

DOCK, HARBOUR & AIRPORT ENGINEERING

CHAP – 1 “INTRODUCTION”

INTRODUCTION

- **Water Transportation** is concerned with conveyance of people and goods in vehicles that float upon water.
- **Waterways** have great historic importance in the development of civilizations and in the growth of nations.
- Rivers and seas provided primitive man with his first facility for **mass transportation of goods**.
- Waterways can be classified broadly as *Oceanic waterways* and *inland waterways*.

- ***Oceanic waterways*** are concerned with the conveyance of people and goods primarily across the ocean between continents or island.
- ***Inland waterways*** consist of water transportation on rivers, lakes and canals within the main land.
- River transportation became popular in **India since 1855**.
- The total perennial waterways in India are **65,600 km** out of which **41,600 km** are of rivers and **24,000 km** canals.



ADVANTAGES OF WATER TRANSPORTATION

- **Around the world 82%** of International trade in tons and **94% of world trade** in tons-kilometers are moved by shipping and thereby through ports.
- Specific function, objectives and the advantages derived from water transportations facilities are summarized below:
 - ❑ Easiest and cheapest mode of communication by utilization of natural surfaces of canals, rivers and oceans, as the element of friction during traction and maintenance are less than road transport.
 - ❑ Require cheap manual, wind and steam motive power.
 - ❑ Higher load carrying capacity **for bulky and heavy commodities.**
 - ❑ Development of industry.
 - ❑ Development of **commerce and expansion of trades.**

- ❑ Development of **agriculture**.
- ❑ Development of **natural resources and their effective use**.
- ❑ Discovery of **new island is possible**.
- ❑ Development of **economic progress and international contact**.
- ❑ Provide **enhanced mobility** and **promotes social and political unity**.
- ❑ Assistance in the problem of national defense.

DISADVANTAGES OF WATER TRANSPORTATION

- ❑ It requires **more time** due to slow speed and circuitous routes. Final docking stages require greater skill.
- ❑ Mountainous rivers and waterfalls hinder water transportation. **Require better position fixing and obstruction** detecting systems to avoid surface collision.
- ❑ Frequent storms results in great **loss of life and material**.
- ❑ **Rapid growth** in demand which is more than the **capacity of existing facilities**.
- ❑ **Vessels** oil spillage, noise smoke and fumes cause **pollution and endanger marine lives**.
- ❑ Uncertainty problem, **like energy shortage problem** due to political and natural causes.
- ❑ **Energy conservation** concern because of energy problem of transportation development.

MODERN TRENDS IN WATER TRANSPORTATION

- Integration of transportation system and the environment.
- Application of system analysis.
- Optimization using operations research techniques.
- Computer application for data processing and analysis.
- Minimization of energy use.
- Increased utilization and efficiency of existing facilities.
- Compatibility between water transportation and other modes through the use of innovative equipments.

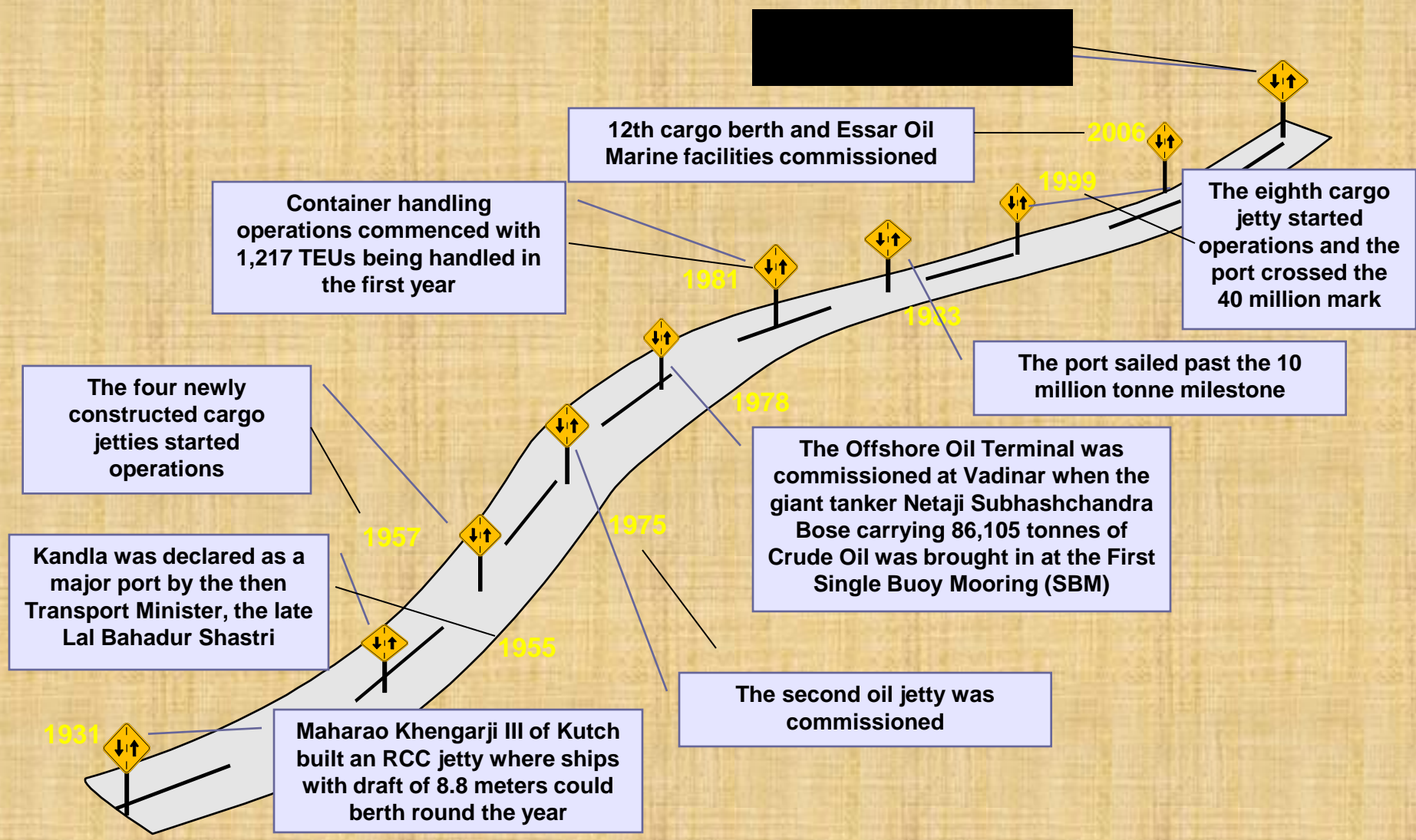
ENVIRONMENTAL IMPACT SYSTEM (EIS)

1. Determine Existing Conditions
2. Predict Future Effects
3. Consider Alternatives
4. Present Resource Commitments
5. Identify Environmental Monitoring Processes to be used if action is implemented.

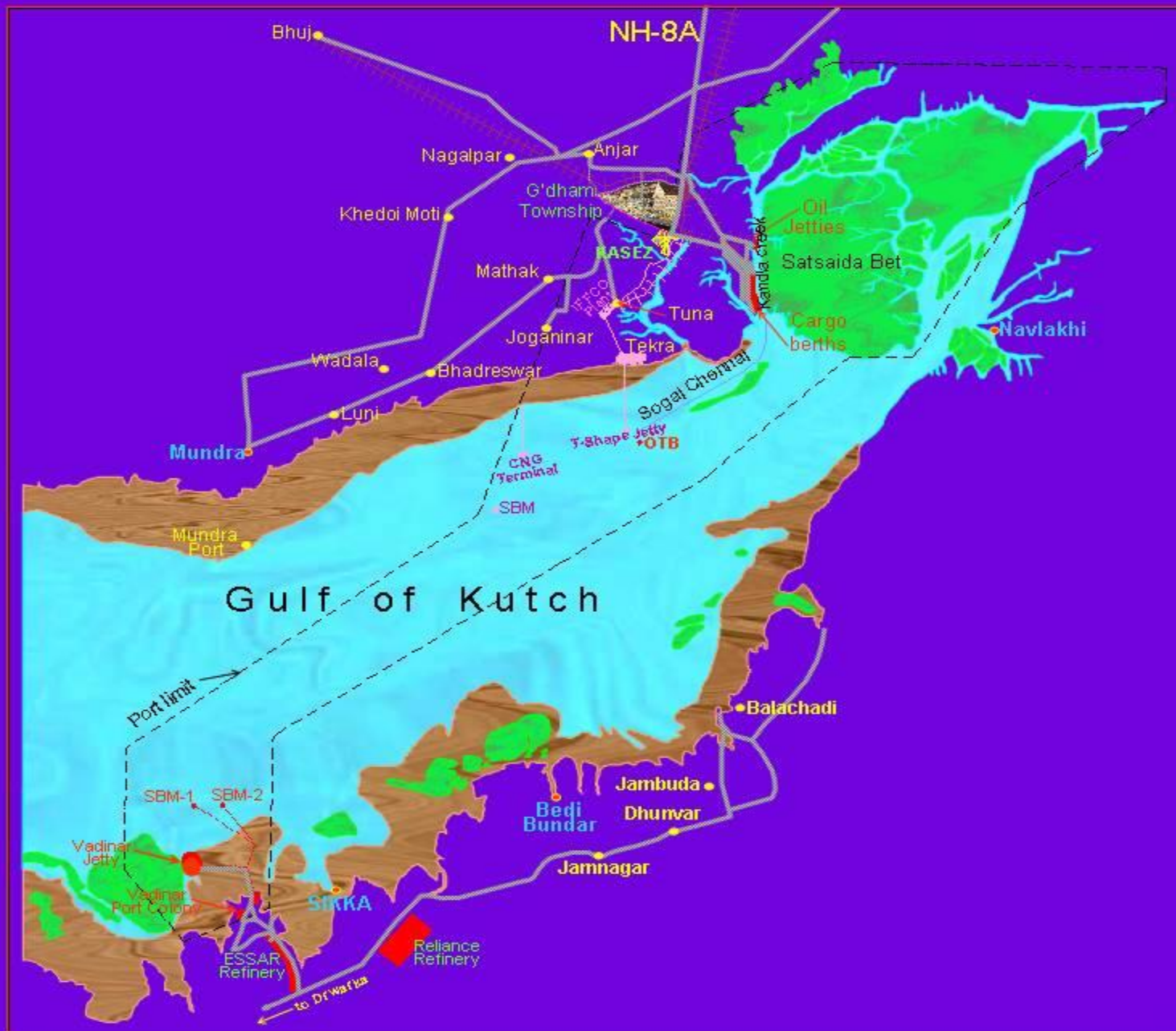
PORT AUTHORITIES, BODIES AND ASSOCIATIONS

- ❖ National Association of port Authorities
- ❖ National Coast Guard
- ❖ National Bureau of Customs
- ❖ Immigration and Naturalization Service
- ❖ National maritime Administration
- ❖ The Bureau of Foreign Commerce
- ❖ Interstate Commerce Commission
- ❖ Department of Agriculture
- ❖ Quarantine
- ❖ Security Associations
- ❖ Waterfront Commissions

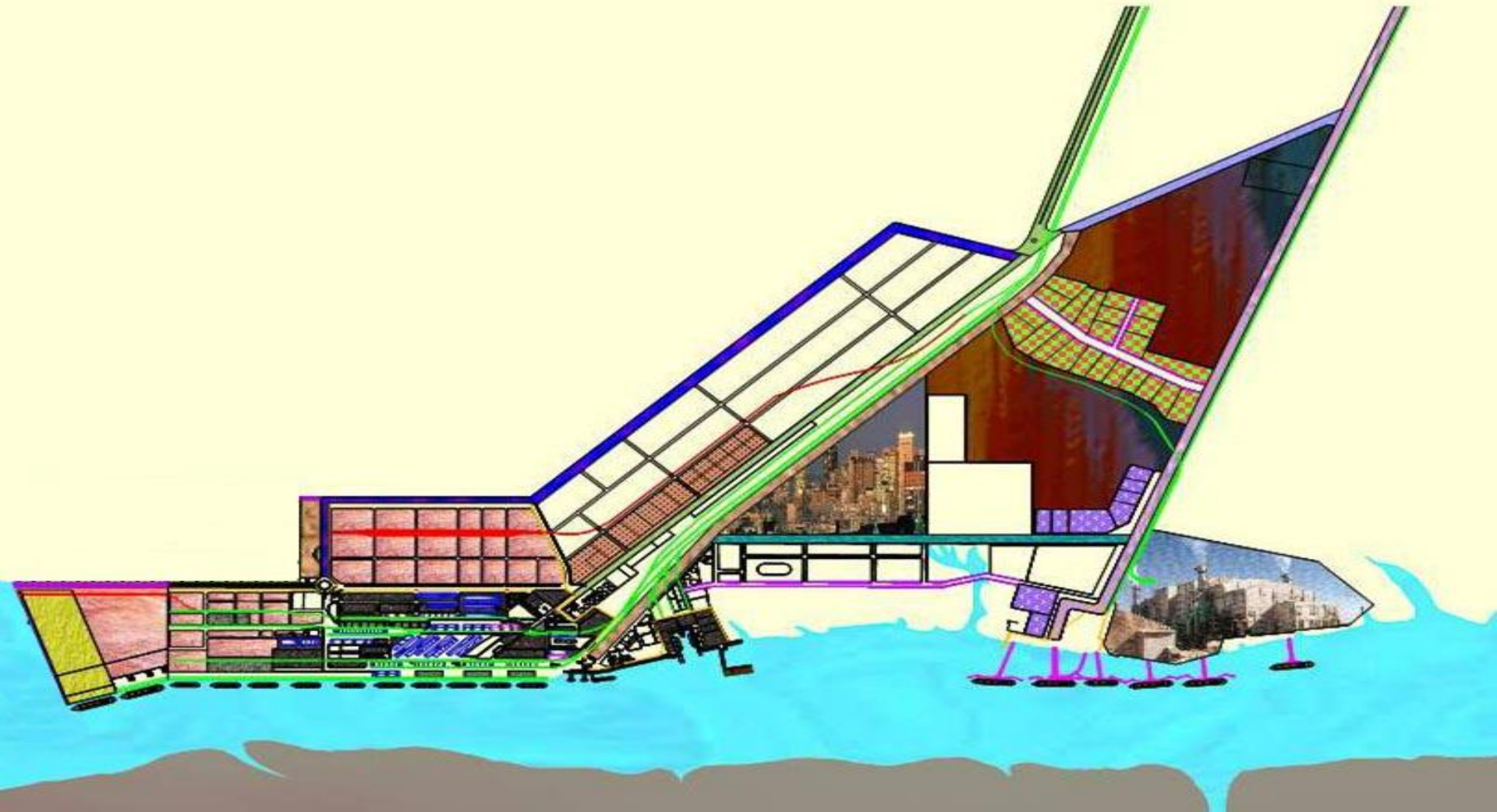
HISTORY OF KANDLA PORT



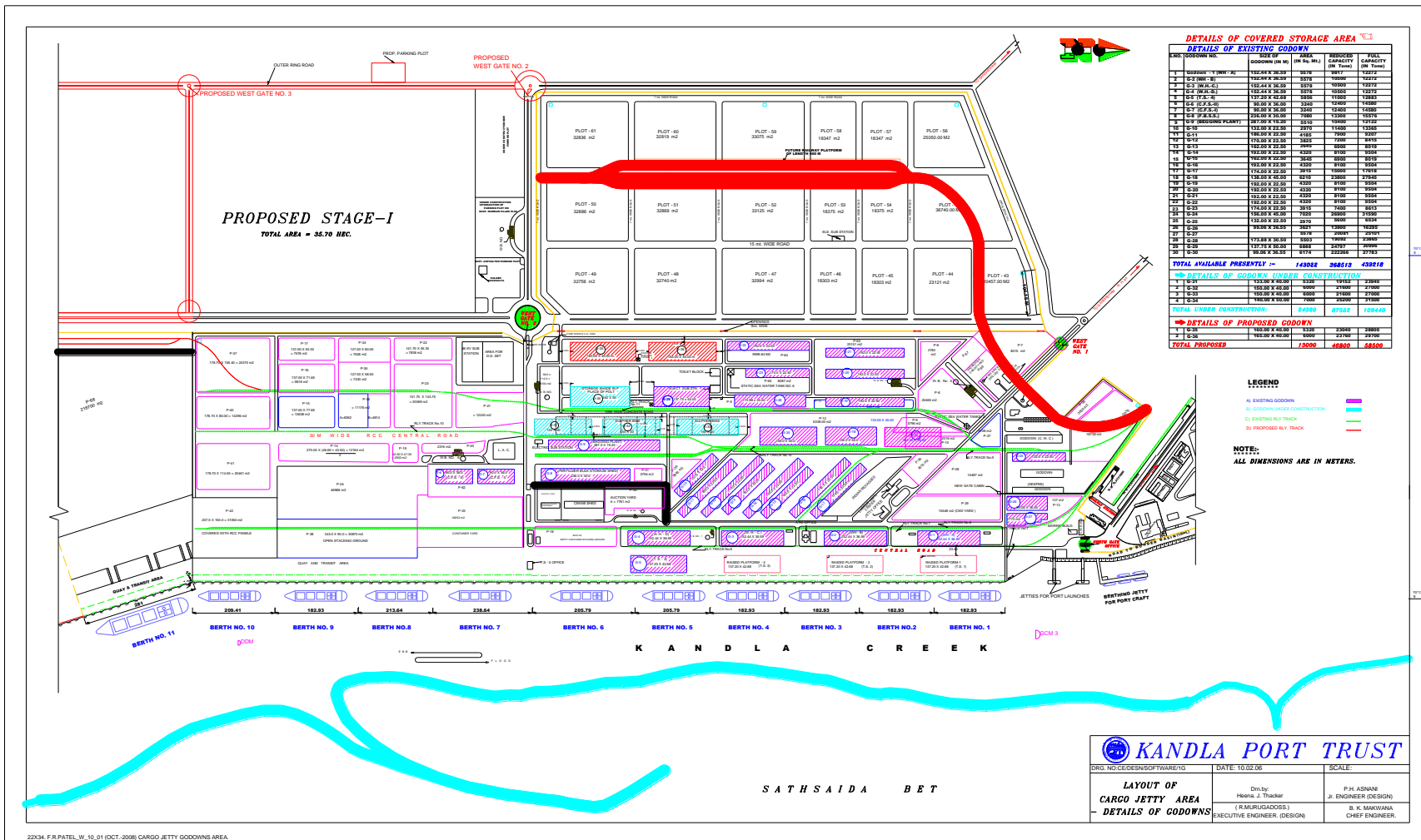
KANDLA PORT LIMITS



LAYOUT OF EXISTING FACILITIES AT KANDLA PORT



LAYOUT OF STORAGE FACILITIES



OVERVIEW OF KANDLA PORT



MODERN WAREHOUSES



NEW GENERATION WHARF CRANES



CONTAINER HANDLING GANTRY CRANES



KOLKATA / HALDIA



- ◆ **OLD AND ESTABLISHED PORT WITH PROMISING HINTERLAND,**
- ◆ **0.045 MILLION TEUS HANDLED EVERY YEAR,**
- ◆ **CLOSER TO LAND LOCKED COUNTRIES OF NEPAL AND BHUTAN.**

- ◆ **ACUTE SHORTAGE OF SPACE AND HENCE OFTEN CONGESTED,**
- ◆ **RIVERINE PORT - SEVERE DRAFT RESTRICTIONS ,**
- ◆ **ABSENCE OF EFFICIENT CONTAINER HANDLING SYSTEMS,**
- ◆ **NO POSSIBILITY OF FURTHER EXPANSIONS.**



VISAKHAPATNAM



- **IN THE MIDDLE OF THE FASTEST DEVELOPING REGION IN INDIA.**
- **EFFICIENT CONTAINER HANDLING INFRASTRUCTURE**
- **AMPLE SPACE AND UN-CONGESTED**
- **DEEPEST CONTAINER TERMINAL ON THE EAST COAST OF INDIA**
- **POSSIBILITY FOR FURTHER EXPANSIONS**
- **WELL CONNECTED TO CENTRAL, EASTERN, AND SOUTHERN INDIA BOTH BY ROAD AND RAIL**
- **FEASIBLE TO CATER TO 5 ICDs ACROSS INDIA AND NEPAL**
- **PROXIMITY TO THE STRAITS OF MALACCA**

CHENNAI



- **EFFICIENT CONTAINER HANDLING INFRASTRUCTURE**
- **1 MILLION PLUS THROUGHPUT**
- **NEW CAPACITY ADDED (CITPL)**
- **HINTERLAND WITH LARGE MANUFACTURING BASE**
- **PRESENCE OF MAJOR MAINLINE AND FEEDER SERVICES**

THANK YOU....