**Detailed estimate for the construction of (A) Sub-Mergible Embankment From km.0.000 to km. 1.697 = 1.697 km, from km. 1.917 to km.2.000 = 0.083 km, from km.2.487 to km 3.077 =0.590 km, from km.7.745 to km.15.239 =7.494 km., from km. 16.881 tokm.18.380 =1.499 km. from km. 18.526 to km.19.377= 0.851km.= Total =12.214 km.(Part-C). (B) Kata Khal Regulator 3V (1.5m x 1.8m ) at km 15.30,(Part-A). of Nunnir Haor Sub -Project in C/W Haor flood Management and Livelihood Improvement project Under Kishoreganj W.D Division,BWDB,Kishoreganj during the Financial year 2016-2017 & 2017-2018.Package No. BWDB/Kish/HFMLIP/PW-05.**

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| **Item no & Code** | **Item Description** | **Measurment** | **Quantity** |
| **Submergible Embankment** | | | |
| 1.  16-100 | Erection of bamboo profile with full bamboo posts and pegs not less than 60mm in diameter and coir strings etc. complete as per direction of Engineer in charge. | Erection of Profile Length = 12214.00  Nos of profile = 12214.00 ÷ 29+9  =430.00 | 430.00 nos |
| 2.  16-650-20 | Earth work by Mechanical Excavator (Long Boon) in constructing/ re sectioning of embankment/canal bank/ road etc. compacted to 85%/90% maximum dry density at optimum moisture content, with reference to laboratory density test AAHSTO modified hammer, with clayey soil(minm 30% clay, 0-40% silt, 0-30% sand) within the initial lead of 30m and all lifts including throwing the spoils to profiles in layers not exceeding 230mm in thickness with clod breaking to a maximum size of 100mm, benching the side slopes, removing roots and stumps of trees of girth upto 200mm from the ground, stripping/ploughing the base of embankment and borrow pit area, dug bailing, rough dressing including 150mm cambering at the centre of crest etc. complete, including maintenance of the same for 6 months after completion, (compaction will be done by the contractor with approved equipment, including all ancillary charges for compaction and  testing) as per direction of Engineer in charge.  16-650-20, Embk. by Mech. Equipment; ht: 4 to 6m & above; 85% comp. | Total Earth Calculation sheet Attached  = 98769.37 cum  30% Earth cutting by mechanical excavator  = 98,769.37 x 30%  = 29630.811 cum | 29630.811 cum |
| 3  16-410-10 | Earth work by carried earth (by truck/boat or any other means) supplied at contractor's own cost (including royalty) direction of Engineer in charge. Earth work by manual labour in all kinds of soil for excavation/ re-excavation of pond/ tank in layers of 150mm including breaking clods, dressing, profiling etc. complete with all leads and lifts as per direction of Engineer in charge.  **16-410-10:**300m to 1.00 km.(85% compaction) | Total Earth = 98769.37 cum  Carried Earth – 40% of Total Earth  = 98769.37 x 40%  = 39,507.748 cum | 39,507.748  cum |
| 4  16-120-10 | Earth work by manual labour in constructing/ re- sectioning of embankment/canal bank/ road etc. compacted to 85%/90% maximum dry density at optimum moisture content, with reference ..., (compaction will be done by the contractor with approved equipment, including all ancillary charges for compaction and testing) as per direction of Engineer in charge.  **16-120-10:** 0 m to 3 m height with 85% compaction. | Total Earth = 98769.37 cum  Earth Work by Manual Labour  = 30% Total Earth  = 98769.37 x 30%  = 29630.811 cum | 29630.811 cum |
| 5  16-190 | Extra rate for every additional lead of 15m or part thereof beyond the initial lead of 30m up to a maximum of 19 leads (3m neglected) for all kinds of earth work. | Extra Rate for Every additional lead = Earth same as Returns = 5  = 29630.811 cum | 29630.811 cum |
| 6  48-100 | Fine dressing and close turfing of the slopes and the crest of embankment with 75mm thick, good quality durba or charkanta sods of size 200mm x 200mm, with all leads and lifts, including ramming, watering until the turf grows properly, maintaining etc. complete (measurement will be given on well grown grass only). as per direction of Engineer in charge. | Turfing = 12214.00cum x 2 x 4.76  = 116277.280cum | 116277.280  cum |
| 7  48-130 | Biological protection of bare earth surface by Dholkalmi with minimum 50cm long sapling, planting @ not more than 30 cm apart including supplying, sizing, taping and nursing etc. complete as per direction of the Engineer in charge. | Dholkalmi = 2 x 2 x 12214.00  = 48856.00m | 48856.00m |
| 8  56-100 | Earth work in box cutting up to 1.00 m depth, in all kinds of soil with all leads, removing the spoils to a safe distance, including leveling and dressing, maintaining required cambering etc. Complete, as per direction of Engineer in charge. | Total Length = 12.214km x 20%  = 2.443 km  Earth work = 2443.00 x 3.00 x 0.750  =5496.750 cum | 5496.750 cum |
| 9  56-110 | Construction of improved road sub-grade of sand (FM>=0.8) in maximum 150mm thick layer including dressing, levelling, ramming, watering, cambering and compacting to attain minimum CBR-8% by..drawing and direction of Engineer in charge (payment shall be made on compacted volume). | Box cutting sand = 2443.00 x 3.00 x 0.150  =1099.350 cum | 1099.350 cum |
| 10  Analysis Rate | Preparation of Bed by Cutting and filling including watering to bring moisture +- 2% of OMC & compacting by appropriate mechanical means etc to attain minimum compaction 98% oc MDD (standard) to obtain a minimum soaked CBR 4% etc all complete as per direction of the E-I-C. | Sub Grade of Sand  = 2443.00 x 3.00 = 7329.00 sqm | 7329.00 sqm |
| 11  Analysis Rate | Manufacturing and supplying C.C. blocks in leanest mix. 1:2:4. with cement, sand (FM>=1.5) and Stone Chips (40mm down graded) to attain a28 days cylinder strength of 15 N/mm² including grading, washing stonechips, mixing, laying in forms, consolidation, curing for at least 21 days,including preparation of platform, shuttering and stacking in measurablestacks etc. complete including supply of all materials (steel shutter to beused) as per direction of Engineer in charge.  Block Size: 30x30x30 | Nos of C.C Block = 2443.00 x 9  0.300  = 73290.00Nos  Deduct 5% gap (-) 3664.00  = 69626.00 nos | 69626.00 nos |
| 12  Analysis Rate | Manufacturing and supplying C.C. blocks in leanest mix. 1:2:4 with cement, sand (FM>=1.5) and Stone Chips (40mm down graded) to attain a28 days cylinder strength of 15 N/mm² including grading, washing stonechips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurablestacks etc. complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge. Block Size: 100cm x 65cm x 10cm-15cm | Edging Block = 2443.00 x 2  1.00  = 4886.00 nos | 4886.00 nos |
| 13  24-310-10 | Flush pointing to brick works, in sand cement mortar (sand of FM>=1.3), including scaffolding, curing, raking out joints, clearing the surface etc. complete in all floors including the cost of all materials and as per direction of Engineer in charge. proportion 1:2 | Flush pointing = 2443.00 x 3.00  = 7329.00 sqm | 7329.00 sqm |
| 14  40-120-20 | Labour charge for protective work in laying sand cement blocks of different sizes including preparation of base, ramming of base etc. complete as per direction of the Engineer in charge:  40-120-20, Beyond 200m. | Protective work  = 30 cum x 30 cum x 30 cum  = 69626.00 nos  Nos of Block = 69626.00x0.300 x 0.300x 0.300 =1879.902 cum  =100 cum x 65 cum x 10 cum – 15 cum  = 4886.00 nos  Volume of block  = 4886.00 x 1.00 x 0.650 x 0.125  = 396.988 cum  Total = (1879.902 cum + 396.988 cum)  = 2276.890 sqm | 2276.890 sqm |
| 15  36-150-10 | Formwork for centering and water tight shuttering as per drawing with 14 BWG M.S. sheet, fitted and fixed with 40mmx40mmx6mm M.S. angle frame and 25mmx6mm F.I. bar stiffener, with necessary fabrication, welding, making the forms including fitting, fixing of steel forms with necessary ties, battens, struts, nuts & bolts, props etc. as per desired shape and size including levelling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge.  36-150-10: Vertical and inclined walls, columns, piers with 60-80mm dia barrack bamboo props. | Nos of Kilometer Post  = 12214÷1000+1 = 13 nos  shuttering = km post = 22/2x0.250=0.785  Area of shuttering = 13x0.785x1.550  = 15.817 sqm | 15.817 sqm |
| 16  76-120-10 | M.S. Work for reinforcement with deformed M.S. bar, fy=414 N/mm², (made from billet) in RCC works, including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and binding with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge.  76-120-10: 8mm dia to 30mm dia | D-10 = 6 Nos  Total length = 13x6x1.500  = 117.00x0.62  = 72.540 kg | 72.540 kg |
| 17  76-115-10 | M.S Work for reinforcement with Standard deformed bar fy=276 N/mm^2 in RCC works including local handling, cutting, forging,bending,cleaning and fabrication with supply of deformed M.S. bar in different sizes and bending with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge.  76-115-10: 6mm dia . | D-6,  Each ring length = 12/7 x0.200  = 0.628+10x0.006  = 0.688m  Nos of ring = 8 nos  Total length = 13x8x0.688  = 71.522x0.22  = 15.741 kg | 15.741 kg |
| 18  28-200-10 | Reinforced cement concrete work in leanest mix. 1:1.5:3, with 20mm down graded coarse aggregates and sand of FM>2.0 to FM<=2.5, to attain a minimum 28 day cylinder strength of 22.0 N/mm², including breaking, screening, grading, washing aggregates with clean water, mixing, laying in forms, consolidation to levels, curing, including supply of all materials, excluding cost of M.S. work for reinforcements and formworks etc. complete and as per direction of Engineer in charge.28-200-10 with stone chips . | R.C.C = 13x22/2 x0.250x1.550  = 15.832 cum | 15.832 cum |
| 19  04-110 | Fixing in position, boundary pillars/bench mark pillars/K.M. post etc. of size 110cm height, bottom dia 25cm and top dia 20cm, embedded 45cm below G.L. including carriage, earth cutting, filling, ramming, etc. complete as per direction of Engineer in charge | Fixing boundary piller = 13 nos | 13 nos |
| **(B) Kata Khal Regulator 3V (1.5m x 1.8m )** | | | |
| 20  04-120 | Construction of B.M. Pillars at site with first class bricks in cement mortar (1:4) of size 38cm x 38cm x 75cm on cement concrete (1:2:4) base of size 50cm x 50cm x 7.5cm with 12mm thick cement plastering (1:2) on exposed surfaces of pillar and cement morter on top (1:2), with inscription of "BWDB" with 25cm of the pillar balow ground level etc. complete including ramming the backfill and the cost of all materials as per direction of Engineer in charge. | Construction of fixing B.M. Pillars - Qnty =1 x 4 = 4 nos | 4  nos |
| 21  04-180 | Site preparation by manually removing all miscellaneous objectionable materials form entire site and removing soil upto 15cm depth including uprooting stumps, jungle clearing, leveling dressing etc. complete as per direction of Engineer in charge. | Preparation of site inclindity removing soil  = 67.305x67.00  = 4509.379 sqm | 4509.379  sqm |
| 22  Analysis Rate | Preparation and mobilization of the Site for Construction of Submersible Embankment or other Structural Components in c/w "Haor Flood Management and Livelihood Improved Improvement Project(BWDB Part) as per Technical Specifications, including land lease, rental charges, obtaining permissions for work, developing work area, preparation of platform for temporary semi pucca site office(40sqm), CI Sheet labour sheds(200sqm), CI Sheet Stores(200sqm), supply of wooden & cane seated furniture etc. as specified and as per Contractor's Method Statement and as per direction of Engineer in charge. | L/S = 1 item | 1 item |
| 23  16-220 | Earth work by manual labour with clayey soil (minimum 30% clay, 0-40% silt and 0-30% sand) in construction of cross bundh/ ring bundh as per design and specification with all leads and lifts, throwing the earth in layers not exceeding 150mm in thickness, including breaking clods, rough dressing, clearing the jungle, removing stumps, dug bailing and 75mm cambering etc. complete as per direction of Engineer in charge. | Earth work by manual labour Cross bund  = 2 x (10.500+17.50)/2 x (3.00+11.00)/2 x 2.00  = 2x14.50x7.00x2.00  =406.00 cum | 406.00  cum |
| 24  16-150 | Earth work in excavation of foundation trenches in all kinds of soils including leveling, dressing, placing, removal of spoils to a safe distance with initial lead of 30m and lift of 1.5m as per direction of Engineer in charge. | Earth work in excavation of foundation trenches  R/wall+C/s & R/S portion  = 2 x 21.10+30.10 x 26.70+35.70 x 3.00  2 2  =25.600x31.200x3.00 = 4792.32 cum  Central part = 1 x 10.00+19.00 x 21.20 x 3.00  2  = 922.20 cum  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **= 5714.52 cum** | 5714.52  cum |
| 25  16-200 | Extra rate for every additional lift of 1.0m or part thereof beyond the initial lift of 1.5m (30cm neglected) for all kinds of earth work. | Lift calculation  = (1/2 cutting + ½ filling + dead left  – 0.300)÷100m  =( 1/2x2.00+1/2x3.00+6.00-3.00) ÷100m  =1/2(1.00+1.500-0.300÷1.00  = 2.20  Say = 2.00 nos  Earth same as item no: 24  = 5414.52 cum | 5414.52 cum |
| 26  16-220 | Earth work by manual labour with clayey soil (minimum 30% clay, 0-40% silt and 0-30% sand) in construction of cross bundh/ ring bundh as per design and specification with all leads and lifts, throwing the earth in layers not exceeding 150mm in thickness, including breaking clods, rough dressing, clearing the jungle, removing stumps, dug bailing and 75mm cambering etc. complete as per direction of Engineer in charge. | Ring Bund = 309.100x (3.00+14.80)/2 x2.95  = 8112.795 cum  Deduct Foundation trench  earth vide item no -24, = (-)5714.520 cum  = 2400.00 cum | 2400.00 cum |
| 27  16-560-20 | Shoring for slope protection of foundation trench, canal, embankment, road, pond etc. as per design slopes, grades including removal of spoils to a safe distance as per direction of Engineer in charge.  **16-560-20:** By bamboo post of 6.0m length, 60mm to 80mm dia, 20cm c/c, driven 2.0m below ground, with drum sheet walling and average 70mm dia half split bamboo batten @ 2.0m c/c fixed with nails. | Shoring for slope protection of bamboo Part : (2 x 48.00) + (2 x 25.500) = 147.00 m x 1.50  = 220.50 sqm, | 220.50 |
| 28  12-310-20 | Bailing out of water with all leads and lifts by manual labour or pump, with all arrengements for protection of ring bund and side slopes of foundation pit against erosion or washout etc. complete actual volume of work will be measured by sounding method before starting the work) as per direction of Engineer in charge.  **12-310-20**: by pump | Bailing out of water = 48.00 x 25.50 x 1.00 x 30 times = 36720.00 cum | 36720.00 |
| 29  44-240-10 | Supplying at site U-shape hot rolled steel sheet pile of different section of Phosphorus=0.04%(Maximum), Sulphur = 0.04% (Maximum), Copper= 0.25% (Minimum), Tensile strength=> 490 N/mm2 , Yield strength =>296 N/mm2, Elongation =15% (Minimum) including all taxes, freights, incidental charges etc. complete as per direction of the Engineer -in- charge.  44-240-10 U- Shape, hot rolled steel sheet pile: width=400 to 600 mm: height=>85mm, Th.=>8.0mm, wt per sqm. of pile wall=> 88.0 kg/m2 , Section modulus per one meter of pile width => 529 cm3/m | Supply slope shut pile (8 mm thickness) C/S+R/S = 2 x 23.70 = 47.40 Each sheet pile width = 400mm Nos of shut pile = 23.70 ÷ 0.40 = 59.25 Nos Each sheet pile Length = 4.00m Volume = 4.00 x 120 = 480m @36.50kg p/m = 17.520.00 kg = 17.520 M ton | 17.520 |
| 30  44-320-10 | Cutting of steel sheet piles to design length and shape as per requirement in design and drawing and as per direction of Engineer in charge.  **44-320-10:** Upto 10mm thick | Cutting of steel shut piles Each piles Length = 6.00 m = 480m ÷ 6.00 = 80 nos Effective Length = 0.65 m Each sheet pile = 80 x 0.65 = 52.00 m | 52.00 |
| 31  44-270-20 | Driving steel sheet piles of various sections and weights of any type of soil, by monkey hammer including handling and placing in position, staging and supplying of all equipments like monkey hammer, pully, rope, bamboo, bullah etc. including correcting leaning beyond tolerance & other defects and any other incidental cost etc. complete (measurement will be taken on projected width x height) as per direction of Engineer in charge.  **44-270-20:** U-type or any other type : Up to 4.50 m depth | Driving steel sheet piles U-Type or any others Type  Length = 4.00 Effective width 0.600  Nos of sheet pile = 120 x 0.600 x 4.00  = 288.00 sqm | 288.00 |
| 32  72-180 | Painting of steel sheet piles, 2 coats of bitumen paint, including preparation of surface with sand paper, iron brush etc. including the cost of all materials and labour etc. complete as per direction of Engineer in charge. | Painting of steel sheet piles C/S+R/S = 120 nos, Effective Long = 0.600 m, Each Sheet pile = 120 x 0.600 x 4.00  = 288.00 sqm | 288.00 |
| 33  44-310 | Supplying and placing 20mm thick hessian cloth impregnated with bitumen in expansion joints or on top of sheet piles as per specification and direction of Engineer in charge. | Supplying and placing 20mm thikness cloth Shut pile Top = 120 x 0.65 x 0.90 = 70.20 sqm Floor = 2 x 6.30 x 0.90 = 11.34 sqm Vt = 2 x 2 x 3.40 x 0.40 = 5.44 sqm  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 86.98 sqm | 86.98 |
| 34  44-220-10 | Supplying and laying single layer polythene sheet in floor below cement concrete, RCC slab, on walls etc. complete in all respect as per direction of Engineer in charge.  **44-220-10:** Weighing minimum 1.0kg per 6.50 sqm. | Supplying and laying single layer polythene sheet Pile, C/S+R/S = 2 x 11.500 x 0.90m  = 20.70 sqm  R/wall = 2 x 2 x 6.10 x 0.90m = 21.70 sqm Slope = 2 x 23.70 x 0.424 = 20.09 sqm R/wall = 2 x 1.200 x 6.10 m = 29.28 sqm C/S= 1 x (12.10 x 7.089m)/2 x 10.800  = 103.62 sqm  = 1 x (7.089+6.300)/2 x 2.372 = 15.88 sqm R/S = 1 x 8.800 x (12.10+7.259)/2 = 85.18sqm = 1 x 2.372 x (7.259+6.300)/2 = 16.08sqm Central Part = 1 x 0.900 x 6.300 = 5.67 sqm Slope = 1 x 6.300 x 0.424 = 2.67 sqm Central part = 1 x 4.300 x 6.300 =27.09 sqm  = 1 x 6.300 x 0.424 = 2.67 sqm  = 1 x 6.300 x 1.500 = 9.45 sqm  = 360.34 sqm | 360.34 |
| 35  28-120-20 | Cement concrete work in leanest mix. 1:3:6 with sand of FM>=1.5, in foundation or floor including breaking, screening, grading and washing aggregates with clear water, mixing, laying in position, consolidation to levels, curing, including supply of all materials, excluding the cost of formworks etc. Complete as per direction of Engineer in charge.  **28-120-20:** With 25mm downgraded stone chips. | C.C work (1:3:6) sheet in km=2x11.500x0.90x0.075 =1.552 Cum R/s=2x2x6.10x0.90x0.075 =1.647 ,, Slope=2x23.70x0.424x0.075 =1.507 ,, R/wall=2x2x1.20x6.10x0.075 =2.196 ,, C/S=1x(12.10+7.089)/2x10.80x0.075 =7.771 ,, =1x(7.089+6.10)/2x2.372x0.075 =1.173 ,, R/S=1x8.80x(12.10+7.259)/2x0.075 =6.388 ,, 1x2.372x(7.259+6.10)/2x0.075 =1.188 ,, Contract part C/S=1x0.90x6.30x0.075 =0.425 ,, Slope=1x0.424x6.30x0.075 =0.198 ,, R/S=1x1.500x6.30x0.075 =0.708 ,, Slope=1x0.424x6.30x0.075 =0.200 ,, Flat=1x4.30x6.30x0.075 =2.031 ,, Seet M-M=2x24.80x0.650x0.30 =9.672 ,, =2x8.00x0.30x.380 =1.824 ,, 2x8x0.270x(.30+0.165)/2 =0.683,, =2x6.00x0.30x0.380 =1.368 ,, =2x6.00x0.270x(0.30+.165)/2 =0.753 ,, =2x24.80x0.400x0.05 =0.992 ,, =2x0.40x8.00x0.05 =0.32 ,, 2x0.40x6.00x0.05 =0.24 ,, =2x28.30x1/2x0.30x0.30 =2.547 ,, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 45.383 Cum | 45.383 |
| 36  36-150 | Formwork for centering and water tight shuttering as per drawing with 14 BWG M.S. Sheet, fitted and fixed with 40mmx40mmx6mm M.S. Angle frame and 25mmx6mm F.I. bar stiffener, with necessary fabrication, welding, making the forms including fitting, fixing of steel forms with necessary ties, battens, struts, nuts & bolts, props etc. as per desired shape and size including leveling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge. |  |  |
| a) 36-150-60 | **36-150-60**: Footing, footing beams, grade beams, foundation slab with 60-80mm dia barrack bamboo props | Form work, Footing, beams, grade  Sheet Pile R/S & C/S =2x2x6.100x0.675  = 16.47sqm Side=2x2x0.900x0.675 =2.43,, =2x2x1/2x0.300x(0.675+0.376)/2 =0.315,, =2x2x1.200x6.200x0.375 =11.16,, Section AA=2x11.50x0.875 =20.125,, C/S=2x11.100x(0.575+0.775)/2 =14.985,, Slope=2x2.371x0.775 =3.675,, Eye=1x7.100x0.0.900 =6.39,, R/S=2x9.100x(0.575+0.775)/2 =12.285,, 2x2.371x0.775 =3.675,, Key=1x7.100x0.900=6.39 Central part=2x0.900x0.70 =1.26 ,, C/S Slope=2x0.424x(0.70+0.30)/2 =0.424,, Side=2x2x.900x0.70 =2.52,, Side=2x2x0.300x(0.70+0.30)/2 =0.60,, R/S=2x1.500x0.775 =2.325,, Slope=0.424x(0.775+0.335)/2 =0.235,, Side=2x2x0.900x0.775 =2.79,, Side=2x2x0.30x(0.775+0.335)/2 =0.666,, Central Side=2x4.300x0.475 =4.085,, Chute block=2x6x0.650x0.450 =351,, =2x2x6x1/2x1.950x0.650 =15.21,, Baffle block=2x9x0.650x0.450 =5.265,, 2x2x9x0.15x0.650 =3.51,, =2x2x1/2x0.750x0.650 =0.975,, =End Still=2x32x0.450x0.350 =10.08,, 2x2x32x0.450x0.150 =8.64,, =2x2x32x0.900x0.450 =51.84,, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  =211.895 sqm | 211.895 |
| b)36-150-10 | **36-150-10,** Vertical and inclined walls, columns, piers with 60-80mm dia barrack bamboo props. | Vertial & incline Walls Column Returnwall=2x2x2x6.10x2.750 =134.20sqm Side=2x2x2.780x0.30=3.24 C/S wing wall=2x2x11.10x2.750m=122.10sqm = 2x2x2.25x(2.75+3.00)/2 =25.875sqm Side=2x2x3.00x0.30=3.60 Central part C/S=2x2x1.200x3.40m =16.32sqm Side=1x2x3.40x0.40 =2.72sqm R/S=2x2x1.800x4.05 =29.16sqm Side=1x2x4.05x0.40 =3.24sqm =2x2x4.300x2.15=36.98 Fillet R/wall=2x2x2x6.10x0.212 =10.345sqm C/S=2x13.35x0.212 =5.66 sqm R/S=2x11.35x0.212 =4.81 sqm Central part =8x7.300x0.212 =12.38sqm Head wall=2x6.300x1.90 =23.94sqm Side=2x1.90x0.30 =1.14sqm Head wall=2x6.30x1.25 =15.75 sqm Side=2x1.25x0.30 =0.75 sqm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 581.785 sqm | 581.785 |
| 36-150-20 | **36-150-20:** Deck slab, operating deck slab, top slab of barrel up to 3.5m of height with 60-80 mm dia barrack bamboo props. | Deck Slab, Operating deck slab Deck slab=3x4.90mx2.124 =31.22 sqm Side=2x4x1.825x0.30 =4.38 sqm op slab=3x1.70mx1.175 =5.99 sqm Side=3x2x1.70mx0.15 =1.53 sqm Rail post=3x8x0.90x0.60 =12.96 sqm Rail bar=3x2x5.10x0.45 =13.77 sqm Red Flag=1x0.90x0.60m =0.54 sqm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  =70.39 sqm | 70.39  sqm |
| 37  76-120-10 | M.S. Work for reinforcement with deformed M.S. bar, fy=414 N/mm²,(made from billet) in RCC works, including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and binding with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge. **76-120-10**, 8mm dia to 30mm dia. | **M.S. work rein forcemeat 8m to 30 mm**  Steel pile kg=12mm 0150mmC/C R/wall=7.390x40x2x2=1182.40x089=1052.3350 200mm C/C Inch=1.790x30x2x2=214.80x.89 = 191.171 kg Binder top Bottom=23.84x17x2=810.56 x 89  = 721.40 kg  Shut pile km Binder=23.84x5x2=238.40x.89  =212.17 kg  150mmC/C Verti:=3.49x2x41x4=1144.72x.89  =1018.80 kg Fillet=0.85x2x31x4=210.80x.89 =187.61 kg Vt Binder=150mm C/C =6.24x2x2x2x19=984.48x.89 =844.14 kg Apron slab C/S 12mmQ Section-4-4 =14.690x50(Av) 0x.89  = 653.70kg  =23.40x46=1076.40x.89 = 957.99 kg Vt=3.49x76x2=530.48x.89 =472.12 kg Fillet=1.20mx60x2=144.00x.89 =128.16 kg  Section-4-4=14.09(Av)x12  =169.08x.89 =150.48 kg Verti= 3.71(Av)x16x12=118.72x.89  =105.66 kg Fillet=1.20x13x2=31.20x.89 =27.768 kg Bottom Binder=150mm C/C =14.47x61=882.67x.89 =785.57 kg Top=3.71x41=152.11x.89 =135.37 kg  Top Binder=11.210x45=1064.95x.89  = 947.80 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 9746.698 kg  **Section -5-5**=12mm 0 150mm C/C wall binder=7.24(Av)6x2x2=173.76x0.89  =154.646 kg =14.39x14x2x2=805.84x.89 =717.197 kg =1.265(Av)x7x2x2=35.42x.89 =31.52 kg Section-4-4(C/S) sheet pile kg=13.390x65=870.35x.89  =774.61 kg Inner=1.890x62=117.18x.89 =104.29 kg Binder sheet piling=23.40x5x2  =234.00 x.89 =208.26 kg  **Limit-7-7**  =16.71m x 63=1052.73x.89 =936.929 kg Verti:=3.78x15x2=113.40x.89 =100.92 kg Fillet=1.20mx58x2=139.00x.89 =123.888 kg Binder bottom=13.39x61=816.79x.89  =726.943 kg  Verti: binder=10.79x5x2x2=149.52x.89  =192.06 kg =11.79x14x2x2=660.24x.89 =587.16 kg Top=1.36(Av)x6x2x2=32.64x.89 =29.04 kg Top Binder=9.340x78=728.52x.89 = 648.38 kg Key=0.940x42=39.48x.89 =35.137 kg Binder=6.44x3=19.32x.89 =17.19 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 6099.56 kg  **Section1-1** C/S kg=2.290x25x1=57.25x.89 =50.95 kg Binder=6.44x7x1=45.08x.89 = 40.12 ,, Vertti:=0.84x25x1=21.00x.89 =18.69 kg Binder=6.44x2x1=12.88x.89 =11.46,, R/Skg=2.89x25x1=72.25x.89 =64.30,, Binder=6.44x7x1=45.08x.89 =40.12,, vertti:=0.84x25x1=21x.89=18.69 Binder=6.44x2x1=12.88x.89 =11.46,, Bottom Binder=5.60x42x1=235.20x.89  =209.33,, =6.44x37x1=238x.89 =212.06,, Top Main=6.44x48x1=309.12x.89 =275.11,, Binder=7.44x42x1=312.48x.89 =278.10,, **C/S verti:=Apartment 12mm** C/S Verti:= 3.94x7x2x2x2=110.32x.89  =98.18 ,,  **Verti: 16mm** =4.02x6x1x2=48.24x1.58 = 76.22 ,, **R/S Verti: 12mm**  =4.59x11x2x2=201.96x.89  =179.74,,  **16mm**  =4.67x6x1x2=56.04x1.58 =88.54,, **C/S Binder=12mm** =3.640x23x2=167.44x.89 =149.02,, Ex=1.50mx23x2=69.00x.89 =61.41,, R/S=4.340x27x2=234.36x.89 =208.58,, Ext=1.94x27x2=104.76x.89 =93.23,, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  =2185.31kg  Apartment=12mm=11.340x29x2=657.72x.89  =585.37kg Vt=2.69x29x2=156.02x.89 =138.85kg Binder=5.04x13x2x2=262.08x.89 =233.25kg Pier=C/S=12mm=3.54x17x3=180.54x.89  =160.68kg C/S=16mm=3.80x10x3=114.00x1.58  =180.12kg  Binder=12mm=2.900x2x3=17.40x.89=15.48kg Binder=1.48x2x3=8.88x.89 =7.90kg Extra=2.00x2x3=12.00x.89=10.68 12mm =R/S=4.59x12x3=165.24x0.89  =147.06kg  16mm R/S=4.67x14x3=196.14x1.58 =309.90kg  12mm Binder  =1.35x27x3=109.35x.89 =97.32kg =3.52x27x3=285.12x.89 =253.75kg =2.32x27x3=187.92x.89 =167.24kg Extra=1.800x27x2x3=291.60x.89 =259.52kg Binder=6.44x15x2x4=772.80x.89 =687.79kg Fillet=1.35x48x6x4=1555.20x.89 =1384.12kg Bottom=12mm Rod Deck slab=6.44x25x2=322.00x.89 =286.58kg =5.04x32x2=322.56x.89 =287.08kg Fillet=1.00x32x6=192x0.89 =170.88kg Detail k1=3.700x42x1=155.40x.89 =138.30kg Binder=6.44x12x2=154.56x.89 =137.55kg Head wall=4.94x43=212.42x.89 =189.05kg Binder=6.44x13x2=167.44x.89 =149.02kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 5997.49 kg  Operation slab 12mm Rod =6.44x8=51.52x.89 =45.88kg 1.19x33=39.27x.89=34.95 Rail post=16mm=8x2.20mx4x8x3=211.20x1.58  =333.69kg bar=4x3x6.52=78.24x1.58 =123.62kg Stripper-6mm bar=0.60x126=75.60x0.328 =24.80kg post=0.60x192=115.20x0.328 =37.85kg =Ladder-20mm =V/S&D/S=1.70x8x2=27.20mx2.98 =51.25kg  \_\_\_\_\_\_\_\_\_\_  =651.945kg  = 24681.003 kg  Chute block=2.94x3x12x2=211.68x.89  =188.39kg 3.00x2x12x2=144x.89=128.16 Baffle block=2.54x2x18=91.44x.89 =81.38kg 2.20x3x18=79.20x.89 =70.49kg End still=2.30x3x16x2=220.80x.89 =196.51kg 1.80x3x16x2=172.80x.89 =153.79kg 2.00x2x15x2=120.x.89 =106.80kg  \_\_\_\_\_\_\_\_\_\_\_  =925.52kg  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 25606.52kg  = Add Lapping chair-3% =768.19  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  **= 26374.71 kg** | 26374.71  kg |
| 38  76-115-10 | M.S Work for reinforcement with Standard deformed bar fy=276 N/mm^2 in RCC works including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and bending with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge.  76-115-10: 6mm dia | Railing post ring , Railing post = 14 nos  Placing length = 0.600m.  D-6 C 0.150 C/C.  Nos of ring = 0.600/0.150+1 = 5nos  Each Ring length =4x 0.100x2+10D  = 0.520m  D-6 Total railing length = 1x14x5x0.520  = 36.400x0.22 = 8.008kg  Railing beam ring  Placing length = 9x3+1x0.925 = 24.975  D-6 @ 0.150 C/C.  Nos of ring = 24.975/0.150+1 = 167 nos  Each ring length = 0.520m.  D-6 Total ring length =167x 1x0.520  = 86.840 x 0.22 =19.104 kg  = 27.112 kg | 27.112  kg |
| 39  28-200-10 | Reinforced cement concrete work in leanest mix. 1:1.5:3, with 20mm downgraded coarse aggregates and sand of FM>2.0 to FM<=2.5, to attain a minimum 28 day cylinder strength of 22.0 N/mm², including breaking, screening, grading, washing aggregates with clean water, mixing, laying in forms, consolidation to levels, curing, including supply of all materials, excluding cost of M.S. work for reinforcements and formworks etc. complete and as per direction of Engineer in charge.  28-200-10: with stone chips | **R. C. C Work 1:1.5:3,**  C/S Sheet pile key R/ wall= 2 x 6.10 x 0.90 x 0.60m = 6.588 Cum =2 x 6.10 x (0.30+0.00+0.300)/2 = 0.549 ,, =2x6.10x1.20x0.30 = 4.392 ,, =R/S pile R/ wall = 2 x 6.10 x 0.90 x 0.60  = 6.588 ,,  =2 x 6.10 x 0.30 x (0+0.30)/2 = 0.549 ,, =2x6.10x1.20x0.30 = 4.392 ,, **Sheet pile secl-A-A**= 2 x 11.500 x 0.90 x 0.30  = 6.21 ,, =2x11.50x0.30x(0+0.30)/2 =1.039 Cum Apporn slab C/S = 1x (12.10x7.089)/2  x 11.400 x (0.50+0.70)/2 = 65.626 ,, Slop=1x(7.089+6.100)/2x2.371x0.700  =10.944 ,,  Slab R/s=1x(12.10+7.259)/2x9.400x(0.50+0.70)/2  = 54.592 ,, Slope=1x(7.259+6.100)/2x2.371x0.70  =11.085 ,,  **Secl-1-1** C/S=1x0.900x6.300x0.70 =3.969 ,, =1x6.300x0.30x(0+0.30)/2 =0.284,, R/S=1x1.500x6.300x0.70 =6.615 ,, =1x6.300x0.30x(0+0.30)/2 =0.283 ,, Flat=1x4.300x6.300x0.40 =10.836 ,, Return wall=2x2x6.10x2.75x0.30 =20.13 ,, Fillet=2x2x2x1/2x0.15x0.15 =0.09 ,, C/S wall=2x10.670x2.75x0.30 =17.60 ,, Slope=2x2.980x(2.75+3.00)/2x0.30 =5.14 ,, R/S wall=2x9.270x2.75x0.30 =15.295 ,, Slope=2x2.380x(2.75+3.55)/2x0.30 = 4.498 ,, **Secl-A-A C/S** Floor=1x0.900x6.30x0.70 = 3.969 ,, =1x6.30x0.424x(0.30+0)/2 =0.400 ,, R/S Floor=1x1.500x6.30x0.70 = 6.615 ,, =1x6.30x0.424x(0.30+0)/2 = 0.400 ,, Central=1x4.90x6.30x0.400 =12.348 ,, C/S wall=2x1.20x3.40x0.400 =3.264 ,, R/S wall=2x1.800x4.05x0.400 =5.832 ,, Central=2x4.300x2.15x0.40 =7.396 ,, Deck slab=1x4.60x6.300x0.350 =10.143 ,, Head wall=1x6.300x2.25x0.30 =4.252 ,, =1x6.30x1.70x0.30 =3.213 ,, Operation slab=6.300x0.90x0.150 =0.850 ,, Rail pot=2x8x0.90x0.15x0.15 =0.324,, Rail bar=2x2x5.100x0.15x0.15 =0.459,, Red flag=1x0.90x0.15x0.15 =0.02,, Cattle black=6x2x1/2x1.950x0.650x0.450  =3.422,,  Baffle block=2x9x0.65x0.15x0.450 =0.789,, 2x9x1/2x0.65x0.65x0.45 =1.711,, End Still=32x0.450x0.15x0.35 =0.756,, =32x1/2x0.90x0.45x0.35 =2.268,, End still=31x(0.90+0.00)/2x0.35x0.225  =1.134,, Pier=2x1.200x3.40x0.500 =4.08,, =2x1.500x4.05x0.500 =6.075,, Central=2x4.90x1.800x0.30 =5.292,, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 342.366 cum  Deduction Stop log Channel of fall baord Grove 0.5= (-) 1.50 cum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 340.866 Cum | 340.866  cum |
| 40  76-630-10 | Supply and fitting and fixing 23cm wide P.V.C water stops having minimum strength of 13.80N/mm2 at 225% elongation and of approved quality in attraction and expansion joints with necessary arrangements for modification in shuttering and keeping the water stop in position etc. complete as per design, specification and direction of Engineer in charge.  **76-630-10,** 3 bulb type. | Supply and fitting and fixing 23cm wide P.V.C R/S&C/S={5.900+(3.40x2)}{5.900+(3.20x2)}  = 25m | 25  m |
| 41  56-430 | Filling up the expansion joints by asphalt, sand and jute waste etc. complete including supply of all materials and as per direction of Engineer in charge. | Filling up the expansion =2x6.30x0.900 =11.34sqm =2x2x3.30(Av)x0.60 =7.92sqm  =19.26sqm | 19.26  sqm |
| 42  16-520-20 | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including levelling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labour using mallet/ vibro compactor) as per direction of Engineer in charge.  **16-520-20**: sand of FM>=1.50 | Supplying and laying sand as filter Detail =2x6.936x(0.90+2.170)/2x0.15 =3.19cum Vt=2x2x3.30x(0.90+2.17)/2x0.15 =3.04cum Flats R/S=1x11.500x6.00x0.15 =10.35cum Flat C/S=1x11.50x8.000x0.15 =13.80cum C/S=2x6.65x8.000x0.15 =15.96cum R/S=2x6.65x6.00x0.15 =11.97cum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 58.31 cum | 58.31  cum |
| 43  40-610-20 | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom) as per specific size, range and gradation, including breaking chips, grading, preparation of surface, compacting each layer etc. complete with supply of all materials and as per direction of Engineer in charge.  40-610-20,Well graded between 40mm to 20mm size. | Supplying and laying dry 1st class or picks, Expiation Km = 2 x 7.30m x (0.60m+2.400)/2  x 0.60 = 13.14cum Wall = 2 x 2 x 3.30m x (0.600+2.400)/2 x 0.60  = 11.88 cum  C/S = 2 x 6.15 x 8.00 x 0.15 = 14.76 cum  R/S = 2 x 6.15 x 6.00 x 0.15  = 11.07 cum  R/S sheed = 1 x 11.500 x 8.00 x 0.15  = 13.80 cum  C/S sheed = 1 x 11.500 x 6.00 x 0.15  = 13.80 cum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  =79.00cum  @ 79.00 x 50% = 37.90 cum | 37.90  cum |
| 44  40-610-30 | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom) as per specific size, range and gradation, including breaking chips, grading, preparation of surface, compacting each layer etc. complete with supply of all materials and as per direction of Engineer in charge.  **40-610-30:** Well graded between 20mm to 5mm size. (Combination of sub-item 10 & 30 or 20 & 30 shall be used) | Supplying and laying dry 1st class or picks, Expiation Km = 2 x 7.30m x (0.60m+2.400)/2  x 0.60 = 13.14cum Wall = 2 x 2 x 3.30m x (0.600+2.400)/2 x 0.60  = 11.88 cum  C/S = 2 x 6.15 x 8.00 x 0.15 = 14.76 cum  R/S = 2 x 6.15 x 6.00 x 0.15  = 11.07 cum  R/S sheed = 1 x 11.500 x 8.00 x 0.15  = 13.80 cum  C/S sheed = 1 x 11.500 x 6.00 x 0.15  = 13.80 cum \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  =79.00cum  @ 79.00 x 50% = 37.90 cum | 37.90 |
| 45  40-140 | Manufacturing and supplying C.C. Blocks in leanest mix. 1:3:6, with cement, sand (FM>=1.5) and Stone Chips (40mm down graded), to attain a minimum 28 days cylinder strength of 9.0 N/mm² including grading, washing stone chips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurable stacks etc complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge. | Manufacturing and supplying C.C. blocks Size =30cm x 30cm x 30cm C/S = 1 x 11.50 x 8.00 = 92.00 sqm R/S = 1 x 11.500 x 6.00 = 69.00 sqm C/S Slope = 2 x 6.65 x 8.00 = 106.40 sqm R/S slope = 2 x 6.65 x 6.00 = 79.80 sqm C/S = 1 x 11.500 x 8.00 x 2 Layer = 184.00sqm =2 x 6.65 x 8.00 x 2 Layer = 106.40sqm R/S = 1 x 11.500 x 6.00 x 2 Layer= 138.00sqm =2 x 6.65 x 6.00 x 2 Layer = 159.60 sqm \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Total = 935.20 sqm Most of the block = 935.20 ÷ 0.09  = 10391.11 Deduction 3% Gap = (-) 311.73  = 10079.00 Nos | 10079.00  Nos |
| 46  40-220-10 | Labour charge for protective works in laying C.C. blocks of different sizes including preparation of base, watering and ramming of base etc. complete as per direction of the Engineer in charge.  **40-220-10:** Within 200m | Laying C.C. blocks  = 10079 x 0.30 x 0.30 x 0.30  = 272.13Cum | 272.13 |
| 47  16-110-10 | Earth work by manual labour in constructing/ re sectioning of embankment/ canal bank/ road etc. with clayey soil(minimum 30% clay, 0-40% silt and 0-30% sand) within the initial lead of 30m, and all lifts including throwing the spoils to profiles in layers not exceeding 150mm in thickness, clod breaking up to a maximum size of 100mm, benching the side slopes, stripping/ ploughing the base of embankment and borrow pit area, dug bailing, cutting trees upto 200mm girth, with uprooting stumps, clearing jungles, bailing out water, rough dressing and 150mm cambering at the centre of the crest etc. Complete as per specification and direction of Engineer in charge.  **16-110-10:** 0 to 3 m height. | 300 mm to 1.00 km = EL- 4.60 m - 2.50 m  = 2.10m  Approach Row = 2.50m x10.90 x 2.10  2  =1596.00cum | 1596.00  cum |
| 48  16-130 | Earth work by manual labour in all kinds of soil in excavation or re excavation of channels with the initial lead of 30m and lift of 1.5m including leveling, dressing and throwing the spoils to profile with breaking clods, rough dressing, clearing jungles including cutting trees up to 200mm girth, dug bailing etc. Complete as per direction of Engineer in charge. | Earth work by manual labour Chanel = 50.00m x 11.50+17.47 x 1.88  2 =1361.59 cum | 1361.59 cum |
| 49  16-200 | Extra rate for every additional lift of 1.0m or part thereof beyond the initial lift of 1.5m (30cm neglected) for all kinds of earth work. | Extra Lift (1 No Lift) = 1361.59 cum | 1361.59 cum |
| 50  68-130 | Supplying pressure treated wooden fall boards/stop logs of different sizes (not less than 15cm in depth) of sal, sundari, garjan, shishu or equivalent for regulator/ sluices, including fixing in position with eye hook etc. complete as per direction of Engineer in charge | Supplying wooden fall boards = 13 x 1.70 x 0.25 x 0.25 x 3 = 4.144 cum | 4.144 cum |
| 51  80-260-10 | Supplying, laying, fitting and fixing of different dia G.I. pipes with all special fittings, such as bends, elbows, sockets, tees, unions, jam nuts etc. including cutting foundation trenches upto required depth where necessary and filling the same with earth duly compacted, making holes in floors and walls and clips, including cutting threads, making necessary connection etc. all complete including the cost of all materials as per direction of Engineer in charge. **80-260-10:** 40mm dia G.I. pipe line. | Supplying D-20 mm dia G.I. pipe post  = 5 x 1.50m = 7.50m | 7.50m |
| 52  76-170 | M.S. Work in plates, angles, channels, flat bars, Tees etc. including fabricating, machining, cutting, bending, welding, forging, drilling, reverting, embedding anchor bars, staging and fitting, fixing, local handling etc. complete with energy consumption and supply of labours including the cost of materials as per design, specification and direction of Engineer in charge. | M.S. Work for Plated angles 10mm Plate, Detail H = base plate  = 3 x 2 x 1.720 x 0.150 x 0.010  = 0.01548 kg @ 7800 km P/m = 120.74 kg Anchor bolt 16 mm = 0.225 x 9 x 6 x  = 12.15 m  @ 1.58 km P/m = 19.19 kg  Detail "W"  = (200+170+200) = 570 mm  = 12 x 4.05 x 0.57 x 0.010  = 0.27702 mm  @ 7800/W, P/m = 2160.756 kg Anchor bolt 16 mm = 0.225 x 405  = 91.125 mm  @ 1.58 km P/m = 143.97 kg Detail "X" = 75 x 100 x 10 = 2 x 4.30 = 8.60m x 1.75 x 0.10  =0.015 mm  @ 7800km P/m = 117.39 kg Anchor bolt 16 mm = 0.225 x 21 x 2  = 9.45 m  @ 1.58 km P/m = 14.93 kg \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 2576.977kg | 2576.977kg |
| 53  04-280-10 | Constructing at site, cement mortar gauge on masonry wall, including engraving in meter, decimeter & centimeter, painting and figuring with black and red water proof paint, etc. complete as per direction of Engineer in charge.  **04-280-10:** 150mm x 25mm | Constructing Cement Gauge = 2 x 4.00m = 8.00 m, | 8.00 m |
| 54  76-240-40 | Manufacturing & Supplying of M.S. Vertical Lift Gate shutter of 8mm thick M.S. skin plate and stiffener with minimum75mm x 75mm x 10mm M.S. angle as frame, horizontal & vertical beam, 75mm x 25mm x 12mm P-type rubber seal, fixed with 10mm dia x 63.5mm M.S. counter shank bolts with nuts and 40mm x 10mm M.S. strip as clamp drilled spaces @ 150mm c/c, stem attachment with proper thread, nut, cotter pin and washer as per approved design including the cost of all materials of proper grade & brand new with a prime coat of red oxide where necessary as per specification and direction of Engineer in charge. 76-240-40,Size 1.95m x 1.65m | Manufacturing & Supplying of M.S. Vertical Lift Gate  Size = 1.95m x 1.65m = 1 x 3  = 3 Nos | 3 Nos |
| 55  76-260-20 | Labour charge for fitting and fixing of M.S. vertical lift gate/ flap gate shutters of different size including making holes in concrete for hooking arrangements with supply of necessary materials, tools and other accessories required for fitting the same to regulator/sluice and mending the damages with CC (1:2:4), removing the spoils etc. complete including the cost of all materials as per direction of Engineer in charge. | Labour charge for fitting and fixing of M.S. gate Size = 1.95m x 1.65m.  = 1 x 3 = 3 Nos | 3 Nos |
| 56  76-190 | Manufacturing, supplying and Installation of Padestal type lifting device for slide gate with 63mm dia threaded steel shaft, 146mm outer dia bronze nut, thrust bearing, steel bevel gear etc. as per approved design including supply of all components, labours with a prime coat of redoxide where necessary etc. complete including the cost of all materials as per specification and direction of Engineer in charge. | Manufacturing, supplying Instalation sate = 1 x 3 = 3 Nos | 3 Nos |
| 57  16-540-20 | Back filling in hydraulic structures including all leads and lifts in 150mm layer including watering, ramming compacting to 30% relative density etc. complete by compactor or any other suitable method as per direction of Engineer in charge.  **16-540-20:** Sand of FM>= 0.80 | Back filling Sand of FM>= 0.80 Return Wall, R/S-C/S  = 2 x 2 x 6.10 x (6.85+2.50)/2 x 3.45  = 288.42 cum = 2 x 28.840 x (0.60+4.05)/2 x 3.45  = 63.72 cum Back side  = 2 x 2 x 16.00 x (0.90+4.05)/2 x 3.45  = 546.48cum  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  = 898.62 cum | 898.62 cum |
| 58  16-530 | Back filling in hydraulic structures and slope building in protective works including all leads and lifts with selected local soil in layer of 150mm including watering, ramming etc. complete compacted to 20% relative density by compactor or any other suitable method as per direction of Engineer in charge. | Back filling in by Earth R/S portion  = 2 x (21.10+30.10)/2 x (26.70+35.70)/2  x 3.00 = 4792.32 cum Central part = 1 x (10.00+19.00)/2 x 21.20 x 3.00 = 922.00 cum  = 5714.32 cum  @ 5714.32 x 80% = 4571.610cum | 4571.610  cum |
| 59  48-100 | Fine dressing and close turfing of the slopes and the crest of embankment with 75mm thick, good quality durba or charkanta sods of size 200mm x 200mm, with all leads and lifts, including ramming, watering until the turf grows properly, maintaining etc. complete (measurement will be given on well grown grass only), as per direction of Engineer in charge. | Turning Work = 2 x 100.00 x 7.00  =1400.00 sqm. | 1400.00 sqm. |
| 60  16-240 | Earth work by manual labour, in all kinds of soil in removing the cross bundh/ ring bundh, including all leads and lifts complete and placing the spoils to a safe distance, (minimun 15m apart from the bank) as per direction of Engineer in charge. | Toal earth = 8112.745 cum  Allowed 47.50% = 3833.856 cum | 3833.856  cum |
| 61 3.1- Analysis Rate | Mobilize, strengthen required land based construction equipment such as excavator, dump truck, chain dozer, vibro-compactor, and plants such as generator for site electrification, digital camera for taking photographs and digital video camera for recording/Taking photograph all sequences of works etc for keeping records of the Works by providing following information including transfer to site, complete for the purposes stated in the Technical Specification and Contractor’s Method Statement and as per direction of Engineer in charge. | 1 Item | 1 Item |
| 62  1.2- Analysis Rate | Provide and maintain 1 (one) no. Engine boat with boatmen having sun and rainproof cover to facilitate supervision by the Engineer/Engineer's Representative during whole construction period of the work as per Technical Specification, Contractor’s Method Statement and as per direction of Engineer in charge. | Engine Boat = 1x60 = 60 days | 60  days |
| 63  2.1- Analysis Rate | Providing and maintaining adequate portable water supply by installing 6 Nos. of tube well and sanitation facilities by installing 6 Nos. of sanitary latrines for usage of labours,officials and others for prevailing the hygenic and healthy environment at allover the working site As per direction of the Engineer in charge. | 1 Item | 1 Item |
| 64  3.2- Analysis Rate | Operate , maintain of plant and equipment such as generator for site electrification, for the purpose stated in the Technical Specification and in the Contractor’s Method Statement and as per direction of Engineer in charge. | 1 Item | 1 Item |
| 65  1.3- Analysis Rate | Demobilization and clean-up of the site upon completion of the works, as per Specifications and Contractor's Method Statement and as per direction of Engineer in Charge | 1 Item | 1 Item |

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| (MD.Alauddin) |
| Sectional officer |
| Bhairab WD section-01 |
| BWDB.Kishoregonj |