# Specifications Impact from Contractors Point of View

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& North Central Asphalt Conference
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# Specifications Impact from Contractors Point of View

- Method Specifications
- QCQA
- ERS
- PFP
- QCP
- QMP

- Method Specification (1930)
  - Lab Requirements
    - 10’ x 12’ x 7’ (144 $ft^2$ )
    - 2 – Windows & Workbench with drawers
    - Be able to see Mixing Platform
  - Mix Designs
    - Submitted 1 pound of Asphalt
    - Submit %’s of Ingredients
  - Proportioning at Plant
    - IDOT
  - Density on Road
    - IDOT
    - Cores 90% of “D”
      - R&R if out of Specification

- Method Specification (1990)
  - Lab Requirements
    - 200 $ft^2$
  - Mix Designs
    - IDOT
    - Contractor Option
  - Proportioning @ Plant
    - IDOT
  - Density on Road
    - IDOT
    - None < 91.0 %

- QCQA (1990's)
  - Mix Designs
    - IDOT
    - Contractor
  - Proportioning @ Plant
    - Contractor
  - Density on Road
    - Contractor
    - None < 91.0 %

- Responsibility
  - Up until the early 90's IDOT was responsible for
    - Design's
    - Proportioning @ Plant
    - Density
  - QCQA Contractor took responsibility for
    - Design's
    - Proportioning @ Plant
    - Density

- Contactor Designs
  - Marshall Method (6-14)
    - Type I,II, & III
    - Mixture A & B Binders
    - Mixture C , D, & E Surface
    - Other , BAM
      - » Voids
      - » VMA
      - » Stability
      - » Flow

# Contactor Designs

- Superpave (12-40)
  - 2 % @ 30 Gyrations
  - @ 4% Voids
    - 30
    - 50
    - 70
    - 80
    - 90
    - 105

# Contactor Designs

- 9.5L Surface / 19.0L Binder
- 4.75 Surface / 9.5 Fine Graded
- 9.5 “C” “D” “E” “F” Surface
- 12.5 “C” “D” “E” “F” Surface
- 12.5 Binder
- 19.0 Coarse Graded Binder
- 19.0 Binder
- 19.0 Fine Graded Binder
- 25.0 Coarse Graded Binders
- SMA

# Contactor Designs

| HMA Mixtures [1/, 2/] | FRAP/RAS Maximum ABR % | | |
|---|---|---|---|
| Ndesign | Binder/Leveling Binder | Surface | Polymer Modified [3/, 4/] |
| 30 | 50 | 40 | 10 |
| 50 | 40 | 35 | 10 |
| 70 | 40 | 30 | 10 |
| 90 | 40 | 30 | 10 |
| | | | |

# Contactor Designs

- Different Aggregates
  - Limestone
  - Dolomite
  - Gravel
  - Trap Rock
  - Slag (Air Cooled / Steel)
  - Sand Stone
  - Concrete
- Different Sources
- Different Asphalt Grades

# Contactor Designs

- Virgin Designs
- Recycle Designs
- Asphalt Grades
- RAS

37 74 92 110


PMW
PMW
OFF

Contractor Designs

- Hamburg
  - Rutting Potential
- SCB (Semi-Circular Bend)
  - Cracking (Brittleness Test)

Contractor Designs

Additional criteria

Lengthens Design Process

1-Week

2-Weeks…

QCQA

Voids

2 per Day for 2 days then 1 per Day

Asphalt Content

1 per 1/2 Day

Density

5 Nuc Test across the Mat every ½ Mile

Pay – 100 %

ERS

Voids

800 tons

Asphalt Content

800 tons

Density

5 Cores across the Mat every ½ Mile

Pay – 105 %

PFP

Voids

1000 tons

VMA

1000 tons

Density

1 Core Randomly every 0.2 Mile

Pay – 103 %

QCP

Voids

Varies tons

VMA

Varies tons

Density

1 Core Randomly every 0.2 Mile

Pay – 100 %

# Pay Calculations

QCQA -100%

ERS 30% Voids – 30% AC Content – 40% Density

PFP 30% Voids – 30% VMA – 40% Density

QCP 30% Voids – 30% VMA – 40% Density

# Out of Spec Material (QCQA)

Art. 1030.05 (f) Acceptance by the Engineer. Final acceptance will be based on the following.

(1) Validation of the Contractor's quality control by the assurance process.

(2) The Contractor's process control charts and actions.

(3) Department assurance tests for voids and density.

If any of the above is not met, the work will be considered in non-conformance with the contract.

# Out of Spec Material (ERS) (PFP) (QCP)

Acceptance by the Engineer. All of the Department's tests shall be within the acceptable limits listed below:

Table 4

| Acceptable Limits | |
|---|---|
| Parameter | Acceptable Range |
| Field VMA | -1.0 – +3.0 %[1/] |
| Voids | 2.0 – 6.0 % |
| Density:<br>IL-19.0, IL-25.0, IL-9.5<br>IL-4.75, SMA | <br>90.0 – 98.0 %<br>92.0 – 98.0 % |
| Dust / AC Ratio | 0.4 – 1.6[2/] |

1/ Based on minimum required VMA from mix design

2/ Does not apply to SMA

In addition, the PWL for any quality characteristic shall be 50 percent or above for any lot. No visible pavement distress shall be present such as, but not limited to, segregation, excessive coarse aggregate fracturing or flushing.

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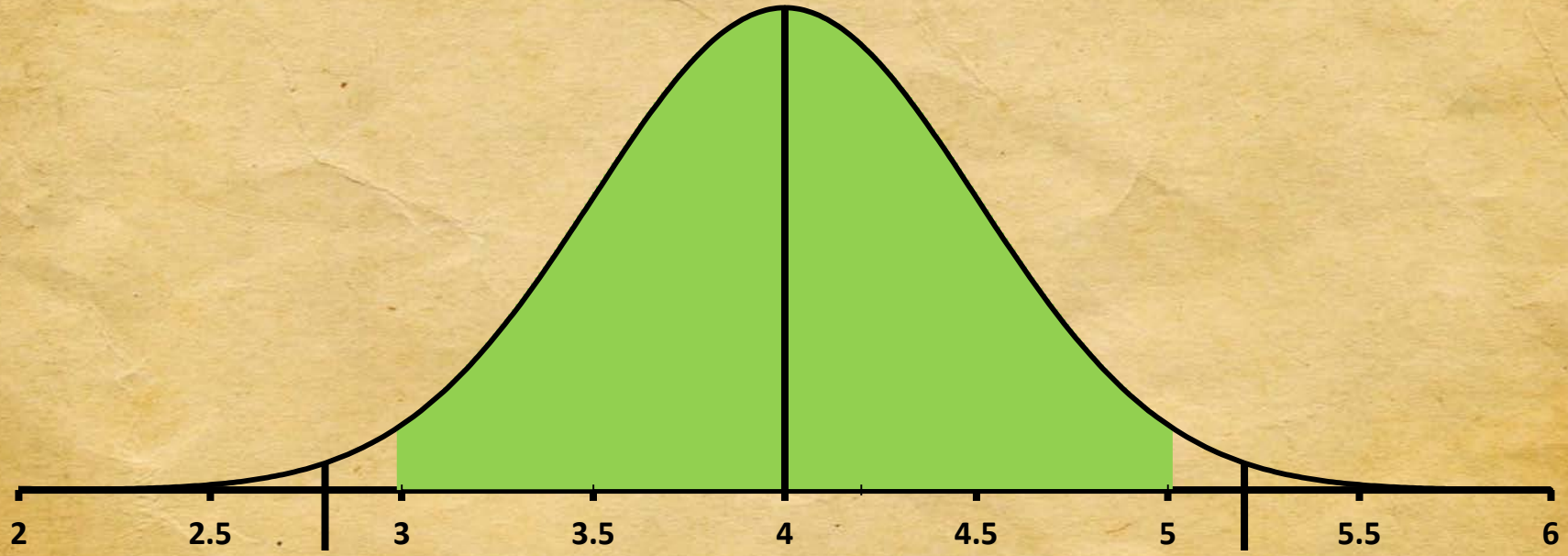
# Designs / Production / Voids



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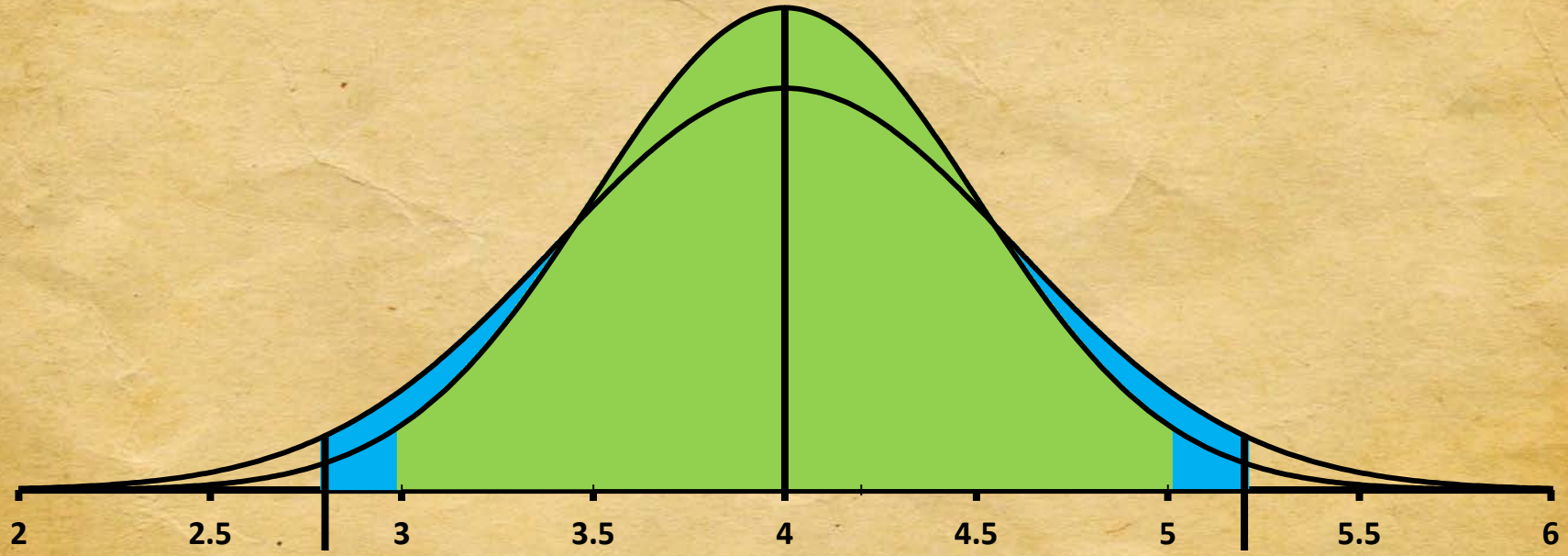

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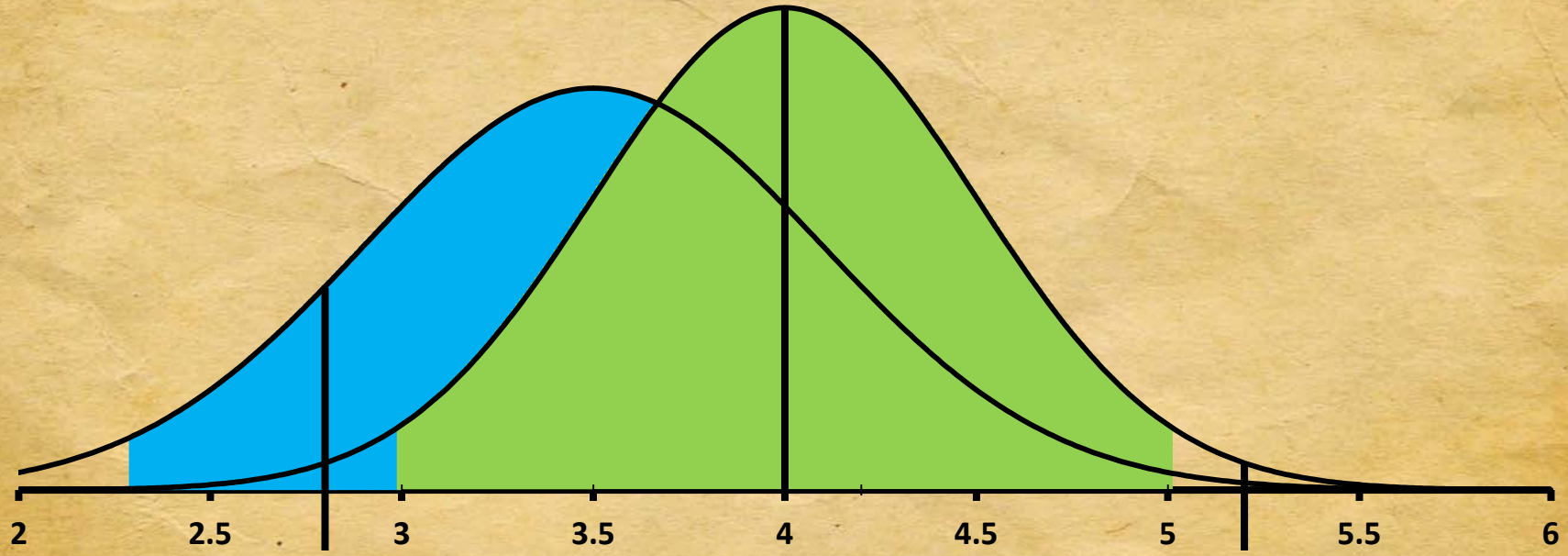

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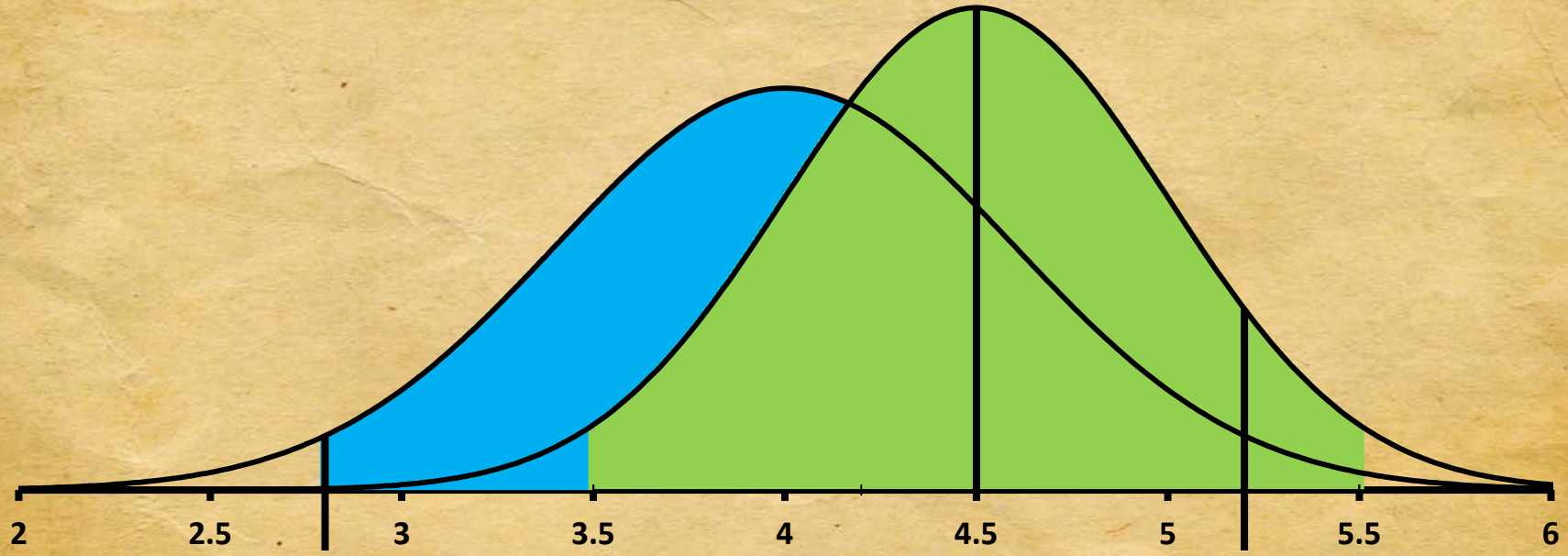

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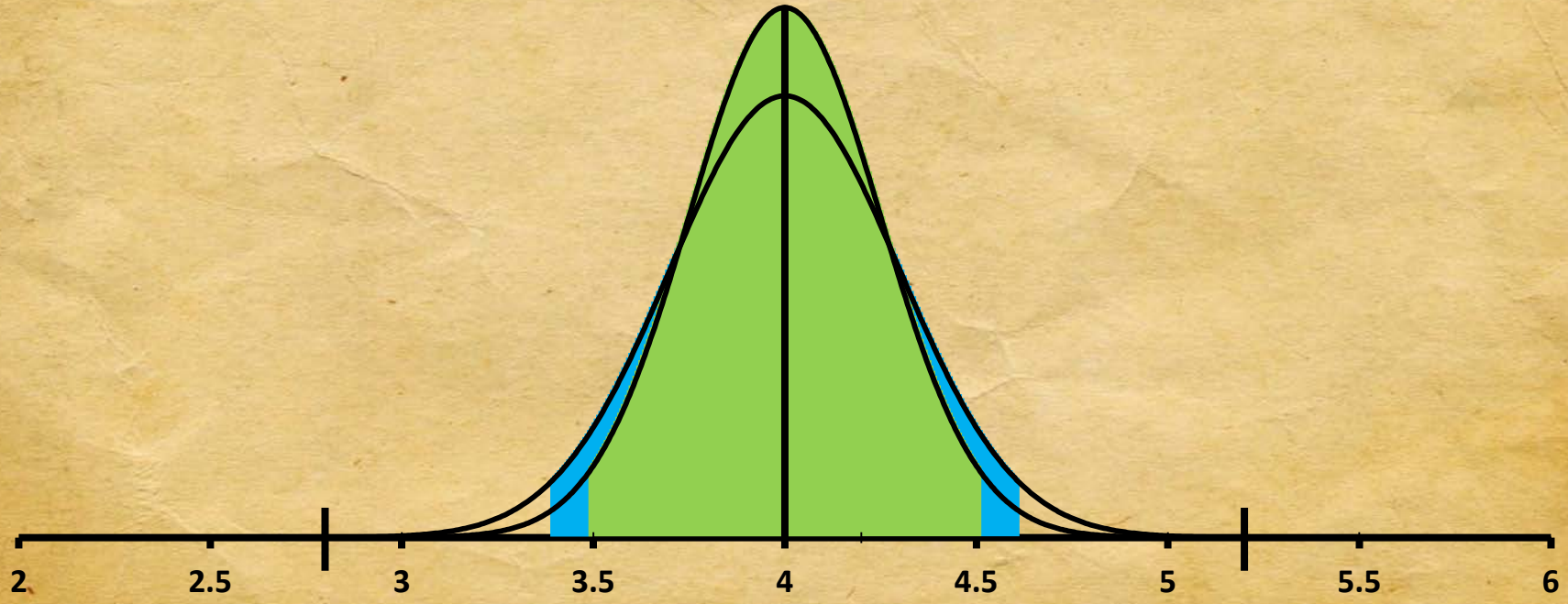
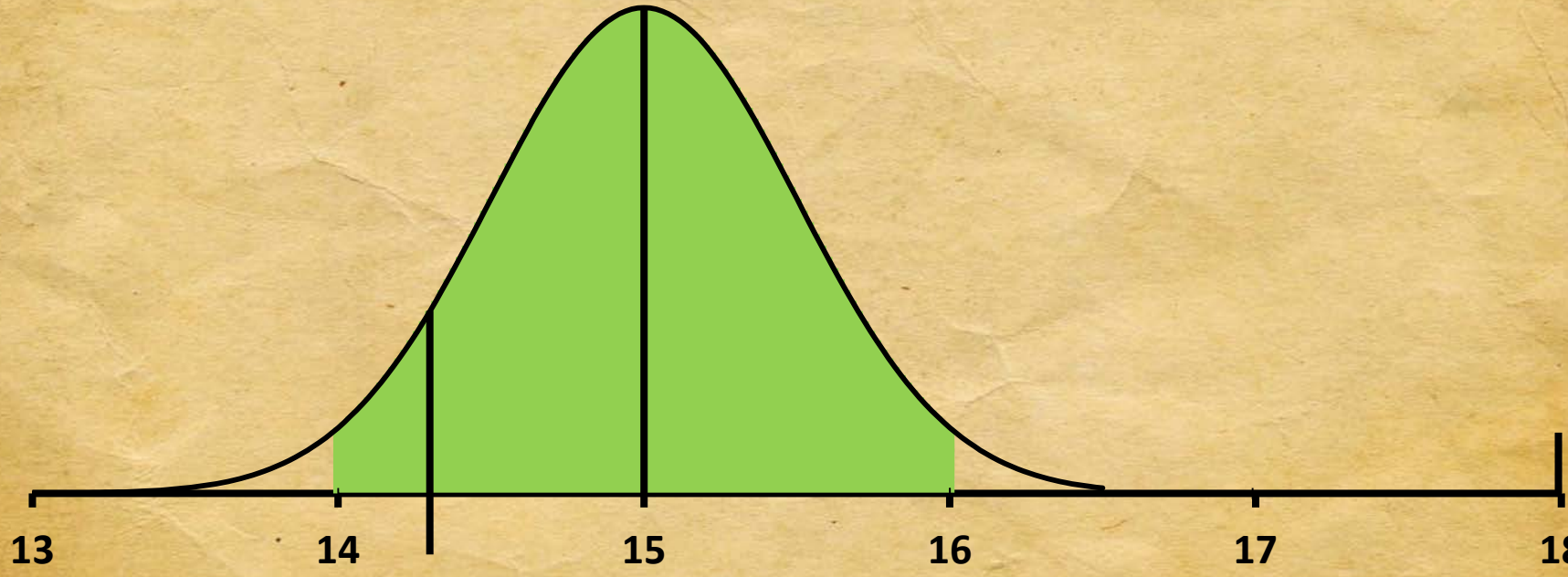


# Contactor Designs / Production



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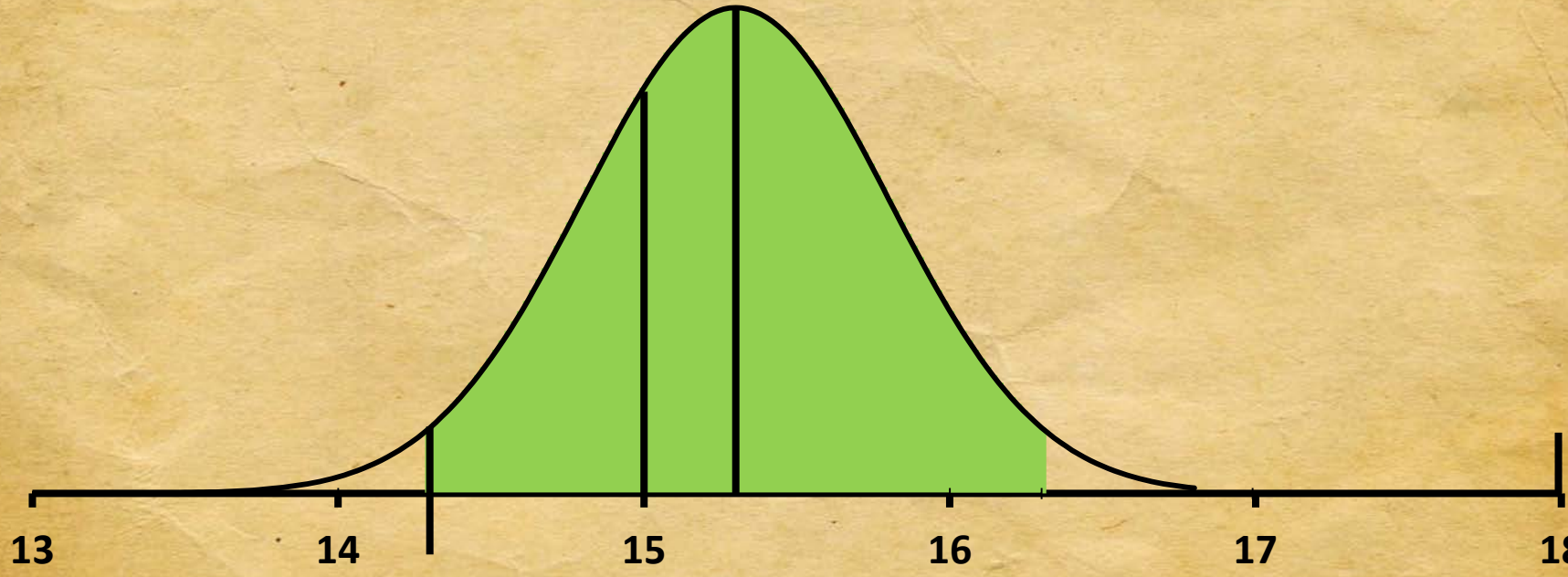

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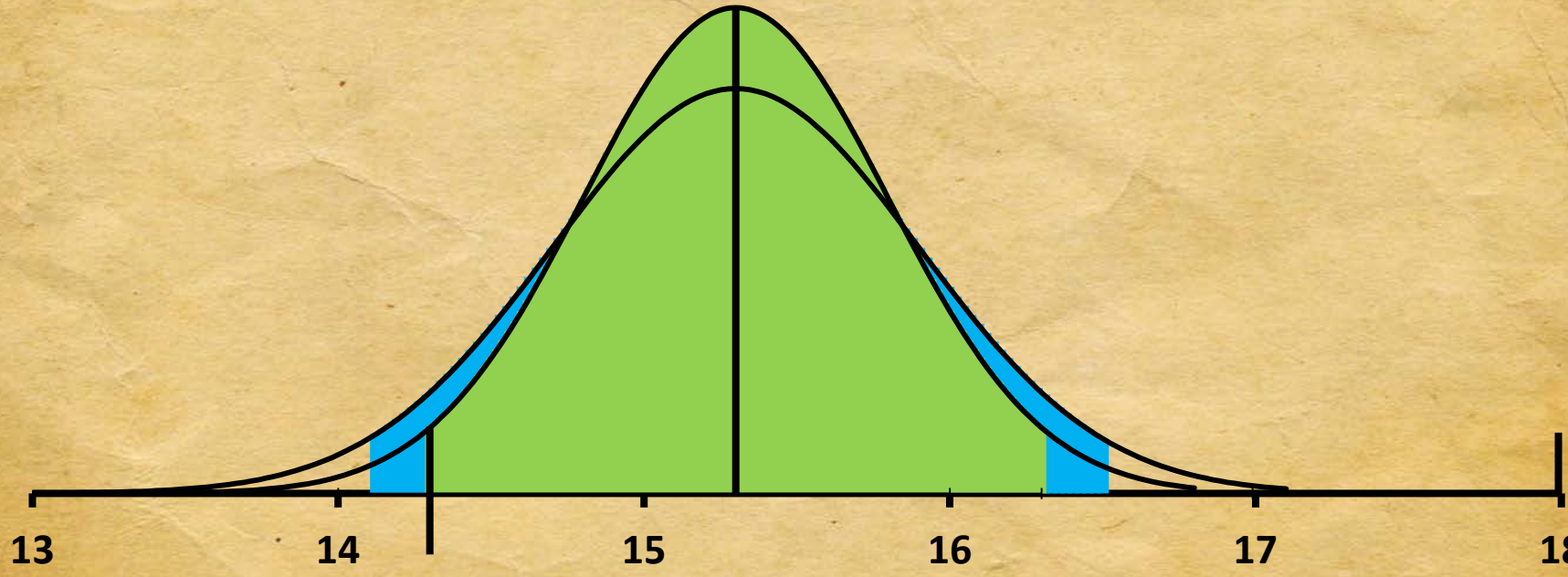

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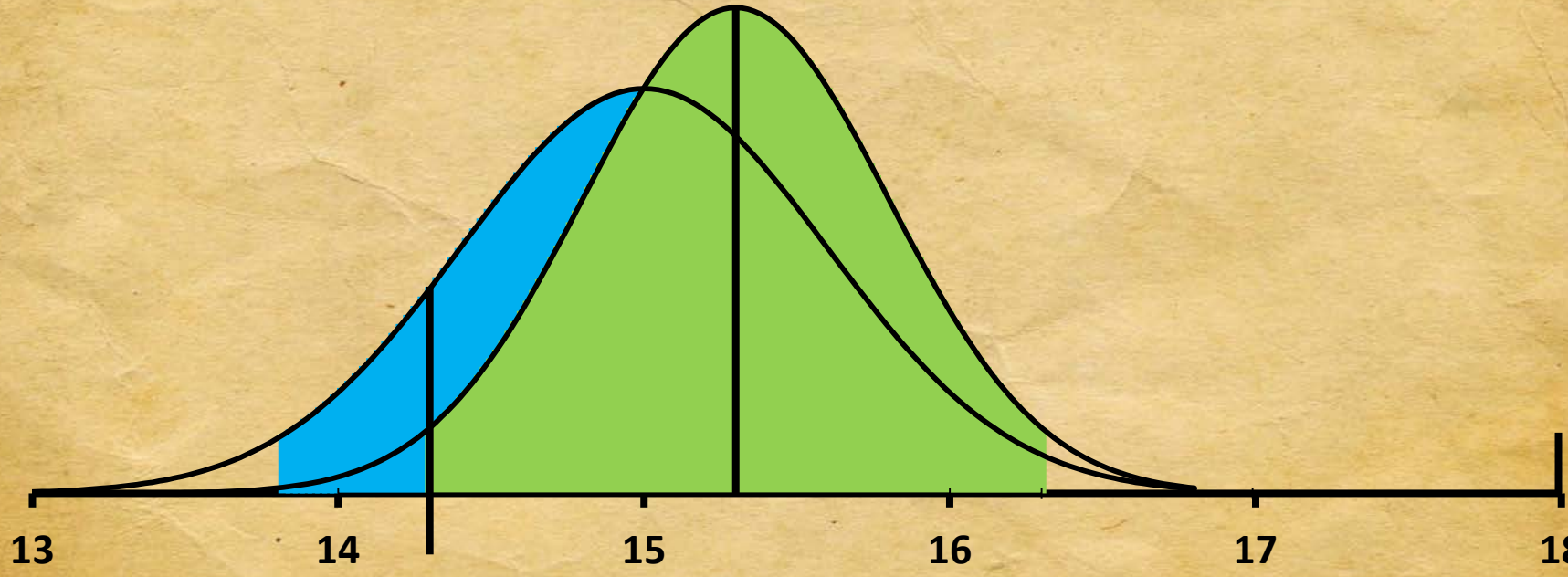

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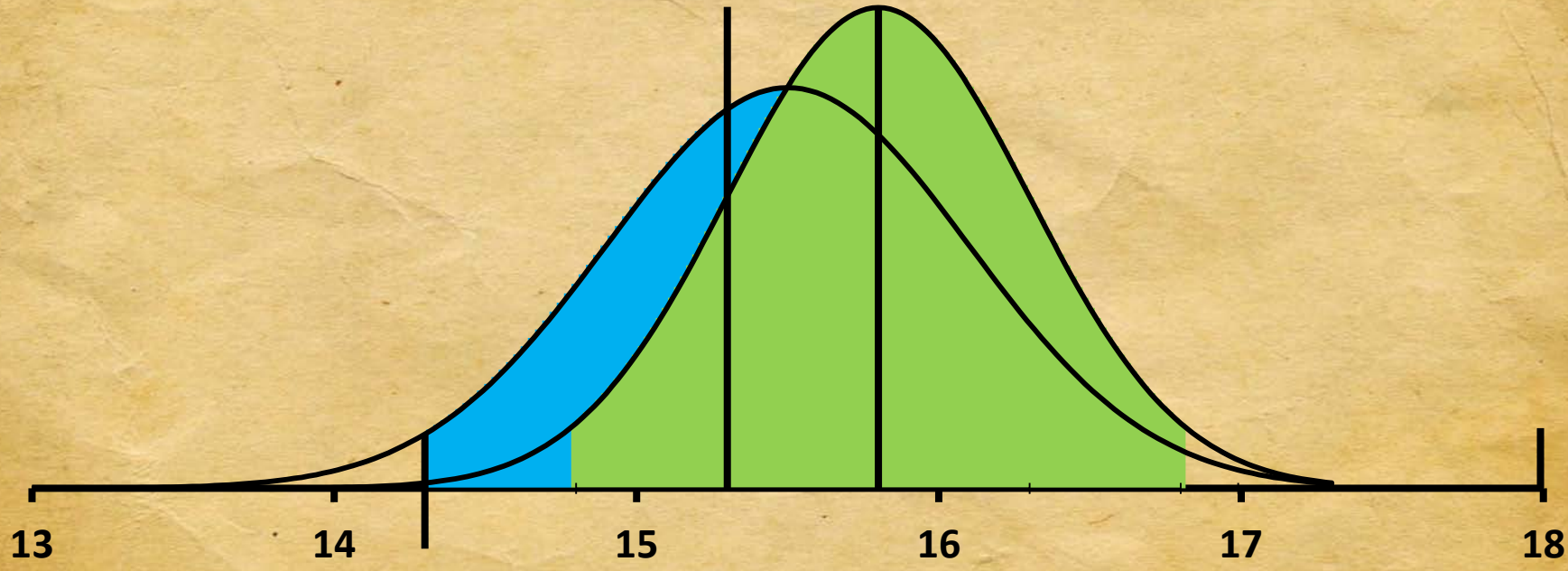


# Out of Spec Material

- Take into account location
  - Base Conditions
  - Location of Material in Pavement structure
- Narrow down Out of Spec Material
- Only remove what is necessary
- Accept Credit

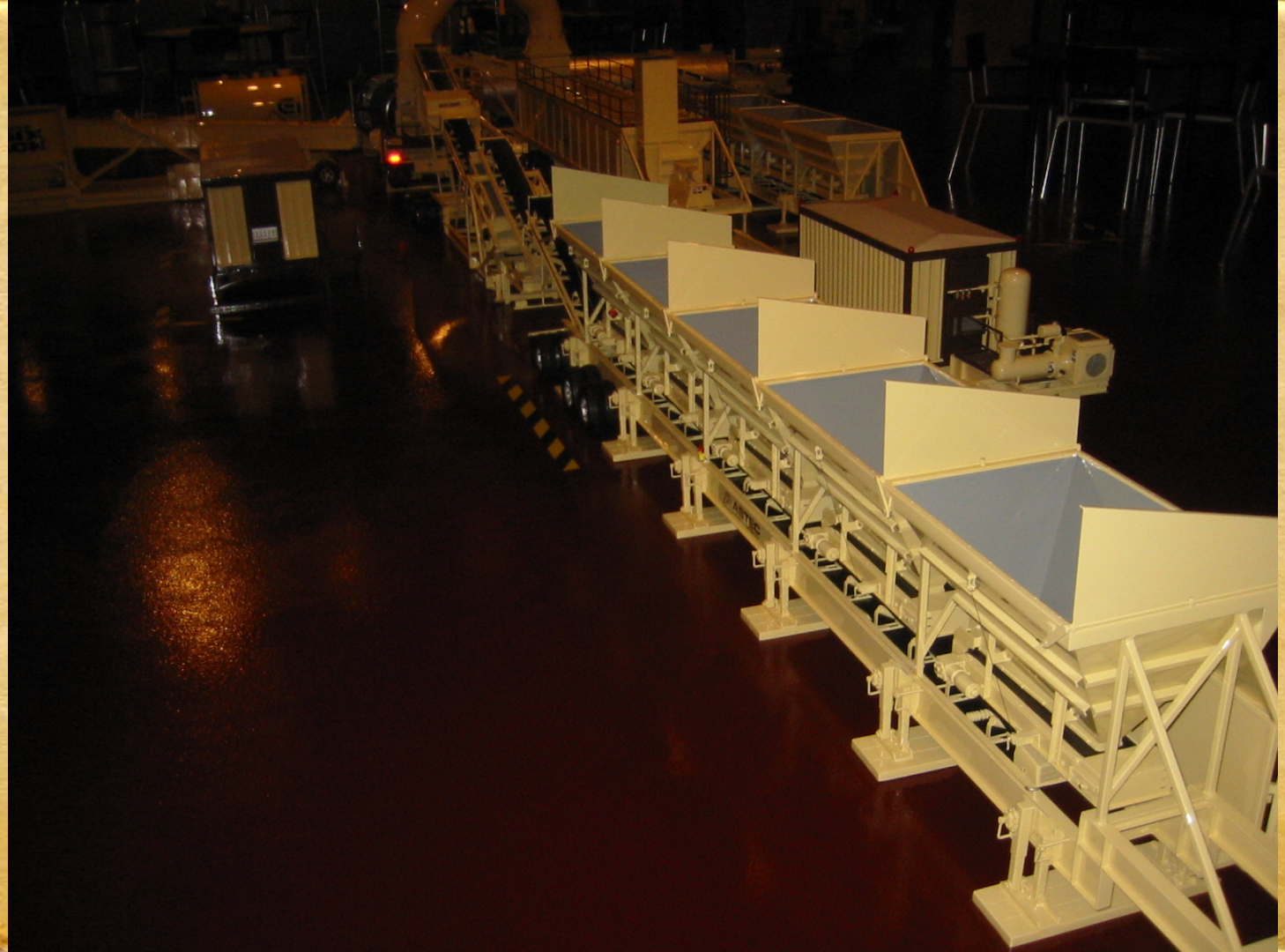
# Out of Spec Material

- HMA Surface Cse N70 “C”- $80
- Remove - $15 - 20,000
- Replace - $60 - 70,000
- R&R - $75 – 90,000

# Contactor Production

- Production of HMA is a High Volume Process
  - Taking Aggregates at a High Rate
    - 150 – 500 tph
    - Acceptable variance of Master Bands within AGCS ± 8
    - Relates to ± 4 on PCS
    - 4% Δ PCS ≈ 0.6 to 2% Δ Voids & VMA


ASTEC
AUG 28 2002




1
2
3
4
5
6
7
8
ASTEC

# Contactor Quality Control & Production

- Additional Equipment & Controls on Plants
- Additional Materials at Plants
- Additional Testing Equipment
- Additional Personnel

- All Adds cost

# Contactor Quality Control & Production

Future:

Fewer Design

Better Control

Better Quality

Less Risk

Lower Cost

# Specifications Impact from Contractors Point of View

Thank You for Your Time