Reliance
Industries Limited

Reliance Corporate Park, Building No. 7, 2nd Floor, A Wing, Thane Belapur Road, Ghansoli
Navi Mumbai – 400 710, India. Tel : +91-22-4477 0000

Dated: Jan.25, 2012

To,
The Secretary,
Petroleum and Natural Gas Regulatory Board,
1st Floor, World Trade Center, Babar Road,
New Delhi – 110001

Sub: Submission of details of Petroleum Product Dedicated pipeline.

Respected Sir,

We are in the process of expanding our manufacturing facilities at Hazira and Dahej. For meeting the incremental logistics demand we plan to transfer Paraxylene (PX) between our manufacturing facilities at Hazira and Dahej through dedicated petroleum product pipeline for captive consumption.

The relevant details and documents pertaining to the dedicated pipeline are enclosed for your kind perusal.

This is for your information and records in compliance with section 19 (2) of "Petroleum and Natural Gas Regulatory Board (Authorizing Entities to Lay, Build, Operate or Expand Petroleum and Petroleum Products Pipelines) Regulations, 2010"

Thanking you,

Yours sincerely,

For and on behalf of Reliance Industries Limited

Krishan Gopal Gulhar

Authorised Signatory.

Encl.

1. Annexure 1 – Details of Hazira - Dahej Product Pipeline
2. Annexure 2 – Hazira - Dahej Product Pipeline Project Report

Cc – **The Director** (Sh.P K Singh),
Ministry of Petroleum and Natural Gas,
Government of India, Shastri Bhavan, New Delhi –110001

19/c

Annexure 1

Details of Hazira - Dahej Product Pipeline:

Details of Hazira – Dahej Product Pipeline			
S. No.	**Description**	**UoM**	**PX Pipeline**
1	**Pumping /Dispatch Stations**		
	For forward flow		At HMD
	For reverse flow		At DMD
2	**Delivery / Receipt Stations**		
	For forward flow		At DMD
	For reverse flow		At HMD
3	Length	km	~ 106
4	Design Pressure (MAOP)	bar(g)	60
5	Pipeline Size (NPS)	Inch	10
6	Pipeline Design Codes		ASME B31.4, OISD #141, OISD # 138
7	**Flow Rates**		
	Forward Flow	TPD	4500
	Reverse Flow	TPD	4500
8	Sp. Gravity		0.840

Annexure - 2 (18/C)

Reliance
Industries Limited

Hazira-Dahej Product Pipeline

(For transporting Paraxylene)

Project Report

HDP000-Z10-J00-001

REV	DATE	DESCRIPTION	ORIG	REVIEW	APPROVAL
1A	25.11.2011	Issued for Review	SR	KG/SJ	NSV
00	09.12.2011	Issued for Use	DM	KG/SJ	NSV
01	25.01.2012	Issued for Use	DM	KG/SJ	NSV

CONTENTS

Appendices

1. INTRODUCTION

Reliance Industries Limited (RIL) is expanding its manufacturing facilities at Hazira and Dahej and for this purpose it needs to transfer Paraxylene (PX) from its manufacturing facilities at Hazira Manufacturing Division (HMD) to Dahej Manufacturing Division (DMD) through captive cross-country pipeline. To meet this requirement it is proposed to install dedicated pipeline, approximately 106 Km long, between HMD and DMD. The proposed pipeline shall be bi-directional and shall be provided with pumping station and receipt facilities at HMD and DMD. (Refer Annexure-III for schematic arrangement of the pipeline system)

The flow rate of PX shall be 4500 TPD (Tonnes per Day). Based on preliminary studies, a 10 inch diameter pipeline between HMD and DMD shall be provided for this purpose.

The proposed cross country pipeline system is in the public interest and national interest at large, as transportation of the above product through underground pipeline has several distinct advantages compared to other options of transportation namely by road or rail. Some of the significant advantages of transportation through pipeline are as under:

a. It eliminates additional traffic burden of plying approximately 500 road tankers (for transporting 4500 TPD of PX) every day on the already burdened road infrastructure thereby making it available for other purposes.

b. It eliminates the pollution that otherwise would have been caused by emissions from approximately 500 road tankers every day, thereby preserving the environment.

c. It saves substantial amount of liquid fuel which otherwise would have been consumed in transportation of this product through rail /road infrastructure, thereby avoiding forex outgo on this account since the crude and liquid fuels are mostly imported.

d. It ensures uninterrupted supply of raw materials to the manufacturing plants during interruptions in the transportation network because of bad weather, storm, floods and other natural reasons and thus ensuring uninterrupted economic activity for growth of national GDP.

e. It avoids environmental and other hazards to the general public associated with transportation of inflammable liquid by road tankers which otherwise would have been deployed.

2. SCOPE

This report covers the following details of the proposed Hazira-Dahej Product Pipeline project:

- Project description, facilities and design parameters
- Pipeline RoU and route

- Project implementation methodology
- Project schedule

3. PROJECT DESCRIPTION, FACILITIES AND DESIGN PARAMETERS

Based on the volumes of product transfer, RIL have undertaken preliminary hydraulics study considering the battery limit conditions. The pipeline diameter as calculated based on these studies is 10". The facilities and their salient details are as follows:

Salient details of Hazira – Dahej Product Pipeline			
S. No.	**Description**	**UoM**	**PX Pipeline**
1	**Pumping /Dispatch Stations**		
	For forward flow		At HMD
	For reverse flow		At DMD
2	**Delivery / Receipt Stations**		
	For forward flow		At DMD
	For reverse flow		At HMD
3	Length	km	~ 106
4	Design Pressure (MAOP)	bar(g)	60
5	Pipeline Size (NPS)	Inch	10
6	Pipeline Design Codes		ASME B31.4, OISD #141, OISD # 138
7	**Flow Rates**		
	Forward Flow	TPD	4500
	Reverse Flow	TPD	4500
8	Sp. Gravity		0.840

The latest editions of referred codes will be used for designing the pipeline. Pipeline is proposed to be coated with 3-layer polyethylene coating against external corrosion. Additionally an impressed current permanent cathodic protection system will also be provided. Remotely operated mainline valves will be provided in accordance with the design code requirements for the purposes of isolation of the pipeline sections during emergency or maintenance.

Minimum depth of burial of the pipeline will be 1 meter all along the route. This depth will be increased keeping in view the sensitivity of the location and code provisions.

The pipeline at major water crossings will be installed by using the Horizontal Directional Drilling (HDD) method. Pipeline will be laid below the predicted scour profile of the river bed.

In order to protect the internal surface of the pipeline against the internal corrosion, corrosion inhibitor dosing at the originating station is proposed. Further, to monitor the health of the pipeline a corrosion monitoring system shall be installed.

3.1 Pipeline Terminal Facilities

There shall be Pipeline Terminals at HMD as well as at DMD to facilitate product transfer. The terminals shall function as Dispatch cum Receipt Station at HMD and DMD.

a) Dispatch cum Receipt Station at HMD and DMD shall consist of the following facilities (Refer Annexure III for schematic details):

- Scraper Trap
- Booster Pumps (N+1)
- Filters (1W+1S)
- Metering (N+1)
- Mainline Pump (N+1)
- Sump tank
- Corrosion Protection equipment
- Associated piping and instrumentation
- Control Room building for housing Unit control panels (UCP's) of pumps, Electrical / Instrumentation panels, Cathodic Protection (CP) Panel, SCADA & Telecom equipment, VSAT facility, HVAC system, AC UPS with ACDB and Space for operating station.
- Electrical Substation and soft starters
- Utilities such as Water (service, potable and fire water), Plant/Instrument air, Electrical power (normal and UPS)
- Storm water disposal, sanitary waste disposal etc.
- Access road, fence, gates and security guard room etc.
- Fire and Gas Detection, Fire Fighting System, Fire Suppression facilities

Requisite utilities shall be made available from the existing plants at HMD and DMD.

3.2 Supervisory Control and Data Acquisition System and Communication

The Control Center shall be located at both the terminals. Mainline Block Valves along the route of pipeline will be remotely operated through the SCADA system. Pipeline Application Software (PAS) will be installed for the pipeline to monitor key flow parameters and for leak detection.

3.3 Pigging Facilities

Pipeline shall be designed with pigging facilities. For this purpose, pig launching and receiving facilities will be provided for the pipeline at each of the terminals.

3.4 Corrosion Protection

Both active and passive corrosion protection systems shall be provided to prevent external corrosion of the pipeline. The system will comprise of a high integrity three–layer polyethylene coating system. This will be supplemented by impressed current permanent cathodic protection system. Insulating joints will be provided at the underground and above ground transition of the pipeline for electrical isolation.

4. PIPELINE ROU AND ROUTE

4.1 General

The proposed pipeline will originate from RIL HMD at Hazira and terminate at RIL DMD at Dahej. The pipeline traverses through Surat and Bharuch districts in the state of Gujarat.

4.2 Pipeline Right of Use (ROU)

The RoU of existing pipelines between Hazira and Dahej will be utilized to the maximum extent possible in order to minimize acquisition of additional RoU. Approximately 10.3 Km of RoU will be shared with existing EWPL pipeline (RGTIL's Hazira and Ankot spur pipelines) and approximately 74 Km of RoU will also be shared with existing HDPL pipeline. However new ROU of 20 meter width would be acquired under the provisions of The Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) act, 1962; from respective land owners for total 4.5 Km approximately. Of this new RoU, about 1.9 Km new RoU is required in the proximity of Narmada river and about 2.6 Km new RoU is required after the exit point of RIL HMD. The lands under RoU will be restored to near original condition after completion of construction of the pipeline. Separate approvals from concerned authorities will be obtained for laying the pipeline within government land. Permission will also be obtained from various authorities having jurisdiction for the purposes of crossing of the pipeline.

4.3 Pipeline Route

- The total length of the Pipeline is approximately 106 Km each. (Refer Annexure-I for route map and Annexure-II for salient route details)

- The pipeline has been routed carefully to minimize traverse in forest land.

a) Main Route

Proposed route for the total length of approximately 106 Km originates from terminal located in RIL HMD and proceeds in west direction for a length of 2.0 Km within RIL HMD limit. Further it traverses in north direction for a length of 2.6 Km in RoU of Road to reach Dhamka M&R of EWPL pipeline. Here onwards it traverses in North-East direction for a length of 10 Km in existing RoU of Hazira spur line of EWPL. Further it traverses in North direction within existing RoU of Hazira-Dahej (HDPL-26"&24"dia Rich/Lean Gas) Pipelines route up to Narmada river crossing for a length of 53.30 Km. Prior to crossing Narmada river route requires independent new RoU for the length of 1.9 Km due to space constraint between GSPL & existing HDPL Pipelines. After crossing Narmada river, route passes through CS-10 of EWPL for a length of 0.5 Km. After that it follows RoU of Ankot spur of EWPL for a length of 0.3 Km to reach Existing HDPL RoU. After that, route traverses in West direction up to entry point of Dahej SEZ area in the same HDPL RoU for a length of 20.50 Km. Thus total length in HDPL RoU shared is 73.8 Km. After entering in Dahej SEZ area, it follows SEZ corridor in north south direction for the length of 1.20 Km (east compound wall of OPAL) and then it traverses in west direction for a length of 10.60 Km (south of OPAL and RIL DMD and village Ambheta); then it traverses in north direction to reach RIL DMD. Thus total length of SEZ corridor is approximately 14.0 Km in proposed route.

b) Alternate Route

Envisaging the difficulty of routing the pipeline in view of availability/feasibility/constructability in the SEZ corridor, an alternate route is also proposed for this SEZ corridor as follows.

From SEZ entry point it follows SEZ corridor for a length of 4.50 Km (north of OPAL). After that it follows GIDC corridor for a length of 1.50 Km (south of GACL). Thereafter it follows RIL DMD's north compound wall (within RIL DMD premises) for a length of 3.20 Km. With this alternate route, the total length of the pipeline route becomes approximately 102 Km.

5. IMPLEMENTATION METHODOLOGY

The project implementation methodology is described broadly under the following main activities:

- Surveys and investigations
- Statutory approvals and clearances
- Design and engineering
- Procurement of materials
- Construction and commissioning

All the activities will be planned in a manner so as to achieve the overall completion target of the project.

5.1 Surveys and Investigations

The desk top pipeline route study has been carried out. Required cadastral data will be collected through survey. Detailed route survey, including additional surveys and investigations required for the design of crossing river, road and railway etc., will be undertaken prior to commencement of detail design considering the overall constructability, geo hazards and environmental requirements.

5.2 Consent for Establishment under Air and Water Acts

Company will apply to Gujarat Pollution Control Board (GPCB) and obtain Consent for Establishment under Air (Prevention and Control of Pollution) Act,1981 and Water (Prevention and Control of pollution) Act, 1974.

5.3 Acquisition of New ROU

New ROU of 20 meter width would be acquired under the provisions of The Petroleum and Minerals Pipelines (Acquisition of Right of User in Land) act, 1962; from respective land owners for total 4.5 Km approximately. Of this new RoU, 1.9 Km new RoU is required in the proximity of Narmada river and 2.6 Km new RoU is required after the exit point of RIL HMD. The RoU will be restored to near original condition after completion of construction of the Pipeline. Separate approval will be obtained for RoU under Government land.

5.4 Statutory Clearances and Approvals

The Company will apply to relevant authorities for the statutory clearances and approvals that are required in order to implement the Project. Such authorities include the ones concerned with grant of approvals in respect of crossings of railway tracks, roads and highways, canals, rivers, power lines, cables and the like as applicable.

5.5 Design and Engineering

The design and engineering of the Project will be entrusted to experienced engineering consultant. The design of the pipeline and related facilities will comply with the requirements of the applicable Indian and international codes and standards, and the requirements and conditions of applicable authorities and government agencies.

5.6 Procurement of Materials

The specifications and QA/QC requirements of materials will be finalized during the design and engineering stage and will comply with project requirements and any conditions imposed under statutory approvals and clearances. The critical long delivery items will be procured directly by the Company while the other non-critical items may be retained in the construction contractor's scope of works. The critical long delivery items identified at this stage include the following:

- Line Pipe and its corrosion protection coating
- Scraper launchers and receivers

- Metering and Regulating skids
- Filters
- Booster Pumps
- Mainline Pumps
- Hot Bends
- Valves
- SCADA and telecom equipments

All materials will be procured from reputed and authorized manufacturers, and will be subjected to third party inspection and QA/QC during various stages of manufacturing and testing.

5.7 Construction and Commissioning

Pipeline will be constructed as per PNGRB guidelines, ASME B 31.4 and OISD 141 / 138. The pipeline will be buried with a minimum depth of 1 m below the natural ground level. Such cover will be increased at certain places, in particular at railways, highways, foreign pipeline, canals and river crossings, to provide a higher safety factor to the pipeline in accordance with the provisions of the design codes and the requirements of the authorities having jurisdiction over such facilities. Typical minimum cover to be adopted for the different locations will be as follows:

Sl No	Location	Min. Cover (m)
1	Industrial, commercial & residential areas	1.2
2	Minor water crossings / canals	1.5
3	Rocky areas	1.0
4	Uncased / cased road crossings	1.2
5	Rail crossings	1.7
6	River crossings	Below scour profile

Adequate measures will be taken to avoid inconvenience to public, and ensure minimum cutting of trees during construction of the pipeline. Water used for hydrostatic testing will be properly treated and disposed off in such a manner that no damage is caused to the public and environment.

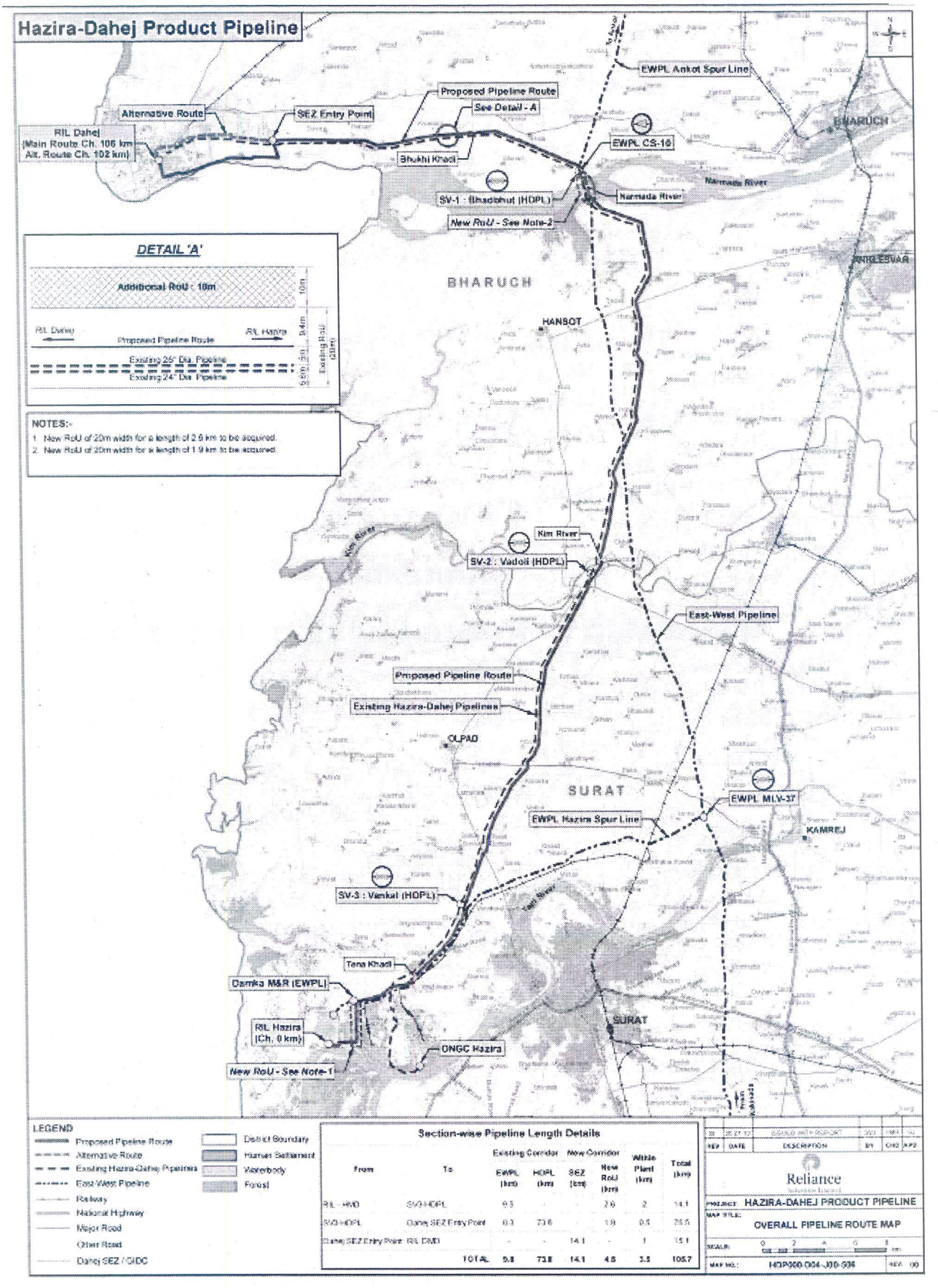
The construction and commissioning of the pipeline and related facilities will be entrusted to qualified contractor. Contractor will be required to comply strictly with applicable statutory requirements concerning safety and environment.

6. PROJECT SCHEDULE

It is anticipated that the Project will be ready for commercial operations within 32 months from the date of commencement.

Annexure–I

Route Map of Hazira-Dahej Product Pipeline


Hazira-Dahej Product Pipeline
EWPL Ankot Spur Line
Proposed Pipeline Route
See Detail - A
Alternative Route
SEZ Entry Point
RIL Dahej
(Main Route Ch. 106 km
Alt. Route Ch. 102 km)
Bhukhi Khadi
EWPL CS-16
BHARUCH
Narmada River
SV-1 : Bhadbhut (HDPL)
New RoU - See Note-2
DETAIL 'A'
Additional RoU : 10m
RIL Dahej
Proposed Pipeline Route
RIL Hazira
Existing 26" Dia. Pipeline
Existing 24" Dia. Pipeline
NOTES:-
1. New RoU of 20m width for a length of 2.6 km to be acquired.
2. New RoU of 20m width for a length of 1.9 km to be acquired.
BHARUCH
HANSOT
NANDESARI
Kim River
SV-2 : Vadoli (HDPL)
East-West Pipeline
Proposed Pipeline Route
Existing Hazira-Dahej Pipelines
OLPAD
SURAT
EWPL MLV-37
EWPL Hazira Spur Line
KAMREJ
SV-3 : Vankal (HDPL)
Tena Khadi
Damka M&R (EWPL)
RIL Hazira
(Ch. 0 km)
ONGC Hazira
New RoU - See Note-1
SURAT
LEGEND
Proposed Pipeline Route
Alternative Route
Existing Hazira-Dahej Pipelines
East West Pipeline
Railway
National Highway
Major Road
Other Road
Dahej SEZ / GIDC
District Boundary
Human Settlement
Waterbody
Forest
Section-wise Pipeline Length Details
From
To
Existing Corridor
EWPL (km)
HDPL (km)
New Corridor
SEZ (km)
New RoU (km)
Within Plant (km)
Total (km)
RIL - HVD
SVD-HDPL
SVD-HDPL
Dahej SEZ Entry Point
Dahej SEZ Entry Point
RIL DMD
TOTAL
5.8
73.8
14.1
4.5
3.5
105.7
Reliance
PROJECT: HAZIRA-DAHEJ PRODUCT PIPELINE
MAP TITLE:
OVERALL PIPELINE ROUTE MAP
MAP NO.:
HDP000-G04-J00-036

Annexure–II

SALIENT FEATURES OF PIPELINE ROUTE

(Preliminary)

SALIENT PIPELINE ROUTE FEATURES		
A	Length (Km)	106.0
B	Terrain (Km)	
i	Flat	105.0
Ii	Slightly Undulating	1.0
	Total	106.0
C	Land Use (Km)	
i	Cultivable land	83.7
ii	Barren land	4.0
iii	RoU with in SEZ/GIDC	14.0
iv	RoU Within Industries	3.6
v	Protected/Social Forest	0.7
vi	Total	106.0
D	Major Crossings (Nos)	
I	National Highway	1
ii	State Highway	5
iii	Other Roads	45
iv	B. G. Railway (Proposed)	1
v	Major Rivers	4
vi	Channel/Nala/Drain	39
vii	Canal/Minors/Distributory	45
vii	Total	140
E	Special Crossings (Nos)	
I	NH-6 in Front of RIL HMD (HDD)	1
Ii	Coastal Route Dahej/Hazira & Narmada/Bhukhi River CRZ (HDD)	5
	Total	6
F	Revenue Details(Nos)	
i	District	2
ii	Taluka(Tehsil)	6
iii	Villages	46

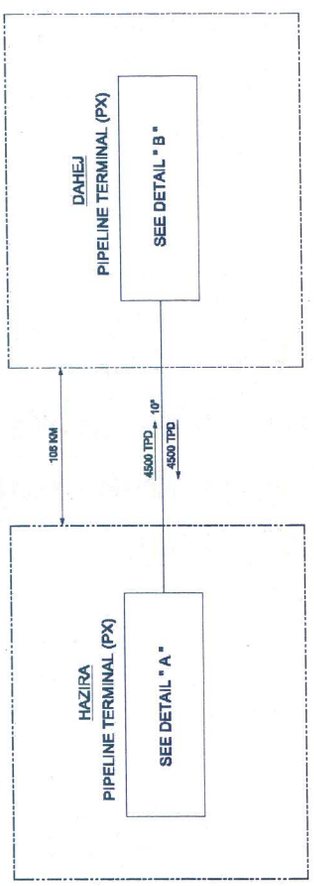
4/c

Annexure–III

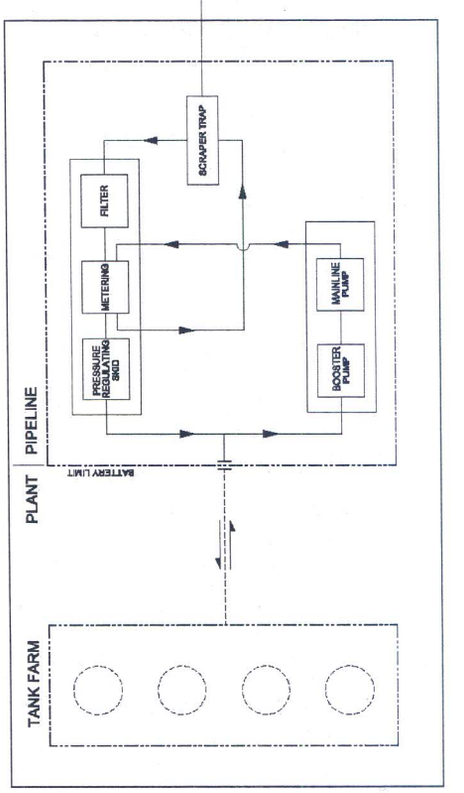
Schematic arrangement for transfer of Paraxylene between Hazira Manufacturing Division and Dahej Manufacturing Division

ANNEXURE - III

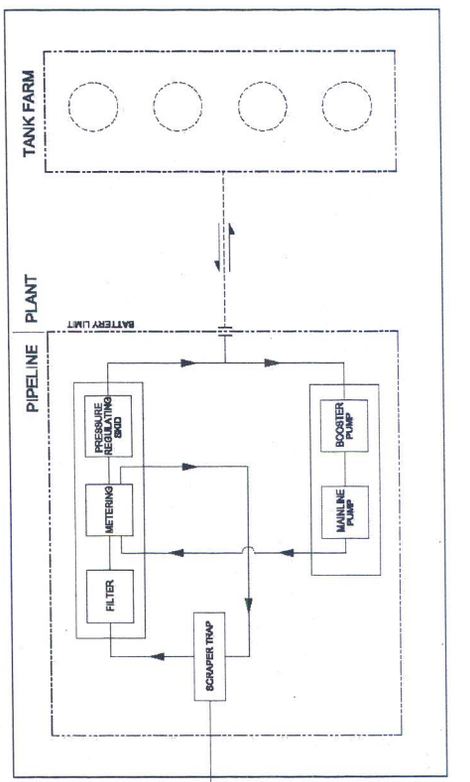
SCHEMATIC ARRANGEMENT FOR TRANSFER OF PARAXYLENE
BETWEEN HMD AND DMD



DETAIL " A "
TYPICAL ARRANGEMENT



DETAIL " B "
TYPICAL ARRANGEMENT



——— BY PIPELINE GROUP
- - - - - - BY DMD PROJECT GROUP