

OFFICE OF THE EXECUTIVE ENGINEER PWD(R&B) DIVISION UDHAMPUR

Superintending Engineer
PWD(R&B) Circle
Udhampur

No. 18104-109
Dt. 30-10-21

Subject: -

**A/A/A for Const. of road from Kaldi to Khurrian alongwith
drainage. (Phase - Ist)**

Sir,

Kindly find enclosed herewith the A/A/A for the above noted work for amounting to Rs. 255.23 lacs along with technical report/ abstract of cost in requisite no. of copies for further necessary action.

All the salient features/ financial implication of the scheme have been fully explained in the technical report appended with the A/A/A.

The A/A/A has been proposed under State Plan

It is, as such, requested to your goodself to kindly accord the A/A/A for an amount of Rs. 255.23 lacs and communicated to this office alongwith allotment of funds to proceed further in the matter.

Yours faithfully,


Executive Engineer
PWD(R&B) Division
Udhampur


Copy for information to the:-

1. Chief Engineer PW(R&B) Deptt. Jammu.
2. Distt. Development Commissioner Udhampur.
3. Asstt. Executive Engineer PWD(R&B) Sub- Division Barmeen along with one complete set.
4. T.O/H.D/CC Divisional Office.
5. Office record.

TECHNICAL REPORT

Name of work: -

A/A/A for Const. of road from Kaldi to Khurran alongwith drainage.

Authority: -

Administrative Deptt.

History and Necessity: -

The proposed road shall take off from Udhampur Ghordi road km 13th and it will connect the villages Rathel, Pallan, Led etc. having population is more than 1000 souls. There is also a 1500 mtr forest area. The inhabitants of the area earn their livelihood by growing crops, vegetables, keeping cattle's and working as labourers and still away from road connectivity. The people of the area will be benefitted and use this road as the population comprises of mostly the agriculturists who depend on agriculture to meet their livelihood, economic and financial needs. Large chunk of population also comprises of students who will use this road to reach their respective schools/ colleges to peruse their studies. Other needful like ill's/ sick's are also dependent on this road to reach the health care institutions like hospitals, dispensaries etc.

Additionally this road after its construction has helped the socio- economic-political progress to reach interiors/ corners of the villages/ hamlets following along & around the road thereby improving overall condition of the inhabitants. Keeping in view the above cited facts, it is felt to necessary the construction of road.

Proposals and Specifications: -

It has proposed to construct the road by adopting the following specifications: -

1. Earth work shall be done with road width of 6.00 mtr.
2. Drainage crossings sufficient shall be provided i.e. H.P culverts, RCC culverts for proper drainage of water.
3. Sufficient protection work has been proposed for improvement of geometrics.
4. Riding surface shall be strengthening by way of 150 mm thick WBM G-II.

Time and cost: -

The entire work shall cost of Rs. 255.23 lacs (as per abstract of cost attached) and the work shall be completed in 12 Months subject to the availability of funds & materials well in time.

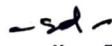

Executive Engineer
PWD (R&B) Division
Udhampur

ABSTRACT OF COST

Name of work: - A/A/A for Const. of road road from Kaldi to Khurrian alongwith Drainage
(Phase - I)

1	Length of Road	=	2.0 km
2	Specifcations		
i.	Road way Width	=	6.00 mtr
ii.	Carriage way Width	=	3.00 mtr
3	Pavement	=	300 mm

S. no.	Particulars of Item	Unit	Rate	Qty.	Amount (in lacs)
1	Earth work				
a.	In cutting	Cum	314.71	30116.25	94.78
1	<u>Drainage X- lngs work:</u>				
a.	1.0 mtr dia HP Culvert	No.	5.50	8.00	44.00
a.	3.0 mtr span RCC cuvlert	No.	15.87	1.00	15.87
b.	Puuca Drain	Rmt.	3140.00	500.00	15.70
2	<u>Protection works:</u>				
a.	R/wall 3.0 mtr. av. ht.	Rmt.	22798.00	150.00	34.20
b.	B/ wall	Rmt.	14536.00	150.00	21.80
3	<u>Pavement</u>				
a.	150 mm thick WBM G-II 2x1000x3+10% for curves	Sqm	325.00	6600.00	21.45
				Total	247.80
				Add 3% for contingencies	7.43
				Total	255.23
	Say Rs. 255.23 lacs				


Asstt. Executive Engineer
PWD(R&B) Sub- Division
Barmeen


Executive Engineer
PWD(R&B) Division
Udhampur

Earth Work Chart

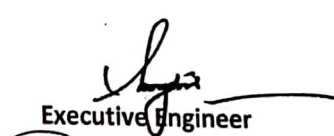
Name of work: A/A for Const. of road road from Kaldi to Khurrian alongwith Drainage
(Phase - ext)

Km	RD	Sectinal Area	Total area	Mean area	Length (in mtr)	Qty.
1st	0	18.31	-	-	-	-
	250	21.78	40.09	20.05	250	5011.25
	500	17.86	39.64	19.82	250	4955.00
	750	18.30	36.16	18.08	250	4520.00
	1000	13.95	32.25	16.13	250	4031.25
2nd	250	12.96	26.91	13.46	250	3363.75
	500	6.66	19.62	9.81	250	2452.50
	750	10.72	17.38	8.69	250	2172.50
	1000	18.16	28.88	14.44	250	3610.00
					Total	30116.25

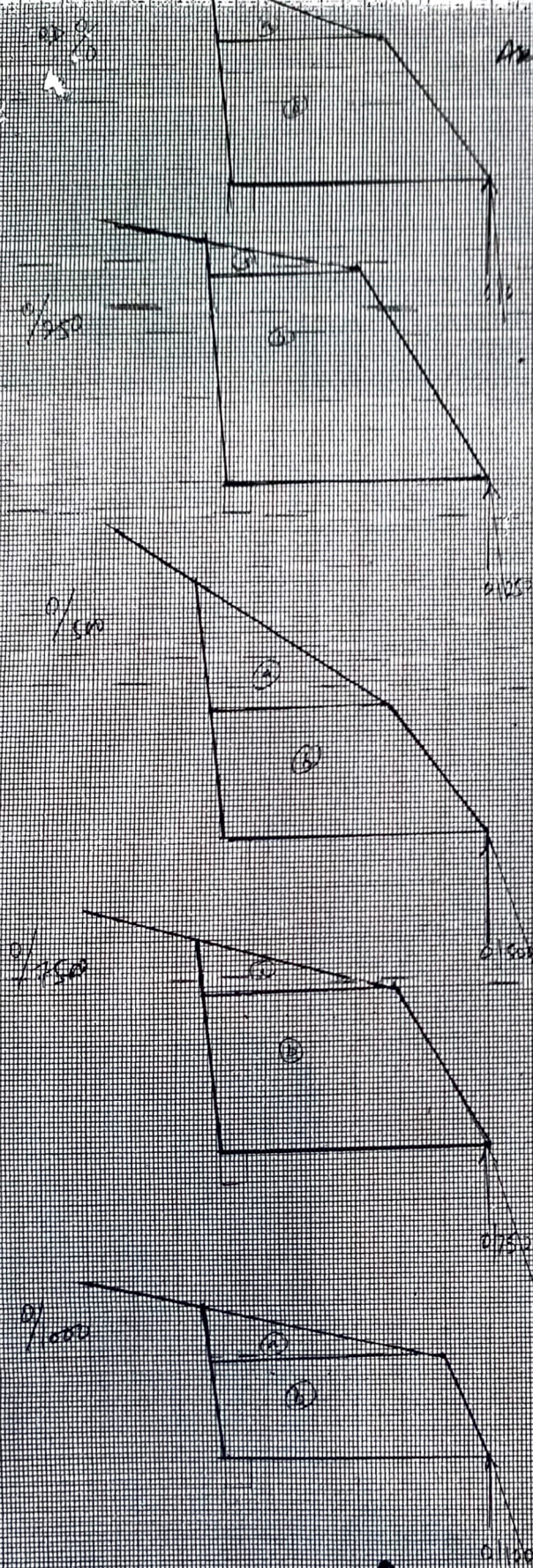
Classifications

Particulars		Rate	Qty.	Amount
Earth work in excavation by mechanical means (hydraulic excavator) over areas (exceeding 30 cm in depth, 1.5 mtr in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50 mtr. & lift upto 1.5 mtr, disposed earth to be levelled & neatly dressed	All kind of Soil (188.75@70%)	132.13	21081.38	
	Ordinary rock (378.35@20%)	75.67	6023.25	
	Hard rock (Blasting Prohibited) (1069.10@10%)	106.91	3011.63	
	Total	314.71	30116.25	94.78


 Asstt. Executive Engineer
 PWD(R&B) Sub- Division
 Barmeen.


 Executive Engineer
 PWD(R&B) Division
 Udhampur

Construction of Road from Kaldito univision Along with Drainage.



$$\text{Area (a)} = \frac{1}{2} \times 4.00 \times 1.40 = 2.80 \text{ m}^2$$

$$\text{b} = \frac{4.00 + 6.00}{2} \times 3.00 = 15.00$$

$$\text{c} = 0.60 \times 0.60 = 0.36$$

$$\text{Total} = 18.31 \text{ m}^2$$

$$\text{Area (a)} = \frac{1}{2} \times 3.60 \times 0.70 = 1.26 \text{ m}^2$$

$$\text{b} = \frac{3.60 + 6.00}{2} \times 1.20 = 7.20$$

$$\text{c} = 0.60 \times 0.60 = 0.36$$

$$\text{Total} = 9.17 \text{ m}^2$$

$$\text{Area (a)} = \frac{1}{2} \times 4.00 \times 2.50 = 5.00$$

$$\text{b} = \frac{4.00 + 6.00}{2} \times 0.50 = 2.50$$

$$\text{c} = 0.60 \times 0.60 = 0.36$$

$$\text{Total} = 7.86 \text{ m}^2$$

$$\text{Area (a)} = \frac{1}{2} \times 4.00 \times 1.00 = 2.00$$

$$\text{b} = \frac{4.00 + 6.00}{2} \times 3.00 = 15.00$$

$$\text{c} = 0.60 \times 0.60 = 0.36$$

$$\text{Total} = 17.36 \text{ m}^2$$

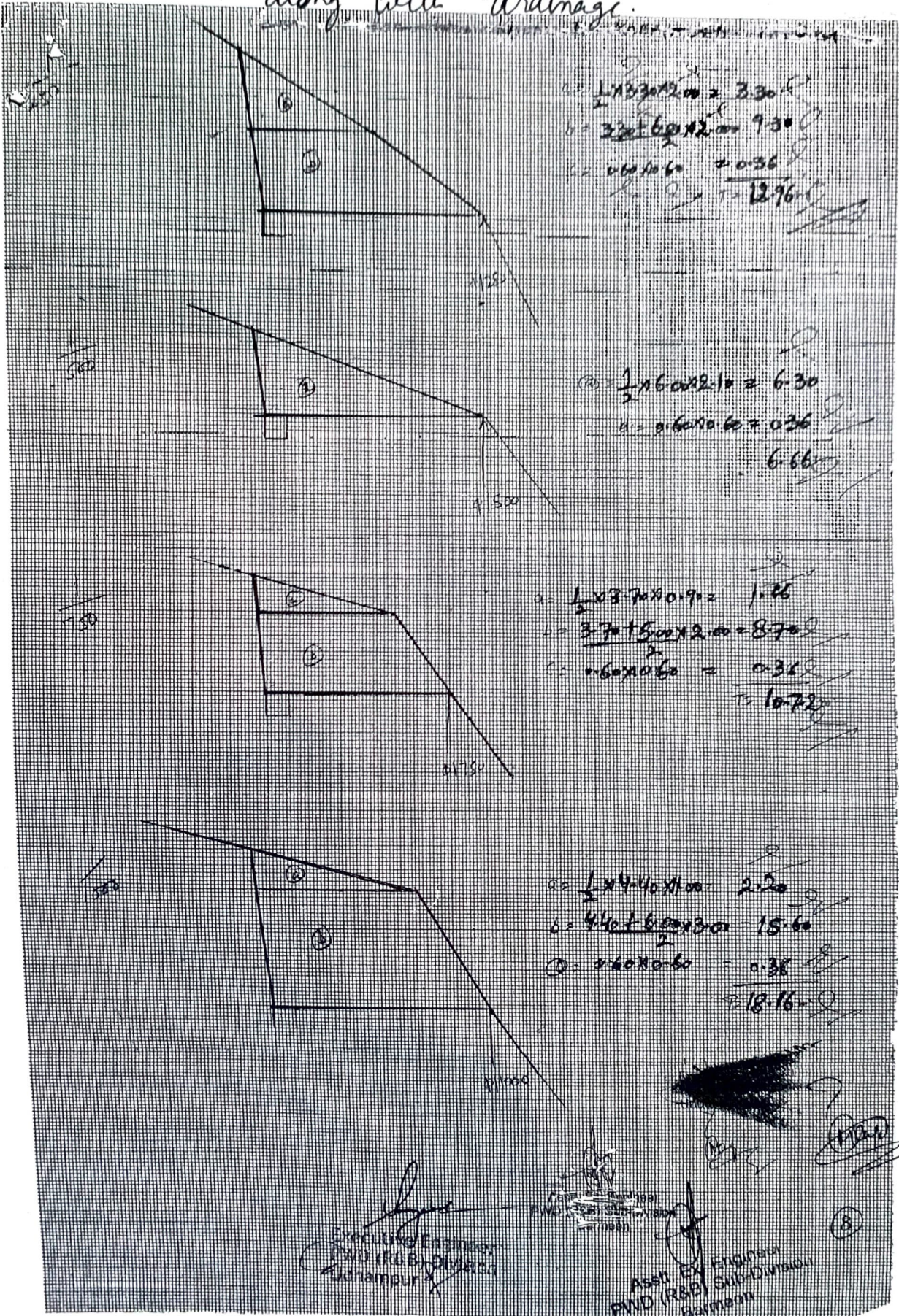
$$\text{Area (a)} = \frac{1}{2} \times 5.30 \times 1.00 = 2.65$$

$$\text{b} = \frac{5.30 + 6.00}{2} \times 2.00 = 5.65$$

$$\text{Total} = 8.30 \text{ m}^2$$

Asst. Engineer
P.W.D. (Roads) Division
Barmen

Construction of Road from Kaldu to Khursian along with drainage.



Executive Engineer
P.W.D. (R&B) Division
Bamunpur

Stamp and signature area.

Asst. Ex. Engineer
P.W.D. (R&B) Sub-Division
Bamun

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**TYPICAL ESTIMATE FOR CONSTRUCTION OF 1.00 MTR. DIA RCC HUME PIPE
CULVERT ON VARIOUS ROADS IN PWD (R&B) DIVISION**

UDHAMPUR

S. no.	Description of work	Amount (in lacs)
1.	Earth work in excavation over areas (exceeding 30 cm in depth, 1.5 m width as well as 10 sqm on plan) including disposal of excavated earth & lift upto 1.5 mtr., disposed earth to be levelled & neatly dressed (Rate per cum for a lead of 1.0 mtr.) D/wall = $1 \times 2.50 \times 1.65 \times (2.40 + 1.40) / 2$ = 7.84 cum C/wall = $1 \times 2.50 \times 1.40 \times (1.40 + 1.20) / 2$ = 4.55 cum Catch pit = $1 \times 2.40 \times 1.95 \times 0.95$ = 4.33 cum Pipe portion = $1 \times 4.80 \times 1.50 \times (0.80 + 0.40) / 2$ = 4.32 cum Crate = $1 \times 6.00 \times 1.20 \times (1.20 + 0.60) / 2$ = 6.48 cum Total = 27.48 cum @ Rs.436/ cum	11981.00
2.	Providing & laying in position cement concrete 1:5:10 with 40 mm nominal size stone aggregate upto plinth level. D/wall = $1 \times 2.50 \times 1.65 \times 0.15$ = 0.62 cum C/wall = $1 \times 2.50 \times 1.40 \times 0.15$ = 0.52 cum Catch pit = $1 \times 2.40 \times 1.95 \times 0.15$ = 0.68 cum Pipe = $1 \times 4.80 \times 1.20 \times 0.15$ = 1.08 cum Total = 2.90 cum @Rs.4029.15/ cum	11684.00
3.	Providing & laying in position cement concrete of (M15) 1:3:6 plum in retaining walls, return walls, Walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses etc. upto floor 5- level, excluding the cost of centering, shuttering & finishing (crushed). D/wall = $1 \times 2.50 \times (1.35 + 0.60) / 2 \times 3.50$ = 8.55 cum C/wall = $1 \times 2.50 \times 2.00 \times (1.10 + 0.60) / 2$ = 4.25 cum Parapet = $2 \times 2.50 \times 0.60 \times 0.60 + 0.45 / 2$ = 1.57 cum Pit wall = $2 \times 1.90 \times 0.50 \times 1.25$ = 2.37 cum = $1 \times 1.50 \times 0.50 \times 1.25$ = 0.91 cum Total = 27.48 cum D/wall = $1 \times 3.14 / 4 \times (0.90)^2 \times 1.0$ (av.) = 0.64 cum C/wall = $1 \times 3.14 / 4 \times (0.90)^2 \times 0.60$ (av.) = 0.38 cum Total = 16.63 cum @Rs.6608.35/ cum	109896.00

4.	Centering & shuttering including strutting, propping etc. & removal of form work for Retaining walls, return walls, wall (any thickness) including attached pilasters, buttresses, plinth & string course fillets etc. D/wall = $2 \times 2.50 \times 3.50$ = 17.50 sqm = $2 \times (1.35 + 0.60) / 2 \times 3.50$ = 6.82 " C/wall = $2 \times 2.50 \times 3.20$ = 10.00 " = $2 \times (1.10 + 0.60) / 2 \times 2.00$ = 3.40 sqm Parapets = $2 \times 2 \times 2.50 \times 0.60$ = 6.00 " = $2 \times 2 \times 0.60 \times 0.60 + 0.45 / 2$ = 1.26 " Total = 44.58 sqm @ Rs. 573.85/ sqm	25582.00
5.	Providing & laying horizontal coping 50 mm thick in nominal mix concrete of M-15 grade nominal max. Size stone aggregate 20 mm (using crusher aggregate) Parapet = $2 \times 2.50 \times 0.45$ = 2.25 sqm Pit = $2 \times 1.50 \times 1.50$ = 2.25 sqm Total = 4.50 sqm @Rs. 505.00/ sqm	2272.00
6.	Hand packing stones in wire crates including cost of wire crates $1 \times 6.00 \times 1.20 \times 1.20$ = 8.64 cum @Rs.1397.17/ cum	12071.00
7.	Stone filling hand packed including supply of stones front of D/wall $1 \times 2.50 \times (1.20 \times 0.30) / 2$ = 0.45 cum @Rs.616.40/ cum	277.00
8.	Providing and laying non-pressure of specified class R.C.C. pipes including collars/spigot jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement: 2 fine sand) including testing of joints etc. complete Non-pressure NP-3 class (Medium duty) R.C.C. pipes 1000 mm dia. R.C.C. pipe (laying by manual/mechanical means). = 7.50 Rmt. @Rs. 5684.30/ Rmt.	42632.00
9.	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming & watering, lead upto 50 m & lift upto 1.5 m. $1 \times 4.80 \times 1.20 \times (0.80 + 1.00) / 2$ = 5.18 cum @Rs.198.70/ cum	1029.00
10.	Carriage of material by Mech. Transport including loading, unloading & stacking at site complete.	
a)	Sand for an average distance of 40.0 km. Qty. vide item no. 2 = 2.90 cum @ 0.47 cum = 1.36 cum Qty. vide item no. 3 = 16.63 cum @ 0.47 cum = 7.81 cum Qty. vide item no. 5 = 4.50 sqm @ 0.018/ sqm = 0.081/ cum Total = 9.251 cum @Rs.522.62/ cum	4834.00

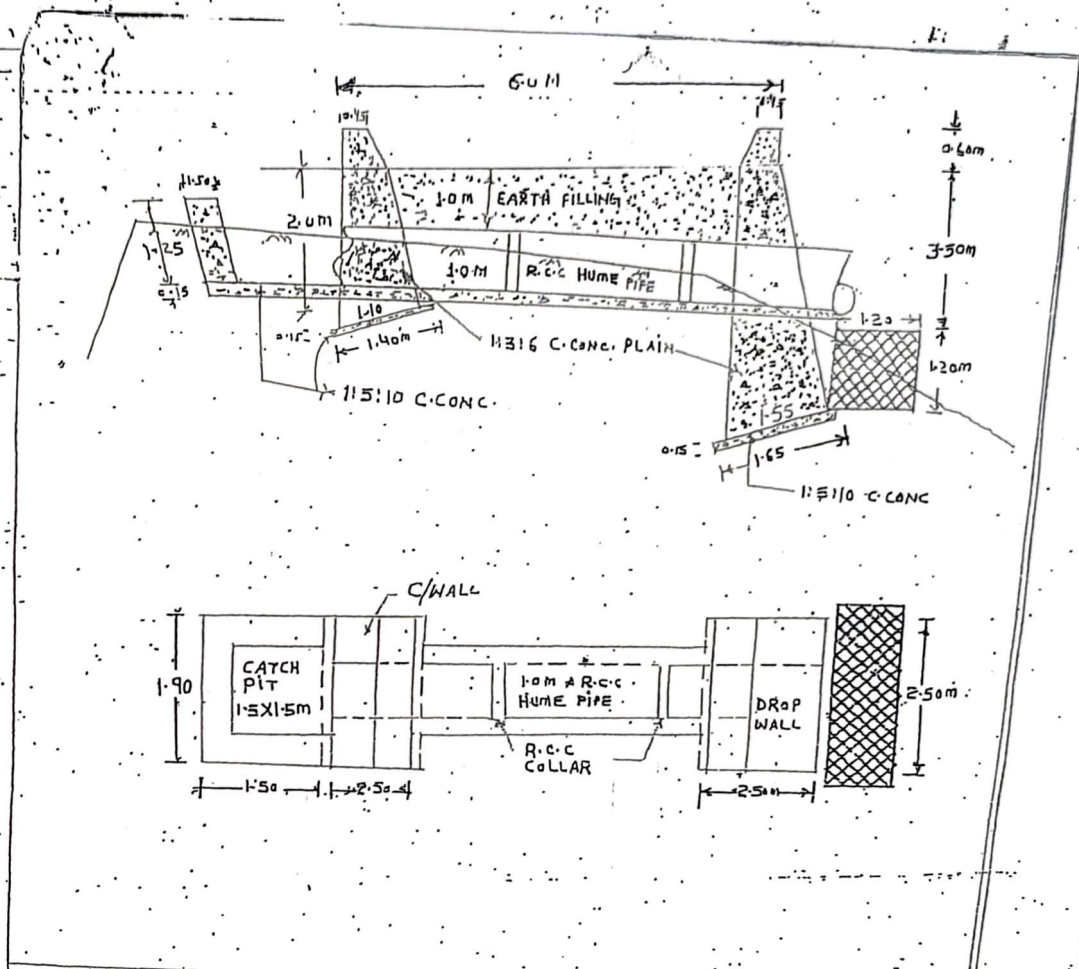
b)	Stone aggregate below 40 mm nominal size for an average distance 15.0 kms. Qty vide item no.2 =2.90 cum @ 0.89cum = 2.58 cum Qty vide item no. 3 =16.63 cum @0.94 cum =15.63 cum Qty vide item no. 5 =4.50 sqm @ 0.036/sqm =0.16 cum Total =18.37 cum @Rs.297.02/cum	5456.00
c)	Stone for an average distance of 10.0 kms Qty vide item no. 6 =8.64 cum Qty vide item no. 5 =0.45 cum Total =9.09 cum @287.32/cum	2611.00
11.	Add provision for approaches for 14 mtr. length, av. 7.0 mtr. on either side @22798/Rmt.	319172.00
	Total	549497
	Say Rs. 5.50 lacs	



Asstt. Ex. Engineer
PWD (R&B) Sub-Division
Bardeen



Executive Engineer
PWD(R&B) Division
Udhampur



TYPICAL DRAWING FOR CONSTRUCTION OF
1.00M. DIA R.C.C HUME PIPE CULVERT

SCALE: 2CM = 1.0M

Asstt. Ex. Engineer
PWD (R&B) Sub-Division
Barmeh

Executive Engineer

	RCC slab: 6.0x3.0 =18.00 sqm @Rs.635.60/ sqm Centering & shuttering including strutting, propping etc. & removal of form work for Edges of slabs & breaks in floors & walls above 20 cm wide. 3.60+3.60x0.30 =2.16 sqm @Rs.1073.00/ sqm	11440.00 2317.00
9.	Carriage of material by Mech. Transport from source to site of work including loading, unloading & stacking complete.	
a)	Sand for an average distance of 40.0 kms Qty vide item no.(2) =12.93 cumx0.47 =6.07 cum Qty vide item no.(3) =141.32cumx0.47 =66.42 cum Qty vide item no.(4) =7.20 cumx0.43 =3.09 cum Total =75.58 cum @Rs.522.62/cum	39500.00
b)	Stone aggregate for an average distance 15.0 kms Qty vide item no.(2) =12.93 cumx0.89 =11.50 cum Qty vide item no.(3) =141.32cumx0.94 =132.84 cum Qty vide item no.(4) =7.20 cumx0.85 =6.12 cum Total =150.46 cum @Rs. 297.02/cum	44690.0
c)	Stone for an average distance of 10.0 km. Qty vide item no.(6) =17.80 cum Qty vide item no.(7) =18.00 cum Total =35.80 cum @287.32/cum	10286.00
10.	Add provision for de- watering & temp. Diversion execution L.S	100000.0
	Total	1586986.00
	Say Rs. 15.87 lacs	



Asstt. Ex. Engineer
PWD (R&B) Sub-Division
Bardeen



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PWD(R&B) Division
Udhampur

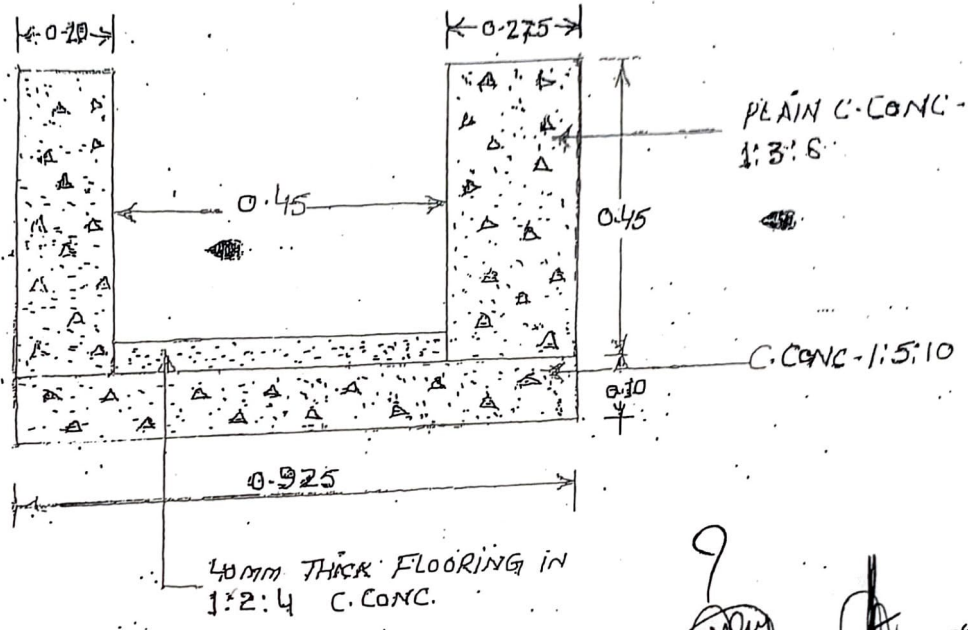
TYPICAL ESTIMATE FOR CONSTRUCTION OF PUCCA DRIAN.

S. no.	Description of items	Amount (in Rs.)
1.	Earth work in excavation in manual means in trenches for foundation, drain, pipes, cables etc. (not exceeding 1.5mtr in width) and for shafts, wells, cesspits and the like not exceeding 10 sqm on plans, including dressing of sides and ramming of bottom lift upto 1.5mtr including getting out excavated earth and disposal of surplus excavated earth as directed. All kind of soil. $1 \times 10.0 \times (0.925 + 1.0) / 2 \times 0.55$ $= 5.29 \text{ cum}$ @ Rs.436.00/cum	2306.00
2.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centring & shuttering All work upto plinth level 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) $10 \times 0.925 \times 0.10$ $= 0.925 \text{ cum}$ @ Rs. 4029.15/cum	3727.00
3.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centring & shuttering All work upto plinth level (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) $1 \times 10 \times 0.275 \times 0.45$ $= 1.23 \text{ cum}$ $1 \times 10 \times 0.20 \times 0.45$ $= 0.90 \text{ cum}$ Total $= 2.13$ @Rs. 4943.40/cum	10530.00
4.	Centring & shuttering including strutting, propping etc. & removal of form work for Foundations, footings, bases of columns etc. for mass concrete $2 \times 2 \times 10.0 \times 0.45$ $= 18.00 \text{ sqm}$ @Rs. 262.03/ sqm	4716.00
5.	12 mm cement plaster of mix 1:6 (1 cement : 6 coarse sand) $2 \times 10.0 \times 0.45$ $= 9.00 \text{ sqm}$ @Rs.241.75/sqm	2176.00
6.	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate finished with a floating coat of neat cement including slurry and curing complete, but excluding the cost of noising of steps etc complete. 50 mm thick with 20 mm nominal size stone. $1 \times 10 \times 0.45$ $= 4.50 \text{ sqm}$ $2 \times 10 \times 0.375$ $= 7.50 "$ Total $= 12.00 \text{ sqm}$ @Rs.505.00/ sqm	6060.00

7.	Carriage of material by Mech. Transport including loading, unloading & stacking at site complete.	
a)	Stone aggregate 40 mm for 15.0 kms distance Qty vide item no. 2 =0.925 cumx0.89 =0.82 cum Qty vide item no. 3 =2.13 cumx0.94 =2.00 cum Qty vide item no. 6 =12.00 sqmx0.036 =0.432 cum Total =3.252 cum @Rs.297.02/cum	966.00
b)	Sand for 40.0 kms distance. Qty vide item no.2 =0.925 cumx0.45 =0.42 cum Qty vide item no.3 =2.13 cumx0.47 =1.00 cum Qty vide item no.5 =9.00 sqmx0.012 =0.108 cum Qty vide item no. 6 =12.00 sqmx0.036 =0.22 cum Total =1.748 cum @Rs.522.62/cum	914.00
	Total	31395.00
	Cost per Rmts =31395.00/10	3139.50
	Say Rs. 3140.00/Rmt.	


 Executive Engineer
 PWD(R&B) Division
 Udhampur


 Asst. Ex. Engineer
 PWD (R&B) Sub-Division
 Bameen



X- Section

9

Asstt. Engineer
PWD (R&B) Sub-Division
Bardeen

TYPICAL DRAWING FOR CONST.
OF PUCCA DRAIN.

SCALE: 1CM = 100mm

Asstt. Engineer

Executive Engineer
PWD (R&B) Division
Udhampur

TYPICAL ESTIMATE FOR CONSTRUCTION OF R/WALL (Height 3.0 Mtr.)

S. no.	Description of Items	Amount (in Rs.)
1.	Earth work in bulk excavation by manual means over area(exceeding 30cm in depth 1.5tr in width as well as 10sqm on plan) Including disposal of excavated earth lead upto 50mtr and lift upto 1.5mtr as directed by Engineer-in-charge. All kind of soil 1x10x2.01 = 20.10 cum @ Rs.539.35/cum	10840.00
2.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centering & shuttering All work upto plinth level 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) 1x10x1.80x0 = 1.80 cum @ Rs. 4029.15/cum	7253.00
3.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centering & shuttering All work upto plinth level (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size Bottom band= 1x10x1.4+1.60x0.60/2 =9.00 cum @Rs.4943.40/cum	44490.00
4.	Providing & laying cement concrete in retaining walls, return walls, Walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or laces, courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. upto floor 5- level, excluding the cost of centering, shuttering & finishing with 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) V.B= 5x0.30x0.65+1.40/2x2.25x2.75/2 =3.84 cum T.B's=1x 10x0.60x0.65+/2x0.30 =1.87 cum Parapets= 4x1.50x(0.45+0.6)2x0.6 =1.89 cum Total =7.60 cum @ Rs. 6608.35/cum	50224.00
5.	Dry random rubble masonry with hard stone in foundation & plinth with bond stones. 1x8.50x0.65+1.40/2x2.25+2.75/2 =21.78 cum @Rs.2462.70/cum	53637.00
6.	Dumping stones filling behind R/wall including supply of stone in horizontal on level. 1x10.0x0.60x2.0 =12.00 cum @Rs.616.40/ cum	7397.00
7.	Filling with available fly ash and earth (excluding rock) in trenches or embankment in layers(each layer should not exceed 15cm) with intermediate layer of compacted earth (soil density of 98%) after every four layers of compacted depth of fly ash, sides and top layer of filling shall be done with earth having total minimum compacted thickness 30cm or as decided by engineer-in-charge, including compacting each layer by rolling/ramming and watering, all complete as per drawing and direction of Engineer-in-charge 1x10x0.80x+0.20/2x2 =10.00 cum @Rs.198.70/ cum	1987.00
8.	Centering & shuttering including strutting, propping etc. & removal of form work for Foundations, footings, bases of columns etc. for mass concrete B.B =2x10.0x0.60 =12.0 sqm =2x1.40+1.60/2x0.60 =1.80 " Total = 13.80 sqm @ Rs. 262.03/ sqm	3616.00

9.	Centering & shuttering including strutting, propping etc. & removal of form work for walls, (any thickness) including attached pilasters, buttresses, plinth & string courses etc. V.Bs = $2 \times 5 \times 0.2 \times 2.75 + 2.75/2$ = 5.00 sqm = $2 \times 5 \times 0.65 + 1.40/2 \times 2.25 + 2.75/2$ = 25.62 " T.B = $1 \times 10.0 \times 0.15$ = 3.00 " = $2 \times 0.60 + 0.65/2 \times 0.15$ = 0.19 sqm Parapets = $4 \times 2 \times 1.50 \times 0.60$ = 7.20 " = $4 \times 2 \times 0.45 + 0.60/2 \times 0.60$ = 2.52 " Total = 43.53 sqm @ Rs. 573.85/ sqm	24980.00
10.	Providing & laying 50 mm thick coping with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and curing complete. $4 \times 1.50 \times 0.45$ = 2.70 sqm @Rs.372.85/ sqm	1006.00
11.	12 mm cement plaster of mix 1:6 (1 cement : 6 coarse sand) Parapets = $4 \times 2 \times 1.50 \times 0.60$ = 7.20 sqm = $4 \times 2 \times 0.45 + 0.60/2 \times 0.60$ = 2.52 " T.B = 10×0.15 = 0.48 " V.B = $5 \times 0.20 \times 2.50$ = 2.50 " Total = 12.70 sqm @Rs.241.75/sqm	3070.00
9.	Carriage of material by Mech. Transport including loading, unloading & stacking at site complete.	
a)	Stone aggregate 40 mm nominal size & above for an average distance 15.0 kms Qty vide item no.2 = $1.80 \text{ cum} \times 0.89/ \text{cum}$ = 1.60 cum @Rs. 322.86/cum	516.00
b)	Stone aggregate below 40 mm nominal size for an average distance 15.0 kms. Qty vide item no. 3 = 9.0×0.94 = 8.46 cum Qty vide item no. 4 = 7.60×0.94 = 7.14 cum Qty vide item no. 10 = 2.70×0.36 = 0.09 cum Total = 15.69 cum @Rs.297.02/cum	4660.00
c)	Stone for an average distance of 10.0 kms. Qty vide item no. 5 = $21.78 \times 100\%$ = 21.78 cum Qty vide item no. 5 = $12.00 \times 100\%$ = 12.00 cum Total = 33.78 cum @287.32/cum	9706.00
d)	Sand for an av. Distance of 40 km. Qty. Vide item No. 2 = 1.80×0.45 = 0.81 cum Qty. vide item No. 3 = 10.89×0.47 = 4.23 cum Qty. vide item No. 4 = 7.60×0.47 = 3.57 cum Qty. vide item No. 10 = 2.70×0.018 = 0.05 cum Qty vide item No. 11 = 12.70×0.012 = 0.15 cum Total = 8.81 cum @ 522.62/ cum	4604.00
	Total	227986.00
	Cost per Rmt 227986.00/10	22798.00
	Say Rs. 22798.00/ Mtr	

9

Executive Engineer
PWD(R&B) Division
Jalgaon

Asstt. Ex. Engineer
PWD (R&B) Sub-Division
Bardeen

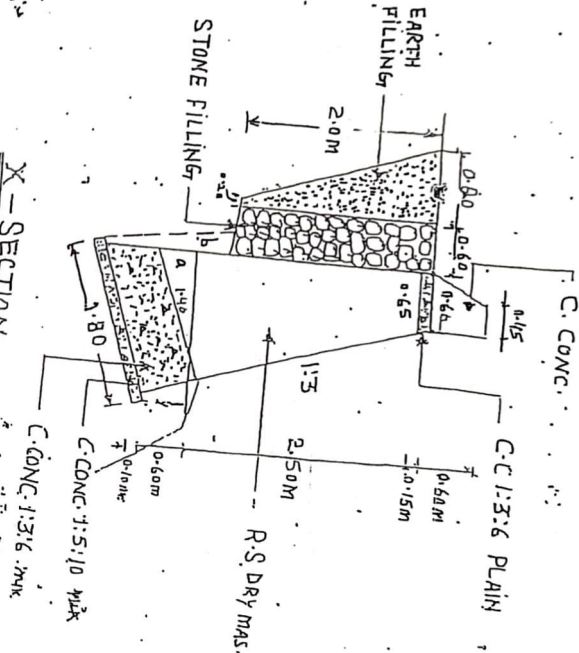


EARTH WORK :-

$$a = \frac{1.80 + 2.0}{2} \times \frac{0.60 + 1.1}{2} = 1.61 \text{ m}$$

b = $\frac{1}{2} \times 2.0 \times 0.4$ = 0.40 "

X-SECTION.



ATYPICAL DRAWING FOR CONCT.
OF RETAINING WALL.

SCALE:- 1cm = 0.5mm

~~Executive Engineer~~
~~WD (R&B) - Division~~

TYPICAL ESTIMATE FOR CONSTRUCTION OF BREAST WALL.

S. no.	Description of items	Amount (in Rs.)
1.	Earth work in bulk excavation by manual means over area(exceeding 30cm in depth 1.5tr in width as well as 10sqm on plan) including disposal of excavated earth lead upto 50mtr and lift upto 1.5mtr as directed by Engineer in charge. All kind of soil $1 \times 10 \times (1.0 + 2.0) / 2 \times 2.60$ $= 39.00 \text{ cum}$ $@ \text{Rs. } 539.35/\text{cum}$	21035.00
2.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centering & shuttering All work upto plinth level 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size) $1 \times 10 \times 1.90 \times 0.10$ $= 1.90 \text{ cum}$ $@ \text{Rs. } 4029.15/\text{cum}$	7655.00
3.	Providing & laying in position cement concrete of specified grade including curing but excluding the cost of centering & shuttering All work upto plinth level (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) a) 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) crushed. Bottom band= $1 \times 10 \times (0.72 + 0.80) / 2 \times 0.60$ $= 4.56 \text{ cum}$ $@ \text{Rs. } 4943.40/\text{cum}$ b) 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) crushed. Drain= $1 \times 10 \times (0.30 + 0.50) / 2 \times 0.60$ $= 2.40 \text{ cum}$ $@ \text{Rs. } 4943.40$	22542.00 11863.00
4.	Providing & laying cement concrete in retaining walls, return walls, Walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or laces, courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. upto floor 5- level, excluding the cost of centering, shuttering & finishing with 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) $V.B = 5 \times 0.30 \times (0.50 + 0.72) / 2 \times 2.10$ $= 1.92 \text{ cum}$ $T.B's 10 \times 0.30 \times (0.45 + 0.50) / 2$ $= 1.42 \text{ cum}$ Total $= 3.34 \text{ cum}$ $@ \text{Rs. } 6608.35/\text{cum}$	22071.00
5.	Dry random rubble masonry with hard stone in foundation & plinth with bond stone. $4 \times 2.12 \times (0.55 + 0.72) / 2 \times 2.10$ $= 10.86 \text{ cum}$ $@ \text{Rs. } 2462.70/\text{cum}$	26745.00
6.	Centering & shuttering including strutting, propping etc. & removal of form work for Foundations, footings, bases of columns etc. for mass concrete a) B.B= $2 \times 10.0 \times 0.60$ $= 12.0 \text{ sqm}$ Drain= $1 \times 10 \times 2.0 \times 0.60$ $= 12.0 "$ Total $= 24.00 \text{ sqm}$ $@ \text{Rs. } 262.03/\text{sqm}$ Centering & shuttering including strutting, propping etc. & removal of form work for walls, (any thickness) including attached pilasters, buttresses, plinth & string courses etc. $V.Bs = 5 \times 2.0 \times (0.50 + 0.72) / 2 \times 2.10$ $= 12.81 \text{ sqm}$ $T.B = 1 \times 10.0 \times 0.30$ $= 3.00 "$	6288.00

	Total = 15.81 sqm @ Rs. 5/3.85/ sqm	90/2.00
7.	Providing & laying damp proof course/ coping 50 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and curing complete. Drain= 1x10x0.45 =4.50 sqm Top= 1x10x0.45 =4.50 " Total = 9.00 sqm @ Rs. 372.85/sqm	3356.00
8.	12 mm cement plaster of mix 1:6 (1 cement : 6 coarse sand) B.B& T.B=1x10x(0.30+0.60) =9.00 sqm V.B=5x0.30x2.10 =3.15 " Drain=1x10.0x0.60 =6.00 " Total = 18.15 sqm @Rs.241.75/sqm	4388.00
9.	Carriage of material by Mech. Transport including loading, unloading & stacking at site complete.	
a)	Sand for an average distance of 40.0 kms from source to site of work. Qty vide item no.2 =1.90 cumx0.47/cum =0.89 cum Qty vide item no.3(a) =4.56cumx0.376/cum =1.71 cum Qty vide item no.3(b) =2.40 cumx0.47/ cum =1.12 cum Qty vide item no. 4 =3.34 cumx0.47/cum =1.56 cum Qty vide item no. 7 =9.00sqmx0.023/sqm =1.56 cum Qty vide item no. 8 =18.15sqmx0.0102/sqm =0.21 cum Total =7.05 cum @Rs.522.62/cum	3685.00
b)	Stone aggregate 40 mm nominal size & above from source to site of work for 15.0 kms Qty vide item no.2 =1.90cumx0.89/ cum =1.69 cum @Rs. 322.86/cum	546.00
c)	Stone aggregate 39 mm nominal size from source to site of work for 15.0 kms. Qty vide item no. 3(a) =4.56cumx0.751/cum =3.42 cum Qty vide item no. 3(a) =2.40cumx0.94/cum =2.25 cum Qty vide item no. 4 = 3.34cumx0.94/cum =3.13 cum Qty vide item no. 7 =9.00sqmx0.047/sqm =0.42 cum Total =9.22 cum @Rs.297.02/cum	2738.00
d)	Stone for an average distance of 10.0 kms from source to site of work. Qty vide item no. 3(a) =4.56cumx0.20 =0.91 cum Qty vide item no. 5 =10.86cumx100% =10.86 cum Total =11.77 cum @287.32/cum	3382.00
	Total	145366.00
	Cost per Rmts 145366.00/10	14536.00
	Say Rs. 14536.00/Rmt.	


 Executive Engineer
 PWD(R&B) Division
 Udhampur


 Asstt. Ex. Engineer
 PWD (R&B) Sub-Division
 Barneen



Asst. Ex. Engineer
DWD (R&B) Sub-Division
Barnegat



TYPICAL DRAWING FOR CONST.
OF BREAST WALL.

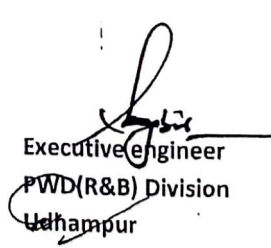
SCALE: 1 cm = 0.5 m

12.E.E

Executive Engineer
PWD (R&B) Division

Typical estimate for providing & laying 150 mm thick WBM G-II on various roads in PWD(R&B) Division Udhampur

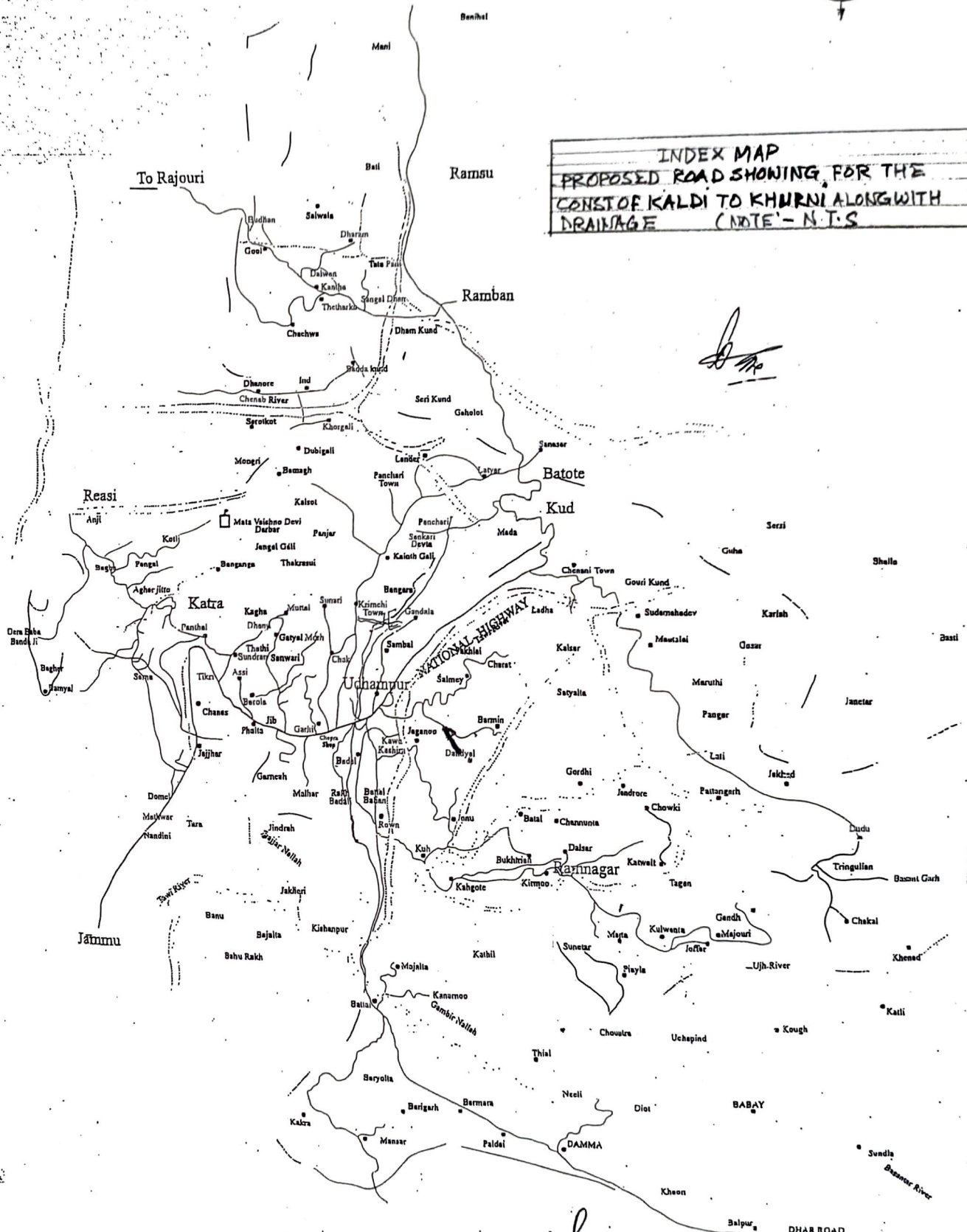
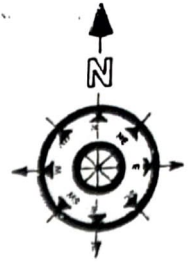
S. no.	Description of work	Amount
1.	Providing & Laying, spreading and compacting stone aggregate of size 63 mm to 45 mm in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8-10 tonne capacity in stages to power grade and camber, applying and brooming 13.2mm nominal size (TYPE A) of screening/ binding material, to fill up interstices of stone dust/course aggregate, watering and compacting to the required density. 1x1000x3.0 =3000.00 Add 10% for curves =300.00 sqm Total =3300.00 sqm x0.15 =495.00 cum @Rs. 1377.37/ cum	681798.00
2.	Berm filling by way of providing, laying, watering & compacting in layers not exceeding 200 mm thick with 80-100 KN roller, river bed material free of organic material mixed with coarse aggregate, round Nallah shingle max agg. Size 75 mm including carriage from source to site of work including of all leads & lifts complete. 2x950x1.20 av.(0.15+0.10)/2 =285 cum @Rs.700.00/ cum (L.M.R)	199500.00
3.	Carriage of material by Mech. Transport from source to site of work including loading, unloading & stacking complete. a. Stone aggregate 63 mm to 45 mm nominal size for an average distance 15.0 kms Qty vide item no. 2 =495.00 cum @Rs. 322.86/cum b. Stone screening for an av. Distance of 15.0 km. Qty vide Item no. 2 = 495.00 cum @15.33% =75.88 cum @Rs. 297.02/ cum c. Stone dust for an average distance 15.0 kms Qty vide item no.(2) =495.00 cum @8% =39.60 cum @Rs. 297.02/cum	159815.00 22537.00 11761.00
	Total	1075411.00
	Cost per sqm =1075411.00/3300.00 =Rs.325.88 / sqm	
	Say Rs. 325.00/sqm	


 Executive Engineer
 PWD(R&B) Division
 Udhampur


 Asst. Engr.
 PWD (R&B) Sub-Division
 Barmeen

ROAD MAP OF DISTT. UDHAMPUR

P.W.D (R&B). Circle Udhampur



Executive Engineer
P.W.D (R&B) Division
Udhampur