What Makes Good Construction Aggregate

June 7, 2010
Cornell Local Roads Program
Ithaca, NY

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Trade Assoc. Representing

– Aggregate
– Hot Mix Asphalt
– PC Concrete
– 518-783-0909
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Introduction

- Aggregate Resources - Quantity
  - Sand & Gravel
  - Crushed Stone
  - HMA and RMC are 95% Sand and Stone

- Aggregate Resources - Quality

- Permitting

- Economic Impact
Sand & Gravel

- Glaciation – The Ice Age
  - 15,000+/- yrs ago ice over 1 mile thick
- Types – 313 NYSDOT Approved Pits
  - Limestone
  - Dolomite
  - Sandstone
  - Quartzite
  - Granite
Aggregate Quantity - Sand & Gravel
Crushed Stone

- Types – 154 NYSDOT Approved Quarries
  - Limestone
  - Dolomite
  - Sandstone
  - Quartzite
  - Granite
  - Trap Rock
Aggregate Quantity – Crushed Stone
Aggregate Quantity – Crushed Stone
Aggregate Resources - Quality

- Physical Properties
  - Soundness
  - Absorption
  - Specific Gravity
  - Abrasion Resistance
  - Freeze-Thaw
  - Frictional Properties

- Processed Properties
  - Gradation
  - Particle Shape
  - Crushed Faces
  - Cleanliness
Quality – Physical Properties

- **Soundness** – ability to resist weathering thru wetting and drying
- **Absorption** – ability to absorb liquid into pore spaces
- **Abrasive Resistance** – ability to resist mechanical breakdown
- **Freeze-Thaw** - ability to resist weathering thru freezing and thawing
- **Frictional Properties** – ability to resist polishing
Quality – Physical Properties

- **Soundness** – Magnesium Sulfate NYSDOT 207
- **Absorption** – No Limit
- **Abrasion Resistance** – LA Abrasion AASHTO 96
- **Freeze-Thaw** – F–T NYSDOT 208
- **Frictional Properties** – Carbonate Content MM28
Quality – Processed Properties

- **Gradation** – distribution of particle size by mechanical screening

- **Particle Shape** – rounded or angular / flat or elongated

- **Crushed Faces** – angular interlocking particles provides strength
Aggregate Resources - Quality

- Gradation – Table 703-4
- Particle Shape – rounded or angular / flat or elongated
- Crushed Faces – ASTM Min. 85% - 2 Face
Permitting

- SEQRA - Passed April 1975
- >1,000 tpy for use or sale other than onsite needs mining permit from NYSDEC
- Townships superseded on most operating procedures
- SEQRA not apply to zoning
Permitting

- In Adirondacks APA permit is needed
- Permit process 3-5 yrs usually involving EIS and public hearings
- Permit may be necessary for expansion of existing operation
- Other Permits/Studies
  - Wetlands
  - Air
  - Storm water (SWPPP)
  - SPCC
  - Archeology Studies
Permitting

• Most townships have zoned out or greatly restricted mining (NIMBY) to the extent that it is rare that a new (greenfield) pit/quarry is developed

• Result – cost of aggregates increasing, which causes cost of infrastructure to increase
Economic Impact

• Aggregate Production in NYS 2006 (USGS)
  – 52.1 MT Crushed Stone
  – 35.0 MT Sand & Gravel
  – Approx 4.5 tons consumed per capita

• Center for Gov’t Research 2009 Rpt
  – 28,000 to 30,000 jobs
  – $1.2 billion in wages
  – $100 million annual fiscal contribution
Economic Impact

“Because the demand for aggregates will continue…provisions to assure adequate supplies will have to be made. Long-range planning and zoning regulations will have to take into account community needs for this valuable natural resource. All groups will need to work together to ensure adequate community and environmental protection, while ensuring availability of aggregates at a reasonable cost that will allow growth and prosperity” USGS
Thank You

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