

LIGHT WEIGHT CELLULAR CONCRETE TO EXTEND ROADWAY SERVICE LIFE AND LEVEL OF SERVICE

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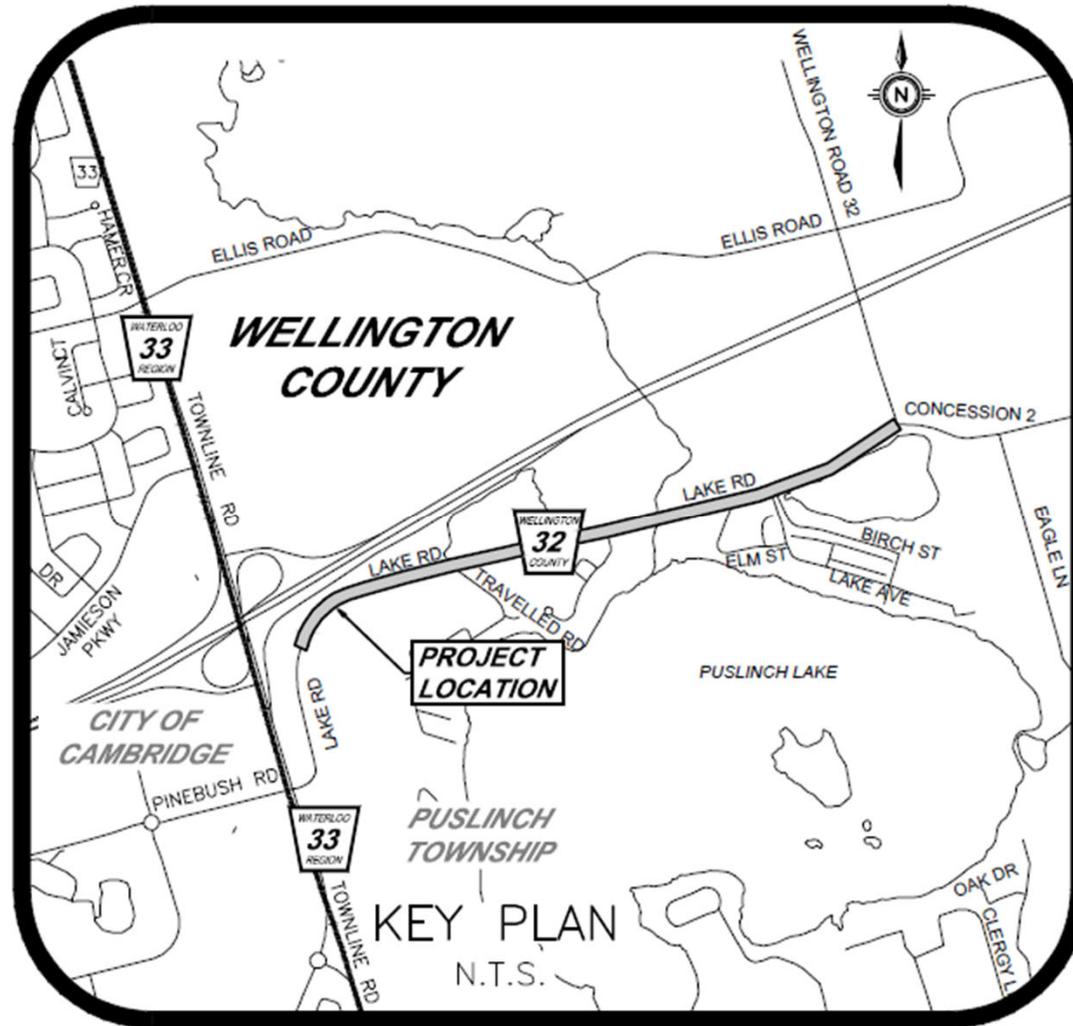
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Lightweight Fill Solutions

Wellington County Road 32



Construction Drawings – MTE Consultants Inc.



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Roadway Conditions

- Two-Lane Rural Platform
 - 3.0 m Wide Travel Lane
 - Narrow Partial Paved Shoulders (Variable Width)
 - Posted Speed Limit = 50 km/hr
 - Permanent Load Restriction = 5 Tonnes/Axle
 - Frequent Attention Required to Maintain Pavement Serviceability



Pavement Distress Areas



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Original Site Conditions



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Original Site Conditions



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Pavement Investigation

- Detailed Pavement Investigation included:
 - Detailed Pavement Surface Condition Survey
 - Pavement Cores
 - Boreholes
 - Laboratory Testing
 - Falling Weight Deflectometer (FWD) Testing

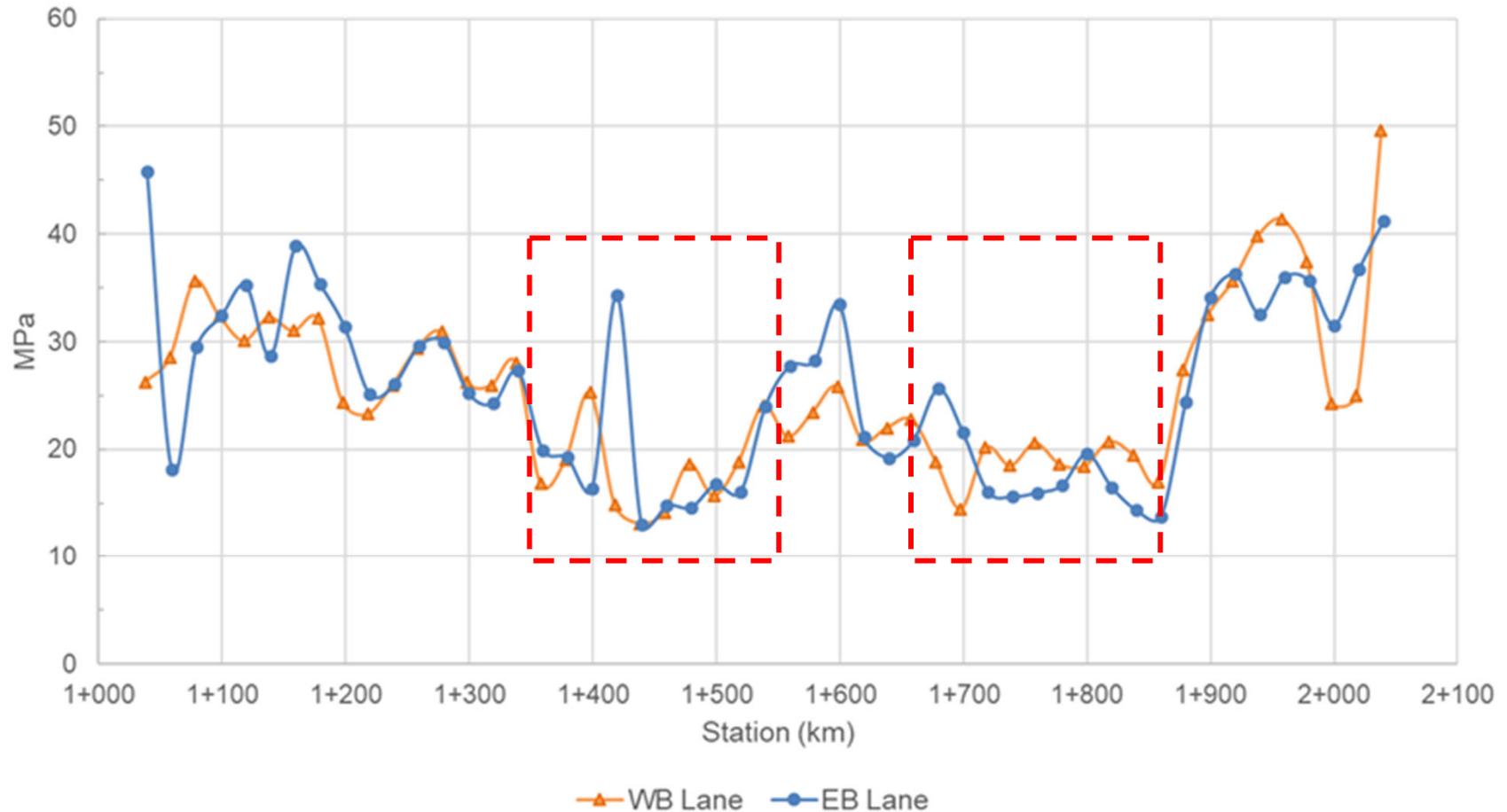


Existing Pavement Condition

- Pavement Considered in Fair-to-Poor Condition
 - Pavement Distortions Observed in Swamp Areas
 - Water Level in Ditches varied from 100 to 500 mm
- Pavement Structure Comprised:
 - 75 to 125 mm Asphalt
 - 350 mm Granular Base/Subbase
 - Additional 1.4m Granular Fill with Bi-Axial Geogrid
 - Layer of Buried Organics
 - Loose to Compact Sand Some Silt



Support Strength (Resilient Modulus)



Pavement Design Analysis

- Traffic Volumes (2014):

Direction	AADT	Cars	Small Trucks	Trucks/ Buses	Tractor Trailers
WB	2,357	95.9%	2.4%	1.3%	0.4%
EB	2,197	96.0%	2.2%	1.4%	0.4%

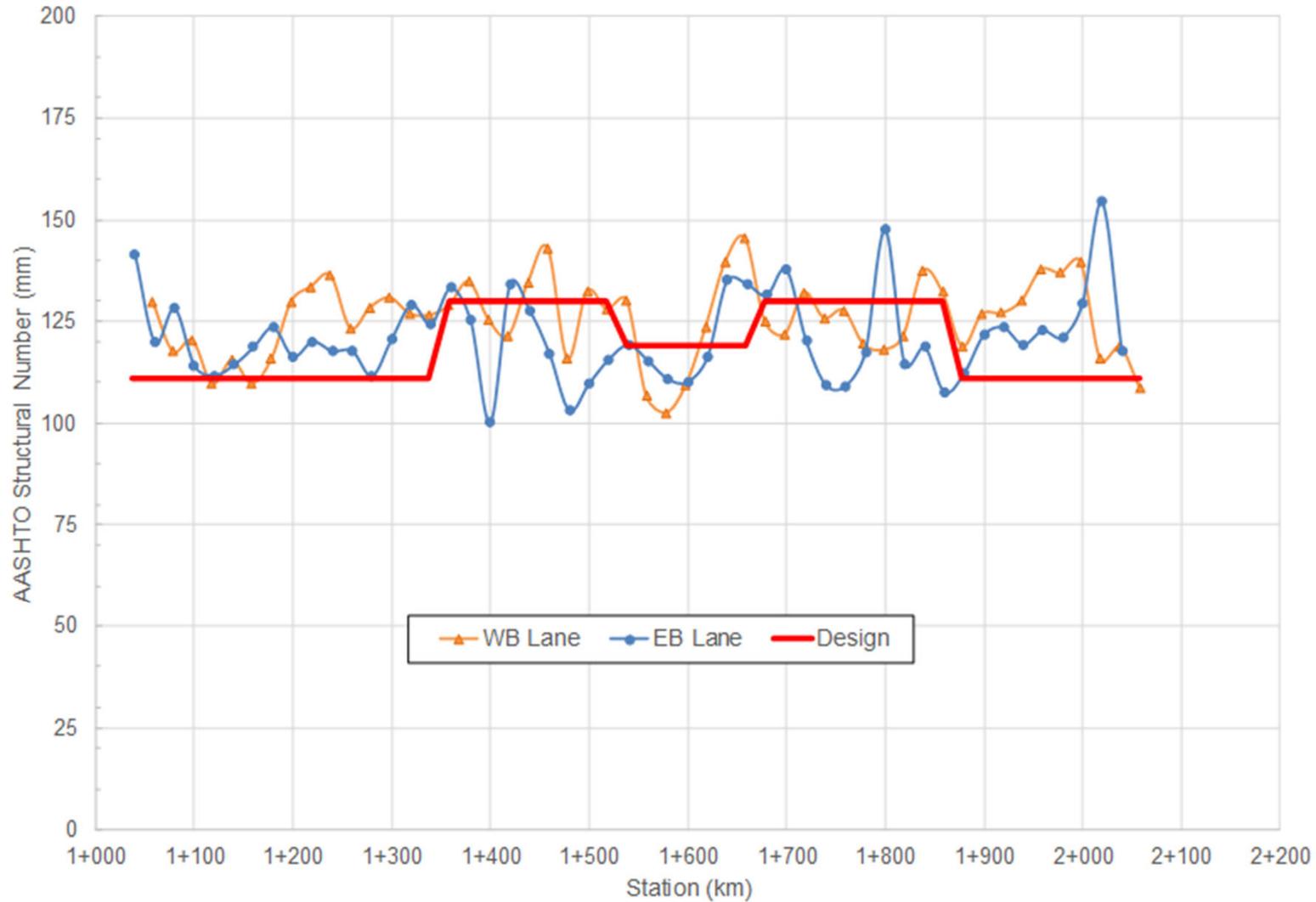
- Pavement Design Inputs (Low Volume Road):

Input Parameter	Value
20-year Design ESALs	1,250,097
Reliability (%)	90
Standard Deviation	0.44
Design Serviceability Loss	$4.2 - 2.0 = 2.2$

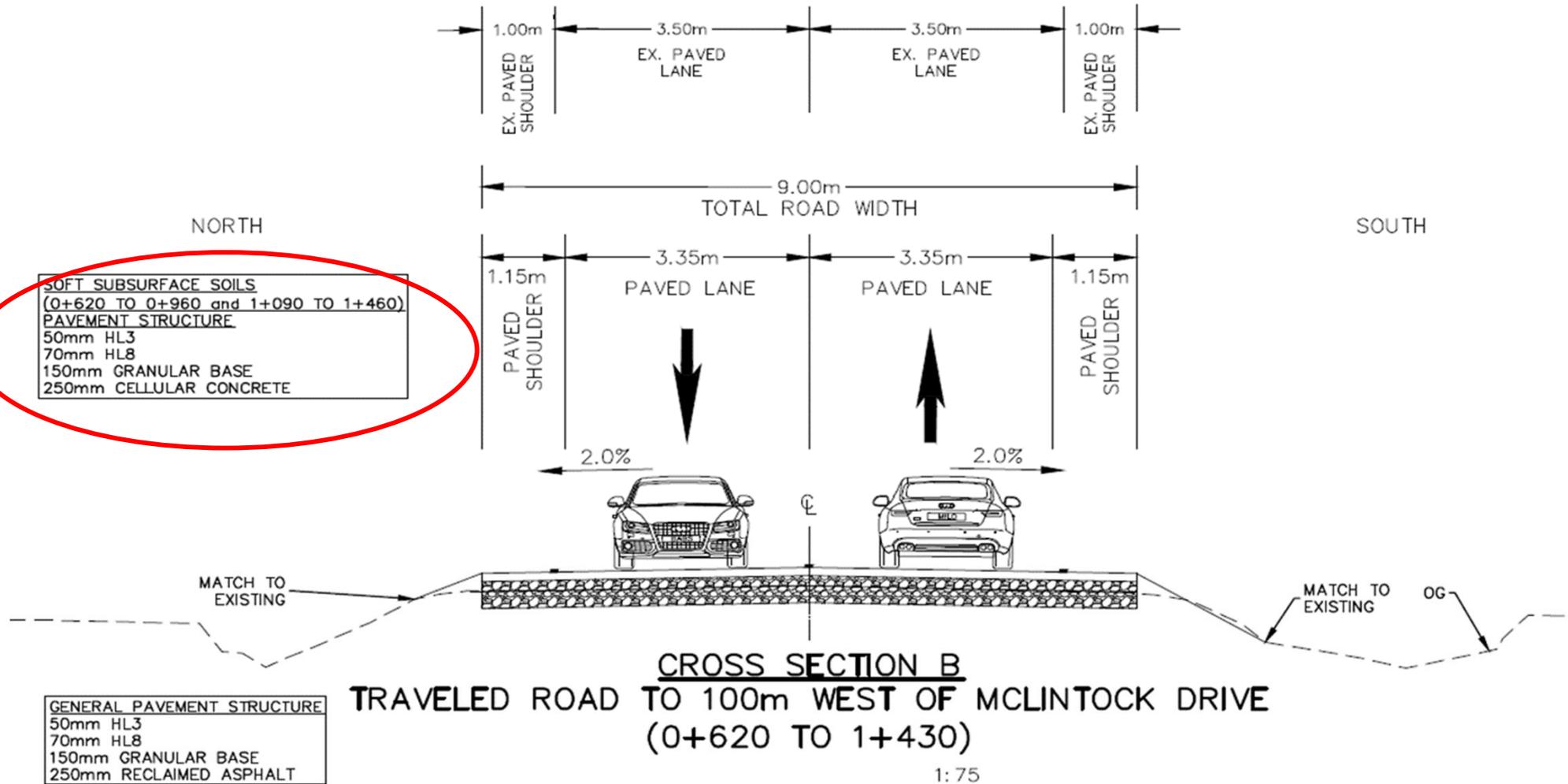
- Design Subgrade Support Strength:

- Varied from 15 to 25 MPa

Pavement Strength Comparison



Recommended Pavement Design



Construction Drawings – MTE Consultants Inc.



Lightweight Cellular Concrete

Mix Design and Properties	
Wet Cast Density	475 kg/m ³ (+/- 10%)
28-Day Compressive Strength	0.4 MPa
Average Thickness	250 mm
Average Daily Volume	~ 300 m ³

Production Equipment - Dry Mix Unit

- Produce up to 100 m³/hr; 750 m³/day
- Pump up to 1 km



Material On-Site Production



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Material Placement



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Material Curing



Granular Material Cover



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Asphalt Paving



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Constructed Pavement



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THANK YOU



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