Estimating Masonry

Week 3

Construction Estimation, Planning and Control

Materials

- Brick
  - Building, Facing, Glazed, Fire, Pavers
- Stone
- Concrete Masonry Units
- Bonded by Mortar and Metal Ties
- Grout and Reinforcement

Bricks (Clay Masonry Units)

- Modular (see Table 15.2)
  - Veneer walls: Non-Load bearing
- Non-Modular (8" x 2.25" x 3.75")
  - Solid Non-Modular: Structural load bearing wall
- Different pattern bonds (Fig 15.1)
- Cost based on 1000 units: M
- Measured: D" x H" x L"
  - Engineer: 4 x 3-1/5 x 8

Mortar and Grout

- Masonry Mortar:
  - Used as a sealant, To bed masonry units
  - Architectural appearance, Allows size variations
  - Types: M(2500psi), S(1800psi), N(750psi), O(350psi) [ASTM C270]
  - Made of: Sand, Cements, Hydrated Lime (Table 15.1)
- Grout:
  - Bond masonry to reinforcing steel
  - Strengths > 2500psi [ASTM C476]

Estimating Bricks

- Estimating number of bricks:
  - # of Units =[(w) (A -O)144]/[(L + t) (H + t)]
  - W: wastage ~ 5% | A, O: Wall and opening areas in SF
  - L: length of masonry unit
  - H: height of masonry unit
  - t: mortar thickness
  - Non-Modular: table 15.4 (# /100 SF)

Estimating Mortar

- Estimating mortar for bricks: (Table 15.3) (CY/1000 bricks)
  - Vol.(CY)/1000 bricks: [(L + H +t) x t x D]/[46.656]
  - D : Depth of brick
  - Waste:25%
  - Non-Modular: Table 15.5 (CY/1000 Standard Size)
- Estimating constituents of Mortar (Table 15.1)

Pattern Bonds

- Arrangements of Headers and Stretchers and Soldiers
- Common Bond
  - 1 course of Header every 6th course
  - Calculate #Header bricks/SF
  - Calculate #Stretcher bricks/SF
  - Divide total SFA by 1:5 ratio