a cluster. These criteria can be modified if special circumstances cause a single hot spot to impact longer distances on the Facility.

Chi-square Statistical Analysis

For each identified cluster accidents with similar characteristics are grouped and a preliminary analysis of the evolution from previous years is carried out. For example: The most recent year's count of nighttime accidents on Mile 12 Eastbound is compared with previous year's value. To assess whether the changes are due to a physical factor that can be corrected or whether they are due purely to random fluctuation. The same sort of analysis can be used for a "before/after" assessment of corrective measures put in place. Figure 23 shows the simple structure of a Chi-square calculation once the data has been entered.

Figure 23: Sample Chi-square Statistical Analysis

Used to determine whether the number of accidents of a particular type is "significantly" higher than at similar sites									
Or to determine whether there has been a "significant" change in the number of accidents at a site after treatment has been carried out.									
Input figures in yellow cells									
Before/After Test					Comparative Test				
	Site	Control	Totals		Site	Control	Totals		
Before	10	100	110	Dark	9	442	451		
After	3	100	103	Light	12	192	204		
Totals	13	200	213	Totals	21	634	655		
Chi squared = 2.55				Chi squared = 5.64					
If Chi sq >2.71 - result is significant at 10%									
If Chi sq >3.84 - result is significant at 5%									
If Chi sq >6.635 - result is significant at 1%									
If Chi sq >10.83 - result is significant at 0.1%									
Significance Levels									
<u>Significance</u>	<u>Confidence</u>	<u>Subjective</u>							
Level	Level	Interpretation							
1%	99%	Highly Acceptable							
5%	95%	Acceptable							
10%	90%	Fair							
20%	80%	Indicative							

If the outcome of the calculations shows that the increase in number of accidents of a certain type is not due to random fluctuation, further studies will be carried out and specific measures will be developed to address the identified problem.

Direct Observation

In addition to statistical analysis, the onsite team will constantly seek to identify traffic operation and safety problems that may lead to accidents. For instance, a statistically relevant increase in the number of accidents on a certain spot during night hours could indicate problems with the illumination system. In this case the team would carry out a nighttime study to determine the cause of these accidents.

Conclusions and Proposals

The conclusions of accident studies will be reflected in brief reports including realistic proposals to address detected problems. Some examples of proposed improvements could be:

- Installing new lighting columns.
- Expediting mowing or trimming if visibility has been reduced.
- Installing anti-skid paving on certain sections.
- Improving signage.

Proposals will include:

- Preliminary cost estimates based on previous experience with similar improvements.
- Estimated reduction in the number of accidents in the area due to the proposed corrective measures.
- Estimated cost savings derived from avoidance of a single road accident (including insurance, medical costs, etc.).

The latter figure requires yearly updates. A savings of \$100,000 per accident avoided can be used as an initial working figure.

The approach described above is a tool used to prioritize implementation of corrective measures. Each proposal's ranking is obtained by calculating the First Year Rate of Return (FYRR).

$$FYRR = \frac{\text{Number of accidents avoided} \times 100,000 \times 100}{\text{Estimated Cost of Corrective Measures}}$$

This criterion is a very important tool in the decision-making process as it relates to reducing the number of accidents and ensuring the safety of the traveling public. One of the Developer's main objectives.

2C.12 Procedures

The Developer will implement the following management tools to meet and exceed the technical requirements set forth in the CDA:

Operations-Specific Tools

- **Integrated Management System (IMS)** – The IMS, originally developed for SH 121 and modified for the IH 635 Managed Lanes Project will serve as the backbone of the Developer's O&M strategy. The Developer will establish the complete IMS following contract award.
- **THORS** – This Cintra-proprietary SAP® software package is a unique tool used to gather comprehensive data from the Proposer's Toll Roads throughout the world. It will allow the Developer to benchmark the IH 635 Managed Lanes Project against other operational toll roads across the globe.
- **Tolling and Enforcement** – From SCD, the Developer will have a Back Office System in place for verifying raw data from the field systems and submittal of toll transactions to NTTA.

Chapter 2: Quality Management

- **Call Center System** – The call center will tie in or coordinate with TxDOT for road weather condition reports and will track complaints.
- **Incident Management System** – A data collection and reporting package that facilitates data gathering, identification/recording of necessary actions, and closure of issues related to incidents/accidents on the Facility.
- **Accident Investigation and Prevention Systems** – A statistics-based system to help analyze hotspots and take immediate action upon detection of a problem.
- **Closed-Circuit Television (CCTV)** – The Technical Provisions require placement of CCTV cameras at a close enough distance on all highway lanes to provide 100 percent overlapping coverage. The cameras will be placed to allow monitoring of traffic conditions on main lanes, frontage roads, connecting facilities, and ramps.
- **Vehicle Detection** – Each lane will be monitored for volume, occupancy and speed in compliance with Project requirements. The Developer will provide traffic data to external users and to TxDOT via the TxDOT center-to-center interface.
- **ITS Field Infrastructure Communications Network** – The communications backbone of the system is based on a 1 Gb fiber-optic configuration, providing full network redundancy. Network redundancy is also integrated into the design by providing two fiber trunk lines.
- **Project Extranet** - This tool will serve as a reference for Project personnel and Stakeholders to efficiently access project documentation and communicate internally.

The following items summarize three additional operational subsystems that exceed TxDOT's ITS requirements, as specified in Book 2A:

- **Toll Tag Tracking System** – This system will complement the information gathered by the TCS through several other tag reader locations. To produce data enough for an accurate calculation of travel times to be displayed through the DMS and the Project website, and origin/destination matrices. For instance, allowing advanced Corridor Planning Studies.
- **Road Weather Information Systems (RWIS)** – The RWIS includes sensors to detect fog, ice and flooding, which will facilitate user alerts and quick emergency response (refer to Winter Service Plan in Chapter 2E of this document).
- **IH 635 Managed Lanes Project Public Traffic Website** – This will be the main gateway for users to contact the Developer and obtain pre-travel information.

Maintenance-Specific Tools

- **Roadway Maintenance Management System (RMMS)** – A GIS-based data collection and reporting device for issues related to maintenance (repair, replacement, servicing) of Project assets.
- **Global Positioning System (GPS)** – Field patrol and maintenance trucks will be equipped with GPS devices so that managers and operators can track their locations in real time, allowing for efficient dispatching.

Chapter 2: Quality Management

- **Asset Management System (AMS)** – The AMS will integrate decision-making to ensure that maintenance and operations projects and major and minor rehabilitation projects are working from a single inventory of materials and equipment.

Software

- **Traffic Management Center Central Software** – The TMC Central Software platform for the Advanced Traffic Management System is an “off-the-shelf” version of a proven application that provides a truly integrated, full-featured ITS platform. The Central Software integrates management of all field devices including CCTV cameras, DMS, traffic detectors, RWIS, and other field devices into a single software platform.
- **Regional Information-Sharing Software** – The regional integrated information-sharing software product is a web-based Graphical User Interface that enables law enforcement, transportation management centers, emergency responders, private entities, and any organization in the network to share important information with one another. Such as, the location and status of major incidents, resources deployed, permits, planned event activities, and construction areas.
- **Personalized Traveler Service (PTS)** – The PTS module, an extension of the public website module, notifies subscribed individuals by e-mail of traffic incidents, road closures and other events that could affect their travel.
- **Automated Vehicle Identification (AVI)** – The AVI system uses vehicles equipped with transponders or electronic toll tags to serve as vehicle probes to measure travel times, report abnormal traffic flow caused by incidents and provide origin/destination data for transportation planning purposes.
- **Roadspace Management** - This proposed software will provide an overview of closures, preventing conflicts, improving safety, and reducing delays. It also provides the opportunity for external organizations such as the maintenance contractors and utility companies to generate their own roadspace requests by logging into the system across the Internet.
- **Pavement Management System** – We will implement a storage and inquiry module that enables the Developer to manage, from one single computing application all roadway parameters. Such as, geometry, inventory, road surface, pavement structures, auscultation, engineering structures, traffic and expert management of road surfaces and pavements for their maintenance.

Traffic Management Center Equipment

To support TMC operators’ tasks, the Developer will equip the TMC with the following elements (excluding the needed servers in which the different TMC applications will run and data and video backed up):

- Two operational workstations, each one with a state-of-the-art personal computer;
- One 84-inch video wall capable of displaying CCTV images as well as a schematic representation of the roadway.
- Two shared printers and one fax machine.

Additionally, the meeting room will be equipped with a PC workstation for TxDOT staff, with access to the same video feed and applications as the TMC operators.

Traffic Management Plan

Advance notice will be deliberate and consistent, rather than being result of crisis management. Well-directed notification prior to commencing roadwork is beneficial for ensuring mobility. This allows users to plan alternative routes when given prior knowledge of timing and duration.

The objectives of the traffic management plan will be first, to ensure the safety and convenience of the traveling public and construction personnel and second, to minimize disruptions to adjacent businesses and residences.

The Developer will achieve these goals by providing a logical and detailed plan that conforms to good industry practice, follows the requirements of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Lane closures, for repair and reconstruction during the Term of the Agreement, will conform to the TMUTCD. The Developer will confine freeway closures requiring detours to times when traffic volume is at its lowest, such as nights and weekends. The Developer will contract with off-duty uniformed police officers to assist with the implementation of roadway closures and major detours. Planned or routine tasks can often be undertaken to take advantage of traffic management provided for other parallel activities.

In the context of roadwork on the IH 635 Managed Lanes Project, the following terms are used:

- **Nighttime-only working:** Describes activities that commence after the evening peak traffic flow has subsided and are completed prior to the build-up of the next morning's peak traffic flow. In such circumstances, lane closures reduce the traffic-carrying capacity of a road during the night, but all lanes are available for traffic use during the day.
- **24-hour working:** Describes roadwork where the conventional daytime working is extended into a 24-hour operation by the use of shift work. The essential difference between 24-hour working and nighttime-only working is that during 24-hour working there is no specific requirement for the full carriageway to be restored to live traffic at the beginning of each day. Although this chapter is directed towards nighttime-only working, many of the considerations contained within it also apply to 24-hour working.

The Traffic Management Plan details the overall approach to temporary lane closures and / or temporary road closures due to maintenance or emergencies:

- **Temporary Lane Closures:**

When the Developer must close a lane for maintenance or an emergency, the Developer will contact TxDOT at least two weeks prior to the closure, in the case of maintenance, or immediately after an emergency occurs.
- **Maintenance lane closures will occur outside of rush hours and will not disrupt traffic. Lane closures that require closure of more than one lane will occur at night when traffic is at a minimum.**
- **Temporary Road Closures:**

When an emergency occurs, the Developer will notify TxDOT and all local authorities of the situation, making it clear that the road is closed due to the emergency. The Developer will divert traffic away from the Facility and will advise TxDOT and local authorities upon reopening. The

Chapter 2: Quality Management

Developer will use all available resources to expedite the reopening of the road and will advise TxDOT and local authorities of the actions taken and their results.

The Maintenance Manager will manage lane closures and traffic restrictions through the Roadspace System as part of the Operations Management Plan. The general, closure specific TMPs will be developed to ensure the appropriate plan for to suit the work requirements.

The Maintenance Manager and the Roadway Public Information Representative will ensure promotion of advanced notification of closures and traffic restrictions through media and the Project website. Real-time information on incident closures, delays, diversions, and anticipated clearance timescales will also appear on the Project website to facilitate travel decision-making and mitigate incident-related congestion and delays.

Roadspace Management and Coordination of Third-Party Work

General

This chapter sets out a number of considerations that the Developer will take into account by when planning traffic management for work on in-service roads. It draws upon experience gained and supplemented by extensive analysis of road user and work costs. The chapter considers various options, but concentrates on the possible use of nighttime-only working.

Roadspace management will be web-based and will allow third-party and stakeholder access, allowing effective planning of roadwork and closures, minimizing conflicts and allowing multiple tasks to be planned within each closure to maximize efficiency. Third-party Roadspace applications will be authorized and coordinated by the Maintenance Manager.

Considerations

Safety must be the primary consideration for all types of roadwork, during both planning and execution. We will address the safety needs of those engaged in the roadwork, the road user and the general public.

Nighttime work on electrical and electronic equipment systems often requires a considerably higher quality of illumination than that required for other activities. This arises from the need to identify small features and to distinguish between colors.

Decision-Making

A major objective in roadwork planning is the reduction of overall traffic delays. However, the costs associated with minimizing traffic delays by using nighttime-only working can be between 25 and 50 percent higher than the costs incurred for the same work undertaken in the daytime. However, experience in nighttime-only working tends to reduce this premium. This chapter provides guidance for the evaluation of the additional costs associated with nighttime working against the benefits arising from the reduction in delays to road users.

Chapter 2: Quality Management

Routine Maintenance

Routine maintenance activities will be combined and undertaken within a single lane closure or mobile lane closure whenever possible, and considered for nighttime-only working. Planned or routine tasks can often be undertaken to take advantage of traffic management provided for other parallel activities.

Routine maintenance operations also will be assessed to establish the optimum traffic management arrangement under which the roadwork must proceed. The total assessed cost of the operation under each traffic management arrangement must comprise the roadwork cost plus the cost of delays and incidents.

Oversize Load Policing and Management

The Developer will manage the routing of oversize loads on the Project. The Developer will work with freight haulers to program and police the movement of oversize loads, scheduling such transport during periods of light traffic whenever possible to minimize impacts to drivers. Arranging convoy and traffic management requirements and, in exceptional circumstances, removing and reinstalling roadway components.

2C.13 Quality Control

Examinations and Audit of O&M Work

Strong management processes and information technology systems will be used to develop solutions to achieve continuous improvement and produce real time information-reporting on the network.

These will support and facilitate:

- Monitoring activities and actions
- Benchmarking and performance indicators
- Budgetary planning
- Provision of comprehensive asset condition and inventory
- Consultation, review and feedback
- Network condition monitoring

Management reviews will be used to confirm that operational requirements are being met effectively and to identify problems and propose solutions.

Process

The Roadway Operations Director decides the frequency and scope of management reviews required and specifies this in the Quality Management Plan. The frequency of management reviews will depend on the size and complexity of the activity / service. Typically larger and / or more complex activities / services may require more frequent reviews. The scope of management reviews may include for example, progress reviews, financial reviews, and performance reviews.

All personnel concerned with the reviewed material are consulted where appropriate.

Guidance

Generally, management reviews establish that, where relevant:

- The overall approach is appropriate to the project requirements, and the necessary controls will be or have been properly applied.
- The concept or project philosophy is proven and is appropriate and effective to use.
- The project inputs and assumptions are satisfactory, and all interfaces are addressed.
- Statutory requirements including health & safety and environmental issues have been taken into account.
- The corridor is practical, safe, and well maintained.

Quality Audits will be used to verify the understanding, implementation and effectiveness of the Integrated Management System and their associated documentation in a systematic, factual and objective way.

Test Observation and Reporting

The Developer will to prepare the following reports on a quarterly basis, except as noted below:

- Incident Reports: For each Incident, the report shall identify the nature of the Incident, time, date, location, parties involved, and actions taken. For Incidents involving deaths, a report shall be submitted to TxDOT within 24 hours of the Incident.
- Non-Conformance Reports: For each material Defect in the Project Elements, the report shall identify the location, the nature and cause of the material Defect and the steps that will be, or have been, taken to address the material Defect.
- Traffic Reports: Each traffic report shall summarize traffic volumes along the Project on a daily, weekly, and monthly basis.
- Maintenance Work Report: Each maintenance work report is to describe the following:
 - Inspections conducted, including the date and type of inspection
 - Material Defects or damage identified, including the date, infrastructure component, details of material defect or damage
- Details of the maintenance work carried out
- Quality conformance summary (i.e., the results of a quality program).
- Environmental monitoring activities, as required in Section 4
- Rehabilitation plans (Annually): Description of the rehabilitation program conducted in the previous year and updates to the five-year rehabilitation plan to describe the planned rehabilitation Work and identify any changes from the previous plan
- Operations plans (Annually): updates to the Operations Management Plan, including planned operating procedures and any changes from the previous operations plan

Chapter 2: Quality Management

Upon request, the Developer will provide TxDOT any technical documentation it maintains regarding operations activities.

Comprehensive Environmental Protection Program Implementation

The Developer will develop and implement a Comprehensive Environmental Protection Program (CEPP), applicable throughout the Term of the Agreement to establish the approach, requirements, and procedures to be employed to protect the environment. All component parts shall reflect in order of priority: Impact avoidance, minimization, and as last resort mitigation. The CEPP will satisfy applicable FHWA, TxDOT and resource agency requirements including those detailed as commitments in any Environmental Approvals.

At a minimum, the CEPP will include the following component parts:

- Environmental Management System (EMS)
- Environmental Compliance and Mitigation Plan (ECMP)
- Environmental Protection Training Plan (EPTP)
- Hazardous Materials Management Plan (HMMP)
- Communication Plan (CP)
- Construction Monitoring Plan (CMP)
- Recycling Plan (RP)

We are committed to improving the sustainability of the highway operations. This requires the consideration and assessment of environmental issues for all activities. The assessment involves balancing the impacts of the activities in a way that sustains both environmental protection and promotes efficient operations.

Our goal is to deliver increased sustainability via the promotion of environmental awareness throughout our team. We will monitor progress towards delivery of this commitment via the development of Performance Indicators and appropriate benchmarking.

We are aware that some products and activities cause environmental damage. We commit to use products and employ procedures that minimize this damage and provide environmental protection. We will work to evaluate the true environmental cost of the products we use and the activities we carry out.

We recognize the continual change in environmental stewardship and legislative obligations and will enhance environmental awareness among our staff and supply chain partners.

Our commitment to enhanced environmental management of our works processes is demonstrated by our development of our Integrated Management System that embodies the ISO 14001 Environmental Management Systems. We will apply internal indicators and benchmarks to support the delivery of our policy objectives.

Quality Control Procedures

Quality Audits assess the IMS processes in all relevant functions, levels and areas of the organization. All audits are carried out by suitably trained auditors.

Process

1. Audit Scheduling & Assignment:

- Audits are planned and programmed in an Audit Schedule to ensure the full scope of the system is adequately sampled and tested on a regular basis.
- The Audit Schedule covers both office based and site activities.
- At any time additional audits not shown on the issued Audit Schedule may be arranged in response to the requirements of the organization.
- The Audit Schedule details the auditor(s) assigned to carry out the audit and the audit reference number.

2. Audit Preparation

- The auditor agrees a date and time for the audit with the key activity/service personnel.
- The auditor uses a prepared audit checklist.

3. Audit Conduct

- The auditor records the evidence collected and decides if any non-conformities should be reported as Corrective Actions Requests (CARs) or observations.
- Serious deficiencies that require urgent attention are referred immediately to the O&M Quality and Environmental Manager or nominated representative for advice.
- Sample reports are reviewed by a reviewer nominated by the O&M Quality and Environmental Manager.
- The reviewer is responsible for reviewing the completeness of the audit.

4. Recording and resolution of CARs

- The auditor agrees the completion date for the CARs with the key activity/service personnel during the audit
- The person responsible for the reported non-conformity accepts the CAR on the database and specifies the actions to be taken to correct and prevent recurrence of the non-conformity.
- Follow up checks and recommendations for closure of CARs are recorded on the database.
- The O&M Quality and Environmental Manager or nominated representative closes the CAR.

Ensuring Accuracy, Completeness and Quality of Submittals

A "Two-Person Rule" will be utilized that will require that anything to stakeholders or third parties, such as project status reports, test plans, designs, technical evaluations, final reports, and manufactured products, will be reviewed by a second person as technically competent as the originator. The two-person rule is intended to ensure early problem identification.

Continuous Improvement

We have wide experience of partnering in Concession contracts. We are committed to, and actively promote, partnering and continuous improvement. We enjoy the benefits that successful partnering relationships bring to all involved. These include:

- Promotion and delivery of business objectives
- Mutual understanding and common purpose
- Focus on the customer
- Clear responsibilities
- Streamlined reporting
- Development of each partner's staff
- A framework to deal with contractual concerns
- Improved systems
- Progression towards Best Value
- The promotion of winning themes and innovation
- Better service
- Teamwork

Approach

We will support TxDOT in developing an integrated project team, working closely with supply chain partners, emergency services and other key stakeholders. We are committed supporters of the integrated project team and will ensure that our representatives think 'outside the box,' challenge current performance, promote change and foster the right environment.

The ethos of partnering and continuous improvement is embedded in our culture and all our operations and procedures. This is key to the development of long-term relationships and is the measure by which we define our uniqueness, exceptional service and added value.

Partnering will benefit all parties through the agreement and promotion of:

- Mutual Objectives that help to promote commitment, fairness, trust and ownership. These will be contained within a Partnering Charter, signed by all parties.
- Problem Resolution Processes through a twinning of organizational structures, and an understanding of the issues important to the other partners
- Continuous Improvement Measures. These ensure the constant improvement of service delivery to satisfy, and exceed, the contracts' Key Performance Indicator requirements
- Innovation. We are committed to the principle of working as one team and will sign up to and take ownership of innovation and nurture 'step change' ideas.

Deployment

To keep the focus on partnering and continuous improvement, we will urge all partners' staff to be involved in regular partnering and improvement workshops facilitated by continuous improvement 'Champions'. This affords an opportunity for all to contribute and openly communicate their ideas and concerns.

In addition to our work on the integrated project team with TxDOT, we will promote the establishment of a Partnering Board and Continuous Improvement Forum involving key stakeholders and our supply chain partners to facilitate the delivery of the benefits outlined above.

In addition, continuous improvement will:

- Act as a think tank and brainstorming unit
- Promote and develop innovative ideas
- Support and guide Partnering Board that will deal with day to day issues and support partnering processes.
- Develop a resource of mentors, advisors and specialists
- Help the team deliver high quality works
- Review and feedback on our processes.

The results of the quality audits and management reviews will be used to identify areas of improvement. CARs and observations generated from these reviews will be continually monitored to identify reoccurring events and the effectiveness of corrective actions.

In addition, each major service area will nominate a Continuous Improvement Champion to sit on a Continuous Improvement Forum. Performance will be monitored through dashboard and feedback provided by the O&M Quality and Environmental Manager to the Continuous Improvement Forum, and the senior management team.

2C.14 Audit

Developer's Representative and Quality Management Staff

The name of the Developer's representative(s) with defined authority for establishing, maintaining, auditing and reporting on the PMP will be provided in the final Project Management Plan. Along with the names, titles, roles and responsibilities of supporting quality management staff reporting to the person with defined authority.

2C.15 Performance Standards

The baseline operational performance measures are defined in Table 19-2 of the Technical Provisions (Performance and Measurement Table Baseline). Specific operational performance measures comprise the following sections:

- 13) ITS and ETCS Equipment
- 17) Incident Response

- 18) Customer Response
- 19) Cleaning and Sweeping
- 20) Buildings and Enclosed Facilities

There are no currently proposed amendments to the Performance and Measurement Table Baseline.

2C.16 Document Management

Maintenance of Records and Document Management Procedures

A document management system will be used to control the receipt of incoming documents, the preparation, checking, issuing and amending of new documents and the filing and storage of quality records. More detailed processes for handling documents during the O&M phase are below:

1. Receipt of Documents

Incoming hardcopy documents are marked to show date of receipt and the project identifier added.

Incoming documents shall be checked before distribution. Any identified errors, omissions, ambiguities or conflicts are referred back to the sender for clarification before the documents are used as input. Appropriate evidence of such examination and resolution is retained. Where it is necessary to use the documents pending resolution then such use is controlled.

Documents shall be clearly marked to show their status for use (e.g. authorized for use, superseded, obsolete etc.).

One copy of each superseded or obsolete document shall be retained unless agreed otherwise by the manager responsible. Other copies are withdrawn from active use or else destroyed.

2. Preparation and Checking of Documents

Outgoing documents shall be recorded on a Document Record Sheet

Documents containing information reproduced from data provided by external bodies or firms and which DEVELOPER then issues may breach copyright laws. Reference should be made to the owner of the source material, and if necessary, permission obtained for its use.

Documents shall be checked and then sign the master copy of the finalized drawing, by hand, in the "Drawn by", "Checked by" and "Approved by" boxes when satisfied the drawing can be issued, and finally marked "OFFICE COPY" and filed

3. Referencing of Documents

Documents shall be referenced with at least the project identifier, document number and version

4. Checking and Approval Policy

All work shall be checked and authorized in accordance with the appropriate category of check
Information requiring checking must be held in a manner to prevent misuse until checked.

5. Issue of Documents

A record shall be kept of the issue of all documents.

Revisions to controlled documents shall be reissued to registered holders whenever they occur.

An office copy shall be retained of "as sent" documents for record purposes.

Documents shall be protected from avoidable loss or damage by appropriate packaging and transmittal.

6. Amending Documents

When a document is amended the version number shall be amended and the change detailed in the amendment box.

Versions that become superseded shall be clearly marked "SUPERSEDED" and filed where the risk of incorrect use of its information is reduced.

7. Filing Documents

Project documents shall be filed in the Project File or their location referenced.

Files will be clearly titled, referenced and located and a list of project files is kept in the Project File. A system to locate files removed from their normal storage location will be used (e.g. file location cards left in place of a file when removed from its normal place).

All records shall be made available to the TxDOT Representative upon request.

2C.17 Response to Maintenance

Refer to the Maintenance Quality Management chapter (Section 2D.17).

2C.18 User Satisfaction

The Developer will use the following process to obtain information to enable the measurement of User Satisfaction with a view to identifying areas for improvement.

- The CEO ensures performance measurement using the User Satisfaction Interview.
- User Satisfaction Interviews are carried out at six monthly intervals and at the end of the contract.
- If the User has raised specific concerns the CEO shall consider these at the time the survey is completed, and ensure appropriate immediate action is taken.

- Records are kept of any actions taken.
- Copies of the completed User Satisfaction Interviews are sent to the O&M Quality and Environmental Manager
- The user feedback interview shall be designed to help managers gather qualitative and quantitative information on how our customers perceive the service that we provide. So, we can ascertain how well we are meeting their needs and where improvements can be made.
- The User Satisfaction Interview shall be a means of obtaining performance data for possible action at Project level and Group level.
- Interviews should be completed at as many levels as possible within the user's organization from Main Board through Client Manager and day to day interfaces where appropriate.

2C.19 Emergency Response

Emergency / Extreme Weather Preparation and Response

The Winter Service Plan (Chapter 2E), sets out our approach and procedures for operation during severe winter weather.

In addition, we will utilize flood sensors, measuring water levels on the roadway and water levels of creeks, streams or ditches to allow early deployment of resources and emergency plans in a significant rain event. Location of winter and water-level sensors will be reviewed on an annual basis to ensure optimum reporting and allowing efficient and timely maintenance operations.

Containment and Disposal of Hazardous Material Spills

Pollution response procedures are detailed in the Environmental Management Plan (PMP Chapter 3).

In addition, we will develop an understanding of incident risks adjacent to the project through a comprehensive assessment of materials stored within ¼ mile of the Project limits. This will allow for effective risk assessment, development of mitigation measures for incident management purposes and continuous improvement of the Incident Management Plan.

Incident Management Plan

Incident response procedures are set down in detail within the Incident Management Plan (IMP)(See Chapter 10 of this document).

Incident notification, dispatch, management, and recording are carried out through the full-time Traffic Management Center. Utilizing CCTV access and communications with Field Patrols and emergency services providers to maintain an incident log.

Real-time information will be communicated to the TxDOT representative. Traffic conditions, diversions, and cleanup timeframes will be made available to road users through the IH 635 Managed Lanes Project website.

Procedures

Incident response procedures are detailed in the Incident Management Plan (Chapter 10) and summarized here. To achieve incident management objectives and produce a combined and coordinated response to an emergency, a common management framework in line with those operated by police, emergency services, local authorities, and other agencies will be adopted.

Under this framework incident management response will be undertaken at one or more of three levels:

- **Operational:** Manage activities at the scene of the incident in cooperation with the appropriate organizations.
- **Tactical:** Determine priorities in allocating resources; plan and coordinate response.
- **Strategic:** Establish strategic management, ensuring that resources and expertise are available for a prompt response and return to normal conditions.

Initially, incidents are likely to be managed at the operational level. Tactical and strategic management levels will be activated as appropriate.

Operational Level (Bronze) – Field Patrols and Others

This level reflects normal day-to-day arrangements for responding to incidents. It is the level at which the management of hands-on work is undertaken at the incident site.

Individual agencies retain full command of the resources that they apply within a geographical area or use for a specific purpose. The Developer will normally act as the response coordinator at an identifiable scene. A key function of an operational commander or manager will be to consider whether circumstances warrant a tactical level of management.

Tactical Level (Silver) – Maintenance Manager

The tactical level of management is introduced to provide overall response management. Tactical managers determine priorities in allocating resources, obtain further resources as required, and plan and coordinate when tasks will be undertaken. They take appropriate risk reduction measures with due regard to health and safety requirements.

When an incident is identified, tactical management is usually undertaken from an Incident Control Point established in the vicinity. Many tactical functions will then be discharged at or close to the scene. However, some agencies, for example local authorities, will prefer to operate from their administrative offices but will often send liaison officers to enhance coordination. Planning must also take into account that there may be a number of separate incident locations at one time.

Chapter 2: Quality Management

Tactical managers must concentrate on overall general management. While they need to be aware of what is happening at the operational level, they will leave the responsibility for dealing with that level to operational managers. When the situation warrants it, a strategic level of management/command will be established as early as possible.

Strategic Level (Gold) – Roadway Operations Director

In certain circumstances, one or more agencies may find it necessary to implement a strategic level of management. Incidents can place considerable demands on the resources of responding organizations, with consequent disruption to day-to-day activities. Such matters require attention by senior management to ensure that operational requirements elsewhere are still met.

Strategic incident management will be standard practice, not the exception. It is easy to dismantle if not required and removes the potential for tactical managers to be reluctant to ask for a strategic level of management. The need for strategic management may arise if tactical management does not have the required resources or expertise available. It may also arise if there is a need to coordinate more than one incident or site for which tactical command has been established. Strategic management is normally undertaken remotely from any incident scene.

Strategic management requirements may be confined to one particular agency. However, certain incidents require a multi-agency response at the strategic level when the issues that arise affect the responsibilities or activities of more than one organization.

While these communication procedures are prescriptive, we recognize the benefits of a partnered approach to incident management with the appropriate emergency services providers.

Incident Response and Reporting

Incident response procedures are set down in detail within the Incident Management Plan (Chapter 10).

Incident notification, dispatch, management and recording are carried out through the full-time Traffic Management Center, utilizing CCTV access and communications with Field Patrols and emergency services providers to maintain an incident log.

Real-time information will be communicated to the TxDOT representative. Traffic conditions, diversions, and cleanup time frames will be made available to road users through the IH 635 Managed Lanes Project website.

2C.20 Toll Operations

The IH 635 Managed Lanes provide drivers with the option of paying a toll electronically to access lanes where travel speeds are consistently at least 50 miles per hour. Upon approaching an entrance to the managed lanes, vehicles will enter a Declaration Zone (DZ), requiring the driver to declare the vehicle as a Single-Occupancy Vehicle (SOV) or High-Occupancy Vehicle (HOV) for purposes of toll charging.



Chapter 2: Quality Management

The Developer will dedicate separate lanes for SOVs and HOVs. The toll amount will vary depending on the near-real-time traffic conditions, and will be calculated by a dynamic toll rate algorithm. The toll collection system described above will collect the toll electronically from vehicles equipped with a valid transponder. For vehicles without a valid transponder, by License Plate Recognition (LPR) cameras mounted on the toll gantry will capture images of the vehicle's license plates. Enforcement officers stationed at enforcement zones located at each tolling point will enforce HOV compliance.

More information on toll operations for the project can be found in the document entitled "Conceptual ITS and TCS Design for IH 635 Managed Lanes Project: Final Document" in the Appendix to the Project Development Plan.

2D. Maintenance Quality Management

Definitions

Table 21: MMP-Specific Definitions

Maintenance Management Information System (MMIS)	A computer based system to record inventory, failures, repairs, maintenance activities, and inspections performed.
Category 1 Defect	Means a Defect which requires prompt attention because it represents an immediate or imminent hazard, or there is a risk of immediate or imminent structural deterioration, or there is an immediate or imminent risk of damage to a third party's property or equipment, or there is an immediate or imminent risk of damage to the environment.
Category 2 Defect	Means any Defect other than a Category 1 Defect
Inspections	Walked or driven assessments of the Facility undertaken at predetermined frequencies.
Element	Means an individual component, system or subsystem of the Project or of a Utility Adjustment included in the Construction Work, and shall include at a minimum a breakdown into the items described in the Performance and Measurement Table Baseline, further subdivided by Auditable Section where appropriate.
Performance and Measurement Table Baseline	Means Attachment 19-1A to the Technical Provisions.
Performance and Measurement Table Amendments	Means Developer amendments to Attachment 19-1A to the Technical Provisions.
Testing	Cyclical or site-specific technical measurement of the Facility to ascertain residual life, roughness, skid resistance, ride quality or specification compliance.
Paved Areas	Roadway, pavement, ramps, shoulders and crossovers.
Drainage Asset	Infrastructure designed to manage clearance of storm water runoff and prevent watershed pollution.
Geotechnical Asset	Earthwork cuts or embankment between the roadway and adjacent landowner boundaries.

Chapter 2: Quality Management

Road Restraint Systems	Concrete or steel safety barriers or guardrails designed to improve safety and safeguard vehicles from accidentally leaving the roadway.
Injurious Weeds	Self-established weed growth within the soft estate, recognized as capable of causing personal injury or irritation when handled.

Table 22: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road

Chapter 2: Quality Management

	as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

2D.1 Organization

The Developer will maintain the IH 635 Managed Lanes Project to provide a safe and reliable transportation system for its users while also ensuring its maintenance as a long-term capital asset. The Developer will use a performance-based approach as defined by the CDA, supported by a comprehensive Facility inspections plan, to maintain the North project's features, components and elements. Such an approach will ensure efficient allocation of in-house resources to effectively address routine and preventive, reactive response and long-term maintenance needs, ensuring continuous operation of a safe and reliable Facility according to TxDOT standards. This approach will guarantee that, upon handback, the State of Texas will take control of a well-maintained asset that will retain its long-term value.

The primary objectives of the Developer's approach to maintenance are as follows:

- Provide and ensure a smooth and immediate transition from construction to O&M.
- Routinely and closely monitor the performance of the Facility in order to respond promptly to emergencies and imminent maintenance needs.
- Maintain the IH 635 Managed Lanes Project's features, elements, components and systems effectively and efficiently to meet the performance requirements established by the CDA.
- Ensure the continuous, serviceable and safe operation of the facility, minimizing delay and inconvenience to the road user.

Chapter 2: Quality Management

- Develop a long-term maintenance plan to maximize asset serviceability and guarantee satisfactory achievement of the Handback Requirements established by the CDA.

Contractual Arrangements

The Developer will retain responsibility for Operations and Maintenance work. The Developer will implement a professional Operations and Maintenance sub-organization, specifically developed and trained to manage the IH 635 Managed Lanes Project. This sub-organization will be comprised of competent individuals supported by operational in-house maintenance crews as well as a large pool of local subcontractors specializing in construction and maintenance of highways who will address specialized maintenance needs during the term of the CDA.

Based on extensive past experience in toll road operations and maintenance, the Developer will retain responsibility for Operation and Maintenance (O&M) of the IH 635 Managed Lanes Project and will not subcontract the obligations. Through this approach, the Developer will guarantee:

- effective application of the Developer's technical expertise and experience, based on its history of maintaining 23 concessions worldwide including Greenfield, Brownfield and transferred projects;
- improved communication levels regarding O&M issues between the Developer, TxDOT and the IE;
- significant maintenance cost reductions due to the experience curve effect arising from the Developer's long-term, hands-on approach to O&M;
- close control of the risks associated with the O&M of the Project, allowing rapid response to unexpected maintenance situations; and
- direct alignment of TxDOT and Developer's interests to maintain a safe and reliable transportation system at all times.

The Developer's O&M sub-organization will monitor and ensure the effective O&M of the Project, supporting the Developer's goals of providing a safe and reliable transportation corridor to its users. The Roadway Operations Director (ROD) responsibilities will include:

- ensuring proper communication between areas of the Developer's organizational structure;
- championing and updating the Maintenance Management Plan;
- hiring and training specialized O&M personnel;
- acquire in-house maintenance equipment; and
- ensure proper maintenance transition from TxDOT to the Developer including coordination with existing O&M subcontractors, utility providers, adjacent landowners and other third parties as needed.

Organizational Structure

To ensure effective implementation of the philosophies and methodologies detailed in the Project Development Plan, the Developer proposes to form an organizational structure comprising the following main sub-organizations:

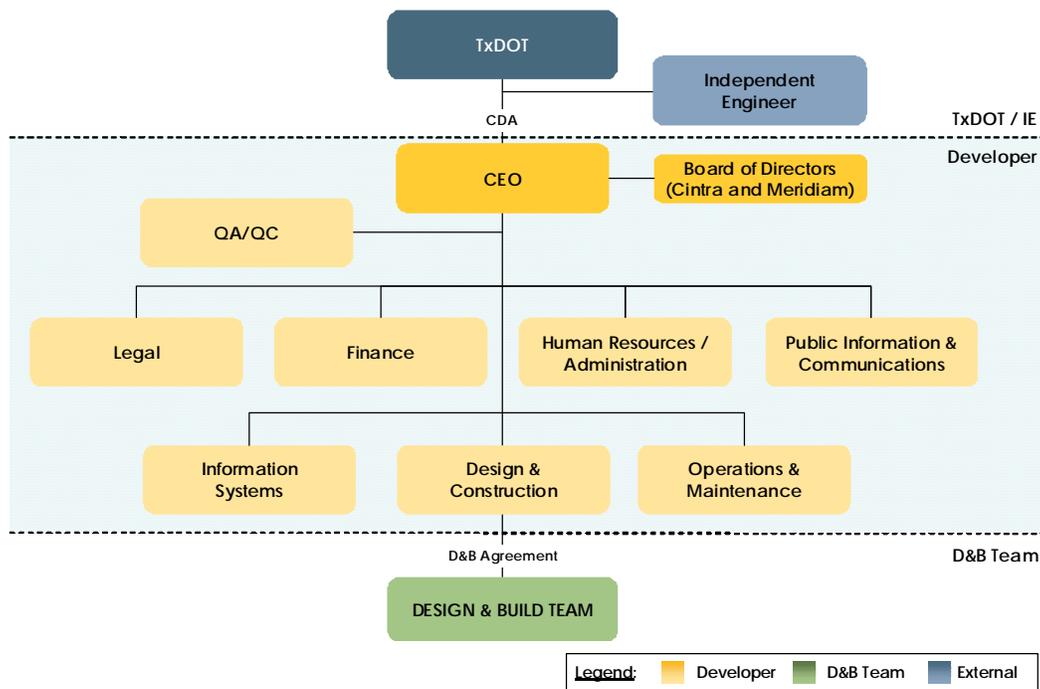
- Quality
- Design and Construction (D&C)

Chapter 2: Quality Management

- Operations and Maintenance (O&M)
- Finance
- Information Systems
- Legal
- Human Resources and Administration
- Public Information and Communications

The leader of each of these areas of responsibility will report directly to the CEO, as shown in Figure 20.

Figure 24: Level 1 Organization



This organization will be responsible for maintaining continuous 24/7 year-round operations of the highest quality, consistent with the best toll road management practices and the Terms and Conditions of the CDA. In addition, it will direct, coordinate, evaluate and amend, when necessary, the responsibilities of the Developer's sub-organizations. This organizational structure was designed to implement the Project from its Effective Date through the End of Term, and will include the following key full-time management positions:

- CEO (CEO)
- Chief Financial Officer
- Public Information Manager
- Design and Construction (D&C) Director
- Design Manager

Chapter 2: Quality Management

- Construction Manager
- Quality Director
- Environmental Compliance Manager
- Roadway Operations Director
- Maintenance Manager

The responsibilities and minimum requirements for key employees of the Operations and Maintenance Organization are presented in Figure 25 and Table 23.

Figure 25: Operations and Maintenance Organization

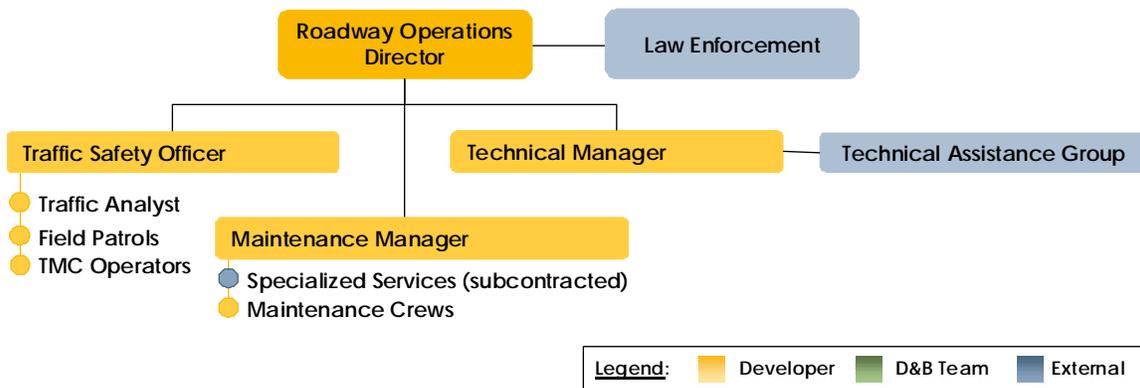


Table 23: Staff Responsibilities and Requirements – Operations and Maintenance

Staff	Minimum Requirements	Roles/Responsibilities
Traffic Safety Officer	Certified by Texas Engineering Extension Service (TEEX) in “Work Zone Traffic Control”. Two years of progressive and relevant experience in traffic control Strong communications and organizational skills.	Ensures uninterrupted monitoring of the facility, defines and enforces internal traffic control procedures and reports on facility condition and incidents. The Traffic Safety Officer will be available or on standby 24 hours per day, seven days a week
Technical Manager	Ten years’ minimum experience with state DOT, toll authority, county or city operations and maintenance programs. Five years’ minimum supervisory experience.	Direct construction and asset renewal activities during the O&M phase. Manages subcontracts with service providers. Coordinates QA/QC with O&M Quality and Environmental Manager.
Maintenance Manager	10 years’ minimum experience with state DOT, toll authority,	Demonstrated ability to know when to call in expert specialized consultant or

Chapter 2: Quality Management

county or city maintenance programs; five years' minimum experience in pavement repair design, drainage design, sign design, maintenance materials, emergency weather/spills prevention planning and managing equipment fleets.

contractor. Coordinates with all other managers on O&M team. Responsible for ensuring that all crew and patrol members receive training in environmental compliance, recognizing category defects and appropriate procedures for emergency incident situations. Responsible for the development of all required plans, coordinating where appropriate with local responsible entities

The responsibilities and minimum requirements for key employees of the Systems Team are presented in Figure 22 and Table 18.

Figure 26: Developer's Sub-Organization Chart – Systems

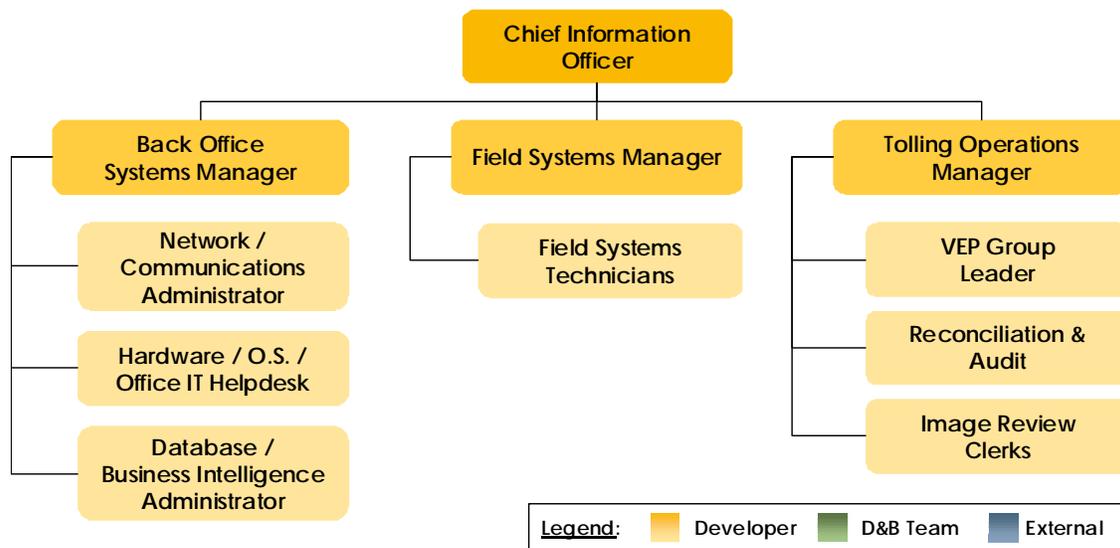


Table 24: Systems Department Staff Responsibilities and Requirements

Staff	Minimum Requirements	Roles/Responsibilities
Back Office Systems Manager	Five years of experience in operation and maintenance in back office systems in the transportation or financial industry.	Ensuring that the control center is up and running on a 24/7 basis and that the information flows between the field elements, the control center and external third parties (NTTA and other regional TMCs) are permanent and fluid.

Chapter 2: Quality Management

Staff	Minimum Requirements	Roles/Responsibilities
Tolling Operations Manager	At least five years of supervisory experience for a call center or similar operation. Excellent organizational and communication skills. Proficiency in Microsoft Office	Oversees Video Exception Processing Group. Serves as main point of contact with NTTA and ensures NTTA's satisfaction with tolling data provided by the Developer.
Field Systems Manager	Associates Degree or higher in Information Technology or related discipline. At least five years of experience troubleshooting and maintaining electronic toll collection devices. Previous supervisory experience	Supervises field maintenance technicians. Ensures fulfillment of required response times for repair of field systems through effective management of available resources, including performance of the programmed maintenance activities. Additionally, this position needs to make possible to meet the accuracy and availability levels required by TxDOT for the Toll Collection System.

2D.2 Personnel

The following identified Key Personnel will be active during O&M. The Developer will identify additional personnel in the final Project Management Plan.

Table 25: Key Personnel

CDA	Developer's PDP	Name	% of Time
Quality Manager	O&M Quality and Environmental Manager (Developer)	Jason Sipes	100%
Environmental Compliance Manager	Environmental Compliance Manager (D&B Team)	William Proctor	100%
Operations Manager	Roadway Operations Director (Developer)	Javier Martinez Ordóñez	100%
Maintenance Manager	Maintenance Manager (Developer)	Belen Marcos	100%

We believe that our employees are our most important asset and key to business success. Our culture promotes training, personal development and workplace safety, and thereby encourages everyone to perform to their potential in a safe and controlled manner.

Resource Plan

As one of the key resources needed through out the project, a detailed plan is required to ensure that the right staff will be available and have the necessities to perform their roles to the fullest. We have established the following key initiatives and will promote them throughout the team:

Staff Development and Opportunities

All employees, irrespective of position, location, or previous employer, have access to comparable and relevant training and development opportunities. We will ensure that all employees are inducted into our ethos.

All employees are encouraged to achieve vocational and professional qualifications. Competency-based Personal Development Appraisals are used to identify training needs, which are developed through the appraisal process and realized through Personal Development Plans.

Career Progression

We recognize the value of planned career progression and the importance of minimizing employee turnover. We have progression systems and effective retention strategies for career development and promotion of employees. We engender an environment and culture that nurtures talent and within which people want to work. Our business requires the development of long-term relationships and capabilities. We are a business that people, staff and consultants, want to work for.

Promotion of Best Practices

Employees will have access to training sessions, technical workshops, literature and other publications relevant to their discipline. This ensures that the best and most consistent methods of working are practiced and a continuous improvement culture promoted.

Communications

We promote positive employee relations by developing transparent HR policies and procedures. Teams will be engaged in regular communications and "change management" activities to deliver a smooth and seamless transition. Effective communications will be enhanced through briefing techniques such as Team Talks, intranet and newsletters, ensuring that our strategy, policies and procedures are easily accessible to employees.

The management team shall be responsible for the provision of adequate resources to meet the contract demands. The management team will review future workload at regular intervals, identify the resources needed, and take appropriate action to ensure their availability. Wherever possible Developer will directly employ staff and labor. All staff will be dedicated to the project.

It may be necessary to supplement requirements these with external resources at times of peak workload. External resources are to be subjected to a rigorous evaluation system prior to appointment. This is to ensure that the most suitable and competent resources are used

The proposed roadway maintenance staff includes:

- Maintenance Manager
- Maintenance Supervisors
- Laborers

In addition, dedicated crews of technicians will support maintenance of field systems (TCS and ITS). The Field Systems Manager will supervise the IT field maintenance technicians, which will allow for coordination of repair and inspection activities with other maintenance personnel, and will help to balance personnel needs in case of unexpected peaks.

An additional in-house crew will maintain the applications and hardware housed in the Traffic Management Center (TMC), including the ITS and TCS servers and all other BOS components. The TMC maintenance crew will consist of technicians working during regular business hours and responding to major after-hours incidents through rotating on-call shifts. The anticipated crew will include database administrators, a Graphical User Interface (GUI) technician and a hardware technician, all reporting to the Back Office System Manager. Both the Field Systems Manager and Back Office System Manager will directly report to the CIO.

Interaction with TxDOT and its Consultants

The Developer will prepare and agree to a task-specific Consultation & Liaison Strategy with the TxDOT CEO to ensure that effective communication and consultation occur at the appropriate time, and in a systematic and consistent manner. The Liaison Strategy that the Developer will establish with TxDOT and the Independent Engineer (IE) will include:

- TxDOT or IE Requests for Information – TxDOT or the IE may issue Requests for Information (RFI) to the Developer, and/or
- Meetings with TxDOT and the IE:

A secure Project Extranet site will enable authorized team member to access and store project data, progress meeting minutes, draft text and drawings. It will contain an e-mail list server to notify Project personnel of significant upcoming events and emergencies. The Extranet will also serve as a clearinghouse to request information from other team members. The Developer will regularly post project-related documents on the Project Extranet for review by TxDOT and other stakeholders.

During the Operations and Maintenance phase of the project, the Roadway Operations Director will be the primary point of contact between the Developer and TxDOT for operations related issues. This clear channel of communication ensures a fluid and controlled flow of information concerning project development. The Roadway Operations Director

Contractor and Third-Party Key Personnel

The Operations Team will be comprised of a dedicated in-house staff. This strategy will ensure a stable and long-term process to operate the highway at peak efficiency.

It may be necessary to supplement these requirements with external resources at times of peak workload. External resources are to be subject to a rigorous evaluation system prior to appointment. This is to ensure that the most suitable and competent resources are used.

Environmental Protection Training Plan Implementation

Developer will develop and implement an Environmental Protection Training Program (EPTP) that will include methods and procedures documented in the Environmental Compliance and Mitigation Plan (ECMP). The length of training sessions and their frequency will be sufficient to achieve the requirements of the EPTP.

Periodic training sessions at key times (e.g., prior to construction or major maintenance in sensitive areas or construction timing restrictions to protect threatened and/or endangered species) will be used to update workers on specific restrictions, conditions, concerns, and/or requirements. All field staff will be required to participate in the EPTP and will keep accurate records documenting attendance, as well as materials presented.

2D.3 Procurement

The Process Procedures Manual (PPM) is included as Chapter 9 of this document. Section 7 of the PPM describes general procedures for procuring services and products. General procedures for overall control of subcontractors and consultants are described in PPM Sections 1.5, 1.10, 1.11, 1.13, 1.16, 1.17, 1.18, and 1.19.

2D.4 Offices and Equipment

Core equipment for preventative maintenance includes:

- Sport Utility Vehicle
- Pick Up Trucks
- Dump Trucks
- Bucket Truck
- Sweeper Truck
- Loader/backhoe with trailer/float
- Cellular Phones
- Truck Radios
- Lawn mowers
- Miscellaneous equipment, including, generators, small power equipment, hand tools, etc.
- Crack Sealing Equipment (kettle, router, hot air lance, etc) – set up on tow behind trailer
- Plow attachments
- V-Box spreader and Tank attachments
- Magnesium Chloride Storage Tank

2D.5 Contractors

The Operations Team will comprise in-house staff. Specialist contractors and consultants will be retained on an as required basis. All contractors will be subjected to a rigorous evaluation system prior to ensure that the most suitable and competent contractor is selected.

Contractor Control Procedures

The supervision of contractors is an important step to ensure that requirements are met in a competent manner. The contracts will be monitored as outlined in the quality management plan implemented for this concession.

Responsibility of Contractors and Affiliates

Each Contract will include terms and conditions sufficient to ensure compliance by the Contractor with the requirements of the CDA Documents, and shall include those terms that are specifically required by the CDA Documents to be included therein, including, to the extent applicable, those set forth in Exhibit 8 - Federal Requirements for Federal-Aid Construction Projects and any other applicable federal requirements.

Notwithstanding, the retention of Contractors by Developer will not relieve Developer of its responsibilities hereunder or for the quality of the Work or materials or services provided by it.

Ensuring Contract Satisfaction

Contractors will be subject to the requirements of the Quality Management Plan implemented for this concession.

Environmental Protection Training Plan Implementation

Developer will develop and implement an Environmental Protection Training Program (EPTP) that will include methods and procedures documented in the Environmental Compliance and Mitigation Plan (ECMP). The length of training sessions and their frequency will be sufficient to achieve the requirements of the EPTP.

Periodic training sessions at key times (e.g., prior to construction or major maintenance in sensitive areas or construction timing restrictions to protect threatened and/or endangered species) will be used to update workers on specific restrictions, conditions, concerns, and/or requirements. All field staff will be required to participate in the EPTP and will keep accurate records documenting attendance, as well as materials presented.

2D.6 Interfaces

The Developer will coordinate access to the Project by companies and Governmental Entities that have a legitimate need to work within the Project ROW, including Utility operators.

A unique aspect of the CDA approach is that the Developer has integrated the design, construction, operations and maintenance functions so that those responsible for each activity will specifically consider their actions' effects on

the other activities. For instance, because the builder of a project will also operate the project, all interfaces with stakeholders during the construction phase bear in mind the impacts to those same stakeholders in the O&M phase. Accordingly, the approach to interfacing with the above stakeholders for purposes of O&M is very similar to the approach utilized, for instance, when interfacing with stakeholders in the Construction or Design phases.

Interface between Developer, Contractors, and Independent Engineer

Prior to transition, a partnering session will take place between the Developer's personnel, TxDOT and its consultants where technical information and contact information will be exchanged, communication channels established and potential maintenance problems and proposed solutions identified.

Third Parties

Existing third party agreements will be maintained in accordance with the CDA. This includes the preexisting agreement with the Cities of Dallas and Farmers Branch to operate and maintain the existing and temporary traffic signals for the Project prior to Service Commencement, as well as, the existing and future traffic signals subsequent to Service Commencement.

Tolling Integration with Other Tolling Agencies

Tolling integration with other agencies, meaning the necessary exchange of data to support statewide interoperability, as mandated by TxDOT, will be managed through the Back Office System.

Most Back Office functions will be performed through the Tolling Services Agreement with NTTA, and all valid transactions will be submitted to NTTA for toll collection purposes, including the transactions involving non-NTTA-valid tags. Therefore, interoperability will be achieved through NTTA.

Coordination with Utility Owners

The Utility Manager will coordinate and communicate all activities, in cooperation with the Developer, the respective utility owners and other potentially affected entities to ensure that all utility adjustment work is performed properly and according to Project requirements (see Project Procedures Manual Section 16, the CDA and Technical Provisions). The Developer will prepare, negotiate and execute all agreements with utility owners during the O&M Phase.

The Developer will conduct periodic coordination meetings with utility owners' representatives. The frequency of such meetings will be appropriate to the matters under discussion with each utility owner. The Developer will notify the Independent Engineer and TxDOT at least two business days in advance of each meeting with a utility owner. The Developer will produce minutes of all meetings related to utility adjustment work.

Minimizing Impacts on Neighboring Facilities

Notification will be deliberate and consistent, rather than being result of crisis management. Well-directed advanced notification prior to commencing roadwork has been found to be beneficial. Local residents often show greater tolerance of noise and disruption when they have prior knowledge concerning its timing and duration.

Experience indicates that the distribution of information leaflets and other helpful information to all affected residents will always be considered. For more intrusive works, personal visits to affected homes and businesses can produce higher levels of acceptance and cooperation. Such courteous notification to members of the public will always be considered and normally provided.

Overloaded/Oversized Vehicle Enforcement

The Developer will manage the routing of oversize loads on the Project. The Developer will work with freight haulers to program and police the movement of oversize loads, scheduling such transport during periods of light traffic whenever possible to minimize impacts to drivers; arranging convoy and traffic management requirements; and, in exceptional circumstances, removing and reinstalling roadway components.

2D.7 Environmental

Please refer to Section 2C.7

2D.8 Schedule

The maintenance is expected to be a continual process that will occur through out the concession agreement. Reactive maintenance will be performed during the initial construction process to ensure a reliable roadway is available. An active preventative and routine maintenance program will be used through out the remainder of the concession. The timing of major renewal works is outlined in 2C.8.1.

2D.9 Complaints

Procedures to Respond to Comments and/or Complaints Received from Users and Others

Please refer to Section 2C.9.1.

Equipment Servicing Requirements

Maintenance and servicing of commercially available equipment will be in general accordance with Original Equipment Manufacturers service manuals.

Ensuring Performance, Condition, and Availability of Equipment

The first line of defense against Traffic Management Center (TMC) equipment failure is a maintenance program through a capable in-house maintenance crew that will be required to respond to any inquires within four hours (phone) and 24 hours (onsite) respectively. The Developer will train additional TMC operations and support staff to carry out minor spare part replacements, including replacing lamps and filters for video wall equipment. Workstation console failures are very rare and are typically due to operator error. Proper training of operations staff will help to prevent such failures.

The Developer will purchase TMC equipment, including the video projection equipment, computers and communications equipment related to the Automated Traffic Management System (ATMS) software with a full manufacturer's warranty that includes onsite repair or replacement within four hours. The system operators and administrators will receive training on how to initiate actions required immediately, such as restarting applications, rebooting computers and performing minor reconfigurations necessary to work around failed equipment. The computer equipment proposed for this project will include sufficient redundancy to minimize or eliminate the need for a complete shutdown of the system. A "cold standby" server is included to provide sufficient spare capacity, should there be an equipment failure that cannot be restored in less than two hours by onsite staff or within four hours by warranty support. The performance of the TMC will be measured against the same requirements used for the field ITS devices as detailed in Attachment 19-1a to the IH 635 Managed Lanes Project Technical Provisions.

The operators and system administrators will conduct periodic inspections and system reviews as a part of a comprehensive backup and disaster recovery process. The recommended backup procedure will include full weekly backups of all computers, including all databases. Daily incremental backups to assure that minimal data is lost in the case of system failure will complement the full weekly backup. Standard operating procedures for the TMC staff will require that computer and video wall maintenance meet or exceed manufacturer recommendations for preventative maintenance. In the case of device malfunction or failure, the ATMS software will allow the TMC staff to initiate maintenance trouble calls. Operators will document trouble calls and use them to dispatch additional support when required.

The sensitive video wall equipment will be purchased with a preventative maintenance program that includes routine preventive maintenance visits, which will be scheduled in advance, to clean, inspect, align and adjust all systems and components to ensure that all electronic systems are maintained to manufacturer standards. Mechanical items such as workstation consoles will be subject to regular inspections to ensure their continuous operation.

To provide for uninterrupted service of the video wall and the computer hardware in the TMC, the facility must address both the procedures to handle spare parts and replacement of the actual spare parts. Both the TMC software and the computer hardware are designed for redundancy and disaster recovery.

The procedures for handling service requests for video and computer hardware equipment will include the following steps:

1. The operations staff detects a problem and places a service call to the installation vendor.
2. The installation vendor opens a service ticket and contacts the assigned Field Engineer.

Chapter 2: Quality Management

3. The assigned Field Engineer system calls the operations staff representative back within four hours to assess the problem and coordinate onsite support as required.
4. the Developer will ensure that emergency onsite response occurs within 48 hours; and will schedule routine issues.
5. Upon completion of the service call, the operator closes the service ticket.
6. Any spare parts used during the service call response will be sent to our installation vendor for replacement, so that within a short period of time (typically one week after sending) the number and type of spare parts will be restocked.

2D.11 Traffic and Ridership

Data Collection and Verification

Please refer to Section 2.C.11

2D.12 Procedures

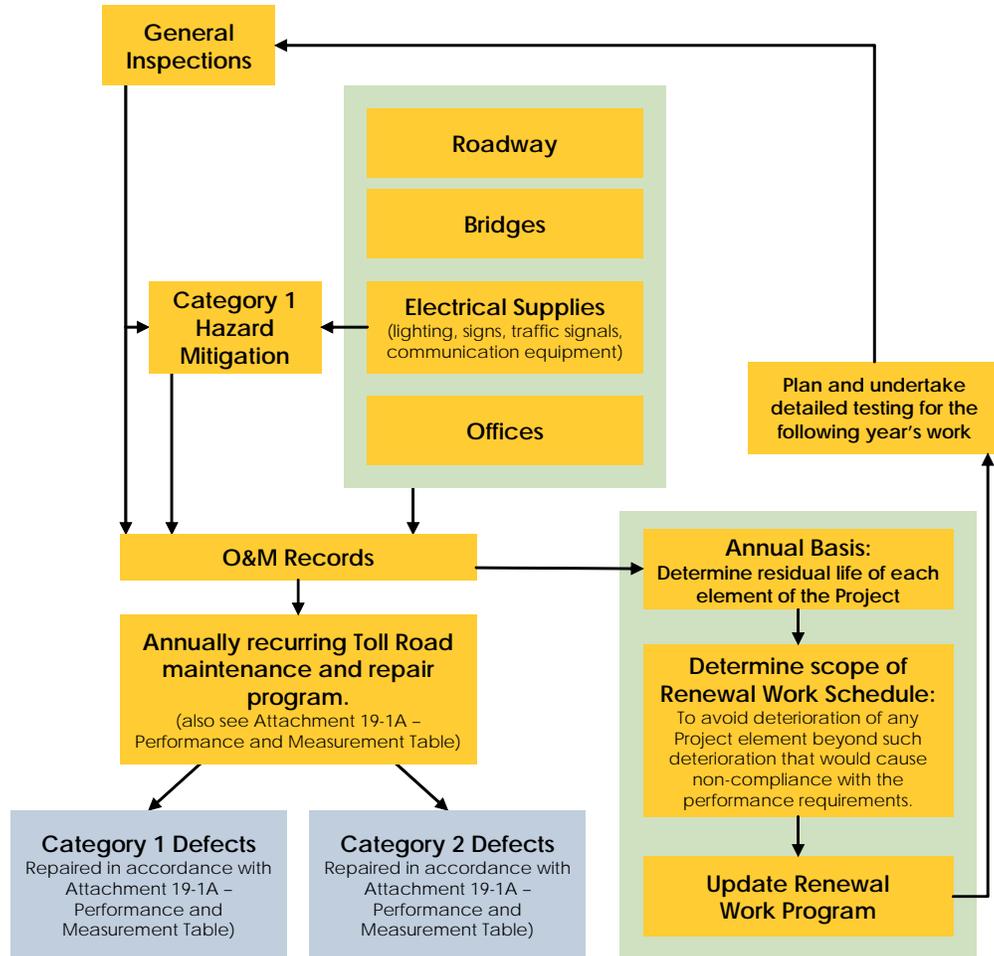
Procedures for Principal Activities during Operating Period

The maintenance approach includes:

- Pavement preservation rather than reactive maintenance.
- General inspections performed by maintenance staff during routine patrols as well as during assigned work trips.
- Identifying any defects not addressed by routine maintenance.
- Evaluating and assessing maintenance priorities.
- Monitoring works completed by subcontractors to ensure conformance with the CDA.
- Monitoring effectiveness with respect to performance measures.
- Maintaining the Maintenance Management Inventory System.

Figure 27 illustrates the inspection and defect management processes, extending into defect categorization and development of reactive maintenance through experienced asset management to ensure the most appropriate and cost-effective intervention levels, driving a robust program of renewal maintenance.

Figure 27: Annually Recurring Highway Maintenance and Renewal Work Programs



Inspections

Inspections will audit the effectiveness of routine and cyclical maintenance strategies and intervention timeframes, which will take place according to TxDOT Maintenance Standards and the TxDOT Maintenance Management Manual. Inspectors will identify sites where increased levels of maintenance are required and the Maintenance Manager will adjust the maintenance program accordingly.

All inspections will be coordinated, as fully as possible, with the inspection of other items on the same part of the Facility to minimize traffic disruption. For example, drainage structure inspection will be coordinated with routine clearing of drainage inlets and interceptors. Wet-weather inspections will take place at locations causing concern even if a dry-weather inspection has already occurred.

Inspectors will use handheld Data Collection Devices (DCD) equipped with standard data-capture programs that include checklists describing the various defects. The inspector will download captured data into the database

Chapter 2: Quality Management

management system when the inspection is complete. This system utilizes Global Positioning System (GPS) hardware to accurately locate defects and repair instructions, while providing a robust audit trail of inspection activities for defense of any claims against maintenance standards.

General Inspections

General inspections are regular visual inspections conducted with the goal of identifying any Category 1 defects. Two trained personnel operating together from a slow-moving vehicle will carry out safety inspections. In certain circumstances, such as at pedestrian bridges or complex interchanges, inspection personnel may proceed on foot, either to confirm suspected defects or to examine the facility more thoroughly. It may be appropriate to undertake safety inspections during off-peak hours or at night to minimize traffic disruption and maximize the safety of both the inspectors and the public. The Developer anticipates carrying out most general inspections without the need for lane closures or other traffic management provisions.

Inspectors will load inspection data into the management database, even in cases where no defects are apparent. Safety inspection records will include details of the weather conditions, road surface condition and any unusual features of the method of inspection. The appropriate personnel will record reports and complaints received from other sources into the database and retain this information along with details of specific inspections and actions taken. Inspectors will use GPS-enabled Data Capture Devices for inspection data collection and automatic transfer of information into the records database.

Detailed Inspections

The purpose of detailed inspections is generally to identify defects in all Facility components except structures and tunnels. For structures, general and specialist inspections are used. Arrangements for detailed inspections will seek to minimize disruption to traffic while providing adequate access for proper inspections and maintaining a safe working environment for inspectors.

Whenever possible, inspections requiring lane closures will occur when closures are already in operation for other maintenance work. When separate lane closures are necessary, inspections will take place during off-peak hours. The Maintenance Manager will consider using nighttime working and mobile lane closures to minimize delays to road users and reduce the risk of accidents.

Detailed Inspections for defects in and along the edges of dual three-lane (or wider) roadway sections will be carried out from the shoulder or roadside. Inspectors will observe the condition of the roadway surface, delineators and pavement markings in all lanes from the edge of the roadway, along with drainage inlets, curbs, shoulders and median edges.

Using lane closures in place for other purposes, previous experience has shown that a detailed inspection can be carried out from the median, with the inside lane coned off. This inspection will cover all items within and adjacent to the median. Additionally, the center and inside roadway lanes, pavement markings and delineators between the lanes will be inspected.

Chapter 2: Quality Management

Detailed inspection records will include details of the manner of inspection, for example, inside lane closure or hard shoulder; the weather conditions; and any other unusual features of the inspection. Inspectors will record all inspections in the database, even in cases where no defects were apparent.

Specialist Inspections

A specialized testing subconsultant will undertake pavement surveys and the results will drive ongoing development of the maintenance renewal program. The frequency of this testing will be completed as outlined in Attachment 19-1A. These tests include:

- **High-Speed Road Monitor (HRM) and Falling Weight Deflection (FWD):** A traffic-speed, high-definition pavement video survey will be undertaken on an annual basis, throughout the network, to identify areas of pavement deformity and vertical differential between roadway slabs. Inspectors will further examine areas containing identified defects for deflection under a standard falling weight (FWD) within an extended program of testing.
- **Skid Resistance (SCRIM):** A locked-wheel skid resistance survey will occur on an annual basis, throughout the network, to identify areas of vehicle stopping deficiency.
- **International Roughness Index (IRI):** The IRI survey will occur on an annual basis, throughout the network, to identify areas of pavement irregularity in terms of both the depth of wheel track ruts and longitudinal ride quality.
- **National Bridge Inspection System (NBIS):** NBIS bridge inspections as well as load rating calculations.
- **Electrical:** including lighting, signs, traffic signals, and communication systems.
- **Toll Equipment:** As required by the equipment manufacturer.

Traffic Management Plan

Advance notice will be deliberate and consistent, rather than being result of crisis management. Well-directed notification prior to commencing roadwork is beneficial for ensuring mobility. This allows users to plan alternative routes when given prior knowledge of timing and duration.

The objectives of the traffic management plan will be, first and foremost, to ensure the safety and convenience of the traveling public and construction personnel; and second, to minimize disruptions to adjacent businesses and residences.

The Developer will achieve these goals by providing a logical and detailed plan that conforms to good industry practice, follows the requirements of the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Lane closures, for repair and reconstruction during the Term of the Agreement, will conform to the TMUTCD. The Developer will confine freeway closures requiring detours to times when traffic volume is at its lowest, such as nights and weekends. The Developer will contract with off-duty uniformed police officers to assist with the implementation of roadway closures and major detours. Planned or routine tasks can often be undertaken to take advantage of traffic management provided for other parallel activities.

Chapter 2: Quality Management

In the context of roadwork on the IH 635 Managed Lanes Project, the following terms are used:

- Nighttime-only working describes activities that commence after the evening peak traffic flow has subsided and are completed prior to the build-up of the next morning's peak traffic flow. In such circumstances, lane closures reduce the traffic-carrying capacity of a road during the night, but all lanes are available for traffic use during the day.
- 24-hour working describes roadwork where the conventional daytime working is extended into a 24-hour operation by the use of shift work. The essential difference between 24-hour working and nighttime-only working is that during 24-hour working there is no specific requirement for the full carriageway to be restored to live traffic at the beginning of each day. Although this chapter is directed towards nighttime-only working, many of the considerations contained within it also apply to 24-hour working.

The Traffic Management Plan details the overall approach to temporary lane closures and/or temporary road closures due to maintenance or emergencies, which are as follows:

- Temporary Lane Closures:
 - When the Developer must close a lane for maintenance or an emergency, the Developer will contact TxDOT at least two weeks prior to the closure, in the case of maintenance, or immediately after an emergency occurs.
 - Maintenance lane closures will occur outside of rush hours and will not disrupt traffic. Lane closures that require closure of more than one lane will occur at night when traffic is at a minimum.
- Temporary Road Closures:
 - When an emergency occurs, the Developer will notify TxDOT and all local authorities of the situation, making it clear that the road is closed due to the emergency. The Developer will divert traffic away from the Facility and will advise TxDOT and local authorities upon reopening. The Developer will use all available resources to expedite the reopening of the road and will advise TxDOT and local authorities of the actions taken and their results.

The Maintenance Manager will manage lane closures and traffic restrictions through the Roadspace System as part of the Operations Management Plan. The general, closure specific TMPs will be developed to ensure the appropriate plan for to suit the work requirements.

The Maintenance Manager and the Roadway Public Information Representative will ensure promotion of advanced notification of closures and traffic restrictions through media and the Project website. Real-time information on incident closures, delays, diversions and anticipated clearance timescales will also appear on the Project website to facilitate travel decision-making and mitigate incident-related congestion and delays.

Roadspace Management and Coordination of Third-Party Work

General

This chapter sets out a number of considerations that the Developer will take into account by when planning traffic management for work on in-service roads. It draws upon experience gained and supplemented by extensive

Chapter 2: Quality Management

analysis of road user and work costs. The chapter considers various options, but concentrates on the possible use of nighttime-only working.

Roadspace management will be web-based and will allow third-party and stakeholder access, allowing effective planning of roadwork and closures, minimizing conflicts and allowing multiple tasks to be planned within each closure to maximize efficiency. Third-party Roadspace applications will be authorized and coordinated by the Maintenance Manager.

Considerations

Safety must be the primary consideration for all types of roadwork, during both planning and execution. We will address the safety needs of those engaged in the roadwork, the road user and the general public.

Nighttime work on electrical and electronic equipment systems often requires a considerably higher quality of illumination than that required for other activities. This arises from the need to identify small features and to distinguish between colors.

Decision-Making

A major objective in roadwork planning is the reduction of overall traffic delays. However, the costs associated with minimizing traffic delays by using nighttime-only working can be between 25 and 50 percent higher than the costs incurred for the same work undertaken in the daytime. However, experience in nighttime-only working tends to reduce this premium. This chapter provides guidance for the evaluation of the additional costs associated with nighttime working against the benefits arising from the reduction in delays to road users.

Routine Maintenance

Routine maintenance activities will be combined and undertaken within a single lane closure or mobile lane closure whenever possible, and considered for nighttime-only working. Planned or routine tasks can often be undertaken to take advantage of traffic management provided for other parallel activities.

Routine maintenance operations also will be assessed to establish the optimum traffic management arrangement under which the roadwork must proceed. The total assessed cost of the operation under each traffic management arrangement must comprise the roadwork cost plus the cost of delays and incidents.

Oversize Load Policing and Management

The Developer will manage the routing of oversize loads on the Project. The Developer will work with freight haulers to program and police the movement of oversize loads, scheduling such transport during periods of light traffic whenever possible to minimize impacts to drivers; arranging convoy and traffic management requirements; and, in exceptional circumstances, removing and reinstalling roadway components.

2D.13 Quality Control

Examinations and Audit of O&M Work

Strong management processes and information technology systems will be used to develop solutions which achieve continuous improvement and produce real time information-reporting on the network.

These will support and facilitate:

- Monitoring activities and actions
- Benchmarking and performance indicators
- Budgetary planning
- Provision of comprehensive asset condition and inventory
- Area Team stewardship promoted hand in hand with the complete Area 9 team
- Consultation, review and feedback
- Network condition monitoring.

Management reviews will be used to confirm that operational requirements are being met effectively and to identify problems and propose solutions.

Process

The Roadway Operations Director decides the frequency and scope of management reviews required and specifies this in the Quality Management Plan. The frequency of management reviews will depend on the size and complexity of the activity/service. Typically larger and/or more complex activities/services may require more frequent reviews, e.g. monthly. The scope of management reviews may include, for example, progress reviews, financial reviews, and performance reviews.

All personnel concerned with the reviewed material are consulted where appropriate.

Guidance

Generally, management reviews establish that, where relevant:

- The overall approach is appropriate to the project requirements, and the necessary controls will be or have been properly applied.
- The concept or project philosophy is proven and is appropriate and effective to use.
- The project inputs and assumptions are satisfactory, and all interfaces are addressed.
- Statutory requirements including health & safety and environmental issues have been taken into account.
- The corridor is practical, safe, and well maintained.

Quality Audits will be used to verify the understanding, implementation and effectiveness of the Integrated Management System and their associated documentation in a systematic, factual and objective way.

Chapter 2: Quality Management

Test Observation and Reporting

The Developer will to prepare the following reports on a quarterly basis, except as noted below:

- Incident Reports: For each Incident, the report shall identify the nature of the Incident, time, date, location, parties involved, and actions taken. For Incidents involving deaths, a report shall be submitted to TxDOT within 24 hours of the Incident.
- Non-Conformance Reports: For each material Defect in the Project Elements, the report shall identify the location, the nature and cause of the material Defect and the steps that will be, or have been, taken to address the material Defect.
- Traffic Reports: Each traffic report shall summarize traffic volumes along the Project on a daily, weekly, and monthly basis.
- Maintenance Work Report: Each maintenance work report is to describe the following:
 - Inspections conducted, including the date and type of inspection
 - Material Defects or damage identified, including the date, infrastructure component, details of material defect or damage
- Details of the maintenance work carried out
- Quality conformance summary (i.e., the results of a quality program).
- Environmental monitoring activities, as required in Section 4
- Rehabilitation plans (annually): Description of the rehabilitation program conducted in the previous year and updates to the five-year rehabilitation plan to describe the planned rehabilitation Work and identify any changes from the previous plan
- Operations plans (annually): updates to the Operations Management Plan, including planned operating procedures and any changes from the previous operations plan

Upon request, the Developer will provide TxDOT any technical documentation it maintains regarding operations activities.

Comprehensive Environmental Protection Program Implementation

The Developer will develop and implement a Comprehensive Environmental Protection Program (CEPP), applicable throughout the Term of the Agreement to establish the approach, requirements and procedures to be employed to protect the environment. All component parts shall reflect in order of priority: impact avoidance, minimization and as last resort mitigation. The CEPP will satisfy applicable FHWA, TxDOT and resource agency requirements, including those detailed as commitments in any Environmental Approvals.

At a minimum, the CEPP will include the following component parts:

- Environmental Management System (EMS),
- Environmental Compliance and Mitigation Plan (ECMP),
- Environmental Protection Training Plan (EPTP),

Chapter 2: Quality Management

- Hazardous Materials Management Plan (HMMP),
- Communication Plan (CP),
- Construction Monitoring Plan (CMP),
- Recycling Plan (RP).

We are committed to improving the sustainability of the highway operations. This requires the consideration and assessment of environmental issues for all activities. The assessment involves balancing the impacts of the activities in a way that sustains both environmental protection and promotes efficient operations.

Our goal is to deliver increased sustainability via the promotion of environmental awareness throughout our team. We will monitor progress towards delivery of this commitment via the development of Performance Indicators and appropriate benchmarking.

We are aware that some products and activities cause environmental damage. We commit to use products and employ procedures that minimize this damage and provide environmental protection. We will work to evaluate the true environmental cost of the products we use and the activities we carry out.

We recognize the continual change in environmental stewardship and legislative obligations and will enhance environmental awareness among our staff and supply chain partners.

Our commitment to enhanced environmental management of our works processes is demonstrated by our development of our Integrated Management System that embodies the ISO 14001 Environmental Management Systems. We will apply internal indicators and benchmarks to support the delivery of our policy objectives.

Quality Control Procedures

Quality Audits assess the IMS processes in all relevant functions, levels and areas of the organization. All audits are carried out by suitably trained auditors.

Process

1. Audit Scheduling & Assignment:

- Audits are planned and programmed in an Audit Schedule to ensure the full scope of the system is adequately sampled and tested on a regular basis.
- The Audit Schedule covers both office based and site activities.
- At any time additional audits, not shown on the issued Audit Schedule may be arranged in response to the requirements of the organization.
- The Audit Schedule details the auditor(s) assigned to carry out the audit and the audit reference number.

2. Audit Preparation

- The auditor agrees a date and time for the audit with the key activity/service personnel.
- The auditor uses a prepared audit checklist.

3. Audit Conduct

Chapter 2: Quality Management

- The auditor records the evidence collected and decides if any non-conformities should be reported as Corrective Actions Requests (CARs) or observations.
- Serious deficiencies that require urgent attention are referred immediately to the O&M Quality and Environmental Manager or nominated representative for advice.
- Sample reports are reviewed by a reviewer nominated by the O&M Quality and Environmental Manager.
- The reviewer is responsible for reviewing the completeness of the audit.

4. Recording and resolution of CARs

- The auditor agrees the completion date for the CARs with the key activity/service personnel during the audit
- The person responsible for the reported non-conformity accepts the CAR on the database and specifies the actions to be taken to correct and prevent recurrence of the non-conformity.
- Follow up checks and recommendations for closure of CARs are recorded on the database.
- The O&M Quality and Environmental Manager or nominated representative closes the CAR.

Ensuring Accuracy, Completeness and Quality of Submittals

A "Two-Person Rule" will be utilized that will require that anything to stakeholders or third parties—such as project status reports, test plans, designs, technical evaluations, final reports, and manufactured products—will be reviewed by a second person as technically competent as the originator. The two person rule is intended to ensure early problem identification.

Continuous Improvement

We have wide experience of partnering in Concession contracts. We are committed to, and actively promote, partnering and continuous improvement. We enjoy the benefits that successful partnering relationships bring to all involved. These include:

- Promotion and delivery of business objectives
- Mutual understanding and common purpose
- Focus on the customer
- Clear responsibilities
- Streamlined reporting
- Development of each partner's staff
- A framework to deal with contractual concerns
- Improved systems
- Progression towards Best Value
- The promotion of winning themes and innovation
- Better service
- Teamwork

Chapter 2: Quality Management

Approach

We will support TxDOT in developing an integrated project team, working closely with supply chain partners, emergency services and other key stakeholders. We are committed supporters of the an integrated project team and will ensure that our representatives think 'outside the box', challenge current performance, promote change and foster the right environment.

The ethos of partnering and continuous improvement is embedded in our culture and all our operations and procedures. They are key to the development of long term relationships and are the measure by which we define our uniqueness, exceptional service and added value.

Partnering will benefit all parties through the agreement and promotion of:

- Mutual Objectives that help to promote commitment, fairness, trust and ownership. These will be contained within a Partnering Charter, signed by all parties.
- Problem Resolution Processes through a twinning of organizational structures, and an understanding of the issues important to the other partners
- Continuous Improvement Measures. These ensure the constant improvement of service delivery to satisfy, and exceed, the contracts' Key Performance Indicator requirements
- Innovation. We are committed to the principle of working as one team and will sign up to and take ownership of innovation and nurture 'step change' ideas.

Deployment

To keep the focus on partnering and continuous improvement, we will urge all partners' staff to be involved in regular partnering and improvement workshops facilitated by continuous improvement 'Champions'. This affords an opportunity for all to contribute and openly communicate their ideas and concerns.

In addition to our work on the integrated project team with TxDOT, we will promote the establishment of a Partnering Board and 'Continuous Improvement Forum' involving key stakeholders and our supply chain partners to facilitate the delivery of the benefits outlined above.

In addition, continuous improvement will:

- Act as a think tank and brainstorming unit
- Promote and develop innovative ideas
- Support and guide Partnering Board that will deal with day to day issues and support partnering processes.
- Develop a resource of mentors, advisors and specialists
- Help the team deliver high quality works
- Review and feedback on our processes.

The results of the quality audits and management reviews will be used to identify areas of improvement. CARs and observations generated from these reviews will be continually monitored to identify reoccurring events and the effectiveness of corrective actions.

Chapter 2: Quality Management

In addition, each major service area will nominate a Continuous Improvement Champion to sit on a Continuous Improvement Forum. Performance will be monitored through dashboard and feedback provided by the O&M Quality and Environmental Manager to the Continuous Improvement Forum and senior management team.

2D.14 Audit

Developer's Representative and Quality Management Staff: The name of the Developer's representative(s) with defined authority for establishing, maintaining, auditing, and reporting on the PMP will be provided in the final Project Management Plan, along with the names, titles, roles, and responsibilities of supporting quality management staff reporting to the person with defined authority.

2D.15 Performance Standards

The baseline maintenance performance measures are defined in Table 19-2 of the Technical Provisions. Specific element categories include the following:

1. Roadway
2. Drainage
3. Structures
4. Pavement Markings, Object Markers, Barrier Markers, and Delineators
5. Guardrails, Safety Barriers, and Impact Attenuators
6. Traffic Signs
7. Traffic Signals
8. Lighting
9. Fences, Walls, and Sound Abatement
10. Roadside Management
11. Rest Areas and Picnic Areas
12. Earthworks, Embankments, and Cuttings
13. ITS and ECTS Equipment
14. Tolling Facilities and Buildings (not used)
15. Amenity

16. Snow and Ice Control
17. Incident Response
18. Customer Response
19. Sweeping and Cleaning
20. Buildings and Enclosed Facilities
21. Subsurface Managed Lane Elements

2D.16 Document Management

Maintenance of Records and Document Management Procedures

A document management system will be used to control the receipt of incoming documents, the preparation, checking, issuing and amending of new documents and the filing and storage of quality records. More detailed processes for handling documents during the O&M phase are below:

1. Receipt of Documents

Incoming hardcopy documents are marked to show date of receipt and the project identifier added.

Incoming documents shall be checked before distribution. Any identified errors, omissions, ambiguities or conflicts are referred back to the sender for clarification before the documents are used as input. Appropriate evidence of such examination and resolution is retained. Where it is necessary to use the documents pending resolution then such use is controlled.

Documents shall be clearly marked to show their status for use (e.g. authorized for use, superseded, obsolete etc.).

One copy of each superseded or obsolete document shall be retained unless agreed otherwise by the manager responsible. Other copies are withdrawn from active use or else destroyed.

2. Preparation and Checking of Documents

Outgoing documents shall be recorded on a Document Record Sheet.

Documents containing information reproduced from data provided by external bodies or firms and which DEVELOPER then issues may breach copyright laws. Reference should be made to the owner of the source material, and if necessary, permission obtained for its use.

Documents shall be checked and then sign the master copy of the finalized drawing, by hand, in the "Drawn by", "Checked by" and "Approved by" boxes when satisfied the drawing can be issued, finally marked "OFFICE COPY" and filed.

3. Referencing of Documents

Documents shall be referenced with at least the project identifier, document number and version.

4. Checking and Approval Policy

All work shall be checked and authorized in accordance with the appropriate category of check

Information requiring checking must be held in a manner to prevent misuse until checked.

5. Issue of Documents

A record shall be kept of the issue of all documents.

Revisions to controlled documents shall be reissued to registered holders whenever they occur.

An office copy shall be retained of "as sent" documents for record purposes.

Documents shall be protected from avoidable loss or damage by appropriate packaging and transmittal.

6. Amending Documents

When a document is amended the version number shall be amended and the change detailed in the amendment box.

Versions that become superseded shall be clearly marked "SUPERSEDED" and filed where the risk of incorrect use of its information is reduced.

7. Filing Documents

Project documents shall be filed in the Project File or their location referenced.

Files shall be clearly titled, referenced and located and a list of project files is kept in the Project File. A system to locate files removed from their normal storage location shall be used, e.g. file location cards left in place of a file when removed from its normal place.

All records shall be made available to the TxDOT Representative upon request.

2D.17 Response to Maintenance

Maintenance of Paved Areas

Maintenance of paved areas will occur to meet the CDA requirements for sustainable travel and accessibility and provide safe facilities for pedestrians, cyclists and other vulnerable road users. Access to adjacent properties and visibility of businesses shall be maintained during construction. Pavement conditions that require consistent monitoring and repair to meet the performance requirements include:

All Traffic Lanes:

- differences in level between items such as covers, gratings, frames and boxes and the abutting roadway pavement, or differential levels between different components;
- parallel drainage channels and other gratings in the roadway, with gaps parallel to the normal line of movement of motorcycles and bicycles; and
- overgrown vegetation that is causing a hazard by encroaching on sight lines.

Flexible Surfacing:

- localized cracking or breakage (including edge deterioration) confined to a discrete area of the roadway, or around a repaired trench or patch and not associated with structural maintenance activities;
- cracking or breakage around ironwork;
- difference in level between a repaired trench or patch and the surrounding roadway;
- potholes;
- depressions;
- fretting, or loss of material from the pavement surface, or around a repaired trench or patch; and
- open or excessive surfacing joints.

Concrete Surfacing:

- spalling at joints and cracks, opening of longitudinal joints, failure of sealed cracks or vertical movement resulting in stepping at a joint or crack;
- dynamic movement under traffic at joints and cracks caused by lack of support from the subbase or lack of, or ineffective, load transfer dowels or tie bars at joints;
- dynamic movement associated with mud pumping, the usual signs of which are muddy stains on the surface of the slab;
- vertical movement of slabs, observed in the form of slab settlement;
- crazing or scaling of surface and a loss of texture; and
- failed repairs, such as failure of overbanding or sealed cracks.

Potholes and other localized pavement defects on traveled lanes will receive particular attention since they often constitute an immediate or imminent hazard. Maintenance crews will promptly repair such localized roadway defects to protect road users and minimize traffic delays.

Routine and structural maintenance activities that are similar in nature will overlap to some extent. Before carrying out surface dressing or resurfacing, it is typical to ensure that the underlying road structure is sound. This often requires repair of defects such as potholes, rutting and open joints that would otherwise occur as routine activities.

Repair of defects reported from inspections may be absorbed into renewal work already due to occur in the planned maintenance program. However, renewal projects will generally be contained within the planned maintenance program, determined based on overall Facility priorities. If the Developer defers any planned maintenance activities, separate routine maintenance may be necessary on relatively short notice.

Bicycle and Pedestrian Facilities

Defects on bicycle and pedestrian facilities affect safety, maintenance and serviceability. Compensation claims may result from facilities left in disrepair. Therefore, the Developer will implement a proactive rather than a reactive approach to identify defects before they become hazardous. Defects such as trip hazards will receive particular consideration, since they may constitute an immediate danger to pedestrians and cyclists. Some hazards are likely to be seasonal, and maintenance procedures will vary by season to reflect this.

Conditions on bicycle and pedestrian facilities that require consistent monitoring and repair to meet the performance requirements include:

Sidewalks and Bike Paths:

- unevenness, including ridges, projections, sharp edges, cracks and gaps;
- landscaping stones that have come loose or protrude into the path of traffic;
- potholes, loss of material or small areas of depression;
- local cracking of the asphalt surface confined to a discrete area or extensive cracking affecting the major part of a sidewalk or bike path;
- fretting (loss of material leaving the coarse aggregate loose from the matrix or causing loss of coarse aggregate);
- failed patches with adjacent cracking, loss of material from a previously repaired area and difference in level and depressions;
- Trench repairs and adjacent cracking, loss of material from a repaired trench and difference in level;
- protrusions or depressions associated with temporary repairs; and
- hazards such as fallen trees, unsafe signing, lighting or guarding of excavations, unsafe steps, persistent snow, ice or leaves, contaminants (such as oil) giving rise to slipping, a loose surface or encroachment by vegetation.

Sidewalks:

- standing water, which restricts the sidewalk width or is likely to cause pedestrians to use the adjacent roadway – this is a particular problem when the water freezes; and
- difference in levels between items such as covers, gratings, frames and boxes, and the abutting sidewalk, or differential levels between different components.

Bike Paths:

- standing water, which restricts the width of the path or is likely to cause cyclists to use the adjacent roadway – this is a particular problem when the water freezes;
- parallel drainage channels and other gratings in bike paths with wide gaps parallel to the normal line of bicycle movement; and
- difference in levels between items such as covers, gratings, frames and boxes and the abutting bike path surface, or differential levels between different components.

Chapter 2: Quality Management

Automobiles may cause damage to sidewalks, particularly at intersections where the sidewalk is immediately adjacent to the roadway edge. In these cases, the Developer may install high-strength in-situ concrete margins behind the curb or at intersection radii. Replacement of precast concrete sidewalk slabs with superficial cracks will not occur as a routine maintenance operation unless resetting the slab is necessary due to other defects.

Covers, Gratings, Frames and Boxes

Conditions relating to covers, gratings, frames and boxes that require consistent monitoring and repair to meet the performance requirements include:

- covers or gratings that constitute an immediate hazard, particularly by a relative movement under load – rocking covers or gratings causing noise will constitute Category 1 defects;
- cracked or broken items that may be in danger of collapse and thus liable to cause a hazard;
- worn covers, which are a hazard for motorcycles and bicycles due to the potential for skidding in wet conditions; and
- missing items likely to constitute a hazard.

The Developer will not neglect to inspect covers situated in grassy roadside areas traveled by pedestrians, since they may pose a hazard. It may often be difficult to decide whether a cracked or broken item is in real danger of collapse. If in doubt, the Developer will replace these items regardless of their location.

When inspecting the gratings of drainage structures, inspectors will also verify that the structure is functioning satisfactorily and without blockages.

Curbs, Edgings and Gutters

Conditions relating to curbs, edgings and gutters that require consistent monitoring and repair to meet the performance requirements include:

- vertical and horizontal projections;
- loose, rocking or damaged curbs, edgings and gutters of all types that are creating or are likely to create a hazard or lead to loss of support or protection;
- poor local alignment of gutters that could give rise to danger or nuisance from standing water or damage to the highway structure caused by water penetration; and
- missing curbs, edgings and gutters of all types.

Although curbs, edgings and gutters tend to be stable by their nature and construction specification, hazardous conditions can develop quickly when heavy vehicles or settling damage curb segments or move them out of alignment. Frequent damage by heavy vehicles may suggest the need for local realignment or a more robust treatment. Inspectors will be certain to include short lengths of curb serving drainage structures in their inspections.

Drainage

Adequate drainage facilities must be present and operate correctly to:

- avoid accumulation of water on the traveled surfaces of the highway, which greatly reduces the safety of the road user;
- adequately drain the road pavement structure to reduce maintenance liabilities and help realize the design life of the road;
- avoid traffic flow disruptions due to flooding;
- prevent nuisance to adjoining landowners due to flooding; and
- avoid discharges of polluted storm water from highway drainage facilities into surrounding watersheds.

Conditions that require consistent monitoring and repair to meet the performance requirements include:

- full or partial blockages;
- standing water;
- debris, weed growth and roots that are likely to reduce flow, damage the structure and may appear unsightly;
- cracking or deformation of components of the drainage system adversely affecting the structural or hydraulic performance or durability of its components;
- complete structural failure of components of the drainage system;
- scour that adversely affects the hydraulic or structural performance or durability of components of the system;
- removal of material in sides, banks or walls by erosion;
- complete or partial blocking of filter material;
- displacement of surface filter material;
- inadequate water flow preventing self-cleaning;
- failure or incorrect operation of equipment associated with outfall regulating devices;
- damage to grassed surface water channels, such as by vehicles;
- looseness, rocking, ridges, sharp edges, cracks and gaps; and
- flooding of the highway, adjoining property or services caused by inadequate provision or operation of highway drainage facilities, or other facilities.

Piped Drainage Systems

Records of the condition and location of the drainage network, prepared in a standard format, will greatly assist in assessing and maintaining the condition of the highway drainage network. In particular, CCTV surveys of the existing drainage network will help to establish a comprehensive record of the type and condition of drainage facilities.

Chapter 2: Quality Management

Properly designed and constructed, piped drainage systems are self-cleaning and maintenance is only necessary when a blockage or damage occurs. Parts of the system that are often problematic (prone to flooding, for example) will be identified through regular inspections and reports and complaints received from other sources.

Symptoms of blockage or defects that will normally prompt further investigation include backing up and flooding at the entry points to the piped drainage system; dry outfalls; wet areas on grassy areas and the presence of lush vegetation.

Methods of inspection that may be suitable include:

- inspection of the facilities during routine drainage system emptying and cleaning operations;
- video inspections that need not be restricted to parts of the network having particular drainage problems – CCTV is currently the most informative inspection method and can be used as an inventory asset condition tool to identify a wide range of defects (cracks, blemishes, encrustation, displaced or open joints, silt buildup, debris, depressed or collapsed pipe sections and root ingress) and may be carried out in conjunction with flushing;
- hand-rodming – a suitable technique for inlet connections or short pipe connections where video inspection are unsuitable. This method is not very informative but will indicate blockages and silt build-up;
- flushing of pipelines is less informative than using a mandrel but provides the best method of inspection in areas of settling where the use of a mandrel is not appropriate. Flushing will be by means of high-volume, low-pressure water;
- inspections at manholes, traps and interceptors during or immediately following a period of prolonged rainfall can provide measurements of the depth of water within the entries of pipes, in successive manholes, traps or interceptors along a drain run, which may indicate any blockage or defect.

Flushing under pressure is not appropriate for filter drain and fin/narrow filter drainpipes. In addition, structured wall thermoplastic pipes may not withstand high jetting pressures and the structural condition of much of the highway drainage network is unknown. Where the condition of any sewer or highway drain is unknown, the recommended maximum pressure will not exceed 19,000 pounds per square inch.

Drains, Catch Basins, Grit Traps, Interceptors, Absorption Trenches and Manholes

Experience has shown that the operation and maintenance of these items is effective if maintenance crews empty them of silt and other detritus at a frequency that is sufficient that solids do not enter the drainage system. Maintenance personnel will check the operation of absorption trenches, in particular the absorption rate, against their design specifications to determine if they are functioning properly.

Pollution may arise from inlet cleaning and the decomposition of organic material in the inlet sump. Material with a high Biological Oxygen Demand (BOD), washed into a watershed from the drainage system during periods of low base flow, can result in pollution with the consequent impact on aquatic life forms. The reuse of water from the inlet sump for flushing purposes may result in pollution of downstream watersheds. Health and safety considerations will be paramount in the cleaning of large diameter drainage structures.

Trench Drains

The importance of trench drains will not be underestimated. They are often added some time after construction or realignment of the road, at known sensitive drainage points or as an alternative to a natural drainage channel to provide safer passage along landscaped areas for pedestrians. The connecting pipe is usually laid close to the surface and is therefore prone to damage. This in turn may result in a blockage. Waterlogged spots in the landscaped area along the roadside are often an indication of ineffective trench drains. Methods of checking the operation of trench drains include proving, by hand rodding and/or high-volume low-pressure flushing, or jetting with water.

Natural Drainage Channels

Drainage channels need to be re-cut to maintain their function fully, at a frequency established by experience. A frequency of once per year is normally necessary and is best carried out following landscaping maintenance. Re-cutting may cause excessively deep channels across the landscaped area and these may be a safety hazard to pedestrians. In this case, the Developer will consider converting the channel to a trench drain or another suitable drainage system.

Grass clippings from landscaping activities may block channels. Vegetation may require removal around outlets and for the first five yards of channel upstream of the outlet. Elsewhere it is not usually necessary to remove it.

Water flushing, manual or machine sweeping will remove silt from the channel. Silt and other solids arising from cleaning operations may cause pollution. Material will be disposed of in an appropriate environmentally friendly manner.

Depressions due to tire tracks may change the flow direction of water run-off. Where extensive vehicle wear has occurred, it may be necessary to reshape and reseed the landscaped areas with an approved grass seed type, but other options, such as paving the affected area, will also be considered.

Ditches

Ditches can become overgrown with vegetation, silted, blocked with debris, or the banks can erode to the extent that erosion impedes the flow of storm water. Water in the ditch is not itself harmful unless stagnation (resulting in a health hazard) or flooding occurs, or a resulting high water table adversely affects the road or other structural foundations. Water in a ditch may be a nuisance to adjacent land users.

Cleaning out ditches normally requires a machine excavator. Before undertaking ditch clearance, the Developer will seek advice from specialist ecological advisors.

Filter Drains and Fin/Narrow Filter Drains

The formation of a silt crust on top of the filter material, with or without vegetation growth, can seriously impair the efficiency of filter drains. Accumulation of trapped silt in the lower layers can have the same effect. Accumulation of trapped silt in the lower layers can seriously impair the efficiency of fin/narrow filter drains.

Chapter 2: Quality Management

Inspectors can easily detect the surface condition of filter drains by inspection at ground level, but excavation is required to confirm the deeper accumulations, usually by means of trial pits. Where the filter drain performs the dual role of surface and subsurface water collection, ponding at the surface will occur if the drains are not performing adequately. If there are no obvious surface defects, ponding will almost certainly indicate silt in the lower layer. Defects in fin/narrow filter drains are difficult to detect and usually require confirmation by the excavation of trial pits. Pavement vibration during the passage of a heavy vehicle may indicate a waterlogged foundation caused by a defective fin/narrow filter drain.

It is probable that, unless there is an obvious cause for a localized defect, a length of filter drain or fin/narrow filter drain will show a consistent defect. Replacement of filter media, either by new cleaned existing material, will occur as part of the planned program of maintenance work. Where filter drains are composed of alternative surface finishes, such as pre-coated chips, tar spray or bitumen-bonded shredded tires, maintenance crews will clean them using an appropriate cleaning method.

During maintenance activities on filter drains, crews will take care to preserve the integrity of geotextile liners if present. Failure of fin and narrow filter drains can have a detrimental effect on the longevity of the pavement. Where the performance is not adequate, installation of a catch basin may be necessary.

Culverts

Many culverts can tolerate some silting and vegetation growth before efficiency is impaired to the point where the culvert requires clearing. Grills fitted across the ends of some culverts are however particularly prone to blockage, restricting the free flow of water through the culvert. The Developer will use video inspections to determine the structural condition of culverts.

Detention Ponds

The effectiveness of detention ponds can be easily and seriously impaired. Some common defects that significantly affect their performance include:

- blockage of the feeder pipe or ditch;
- silting in the pond causing a loss of storage capacity and an accumulation of heavy metals that may increase the risk of pollution;
- damage or erosion to the pond banks, walls or embankment slope;
- damage or obstruction to the pond outlet, which affects the controlled rate of discharge; and
- loss of or damage to vegetative treatment systems that renders pollutant removal ineffective.

Pond operating systems may be quite complex and further planning is necessary before maintenance starts:

- final O&M Manuals will describe procedures for effective detention pond management;
- detention ponds may often become important sites for nature conservation, making it necessary to address relevant ecological issues prior to commencing maintenance;
- planned replacement of vegetative treatment systems on a cyclical basis will be part of the maintenance activities.

Chapter 2: Quality Management

Linear Drainage Systems

Linear drainage systems are shallow in depth and are generally at the edge of pavements, in gores of ramps and in medians. These systems are prone to accumulation of silt where the flow speed is insufficient to self-clean the system. Therefore, maintenance crews must empty these systems of silt and other detritus to prevent solids entering the drainage system. Crews will use large-volume, low-pressure, water flushing for this purpose.

Silt and other solids arising from emptying and cleaning operations may cause pollution. Material will be disposed of in an appropriate environmentally friendly manner.

Flooding

The Developer, in cooperation with adjacent authorities, will endeavor to prevent flooding on the highway and maintain full operational status. Monitoring of national and local weather forecasts and flood warnings can aid the initiation of preventative maintenance of drainage systems if it appears that adverse conditions may lead to flooding or disruption of traffic.

Leaves or other debris may block drainage inlets, but inlets and other drainage components are often submerged and it may be difficult to confirm the cause of the flooding. Storm events will often dislodge covers, particularly on hills where overflows occur. Reliable information on location and type of inlets through the availability of an up-to-date inventory is essential in determining the actions to undertake at the time of flooding.

The Developer will establish responsibility for the maintenance and inspection of structures, drainage ditches and watersheds that interface with highway drainage systems, through consultation with all relevant organizations. Providing these details to appropriate maintenance staff will aid the effective organization of the work in advance and during flood events.

Alterations or improvements to the highway drainage system may prevent roadway flooding caused by water shed from adjacent land. It is not appropriate in all cases to take the matter up with the adjacent landowner. Positive advance actions may be a more efficient approach to providing adequate drainage.

Should flooding occur, the developer will establish suitable detours for traffic in flood-prone areas, so that it may rapidly implement a consistent system of detours should flooding occurs.

Geotechnical Assets

Geotechnical defect features often become apparent through routine activities, such as identification of Category 1 defects, recording of the condition of other assets or following other reports or complaints. The requirements for inspections, maintenance and remedial work in connection with geotechnical assets include:

- appointment of a Geotechnical Maintenance Liaison Engineer (GMLE) who will be responsible for all geotechnical matters carried out by the Developer;
- annual and principal inspections;

Chapter 2: Quality Management

- qualifications, experience and training of the GMLE and personnel carrying out annual and principal inspections;
- submittal of a Geotechnical Asset Management Plan;
- risk assessment of geotechnical features;
- certification procedures for remedial work and prevention measures; and
- advice on the maintenance of assets, including references to sources of information.

Although there is a need for specialist responsibility for geotechnical matters, the Developer will consider the merits of integrating the categorization and certification process with those of other assets. For example, highway drainage defects are often a cause of geotechnical problems, and, conversely, instability may be the cause of drainage defects. A lateral thinking approach is necessary during inspection of these items.

Principal inspections will initially take place every five years, and at a rate of at least 20 percent of the network per year to phase any necessary remedial work. Thereafter, the Developer may reduce or increase the frequency of re-inspection to reflect the risk to the network.

The Developer recommends recording and retaining schedules of items such as ground anchoring systems and geotextiles, as these can be important during an emergency response situation when it is necessary to create temporary routes for emergency service personnel and vehicles, or road users themselves.

We will develop a list of hazards that may affect the achievement of the performance requirements for the geotechnical assets. Such hazards include:

- slope instability;
- weak and compressible strata;
- adverse groundwater conditions;
- scour and erosion;
- instability and settling associated with dissolution features, mining and landfill;
- corrosion of construction materials due to adverse ground and groundwater chemistry conditions;
- highway drainage acting as a conduit for migration of leachate from landfill sites;
- degradation or failure of supporting materials or structures;
- destabilizing effects of animal burrows, vegetation or the removal of vegetation; and
- changes in loading or other changes from the original design assumptions.

Failure of Geotechnical Assets

Since crews often identify geotechnical defects during routine activities, general advice on the recognition of these defects by non-specialists is included in this section. Identification of potential problems related to excavation and embankments is, in many cases, not possible during driven inspections because of vegetation and the lack of visibility of embankments from the roadway.

Chapter 2: Quality Management

One can often recognize slopes at an early stage of instability by bulging of the slope profile (at the bottom of the potential slip), development of tension cracks (at the top of the potential slip) or by evidence of water seepage from developing slip planes. The presence of lush, greener or marsh-type vegetation will often serve to identify seepage areas where water is not visible on the surface. In excavated rocky areas, an early stage of instability might also be evident due to relative movement of blocks of rock, fallen material and fresh surfaces.

Slips are most frequently associated with clay soils, although failures in other types of material do occur. While some failures, often deep-seated, occur either during or just after construction, the most frequent type of failure is at shallow depth, and occurs a number of years after construction. These latter slips are usually three to six feet deep and, in some areas, constitute a considerable maintenance problem. On new embankment and cut slopes, failure of the topsoil layer can occur if vegetation has not yet established itself. Failure is usually associated with steep slopes and thick topsoil.

Failures are more likely to occur when the groundwater level is high after periods of sustained rainfall and are therefore most likely during the late winter, spring or early summer months before warm weather and associated plant growth have dried out the ground. Similarly, failures may be more frequent on slopes facing west or north where there is a higher exposure to the prevailing wind direction (and rainfall) or lower plant growth, respectively. Therefore, slopes will receive particular attention during and after periods of high rainfall.

Embankment slope failures often become evident later than failures in excavation, since the slope is below the level of the roadway and hence less visible. Therefore, these will also receive particular attention where possible. Drainage defects may result in excess surface runoff, scour and raised groundwater levels that may cause instability. In addition, distress to components such as pavements, structures, non-vertical signs, signals and lighting columns may indicate instability, and those inspecting these items will report such defects.

Permanent Repair

In cases where geotechnical investigations must be undertaken and remedial projects designed and constructed, a permanent repair may take some time to complete. Therefore, it may be necessary to make and monitor safe, temporary remedies.

Differentiation must be made between remedial measures for failed earthwork and those undertaken as preventative maintenance. Maintenance need not be "reactive" (for example, after a failure has occurred) but can be proactive. The benefits of preventative maintenance will be noted as the work may be less disruptive and more cost-effective. For example, rock ribs are less expensive and quicker to apply than the techniques used for repairs.

Structures

Many of the maintenance activities for structures are minor in themselves, but failure to carry them out may lead to deterioration of the structure and the need for more serious and costly repair operations in the future. Generally, it is cost-effective, in whole-life cost terms, to undertake timely cyclical maintenance and repair activities. These form an important component in the development of a coherent ongoing bridge management strategy. In general, the Developer will maintain the structure to a condition that assures safety and serviceability for the next 12 months unless local conditions or experience have shown that more regular monitoring is required.

Chapter 2: Quality Management

Crews will perform cyclical maintenance activities relating to servicing structures rather than repairing them at regular predetermined intervals. Routine activities do not cover the repair or renewal of structural elements or components, which have become unserviceable due to general wear and tear, or have deteriorated for other reasons. The Developer will identify such work during the regular inspection process and include it in a planned structural maintenance program.

A Structural Maintenance Manual will exist for all structures and will be reviewed and updated annually. Maintenance crews will follow the specific requirements for each structure, along with any recommendations from the manufacturers of components used on the structure. However, manufacturer maintenance recommendations often correspond to set time intervals, rather than as a function of the burden to which the items are subjected. These may vary with time and from location to location. Therefore, with competent judgment, Developer personnel may supplement manufacturers' recommendations in the light of local conditions and experience.

If it is necessary to carry out frequent routine operations, such as for chronically blocked drainage inlets, renewal maintenance projects will take place to reduce the necessity for such frequent maintenance.

Overpasses

The Developer is responsible for the maintenance of all structural elements below and including the waterproofing membrane, together with the guardrails and any protective safety fence.

Subsurface Lanes

The Developer is responsible for the maintenance of the subsurface lanes. This maintenance includes, but it not limited the structure, the illumination, the drainage, and all roadway assets. Maintenance of drainage pumps serving subsurface lanes is particularly important and the responsibility for such maintenance will always be clear.

Pedestrian/Bicycle Facilities on Bridges

The Developer will be responsible for all routine activities on all items on pedestrian/bicycle facilities, including those that would be deemed highway elements on an overpass. However, in come cases, there may be a special agreement with an adjacent highway authority or other party for maintenance of the surfacing and/or lighting on these facilities. The maintenance responsibility will be clear.

Retaining Walls

The O&M responsibility for all retaining walls will be clarified. Where this is not the responsibility of the Maintenance Manager, the Developer will ensure that the appropriate person or organization is aware of their responsibilities.

Cyclical Maintenance

The Structural Maintenance Manual will contain all Routine Service Schedules for the cyclical maintenance required to meet the CDA requirements, including:

- graffiti removal;

Chapter 2: Quality Management

- removal of undesirable vegetation, such as vegetation blocking drainage inlets, impairing visibility, causing structural damage or restricting access;
- removal of debris, bird droppings and other detritus that blocks drainage and promotes corrosion or other deterioration;
- clearance and operational checks of drainage inlets, culverts, channels and systems;
- application of gap sealant to movement joints;
- operational checks of flap valves and grease;
- inspection, tightening and replacement, if necessary, of any loose nuts and bolts to expansion joints, guardrail supports and gantry assemblies;
- replacement of expansion joint gaskets where this is a specific requirement detailed in the Structural Maintenance Manual;
- removal of general dirt and debris from bearings, cleaning sliding and roller surfaces if accessible and re-grease, and following any additional advice contained in the bearing manufacturer's instructions in the Structural Maintenance Manual;
- operational checks of ancillary equipment, such as drainage pumps and associated sumps and pipework, and maintenance of lifting device certification;
- inspection and rectification, where necessary, of seating of drainage gratings or covers, replacing any missing or defective items;
- inspection, cleaning and replacement of pedestrian security measures such as mirrors, handrails and non-slip surfaces;
- scour damage inspections around drainage channels;
- repair of superficial defects in surface protection systems; and
- inspections of special finishes to ensure that they are clean and will perform to the appropriate standards.

Graffiti

The Maintenance Manager's policy is to remove obscene or offensive graffiti as soon as practicable after it appears. Other graffiti will also be removed as soon as practical while considering other factors such as traffic management strategies. Where graffiti is persistent and widespread in environmentally sensitive areas, the Developer will consider alternative options besides frequent removal or obliteration. Possible strategies are initiatives involving local schools, stakeholder groups and local law enforcement.

Physical measures include the use of anti-graffiti coatings, special cleaning materials, grit blasting and providing alternative surfaces such as tiling and murals. The Developer will take care to ensure the compatibility of applied materials and cleaning techniques with the structural substrate, and to avoid surface deterioration. The remedial action will not encourage further graffiti – for example, vandals often see overpainting with light-colored coatings as providing a new “blank canvas”.

Road Restraint Systems

Conditions that may affect the performance of vehicle restraint systems and pedestrian restraint systems include:

Chapter 2: Quality Management

- rotten wooden elements affecting the function of the restraint system (wooden-post safety barriers must be replaced);
- corroded metal that affects function or promotes deterioration;
- concrete cracking, spalling or reinforcement corrosion that affects the function or promotes deterioration;
- missing elements;
- broken, deformed or cracked components that affect function or promote deterioration;
- loose nuts, bolts and other components may represent a hazard or promote deterioration;
- lack of tension on tensioned systems;
- incorrect height; and
- excessive undergrowth, weeds or buildup of detritus in verge or median.

The Developer will retain site uniformity by maintaining the safety barrier system to the same physical appearance as the adjacent systems, unless the adjacent systems are obsolete.

It is important to check for adequate and appropriate fixings and connections, such as correct bolt types. It is also important to check the advance length of any safety barrier system provided in front of or around an obstruction because of the possibility that someone might have moved either the barrier system or obstruction for some reason, such as for repair. In the process of tensioning, crews must inspect anchorages in case they have moved. This can result from a change to ground conditions.

Concerning the mounting height of safety barriers, the setback distance is important (close to the roadway, the measured height is between the roadway surface and the beam; whereas, further away from the roadway, the measured height is between the ground surface directly beneath the barrier and the beam).

In most cases, repairs to safety barrier systems are for relatively minor vehicle impacts, and comprise repairs to flattened posts and superficially damaged barriers. Although the supporting posts may be missing, the barrier system remains continuous and at approximately the correct height. Only in a few cases is the extent of the damage such that the safety barrier system is no longer continuous.

The Developer must consider each occurrence on its merits but, generally, damage that results in the barrier lying on the ground or being no longer continuous will be repaired immediately following the incident that has caused the damage, before the road is fully reopened to traffic. In this case, the permanent repair takes place immediately and there is no hazard mitigation.

The Developer will therefore consider marking damage to median safety barrier systems by placing a single cone at the back of the hard shoulder. By reducing worker time on the roadway, their risk would be greatly reduced while the safety of the road users and exposure of the Maintenance Manager to liability would be no different than if crews had placed cones around the defect.

Pavement Markings and Delineators

Since law enforcement uses many pavement markings to enforce traffic laws, undue wear or damage should not diminish their legal status.

Road Markings

Conditions that may affect the performance of pavement markings (paint or thermoplastic) and require inspection include:

- erosion;
- spread;
- discoloration and reduction in the luminance factor;
- reduction in the skid resistance of pavement markings;
- reduction of retro-reflective properties; and
- reduction in audible or tactile characteristics when these are required.

Delineators

Conditions that may affect the performance of delineators and require inspection include:

- wear, corrosion or damage;
- loose and missing delineators and/or inserts;
- loss of or damage to retro-reflective lenses;
- sinkage or settlement;
- detritus on lenses;
- integrity and security of embedded delineator (housings);
- loss of adhesion or breakup of surface-mounted delineators;
- misalignment with existing pavement markings;
- failure to meet requirements for luminous intensity; and
- failure to meet requirements for reflective conspicuity.

Traffic Signage

State law requires illumination of many types of signs, and illumination failures affect their legal status. Such failures must be promptly detected and rectified.

Conditions that may affect the performance of traffic signs include:

- reduced visibility due to dirt, graffiti, foliage or other signs and structures;
- incorrect orientation, damaged or missing;
- loss of surface/paint/legend from peeling, damage or vandalism;

Chapter 2: Quality Management

- reduction in retro-reflectivity of white sign face materials;
- degradation of colored sign face materials;
- lamp failure, mistimed lamp timer, photoelectric circuit or time switch failure, electricity supply failure, missing fuses, lamp dirty or output low;
- malfunction in moving parts of variable message signs;
- wiring deterioration, discontinuity of protective conductors, earth electrode failure, earth loop impedance failure, inadequate insulation resistance, missing drawings, condition of sealant, polarity failure, residual current device failure;
- wiring in hazardous condition;
- access for maintenance blocked or equipment security breached; and
- corrosion/deterioration or damage to plate, fittings, frame or post.

Illumination

In general, lamp replacement provides safety, service and value for money. However, the Developer will consider other aspects of illumination maintenance to ensure minimization of overall whole-life maintenance costs.

- components will be standardized whenever possible to ensure maximum compatibility;
- replacement and repair materials and equipment will have the same physical, photometric and aesthetic characteristics as existing materials, except where the existing part is obsolete;
- lights will be maintained in a way that enables a continuing rapid and cost-effective maintenance response including replacement of power factor correction capacitors; and
- The Developer will use lamps containing materials that can be recycled, with the goal of achieving 70 percent recycling – including mercury-free lamps where practicable.

Conditions that require continuous monitoring to achieve the CDA performance requirements for illumination include:

- lamp failure, photoelectric circuit or time switch failure, electricity supply failure or lamp damage;
- low lamp output due to dirt, age or voltage drop;
- lamp illuminated during the day due to photoelectric circuit or time switch failure;
- lamp blockage by foliage or other signs and structures;
- incorrect lamp orientation due to damaged or misaligned mountings;
- wiring deterioration, discontinuity of protective conductors, earth electrode failure, earth loop impedance failure, inadequate insulation resistance, condition of sealant, polarity failure, protective current device failure, thermostat or heater failure;
- wiring in hazardous condition;
- access for maintenance blocked or equipment security breached;
- deterioration or damage to column, brackets or other supports – corrosion, damage or missing parts that affect function or promote deterioration.

Chapter 2: Quality Management

Considering the whole-life cost of maintenance operation leads to reduced overall costs and is the most significant aspect of improving maintenance efficiency and effectiveness, and therefore best value for money. However, manufacturer development and improved specification of materials and equipment can also enhance maintenance efficiency and effectiveness.

As improvements in manufacturing processes continue, these will contribute to a longer life of the illumination equipment, and will extend the periods between bulk changes and cyclical maintenance. The Developer will consider using different wattage lamps, including lamps with an alternative light source, particularly where reductions in energy consumption and overall maintenance costs due to an increase in lamp life will lead to significant cost savings.

The Developer will supplement all equipment specifications to allow use of apparatus with an agreed minimum projected “whole life” and which offers sustainable long-term Ingress and Protection ratings, (I.P. ratings) and recycling opportunities. Manufacturers will be encouraged to extend their warranties beyond the normal 12 months to the projected “whole life” of their products.

Border Widths

Conditions that require continuous monitoring to achieve the CDA performance requirements for border widths include:

- vegetation restricting visibility along sight lines at interchanges and access points, and below minimum stopping distances at curves;
- vegetation obstructing the view of signs, lights, signals and marker posts;
- fire hazards;
- unsafe trees within falling distance of the traveled lanes;
- undesired vegetation in paved areas;
- injurious weeds;
- failure to protect named species and habitats, including failure of special ecological measures, such as deer fencing, badger tunnels and bat boxes;
- failure to manage planting plans and shrubbery; and
- failure to manage wetlands.

Trees

Trees are an important roadside amenity and their contribution to the environment is such that they will remain in place to the extent allowed by safety considerations. Highway trees do however have the potential to pose a threat to the safety of road users, pedestrians and to adjoining property and livestock. The Developer will report any external signs of decay or deterioration to a qualified forestry specialist for action.

Forestry specialists will carry out specialist inspections and advise the Developer of signs of ill health or damage to trees. The Developer will take care to ensure the appropriate maintenance of “veteran trees” (trees that are of interest biologically, aesthetically, or culturally because of their age).

Control of Injurious Weeds

These are likely to be widespread on the border widths. Hand pulling is not an option for these species but they can all be effectively controlled by spot treatment with selective herbicide, or, in exceptional circumstances, by a concerted program of Tran located herbicide applications.

The presence of injurious weeds within border widths can put severe constraints on engineering and maintenance operations, particularly any work that involves trenching or another form of excavation. Crews will not move material containing injurious weeds within a site.

Sweeping and Cleaning

To achieve the required standards of cleanliness, the response to the accumulation of litter will be proactive rather than reactive. The Developer will carry out a combination of regularly scheduled roadside cleanup operations, as need dictates, to establish the overall cleanliness standard, plus "black spot" cleanups in locations where factors such as debris from vehicles or windblown litter cause frequent heavy litter. If the Developer identifies a particular source of windblown litter, the Developer will request that the owners control their site more effectively and will document such requests.

Conditions that require continuous monitoring to ensure a clean and litter-free Facility and border width are:

- detritus, litter, refuse, carcasses, debris and other objects;
- growth of grass or other vegetation between the channel and curb, which is likely to obstruct the flow of water or cause structural deterioration; and
- weed and vegetation growth that is likely to obstruct the flow of water in channels or cause structural deterioration.

Maintenance supervisors and crews will also refer to the requirements for items contained in other sections of this document, such as Drainage.

Fences, Walls, Screens and Environmental Barriers

It will be necessary to maintain a record of the purpose of fences, walls, screens and environmental barriers, to verify their performance. The original contract documentation may describe the intended design and performance requirements.

Conditions that require continuous monitoring to achieve performance requirements for fences, walls, screens and environmental barriers are:

- rotten wooden elements;
- corroded metal;
- concrete cracking, spalling or reinforcement corrosion;
- brickwork cracking, spalling or loss of mortar;

Chapter 2: Quality Management

- missing, broken, deformed or cracked components;
- loose nuts, bolts and other components;
- lack of tension in a strained wire fence;
- fence or barrier below height requirements (caused by settling or otherwise);
- loss of paint, galvanizing or other protective system; and
- effects of spray and pollutants degrading color or transparency.

The appearance of fences, walls, screens and environmental barriers is important and any repairs or replacement sections will maintain the uniformity of their appearance, unless the existing components are obsolete.

In the interest of safety, the Developer will use discretion in carrying out minor/temporary repairs on any part of the fence added by the landowner/occupier, where such parts are defective because of inspection or reports from law enforcement or the public. The Developer will report serious defects to the landowner/occupier with a request for rectification. If the repairs need to take place immediately, in the interests of safety, the Developer will carry out the necessary work and make a request to the landowner/occupier for reimbursement of any substantial expenditure incurred.

Fences designed for other special purposes, such as security of goods or protection of traffic from sporting activities, and installed by the owners on land adjoining a motorway, remain the responsibility of the landowner/occupier, and any serious defects will be drawn to the owner/occupier's attention.

Where there is persistent vandalism and theft, the Developer will consider replacing the existing fence with a more substantial type – for example, replacing timber post and rail with palisade fencing.

Building Maintenance (Administration and Maintenance Areas)

Crews will inspect administration and maintenance areas on a monthly basis to identify maintenance repair and improvement needs and the Maintenance Manager will manage this process. While recognizing that the management of the IH 635 Managed Lanes Project is a 24/7 operation, the Developer will schedule building maintenance work outside of peak operational periods to reduce disruption to working activities.

Inspection data will drive the annual maintenance program of both routine cyclical maintenance and capital building maintenance and improvement. This process will allow building maintenance to be budgeted on an annual basis. A building maintenance plan will establish periodic maintenance cycles and will contain detailed layout graphics highlighting positions of site boundaries, drainage outfalls, fuel storage and fuelling points, wash-down areas and waste storage. The plan will further detail:

- security arrangements;
- discharge permits;
- emergency fire evacuation procedures;
- spillage protection procedures;
- waste management;

Chapter 2: Quality Management

- de-icing material storage;
- administration; and
- inspection and audit procedures.

Information Technology Systems

Ordinary Maintenance

It is the Proposer's objective that the Developer's IT maintenance personnel shall work independently from subcontractors following an appropriate learning period. For this purpose, work will be contracted for the Intelligent Transportation Systems (ITS) Toll Collection Systems (TCS) and Back Office System (BOS). This will include, as part of the scope, a two-year extended guarantee, which will include very exigent response times along with the obligation to provide continuous training for the Developer's IT maintenance crew.

In terms of field systems (Toll Collection System and Intelligent Transportation Systems), the Developer anticipates the following personnel structure to support maintenance:

- The proposed ITS field maintenance team will be on duty 16 hours per day from Monday through Friday and eight hours per day on weekends and holidays. During the hours not covered by this schedule, technicians will be on call in case of emergencies.
- The proposed TCS field maintenance team will be on duty 16 hours per day from Monday through Friday and eight hours per day on weekends and holidays, coinciding with peak traffic hours. To cover the remaining eight hours from Monday to Friday, as well as the remaining 16 hours on weekends and holidays, the Developer will count with an extra technician crew onsite.

The Field Systems Manager will supervise all field maintenance technicians. This will allow for coordination of repair and inspection activities between both teams, balancing personnel needs in case of unexpected peaks.

An additional in-house crew will maintain the applications and hardware housed in the Traffic Management Center (TMC), including the ITS and TCS servers and all other Back Office System components. The TMC maintenance crew will consist of four technicians working during regular business hours and responding to major after-hours incidents through rotating on-call shifts. The anticipated crew will include at least two database administrators, one Graphical User Interface (GUI) technician and one hardware technician, all reporting to the Back Office System Manager.

Both the Field Systems Manager and the Back Office System Manager will directly report to the CIO.

Renewal work

Technology-based assets follow very particular patterns regarding their useful life, which depends mainly on the amount of software vs. hardware they contain. The Developer has estimated guidelines for intervals between major upgrades or renewals of the system by taking into account the advice of vendors and advisors, plus the Developer team members' own toll road experience. The expected major interventions for the various systems are:

Chapter 2: Quality Management

- **Intelligent Transportation Systems:** the Developer estimates that most hardware components of the TMC will require periodic renewals in cycles of five years. On top of these, the entire system (including field systems and TMC hardware and software components) will require a complete evaluation every 12 years in order to design major upgrades that may be needed. The Developer will competitively bid these 12-year renewal operations through RFPs, leading to integrated design-build contracts with the selected provider(s).
- **Toll Collection Systems:**
 - **Field Systems:** major renewals of the field systems will take place every eight years. The Developer will competitively bid these eight-year operations through RFPs, leading to integrated design-build contracts with the selected provider(s).
 - **Back Office System:** the Developer estimates that hardware components will require periodic renewals every five years of operation, whereas complete redesign and redevelopment of the system will take place every 12 years. Like in the two other subsystems, these major renewals will take place under design-build contracts awarded through RFPs.

Renewal Work

The Developer will implement a database that enables the user to access, from one single computing application, characteristic highway parameters such as geometry, inventory, road surface, pavement structure, auscultation (deflections, IRI, CRT, etc.), engineering structures, signs and signalization, traffic data and pavement management data.

Pavement

The anticipated solution to address pavement renewal needs includes:

- Mill and Fill program supported by a crack sealing and HMA deep patching program.

The anticipated mill and fill cycle to keep pavement up to required standard is:

- 8 – 9 years for general purpose lanes;
- 11 – 13 years for managed lanes; and
- 11 – 13 years for frontage roads.

The cycle timing is been based on:

- Proposer's experience on highway maintenance of both new and transferred facilities, such as the Indiana Toll Road, which has been in existence for over 50 years;
- Internal and external technical advisor research and analysis of local engineering practices; and
- Pavement structure modeling considering a 50-year concession term and 10 years of useful life required after handback.

Chapter 2: Quality Management

Structures

The major maintenance profile for structures originates from a strong program of inspection and renewal based on previous experience and international standards. Major structural maintenance depends on inspections undertaken on a risk management basis. Criteria include:

- strategic importance of a route or bridge (current and projected traffic loading may be an influence);
- risk management of known defects, such as environmental exposure, historical rate of deterioration for a specific bridge type or component, etc;
- risk management for degradation of materials;
- events such as floods, bushfires or earthquakes;
- traffic collisions that may have damaged a critical structural element;
- notification from the public; and
- availability of special equipment or resources

Other Road Assets

Typical frequencies for replacement or renovation of other road assets, such as road markings, barriers, fencing, drainage, road signs and lighting drive the expected renewals. **Error! Reference source not found.** shows renewal times for these assets.

Concrete traffic barrier	20 years
Road signs	10 years
Thermoplastic road markings	5 years
MSE Walls	15 years
Noise Walls	15 years

2D.18 User Satisfaction

The Developer will use the following process to obtain information to enable the measurement of User Satisfaction with a view to identifying areas for improvement.

- The CEO ensures performance measurement using the User Satisfaction Interview.
- User Satisfaction Interviews are carried out at six monthly intervals and at the end of the contract.
- If the User has raised specific concerns, the CEO shall consider these at the time the survey is completed and ensure appropriate immediate action is taken.
- Records are kept of any actions taken.
- Copies of the completed User Satisfaction Interviews are sent to the O&M Quality and Environmental Manager.
- The user feedback interview shall be designed to help managers gather qualitative and quantitative information on how our users perceive the service that we provide, in order that we can ascertain how well we are meeting their needs and where improvements can be made.

Chapter 2: Quality Management

- The User Satisfaction Interview shall be a means of obtaining performance data for possible action at Project level and Group level.
- Interviews should be completed at as many levels as possible within the user's organization from Main Board through Client Manager and day to day interfaces where appropriate.

2D.19 Emergency Response

Emergency / Extreme Weather Preparation and Response

The Winter Service Plan (Chapter 2E), sets out our approach and procedures for operation during severe winter weather.

In addition, we will utilize flood sensors, measuring water levels on the roadway and water levels of creeks/streams/ditches, to allow early deployment of resources and emergency plans in a significant rain event. Location of winter and water-level sensors will be reviewed on an annual basis to ensure optimum reporting, allowing efficient and timely maintenance operations.

Containment and Disposal of Hazardous Material Spills

Pollution response procedures are detailed in the Environmental Management Plan (Chapter 3).

In addition, we will develop an understanding of incident risks adjacent to the project through a comprehensive assessment of materials stored within ¼ mile of the Project limits. This will allow for effective risk assessment, development of mitigation measures for incident management purposes and continuous improvement of the Incident Management Plan.

Incident Management Plan

Incident response procedures are set down in detail within the Incident Management Plan (Chapter 10).

Incident notification, dispatch, management and recording are carried out through the full-time Traffic Management Center, utilizing CCTV access and communications with Field Patrols and emergency services providers to maintain an incident log.

Real-time information will be communicated to the TxDOT representative; and traffic conditions, diversions and cleanup time frames will be made available to road users through the IH 635 Managed Lanes Project website.

Procedures

Incident response procedures are detailed in the Incident Management Plan (Chapter 10) and summarized here. To achieve incident management objectives and produce a combined and coordinated response to an emergency, a common management framework in line with those operated by police/emergency services, local authorities and other agencies will be adopted.

Chapter 2: Quality Management

Under this framework, incident management response will be undertaken at one or more of three levels:

- **Operational:** Manage activities at the scene of the incident in cooperation with the appropriate organizations
- **Tactical:** Determine priorities in allocating resources; plan and coordinate response
- **Strategic:** Establish strategic management, ensuring that resources and expertise are available for a prompt response and return to normal conditions

Initially, incidents are likely to be managed at the operational level. Tactical and strategic management levels will be activated as appropriate.

Operational Level (Bronze) – Field Patrols and Others

This level reflects normal day-to-day arrangements for responding to incidents. It is the level at which the management of hands-on work is undertaken at the incident site.

Individual agencies retain full command of the resources that they apply within a geographical area or use for a specific purpose. The Developer will normally act as the response coordinator at an identifiable scene. A key function of an operational commander or manager will be to consider whether circumstances warrant a tactical level of management.

Tactical Level (Silver) – Maintenance Manager

The tactical level of management is introduced to provide overall response management. Tactical managers determine priorities in allocating resources, obtain further resources as required, and plan and coordinate when tasks will be undertaken. They take appropriate risk reduction measures, with due regard to health and safety requirements.

When an incident is identified, tactical management is usually undertaken from an Incident Control Point established in the vicinity. Many tactical functions will then be discharged at or close to the scene. However, some agencies, (for example local authorities), will prefer to operate from their administrative offices, but will often send liaison officers to enhance coordination. Planning must also take into account that there may be a number of separate incident locations at one time.

Tactical managers must concentrate on overall general management. While they need to be aware of what is happening at the operational level, they will leave the responsibility for dealing with that level to operational managers. When the situation warrants it, a strategic level of management/command will be established as early as possible.

Strategic Level (Gold) – Roadway Operations Director

In certain circumstances, one or more agencies may find it necessary to implement a strategic level of management. Incidents can place considerable demands on the resources of responding organizations, with consequent disruption to day-to-day activities. Such matters require attention by senior management to ensure that operational requirements elsewhere are still met.

Strategic incident management will be standard practice, not the exception. It is easy to dismantle if not required and removes the potential for tactical managers to be reluctant to ask for a strategic level of management. The need for strategic management may arise if tactical management does not have the required resources or expertise available. It may also arise if there is a need to coordinate more than one incident or site for which tactical command has been established. Strategic management is normally undertaken remotely from any incident scene.

Strategic management requirements may be confined to one particular agency. However, certain incidents require a multi-agency response at the strategic level when the issues that arise affect the responsibilities or activities of more than one organization.

While these communication procedures are prescriptive, we recognize the benefits of a partnered approach to incident management with the appropriate emergency services providers.

Incident Response and Reporting

Incident response procedures are set down in detail within the Incident Management Plan (Chapter 10).

Incident notification, dispatch, management and recording are carried out through the full-time Traffic Management Center, utilizing CCTV access and communications with Field Patrols and emergency services providers to maintain an incident log.

Real-time information will be communicated to the TxDOT representative; and traffic conditions, diversions and cleanup time frames will be made available to road users through the IH 635 Managed Lanes Project website.

2D.20 Toll Operations

Please refer to Appendix D.2 to the Technical Proposal for the document entitled "Conceptual ITS and TCS Design for IH 635 Managed Lanes Project: Final Document".

2E. Winter Service Plan

This Winter Service Plan (WSP) provides an overview of the Management System response to extreme cold weather conditions on the IH 635 Managed Lanes Project. The Roadway Operations Director has provided and resourced this information to address his responsibilities and commitment as defined by the CDA.

This section of the WSP outlines the service standards, scope of services and responsibilities for provision of those services, and details the extent of the network subject to Winter Service delivery. The WSP aims to ensure the safe movement of roadway users, including pedestrians. Winter Service is important in terms of the public economy and to the safety of road users.

The WSP involves treating the roadway and pedestrian facilities with de-icing materials to:

- prevent ice from forming (preventative treatment);
- melt ice and/or snow already formed (post treatment); and
- remove snow from the Facility.

Definitions

Table 26: WSP-Specific Definitions

CC	Control Center
RWIS	Road Weather Information System

Table 27: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above



Chapter 2: Quality Management

	the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A “pavement blowup” occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.

Chapter 2: Quality Management

Wedge and Level

Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

References and Standards

Table 28: Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required by the TxDOT and cities when establishing speed zones on the state highway system.
State Interagency Agreements with the Texas Highway Patrol (to be researched)		The Texas Highway Patrol works closely with TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
TxDOT Maintenance Manual Chapter 7 - Emergency		Chapter 7 provides guidance for emergency response for disasters and national

Chapter 2: Quality Management

	Management: (ftp://ftp.dot.state.tx.us/pub/txdot- info/gsd/manuals/mmt.pdf)	emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot- info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot- info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 29: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot- info/gsd/manuals/env.pdf)	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
Water Quality Control	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot- info/gsd/manuals/env.pdf)	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/e	Provides rules, policy and legislation for water quality control.

Chapter 2: Quality Management

	q/eq_wqmgt.html)	
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tl-pge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.
Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/resources/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.
Air Pollution	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.
	TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQG_guidelines0606.pdf	Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language useful in developing environmental documentation.
	TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-	Describes air quality requirements with respect to project planning.

Chapter 2: Quality Management

	info/gsd/manuals/pol.pdf	
	TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html	Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.
Vegetation	Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm	Issued to prevent and control the introduction and spread of invasive species
	Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf	Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development of landscape and aesthetic components for different classifications of roadway facilities.

Table 30: Required Operations and Environmental Permits

Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc	Table 4.1 in Book 2A lists all environmental permit requirements and the name of the coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.
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Chapter 2: Quality Management

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Comprehensive Development
Agreement, TxDOT Statewide
Open-Road Toll Collection System,
Section 9:
<http://www.fhwa.dot.gov/ppp/toc>.

Section 9 provides the insurance coverage
required for all CDA development, including
requirements for commercial liability
insurance, workers' compensation insurance
and other liability insurance.

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Systems and Procedures

For systems and procedures relating to this Plan, please refer to Chapters 2A through 2D of this document, which include procedures to cover the following:

- control of quality records;
- management reviews;
- resource allocation;
- measurement of customer satisfaction;
- control of nonconforming products and services;
- internal audits; and
- continuous improvement.

For Winter Service Plan-specific procedures please refer to Section B and Appendices below.

Roles and Responsibilities

Operations and Maintenance Department personnel will ensure effective implementation of the philosophies and methodologies detailed in the Project Management Plan regarding winter maintenance.

This department is responsible for all roadway maintenance activities (routine, preventative and major renewals). Winter maintenance is included as one of the key areas of work.

Figure 28 and Table 31 present the Organization Chart, responsibilities and minimum requirements for key employees in this area.

Chapter 2: Quality Management

Figure 28: Operations and Maintenance Organization

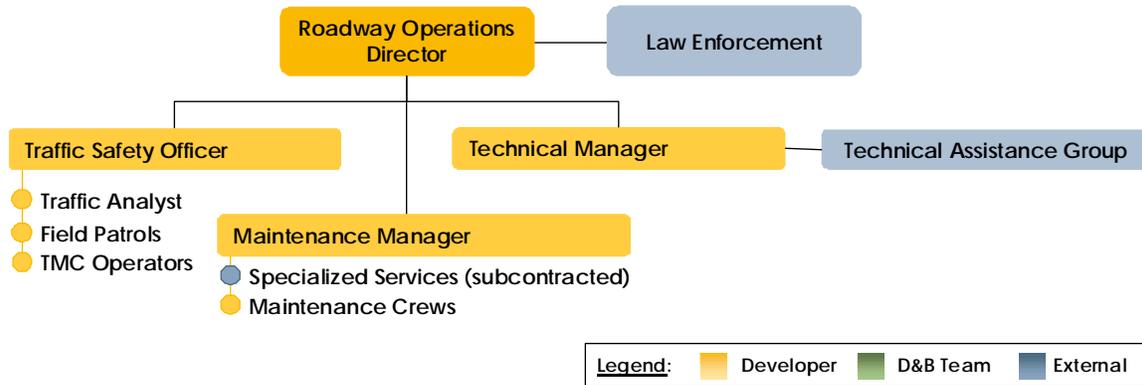


Table 31: Staff Responsibilities and Requirements – Operations and Maintenance

Staff	Minimum Requirements	Roles/Responsibilities
Traffic Safety Officer	Certified by Texas Engineering Extension Service (TEEX) in “Work Zone Traffic Control”. Two years of progressive and relevant experience in traffic control Strong communications and organizational skills.	Ensures uninterrupted monitoring of the facility, defines and enforces internal traffic control procedures and reports on facility condition and incidents. The Traffic Safety Officer will be available or on standby 24 hours per day, seven days a week
Technical Manager	Ten years’ minimum experience with state DOT, toll authority, county or city operations and maintenance programs. Five years’ minimum supervisory experience.	Direct construction and asset renewal activities during the O&M phase. Manages subcontracts with service providers. Coordinates QA/QC with O&M Quality and Environmental Manager.
Maintenance Manager	10 years’ minimum experience with state DOT, toll authority, county or city maintenance programs; five years’ minimum experience in pavement repair design, drainage design, sign design, maintenance materials, emergency weather/spills prevention planning and managing equipment fleets.	Demonstrated ability to know when to call in expert specialized consultant or contractor. Coordinates with all other managers on O&M team. Responsible for ensuring that all crew and patrol members receive training in environmental compliance, recognizing category defects and appropriate procedures for emergency incident situations. Responsible for the development of all required plans, coordinating where appropriate with local responsible entities

Plan-Specific Procedures

Introduction and Purpose

The North Central Texas area is prone to heavy rain in the spring and ice storms during the winter months. Weather conditions greatly affect roadway conditions and general pavement drivability. These conditions can directly affect motorist safety. This Winter Service Plan describes the policy, objectives, procedures and operational arrangements for delivering winter service on the IH 635 Managed Lanes Project.

Policy Framework and Statement of Service

The principal winter service activity is preventative treatment of roads to keep them free from ice, frost and snow. This is a routine activity that activated through a Weather Forecasting System and Ice Prediction System.

This document outlines our response to ice, frost and snow warnings. Upon receipt of an adverse weather forecast, the Maintenance Manager will activate the precautionary treatment plans and put them into operation in accordance with this document.

Precautionary treatment will begin within as soon as possible upon instruction. The maximum treatment time will include time for the spreader truck to return to the maintenance compound.

Service and Performance Standards

Response and Treatment Times

- Response Time – Response time is the time between the decision to begin treatment until the winter service vehicles are loaded, manned and ready to leave the compound.
- Treatment Time – Treatment time is the time between when the treatment vehicles leave the compound though their return to the compound after completion of the treatment route.

Risk Periods

The Developer has defined three winter services periods for planning and operational purposes only, as shown in Table 32.

Table 32: Winter Weather Risk Periods

Period (Risk)	Time (Months)	Winter Weather Conditions
High	December, January and February	Probable
Low	November and March	May Occur
Marginal	October and April	Not Expected

Operations

Introduction

This section of the WSP contains detailed operational procedures for delivery of winter services on the network and includes arrangements for liaison and cooperation with adjacent providers to promote delivery of a consistent and coordinated service across all boundaries.

Our Traffic Management Center will be available 24 hours per day to inform the Maintenance Manager of weather conditions. The Maintenance Manager is responsible for receiving the weather information, making daily treatment decisions and initiating appropriate actions for all winter events throughout the day.

Operational Requirements

Preventative treatment and other winter service operations will originate from the maintenance compound.

Personnel

The Maintenance Manager will use in-house and subcontracted resources to address weather related issues along the IH 635 Managed Lanes Project.

Weather Data

The Maintenance Manager will maintain computer and telephone contact with the weather forecast suppliers.

A bureau service will deliver forecasts through a forecasting center. Forecasts typically available include:

- Morning Summary and Preliminary Forecast: early morning
- 24-hour Area Forecast: early afternoon
- Site-Specific Sensor Forecasts (Text & Ice Prediction Graphs): early afternoon
- Two- to Five-Day Advance Forecast: early afternoon
- Evening Updated Forecast: early evening

The Maintenance Manager can view site-specific sensor data in real time through the bureau service and can contact the bureau service's forecaster 24 hours per day via telephone consultancy.

When winter weather is highly likely, the Maintenance Manager will monitor the most up-to-date forecast information and sensor readings day and night. This plan contains further details on the content and interpretation of forecasts and ice prediction systems.

Decisions and Instructions

The Maintenance Manager decides on a course of action for standby, preventative treatment, repeat treatment or snow clearance activities based on the forecast information received and from the ice prediction information. Confidence levels for forecasts will influence the timing of these decisions and the need to review ice prediction information.

If treatment is required during normal office hours (8:00 AM through 5:00 PM), the Maintenance Manager will notify the Control Center of the action required by 3:00 PM. If a decision has not been reached, it will be delayed until updated forecast and ice prediction information is available. Outside normal office hours, the Maintenance Manager will notify the Control Center.

The Maintenance Manager will specify the following:

- sections to be treated;
- spread rates;
- Timing of treatments;
- standby requirements;
- snow clearance activities (plowing);
- activation of standby resources; and
- calling of a Snow Emergency.

The Maintenance Manager will record the above instructions on the Daily Decision form and send them electronically to the Control Center. From time to time, it may be necessary for the Maintenance Manager to communicate instructions directly to the Control Center via telephone or radio system. The Control Center will follow up on these instructions as soon as practicable with written confirmation on the Daily Decision forms or by e-mail.

Where practicable and safe to do so, the Maintenance Manager will avoid scheduling treatments during periods of peak traffic flow.

Winter Conditional and Readiness States

During the winter service period, the Maintenance Manager will record four conditional states on the Daily Decision form and escalate them as follows:

- **Normal** – where winter weather is not predicted.
- **White 1** – where ice or frost are likely, but snow is not predicted over the next five days. In this state, maintenance crews employ preventative treatments. During the marginal periods recorded as White 1, the TMC and Field Patrol will monitor the local weather, road surface conditions and will communicate with the Maintenance Manager to report any local variations to the forecasted state.

Chapter 2: Quality Management

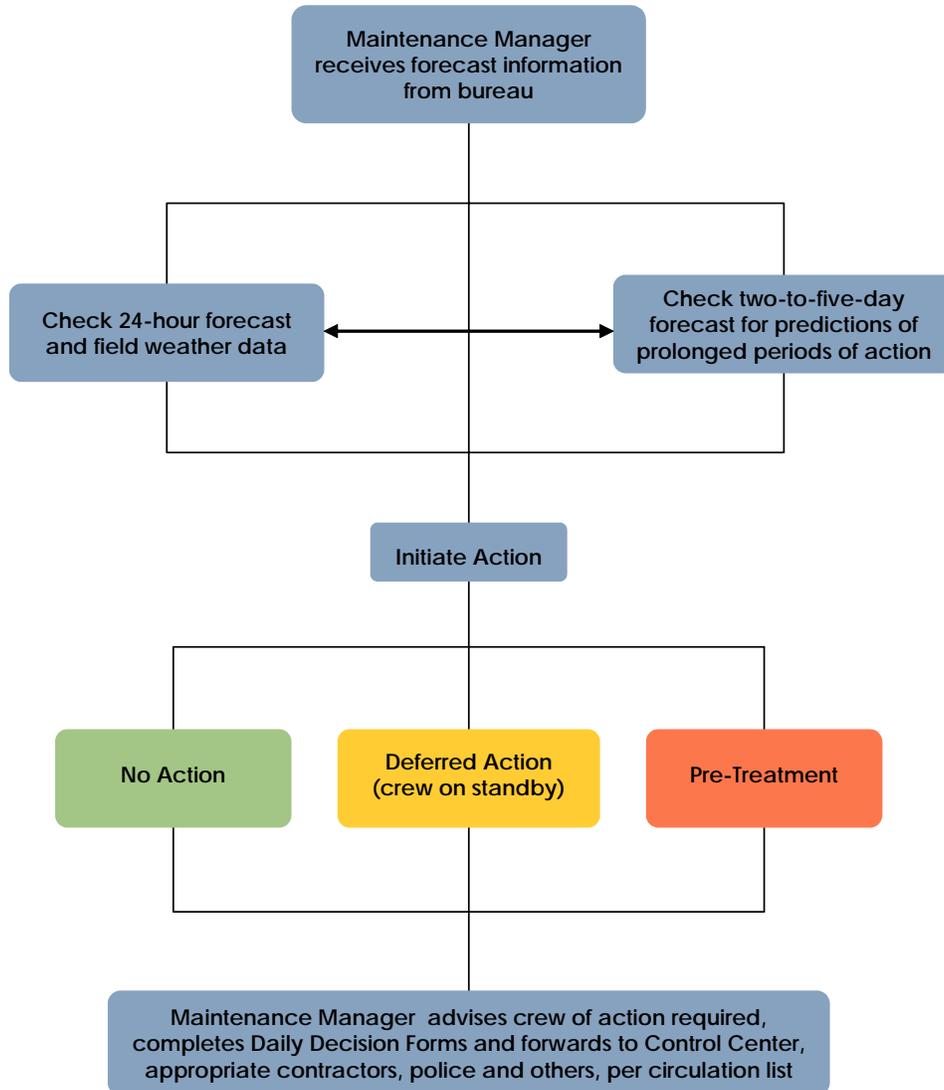
- **White 2** – when snowfall is predicted within 48 hours on the two-to-five-day weather forecast. During these periods, the Maintenance Manager will set up and coordinate a “Snow Desk” and the Control Center and Field Patrols will monitor local conditions and report any local variations to the forecast state back to the Snow Desk.
- **White 3** – when severe weather is underway and the Maintenance Manager has already established a Snow Desk.

Table 33 summarizes the winter weather readiness states outlined above.

Table 33: Winter Conditional and Readiness States

State	Condition	Forecast	Action
1	Normal	No ice or frost	No Action
2	White 1	Ice or frost predicted	Preventative Treatments
3	White 2	Snowfall predicted within 48 hours	Preventative Treatments; Set up Snow Desk
4	White 3	Snowfall present or immediately forecast	Treatment / Plowing; Snow Desk Operational

Figure 29: Decision-Making Flowchart



Decision-Making and Treatment Matrix

The Developer will make Winter Service-related decisions primarily in the interest of service delivery and continuity, and taking account of information from adjacent authorities.

During periods of predicted severe weather, the Maintenance Manager will remain in contact with forecasters and take account of information from field crews and from CCTV when making decisions.

Chapter 2: Quality Management

All decisions are evidence-based and made in accordance with the guidance contained within the decision and treatment matrices shown as Table 34. This matrix will assist the Maintenance Manager in the decision-making process; however, all decisions should derive from the unique weather conditions prevailing at the time.

Table 34: Decision-Making and Treatment Matrix

Road Surface Temperature	Precipitation	Predicted Road Conditions		
		Wet	Wet Patches	Dry
May fall below 34°F	No rain No frost No fog	Treatment before frost	Treatment before frost (see note A)	No action likely, monitor weather (see note A)
	No rain No frost No fog			
Expected to fall below 34°F	Expected frost Expected fog		Treatment before frost (see note B)	
	Rain expected prior to freeze	Treatment after rain stops		
	Rain expected during freeze	Treatment before frost and after rain stops (see note C)		
	Possible rain Possible frost Possible fog	Treatment before frost		Monitor weather conditions
	Expected snowfall	Treatment before snowfall		
Freezing Rain / Sleet	Before Rain	Treatment before Rainfall (see note C)		
	During Rain	Treatment during Rainfall (see note C)		
	After Rain	Treatment after Rainfall (see note C)		

Residual treatment and surface moisture should factor in decisions to undertake preventative treatments.

- A. *The possibility of water running across traveled lanes should receive particular attention, monitoring and treatment as needed.*

Chapter 2: Quality Management

- B. *When a weather warning contains reference to expected frost, considerable deposits of frost are likely to occur and close monitoring will be necessary. Timing of preventative treatments should receive particular attention due to the possibility that vehicles may cause treatment deposited on a to disperse before it can become effective.*
- C. *Under these circumstances, rain will freeze on contact with the pavement and even dry roads should receive full preventative treatments. This is a most serious condition that the Maintenance Manager and Field Patrols must monitor closely and continuously throughout the danger period.*

Escalation and Area Contingency Plans

The Snow Desk team will typically manage snow events and the Developer will only enact contingency plan arrangements if the planned response is insufficient to cope with exceptional weather conditions, if procedures fail or if an incident is compounded by a series of further incidents.

Establishment of Snow Desk

The Maintenance Manager will establish the Snow Desk prior to the predicted time of any snowfall likely to be significant enough to settle on the roadway and substantially hinder the passage of traffic, or as soon as possible in the event of unexpected snowfall.

During periods where severe weather is forecast and snowfall is likely to cause significant disruption to traffic, the Maintenance Manager will be set up a Snow Desk by and coordinate all related actions and information flow.

The Snow Desk will communicate directly with relevant organizations and local authorities and will monitor local news, weather and traffic media.

Upon the decision to initiate a Snow Desk, the Maintenance Manager will assemble a dedicated team a designate a room to house Snow Desk. This room will contain all necessary equipment required to effectively run the Snow Desk and communicate with the treatment fleet, compounds, supervisors, emergency services, TxDOT, adjacent local Highway Authorities and any other third parties.

Where decisions and their implications require strategic oversight, the Maintenance Manager will refer them to the Roadway Operations Director.

Weather Forecasting

The proposed Road Weather Information System (RWIS) incorporates Ice, Fog and High Water sensors. During the winter period, information received each day includes:

- a detailed 24-hour forecast;
- an evening update forecast;
- realistic site-specific temperature graphs;

Chapter 2: Quality Management

- site-specific snow prediction;
- an early morning summary; and
- a two-to-five-day forecast.

The Maintenance Manager will receive a 24-hour forecast every day. The main features of the forecast are:

- Readiness Color:
 - **GREEN** No snow or ice expected
 - **AMBER** Risk of snow and/or ice
 - **RED** Snow, Ice and/or drifting snow is expected or falling
- Hazards: Potential hazards such as heavy rain, high winds or fog
- Temperatures: Minimum road surface and air temperatures, along with a confidence level of High or Low
- 24-Hour Summary: General overview of the weather forecast from midday of the present day to midday of the following day
- Predicted Road Surface: Lowest predicted road surface temperature for at-grade lanes
- Structures Surface Temperature: Surface temperatures for bridge decks, including overpasses and elevated lanes

The two-to-five-day forecast is received every day. It includes predicted weather conditions, likely minimum road surface temperatures and a yes/no statement for snow, ice, frost and fog.

In addition to the 24-hour and two-to-five-day forecast forecasts, the Developer will receive an evening update forecast each day. This forecast contains the same features as the 24-hour forecast issued earlier in the day.

Domain Arrangements

The effects of winter weather on the Facility will vary largely according to geographical features such as topography, bodies of water and degree of urbanization. Weather will rarely follow the boundaries defined by contract boundaries and some domains will overlap with those of adjacent agents and authorities.

Each geographical domain has one or more weather outstation within its boundary and will normally have one designated as a forecast site through which the forecast provider will predict the weather for that domain.

Weather Forecasting

Road Weather Information System (RWIS)

The proposed Road Weather Information System will provide detection and warning capabilities for frozen precipitation, high water and fog. RWIS elements include field-deployed devices, communications (usually wireless) back to the TMC, central software to process the data and prescribed strategies for addressing the particular weather event. The technical approach to designing, installing, operating and maintaining the RWIS will follow the approach described for designing, installing, operating and maintaining all other proposed ITS devices.

Thermal Mapping

Thermal mapping is a technique for measuring and analyzing thermal characteristics of road surfaces in conjunction with their topographical surroundings. Thermal mapping recognizes road surface conditions three main weather types – extreme, intermediate and damped.

The extreme condition often occurs on nights when skies are clear and winds are light, producing the maximum variation in road surface temperature, along with the coldest absolute temperatures and potentially leading to the most hazardous road conditions. Under such conditions, it is important to be able to predict road surface temperatures accurately.

Maintenance personnel will use information provided by thermal mapping in conjunction with site-specific forecasts to predict minimum road surface temperatures across the network and make informed decisions on roadway treatment.

Records

Collection of detailed records is fundamental in defending against any liability claims made with respect to Winter Service delivery.

Record-Keeping

The Developer will keep detailed records on the following:

- weather forecasts;
- actual weather conditions;
- reports received;
- decisions made;
- instructions given;
- confirmations;
- actions taken;
- liaison and communications logs;
- Telephone conversations including with forecast provider;
- material usage;
- fleet breakdowns;
- Times taken to complete treatments;
- use of additional resources including reserve fleet and mutual aid;
- road closures/blockages due to weather conditions; and
- complaints received relating to road conditions due to weather.

Mutual Aid

Mutual aid can refer to many different things, from sharing treatment resources and compound facilities for better network coverage, to providing full winter service coverage to a particular part of another network. Mutual aid arrangements can also involve supporting, or obtaining support from, other network operators during times of stress to the roadway network, such as during severe weather, for the benefit of road users.

Prior to the winter season, the Roadway Operations Manager and Maintenance Manager will discuss mutual aid capabilities and establish arrangements with adjacent authorities. This will be an ongoing process, continuing throughout the winter service period to account for any changes on the network or changes in operational requirements.

Review Procedures

Review of the Winter Service delivery will be an ongoing process that aims to monitor the effectiveness of the treatment program, decision-making process, forecasting service, bureau service and operational delivery. Typical issues that the Developer will review include:

- response and treatment times;
- decision-making;
- command and control;
- escalation and Snow Desk operations;
- liaison and communications;
- weather forecasting and ice prediction;
- actual weather conditions;
- operational issues;
- records;
- health and safety;
- human resources;
- vehicles and plant;
- de-icing materials;
- compounds and facilities;
- other issues such as traffic flow and adjacent roads;
- areas for improvement; and
- identified problem areas on the network.

The Developer will compile and analyze the statistical information collected throughout the winter season in a Winter Service End-of-Season Report (post-season review).

Chapter 2: Quality Management

Road Weather Information System (RWIS)

The Developer proposes ice sensors for most freeway and cross street overpasses, freeway-to-freeway interchange direct connectors and bridge crossings over creeks or waterways. The Developer will determine the final number and location of ice sensors following a careful study of the site.

Fog occurs in the Dallas / Fort Worth area several times a year, usually during the spring and fall. During instances of heavy fog, the distance for visibility can fall as low as zero. The RWIS and TMC staff will also monitor fog, allowing TMC staff to warn drivers, via Dynamic Message Signs (DMS), to slow down due to reduced visibility ahead. The Developer will use fog detectors in conjunction with vehicle speed detectors and CCTV to determine the severity of fog conditions. The TMC will then activate variable speed limit signs and DMS to advise motorists of the hazardous conditions and reduce speeds accordingly. The Developer will determine the final number and location of fog detection devices following a careful study of the site.

High water detection is the third system that will enhance weather monitoring on the IH 635 Managed Lanes Project. Several creeks traverse the frontage roads and toll road, which the Developer will monitor for flooding during and after severe storms. When high water detectors detect water rising to the level of the roadway, TMC operators will warn drivers of the danger via DMS and inform them of suggested precautions or alternative routes to avoid the hazard. The Developer will determine the final number and location of high water detection devices following a careful study of the site.

The ice, fog and high water detection systems can automatically enact prescribed scenarios or alert an operator. The prescribed scenarios will warn motorist via website, e-mail, fax or DMS message that the roadway is susceptible to fog, ice, or flood conditions. IH 635 Managed Lanes Project traffic incident responders and maintenance forces can also receive the alerts, and thereby begin preparations to respond to potential incidents.

The RWIS data will be distributed to other systems via center-to-center communications protocols.

Winter Strategy

Key Assumptions:

- Maximum time to clear snow and ice: two hours
- Maximum time between clearing operations (when snowing continuously): one hour

Fleet:

- For preventive maintenance: seven spreaders
- Worst-case scenario (continuous snow): 14 spreaders

Equipment:

- Snowplows: seven
- Treatment container (on spreader truck): seven V-Boxes
- Silos: one



Chapter 2: Quality Management

Approach to Subcontracting:

Half of the spreaders will be the Developer's own trucks for used for year-round routine maintenance, and mounted with V-Box containers and snowplows for Winter Service. The Developer will subcontract the other seven required spreaders for snow events. The subcontracted spreaders will be fully equipped with snowplows.

Chapter 3: Environmental Management

CHAPTER 3 ENVIRONMENTAL MANAGEMENT

A. Design and Construction Phase

3.1 Organization

Contractual Arrangements

The Developer is committed to meeting the obligations regarding Governmental Approvals and regulatory compliance with Environmental Approvals as set forth in the Comprehensive Development Agreement (CDA). The Developer will ensure that work complies with Environmental Approvals throughout the term of the contract and will monitor work at the Facility so that documents providing evidence of compliance are available at any time for inspection by TxDOT personnel and the Independent Engineer.

To maintain a consistent approach and the integrity of Environmental and Governmental Approvals, the Developer's Environmental Compliance Manager (ECM) will designate an Environmental Compliance Team (ECT), to prevent, minimize and/or correct any violations of, or non-compliance with, Environmental Approvals. The ECT personnel shall include the ECM, Environmental Compliance Inspectors (ECI), and the environmental training staff. Additionally, other ECT staff members will include the Archeologist, Natural Resource Biologist, Water Quality Specialist, Hazardous Material Manager, and Health and Safety Manager. Roles, responsibilities and procedures for carrying out and reporting on environmental construction monitoring activities are described in Table 35. The specifics of how these services will be procured are to be determined.

A Comprehensive Environmental Protection Program (CEPP) will be developed as required by the CDA to set forth an approach, procedures, and methods throughout the Term of the Contract. The CEPP satisfies applicable US Department of Transportation, Federal Highway Administration (FHWA), TxDOT, and resource agency requirements including those commitments described in the Environmental Approvals. The CEPP will contain the following topics:

- Environmental Management System (EMS),
- Environmental Compliance and Mitigation Plan (ECMP),
- Environmental Protection Training Plan (EPTP),
- Hazardous Materials Management Plan (HMMP),
- Communication Plan (CP),
- Construction Monitoring Plan (CMP),
- Recycling Plan (RP).
- Staffing and availability of the ECM and all ECT personnel
- Environmental Contact tree including primary and secondary contacts
- ECT staff response times

Chapter 3: Environmental Management

The D&B Team acknowledges that Environmental and Governmental Approvals in connection with the development of the Facility have been negotiated by TxDOT and accepted by Governmental Entities (US Environmental Protection Agency [USEPA], Texas Commission on Environmental Quality [TCEQ], Texas Historical Commission [THC], US Army Corps of Engineers [USACE], US Fish and Wildlife Service [USFWS], Texas Parks and Wildlife Department [TPWD], and the North Central Texas Council of Governments [NCTCOG]). The permits provided to the D&B Team by TxDOT are based on the Project schematic of the preferred alternative as presented in the environmental documents. Further Governmental Approvals will be required to enable the Work to proceed, for which the D&B Team will prepare documentation and TxDOT shall, where specified, make the necessary submittals to the Governmental Entity. Table 4.2-1 of the CDA, Book 2A – TxDOT Provided Approvals sets forth the status of existing Environmental Approvals and the D&B Team’s obligations to prepare documentation and take other action(s) to support TxDOT regarding Environmental Approvals as well as the actions to be taken by TxDOT. The D&B Team shall be responsible for ensuring compliance with the conditions and schedules set forth in the amendment of any TxDOT-Provided Approvals. The level of support from TxDOT, if any, will be in the sole discretion of TxDOT.

Organizational Structure

The description of the ECT is provided in Table 35 below. Multiple roles of the ECT personnel may be fulfilled by single ECT members if respective members fulfill the requirements of the ECT personnel as detailed under the terms of the CDA, Book 2A, Section 4 and as workload allows. An Environmental Organization Chart is provided in Table 35, which shows the organization structure, chain of command, and identifies examples of environmental issues that the ECT staff might encounter during the project.

Table 35: Environmental Compliance Team

Title	Qualifications	Responsibilities
Environmental Compliance Mgr. (William Proctor)	<ul style="list-style-type: none"> ▪ Employee of an independent firm ▪ At least five years of experience successfully managing environmental compliance of urban freeway construction , including: <ul style="list-style-type: none"> ○ developing and managing a SWPPP; ○ developing and managing a hazardous substance and petroleum products management plan; ○ implementing environmental mitigation plans; ○ providing environmental and personal protection training; and ○ monitoring compliance with Section 404 Permit conditions. ▪ Familiarity with: <ul style="list-style-type: none"> ○ ASTM E 1527-05, “Standard Practice 	<ul style="list-style-type: none"> ▪ Directs the work of the ECT ▪ Monitors, documents, and reports environmental compliance. ▪ Reports and coordinates all issues directly with TxDOT and the CEO ▪ Reports any violation or non-compliance to TxDOT and the CEO immediately, along with appropriate recommendations for corrective action including stoppage of Work. ▪ Submits environmental documentation and monitoring reports to the appropriate Governmental Entities and when applicable, through TxDOT, to the extent necessary to maintain compliance with applicable Environmental Approvals. ▪ Prepares weekly monitoring reports



Chapter 3: Environmental Management

Title	Qualifications	Responsibilities
	<ul style="list-style-type: none"> for Environmental Site Assessment Process”; o Provisions of the TPDES Construction General Permit (TXR 150000) 	<ul style="list-style-type: none"> ▪ Reviews Site Investigation Reports and Site Investigation Work Plans ▪ Evaluates hazardous materials management practices for compliance with the Hazardous Materials Management Plan ▪ Oversees environmental training
Environmental Training Staff	<ul style="list-style-type: none"> ▪ At least one year of experience in environmental compliance work for urban freeways 	<ul style="list-style-type: none"> ▪ Develop, schedule and conduct environmental awareness and environmental compliance training for all employees. ▪ Maintain training documentation
Environmental Compliance Inspectors	<ul style="list-style-type: none"> ▪ At least one year of operational control experience for SWPPP activities 	<ul style="list-style-type: none"> ▪ Report any violation or non-compliance to the ECM immediately. ▪ Conduct daily onsite environmental monitoring ▪ Conduct SWPPP inspections ▪ Inspect AST and HAZMAT areas ▪ Respond to spills or releases
Cultural Resource Management Personnel	<i>To be designated if needed for the project</i>	<ul style="list-style-type: none"> ▪ Monitors construction activities within cultural resources high-probability areas ▪ Responds to any potential cultural resources incidents on the Facility
Natural Resource Biologist	<i>To be designated if needed for the project</i>	<ul style="list-style-type: none"> ▪ Assesses all impacts on wildlife and the natural environment during the course of the Work
Water Quality Specialist	<ul style="list-style-type: none"> ▪ Verifiable experience implementing SWPPPs ▪ Working knowledge of NPDES requirements 	<ul style="list-style-type: none"> ▪ Provides expertise in permitting delineation, SWPPP and protection of jurisdictional waters
Hazardous Materials Manager	<p>Required qualifications:</p> <ul style="list-style-type: none"> ▪ Must have verifiable Leaking Petroleum Storage Tank investigation and remediation experience in Texas <p>Additional preferred qualifications:</p> <ul style="list-style-type: none"> ▪ Precertified in TxDOT work category 2.13.1, Hazardous Materials Initial Site Assessment ▪ 40-hour HAZWOPER certified ▪ At least five years of experience in: <ul style="list-style-type: none"> o developing IWPs, SIRs, and remedial action plans or equivalent reports necessary and acceptable to the 	<ul style="list-style-type: none"> ▪ Provides expertise in the safe handling of Hazardous Materials ▪ Schedules and/or conducts training for employees ▪ Verifies employee certifications required for handling of HAZMAT ▪ Maintains records of incidents involving Hazardous Materials ▪ Maintains lists of Material Safety Data Sheets (MSDS) ▪ Prepares Spill Prevention Control and Countermeasures (SPCC) ▪ Manages spill and release response actions per the HMMP



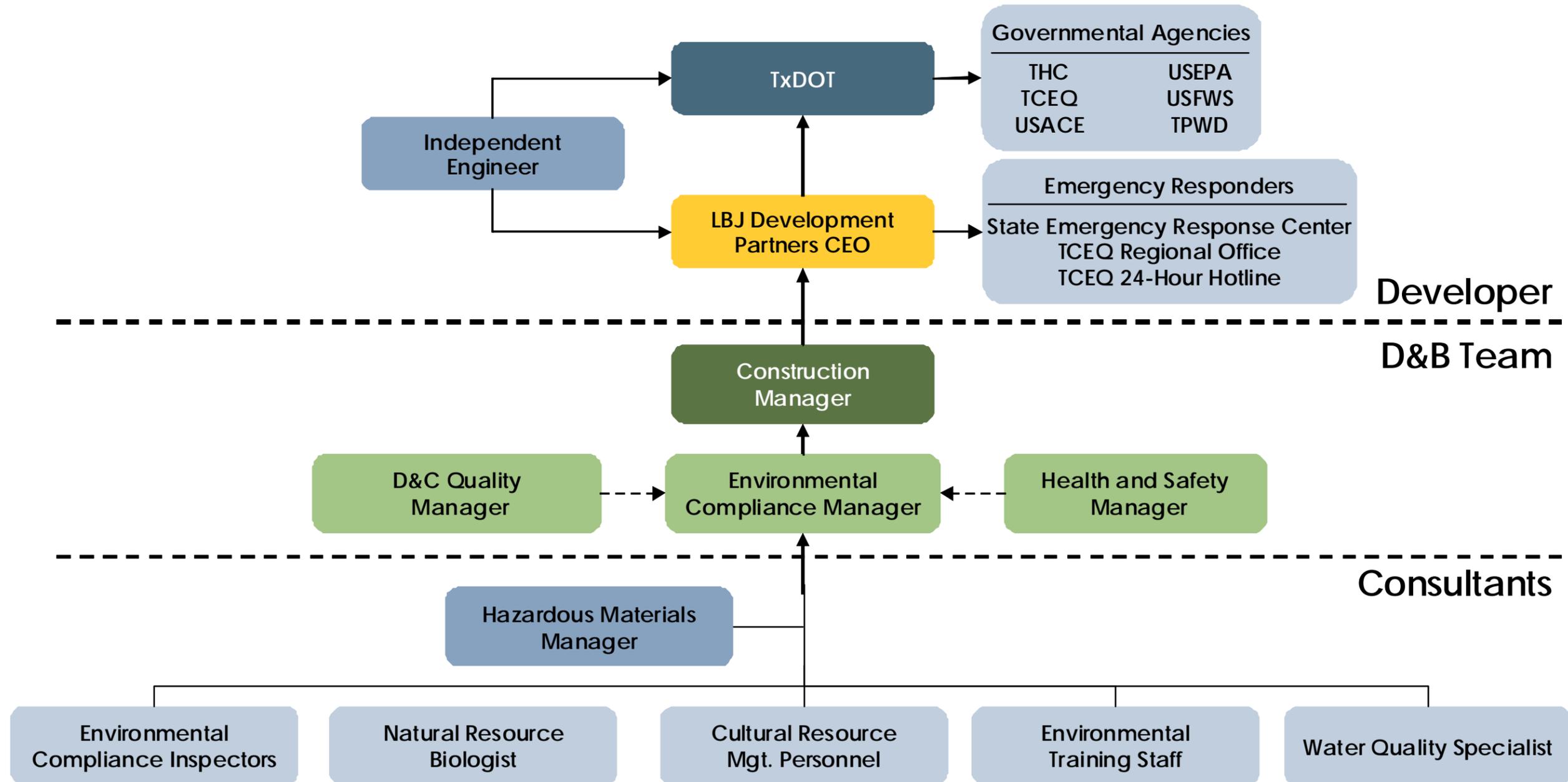
Chapter 3: Environmental Management

Title	Qualifications	Responsibilities
	<p>TCEQ in material discovery and remediation efforts of Hazardous Materials; and</p> <ul style="list-style-type: none">○ TCEQ guidance for investigation and remediation of Hazardous Materials under the TCEQ Voluntary Cleanup Program and Texas Risk Reduction Program Rules.	<ul style="list-style-type: none">▪ Prepares Site Investigation Work Plans and Site Investigation Reports▪ Oversees HAZMAT classification and disposal▪ Acts as a backup ECM



Chapter 3: Environmental Management

Figure 30: Environmental Team Organization Chart





Chapter 3: Environmental Management

3.2 Environmental Contact Tree

Table 36 contains a preliminary list of environmental reporting contact information and emergency telephone numbers. The final PMP will contain a more complete list.

Table 36: Environmental Reporting Contact Information and Emergency Numbers

Construction QC Mgr.	General Manager	Natural Resource Biologist	<u>EMERGENCY PHONE NUMBERS</u>
Company Name	D&B Team	Company Name	State Emergency Response Center
Email address	Email address	Email address	(800) 832-8224
Office number:	Office number:	Office number:	TCEQ Regional Office
Mobile number:	Mobile number:	Mobile number:	(512) 339-2929
Fax number:	Fax number:	Fax number:	TCEQ 24-hour Hotline
Home number:	Home number:	Street address	(512) 239-2507
Street address	Street address	City, State, Zip Code	
City, State, Zip Code	City, State, Zip Code		
Hazardous Materials Mgr.	Project Archaeologist	Env. Compliance Inspectors	Texas Historical Commission
Company Name	Company Name	Company Name	(512) 463-6906
Email address	Email address	Email address	
Office number:	Office number:	Office number:	TCEQ
Mobile number:	Mobile number:	Mobile number:	(512) 239-1000
Fax number:	Fax number:	Fax number:	
Home number:	Home number:	Home number:	USACE
Street address	Street address	Street address	(817) 886-1731
City, State, Zip Code	City, State, Zip Code	City, State, Zip Code	
Turnpike Environmental Coordinator	Environmental Compliance Manager	Water Quality Specialist	USEPA
TxDOT/TTA	Jennifer Oshel	Company Name	(xxx) xxx-xxxx
Email address	Ferrovia Agroman	Email address	
Office number:	joshel@ferrovial.es	Office number:	USFWS
Mobile number:	Office: 512.637.8545	Mobile number:	(xxx) xxx-xxxx
Fax number:	Mobile number:	Fax number:	
Home number:	Fax: 512.637.1499	Home number:	TPWD
Street address	Home number:	Street address	(512) 389-4800
City, State, Zip Code	7700 Chevy Chase Dr., Suite 500A	City, State, Zip Code	

Chapter 3: Environmental Management

Austin, TX 78752

3.3 Personnel

Resource Plan

Work Plans/Method Statements will define the proposed method of executing an element of work, taking into account the particular requirements of the project, including site conditions, safety hazards, the contract drawings, specifications, and industry practice. These plans and statements define the proposed use of equipment, labor, and materials. Required permits are identified and may be supplemented by drawings, sketches, and product data as necessary.

The principle aim of a Method Statement is to ensure that:

- Environmental risks are assessed, safe working methods defined, and workers involved are made aware of the risks associated with the task;
- Tasks are thought out in advance of field performance;
- Resources are available prior to task commencement.

These Work Plans will:

- Cover key activities identified through the schedule and be task-specific;
- Identify responsible personnel;
- Identify the required control measures and preparations;
- Be prepared in accordance with the environmental and safety standards outlined in the Comprehensive Environmental Protection Program (CEPP), Health & Safety Plan and Risk Assessment.

The following is a non-exhaustive list of activities that may require work plans. Reference numbers will be allocated as the method statements are produced:

- Environmental management including treatment of habitat areas and all areas where there is any risk or potential risk of environmental damage;
- Traffic Management segregated into each traffic management operation, including traffic diversions, traffic re-routing and permanent and temporary diversions;
- Demolition and site clearance;
- Safety fences, safety barriers and pedestrian guard rails;
- Drainage and service ducts;
- Earthworks, including method statements for different materials;
- Road pavements including instructions for different materials;
- Curbs, Footpaths and Paved areas;
- Traffic signs;
- Road lighting;

Chapter 3: Environmental Management

- Electrical work;
- Structures, each being broken down into each main element;
- Landscape operations, including the monitoring, stripping, preservation and re use of topsoil;
- Accommodation works;
- Service diversions;
- Special activities.

All environmental and construction/environmental subcontractors, equipment, materials and systems will be handled following the Procurement (Subcontractor) Procedure and/or the Procurement (Materials and Supplies) Procedure set forth in the Process Procedure Manual.

Interaction with TxDOT and its Consultants

The specific arrangements governing staff interaction with the IE and/or TxDOT and its consultants (Developer and the D&B Team) have yet to be established. In general, communication with the IE will pass from either the IE and/or TxDOT through the Developer, to the D&B Team's General Manager. The General Manager will direct the communication to the appropriate Department within the D&B Team's organization.

Key Personnel

The Environmental Organization Chart provided in Figure 30 depicts the overall organization's structure, chain of command, and Environmental Compliance Team (ECT) members. Specific experience requirements will mirror, at a minimum those identified in the CDA. Key and specified personnel will meet the qualification requirements defined in the CDA. The roles to be filled by specific subcontractors and affiliates have not yet been established. It is anticipated that contractual arrangements will be made with an experienced and qualified environmental consulting firm "subcontractor" to obtain the necessary environmental permits and implement the environmental monitoring and training programs for the Facility. Selection of a subcontractor will be made on the basis of the scope of work, competency to perform the work, health and safety, quality control and assurance, and overall best value to the Project. Special attention will be given to qualified firms with current TxDOT DBE, WBE, or HUB status. At a minimum, the subcontractor will provide all key environmental training staff who meet the specified qualifications to fulfill the primary responsibility for environmental protection as part of the designated Environmental Compliance Team (ECT), as well as any other personnel or resources to perform the required services. The subcontractor shall carry out all activities and tasks necessary to properly train personnel engaged in field activities and environmental compliance monitoring activities.

3.3 Contractors

Contractor Control Procedures

The roles to be filled by specific contractors and affiliates have not yet been established. However, control of work will follow the CEPP, which describes project administration and control elements in subsidiary plans such as Environmental Management System (EMS), Environmental Protection Training Plan (EPTP), Hazardous Materials



Chapter 3: Environmental Management

Management Plan (HMMP), Environmental Compliance and Mitigation Plan (ECMP), Construction Monitoring Plan (CMP) and the Recycling Plan.

Responsibility of Contractors and Affiliates

Under the contractual agreement between the D&B Team and the Developer, the D&B Team is subject to the same environmental requirements as set forth in the CDA. Subcontractors and Affiliates to the D&B Team will be contractually obligated to comply with the environmental requirements as indicated in the CDA, as part of the provision of their services.

Compliance Action Plan

The Compliance Action Plan (CAP) will consist of a decision making matrix defining the triggers for initiating or reinitiating environmental compliance actions for construction and maintenance activities. For each trigger, the CAP identifies the appropriate type or level of environmental study or other compliance action necessary to ensure the ongoing validity of Project Environmental Approvals and commitments. Triggers defined in the CAP will be based upon recommendations made in the TxDOT-Provided Approvals. Specific triggers and actions to be discussed in the CAP shall include those related to construction noise mitigation measures, hazardous materials discovery, cultural resources accidental discovery, etc.

Environmental Permits, Issues, and Commitments (EPIC) Sheets

All environmental commitments and applicable permits identified in the CEPP during the design, construction and O&M of the IH 635 Managed Lanes Project will be identified and organized using Environmental Permit, Issues and Commitment (EPIC) sheets, which the Environmental Compliance Team will update throughout the construction period to identify onsite conditions. EPIC sheets will include notes relating to:

- endangered species/wildlife;
- cultural resources;
- noise;
- water quality;
- Wetlands/Waters of the U.S.;
- vegetation;
- beneficial landscape practices/vegetation management;
- hazardous materials; and
- Traffic control.

All specific areas of concern relating to the discipline identified on the EPIC sheet will be labeled and will contain a separate legend relating to these areas for identification purposes. This inventory will be identified in a database maintained by the Environmental Compliance Team. It will prioritize environmentally sensitive areas associated with future construction activities. The database will include environmental information concerning the project ROW as well as D&B Team's Additional Properties and Project Specific Location (PSLs) including stockpile areas, staging areas, borrow sites and field office sites.

Chapter 3: Environmental Management

Construction Monitoring Plan

The Construction Monitoring Plan (CMP) will require a joint inspection of the Project vicinity by the D&B Team and TxDOT prior to the commencement of construction activities. The inspection will document the pre-construction condition of the Project vicinity and serve to quantify the benchmark conditions. Any impacts to the vicinity as a result of construction will be restored to the benchmark condition established in the inspection. A report of the benchmark conditions including photographs, sketches and maps will be created by designated ECT members. Separate inspections of the municipal separate storm sewer system will be performed by the D&B Team upon commencement of construction activities and annually upon completion of construction. The storm sewer inspections will identify pre-existing conditions, document the functionality of the system, and the presence of construction on nearby properties. Deficiencies in the storm water system identified during these inspections will be repaired.

Communication Plan

The CP will detail the communication hierarchy for information distribution related to CEPP compliance. The CP will include names and contact information, including emergency contact information, and the preferred methods of routine and emergency communication

Environmental Protection Training Plan Implementation

The Environmental Protection Training Program (EPTP) will educate all employees to recognize the overall importance of environmental issues throughout construction, operation, and maintenance of the Facility as well as recognize the various environmental sensitivities associated with the Facility. All employees will be trained to recognize environmentally sensitive resources that may be encountered during work, how to avoid or take appropriate action to minimize environmental impacts from the Work, and understand the required actions, practices, and procedures regarding related resources.

The following proposed Table of Contents outlines the information topics to be provided in the EPTP:

Table of Contents

- 1.0 Environmental Protection Training Plan
- 2.0 Environmental Protection Training Plan Scope and Content
- 3.0 Environmental Discipline Segments
- 4.0 EPTP Participation
- 5.0 Ongoing Training

The following environmental discipline segments will be developed to provide more detailed training in the regulations and procedures that apply to each environmental discipline. These segments are:

Chapter 3: Environmental Management

- Environmental background;
- Overview of specific environmental commitments at the project level;
- Overall importance of environmental protection to the Facility;
- The D&B Team's ECT commitments and responsibilities;
- Worker responsibilities;
- Regulatory permit conditions;
- Penalties and/or fines for violations of and noncompliance with environmental requirements and Laws, including termination of employment;
- Wetlands identification;
- Overview of the provisions of the Endangered Species Act, Migratory Bird Treaty Act, Stormwater Pollution Prevention Program (SWPPP), and project mitigation commitments;
- Best Management Practices (BMPs) for environmental compliance, including but not limited to pollution prevention, erosion, sedimentation, and dust control measures to maintain water and air quality;
- Required mitigation measures;
- Groundwater protection requirements;
- Clean Water Act (CWA) regulations and surface water protection requirements;
- Overview of noise and residential impact reduction procedures;
- Air quality and dust control requirements;
- Compliance responsibility and Governmental Entity Authority;
- Procedures and precautions in the event skeletal remains or other archeological or paleontological resources are discovered;
- Procedures and precautions in the event of spills of or discovery of hazardous materials, unknown chemicals or contamination; and,
- Threatened or Endangered Species or sensitive habitat protection measures.
- Identification and abatement of Asbestos-Containing-Materials (ACM)

Training sessions will include the viewing of the EPTP video and question and answer sessions. Both English and Spanish versions of the EPTP video will be available. Training documentation will be achieved through use of a sign-in sheet. This sign-in sheet will be entered into the training database. Recognition for completion of training will be signified by use of environmental training stickers for hardhats and certificates. The D&B Team's selected environmental subcontractor will provide any resources necessary to perform the required services to achieve environmental training of all employees of the Facility.

The ECT will schedule the EPTP in coordination with the Facility Work schedule. The ECT will provide introductory environmental protection training to all personnel who will perform field activities. Personnel engaged in field activities will be required to complete the introductory training prior to working at the site. In-office training session(s) will be conducted for all D&B Team staff, including all subcontractor personnel. The introductory training will provide an understanding of the applicable environmental laws, regulations, policies, and procedures for the Facility. The introductory environmental training will be coordinated with the D&B Team's Health and Safety

Chapter 3: Environmental Management

Program. In addition to the introductory training, periodic training sessions at appropriate times (e.g., prior to construction in sensitive areas) may be used to update workers on specific restrictions, conditions, concerns, or requirements.

Hazardous Materials Management Plan

The Hazardous Materials Management Plan (HMMP) will set procedures for the safe handling, storage, treatment and-or disposal of Hazardous Materials, whether encountered at or brought to the Project Site by the Developer, encountered or brought to the Project site by a third party, or otherwise, during the Term of the Agreement. The Developer shall submit the final HMMP to TxDOT for review and approval prior to commencement of Work.

At a minimum, the HMMP shall include:

- OSHA-compliant Material Safety Data Sheets (MSDS) shall be kept and updated for all chemicals used on the Project;
- Designated individuals responsible for implementation of the plan (the Hazardous Materials Manager {HMM});
- Procedures for identification and documentation of potential hazardous material contamination which might impact Project development;
- Procedures for mitigation of known hazardous material contamination with the potential to impact Project development;
- Procedures for mitigation of accidentally discovered hazardous materials;
- Procedures for mitigation of hazardous material contamination during operation and maintenance of the Project;
- Procedures for developing a detailed Spill Response Plan for the Term of the Project;
- Training protocol for hazardous material contamination response and mitigation to be included in the EPTP;
- Provisions for appropriate storage and disposal of all waste encountered or generated on the Project during the Work;
- Procedures for preparing an Investigative Work Plan *IWP(and Site Investigative Report *SIR(in the event that Hazardous Materials are discovered during construction, operations or maintenance activities; and;
- Listings with contact information for the HMM and other designated responsible individuals.

The HMMP shall include provisions for EPTP training of all on-site workers regarding the potential Hazardous Materials present, limiting the exposure to Hazardous Materials of all on-site Workers, and providing all necessary personal protection equipment to protect all on-site Workers from exposure. The HMMP shall require HAZWOPER training for all on-site personnel handling Hazardous Materials. Additionally, the HMMP shall include procedures to ensure that all applicable certifications, licenses, authorizations, and Governmental Approvals for all on-site personnel handling Hazardous Materials are current and valid through the duration of the Work.

Chapter 3: Environmental Management

3.5 Environmental

Environmental Compliance and Mitigation Plan

The Environmental Compliance and Mitigation Plan (ECMP) will detail in one comprehensive document procedures by which the D&B Team will comply with requirements of the CDA and Environmental Approvals. The ECMP will include details of all mitigation requirements by Environmental Approvals and the D&B Team's approach to satisfying mitigation requirements. The ECMP is an integral part of the CEPP and is prepared in compliance with the CDA requirements, which states that the ECMP will fully detail the mitigation requirements contained in the Governmental Approvals. The ECMP shall provide a method for monitoring, documenting, evaluating, and reporting environmental compliance during construction activities of the Facility. The ECMP will include details of all mitigation requirements by Environmental Approvals and the D&B Team's approach to satisfying mitigation requirements. Additionally, schedules, protocols, and methodologies to be used for the Work, including requirements for monitoring, reporting, corrective actions and adaptive management will be detailed to ensure compliance with applicable requirements. The ECMP outlines each of the environmental resource categories related to the Facility. The resource categories listed in this section include:

- Jurisdictional Waters / Wetlands,
- Water Quality,
- Floodplains,
- Wildlife,
- Threatened and Endangered Species,
- Archeology,
- Hazardous Materials,
- Noise,
- Air quality,
- Farmland, and
- NEPA Documentation.

For each resource, the compliance requirements are presented in the following four subsections:

1. the federal and State statutes and regulations that establish the legal authority for project environmental mandates;
2. permits, memoranda of understanding, protocols, and other regulatory documents which have legal effects as extensions of applicable statutes and regulations;
3. CDA commitments and other mitigation measures; and,
4. NEPA documentation and approvals

Each resource specific section is concluded with a fifth subsection, "resource mitigation requirements," which compiles all subsection commitments into the actions being taken by the D&B Team's ECT to adhere to resource requirements and mitigation.

Chapter 3: Environmental Management

The following proposed Table of Contents outlines the information topics to be provided in the ECMP:

Table of Contents

- 1.0 Introduction
 - 1.1 Comprehensive Environmental Protection Program Overview
 - 1.2 Guidance Plans
 - 1.2.1 Environmental Management System
 - 1.2.2 Compliance Action Plan
 - 1.2.3 Environmental Protection Training Plan
 - 1.2.4 Hazardous Materials Management Plan
 - 1.2.5 Environmental Construction Monitoring Plan
 - 1.2.6 Recycling Plan
 - 1.3 Goals of the Comprehensive Environmental Protection Program
 - 1.3.1 Commitment to Goals
 - 1.4 Environmental Personnel
- 2.0 Implementation and Monitoring
 - 2.1 Environmental Permits, Issues and Commitments Coversheet
 - 2.2 Training
 - 2.3 Environmental Construction Monitoring Plan
 - 2.4 Meetings and Coordination
- 3.0 Environmental Resources and Concerns
 - 3.1 Section 404 Jurisdictional Wetlands and/or other “Waters of the US”
 - 3.1.1 Federal and State Statutes and Regulations
 - 3.1.2 Permits, Protocols, Other Regulatory Documents
 - 3.1.3 Commitments and Other Mitigation Measures

Chapter 3: Environmental Management

- 3.1.4 NEPA documentation and approvals
- 3.1.5 Jurisdictional Wetlands and/or other “Waters of the US” Mitigation Requirements
- 3.2 Water Quality
 - 3.2.1 Federal and State Statutes and Regulations
 - 3.2.2 Permits, Protocols, Other Regulatory Documents
 - 3.2.3 Commitments and Other Mitigation Measures
 - 3.2.4 NEPA documentation and approvals
 - 3.2.5 Water Quality Mitigation Requirements
- 3.3 Floodplains
 - 3.3.1 Federal and State Statutes and Regulations
 - 3.3.2 Permits, Protocols, Other Regulatory Documents
 - 3.3.3 CDA Commitments and Other Mitigation Measures
 - 3.3.4 NEPA documentation and approvals
 - 3.3.5 Floodplain Mitigation Requirements
- 3.4 Wildlife and Threatened and Endangered Species
 - 3.4.1 Federal and State Statutes and Regulations
 - 3.4.2 Permits, Protocols, Other Regulatory Documents
 - 3.4.3 Commitments and Other Mitigation Measures
 - 3.4.4 NEPA documentation and approvals
 - 3.4.5 Wildlife and Threatened and Endangered Species Mitigation Requirements
- 3.5 Archeology
 - 3.5.1 Federal and State Statutes and Regulations
 - 3.5.2 Permits, Protocols, Other Regulatory Documents



Chapter 3: Environmental Management

- 3.5.3 Commitments and Other Mitigation Measures
- 3.5.4 NEPA documentation and approvals
- 3.5.5 Archeology Mitigation Requirements
- 3.6 Historical
 - 3.6.1 Federal and State Statutes and Regulations
 - 3.6.2 Permits, Protocols, Other Regulatory Documents
 - 3.6.3 Commitments and Other Mitigation Measures
 - 3.6.4 NEPA documentation and approvals
 - 3.6.5 Historical Mitigation Requirements
- 3.7 Hazardous Materials and Waste
 - 3.7.1 Federal and State Statutes and Regulations
 - 3.7.2 Permits, Protocols, Other Regulatory Documents
 - 3.7.3 Commitments and Other Mitigation Measures
 - 3.7.4 NEPA documentation and approvals
 - 3.7.5 Hazardous Materials and Waste Mitigation Requirements
- 3.8 Noise
 - 3.8.1 Federal and State Statutes and Regulations
 - 3.8.2 Permits, Protocols, Other Regulatory Documents
 - 3.8.3 Commitments and Other Mitigation Measures
 - 3.8.4 NEPA documentation and approvals
 - 3.8.5 Noise Mitigation Requirements
- 3.9 Air Quality
 - 3.9.1 Federal and State Statutes and Regulations



Chapter 3: Environmental Management

- 3.9.2 Permits, Protocols, Other Regulatory Documents
- 3.9.3 Commitments and Other Mitigation Measures
- 3.9.4 NEPA documentation and approvals
- 3.9.5 Air Quality Mitigation Requirements
- 3.10 Farmland
 - 3.10.1 Federal and State Statutes and Regulations
 - 3.10.2 Permits, Protocols, Other Regulatory Documents
 - 3.10.3 Commitments and Other Mitigation Measures
 - 3.10.4 NEPA documentation and approvals
 - 3.10.5 Farmland Mitigation Requirements
- 3.11 NEPA Documentation
 - 3.11.1 Federal and State Statutes and Regulations
 - 3.11.2 Permits, Protocols, Other Regulatory Documents
 - 3.11.3 Commitments and Other Mitigation Measures
 - 3.11.4 NEPA documentation and approvals
 - 3.11.5 NEPA Documentation Mitigation Requirements
- 4.0 Additional Properties Clearances
 - 4.1 Cultural Resources
 - 4.2 Wildlife and Vegetation
 - 4.3 Threatened or Endangered Species
 - 4.4 Jurisdictional Wetlands and/or other "Waters of the US"
 - 4.5 Hazardous Materials
- 5.0 Updating The Plan

List of Appendices

Chapter 3: Environmental Management

Appendix A – List of Acronyms

Appendix B – USACE Pre-Construction Notification

Appendix C – Phase I Environmental Site Assessment Summary

Appendix D – Plan Update Format and Index

The ECMP includes standard operating procedures for a minimum of the following components:

- Permanent water pollution control measures;
- Temporary water pollution control measures;
- Compliance with environmental permit requirements;
- Compliance with mitigation measures for wetland/habitat replacement;
- Compliance with jurisdictional waters and wetlands permits;
- Noise and vibration mitigation measures;
- Air quality mitigation measures, including dust control during construction;
- Mitigation measures for light intrusion on adjacent properties;
- Maintaining current traffic flows within the existing footprint, no detours will be required
- Identification and abatement of Asbestos-Containing-Materials (ACM)

3.6 Quality Control

Ensuring Accuracy, Completeness and Quality of Submittals

The Developer is committed to the application of responsible and professional quality control for all project deliverables, including subconsultant deliverables, to ensure accuracy, completeness and adequacy for the intended purpose. The environmental activities will be assigned to professionally qualified individuals who will be required to comply with the Developer's Project Management Plan. Quality control management and monitoring of environmental inputs and outputs will be performed by the Environmental Compliance Manger.

Continuous Improvement

The Quality Management Plan establishes an internal audit process for the continual improvement to design, construction, and environmental compliance of the Facility. Internal quality audits will be performed by qualified personnel who are independent of those having direct responsibility for the activity being audited. Managers responsible for the activity being audited will ensure that prudent and timely corrective action is taken to resolve all identified deficiencies. Follow up audits will be used to verify the corrective action taken and its effectiveness. If any recurring problems exist, they will be brought to the attention of the General Manager. Quality audit results will also be used as a tool to review and implement continuous improvement to the Environmental Compliance. The D&B

Chapter 3: Environmental Management

Team complaint process will address all reported complaints, regardless of reporting individual as outlined in the procedure for Developer Complaints. Procedures for evaluating continuous improvement contemplated as part of this project are:

- **Management Review Procedure:** A formal regular evaluation by the General Manager and the Construction Manger of the status and adequacy of the quality system (procedures, stated business objectives, working methods) in relation to Quality Policy. The evaluation will take into account any changes incepted by new technologies, quality concepts, market strategies, social or environmental conditions, and laws.
- **Developer Complaints Procedure:** Sets forth guidelines to ensure that complaints received from the Developer on aspects other than quality will be investigated appropriately. The Scope covers complaints received from the Developer on completed work, and from members of the public related to the D&B Team's activities (e.g. noise, dust or other hazards).

Environmental Compliance

The Facility Environmental Compliance Procedures will be developed in the CEPP guidance documents including the Environmental Management System (EMS), Environmental Compliance and Mitigation Plan (ECMP), Environmental Protection Training Plan (EPTP), Hazardous Materials Management Plan (HMMP), Construction Monitoring Plan (CMP), and the Recycling Plan. The following procedures will be developed under the CEPP guidance documents:

- Permanent water pollution control measures;
- Temporary water pollution control measures;
- Compliance with environmental permit requirements;
- Compliance with mitigation measures for wetland/habitat replacement;
- Compliance with jurisdictional waters and wetlands permits;
- Traffic Noise and vibration mitigation measures;
- Traffic Air quality mitigation measures;
- Mitigation measures for light intrusion on adjacent properties;
- Maintaining current traffic flows
- Wetlands identification;
- Best Management Practices (BMPs) for environmental compliance, including but not limited to pollution prevention, erosion, sedimentation, and dust control measures to maintain water and air quality;
- Groundwater protection requirements;
- Clean Water Act (CWA) regulations and surface water protection requirements;
- Residential noise impact reduction procedures;
- Air quality and dust control requirements;
- Procedures and precautions in the event skeletal remains or other archeological or paleontological resources are discovered;

Chapter 3: Environmental Management

- Procedures and precautions in the event of spills or discovery of hazardous materials, unknown chemicals or contamination;
- Threatened or Endangered Species or sensitive habitat protection measures;
- Hazardous Materials brought on site;
- Hazardous Materials encountered on site;
- Hazardous Materials Storage and Disposal Provisions;
- Identification and abatement of Asbestos-Containing-Materials (ACM);
- Preparation of Investigative Work Plans (IWP), and Site Investigative Reports (SIR) to adequately characterize the extent of the contaminated media;
- Remedial Action Plans;
- Emergency Spill Procedures;
- Certification Requirements;
- Medical Surveillance Program; and
- Exposure Protection.

3.7 Audit

Supporting Quality Management Staff

The Quality Manager is responsible for establishing and maintaining a system of internal audits and will be responsible for training and supervision of all internal auditors. Internal quality audits will be performed by the Quality Management Staff comprised of qualified personnel who are independent of those having direct responsibility for the activity being audited. The Quality Manager will ensure that audit results are recorded and brought to the attention of appropriate personnel (e.g. General Manager). Managers responsible for the activity being audited will ensure that prudent and timely corrective action is taken to resolve all identified deficiencies. Follow up audits will be used to verify the corrective action taken and its effectiveness. If any recurring problems exist, they will be brought to the attention of the General Manager. Quality audit results will also be used as a tool to review and implement continuous improvement to the Environmental Compliance. The Quality Management Team Key Personnel include:

- Design/Construction Quality Manager
- Quality Control Leads
- Quality Control Technicians
- Quality Control Laboratory Technicians

Chapter 3: Environmental Management

3.8 Document Management

Maintenance of Records and Document Management Procedures

Quality Records are objective evidence that specified quality control procedures and quality assurance processes were performed. These records are to be submitted in accordance with Environmental requirements. To ensure accuracy, completion and quality in necessary submittals, all environmental records, must serve as evidence (together with all applicable checklists) that environmental control was performed and must be handled following any of these procedures:

- **Document and Data Control Procedure:** Sets forth guidelines to ensure that the relevant documents are available at the locations at which they are needed and that obsolete documents are removed from the system and replaced with the latest versions to avoid inadvertent use. The Quality Manager will maintain a list of all Quality Documentation with current issue status. The Environmental Compliance Manager will also keep a list of all environmental documentation. Documents will reside in the Document Control.
- **Construction Management Procedure:** Sets forth guidelines to ensure the execution and supervision of the constructed works, including that of all subcontractors, self-performed work, vendors and suppliers, are in accordance with the provisions of the Design and Build Agreement. This procedure covers all construction activities undertaken on contracts. This will include procurement of material and supplies, directly performed work, and subcontracted work.
- **Control of Quality and Environmental Records Procedure:** Sets forth guidelines to ensure that Quality and Environmental Records are identified, generated, distributed and stored for the specified period. Identifies the primary responsibilities and principles used by the D&B Team for indexing, filing and retrieving Quality and Environmental Records generated during design, procurement, and construction phases of the Design and Build Agreement.

Environmental Documentation

The D&B Team will make the following submittals, to TxDOT and to Governmental Entities as directed by TxDOT and required by Contract documents and Environmental Approvals:

- CEPP component parts
 - Environmental Management System
 - Environmental Compliance and Mitigation Plan
 - Environmental Protection Training Plan
 - Hazardous Materials Management Plan
 - Communication Plan
 - Construction Monitoring Plan
 - Recycling Plan
- Weekly Environmental Monitoring Reports;
- Pre-Construction Inspection Report (Construction, Operations, and Maintenance Monitoring Plan);

Chapter 3: Environmental Management

- Investigative Work Plans, Site Investigative Reports, and Remedial Action Plans as necessary for Hazardous Material discovery/remediation;
- Section 404 Permits
- Section 401 Certification submittals to support TxDOT Section 404 Permit Applications;
- Water Well Impacts and Requirements
 - If well is encountered prepare SOP for plugging and abandonment of wells
 - If water well has become contaminated, prepare a corrective action plan for TxDOT approval
 - Submit a "Plugging Report"
 - Submit alternate plugging procedures if the method prescribed in the CDA is not used;
- Designs for wetland and floodplain mitigation measures;
- Mitigation or resource monitoring reports, as required by resource-specific mitigation plans;
- TPDES Construction General Permits
- Storm Water Pollution Prevention Plan (SWPPP) and amendments, as required, to reflect Project development and staging;
- Completed Permit applications and permits as issued; and
- Training Documentation.

The schedule for submittals will be in accordance with the requirements set forth previously in the CDA or as necessary to maintain compliance with all applicable Laws, Rules, and Environmental Approvals granted for the Work.

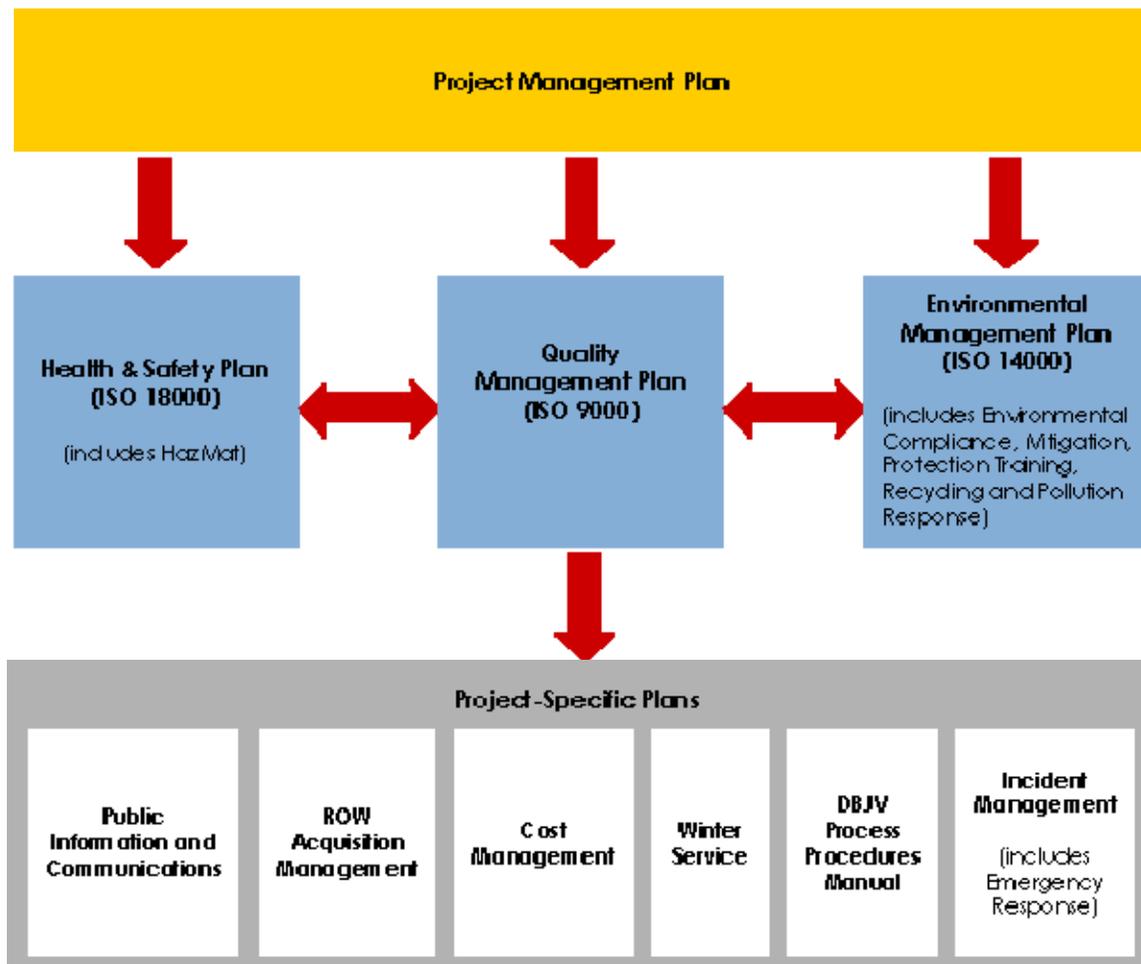
B. Operations and Maintenance Phase

This Environmental Management Plan summarizes Environmental Improvement and Maintenance schemes which are undertaken upon the network. It incorporates Environmental Compliance Mitigation, Environmental Protection Training, Recycling, Pollution Response and Spill Prevention Control.

The Environmental Management Plan is a key component of our mandatory Integrated Management System (IMS) that embodies ISO 9001:2000 Quality Management Systems, ISO 14001 Environmental Management Systems and our Safety Management System, which complies with the requirements of OHSAS 18001.

Chapter 3: Environmental Management

Figure 31: Integrated Management System



Chapter 3: Environmental Management

Aims

- Identify the client's commitments towards environmental management in addition to considering any relevant legislation, local action plans, stakeholder influence, best practice, technical guidance and any other specifications.
- Present the strategy for maintaining and enhancing the environment of the network.
- Define the management of the soft estate for the network.
- Outline the program summarizing the mechanisms used to achieve the objectives set within this plan.

Objectives

- Integration of the network into the surrounding landscape
- Improving the visual amenity of the network
- Increasing the biodiversity of the network
- Compliance with any existing management strategies, for example the 'tree health and safety strategy' and the 'noxious and invasive weeds strategy'.
- Compliance with ministerial targets and client requirements
- Ensuring the maintenance of the existing landscape.
- Ensuring mitigation activities are undertaken in order to minimize the impact of the network on the surrounding environment.

Definitions

Table 37: Environmental Management -Specific Definitions

CWA	Clean Water Act
Developer	Cintra
ECI	Environmental Compliance Inspector
ECM	Environmental Compliance Manager
ISO 14001	International standard for Environmental Management
RTA	Road Traffic Accident

Table 38: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.



Chapter 3: Environmental Management

Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base,

Chapter 3: Environmental Management

	Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

References and Standards

Table 39: Technical Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required to be used by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.

Chapter 3: Environmental Management

	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/oep.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 40: Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.

Chapter 3: Environmental Management

	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 41: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
Water Quality Control	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	TCEQ - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgt.html)	Provides rules, policy and legislation for water quality control.
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tlpge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.



Chapter 3: Environmental Management

Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/sources/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.
Air Pollution	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.
	TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf	Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language useful in developing environmental documentation.
	TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf	Describes air quality requirements with respect to project planning.
	TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html	Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.



Chapter 3: Environmental Management

Vegetation	Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm	Issued to prevent and control the introduction and spread of invasive species
	Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf	Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development of landscape and aesthetic components for different classifications of roadway facilities.

Table 42: Required Operations and Environmental Permits

Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc.htm	Table 4.1 in Book 2A lists all environmental permit requirements and the name of the coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.
Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm	Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.

Table 43: Insurance Standards

Comprehensive Development	Section 9 provides the insurance
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Chapter 3: Environmental Management

<p>Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.</p>
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Systems and Procedures

For systems and procedures relating to this Plan, please refer to the Quality Management Plan, which includes inter alia procedures to cover the following:

- Control of quality records
- Management reviews
- Resource allocation
- Measurement of customer satisfaction
- Control of nonconforming products and services
- Internal audits
- Continual improvement

For EMP-specific procedures please refer to Section B and Appendices below.

Environmental Roles and Responsibilities

The Developer will designate an Environmental Compliance Team (ECT) through the Environmental Compliance Manager (ECM) to prevent, minimize, and / or correct any violation or non-compliance with Environmental Approvals. The ECT will include the following personnel:

Environmental Compliance Manager (ECM)

The Developer will designate the ECM for the Work. The ECM will coordinate all issues with TxDOT and the Project manager. If the ECM, TxDOT and the CEO are unable to reach agreement over an issue, then the ECM will issue written notification of the concern to TxDOT and the Developer including actions and recommended solutions to the problem.

The ECM will also:

- Direct the ECT and report back on compliance of work to Environmental Standards. All violations will be immediately reported by the ECM to TxDOT and the Developer.
- Coordinate with TxDOT, the Developer and the appropriate Government Entities.

Chapter 3: Environmental Management

- Submit necessary Environmental documentation and monitoring reports to the appropriate Government Entities and TxDOT, to the extent necessary to maintain compliance with the applicable Environmental Approvals.

Environmental Training Staff

The Environmental Training Staff will develop, schedule and conduct environmental awareness and environmental compliance training for the Developer's personnel. This will be under the direction of the ECM.

Environmental Compliance Inspectors (ECI)

The ECI's will conduct on-site Environmental Monitoring, prepare documentation, and report to the ECM daily all violations, compliance and non-compliance of Environmental Approvals.

The ECI will then report any violation or non-compliance that represents an imminent danger to human health or the environment and will advise on appropriate recommendations and corrective actions, including the stoppage of work if necessary.

Project Water Quality Specialist

The ECM will designate a Water Quality Specialist who will provide expertise in permitting delineation, storm water pollution prevention, and the protection of jurisdictional waters during the course of the Work.

The Developer will ensure that the Water Quality Specialist has at least 5 years experience on similar projects.

Hazardous Materials Manager

The ECM will designate a Hazardous Materials Manager to provide expertise in the safe handling of Hazardous Materials required to perform the Work or discovered/impacted during the duration of the Agreement. The Hazardous Materials Manager will undertake activities such as the following:

- Schedule and / or conduct training for the Developer's employees
- Verify all employee certifications prior to and required for any handling of hazardous materials.
- Maintain records of all incidents involving Hazardous Materials and notify the ECM, TxDOT and the appropriate authorities of any such incidents.

The Developer will ensure that the Hazardous Materials Manager is a qualified professional with 40 hour HAZWOPER certification. This individual will have at least 5 years experience in similar projects in the following areas:

- Development of IWPs, SIRs and remedial action plans or equivalent reports necessary and acceptable to the TCEQ in material discovery and remediation efforts to Hazardous Materials.
- Experienced in TCEQ guidance for the investigation and remediation of Hazardous Materials under the TCEQ Voluntary Cleanup Program and Texas Risk Reduction Program Rules.

Chapter 3: Environmental Management

Comprehensive Environmental Protection Plan

Environmental Management Systems and ISO 14001

As a leader in the sector, there is a commitment to working with our clients and suppliers in taking positive action to reduce and manage environmental impacts and to develop solutions that incorporate sound and sustainable environmental management. We aim to provide environmental awareness through our services, to improve environmental performance and create a business advantage for our clients.

An Environmental Management System (EMS) has been developed which reflects the principles of the International Organization for Standardization (ISO) 14001:2004. The EMS provides a structured, documented approach to managing a business's environmental performance and responsibilities. It is a management tool which enables us to implement our environmental policy, achieve continual improvement through the setting and review of environmental objectives, identify the environmental impacts we can control and those which we can be expected to influence and to communicate environmental standards across all aspects of the business

In implementing an EMS that is compliant with ISO 14001:2004, the company is able to successfully:

- Minimize our impact on the environment.
- Identify environmental risks in advance.
- Demonstrate compliance to environmental legislation
- Provide value through ensuring sustainable environmental practices
- Undertake environmental systems reviews through internal audits and monitoring activities
- Meet our client's requirements.

Through establishing an EMS the business is provided with:

- Environmental Policy
- Environmental Management Plan
- Objectives and Targets
- Identification of Environmental Impacts
- Commitment to Continual Improvement
- Identification of all relevant Environmental Legislation
- Environmental Training Plan and Competency Matrix
- Compliance and Mitigation Plan
- Incident Control Plan
- Construction Monitoring and Inspection Records

Chapter 3: Environmental Management

Environmental Assessment Process

All highway work goes through some form of Environmental Impact Assessment. The impacts, whether beneficial or detrimental, are assessed in accordance with any legal, contractual and other requirements. Where necessary public and stakeholder consultations will occur in line with the current regulations. The overall impact of the work is calculated by taking into consideration the following topic areas:

- Air Quality and Dust Control
- Ecology and Nature Conservation
- Landscape and Townscape
- Traffic Noise and Vibrations
- Non Motorway Users
- Water Environment and Drainage
- Vehicle Travelers and Journey Ambience
- Additional Land Take and Land Use
- Geology and Soils
- Cultural Resource
- Policies and Plans
- Hazardous Materials Management and Material Storage
- Waste Management and Minimization
- Asbestos-Containing-Materials (ACM)
- Mitigation of excess or runoff of materials from snow and ice prevention activities, NPDES
- Permits and Environmental Approvals obtained as needed for maintenance and new construction

Environmental Improvement Schemes

Environmental improvement schemes include any project that involves an improvement to the existing network, or the creation of additional environmental assets around it. Improvement schemes can be undertaken within any of the environmental disciplines that affect the network. The following outlines the generic aims of these improvement works and lists examples of those undertaken.

Air Quality and Dust Control

Roadway projects within the State of Texas must be in conformance with the State Implementation Plan in regards to Air Quality. Conformance with the SIP will ensure that the IH 635 Managed Lanes Project does not lead to emissions violating the National Ambient Air Quality Standards. Additionally, steps shall be taken to reduce airborne dust. Such steps shall include appropriate highway designs to influence vehicle operation plus controls on the performance of contractors. Contractor controls shall be adjusted as needed based on construction traffic, forecasted wind speeds, and persistent dry weather conditions.

Chapter 3: Environmental Management

In order to ensure that the f air quality standard is not made worse through highway activities, air quality monitoring sites are established around the network. The results are then analyzed alongside information on congestion and traffic levels to establish if a correlation exists and suitable mitigation is undertaken accordingly. In addition to this works are monitored to guarantee best practice is being undertaken and ensure compliance with national standards to keep the affect on overall air quality to a minimum, for example through the implementation of emission reduction and dust control measures.

Asbestos Containing Materials (ACM)

Steps will be taken to identify, inspect, notify, amend notifications as necessary, pay notification fees and abate asbestos found on any structure, including but not limited to bridges and buildings, in accordance with appropriate or relevant regulations or guidance.

Ecology and Nature Conservation

These works are set to enhance conservation and biodiversity. This is achieved through landscape design and management in compliance with applicable environmental regulations, including using native plant species in the landscaping and in the seed mixes where practicable in accordance with Executive Order 13112 on Invasive Species, and by avoiding, minimizing, and mitigating for impacts to Threatened and Endangered Species as per the Endangered Species Act. Where required ecological mitigation activities are conducted to minimize the impact of works upon the habitat and plant and animal communities.

Landscape and Townscape

One of the main objectives of the majority of landscape improvement schemes is to integrate the road and its associated traffic, earthworks, bridges, lighting and other equipment into the existing landscape. In order to achieve this, the local character and quality of the surrounding landscape is considered prior to any management works. In addition to general maintenance activities, integration of the network is achieved through the use of the following mechanisms:

- Additional screen planting
- Offsite planning and Revegetation
- Linking management to any local community landscape objectives
- Site-specific landscape improvements

In addition to the above, another landscape management technique that is used is ornamental planting. This can be used to achieve landscape integration, improve visual amenity, enhance the built environment, provide visual screening, link in adjacent open spaces or to provide a high value gateway location. Ornamental planting would also be in compliance with Executive Order 13112 as discussed above.

Light intrusion schemes are also targeted at reducing the visual intrusion of the highway lighting systems upon the surrounding townscape and non motorized users. Improvement schemes are put in place to replace the standard lighting systems with high pressure sodium (SON) full cut off lanterns which reduce glow

Chapter 3: Environmental Management

Landscape management is undertaken in line with the network 'Landscape Management Strategy'.

Traffic Noise and Vibrations

Noise and vibration improvement works take practical steps to minimize noise and disturbance around the highway. These include providing appropriate highway designs and installing noise walls where reasonable and feasible. All proposed noise walls shall be constructed during the early phases of construction to help minimize construction noise. Prior to initiating construction work on any portion of Frontage Roads, Managed Lanes or General Purpose Lanes located in the vicinity of a portion of a required noise wall, the Developer will construct the required noise wall. Noise levels of construction activities are also monitored to guarantee best practice is being undertaken and ensure compliance with relevant legislation and local standards.

Non-Motorized Users

When assessing the impact of the network, consideration needs to be given to non-motorized users such as pedestrians, cyclists and equestrians, in addition to the overall effect of the road upon the local community. A range of engineering improvements will be undertaken to improve facilities for non-motorized user groups. These include among other things, keeping and maintaining bicycle and pedestrian and sidewalks constructed as part of the IH 635 Managed Lanes Project.

Water Quality, Waters of the U.S./Wetlands and Floodplains

Practical steps to manage the drainage of the network will be implemented to minimize the impact of traffic and any maintenance operations on watercourses, groundwater and flooding. These works shall conform with any changes to national regulations and standards relating to the water environment and keep in line with such legislation.

The existing drainage system is assessed and any necessary improvements to the original design undertaken to minimize the impacts from the highway upon the water environment. Issues relating to water quality and discharge include the provision of pollution control devices, drainage system capacity improvements and increasing of the retention time to allow for treatment, especially within the Trinity River and other floodplains. In addition to this, schemes are undertaken in the field of storm flow management, which look into the problems associated with flash flooding. If required, a Corridor Development Certificate (CDC) will be obtained from the local floodplain/CDC administrator for any development within the Trinity River floodplain designated as a regulatory zone.

Another aspect of drainage improvement schemes involves the testing of new technologies and methodologies, a current example of which is the implementation of vegetative drainage systems, which would provide the network with not only a drainage feature but an ecological asset.

Maintenance and operations with the potential to impact natural or constructed wetlands along the IH 635 Managed Lanes Project shall be in accordance with provisions of Section 404 of the Clean Water Act. Extensions or reauthorizations of Permits covering construction of the project shall be obtained as needed.

Ground water levels shall be monitored at selected locations, providing assurance through the RLM of a 10 year Residual Life for groundwater.

Chapter 3: Environmental Management

Vehicle Travelers and Journey Ambience

Landscape management is undertaken to increase the visual amenity and variety of the highway ROW to improve journey ambience. The aesthetic character of the ROW is considered prior to any management works, along with the subsequent impact upon the road user of the works. In addition to general maintenance programs, specific projects are tailored to improve the visual amenity of the network.

To provide a safer environment for vehicle travelers various measures are undertaken, including ensuring traffic control centre monitoring devices (such as CCTV cameras) are not obscured by vegetation and hence enabling a more effective response to breakdowns and RTAs.

Cultural Resource

The ECM will designate personnel in the event of accidental discovery or other needs arise for compliance with the National Historic Preservation Act. Works are undertaken to minimize the impact of the road network on cultural heritage features by, for example, providing a visual screen in order to prevent the highway from falling into the visual envelope and disrupting views from or to the feature.

Environmental Maintenance

Environmental maintenance activities are undertaken annually to ensure the upkeep of any existing environmental assets and to allow them to function as originally intended.

Maintenance routinely relies on a range of generic techniques and management practices which are dependant on the feature in question. The various techniques and management practices used follow best practice guidelines and comply with any legal, contractual or other requirements.

Landscaping, Invasive Weeds and Tree Management

The Developer's landscaping design will focus on intersections and landscapes, with at least two-thirds of all intersections landscaped. Per Executive Order 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, planting with TxDOT-approved seeding specifications will occur as early as possible. Invasive weeds will be routinely controlled where legal considerations require the implementation of effective control measures or where the lack of effective control would have a detrimental effect on the ROW.

As specified in the Technical Provisions, the Developer will place one ornamental, evergreen, or flowering tree, at least six feet high, per 750 square feet of plantable ROW. Trees will be placed in accordance with TxDOT's minimum clearance zones. The Developer will place one deciduous tree per 1,000 square feet of plantable ROW. Trees will be placed in the ROW between mainlines and frontage roads

Chapter 3: Environmental Management

Ecology and Nature Conservation

Ecological maintenance works include techniques to sustain the biodiversity of an area through the use of targeted habitat management and maintenance of nature conservation assets such as roosting/nesting boxes and wildlife tunnels.

Natural resource maintenance includes wildflower cuts, species rich hedgerow and woodland edge management and maintenance of any existing wildlife corridors which link otherwise isolated habitats. In order for this management to be effective, these works are programmed annually in accordance with the network 'Biodiversity Management Strategy'.

Water and Drainage

Stormwater control maintenance is imperative to ensure the drainage system remains functional and prevents network flooding or pollution of adjacent water bodies. Examples of stormwater maintenance include dredging of detention ponds and associated ditches, clearance of interceptors and infalls, and cleaning and repairing of pollution control devices. In addition to this regular maintenance of ROW vegetation is undertaken to ensure clear access to drainage features.

As part of the legal and contractual commitments which are considered a requirement for running the network, a SWPPP has been put in place to allow for an efficient response to pollution incidents. In order to ensure that the plan works as designed, pollution control devices must be maintained to a standard to allow for ease of use.

Traffic Noise and Vibration

Any noise mitigation features, including noise walls, will be maintained to ensure they perform their intended function.

Waste and Hazardous Materials Management

An environmental commitment exists to provide sustainable management of the network. For buildings to be built for this project, the goals of the Leadership in Energy and Environmental Design (LEED) program shall be followed. This incorporates where possible the use of green, sustainable products throughout all aspects of the business. A waste minimization program is put in place to encourage reduction of material use. Where this is not appropriate the recycling of waste shall be encouraged. Additionally, the carbon footprint of activities is assessed and where possible offset accordingly.

To ensure sufficient protection of the environment during works a Hazardous Materials Management plan is implemented. This incorporated the identification of hazardous materials along with the appropriate storage, use and disposal of such materials, along with mitigation activities, incident management and named individual responsible for implementation. This plan works alongside the incident control plan and is tested and monitored in accordance with the Environmental Management System.



Chapter 3: Environmental Management

Pollution Response Plan

The objective of the Pollution Response Plan is to provide a functional and reliable source of information in case of spillage on the roadway for incident management teams to effectively mitigate the risk of pollutants entering the natural water course.

This plan is to be developed as a Commission specific document for the IH 635 Managed Lanes Project, in partnership with Fire, Rescue and Environmental Agencies. Storm water pollution prevention plans will be fully developed in accordance with NPDES 1990, Storm Water Pollution Prevention Plans, CWA of 1972.

IH 635 Managed Lanes Project inventory and local information will allow us to develop these plans within the first 3 months of the concession, updating this document in partnership with the emergency services as the construction phase introduces changes to the infrastructure and maintainable inventory.

The developed plan will show position and operation of outfall control devices, documenting drainage catchment areas and extents of vulnerable aquifers.

This plan serves to highlight the importance of routine maintenance of pollution control devices and all development of strategic improvement where pollution risk exceeds the existing controlling asset.

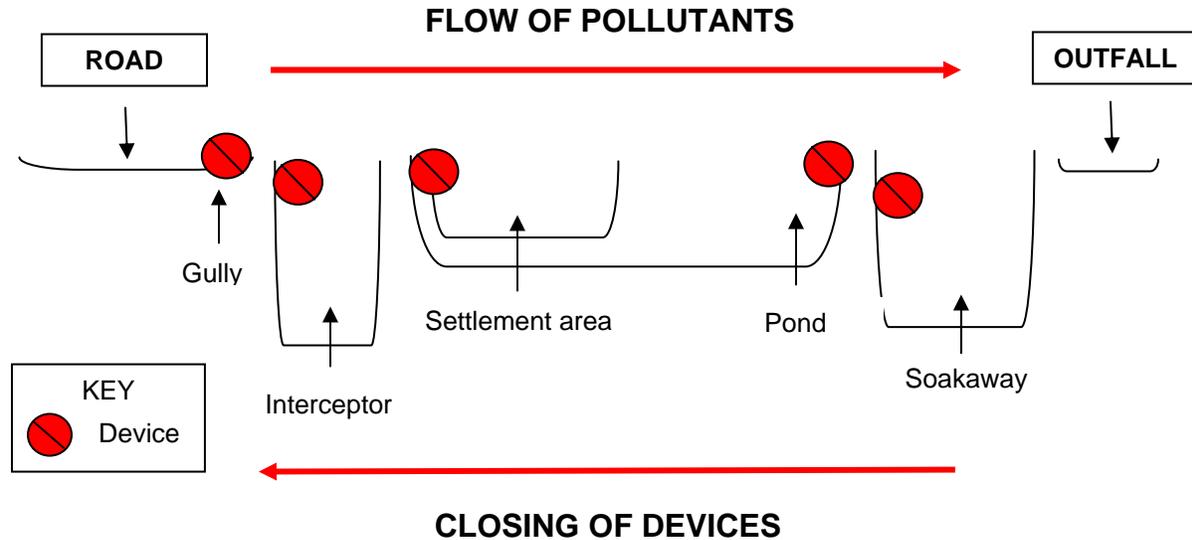
The completed plan will be shared with the emergency services as well as our Road Patrol, documenting each outfall control device, location, operation and maintenance requirement.

Spill Response Procedures

When a spill occurs on the network use the procedure below to contain and remove the pollutant in order to prevent discharge into local watercourses. The structures shown may or may not be present between the road and the outfall.

Chapter 3: Environmental Management

Figure 32: Pollution Prevention Devices



Phase One – Spill Containment

- Commence on-road containment using Spill kits and Jetter units.
- Working from the outfall and moving towards the road, close all devices present as instructed within the PRP document. This will contain the spill within the drainage system.

Phase Two – Cleaning and Reopening

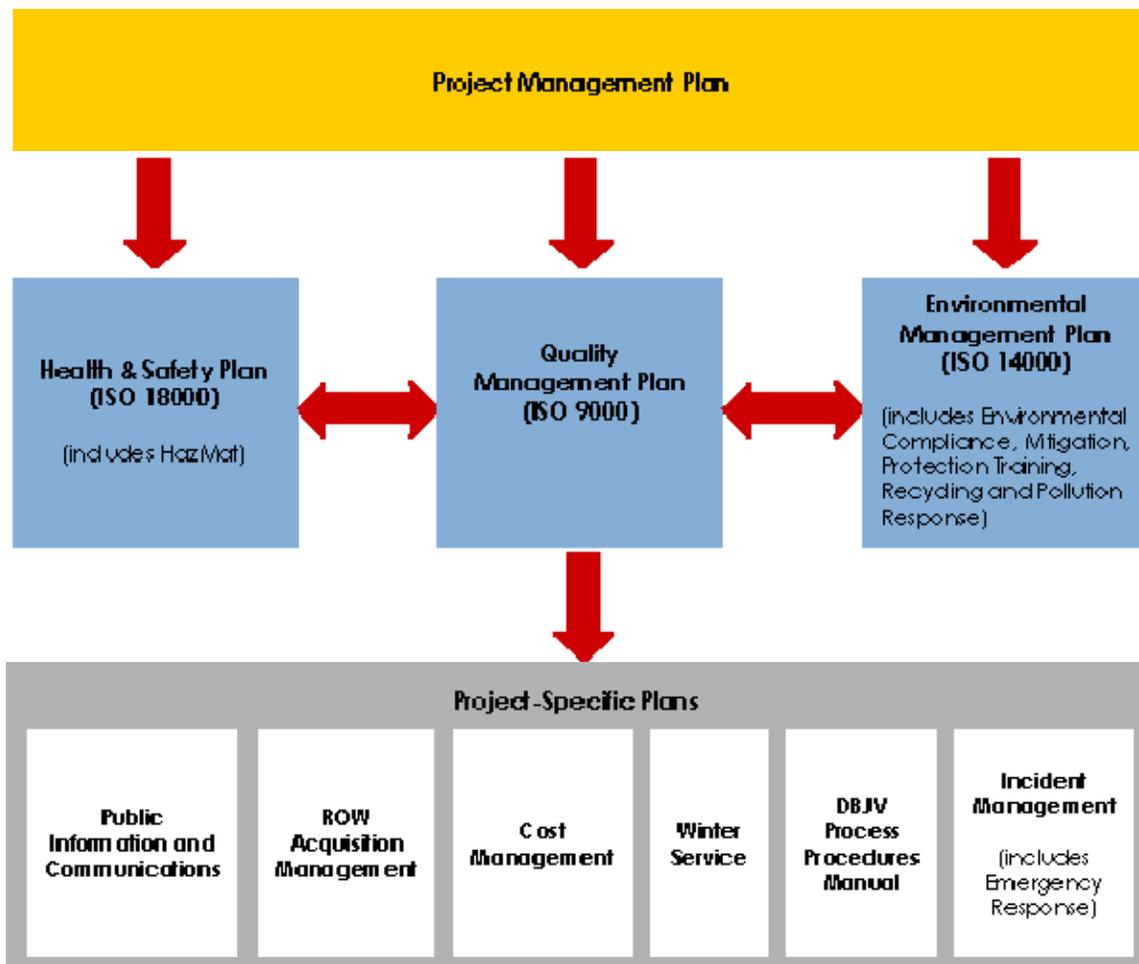
- Once the spill is contained inspect drainage structure for presence of pollutant.
- Inspect structures working from the outfall towards the road.
- If the pollutant is present undergo cleaning of the structure.
- Once all structures have been checked and are free from the pollutant, reopen devices.

Chapter 4: Public Information and Communications

CHAPTER 4 PUBLIC INFORMATION AND COMMUNICATIONS

The preliminary Public Information and Communications Plan (PICP) details the procedure for communicating within the Concession company ('the Developer') and externally with TxDOT and the surrounding community. This procedure explains how to respond to unexpected requests for information, communicate changes to essential and necessary personnel, and notify affected stakeholders before and after changes to the Comprehensive Development Agreement (CDA) Documents. The PICP is a key component of our Integrated Management System (IMS), shown in Figure 33, and forms part of a collection of project-specific plans.

Figure 33: Integrated Management System



Sixty days prior to the Notice to Proceed 2 (NTP2), the Developer will submit a complete PICP to TxDOT. This PICP will be based off of the preliminary plan set forth in this document. Once approved by TxDOT, the final PICP will guide the Developer's communications during the construction, operation and maintenance phases of the IH 635 Managed Lanes Project. The PICP will be flexible and responsive to changing needs and conditions

Chapter 4: Public Information and Communications

throughout the life cycle of the project. The Developer will be mindful of local environmental conditions as well as cooperate with TxDOT to amend the PICP as required to suit circumstances yet unforeseen. This may include tailoring public information to minimize motorist impact from the project while still ensuring full compliance with any audit or review findings that would better serve the greater community.

The Developer is committed to constantly improving communications to all stakeholders and the public at large. We value the importance of clear, honest, timely and relevant communications. We will undertake a planned and sustained communications approach to best support and deliver a first-class service to both our client and customers during the operation of the IH 635 Managed Lanes Project.

We understand the importance of an effective and credible public communication program that serves to educate the community to overall project goals, public benefits and project timelines. The IH 635 Managed Lanes Project will positively affect the quality of life and economic well-being of North Texans for years to come.

The objectives of the Public Information and Communications Plan are as follows:

- Establish the organization as a first-class entity dedicated to ensuring credible and effective public education and stakeholder communications in support of the project lifecycle within the entire community of service. ;
- Establish protocol to coordinate with regional stakeholders regarding dissemination of all public information.
- Enact external and internal communications structures, procedures and practices to enable an efficient two-way flow of information that fosters a high level of public confidence. The project staff will be required to go through procedure training and sign an agreement to abide by highest standards of policy;
- Respond to client, customer and group concerns and ensure that the Organization's procedures, policies and practices are open, transparent and accountable;
- Anticipate, plan for and respond to public relations issues in support of Developer and TxDOT initiatives to ensure and maintain public trust and support; and
- Ensure that the organization consults and coordinates with regional stakeholders. The Project successes and lessons learned are documented and then communicated with all individuals within the organization and key stakeholders across the region.

Definitions

Table 44: Communications-Specific Definitions

Communications Plan	Describes the processes and procedures for communication of Project information between the Developer's organization and TxDOT.
Communications Strategy	Set of communication policies for the IH 635 Managed Lanes Project, making use of all the technology and equipment available for this purpose.
Organization	The Developer's organization, including any Affiliates and Contractors that have an adjacent property interest or connecting roadway.
Project Intranet	Internal Project website with restricted access for stakeholders in which

Chapter 4: Public Information and Communications

	selected project-related data will appear for consultation and download.
Customer Groups	Media, Governmental Entities, general public residing or working within the general vicinity of the Project, general public traveling within or across the limits of the Project, business owners within or to the adjacent Project corridor, utilities, railroads, transportation authorities and providers affected by the Project.
TxDOT HCR	TxDOT's Highway Conditions Report online tool. The Developer will update HCR with any events occurring on the IH 635 Managed Lanes Project.

Table 45: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.

Chapter 4: Public Information and Communications

Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

References and Standards

Table 46: General References and Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation

Chapter 4: Public Information and Communications

		enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 47: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
Water Quality Control	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgt.html)	Provides rules, policy and legislation for water quality control.
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tlpge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.
Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental



Chapter 4: Public Information and Communications

		documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/resources/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.
Air Pollution	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.
	TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf	Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language useful in developing environmental documentation.
	TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf	Describes air quality requirements with respect to project planning.
	TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html	Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.
Vegetation	Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm	Issued to prevent and control the introduction and spread of invasive species
	Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf	Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development

Chapter 4: Public Information and Communications

of landscape and aesthetic components for different classifications of roadway facilities.

Table 48: Required Operations and Environmental Permits

<p>Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>Table 4.1 in Book 2A lists all environmental permit requirements and the name of the coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.</p>
<p>Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.</p>

4.1 Organization

Contractual Arrangements

The Developer anticipates entering into contractual arrangements with two public relations firms, ROSS Communications (ROSS) and the Margulies Communications Group (MCG), to support its public information and communication program. More specific information on these contractual arrangements will be provided in the final Project Management Plan.

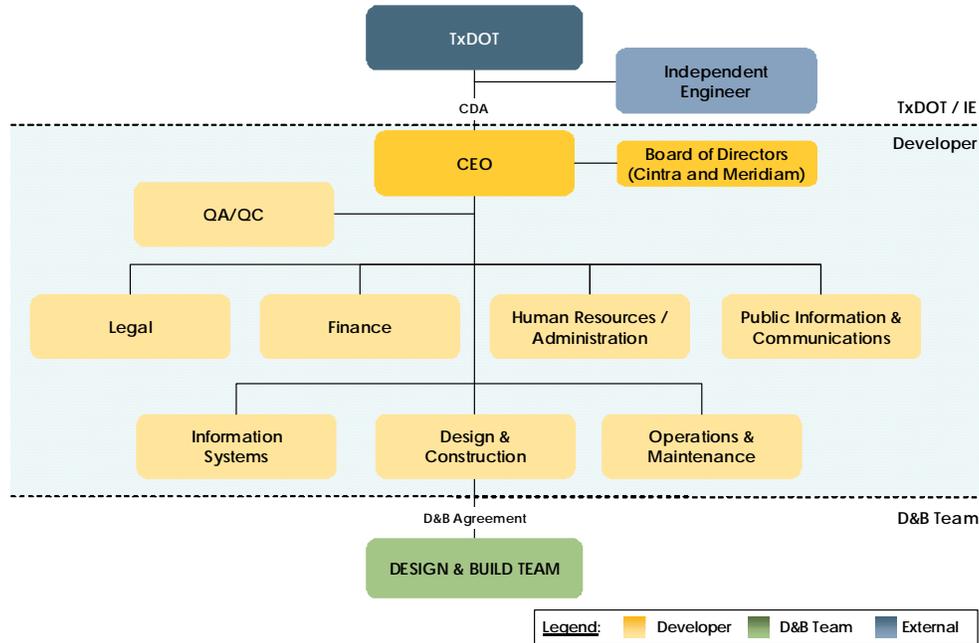
Organizational Structure

To ensure effective implementation of the philosophies and methodologies detailed in this Project Management Plan, the Developer proposes to form an organizational structure (see Figure 34) comprising the following main sub-organizations:

- Quality
- Design and Construction (D&C)
- Operations and Maintenance (O&M)
- Finance
- Information Systems
- Legal
- Human Resources and Administration
- Public Information and Communications

Chapter 4: Public Information and Communications

Figure 34: Level 1 Organization



It is the role and responsibility of every member of the Organization to communicate in an open and timely fashion. It is everyone's responsibility to pass on important and relevant information as well as take responsibility for receiving and reviewing pertinent information. All staff will be trained in and tested on the procedures within the Communications Plan and will sign agreements to abide by them. Key personnel with specific responsibilities relating to the Communications Strategy are:

- CEO;
- Public Information Manager; and
- Roadway Public Information Representative.

Internal Communication Channels

Various internal communications channels are available, but we must always consider which medium is most appropriate for each audience and work activity. Internal communication channels include:

- Printed information;
- Document Management System;
- Project Extranet;
- Team meetings;
- Advanced communication devices;
- Mailing lists;
- Events - conferences, workshops, meetings;

Chapter 4: Public Information and Communications

- Statistics, surveys and evaluations; and
- Questionnaires and feedback.

4.2 Personnel

Resource Plan

Please refer to Chapter 1, Project Administration for the Developer's general resource plan for the Developer and its Contractors.

Interaction with TxDOT and its Consultants

Project success depends on the Developer's ability to work with TxDOT towards common goals. Our relationship with TxDOT will stem from consistent, proactive and clear communications on project issues and solutions. TxDOT's involvement in these issues will be facilitated through project meetings, monthly reports, written updates, immediate notification on high-priority issues, a review process on public communications and participation as a member of the complaint resolution team. The Developer will define high-priority issues and review procedures in consultation with TxDOT.

The TxDOT CEO and the Developer Public Information Manager will be the key points of contact, coordination and communication. Direct communications between the respective TxDOT and Developer communications task leaders will also be essential. The CEOs will remain informed of the results of these communications through consistent communication with the communications task leaders.

Key Personnel

The Developer has selected and TxDOT has approved Rossanna Salazar, founder and managing partner of ROSS Communications, as Public Information Manager for the Project. Ms. Salazar has over 20 years of communications experience, including 15 years as a consultant, six years as a press secretary or spokesperson for some of Texas' top elected officials and two years as a journalist. She is a member of the board of the Texas Association of Business and advises the organization on issues such as transportation infrastructure development.

In addition to the Public Information Manager, the Developer will appoint a Roadway Public Information Representative and other personnel necessary to assist in preparation of meetings and communication with stakeholders. By assigning multiple individuals to these important tasks, the Developer exceeds TxDOT's requirement and guarantees the public access to individuals highly capable of responding to their needs.

Contractor and Third-Party Key Personnel

Two public relations firms, **ROSS Communications** (ROSS) and the **Margulies Communications Group** (MCG), will provide public information and communications services. Founded in 1993, ROSS is an Austin-based public affairs and strategic communications firm serving local, state and national clients. ROSS offers its clients



Chapter 4: Public Information and Communications

customized solutions for external and internal communications; media relations and media training; positioning; issue management; grassroots advocacy and coalition building; creative services; government relations; message development; news story development, meeting facilitation and online communications.

MCG is a Dallas-based firm specializing in media relations, crisis prevention management, litigation support and media interview training. Since 1986, MCG has provided strategic public relations counsel to and federal, state and local governments; Fortune 500 corporations; emerging growth companies; trade associations; marketing cooperatives and non-profit organizations. MCG's founder and president, **David Margulies**, offers over 30 years of experience as a strategic counselor and award-winning journalist. In addition to obtaining positive media coverage for his clients, Mr. Margulies has helped them successfully navigate some of their most difficult business crises and avoid negative publicity.

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Margulies Communications Group

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Résumés for Rossanna Salazar and David Margulies are included following this page.

Chapter 4: Public Information and Communications

Rossanna Salazar

Public Information and Communications

Ms. Salazar has more than two decades of practical and successful experience in the field of communications. She founded ROSS Communications in 1993, after working for a Texas governor, a future Texas governor and a soon-to-be U.S. Senator. ROSS Communications is an Austin-based, public affairs and strategic communications firm serving multi-national, national, state and local clients. Ms. Salazar has built a team that works effectively at all levels of government, demonstrating a significant understanding of the people and channels that drive the political process.

ROSS Communications develops customized solutions for its clients to facilitate communications and media relations. Services offered include issue management, media relations and media training, positioning, grassroots advocacy and coalition building, creative services, government relations, message development, external and internal communications, news story development, online communications and public opinion research.

Experience

1993 – Present, ROSS Communications, Founder and Managing Partner

- Develops customized solutions to facilitate communications and media relations.
- Advises legislators, multinational companies and trade associations on media relations outreach, earned media strategy and development, and grassroots organizing and coalition building.

1993, Kay Bailey Hutchison, Senate Campaign, Press Secretary

- Served as Press Secretary to the successful first U.S. Senate campaign of Kay Bailey Hutchison.

1991 – 1992, Texas Agriculture Commission, Texas Department of Agriculture, Adviser/Chief Media Spokesman

- Chief media spokesman for Agriculture Commissioner Rick Perry, now Governor of Texas.
- Served as a member of Mr. Perry's senior staff of advisers.

Education

BA, Journalism, University of Arizona, Tucson

Professional Associations

Board Member, Texas Association of Business

References

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Chapter 4: Public Information and Communications

- Responsible for development and implementation of a comprehensive public information campaign on the Department of Agriculture's marketing and regulatory programs.

1987 – 1991, State of Texas, Governor Bill Clements, Press Secretary and Chief Speechwriter

- Served as Press Secretary and Chief Speechwriter for Governor Bill Clements.

1984 – 1986, San Antonio Light, Political Writer

- Covered local government and politics topics.
- Served as a member of the newspaper's Editorial Board.

1983 – 1984, San Antonio Express, Reporter

- Covered local government affairs.

Chapter 4: Public Information and Communications

David S. Margulies

Public Information and Communications

As founder and president of The Margulies Communications Group (MCG), Mr. Margulies brings his experience as an award-winning investigative reporter and network journalist to his work as strategic counselor to some of Texas largest corporations, non-profits and government entities. In addition to obtaining positive media coverage for clients, he has helped clients successfully navigate some of their most difficult business crises and avoid negative publicity. He is frequently interviewed on issues involving litigation, crisis communications and media relations in major publications and on national television. MCG recently received two Best of Texas Awards from the Texas Public Relations Association, in recognition of the firm's long record of accomplishment in dealing with community relations and media relations issues.

Experience

1986 – Present, Margulies Communications Group, Founder and President

- Provides media relations support, media interview training, crisis prevention management and litigation support to corporations, non-profits and government entities.
- Works with leading attorneys and law firms throughout the U.S., providing media relations counsel for complex, high-profile litigation and preparing witnesses for courtroom testimony.
- Manages Continuing Legal Education Programs for clients such as the Texas Corporate Counsel Forum, The State Bar of Texas, The Dallas Bar Association and the Texas Center for the Judiciary.
- Coordinated national and international media relations for Oprah Winfrey during litigation in Amarillo.
- Provided public relations counsel for the defense in the litigation involving the estate of the late J. Howard Marshall and Anna Nicole Smith.

1976 – 1986, WFAA-TV, Senior Reporter, Investigative Reporter and News Anchor

- Anchored top-rated weekend newscasts.
- As a reporter, gained firsthand knowledge of how corporations deal with potentially negative publicity, which became the basis for work in media relations.

Education

MA, Journalism, University of Missouri

BS, Radio/Television Journalism, Southern Illinois University

References

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Chapter 4: Public Information and Communications

- Recognized by The Headliner's Club, The Aviation and Space Writers Association, The Associated Press, The State Bar of Texas and The Press Club of Dallas.

1975 – 1976, NBC News, Correspondent

- Served as a correspondent covering the Middle East.
- Accompanied the Syrian army as it invaded Lebanon and covered the Lebanese civil war at the height of the fighting.
- Features appeared on the Today Show and NBC Nightly News.

1974 – 1976, WGR-TV, Reporter

- General assignment and investigative reporter for NBC affiliate in Buffalo, New York.
- Winner of New York State Associated Press Award for Best Enterprise Story.

1971 – 1974, WOAI-TV, Reporter, Investigative Reporter and News Anchor

- Reporter, investigative reporter and news anchor WOAI-TV San Antonio, Texas.

Chapter 4: Public Information and Communications

4.3 Offices and Equipment

To be provided in final Project Management Plan.

4.4 Contractors

Contractor Control Procedures

The supervision of contractors is an important step to ensure that requirements are accomplished in a skilled manner. The contractors will be monitored as outlined in the concession Quality Management Plan .

Responsibility of Contractors and Affiliates

Each contract will include terms and conditions to ensure compliance with the requirements of the CDA Documents. Any terms that are specifically required by the CDA Documents will also be included.

However, the Developer is aware that retention of Contractors by the Developer does not relieve the Developer of its responsibilities and thus, the Developer is still responsible for the quality of the work, materials, and/or services provided by the Contractor.

Ensuring Contract Satisfaction

Contractors will be subject to the requirements of the concession Quality Management Plan.

Environmental Protection Training Plan Implementation

Please refer to Chapter 3, Environmental.

4.5 Interfaces

Liaison with the Public, Media and Other Customer Groups / Coordination with Stakeholders

The Developer's communication strategy is as key to the project success as its construction strategy. This is particularly true in the Dallas area, which, by any measure, has a well-informed and engaged group of transportation leaders. The Developer is acutely aware of these dynamics and understands that it will not only be viewed as TxDOT's representative on this project, but that it will also be a model for other future concession projects in the Dallas-Fort Worth area and around the state. Our goal is to exceed both TxDOT and the public's expectations by providing timely information, notifying Customer Groups in advance of potential impacts and

Chapter 4: Public Information and Communications

construction, gathering input from the public specific to the project, and responding to that input. This will result in the Developer building and maintaining public confidence, trust and goodwill.

The Public Information and Communications Plan (PICP) focuses on continuous communications and collaborative problem-solving. An abbreviated approach to public information and communications, as set forth in the CDA Technical Provisions, appears below.

Public Liaison

Facilitating Alternative Trip Planning During Construction

The Developer will use the following methods to help the public facilitate alternative trip planning during construction:

- Project Website: the website will contain the following features to facilitate trip planning:
 - e-mail / text message alert service
 - a schedule of street and ramp closures and openings and recommended alternative routes during construction
 - a real-time travel speed map
 - Traffic accident, flooding and special event information
 - live camera images or CCTV stills of various segments of the Project
- Highway Advisory Radio (HAR)
- Written and Video News Releases: to television, radio and print media
- Neighborhood Meetings
- Targeted Direct Mail: newsletters and construction updates
- Public Information Office and Project Hotline: staff and operators will be able to communicate current closures and alternative routes

Project Exhibits

To help the public understand the Project's scope and goals, and to aid in responding to questions, the Developer will provide high-quality displays and state-of-the art visuals such as an animated "virtual tour" of the Project alignment. Other exhibits will include subsurface portal locations, ancillary facility locations and aesthetic treatments, as required in the CDA.

Media/Group Tours

The Developer will invite the media and the public to tour the Project at important milestones, such as the "halfway complete" mark. The Developer will provide exhibits and media kits to make the tours as informative as possible. Individuals participating in walking tours will be provided with safety training and equipment. The Developer will also host special events to foster public goodwill, such as "Meet the Contractor" receptions, block parties, Kids' Day events and groundbreaking events.

Chapter 4: Public Information and Communications

Meeting Invitations

The Public Information Manager will serve as a gatekeeper for invitations to attend meetings and other events. He will communicate with the entities issuing the invitations and make arrangements for Developer personnel to attend. He will consult with management personnel to determine which personnel are most appropriate to represent the Developer at the event, work with these representatives to present a consistent message and help determine the types of exhibits and other written materials to provide at the event.

Customer Groups

The IH 635 Managed Lanes Project affects a broad population and many Customer Groups. The 17-mile project transects a populous urban section of Dallas and Farmers Branch. The project is important to elected leaders in these communities, landowners, business owners adjacent to the project corridor, other transportation providers, utility providers and a host of other specific groups and individuals. TxDOT, as owner of the project, is a critical stakeholder. The Developer team will continue identifying interested and affected Customer Groups. These groups will be included in a project database and a variety of communication strategies to keep these stakeholders informed of activities, solicit their questions and concerns and resolve project-related issues in a proactive manner will be used.

Customer Groups will be more likely to support the project if the Developer provides them with timely information, notifies them in advance of construction activities and possible impacts, alerts them to impacts on travel, offers alternative routes, and provides an opportunity to communicate directly with appropriate project staff. The PICP focuses on continuous communications and collaborative problem solving. Our approach to collaboratively working with Customer Groups to solve problems is not only preventative, but also necessary to keeping the project on time and within budget.

Types of Customer Groups

The IH 635 Managed Lanes Project affects a broad range of Customer Groups, as listed below. The Developer will continue identifying Customer Groups throughout the Project and will use a multiple outreach and communication strategies to keep them informed and understand their issues. Stakeholders will include:

- TxDOT
- Potential IH 635 Managed Lanes Project customers
- Landowners and business owners adjacent to the project corridor
- Surrounding neighborhoods
- Other transportation providers
- Utility providers
- The North Central Texas Council of Governments
- The Regional Transportation Council
- Dallas-Fort Worth Area Partners in Mobility
- The Dallas Regional Mobility Coalition

Chapter 4: Public Information and Communications

- Chambers of Commerce
- Elected officials (state, county, city)
- NTTA
- Local mass transit authorities (DART, The T, the Trinity Railway Express)
- BNSF Railroad

Emergency Services Vehicle Access

The Developer will maintain consistent communications with the fire, police, emergency services and motorist assistance agencies along the project alignment, as well as the Fire, Security and Life Safety Committee (FSLSC). The Developer will keep them informed about closures and other obstacles to emergency vehicle access and will seek their input on the most effective ways to communicate this information with them.

Business Driveway Access / Delivery Access

The Developer will compile a database of businesses within the corridor that may be impacted by construction and will conduct meetings with these businesses to discuss how acceptable driveway and delivery access will be provided. Affected businesses will receive written updates throughout the construction process and will receive phone/e-mail contact information for Developer personnel who can help them with access issues.

Bicycle, Pedestrian and ADA Mobility Access

Where bicycle, pedestrian and ADA mobility access are temporarily restricted during construction, the Developer will post signs in advance of and during closures suggesting alternative routes. In addition, bicycle and pedestrian facility closure information will be posted on the Project website and included in news releases to the media, neighborhood meetings and direct mail pieces. Public Information Office staff and hotline operators will be familiar with any obstacles to bicycle, pedestrian and ADA mobility access.

Noise Wall Workshops

The Developer will conduct noise wall workshops with property owners near proposed noise walls, to determine if the property owners will accept the proposed walls. Property owners will receive at least 30 days' notice prior to the workshop.

Media

Media Communications Plan

The Developer is committed to providing the media with immediate and ongoing access, through the methods shown below.

- The Developer will establish a working relationship with the media. The Developer will provide accurate and timely information to the media. In turn, the Developer will utilize the media to distribute project news to interested audiences.

Chapter 4: Public Information and Communications

- The Public Information Manager will serve as the Developer's media liaison, facilitating media access to needed Project information. The Public Information Manager will send appropriate local, state and national media contacts a media kit with his contact information. The Public Information Manager will continuously distribute news releases concerning closures and detours to television.
- The Public Information Manager will proactively arrange interviews and editorial board meetings and suggest photo opportunities and story ideas that will keep the Project in a positive public light. The Developer will work cooperatively with TxDOT and obtain TxDOT approval on media materials, as requested.
- The Public Information Manager will send news releases concerning closures and detours to television, radio and print media for use during early morning newscasts, afternoon drive-time broadcasting and newspaper publication.

Minimizing Traffic Impacts of Special Events

In advance of special events, the Developer will issue press releases and post notices on the Project website alerting the public to possible delays. The Developer will suggest allowing extra travel time, taking advantage of any shuttle services provided by the event organizers, or using alternate routes. During special events, Dynamic Message Signs will display travel time information to the event and will suggest which exit event attendees should use.

Public Information Manager

Data Management Program

The Developer will implement an Audience & Stakeholder Database that includes contact information for stakeholders and media contacts, plus records of all citizen communications (calls, e-mails, letters, etc.) and responses to these communications. It will include individualized communications protocols, and auditable trail of contacts made, minutes of meetings and details of concerns and issues as well as a register of inquiries and complaints. The database will contain an Electronic Comment Management System, which will record actions taken and correspondence with each individual.

Educating and training presenters

The Public Information Manager will conduct training workshops with Developer personnel likely to make presentations at public meetings and events. In addition to general presentation skills, these workshops will focus on consensus-building / conflict resolution, answering frequently asked questions, presenting a unified and consistent message about the Project and handling questions and comments that cannot be answered immediately during the meeting and require further follow-up.

Chapter 4: Public Information and Communications

Public Information Office

General

The Developer will maintain a Public Information Office for the Term of Agreement. In addition to providing maps and other needed information, designated team members will be available to answer questions and help resolve users' concerns.

Office hours

The Public Information Office will operate during the following hours:

Design-Build Phase:

- Monday – Friday: 7:00 AM – 7:00 PM
- Saturday: 7:00 AM – 5:00 PM
- Sunday: closed

O&M Phase:

- Monday – Friday: 8:00 AM – 6:00 PM
- Saturday: 8:00 AM – 4:00 PM
- Sunday: closed

Telephone hotline

The Developer will establish a 24-hour live project hotline to allow customers to call with questions or to register complaints during the Design-Build phase. During the O&M phase, operators will answer the hotline during normal business hours and a voice mailbox will allow callers to relay after-hours inquiries and complaints. The Developer's designated on-call manager will respond to emergency inquiries received after hours. Operators will return non-emergency calls received after hours the next business day.

Public Meetings

The Developer considers meetings with Customer Groups to be a crucial part of a successful PICP. These meetings will take the form of neighborhood-specific meetings, large community-wide gatherings, or meetings to discuss a specific topic, such as sound walls. The Developer will adhere to TxDOT requirements regarding public meetings, such as prior notification of Developer-initiated meetings and participation by the Developer in support of TxDOT-sponsored meetings. The Developer will exceed expectations of a typical public meeting by providing high-quality displays and state-of-the-art visuals such as an animated "virtual tour" of the Project alignment. The Developer will be prepared to respond to issues raised at meetings and through other channels. Topics will include design and construction issues affecting adjacent residential areas and businesses, such as frontage road configuration and noise and retaining walls.

Chapter 4: Public Information and Communications

Frequency and Format

The Developer will establish the frequency of public meetings based upon data gathering and analysis of public feedback. Comment cards will be available at all meetings. The Developer will carefully document questions and complaints and distribute them to appropriate personnel for thorough review and effective resolution.

Location

The final PICP will include a list of potential public meeting locations, in convenient locations near the Project site. Smaller stakeholder meetings will take place in the Public Information Office.

Cost

The Developer will bear all costs associated with Public Meetings.

Meeting Minutes

The Developer will document meetings with the public in official minutes, which will be distributed to TxDOT and the IE within five business days, and will require TxDOT approval before being sent to the appropriate Customer Groups. The minutes will include a full list of attendees including their affiliations and contact details, documentation of issues discussed and their solutions and description of remaining open issues with associated actions with the responsible individuals identified. The Developer will incorporate public meeting minutes into the Audience and Stakeholder database.

Briefings and Updates

The Developer acknowledges its responsibility to keep elected officials and public agencies updated on project developments. Briefings with the Dallas County Commissioners' Court and for the city councils of Dallas and Farmers Branch will be scheduled on a quarterly basis during construction, or whenever pertinent developments warrant. The Developer will also conduct briefings for appropriate entities such as the North Central Texas Council of Governments (NTCOG). Because several members of the Legislature from North Texas serve in critical positions regarding transportation policy, the Developer (in conjunction with TxDOT) will make a concerted effort to inform these officials at all critical junctures to ensure they remain supportive of not only IH 635 Managed Lanes Project, but also of the CDA model used to implement the project. The Developer will also prepare quarterly written updates and provide them to these same elected officials and any public agencies requesting them.

Emergency Event Communications

The Public Information Manager will take timely and appropriate action when informing TxDOT and the relevant Customer Groups in response to all emergency events. These may include such events as extreme winter conditions (ice / snow), vehicle collisions and Hazardous Material spills. The information will be disseminated through the appropriate media and will continue to be appropriately communicated until the situation has ended.

Chapter 4: Public Information and Communications

In all instances of unforeseen emergencies (i.e. without available advance warning), the Public Information Manager will inform TxDOT and the relevant Customer Groups within one hour of their occurrence. The Public Information Manager will disseminate this information in a timely manner, as soon as is practicable. The same will apply to emergencies where advanced warning is available. In both cases, the Developer will communicate information appropriately until the emergency no longer exists.

To communicate with Facility users during emergencies, the Developer will use a combination of the following methods, as appropriate:

- Dynamic Message Signs
- Highway Advisory Radio
- Emergency bulletins on Project website
- E-mail / text message alerts
- News releases to television, radio and print media
- Public Information Office and Project Hotline

Lane Closures

At a minimum of two weeks prior to lane closures or traffic switches that will be in effect for more than 24 hours, the Developer will provide TxDOT and appropriate Customer Groups with related information. For closures or switches less than 24 hours in duration, the Developer will give minimum of 24 hours' prior notice. The Developer will communicate this information via the appropriate methods. The Public Information Manager will input all lane closure information into the TxDOT HCR.

The Traffic Management Plan will include details of the overall approach to temporary lane closures and temporary road closures due to emergencies, summarized as follows:

- Temporary Lane Closures: For temporary lane closures, the following procedures apply:
 - When the Developer must close a lane for maintenance or an emergency, the Developer contacts TxDOT at least two weeks prior to the closure, immediately in the case of emergencies.
 - Maintenance lane closures are set outside of peak traffic hours and should not disrupt traffic. Lane closures that require closure of more than one lane occur at night when traffic is at a minimum.
- Temporary Road Closures: When an emergency occurs, the Developer will notify all local authorities of the situation, making it clear that the road is closed due to the emergency. The Developer will divert traffic from the Facility property and will advise local authorities on the reopening of the road. The Developer will use all available resources to expedite the reopening of the road and will advise local authorities of the actions taken and their results.

Chapter 4: Public Information and Communications

Disseminating Public Information

Broadcast methods

- Project website
- E-mail / text message alerts
- Highway Advisory Radio
- Written and video news releases to television, radio and print media
- Neighborhood meetings
- Targeted direct mail pieces / door hangers
- Public Information Office
- Project hotline
- Dynamic Message Signs and other signs

Project website

The Developer will execute a marketing program to promote the launch of the Project website. The website will be user-friendly and visually appealing and will allow visitors to e-mail questions directly to the Public Involvement Coordinator. The website will offer an option to sign up for e-mail / text message alerts, which will automatically notify users of traffic issues. The Developer will publish materials in Spanish as needs warrant and will assess with TxDOT the need for communications in other languages where appropriate. As information becomes available, the Developer will post content that includes, but is not limited to:

- project maps;
- information on design, construction, maintenance and operations;
- a schedule of street and ramp closures and recommended route alternatives;
- frequently asked questions;
- a list of public meetings, briefings and other opportunities to meet with project staff;
- information on Toll Tags and a toll calculator;
- rest areas and services alongside the Project;
- location of the Project Information Office;
- job opportunities;
- links to TxDOT HCRS and other websites deemed appropriate by TxDOT;
- a real-time travel speed map;
- Traffic accident, flooding and special event information;
- live CCTV images;
- Dynamic Message Sign messages;
- incident notification (via e-mail or text message);
- dynamic routing application; and

Chapter 4: Public Information and Communications

- the Project Extranet (secure – for Project staff only).

Proposed Approach to Project Marketing and Advertising

The Developer's marketing push will precede milestones such as segments of the Project opening to traffic. The Developer will develop six to eight-week advertising campaigns including television, radio and newspaper ads placed in media vehicles with high circulation and viewers. Because the Project transects several communities, the Developer will place Project information in small community newspapers. The Public Information Manager will also send information to neighborhood associations for their websites and newsletters. The Public Information Manager will be persistent in seeking "target audience" publications such as transportation-related magazines.

The Developer will set and adhere to professional presentation and communication standards. High quality graphics, a project logo and accompanying materials are important to the credibility and branding of the project. Adhering to TxDOT standards and in consultation with TxDOT, the Developer will develop project design standards and produce all materials in line with these standards. The Developer will coordinate marketing messages with TxDOT to promote the IH 635 Managed Lanes Project as part of the statewide toll road system.

Communication Principles

The following are some general communications principles that the Developer will employ in working with the public and other stakeholders:

- speaking and writing in plain language that the general public can understand, avoiding the use of jargon and acronyms without first explaining their meanings;
- recognizing that people do not always absorb information completely at first hearing and giving them the opportunity to ask questions;
- ensuring that the Spanish-speaking community is not left out of Project-related communications by providing Spanish-speaking representatives at public meetings and producing some informational materials in Spanish;
- being aware of our body language and how it might communicate to those to whom we are talking or listening;
- practicing active listening and maintaining eye contact when involved in face-to-face communication;
- feeling comfortable about telling people when we do not understand what they are saying or what they have written;
- being comfortable with challenging others and being challenged ourselves and welcoming feedback and constructive criticism; and
- always trying to put ourselves in the position of those with whom we are communicating and treating people as we would like to be treated in face-to-face and written communications.

Chapter 4: Public Information and Communications

4.6 Procedures

Section 4.5 above outlines the Developer's general approach to the principal activities to be carried out in relation to public information and communications. More detailed procedures will be provided in the final Public Information and Communications Plan.

4.7 Quality Control

Quality Control Procedures

Public Information and Communications activities will be subject to O&M Quality Control procedures, as laid out in Chapter 2, Quality Management.

Ensuring Accuracy, Completeness and Quality of Submittals

Please refer to Chapter 2, Quality Management procedures to ensure accuracy, completion, and quality in all submittals to TxDOT, Governmental Entities and Customer Groups.

Continuous Improvement

Please refer to Chapter 2, Quality Management, for procedures to establish and encourage continuous improvement.

4.8 Audit

Developer's Representative

The name of Developer's representative with defined authority for establishing, maintaining, auditing and reporting on the PMP will be provided in the final Project Management Plan.

Supporting Quality Management Staff

Please refer to Chapter 2, Quality Management for more details on supporting quality management staff.

4.9 Document Management

Maintenance of Records

An effective project means conducting meetings and activities that solicit public input and document input and response. The Developer will use an electronic comment management system or specific methods such as a complaint and inquiry form available to any citizen, governmental entity, or other Customer Group upon request.

Chapter 4: Public Information and Communications

Comment cards will be available at all meetings. The Developer will carefully document questions and complaints and distribute them to appropriate personnel for thorough review and effective resolution of issues.

The Developer will document all meetings with the public in official minutes, and distribute them to TxDOT within five business days. The minutes will include a full list of attendees including their affiliations and contact details; documentation of issues discussed and their solutions; and description of remaining open issues with associated actions and responsible individual(s) identified. TxDOT will approve such minutes before the Developer releases them to the appropriate Customer Groups.

Document Management Procedures

The Developer will employ an electronic Document Management System (DMS) that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will include user-friendly navigational tools such as index, contents and search features, to facilitate information retrieval. The Developer will review usage of the Integrated Management System (IMS) regularly and will survey staff to ensure that it is fulfilling their needs. The IMS Coordinator will administer changes to the system. Staff can complete Change Control forms to activate changes after the appropriate manager has given his or her approval.

The Document Management System will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.

The Developer will implement a secure Project Extranet system, which enables all team members to access and store project data, draft text and drawings. The Project Extranet system will link to the Document Management System, allowing users to access many of the same documents through either the Document Management System or Extranet site.

Chapter 9 this document is the D&B Team Process Procedures Manual, which contains specific procedures related to maintenance of records and document management. The procedures relevant to this section of the plan are:

- PPM Section 3: Documents and Data Control
- PPM Section 8: Construction Management
- PPM Section 14: Control of Quality and Environmental Records.

CHAPTER 5: SAFETY

5.1 General Safety Policies and Procedures – Design and Construction

5.1.1. Health and Safety Policy Statement

It is the Developer's policy to maintain a high standard for safety in design and construction of the IH 635 Managed Lanes Project. The Developer is dedicated to providing a working environment as free as possible from recognized and potential hazards to employee safety and health. This dedication stems from the philosophy that all occupational injuries and illnesses are preventable and that a "Zero Accident and Injury" goal in all areas of operation is achievable.

The Safety Plan's success depends on a sincere commitment by all employees to achieve the safest possible work environment by identifying, eliminating and reducing hazards that may result in personal injuries, occupational illness and damage to equipment and property. Our properly executed Safety Plan will also protect the public and anyone exposed to or affected by our work.

Achieving this ambitious goal is possible by integrating Safety Plan procedures, along with management support and enforcement, into our business strategy. Safety is fundamental to the way we conduct business, and anything less is unacceptable.

Specific techniques that the Developer will use include:

- a written, well-communicated, enforceable and evolving safety program;
- safety orientation and training;
- pre-project/pre-task safety planning;
- accident/incident/injury investigations and follow-up; and
- a strictly enforced alcohol and substance abuse program.

Employment with the Developer is conditional upon working in a safe manner and making wise choices concerning work performance. The Developer believes that each employee is responsible and accountable for his or her own personal safety, and that integrity, behavior and attitude are the driving motivators for their actions.

Supervisory personnel have a higher level of responsibility and accountability for their crews' safety. They will:

- ensure that their personnel receive appropriate training through the Safety Department;
- supply the needed personal protective equipment;
- participate in safety meetings and planning; and
- lead by example, adhering to and enforcing the pertinent safety policies, procedures, rules and laws.

The Developer will maintain a written Safety Plan, which incorporates OSHA and ANSI laws as well as Developer safety rules. The final Safety Plan will include procedures for basic safety training, pre-task planning, and other

procedures for maintaining a safe work environment. The Developer will monitor the Safety Plan for effectiveness, quality and usability, and will amend it as needed.

The participation and cooperation of all employees are essential to making the Developer a leader in the industry and a company for which people will want to work.

5.1.2 Safety Management

Introduction

The Developer will designate an experienced safety professional as Safety Manager. This person will be responsible for the development, distribution and implementation of all Safety Policies, Procedures and Training Programs, and will participate in investigating any accidents, incidents and injuries. This person, at the discretion of the CEO, will be involved in legal or governmental inquiries or investigations due to any serious accidents, incidents, injuries or deaths.

The Developer may hire other health and safety professionals, as necessary, to fulfill contract requirements or additional safety needs. These professionals will serve as Safety Superintendents reporting to the Safety Manager.

Qualifications for Health and Safety Professionals

All health and safety professionals will have at least five years of construction safety experience or a combination of documented safety training/education and construction experience, at the discretion of the Safety Manager or CEO.

Duties of Health & Safety Professionals

The Health and Safety Professionals' duties will include:

- monitoring and inspecting all projects for safety;
- maintaining written safety policies and procedures and updating any statutory changes;
- correcting any observed safety violations occurring on the jobsite;
- making written reports for jobsite inspections and filing them accordingly;
- investigating, documenting, and following up on all accidents and injuries;
- working as a coordinator with the owner, subcontractors, and other entities involved on a project;
- Training employees in safety procedures;
- Training employees in First Aid/CPR;
- working with engineers and project management to build safety into the job prior to beginning; and
- reporting to the Safety Manager and management.

Authority and Responsibilities

The Health & Safety Manager and the Safety Superintendent(s) will have the authority to stop any work at any time they perceive imminent danger or to enforce any company safety policy or procedure, OSHA or ANSI law, or any other safety infraction and implement corrective action. The Safety Manager and General Manager will decide on the disciplinary action to take for an employee safety violation.

Safety Supervision Responsibility

Supervisors include, but are not limited to:

- Construction Superintendents, Supervisors and Crew Leaders
- CEOs
- General Manager
- Health & Safety Professionals

All supervisors are accountable for their crews' safety, implementation of safety practices, and the providing of Personal Protective Equipment (PPE). All supervisory personnel will lead by example.

5.1.3 Safety Program

Objective

The objective of the Developer's Safety Program is to build a safety culture within the team whereby current employees, new hires, and potential employees will know that a safety culture exists within our organization, and that we expect all employees to either work safely or seek other employment. The Developer expects all employees to respect the safety culture and to work with due diligence toward zero accidents, incidents, and injuries. The Developer will continually monitor the Safety Program for effectiveness and relevance, and modify it as needed to increase its effectiveness or to respond to new legal requirements.

Employee Safety

Each employee is responsible and accountable for his or her own safety. It is very important that all employees undergo safety training specific to their jobs. They must know the safety laws and rules guiding them. Supervisors are responsible and accountable for providing and enforcing safety rules. Specific levels of responsibility with regard to the safety program are outlined below:

- **Safety Manager** – Guides the Team's Health & Safety Professionals, superintendents and project managers regarding the Safety Program. Participates in and facilitates implementation of corrective actions.
- **Health & Safety Professionals/Safety Superintendents** – Train employees based on needs, as suggested by supervisors, safety superintendents, job requirements or the General Manager. Monitor project safety through safety audits, daily visual inspections, investigations and written reports. Advise

design and construction management personnel on critical safety issues. Follow up with appropriate personnel following accidents, incidents or injuries.

- **Individual Employees** – Individuals are always the first line of safety responsibility. All employees should be able to recognize hazards and take appropriate action to avoid accident or injury to themselves or co-workers.
- **Supervisors** – Responsible for the safety of their crews. Supervisors will provide safety guidance, PPE, enforcement, and mentor employees in safety leadership.
- **Developer/D&B Team** – Maintains a safe working environment on all projects. This responsibility includes training employees and monitoring all activities within the boundaries of our projects. The D&B Team will obligate all subcontractors to adhere to this Safety Plan, all safety regulations and laws established by OSHA and ANSI to ensure a safe project for all.

Accountability is essential in enforcing the Safety Program. Individuals will be accountable for their actions and supervisors will be accountable for their subordinates' actions to the extent that they are aware of, or should have been aware of, safety violations. For example, if the Safety Superintendent observes a safety violation at a worksite, he or she will discuss the safety violation with the individuals responsible for the incident and determine whether disciplinary action is warranted. If the employee's supervisor is aware, or should have been aware, of the safety violation, the supervisor will be held accountable as well.

Practices and Techniques for Achieving Zero Accidents/Injuries

- Demonstrated management commitment
- Pre-project/pre-task planning for safety
- Safety orientation, training, monitoring, and enforcement
- Worker involvement and participation
- Accident/incident reporting and investigation
- Alcohol and substance abuse program
- Coordination with other entities working or operating in or near the work area
- Staffing for safety

5.1.4 Mandatory Written Programs

Alcohol and Substance Abuse Policy

The Developer will maintain, enforce and monitor the effectiveness of the Alcohol and Substance Abuse Policy. The D&B Team will retain the right to make changes and modifications to this policy as needed to comply with regulatory changes and to ensure a safe work environment at each worksite.

Physical Examinations:

- The Developer employees will undergo physical examinations, if requested, at the expense of the Developer or D&B Team, as appropriate. For prospective new employees and seasonal employees

recalled from layoff, the examination will take place before the employee begins work for the Developer. For wage rate and salaried personnel who work throughout the year, each employee will submit to a physical examination up to once per year, if requested.

- The physical examination will include urinalysis to test for substance abuse. The policies and procedures concerning testing for substance abuse are outlined herein.

Alcohol and Substance Abuse Testing:

- Substances tested for by urinalysis are:
 - cocaine and cocaine derivatives;
 - heroin, morphine and other opiates;
 - amphetamines;
 - barbiturates;
 - alcohol; and
 - marijuana.
- Regular Testing:
 - Pre-employment Testing – All prospective new employees will submit to testing for the above substances by urinalysis.
 - Recalled Employees – Recalled seasonal employees will submit to urinalysis before beginning work at the start of the season.
 - Current Employees – Employees who work throughout the year will submit to urinalysis on an annual basis, or randomly, at the sole discretion of the D&B Team.
- Testing Related to Specific Incidents:
 - Testing will occur following an accident or injury on the jobsite.
 - Employees will undergo drug testing upon reasonable suspicion that they are under the influence of unauthorized drugs or alcohol and may create an unsafe condition at the worksite.
- **Searches:** the Developer reserves the right to search employees, their property, and company property for unauthorized substances or stolen company property based upon reasonable suspicion of substance abuse or theft.
- **Action for Violations:** Any employee found in violation of these policies or found to be abusing substances listed herein will be subject to discharge from employment upon the first violation or occurrence.
- **Reporting Procedure:** All employees are required to report jobsite substance abuse to their supervisor. The reporting employee and supervisor shall keep such information confidential. Anyone found to have discussed suspected substance abuse with anyone other than his/her immediate supervisor will be immediately discharged from the Developer employment.
- **Prescription Medication:** An employee who uses prescription medications during work hours must produce a written statement from the prescribing physician, stating the purpose of the medication and possible physical side effects that may affect employee performance or safety at the worksite.
- **Law Enforcement:** the Developer may, in the discretion of management, report instances of substance abuse to law enforcement agencies.

- **Subcontractors and Suppliers:** the Developer requires that all subcontractors and suppliers on its jobsites conform to the substance abuse policy. The Developer reserves the right to require any individual working for a subcontractor or supplier to leave the jobsite permanently upon reasonable suspicion that the individual is under the influence of unauthorized substances or creating a potential jobsite safety hazard.

Hazard Communication Program (HCP)

General

The Developer will implement the following written Hazard Communication Program (HCP) to ensure compliance with 29 CFR 1910.1200 (Hazard Communication Standard). The Safety Department will ensure that the HCP is current and that all employees work according to the program. The Safety Department will supply all employees with a copy of the HCP upon hiring and upon request. The Safety Officer will keep the originals on file.

The Safety Department will review the HCP annually, and update it when new chemicals or hazards are introduced into the working environment. The Developer purchasing agents will ensure that all Purchase Requests for chemicals include a statement requesting a Material Safety Data Sheet (MSDS).

Container Labeling

The employee taking delivery of containers will be responsible for all containers of chemicals entering the workplace and will ensure that the containers containing chemicals are properly labeled with:

- chemical name;
- hazard warnings; and
- name and address of the manufacturer, importer, or responsible party.

Employees will not use newly received chemicals until the ordering employee has checked each container. If the chemical will be transferred to a separate container, the ordering employee will ensure that the new container is properly labeled with a copy of the original manufacturer's label or with generic labels showing the chemical's identity and applicable hazard warnings. The Safety Department will provide any needed help with labeling. Safety personnel will review the labeling system annually and update it as required.

Where pipes are used to transfer chemicals, the pipes will be identified and labeled. The plant supervisor will also inform employees of the hazards associated with the chemicals contained in pipes within the work areas.

Material Safety Data Sheets (MSDS)

The Safety Department will maintain the MSDS system for the D&B Team. Safety personnel will review incoming Material Safety Data Sheets for new and significant health/safety information and will ensure that affected employees receive this information. The Safety Department will keep copies of all MSDS and review them annually for accuracy and completeness.

The MSDS system will include:

- a current, numerically indexed master inventory list of all MSDS;
- container labels with the same index number used on the MSDS; and
- MSDS for all chemicals, containing the chemical and common name of all ingredients determined to present a hazard.

The MSDS lists:

- The physical and chemical characteristics of the chemical such as vapor pressure, flash point, and others;
- The fire, explosion, and reactivity hazards of the chemical mixture including the boiling point, flash point and auto-ignition temperature;
- health hazards of the chemical mixture including signs and symptoms of exposure and medical conditions recognized as aggravated by exposure with primary routes of entry;
- permissible exposure limit (PEL) or any other exposure limit used or recommended by the manufacturer, importer, or employer;
- whether the chemical is on the National Toxicological Program's carcinogen list or has been found to be a potential carcinogen by the International Agency for Research on Cancer or by OSHA;
- control measures including fire, engineering and PPE;
- general precautions for safe handling and use including protective measures during repair and maintenance and procedures for cleanup of spills and leaks;
- emergency and first aid procedures;
- date prepared or changed; and
- name, address, and telephone numbers of manufacturer, importer, or responsible party to call in an emergency.

The Safety Department will file the originals at the Developer headquarters. The MSDS will also be part of the program for use by employees. Each project will keep a current and up-to-date copy of the program on file. New chemicals will not be used until a MSDS has been obtained.

Employee Training and Information

Before new employees may start work, Safety Department personnel will train them on the HCP, including the use, location and availability of MSDS information pertaining to their job. Before any new chemical is used, the Safety Department will train all appropriate employees on how to use it safely and the hazards associated with it. Employees will attend additional training, as appropriate, to review the HCP and MSDS.

The minimum HCP orientation and training for a new employee is as follows:

- an overview of the requirements contained in the Hazard Communication Standard, 29 CFR 1910.1200;
- chemicals present in their worksites (field and office);
- location and availability of the written HCP;

- physical and health effects of the hazardous chemicals listed on the HCP inventory list;
- methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area;
- ways to lessen or prevent exposure to hazardous chemicals through work practices and PPE;
- The steps taken by the D&B Team to lessen or prevent exposure to the chemicals on the inventory list;
- emergency procedures to follow if exposed to a chemical;
- location of MSDS file and location of hazardous inventory list;
- proper labeling requirements for containers; and
- explanation on how to read and interpret each MSDS.

Prior to introduction of a new chemical hazard into the workplace, each appropriate employee will receive information and training as outlined above. After attending the training class, employees will sign a form to verify that they attended the training, that the written HCP is available for review and that they understand the HCP.

Before employees enter an area containing chemicals, the appropriate supervisor will ascertain what hazards may be present and take appropriate action to protect the crew. If an employee has any questions about what protection they need, they shall contact the Safety Department immediately.

Non-Routine Tasks

Before they perform any non-routine task, employees will undergo training on special precautions to follow and the appropriate supervisor will inform any other personnel working in the vicinity.

In the event such tasks are required, the Safety Department will provide the following information about such activity as it relates to the specific chemicals expected to be encountered:

- specific chemical name(s) and hazard(s);
- PPE required and safety measures to be taken; and
- measures that have been taken to lessen the hazards including ventilation, respirators, presence of other employees and emergency procedures.

Emergency Action Plan

The Emergency Action Plan for all projects and worksite locations will follow the following basic guidelines. Under special circumstances, the Developer will supplement these guidelines with additional procedures.

- Prior to beginning work on any project, the Safety Department will post contact information for the nearest medical facilities, including name, address, telephone numbers, emergency hours, and any specific contacts. This information will be posted within easy access to the major work phones at each project jobsite. Employees will call 911 in case of a catastrophe; i.e., very serious injury, fall, entrapment, fire, or death.
- All supervisory personnel will have a copy of the Emergency Action Plan at all times.

- Supervisory personnel and additional employees will undergo training in First Aid and CPR and will have the equipment necessary to take immediate First Aid action.
- First Aid Kits will be available at the main offices for the project, supervisor vehicles and other locations as deemed necessary by management.
- In the event of an emergency, the following personnel will be contacted immediately:
 - The Safety Superintendent;
 - The Company Safety Officer; and
 - The General Manager
- In a serious event, the Developer will restrict access to the incident site, only allowing people responding to the incident into the area.
- The Developer will direct the news media away from the incident site and to the Project Management Offices. Only employees authorized by the D&B Team may speak to the media.
- In the event of an environmental emergency involving spills or contamination of a waterway, the supervisory manager shall call the Safety Department and the Safety Manager.

Excavations Greater Than 20 Feet Deep

Excavations that are greater than 20 feet deep will be equipped with a protective system designed by a registered Professional Engineer prior to the start of work.

The plans will indicate the size, type and configuration of the materials to making up the protective system.

The registered Professional Engineer will be identified in the plans.

A copy of the plans will be kept on the jobsite for the duration of the excavation.

Confined Space Entry Program

Confined Space refers to any space having a limited means of egress that is subject to accumulation of toxic or flammable contaminants or has an oxygen-deficient atmosphere. They include, but are not limited to, storage tanks, process vessels, bins, boilers, ventilation or exhaust ducts, sewers, underground utility vaults, tunnels, pipelines, and open-top spaces more than four feet in depth, including trenches.

Confined Space also can refer to a space that is large enough and configured so that an employee can enter and perform assigned work, but has limited or restricted means for entry or exit, and is not designed for continuous employee occupancy.

These Confined Spaces may be Permit Required Confined Spaces. The following basic guidelines apply to enclosed spaces or Confined Spaces:

- If an employee must enter an area and is unsure whether it qualifies as a Confined Space, he or she will contact the project Safety Superintendent prior to entering the area.

- No employee will enter a designated Confined Space until the Safety Superintendent or other designated person, such as the batch plant operator for drum entry, has inspected the space.
- The Entrant(s) and the Attendant will receive training on existing and potential hazards regarding each particular Confined Space.
- If the Confined Space is a rotating piece of equipment, Lockout/Tag-Out procedures must be implemented prior to inspection or entry.
- The Confined Space must be isolated, removed from service and completely protected from the release of any energy or material that could possibly engulf the entrants.
- Only those employees authorized by the Developer may enter the Confined Space.
- There must be a designated employee (Confined Space Attendant) to monitor and restrict entrance to the Confined Space and monitor the activities and safety of the entrant(s).
- The Attendant will be trained in rescue techniques and use of the equipment required for rescue.
- Employees must not enter a confined space to rescue someone without the proper help, equipment and communication.
- Prior to entry, the atmosphere will be tested for oxygen content, carbon dioxide, flammables, and Lower Explosive Limit (LEL).
- Depending on the situation, atmospheric monitoring will either be continuous or periodic. The Confined Space will always be re-tested prior to reentry after the entrants have left the area for any reason.
- Confined Spaces shall always have forced air ventilation before entry and during operations.
- A Permit Required Confined Space is one that meets the definition of a Confined Space and has one or more of the following characteristics:
 - contains or has the potential to contain a hazardous atmosphere;
 - contains a material that has the potential for engulfing the entrant;
 - has an internal configuration that might cause an entrant to be trapped or asphyxiated by inwardly converging walls or by a floor that slopes downward and tapers to a smaller cross section; or
 - contains any other recognized serious safety or health hazards.

The Safety Superintendent will determine the proper PPE to provide to entrants and any rescue personnel. All entrants will wear a full body harness equipped a back D ring and an attached rescue line.

Bloodborne Pathogen Exposure Program

Bloodborne Pathogens are pathogenic microorganisms that are present in human blood and can cause disease. These pathogens include, but are not limited to, hepatitis B virus (HBV) and human immunodeficiency virus (HIV). Other potential infectious materials can be borne by any of the following body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva, any body fluid visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids. Any unfixed tissue or organ (other than intact skin) from a human, living or dead is potentially infectious.

All first responders and first aid personnel will take the Universal Precautions approach, which dictates that they treat all human blood and body fluids as if they were known to be infected by HIV, HBV and other bloodborne pathogens.

Anyone administering first aid to an employee with exposed blood will use the proper PPE for self-protection, which may include the following:

- rubber or latex gloves;
- a face shield and/or face mask;
- a protective apron;
- protective eye wear; and
- any other PPE deemed necessary specific to the situation.

To the extent possible, first aid shall take place at a location where an employee may clean up using soap and running water and where disposal apparatus exists for contaminated clothes, rags, PPE, or other contaminated objects.

If the first aid responder or another employee becomes contaminated, the Safety Superintendent for that project will be contacted immediately and cleanup will begin at once. If the exposure to contamination is serious, medical attention and documentation will be given and the guidelines for testing and vaccination will be followed.

All persons who have the potential for contamination will be trained on this program and the hazards involved. Only the first aid responder should be at risk of contamination because no other employees or individuals should be in the area of the incident.

These guidelines incorporate the standard precautions suggested by the Bloodborne Pathogen Standard (29 CFR 1910.1030).

5.1.5 The D&B Team - Written Programs

New Hire Safety Orientation

Personal Protective Equipment (PPE)

1. Hard hats, reflective vests and safety glasses shall be worn on all worksites at all times.
2. At least the minimum PPE shall be worn while operating certain heavy equipment.
3. It is not necessary to wear PPE when riding in vehicles – in the cabs of cars and pick-up trucks.
4. Seat belts shall be worn while driving vehicles and/or operating equipment that is designed to have them. Seat belts shall be in place and in good operating condition.
5. When operating certain hand tools and performing specific tasks, additional PPE will be required for eye and face protection.
6. When operating skill saws, sanders, chipping tools, grinders, air blowers, or any other tool that generates flying particles, goggles and/or a face shield shall be worn in addition to safety glasses.

7. Gloves shall be worn when working with steel wire cable (when not attached to powered equipment), tying rebar, or other tasks that can cause cuts or splinters to the hands. Rubber gloves shall be worn when working with chemicals that could cause burns. If cement gets on the skin, then vinegar should be used to wash the area of exposure.
8. Foot protection shall be worn when working with any tool or performing tasks where there is a danger of crushing the feet.
9. Persons working in concrete shall wear rubber boots.
10. Anyone performing a task where they are at least six feet above the next lower level shall wear and use full body fall protection. This includes inspectors, engineers and supervisors as well as construction workers.
11. The proper clothing shall be worn at all times while on the jobsites. Shirts shall have sleeves, be long enough to cover the midsection, and shall not be made of mesh material. Long pants and good durable work boots shall also be worn. Tennis shoes, sandals or canvas shoes are not allowed.

Traffic Safety

1. Construction equipment has the right-of-way within the work area and haul roads.
2. All heavy construction equipment shall slow down in congested areas near pedestrians, other equipment, and vehicles. Safe speeds shall be maintained at all times.
3. Horseplay will not be tolerated under any circumstances.
4. It is the responsibility of the people on the ground around equipment to let the operator know they are in the area and their location. The person on the ground must make eye contact with the operator.
5. All traffic instructions shall be obeyed.
6. Employees having no purpose in a congested work area shall stay clear of the area.
7. Flaggers shall receive training in proper flagging techniques and shall use these techniques to direct traffic.

Trench Safety

The 4-5-6 Rule applies to all trenches and excavations:

- 4: Four feet of access and egress must be provided by ladders or ramping.
- 5: Five feet of protection must be provided for sloping, benching, or shielding.
- 6: For workers working above a drop of at least six feet, fall protection must be provided.

Other Trench Safety rules include:

1. All trenches shall be sloped, benched or shielded appropriately.
2. Ladders or ramping shall serve as access and egress from trenches or excavations. The spacing for ladders or ramps shall be set up so that workers do not have to travel more than 25 feet for access or egress.
3. If ladders are used, they shall be anchored at the top and bottom and shall extend at least three feet above the top of the trench.
4. Class C soil shall be sloped at a 1 ½ : 1 ratio, beginning at the bottom edge of the trench.

5. Class B soil shall be sloped at a 1: 1 ratio, which can begin with a maximum of a four-foot vertical side and then sloped or benched.
6. When using a trench box, the soil must be filled in on the outside walls and the top of the trench box must extend at least 18 inches above the top of the trench or to where the soil begins sloping according to its classification. There may be no more than a two-foot space from the bottom of the trench box to the bottom of the trench.
7. The tabulated data associated with each trench box shall be kept on site at all times.
8. If using timber shoring, solid sheeting shall be used for Class C soil. Shoring for Class B soil shall comply with OSHA 1926 subpart P App. C.
9. The competent person shall be on site at all times while work is being performed in the trench.
10. Absolutely no one other than the crew is allowed in the trench without the competent person's permission.
12. Nobody is allowed in the trench when a trench box is being moved.
13. Trench boxes shall not be stacked unless they were designed to be stacked and unless the tabulated data for that purpose is on hand and available on site.

Equipment

1. Nobody is allowed to ride on a piece of equipment unless the equipment was designed to carry passengers.
2. Under no circumstances will workers be allowed to perform tasks from or be transported in the bucket of any equipment.
3. Man baskets are not allowed on projects unless all applicable laws and testing are met, and only then when the Safety Department agrees that the use of a man basket is the only means of accomplishing a task.
4. No loads shall be lifted over workers.
5. Proper rigging shall be used for each individual lift.
6. Tag lines shall be used for controlling loads.
7. When transporting employees to the work areas:
 - No more than three employees shall ride in the cab of pickup trucks unless it was designed for more.
 - Employees riding in the back of pick-up trucks or flatbed trucks shall sit with their bottoms on the floor of the bed. No one is allowed to sit on the wheel wells, coolers, lunch buckets, tool kits or other objects. Under no circumstances are workers allowed to ride sitting on the tailgate or the side rails.
 - Benches with seats and backs may be designed and placed in trucks or on trailers for transporting employees.

Accident Reporting

1. It is each employee's responsibility to report any injury or accident immediately to his or her supervisor.
2. The supervisor shall begin filling out an accident report and initiate an investigation immediately after learning of the incident, and after ensuring that any injured people are receiving treatment and that no further danger is imminent.

3. If an injury is severe enough to require medical treatment at a medical facility, the injured person shall be taken to the doctor along with the proper treatment authorization papers.
4. A drug screen shall be taken at the time of medical treatment.
5. If an accident occurs where there is equipment or property damage, the employee(s) involved shall be required to take a drug screen at an authorized medical facility within two hours or as soon as possible.
6. The supervisor will take pictures of the accident.
7. All witnesses to an accident or injury shall write a witness statement and give it to their supervisor.
8. The Safety Department shall be notified immediately of an accident or injury.
9. The Safety Department will help to carry out accident/injury investigations.

Employee Safety Responsibility

1. Employees are required, as a condition of employment, to abide by these safety procedures and other safety requirements, as identified and direct by D&B Team safety personnel, supervisors and common sense.
2. Employees will be responsible for maintaining the safety equipment issued to them.
3. Employees will be responsible for having safety equipment on hand when reporting to work.
4. Employees reporting to work without safety equipment may be asked to return home and come back to work with the equipment.
5. If an employee loses, misplaces or damages safety equipment, he or she may be issued another item at his or her own expense.
6. Supervisors are responsible for providing additional safety equipment and replacements in the event of the above-mentioned cases.
7. Employees are responsible for making wise choices for their actions regarding their own personal safety and the safety of those around them.

5.1.6 General Safety and Health

Contractor Requirements and Responsibilities

Under the Occupational Safety and Health Act (OSHA), Section 5.(a)(1) (Duties), employers shall furnish to each of their employees a place of employment free from recognized hazards that are likely to cause physical harm. The D&B Team will use a variety of methods to create the safe working environment the OSHA standard requires.

Where the D&B Team has subcontractors on a project, they are required to comply with OSHA standards in 29 CFR 1926, as we are, and as the General Contractor, the D&B Team will monitor all subcontractor work methods and hold subcontractors accountable for compliance where deviations are noted. The D&B Team has the right to take means to ensure subcontractor compliance. The D&B Team will not instruct the subcontractor in the methods and means of compliance, only that they are out of compliance and that corrective measures are expected to be immediate and in compliance.

Subcontractor, as defined by Section 107 of the Act, refers a person or entity who agrees to perform any part of the labor or material requirements of a contract for construction, alteration, or repair.

Bulletin Boards

A Bulletin Board will be situated at each large construction worksite in a common location visible to all employees. The required posters and information will be kept in good condition, legible, and maintained for the duration of the project. The following information will be kept on the Bulletin Board:

- Minimum Wage Statement;
- Prevailing Wage Rates;
- Federal and State Equal Employment Opportunity Posters;
- Affirmative Action Policy;
- Alcohol and Substance Abuse Policy;
- Family and Medical Leave Act Policy; and
- other mandated information as required and approved by management.

Safety Meetings

The D&B Team requires several types of safety meetings, as outlined in the following sub-sections.

Pre-Construction Safety Meeting

This is a meeting between the contractor, subcontractors and the owner with the purpose of establishing the expectations of each entity and the requirements/statutes prescribed for each entity.

Pre-Task Safety Meeting

This is a meeting held with the crew, superintendent, supervisor, engineer, safety officers or others who may be integral to accomplishing a task safely. They identify the recognizable safety hazards and develop a working plan that will ensure safety for the duration of the task.

Weekly Safety Meetings

These take place within the different crews for the various Project worksites. These meetings will have a specific safety topic to train the crew and will include safety information that is specific to the crew's job.

Monthly Supervisor Safety Meeting

The Safety Department conducts this meeting, which will cover specific safety issues, any accidents or injuries, other safety and security concerns, plus pertinent information about upcoming training, hazardous critical work and subcontractor work.

Post-Accident/Injury Safety Meeting

These meetings will investigate and discuss the circumstances that precipitated an accident or injury and devise ways to prevent this type of accident/injury from occurring again. The people involved in these meetings will be at least the:

- person(s) involved;
- Safety Department representative;
- supervisor;

and, depending on the severity of the accident/injury, the:

- crew members;
- witnesses; and
- anyone else who may have pertinent information, or anyone else invited by management.

Internal Reporting Accidents and Injuries

As a condition of employment, employees must report all accidents and injuries to their immediate supervisors. Supervisors will document such incidents, no matter how minor. The immediate supervisor will administer first aid; begin the incident investigation and documentation; and notify the Project Superintendent and the Safety Superintendent for that project as soon as possible.

If the incident is severe, the supervisor will call for outside aid as needed and notify the Health and Safety Manager. He or she will ensure that the site is secure and that only the personnel necessary to respond to the incident remain on site.

The Health and Safety Manager will report severe incidents to the General Manager immediately. The General Manager will report such incidents to the Developer CEO, who will notify TxDOT and the Independent Engineer.

The immediate supervisor of the person(s) involved in the incident will write up an accident/injury report. In severe incidents, the Safety Superintendent will aid in the investigation and make a separate report to the Safety Manager. Photos and witness reports will necessary in most accident/injury incidents and supervisors will receive training in effective incident documentation and reporting.

The persons involved in the incident will undertake a drug/alcohol urinalysis as soon as possible, preferably within two hours of the incident. Disciplinary action may be necessary in some instances. Disciplinary measures could include unpaid suspension or discharge from employment.

5.1.7 Basic Safety Rules

Employee Responsibility

As a condition of employment, every employee shall report to work in a healthy state of being and maintain that well-being throughout the workday.

All employees shall make wise choices concerning their practices and be aware of their surroundings, potential hazards and any changing situations or circumstances.

All employees shall have training, knowledge and experience in the work they are performing.

All employees shall wear the proper work attire. For field employees, this consists of long pants, shirts with sleeves that cover the midsection and durable work boots. Employees shall not wear tennis shoes, sandals, shorts, tank tops or baggy pants on the jobsite.

All employees shall wear and make proper use of all PPE provided them. Supervisors are responsible for providing appropriate PPE for all tasks and workers are responsible for requesting additional PPE when they believe it is necessary for a task. If an employee is unsure of how to perform a task, what type of PPE is necessary, or what the proper tools/equipment are, they shall ask their supervisor for the proper direction.

All employees shall apply safe work practices and use safe operating techniques in all types of work.

All employees shall attend, sign in and participate in all safety meetings that the D&B Team requires.

All employees shall know the proper emergency procedures for their worksite.

All employees are responsible for maintaining a clean and organized work area.

All employees shall report any unsafe acts, behavior or conditions of other employees or subcontractors. The Safety Superintendent for each worksite will observe and correct the infraction without identifying the reporting employee to anyone else.

All employees shall report accidents and injuries to their supervisor, no matter how slight they believe them to be. This includes submitting the proper paperwork to the Safety Department.

In incidents where medical treatment beyond first aid is necessary, or in the case of accidents involving equipment, vehicle or property damage, the employee(s) involved shall submit to a drug and alcohol screen by urinalysis. Refusing such drug screens will result in termination for failing to comply with the D&B Team Alcohol and Substance Abuse Policy.

The Developer encourages all employees to suggest ways to improve workplace safety and work practices. The workers doing the tasks have unique insight into how to optimize safety, effectiveness and efficiency.

Pre-Task Hazard Recognition

Pre-task hazard recognition meetings will take place prior to each crew beginning work each day, and upon changes in jobs, conditions, tools, equipment or locations.

When supervisors move employees from one job or crew to another within a workday, they will inform the employees of any new hazards associated with that change.

If environmental conditions change, such as rain, high winds, temperature or other conditions that could negatively affect the worksite, supervisors will discuss these conditions with their crews and implement proper action or precautions immediately.

Supervisors will conduct new hazard recognition meetings if other crews, such as subcontractor, piping, road, electrical, etc., begin working in close proximity to their worksite. The other crew will attend these meetings and discuss their work scope and potential hazards.

Supervisors shall train their crews in recognizing existing and potential hazards associated with the job at hand. They also shall provide crewmembers with coaching, PPE, and other necessities for compliance with safety rules.

Personal Protective Equipment (PPE)

All workers shall wear the PPE allotted to them and use it appropriately for the task at hand. Employees are responsible for maintaining their PPE in good condition and bringing it with them when reporting to work.

The minimum PPE for all worksites consists of:

- a hard hat;
- safety glasses; and
- a high-visibility vest.

Workers shall wear the minimum PPE when on the ground or when operating certain types of equipment. PPE is not necessary while inside a vehicle, but it must be in place when getting out of the vehicle and onto the jobsite.

Eye Protection

Workers shall wear additional eye/face protection when there is a potential for airborne objects to come in contact with the eyes or face. Supervisors will provide safety goggles and face shields for tasks including, but not limited to:

- metal or concrete grinding;
- sawing;
- using a cut off saw;
- chipping or hammering;
- using any type of hammer;

- operating air tamps, drills, jackhammers or hydraulic tools;
- using powder-activated tools or pneumatic nail/staple guns;
- using welding or cutting torches;
- using air blowing equipment; and
- using materials that splash.

All eye protection shall comply with ANSI Z87.1 - 1968 Standards.

Head Protection

Workers shall wear hardhats at all times while on the jobsite or in any area where work is being performed. Hardhats shall comply with ANSI Z89.1 - 1969 and the employee shall be responsible for maintaining them. Hardhats shall:

- be worn properly;
- have only designated decals and/or writing on them;
- not be altered in any way, such as drilling holes for ventilation, turning lining around, or painting;
- not be made of metal; and
- not be cowboy hardhats when working in areas where there is a potential of debris falling from a higher level.

Hand and Foot Protection

Workers shall wear gloves when working with rebar, wire, wood, cutting tools, and other tasks where there is a potential for cuts, scratches, splinters, or penetration by pointed objects. Where chemicals can contaminate the hands, workers shall wear chemical-resistant gloves...

Workers shall wear rubber boots when working in concrete. When working with equipment or tools that could be a crush hazard for the feet, workers shall wear steel-toe boots and, where appropriate, metatarsal covers.

Respiratory Protection

Workers shall wear particulate masks where dust or solid particles are in the air due to sweepers, blowers, concrete grinding/hammering or wind. Supervisors shall provide specialty respirators to protect workers from other harmful atmospheres, where appropriate.

Hearing Protection

Workers shall wear earplugs or other sound-muting devices when noise levels exceed 90 decibels for eight hours per day, and at higher decibels as listed in Table D-2 of 29 CFR 1926.52.

Fall Prevention/Protection

Anyone working on a level at least six feet above the next lower level shall wear a full body harness, properly fitted and secured, and tied off with the appropriate equipment to an engineered lifeline or anchor point. This is a 100 percent tie-off rule, meaning that the worker shall abide by this rule at all times when working on an elevated level.

The main consideration in fall protection is the height of the potential fall. To use a six-foot rip-away lanyard, a 12- to 15-foot clearance is required for complete arrest. If the fall to the next lower level is less than 15 feet, the D&B Team will use non-rip-away lanyards, rebar hooks or other approved means to keep workers from contacting the next lower level prior to coming to a complete arrest.

The D&B Team will design and install appropriate engineered anchor points and lifelines prior to elevating a structure into place to avoid placing workers in a hazardous situation by installing the protection system while other work on the structure is underway.

The D&B Team may incorporate other engineered means of fall prevention such as platforms and railing. All platforms and railing will meet OSHA standards, as will the proper means of access and egress.

Nobody shall work standing or sitting in the bucket of a piece of equipment such as an end loader, track hoe, forklift or any other type of lifting equipment that is not designed to lift people.

Employees working out of a man-lift shall always tie off to the manufacturer's anchorage points while in the lift.

Employees working out of a scissor lift shall not tie off to the lift as per manufacturer's manual.

Any employee issued a safety harness shall inspect it for defects prior to each use. The harness and all associated attachments shall be maintained in proper condition and stored in a manner that will not cause damage or deterioration.

Any employee required to work using fall protection shall receive training prior to beginning work.

Trench and Excavation Safety

Excavations are any cuts, cavities, trenches or depressions in an earth surface, formed by earth removal. A competent person will be on site at all times during any excavation work.

All employees working in an excavation will receive trench hazard awareness training. An employee may receive this training from the D&B Team Health and Safety Professionals or from an outside source such as a trench box supplier.

When an excavation is 20 feet deep or deeper, a professional engineer shall write an excavation plan, which will remain on site for the duration of that excavation.

Equipment Operation Safety

The Developer will maintain all equipment on a regular basis and correct any mechanical or operational problems immediately or as soon as reasonably possible.

Anyone who operates a piece of equipment shall be qualified by formal training and experience and shall demonstrate such prior to operating equipment. There will be opportunities for employees to learn to operate certain equipment through on-the-job training. An experienced and qualified operator will provide this training.

Nobody shall ride on a piece of equipment unless the manufacturer's operators manual states that the equipment can accommodate passengers. Nobody shall work sitting or standing in the bucket of a piece of equipment. The operator of that equipment is responsible for all items lifted and shall never lift workers.

Equipment operators shall wear appropriate PPE while operating equipment. Operators shall wear seatbelts at all times while operating equipment. If a piece of equipment was designed to include a seatbelt, then it must be in place, operational, and used properly. Operators shall report any missing or damaged seatbelts for repair or replacement.

Crane operators shall be certified operators and shall carry their National Commission for the Certification of Crane Operators (NCCCO) certification cards on their person while operating a crane. Crane operators shall attend the D&B Team's Crane Load Chart Reading training class. Either the D&B Team's NCCCO-certified trainer or an outside source may provide this training. The D&B Team's crane lift/design team shall plan critical lifts, such as multi-crane lifts, high-cost loads or lifts of long lead-time items.

General Housekeeping

The D&B Team will maintain all jobsites, including field offices and yards, to a clean and orderly standard, so that everyone who works at or visits the location will be proud to be there.

Each individual is responsible for cleaning up the trash or debris that he or she generates on a jobsite.

Each work location will have adequate trash receptacles, with replacement bags or containers as needed, and an employee assigned to empty them as needed.

When encountering boards with nails, employees shall either remove or bend the protruding nails so that they cannot penetrate footwear and puncture the foot.

The D&B Team will maintain all stored materials in an orderly manner, including stockpiles of removed materials such as concrete, pipe and rebar.

The D&B Team will keep roadways used by parties other than contractors free of debris or other materials that could cause travel problems.

The D&B Team will provide adequate lighting in all active work areas.

Smoking will be prohibited inside all company offices.

Jobsite Inspections

Jobsite inspections will be a coordinated effort between the project Safety Superintendent and project management. Inspections will occur at all worksites at least monthly, and by random selection. Inspections will include all work underway, including subcontractor work.

Inspectors will document any safety violations and discuss them with the non-complying employees or subcontractor personnel. Inspectors will work with supervisors to correct the infraction as quickly as possible. Inspectors will stop work in progress if they observe imminent danger, and will not allow work to resume until the situation meets compliance guidelines.

Inspectors will use an inspection form that assigns a number grade to each jobsite. The form includes a section on which the supervisor will document and date corrective actions taken before returning the form to the project's Safety Superintendent. The Safety Superintendent and CEO will each retain a copy of the inspection form, including corrective action information, in their records.

Safety Superintendents and CEOs may conduct jobsite inspections for other projects within the IH 635 Managed Lanes Project that are not under their management. This will allow them to look at the project from a new perspective and offer fresh insights on improving safety and efficiency.

5.1.8 Special Programs

Plant Operations

The Plant Operations Procedure will apply to the following types of plants:

- concrete batch plants;
- pug mills;
- crusher plants; and
- mining facilities.

Plant Warnings

One long blast of the horn indicates the initial startup of plant equipment. No such warnings will occur for the startup of individual batches. Workers must be aware that certain equipment starts automatically at the beginning of each individual batch, such as conveyors, chain augers and mixers.

Two short blasts of the horn mean that the plant operator needs assistance or the attention of other plant personnel.

Without exception, all visitors must check in with the plant operator before entering the plant site. A visitor is anyone not directly assigned to work at the plant, regardless of whether he or she is a D&B Team employee. Visitors

include vendors, engineers, management personnel, truck drivers, mechanics, maintenance personnel and anyone else not directly assigned to the plant.

Before entering or going under the drum, the safety stands must be in place and secured and the hydraulic power locked out.

General Safety

- Everyone within the plant site boundaries shall obey all posted signs.
- Nobody shall attempt to make repairs or enter fenced-off areas while the plant is in operation.
- Vehicles will not be allowed on the plant site without prior authorization. There will be designated parking outside the plant site for plant personnel.
- References to procedures such as Confined Space Entry and Lockout/Tag-Out refer to the written standards in this document and OSHA standards.
- MSDS sheets will be filed in the plant control room for chemicals used in plant operations.
- Fire extinguishers will be located in the control room and next to gas-powered generators, fuel tanks and in other locations as needed.
- The first aid station will be located inside the control room, with smaller ones available in the plant vehicles.
- All portable ladders shall be tied off when used at any location within the plant site.
- Man lifts shall be used whenever possible to reach higher locations that are hard to access otherwise.
- Workers shall use appropriate fall protection gear while working off the ground on plant equipment.
- All hose connections shall have their clamps wired closed during use.

Personal Protective Equipment (PPE)

The following is the minimum PPE required for anyone in the plant site:

- hard hat at all times outside vehicles or the control house;
- orange or green reflective vest if around vehicle traffic and/or night work;
- proper eye protection for the task at hand;
- long pants – truck drivers in shorts shall stay inside their truck;
- shirts with sleeves that cover the midsection;
- work boots – no tennis shoes, sandals, etc.

When unloading cement or fly ash, workers shall wear the proper gloves, goggles, dust mask and boots. Workers shall use additional eye protection during tasks that produce airborne particles such as chips of concrete, metal, or wood. Workers shall wear proper hearing protection when using tools that generate excessive noise such as chipping hammers and grinders. The D&B Team will provide respirators for workers performing tasks that generate excessive amounts of dust, fumes, or mists.

Any employee working at a distance of six feet above the next lower level will be subject to the fall protection guidelines of this document and OSHA. The requirements are:

- a full body harness, worn properly;
- a shock-absorbing lanyard worn properly and connected to an engineered tie off; and
- positioning lanyards and hooks, properly connected, when performing tasks that require the use of both hands.

When using electrical hand tools, workers shall use ground fault circuit interrupters at the power source.

Refer to the Confined Space Entry and Lockout/Tag-Out procedures in this document for specific PPE and other procedures when performing these types of work.

Traffic Awareness

All vehicles entering the plant site will adhere to any posted traffic directions, speed limits, warnings, “keep out” signs and any other signs pertinent to traffic.

Vehicles will not be permitted within the plant site without prior authorization.

Visitors shall check in with the plant operator prior to entering any part of the plant site. This includes, but is not limited to, truck drivers, vendors, engineers, management personnel, inspectors, mechanics, and anyone else not specifically assigned to plant operations.

Vehicles and pedestrians shall not enter the loader operations area unless escorted or authorized by the plant operator.

All pedestrians are responsible for making eye contact with the operator of any vehicle or piece of machinery when in the immediate area where they are in operation.

When the plant is in operation and the loaders are working, they always have the right of way.

Mixing, Crushing, and Sieving Operations

A warning will sound prior to the startup of plant operations.

All personnel in the plant operations area shall notify the plant operator of their location, purpose, and the duration of their stay.

No maintenance, repairs or additions shall take place while the plant is in operation unless the equipment in question can be locked out/tagged out, and until all employees have been notified and the plant operator is in control of the situation. The plant operator must verify the status of the equipment prior to putting it back into service. He or she will verify that the equipment is ready for use, notify plant employees and ensure that safety precautions are in place prior to startup.

When working on any equipment controlled by any type of energy source, workers shall follow the Lockout/Tag-Out and/or Confined Space Entry procedures and take all safety necessary precautions to isolate and immobilize the equipment.

Pedestrians within the plant area will wear the minimum PPE, consisting of a hard hat, reflective vest, safety glasses and the proper clothing. People working on or around moving or rotating equipment shall not wear loose clothing, including safety vests.

Trucks hauling raw materials, such as rock, sand, gravel, dirt, cement, fly ash or water, will travel by designated routes and follow posted traffic control procedures and other signs. Drivers will stay in their trucks while being loaded. Drivers who get out of their trucks for any reason become pedestrians and shall follow the safety rules regarding such.

The D&B Team will keep truck-dumping locations level and maintain them in good condition. The truck washout area will be kept level for trucks raising their bed. The loader operator has the right-of-way while cleaning out the washout pit.

Pressure vessels, including trailers, will be inspected to ensure that all relief valves are functioning properly and that pressure is released prior to disconnecting hoses or compartments. All hoses connected for loading/unloading or pressure hoses will be connected securely and the proper whip-check and eye connections secured. The only exception is the boss fitting.

First aid kits will be on hand in the control house at plant sites, with smaller kits in plant vehicles and in other locations, as management deems necessary. Since cement and fly ash are caustic materials, vinegar will be on hand for first aid purposes. The control room will contain a halon or other electrical fire extinguisher in good working condition at all times.

Guarding devices and warning signs will be in place in specific locations where hoses and other peripheral equipment on the ground create a tripping hazard.

Lockout/Tag-Out (LO/TO)

The unexpected startup of machines or equipment, or the release of stored energy, can cause serious injury. Lockout/Tag-Out procedures prevent accidental exposures from sources such as electrical, mechanical, pneumatic, hydraulic, chemical, thermal, and gravity.

Lockout is the process of turning off and locking out the flow of energy from a power source to a piece of equipment or a circuit, and keeping it locked out. Lockout is accomplished by installing a lockout device at the power source. Lockout should always be the preferred method.

Tag-Out is placing a tag on the power source. The tag acts as a warning not to restore energy – it is not a physical restraint. Tags shall clearly state, “Do Not Start”.

Employees who work with or near electrical and mechanical devices will receive training in LO/TO procedures. An authorized employee must notify affected employees before LO/TO devices are applied and after they are removed.

Work will only take place on electrical circuits if an effective LO/TO program is in place, including employee training, and the electrical circuits are not positively de-energized or tagged out. Employees designated to implement LO/TO procedures will

- Tag all controls that will be deactivated during the course of work on energized or de-energized equipment or circuits;
- render equipment or circuits that are de-energized inoperative and attach tags at all points where such equipment or circuits can be energized; and
- place tags to plainly identify the equipment or circuits being worked on.

Employees shall not perform maintenance or repair activities on equipment, such as compressors, mixers, screens, or pumps used for concrete construction, where inadvertent operation of the equipment could occur, unless all potential hazardous energy sources have been locked out and tagged.

When performing a servicing activity such as lubricating, cleaning or un-jamming production equipment, the workers engaged in these operations will institute the LO/TO procedure when:

- The employee must either remove or bypass machine guards or other safety devices, resulting in exposure to hazards at the point of operation;
- The employee is required to place any part of his/her body in contact with the point of operation of the operational machine or piece of equipment; or
- The employee is required to place any part of his/her body into a danger zone associated with a machine operating cycle.

Servicing tasks that may have to be performed with the power on include making fine adjustments, such as centering the belt on conveyors, or identifying the source of a problem and checking to ensure that it has been corrected. Workers must exercise a great deal of caution and communication when performing these tasks with the power on.

Minor tool changes and adjustments, and other minor servicing activities that are routine, repetitive, and integral to the use of the production equipment, are not subject to the LO/TO procedure, provided that they occur during normal production operations and that the work is performed using alternative measures that provide effective protection.

When tags are used on energy-isolating devices not capable of being locked out, there must be additional means to assure a level of protection equivalent to that of locks.

Written Guideline for Lockout/Tag-Out

Below are guidelines for Lockout/Tag-Out by authorized employees. These are the basic step-by-step rules for preventing unexpected energizing, startup or release of stored energy that could cause injury to anyone working on equipment.

Step 1: Turn Off the Equipment and Disconnect the Energy Source

- Locate and identify all switches, valves and other devices that must be locked and/or tagged. More than one energy source may be involved.
- Notify all affected employees that a lockout procedure is beginning and explain why.

Step 2: Lock Out ALL Energy Sources

- Use a lock to prevent the flow of energy from being restored. Snap your lock on the control lever or on the multiple-lock adapter. Test the disconnect to be sure that it cannot be moved to the “on” position. In other words, make it impossible to reestablish the flow of energy without your knowledge. **Pulling a fuse or flipping a circuit breaker is no substitute for locking out.** If more than one person will be working on the equipment, use a multiple lockout device so that each separate work group must use a different lock and control their key.

Step 3: Tag Out at the Disconnect Point

- Even though you are using a lock, it is also necessary to place a tag at the disconnect point. A tag provides vital information and extra protection. It tells everyone who you are and what you are doing and instructs them not to restore energy. When it is physically impossible to use a lock, a tag is essential.
- The information required on the tag is as follows:
 1. Your name, the time and date that the work began and type of work you are doing.
 2. Other items that should be on the tag that act as a warning to others are:
 - A. Do Not Start
 - B. Do Not Open
 - C. Do Not Energize
- The following are the limitations of tags:
 1. Tags are essentially warning devices affixed to energy-isolating devices and do not provide the physical restraint of a lock.
 2. When a tag is attached to an isolating means, it shall not be removed except by the person who applied it, and shall never be bypassed, ignored or otherwise defeated.
 3. Tags must be legible and understandable by other employees.
 4. Tags and their means of attachment must be made of materials that will withstand the environmental conditions encountered in the workplace.
 5. Tags must be securely attached to the energy-isolating devices so that they cannot be accidentally detached during use.
 6. Tags may evoke a false sense of security. They are only one part of an overall energy control program.

Step 4: Release Residual Energy

- Zero mechanical state means that the machine has been put in a state in which the possibility of an unexpected mechanical movement has been reduced to a minimum.

- Some equipment does not run by electricity alone. Hydraulic and pneumatic devices may also be involved. Air under pressure in a hose and unsecured machine parts are also examples of potentially dangerous energy that is often stored in a machine that has been shut down. That is why releasing residual energy by discharging capacitors, grounding circuits and releasing built-up pressure is a step that cannot be overlooked. **Do not forget about gravity!**

Step 5: Test Equipment

- It is necessary to test equipment to make sure it will not run before working on it. A disconnect switch could be defective, or the wrong switch thrown, leaving the circuit energized. After you have completed the first four steps, turn on the switch or push the start button to make sure you have successfully blocked out all energy sources. Then return it to the "off" position.
- Be aware of hidden energy sources. For example, if there is more than one source of energy, make sure you lock and tag the other sources following the steps above.

Step 6: Restore Energy Safely

- When you have finished working, check to make sure all tools have been removed, all lines have been reconnected or unblocked, all guards have been reinstalled and other workers are safely out of the way before removing your lock and tag and restoring power to the machine. Be sure you are not exposing another person to danger by removing your lock. Make sure all co-workers have been notified.
- Beware of multiple lockout situations. Even if your lock is the last one remaining on the lockout device, it is a good idea to check the machine and notify your supervisor before restoring energy, just to be safe.

Ladder Safety

All ladders shall be maintained in good working condition, and free of oil, grease and other slipping hazards.

Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond the manufacturer's rated capacity.

Ladders shall only be used for the purpose for which they were designed.

Ladders shall extend at least three feet above the upper landing. Where that is not possible because of the length of the ladder, the top and bottom of the ladder shall be secured so as not to move or deflect and some type of grab rail can be installed to assist the user in mounting and/or dismounting.

Ladders shall not be modified, such as by separating the two sections of an extension ladder or by painting.

The user will face the ladder when ascending or descending and maintain three-point contact with the ladder. In other words, workers shall not carry bulky loads or loads that could make them lose their balance or slip.

When there is a structural defect in the ladder such as, bent/broken/or missing rungs, broken or split rails, corroded components or other defects, the ladder shall be immediately taken out of service.

Job-Made Ladders

Job Made Ladders are heavy-duty and custom-made to fit specific job situations. Although the basic construction of job-made ladders is fundamental, workers must follow specific guidelines to ensure their safety and strength. Job-made ladders must follow ANSI criteria for construction, as follows:

Do Not Skimp on Material Quality:

- all lumber used must be finished on four sides (s4s), and free of sharp edges or splinters
- all nails must be driven full length and flush
- depending on your location, various selections of wood species and associated grades can be used, but as a rule of thumb, the lumber must be equal to or better than #1 Hem-Fur
- wood ladders shall not be coated with any opaque covering, except for identification or warning labels, which may be placed on one face only of a side rail

Limitations:

- a single-cleat (single-rung) ladder is permissible if fewer than 25 workers will be using it
- if more than 25 workers will use the ladder, a double-cleat ladder is required

Side Rail Construction:

- The ladder's side rails must extend 36 to 42 inches above the upper landing
- side rails can be constructed with either 2 x 4 or 2 x 6 lumber
- any ladder that rises less than 12 feet to the working level may be built from 2 x 4 material
- ladders over 12 feet high must meet the restrictions and material used depending on the height and pitch of the ladder
- side rails can be spliced once, but the splice should be in the upper portion of the rail, and the rail must be as strong as if it were unspliced – spliced rail ladders cannot exceed a pitch of 1:8

Cleat Construction:

- cleats can be made from either 1 x 4 or 2 x 4 lumber
- The cleat cannot be spliced and must extend the full outside measurement of the single- or double-width ladder
- if using 1 x 4 cleats, install them with three 10d common nails at each rail
- if using 2 x 4 cleats, use three 12d common nails at each rail
- cleats must be parallel and evenly spaced from the ladder's base to the top point of bearing with spacing 12 inches between the top edges of each cleat
- There should be no cleats on side rails that extend above the landing surface
- with a single-cleat ladder, the clear distance between side rails can be 16 to 20 inches
- double-cleat ladders may have a clearance of 18 to 22 inches between each rail
- a filler block must be installed between each cleat and must fit snugly between cleats

- use 1 x 2-inch fillers with 1 x 4 cleats
- use 2 x 2-inch fillers with 2 x 4 cleats

Inspection and Maintenance:

- as with any important tool, ladders must be inspected regularly and repaired as necessary to ensure the safety of workers
- inspect the ladder daily or at least weekly
- inspect the condition of the lumber, landings, lashings and connections carefully
- any faulty items should be corrected immediately or the ladder taken out of service
- cleats should be kept as clean as possible at all times, especially in wet or muddy conditions
- excellent housekeeping at the ladder's access points will be the norm

Safety First on Any Ladder:

- as with all ladders, a job-made ladder must be set on a level and solid foundation
- do not set up the ladder where it may be bumped by equipment and damaged
- always secure the ladder at the top and bottom
- always use the three-point contact method while ascending or descending the ladder
- always face the ladder while ascending or descending
- use alternative methods for getting tools, supplies, or equipment to the working level – do not carry any of these objects while ascending or descending a ladder
- always correct any defect immediately or take the ladder out of service until repaired

Table 49: Minimum Rail Size for Single-Cleat Ladders

Working Length	1/8 Pitch	1/4 Pitch
12'	2x4	2x4
14'	2x4	2x4
16'	2x4	2x6
20'	2x6	2x6

Table 50: Minimum Rail Size for Double Cleat Ladders

Working Length	1/8 Pitch	1/4 Pitch
12'	2x4	2x4
14'	2x4	2x6

16'	2x6	2x6
20'	2x6	Not Allowed
24' (MAX)	2x6	Not Allowed

5.1.9 The D&B Team - Training Programs

The D&B Team has developed various training programs specific to our type of work. They were developed with the intent to have a better-informed workforce who will perform their job duties in a safe, efficient and effective manner. The Health and Safety Professionals employed by the D&B Team will facilitate these training programs. Outside sources will conduct specialized training programs where management deems it necessary to do so. Training programs will be developed using the latest OSHA Standards and any other applicable laws referenced.

D&B Team' Training Programs

The following is a list of Training Programs developed for use by the D&B Team:

- New Hire Orientation – English and Spanish
- OSHA 10-Hour
- OSHA 30-Hour
- Excavation Competent Person
- Trench and Excavation Hazard Awareness
- Fall Protection
- Personal Protective Equipment (PPE)
- Confined Space Entry
- Permit Required Confined Space Entry
- Stairway and Ladder Safety
- Electrical Hazard Awareness
- NCCCO Crane Certification Training
- Crane Load Chart Reading
- Rigging
- Record Keeping and Recording
- Flagger Train-the-Trainer
- Tools – Hand and Power
- Material Handling, Storage, Use and Disposal
- Material Safety Data Sheets (MSDS)
- Bloodborne Pathogens
- Heat-Related Illnesses



New Hire Safety Orientation

The new employee’s immediate supervisor will conduct the New Hire Safety Orientation. All new employees will receive this orientation prior to performing any job task for the D&B Team and will attest to having received this training by signing the form shown in Figure 35.

Figure 35: New Hire Safety Orientation Acknowledgement Form

New Hire Safety Orientation Acknowledgement Form

The supervisor giving the New Hire Safety Orientation, _____, affirms that all safety material
(Supervisor Name)
 in the attached packet was explained to the new employee, _____, and the new
(New Employee Name)
 employee understands that these rules apply, as a condition of employment, at all times during working hours.

The new employee also understands that violation of any of these rules will result in immediate disciplinary action up to and including termination.

The new employee also understands that he/she is responsible for maintaining Personal Protective Equipment in proper condition, bringing it with them to work each day, and wearing it properly.

I, _____, am the immediate supervisor for the new employee and have covered all
(Supervisor Name)
 the New Hire Safety Orientation material with him/her and have answered all questions asked in a satisfactory manner.

(Supervisor Signature)

I, _____, have been given the New Hire Safety Orientation, covering all material
(New Employee Name)
 contained in the packet. I understand this information and my responsibility and accountability for performing my work in a safe manner.

(New Employee Signature)

Revised: [date]

5.2 General Safety Policies and Procedures – Operations and Maintenance

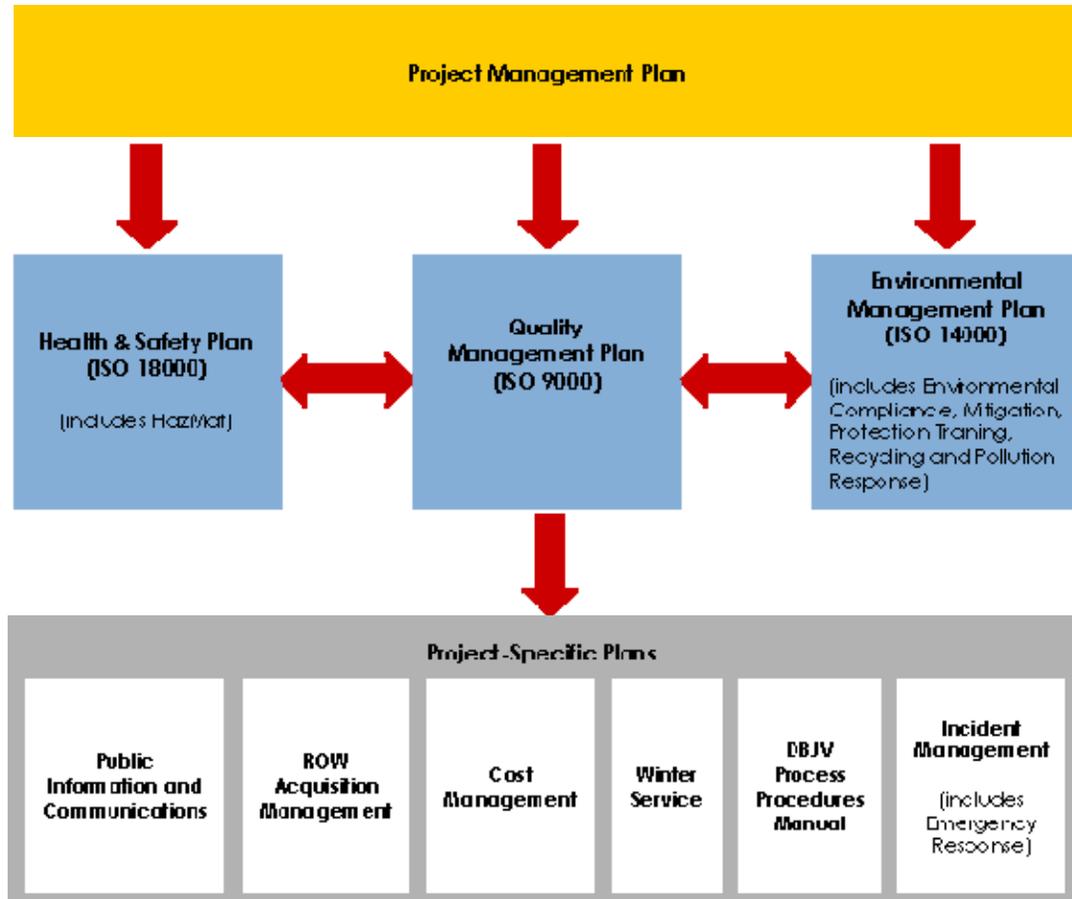
5.2.1 Purpose of Plan

This Operations Safety Plan will provide an overview of the Health and Safety Management System that the Roadway Operations Director has provided and resourced to address his responsibilities and commitment as defined by the Policy Statement.

The Developer will be responsible for the safety of its personnel and of the wider public affected by the IH 635 Managed Lanes Project.

The Developer will submit a comprehensive Safety Plan with the final Project Management Plan that will expand upon this Preliminary Operations Safety Plan. The plan will address procedures for immediately notifying TxDOT of all incidents arising out of or in connection with the performance of the work, whether on or adjacent to the Project.

Figure 36: Integrated Management System



5.2.2 Definitions

Table 51: Safety-Specific Definitions

Accident outcomes	Classification according to severity fatal, major, minor, no injury
OHSAS 18001	Occupational health and safety Assessment Series – international standard for health and safety

Table 52: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expansion from excessive heat causes heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the mainlanes and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.

Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment that consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor-to-moderate surface distress.

5.2.3 References and Standards

Table 53: Technical Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required to be used by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.

	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 54: Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	Texas MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required by the TxDOT and cities when establishing speed zones on the state highway system.

	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf)	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Table 55: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
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Water Quality Control	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgt.html)	Provides rules, policy and legislation for water quality control.
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tlpge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.
Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/resources/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.
Air Pollution	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.

	<p>TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf</p>	<p>Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language useful in developing environmental documentation.</p>
	<p>TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf</p>	<p>Describes air quality requirements with respect to project planning.</p>
	<p>TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html</p>	<p>Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.</p>
Vegetation	<p>Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm</p>	<p>Issued to prevent and control the introduction and spread of invasive species</p>
	<p>Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf</p>	<p>Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development of landscape and aesthetic components for different classifications of roadway facilities.</p>

Table 56: Required Operations and Environmental Permits

<p>Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>Table 4.1 in Book 2A lists all environmental permit requirements and the name of the coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.</p>
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Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9:
<http://www.fhwa.dot.gov/ppp/toc.htm>

Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.

Table 57: Insurance Standards

Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9:
<http://www.fhwa.dot.gov/ppp/toc.htm>

Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.

5.2.4 Systems and Procedures

For systems and procedures relating to this Plan, please refer to the Operations Quality Management chapter of this document (Chapter 2C), which includes procedures to cover the following:

- control of quality records;
- management reviews;
- resource allocation;
- measurement of customer satisfaction;
- control of nonconforming products and services;
- internal audits; and
- continuous improvement.

5.2.5 Roles and Responsibilities

Developer's Management Structure

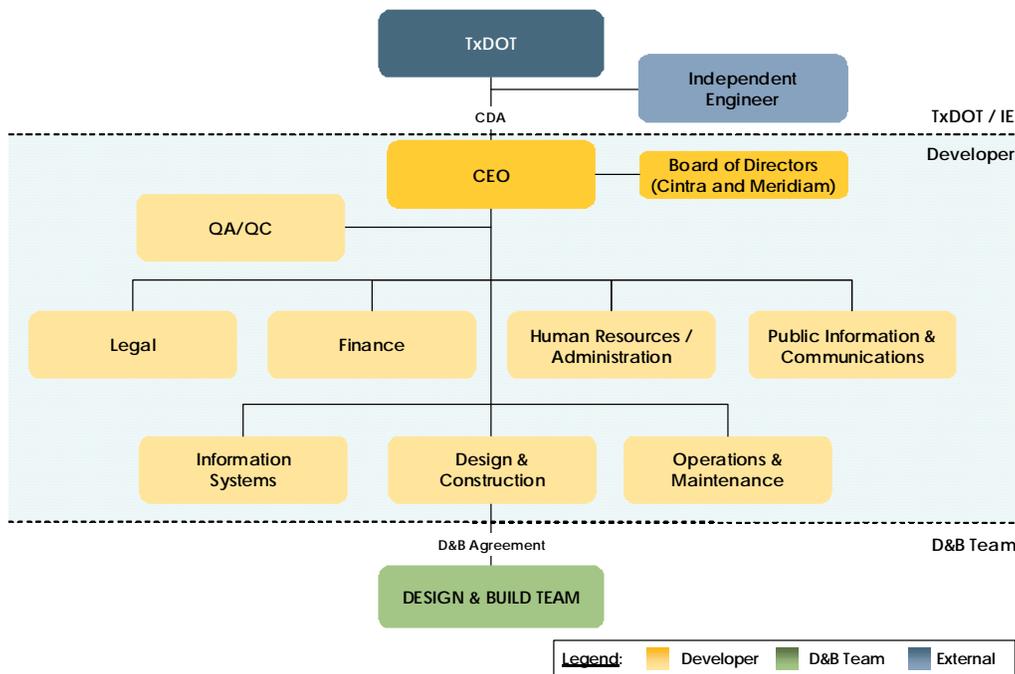
The Developer will establish an organization that will ensure a fast, safe and reliable transportation route serving millions of commuters and various industries and geographical markets. To achieve these goals, the organization's management will consist of the following areas of responsibility (also see Figure 37: Developer's Organization Chart – Management)

- Quality
- Design and Construction (D&C)
- Operations and Maintenance (O&M)

- Finance
- Information Systems
- Legal
- Human Resources and Administration
- Public Information and Communications

The leader of each of these areas of responsibility will report directly to the CEO, as shown in Figure 37.

Figure 37: Developer’s Organization Chart – Management



() Active only during the initial construction period*

This organization will be responsible for maintaining continuous 24/7 year-round operations of the highest quality, consistent with the best toll road management practices and the Terms and Conditions of the CDA. In addition, it will direct, coordinate, evaluate and amend, when necessary, the responsibilities of the Developer’s sub-organizations. This organizational structure was designed to implement the Project from its Effective Date through the End of Term, and will include the following key full-time management positions:

- CEO (CEO)
- Chief Financial Officer
- Public Information Manager
- Design and Construction (D&C) Director
- Design Manager

- Construction Manager
- Quality Director
- Environmental Compliance Manager
- Roadway Operations Director
- Maintenance Manager

5.2.8 Safety-Specific Roles and Responsibilities

Roadway Operations Director

The Roadway Operations Director (ROD) has overall responsibility for ensuring the health, safety and welfare of Developer employees and subcontractors during the O&M phase. The ROD is responsible for assessing and reporting on the effectiveness of the Developer's safety management system, policies and procedures, in terms of reducing workplace accidents and work-related ill health. The ROD will identify areas where safety management improvements and updates are required, and lead will the implementation of such improvements.

The Delegated responsibilities to support the Roadway Operations Director are as follows:

Employees

All employees shall:

- Take reasonable care for their own safety;
- Take reasonable care for the safety of anyone else who might be affected by their work practices;
- work according to the information, instructions and training given;
- report all incidents, including accidents and near misses, encountered in the workplace;
- report all hazards and defects to their supervisor; and
- report any unsafe acts or conditions and any deficiencies in the safety arrangements to their supervisor.

Employees shall not:

- interfere with or misuse equipment that has been provided in the interest of workplace health, safety and welfare;
- undertake any work for which authorization and training has not been provided;
- bring any unauthorized equipment or substance to the workplace.

Specific Health and Safety Staff

The following roles are the specific roles and resources that the ROD has provided to manage the safety management system and implement the Operational Safety Plan policies. Furthermore, the Roadway Operations Director will ensure that these personnel receive the necessary resources and are allotted the necessary time to exercise their responsibilities.

Health and Safety Manager

The Health and Safety Manager is the designated competent person who will provide health and safety assistance to the Roadway Operations Director. The Health and Safety Manager has the authority to order a stop to any process or activity that he or she considers unsafe. Supervisors shall report all urgent Health and Safety matters and all incidents to the O&M Quality and Environmental Manager immediately.

The Health and Safety Manager will:

- advise all levels of staff on health and safety matters;
- support line managers in providing health and safety orientations and risk assessment training to staff, subproviders and agency personnel, as appropriate;
- assist in identifying health and safety training needs and arrange for necessary training;
- update the ROD and the O&M management team on actual or anticipated changes in health and safety legislation and best practices, by updating and maintaining the IMS database of legal and other requirements;
- advise the ROD in formulating and revising the Operations Safety Plan and the safety management system;
- assist in devising health and safety procedures;
- coordinate and oversee a program of periodic health and safety risk assessments throughout the O&M phase;
- conduct monthly inspections and periodic health and safety audits to determine the effectiveness of health and safety management procedures, recommend corrective measures where appropriate and report results to the appropriate managers;
- investigate accidents and dangerous occurrences, help to initiate corrective measures and report such incidents to the appropriate managers and to outside agencies as required by law;
- ensure that all equipment is properly maintained and that statutory checks have been carried and reports retained;
- maintain an office safety manual as a record of evidence for the office health and safety practice;
- update and maintain health and safety notice bulletin boards;
- ensure that first aid provisions are in place for offices and worksites;
- ensure that fire procedures and statutory checks are carried out;
- ensure that contractors engaged to carry out building or maintenance work relating to the office are assessed for their competency;

Office Managers

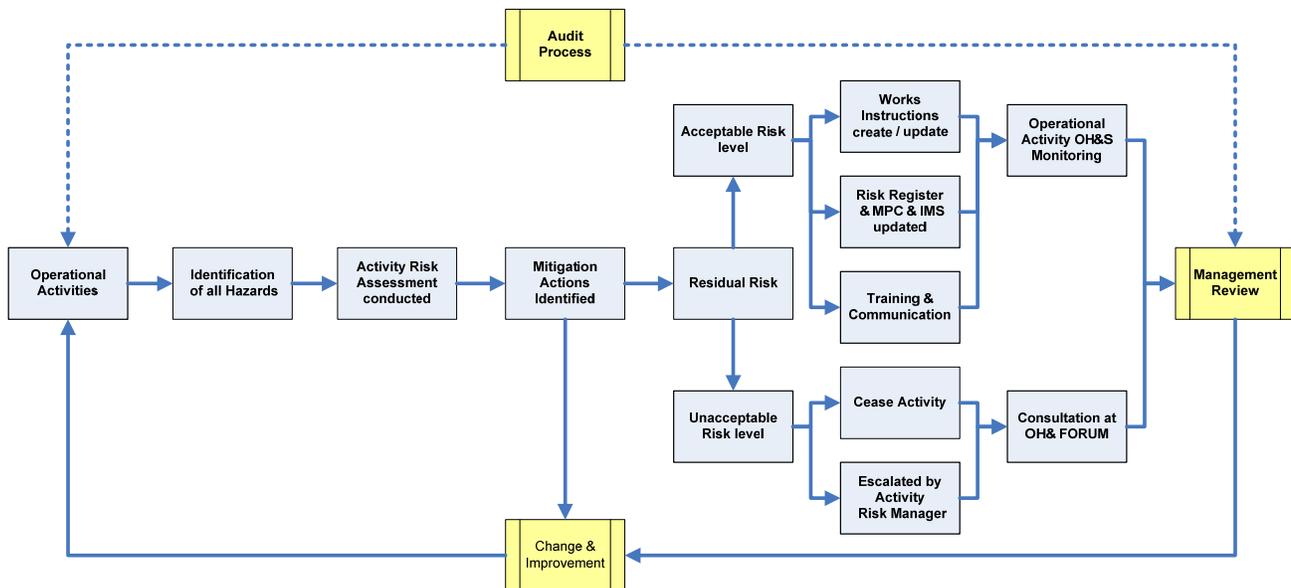
The ROD will appoint a competent person at each office, to assist with the management of health and safety relating to office risks. These office managers will:

- have overall responsibility for the health, safety and well-being of all staff, agency staff, and visitors who occupy the office for which they have managerial responsibility;

- lead completion of an Office Risk Assessment, including specific risk assessments such as Display Screen Equipment (DSE) and ergonomic assessments, and make the results available to all staff;
- appoint a competent office safety coordinator to assist the office manager with safety-related responsibilities, and ensure that he or she has sufficient training, support and resources to fulfill this role; and
- appoint the following personnel to assist with health and safety management within the office for which they have managerial responsibility:
 - Fire Warden / Marshal
 - First Aid administrator
 - DSE / Ergonomic Assessor

5.2.9 Hazard Identification & Risk Assessment

Figure 38: Hazard Identification/Risk Assessment Flowchart



Hazards are defined as those things which potentially could be harmful, and their identification is the first step in accident and ill health prevention. Hazards will be identified as a result of:

- Employees being vigilant during the course of their daily work.
- Workplace inspections undertaken by managers and supervisor.
- Workplace inspection undertaken by safety representative.
- Formal risk assessments
- Incident reports.

At the business level the Health and Safety Manager has identified all the activities of the business and conducted seven generic risk assessments, these are held on the IMS. Any change an improvement action required as a result of these generic risk assessments is reviewed by the OH&S forum and is an input to business planning

At the project level, risk assessments are conducted to cover hazards not addressed by the generic risk assessments, these local risk assessments are kept as part of the project documentation. Any change an improvement action required as a result of these project risk assessments is reviewed by the project review and is an input to project planning.

Risk assessments will be undertaken on an activity basis and executed by a competent person, these will include:

- Maintenance Manager / team leader
- Health and Safety advisors
- Any person who by virtue of their specialist skills of particular competence may contribute to the suitability and sufficiency of the risk assessment

5.2.10 Legal and Other Requirements

The Health and Safety Manager will update and maintain an index of legal requirements and other safety-related requirements as part of the Integrated Management System (IMS). This index will consist of a list of legal statutes with hyperlinks to the full text of each piece of legislation. The O&M Quality and Environmental Manager will communicate new requirements to all employees via "Health and Safety Alert" e-mails.

5.2.11 Health and Safety Objectives

The Developer has identified the following Health and Safety objectives for the IH 635 Managed Lanes Project as part of its business planning process:

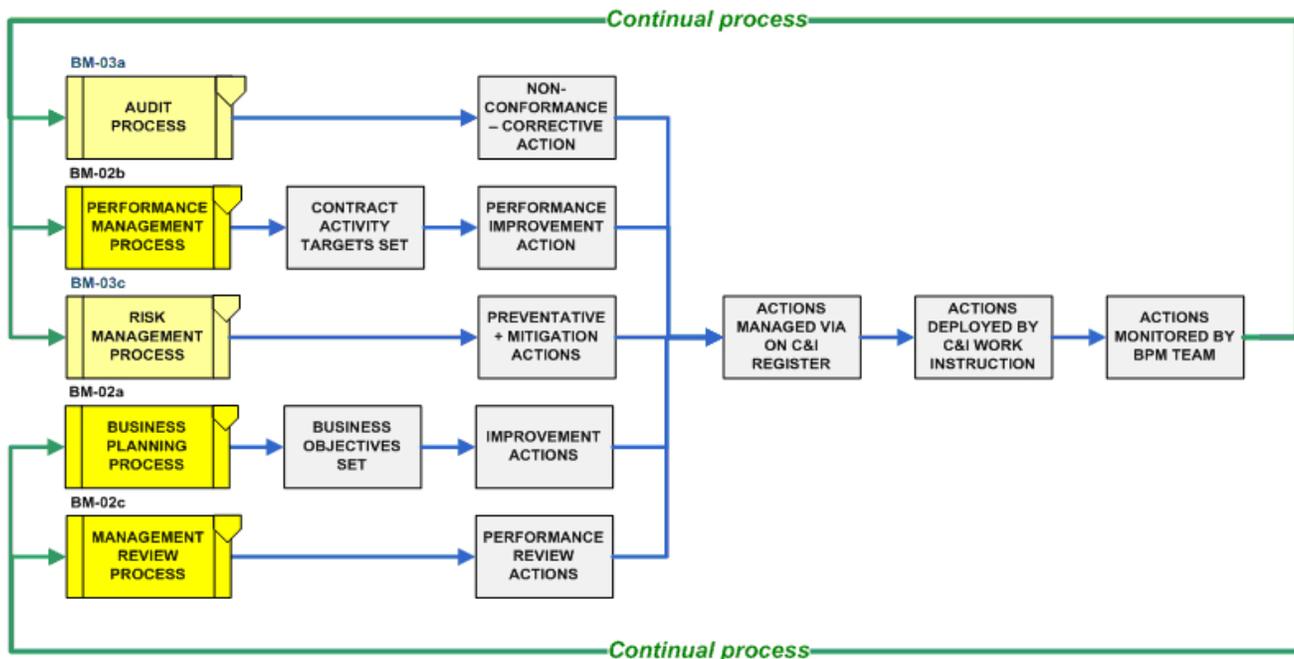
- Deliver Safety Plan Objectives:
 - include near-miss figures in management reports;
 - deliver safety orientation training to all new staff;
 - audit performance based on Key Performance Indicators and prepare assessment reports; and
 - appoint and train office and field safety coordinators.
- Achieve and Maintain OHSAS 18001 accreditation:
 - apply resources for management, review audit and training.
- Provide All Staff With Appropriate Training
 - produce and manage Skills and Training matrix; and
 - plan and deliver individual training to all staff.
- Promote Interaction Between Departments and Working Sections
 - establish an interactive liaison process and program for sharing best practices, undertaking compliance reviews and reporting to management team.

Performance Measurement and Review

Once the Developer has identified Health and Safety objectives, they become part of a Change and Improvement Plan. The Change and Improvement Plan will be located on the IMS to facilitate planning, assessment, implementation and documentation of objectives.

The Business Process Management Team monitors the progress towards each objective with the respective action owners, documents the status of each action on Change Control forms, and prepares monthly progress reports as part of the Monthly Management Review Report. Figure 39 further illustrates the performance measurement process.

Figure 39: Performance Measurement Flowchart



5.2.12 Training and Awareness

Local Workplace Health and Safety Orientation

The Developer recognizes the importance of health and safety orientations for all full- and part-time employees, contractors and subproviders. All new staff will receive an orientation to the IMS and the Quality Management System, which will include an introduction to the Health and Safety Management System. Line Managers will provide health and safety orientations with the support of the O&M Quality and Environmental Manager. Safety orientations will address the following topics:

- Emergency Procedures:
 - raising the alarm;
 - alarm recognition;
 - fire exits and assembly points;
 - location of firefighting equipment; and
 - first aid.
- Health and Safety Organization:
 - Safety Policy and personal responsibility;
 - hazard reporting procedures; and
 - incident reporting procedures.
- Job-Specific Training:
 - job-related hazards;
 - risk control measures;
 - safe work procedures; and
 - use of procedural notes, where applicable.

Provision of Training

Every employee will undergo Health and Safety Training. Training will be provided locally, by line managers, the O&M Quality and Environmental Manager and recognized third-party suppliers. The Developer will determine the types of training required according to factors such as:

- The nature of work associated with each position;
- The training needs identified by risk assessments; and
- any special needs of the employee in question.

The Developer will provide Health and Safety training in the following circumstances:

- upon start of work as a new employee or contractor;
- when new responsibilities are assigned;
- when new equipment is introduced;
- when work procedures change;
- after a prolonged absence from work;
- after a case of work-related ill health;
- after an accident or near-miss;
- following changes in health and safety legislation; and
- at other times, as management deems necessary.

The Developer will retain records of health and safety training for every employee to ensure that all training is recorded; and that employee signatures confirm receipt of the appropriate training and understanding of the training received.

5.2.13 Performance Measurement and Monitoring

Monitoring the Implementation of the Policy and System

The Developer will monitor implementation of the Health and Safety System to confirm its effectiveness in ensuring workplace health, safety and welfare. Such monitoring will be both active and reactive in nature.

Examples of active monitoring include:

- workplace inspections;
- spot checks;
- Testing of employees' understanding; and
- health and safety audits.

Examples of reactive monitoring include:

- investigation of accidents, near misses, and work-related illnesses that have occurred;
- analysis of accident and near miss investigation reports;
- response to health and safety concerns resulting from external audits.

An annual report will be submitted to the Roadway Operations Director on the effectiveness of the health and safety management procedures. The following personnel will carry out office inspections and contribute the results to the annual report:

- Daily: All employees shall conduct informal inspections while going about their daily business
- Monthly: Office Safety Coordinators
- Biannually: Safety Advisor
- Annually Chief Operating Officer (Departmental Review).

5.2.14 Accident and Near Miss Reporting and Investigation

Employees shall immediately report all incidents, concerns, near misses and accidents to the appropriate manager and provide a copy of the incident or near miss report to the Office Safety Coordinator.

Employee working away from the office must report any incidents, near misses or accidents to the person responsible at the location where the incident occurred. The employee must also report the incident to his or her supervisor and the Office Safety Coordinator upon return to the normal place of work.

All incidents, near misses and accidents involving visitors or the public will also be reported.

5.3 Incident Notification Procedures

OSHA requires employers to fill out, maintain and post three record-keeping forms for injuries and illnesses:

- **Form 300 – Log of Work-Related Injuries and Illnesses:** lists injuries and illnesses; tracks days away from work, restricted, or transferred.
- **Form 301 – Injury and Illness Incident Report:** contains supplementary information about recordable cases.
- **Form 300A – Summary of Work-Related Injuries and Illnesses:** summarizes and categorizes total injuries and illnesses for the year. Posted from February 1 to April 30 of each year.

Supervisors will report all accidents and injuries to the project Safety Superintendent in written form. The Safety Superintendent will forward the incident report, along with his or her investigative report, to the Safety Manager. The Safety Manager will log the appropriate forms and make judgments as to OSHA recordability. The project Safety Superintendent will thoroughly investigate the incident and make a report with a synoptic description, fault determination, disciplinary action and corrective action, and present it to the Safety Manager. Monthly reports will include investigation report forms filed for any accidents.

In the case of severe accidents and injuries, supervisors will immediately report these cases to the Health and Safety Manager, who, in turn, will report this information to the General Manager. The General Manager will report such incidents to the Developer CEO. Under the terms of the Communications Plan (Chapter 6 of this document), the CEO or the communications task leaders will inform the TxDOT CEO or respective TxDOT authorized representative of severe accidents and injuries.

The Safety Superintendent will keep his or her own OSHA logs at the jobsite to aid in the follow-up. The Safety Manager will work directly with the project Safety Superintendent to follow up on the status of all accidents and injuries. Safety personnel and supervisors will monitor injured employees until they are able to resume full duty with no restrictions.

Please see Chapter 10: Incident Management Plan for a more detailed description of how the Developer will prevent, respond to and report incidents.

Exhibit 5.1: Trench/Excavation Safety Plan

1. General Conditions

- 1.1 The D&B Team will provide for safe excavation in accordance with OSHA Regulations (29 CFR Part 1926.650-652 Subpart P) and other applicable Federal, State and Local governing agencies.
- 1.2 Any trench, regardless of depth, that has unstable, raveling, or flowing soil shall be sloped, shored or shielded in accordance with this plan and drawings.
- 1.3 Any trench five feet deep or deeper must be sloped, shored or shielded in accordance with these notes and drawings.
- 1.4 The presence of any special hazards, including, but not limited to, boulders, water, springs, trees and tree roots, adjacent building foundations or piers, adjacent streets or sidewalks, shall be immediately reported to the safety superintendent. Such hazards may require special safety considerations and a change in the trench safety plan.
- 1.5 The estimated location of utility installations, such as sewer, telephone, fuel, electric, waterlines or any underground installations that may reasonably be expected to be encountered during excavation work, shall be determined prior to excavation.
- 1.6 Prior to beginning an excavation, workers shall refer to the General Notes of the Contract Plans, the Contract Specifications, or contact their Safety Superintendent for numbers to call regarding the Texas One Call Law.
- 1.7 Workers shall support all crossing utility lines to protect against movement and damage.

2. Trench Safety System Design

2.1 General:

- 2.1.1 Trench safety systems will be designed in accordance with current OSHA regulations set out in 29 CFR Part 1926.650-652, Subpart P and Appendices.
- 2.1.2 The D&B Team will maintain the trench safety system and inspection in accordance with OSHA regulations and other requirements stipulated by Federal, State or Local authorities.
- 2.1.3 The D&B Team will construct the trench safety system in a safe manner, with quality workmanship that is consistent with the accepted standards of the profession and industry.

2.2 Design Criteria:

- 2.2.1 The trench safety system is designed for a maximum trench depth of 18 feet.
- 2.2.2 Excavated material shall not be stockpiled any closer than two feet from the trench nor sloped at a ratio of more than one horizontal to one vertical.
- 2.2.3 The trench safety system design is based on geotechnical information provided by the Project documents and on what is actually found at each particular excavation.

3. Contractor Responsibilities

3.1 Competent Person:

- 3.1.1 The D&B Team will have a competent person on site at all times to be responsible for the trench safety system.
- 3.1.2 The competent person shall be capable of identifying existing and predictable hazards in the surroundings, or working conditions that are unsanitary or hazardous to employees.
- 3.1.3 The competent person shall have the authority to take prompt corrective measures to eliminate any dangers. This shall include the authority to stop work and remove workers from the excavation.
- 3.1.4 The competent person shall be trained and qualified to supervise installation, maintenance and removal of the trench safety system.
- 3.1.5 The competent person shall ensure that all workers are trained in proper trench safety equipment, methods and techniques.
- 3.1.6 The competent person shall confirm that the soil conditions are as described by the geotechnical information and as shown on the drawings. Any variations in soil conditions shall be reported to the safety superintendent immediately. A change in the soil conditions may require a change in the trench safety system.
- 3.1.7 The competent person shall perform daily inspections that, at a minimum, meet the inspection criteria described in OSHA regulations. Inspections shall also comply with all Federal, State and Local governing requirements.

3.2 Worker Protection:

- 3.2.1 All surface encumbrances located where they may create a hazard to workers shall be removed or supported, as necessary, to safeguard workers.
- 3.2.2 Workers exposed to public or construction vehicular/machine traffic shall be provided with, and shall wear, high-visibility warning vests marked with or made of reflectorized material.
- 3.2.3 Workers shall not be permitted under loads handled by lifting or digging equipment or near vehicles being loaded or unloaded.
- 3.2.4 Where workers are required or permitted to cross over excavations, walkways or bridges with standard guardrails and toe boards shall be provided. The walkway or bridge shall be designed by the competent person and shall meet all applicable OSHA requirements.
- 3.2.5 When working in the excavation, including ingress and egress, all workers shall remain within the protective system.

3.3 Hazardous Atmospheres:

- 3.3.1 Adequate precautions shall be taken to prevent worker exposure to atmospheres containing less than 19.5 percent oxygen. Where oxygen deficiency exists or could reasonably be expected to exist, the atmospheres shall be tested before workers enter any trench greater than four feet deep.
- 3.3.2 Adequate precautions shall be taken to prevent worker exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower explosive limit (LEL).

- 3.3.3 Emergency rescue equipment shall be readily available where hazardous atmosphere conditions exist or may reasonably be expected to develop during work in the excavation.
- 3.4 Water in the Excavation:
 - 3.4.1 Excavations shall be kept free of running water at all times.
 - 3.4.2 Surface water and groundwater shall be prevented from running into the excavation.
 - 3.4.3 The competent person shall inspect the excavation walls after each rain for indications of raveling, stress cracking, or other signs of soil failure.
 - 3.4.4 After a rain, workers shall not be allowed to enter the excavation until the competent person has completed the inspection and approved the site as safe.
 - 3.4.5 Pumps shall be used at all times in an excavation where water is continually accumulating from ground seepage.
- 3.5 Excavated Material:
 - 3.5.1 Excavated material shall be placed no closer than two feet from the edge of the excavation.
 - 3.5.2 Excavated material shall be stacked at a maximum slope ratio of one horizontal to one vertical.
 - 3.5.3 If the excavated material is in the form of large boulder-type chunks, then the distance from the excavation shall be increased accordingly and the slope adjusted to prevent the material from rolling back toward the excavation.
- 3.6 Equipment:
 - 3.6.1 If the equipment operator does not have a clear and direct view of the edge of the excavation, a warning system such as barricades, hand signals, or stop logs shall be utilized.
 - 3.6.2 No digging, lifting or hauling equipment shall be operated within five feet of the edge of an excavation without the permission of the responsible D&B Team engineer.
 - 3.6.3 An engineer shall be notified of any equipment in excess of 20,000 pounds that will be on the excavation site.
 - 3.6.4 Pile driving operations, and any other construction operations that generate ground vibrations around, near, or in the excavation, shall not be permitted without the responsible D&B Team engineer's written consent.
- 3.7 Means of Access and Egress
 - 3.7.1 Any excavation/trench four feet or more in depth shall have ladders or ramps located in the trench excavation to provide safe means of access and egress.
 - 3.7.2 Workers shall use ladders or ramps to enter or leave the excavation.
 - 3.7.3 Ladders or ramps shall be placed within the protective system and shall have a maximum lateral travel distance of not more than 25 feet from any worker.
 - 3.7.4 Ladders shall extend at least three feet above the top of the excavation landing or shielding system.
 - 3.7.5 Ladders shall be secured against movement and slippage at the top and bottom. However, ladder shall not bear against hydraulic cylinders.

4. Sloping/Benching Earth Safety System

- 4.1 Slopes shall not be greater than those specified for Type C soils unless a specific soil in a specific location can be classified as a different type according to the responsible D&B Team engineer, the competent person, and/or approved by the Project Safety Superintendent. Only under these conditions may the sloping criteria be changed.
- 4.2 Benches may be permitted for Class B soil or better, and never for a Class C soil. The D&B Team shall submit a benching plan to the responsible engineer upon request; otherwise, benching shall occur in accordance with OSHA regulations.

5. Aluminum Hydraulic Shoring System

- 5.1 All shoring systems shall be designed by an engineer and shall be provided to the contractor along with the pertinent tabulated data.
- 5.2 Tabulated data for the shoring system shall be maintained on site at all times when the shoring system is being used.
- 5.3 Workers and other personnel shall not enter areas of the excavation outside the shoring system or a partially shored excavation.
- 5.4 Trenches shall be dug in a manner that provides vertical walls of sufficient smoothness to accept the shoring system.
- 5.5 The trench walls shall be able to stand vertically for a period that allows the workers to shore the trench safely from the top of the excavation. If this cannot be achieved, the responsible engineer must be notified. An alternate safety system may be required.
- 5.6 If soil conditions dictate, 1 1/8-inch plywood shall be placed between the trench wall and the hydraulic shores.
- 5.7 A shored trench section shall consist of no fewer than three adjacent vertical rails with installed shores.
- 5.8 Vertical shoring rails shall be standard sections as provided by the manufacturer and shall have a minimum section modulus of 0.40 cubic inches; aluminum material shall be 6061-T6 or equivalent.
- 5.9 The aluminum hydraulic shores shall have cylinders with no less than a two-inch diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension.
- 5.10 Vertical shoring may be removed for ease of construction operations, to place or align pipe. No workers shall be allowed in the unshored portion of the trench. Vertical shores shall be reinstalled before workers are allowed to re-enter the trench.
- 5.11 Excavations shall be backfilled immediately after the shores are removed.
- 5.12 All shores and cylinders shall be clean, in good working order, and shall be regularly inspected. The competent person shall determine if materials are unsuitable for use, and if necessary, have any unsuitable materials removed from service.
- 5.13 Vertical loads in excess of 100 pounds shall not be imposed on any cylinder.

6. Shield Safety System

- 6.1 Shields shall be manufactured using standard sections as provided by the manufacturer.
- 6.2 The D&B Team shall obtain a shield certificate from the manufacturer that indicates the professional engineer who designed the shield, the rated load capacity, the design criteria, and approval of the shield for the application shown on the applicable drawings.
- 6.3 Shielding that is to be stacked shall be certified by the professional engineer and used only in the particular excavation for which it was designed.
- 6.4 Shields shall have the rated capacity spray-painted on the top portion of both outer faces. The minimum capacity of shields required for trenches is 800 pounds per square foot.
- 6.5 Shields shall be regularly inspected for damage.
- 6.6 Trench shield end plates or sloping/backfilling shall be used at the ends of the excavation for worker protection. If trench plates are used they shall run the full height of the shield but can be raised a maximum of two feet above the bottom of the excavation. If sloping is used, the slope shall be at a ratio of one horizontal to one vertical.
- 6.7 The trench shield shall extend at least 18 inches above the top of the excavation.
- 6.8 At no time shall spoils or natural ground be higher than the top of the shield at the shield sides. Spoils shall be placed at least two feet back from the edge of the shield and shall be sloped at a ratio of one horizontal to one vertical.
- 6.9 The D&B Team shall use shields in accordance with manufacturer recommendations.

Chapter 6: Communications Management

CHAPTER 6 COMMUNICATIONS MANAGEMENT

6.1 Communications Policies and Procedures

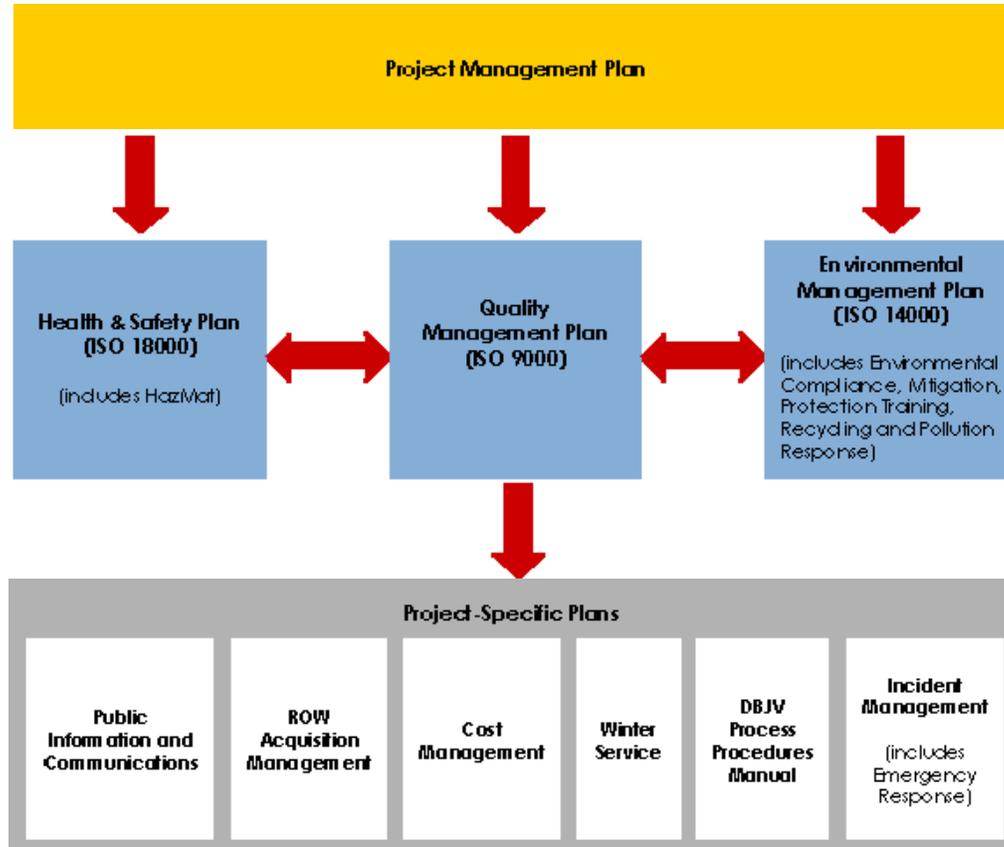
6.1.1 Purpose of Plan

This Communications Plan describes the methods by which information will be communicated both internally to the Developer staff and externally to TxDOT and the wider community. The Communications Plan is a key component of our Integrated Management System (IMS) shown in Figure 40.

The Communications Plan incorporates the Preliminary Communications Plan included in Section C.1.3.b. of the Project Development Plan and sets the Communications Strategy and principles for the Public Information and Communications Plan to be developed. The present document describes the processes and procedures for communication of Project information between the Developer and TxDOT. The Communications Plan describes how the Developer will respond to unexpected requests for information, communicate changes or revisions to necessary personnel and notify affected stakeholders before and after changes are made to the Comprehensive Development Agreement (CDA) Documents.

Chapter 6: Communications Management

Figure 40: Integrated Management System



The Developer is committed to constantly improving communications. We value the importance of clear, honest, timely and relevant communications. We will undertake a planned and sustained approach to communications to support the delivery of our core business and delivery a first-class service to our client and customers in managing the IH 635 Managed Lanes Project.

We understand the importance of an effective public communication program, knowing that innumerable important projects have been delayed or worse because the public felt the impact was too high or did not fully understand the project's benefits. The IH 635 Managed Lanes Project will positively impact the quality of life and economic well-being of North Texans for years to come.

Aims of the Communication Plan

- Support the aims and objectives of the Project through effective internal communication
- Gain and maintain public support through appropriate communications strategies
- Provide information to target audiences using a wide range of communication channels
- Engage in direct communication with our key stakeholders
- Ensure staff understands and shares in the Organization's values and objectives

Chapter 6: Communications Management

- Contribute to the Organization being regarded as a leader in providing support services in the community
- Support and promote the strategic direction of the Organization and contribute to providing the best service to the client.

Objectives of the Communication Plan

- Enact external communication structures, procedures and practices to enable a two-way flow of information. Project staff will be trained and tested on these policies and procedures and will sign an agreement to abide by them
- Respond to client, customer and group concerns when a response or reassurance is needed and ensure that the Organization's procedures, policies and practices are open, transparent and accountable
- Anticipate, plan for and respond to public relations issues, in support of Developer and TxDOT initiatives to gain and maintain public support
- Ensure that Project successes are communicated and celebrated and that lessons learned are shared with other parts of the Organization as well as with stakeholders

6.1.2 Definitions

Table 58: Communications-Specific Definitions

Communications Plan	Describes the processes and procedures for communication of Project information between the Developer's organization and TxDOT.
Communications Strategy	Set of communication policies proposed by the developer to be implemented on the IH 635 Managed Lanes Project, making use of all the technology and equipment available for this purposes.
Organization	The Developer's organization, including any Affiliates and Contractors that have an adjacent property interest or connecting roadway.
Project Intranet	Internal Project website with restricted access for stakeholders in which selected project-related data will be posted for consultation and download.
Customer Groups	Media, Governmental Entities, general public residing or working within the general vicinity of the Project, or traveling within or across the limits of the Project, business owners within or to the adjacent Project corridor, utilities, railroads, transportation authorities and providers affected by the Project.
TxDOT HCR	TxDOT's Highway Conditions Report online tool, to be updated by the Developer with any events occurring on the IH 635 Managed Lanes Project.

Table 59: Roadway Technical Definitions

Access Roads	Those roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance,
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Chapter 6: Communications Management

	inspection or utility traffic. These are low-type pavements constructed of gravel, grindings, or earth.
Asphalt	A brown to black solid material, soluble in gasoline or naphtha.
Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. When heave or settlement in a concrete pavement is caused by pavement expansion from excessive heat, it is also commonly referred to as a pavement blowup.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the Mainline and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.
Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.

Chapter 6: Communications Management

Wedge and Level	Pavement surface treatment which consists of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process is used to extend the life of relatively sound pavements that are beginning to show minor to moderate surface distresses.
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6.1.3 References and Standards

Table 60: General References and Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: (http://www.dot.state.tx.us/publications/traffic.htm#06%20mutcd)	X MUTCD Part 6 provides procedures for temporary traffic control (rehabilitation, maintenance, etc.).
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf)	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; required to be used by the TxDOT and cities when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol (to be researched)	The Texas Highway Patrol works closely with TxDOT which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and TxDOT also provide funding for statewide overtime traffic enforcement, construction work zone enforcement and ferry operation enforcement.
	TxDOT Maintenance Manual Chapter 7 - Emergency Management: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf)	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf)	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: (ftp://ftp.dot.state.tx.us/pub/txdot-	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program;

Chapter 6: Communications Management

info/gsd/manuals/tfa.pdf)

basic objective of the HES Program is to reduce the number and severity of crashes.

Table 61: Environmental Standards

General	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
Water Quality Control	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgmt.html)	Provides rules, policy and legislation for water quality control.
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regs/tlpge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.
Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/references/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the traffic noise analysis process and associated documentation.

Chapter 6: Communications Management

Air Pollution	<p>TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)</p>	<p>Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.</p>
	<p>TxDOT Air Quality Guidelines: http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf</p>	<p>Provides background information on air quality issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language which can be used when developing environmental documentation.</p>
	<p>TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf</p>	<p>Describes air quality requirements with respect to project planning.</p>
	<p>TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html</p>	<p>Summarizes Dallas–Fort Worth’s air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.</p>
Vegetation	<p>Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm</p>	<p>Issued to prevent and control the introduction and spread of invasive species.</p>
	<p>Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf</p>	<p>Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development of landscape and aesthetic components for different classifications of roadway facilities.</p>

Table 62: Required Operations and Environmental Permits

<p>Comprehensive Development Agreement, TxDOT Statewide</p>	<p>Table 4.1 in Book 2A lists all environmental permit requirements and the name of the</p>
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Chapter 6: Communications Management

<p>Open-Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.</p>
<p>Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm</p>	<p>Section 9 provides the insurance coverage required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.</p>

6.1.4 Systems and Procedures

For systems and procedures relating to this Plan, please refer to Chapter 2, Quality Management which includes procedures to cover the following:

- Control of quality records
- Management reviews
- Resource allocation
- Measurement of customer satisfaction
- Control of nonconforming products and services
- Internal audits
- Continuous improvement

The Communications Strategy and its guidelines for implementation will be reviewed and updated regularly, and feedback and comments from members are welcomed to assist in this process.

For Communications-specific procedures please refer to Section B and Appendices below.

6.1.5 Roles and Responsibilities

Developer's Management Structure

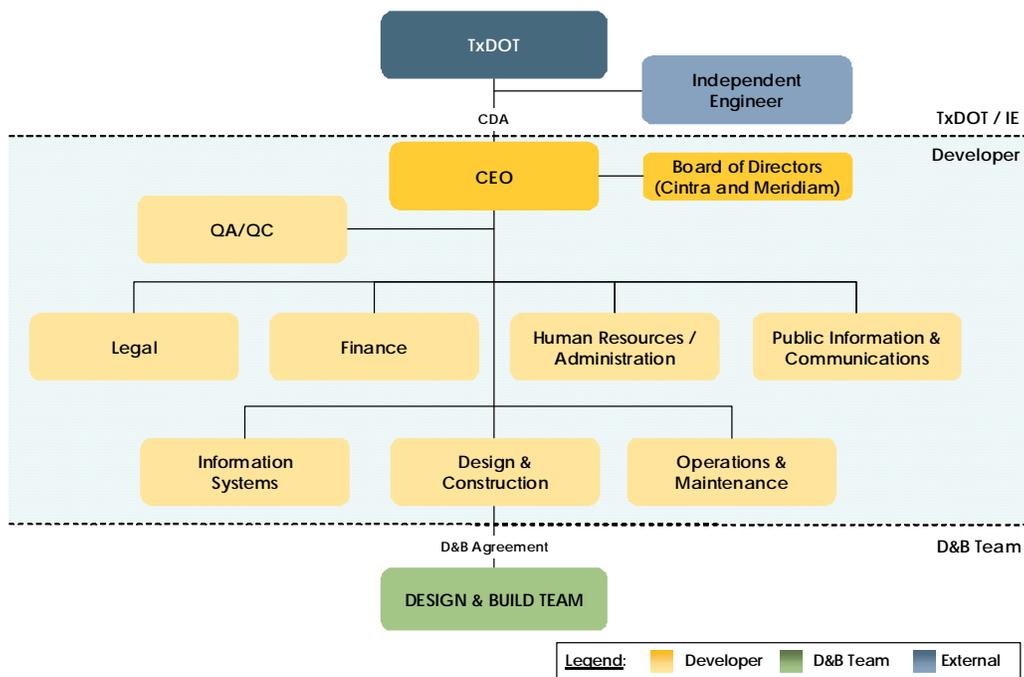
To ensure that the philosophies and methodologies detailed in this Project Development Plan are implemented, the Developer proposes to form an organizational structure (see Figure 41) comprising the following main sub-organizations:

- Quality
- Design and Construction (D&C)
- Operations and Maintenance (O&M)
- Finance

Chapter 6: Communications Management

- Information Systems
- Legal
- Human Resources and Administration
- Public Information and Communications

Figure 41: Developer's Management Structure



It is the role and responsibility of every member of the Organization to communicate in an open and timely fashion. It is everyone's responsibility to pass on important and relevant information as well as taking responsibility for receiving information. All staff will be trained in and tested on the procedures within the Communications Plan and will sign agreements to abide by them. Key personnel with specific responsibilities relating to the Communications Strategy are the following:

- CEO
- Public Information Manager

6.1.6 Internal Communication Channels

A variety of internal communications channels are available, but we must always consider which medium is most appropriate for each audience and work activity. Channels to be used include:

1. Printed information
2. Document Management System
3. Project extranet

Chapter 6: Communications Management

4. Team meetings
5. Advanced communication devices
6. Mailing lists
7. Events - conferences, workshops, meetings
8. Statistics, surveys and evaluations
9. Questionnaires and feedback

Document Management System

The Developer will employ an electronic Document Management System that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will be set up with user-friendly navigational tools such as index, contents and search features, so that this information may be easily found. Usage of the IMS will be reviewed regularly and staff will be surveyed to ensure that it meets fulfills their needs. Changes to the system will be administered by the IMS Coordinator. Staff can complete Change Control forms to activate changes after approval has been given by the appropriate manager.

The Document Management System will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.

Project Extranet

The Developer will implement a secure Project Extranet system, which enables all team members to access and store project data, draft text and drawings. The Project Extranet system will link to the Document Management System, allowing users to access many of the same documents through either the Document Management System or Extranet site.

Advanced Communication Devices

All construction and operations management personnel down to the crew foreman will be provided with advanced communication devices to facilitate communications and coordination throughout the organization as well as with subcontractors. Maintenance vehicles will be equipped with GPS tracking systems, allowing the Traffic Management Center to identify the exact location of each vehicle in real time.

Team Meetings

The Developer will implement an organized schedule of monthly, weekly and daily meetings (as appropriate based on the activity) at all levels and disciplines of the organization. To expedite communications, the scheduling and documentation of meetings is conducted through the electronic Document Management System compatible with TxDOT's system. In addition to these formal meetings, field meetings such as weekly toolbox talks and safety briefings will be conducted on a regular basis. Special-purpose meetings will also be held prior to critical activities

Chapter 6: Communications Management

such as major traffic shifts. Key successes, lessons learned and organizational changes will be communicated at meetings, as appropriate.

Mailing Lists

Project administrators will be responsible for keeping electronic and printed mailing lists, including e-mail and telephone lists, up-to-date and distributing them as needed.

Events - Conferences, Workshops, Meetings

Planned events, conferences, workshops and meetings will be communicated to staff well in advance to avoid conflicts with other commitments. After the event, relevant reports or presentations will be published on the Project Extranet site. Links to other relevant resources will also be added.

Statistics, Surveys and Evaluations

The results of commissioned and ad hoc surveys, if they are not confidential, will be published on the Project Extranet site.

Questionnaires and Feedback

Occasional questionnaires, such as user experience surveys, will be e-mailed to Project staff, advertised and made available online. The results will be published on the Project Extranet site.

6.1.7 External Communications Channels

For information on the Public Information and Communications Plan, please refer to Chapter 4, Public Information and Communications.

Interfacing with TxDOT

Project success is predicated on the Developer's ability to work with TxDOT toward common goals. Our relationship with TxDOT will be built on consistent, proactive and clear communications on project issues and solutions. TxDOT's involvement in these issues will be facilitated through project meetings, monthly reports, written updates, immediate notification on high-priority issues and a review process on public communications and participation as a member of the complaint resolution team. High-priority issues and publications review procedures will be defined in consultation with TxDOT.

The TxDOT CEO and the Developer Public Information Officer will be the central points of contact, coordination and communication. Direct communications between the respective TxDOT and Developer communications task leaders will also be essential. CEOs will be kept informed of the results of these communications through regular communication with the communications task leaders.

Chapter 6: Communications Management

Briefings and Updates

The Developer acknowledges its responsibility to keep elected officials and public agencies updated on project developments. Briefings will be scheduled on a quarterly basis during construction, or whenever pertinent developments warrant, for the Dallas County Commissioners' Court and for the city councils of Dallas and Farmers Branch. Briefings will also be held for appropriate entities such as the North Central Texas Council of Governments (NCTCOG). Because there are several members of the Legislature from the North Texas region in critical positions regarding transportation policy, the Developer (in conjunction with TxDOT) will make a concerted effort keep these elected officials informed at any and all critical junctures to ensure they remain supportive of not only IH 635 Managed Lanes Project, but also of the CDA model used to implement the project. Quarterly written updates will also be prepared and provided to these same elected officials and any public agencies requesting them.

Media Relations

The Developer will establish a working relationship with the media. The Developer shall provide accurate and timely information to the media. In turn, the Developer will utilize the media to disseminate project news to interested audiences.

The Developer is committed to providing the media with immediate and on-going access. The Public Information Manager will enter appropriate local, state and national media into the project database and within two weeks, the Public Information Manager will prepare an information package that includes daytime and after-hours contact information for the media. The Public Information Manager will serve as the Developer's media liaison, facilitating easy access to information and allowing reporters to meet deadlines. News releases concerning closures and detours will be sent to television, radio and print media for use during early morning newscasts, afternoon drive time broadcasting and newspaper publication.

The Public Information Manager will proactively arrange interviews and editorial board meetings and suggest photo opportunities and story ideas that will keep the Project in a positive public light. The Developer will work cooperatively with TxDOT and obtain TxDOT approval on media materials, as requested.

Emergency Event Communications

The Public Information Manager will take timely and appropriate action when informing TxDOT and the relevant Customer Groups in response to all emergency events. These may include such events as extreme winter conditions (ice / snow), vehicle collisions and Hazardous Material spills. The information will be distributed through the appropriate mediums and will continue to be appropriately communicated until the emergency situation no longer exists.

In all instances of unforeseen emergencies (i.e. without available advance warning), the Public Information Manager shall inform TxDOT and the relevant Customer Groups within one hour of their occurrence. This notification will be given in a timely manner and as soon as is practicable. The same will apply to emergencies where advanced warning is available. In both cases information will be appropriately communicated until the emergency situation no longer exists.

Chapter 6: Communications Management

Lane Closures

At a minimum of two weeks prior to lane closures and / or traffic switches planned to be in effect for more than 24 hours the Developer will provide TxDOT and appropriate Customer Groups with relating information. For closures or switches less than 24 hours in duration, a minimum of 24 hours prior notice will be given. This information will be communicated via the appropriate methods. The Public Information Manager will input all lane closure events into the TxDOT HCR.

The proposed Traffic Management Plan includes details of the overall approach that can be summarized as follows in terms of temporary lane closures and/or temporary road closures due to emergencies:

- Temporary Lane Closures: For temporary lane closures, the following procedures apply:
 - When the Developer must close a lane for maintenance or an emergency, the Developer contacts TxDOT at least two weeks prior to the closure or when the emergency occurs.
 - Maintenance lane closures are set after rush hours and should not disrupt traffic. Lane closures that require more than one lane to be closed are performed at night when traffic is at a minimum.
- Temporary Road Closures: When an emergency occurs, the Developer will notify all local authorities of the situation, making it clear that the road is closed due to the emergency. The Developer will divert traffic from the Facility property and will advise local authorities on the reopening of the road. The Developer will use all available resources to expedite the reopening of the road and will advise local authorities of the actions taken and their results.

Chapter 7: ROW Acquisition Management

CHAPTER 7 ROW ACQUISITION MANAGEMENT

The IH 635 Managed Lanes Project does not require any additional Right of Way, other than the parcels already identified by TxDOT during the proposal. Should additional ROW become necessary, the Developer, through an appropriately qualified TxDOT Right of Way Acquisition Services provider, will acquire the new parcels required for the construction of the Project, without the direct participation of TxDOT, but subject to TxDOT's right of review, approval, audit, and enforcement.

This chapter consists of a brief overview of the ROW acquisition processes and procedures. It is provided for informational purposes and to comply with the requirements of Attachment 1 to the Technical Provisions "Project Management Plan Contents".

7.1 Organization

TxDOT will oversee ROW acquisition procedures, and the State of Texas will be the record titleholder (owner) to all ROW acquired for a Facility. The Developer may perform certain functions of the ROW acquisition process as a quasi-agent for TxDOT to complete the purchase of all real property or real property interests in a proposed segment.

Contractual Arrangements/Organizational Structure

The Developer anticipates making contractual arrangements with a qualified firm specializing in ROW acquisition. Details of contractual arrangements and the organizational structure will be provided in the final Project Management Plan.

7.2 Personnel

Resource Plan

A detailed Resource Plan for ROW will be provided in the final Project Management Plan.

Interaction with TxDOT and its Consultants

The Developer's ROW organization will work in cooperation with TxDOT and its consultants to evaluate and acquire real property. Figure 42 illustrates the cooperation between the Developer and TxDOT and shows the delineation of responsibilities between the two parties.

Key Personnel

ROW personnel to be named in the final Project Management Plan include a ROW Acquisition Manager, appraisers, appraisal reviewers and land planners. The Developer is aware of the requirements set out for these personnel in the Technical Provisions, and will abide by these requirements.

Chapter 7: ROW Acquisition Management

Contractor and Third-Party Key Personnel

Potential contractor / third-party personnel to be named in the final Project Management Plan include appraisers, appraisal reviewers and land planners. The Developer is aware of the requirements set out for these personnel in the Technical Provisions, and will abide by these requirements.

7.3 Contractors

Contractor Control Procedures

The supervision of contractors is an important step to ensure that requirements are met in a competent manner. The contracts will be monitored as outlined in the quality management plan implemented for this concession.

Responsibility of Contractors and Affiliates

Each Contract will include terms and conditions sufficient to ensure compliance by the Contractor with the requirements of the CDA Documents, and shall include those terms that are specifically required by the CDA Documents to be included therein.

Notwithstanding, the retention of Contractors by Developer will not relieve Developer of its responsibilities hereunder or for the quality of the Work or materials or services provided by it.

Ensuring Contract Satisfaction

Contractors will be subject to the requirements of the Quality Management Plan implemented for this concession.

Environmental Protection Training Plan Implementation

Please refer to Chapter 3 of this document for details of Environmental Protection Training Plan implementation.

7.4 Interfaces

Interfaces during ROW Acquisition

Interfaces during ROW acquisition will include:

- coordination with TxDOT ROW personnel regarding approval of ROW maps, property appraisals and relocation assistance plans;
- negotiations with landowners regarding appraisals, compensation and relocation; and
- communication and coordination with utility owners regarding utility coordination and relocation;

Chapter 7: ROW Acquisition Management

Coordination with Utility Owners

As early as possible in the process, the Utility Manager and team will contact affected utility companies and organize kickoff meetings. In these meetings, the Developer will request data for existing, new and planned utilities; identify differences from existing data; introduce the companies to the project-specific utility agreements, set out the proposed construction schedule and phasing, and initiate discussions on utility adjustment construction. The agreement types will likely differ from those that the utility companies have entered into before and may involve some legal discussions that could affect the overall schedule of adjustments. Also discussed will be alternatives to relocations, including protection-in-place and combined duct runs. The meetings will also include discussion of where and how the D&B Team may be able to reduce construction time and impacts by constructing some adjustments on behalf of the utility companies, such as ducts, manholes, crossings etc.

After this meeting, the Developer will conduct regular utility coordination meetings. All meetings, correspondence and telephone conversations will be documented. The Developer will use a Utility Tracking Report to track the resolution of each conflict and the status of each utility (reimbursable or non-reimbursable). The database will be sorted by expected lead-time, so that the utility adjustment team can focus its initial efforts on the adjustments expected to require a long lead-time.

As design proceeds, the Developer will continue communicating with the utility companies to track their progress and relay any new information. The Utility Manager or his designated representative will be available at all coordination meetings with the utility companies. The Utility Manager will review relocation plans provided by the utility companies to ensure compatibility with overall Project design; compliance with the utility accommodation rules and CDA requirements; and to ensure that, where reimbursable, any "betterments" are added at the utility owner's expense. Cost estimates will also be reviewed for reasonableness.

The Utility Manager and his staff will prepare, negotiate and execute utility agreements, which will include the utility plans discussed above, cost estimates broken down into the correct categories, schedule implications, proof of property interests and the utility joint use acknowledgment.

Utility Adjustment Concept Plans / Utility Adjustment Plans

The Developer has reviewed and analyzed the TxDOT-provided utility data from previous Subsurface Utility Engineering (SUE) investigations and has conducted a limited field investigation to validate data and identify other features not identified in SUE drawings. Reviewing this data in conjunction with the proposed design, the Proposer identified more than 800 potential conflicts with 33 utility owners, including 13 communication companies, six gas pipeline companies and five municipalities. The Project has at least 32 natural gas or other petroleum transmission lines and two power transmission lines crossing the proposed alignment.

For utilities that must be adjusted, it will be necessary to coordinate construction schedules and verify that utility installation is in the correct position, both horizontally and vertically. Incorrectly repositioned utilities, especially in restricted ROW, can affect other utility adjustments as well as the construction schedule and budget. The Developer understands that the utility coordination process will not be complete until reimbursement for final adjustments is complete and our experienced staff will ensure complete and accurate reimbursement and related documentation.

Chapter 7: ROW Acquisition Management

7.5 Relocation

Relocation payments and advisory services are available to all individuals, families, businesses, farmers, ranchers and nonprofit organizations displaced as a result of the ROW acquisition for a Facility. Each displaced person shall be given sufficient time to plan for an orderly, timely and efficient relocation (not less than 90 days). If relocation assistance is necessary, the appraiser and team will work with the displaced individuals or businesses to find comparable accommodations. All state and federal regulations will be followed in this process.

7.6 Environmental

Integrating Environmental Requirements with ROW Acquisition

In order to initiate ROW acquisition, the Facility must receive environmental clearance and TxDOT must issue a formal Notice to Proceed (NTP).

Hazardous Materials Management Plan Procedures

The Developer will take hazardous materials / petroleum products contamination into account during ROW negotiation and acquisition. If Hazardous Materials or petroleum products are encountered, the Developer will prepare an investigation work plan addressing requirements for locating and assessing the likely source of contamination and characterizing the extent of contamination. The Developer will summarize such findings in a Site Investigation Report and recommend appropriate response actions. The Developer may initiate a preventative or corrective action after TxDOT review and receive approval of the Site Investigation Report from appropriate Federal or State agencies.

Storm Water Pollution Prevention Plan (SW3P), Recycling Program and Waste Management

To ensure compliance with Section 402 of the CWA, the Developer will submit a Notice of Intent (NOI) to TCEQ and develop supplemental SW3Ps for newly acquired ROW as needed.

Comprehensive Environmental Protection Plan Requirements

As required by the CDA, the Developer will create a Comprehensive Environmental Protection Program (CEPP), which will be applicable throughout the Term of Agreement. This document will establish the approach, requirements and processes for protecting the environment during the performance of the work to minimize impacts on the environment from the Project's design, construction, maintenance, operation and rehabilitation activities. The CEPP will satisfy applicable TxDOT, U.S. Department of Transportation, FHWA and resource agency requirements including those commitments described in the Environmental Approvals. Procedures and processes for environmental compliance will be set forth in the CEPP guidance documents. The CEPP will include processes for integrating environmental compliance activities into the ROW process.

Chapter 7: ROW Acquisition Management

7.7 Schedule

ROW acquisitions and utility adjustments must get underway immediately following NTP. Due to the construction phasing, ROW will be required early for construction. The Developer team intends to identify critical parcels that require condemnation and/or have a displacement, so that when the remaining parcels are acquired, the difficult ones will have been addressed and should be ready for access in a timely manner.

A ROW acquisition plan and preliminary surveying and planning work could also be performed prior to NEPA approval to expedite the ROW acquisition process.

7.8 Procedures

The right-of-way process is one of the most critical elements in the development of facilities. There can be significant delays to facility implementation if it is not handled properly. The approach of the Developer will be to institute an experienced team to perform all aspects of the right-of-way acquisition process up to the actual purchase.

To begin the acquisition process, ROW requirements will be determined early in schematic design. Known utility facilities within the needed ROW will be located on the schematics. The ROW need will be based on the proposed alignment, typical sections, access control, and any other information available. In determining proposed ROW limits, accommodation for construction, drainage, clear zone, access to and maintenance of the highway, accessible pedestrian design, if applicable, and environmental mitigation will be considered.

Schematic plan drawings showing the ROW limits will be completed by the Design Consultant and provided by the D&B Team to the Developer. The Facility ROW map will be developed by the Developer and submitted to TxDOT for review and approval per CDA Technical Requirements.

The success of the acquisition process begins at the right-of-way mapping phase of the facility development. As the ROW boundaries are surveyed and the plans are developed, the property owner will be contacted to explain the process before any appraisal is done. It is critical that the owner feels that they have an input into the process.

Once this initial contact and the right-of-way plans are completed, an experience appraiser from the team will interview the property owner to discuss any special considerations and, again, to discuss the process. The appraiser will then provide their appraisal with the fair market value to the owner to verify that all features including improvements have been included.

To expedite the process, it is proposed to allow the appraiser to provide the offer to the owner at the time the appraisal is provided. It is also proposed to allow the appraiser to negotiate the offer with the owner. This will give the owner a single point of contact that will provide a certain level of trust and confidence for the owner.

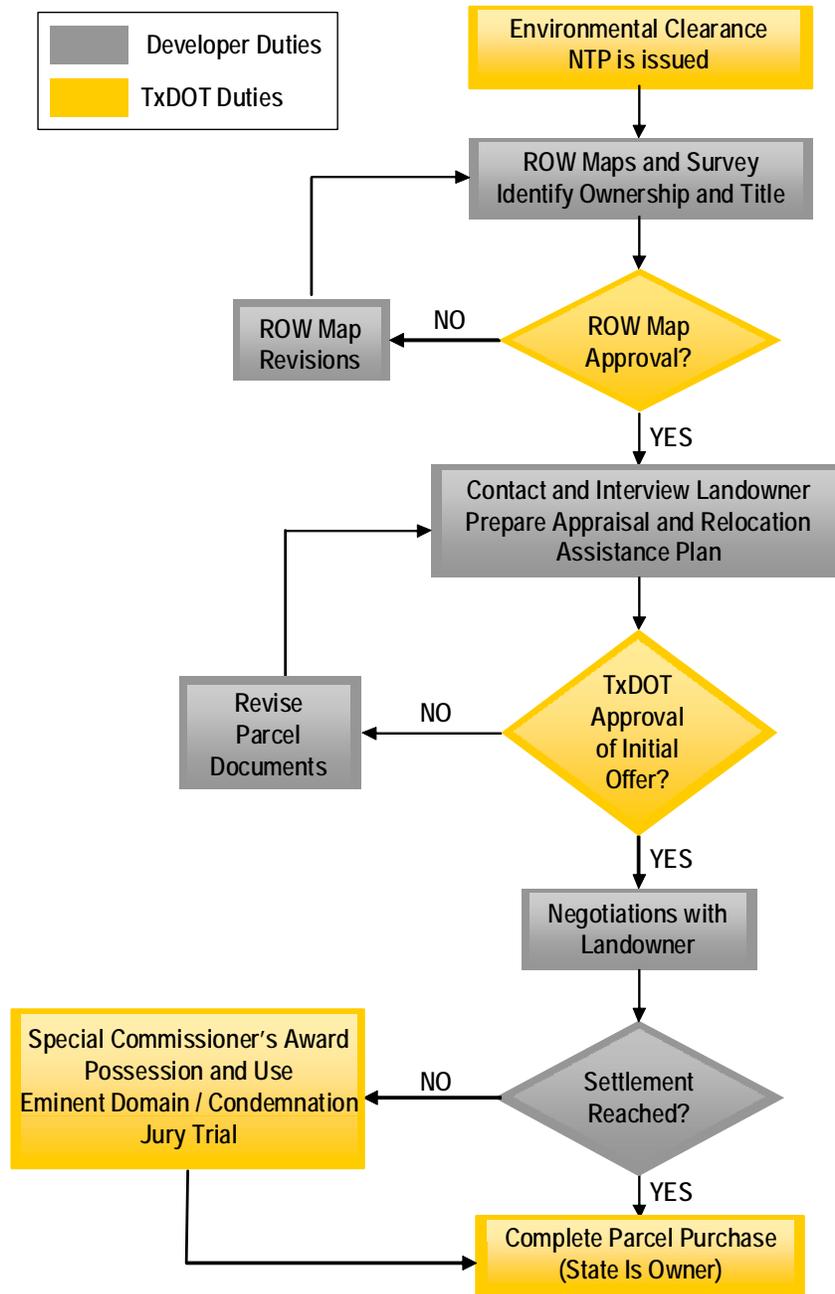
It is the goal to avoid the lengthy condemnation process. This will be achieved by providing an offer that is fiscally responsible but attractive to the property owner. The appraisal will include extensive research for the area to determine the fair market value and possible incentives to the owner to close quickly.

Chapter 7: ROW Acquisition Management

In the event that the owner does not accept the offer, the team will then assist TxDOT in the condemnation process by providing all documents and personnel to bring the property into TxDOT's possession.

Figure 42 depicts the proposed ROW acquisition process.

Figure 42: ROW Acquisition Process



Chapter 7: ROW Acquisition Management

Corridor Preservation Techniques

A “corridor” is defined as “the path of a transportation facility that already exists or may be built in the future.” The American Association of State Highway and Transportation Officials (AASHTO) defines corridor preservation as “a concept utilizing the coordinated application of various measures to obtain control of or otherwise protect the Right of Way for a planned transportation facility.” These techniques are described briefly below.

Options to Purchase

To preserve future potential Facility locations, TxDOT may enter into an agreement with a willing landowner for an option to purchase the property at a future date. For this option, the landowner will be paid a fee and forgo additional development on the property. The option period is limited to a maximum of five years, but may be renewed. If TxDOT chooses to buy the land, the landowner would be paid an additional sum based on the fair market value of the property. The price of the land can be negotiated at the time of the purchase of the option and signing of the contract, or if the parties would rather wait, the price can be established by an appraisal methodology to be described in the option contract and utilized at the time the option is exercised and the property actually purchased. The State cannot use eminent domain to acquire options.

Access Management

Access management is a cooperative effort between TxDOT and local municipalities to effectively manage land use with transportation efficiency and safety along corridors on the State Highway system. Access management can be effectively applied to planned or existing transportation facilities. Access management is especially important in the preservation of capacity on existing transportation facilities.

7.9 Quality Control

The ROW acquisition process for the IH 635 Managed Lanes Project must follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (the Uniform Act or URA), and all current amendments to the Uniform Act. All current TxDOT regulations, policies and procedures, as set forth in its *Right of Way Manual*, *Access Management Manual*, *Survey Manual* and *Appraisal and Review Manual*, will be applicable. Other Federal and State laws, where applicable, will also be observed.

Quality Control Procedures

The ROW process will be subject to similar Quality Management procedures as design, construction and O&M processes, as laid out in Chapter 2, Quality Management. The ROW Manager will carry out QA/QC reviews of ROW maps, parcel documents and other documents relevant to ROW acquisition

Ensuring Accuracy, Completeness and Quality of Submittals

Please refer to Chapter 2, Quality Management procedures to ensure accuracy, completion, and quality in all submittals to TxDOT, Governmental Entities and Customer Groups.

Chapter 7: ROW Acquisition Management

Continuous Improvement

Please refer to Chapter 2, Quality Management, for procedures to establish and encourage continuous improvement.

Integration of CEPP into ROW Acquisition Management/Environmental Documentation and Reporting Requirements

As required by the CDA, the Developer will create a Comprehensive Environmental Protection Program (CEPP), which will be applicable throughout the Term of Agreement. This document will establish the approach, requirements and processes for protecting the environment during the performance of the work to minimize impacts on the environment from the Project's design, construction, maintenance, operation and rehabilitation activities. The CEPP will satisfy applicable TxDOT, U.S. Department of Transportation, FHWA and resource agency requirements including those commitments described in the Environmental Approvals. Procedures and processes for environmental compliance will be set forth in the CEPP guidance documents. The CEPP will include processes for integrating environmental compliance activities into the ROW process.

7.10 Audit

The name of the Developer's representative(s) with defined authority for establishing, maintaining, auditing, and reporting on the PMP will be provided in the final Project Management Plan, along with the names, titles, roles, and responsibilities of supporting quality management staff reporting to the person with defined authority.

7.11 Document Management

Maintenance of Records

An effective project means conducting meetings and activities that solicit public input and document input and response. The Developer will use an electronic comment management system or specific methods such as a complaint and inquiry form available to any citizen, governmental entity, or other Customer Group upon request. Comment cards will be available at all meetings. The Developer will carefully document questions and complaints and distribute them to appropriate personnel for thorough review and effective resolution of issues.

The Developer will document all meetings with the public in official minutes, and distribute them to TxDOT within five business days. The minutes will include a full list of attendees including their affiliations and contact details; documentation of issues discussed and their solutions; and description of remaining open issues with associated actions and responsible individual(s) identified. TxDOT will approve such minutes before the Developer releases them to the appropriate Customer Groups.



Chapter 7: ROW Acquisition Management

Document Management Procedures

The Developer will employ an electronic Document Management System that is compatible with TxDOT's system. This will be the main source where staff will be able to find current information about processes and procedures relating to their areas of work. The system will include user-friendly navigational tools such as index, contents and search features, to facilitate information retrieval. The Developer will review usage of the IMS regularly and will survey staff to ensure that it meets their requirements. The IMS Coordinator will administer changes to the system. Staff can complete Change Control forms to activate changes after the appropriate manager has given his or her approval.

The Document Management System will be used to store correspondence, meeting minutes, presentations from workshops, links to other related materials and the results of commissioned reports and surveys.

The Developer will implement a secure Project Extranet system, which enables all team members to access and store project data, draft text and drawings. The Project Extranet system will link to the Document Management System, allowing users to access many of the same documents through either the Document Management System or Extranet site.

Chapter 9 this document is the D&B Team Process Procedures Manual, which contains specific procedures related to maintenance of records and document management. The procedures relevant to this section of the plan are:

- PPM Section 3: Documents and Data Control
- PPM Section 8: Construction Management
- PPM Section 14: Control of Quality and Environmental Records.

CHAPTER 8 COST MANAGEMENT

The following is a brief description of cost management procedures for the IH 635 Managed Lanes Project. A more detailed cost management strategy and procedures will be provided in the final Project Management Plan.

8.1 Cost Management and Reporting Procedures

A project management system will be used for the IH 635 Managed Lanes Project to define, plan, monitor and control costs, procurement and construction during all phases of the Project. Connected by Local Area Network (LAN) and remote connections, all offices will be connected and responsible for maintaining this data. Data security will be established to ensure that Project personnel have the appropriate secure access to all needed information, while protecting sensitive areas of the database. The following areas will be implemented in the project management system:

- Estimating
- Cost Control
- Project Accounting
- Procurement
- Construction Management
- Document Control

Primavera software will be used for Critical Path Method (CPM) scheduling and manpower loading on all schedule levels for the project. The Project Master Schedule (Level 1) and the Interface Coordination Schedule (Level 2) will be developed and maintained by the central core team. Each subcontractor will be responsible for preparing and maintaining their own schedules to ensure compatibility and fluid integration with the Level 1 and 2 schedules maintained by the central core team.

In the event of a change order or compensation event:

- TxDOT and Developer will discuss and agree on a well-defined scope of work.
- Compare what was originally planned for the Project to what is now proposed.

Note: If the Change is proposed during the design process, the Design & Build Team cannot complete both an original design and a change order design to make this comparison. TxDOT/Developer/ Design & Build Team must agree on originally planned quantities (best estimate) and allow the Design & Build Team to progress the design using the Change Order design parameters.

Develop quantities for the variance between originally planned work and Change Order Work.

- Assess the schedule impact imposed by the Change Order Work. Does the Change Order Work affect the critical path? If yes, what are the new completion dates?
- Assess impact on project resources. Does the Change Order Work require more/less direct labor and supervision? How is project overhead affected? How are equipment needs affected? Is material available?



Chapter 8: Cost Management

- Price the new work at current market prices with appropriate escalators based on when the work will be performed.
- Third-party consultant reviews proposal and issues an opinion that the pricing submitted to TxDOT/Developer is reasonable.

Chapter 9: D&B Team Process Procedures Manual

CHAPTER 9 D&B TEAM PROCESS PROCEDURES MANUAL

1 Management Review

1.1 Purpose and Scope

- 1.1.1 Establish a Quality Management System that meets project needs and is functional.
- 1.1.2 Ensure that changes to the Quality Management System, if any, are evaluated and documented.
- 1.1.3 The Scope encompasses all aspects of the D&B Team's activities that affect the quality of the Design Build Contractor's products and services, to the agreed requirements of the Design and Build Agreement and other relevant contract documents.

1.2 Definitions

- 1.2.1 **Review:** A formal regular evaluation by the General Manager and the Construction Manager of the status and adequacy of the quality system (procedures, stated business objectives, working methods) in relation to Quality Policy.

The evaluation will take into account any changes accepted by new:

- Technologies;
- quality concepts;
- market strategies;
- social or environmental conditions; and
- law.

1.3. References

- 1.3.1 The D&B Team Quality Assurance Manual and Process Procedures Manual
- 1.3.2 Other procedures having a quality impact

1.4. Responsibilities (for this procedure)

- 1.4.1 Preparation by Quality Manager.
- 1.4.2 Review by General Manager.
- 1.4.3 Approval by the Supervisory Board.

Chapter 9: D&B Team Process Procedures Manual

1.5. Procedure

1.5.1 Frequency

The D&B Team will conduct a Management Review Meeting at least every six months to discuss the status of the Quality System. The QA/QC Manager will prepare and circulate an agenda indicating topics for discussion at the meeting.

1.5.2 Attendance

The Quality Manager will coordinate the meeting and record meeting minutes and actions items.

The attendees will include the General Manager, the Construction Manager, the Design Manager, other requested Managers, and the Quality Manager. Managers, who are unable to attend, may forward points they wish to discuss at this meeting via a memo to the Quality Manager.

1.5.3 Agenda/Meeting

The General Manager will chair the meeting. The agenda will cover fulfillment of the Quality Plans, results of internal and external audits, any departures from procedures indicating possible improvements, Developer complaints/compliments and status and analysis of non-conformances to indicate any quality trends. Any new policies and objectives for inclusion in the Quality System and Environmental Management System will be presented for discussion and documentation amended accordingly.

The review will also take into account any observations made by the operating staff, Suppliers, Subcontractors, Designers, Quality staff, Developer, and agencies/organizations affecting quality. The D&B Team will consider such recommendations, observations and any conclusions reached for improving procedures.

The agenda will also include adequacy of the resources to meet the quality requirements, and the need for staff training.

Suggested items include:

- Non-conforming items occurring during the period (including the results of Quality Audits);
- Corrective/Preventive Action recommended and responsibility (including Quality Audits);
- Effectiveness of previous corrective/preventive actions, if any;
- Supplier , Subcontractor, Designers;
- Supplier visits to assess Quality Assurance and Controls;
- Documentation Changes (including procedures);
- Contract Review (general)/Quality Planning;
- Developer Complaints / Compliments;
- New Products / Services for consideration;

Chapter 9: D&B Team Process Procedures Manual

- New Suppliers / Subcontractors, Designers.
- Training Requirements/resources;
- Any other Business;
- Date of Next Meeting.

1.5.2 Follow-Up

The Quality Manager will take and circulate the meeting minutes, and follow-up on actions agreed to at the meeting.

1.6 Records

The meeting minutes are the only formal documentation generated by this procedure and the D&B Team will file them in the Document Control System. Each participant shall review the meeting minutes and acknowledge acceptance or disagreement of the minutes within five business days.

2 Design & Build Contract Review

2.1 Purpose and Scope

- 2.1.1 To ensure adequate definition, specification and documentation of the Developer's requirements.
- 2.1.2 To ensure that any requirements differing from those in the proposal and in the Design and Build Agreement are resolved, and that any further amendments to the Design and Build Agreement are controlled and documented.
- 2.1.3 To ensure that adequate resources are available to meet the Design and Build Agreement requirements.
- 2.1.4 The Scope covers any Changes/Variations/Instructions issued during the execution of the Design and Build Agreement.

2.2 Definitions

- 2.2.1 Design and Build Agreement - Formal business agreement between the D&B Team and the Developer for the execution of the works to the agreed requirements at specified price.
- 2.2.2 Comprehensive Development Agreement (CDA) – Formal business agreement entered into between the Developer and TxDOT.
- 2.2.3 Contract Review - An evaluation by the Design-Builder Contractor's management of the Contract documents to assess the D&B Team's obligations.
- 2.2.4 D&B Team Management Team - The General Manager, the Design Manager, the Construction Manager, and the other relevant Managers.

Chapter 9: D&B Team Process Procedures Manual

2.3 References

- 2.3.1 The Quality Assurance Manual and Process Procedures Manual
- 2.3.2 Design and Build Agreement.
- 2.3.3 Comprehensive Development Agreement, Technical Requirements, Technical Documents.

2.4 Responsibilities (for this procedure)

- 2.4.1 Preparation by the General Manager.
- 2.4.2 Review and approval by D&B Team Supervisory Board.

2.5 Procedure

- 2.5.1 Upon execution of the Design and Build Agreement, the Supervisory Board will appoint a General Manager. The General Manager will convene a contract meeting.
- 2.5.2 The D&B Team may conduct Contract Reviews in separate meetings.
 - a. Pre-Agreement Meeting/Project Information Meeting.
 - b. Design-Build Contract Management Review Meeting. (General Manager).

The Chief Estimator will chair the Pre-Agreement Meeting. There may be more than one meeting for a complete handover of the Project.

The Pre-Agreement Meeting will take place as soon as confirmation of award is given. The Chief Estimator (or an appointed designee) will conduct such meetings, which will serve as formal handover from the Estimating Department to the D&B Team Management team. The D&B Team General Manager will then assume responsibility for the Project.

The D&B Team Management Review Meeting will take place after the D&B Team Management Team has had time to familiarize itself with the Contract and formed initial views/proposals. The General Manager will chair the Meeting.

The D&B Team Management Team will conduct this meeting to understand the requirements set forth in the Design and Build Agreement and other relevant contract documents.

The General Manager will appoint a responsible person to take and issue meeting minutes.

- 2.5.3 The Review will affirm the following points:
 - 2.5.3.1 Work scope and assessments of any changes in the requirements of the Developer;
 - 2.5.3.2 Developer Specifications, National and other Standards specified;
 - 2.5.3.3 Regulatory requirements, e.g. Health & Safety, environmental;
 - 2.5.3.4 Any restrictions imposed on working methods/plant etc.; and
 - 2.5.3.5 Change in Management Staff (if different from the D&B Team's proposal).

Chapter 9: D&B Team Process Procedures Manual

- 2.5.4 If any issues arise because of the review, the General Manager will contact the Developer for clarification. All correspondence will be filed in the Document Control System. If such a query affects the Quality Assurance or Quality Control requirements of the Design and Build Agreement, the General Manager will forward a copy to the Quality Manager for appropriate action.
- 2.5.5 To ensure that communications with the Developer's representative are controlled, the Design and Build Agreement Review will endeavor to establish primary levels of communication (verbal and writing, contacts). The D&B Team may further develop communication procedures to suit specific site requirements at different levels.
- 2.5.6 Review of Supplier/Subcontractor/Designers queries
- 2.5.7 Suppliers and Subcontractors may need to obtain clarification on queries sufficiently in advance to avoid delays. The Procurement Manager or Project Controls Manager will normally address these queries and send them for filing in the Document Control System.

2.6 Further Design and Build Agreement Reviews

After the initial Design and Build Agreement Management Review Meeting, appropriate team members will carry out further reviews at the project level through periodic meetings and circulate action items noted at such meetings to those concerned. Project Management will determine the frequency of such meetings.

2.6.1 End of Contract Report

At the end of the Design and Build Agreement review, the General Manager will produce a final report as an historical report, highlighting the significant areas of problems and successes. The following is a guide for contents of the report:

- Brief description of the work;
- Construction Methods (i.e. methods actually used to construct the work, highlighting the differences from proposal assumptions);
- Site Organization (e.g.. organization chart, responsibilities);
- Program: How the Contract was actually performed relative to the planned program. Where there were delays and what actions were taken;
- Labor: Difficulties, shortages, recruitment;
- Plant: Availability, reliability, specific costs to run major items, transport, servicing, (internal and external) site purchase, special items designed and/or fabricated, transport difficulties;
- Materials: Shortages, surpluses, long deliveries, price level and availability, new and/or problem suppliers;
- Subcontractors (their performance), difficulties, safety. New Subcontractors.
- Safety: Performance, difficulties, accidents, incidents, Subcontractors' performance;
- Staff: Performance, attitudes, failings, communications;
- Claims, Changes, Contractual claims (and counterclaims) and Insurance claim evaluations. Change orders (how and why these occurred);

Chapter 9: D&B Team Process Procedures Manual

- Engineering problems and solutions
 - a. Photographs: Specific items of technical interest with descriptions and dates;
 - b. Consultants (their performance)
 - c. General: Any other areas of concern;
 - d. Summary: Lessons Learned.

This list is not exhaustive—it is simply a guideline.

3 Documents and Data Control

3.1 Purpose and Scope

3.1.1 Legal Purpose

Quality Systems generate documentary records. Such records may serve as evidence in legal proceedings. Therefore, the D&B Team will maintain specific records for the period detailed in the contract documents (depending on the type of records), with the Supervisory Board's discretion and with due regard to statutory requirements.

3.1.2 Quality Purpose

In establishing and maintaining procedures to control documents and data of relevance to the Quality System, these document control procedures will ensure:

- a. That the relevant documents are available at the needed locations;
- b. That obsolete documents are removed from the system and replaced with new versions to avoid inadvertent use. These may be kept for reference but must be suitably marked as "SUPERSEDED".

3.1.3 Scope

This procedure covers all documents that support the Quality System for the execution of the work, such as the Quality Manual, environmental manuals, Process Procedures Manual, quality plans, drawings, conditions of contract, specifications, procedures and federal standards. This procedure also covers documents from subcontractors, consultants, reviewers and inspectors involved in the Design and Build Agreement, such as specific drawings, method statements and work plans.

3.1.4 Quality Documentation

The Quality Manager will maintain a list of all Quality Documentation, with current issue status. The Environmental Compliance Manager will also keep a list of all environmental documentation. Documents will reside in Document Control.

Chapter 9: D&B Team Process Procedures Manual

3.1.5 Control of Quality and Environmental Records

Section 14 of the Process Procedures Manual (see Chapter 9 of this document) describes Control of Quality and Environmental Records in more detail.

3.2 Definitions

3.2.1 Quality and Environmental Documentation

Documents and Data can be in many formats (i.e. electronic media and/or hard copies). The following is a list for guidance:

- Main Contract and Attachments;
- Drawings;
- Specifications;
- Inspection Instructions;
- Test Procedures;
- Work Instructions/Method Statements/Work Plans;
- Operation Sheets;
- Quality Manual;
- Procedures Manual;
- Environmental plans, e.g. HMMP, Project Mitigation Plan;
- Quality Plans;
- Utility Assemblies.

Many of the above documents contain records in the form of attachments, which will be maintained and made available for verification purposes.

3.3 References

- 3.3.1 The Quality Assurance Manual and Process Procedures Manual.
- 3.3.2 Inspection & Test Plans.
- 3.3.3 Environmental Plans

3.4 Responsibilities

- 3.4.1 Preparation by Quality Manager
- 3.4.2 Review by the Controls Manager
- 3.4.3 Approval by General Manager

Chapter 9: D&B Team Process Procedures Manual

3.5 Procedure

Prior to issuance to any parties, all documents including drawings, specifications, procedures or other sensitive information will be verified as approved for use by relevant authorized persons. For example, final signed and sealed drawings and specifications used for construction will be marked "ISSUED FOR CONSTRUCTION." A document transmittal sheet is used to control distribution of records.

- 3.5.1 The standard method for adding, deleting, or amending a document or its contents is by following the review cycle as shown on the front page of the original document (i.e. Prepared by, Reviewed by and Approved by). The department involved in the execution of the Procedure is the 'Owner' of that document, (e.g. The Construction Department is responsible for establishing, maintaining and improving the Construction Management Procedure).
 - 3.5.1.1 Revisions of a minor nature will be marked up in the margin by a line, and on the Revision Record sheet of the procedure. If the altered documents are drawings, the "Revision" box will be completed and the area affected by change will be highlighted wherever possible with a revision number alongside it.
 - 3.5.1.2 Distribution of the altered document will be the same as the original issue, although in some instances the number of copies may vary due to fluctuating staff levels.
- 3.5.2 The Quality Manager will control the Company Quality Manual and Procedures Manual, while any site-generated documents will be under the jurisdiction of the General Manager and the relevant Managers. The Quality Manager will review site-generated documents as appropriate. The Environmental Compliance Manager will be control the Environmental Plan.
- 3.5.3 It is not necessary to revise a document completely for every minor change. The Quality Manager will authorize revision of the full document after a reasonable number of changes have occurred. To incorporate minor changes, only the page containing the minor amendment and the Revision Record Sheet will be issued, and not the entire document.
- 3.5.4 Document Control staff will maintain a register of all Quality and Environmental Documents that the Quality Manager generates, along with the names of staff in receipt of controlled documents, and the latest revision number.
- 3.5.5 Uncontrolled copies (i.e. copies issued for information purposes only) are not the responsibility of the originator, and therefore the user of an uncontrolled document must ensure that the document is current.
 - 3.5.5.1 In the case of drawings, specifications and technical documents, the designer (the engineer who sealed the Plan) must approve any changes before they can be incorporated.
 - 3.5.5.2 Codes, Regulations and Reference Manuals are available for review in the Procurement Department. Users will confirm the revision status of any standard they wish to use and inform the Procurement Department of revised or superseded documents.
 - 3.5.5.3 Notes on Control of Documents: A Document Transmittal Sheet will be used to transmit of quality assurance documents such as procedures, quality plans, inspection and test plans, specifications, site instructions, technical queries and changes.

Chapter 9: D&B Team Process Procedures Manual

The recipient will ensure that:

- a. Documents are checked against the transmittal note for content, issue status revision number and general accuracy.
- b. Any documents which have been superseded as a result of the issue are either destroyed or kept in a manner such that these will not be accidentally used, and should be marked "SUPERSEDED".
- c. Documents such as drawings, specifications, site instructions, standards and quality assurance documents will show date of receipt and indicate their status. Superseded material will be removed/destroyed as stated in point b).
- d. Staff leaving the D&B Team or being transferred to another site will return any controlled documents in their possession to the Controls Manager.
- e. If required under the Design and Build Agreement, the Independent Engineer will be given access to Quality and/or Environmental Documents.

3.5.6 The storage period (if any) after the completion of the Design and Build Agreement will be either as specified in the Design and Build Agreement, required by law, or as specified by the D&B Team Supervisory Board.

3.5.7 Data stored on Computer Disks or web access sites will also be controlled in such a way that access is only possible to authorized persons. It may be necessary to restrict access to certain levels of information. Every department that uses computer systems will establish these levels. All work will be routinely backed up at the end of every working day.

In any case, all disks containing information on Quality or Environmental Systems will be duplicated and stored off-site.

4 Procurement (Materials and Supplies)

4.1 Purpose and Scope

- 4.1.1 The purpose of this procedure is to ensure that all materials, goods, and products purchased by the D&B Team meet the Project requirements at the most economical price and comply with the CDA.
- 4.1.2 The scope covers all materials, goods, and products ordered by the D&B Team for use on the Comprehensive Development Agreement (defined in the Design and Build Agreement). Subcontract services are not within the scope of this procedure.

4.2 Definitions/Acronyms

- 4.2.1 P.R. - Purchase Requisition.
- 4.2.2 P.O. - Purchase Order.

4.3 References

- 4.3.1 The Quality Assurance Manual and Process Procedures Manual.

Chapter 9: D&B Team Process Procedures Manual

- 4.3.2 Comprehensive Development Agreement and associated documents.
- 4.3.3 American & International Standards, Codes of Practice, Material Data Sheets.

4.4 Responsibilities

- 4.4.1 Preparation by the Procurement Manager.
- 4.4.2 Review by the Construction and Controls Manager.
- 4.4.3 Approval by the General Manager

4.5 Procedure

- 4.5.1 The process of procurement of materials starts from the Proposal stage. The Procurement Manager maintains on a database a source list of materials and approved suppliers, based on historical data.
- 4.5.2 Contract Stage: All materials to be procured will be requisitioned on a Purchase Requisition.
The General Manager and his staff are responsible to ensure that the Purchase Requisition is completed in full, and includes correct resource allocation codes. The Procurement Manager will advise on the adequacy of the suppliers and/or vendors available to provide materials supplies. The General Manager and the Construction Manager will make the ultimate decision regarding selection of supplier or vendor.

The requestor of a product may suggest a possible supplier if known, or if requested in the contract. In addition, the requestor must state all unique characteristics required.

Upon receipt of the Purchase Requisition, the Procurement Manager may seek additional quotes from suppliers not contacted during the proposal stage.

The Procurement Manager will also forward data such as specifications, Bill of Quantities, contract-specific clauses and drawings to the appropriate supplier to ensure accurate pricing.

The Procurement Manager will send a Quality Assurance Questionnaire to the Supplier to determine what quality measures the Supplier has in place.
- 4.5.3 The approved suppliers database will be established and maintained on the basis of the suppliers' ability to show consistent reliability for:
 - a. product compliance to specification;
 - b. price;
 - c. compliance with agreed delivery schedules; and
 - d. quality assurance compliance.
- 4.5.4 The Procurement Manager will review the quotes from the proposal stage and transmit additional inquiries. If necessary, meetings will be held with the relevant suppliers to clarify any queries and

Chapter 9: D&B Team Process Procedures Manual

confirm ability to meet the contract requirements. The Procurement Manager or designee will keep records of such meetings.

4.5.5 The Procurement Manager or designee will complete a Cost Comparative sheet for all materials within the parameters set out in purchasing policy. A review will then be undertaken and a Supplier will be chosen.

4.5.6 A Purchase order is then sent out to the chosen Supplier. Terms and Conditions are as described in the Purchase Order, but, as a minimum, each Supplier will provide:

- a. Certificates of conformity for the products supplied to specification with the delivery, unless already established;
- b. Material Safety Data Sheets;

Each Purchase Order should contain information pertaining to special terms and conditions, max limitation quantities and any other project specific requirements.

4.5.7 For products or materials that require traceability for a contract, this will be clearly noted on the Purchase Requisition, and then repeated on the Purchase Order to allow the supplier to make the necessary provisions.

4.5.8 The Procurement Manager's Representative will maintain a Purchase Requisition summary list for each contract.

4.5.9 The Procurement Manager will correspond with Suppliers during the Project's life cycle, as necessary, to address contract-related issues that arise, e.g. nonconforming materials.

4.6 Records

The Procurement Manager will maintain records of quotes, comparisons, purchase requisitions, purchase orders and the Suppliers List (as a database). Specifications, drawings, Bills of Quantities, and other documents used in the quotes will be filed in the applicable contract files stored in the Document Control System.

5 Procurement (Subcontractor)

5.1 Purpose and Scope

5.1.1 The purpose of this procedure is to enable the selection of Subcontractors on the basis of scope of work, competency to perform the work, health and safety, quality control and assurance, and overall best value to the Project and compliance with CDA, including the 12.12 percent DBE goal.

5.1.2 The procedure covers all construction Subcontracts.

5.2 Definitions

5.2.1 Subcontractor: A company, organization or individual providing a service or product, which may include, labor, plant, materials or other facilities or resources to the D&B Team.

Chapter 9: D&B Team Process Procedures Manual

5.3 References

- 5.3.1 The D&B Team Quality Assurance Manual and Process Procedures Manual.
- 5.3.2 The D&B Team Health and Safety Plan
- 5.3.3 The D&B Team Environmental Plan (esp. noting the environmental training program for all subcontractor employees who will be on site).
- 5.3.4 The D&B Team approved Subcontractors list.
- 5.3.5 Appropriate forms of Subcontract.
- 5.3.6 Disadvantaged Business Enterprise (DBE) Plan, Small Business Mentor-Protégé Program, and Subcontracting Plan.

5.4 Responsibilities (for this procedure)

- 5.4.1 Preparation by the Procurement Manager.
- 5.4.2 Review by the Construction and Controls Managers.
- 5.4.3 Approval by the General Manager.
- 5.4.4 The responsibility for the approval of a Subcontractor rests with the General Manager (or a delegated authority). The Procurement Manager will provide the Construction Manager and the General Manager with all the necessary assessment details of the Subcontractor for his review and approval.
- 5.4.5 Other responsibilities for Subcontractor selection are described in this Procedure.

5.5 Subcontractor Procedure

5.5.1 Pre-Contract and Contract Procedure

Procurement of subcontract services starts from the Proposal stage. The Procurement Manager provides a list of Subcontractors and determines their level of interest to participate in the Project.

5.5.2 Inquiries, Quotations and Comparisons

- 5.5.2.1 Following Notice to Proceed, a meeting will be held to include the Procurement Manager, the Construction Manager, and the General Manager, plus any other parties as deemed necessary to discuss Subcontract packages. The Procurement Manager will present the information.
- 5.5.2.2 Subsequently, the Procurement Manager will extract and copy the relevant information from the contract documents, which will include:
 - Safety, Health and Environmental documentation;
 - Drawings;
 - Specifications;

Chapter 9: D&B Team Process Procedures Manual

- Unpriced Bill of Quantities;
- Specific conditions of Subcontract;
- Extracts from contract documents including Contract Details, Instructions to Proposers, and other sections, as required.
- Subcontractor Quotations and Quality Assurance documents and any other information where submitted;
- Letter of Award.

5.5.2.3 The Procurement Manager creates a Subcontract Procurement File.

5.5.2.4 The Procurement Manager notifies qualified Subcontractors of Award of Contract and provides scope of work and proforma subcontract for review and comment.

5.5.2.5 All Requests for Proposal (RFP) to Subcontractors are forwarded under cover of the D&B Team standard Letter. Attachments include the D&B Team's Health and Safety Plan and a Quality Assurance Questionnaire.

5.5.2.6 All RFPs sent out and received are recorded in the Subcontract Buying Database for cost comparison.

5.5.2.7 A copy of the completed Quality Assurance Questionnaire from the Subcontractors will be forwarded to the Quality Manager.

5.5.2.8 Following initial comparisons between Subcontractors, the Construction Manager will convene Pre-Let meetings with the preferred Subcontractors and the Procurement Manager. A Pre-Let meeting agenda will be developed. The Subcontractors compliance matrix will be completed at this meeting.

5.5.2.9 Responsive subcontractor proposals are evaluated based on price, qualifications, schedule, inclusions/exclusions to determine fit and best value for the project and DBE status.

5.5.3 Subcontract Documentation

5.5.3.1 Following the selection of a Subcontractor, the Procurement Manager drafts the Subcontract.

5.5.3.2 All Subcontracts should have reference to and contain a Subcontract Bill of Quantities, Lump Sum Price, or Schedule of Rates.

5.5.3.3 Prior to final compilation, the Procurement Manager will review the proposed Subcontract document.

5.5.3.4 Three sets of completed Subcontract Documents are sent to the Subcontractor for signature under cover of Company Standard Letter. The Procurement Manager will retain a record Subcontract.

5.5.3.5 Copies of Subcontractor's document details are filed in the Subcontractor Procurement File and relevant extracts are provided to the Construction Manager and relevant Section Managers.

5.5.3.6 The Procurement Manager will check returned or queried subcontracts for amendments made by the Subcontractor. Any disagreement with these amendments, actual or proposed, must be resolved with the Subcontractor immediately. The General Manager must also be immediately informed of any matter that may affect or vary the final Subcontract terms and conditions and/or execution of the works. If these amendments are acceptable and the Subcontractor initials them properly, the authorized D&B Team signatory then signs the Subcontract in triplicate. Document Control retains one original, filing it

Chapter 9: D&B Team Process Procedures Manual

in the Subcontractor Procurement File. The second original is sent to the D&B Team home office, and the third original is returned to the Subcontractor under cover of a letter.

- 5.5.3.7 Other returned information such as method statements, risk assessments, hazardous materials data sheets, waste disposal, materials sources and contact numbers is copied to the site and relevant personnel with the original details retained along with the original signed Subcontract in the Project Office Document Control System.
- 5.5.3.8 The Procurement Manager notifies the Administration Manager of the new Subcontractor.
- 5.5.3.9 The Subcontract Register is updated.

5.5.4 Supply Chain Management / Subcontractor Performance Review

- 5.5.4.1 The D&B Team is constantly seeking out best practices that will lead to superior performance in satisfying Developer needs and the D&B Team's internal cost effectiveness. Towards this goal, the D&B Team is establishing a relationship with its Subcontractors to create a list of preferred Subcontractors. Subcontractor performance is therefore monitored on various items, e.g. safety, Non-conformances, on the contract. This data will be analyzed and used for establishing reliable relationships.
- 5.5.4.2 The Construction and Design Managers will monitor Subcontractor performance on a regular basis while the works are being carried out on site. Any problems, difficulties, failures, or queries, which bring into question matters within the scope of this procurement procedure will be identified and resolved jointly with the Procurement Manager in conjunction with other relevant personnel.
- 5.5.4.3 To control the performance of Subcontractors, the relevant Project Controls Representative will review Subcontractor progress payments and the General Manager will authorize them.
- 5.5.4.4 Upon completion of a Subcontractor's work, the Construction Manager, with input from the Procurement Manager, will complete a Subcontractor's Performance Survey and distribute copies of the document to the Document Control System so that it may be recorded in the Subcontractor database for future reference.

5.6 Records

The Procurement Manager will maintain records of quotes, comparisons, purchase requisitions, purchase orders and Subcontractors List (as a database). Specifications, drawings, Bills of Quantities, and other documents used in the quotes will be filed in the applicable contract files stored in the Document Control System.

6 Traffic Management

6.1 Purpose and Scope

The proposed traffic management plan is developed in conjunction with the Health and Safety Manager, Construction Manager, and the Segment Managers. All matters relating to arrangements, timing, and

Chapter 9: D&B Team Process Procedures Manual

communications with the public and other stakeholders will be discussed with the construction team, after which a general plan will be drawn up and forwarded to the Developer and relevant governmental entities. Any recommendations, suggestions or conditions they may have will be considered and applied, as applicable, to the traffic management plan. These plans are also discussed at the periodic construction, traffic management, and safety meetings.

6.2 Definitions

6.2.1 Traffic Management Plan (TMP)

Means the work associated with Traffic Management during the Project.

6.2.2 Process Procedure (PP)

A Process Procedure is a document that details the purpose and scope of a generic activity, and specifies how it is to be carried out. The Quality Manual describes the intent (i.e. "what" is to be done), the procedure details not only "what" but also "who, how, when, where and why". The output from a procedure provides objective evidence (in the form of records) of the compliance to the Specification and Developer requirements.

6.2.3 Method Statements /Work Plans

Written instructions for individual construction activities.

6.2.4 Traffic Control Plan (TCP)

A licensed Professional Engineer will prepare TCPs, which consist of sets of drawings that show the flow of traffic in construction zones and the location of proposed traffic control devices. The TCP is used in conjunction with, and will comply with the requirements of the Texas Manual on Uniform Traffic Control Devices.

6.3 References

- 6.3.1 The D&B Team Quality Assurance Manual and Process Procedures Manual.
- 6.3.2 The D&B Team Health and Safety Plan.
- 6.3.3 Contract specific documents such as Specifications and Drawings.
- 6.3.4 The D&B Team Material and Subcontract Procurement Procedures
- 6.3.5 The Texas Manual on Uniform Traffic Control Devices, 2006 edition.

6.4 Responsibilities (for this procedure)

- 6.4.1 Preparation by the Quality Manager.
- 6.4.2 Review by the Construction Manager

Chapter 9: D&B Team Process Procedures Manual

6.4.3 Approval by General Manager.

6.4.4 Specific Responsibilities

Traffic Safety Officer (TSO): The appointed Traffic Safety Officer will oversee traffic management issues. The Traffic Safety Officer will supervise all aspects of Traffic Management during the Project's Design and Construction. Third-party consultants may be employed to provide this service. The TSO will supervise the activities of Segment Traffic Representatives to implement the Facility wide procedures and requirements at Segment Level. The TSO reports to the Construction Manager.

6.5 Procedure

The D&B Team provides Traffic Management for the execution of the Work in accordance with the Design and Build Agreement, Comprehensive Development Agreement, Technical Requirements (Section 18), and Texas Manual on Uniform Traffic Control Devices for Streets and Highways, 2006 Edition.

Traffic control is accomplished by applying the engineered Traffic Control Plan in conjunction with the standards defined in the Texas Manual on Uniform Traffic Control Devices for Streets and Highways, 2006 Edition.

Prior to commencement of work in a specific area, a notification system will be used to ensure that Developer, governmental agencies, local businesses and residents, and the traveling public are advised of upcoming changes to traffic patterns, e.g. lane closures.

Each Segment will have designated traffic control representatives, reporting directly to the Traffic Safety Officer and the Segment Managers, who are responsible for the accurate implementation, communication and recording of the individual Segment plans. These representatives will work directly with the Segment Manager to ensure compliance with the guidelines of the individual Segment traffic management plan.

A licensed P.E. will review proposed changes to the signed and sealed Traffic Control Plan, and sign and seal these modifications if approved prior to field issue.

Chapter 9: D&B Team Process Procedures Manual

Traffic Management and Control Plan Outline.

I. Introduction

A. Overview

1. Safety criteria
2. Public awareness programs
3. Local agencies/stakeholders involvement
4. Traffic Management Plan
5. Impact areas
 - a. residences
 - b. businesses
 - c. other

II. Organization and Management Structure

A. Key Personnel

1. Roles and Responsibilities
 - a. Construction Manager
 - b. Segment Manager
 - c. Traffic Safety Officer

B. Traffic Management Plan

1. Pre-planning
2. Updates

C. Subcontractors and Vendors

1. Selection process
 - a. services and responsibilities
 - b. qualifications
2. Traffic control maintenance
3. Courtesy Patrol

D. Dedicated traffic control staff

- a. Roles and responsibilities
- b. Qualifications
- c. Monitoring and coordination of subcontractors
- d. Reporting and recording responsibilities
- e. Roles and responsibilities in roadway maintenance

E. Contractual arrangements

1. Reporting and recording requirements
2. Design and Build Agreement pass-thru terms and conditions

III. Procurement

A. Uniform standards—TMUTCD

B. Equipment

1. Signage
 - a. permanent
 - b. temporary
2. Message boards

Chapter 9: D&B Team Process Procedures Manual

3. Barrier
4. Traffic signals
 - a. permanent
 - b. temporary
5. Pavement markings
6. Other

IV. Schedule

- A. Preliminary planning
- B. Schedule updating
- C. Segments

V. Traffic Control Procedures

- A. Subcontractor and vendor procurement
- B. Coordination
 1. Community awareness
 2. Local/state agencies and stakeholders
- C. Quality control
- D. Traffic control request forms

7 Procurement (Design)

7.1 Purpose and Scope

- 7.1.1 The purpose of this procedure is to enable the selection and procurement of Designers (and other professional consultants) on the basis of capabilities, quality assurance, technical experience, past performance, safety and health, price, and overall best value and compliance with the CDA.
- 7.1.2 The procedure covers all Design subcontracts entered into with the D&B Team.

7.2 Definitions

- 7.2.1 Designer: A company, organization or individual providing technical services, e.g. design, checking or other similar facilities or resources, to the D&B Team.

7.3 References

- 7.3.1 The D&B Team Quality Management Plan (QMP) and Process Procedures Manual.
- 7.3.2 The D&B Team Health and Safety Plan.
- 7.3.3 The D&B Team approved Subcontractors list.
- 7.3.4 Appropriate forms of Subcontract.
- 7.3.5 Disadvantaged Business Enterprise (DBE) Plan

Chapter 9: D&B Team Process Procedures Manual

7.4 Responsibilities (for this procedure)

- 7.4.1 Preparation by the Quality Manager.
- 7.4.2 Review by the Design Manager.
- 7.4.3 Review by the Procurement Manager.
- 7.4.4 Approval by General Manager.
- 7.4.5 The responsibility for the selection of a Designer rests with the General Manager (or a delegated authority). The Procurement Manager and the Design Manager will provide the General Manager with all the necessary assessment details of the Designer for his review and approval.
- 7.4.6 Other responsibilities for Designer selection are described in this Procedure.

7.5 Procedure

7.5.1 Inquiries, Quotations and Comparisons

- 7.5.1.1 A meeting will be held including the Procurement Manager, General Manager, Design Manager, plus any other parties as deemed necessary to define the procurement strategy for design.
- 7.5.1.2 As part of this meeting, the Design Manager will outline the main design packages.
- 7.5.1.3 Subsequently, the Procurement Manager will extract and copy the relevant information for the procurement documents, which will include:
 - Safety, Health and Environmental documentation;
 - Specification details;
 - Specific conditions of Subcontract;
 - Extracts from the Proposal documents including Contract Details, Instructions to Proposers; Extracts from the Comprehensive Development Agreement, Instructions to proposers;
 - Design and Construction schedule;
 - Drawings.
- 7.5.1.4 The Procurement Manager creates a Design Procurement File, according to the criteria of the D&B Team.
- 7.5.1.5 The Procurement Manager notifies proposing Designers of the conditions of Contract and invites review and quotes of Designer's prices.
- 7.5.1.6 All requests for proposal (RFPs) to Subcontractors are dispatched under cover of the D&B Team standard Letter. A Quality Assurance Questionnaire may accompany the RFP at the discretion of the Design and Quality Managers.
- 7.5.1.7 All RFPs sent out and proposals received are recorded on a spreadsheet for comparison of cost and technical capability.

Chapter 9: D&B Team Process Procedures Manual

- 7.5.1.8 A copy of the completed Quality Assurance Questionnaire from the preferred Bidders will be forwarded to the Quality Manager.
- 7.5.1.9 Following initial comparisons of the proposals, the General Manager will convene Pre-award meetings with the preferred Bidders the Design Manager and the Procurement Manager.

7.5.2 Designer Documentation

- 7.5.2.1 Following the selection of a Designer, the Procurement Manager drafts the subcontract agreement.
- 7.5.2.2 The subcontract should have reference to and contain (1) terms and conditions, (2) scope of work, (3) price with a schedule of values for payment, (4) schedule of design deliverables, (5) waiver of liens, (6) insurance requirements and (7) any other documents that are relevant to the subcontractor's scope of services.
- 7.5.2.3 Prior to final compilation, the Design Manager and the Procurement Manager will review the proposed subcontract.
- 7.5.2.4 Three sets of subcontract documents are sent to the Designer for initial signature under cover of D&B Team Standard Letter. In all cases, the Procurement Manager will retain a record.
- 7.5.2.5 The Procurement Manager will check returned Subcontracts for amendments made by the Subcontractor. Any disagreement with these amendments, actual or proposed, must be taken up with and resolved with the Designer immediately, including reference where necessary to other parties involved in meetings and discussions. The General Manager must also be immediately informed of any matter that may affect or vary the final Contract terms and conditions and/or execution of the works. If these amendments are acceptable the Designer initials them properly, the authorized D&B Team signatory will sign the contract. The D&B Team will file one original in Document Control, provide a second original to the D&B Team's home office, and return the third original to the Designer under cover of a letter.
- 7.5.2.6 Other returned information, e.g. method statements, risk assessments, contact numbers, is copied to the site and relevant personnel with the original details retained along with the original signed contract in the Project Document Control System.
- 7.5.2.7 The Design Manager and the Procurement Manager notifies the Administration Manager on the Subcontractors Approval/Notification Form.

7.5.3 Supply Chain Management/Subcontractor Performance Review

- 7.5.3.1 The Company is constantly seeking out best practices that will lead to superior performance in satisfying the Developer's needs and the D&B Team's internal cost effectiveness. Towards this goal, the D&B Team is establishing a relationship with its Designer to create a list of preferred Designers. Subcontractor performance is therefore monitored. This data will be analyzed and used for establishing reliable relationships.
- 7.5.3.2 The Design Manager will monitor the Designer's performance on a regular basis while the works are being carried out. Any problems, difficulties, failures, or queries, which bring into question matters

Chapter 9: D&B Team Process Procedures Manual

within the scope of this procurement procedure will be identified and resolved jointly with the Procurement Manager in conjunction with other relevant personnel.

- 7.5.3.3 To control the performance of Designers, the General Manager and the Design Manager will review their progress payments.
- 7.5.3.4 Upon completion of the Designer's works, the General Manager with input from the Design Manager will complete a Subcontractor's Performance Survey. Copies of this document are distributed to the Document Control System and recorded in the subcontractor database for future reference.

8 Construction Management

8.1 Purpose and Scope

- 8.1.1 The purpose of this document is to set forth guidelines and procedures to ensure the execution and supervision of the constructed works, including that of all subcontractors, self-performed work, vendors and suppliers, are in accordance with the provisions of the Design and Build Agreement and CDA.
- 8.1.2 The scope covers all construction activities undertaken on contracts. This will include procurement of material and supplies, directly performed work, and subcontracted work.

8.2 Definitions

8.2.1 The Developer & Independent Engineer:

- Developer: The purchaser/ultimate user of the Project that is being built under the Design and Build Agreement.
- Independent Engineer: The person and/or organization employed by the Developer and TxDOT to oversee the execution of the project.

8.2.2 Quality Management Plan (QMP)

Describes the quality assurance and quality control activities necessary to manage the design and construction of the Project.

8.2.3 Inspection and Test Plan (ITP)

An Inspection and Test Plan is a document which sets out the requirements, frequency and responsibilities for activities such as measuring, examining, testing and gauging one or more characteristics of a product or service, and comparing the results with specified requirements to determine conformity to the Contract Specification. Inspections and tests are detailed in the applicable procedures and results recorded on forms.

Chapter 9: D&B Team Process Procedures Manual

8.2.4 Process Procedure (PP)

A Process Procedure is a document that details the purpose and scope of a generic activity, and specifies how it is to be carried out. The PMP describes the intent (i.e. 'what' is to be done), the procedure details not only 'what' but also 'who, how, when, where and sometimes why'.

8.2.5 Works Plan/Method Statements (MS)

These are written instructions for individual construction activities.

8.3 References

- 8.3.1 The D&B Team PMP and Process Procedures Manual.
- 8.3.2 The D&B Team Health and Safety Plan.
- 8.3.3 Contract specific documents such as Specifications, Drawings, and schedules.
- 8.3.4 Product and material safety data sheets (MSDS), hazard data sheets, and material conformity certificates.
- 8.3.5 Comprehensive Development Agreement.

8.4 Responsibilities (for this procedure)

- 8.4.1 Preparation by the Quality Manager.
- 8.4.2 Review by the Construction Manager
- 8.4.3 Approval by General Manager.

8.5 Procedure

To meet the contractual obligations of the Design and Build Agreement, the D&B Team will establish and maintain a series of execution oriented procedures during construction.

Each procedure will be structured so that audit criteria may be applied to it to ensure compliance with the terms and conditions of the Design and Build Agreement and CDA.

8.5.1 Construction Management Procedures

This procedure begins with the acquisition of the site for execution of the Contract. Activities such as pre-construction planning, site orientation visits, and verification of services will be the responsibility of the Hub Office management team.

The management team will take photos, video footage, and/or use digital imagery to document existing conditions before construction activities commence.

Chapter 9: D&B Team Process Procedures Manual

The responsibility for the development of the construction portion of the Quality Assurance Manual will rest with the General Manager and his designated quality management staff, including the Quality Manager.

The Quality Management Plan (QMP) is the principal management plan for the construction phase.

- 8.5.1.1. The QMP will briefly describe the project, the scope of the Work, the location, the quality objectives for the Work, and the organization (including responsibilities and duties) required to achieve these objectives.
- 8.5.1.2. The construction phase may require additional procedures and instructions to supplement those contained in the QMP, as well as specific Method Statements to carry out the work. The General Manager or the Construction Manager will identify, establish and issue such instructions for implementation. The General Manager may consult the Quality Manager on the preparation of these documents. Only competent persons may prepare procedures and Method Statements. Method Statements and Procedures are also required for critical Subcontractor activities. The General Manager will ensure these are prepared and approved prior to the commencement of activities.
- 8.5.1.3. Method Statements will contain details regarding the manner of production, construction, installation of products and materials, use of plant and equipment, specified tolerances, and task safety.
- 8.5.1.4. The D&B Team or its Subcontractors may issue a Request for Information (RFI) to clarify or supplement insufficient or ambiguous information contained in specifications, drawings, or instructions.
- 8.5.1.5. It may be necessary to submit certain documents to the Developer for approval. A Request for Approval will be issued in these circumstances.

8.5.2 Inspection and Test Plan (ITP)

- 8.5.2.1. In order to provide assurance that the specified quality is being built into the works, objective evidence is required. For this purpose inspections and tests will be performed as specified in the PMP, the ITP, and Method Statements. The records will be reviewed and maintained as the work progresses to show compliance to the Contract requirements.
- 8.5.2.2. Inspection, measurement and test plans will be developed based on the requirements of the PMP and any additional requirements as stated in Method Statements.
- 8.5.2.3. Inspection and Tests may also be performed off-site for products and services obtained from Suppliers and Subcontractors prior to incorporation in the permanent works. Where Suppliers hold current approved quality management certificates or certificates from independent accredited testing laboratories, no further testing will be required. Periodically, it may be necessary to carry out testing using a certified laboratory. Inspection at time of receipt may be limited to visual checks in these cases.
- 8.5.2.4. The Quality Manager will observe, review and audit Contract activities, which have an effect on the quality of the works. Suppliers and Subcontractors working for the D&B Team will be required to complete a Quality Assurance Questionnaire. The Quality Manager will assess the questionnaires by reviewing the responses and/or carrying out assessment visits. Reports of such visits will be recorded and issued appropriately.

Chapter 9: D&B Team Process Procedures Manual

A schedule of quality audits will be drafted and distributed to the relevant personnel. Generally, the audit team will be drawn from the D&B Team staff at the appropriate times. Compliance to quality requirements as specified in the Contract will be monitored on this basis and will be reported to Department Managers and the General Manager. Corrective Action Reports will be created when non-conformances are identified. This will be carried out as per the Procedure for Internal Audits.

8.5.3 Materials Control and Traceability

- 8.5.3.1 The General Manager, through the Construction Manager will ensure that responsibility is allocated to the Segment Managers and their staffs for inspecting ordered materials, carrying out receipt inspections, verifying any product conformity certificates applicable to the supplied materials and ensuring Material Safety Data Sheets are supplied for their safe use.
- 8.5.3.2 If a material storage yard manager is appointed, he will be responsible for the safe and proper storage of material.
- 8.5.3.3 Any damaged or unacceptable products will be subject to the Control of Non-Conforming Products procedure until resolved. Isolation areas will be used to segregate such materials from the works.
- 8.5.3.4 Traceability of products will be documented to the extent specified by the Design and Build Agreement, or as required by statute.
- 8.5.3.5 The Inspection and Test Plan and relevant Method Statements will identify cases in which the Developer requires inspections before incorporation of products into the work. Developer-supplied materials, if any, must also be inspected, and, if found unacceptable, the Developer will be informed in writing.

8.5.4 Survey Control

- 8.5.4.1 All instruments used for establishing horizontal and vertical controls will be maintained at an acceptable calibrated status. A log will be kept of instruments used on site noting the instrument number, make, model, calibration date, calibration method, and any other regular checks carried out.
- 8.5.4.2 Survey books will be maintained legibly, and in such order as would enable them to be understood by other engineers.
- 8.5.4.3 Regular checks will be implemented to verify the accuracy of survey control stations. Survey tolerances will be identified and complied with. Any non-compliance will be resolved.

8.5.5 Site Control of Subcontractors

- 8.5.5.1 Reference is made to PPM Section 5, Procurement-Subcontractors, which provide the guidelines for selection of suitable Subcontractors for Contract work.
- 8.5.5.2 Selected Subcontractors must supply details of their personnel (including responsibilities), inspection and testing arrangements for work and materials, and supply of records. All Subcontractor activities will be subject to inspection, test, and audit by the Developer or any overseeing authority. Following the completion of subcontracted work, the General Manager will prepare a Subcontractor Performance

Chapter 9: D&B Team Process Procedures Manual

Report to form part of the permanent records, which will be copied to the Construction Manager and Procurement Manager.

8.5.6 Contract Review and Construction Planning

8.5.6.1 Following the award of a Contract, an initial review will be carried out as detailed in the Procedure Design-Build Contract Review (PPM 2).

8.5.6.2 Continuous contract reviews will be carried out for the General Manager. These reviews will cover:

- Assessment of any changes to the scope and/or the schedule requirements of the Developer, including new Drawings, if any;
- Changes to the Specifications and/or standards (if any);
- Matters pertaining to Safety, Health and the Environment;
- Schedule review and update;
- Material Issues (If any)

8.5.7 Contract Correspondence

8.5.7.1 The General Manager is responsible for acknowledging and replying to all correspondence received from the Developer. The General Manager or his designee will identify all incoming site correspondence for distribution and approve all outgoing correspondence.

8.5.7.2 As a standard practice, all correspondence received will be date stamped upon receipt and presented to the General Manager for distribution.

8.5.7.3 All correspondence must be maintained in an organized Project Office filing system, with each document uniquely referenced.

8.5.7.4 In certain circumstances, some correspondence may require the authorization and signature of the Developer. The General Manager is responsible for ensuring that this procedure is correctly followed.

8.5.7.5 The Construction Manager will ensure that each Segment Manager reviews regularly and causes to be maintained all site diaries of the appropriate supervisory staff, including Superintendents and Construction Representatives, to record overall progress on the construction of the works.

8.5.7.6 A systematic control will be established for obtaining approval of materials and products into the permanent works.

8.5.7.7 The General Manager, Construction Manager, and Segment Managers will ensure that all controlled documents such as Method Statements, Schedules, Drawings, and Quality Procedures are distributed using prescribed Document Control methods, as per the guidelines in the Document Control procedures.

The Controls Manager will be responsible for tracking and compiling quantities, producing work plans, memorializing field activities, and other duties, as the Construction Manager directs.

Chapter 9: D&B Team Process Procedures Manual

8.5.8 Protection to Permanent Works

The Segment Manager and his staff of Superintendents will be responsible for ensuring that any completed or permanent works are suitably protected from potential damage until the Project Segment hand-over is complete.

8.5.9 Developer-Supplied Materials

Where the Developer supplies materials for incorporation into the work, they will be subject to the same inspection and control as any other materials such as those sourced directly from approved suppliers. Where these materials are not required (or are surplus to requirements) the General Manager will seek instruction from the Developer regarding their removal or disposal.

8.5.10 Internal Communications

In order to facilitate internal communication of the D&B Team staff, the following measures must be implemented:

- Staff meetings will be held on a regular frequency to be determined by the respective manager. The agenda should include labor, equipment, materials, Subcontractors, progress, and work activities for the next week. Any problems on safety, quality and any other aspects of the Contract should be discussed and appropriately assigned for action
- Copies of relevant letters, instructions, confirmation of verbal instructions, technical issues, drawings, specifications, etc., must be distributed in a timely manner.
- Subcontract coordination meetings will be conducted.

9 Control of Non-Conforming Products

9.1 Purpose and Scope

- 9.1.1 The purpose of this procedure is to define the requirements for the identification, documentation and resolution (elimination) of non-conforming products and/or services, including any environmental non-compliance, which may occur at any stage in the project cycle. This process will ensure that non-conforming products are controlled by taking actions to preclude their use or application in the Work.
- 9.1.2 At times it may be possible for a non-conforming product to be accepted by requesting concession or minor alteration of a specification. The purpose of this procedure is to control such changes and provide verification of acceptance from the Developer.
- 9.1.3 The scope includes all materials and products used in the construction of the D&B Team's project, and any section of completed or partly completed work which is within the scope of this procedure.

9.2 Definitions

- 9.2.1 Non-Conformance: A Non-Conformance is an event that does not comply with the requirements of the contract.

Chapter 9: D&B Team Process Procedures Manual

- 9.2.2 Modify: The action of removing an error by returning to the previously acceptable stage and redoing the work to the specified requirement.
- 9.2.3 Repair: The action of performing additional work to an agreed alternative specification.
- 9.2.4 Accept 'As is': No additional work will be performed.
- 9.2.5 Re-Test: In case there is a doubt of incorrect inspection and testing, further testing can be done by specifying the test, location, method, environment, etc.

9.3 References

- 9.3.1 The D&B Team Quality Management Plan (QMP) and Process Procedures Manual.
- 9.3.2 Quality Management Plan
- 9.3.3 Project Inspection and Test Plans
- 9.3.4 Contract specific Drawings and Specifications

9.4 Responsibilities (for this procedure)

- 9.3.1 Preparation by the Quality Manager.
- 9.3.2 Review by the Construction Manager
- 9.3.3 Approval by the General Manager

9.5 Procedure

9.5.1 Identification of Non-Conformances.

9.5.1.1 Identification of non-conformances may be performed by:

- Technical staff of the D&B Team.
- Quality, Environmental and Health and Safety Teams

The Independent Engineer also has the authority to issue Non-Conformance Reports and the Quality Manager will address these NCRs. All NCRs that are raised will be specific and individual in relation to a non-conformance. Contractual reference (specification, drawings, contract clause, works element, etc) should also be as detailed as possible.

- 9.5.1.2 D&B Team staff, suppliers, subcontractors, the Quality Manager, or the approved inspection authority will identify non-conformances occurring onsite.
- 9.5.1.3 To commence the process, staff should raise the Non-Conformance Report (NCR) using the standard *Non-Conformance Report* form and, at the same time, the NCR should be communicated to the relevant construction staff supervising that element of work, so that the D&B Team staff is aware of the situation. Initial notification of the construction staff can be done verbally.
- 9.5.1.4 Each Section Manager will review NCRs on a case-by-case basis.

Chapter 9: D&B Team Process Procedures Manual

- 9.5.1.5 The Quality Manager (or designee) will conduct weekly meetings with the Independent Engineer and the D&B Team's staff to review all open NCRs. Each open NCR is examined to determine if the required action has been taken and the relevant information required to close out the NCR has been attached to the NCR. If the latter has taken place, the Quality Manager (or by a person appointed by him) may close out then the NCR by examining the attached information to ensure correct closeout of the NCR. The NCR is closed by signing the NCR form. All sections of the NCR form are to be completed for the NCR to be satisfactorily closed out. In some instances, however, sections of the form may not be applicable to the NCR in question and, in these situations, the non-relevant sections of the form should be marked N/A (not applicable). If the information attached or the action taken to close out the NCR is insufficient in the opinion of the Quality Manager, then additional information and/or further action are taken to close out the NCR. Details of the additional information and/or action taken to be detailed on the NCR form. NCR registers will be made available to all D&B Team staff and Independent Engineer.
- 9.5.1.6 Each NCR has a unique number. When a non-conforming work product occurs, an NCR form is filled out and the original NCR is provided to the Quality Manager. The NCR is assigned a unique number so that it may be monitored. The Quality Manager will maintain only one record NCR log.
- 9.5.1.7 NCRs received from the Developer or the Independent Engineer will be processed like a D&B Team generated NCR.
- 9.5.1.8 Minor errors which occur during construction may be corrected by minimal rework through standard working practices without any change to permanent works. Such instances need not be recorded as an NCR and all staff will use "reasonable" expertise and judgment in determining these situations.
- 9.5.1.9 Completed work which is not in accordance with the Drawings and Specifications, for which an alteration would be necessary for its acceptance, or where repairs are required to comply with the Drawings and Specifications, will be recorded as a Non-Conformance.
- 9.5.1.10 The D&B Team will allocate a suitable area for controlled storage of Non-Conforming items. This will help in segregating these items to avoid inadvertent use.

9.5.2 Recording and Resolution of Non-Conformance Reports.

- 9.5.2.1 Any non-conforming product delivered to the site by a Supplier and incorporated into the works will be identified and recorded as an NCR. The product (if identified before use), will be segregated and marked up 'NOT FOR USE' in whatever practical manner to prevent inadvertent use or mixing with conforming products. The NCR system is for internal use only. Suppliers will be notified in writing when a product does not conform to project requirements. Unused, non-conforming products need not be recorded on the NCR form, but will be sent back to the Supplier for replacement with acceptable product.

When traceability is a required parameter of the Contract, items will be uniquely identified and their location where used in the works will be recorded. The 'Location' of concrete and earth product incorporated into the works will be recorded to enable traceability.

Chapter 9: D&B Team Process Procedures Manual

9.5.2.2 Each NCR will have a unique number. The details of the non-conformance will show the item and activity with a brief description.

The person who is responsible for controlling the activity must be identified in the 'Response Required From' section of the Non-Conformance Report. Typically this may include the Segment Manager or Superintendents.

The person responsible for originating the document must be identified in the 'Originator' section of the Non-Conformance Report. Such persons should be sufficiently competent in identifying any non-conformance in a particular item or activity.

A copy of each NCR must be sent to the Quality Manager who will ensure that the information has been entered correctly, and will be used for internal reporting.

Typical uses for NCRs may include (but are not limited to):

- a. Deviation in alignment (horizontal or vertical) in excess of specified tolerance;
- b. Errors and omissions in part completed or fully completed works;
- c. Incompatible sizing;
- d. Use of incorrect or unsuitable materials or products.
- e. Work products completed and not meeting specifications.

The Originator of an NCR may elaborate on the details and circumstances of the non-conformance on additional sheets and/or photographs which may be attached to the NCR.

The person required to respond to the NCR shall address all action items identified within the NCR. This person should select one of the action items as appropriate, and expand on the suggested action proposed for the resolution of the non-conformance. The Quality Manager will evaluate the suggested action.

Approval by the Quality Manager is required to close out all NCRs. The D&B Team will communicate a list of personnel approved to sign off on NCRs to Independent Engineer.

NCRs will be distributed to the following personnel:

- Construction Manager.
- Segment Managers.
- Other relevant personnel, e.g. Procurement Manager when a Supplier is having problems.

9.5.2.3 Decisions on the resolution of Suppliers non-conforming products will be subject to the approval of the Construction Manager in consultation with the Quality Manager, and the Procurement Manager.

9.5.2.4 Objective evidence will be retained to substantiate wherever possible that repaired and reworked items have been re-inspected or re-tested according to the applicable procedures. This procedure will control NCRs for subcontracted work unless agreed otherwise.



Chapter 9: D&B Team Process Procedures Manual

9.5.3 Change Control

The Construction Manager and the Segment Managers are responsible to ensure that all activities are performed in accordance with the approved procedures, applicable Drawings and Specifications. When errors occur, this procedure ensures that a controlled approach is taken to resolve these non-conformances in the most economical manner.

9.5.4 NCR Data Analysis & Improvement

The Quality Manager will review and carry out analysis to identify any adverse trends and will report to the General Manager and Construction Manager with recommendations for improvement (e.g. additional training).

Chapter 9: D&B Team Process Procedures Manual

Figure 43: Non-Conformance Report

		NON-CONFORMANCE REPORT		Document Ref: Tx-2/ PPM 1.9 01	
				Revision No.:	
		N^o		Issue Date:	
				Page 1/1	
				FORMAT: Tx-2/ PPM 1.9/01	
Center Code:	Tx-2	Project:	SH 121 TOLLWAY SEGMENTS 1-5		
Area	<input type="text"/>	Activity	<input type="text"/>		
Subactivity	<input type="text"/>	Element	<input type="text"/>		
Plans reference:		Specifications reference:			
Location:	<input type="text"/>	Position:	<input type="text"/>		
DETAILS OF NON-CONFORMANCE:					
CAUSE:					
Action tick as appropriate					
1. Reject/Remove	<input type="checkbox"/>	2. Repair	<input type="checkbox"/>	3. Modify	<input type="checkbox"/>
4. Re test (Specify)	<input type="checkbox"/>	5. Accept "As is"	<input type="checkbox"/>	6. Others	<input type="checkbox"/>
REQUIRE CORRECTIVE ACTION (PPM 1.10): YES <input type="checkbox"/> NO <input type="checkbox"/>					
Supplier and/or Subcontract:		Fee of:	D-B CONTRACTOR <input type="checkbox"/>	SUBCONTRACT <input type="checkbox"/>	
DESCRIPTION OF RESOLUTION ACTION:					
RAISED BY:		APPROVE BY:		RESOLUTION VERIFY BY:	
Date:	Signed:	Date:	Signed:	Date:	Signed:

Chapter 9: D&B Team Process Procedures Manual

10 Corrective and Preventative Action

10.1 Purpose and Scope

10.1.1 The purpose of this procedure is to ensure that defects, wherever they are located in the D&B Team's activities, result in NCRs and remedial action. In addition, the root cause will be identified to and changes to the PMP made, if necessary, to prevent recurrence.

These actions will be recorded and used in the continual improvement of the Quality Management System.

10.1.2 Scope: This procedure encompasses all activities affecting the quality of products/services that the D&B Team provides to the Developer. It includes Developer Complaints.

10.2 Definitions

10.2.1 Corrective Action Report (CAR)

10.2.1.1 Either the Quality Manager or Lead Auditor will initiate Corrective Action Reports to identify, record, and resolve non-conformances from the Quality system. These reports may be generated as a result of an audit finding or by some other means.

10.2.1.2 NCRs are the documents initiated by competent personnel to identify, record, and resolve items (material, equipment or portion of completed works) where the quality characteristic is indeterminate or non-conforming to applicable specifications or drawings.

10.2.2 Preventative Action (PA)

An action to pre-empt a non-conformance.

10.2.3 Observation

Non-conformances, which are single occurrence, corrected immediately, and do not affect the permanent works. They will be reported as observations in an Audit Report.

10.3 References

- 10.3.1 The CDA
- 10.3.2 The D&B Team Quality Assurance Manual and Process Procedures Manual
- 10.3.3 Environmental Plan
- 10.3.4 Quality Management Plan.
- 10.3.5 Inspection and Test Plans.

Chapter 9: D&B Team Process Procedures Manual

10.4 Responsibilities (for this procedure)

- 10.4.1 Preparation by the Quality Managers
- 10.4.2 Review by the Quality Director
- 10.4.3 Approval by the General Manager

10.5 Procedure

10.5.1 Investigations

The Quality Manager will carry out investigations to determine the cause of quality problems and to identify possible quality system defects, especially when:

- 10.5.1.1 Analysis of all NCRs indicates significant, recurring defects in materials, equipment, or portions of completed work, or recurring disregard to environmental controls.
- 10.5.1.2 Developer complaints are frequent.

10.5.2 Corrective Action Reports

A Corrective Action Report will be prepared for all such investigations containing the following information:

- a. The details of the audit or department/section under investigation.
- b. The unique number or numbers for the C.A.R. from the Quality Manager. There are two types of C.A.R., one is audit generated and the other is generated outside an audit.
- c. Description of the item/activity which is the subject of the C.A.R. (s).
- d. References of the document and clauses against which the C.A.R.s are identified.
- e. A brief description of the non-conformance from the quality system or environmental controls requiring corrective action.
- f. A proposal to remedy the situation and, further, a proposal for preventing recurrence.
- g. The General Manager must approve proposals before the Quality Manager can verify and close out CARs. The Quality Manager will analyze internal audit reports and Subcontractor/ Supplier audit findings to identify trends or deficiencies in the Quality Management System. If such deficiencies are identified, the steps outlined in 10.5.2 will be followed.

Chapter 9: D&B Team Process Procedures Manual

Figure 44: Corrective and Preventative Action Report

CORRECTIVE AND PREVENTATIVE ACTION REPORT		Document Ref: Tx-2/ PPM 1.10/01
		Revision No.: 0
N^o		Issue Date:
		Page 1/1
Center Code: Tx-2	Project: SH 121 TOLLWAY SEGMENTS 1-5	FORMAT: Tx-2/ PPM 1.10/01
Date:		
CAUSE: (Item/Activity, Description, Location)		
ANALYSIS:		
DESCRIPTION OF THE CORRECTIVE/PREVENTATIVE ACTION ADOPTED:		
IMPLANTATION: Due Date: / / Responsible: _____		Approve by (QM, originator): Date: / /
VERIFICATION AND CLOSE OF THE CORRECTIVE/PREVENTATIVE ACTION:		
Date of implementation: / /		Verify by (QM): Date: / /

Chapter 9: D&B Team Process Procedures Manual

11 Internal Audits

11.1 Purpose and Scope

The purpose of this procedure is:

- To establish measures for Planning, Performance, Recording and Reporting of Internal Audits.
- To determine whether quality management activities and associated results comply with planned arrangements and whether these arrangements are implemented effectively and suitably to achieve set objectives.
- To provide the D&B Team, Subcontractors, and/or Suppliers/Vendors opportunity for improvement.
- To meet regulatory requirements, if any.
- The scope will encompass all documentation of D&B Team work.

11.2 Definitions

11.2.1 Audits

A systematic and objective examination to determine whether quality management activities and associated results comply with planned arrangements, and whether these arrangements are implemented effectively and suitably to achieve set objectives.

11.2.2 Internal Audits

The Quality Manager (or suitably qualified delegated personnel) will perform audits on specific sites or departments within the D&B Team.

11.2.3 External Audits

11.2.3.1 The Quality Manager (or suitably qualified delegated personnel) will perform audits on D&B Team Subcontractors and Suppliers.

11.2.3.2 The Developer will carry out audits of the D&B Team's Quality Management System.

11.2.4 Review System

A general examination of the Quality System using the documentary information available to establish whether Quality requirements are being met or can be achieved. A report will be produced giving conclusion, recommendations or corrective actions, as appropriate.

Chapter 9: D&B Team Process Procedures Manual

11.2.5 Surveillance

The continual monitoring and verification of the effectiveness and validity of procedures, methods, conditions, processes, products and services. It also includes analysis of records in relation to stated references to ensure that specified requirements are being complied with.

11.3 References

- 11.3.1 The D&B Team Quality Management Plan (QMP) and Process Procedures Manual.
- 11.3.2 Project Inspection and Test Plans.

11.4 Responsibilities (for this procedure)

- 11.4.1 Preparation by the Quality Managers
- 11.4.2 Review by Quality Director
- 11.4.3 Approval by the General Manager

11.5 Procedure

11.5.1 General

- 11.5.1.1 Auditors and Lead Auditors must be suitably qualified. The Quality Manager will select the auditors. If no suitably qualified persons are available, then the Quality Manager will help prepare a checklist against which delegated persons will perform the audit.
- 11.5.1.2 The persons carrying out the audit will have no functional responsibility for the performance of the activity being audited.
- 11.5.1.3 The Quality Manager will develop and audit schedule, which the General Manager will approve. Audits will proceed according to this schedule. The Quality Manager (or suitably qualified deputy) will carry out unscheduled audits as necessary.
- 11.5.1.4 A lower level of monitoring may be necessary in the form of surveillance (observation) and/or review.
- 11.5.1.5 Unscheduled audits will be performed when it is suspected that quality is being jeopardized or when significant changes are made to the functional areas of the Quality Management System.

11.5.2 Audit Schedule

- 11.5.2.1 Audits will be planned in advance and a schedule prepared subject to the approval of the General Manager. These audits are used to verify the implementation of all quality-related activities carried out both by the D&B Team and its Suppliers/Subcontractors. Audits will be carried out at least annually.

Chapter 9: D&B Team Process Procedures Manual

11.5.3 Selection of the Audit Team

- 11.5.3.1 The Quality Manager may carry out the audits alone, or may select a suitably qualified deputy to act on his/her behalf. The Quality Manager may allocate a Lead Auditor and assist in the selection of the other members of the audit team. The Quality Assurance Manager will brief the auditors on the performance of the audit.
- 11.5.3.2 The Lead Auditor is responsible for coordinating the audit plan, date(s) and time of the audit, conducting the audit, summarizing the audit findings at exit interview, preparing an audit report and circulating and following-up the associated Corrective Action Reports (if any). The Quality Manager will assist him in this task.
- 11.5.3.3 The Quality Manager may decide to use external auditors, with the consent of the General Manager.

11.5.4 Audit Plan and Notification

- 11.5.4.1 The audit plan identifies the purpose of the audit, the specific requirements to be audited (including reference to specific documents), and thereby permits development of a checklist for use during the audit.
- 11.5.4.2 The Quality Manager will allocate a unique number to each audit.
- 11.5.4.3 The Quality Manager will issue an audit notification to the section or department to be audited. The Quality Manager will then consult with the Lead Auditor detailing the scope of the audit, the name(s) of the auditor(s), reference documents, the timing of the audit, the date(s) and any works visits necessary. Site visits will be made jointly with the D&B Team staff. Notes will be made of any relevant points where verification is sought in identifying compliance to procedures.

11.5.5 Audit Performance

- 11.5.5.1 The Lead Auditor will conduct a pre-audit meeting to establish a general overview of the areas to be audited, establish escorts for site visits, anticipated time for closing meeting and venue, etc. The names of those present will be recorded.
- 11.5.5.2 An audit checklist may be used as the basic agenda for some audits at the discretion of the auditor.
- 11.5.5.3 All deficiencies will immediately be brought to the attention of the Department or Segment Manager of the audited Department/Segment, discussed and corrected wherever possible. When deficiencies show a non-conformance in relation to the Quality Management System it will be subject to the issue of a Corrective Action Report.

Non-conformances of a less serious nature will be noted and reported as an "Observation". As a guide, observations are those types of deviations where they are:

- a. a single, non-recurring event;
- b. an event not affecting any permanent works;
- c. An event that is corrected immediately.

Chapter 9: D&B Team Process Procedures Manual

11.5.6 Recording of Documents

Key documents or records which are witnessed will be identified on the checklist. Where possible, copies will be obtained as documentary evidence. The names of persons consulted during the audit will be recorded.

- 11.5.6.1 The Lead Auditor will conduct a closing meeting to discuss audit findings with appropriate D&B Team members. Persons responsible for correcting non-conformances will acknowledge any Corrective Action Reports generated during the audit. The attendees will discuss recommendations for corrective action with the goal of agreeing on a solution prior to concluding the audit. The D&B Team may amend the procedures applicable to the affected Department or Section at this time to facilitate corrective action and prevent future non-conformances. Meeting minutes will include names of attendees, discussion topics and action items.

11.5.7 Audit Reports

11.5.7.1 The audit report will contain as a minimum:

- a. audit number and date(s) of audit;
- b. title, address, location of the audit;
- c. audit scope;
- d. names of persons consulted during the audit;
- e. the audit team;
- f. list of criteria audited and the result;
- g. audit conclusion or summary;
- h. Non-conformance Reports and/or Corrective Action Reports with unique numbers and response due dates, other observations requiring attention.

11.5.7.2 The lead auditor will sign the Audit Report and transmit it to the Quality Manager, who will review the report and transmit it to the audited Segment or Department Manager and the General Manager within three days of the audit.

11.5.8 Follow-Up Activities

11.5.8.1 The D&B Team will respond to the findings no later than three weeks from the receipt of the report.

11.5.8.2 The Lead Auditor or Quality Manager will follow-up any CARs and notify the D&B Team of the CARs disposition. The Quality Manager will monitor the responses for compliance and report the results to the General Manager and applicable Department Managers.

Chapter 9: D&B Team Process Procedures Manual

12 Developer Complaints and Compliments

12.1 Purpose and Scope

- 12.1.1 The Purpose of this procedure is to ensure that complaints received from the Developer on aspects other than quality will be investigated appropriately.
- 12.1.2 The scope covers complaints received from the Developer on completed work (which does not form part of the final “punch” list), and from members of the public related to the D&B Team’s activities (e.g. noise, dust or other hazards).

12.2 Definitions

- 12.2.1 **Complaint:** An expression of dissatisfaction (either verbally or in writing), with respect to any aspect of the Design and Build Agreement, including scope, execution or status which has an overall effect on the quality of the end product, and which is not covered by a Non-conformance Report.
- Note: A low Complaint rate is not proof of Developer satisfaction; however a high Complaint rate is proof of dissatisfaction.
- 12.2.2 **Compliment:** An expression of satisfaction beyond the normal compliance to the Design and Build Agreement requirements. This type of expression will usually be received by letter.

12.3 References

- 12.3.1 The D&B Team Quality Management Plan and Process Procedures Manual
- 12.3.2 The D&B Team Safety, Health and Environmental Manuals.

12.4 Responsibilities (for this procedure)

- 12.4.1 Preparation by the Quality Managers
- 12.4.2 Review by Quality Director
- 12.4.3 Approval by the General Manager

12.5 Procedure

- 12.5.1 The non-conformance system and the corrective action reporting system will generally be sufficient to control any non-conformances in relation to the Contract Requirements. A Quality Plan is the communication document between staff and Developer (and related third parties) to ensure compliance with Developer, statutory, and regulatory requirements.
- 12.5.2 When the Developer, or an outside party, raises a complaint to any member of the D&B Team staff, the individual receiving the complaint will complete a Developer Complaint Form documenting all relevant information pertaining to the complaint.

Chapter 9: D&B Team Process Procedures Manual

- 12.5.3 A copy of the Complaint Form will be kept for reference and the original will be filed in Document Control. The recipient of the complaint will pass this information to the relevant Department Manager or General Manager for use in preparing a response. A copy of the Complaint Form will be forwarded to the Quality Manager for his information.
- 12.5.4 Once a complaint has been received, the Quality Manager may provide assistance (if required) to the relevant Department Manager or General Manager in investigating the cause of the complaint, whether a Non-conformance Report already exists, or whether one should have been raised at the time. The Quality Manager will note such details in the "Comments" section of the Complaint Form.
- 12.5.5 The Quality Manager may also assist the Department Manager or General Manager on the possible reply to the Complaint. The General Manager will review the response before it is dispatched. In certain circumstances, the Department Manager might have already agreed upon corrective actions to site-related complaints. These actions or agreements will be noted on the Complaint Form.
- 12.5.6 If the Complaint relates to Supplier or Subcontractor work, the Quality Manager will investigate the matter in consultation with the persons responsible for the procurement of the particular Supplier or Subcontractor. The Procurement Manager will note the results, and the Approved Suppliers/Subcontractors list will be updated accordingly.
- 12.5.7 A Developer or outside party complaint is an important document in the 'quality loop' as it provides feedback for the improvement and 'fine tuning' of the Quality Management System. The Quality Manager will maintain a file of complaints.
- 12.5.8 Occasionally, the D&B Team may receive a compliment from the Developer or other bodies regarding its performance. Copies of these documents will be forwarded to the Quality Manager for his information. The Quality Manager will maintain a file of such compliments.

12.5 Records

Complaints, compliments, and responses to same will be filed in Document Control.

13 Health and Safety

13.1 Purpose and Scope

- 13.1.1 The purpose of this document is to establish procedures for compliance with TxDOT and OSHA health and safety requirements during execution of the Work.
- Identify core values and operations practices, including;
 - outline responsibilities of employees and management;
 - outline safety performance measurement to track success and continuous improvement;
 - safety training as a continuous process;
 - safety and health principles;
 - Field safety practices and activities.

Chapter 9: D&B Team Process Procedures Manual

- 13.1.2. The scope is to develop a Project Health and Safety Plan.

13.2 Definitions

- 13.2.1. OSHA: Occupational Safety and Health Administration, is an agency of the United States Department of Labor. Congress created it on December 29, 1970 under the Occupational Safety and Health Act. Its mission is to assure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health.
- 13.2.2. TxDOT: Texas Department of Transportation is a state agency responsible for constructing and maintaining interstate highways, U.S. highways, state highways and farm to market roads in Texas.

13.3 References

- 13.3.1. The D&B Team Quality Manual and Process Procedures Manual.
- 13.3.2. The D&B Team Health and Safety Plan.
- 13.3.3. Product and material safety data sheets (MSDS) and material conformity certificates.

13.4 Responsibilities (for this procedure)

- 13.4.1 Preparation by the D&B Team Health and Safety Manager.
- 13.4.2 Review by the Construction Manager
- 13.4.3 Approval by the General Manager

13.5 Procedure

13.5.1 Project Health and Safety Plan

A comprehensive Health and Safety Plan will be developed to promote a safe work environment and will include the following general topics:

- 13.5.1.1 Safety orientation during the hiring process, including:
- Drug and alcohol testing requirements;
 - Outline policy for qualification to drive company vehicle;
 - Outline Hazard Communications/MSDS program;
 - Review standard safety rules, Employee Handbook and Safety Orientation information;
 - Outline requirements for personal protective equipment (PPE);
 - Outline project-wide safety policy commitment;
 - Outline injury reporting significance and basic procedure.
 - Each subcontractor will provide a Health and Safety Manager who will monitor and train its employees under the supervision of the DB Contractor.

Chapter 9: D&B Team Process Procedures Manual

- 13.5.1.2 Safety meetings are to be conducted to promote the discussion of health and safety issues, preparation for the start of new construction activities, new safety techniques and methods and changing work conditions. Examples of these meetings are:
- a. Monthly Supervisors Safety Meetings conducted by the Health and Safety Manager.
 - b. Weekly Toolbox Safety Meetings conducted by the Segment Safety Representative, Segment Manager and/or Superintendent.
 - c. Daily safety meetings, as required by changing conditions or activities, conducted by both the Superintendent and the craft foremen.
- 13.5.1.3 A Hazard Analysis will be required prior to the start of any operation. The craft superintendent will assist foremen in preparing the analysis. Other supervisors and craft personnel will be asked and encouraged to contribute ideas.
- 13.5.1.4 A Safety Task Assessment (STA) will be developed prior to the start of any task by every crew and will be facilitated by the supervisor or his designee. The input of everyone on the crew should be encouraged and solicited. The STA should define what the task is, how it is going to be done, identify any hazards associated with each step in the task, and all resources needed to accomplish the task safely. Steps will then be taken to either eliminate the hazard or reduce the exposure to the hazard to acceptable levels. The supervisor should explain any hazards present and the preventive measures and ensure that each employee involved in the task understands them.
- 13.5.1.5 The D&B Team Health and Safety Plan will include a medical treatment case management protocol covering four key points, with the goal being the provision of the best medical treatment to the injured employee:
- a. First Aid
 - b. Emergency Response
 - c. Medical Intervention
- 13.5.1.6 The primary goal of the Health and Safety Plan is to prevent accident/incidents in the work place. Should an accident/incident occur, an investigation is conducted to identify the causal factors. Subsequently, actions for prevention are implemented. In the event an incident occurs, an Incident Review Team will be convened. The team will consist of the General Manager, Health and Safety Manager, Construction Manager and the Segment Manager and Segment Safety Representative, Superintendent, Foreman, and individual (s) involved in the incident to conduct an accident investigation.
- Each subcontractor and principal vendor must agree as a condition of their agreement to follow the Health and Safety Plan when operating at the project site.

Chapter 9: D&B Team Process Procedures Manual

14 Control of Quality and Environmental Records

14.1 Purpose and Scope

- 14.1.1 The purpose of this procedure is to ensure that Quality and Environmental Records are identified, generated, distributed and stored for the specified periods. These records help to safeguard the D&B Team's interests for future reference.
- 14.1.2 This procedure describes the primary responsibilities and principles used by the D&B Team for indexing, filing and retrieving Quality and Environmental Records generated during design, procurement, and construction phases of the Design and Build Agreement.
- 14.1.3 This procedure covers Quality and Environmental Records only; it does not cover records such as personnel records, accounting and taxation records, schedule, and cost reports. The relevant departments will maintain such records.

14.2 Definitions

- 14.2.1 Design and Build Agreement: The agreement in writing between the D&B Team and the Developer to design and construct the Work.
- 14.2.2 Records: Quality and Environmental Records which provide documentary evidence of the specification of individual items, standards of work, and compliance with the Quality Management System. A document is considered a Quality or Environmental Record when it has been fully completed, verified (when applicable) and signed by the relevant personnel.

14.3 References

- 14.3.1 The D&B Team's Quality Management Plan and Process Procedures Manual.
- 14.3.2 Design and Build Agreement Plans and Inspection and Test Plans.
- 14.3.3 CDA Technical Requirements, Section 2.5 "Document Management System".

14.4 Responsibilities (for this procedure)

- 14.4.1 Preparation by the Quality Manager
- 14.4.2 Review by the Controls Manager
- 14.4.3 Approval by the General Manager

14.5 Procedure

- 14.5.1 Where the Design and Build Agreement includes a design element, the Designer will maintain documents which will form part of the overall Design and Build Agreement project record (inclusive of sub consultants and subcontractors).

Chapter 9: D&B Team Process Procedures Manual

- 14.5.2 One master set of design records (which are approved for construction) will be maintained on the site where the works are being executed (Document Control). The Design Manager is responsible for the transmittal of revisions to the Construction Manager.
- 14.5.3 The Controls Manager is responsible for filing and maintaining records during the execution of the Design and Build Agreement. These records are generally defined in applicable Procedures and must include records supplied by Consultants, Subcontractors and Suppliers.
- 14.5.3.1 The list of the Quality Records to be maintained as part of the Design and Build Agreement must be established by the site management team in consultation with the Quality Manager.
- 14.5.3.2 All records will be uniquely identified and only the current revision of any document is permitted for use.
- 14.5.4 Records will be maintained by establishing a Document Control System and Correspondence Register, detailing which records are held in each specific file. All files will be kept in a secure place and in an environment which will minimize deterioration.
- 14.5.5 Unauthorized personnel must not remove records from the Document Control System. The Controls Manager will delegate responsibility for copying and distributing documents to suitable members of the administrative staff. A relevant member of the administrative staff will note any documents that are temporarily removed (permitted for short periods only). This person will be responsible for ensuring the return and proper re-filing of the document.
- 14.5.6 Records will be filed and maintained as required by the Design and Build Agreement. At the completion of the Contract, records will be classified and separated according to the storage period requirement.
- 14.5.7 Packaging (collating and filing) of Records.
- 14.5.7.1 The records will be separated in accordance with paragraph 5.5 above. Each file will be labeled to show file index number, section of the Work, structure number (if any), and Design and Build Agreement Title and Number.
- 14.5.7.2 The Controls Manager (or his/her delegate) will check each file for completeness, legibility and retrieval.
- 14.5.7.3 Subcontractors and Suppliers records will be packaged similarly (where applicable).

The D&B Team Quality Manager (or delegated persons), will verify compliance with paragraphs 5.1 to 5.7 of this procedure through surveillances, reviews and audits.

Records generated by Subcontractor and Supplier interaction with the D&B Team are also subject to the above controls.

- 14.5.8 Records to be stored by the D&B Team will be sent to a suitable storage facility. The documents will be marked with the unique Design and Build Agreement Title and Number for easy retrieval. The storage period for the records is dependent on Design and Build Agreement requirements.

14.6 Records

- 14.6.1 The Record Files will contain all or some of the following:

Chapter 9: D&B Team Process Procedures Manual

- a. Drawings and Specifications (Approved for Construction);
- b. D&B Team Quality Management Plan, Process Procedures Manual, Safety Plan, Inspection and Test Plan, Records of Verification. Records of all Non-conformances (and their resolution);
- c. Developer Complaints and Compliments;
- d. Material Certification Records, Certificates of Conformity and In-Process Test, Inspection and Traceability Records;
- e. Audit and Review Reports;
- f. Training Records;
- g. Developer Representative authorizations;
- h. Calibration Certificates of Test and Measurement Equipment;
- i. Corrective Action Reports;
- j. Records of Management Review.
- k. Environmental Records.
- l. Test results and inspection reports carried out in conformance with the Inspection and Test Plan during the construction process to verify compliance with the Design-Build Agreement.
- m. As-built drawings.

15 Training

15.1 Purpose and Scope

The purpose of this procedure is:

- To ensure that D&B Team personnel are adequately trained to carry out their duties.
- To ensure that D&B Team personnel skills are developed sufficiently to enable them to progress within the Company and undertake increased roles of responsibility.

15.1.1 Scope: The procedure is applicable to all D&B Team personnel. Job Descriptions of key personnel who have a direct impact on quality matters are detailed in the Quality Management Plan and other related procedures.

15.2 Definitions

15.2.1 None.

15.3 References

- 15.3.1 The D&B Team Quality Management Plan and Process Procedures Manual.
- 15.3.2 Developer On-the-Job Training (OJT) Program Manual
- 15.3.3 Environmental Training.

Chapter 9: D&B Team Process Procedures Manual

15.4 Responsibilities (for this procedure)

- 15.4.1 Preparation by the Quality Manager
- 15.4.2 Review by the Construction Manager
- 15.4.3 Approval by the General Manager

15.5 Procedure

- 15.5.1 The General Manager, Construction Manager, and Section Managers will review the records of personnel under their supervision to assess training needs.
- 15.5.2 The records will be kept up-to-date and noted on a training log. All training undertaken will be documented. Any person responsible for arranging a training course will inform the participants of the course date, and will provide the course administrator with a list of names of the participants and other relevant details.
- 15.5.3 Training may be undertaken as an in-house activity or by an approved third-party organization.
- 15.5.4 Managers will be responsible for reviewing and identifying training needs. Such reviews will occur at least annually. Training recommendations will be communicated to the appropriate managers for review and approval.
- 15.5.5 The General Manager (or other delegated person), will review any training recommendations made and approve the training program.
- 15.5.6 After attending a training course, personnel are required to complete the Training Course Seminar Feedback Sheet.
- 15.5.7 The Administration Manager will maintain copies of certificates and training records in the respective personnel files. Access to personnel information is restricted due to confidentiality requirements.

16 Utility Relocation

16.1 Purpose and Scope

- 16.1.1 The purpose of this procedure is to ensure that the D&B Team adequately prepares and plans for all Utility Adjustments associated with the construction of the Project in accordance with the CDA and, especially, the Technical Requirements.
- 16.1.2 Scope: The procedure is applicable to all utilities located within the limits of the Project.

16.2 Select Definitions

- Abbreviated Utility Assembly means the collection of plans and other information and materials which Developer is required to submit to TxDOT in connection with each Utility proposed to remain at its original location within the Facility Right of Way, as more particularly described in the Technical Requirements; a single Abbreviated Utility Assembly may address more than one such Utility.

Chapter 9: D&B Team Process Procedures Manual

- Adjust means to perform a Utility Adjustment.
- Adjustment Standards means the standard specifications, standards of practice, and construction methods that a Utility Owner customarily applies to facilities (comparable to those being Adjusted on account of the Project) constructed by the Utility Owner (or for the Utility Owner by its contractors), at its own expense. Unless the context requires otherwise, references in the CDA Documents to a Utility Owner's "applicable Adjustment Standards" refer to those that are applicable.
- Alternate Procedure means the alternate procedure for processing Utility Adjustments for FHWA approval pursuant to 23 CFR Section 645.119, which was approved by the FHWA for TxDOT by letter dated October 16, 1973.
- Alternate Procedure List means the list of Utilities to be Adjusted (and related information) which Developer will prepare and TxDOT will submit to the FHWA, as such list may be amended from time to time.
- Betterment has, with respect to a given Utility being Adjusted, the meaning (if any) set forth in the Utility Agreement(s) applicable to the Utility. In all other cases, "Betterment" means any upgrading of the Utility in the course of such Utility Adjustment that is not attributable to the construction of the Project and is made solely for the benefit of and at the election of the Utility Owner. This includes an increase in the capacity, capability, efficiency or function of an Adjusted Utility over that which the existing Utility provided. Notwithstanding the foregoing, the following are not considered Betterments unless otherwise provided in the applicable Utility Agreement(s):
 - a. any upgrading which is required for accommodation of the Project;
 - b. replacement devices or materials that are of equivalent standards although not identical;
 - c. replacement of devices or materials no longer regularly manufactured with an equivalent or next higher grade or size;
 - d. any upgrading required by applicable Law;
 - e. replacement devices or materials that are used for reasons of economy (e.g., non-stocked items may be uneconomical to purchase);
 - f. any upgrading required by the Utility Owner's applicable Adjustment Standards; and
 - g. any discretionary decision by a Utility Owner that is contemplated within a particular standard described in clause (f) above.

With respect to any Replacement Utility Property Interest, "Betterment" has the meaning (if any) set forth in the applicable Utility Agreement(s). In all other cases, a Replacement Utility Property Interest will be considered a Betterment, except to the extent that reinstallation of a Utility in the Replacement Utility Property Interest (i) is necessary in order to meet the requirements of the CDA Documents, or (ii) is called for by Developer in the interest of overall economy for the Project.

- Design Documents means all drawings (including plans, profiles, cross-sections, notes, elevations, typical sections, details and diagrams), specifications, reports, studies, calculations, electronic files, records and submittals necessary for, or related to, the design of the Project and/or the Utility Adjustments included in the Design Work and/or the Construction Work. Design Documents include the Final Design Documents.
- Developer-Managed Master Utility Adjustment Agreement has the meaning set forth in the definition of "Master Utility Adjustment Agreement".

Chapter 9: D&B Team Process Procedures Manual

- Developer's Utility Tracking Report means the report regarding Utilities likely to be impacted by the Project which Developer will maintain on a current basis, as more particularly described in the Technical Requirements.
- Existing Utility Property Interest means any right, title or interest in real property (e.g., a fee or an easement) claimed by a Utility Owner as the source of its right to maintain an existing Utility in such real property, which is compensable in eminent domain.
- Final Design Documents means the complete final construction drawings, including plans, profiles, cross-sections, notes, elevations, typical sections, details and diagrams, specifications, reports, studies, calculations, electronic files, records and submittals, necessary or related to construction and maintenance of the Project and any Utility Adjustments included in the Design Work or the Construction Work.
- Master Utility Adjustment Agreement (MUAA) means an agreement between Developer and a Utility Owner which sets forth terms and conditions for one or more Utility Adjustments, as the same may be amended or supplemented from time to time and as more particularly described in the Technical Requirements. A document is a "Master Utility Adjustment Agreement" if it meets the foregoing definition, without regard to the title of the document.
 - a. Developer-Managed Master Utility Adjustment Agreement means a Utility Adjustment Agreement providing for design and construction by Developer of the Utility Adjustment(s) addressed therein.
 - b. Owner-Managed Master Utility Adjustment Agreement means a Utility Adjustment Agreement providing for design and construction by the Utility Owner of the Utility Adjustment(s) addressed therein.
- Protection-in-Place (or Protection in Place) means any action taken to avoid damaging a Utility which does not involve removing or relocating that Utility, including staking the location of a Utility, exposing the Utility, avoidance of a Utility's location by construction equipment, installing steel plating or concrete slabs, encasement in concrete, temporarily de-energizing power lines, and installing physical barriers. The term includes both temporary measures and permanent installations meeting the foregoing definition.
- Service Line means (a) a Utility line, the function of which is to directly connect the improvements on an individual property to another Utility line located off such property, which other Utility line connects more than one such individual line to a larger system, or (b) any cable or conduit that supplies an active feed from a Utility Owner's facilities to activate or energize TxDOT's or a local agency's lighting and electrical systems, traffic control systems, communications systems and/or irrigation systems.
- Subsurface Utility Engineering (SUE) means an engineering process for accurately identifying the quality of subsurface utility information needed for highway plans, and for acquiring and managing that level of information during the development of a highway project, as more particularly described at the FHWA website <http://www.fhwa.dot.gov/programadmin/sueindex.htm>.
- Supplemental Utility Assembly means the collection of agreements, plans and other information and materials which Developer is required to submit to TxDOT in connection with each Utility Adjustment being added to an existing MUAA by means of a UAAA, as more particularly described in the Technical Requirements.
- Utility (ies) or utility (ies) means a public, private, cooperative, municipal and/or government line, facility or system used for the carriage, transmission and/or distribution of cable television, electric power, telephone,

Chapter 9: D&B Team Process Procedures Manual

telegraph, water, gas, oil, petroleum products, steam, chemicals, hydrocarbons, telecommunications, sewage, storm water not connected with the drainage of the Project, and similar substances that directly or indirectly serve the public. The term “Utility” or “utility” also includes radio towers and/or transmission towers, and excludes (a) storm water facilities providing drainage for the Final ROW, (b) street lights and traffic signals, and (c) ITS and IVHS facilities. The necessary appurtenances to each Utility facility will be considered part of such Utility. Without limitation, any Service Line connecting directly to a Utility will be considered an appurtenance to that Utility, regardless of the ownership of such Service Line.

- Utility Accommodation Rules (UAR) means the Utility Accommodation Rules issued by TxDOT, at 43 Tex. Admin. Code, Part 1, Chapter 21, Subchapter C, as TxDOT may amend, supplement or replace the same from time to time.
- Utility Adjustment means each relocation (temporary or permanent), abandonment, Protection in Place, removal (of previously abandoned Utilities as well as of newly abandoned Utilities), replacement, reinstallation, and/or modification of existing Utilities necessary to accommodate construction, operation, maintenance and/or use of the Project. The term “Utility Adjustment” will not refer to any of the work associated with facilities owned by any railroad. For any Utility crossing the Facility Right of Way, the Utility Adjustment Work for each crossing of the Facility Right of Way by that Utility will be considered a separate Utility Adjustment. For any Utility installed longitudinally within the Facility Right of Way, the Utility Adjustment Work for each continuous segment of that Utility located within the Facility Right of Way will be considered a separate Utility Adjustment.
- Utility Adjustment Agreement Amendment (UAAA) means an agreement between Developer and a Utility Owner that amends a MUAA, as more particularly described in the Technical Requirements.
- Utility Adjustment Concept Plan means a conceptual design document for the entire Project or for a segment thereof, which shows all of the approximate existing locations, and Developer’s recommendation for all of the adjusted locations, of each Utility impacted by the Project or segment, as more particularly described in the Technical Requirements.
- Utility Adjustment Field Modification means any horizontal or vertical design change to a Utility Adjustment proposed by Developer or a Utility Owner due either to roadway design or to conditions not accurately reflected in the corresponding Utility Assembly for which the review and comment/approval process has been completed, that alters the design included in that Utility Assembly. An example would be shifting the alignment of an 8” water line to miss a roadway drainage structure. A minor change (e.g., an additional water valve, an added Utility marker at ROW line, a change in vertical bend, etc.) will not be considered a Utility Adjustment Field Modification, but will be shown in the Record Drawings.
- Utility Adjustment Plans means the plans, specifications, and cost estimates furnished for a particular Utility Adjustment, as more particularly described in the Technical Requirements.
- Utility Adjustment Work means all efforts and costs necessary to accomplish the required Utility Adjustments, including all coordination, design, design review, permitting, construction, inspection, maintenance of records, relinquishment of Existing Utility Property Interests, preparation of Utility Joint Use Acknowledgements, and acquisition of Replacement Utility Property Interests, whether provided by Developer or by the Utility Owners. The term also includes any reimbursement of Utility Owners which is Developer’s responsibility. Any Utility Adjustment Work furnished or performed by Developer is part of the Work; any Utility Adjustment Work furnished or performed by a Utility Owner is not part of the Work.

Chapter 9: D&B Team Process Procedures Manual

- Utility Agreement means a MUAA and/or UAAA, as the context may require.
- Utility Appurtenance Adjustment means the adjustment of Utility appurtenances (e.g. manholes, valve boxes, and vaults) for line and grade upon completion of roadway work.
- Utility Assembly means the collection of agreements, plans and other information and materials which Developer is required to submit to TxDOT in connection with each Utility Adjustment (or group of Utility Adjustments subject to the same original Master Utility Adjustment Agreement), as more particularly described in the Technical Requirements. Depending on the context, the term also refers to Supplemental Utility Assemblies and Abbreviated Utility Assemblies (both also described in the Technical Requirements).
- Utility Assembly Checklist means a checklist listing the required components of a Utility Assembly, as referenced in the Technical Requirements.
- Utility Assembly Number (also Assembly Tracking Number) means the unique number given by the Developer to each Utility Assembly, using the form "YYY-U-XXXX." The "YYY" will refer to the assigned number of the highway and the "XXXX" will refer to the 4-digit number assigned to each Utility Assembly (beginning with 0500 and numbered consecutively thereafter). The Utility Assembly Number will be referenced on each corresponding MUAA, UAA, and UAAA.
- Utility Design Coordinator (UDC) means the Registered Professional Engineer designated by the Developer to be responsible to coordinate the Utility Adjustment design with the overall highway design features during the planning, design, and construction phases of the Work, as more particularly described in the Technical Requirements. Comprehensive Development Agreement (CDA).
- Utility Enhancement means Betterment or a Utility Owner Project, as referenced in the CDA.
- Utility Joint Use Acknowledgment or Utility Joint Use Agreement means an agreement between TxDOT and a Utility Owner that establishes the rights and obligations of TxDOT and the Utility Owner with respect to occupancy of the Facility ROW by such Utility Owner's Utility.
- Utility Manager (UM) means the senior staff person designated by Developer to be responsible for coordination and oversight of Utility Adjustment operations during the planning, design, and construction phases of the Work, as more particularly described in the Technical Requirements.
- Utility Memorandum of Understanding ("Utility MOU" or "MOU") means a non-binding agreement or memorandum of understanding between TxDOT and a Utility Owner, establishing a cooperative general framework for the Utility Adjustment of such Utility Owner's Utilities. A document is a "Utility MOU" if it meets the foregoing definition regardless of the title of the document.
- Utility Owner means the owner or operator of any Utility (including both privately held and publicly held entities, cooperative utilities, and municipalities and other governmental agencies).
- Utility Owner Project means the design and construction by or at the direction of a Utility Owner (or by Developer) of a new Utility other than as part of a Utility Adjustment. Betterments are not Utility Owner Projects. Utility Owner Projects are entirely the financial obligation of the Utility Owner.
- Utility Strip Map means a SUE map depicting existing Utilities potentially impacted by the Facility.
- Utility Tracking Report , means Developer's Utility Tracking Report.
- Work means all of the work required to be furnished and provided by Developer under the CDA Documents, including all administrative, design, engineering, real property acquisition and occupant relocation, construction, Utility Adjustment, utility accommodation, support services, operations,

Chapter 9: D&B Team Process Procedures Manual

maintenance and management services, except for those efforts which such CDA Documents expressly specify will be performed by Persons other than Developer-Related Entities.

16.3 References

- 16.3.1 The D&B Team Quality Management Plan and Process Procedures Manual.
- 16.3.2 The D&B Team Health and Safety Plan.
- 16.3.3 Specifications, Drawings, and other relevant design documents.
- 16.3.4 Product and material safety data sheets (MSDS), hazard data sheets, and material conformity certificates.
- 16.3.5 Comprehensive Development Agreement (CDA), Technical Requirements, and Technical Documents.

16.4 Responsibilities (for this procedure)

- 16.4.1 Preparation by the Quality Manager.
- 16.4.2 Review by the Utility Manager
- 16.4.3 Approval by General Manager.
- 16.4.4 Specific Responsibilities.

Utility Manager (UM):

- Ensure that Utility conflicts are resolved as mutually agreed by all parties,
- Attend and lead Utility coordination meetings,
- Establish, coordinate, and update the design schedules and sequence of work schedules,
- Track the schedule of Utility Assemblies,
- Report on the status of New Utility Property Interest acquisitions by the Utility Owners,
- Prepare and provide the documentation necessary for federal funding reimbursement, in conformance with the provisions of 23 C.F.R. Section 645 Subpart A,
- Ensure that a Registered Professional Engineer signs and seals all Utility plans.

Utility Design Coordinator (UDC)

The UDC will coordinate the Utility Adjustment design with the overall highway design features and obtain the executed Utility no conflict sign-off form. The UDC will review and provide written approval that the Utility Design is compatible with the Ultimate Roadway Design. The UDC will be a registered professional engineer.

Note: General responsibilities are defined in the Technical Requirements.

Chapter 9: D&B Team Process Procedures Manual

16.5 Procedure

16.5.1 Utility Identification and Tracking

Identify utilities that conflict with the Project.

Develop and maintain a Utility Tracking Report per Technical Requirements. It will be updated periodically and submitted to TxDOT. Prepare a Utility Strip Map and submit it to TxDOT .

16.5.1.1 Utility Adjustment Concept Plan (ref. Technical Requirements 6.3.3)

Develop a Utility Adjustment Concept Plan. This Plan will be coordinated with the D&B Team Design Manager to ensure compatibility with the general design consultant's design (e.g. roadway, drainage, electrical, structural). The Plan was also be coordinated with each Utility Owner.

Meet with Utility Owners to discuss the Project and utility relocation requirements, e.g. betterments, protection in place, abandonment and removal. Decide if the relocation will be Owner or Developer managed.

Submit the Utility Adjustment Concept Plan to TxDOT for review.

16.5.1.2 Master Utility Adjustment Agreements (ref. Technical Requirements

Provide Master Utility Adjustment Agreements (MUAA) to the Utility Owners using the TxDOT MUAA forms in the Technical Requirements.

Note: Each MUAA is subject to TxDOT review and approval.

16.5.1.3 Failure to Cooperate

If a Utility Owner fails to cooperate with the relocation effort, then the D&B Team will notify the Developer and the Developer will notify TxDOT in accordance with the process described in the Comprehensive Development Agreement (CDA).

16.5.1.4 Coordination Effort

From the point of initial contact through the point of acceptance of the Utility Adjustment by the Utility Owner, the Developer and D&B Team will be engaged in regular coordination with the Utility Owner and with TxDOT.

The Utility Design Coordinator will coordinate design to ensure that Utility Adjustment plans are compatible with the overall highway design and the Utility Owners' needs per Technical Requirements. The Utility Adjustment plans are included in the Utility Assembly for TxDOT's approval.

The Utility Manager will coordinate with Utility Owners to finalize the MUAAs. The MUAA is included in each Utility Assembly for TxDOT's approval.

Chapter 9: D&B Team Process Procedures Manual

The coordination effort will be accomplished by email, telephone conversations, letter, and meetings. Meeting notice and agendas will be provided to TxDOT two Business Days in advance of the meeting and provided to the Utility Owner three Business Days in advance of the meeting.

16.5.1.5 Affidavit of Property Interest

The Utility Manager (or designee) will prepare an Affidavit of Property Interest for each Existing Utility Interest. It will be included in the applicable Utility Assembly.

16.5.1.6 Replacement Utility Property Interests

The Utility Manager (or designee) will coordinate with each Utility Owner to assist their efforts to acquire Replacement Utility Property Interests.

16.5.1.7 Relinquish Existing Utility Property Interests

The Utility Manager (or designee) will cause the Utility Owners to relinquish each Utility Property Interest unless the utility remains in its original location or is installed in a new location.

16.5.1.8 Quitclaim Deeds

The Utility Manager (or designee) will have prepared a Quitclaim Deed for each relinquished Existing Utility Property Interest using TxDOT's standard form included in Technical Requirements.

Note: Quitclaim Deed is subject to TxDOT's review as part of the Utility Assembly.

16.5.1.9 Utility Joint Use Acknowledgments

The Utility Manager (or designee) will prepare Utility Joint Use Acknowledgments per the criteria defined in Technical Requirements, and using the standard form.

Note: Utility Joint Use Acknowledgments are subject to TxDOT's approval as part of the Utility Assembly.

16.5.1.10 Ultimate Configuration

The Utility Design Coordinator will check the compatibility of the utility relocations with the initial design and Ultimate Configuration.

16.5.1.10 Utility Assemblies

Prepare Utility Assemblies (or Supplemental Utility Assemblies or Abbreviated Utility Assemblies) as prescribed in Technical Requirements

16.5.1.12 Construction Notification

The Utility Manager will notify the Utility Owners prior to starting Construction Work for that Utility Adjustment. The minimum notice period will be negotiated with each Utility Owner. Construction Work may only commence after TxDOT has provided Notice to Proceed.

Chapter 9: D&B Team Process Procedures Manual

16.5.1.13 Emergency Procedures

The Utility Manager will establish procedures (e.g. emergency contact names and telephone numbers) with each Utility Owner prior to commencing Construction Work. See Technical Requirements 6.4.6.

16.5.1.14 Construction

The D&B Team or Utility Owner will perform Construction Work in accordance with the criteria prescribed in Technical Requirements.

Note: Construction cannot commence until all conditions are met as set forth in Technical Requirements

16.5.1.15 Construction Inspection

The Quality Manager (or designated inspection entity) will inspect the Utility Adjustment Work in accordance with Technical Requirements. Inspection and Test Plans will be developed depending upon the unique needs of each Utility Adjustment.

16.5.1.16 Utility Adjustment Field Modifications

Utility Owners will review and approve field modifications in the same manner that the original Utility Adjustment drawings were approved. The D&B Team Design Manager will also review field modifications to ensure that they do not conflict with the highway design. The Developer and/or D&B Team will request that the Utility Owner expedite its review, since the modification will likely be during construction work that has already commenced. The Utility Design Coordinator will coordinate.

The field modifications will be simultaneously transmitted to TxDOT for review and comment. Again, with expedited review requested.

Modified Utility Adjustment drawings will be processed through the D&B Team's Document Control (See PPM 3) to the D&B Team Construction Manager (if Developer Managed). If Owner-Managed, then the Utility Owner will provide modifications to its construction field personnel.

Document Control will provide modification drawings to the D&B Team Design Manager for inclusion in the Record Drawings for the Project.

16.5.1.17 Utility Service Commencement

The Utility Manager will coordinate with Utility Owners the timing for placing the newly Adjusted Utility into service and terminating the replaced Utility. Utility Service must be maintained.

16.5.1.18 Traffic Control

The D&B Team or Utility Owner will provide Traffic Control.

16.5.1.19 Record Drawings

Chapter 9: D&B Team Process Procedures Manual

The Utility Manager (or designee) will provide Record Drawings to TxDOT no later than 120 days after the Utility Owner accepts the Utility Adjustment.

16.5.2 Deliverables to TxDOT

- 16.5.2.1 Utility Strip Map
- 16.5.2.2 Utility Tracking Report
- 16.5.2.3 Utility Adjustment Concept Plans
- 16.5.2.4 Master Utility Assembly Agreements
- 16.5.2.5 Utility Adjustment plans
- 16.5.2.6 Affidavits of Property Interest
- 16.5.2.7 Quitclaim Deeds
- 16.5.2.8 Utility Joint Use Agreements
- 16.5.2.9 Utility Assemblies (contains aforementioned components)
- 16.5.2.10 Utility Adjustment Field Modifications
- 16.5.2.11 Record Drawings

17 Quality Assurance Management

17.1 Purpose and Scope

- 17.1.1. The purpose of this procedure is to ensure that the Contract is executed in accordance with the Contract requirements, including any work performed by Subcontractors and Subconsultants, and to ensure that Quality Records are identified, generated, distributed and stored for the specified time. "Quality" deliverables will be identified prior to project commencement.
- 17.1.2. The scope covers all design and construction activities undertaken on contracts.

17.2 Definitions

17.2.1 Construction Quality Plan (CQP)

A Construction Quality Plan is a document setting out the specific quality objectives, practices, resources and sequence of activities relevant to a particular Contract or project.

17.2.2 Inspection and Test Plan (ITP)

An Inspection and Test Plan, e.g. Design Quality Plan, sets out the requirements, frequency and responsibilities for activities such as measuring, examining, testing and gauging one or more characteristics of a product or service,

Chapter 9: D&B Team Process Procedures Manual

and comparing the results with specified requirements to determine conformity to the Contract Specification. Inspections and tests are detailed in the applicable procedures and results recorded on forms appended to these procedures.

17.2.3 Process Procedure (PP)

A Process Procedure details the purpose and scope of a generic activity, and specifies how it is to be carried out. The Quality Manual describes the intent (i.e. 'what' is to be done), the procedure details not only 'what' but may also detail 'who, how, when, where and why'. The output from a procedure (when complied with), provides objective evidence (in the form of records) of the compliance to the Specification and Developer requirements.

17.2.4 Work Plans/Method Statements (WP)

These are written instructions for individual construction activities.

17.2.5 Verifying Document:

Any document that records the result of an inspection or a test. These include, signed off Requests for Inspection of Work, laboratory test result certificates, concrete placement record sheets, temporary works certificates, and engineer diaries. These records must be maintained, stored and made available when required.

17.2.6 Quality and Environmental Documentation:

Documents and Data can be in many formats (e.g. electronic media and/or hard copies). The following is a list for guidance:

- Main Contract and Attachments;
- Drawings;
- Specifications;
- Inspection Instructions;
- Test Procedures;
- Works Instructions/Work Plans;
- Operation Sheets;
- Quality Manual;
- Procedures Manual;
- Environmental Plan, included specific Method Statements
- Quality Plan, specific for the Contract;

Many of the above documents contain Records in the form of Attachments, which will be maintained and made available for verification purposes

Chapter 9: D&B Team Process Procedures Manual

17.2.7 Non-Conformance Report (NCR)

Non-conformance Reports are the documents initiated by competent personnel to identify, record, and resolve items (material, equipment or portion of completed works) where the quality characteristic is indeterminate or non-conforming to applicable specifications or drawings.

17.2.8 Corrective Action Report (CAR)

These reports may be generated as a result of an Audit finding or outside an Audit. The Corrective Action Report is the document initiated by the Quality Manager or as a result of an audit raised by the Lead Auditor to identify, record and resolve a non-conformance from the approved Q.A. system. Refer to PPM 10, Corrective Action Report (Non Audit) and PPM 11, Corrective Action Report (Audit).

17.2.9 Audits

A systematic and objective examination to determine whether quality management activities and associated results comply with planned arrangements, and whether these arrangements are implemented effectively and suitably to achieve set objectives.

Internal Audits - Audits performed by the D&B Team Quality Manager (and/or suitably qualified delegated personnel) on specific departments.

Audits performed by the D&B Team Quality Manager (and/or suitably qualified delegated personnel) on Subcontractors and Suppliers employed by the Company.

External Audits – Audits carried out on the D&B Team Quality Management System by outside Organizations (e.g. Developer Representatives)

17.3 References

- 17.3.1 D&B Team Quality Assurance Manual and Process Procedures Manual.
- 17.3.2 D&B Team Health and Safety Plan.
- 17.3.3 Specifications, Drawings, and other relevant contract documents.
- 17.3.4 Product and material data sheets, material safety data sheets (MSDS), material conformity certificates.

17.4 Responsibilities (for this procedure)

- 17.4.1 Preparation by the Quality Managers
- 17.4.2 Review by the Quality Director
- 17.4.3 Approval by the General Manager.
- 17.4.4 The Quality Manager may delegate responsibilities for various activities.

Chapter 9: D&B Team Process Procedures Manual

17.5 Procedure

17.5.1 Requirements for Quality Assurance Management

17.5.1.1 Quality Assurance Management System requirements for the construction of the works are detailed within the following documents:

- Specifications
- Drawings
- Contract documents
- Inspection and Test Plans
- Method Statements

17.5.1.2 The above documents specify the following,

- The general standards of the works;
- The specific standards of the works;
- The limit and extent of the works;
- The required testing to be conducted;
- The level of supervision of the works;
- The method to be used to construct each element of work.

17.5.2 Structure of Quality Assurance Management System on the project

17.5.2.1 In order to provide assurance that the specified quality is being built into the works, objective evidence is required. For this purpose inspections and tests will be performed as specified in the Inspection and Test Plans (ITPs) and Work Plans. The records will be reviewed and maintained as the work progresses to show compliance to the Design and Build Agreement requirements.

17.5.2.2 Inspection, measurement and test plans will be developed based on the Plans, Specifications, and any additional requirements as stated in Work Plans. All records will be maintained on the specific forms developed for the project. All such documentation is required to demonstrate compliance with the specified quality parameters.

17.5.2.3 The Quality Control Team, and Suppliers and Subcontractors, as required, will perform inspections and tests prior to incorporation in the permanent Facilities. Where the QA/QC Team or Suppliers hold current approved quality management certificates or certificates from independent accredited testing laboratories, no further testing will be required. Periodically, it may be necessary to carry out testing using an external organization (e.g. chemical analysis). Material receipt inspection may be limited to visual checks in these cases. The General Manager will select independent testing facilities with assistance from the Quality Manager, if required.

17.5.2.4 The Quality Manager will carry out surveillances, reviews and audits of Contract activities, which have an effect on the quality of the works. Suppliers and Subcontractors working for the D&B Team will be

Chapter 9: D&B Team Process Procedures Manual

subject to comparable reviews and audits. Reports of such visits will be recorded and issued appropriately.

A schedule of quality audits will be developed and distributed to the relevant personnel to ensure availability of staff at the appropriate times. Compliance to quality requirements will be monitored on this basis and will be reported to D&B Team Management. Corrective Action Reports will be raised when non-conformances are identified. This will be carried out as per the Procedure for Internal Audits. (Refer PPM 11).

- 17.5.2.5 Materials Control and Traceability: The General Manager will ensure that responsibility is allocated to authorized personnel for ordering materials, carrying out receipt inspections, verifying any product conformity certificates applicable to the supplied materials and ensuring material safety data sheets are supplied for their safe use.

Any damaged or unacceptable products will be subject to the Control of Non-Conforming Products procedure (Refer to PPM 9) until resolved.

Where required, traceability of products will be accomplished by recording location, date of manufacture, receipt date, unique number, date of use, tests, results or other relevant data.

When the Developer requires inspections before incorporation into the work, these will be identified in the Inspection and Test Plan and the relevant Method Statements. Materials supplied by the Developer (if any) must also be inspected and, if found unacceptable, the Developer will be informed in writing.

- 17.5.2.6 Survey Control: All instruments used for establishing horizontal and vertical controls will be maintained at an acceptable calibrated status. A log will be kept of instruments used on site noting the instrument number, make, model, calibration date, calibration method, and any other regular checks carried out (Refer to PPM 8).

Survey books will be maintained legibly, and in such order as would enable them to be understood by other engineers.

Monthly checks will be implemented to verify the accuracy of survey control stations. Survey tolerances will be identified and complied with. Any non-compliance will be resolved through the procedure for Corrective and Preventive Actions (Refer to PPM 10). Site Engineers and their supervisors will ensure compliance to the above requirements.

Survey checks will be carried out on certain critical elements of the works as they proceed to verify that the elements have been constructed as per the contract. Results of these checks to be recorded and stored in document control.

- 17.5.2.7 Testing: An accredited testing laboratory will perform required construction testing. Quality Control is part of the Quality Management Team on the project and its responsibilities are as follows:
- Reviewing, updating distributing and filing of Quality Control and subcontractor test reports.
 - Supervising testing performed by subcontractors.

Chapter 9: D&B Team Process Procedures Manual

- Liaise with the Procurement Manager on assessment and approval of material supply sources.
- Advise and liaise with construction and departmental managers regarding material testing requirements.
- Analyze material test data and report results to the Construction manager and General Manager.
- The Quality Manager will assist in investigating the cause of material test failures and recommend corrective action if (any) in consultation with the Site Management. Also, assist in the discharge of non conformances relating to material test failures.

The QA/QC D&B Quality Staff will carry out testing. Specialized subcontractors may perform these duties, if required. The required documentation necessary to verify the test results will be obtained and stored in Document Control.

17.5.3 Construction, Inspection and Non-Conformance Process

- 17.5.3.1 Prior to the commencement of construction of an element of works (e.g. concrete placement), the D&B Team Construction Department will inform the Developer's representative of their intention to perform a particular operation.
- 17.5.3.2 Inspections take place and issues are identified and addressed.
- 17.5.3.3 NCRs will be generated during the construction process when an element of work fails to comply with the contract documents.
- a. Developer NCRs will be communicated to D&B Team Quality Manager for resolution by the Construction Manager.
 - b. D&B Team NCRs will be routed through Quality Manager for resolution by the Construction Manager. They will be available for inspection by the Developer for audit purposes. The Quality Manager will close all NCRs.
- 17.5.3.4 Where a design solution is involved in the resolution of an NCR (from whatever source it has been raised), the Quality Manager will transmit the NCR to the Design Manager for action.
- 17.5.3.5 Completed inspection reports, "Closed out" NCRs, laboratory test results, and other relevant records, will be retained in Document Control.
- 17.5.3.6 The following are other relevant documents pertaining to this procedure,
- PPM Section 8: Construction Management.
 - PPM Section 9 Control of Non-Conforming Products.
 - PPM Section 10 Corrective and Preventive Action.
 - Design Quality Plan.

Chapter 9: D&B Team Process Procedures Manual

17.5.4 Document Control of Records

- 17.5.4.1 Quality Systems generate documentary records. It is necessary to maintain specific records for the period detailed in the contract documents and required by governmental statutes. It is essential that the relevant records are available at the locations, at which they are needed to verify the following:
- The works have been constructed as per the contract
 - The works have been witnessed and recorded
 - The required tests have been conducted and recorded
 - Test results have been analyzed to establish compliance
- 17.5.4.2 The responsibility for filing and maintaining records during the execution of the Contract lies with the D&B Team management team. These records are generally defined in applicable Procedures, Work Plans, ITPs, and quality plans. They include records supplied by Subcontractors and Suppliers.
- 17.5.4.3 The list of the Quality Records to be maintained as part of the Contract must be established by the D&B Team management team in consultation with the Quality Manager.
- 17.5.4.4 All records will be uniquely identified by the presence of a unique number. A register of all pertinent documents are maintained on the site computer network. For details of the Site Filing System, see PPM 3, Documents and Data Control and PPM 14 Control Quality and Environmental Record.
- 17.5.4.5 Records will be filed and maintained for the duration of the activities on a Contract. At the completion of the Contract, records will be classified and separated according to the storage period requirement.
- 17.5.4.6 Records generated by interaction with Subcontractors and Suppliers are also subject to the above controls.

18 Geotechnical Investigation

18.1 Purpose and Scope

- 18.1.1 The purpose of this procedure is to describe the primary responsibilities and processes used by the D&B Team for creating, executing, and documenting the Geotechnical Investigation Plan.
- 18.1.2 This procedure addresses Geotechnical Investigations.

18.2 Definitions

- 18.2.1 Contract: The Agreement between the D&B Team and the Geotechnical Consultant to perform the Work defined in the Contract.
- 18.2.2 Records: Documentary evidence gathered or created by the Geotechnical Consultant related to performance of the Work.

18.3 References

- 18.3.1 TxDOT Geotechnical Manual. Ed. Aug 2006

Chapter 9: D&B Team Process Procedures Manual

18.3.2 D&B Team Quality Management Plan and Process Procedures Manual

18.3.3 Contract Plans and Inspection and Test Plans.

18.4 Responsibilities (for this procedure)

18.4.1 Preparation by the Quality Manager

18.4.2 Review by Design Manager

18.4.3 Approval by the General Manager

18.5 Procedure

- 18.5.1 A Geotechnical Investigation Plan is developed through consultations between the Geotechnical Design Consultant and the General Design Consultant under the supervision of the Design Manager. By working in concert, these consultants determine the location, quantity, and depth of borings, sampling and laboratory test work, and other NDT investigations to be undertaken throughout the Project corridor. The boring layout will minimally encompass borings for bridges, retaining walls over five feet in height, high-mast illumination, paving, slopes, and overhead sign structures.
- 18.5.2 The number and locations of soil borings required for the foundation explorations will be established by the complexity of the geological conditions and the dimensions of the structure and be based on the guidelines outlined in the *TxDOT Geotechnical Manual*. Generally, soil borings will be deeper than the probable tip elevation of the foundation.
- 18.5.3 The D&B Team will have a single point of contact who will contact landowners to inform them of the activities scheduled to take place on their property during these Geotechnical Investigations. The Geotechnical Consultant will provide a daily log of personnel conducting field operations and their location.
- 18.5.4 The Geotechnical Consultant will contact Texas One Call System two business days prior to the anticipated start of boring activities, to ensure no utilities are present in the area of the proposed borings. If there is a conflict, then the Geotechnical Consultant will confer with the General Design Consultant to adjust the boring plan.
- 18.5.5 The Geotechnical Consultant will generate a traffic control plan in accordance with the *Texas Manual on Uniform Traffic Control Devices* (latest edition) and make arrangements for traffic control, if required.
- 18.5.6 Prior to commencing field work, the Geotechnical Consultant's and General Design Consultant's field personnel will receive safety training and environmental training.
- 18.5.7 The Geotechnical Consultant will have the boring hole locations surveyed in by a Registered Professional Land Surveyor (RPLS). The RPLS will provide the coordinates of the hole and the elevation of the existing ground where the bore is made. If the bore is moved, e.g. drill rig cannot drill at the surveyed location, the RPLS will amend the boring layout to reflect "as-built" boring locations. In all cases, the hole coordinates and elevation of existing ground at point of entry must be documented.
- 18.5.8 Testing will be performed in agreement with TxDOT Geotechnical Manual. The testing and sampling program will be contained in the Geotechnical Investigation Plan.

Chapter 9: D&B Team Process Procedures Manual

- 18.5.9 When a boring has been completed, the hole will be backfilled with bentonite (top 10 feet; points below 10 feet may be filled with in-situ material).
- 18.5.10 Analyze sample and prepare geotechnical reports:
- a. Earthworks and retaining walls.
 - b. Foundations (bridge, culverts, misc. structures)
 - c. Pavement Design

18.6 Records

- 18.6.1 The Geotechnical Consultant will establish a record-keeping procedure approved by the D&B Team Design Manager to properly identify field samples collected for laboratory analysis to ensure the integrity of information that is used in the design process.
- 18.6.2 Records will be maintained by establishing a Document Control System.
- 18.6.3 Unauthorized personnel must not remove records from the Document Control System.
- 18.6.4 Records will be filed and maintained for the duration of the Contract. At the completion of the Contract, records will be classified and separated according to the storage period requirement.
- 18.6.5 Records generated by Subcontractor and Supplier interaction are also subject to the above controls.
- 18.6.6 The Quality Manager (or delegated persons) will verify compliance with paragraphs 5.1 to 5.9 of this procedure through surveillances, reviews and audits.

19 Aesthetics and Landscaping

19.1 Purpose and Scope

- 19.1.1 The purpose of this procedure is to outline how the aesthetics and landscaping allowance will be utilized.
- 19.1.2 This procedure describes the primary responsibilities and processes the D&B Team will use to create, execute and document the use of aesthetics and landscaping allowance defined in the CDA and Technical Requirements.

19.2 Definitions

- 19.2.1 Contract: The Agreement in writing between The D&B Team and the General Design Consultant to perform the Work defined in the Contract.
- 19.2.2 Records: Documentary evidence gathered or created by the D&B Team and its consultants related to performance of the Work.

19.3 References

- 19.3.1 The D&B Team Quality Management Plan and Process Procedures Manual

Chapter 9: D&B Team Process Procedures Manual

- 19.3.2 The D&B Team Design Quality Plan
- 19.3.3 Comprehensive Development Agreement
- 19.3.4 Technical Requirements
- 19.3.5 Technical Documents

19.4 Responsibilities (for this procedure)

- 19.4.1 Preparation by the Quality Manager
- 19.4.2 Review by Design Manager
- 19.4.3 Approval by the General Manager

19.5 Procedure

- 19.5.1 An aesthetic and landscaping policy has been established for the IH 635 Managed Lanes Project. Prior to the start of any design element, the Developer will define a scope of work for aesthetic and landscaping features to be performed by the D&B Team on a cost-plus basis, up to the amount of such allowance with the D&B Team having no further obligation to perform any additional work for Landscape and Aesthetic features without further compensation.
- 19.5.2 The Design Manager and the General Design Consultant will develop an Aesthetics and Landscaping Plan in consultation with the Developer.
- 19.5.3 The aesthetics activities will include among other: design, formliner , sealing/painting on retaining walls, riprap, railing, bent caps, abutment caps, abutment wingwalls, columns, sign columns and accents (including raised, recessed or cast). The landscaping activities will include among others: trees, shrubs, hardscapes, stones, other vegetative material and QC/QA.
- 19.5.4 The General Design Consultant will ensure that, to the extent specified by the Developer, the requirements of IH 635 Managed Lanes Project Landscape and Aesthetic Details will be incorporated into the design.
- 19.5.5 The D&B Team will submit panels for textured concrete surfaces to the Developer at least 10 days prior to commencing Work on these features.
- 19.5.6 Bridge aesthetic design procedures:
 - Design and construct bridges with relatively long spans and fewer bents without compromising economics of optimization;
 - Round columns will be used at stream crossings and bridges not visible to the traveling public.
 - Use similar shapes and details for all bridges;
 - Minimize structure size consistent with function;
 - Emphasize bridge railings by maximizing deck overhangs (up to three feet) to place the girder face in deeper shadow and use TxDOT standard bridge rails;
 - Minimize the superstructure depth;

Chapter 9: D&B Team Process Procedures Manual

- Balance span lengths to the extent possible;
- For steel superstructures, if any, use continuous spans with a minimum number of expansion joints; and for conventional concrete superstructures, use simple spans; and,
- Make column size proportional with the bridge as a whole; and if possible locate columns under parallel bridges along a common line at each bent.
- 19.5.7 Retaining wall aesthetic design procedure:
 - Eliminate walls wherever possible in favor of slopes.
 - Where necessary, design retaining wall profiles and alignments to blend with the natural terrain.
 - Use similar wall colors, textures, and styles throughout the corridor.
 - Aesthetic treatments will be applied to the vertical surface where the surface is visible from the traveled way.

19.5.8 Trees, Shrubs, and Other Plants Material—the Design will incorporate the use of plant material with the requirements of the Technical Requirements.

19.6 Records

- 19.6.1 Records will be maintained by establishing a Document Control System.
- 19.6.2 Unauthorized personnel must not remove records from the Document Control System.
- 19.6.3 Records will be filed and maintained for the duration of the activities on a Contract. At the completion of the Contract, records will be classified and separated according to the storage period requirement.
- 19.6.4 Records generated by Subcontractor and Supplier interaction are also subject to the above controls.
- 19.6.5 The Quality Manager (or delegated persons) will verify compliance with paragraphs 5.1 to 5.8 of this procedure through surveillance, reviews and audits.

Chapter 10: Incident Management Plan

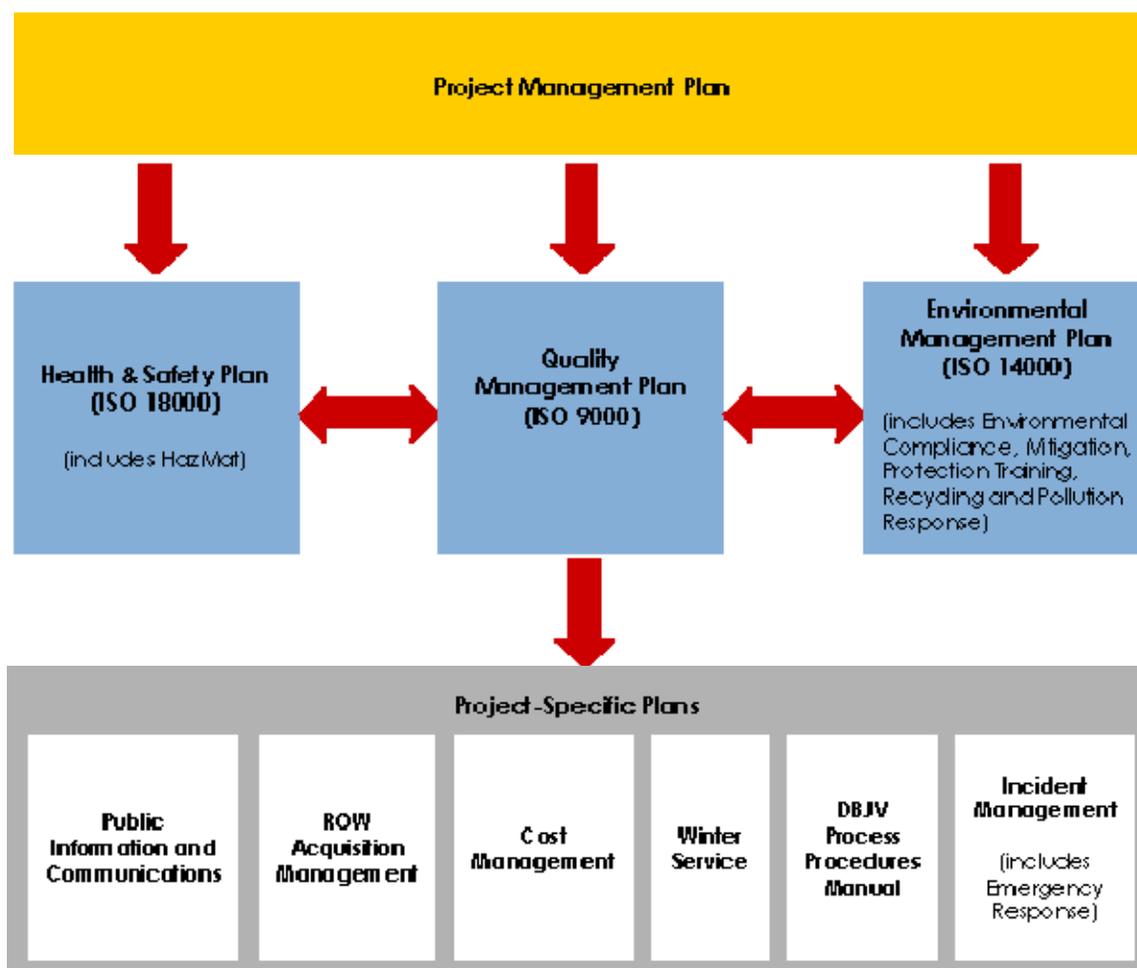
CHAPTER 10 INCIDENT MANAGEMENT PLAN

A. General Information

A.1 Purpose of Plan

The Incident Management Plan (IMP) is a key component of our mandatory Integrated Management System (IMS) that embodies ISO 9001:2000 Quality Management Systems, ISO 14001 Environmental Management Systems and our Safety Management System, which complies with the requirements of OHSAS 18001.

Figure 46: Integrated Management Plan



This preliminary IMP provides an overview of the Incident Management System that the Roadway Operations Director has provided and resourced to address his responsibilities and commitment as defined in the CDA.

Chapter 10: Incident Management Plan

The IMP will assist the Service Providers in dealing with any emergency that could fall into the categories of either Major or Critical Incidents as later defined, affecting the road network.

The IMP identifies incident management objectives and defines the criteria under which to activate the plan. The IMP also identifies responsibilities and sets out the lines of communication, actions and interfaces between the various organizations involved.

The Command Structure is in line with police and emergency services categorization, with Operational, Tactical and Strategic management equating to their Bronze, Silver and Gold command/management framework.

The Developer will send any proposed changes or corrections to the IMP to the Plan Owner. The IMP is subject to review every three months, and after any Major/Critical incident or significant organizational change.

A.2 Definitions

IMP-Specific Definitions

Table 63: IMP-Specific Definitions

Emergency Incident	An incident presenting a serious threat to human welfare, the environment, or political, administrative, or economic welfare
Major Incident	An incident requiring the implementation of special arrangements by one or more of the emergency services providers
Critical Incident	Multiple collisions, partial or full road closure, collisions involving crossover, buses, trains, fatal collisions, hazardous materials releases, structural damage, collisions where roadwork is in progress
Bronze Level	Operational level for normal day-to-day arrangements for responding to incidents
Silver Level	Tactical level for management of response to incidents
Gold Level	Strategic level for management of response to incidents

Roadway Technical Definitions

Table 64: Roadway Technical Definitions

Access Roads	Roadways located on the IH 635 Managed Lanes Project that are closed to the general public and are intended only for use by maintenance, inspection or utility traffic. These are low-type pavements constructed of gravel, grindings or earth.
Asphalt	A brown-to-black solid material, soluble in gasoline or naphtha.



Chapter 10: Incident Management Plan

Bleeding	An area where the asphalt mix is too rich, causing the asphalt material to ooze to the surface in puddles and leaving a slick, slippery area.
Bridge	A structure consisting of single or multiple spans of more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, railroad or other obstruction.
Debris	Litter, rubbish, vegetation, rocks, dead animals, spilled materials, brush or other items which are not part of, or which impede, drainage.
Litter	Trash, debris, waste, refuse, accident and construction residue.
Heave or Settle	Displacement of rigid-type pavement by a combination of vertical and horizontal stresses due to expansion or contraction of the subgrade. A "pavement blowup" occurs when pavement expands due to excessive heat, causing heave or settlement in a concrete pavement.
Mainline	The portion of the multi-lane IH 635 Managed Lanes Project traveled way extending from Shoulder line to Shoulder line or from curb line to curb line.
Pothole	An area where a piece of pavement has broken free and been removed, leaving a hole.
Ramp	The portion of the traveled way that provides access between the Mainline and the local street network, extending from Shoulder line to Shoulder line or from curb line to curb line.
Raveling	The progressive loosening of the material in the courses of a road as separate from the Asphalt binding material.
Resurfacing	Placing of one or more new layers of material on an existing pavement surface.
Rutted and Shoved Pavement	Deformations in which the surface of the pavement has worn into longitudinal ruts due to repetitive passes of vehicle tires, or transverse corrugations due to vehicle deceleration and acceleration.
Shoulder	The portion of the roadway extending from edge of the Mainline or Ramp pavement to the unpaved top of earth embankment, or to the base of a barrier wall.
Subbase	An auxiliary course to furnish needed stability, usually due to poor Subgrade.

Chapter 10: Incident Management Plan

Subgrade	That portion of the roadbed on which pavement, surfacing, base, Subbase, or a layer of any other material which may be specified, is to be placed.
Wedge and Level	Pavement surface treatment consisting of milling off approximately 1.25 inches of surface and replacing it with new Asphalt surface material. This process extends the life of relatively sound pavements that are beginning to show minor to moderate surface distresses.

A.3 References and Standards

Operational Standards

Table 65: Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: http://www.dot.state.tx.us/trf/mutcd2006.htm	Texas MUTCD Part 6 provides procedures for temporary traffic control, for purposes such as rehabilitation and maintenance.
State Obligations (safety, patrolling, emergency response)	Procedures for Establishing Speed Zones: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/szn.pdf	Provides information and procedures necessary for establishing speed zones and advisory speeds on the state highway system; TxDOT and cities are required to use these standards when establishing speed zones on the state highway system.
	State Interagency Agreements with the Texas Highway Patrol	The Texas Highway Patrol works closely with the TxDOT, which acts as the pass-through agency for funding from the National Highway Transportation Safety Administration (NHTSA) for federally funded Selective Traffic Enforcement Programs (STEP). Interagency agreements between the Department and

Chapter 10: Incident Management Plan

TxDOT also provide funding for statewide overtime traffic enforcement, enforcement of construction work zones and ferry operation enforcement.

	TxDOT Maintenance Manual Chapter 7 - Emergency Management: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs and oil/hazardous materials spills.
	TxDOT Maintenance Operations Manual Chapter 5 - Emergency Operations: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf	Chapter 5 defines procedures for snow and ice operations, emergency spill response, response to wildfires and response to incidents and accidents.
Accident Responsibility / Claims	Hazard Elimination Program: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/tfa.pdf	Hazard Elimination (HES) Program is part of the Highway Safety Improvement Program; basic objective of the HES Program is to reduce the number and severity of crashes.

Environmental Standards

Table 66: Environmental Standards

General	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf	Provides procedures and practices related to environmental analysis and decision-making with TxDOT project development work; provides a guide to clearing transportation projects through the National Environmental Policy Act (NEPA) process.
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Chapter 10: Incident Management Plan

Water Quality Control	TxDOT Environmental Manual:	Details the process for all related environmental documentation which includes water quality; Chapter 3 Section 8 provides content details for documentation.
	Texas Commission on Environmental Quality - Water Quality Management: (http://www.tceq.state.tx.us/nav/eq/eq_wqmgmt.html)	Provides rules, policy and legislation for water quality control.
	US Army Corps of Engineers Wetlands Delineation Manual: (http://www.wetlands.com/regis/tlpge02e.htm)	Provides users with guidelines and methods to determine whether an area is a wetland for purposes of Section 404 of the Clean Water Act.
Noise	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf)	Section 4 describes roles and responsibilities related to noise analysis; manual details process for all related environmental documentation; Section 8 provides content details for documentation.
	TxDOT's Guidance for the Analysis and Abatement of Highway Traffic Noise: (http://www.dot.state.tx.us/env/pdf/references/TxDOTnoise96.pdf)	Provides basic guidelines for performing traffic noise analyses for TxDOT highway projects and includes a discussion of the fundamentals of sound and traffic noise, the process of traffic noise analysis and associated documentation.
Air Pollution	TxDOT Environmental Manual: (ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division))	Section 4 describes roles and responsibilities related to air quality; manual details process for all related environmental documentation. Section 8 provides content details for documentation.
	TxDOT Air Quality Guidelines:	Provides background information on air quality



Chapter 10: Incident Management Plan

	<p>http://www.dot.state.tx.us/publications/environmental_affairs/AQGuidelines0606.pdf</p>	<p>issues and terminology to clarify the air quality analysis and documentation requirements for environmental documents. Guidelines include sample language for use in developing environmental documentation.</p>
	<p>TxDOT Project Development Policy: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pol.pdf</p>	<p>Describes air quality requirements with respect to project planning.</p>
	<p>TCEQ Dallas-Fort Worth Non-attainment Area: http://www.tceq.state.tx.us/implementation/air/sip/dfw.html</p>	<p>Summarizes Dallas-Fort Worth's air quality challenges, air quality plan and control strategies; contains links to rules, agreements and State Implementation Plan (SIP) revisions.</p>
Vegetation	<p>Executive Memorandum on Beneficial Landscaping and Executive Order on Invasive Species (EO 13112): http://www.fhwa.dot.gov/environment/020399em.htm</p>	<p>Issued to prevent and control the introduction and spread of invasive species</p>
	<p>Landscape and Aesthetics manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/lad.pdf</p>	<p>Provides guidance in the selection of landscape and aesthetic design criteria for highway and street project development; provides a synthesis of current information and design practices related to development of landscape and aesthetic components for different classifications of roadway facilities.</p>

Required Operations and Environmental Permits

Table 67: Required Operations and Environmental Permits

Comprehensive Development Agreement, TxDOT Statewide Open-	Table 4.1 in Book 2A lists all environmental permit requirements and the name of the
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Chapter 10: Incident Management Plan

Road Toll Collection System, Section 6.4; however, Book 2A provides comprehensive permitting information: <http://www.fhwa.dot.gov/ppp/toc.htm> coordinating agency; Chapter 6 in Book 2A describes utility adjustment requirements and procedures.

Insurance Standards

Table 68: Insurance Standards

Comprehensive Development Section 9 provides the insurance coverage Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: <http://www.fhwa.dot.gov/ppp/toc.htm> required for all CDA development, including requirements for commercial liability insurance, workers' compensation insurance and other liability insurance.

B. Plan-Specific Information

B.1 Roles and Responsibilities

Operations and Maintenance Department

This sub-organization will be responsible for operating and maintaining the IH 635 Managed Lanes Project in a manner that ensures a safe and reliable transportation system and guarantees compliance with the CDA Performance Requirements. This sub-organization will define and coordinate the necessary work to accomplish these tasks, between in-house personnel and subcontractors. Figure 47 and Table 69 below depict the Operations and Maintenance Organization Chart, plus responsibilities and minimum requirements for key employees in this area.

Chapter 10: Incident Management Plan

Figure 47: Developer’s Sub-Organization Chart –Operations and Maintenance

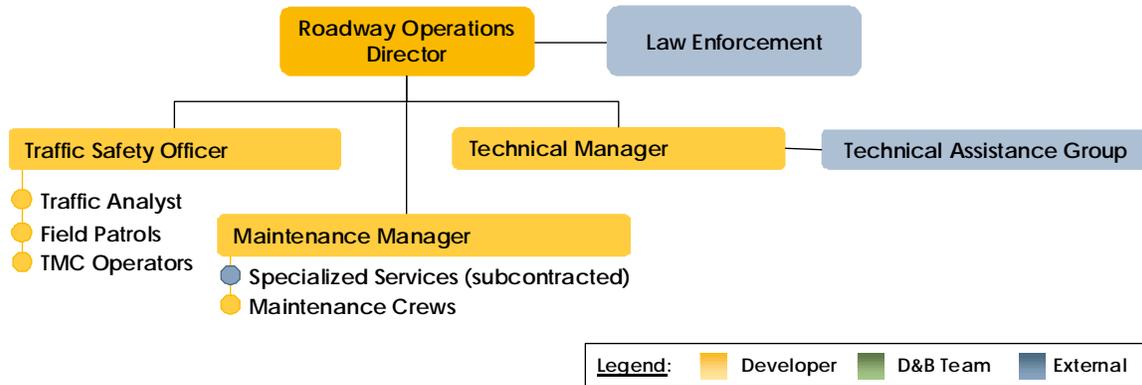


Table 69: Operations and Maintenance Department Staff Responsibilities and Requirements

Staff	Minimum Requirements	Roles/Responsibilities
Traffic Safety Officer	Certified by Texas Engineering Extension Service (TEEX) in “Work Zone Traffic Control”. Two years of progressive and relevant experience in traffic control Strong communications and organizational skills.	Ensures uninterrupted monitoring of the facility. Defines and enforces internal traffic control procedures and reports on facility condition and incidents. The Traffic Safety Officer will be available or on standby 24 hours per day, seven days a week
Technical Manager	Ten years’ minimum experience with state DOT, toll authority, county or city operations and maintenance programs. Five years’ minimum supervisory experience.	Direct construction and asset renewal activities during the O&M phase. Manages subcontracts with service providers. Coordinates QA/QC with O&M Quality and Environmental Manager.
Maintenance Manager	10 years’ minimum experience with state DOT, toll authority, county or city maintenance programs; five years’ minimum experience in pavement repair design, drainage design, sign design, maintenance materials, emergency weather/spills prevention planning and managing equipment fleets.	Demonstrated ability to know when to call in expert specialized consultant or contractor. Coordinates with all other managers on O&M team. Responsible for ensuring that all crew and patrol members receive training in environmental compliance, recognizing category defects and appropriate procedures for emergency incident situations. Responsible for the development of all required plans, coordinating where appropriate with local responsible entities.

Chapter 10: Incident Management Plan

B.2 Plan-Specific Procedures

Objectives

Specific Incident Management Objectives

- Minimize the effect of incidents on the traveling public;
- Provide information to TxDOT management for further transmission to road users and officials;
- Restore the network to normal conditions as quickly as possible.

Common Objectives

Regardless of various individual responsibilities, all organizations involved in incident management will work toward the following common objectives:

- Saving and protecting life;
- Relieving suffering;
- Protecting property;
- Providing the public with timely information;
- Containing the emergency;
- Maintaining critical services;
- Maintaining normal services at an appropriate level;
- Protecting the health and safety of personnel;
- Safeguarding the environment;
- Facilitating investigations and inquiries;
- Promoting self-help and recovery;
- Restoring normal conditions as soon as possible;
- Evaluating the response
- Identifying lessons to be learned.

Definitions: Emergency, Major and Critical Incidents

Emergency

This term covers any challenges that present a serious threat to:

- Human welfare;
- The environment; or
- Political, administrative or economic welfare.

Chapter 10: Incident Management Plan

Major Incident

Major Incidents are those requiring implementation of special arrangements by one or more emergency service providers, and involving:

- Rescue and transport of a large number of casualties;
- Involvement, either directly or indirectly, of large numbers of people;
- A large number of inquiries from the public and the news media;
- Large-scale deployment of the combined resources of emergency service providers; or
- Mobilization and organization of emergency service providers and supporting organizations.

Critical Incident

The following constitute Critical Incidents:

- Multiple collisions involving fatalities, serious injuries or vehicles disabled on the traveled lanes;
- Partial or full closure of roads due to weather or road conditions – this will also include a combination of minor incidents occurring at differing locations aggravated by other circumstances;
- Collisions involving vehicle crossover into lanes traveling the opposite direction;
- Collisions involving passenger vehicles, buses, trains, or trucks resulting in fatalities or injuries;
- Fatal collisions involving fire;
- Serious collisions involving a vehicle carrying dangerous substances, such as hazardous chemicals, flammable liquids such as gasoline or radioactive materials;
- Collisions resulting in serious or potentially serious structural damage, such as to a bridge, necessitating road closures;
- Fatal collisions on roads where roadwork is in progress;
- Significant incidents causing partial or full closure of roads due to collisions, security alerts or criminal/terrorist acts
- Any incident off or adjacent to the network that may meet any of the above criteria.

Contingency Plan and Operational Procedures

Major Incidents. In the event of declaration of a Major Incident, Police will set up the following:

- Forward control point (Bronze Control);
- Inner cordon;
- Outer cordon;
- Rendezvous point, including assembly point if different, or marshalling areas;
- Central media point;
- Incident control post (Silver Control);
- Major incident room (Gold Control);

Chapter 10: Incident Management Plan

- Emergency evacuation centers;
- Evacuation routes;
- Rest centers/reception centers;
- Triage/medical centers;
- Casualty inquiry bureau;
- Mortuaries/temporary mortuaries;
- Catering centers;
- Investigation team base
- Traffic detours.

Agencies to be mobilized

Police

While the Developer will take primary responsibility for coordinating the activities of those responding at and around the scene, we will work closely with the police in their efforts to recover incidental evidence, which must be preserved for subsequent inquiries and possibly criminal proceedings, unless a disaster results from severe weather or other natural phenomena. Where practicable, the police will establish cordons to facilitate the work of the other emergency services. They will facilitate inquiries carried out by accident investigators.

Fire Department

The first concern of fire departments responding to accidents is to rescue people trapped in a fire, wreckage, or debris. They will prevent further escalation of the disaster by extinguishing fires, or undertake protective measures to prevent them. They will handle released chemicals, or other contaminants to render the incident site safe. They assist the ambulance service in handling casualties and the police with recovery of bodies. The fire department is responsible for the health and safety of personnel from all key agencies working within the inner cordon. Fire department personnel will work with the police to control access to the scene, and to ensure that they are properly equipped, adequately trained and briefed. However, in the event of a situation which is, or which may be, the result of a terrorist incident, all activities within cordons are will be under the direct control of the police.

Local Authorities

In the immediate aftermath of a disaster, local authorities' principal concerns are to provide support for emergency services; continue normal support and care for the local and wider community; use resources to mitigate the effects of the emergency; and coordinate the response by organizations other than emergency services.

As time goes on and the emphasis switches to disaster recovery, the local authority will take a leading role to facilitate rehabilitation of the community and restoration of the environment. Even a relatively small disaster may overwhelm the resources of the local authority in whose area it occurs. The Developer has made plans to avert this possibility, which will trigger arrangements for mutual aid from neighboring authorities in appropriate circumstances, delivering cross-boundary assistance if required. Arrangements may range from simple agreements to offer

Chapter 10: Incident Management Plan

assistance in the event of an incident, to more formal arrangements for the shared use of resources, which could include vehicles, equipment and people.

Volunteers

Bona fide volunteers can contribute to a wide range of activities, either as members of a voluntary organization or as individuals. They will always be under the control of a statutory authority.

Industry and Commercial Organizations

Industrial or commercial organizations, including utilities, may play a direct part in disaster response if their personnel, operations or services have been involved. They may provide support, for example, by providing equipment, services, or specialized knowledge.

B.2.5 Command Structure

To achieve incident management objectives and produce a combined and coordinated response to an emergency, the Developer must adopt a common management framework in line with those operated by police/emergency services, local authorities and other agencies.

Under this framework, incident management response will take place at one or more of three levels:

- **Operational:** manages at-scene activities within respective organizations;
- **Tactical:** determines priority in allocating resources and plans and coordinates response;
- **Strategic:** establishes strategic management and ensures that resources and expertise are available for a swift return to normal conditions.

The Operational level of management will be the first to respond to incidents. Depending on the severity of the incident, the Developer will activate the Tactical and Strategic management levels as appropriate.

Operational Level (Bronze) – (Field Patrol)

Management of “hands-on” work is undertaken at the individual site.

Individual agencies will retain full command of the resources that they apply within a geographical area, or for a specific purpose. The Developer will serve as the response coordinator at any identifiable incident scene.

A key function of an operational commander or manager will be to consider whether circumstances warrant a tactical level of management.

Tactical Level (Silver) – (Maintenance Manager)

The Tactical level of management will provide overall response management. Tactical managers determine resource allocation priorities, obtain further resources as required, and plan and coordinate timeframes for

Chapter 10: Incident Management Plan

undertaking tasks. They will take appropriate risk reduction measures to ensure that the response conforms to the health and safety requirements laid out in the Developer's Safety Manual.

Where there is an identifiable incident, the Developer will typically undertake tactical management from an Incident Control Point established in the vicinity. The Developer and cooperating agencies will then discharge many tactical functions at or close to the scene. However, some agencies, such as local authorities, will prefer to operate from their administrative offices and send liaison officers to the scene enhance coordination. Planning must also take into account that a single incident may comprise multiple scenes.

Tactical managers concentrate on overall general management. While they need to be aware of what is happening at the operational level, they should leave the responsibility for dealing with that level to operational managers. When a situation warrants it, the Developer will establish a strategic level of management/command as early as possible.

Strategic Level (Gold) – (Roadway Operations Director)

In exceptional circumstances, one or more agencies may find it necessary to implement a strategic level of management. Incidents can place considerable demands on the resources of the responding organizations, with consequent disruption in day-to-day activities. It will also be necessary to ensure fulfillment of ordinary operational requirements elsewhere. Such matters require attention by senior management.

Strategic incident command will be standard practice – not the exception. Strategic management is simple to dismantle when not required and removes the potential for tactical managers/commanders to be reluctant to ask for a strategic level of management/command. The need for a strategic level may arise if tactical management does not have the required resources or expertise available. It may also arise if there is a need to coordinate more than one incident/scene for which tactical command is currently in place. Strategic management normally occurs away from any incident scene.

One particular agency may handle all strategic management requirements for a given incident. However, certain incidents require a multi-agency response at the strategic level when the issues that arise affect the responsibilities or activities of more than one organization.

Staff Responsibilities in Event of a Major or Critical Incident

Traffic Management Center (TMC)

The TMC is located within the network, and is operational 24 hours per day and 7 days per week. Upon receipt of information alerting the TMC to a possible incident, the Developer will take the following actions:

- Obtain full and complete details of the incident, as far as are known;
- Obtain details of likely emergency service evacuation signals and advise all attendees;
- Obtain details of the Rendezvous Point (RVP), if known;
- Immediately dispatch a crew to the scene, and inform the Field Patrol;

Chapter 10: Incident Management Plan

- At the request of the Field Patrol, dispatch additional resources to the scene as required, calling out staff in according to current procedures and arranging a police escort for heavy machinery if necessary;
- Initiate and continuously update the Incident Log;
- Implement detours as directed by the Field Patrol, using Dynamic Message Signs where available; and
- Make use of CCTV where available, informing the Communications Team of such use;
- On the advice of the Field Patrol, assess the likely duration of the incident, and arrange for additional personnel resources as appropriate.

First Responders

The primary consideration in this situation is the safety of oneself and others. To that end, first responders will take the following actions:

- Carry out any necessary Risk Assessment to ensure human safety;
- Contact emergency services via the CC (if not already on scene);
- If emergency services are already on scene, locate the police officer in charge (or fire department senior officer, if police not in attendance) and assist as required and able;
- Inform CC of the exact location of the incident, to nearest marker post, including direction of travel, whether any road closures are in place, the best route to reach the scene, present and potential hazards, and request any necessary extra resources;
- Keep CC updated pending the arrival of Field Patrol.

The mnemonic device “SAD CHALETS” can help responders memorize a methodical way to approach the scene of any incident:

- S** Survey the area from a distance, with regard for your own personal safety.
- A** Assess the situation.
- D** Disseminate the information to the CC, and others as necessary.
- C** Casualties – estimate numbers and seriousness of injuries.
- H** Hazards – assess hazards such as fuel spillage, debris, weather and road conditions or fire.
- A** Access – identify best routes for emergency vehicles, while considering preservation of the scene.
- L** Location – determine exact location (marker post, direction of travel, lane).
- E** Emergency Services – already present or required?
- T** Type – type of incident with details of type and numbers of vehicles involved.
- S** Start an Incident Log.

Chapter 10: Incident Management Plan

Field Patrol

When informed of an incident, report to the scene as soon as possible, and carry out the following actions:

- Carry out a dynamic Risk Assessment;
- Identify the likelihood of the incident becoming Major or Critical;
- If it is, declare it as such, and ensure “Silver” is contacted – remain at the scene as “Bronze” until informed otherwise;
- Initiate and maintain Incident Log;
- Assume control of all maintenance resources;
- Liaise with police and other emergency services, and advise CC of location of RVP;
- Update TxDOT and the Public Information Manager via the CC;
- Request any additional management assistance considered necessary at the scene via the CC;
- Maintain contact with, and information to, the CC;
- Assess sufficiency of maintenance resources and request additional support as required via the CC;
- Assist the police in setting up detours;
- Organize Traffic Management as necessary;
- Assess infrastructure damage, calling on specialists as necessary.

Maintenance Manager

When informed of an incident, determine the extent of such, and:

- Declare and inform all necessary parties of the physical location from which the incident is to be controlled (in conjunction with emergency services if necessary);
- Act as “Silver” until informed otherwise;
- Ensure “Bronze” at the scene is aware of his/her responsibilities;
- Ensure resources are adequate;
- Anticipate and authorize additional personnel and resources as required;
- Maintain communication with staff at the scene;
- Control Traffic Management and monitor congestion;
- Make any necessary arrangements to replace staff on duty for lengthy periods;
- Communicate with appropriate stakeholders;
- Consider providing items such as food, water, blankets, toilets, etc;
- Where traffic must stop behind a closure for long periods, prioritize methods to restore traffic flow.



Chapter 10: Incident Management Plan

Public Information Manager and Gold Advisory Group

A team will be set up to assist TxDOT in both managing the incident from a strategic point of view, and to communicate with the media. They will act to manage the flow of information to and from the incident, along with information concurrently available through the CC, updated throughout by the Field Patrol.

Finance

Bronze-level management must be aware that a third party is likely to be ultimately responsible for the incident management costs and the operational costs of returning the Facility to a safe condition.

Where large amounts of resources or materials are necessary, particularly in cases where a premium for rapid or after-hours response is required, the Roadway Operations Director must authorize the remedial action in his or her capacity as a Gold-level manager.

Contact Information/Telephone Numbers

Emergency Service Contacts

The Developer will post emergency contacts for local fire departments, ambulance services and hospitals in prominent places within the CC, and furnish this information to all CC operators and designated Bronze-, Silver- and Gold-level managers. In the final version of this manual, such contact details will appear in this chapter.

Highway and Emergency Planning Authorities

The police will automatically contact emergency planning officers of adjacent authorities in the event of a Major Incident. In the event of a Critical Incident, such contact will be the responsibility of Silver-level management.

Emergency Planning Officers maintain details of emergency shelters, possess limited stocks of useful equipment such as blankets, maintain lists of local suppliers of other emergency items such as food and water, and are able to contact and involve their respective highway departments as necessary. These authorities should be contacted at an early stage.

In the final version of this manual, contact details for adjacent authorities will appear in this chapter:

Ownership of the Plan

The Roadway Operations Director will assume ownership over the Incident Management Plan.

Any proposed changes or corrections to this Plan must be sent to the Plan Owner.

Chapter 10: Incident Management Plan

Post-Incident Structured Debriefing

The IMP is subject to review every three months, and after any Major/Critical Incident or significant organizational change.

Operational Debriefing Sessions

Operational Debriefing Sessions will take place following any event or incident requiring implementation of the IMP (or any part of it). These sessions will:

- Identify areas for improvement;
- Determine best practice;
- Gather intelligence;
- Supply updated situation reports;
- Praise jobs well done;
- Enable the Developer to provide a concise and accurate contribution to any agency or inter-agency debriefing session.

Personal or Critical Incident Debriefing

Silver-level management will be responsible for arranging Personal Incident Debriefings, with the assistance of an Occupational Health Advisor. Such debriefing sessions should allow for:

- Venting of thoughts and feelings;
- Identifying stress-related reactions;
- Helping people to understand their reactions;
- Discussing ways of coping;
- Determining the need for supplemental trauma counseling and referring individuals to counselors as needed.