

## CHAPTER NO. 19

### LINING

**Notes :-**

- (i) Labour rates for lining items include handling of materials within 100 ms.
- (ii) The cost of water is not included in the following rates except items 19.24 and 19.25 and the water shall be supplied by the department free of cost.
- (iii) The rates for item Nos. 19.1 to 19.6 include the cost of fine dressing to exact level, watering and preparing sub-grade. All basket earth work to be paid extra at the rates for lip cutting.
- (iv) For Item No. 19.7, 19.9, 19.26, 19.27, 19.28, 19.29, 19.30, 19.31, 19.32, 19.33, the labour & through rates for lining of side slopes from 0 to 3.5m height be reduced by 5%, if the depth of the channel is upto 1.5m.

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
19.1	Dressing bed and preparation of sub grade for lining.	sqm	4.05	4.05	4.05	4.05
19.2	Dressing side slopes and preparation of sub grade for lining.	sqm	6.60	6.60	6.60	6.60
19.3	Dressing bed and preparation of sub grade for lining in earth work with admixture of shingle or kankar :-					
	(a) Up to 40 per cent	sqm	6.37	6.37	6.37	6.37
	(b) Above 40 per cent	sqm	8.10	8.10	8.10	8.10
19.4	Dressing side slopes and preparation of sub grade for lining in earth work with admixture of shingle or kankar :-					
	(a) Up to 40 per cent	sqm	8.10	8.10	8.10	8.10
	(b) Above 40 per cent	sqm	10.48	10.48	10.48	10.48
19.5	Dressing bed and preparation of sub-grade for lining in mixed gravel and conglomerate reaches.	sqm	11.88	11.88	11.88	11.88
19.6	Dressing side slopes and preparation of sub grade for lining in mixed gravel and conglomerate reaches.	sqm	13.71	13.71	13.71	13.71
19.7	Double layer tile lining for irrigation channels consisting of :-					
	(i) 10mm thick cement mortar 1:5 on sub-grade.		-	-	-	-

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
	(ii) First layer of 5.08 cm. thick tiles 30.48 x 15.24 cm laid in 1:5 cement mortar as mentioned above.		-	-	-	-
	(iii) Sand-wiched plaster 1:3 cement sand mortar 16mm thick.		-	-	-	-
	(iv) Second layer of tile 5.08 cm thick laid in 1:3 cement sand mortar with 6mm thick layer of mortar over sand-wiched plaster :-		-	-	-	-
	The above gives total thickness of lining 13.36 cm					
	(I) In bed	sqm	62.13	312.03	68.34	318.24
	(II) On side slopes:-					
	(a) Upto 3.5 ms height above bed level.	sqm	75.63	325.54	83.20	333.10
	(b) Above 3.5 ms but upto 5.5 ms height	sqm	81.63	331.54	89.80	339.70
	(c) Above 5.5 ms but upto 7.5 ms height	sqm	84.63	334.54	93.10	343.00
Note :-	The height is to be measured vertically.					
19.8	Single layer tile lining in bed only consisting of :-					
	(i) 10mm thick cement mortar 1:5 on sub-grade					
	(ii) Single layer of 5.08 cm thick tiles 30.48x15.24x5.08cm. laid in 1:5 cement sand mortar mentioned above.					
	(iii) 20mm thick cement plaster 1:3 properly rendered and finished.					
		sqm	49.07	205.30	53.98	210.21
19.9	Cement concrete lining 15cm. thick or less for irrigation channels, using cement concrete 1:3:6 :-					
	(a) hand mixed concrete lining in bed.	cum	393.96	2264.47	433.36	2737.22
	(b) hand mixed concrete lining on side slopes for vertical height up to 3.5m.	cum	436.31	2306.82	479.95	2350.46

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
	(c) hand mixed concrete lining on side slopes for vertical height above 3.5m but upto 5.5m.	cum	492.22	2362.73	541.44	2411.95
	(d) hand mixed concrete lining on side slopes for vertical height above 5.5m but upto 7.5m.	cum	548.13	2418.64	602.94	2473.45
19.10	Excavating conglomerate for drains and bed sleepers under the lining.	cum	485.97	485.97	485.97	485.97
19.11	Making dry brick drains behind lining 7.5cm brick all-round.	m	11.77	11.77	11.77	11.77
19.12	Putting 1:3 cement sand slurry 6mm thick on prepared bed and side slopes before laying concrete on bed and side slopes.	sqm	2.19	26.12	2.19	26.12
19.13	Curing lining for 28 days :-					
	(a) In bed	sqm	3.05	4.03	3.05	4.03
	(b) On side slopes.	sqm	11.05	13.88	11.05	13.88
19.14	Extra allowance for providing templates in curved portion of lining.	sqm of curved surface	0.44	6.89	0.44	6.89
19.15	Extra allowance for form work in concrete lining :-					
	(a) In bed	cum	49.99	216.91	49.99	216.91
	(b) On side slopes.	cum	59.99	226.91	59.99	226.91
19.16	Extra allowance for scaffolding in tile, brick and concrete lining for side slopes only.	sqm	0.48	10.62	0.52	10.67
Note :-	The rates for item No. 19.16 are payable on area of side slopes only.					
19.17	Filling expansion joints with special impervious hot pour 12.5mm wide.	Per m per cm depth	0.05	1.00	0.05	1.00
19.18	Bending and fixing iron rungs on lined slopes.	each	25.62	401.92	28.18	404.48
19.19	Making temporary perforated french drain on top of coping of lining for curing, consisting of two tiles laid on edge in 1:7 cement mortar on each side of the drain.	m	5.51	33.56	6.06	34.11

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
Note :-	The rates for item Nos. 19.19 and 19.20 are included in the rate of item No. 19.13 for curing and are not payable in addition. These rates are payable only when curing is done departmentally and the work of french drain is got done through contractor.					
19.20	Dismantling perforated french drain on top of lining.	m	3.39	3.39	3.39	3.39
19.21	Collecting kattals and brick bats from bed including stacking of collected material outside the canal.	cum	Same rate as per carriage of materials over short lead plus Rs. 9.60 per cum for collecting the scattered material	Same rate as per carriage of materials over short lead plus Rs. 9.60 per cum for collecting the scattered material	Same rate as per carriage of materials over short lead plus Rs. 9.60 per cum for collecting the scattered material	Same rate as per carriage of materials over short lead plus Rs. 9.60 per cum for collecting the scattered material
Note :-	In item No. 19.21, lift shall be converted into horizontal lead as laid down in note (i) of chapter No. 6.					
19.22	<b>Cement pointing 1:2</b> on tile lining.					
	(a) In bed	sqm	19.04	27.41	20.94	29.31
	(b) On side slopes.	sqm	21.10	29.47	23.21	31.58
Note :-	The work of item No. 19.22 is to be done and paid for only when specially permitted by the Superintending Engineer.					
19.23	Earth work for lip cutting for lining of irrigation channels inclusive of all allowances, lead and dressing :-					
	(a) 0 to 1.5 m depth	cum	68.78	68.78	68.78	68.78
	(b) depth exceeding 1.5 ms but upto 3.0 ms.	cum	72.10	72.10	72.10	72.10
	(c) depth exceeding 3.0 ms but upto 4.5 ms.	cum	78.74	78.74	78.74	78.74

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				Labour Rate	Through Rate	Labour Rate	Through Rate
1	2		3	4	5	6	7
	(d)	depth exceeding 4.5 ms but upto 6.0 ms.	cum	88.70	88.70	88.70	88.70
	(e)	depth exceeding 6.0 ms but upto 7.5 ms.	cum	98.66	98.66	98.66	98.66
Note :-	(i)	The height in item No. 19.23 is to be measured vertically.					
	(ii)	The rates for lip cutting are payable for the entire depth including the bottom curve.					
19.24	Double layer tile lining for water storage tanks as per specifications of item no. 19.7 but including cost of dressing of sub grade, providing scaffolding and curing etc. complete in all respects.						
	(a)	In bed	sqm	69.23	320.11	76.15	327.04
	(b)	On side slopes.	sqm	93.29	356.16	102.62	365.49
19.25	Lining of water storage tanks with 5 cm. thick cement concrete 1:3:6 laid over 7.5 cm thick layer of cement concrete 1:6:12 including dressing of sub grade, curing of work and scaffolding etc., complete in all respects :-						
	(a)	In bed	sqm	54.63	274.48	60.09	279.94
	(b)	On side slopes.	sqm	67.90	292.41	74.69	299.20
19.26	Single layer brick lining for irrigation channels (Distributaries and minors) or section for all depths consisting of :-						
	(a)	First layer 12.5mm thick cement plaster 1:5 on sub grade and finished.		-	-	-	-
	(b)	Second layer of 10mm thick cement plaster 1:3 properly rendered and finished.		-	-	-	-
	(c)	75mm thick bricks laid in 1:3 cement sand mortar over second layer.	sqm	82.06	332.52	90.26	340.73

Sr. No.	Description		Unit	Plains		Sub-Mountainous Region	
				Labour Rate	Through Rate	Labour Rate	Through Rate
1	2		3	4	5	6	7
19.27	(a)	Brick lining 7.5cm thick in 1:3 cement sand mortar over low density polyethylene over dressed sub-grade with 12.5 mm thick sand cushion in curved bed portion only including laying, trenching and jointing LDPE.	sqm	79.08	293.16	86.99	301.06
	(b)	Brick lining 7.5cm thick in 1:3 cement sand mortar over 12.5 mm thick base plaster 1:6 over dressed sub-grade including laying, trenching and jointing of low density polyethylene.					
	(i)	On Side Slopes	sqm	104.58	343.88	115.03	354.33
	(ii)	In Bed (for Trapezoidal Section Only)	sqm	83.66	322.96	92.03	331.33
19.28	Cement concrete lining 15cm. thick or less for irrigation channels, using cement concrete 1:2:4 (M-15)						
	(a)	Hand mixed concrete lining in bed.	cum	393.96	2823.44	433.36	2862.84
	(b)	Hand mixed concrete lining on side slopes for vertical height upto 3.5 m.	cum	436.31	2865.79	479.95	2909.43
	(c)	Hand mixed concrete lining on side slopes for vertical height above 3.50 m but upto 5.50 m	cum	492.22	2921.70	541.44	2970.92
	(d)	Hand mixed concrete lining on side slope for vertical height above 5.5 m but upto 7.50 m	cum	548.13	2977.61	602.94	3032.42
19.29	Cement concrete lining 15cm thick or less for irrigation channels, using cement concrete 1:2:4 (M-15)						
	(a)	Machine mixed concrete lining in bed.	cum	441.96	2871.44	486.16	2915.64
	(b)	Machine mixed concrete lining on side slopes for vertical height upto 3.5 m.	cum	484.31	2913.79	532.75	2962.23
	(c)	Machine mixed concrete lining on side slope for vertical height above 3.50 m but upto 5.50 m.	cum	540.22	2969.70	594.24	3023.72
	(d)	Machine mixed concrete lining on side slope for vertical height above 5.5 m but upto 7.50 m	cum	596.13	3025.61	655.74	3085.22

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
19.30	Cement concrete lining 15cm thick or less for irrigation channels, using cement concrete 1:3:6 (M-10)					
	(a) Machine mixed concrete lining in bed.	cum	441.96	2312.47	486.16	2356.67
	(b) Machine mixed concrete lining on side slopes for vertical height upto 3.5 m.	cum	484.31	2354.82	532.75	2403.26
	(c) Machine mixed concrete lining on side slope for vertical height above 3.50m but upto 5.50 m	cum	540.22	2410.73	594.24	2464.75
	(d) Machine mixed concrete lining on side slope for vertical height above 5.5m but upto 7.50	cum	596.13	2466.64	655.74	2526.25
19.31	115 mm thick brick on edge lining in herring bone bond/zig-zag or other specified pattern in 1:3 cement sand mortar over 10mm thick cement plaster 1:3 over 12.50 mm thick cement plaster in 1:5 on sub grade.					
	(a) On side slopes.	sqm	109.66	457.10	120.63	468.06
	(b) In bed	sqm	87.73	435.16	96.50	443.93
19.32	115 mm thick brick on edge lining in herring bone bond/zig-zag or other specified pattern laid in 1:3 cement sand mortar over LDPE over 12.5 mm thick base plaster 1:6 over dressed sub grade including laying, trenching and jointing of low density polyethylene.					
	(a) On side slopes.	sqm	121.42	457.76	133.57	469.90
	(b) In bed	sqm	97.14	433.47	106.85	443.18
19.33	115 mm thick brick on edge lining in herring bone bond/zig-zag or other specified pattern laid in 1:3 cement sand mortar over low density polyethylene over dressed sub grade including laying, trenching & jointing LDPE					
	(a) On side slopes.	sqm	88.70	398.70	97.57	407.57
	(b) In Bed (with 15 mm sand cushion underneath lining.)	sqm	70.96	384.29	78.06	391.38

Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
19.34	Filling triangular portion under coping and on side of toe wall underneath lining with 1:3 cement sand mortar.	cum	425.19	3478.74	467.71	3521.26
19.35	Raking, cleaning and filling of hollow joints in cement sand mortar 1:3 on side slopes of tile lined channel.					
	(a) When depth of channel is more than 5ft and water is running	sqm	48.65	49.29	48.65	49.29
	(b) When depth of channel is more than 5ft and work is done in closure.	sqm	43.45	44.09	43.45	44.09
Note:-	(i) If depth is less than 5 ft. , above rates of item no. 19.35(a), 19.35(b) be decreased by 15%. This rate will also be applicable to bed portion.					
	(ii) If the work pertains to flat brick lining the labour rates as well as through rates will be increased by 33% of rates of tile lining.					
	(iii) If the work pertains to brick on edge lining the labour rates as well as through rates will be increased by 70% of rates of tile lining.					
19.36	Brick lining 75 mm thick in 1:3 cement, sand mortar over LDPE over dressed sub-grade with 15 mm thick sand cushion in bed for trapezoidal section only including, laying trenching and jointing of LDPE.					
	(a) On side slopes.	sqm	79.08	292.10	86.99	300.00
	(b) In bed	sqm	63.26	279.62	69.59	285.95
19.37	Laying brick on edge coping 229mm wide and 115mm thick in cement sand mortar 1:3	m	9.34	73.64	10.28	74.58
19.38	Laying brick on edge coping 356mm wide and 115mm thick in cement sand mortar 1:3	m	14.53	113.70	15.98	115.15
19.39	Laying brick on edge coping 550mm wide and 115mm thick in cement sand mortar 1:3	m	22.47	175.80	24.71	178.04
19.40	Laying E.C bags filled with cement concrete 1:4:8 including sewing and laying in position within 30 ms complete in all respects.	bag	15.08	63.34	16.59	64.84



Sr. No.	Description	Unit	Plains		Sub-Mountainous Region	
			Labour Rate	Through Rate	Labour Rate	Through Rate
1	2	3	4	5	6	7
19.41	Laying E.C bags filled with cement concrete 1:3:6 including sewing and laying in position within 30 ms complete in all respects.	bag	15.08	71.24	16.59	72.75