TOMLINSON

Asphalt Pavement – Contractor Perspective

2015 CAPTG Workshop

September 14, 2015

MacDonald-Cartier International Airport

MacDonald-Cartier International Airport

Tomlinson has completed **the redevelopment of all 3 runways** at the Ottawa Airport. The latest project was completed in August 2014 involved the longest runway: Runway 14-32 (10,000ft).

Project scope included a complete design & overhaul of the existing runway from the grinding of old asphalt, full excavation, placement of granulars, replacing all of the existing storm sewers along with all new wiring and lighting system and asphalt paving.

Highlights

The Tomlinson partnership with the Ottawa Airport involved the design input to provide an asphalt solution that provided cost savings & minimal operational disruption.

Key Facts

- $29M
- 18 weeks to do 3 km of runway
- Granulars = 430,000 tonnes
- Asphalt = 80,000 tonnes
- Asphalt/day = 9,000 tonnes

Key Challenges

- Night Operations @ intersection of 2 runways
- Crews had to trench, install, backfill, grade, compact and clean up in very short time
- Working/co-ordination 100% air side

Key Innovations

- GPS technology for grade control & sewer layout = real-time info to better manage time crunch
- Echelon paving meant staggering 3 pavers + 2 material transfer vehicles which ensured seamless longitudinal joints and large daily amounts of asphalt to be laid
- Heated asphalt joints to ensure good compaction + increased longevity of the joints
- Computer automated joint heating system in a self contained electric infrared system = consistent temperatures

Summary of Major Quantities

DESCRIPTION	QUANTITY	UNIT
Excavation	144,000	M3
Asphalt Removal	210,000	M2
In Place Processing of Asphalt	210,000	M2
Granular 'B'	260,000	MT
Granular 'A'	180,000	MT
Asphalt	81,000	MT
Hydroseeding	350,000	M2
Manholes & Catch Basins	120	EA
Storm Sewers	9,600	M
Adjustments	145	EA
Complete Electrical Upgrading & Replacement		LS

Project was completed in ONLY 18 weeks

Quality Control - Challenges

Challenges

- 14 hour days, 6 days/week
- **Sheer number of samples required** when dealing with this much material in such a short period of time
- Struggled to achieve **Modified Proctor Densities** in the field – often not achievable
- Resorted to conducting **a control strip** to yield an achievable target density value

Quality Control - Scope

Granulars

- **2 Field technicians were required + 1 QCA + our CCIL Certified Lab**
- **60 samples** of Granular B Type II (GB) were taken for gradation and physical properties testing
- GB for this project was project specific - had to be 3” minus
- **50 samples** of GA were taken for gradation and physical properties testing

Asphalt

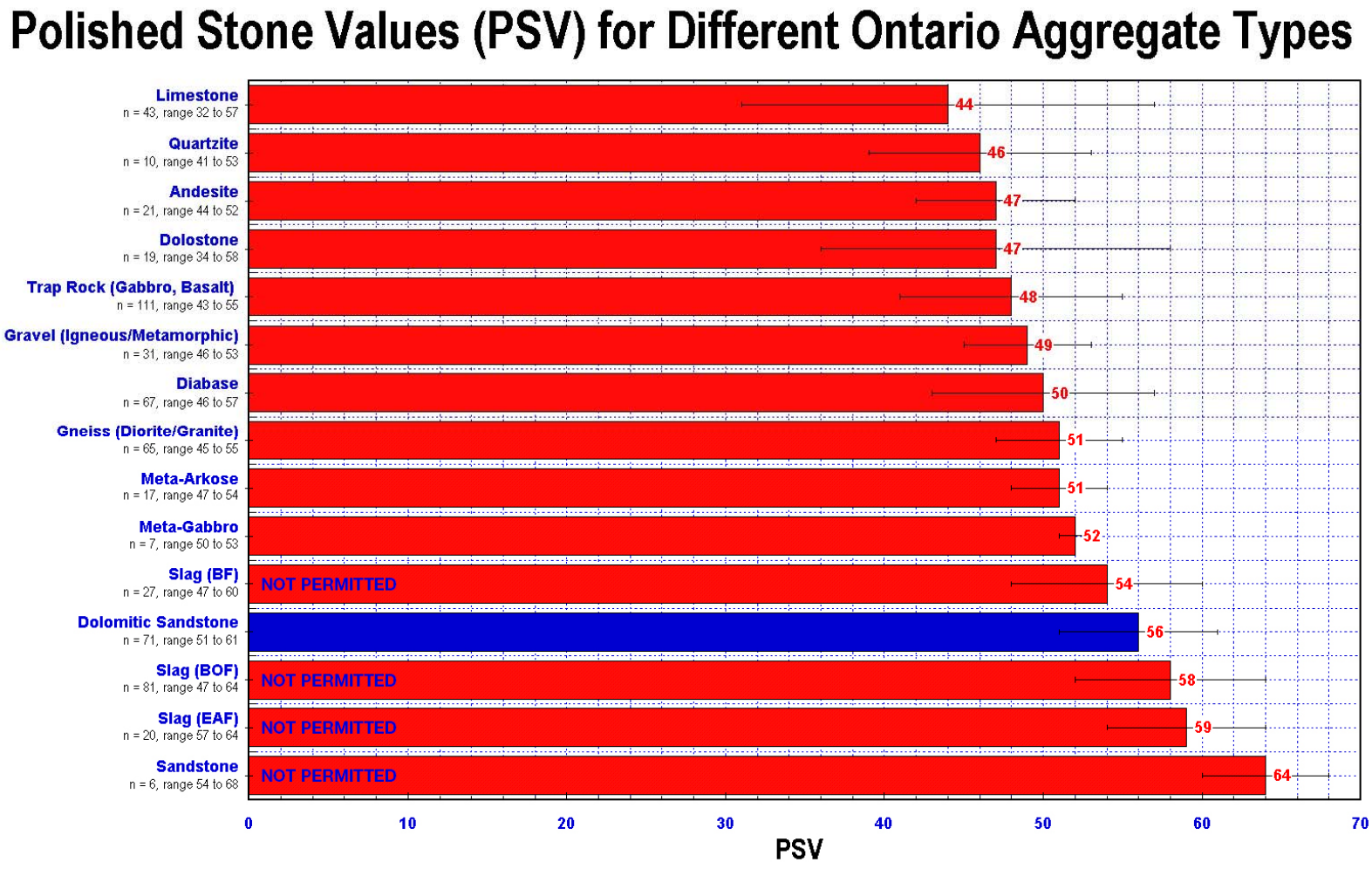
- **2 Field technicians + 1 QCA + our CCIL Certified Lab.**
- SP 19 Category E with 64-34 asphalt cement came from 3 plants
- **118 samples** were taken
- SP 12.5 FC 2 Category E with 70-34 asphalt cement came from one plant
- **45 samples** were taken

FC 2 Asphalt

All materials came from approved premium designated source: Rideau Quarry Dolomitic Sandstone from the March Formation

- Silica content = 55-57% (SiO2)
- Highest Polished Stone Value in the Province
- As the stone wears, it does not polish. Skid resistance stays roughly the same
- The micro texture of the stone consists of fine sand particles = sand paper
- As it wears, exposes more sand particles yielding consistent skid resistance
- Minimal polishing with time
- Initially, the Airport obtained skid resistance values of 85, though after the thin film of surface AC wears off the Airport was getting values of 90+

Polished Stone Values (PVS)



Conclusion

Benefits of Asphalt

- Offers excellent:
  - Skid resistance
  - Durability
  - Ability to groove surface
- Time savings due to large area coverage and quick curing time
- Cost effective
- Allows for maintenance

Communication, Cooperation & Collboration

“Since 1998, Tomlinson has been the Ottawa Airport's preferred "paver”. The enduring partnership between the Airport and Tomlinson is based on good communication, constant cooperation and valuable collaboration. Tomlinson has consistently provided high quality people, processes and products in its completion of all the Airport asphalt runways and the concrete de-icing pad. More importantly, Tomlinson understands the need to get things done quickly and with minimal disruption to airport operations. They were proactive and their crews worked every weekend to meet our target dates.”

- Paul Benoit

President & CEO, Ottawa International Airport (retired)

Runway Paving Video

Any Questions?