JANUARY 26, 2007

TECHNICAL PROPOSAL FOR THE

TXDOT SH121 TOLL PROJECT

D.4.12 ENVIRONMENTAL MANAGEMENT PLAN (OPERATIONS)

TABLE OF CONTENTS

CHAPTER A: GENERAL INFORMATION 3
A.1 PURPOSE OF PLAN 3
A.2 DEFINITIONS 5
A.3 REFERENCES AND STANDARDS 7
A.4 SYSTEMS AND PROCEDURES 15
CHAPTER B: PLAN SPECIFIC INFORMATION 16
B.1 ROLES AND RESPONSIBILITIES 16
B.2 COMPREHENSIVE ENVIRONMENTAL PROTECTION PLAN 21
PHASE ONE – SPILL CONTAINMENT 26
PHASE TWO – CLEANING AND REOPENING 26
APPENDICES: ROAD SPECIFIC APPENDICES 27
APPENDIX 1 28
APPENDIX 2 29
APPENDIX 3 30

CHAPTER A: GENERAL INFORMATION

A.1 Purpose of Plan

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, Spill Prevention Control.

The Environmental Management Plan for construction activities is provided under Appendix 4.11.

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.

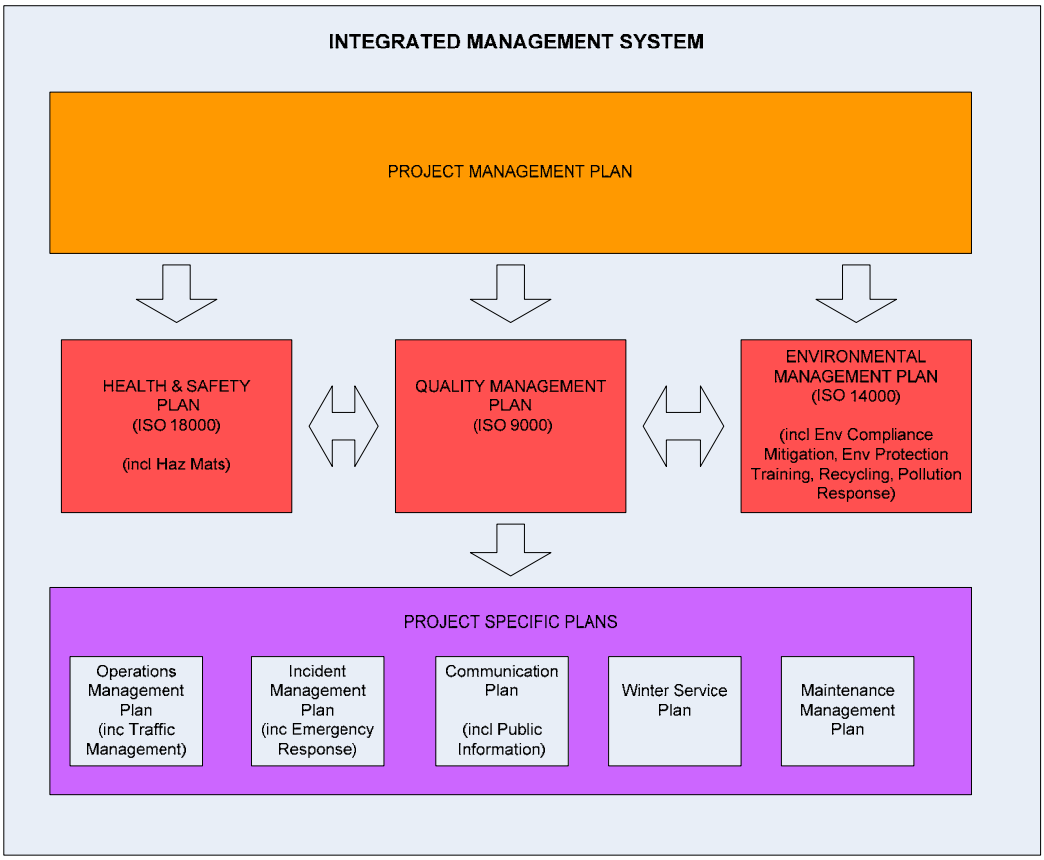


Figure 1 – Integrated Management System

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 programme 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.

A.2 Definitions

A.2.1 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

A.2.2 ROADWAY TECHNICAL DEFINITIONS

Access Roads	Those roadways located on the SH121 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 naptha.
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 and slippery area.
Bridge	A structure consisting of single or multiple spans more than 20 feet in length that provides a means of transit for vehicles and/or pedestrians above the land, water surface, roadway, rail road 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 SH121 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 aggregates 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 which consists of milling off approximately 1 ¼ " 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.

A.3 References and Standards

Technical Standards

Road Maintenance Standards	TxDOT Maintenance Management Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf	Section 2.2 (Definitions of Maintenance) defines standards; Section 2.3 provides guidance on developing maintenance plans; Chapter 5 defines Activities Requiring Permits
	TxDOT Maintenance Operations Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf	Chapters 1 and 2 provide guidance on routine maintenance activities and maintenance operations for pavement and roadside; Chapters 4 and 5 detail traffic and emergency management operations; Section 2.3 details vegetation management
Pavement surface characteristics	TxDOT Pavement Design Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pdm.pdf	Chapter 2 provides Asphalt Cement Concrete design guidelines; Chapter 3 provides Portland Cement Concrete design guidelines; includes methods for new construction, reconstruction, and rehabilitation
	Pavement Management Information System (PMIS) User's Manual	TxDOT Pavement Design Manual refers to the PMIS User's Manual for pavement performance information
Pavement structural characteristics	Pavement Design Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pdm.pdf	Chapter 2 provides Asphalt Cement Concrete design guidelines; Chapter 3 provides Portland Cement Concrete design guidelines; includes methods for new construction, reconstruction, and rehabilitation
Structures maintenance	Maintenance Management Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf	Chapter 1 provides definitions and general requirements for routine, preventative, and major maintenance of drainage structures
	Maintenance Operations Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf	Chapter 3 provides policies, procedures and materials used in the maintenance of the state's bridges, moveable span bridges and ferries in order to assure uninterrupted, safe traffic flow and protection of investment.
	Bridge Inspection Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ins.pdf	Manual provides guidance for bridge inspection personnel, provides a reference for consultants, and helps to ensure consistency in bridge inspection, rating, and evaluation
Road markings	2006 Texas MUTCD: http://www.dot.state.tx.us/trf/m	Part 3 provides pavement markings standards, guidelines, and drawings

	utcd2006.htm	
	Pavement Marking Handbook: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/pmh.pdf	Provides information on material selection, installation, and inspection guidelines for pavement markings
Road signs, drainage, fences	Signs and Markings Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/smk.pdf	On-line version provides TOC only; references print version to be obtained from TxDOT; Chapter 7 does provide detailed information on Guide Signs and references the Texas MUTCD
	2006 Standard Highway Sign Designs For Texas (SHSD) (referenced in Book 3): http://www.dot.state.tx.us/trf/shsd/shsd.htm	Provides detailed drawings of the Standard Highway Signs for Texas prescribed or provided for in the Texas Manual on Uniform Traffic Control Devices (TMUTCD), 2005.
	TxDOT Sign Crew Field Book (referenced in Book 3): Available for purchase from TxDOT or the Texas Transportation Institute	Provides sign placement information in a manner that coordinates regulatory, warning, and guide signs and promotes statewide consistency
	Urban Freeway Signing and the Freeway Signing Handbook (referenced in Book 3): Available for purchase from TxDOT or the Texas Transportation Institute	Provides TxDOT staff and design consultants with information beyond that contained in the Texas MUTCD or the TxDOT Traffic Control Standard Sheets so that freeway signing can be designed and installed in a more uniform manner
	2006 Texas MUTCD: http://www.dot.state.tx.us/trf/mutcd2006.htm	Part 2 provides function/design characteristics and standards for signs; 2J provides specifications for toll road signing; Part 3 provides pavement markings
	Texas Reference Marker System User's Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/trm.pdf	Provides Texas Reference Marker (TRM) System Highway Data File users with the necessary information to input data to, or extract data from TRM
	Roadway Design Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/rdw.pdf	Provides general criteria for design, location, and sight distance for signs
	TxDOT ROW Beautification Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/bet.pdf	Provides standards for advertising signage within the ROW.
	AASHTO Roadside Design Guide	Presents information on the latest state-of-the-practice in roadside safety and procedures to determine a recommended minimum clear zone on tangent sections of roadway with variable side slopes and adjustments

		for horizontal curvature; focus of this guide is on safety treatments that minimize the likelihood of serious injuries when a driver runs off the road
	AASHTO Green Book	Provides sight distance requirements; use as secondary reference to the TxDOT Roadway Design Manual
	FHWA Bridge Deck Drainage Manual (referenced in Book 3): http://www.fhwa.dot.gov/engineering/hydraulics/pubs/hec/hec21.pdf	Provides guidelines and procedures for designing bridge deck drainage systems
Lighting Requirements	TxDOT Highway Illumination Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/hwi.pdf	Provides procedures, guidelines, standards, and information concerning highway illumination
	TxDOT ROW Beautification Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/bet.pdf	Includes standard for toll plaza lighting (Chapter 4, Section 9, Illumination).
	AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaries, and Traffic Signals	Provides criteria for structural support, breakaway, and safety
	AASHTO Roadway Lighting Design Guide (referenced in Book 3): Available for purchase from AASHTO	Provides a general overview of lighting systems and recommends minimum levels of quality
Landscaping	TxDOT ROW Beautification Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/bet.pdf	Manual provides the current information and operating practices for acquisition of right of way for transportation projects, property management relating to right of way, and the highway beautification program
	Landscape and Aesthetics Design 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
	AASHTO Roadside Design Guide	Presents information on the latest state-of-the-practice in roadside safety and procedures to determine a recommended minimum clear zone on tangent sections of roadway with variable side slopes and adjustments for horizontal curvature; focus of this guide is on safety

		treatments that minimize the likelihood of serious injuries when a driver runs off the road
Cleaning	TxDOT Maintenance Management Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/mmt.pdf	Chapter 1 provides definitions and general requirements for routine, preventative, and major clean-up operations; Chapter 7 provides general procedures for emergency clean-up and haz-mat spills
	TxDOT Maintenance Operations Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ope.pdf	Chapter 5 Section 3 provides Emergency Spill Response guidelines for clean-up related to traffic incidents.
Surveying	TxDOT Survey Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/ess.pdf	Provides general reference for surveying procedures performed by and for the TxDOT; establishes minimum standards, policies, and procedures of surveying for TxDOT
	TxDOT ROW Manual, Books I and II: (reference in Book 3): http://www.dot.state.tx.us/services/general_services/manuals.htm	Referenced in CDA Book 3; various volumes of ROW Manual are available on TxDOT's Manuals website; however, no specific volumes relating directly to surveying were found
Hand Back Requirements for Highways	Comprehensive Development Agreement, TxDOT Statewide Open-Road Toll Collection System, Section 9: http://www.fhwa.dot.gov/ppp/toc.htm (one stipulation for warranty following handback)	Specific requirements for handback are defined in Book 2A Section 19.3 Handback Requirements; Table 19.3.4-1 provides Residual Life requirements including residual life at handback, useful life at handback, inspection requirements, and residual life methodology requirements. Book 2B Section 19.3 provides and overview of these handback requirements and a summary Table of Residual Life Requirements for handback.
Environmental Protection Standards/Legislation	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	Chapter 1 Section 2 presents information on the federal and state laws governing environmental considerations related to all projects that TxDOT has oversight responsibilities; information is organized by subject matter, with the authorities grouped under the following headings: - Comprehensive environmental laws, regulations and policies - Natural resources - Cultural/socio-economic resources - Air quality - Hazardous materials.
	ASTM E-1527 Standard Practice for Environmental Assessments, Phase 1 Environmental	Imposes specific educational, certification or licensing requirements, and relevant experience requirements, upon the person overseeing environmental assessment

	Assessment Practices (referenced in Book 3)	activities
	ASTM E-1528 Standard Practice for Environmental Assessments: Transaction Screen Process (referenced in Book 3)	Defines good commercial and customary practice for conducting an environmental site assessment of a parcel of commercial real estate with respect to the range of contaminants within the scope of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and petroleum products
Toll Collection	TxDOT Tolling Concept Guide: http://www.dot.state.tx.us/publications/tta/tolling_concept.pdf	Two-page flyer provides general information on TxDOT's tolling policy and initiatives.
	Texas House Bill 1340 Section 362: http://www.capitol.state.tx.us/tlo/78R/billtext/HB01340H.HTM	HB 1340 Section 362 provides interoperability legislation with respect to (toll) transponder technology used in (Texas).
	TxTag: http://www.txtag.org/	Provides integrated electronic tolling capability for all Texas toll roads; one tag to be used on all toll roads in the state.

Operational Standards

Road Availability (lane closures for maintenance)	2006 Texas MUTCD: http://www.dot.state.tx.us/trf/mutcd2006.htm	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 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 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-	Chapter 7 provides guidance for emergency response for disasters and national emergencies, the federal reimbursement programs, and oil/hazardous materials

	info/gsd/manuals/mmt.pdf	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

	TxDOT Environmental Manual: ftp://ftp.dot.state.tx.us/pub/txdot-info/gsd/manuals/env.pdf (TxDOT ENV Division)	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 (TxDOT ENV Division)	Manual details 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 (TxDOT ENV Division)	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	Section 4 describes roles and responsibilities related to air quality; manual details process for all related

	-info/gsd/manuals/env.pdf (TxDOT ENV Division)	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 which can be used when 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 the 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.

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.

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.

A.4 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

CHAPTER B: PLAN SPECIFIC INFORMATION

B.1 Roles and Responsibilities

B.1.1 Developer's Management Structure

In order to ensure the philosophies and methodologies detailed in this Project Development Plan are implemented, the Developer proposes to form an organizational structure comprising the following main sub-organizations:

- Management structure
- Public Information structure
- Financial structure
- Information Technology structure
- Design and Construction structure
- Operations and Maintenance structure
- Customer Service structure

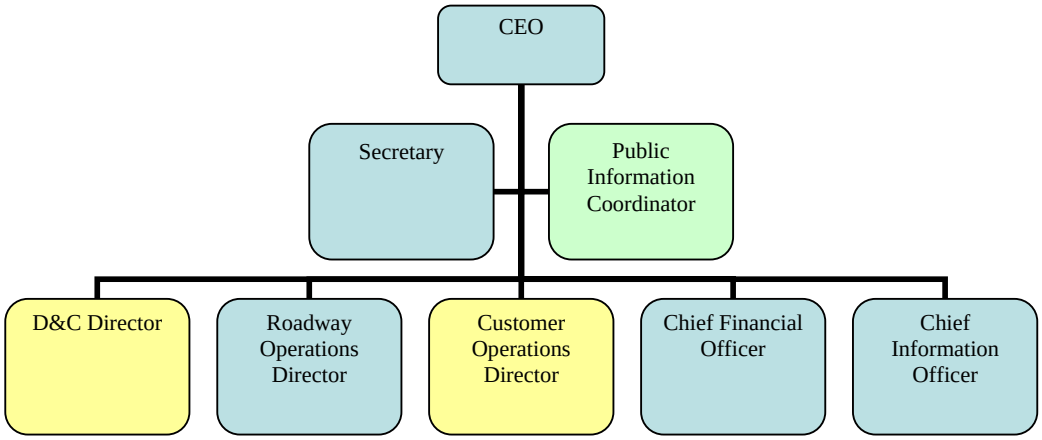


Figure 2 – Level 1 organization

The people with specific responsibilities in respect of the Environmental Management are the following:

Staff	Minimum Requirements	Roles/Responsibilities
Design and Construction (D&C) Director	10 years minimum experience in transportation design. 3 years minimum supervisory experience. Advanced degree and Chartered status preferred.	Responsible for quality and delivery of the initial construction period. Management of programmes, costs and client construction reporting. Development of capital road renewal design and construction team following initial construction phase.
Roadway Operations Director	10 years minimum experience in maintenance, operations, design and construction of major highways. 3 years supervisory experience, PE	Acts as quality control for Maintenance Engineer design work and oversees all new construction that occurs during the O and M phase (adding lanes), contracting, Highway operations control center and traffic analysis/planning. Coordinates with Construction, Design, CFO, NTTA and state, federal and local entities and authorities. Main point of contact for access to the corridor by any other entity (city,

		TxDOT, Utilities) Develops Audit Inspection Regime and completes the Asset Condition Score in accordance with the Project Specific CDA Section 22.4.
Customer Operations Director	10 years experience in customer service, 5 years in transportation industry, 3 years supervisory experience	Develops Complaint Resolution Procedure. Oversees call center for public, including toll related issues following 5 year NTTA involvement Monitors feedback and Continuous Improvement of Communication Plan.
Chief Financial Officer	10 years minimum experience in transportation. 3 years minimum supervisory experience. 5 years experience in accounting and finance. Advanced degree preferred	Responsible for financial and management reporting, accounting, records management, document control, procurement, contracting, cash flow analysis, accounting, toll management, Human Resources and Public Information. Develop program and project controls. Coordinates with Construction, Design, COO, NTTA and state, federal and local entities and authorities
Chief Information Officer	Minimum 5 years experience working in the transportation industry. 3 years minimum supervisory experience.	Communication strategies, operation systems and accurate and timely information flow to NTTA, Client and Public.

B.1.2 Design and Construction Team

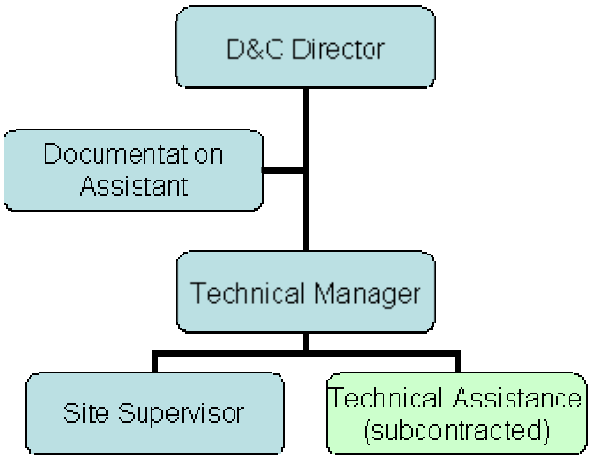


Figure 3 – Design & Construction Organization

Staff	Minimum Requirements	Roles / Responsibilities
Technical Manager	5 years minimum experience in transportation design. 3 years minimum supervisory experience. Advanced degree and Chartered status preferred.	Responsible for quality and delivery of the initial construction period, specification compliance and management of early operational input to design stage. Management of capital road renewal design and construction team following initial construction phase.
Site Supervisor	Minimum 5 years experience in traffic modeling. PE	Supervision of construction phase and quality management. Interface with maintenance team and handover strategy. Management of 'as built records.

B.1.3 Roadway Operations

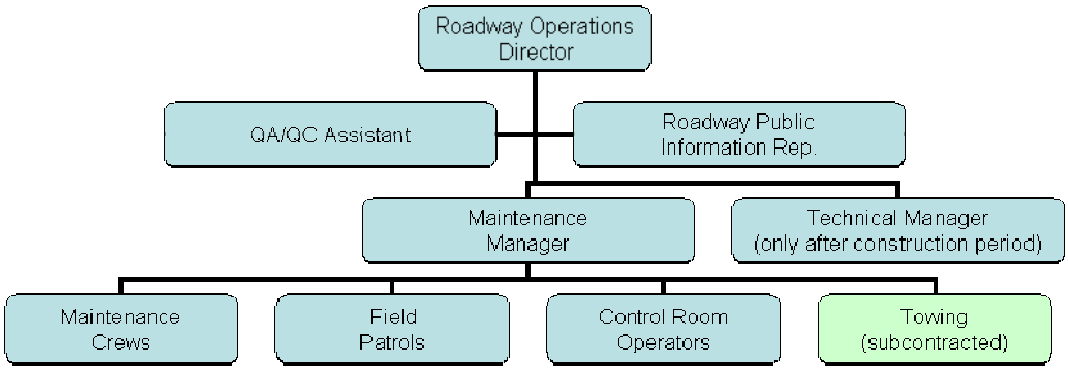


Figure 4 – Roadway Operation Organization

Staff	Minimum Requirements	Roles/Responsibilities
Maintenance Manager	10 years minimum experience with state DOT, toll authority, county or city maintenance programs, 5 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. Coordinate with all other managers on O and M team. Responsible for ensuring that all crew and patrol members are trained in environmental compliance, recognizing category defects, and appropriate procedures for emergency incident situations. Responsible for the development of all required plans, co coordinating where appropriate with local responsible entities
Field Patrols	Up to 3 years of experience	Roadway Patrol will be trained in identifying environmental compliance and Category 1 defects as a back up to regular inspection and in appropriate procedures for emergency incident situations.
Control Room Operators	5 years experience in call center work. 3 years supervisory experience. Event monitoring and Incident response.	Event monitoring and Incident response. Coordinates will all local emergency/ utility/ city/county/environmental entities. 24/7 operation.

B.1.4 Environmental Roles and Responsibilities

DEVELOPER will designate an Environmental Team (ET) through the Environmental Compliance Manager (ECM) to prevent, minimize, and / or correct any violation or non-compliance with Environmental Approvals. The ET will include the following personnel:

B.1.4.1 Environmental Compliance Manager (ECM)
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 Project Manager are unable to reach agreement over an issue, then the ECM will issue written notification of the concern to TxDOT and DEVELOPER including actions and recommended solutions to the problem.

The ECM will also:

- Direct the ET and report back on compliance of work to Environmental Standards. All violations will be immediately reported by the ECM to TxDOT and DEVELOPER.
- Coordinate, with TxDOT DEVELOPER and the appropriate Government Entities.
- 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.

B.1.4.2 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.

B.1.4.3 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.

B.1.4.4 Project Water Quality Specialist
The ECM will designate a Water Quality Specialist who will provide expertise in permitting delineation, stormwater pollution prevention, and the protection of jurisdictional waters during the course of the Work.

DEVELOPER will ensure that the Water Quality Specialist has at least 5 years experience on similar projects.

B.1.4.5 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 and 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 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.

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.

B.2 Comprehensive Environmental Protection Plan

B.2.1 Environmental Management Systems & 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 which 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

B.2.2 Environmental Assessment Process

All highway works go 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 consultation occurs in line with current regulations. The overall impact of works 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
- 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

B.2.3 Environmental Improvement Schemes

Environmental improvement schemes include any project which 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 which affect the network. The following outlines the generic aims of these improvement works and lists examples of those undertaken.

B.2.3.1 Air Quality and Dust Control

Air Quality improvement works include taking practical steps to minimize emissions and reduce airborne dust. Such works include appropriate highway designs to influence vehicle operation plus controls on the performance of contractors.

In order to ensure that the standard of air quality 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.

B.2.3.2 Ecology and Nature Conservation

These works are set to enhance nature conservation and diversity. This is achieved through sympathetic landscape design and management by adding variety to habitats including woodland and shrubs, species-diverse grassland and scrub mosaic. Biodiversity management has a direct impact on the resultant landscape and the two are often inseparable.

Other schemes are undertaken with consideration to the targets outlined in the National 'Biodiversity Action Plan'. These include such schemes as the creation of additional habitats for protected species, engineering projects aimed at reducing wildlife casualties and linking of isolated ecosystems. These works are undertaken in line with the network 'Biodiversity Management Strategy'

Where required ecological mitigation activities are conducted to minimize the impact of works upon the habitat and species of the soft estate.

B.2.3.3 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.

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

Landscape management is undertaken in line with the network 'Landscape Management Strategy'.

B.2.3.4 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 making use of noise reducing technologies such as the installation of noise reducing fences or earthworks or resurfacing with a thin wearing course to minimize the vibration and noise of the road surface. Noise levels of construction activities are also monitored to guarantee best practice is being undertaken and ensure compliance with relevant legislation and local standards.

B.2.3.5 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.

There are a range of engineering improvements which are undertaken to improve facilities for non-motorized user groups. These include amongst others, the provision of lighting within subways, enabling safer access across the highway for equestrians by increasing parapet height upon equestrian way over bridges and upgrading pedestrian footways to enable joint use by cyclists.

B.2.3.6 Water Environment and Drainage

Improvement schemes are put in place to identify and implement practical steps to manage the drainage of the network with the aim to minimize the impact of traffic and any maintenance operations on water courses, groundwater and flooding. These works are often undertaken in order to conform with any changes to national regulations and standards relating to the water environment and to 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. Improvement schemes address issues relating to water quality and discharge and include such works as the provision of pollution control devices, drainage system capacity improvements and increasing of the retention time to allow for treatment. In addition to this schemes are undertaken in the field of storm flow management which look into the problems associated with flash flooding.

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 but an ecological asset.

Operation of newly constructed wetlands,

Ground water level monitoring at selected locations, providing assurance through the RLM of a 10 year Residual Life for groundwater. Utilizing groundwater monitoring sensors at four locations.

B.2.3.7 Vehicle Travelers and Journey Ambience

Landscape management is undertaken to increase the visual amenity and variety of the highway soft estate in order to improve journey ambience to the road user. The aesthetic character of the soft estate is considered prior to any management works, along with the subsequent impact upon the road user of the works. In addition to general maintenance programmes, 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.

In addition to this civil engineering schemes have been implemented to improve conditions for vehicle travelers.

B.2.3.8 Geology and Soils

Protected geological areas or geomorphological features are managed in accordance with the guidance notes relating to their designation. Any enhancements of these areas are undertaken as part of Environmental Improvement Schemes and are conducted in association with the designating body.

B.2.3.9 Cultural Resource

In the assessment of any highway projects, consideration is given in the planning and resourcing to ensure there is an appropriate response to any adverse effects on the historic environment and that the historic fabric of the landscape is respected in line with any relevant legislation for example 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.

B.2.4 Environmental Maintenance Schemes

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.

B.2.4.1 Landscape and Townscape

There are a number of landscape maintenance commitments which are considered a requirement of running the network. These commitments are programmed annually and include grass cuts, to provide a clear 1 yard swathe immediately adjacent to the carriageway and visibility cuts, which ensure any signage or structure around the network is clear of vegetation.

The maintenance of existing habitats is undertaken as and when funds permit and follow generic landscape management techniques as outlined in the network ‘Landscape Management Strategy’. Examples of these works include thinning of woodland plots, removal of self set fast growing species, scrub management in areas of open grassland and removal of tree and shrub shelters. In addition to this, there are legal and contractual requirements to undertake maintenance works in compliance with the network ‘Tree Health and Safety Strategy’ and the ‘Noxious Weeds Strategy’. Details of these are summarized below.

B.2.4.2 Tree Management

The management of trees around the network is outlined within the ‘Tree Strategy’. All trees present on highway land along with those trees outside, but which are within falling distance of the highway, require inspection by a competent person. Tree inspections are carried out regularly and aim to safeguard the public and enable the maintenance of trees to be planned in a systematic manner. Whilst safety is the principal consideration, due respect is given to the value of trees for biodiversity, amenity, landscape and cultural significance, and for the sites in which they are growing. These issues are of particular relevance when implementing management to ensure that all works are compliant with legislation and that the value of the trees is not jeopardized.

B.2.4.3 Noxious and Invasive Weed Management

Noxious and invasive weeds are 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 hard or soft estate. Management and control of these weeds is compliant with any legal, contractual or other requirement and follow best practice guidelines.

B.2.4.4 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.

Biodiversity habitat works include 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'.

B.2.4.5 Water and Drainage

Drainage maintenance works are imperative to ensuring that the drainage system remains functional and thus preventing network flooding or pollution of adjacent water bodies. Examples of drainage maintenance works include dredging of infiltration ponds and associated ditches, clearance of interceptors and catch pits and cleaning and repairing of pollution control devices. In addition to this vegetation works are often 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 'Pollution Prevention Plan' 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.

B.2.4.6 Traffic Noise and Vibration

Any noise assets, including fences and earthworks are maintained to ensure they perform their intended function.

B.2.4.7 Waste and Hazardous Materials Management

An environmental commitment exists to provide sustainable management of the network, 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 and where this is not appropriate the recycling of waste. In addition to this the carbon footprint of activities is assessed and where possible offsite 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.

B.2.5 Pollution Response Plan

B.2.5.1 Introduction and Purpose

The objective of the Pollution Response Plan is to provide a functional and reliable source of information in case of spillage on the carriageway 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 SH121 Toll Road, in partnership with Fire, Rescue and Environmental Agencies. Storm water pollution prevention plans will be fully developed in accordance with NPDES 1990, Strom Water Pollution Prevention Plans, CWA of 1972

Examples of plans detailing catchment roadway areas for each drainage infrastructure, outfall points, control devices, pollution control operation, maintenance details and emergency contact information is

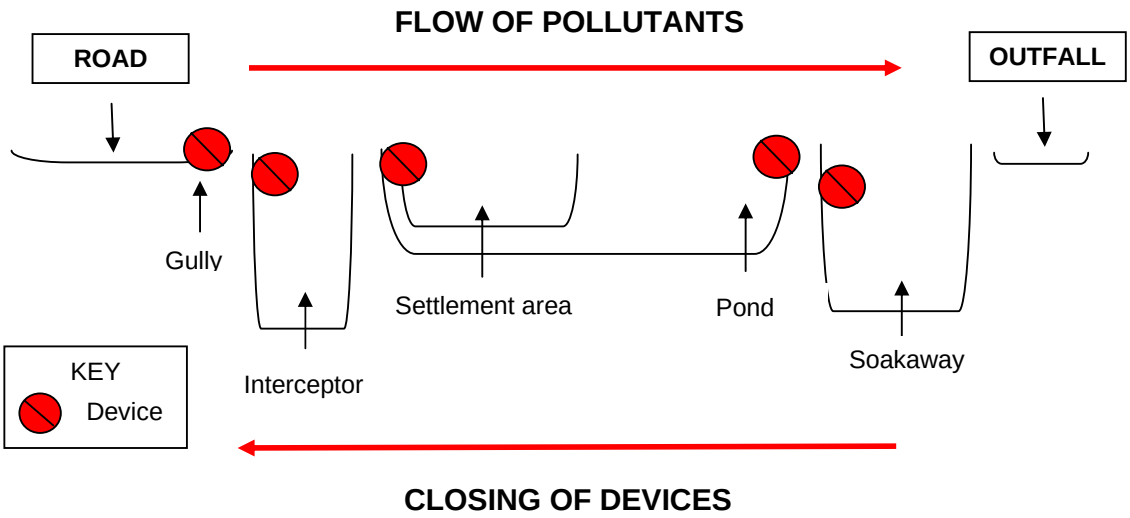
shown at Appendix 3. SH121 inventory and local information will allow us to develop these plans within the first 3 months of the concession, updating this document in partnership with the emergency services as the construction phase introduces changes to the infrastructure and maintainable inventory.

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.

B.2.5.2 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.



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.

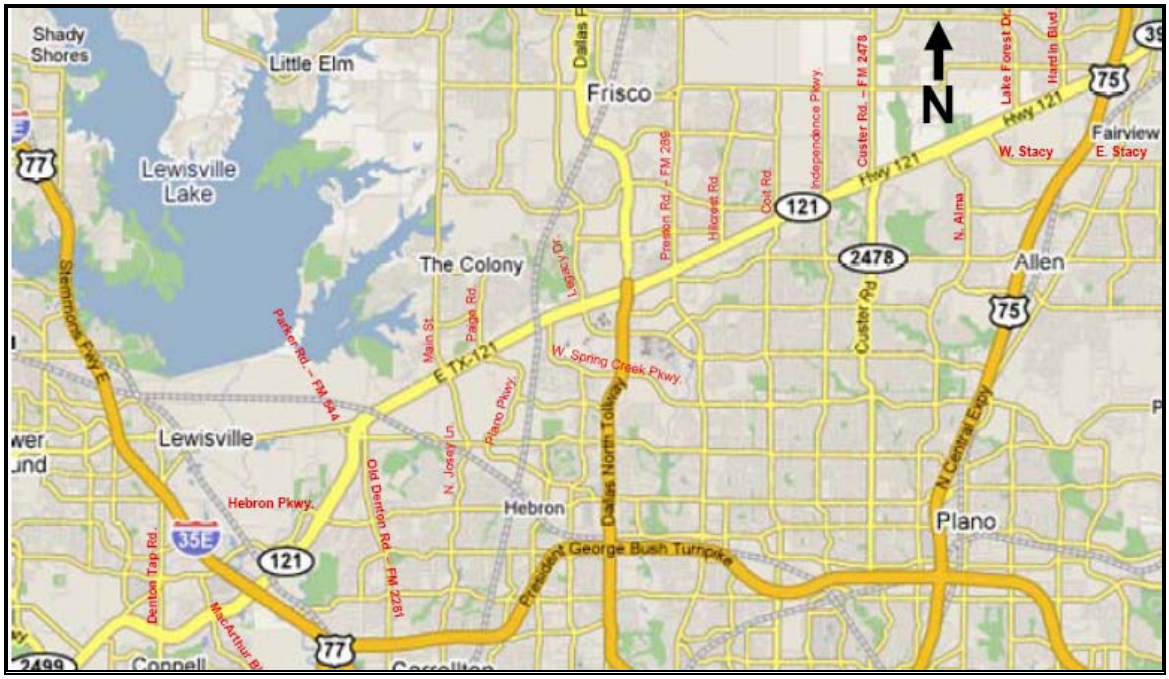
PHASE TWO – Cleaning and Reopening

- 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.

APPENDICES: ROAD SPECIFIC APPENDICES

APPENDIX 1

Extent of Network



State Highway 121 (SH 121) is situated in North Central Texas. It is Collin County's principal route to the Dallas-Fort Worth International Airport, as well as an essential east-west link between US 75 in McKinney and Denton County.

The Texas Department of Transportation (TxDOT) has issued a Request for Proposals to develop, design, construct, finance, operate and maintain the SH-121 Toll Road Project through a comprehensive development agreement (Concession Agreement).

The major construction activity will take place in Collin County (Segments 3 and 4). In this section of SH 121 the Developer will improve the existing SH 121 by constructing 3 + 3 main lanes between the 3 + 3 frontage roads that are currently under construction in both sides. This will affect the last 9 miles of SH 121 from Hillcrest intersection up to the interchange with US 75.

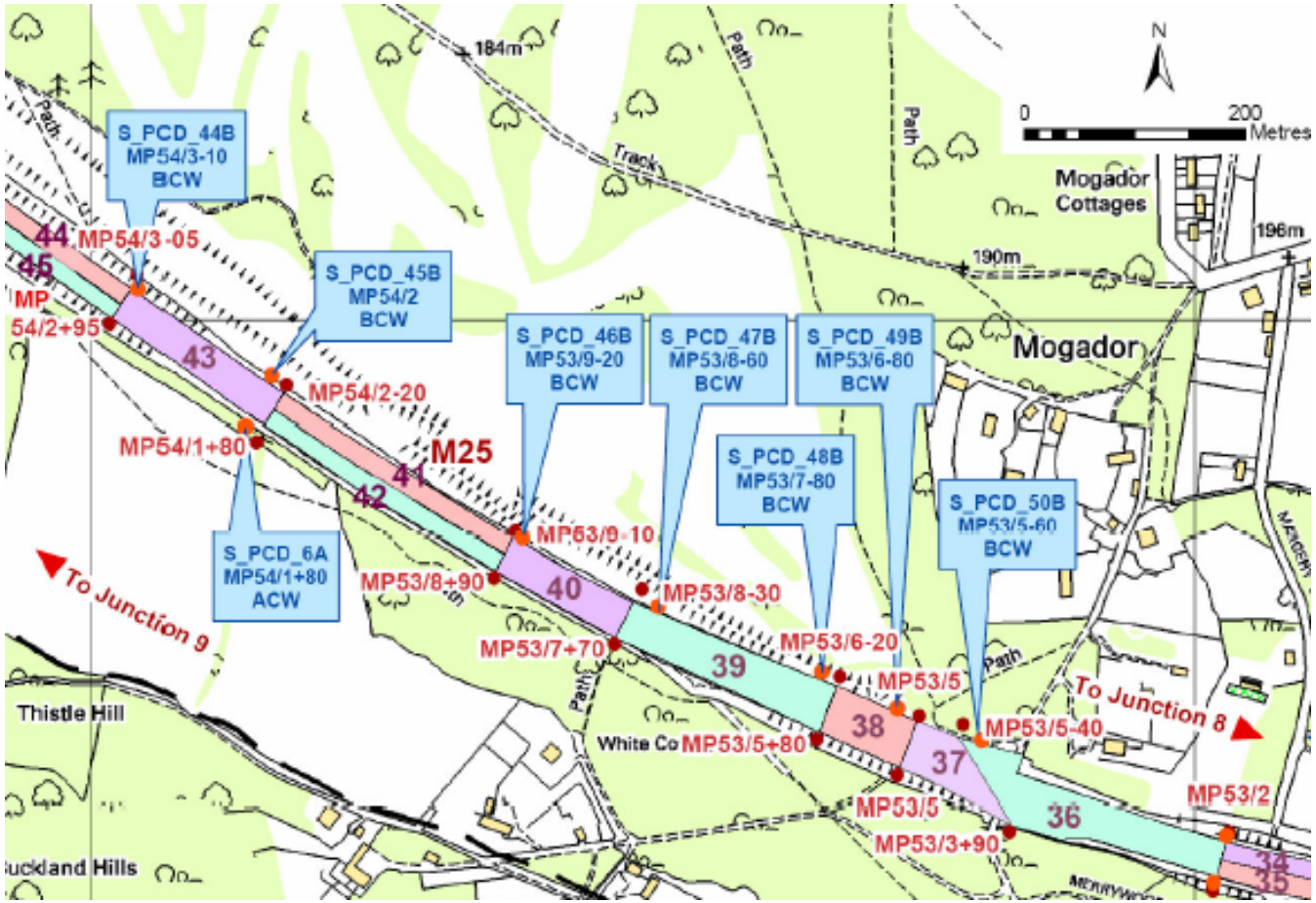
There are 7 interchanges along this section: Colt Road, Independence Parkway, FM2478 - Custer Road (Currently under construction), Alma Drive, Stacey Road, Lake Forest Drive and Watters Road. All of them have the same typology with the main lanes crossing over the secondary roads.

The second main construction site will be locate at the SH 121/US 75 five-level interchange (Segment 5). This new fully directional interchange will replace the existing one, which dates back to 1959. A careful study of the traffic detours and phasing will be necessary to demolish the existing structure, construct the new ones while maintaining the traffic flow.

The Developer will also have the obligation to provide finance, design and construct certain additional improvements, along each of the relevant sections, as well as the maintenance and renewal activities for the entire project.

APPENDIX 2

Performance and Measurement as TxDOT Attachment 11

APPENDIX 3 –

Sample Plans Detailing Outfall and Pollution Control Device Operation