QUANTITY SURVEY AND VALUATION
Unit III

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- **AREA OF SIDE SLOPING SURFACE**
- The area of sides which may require turfing or pitching, may be found by multiplying the mean sloping breadth by the length.
- The mean sloping breadth = $\sqrt{(sd^2 + d^2)}$
- Area of both side slopes = $2L \times d\sqrt{s^2 + 1}$
- This may also be calculated in a tabular form

ROAD ESTIMATION

Station or Chain-age	Depth or Height	Mean depth or Height	Breadth of side slopes $d\sqrt{s^2+1}$ *Sloping breadth*	Length between stations L	Total Area of both side slopes $2 L d\sqrt{s^2+1}$

PRISMOIDAL METHODQuantity or Volume = L/6 $(A_1+A_2+4A_m)$

Where A_1 and A_2 are the cross-sectional areas at the two ends of a portion of embankment of a road of length L, and A_m is the mid-sectional area

Let d_1 and d_2 be the heights of bank at two ends, and d_m be the mean height at the mid-section, B be the formation width and S:1 be the side slope.

Cross-sectional area at one end

$A_1=Bd_1+sd_1^2$

Cross-sectional area at other end

$A_2=Bd_2+sd_2^2$

Cross-section at middle

$d_m= \frac{d_1+d_2}{2}$

Bar Bending Schedule

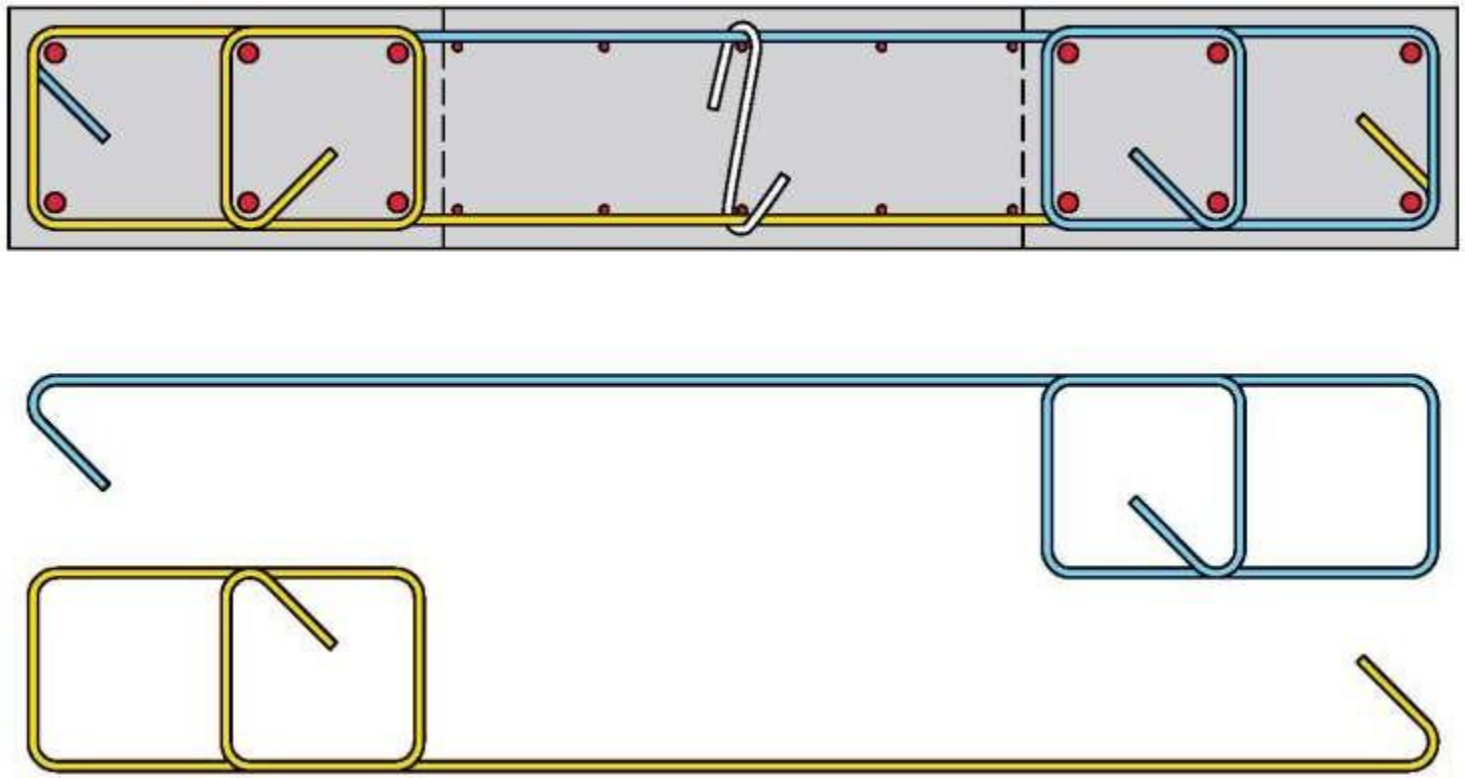
Space Constraints – specially large dia bars in Columns and Beams Depend on the strength from concrete / lack structural integrity Time consuming / Costly for higher diameter bars

Couplers (Crimping / Threading) are the options fro splicing.

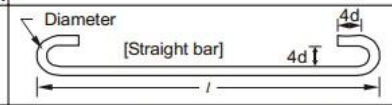
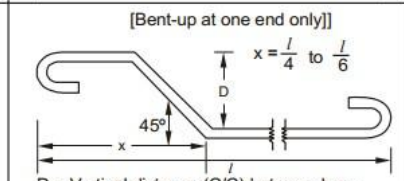
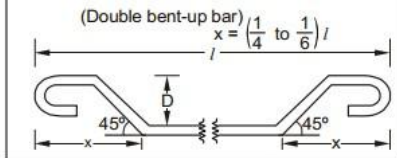
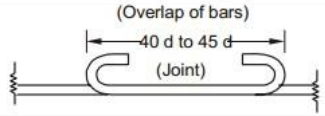
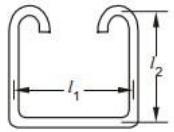
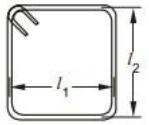
Connect quickly at site locations

Reduced congestion of rebars due to splicing Independent of concrete – integral reinforcement Cost effective – specially 20mm dia and above.

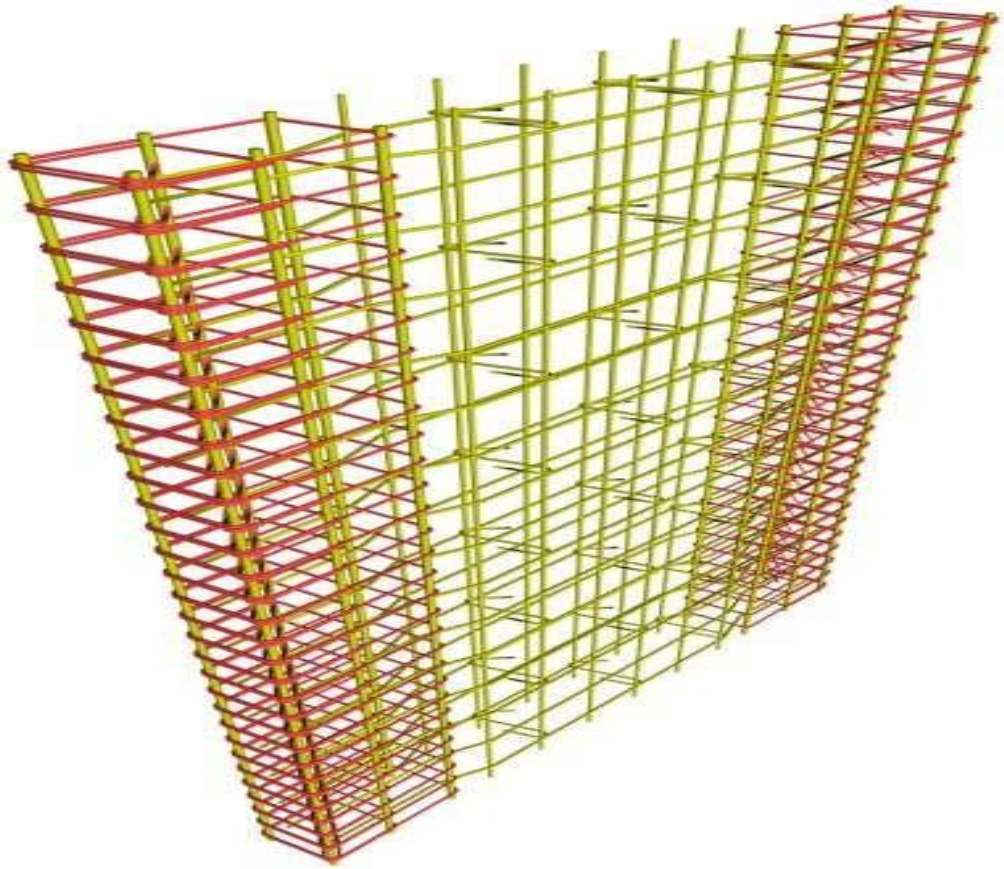
BBS for RC Beams

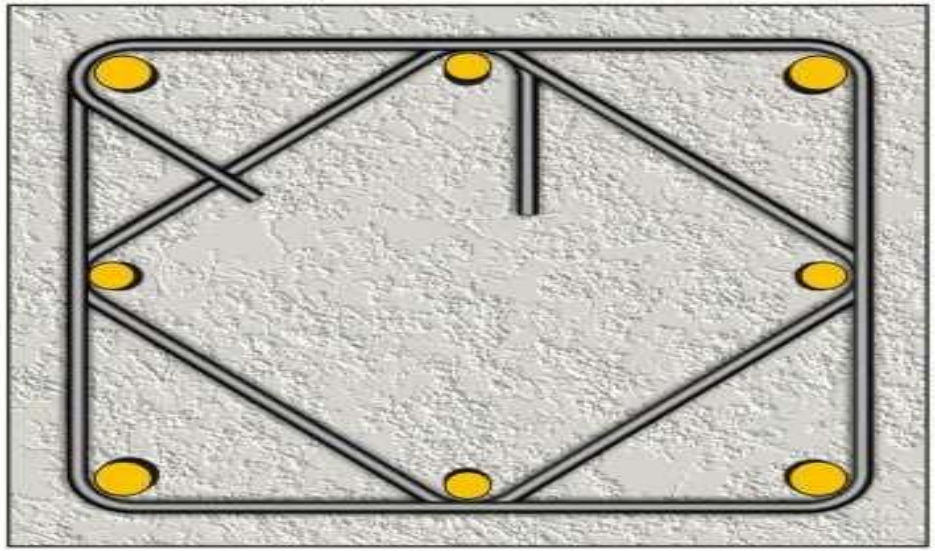


Bar Bending Schedule

Sl. No.	Details of Bar Shape	Length of Hooks	Total Length of Bar
1.		2[9d] = 18 d (both hooks together)	[l + 18 d]
2.		2[9d] = 18d (both hooks together)	[l + 18 d + 0.42 D]
3.		2[9d] = 18d (as for above cases)	[l + 18 d + 2 × 0.42 D]
4.		2[9d] = 18d	Overlap length at joint = [(40 d to 45 d) + 18 d]
5.		[Here, one hooks height = 14d] 2 × (14d) = 28 d	[$l_1 + 2l_2 + 28$ d]
6.		2(12d) = 24 d	[2($l_1 + l_2$) + 24 d]

BBS for Columns and walls





Bar Bending Schedule