

SLIPFORM PAVERS – INDIA EXPERIENCE

Charmanna BB. 23rd July 2020 – ASCP Forum



CLOSE TO OUR CUSTOMERS

INDIA- ROAD SECTOR

Road Sector in INDIA



Second Largest Road Network : 5.89 Million Kms

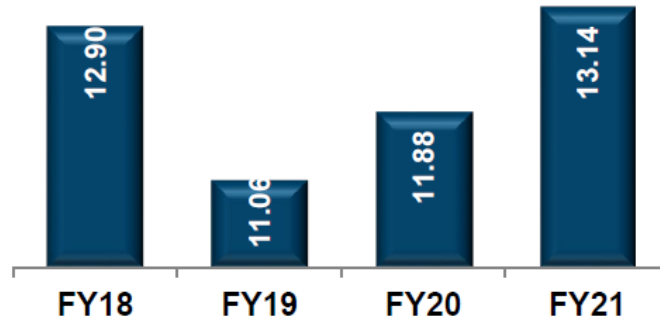
National Highway (NH) & Expressways, km	1,32,500
State Highways (SH), km	1,56,694
Other Roads, km	56,08,477
Total Road Length, km	58,97,671

- * 65% freight & 80 % passenger traffic on roads
- * Vehicle growth: 10.16%
- * NHs are less than 2% of network but carry 40% of total traffic

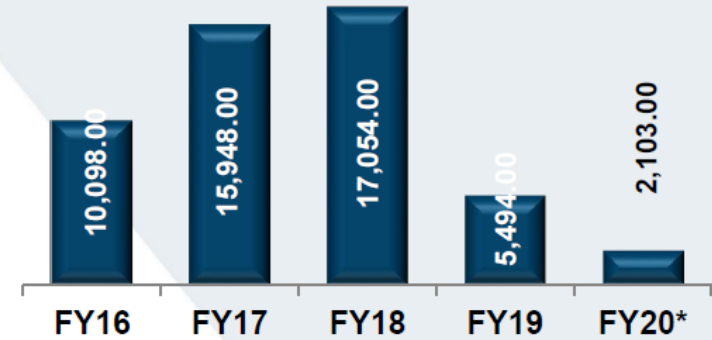
Source: Annual Report, 2018-19, MORTH, Govt. of India

Key Trends

Outlay for Roads under the respective Union Budget (US\$ billion)



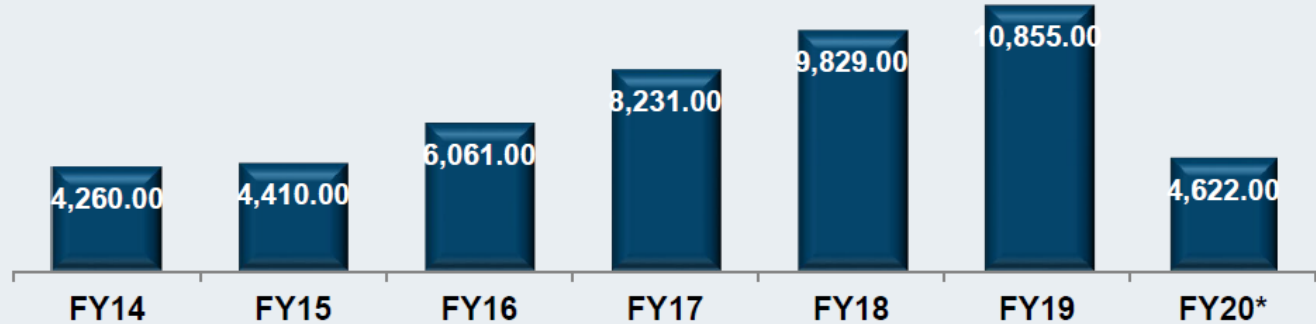
Projects Awarded by NHAI (in kilometres)



Note: NHAI - National Highways Authority of India, * - As on September 2019

Market Size

Highway Construction in India (kilometres)

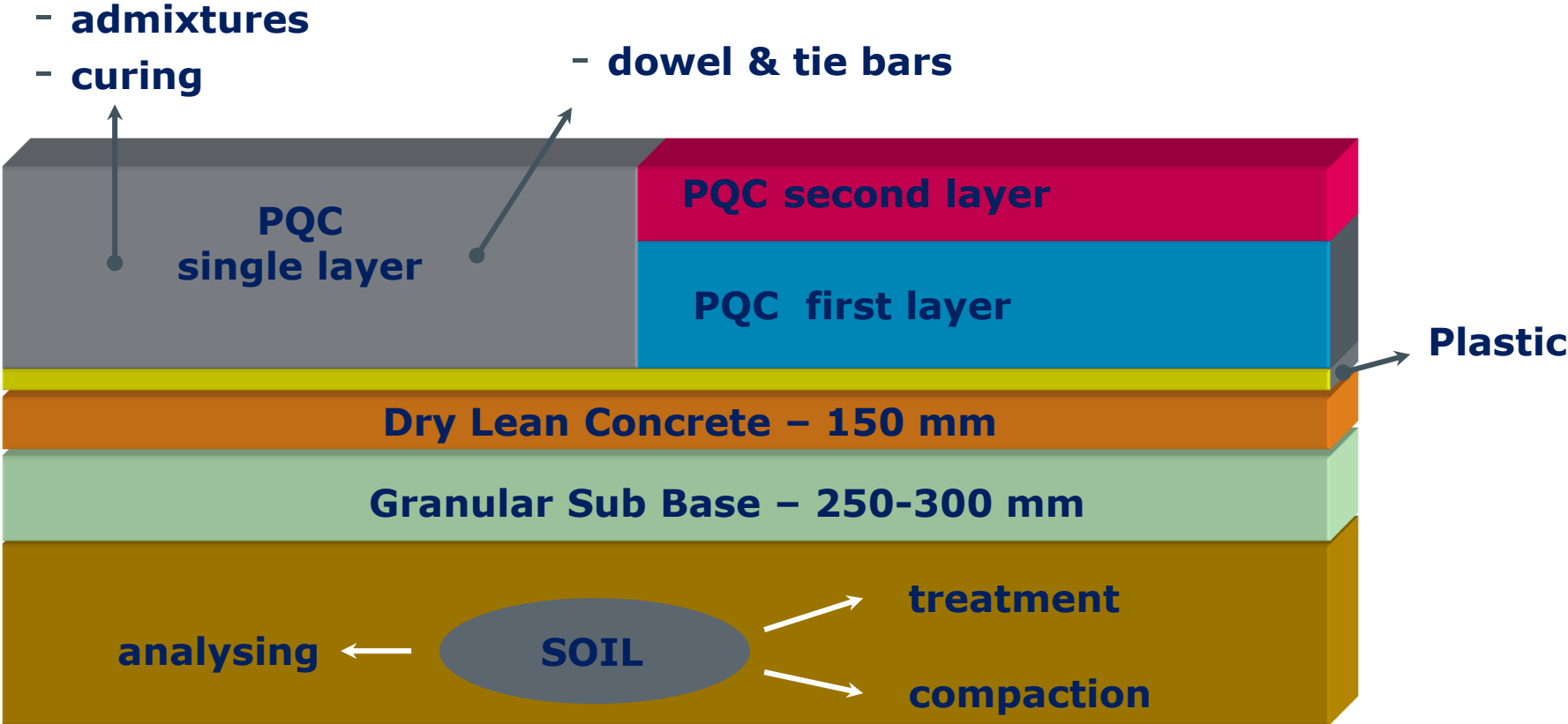


Note: * Up to September 2019

- Highway Construction Increased at 21.44% CAGR
- Target of constructing roads worth of US\$ 212.80 billion over next two years

INDIA- CONCRETE ROADS

Construction of PQC Pavement.





Slipform Paving concrete Road - India

Year: 1998-2002

Mumbai-Pune Expressway

**THE ROAD
TO
SLIPFORM
PAVING IN
INDIA**



Phase1: Mumbai – Pune Expressway



- 96 Kms, 6 lane project
- Five packages
- 6 Slipform Pavers with Dowel Bar Inserter
- 1 SP without DBI, ISF for feeding
- Dowel size – 32 m dia, 450mm length, 300 c/c spacing
- 90 Cum batching plant per paver
- First Expressway with rigid pavement in India

Total width of pavement

12.45 M

300mm

Paved in 3 passes

4.35 M

3.75 M

4.35 M

1st pass

3rd pass

2nd pass

Phase1 – Golden Quadrilateral & NSEW Corridor

Year: 2001-2006

Roads & Highways



**GOLDEN QUADRILATERAL:
2001-2006**

**TOTAL LENGTH OF CONCRETE
ROAD :1509 KMS**

**North South & East West
CORRIDOR:
2003-2008**

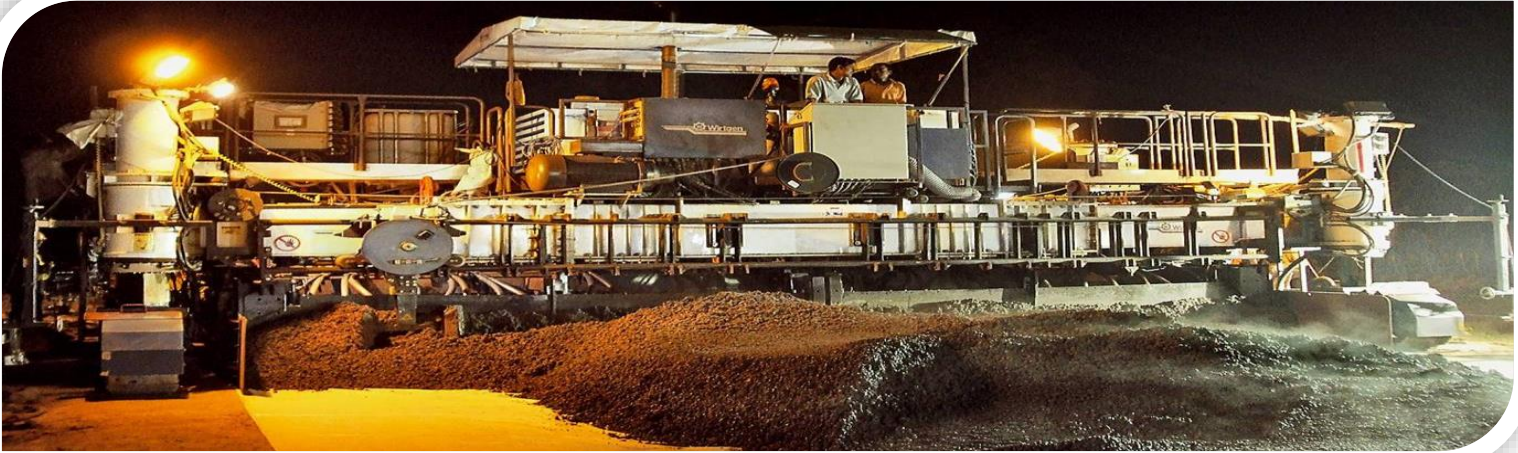
**TOTAL LENGTH OF CONCRETE
ROAD: 1100 KMS**

Phase1 – Golden Quadrilateral & NSEW Corridor

Year: 2003-2006



Concrete paving in progress on NH2, NH4, NH6, NH47



Phase1 – Golden Quadrilateral & NSEW Corridor

- Connecting Four major Metro cities
- 8.5m width, 300 mm thick rigid pavement
- Paving in single pass - better paving results...
- Batching plant used was 120 Cum/hr per paver...
- 23 Slipform pavers with Dowel Bar Inserter in operation in GQ
- 14 Slipform pavers with Dowel Bar Inserter in NSEW corridor
- Dowel Bar Size: 30mm dia, 450mmLength, 300mm c/c spacing

Year: 2004-2007



Year: 2007-2014

Period of slow growth – Mostly city roads

Predominantly Flexible / Bituminous pavements

Yamuna express way – 8 lane / 165 Kms

BOT - Build – Operate – Transfer : concept failure.
(PPP)



City Roads



State Highways





Canal bed lining by SP 500

Phase 2 – Airport Paving



Phase 2 – Offset Applications

2007-2014



Year: 2009-2014

**15.7M paving in single pass, 165 km –
New Delhi / Agra with 4 no's SP 1600**



SP PROJECT - YAMUNA EXPRESSWAY

Yamuna Expressway



165 Kms



PROJECT DATA

Construction time	5 years
Paving length (concrete)	165.537 km
Paving width (concrete) in each direction	15.7 m
Paving thickness (concrete)	320 mm
Paving thickness (hydraulically bound base)	150 mm
Concrete used	1.7 million m ³
Concrete aggregates used	13.5 million t
Steel reinforcement used	140,000 t

**Customer: JAYPEE ASSOCIATES
OSEL and C&C**



SP1600: 4nos for 165 Km project length

15.75m, 320mm thick, 6 lanes. Total Concrete Quantity: 1.7M Cum

Yamuna Expressway



2 contracts of 83 Km each
3 Project Camp @ 55Km Interval
2 x 240 Cum Batching plant per paver

Yamuna Expressway

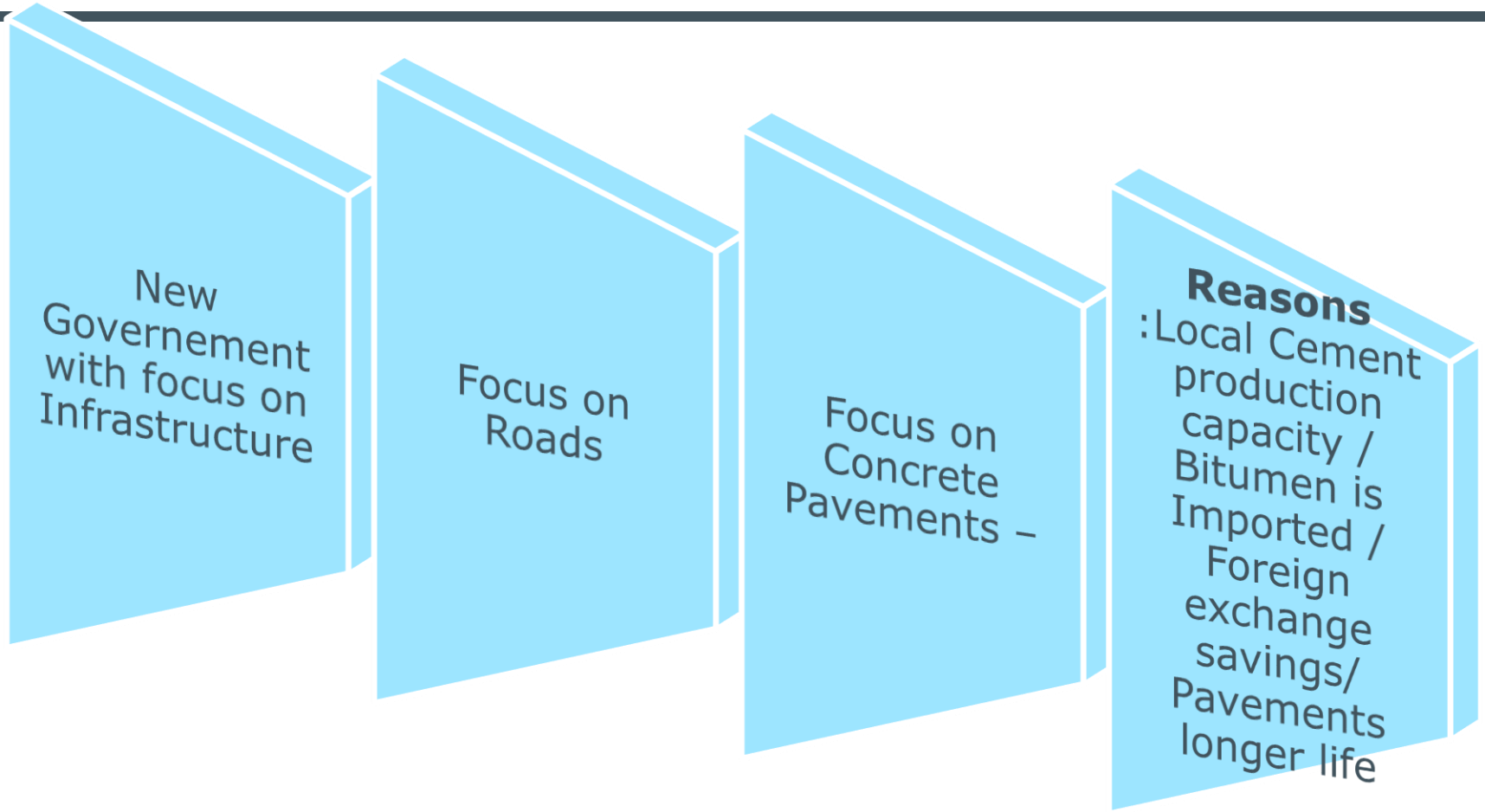
SP 150 for Offset – 4 nos
Crash Barrier
Shoulder Drain
Kerb



Yamuna Expressway



PHASE 3- CONCRETE ROADS



Outlook for Road Industry

Government plans further award of additional 70,000 Kms by 2021

Government plans for 22 green field expressways out of which 6 to 8 expressways totaling Length of ~ 2600 Kms started implementation

Bharat mala Project execution start by early 2019 – 65000 Kms
(11,500 Kms awarded initial 1st Phase of Total Pkg of 28,000 Kms to be built)

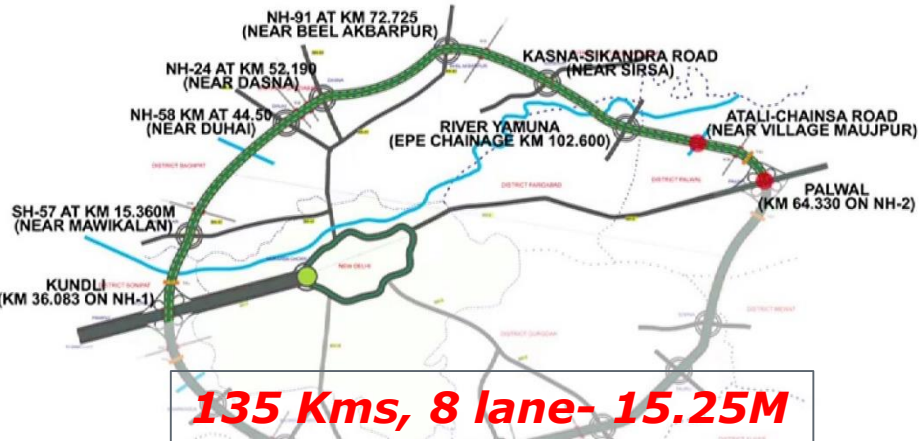
Mumbai – Nagpur Samruddhi 8 lane Expressway ~ 700 Kms

Vadodara – Kim 8 lane Expressway ~ 380 Kms

Budget allocation for Road Infrastructure
For 2019 --→ US \$ 17 Billion.
For 2020 --→ US \$ 20 Billion

(in 1000 Kms)

Eastern Peripheral Expressway



Jaypee Gujarat Cement Plant



Sadhay Engineering Ltd.



Eastern Peripheral Expressway: Salient Features

- Total project length – 135 kms in 5 packages
- 8 lane project – Total width: 15.25M
- 7 Nos SP1600 with DBI & 3 LTBI paving 15.25m in single pass
- 240 Cum batching plant per machine
- Panel size: 3.75 x 4.5m
- Dowel Bars size: 32mm dia, 450mm length, 300mm c/ spacing

Samrudhi Expressway...



Samruddhi Expressway: Salient Features

- Expressway between Mumbai - Nagpur
- Total project length – 700 kms in 16 packages
- 8 lane project – Total width: 15M (3.75m lane width)
- Pavement thickness of 310mm
- Dowel Bar size: 32mm dia, 450 mm length, 300mm c/c spacing
- 13 Nos SP1600 with DBI & 3 LTBI paving 15m in single pass
- 240 Cum batching plant per paver
- Designed for 150Kmph speed limit

Vadodara – Kim Expressway...



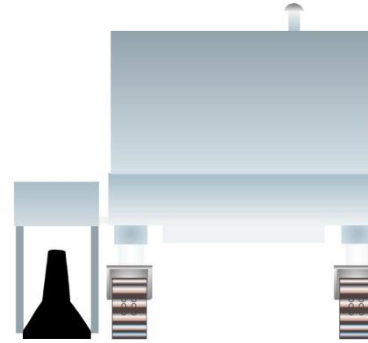
18.75M width paving in single pass..

Vadodara- Kim Expressway: Salient Features

- Total project length – 380 kms in 5 packages
- 8 lane project – Total width: 18.75M including emergency lane
- Paving thickness 320mm
- Total M40 concrete requirement for PQC ~ 2.3 Mi Cum
- SP1600 with DBI & 4 LTBI paving 18.75m in single pass
- Dowel Bar size: 32mm dia, 450mm length, 300mm c/c spacing
- 2 x 240 Cum batching plant per paver at max distance of 8-10 kms
- By far the largest paving width with DBI & LTBI in single pass...

OFFSET APPLICATIONS

SP15 - Offset Application



Kerb

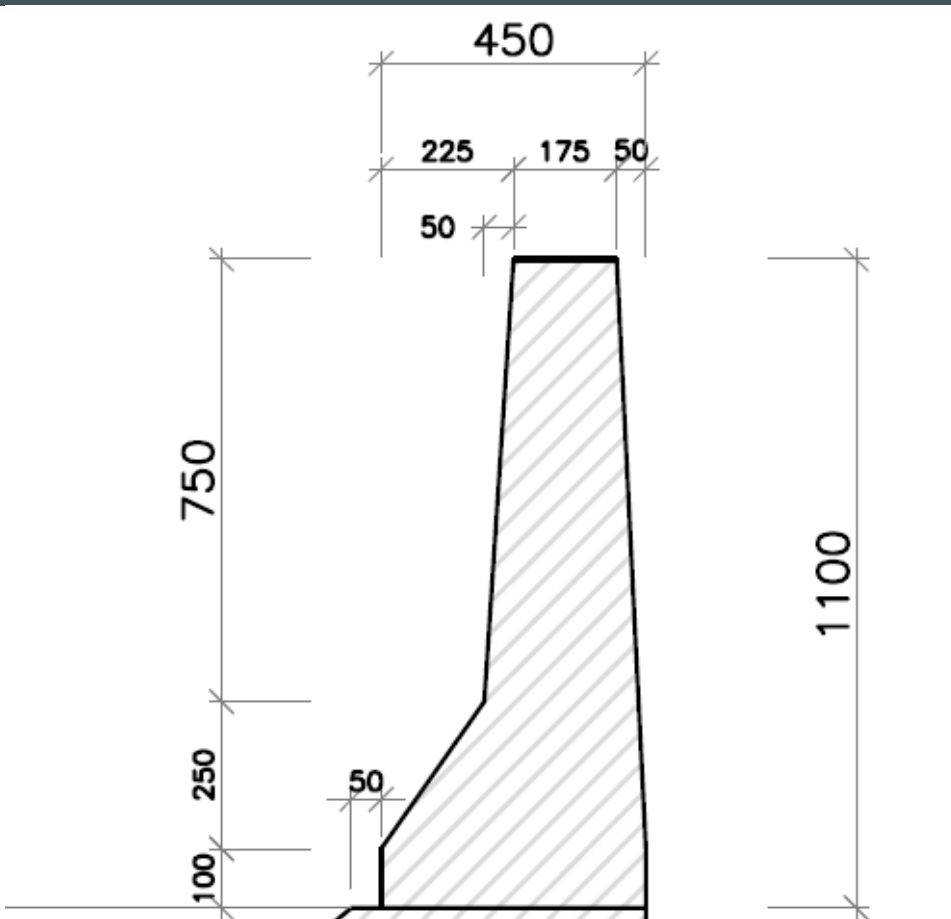
Kerb & Gutter

Crash Barrier

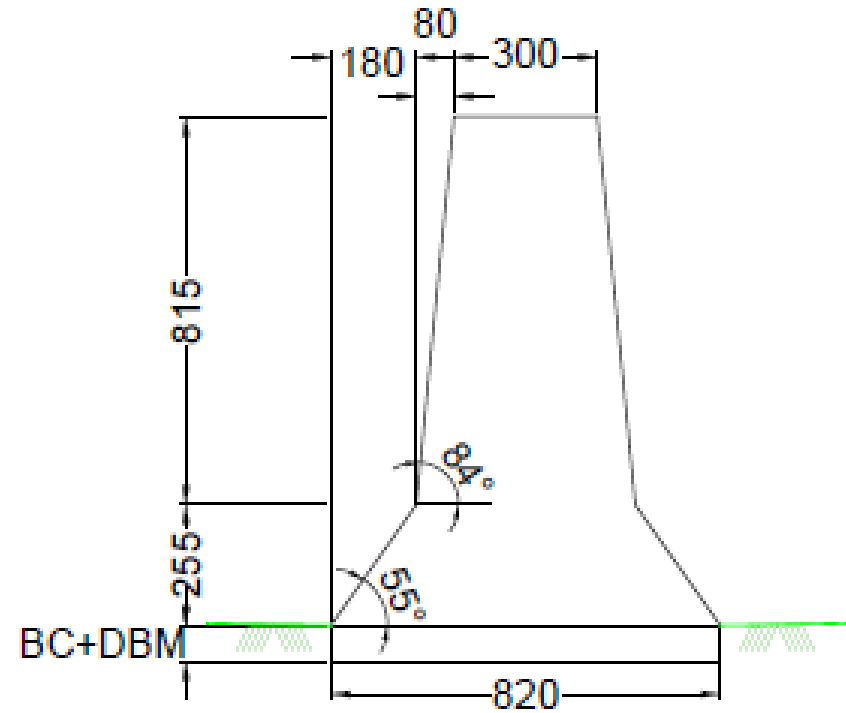
Drain

Footpath

SP15 - Offset Application – Crash Barrier



SP15 - Offset Application – NJB



SECTION

More than 400 plus machines in 2016 to 2018

Addition of new customers

No previous experience in rigid pavements

Our Customers did not have trained operator...

Pavement Quality issues... riding quality...

Seminars / Trainings / Operator School



- Interaction with design & consultant team
- Wirtgen India is member of Indian Road Congress (Key technical body of Indian Highway Authority)
- Technical Seminars @ CRRI, Consultants
- Knowledge centre – Share with customers
- Developed Skilled Operators – Hired by customers
- Application support / training at customer jobsites
 - ~ 250 Application training done
 - ~ 5400 personnel trained

Slipform Paver 2020& way forward



It's the mature market...

Opportunities:

Implementation of Dual Layer Paving

String less Paving – 3D

Usage of RAP in DLC – Specified by
CRR I

High speed railway track



THANK YOU !

Thank you for your Attention!!!

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