

EPC CONTRACTS

UNIQUE SOLUTIONS FOR UNIQUE PROBLEMS

9th August, 2014



Engineering – Procurement – Construction (EPC)

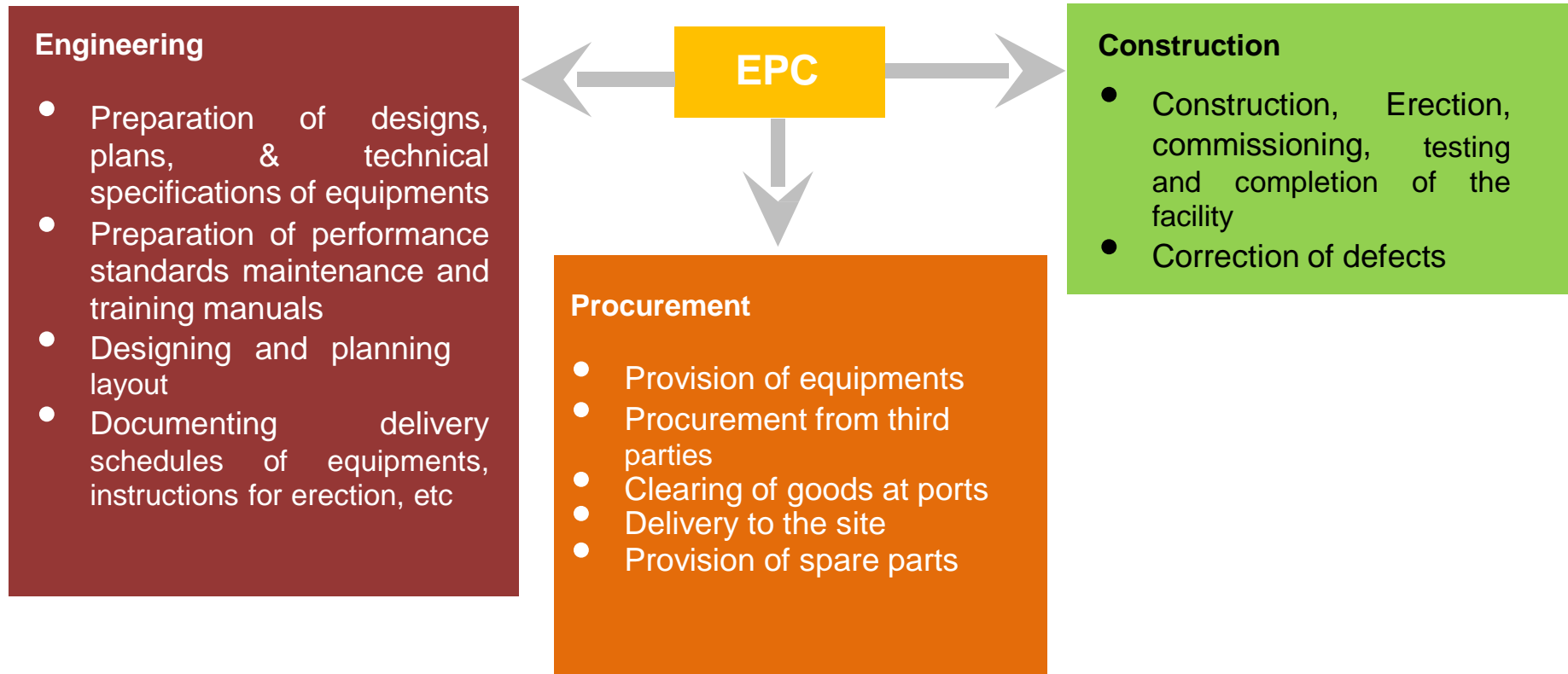
Preamble

- The EPC is an acronym of Engineering, Procurement and Construction;
- Complex projects are procured under EPC mode;
- Under EPC mode, the contractor designs the Construction/installation; procures the necessary materials and builds the project, either directly or by subcontracting part of the work;
- EPC mode suitable for Projects on fast track;
- Scope of work under EPC is definitive;
- Under EPC mode, Contractor shall fully indemnify the Employer.

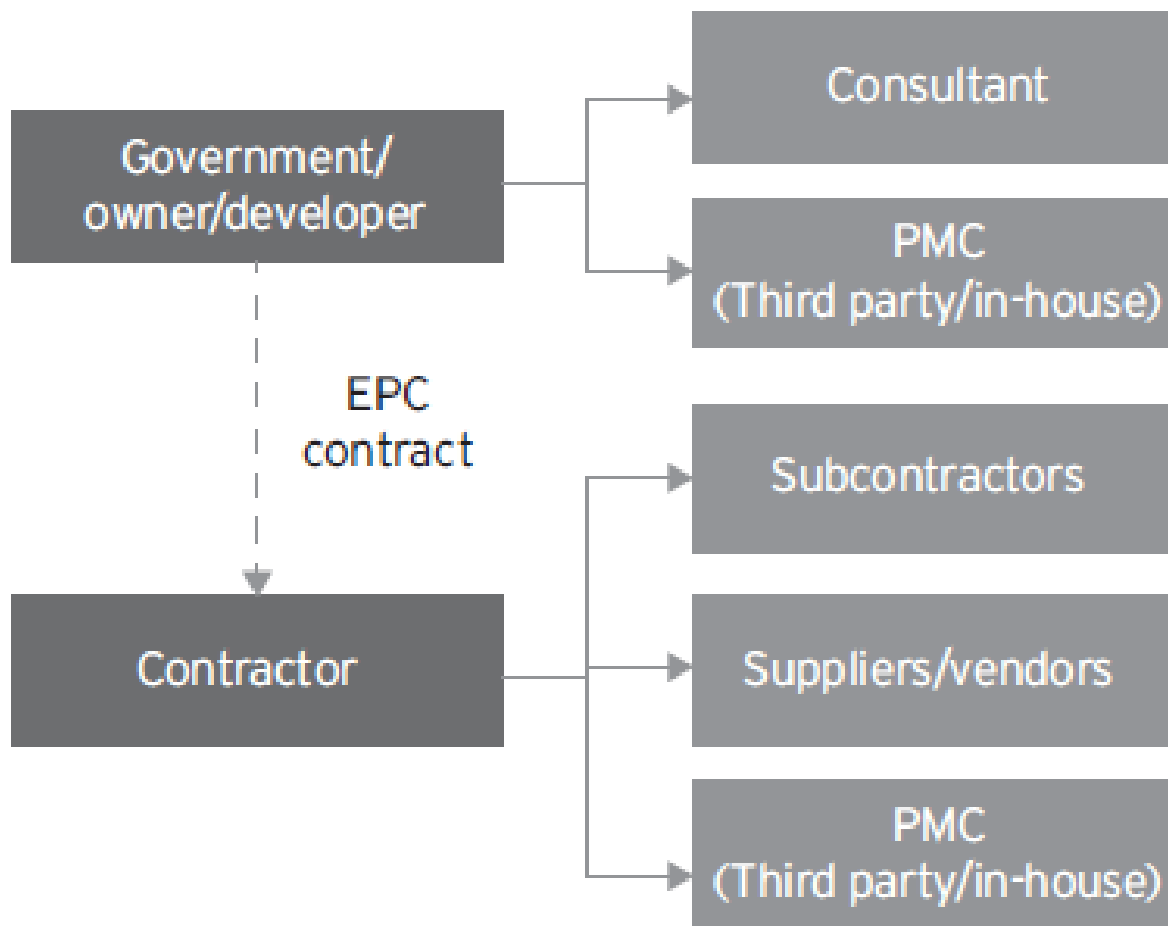
Key Components under EPC mode

Engineering, Procurement and Construction (EPC) Contracts are in the nature of turn-key projects, having a combined scope of work involving services and supplies

Broadly, an EPC contract encompass the following key activities



EPC Role Matrix



Roles and Responsibility of Different Stakeholders

Participant	Role and responsibility	Illustrative players
Owners/Developers	<ul style="list-style-type: none"> ▶ Define scope, specifications, standards, project duration and cost of project ▶ Supervises project work with in-house or external consultants ▶ Makes payment according to agreed upon milestones in contract 	<p>Public sector – NTPC, NHAI, AAI, Port Trusts</p> <p>Private sector – Tata Power, Reliance Power, GMR Group, GVK Group, Adani Group, Sterlite, Essar Group, JSW, AVB Group</p>
Consultants	<ul style="list-style-type: none"> ▶ Prepare initial design for tendering document ▶ Manages tendering process 	EIL, Stup, Rites, Mott Macdonald, Halcrow, CES- Jacobs
Contractors	<ul style="list-style-type: none"> ▶ Prepare detailed design based on agreed upon standards and specifications ▶ Procures 3M resources (material, machinery and manpower) ▶ Delivers project according to the terms of the the contract ▶ May appoint sub-contractors to bring in efficiencies 	L&T, HCC, NCC, Punj Lloyd, IVRCL, Gammon, Patel Engg. Shapoorji Group, IRCON, Navyuga, Leighton, Isolux
Suppliers/Vendors	<ul style="list-style-type: none"> ▶ Supply materials/equipment required for execution of project 	General Electric, Mitsubishi, Thermax, Hitachi, Alstom, BGR Energy Systems, BHEL, JCB, Eicher Group, Doosan Group
Sub-contractors	<ul style="list-style-type: none"> ▶ Deliver work to the contractor – typically a back-to-back contract with the contractor 	Sadbhav, Ramky Infrastructure, Indu Projects, Coastal projects, ITD Cementation, Welspun Projects, Afcons, Soma
Project Management Consultants (PMCs)	<ul style="list-style-type: none"> ▶ Supervise work undertaken by contractor and sub-contractor ▶ Ensure timely procurement and adequacy of resources ▶ Report progress and issues to owner/developer/contractor 	Local contractors and consultants providing these services


Plan Outlays-EPC Opportunity

	Tenth Plan	Eleventh Plan	Twelfth Plan
Planned investments	INR 8.7 trillion	INR 20.5 trillion	INR 40.9 trillion
Actual Investments	INR 9.6 trillion	INR 16.5 trillion	-
EPC opportunity	INR 4.5 trillion	INR 9.5 trillion	INR 17.1 trillion
Sectoral mix	Power: 37% Roads: 14% Telecom: 11% Railways: 11% Irrigation: 13% ~50% spend on power and roads – above targeted achievement in power sector	Power: 32% Roads: 14% Telecom: 17% Irrigation: 12% Railways: 10% Power and roads consistently amounting to ~50% of planned expenditure – added focus on telecom	Power: 31% Roads: 12% Telecom: 25% Railways: 7% Irrigation: 9% Greater thrust on telecommunications – increased expenditure on ports, oil and gas pipelines

Model Shift for EPC Players

EPC market dependency	Sub-sector	Clientele base* (government-private ratio)	Order of models adopted by Government
Infrastructure construction	Roads	50: 50	PPP -> Annuity -> EPC
	Railways	80: 20	EPC -> PPP
	Ports	50: 50	PPP -> EPC
	Airports	50:50	EPC -> PPP
	Urban infrastructure	80: 20	EPC -> limited PPP
Building construction	Building construction	20: 80	Cash contracts -> EPC
Oil & gas EPC	Oil & gas	80: 20	EPC
Power EPC	Power	20: 80	EPC
Specialized EPC	Marine	20: 80	EPC
	Hydro	80: 20	EPC
	Industrial	20: 80	EPC

Key Risks in EPC Contract

	Stage of EPC contract 		
	Pre-tender stage	Post-bid stage	Execution stage
Political risks	Political stability of the country; change in governments	Delay in approvals and land acquisition	-
Environmental risks	-	Environmental approvals	Unfavorable climatic condition and topography
Technical risks	Insufficient preliminary research on scope, resource availability, technology requirement leading to inaccurate time and cost estimations	Design changes/inadequacies Resource availability; site conditions	Unfamiliarity with topography/ terrain; resettlement and rehabilitation; utility shifting
Financial risks	Cost estimates and financing assumptions	Liquidity and credit shortage	Foreign exchange and interest rate fluctuation
Contractual/legal risks	-	Economic downturn	Delay in payments from client; unavailability of resources
Force majeure risks	Unfamiliarity with the local laws and regulations	Unfamiliarity with the local laws and regulations Limited say in contract negotiations	Unfamiliarity with the local laws, tax and regulations

“Who is to blame” Leads to

- More Disputes
- More Cost overruns
- More Claims

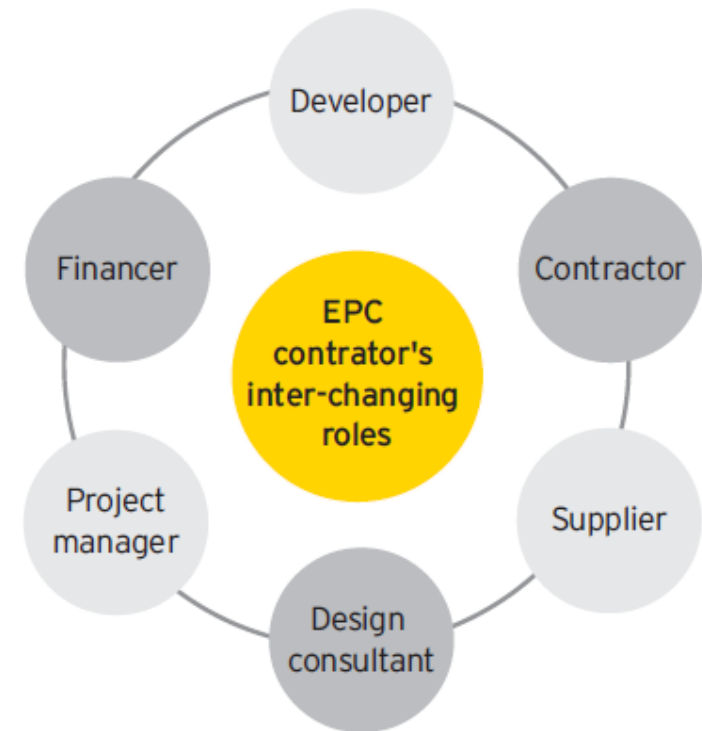
Overcoming Challenges

1. Sector Diversification

- Slow movement of irrigation projects causing irrigation-focused companies to diversify;
- Stiff competition and pricing in the highway space resulting in some players being reluctant to participate;
- Exploration of new sectors including the defense, nuclear, aerospace, contract mining, power transmission and urban infrastructure segments.

2. Business/Role Diversification

- Companies have diversified into sectors that offer new opportunities in a broad based revenue base;
- Most civil EPC contractors are foraying into PPP opportunities, especially into the highway sector;
- Large construction companies and developers are moving higher along the value chain and creating in house PMC and high value engineering divisions;
- Financial institutions are venturing into the development space, based on their infrastructure skills.



3. Globalization: Operating Across Geographies

- Active interest of international players in Indian PPP projects, especially in the highway sector;
- Indian companies evaluating distress purchase options in international markets, especially in Europe, Middle East and Africa.

4. Growth through private equity and/or mergers and acquisition and joint ventures

- The nature of private equity transactions have changed from plain vanilla equity investments to structured deals (be it convertibles or preferential instrument);
- Private equity investors are keen on investment due to their long term infrastructure potential;
- Companies that are unwilling to divest at an early stage have also shown a keen interest in raising their mezzanine capital;
- With many participants in the sector and multiple investment opportunities, investors have chosen to make selective investments in the sector;
- Most merger and acquisition transactions have been undertaken as an entry strategy-be it a new geography or sector, or to gain access to technology and participate in complex projects.

5. Developing Project Management Skill Sets-making Complex Projects Easy

- Create an in house team of experienced project management personnel;
- Adopt and rely on sophisticated project management tools and techniques;
- Develop a tracking system for all critical activities to avoid slippages on a daily basis.

6. Governments Thrust- aiding the Process

- Government authorities should devise more tax benefits for EPC players to increase their participation in infrastructure building;
- Long term innovative vehicles should be launched to provide easy finance to EPC players;
- Land acquisition procedures should be simplified to ease the entire process;
- Grievance redressed mechanism should be more active.

Stringent Diligence during Bidding

Category	Risk	Diligence measure
Political	Political stability of the country	<ul style="list-style-type: none"> ▶ Adequate studies to understand economic and political cycles in the country ▶ Appropriate remedies in contracts to factor in any force majeure events
Political/ Regulatory	Delays in approvals and land acquisition	<ul style="list-style-type: none"> ▶ Ensuring substantial approvals and land are in place prior to work commencement ▶ Onus of procurements to lie with the owner
Environment	Unfavorable climatic condition and topography	<ul style="list-style-type: none"> ▶ Environment Impact Assessment clearance ▶ Adequate geo-technical surveys and climate surveys prior to construction phase planning
Technical	Design changes/ inadequacies	<ul style="list-style-type: none"> ▶ Clear understanding of standards and specifications prior to bidding ▶ Appropriate remedies in contracts to factor in any change in design
Technical	Availability of resources	<ul style="list-style-type: none"> ▶ Adequate studies to source procurement of materials and build appropriate transport costs
Technical	Resettlement and rehabilitation; utility shifting	<ul style="list-style-type: none"> ▶ Ensure zero tolerance in R&R as it leads to indefinite delays ▶ Appropriate contractual obligations on owner for unforeseen delays due to utility shifting
Financial/ Operational	Cost estimates	<ul style="list-style-type: none"> ▶ Detailed understanding of scope of work ▶ Detailed BOQ estimation at time of bid ▶ Provision for unforeseen costs escalation ▶ Clear contractual obligations on both parties for cost escalations to avoid ambiguities

Stringent Diligence during Bidding.....contd.

Category	Risk	Diligence measure
Financial	Liquidity and credit shortage	<ul style="list-style-type: none"> ▶ Adequate mobilization advance ▶ Milestone payments to be recovered within time
Financial	Foreign exchange and interest rate fluctuations	<ul style="list-style-type: none"> ▶ Appropriate hedging mechanisms for foreign exchange ▶ Appropriate interest rate budgeting during bid –may also resort to hedging
Market	Delay in payment from owner	<ul style="list-style-type: none"> ▶ Efficient billing cycles to be adopted ▶ Appropriate remedies in contracts to penalize client for delay in payments
Contractual and legal	Unfamiliarity with the local laws and regulations	<ul style="list-style-type: none"> ▶ Consult appropriate legal experts ▶ Clearly understand variations from home country laws
Force majeure events	Risks associated with external hazards	<ul style="list-style-type: none"> ▶ Appropriate remedies in contracts to factor in force majeure events

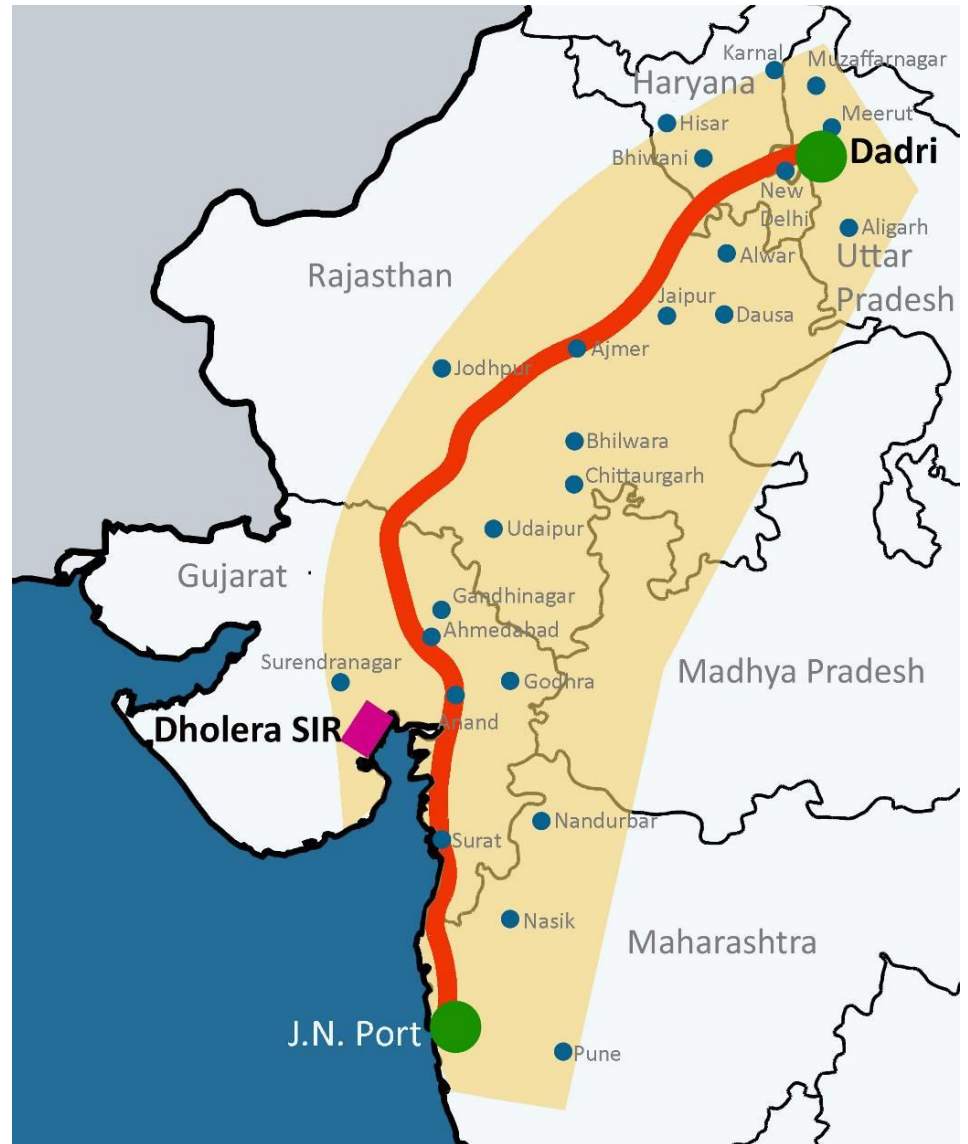
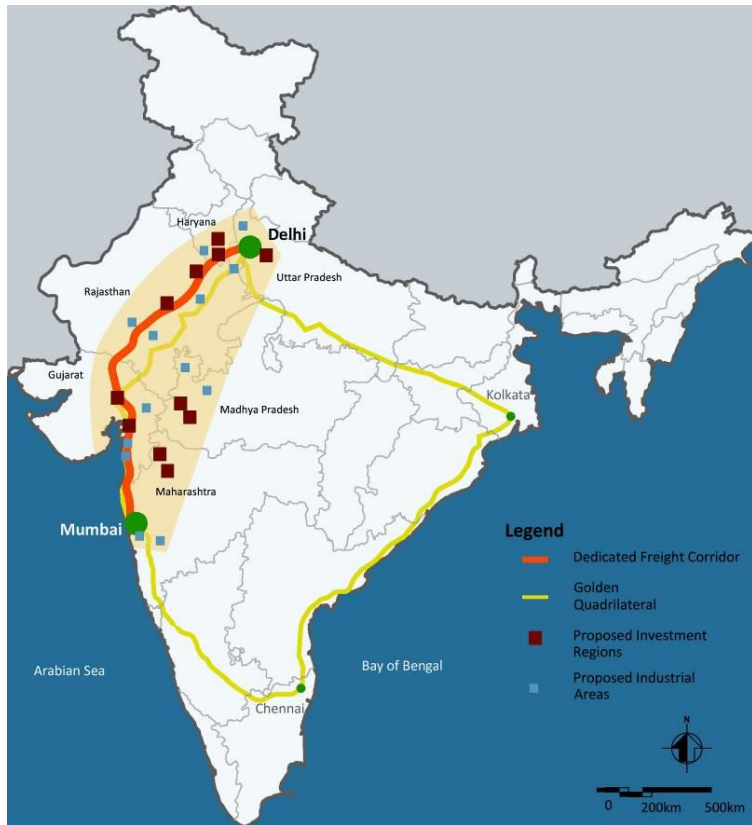
3M Dynamics: Manpower, Machinery, Material

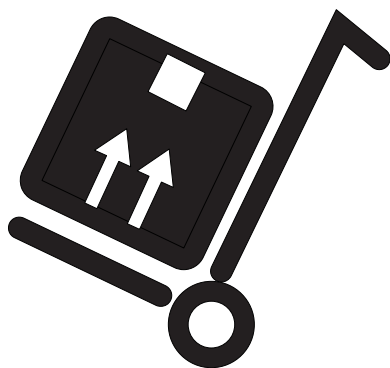
- Scarcity of manpower;
- Procurement of raw material;
- Efficiency of machinery;
- Constraints on fund raising-an added element.

Delhi Mumbai Industrial Corridor Project



The DMIC Corridor



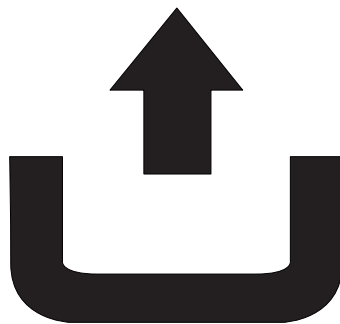


Exports

4

In 9 years

USD **720** billion
INR 43,20,000 crores



Value of Output

3

In 9 years

USD **3.3** trillion
INR 1,98,00,000 crores



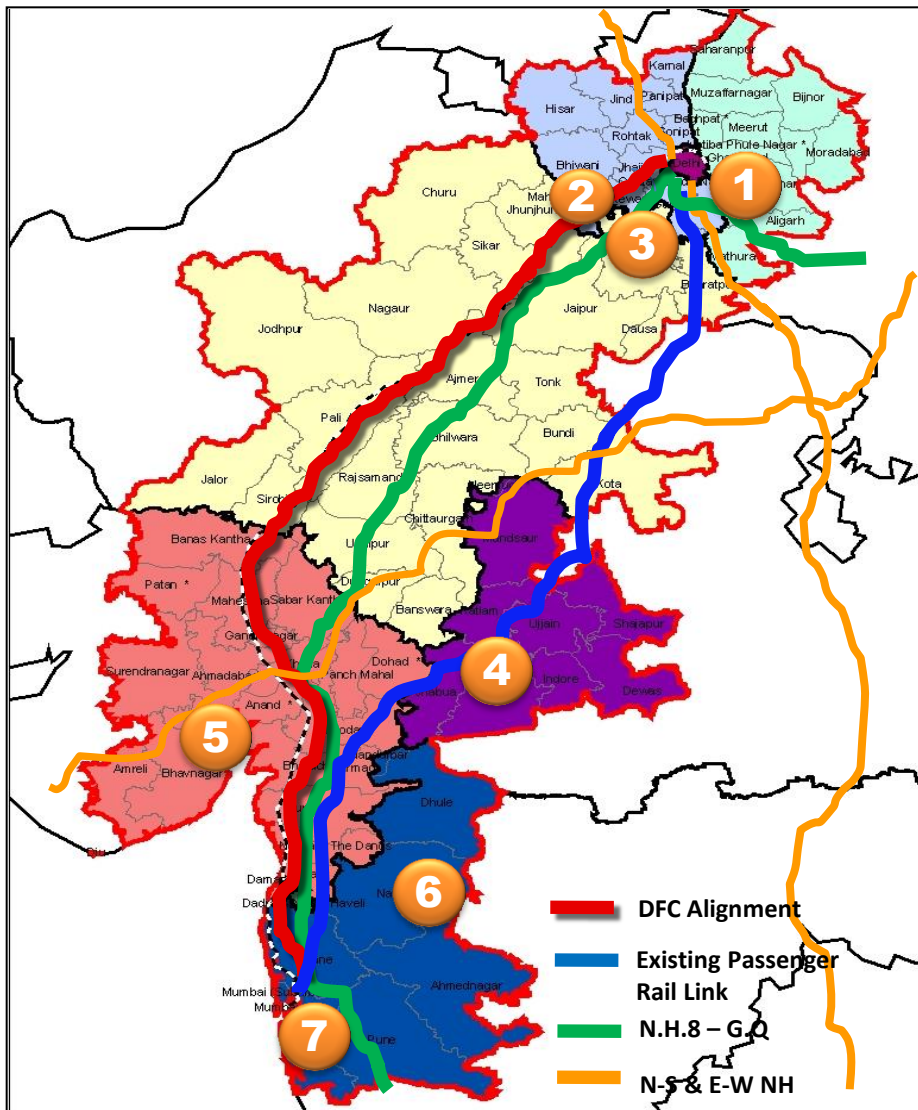
Employment

2

In 7 years

25.5 million
2,55,00,000 lacs

7 Nodes being developed in DMIC Phase 1

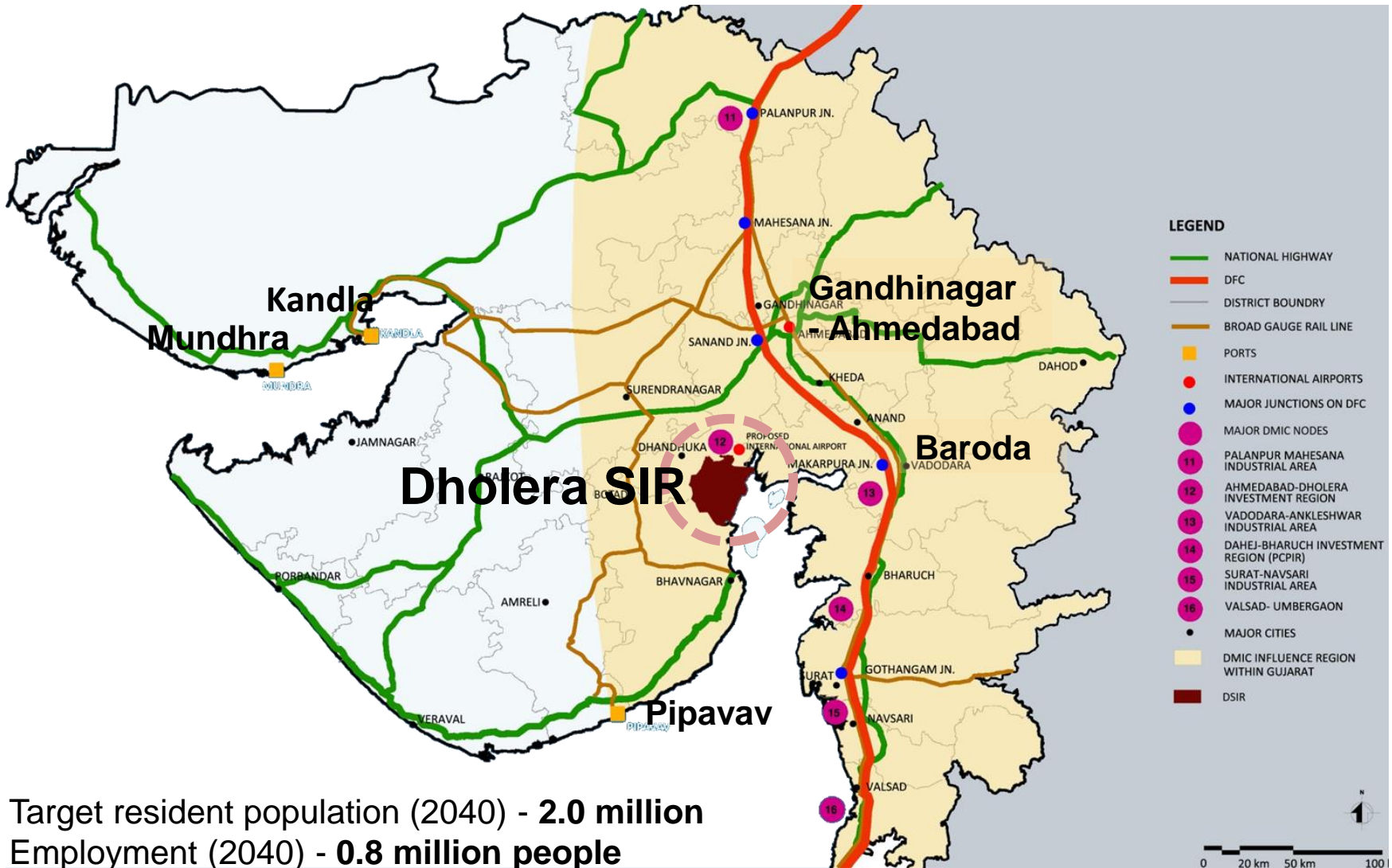


- 1 Dadri – Noida Ghaziabad IR, UP
- 2 Manesar – Bawal IR, Haryana
- 3 Neemrana – Khushkhera – Bhiwadi IR, Rajasthan
- 4 Pithampur- Dhar - Mhow IR, MP
- 5 Ahmedabad – Dholera IR, Gujarat
- 6 Shendra - Bidkin Industrial Park, Maharashtra
- 7 Dighi Port IA, Maharashtra

Best practices in Master Planning being brought in through international consultants

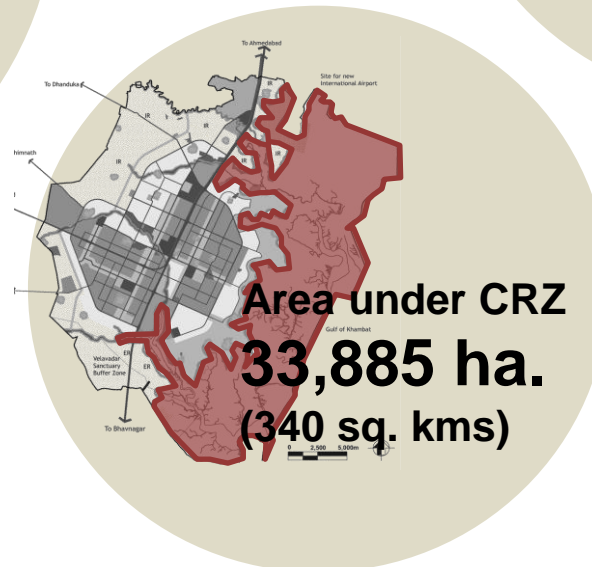
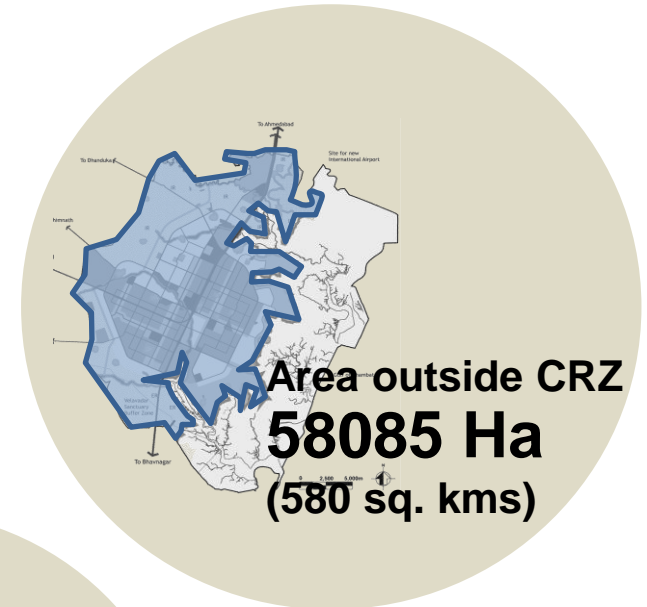
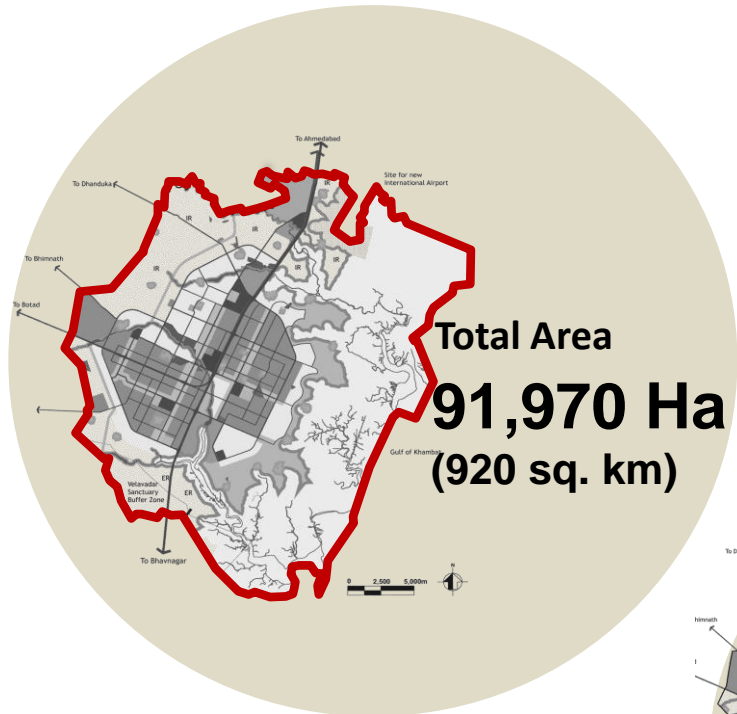
Node	Consultants	Area (sq. km)
Ahmedabad-Dholera Investment Region, Gujarat	Consortium led by M/s Halcrow, UK	920
Manesar-Bawal Investment Region, Haryana	Consortium led by M/s Jurong, Singapore	402
Khushkhera-Bhiwadi-Neemrana Investment Region, Rajasthan	Consortium led by M/s Kuiper Compagnons, Holland	165
Pithampur-Dhar-Mhow Investment Region, Madhya Pradesh	Consortium led by M/s Lea Associates South Asia	372.4
Dadri-Noida-Ghaziabad Investment Region, Uttar Pradesh	Consortium led by M/s Halcrow, UK	200
Dighi Port Industrial Area, Maharashtra	M/s AECOM, Hong Kong	253
Shendra Bidkin Industrial Park Maharashtra	M/s AECOM, Hong Kong	84

Dholera Special Investment Region



Dholera SIR: Key Indicators

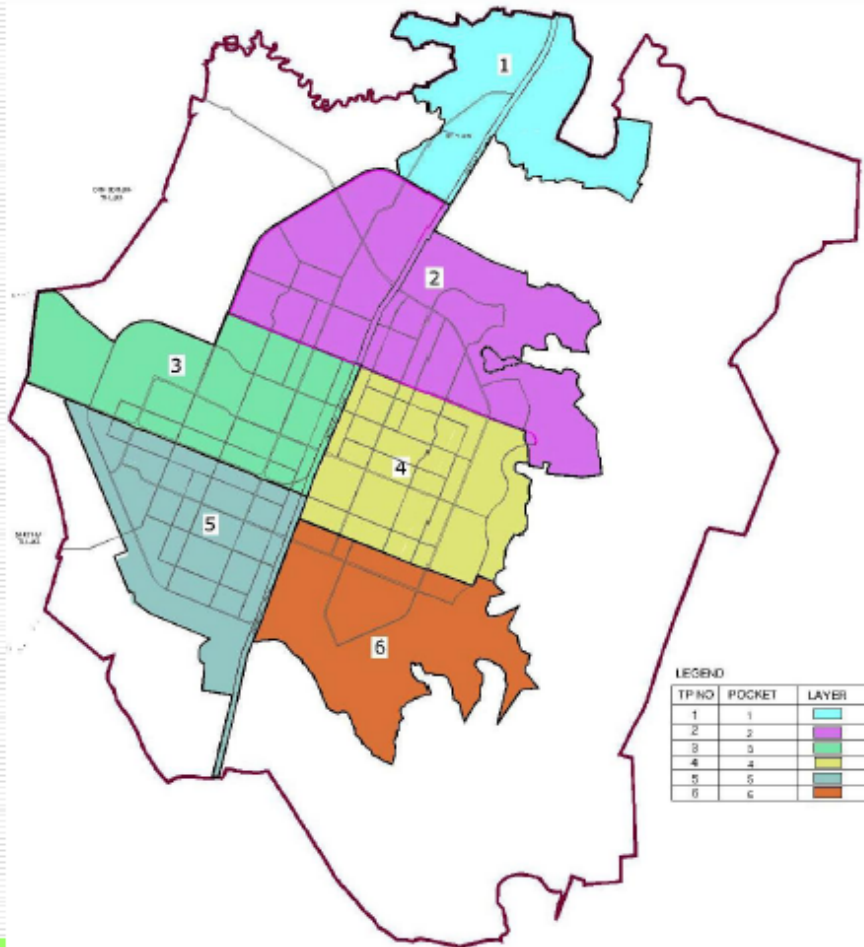
As per Development Plan



Draft Town Planning Scheme

DRAFT TOWN PLANNING SCHEME NO. 1 TO 6

DRAFT TOWN PLANING SCHEMES AREA/BOUNDARY DELINEATION



Draft Town Planning Scheme Area Table

SR. NO	T.P.S NO.	AREA IN SQ. KM
1	1	51.28
2	2	103.00
3	3	67.06
4	4	59.85
5	5	63.00
6	6	62.40
Total		406.59



Ecology



Settlement



T P roads





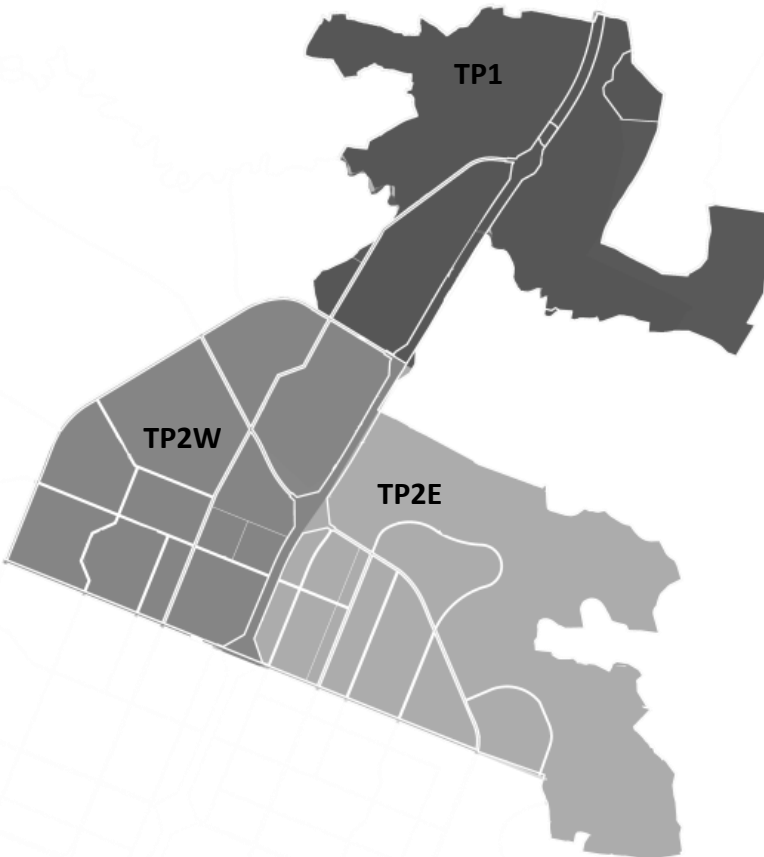
Phase -1 of Dholera

Area to be developed in phase 1a-

154 sq. kms

Validated Construction Cost (2013) ~

INR **20,000** Crores (USD 3333 million)



Base (Flat) Infrastructure Include:



Roads and Utilities (TP 1 & 2) : 550 kms



Potable Water: Raw Water Pipeline from Periej Dam and Water Treatment



Sewage: CETP and STP (RecyclePlants)



Industrial Water: Effluent Pipeline from AMC & Tertiary Treatment Plant



Stormwater: Collection and Treatment



Flood: River Training and Bunding



Solid waste: Transfer and Treatment



Power: Transmission and Distribution

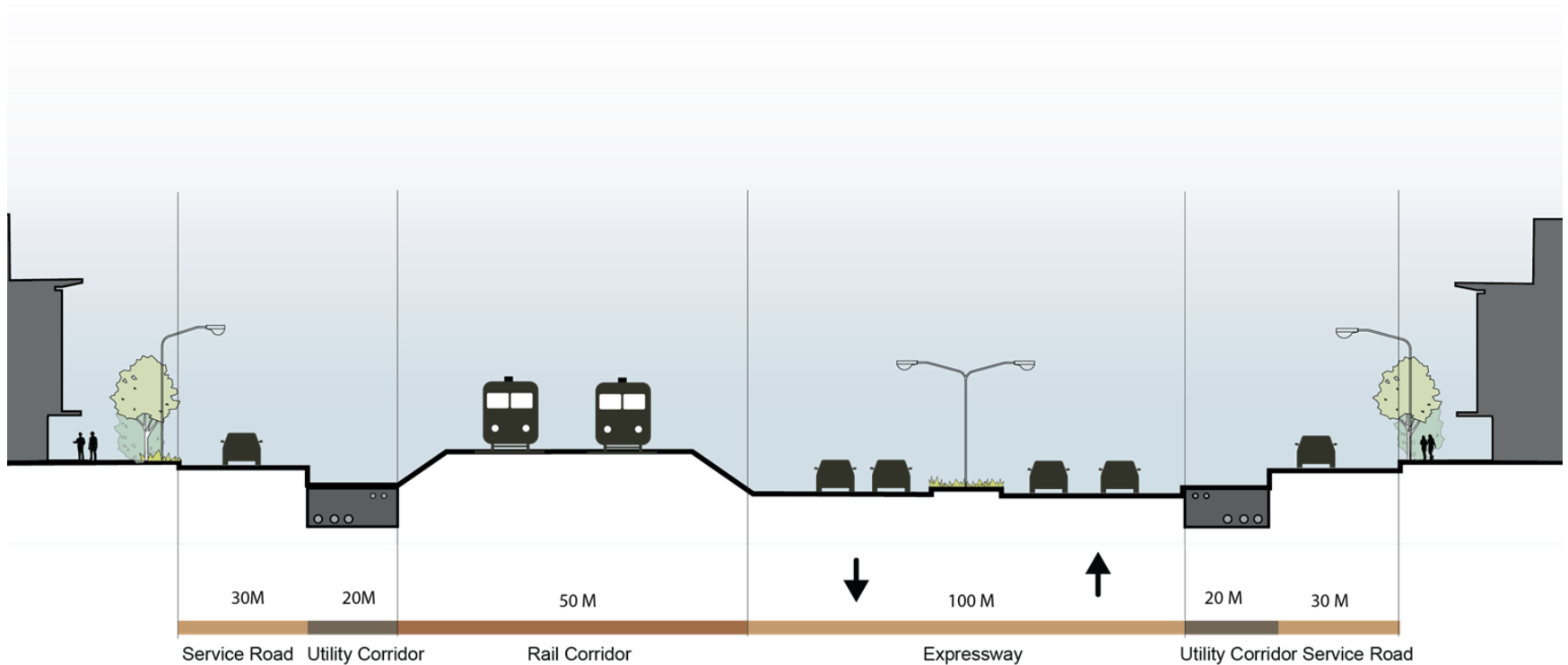


ICT: Networks

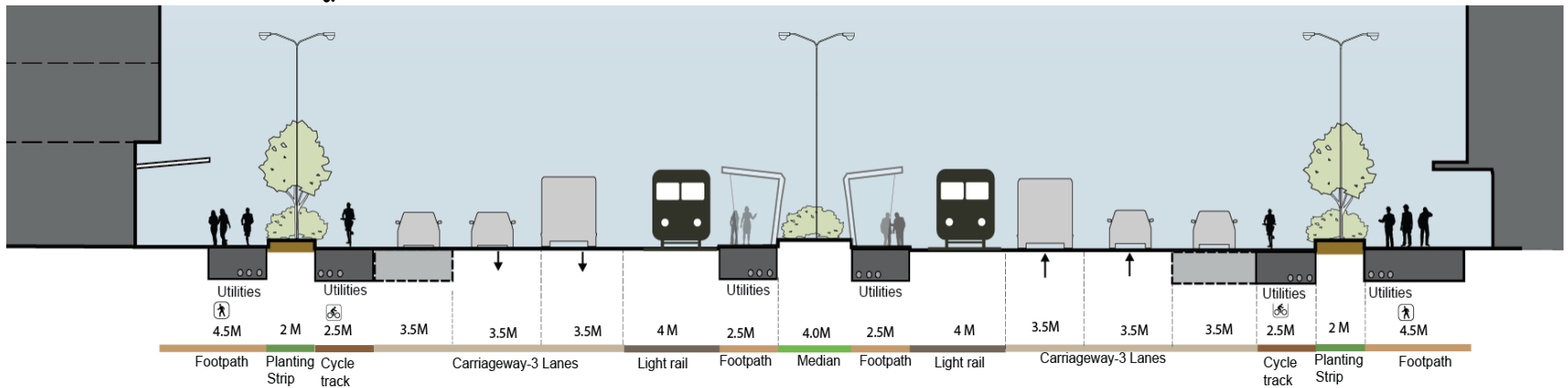
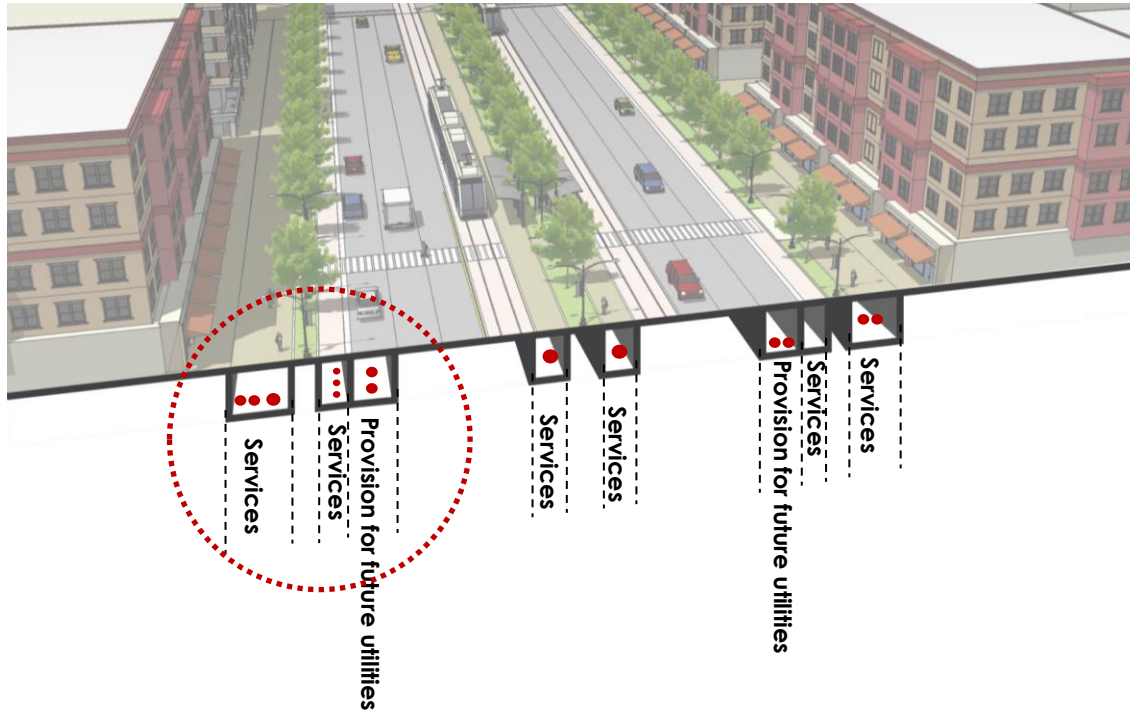


Related Projects (RRTS/MRTS, Airport)

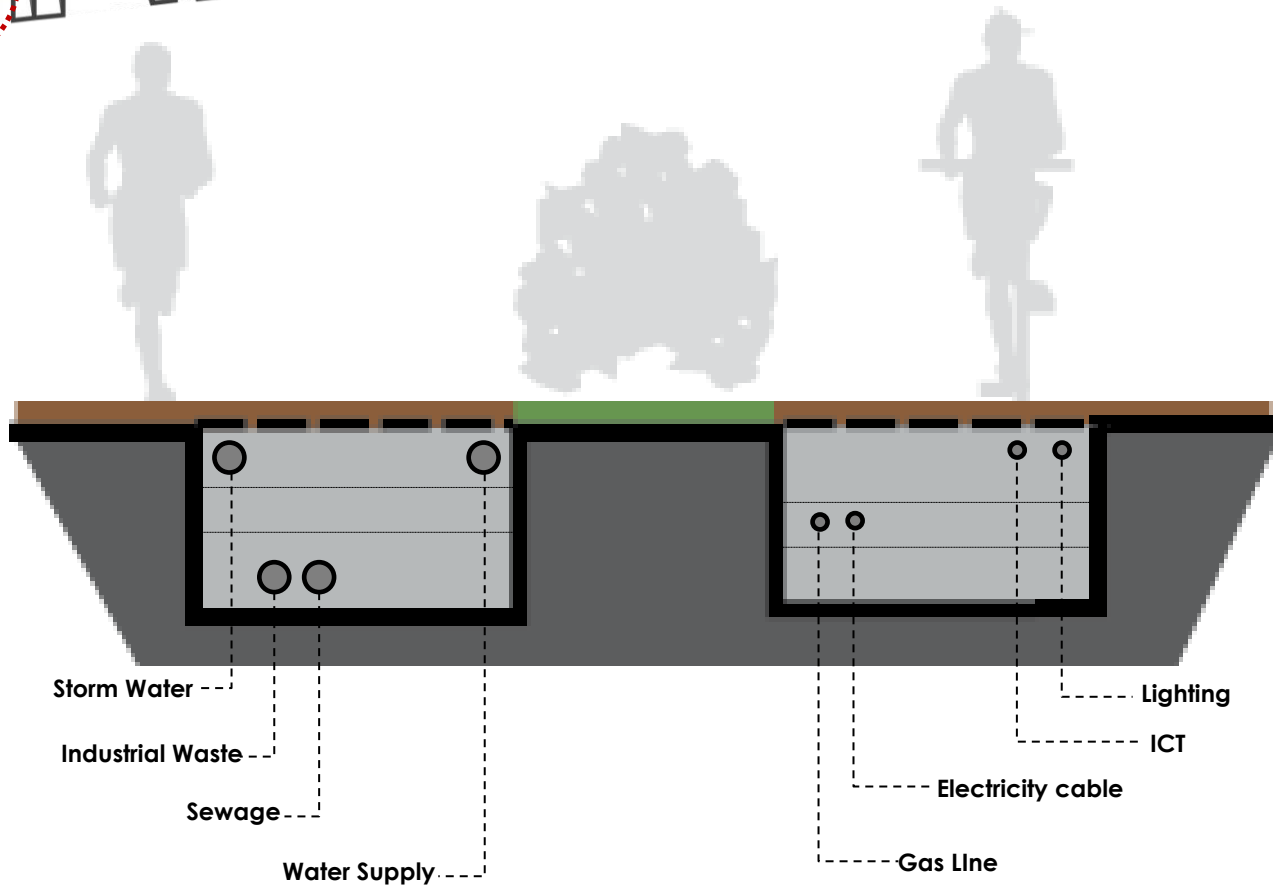
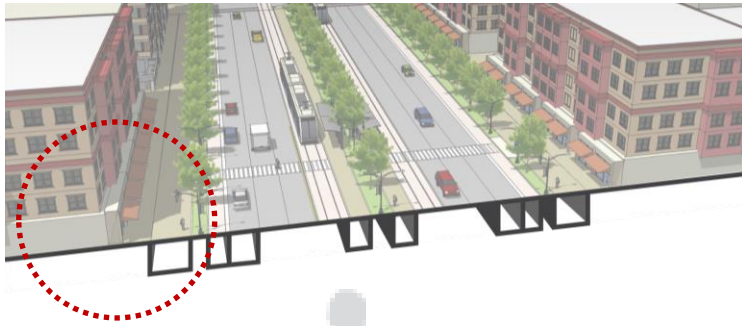
SPINE Road - SH-6 Road Section and Utility Corridor



Typical Road Section (55 M & 70 M) with Utility Corridor



Typical detail of Utility Corridor



THANK YOU



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