Details of estimate for the construction of (A) Sub-Mergible Embankment From km. 2.565 to km 12.059 = 9.494 km (B) Construction of Kursi Khal Regulator (2-vent, 1.50m x 1.80m) at km 16.10 (C) Construction of Chouganga Khal Regulator (1-vent, 1.50m x 1.80m) at km 24.40 (D) Rehabilitation of 5Nos Regulator (2 vent 1.50m x 1.80m- 2Nos, 1 vent 1.50m x 1.80m- 3Nos) (E) General item of works; under Badla Haor Project in Upazilla- Itna &Tarail, Dist: Kishoreganj in C/W Haor flood Management and Livelihood Improvement project Under Kishoreganj W.D Division, BWDB, Kishoreganj during the Financial year 2018-19 & 2019-20. Package No. BWDB/Kish/HFMLIP/PW-21.

| **Sl. No** | | **Item no & Code** | | **Item Description** | | **Measurement** | | **Qnty** | |
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|  | | 1. **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 = 9494.00  Nos of Profile = (9494.00÷51)+1  = 187 Nos | | 187.00  Nos | |
| 2 | | 16-240 | | Earth work by Mechanical Excavator (Long Boon) in constructing/ resectioning 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, tripping/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.  16-240-20: Embk. by Mech. Equipment; ht: 4 to 6m & above; 85% comp. | | Total Earth calculation Sheet Attached  = 121065.93 Cum  90% earth cutting by mechanical excavator  =121065.93 x 90% = 108959.34 Cum | | 108959.34  Cum | |
| 3 | | 16-250 | | Earth work by carried earth (by truck/boat or any other means) supplied at contractor's own cost (including royalty) in constructing/ resectioning of the embankment/ canal bank/ road etc. by Mechanical Excavator (Long Boon) compacted to 85%/90% maximum dry density at optimum moisture content with reference to laboratory density test AASHTO modified hammer, with clayey soil (minimum 30% clay, 0-40% silt and 0-30% sand) beyond initial lead of 300m including throwing the spoils to profiles in layer not exceeding 230mm in thickness with clod breaking to maximum size of 100mm, benching the side slopes, removing roots and stumps of trees of girth upto 200mm, stripping/ ploughing the base of embankment and borrow pit area, dug bailing, clearing jungles, rough dressing including 150mm cambering at the centre of crest with all leads and lifts complete (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.  16-250-20: 300 m to 1 km and Embk. ht: 4 m above with 85% Comp. | | Total Earth = 121065.93 Cum  Carried Earth = 5% of total earth  = 121065.93x 5%  = 6053.30Cum | | 6053.30  Cum | |
| 4 | | 16-120 | | Earth work by manual labour in constructing/ resectioning 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, bail out of water, 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.  16-120-10: 0 m to 3 m height with 85% compaction. | | Total Earth = 121065.93 Cum  Earth Work by manual Labour 5% of total earth = 121065.93 x 5%  = 6053.30 Cum | | 6053.30  Cum | |
| 5 | | 16-160 | | Extra rate for every additional lead of 15m or part thereof beyond the initial lead of 30m upto a maximum of 19 leads (3 m neglected) for all kinds of earth work. 1 Nos lead. | | Extra rate for every additional lead Earth same as item No:- 04,  = 6053.30 Cum | | 6053.30  Cum | |
| 6 | | 16-180 | | Royalty of specified earth taken from private land (with prior permission of the Executive Engineer on production of royalty deeds with the land owner) from the area to be selected by the contractor with mutual agreement. | | Total Quantity of earth =121065.93 cum  Deduct. for carried earth= (-) = 6053.30 cum  115012.63 cum  Considering 50% of Royalty  =115012.63x50% = 57506.31 Cum | | 57506.31 Cum | |
| 7 | | 48-100 | | Fine dressing and close turfing of the slopes and the crest of embankmentwith 75mm thick, good quality durba or charkanta sods of size 200mm x200mm, with all leads and lifts, including ramming, watering until the turfgrows properly, maintaining etc. complete (measurement will be given onwell grown grass only). As per direction of Engineer in charge. | | Turfing = 9494.00m  Av. Slope length= 14.00m  Total area=9494.00m x 14.00m  =132916.00 Sqm | | 132916.00  Sqm | |
| 8 | | 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. | | 2x 3 x9303 = 55818.00 m | | 55818.00  m | |
|  | |  | | **(B) Construction of Kursi Khal Regulator (2-vent, 1.50m x 1.80m) at km 16.10** | |  | |  | |
| 1 | | 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 bellow ground level etc. complete including ramming the backfill and the cost of all materials as per direction of Engineer in charge. | | Construction BM Pillar = 1 x 2 =2 Nos | | 2.00  Nos | |
| 2 | | 04-180 | | Site preparation by manually removing all miscellaneous objectional materials form entire site and removing soil upto 15cm depth including uprooting stumps, jungle clearing, levelling dressing etc. complete as per direction of Engineer in charge. | | Site preparation  100.00 x 80.00 = 8000.00 Sqm | | 8000.00  Sqm | |
| 3 | | 04-600 | | Providing cork sheet/polysterene sheet in expansion joints of concrete works including supply of all materials etc. complete as per direction of Engineer in Charge. 04-600-10. 25mm thick sheets. | | Providing cork sheet/polysterene sheet:  1 x 2 x 4.40 x 0.700 = 6.16 Sqm  1 x 2 x 2 x 0.40 x 4.10 = 6.56Sqm  Total=12.72 Sqm | | 12.72  Sqm | |
| 4 | | 04-620 | | Filling of expansion joints up to a depth of 40 mm with bitumen mixed with coarse sand (FM>=2.5) in concrete works including supply of all materials etc. complete as per specification and direction of Engineer in charge.  04-620-20. 20 mm wide. | | Filling of expansion joints:  1 x 2 x 4.40 = 8.80 Sqm  1 x 2 x 2 x 3.85 = 15.40 Sqm  Total=24.20 Sqm | | 24.20  Sqm | |
| 5 | | 12-100 | | Installation of Pizeometer including supply of 38mm G.I. Pipe, Brass Strainer, Socket, Labour by wash boring, Lowering, fixing the elevation and providing cover on the top of the well etc. complete as per direction of Engineer in charge. | | Installation of pizometer  1x4 =4 Nos | | 4.00  Nos | |
| 6 | | 16-510 | | Earth work in excavation of foundation trenches in all kinds of soil as per layout plan of foundation excavation with all leads and lifts and placing the spoil earth for constructing the ring bundh/offerdam where necessary as per design and specification or disposing it to a safe distance including pushing, levelling, dressing, etc. complete as per direction of Engineer in charge.  **16-510-10 :** For moving spoil earth upto a distance of 100m from the centre of the pit | | Earth work in excavation of foundation trenches:  Barrel:  1x7.90x(6.4+16.30)÷2x2.475 =219.92 Cum  2x(1.80+2.10)÷2x6.40x0.30 =7.488  Apron C/S & R/S:  2x2.7x{(6.40+17.50) ÷2+(8.13+22.43) ÷2}÷2  x(2.775+3.575) ÷2 =233.43  C/S:  1x8.50x{(8.13+22.43) ÷2+(10.80+24.00) ÷2}÷2  x(3.575+3.3) ÷2 =477.43  R/S: 1x6x{(8.13+22.43)÷2+(9.80+23.00)}÷2  x(3.575+3.30)÷2 =326.70  2x(0.90+1.20) ÷2x(8.00+7.00)÷2x0.30 = 4.725  Retain wall:  4x7.40x(4.70+17.50)÷2x3.20 =1051.40  4x7.40x0.90+1.20)÷2x0.30 = 9.324  Loose Apron  C/S: 16.300+1.000  =(17.300+24.35)÷2x(8.00+22.10)÷2x3.525=1104.80  R/S: 10.300+1.000  = 11.300+18.35)÷2x(7.00+21.10)÷2x3.525=734.22  Total =4169.437 Cum | | 4169.437  Cum | |
| 7 | | 16-170 | | 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 rate for every additional lift:  Quantity Same as Item No-6  =4169.437 PltCum | | 4169.437  PltCum | |
| 8 | | 16-620 | | 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.  16-620-20:  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:  2 x 57.44 x 1.50 = 172.32 Sqm  2 x 26.80 x 1.50 = 80.40 Sqm  Total- =252.72 Sqm | | 252.72  Sqm | |
| 9 | | 12-310 | | Bailing out of water with all leads and lifts by manual labour or pump, with all arrangements 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  2Nos Pump- 60 days- 6 hour/days  =2 x60x6x60x60 =2592000.00 cft  80% Efficiency =2073600.00 cft  Total- =58717.25 Cum | | 58717.25  Cum | |
| 10 | | 44-240 | | Supplying at site U-shape hot rolled steel sheet pile of different section of Phosphorus=0.04%(Maximum), Sulphur = 0.04% (Maximum), 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 -incharge.  44-240-10: U-shape, hot- rolled steel sheet pile width= 400mm to 600mm: height=> 100mm, Thickness>=10.5mm. (±0.50mm) | | Supplying at site U-shape  Each Sheet pile length C/S=4.00m R/S=3.00m  C/S =20.80÷0.400 =52.00x4.00=208.00  R/S =19.80÷0.400=49.50~50.00x3.00=150.00  102 pcs = 358.00  Area of sheet pile  = 358.00mx0.400 = 143.20 Sqm  143.20x120 kg/Sqm = 17184 kg  =17.184 M ton. | | 17.184  M ton. | |
| 11 | | 44-320 | | Cutting of steel sheet piles to design and length and shape as per requirement in design and drawing and as per direction of Engineer in charge. **44-320-10:** Up to 10mm thick. | | Each sheet pile full length = 6.00m  Nos of cutting  C/S =52Nos  R/S 50÷2 = 25 Nos  Total =77 pcs  Effective cutting length = 0.650  length of cutting =77 x 0.650= 48.75m | | 48.75  m | |
| 12 | | 12-300 | | Construction of sump well with dug holes of size 1.80 m x 2.0 m, laying in position the perforated empty diesel/petrol drum sheet of 1.00 m dia to a depth 1.5m having slot area of 1000 sq.cm/Sqm, slot dia being 30mm each with supply of necessary shrouding materials comprising of 60% 40mm downgraded khoa and 40% coarse sand of FM>=2.50 and placing those around and beneath the drum sheet having thickness of 40cm and 50cm respectively including necessary welding, fitting etc. complete as per direction of Engineer in charge. | | Construction of sump well with dug holes:  =1x2x4 =8 Nos | | 8 Nos | |
| 13 | | 44-270 | | 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 :Upto 4.50 m depth. | | Driving steel sheet piles of various sections:  52x0.600x4.00= 124.80 Sqm  50x0.600x3.00= 90.00 Sqm  Total = 214.80 Sqm | | 214.80  Sqm | |
| 14 | | 72-180 | | Provide 1 (one) coat of Zinc phosphate as primary coat and 2 (two) coat of coaltar epoxy coat over primary coat to steel surface with paint of approved colour etc. complete including the cost of all materials as per direction of Engineer in charge. | | Painting of steel sheet piles:  2x52x0.650x4.00= 270.40 Sqm  2x50x0.650x3.00= 195.00 Sqm  = 465.40 Sqm  Total- 465.40x2=930.80 Sqm | | 930.80  Sqm | |
| 15 | | 72-540 | | Epoxy paint 2 coats of approved colour and specification over a priming coat to gate, hoisting device and embedded metal parts including scraping out rust and old paint with chisel, scraper, steel wire brush & emery paper etc. complete in all respect including the cost of all materials as per direction of Engineer in charge. | | Epoxy paint 2 coats of approved colour:  Vertical Lift Gate 4x1.50x1.80 =10.80 Sqm  Angles 8x0.570x4.85 =22.116  Angles 4x1.50x0.175 =1.05  Base Plate 4x1.65x0.150 =1.00  = 34.966 Sqm  =2.50x34.966 Sqm  Total =87.415 Sqm | | 87.415  Sqm | |
| 16 | | 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 thick hessian cloth:  102.00x0.65x0.90 =59.67 Sqm | | 59.67  Sqm | |
| 17 | | 44-220 | | 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 1.0 kg per 6.50 Sqm | | Supplying and laying single layer polythene:  Barrel: 1x(7.90+0.25+0.60)x(4.40+0.60) =43.76  C/S & R/S slope  1x2x(2.70+0.60)x(5.468+0.600) = 40.04  Apron C/S  1x1x(8.50+0.600)x{5.50+(8.00+0.600)}÷2 =64.15  Apron R/S  1x1x(6.00+0.600)x{6.00+(7.00+0.600)}÷2 =44.88  R/Wall  (5.80+0.60+0.125+0.60)x(2.70+0.60+0.125+0.60) =28.678  Total=221.51 Sqm | | 221.513  Sqm | |
| 18 | | 28-120 | | 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 down graded stone chips. | | Cement concrete work in leanest mix. 1:3:6  Barrel:  1x{7.90+(0.124x2)}x4.40x0.075 =2.68  C/S Slope:  1x(2.7+0.124)x{(4.3+5.468)÷2} x0.075=1.034  R/S Slope:  1x(2.7+0.124)x{(4.3+5.521)÷2} x0.075 =1.04  Apron C/S:  1x8.5x(5.468+8.80) ÷2x0.075 =4.54  Apron R/S:  1x6.00x(5.521+4.110) ÷2x0.075 =2.167  R/W: 4x6.40x2.824 x0.075 =5.42  Block Guide wall  Slope: 1x2x6.805x0.30x0.65 =2.654  Top of Bank: 1x2x0.60x0.30x0.65 =0.234  R/S bed: 1x7.00x0.30x0.65 =1.365  Slope Toe: 1x2x5.00x0.30x0.65 =1.95  Slope: 1x2x6.485x0.30x0.65 =2.529  Top of bank: 1x2x0.60x0.30x0.65 =0.234  Total =25.847Cum | | 25.847  Cum | |
| 19 | | 28-100 | | Cement concrete work in leanest mix. 1:4:8, 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.  28-100-10 : With 25mm down graded picked jhama or 1st. class brick chips. | | Cement concrete work in leanest mix. 1:4:8  Block Guide wall base:  C/S bed: 1x8.00x0.40x0.050 =0.16  Slope Toe: 1x2x8.00x0.40x0.050 =0.32  Slope: 1x2x6.485x0.40x0.05 =0.259  Top of Bank: 1x2x0.60x0.40x0.050 =0.024  R/S bed: 1x7.00x0.40x0.050 =0.14  Slope Toe: 1x2x5.00x0.40x0.050 =0.20  Slope: 1x2x6.485x0.40x0.050 =0.259  Top of Bank: 1x2x0.60x0.40x0.050 =0.024  Sec. X-X: 4x16.483x0.30x0.050 =0.989  Total- =2.375Cum | | 2.375  Cum | |
| 20 | | 28-200 | | 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/mSqm, 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 | | Reinforced cement concrete work in leanest mix. 1:1.5:3  Barrel:  1x7.90x4.40x0.40 = 13.904  1x2x(1.5+1.8)÷2x4.40x0.30 = 4.356  X-sec. 4-4(part)  1x2.824x(4.30+5.468)÷2x(0.70+0.60)÷2 = 8.965  X-sec. 6-6(part)  1x2.824x(4.30+5.521)÷2x(0.70+0.60)÷2 = 9.013  C/S Apron X-sec. 4-4 (part) & X-sec.5-5  1x7.7x(5.468+8.8)÷2x(0.60+0.40)÷2 = 27.466  R/S Apron X-sec.6-6 (part) & X-sec.7-7  1x5.2x(5.521+7.8)÷2x(0.60+0.40)÷2 = 17.317  C/S 1x0.80x8.8x0.40 = 2.816  R/S 1x0.80x7.80x0.40 =2.50  R/W base:  4x2.70x6.40x0.30 = 20.736  Sheet Pile Cap  1x40.60x(0.90+1.20)÷2x0.30 = 12.789  R/wall 4x6.4x0.30x2.90 = 22.272  W/wall  X-sec. 4-4  1x2x6.30x(0.30+0.40)÷2x(4.10+2.90)÷2 = 15.435  X-sec. 5-5  1x2x4.10x(0.30+0.40)÷2x2.90 = 8.323  Fillet in between R/wall & W/wall  4x2x½x0.30x0.30x2.90 = 1.044  R/S X-sec. 6-6  1x2x6.30x(0.30+0.40)÷2x(4.10+2.90)÷2 = 15.435  X-sec. 7-7  1x2x1.60x(0.30+0.40)÷2x2.90 = 3.248  Abutment 1x2x4.3x0.35x4.35 = 13.093  Pier wall 1x1x4.3x0.30x4.35 = 5.611  Fillet  R/wall 4x2x6.4x½x0.150x0.150 = 0.576  W/wall C/S 1x2x1x10.40x½x0.15x0.15 = 0.234  W/wall R/S 1x2x1x7.90x½x0.15x0.15 = 0.177  Abutment 1x2x1x7.90x½x0.15x0.15 = 0.177  Pier wall 1x2x1x7.90x½x0.15x0.15 = 0.177  Drop wall 1x2x4.40x0.300x2.550 = 6.732  Head wall 1x2x2x1.50x0.450x4.850 = 13.095  Pier wall 1x2x1.50x0.500x4.60 = 6.90  Bridge Deck slab 1x1x4.90x4.40x0.350 = 7.546  Operation Deck  Beam1x2x4.40x0.975x0.250 = 2.145  1x2x4.40x0.300x0.250 = 0.66  Railing post  1x2x2x5x0.175x0.175x0.900 = 0.551  Railing Horizontal bar  1x2x4x4x0.88x0.175x0.175 = 0.863  Fillet below B/deck  4x4.90x½x0.150x0.150 = 0.22  Chute block C/S  1x3x½x2.10x0.70x0.500 = 1.1025  Chute block R/S  1x5x½x1.50x0.500x0.350 = 0.656  Buffle block C/S  1x6x0.70x0.20x0.500 = 0.42  Buffle block C/S  1x6x½x0.70x0.70x0.500 =0.735  Buffle block R/S  1x8x0.40x0.150x0.350 =0.168  Buffle block R/S  1x8x½x0.80x0.40x0.350 =0.448  End seal C/S  1x9x(1.25+0.15)÷2x0.45x0.55 = 1.559  1x9x2x½x0.625x3.125x0.45 = 7.91  End seal R/S  1x12x(0.95+0.15)÷2x0.30x0.40 = 0.792  1x11x2x½x0.475x0.30x0.2375 = 0.372  Total- =258.533Cum | | 258.533  Cum | |
| 21 | | 76-120 | | M.S. Work for reinforcement with deformed M.S. bar, fy=400 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 for reinforcement with deformed M.S. bar  **20mm Ø bar calculation**  @300mm c/c  2x9x1.55 =27.90 m  @2.47 Kg/m =68.913 Kg  (+) 5% =3.445 Kg  20mm Ø bar Total =72.358 Kg  **16mm Ø bar calculation**  X-sec 4-4  C/S bottom long bar @100mm c/c  1x64x(4.5+7.226)÷2 =375.232  X-sec 5-5  C/S bottom long bar @200mm c/c  1x20x(7.14+9.0)÷2 =161.40  Beyond section  1x4x9.00 =36.00  C/S top layer  1x32x(4.50+7.226)÷2 =187.616  X-sec 5-5  1x20x(7.14+9.00)÷2 =161.40  Beyond section  1x4x9.00 =36.00  Binder bottom layer @250mm c/c  1x18x11.41 =205.38  Variable bar  1x2x9x(11.20+1.06)÷2 =110.34  Binder top layer @200mm c/c  1x21x3.43 =72.03  1x21x9.08 =190.68  Variable bar  1x2x11x(11.20+1.06)÷2 =134.86  C/S W/wall vertical bar  Long bar  1x2x14x(6.35+3.678)÷2 =140.40  1x2x18x(5.283+4.751)÷2 =180.612  Short bar @100mm c/c  1x2x14x(3.80+3.70)÷2 =105.00  1x2x18x(3.70+3.60)÷2 =131.40  X-sec 5-5  Long bar @200mm c/c  1x2x20x(5.751+5.651)÷2 =228.04  Short bar @100mm c/c  1x2x20x(3.90+3.80)÷2 =154.00  C/S water face vertical bar @200mm c/c  1x2x14x(5.010+4.010)÷2 =126.28  1x2x18x(3.943+3.611)÷2 =135.972  X-sec 5-5  1x2x20x(3.611+3.51)÷2 =142.42  C/S wall Binder  1x2x2x15x11.310 =678.60  Variable bar  1x2x20x(4.0108+0.37)÷2 =87.616  R/S Apron Sec 6-6  Bottom Layer bar @100mm c/c  1x1x64x(4.50+7.349)÷2 =379.168  Top Layer bar @200mm c/c  1x1x32x(4.50+7.349)÷2 =189.584  C/S Apron Sec 7-7  Top & Bottom Layer bar @200mm c/c  1x2x8x(7.47+8.00)÷2 =123.76  Beyond section  Top & Bottom Layer bar  1x2x4x8.00 =64.00  Binder bottom layer bar @250mm c/c  1x18x9.050 =162.90  Variable bar  1x2x7x(8.939+0.917)÷2 =68.992  Top Layer bar @200mm c/c  1x21x3.43 =72.03  1x21x6.58 =138.18  Variable bar @200mm c/c  1x2x8x(6.492+1.00)÷2 =59.936  Vertical bar Earth face Sec 6-6  long bar 1x2x14x(6.35+5.35)÷2 =163.80  1x2x18x(5.283+4.951)÷2 =184.212  Earth face Sec 7-7  1x1x(5.70+5.65)÷2 =5.675  Short bar Sec 6-6  @100mm c/c  1x2x14x(3.80+3.70)÷2 =105.00  Rest Portion  1x2x18x(3.70+3.55)÷2 =130.50  Short bar Sec 7-7  1x2x8x(3.85+3.80)÷2 =61.20  Vertical bar Water face Sec 6-6  @200mm c/c  1x2x14x(5.01+4.01)÷2 =126.28  1x2x18x(3.943+3.611)÷2 =135.972  Sec 7-7  1x2x8x(3.61+3.51)÷2 =56.96  Wall binder  Water face & Water face  1x2x2x15x8.81 =528.60  Variable bar  1x2x2x6x(5.92+0.37)÷2 =75.48  Barrel base  @150mm c/c  1x30x16.16 =484.80  Abutment E/F  C/S+R/S 2x2x11x15.64 =688.16  6 Nos bar head wall line  1x2x3x6x5.76 =207.36  6 Nos bar in each groove  16x2x5.76 =184.32  Abutment  Vertical bar Water face  @200mm c/c  2x1x22x5.31 =233.64  Pier wall  1x2x22x5.31 =233.64  2x2x7x5.51 =154.28  Pier wall end  2x2x7x5.51 =154.28  Pier round end  5 Nos bar  1x2x5x5.51 =55.10  Operation deck beam  1x2x4.6 =9.20  Sub Total of 16mm Ø bar (m) =9018.288 m  @1.58 Kg/m =14248.89 Kg  (+) 5% =712.444 Kg  Total weight of 16mm Ø bar (Kg) =14961.33 Kg  **12mm Ø bar calculation**  @150mm c/c  Return wall pile cap Ring  Outside-  4x43x1.90 = 326.8  In side- @150mm c/c  4x43x1.763 =303.236  3Nos bar at In & Out side bottom  4x2x3x6.88 =165.12  Apron- outside of pile cap  C/S 1x53x2.10 =111.30  Inside 1x53x2.004 =106.212  3Nos bar at bottom  1x2x3x8.84 =53.04  R/S outside 1x46x2.10 =96.60  R/S Inside 1x46x2.004 =92.184  3Nos bar at bottom  1x2x3x7.84 =47.04  Return wall base  Top + Bottom layer  4x2x43x2.83 =973.52  Return wall binder  Top + Bottom layer  4x2x17x6.88 =935.68  Return wall fillet @300mm c/c  4x2x22x1.119 =196.944  C/S fillet X-sec 4-4 & 5-5  1x2x9x(1.827+1.686)÷2 =31.617  X-sec 4-4 (part)  1x2x1x12x(1.545+1.686)÷2 =38.772  X-sec 5-5  1x2x1x14x(1.545+1.404)÷2 =41.286  Return wall vertical bar  Earth face long bar@200mm c/c  4x1x33x3.63 =479.16  Earth face short bar@100mm c/c  4x1x32x1.78 =227.84  Return wall vertical bar  water face @150mm c/c  4x1x43x3.33 =572.76  Return wall binder E.F&W.F  4x2x20x7.06 =1129.60  Fillet  Sec 6-6 @300mm c/c  1x2x9x(1.827+1.686)÷2 =31.617  1x2x12x(1.686+1.545)÷2 =38.772  Sec 7-7  1x2x5x(1.545+1.404)÷2 =14.745  Barrel base  Top layer @150mm c/c  1x53x4.52 =239.56  Bottom layer binder  1x29x5.26 =152.54  1x29x2.824 =81.896  Top layer binder  1x29x8.74 =253.46  Abutment end ring  1x2x31x2.782 =172.545  1x2x2x31x1.32 =163.66  Pier  1x2x31x1.44 =89.28  Abutment wall binder  1x2x1x30x8.04 =482.40  W/F  1x2x1x30x5.04 =302.40  Pier wall binder  1x2x30x5.04 =302.40  Abutment wall W/F  1x2x1x31x1.94 =120.28  Pier wall  1x2x2x31x1.94 =240.56  Fillet @300mm c/c  Barrel base  1x2x1x15x1.756 =52.68  Pier  1x2x1x15x1.543 =46.29  Pier wall  1x2x15x1.459 =43.77  Head wall side  1x2x2x6x2.138 =51.312  Pier wall  2x2x6x2.222 =53.328  Deck slab  1x2x1x15x1.515 =45.45  Drop wall  @150mm c/c  1x2x2x2x11x3.24 =285.12  Binder  U-shape bar  1x2x18x9.2 =331.20  Deck slab  Top & Bottom layer @150mm c/c  1x2x29x4.52 =262.16  binder top & bottom layer  1x2x13x5.04 =131.04  Operation deck  top & bottom layer @200mm c/c  1x2x2x21x0.94 =78.96  Binder top & bottom layer @150mm c/c  1x2x2x5x4.14 =82.80  Extra top  1x2x2x5x0.815 =16.30  Middle bar  1x2x1x5x1.74 =17.40  Railing Post  4 Nos bar  2x2x5x4x1.49 =119.20  1x2x2x2x4.54 =36.32  Chute block  C/S  3 Nos bar 3x3x3.00 =27.00  2 Nos U bar 3x2x(4.15+3.134)÷2 =21.852  12 Nos U bar 3x12x(2.20+1.70)÷2 =70.20  R/S  3 Nos bar 5x3x2.20 =33.00  2 Nos U bar 5x2x(2.80+1.90)÷2 =23.50  7 Nos U bar 5x7x(1.70+1.20)÷2 =50.75  Buffle block  C/S  3 Nos bar 6x3x2.394 =43.092  2 Nos U bar 6x2x(1.00+1.40)÷2 =14.40  3 Nos U bar 6x3x(1.975+1.325)÷2 =29.70  R/S  3 Nos bar 8x3x1.911 =45.864  2 Nos U bar 8x2x(0.85+1.25)÷2 =16.80  3 Nos U bar 8x3x(1.525+0.625) =51.60  End Sill C/S  3 Nos bar in each end sill  big 9x3x2.268 =61.236  small 9x3x1.998 =53.946  7 Nos binder bar in each end sill  7x8.14 =56.98  6x9x0.40 =21.60  End Sill R/S  3 Nos bar in each end sill  big 12x3x1.783 =64.188  small 11x3x1.662 =54.846  7 Nos binder bar in each end sill  7x7.14 =49.98  6x12x0.20 =14.40  \_\_\_\_\_\_\_\_\_\_  Sub Total of 12mm Ø bar (m) =11073.09m  @0.89 Kg/m =9855.05 Kg  (+) 5% =492.752 Kg  12mm Ø bar Total weight (Kg) =10347.80 Kg  ­­­  **12mm Ø bar Total weight (Kg) =10347.80 Kg**  **16mm Ø bar Total weight (Kg) =14961.33 Kg**  **20mm Ø bar Total weight (Kg) =72.358 Kg**  **Total (8mm-30mm Ø bar) =25381.50 Kg** | | **25381.50 Kg** | |
| 22 | | 76-115 | | M.S Work for reinforcement with Standard deformed bar fy=300 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 | | M.S Work for reinforcement  **6mm Ø bar calculation**  Ring @150mm c/c  1x2x30x0.82 =49.20 m  Railing post  1x2x2x5x7x0.62 =86.80  1x2x2x4x7x0.62 =69.44  Sub Total of 6mm Ø bar (m) =205.44 m  @0.222 Kg/m =45.60 Kg  6mm Ø bar Total weight (Kg) =45.60 Kg | | 45.60 Kg | |
| 23 | | 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 levelling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge. | | **36-150-60:** Footing, footing beams, grade beams, foundation slab with 60-80mm dia barrack bamboo props.  Barrel  1x2x7.90x0.475 =7.505 Sqm  1x2x4.40x0.475 =4.180  Slope+Apron C/S  1x2x2.824x(0.775+0.675)÷2 =4.094  1x2x7.40x(0.675+0.525)÷2 =8.88  1x2x1.224x0.775 =1.897  1x1x8.8x0.775 =6.82  R/S  1x2x(2.70+0.124)x(0.775+0.675)÷2 =4.094  1x2x4.9x(0.675+0.525)÷2 =5.88  1x2x(1.10+0.124)x0.775 =1.90  1x1x7.8x0.775 =6.045  R/wall base  4x2x6.40x0.375 =19.20  4x1x6.40x0.30 =7.68  4x1x2.7x0.375 =4.05  4x1x0.90x0.30 =1.08  Chute block C/S  1x3x2x½x2.10x0.70 =4.41  1x3x1x0.50x0.70 =1.05  R/S  1x5x½x1.50x0.50 =1.875  1x5x0.35x0.50 =0.875  Buffle block C/S  1x6x2x (0.20+0.90)÷2x0.70 =4.62  1x6x1x0.50x0.70 =2.10  R/S  1x8x2x (0.40+0.70)÷2x0.50 =4.40  1x8x1x0.35x0.50 =1.40  End sill  1x9x2x (0.150+1.250)÷2x0.55 =6.93  1x9x1x0.450x0.55 =2.227  R/S  1x12x2x (0.150+0.95)÷2x0.40 =5.28  1x12x1x0.300x0.400 =1.44  Total- =119.91 Sqm  **36-150-10:** Vertical and inclined walls, columns, piers with 60-80mm dia barrack Bamboo props.  Return wall fillet  4x2x6.400x0.212 =10.854  Return wall  4x2x6.400x2.75 =140.80  Return wall  4x1x0.300x2.90 =3.48  Wing wall  C/S fillet  1x2x10.40x0.212 =4.409  E/F 1x2x6.30x(4.10+2.90)÷2 =44.10  W/F 1x2x6.30x(3.95+2.75)÷2 =42.21  E/F 1x2x4.10x2.90 =23.78  W/F 1x2x1x4.10x2.75 =22.55  fillet between wing & Return wall  4x1x0.84x2.90 =9.744  R/S X-sec 6-6, 7-7  1x2x7.90x0.212 =3.35  C/S X-sec 6-6  E/F 2x1x6.30x(4.10+2.90)÷2 =44.10  W/F 2x1x6.30x(3.95+2.75)÷2 =42.29  X-sec 7-7  E/F 2x1x1.60x1.881 =6.02  W/F 2x1x1.60x2.75 =8.80  Barrel wall fillet  2x1x7.90x0.212 =3.349  E/F 2x1x4.30x4.70 =40.42  W/F 2x1x4.20x4.30 =36.12  Pier wall fillet  1x2x7.90x0.212 =3.35  Wall 1x2x4.30x4.050 =34.83  Bridge deck fillet  1x2x4.30x0.212 =1.823  1x2x4.30x0.212 =1.823  Head wall  C/S, R/S- E/F  1x2x2x1.80x4.85 =34.92  W/F  1x2x2x1.80x4.70 =33.84  Pier wall  1x2x2x1.80x4.45 =32.04  Drop wall  1x2x2x1.50x3.05 =18.30  Below Drop wall  2x1.50x0.30 =0.90  Grooves for Fall Board  1x2x4x2x0.10x4.85 =7.76  Total-  **=655.962 Sqm**  **36-150-20:** Deck slab, operating deck slab, top slabof barrel upto 3.5m height with 60-80mm dia barrack bamboo props  B/D  1x2x4.30x1.40 =12.04 Sqm  2x2x1.50x0.80 =4.80  Beam side  1x2x4.40x0.30 =2.64  1x2x4.40x0.10 =0.88  Railing Post  2x2x5x0.70x0.90 =12.60  2x2x4x0.881x0.525 =7.40  Total- =40.36 Sqm | | 119.91  Sqm  655.962  Sqm  40.36  Sqm | |
| 24 | | 76-630 | | Supply and fitting and fixing 23cm wide P.V.C water stops having minimum strength of 13.80 N/mSqm at 225% elongation and of approved quality in contraction 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 water stops:  Vertical  2x4.45 =8.90 m  Horizontal  1x3.90 =3.90  Sub-Total =12.80 m  Grand Total- 2x12.80 **=**25.60 m | | 25.60  m | |
| 25 | | 16-540 | | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including leveling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labour using mallet/ vibro compactor) as per direction of Engineer in charge.  16-540-20 : sand of FM>=1.50 | | Supplying and filling sand in foundation by FM>=1.50  C/S Loose Apron  1x8.00x8.00x0.15 =9.60 Cum  Slope  1x2x8.00x6.48x0.15 =15.55  Top  1x2x8.00x0.60x0.15 =1.44  R/S Loose Apron  1x5.00x7.00x0.15 =5.25  Slope  1x2x5.00x6.48x0.15 =9.72  Top  1x2x5.00x0.60x0.15 =0.90  Total- =42.46 Cum | | 42.46  Cum | |
| 26 | | 40-520 | | 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: | | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom)  **40-520-20:**  Well graded between 40mm to 20mm size.  A)  C/S Loose Apron  1x8.00x8.00x0.10 =6.40 Cum  Slope 1x2x8.00x6.48x0.10 =10.368  Toe 1x2x8.00x0.60x0.10 =0.96  R/S Loose Apron  1x5.00x7.00x0.10 =3.50  Slope 1x2x5.00x6.48x0.10 =6.48  Toe 1x2x5.00x0.10 =1.00  Sub-Total of A =28.708 Cum  B)  Below Barrel Base  1x2x4.40x0.60x0.15 =0.792 Cum  Wall side  1x2x2x0.60x0.150x4.80 =1.728  Sub-Total of B =2.52 Cum  C)  Embanks Top  2x2x10.00x0.80x0.050 =1.60 Cum  Embanks Slope  2x2x(10.00+8.237)÷2x8.55x0.05 =15.60  Toe 2x2x8.237x0.60x0.050 =0.988  Sub-Total of C =18.188 Cum  D)  Protection work  Embanks top  4x50.00x0.60x0.050 =6.00 Cum  Slope 4x50.00x6.481x0.050 =64.81  Sub-Total of D =70.81 Cum  Grand Total (A+B+C+D) =120.261 Cum  **40-520-30:**  Well graded between 20mm to 5mm size.  A) Qnty same as Sub-Total A =28.708 Cum  B)Below base 1x2x4.40x1.20x0.15 =1.584  Wall side 2x2x1.20x0.15x4.80 =3.456  C)Qnty same as Sub-Total C =18.188  D) Qnty same as Sub-Total D =70.81  Grant Total (A+B+C+D) =122.746 Cum | | 120.261  Cum  122.746  Cum | |
| 27 | | 40-500 | | Supplying and placing non-woven needle punched type geotextile fabric (100% Polypropylene Fabric, unit weight : 855 Kg/m3 to 946 Kg/m3) as filter materials of elongation at maximum force machine direction (MD) >=60% and <= 100 % , elongation at maximum force (CMD) => 40% and <= 100% ,horizontal and vertical permeability (under 2 kn/m² pressure)=>2x10E-3 m/sec. for effective erosion protection in hydraulic structures/river training works including local handling, placing in position, providing machine seamed joints (with 100% polypropylene or nylon thread) or 35cm lap in dry condition or minimum 100cm lap under water including protecting the geotextile material from UV ray and from any other damages including supply of all materials, labours, equipment’s etc. complete as per direction of Engineer in charge. (Geotextile delivered at site should be certified by ISO and clearly labelled with brand name and grade printed at regular intervals across the body of the fabric).  40-500-20: Mass =>300 gm/m², thickness(Under 2 kpa pressure) =>2.00mm, EoS<=0.11mm, strip tensile strength =>15kn/m, grab strength =>850N, CBR puncture resistance =>2200N. | | Embank top, Slope Top  4x10.30x13.25 =545.90 Sqm  Protective work  4x50.60x7.081 =1433.194  Total- =1979.094 Sqm | | 1979.09 Sqm | |
| 28 | | 40-550 | | Supplying and laying sand as filter layers as per specific size ranges and gradation including preparation of surface, compacting in layer etc. complete with supply of all materials and as per direction of Engineer in charge.  **40-550-20 :** FM : 1.5 to 2.0 | | **40-550-20 :** FM : 1.5 to 2.0  Below Barrel base-  1x2x4.40x1.80x0.15 =2.376 Cum  Wall side Slope  1x2x2x1.80x4.80x0.15 =5.184  Total- =7.56 Cum | | 7.56  Cum | |
| 29 | | 40-550 | | Supplying and laying sand as filter layers as per specific size ranges and gradation including preparation of surface, compacting in layer etc. complete with supply of all materials and as per direction of Engineer in charge.  **40-550-30 :** FM : 1.00 to 1.5 | | **40-550-30 :** FM : 1.00 to 1.5  On Embankment Slope  1x2x2x(10.00+8.237)÷2x8.55x0.15=46.777  On Embankment Top  1x2x2x10.00x0.80x0.15 =4.80  at Toe  1x2x2x8.322x0.60x0.15 =2.996  Protective work on bank  4x50.00x0.60x0.15 =18.00  Protective work on Slope  4x50.00x6.481x0.15 =194.43  Total- =267.003 Sqm | | 267.003 Sqm | |
| 30 | | 40-150 | | 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/mSqm 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.   1. **40-150-50:** block size 30cmx30cmx30cm. 2. **40-150-40:** block size 40cmx40cmx20cm. | | 1. **40-150-50**: block size 30cmx30cmx30cm.   C/S Apron bed: 1x8.00x8.00 =64.00  Slope: 1x2x8.00x6.48 =103.68  Bank Top:1x2x8.00x0.60 =9.60  R/S Apron Bed: 1x5.00x7.00 =35.00  Slope: 1x2x5.00x6.48 =64.80  Bank Top: 1x2x5.00x0.60 =6.00  Without filter C/S bed double layer  1x2x8.00x8.00 =128.00  R/S bed double layer  1x2x5.00x7.00 =70.00  C/S slope: 1x2x8.00x6.48 =103.68  At Bank Top: 1x2x8.00x0.60 =9.60  R/S slope: 1x2x5.00x6.48 =64.80  At Bank Top: 1x2x5.00x0.60 =6.00  At Embankment Toe  4x1x8.237x0.60 =19.768  Protective works Sec x-x  4x50.00x0.60 =120.00  Sec x-x Slope, Toe 4 Nos 2 layer  2x4x50.00x1.20 =480.00  Total- =1284.928 Sqm  Area of 1 (one) Nos Block =0.09 Sqm  Nos of Blocks =1284.928÷0.09  =14276.977  (-) 3% of Gap =(-)428.309  =13858.668 Nos  Say 13859.00 Nos  b) **40-150-40:** block size 40cmx40cmx20cm.  1x4x10.00x0.80 =32.00 Sqm  1x4x(10.00+8.237)÷2x8.55=311.852  4x50.00x6.481 =1296.200  =1640.052 Sqm  Area of 1 (one) Nos block =0.160 Sqm  Nos of blocks =1640.052÷0.16  =10250.325  (-) 2% of Gap =(-)205.006  =10045.318  Say 10045.00 Nos | | 13859.00 Nos  10045.00 Nos | |
| 31 | | 40-270 | | Labour charge for protective works in laying CC blocks of different sizes including preparation of base, watering and ramming of base etc. complete as per direction of Engineer in charge.  40-270-10 : Within 200 m. | | Labour charge for protective works in laying CC blocks of different sizes  Block size 30cmx30cmx30cm  =13849x0.300x0.300x0.300 =373.923 Cum  Block size 40cmx40cmx20cm  =10045x0.400x0.400x0.200 =321.44 Cum  Total- **=695.363 Cum** | | 695.363  Cum | |
| 32 | | 76-170 | | M.S. Work in plates, angles, channels, flat bars, Tees etc. including fabricating, machining, cutting, bending, welding, forging, drilling, revetting, 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 in plates, angles, channels, flat bars, Tees etc.  1x2x2x1.65x0.15x0.010 =0.0099 Cum  @7850Kg/Cum =77.71 Kg.  Anchor bolt 16mm Ø @200mm C/C  4x9x0.225 = 8.10  @1.58 Kg/m =12.798 Kg.  V. Angles  2x2x2x0.57x4.85x0.010 = 0.221 Cum  @7850 Kg/Cum = 1736.10 Kg.  16mm Ø Anchor  2x2x2x3x2.50x0.225 = 13.50 m  @1.50 Kg/m =21.33 Kg.  Detail Sec X. 75mm x 100mm Angle  4x1.50x0.175x0.010 = 0.0105 Cum  @7850 Kg/Cum =82.425 Kg.  Anchor 16mm Ø @300mm C/C  4x6x0.225 =5.40 m  @1.58 Kg/m =8.532 Kg.  **Total = 1938.895 Kg.** | | 1938.895  Kg | |
| 33 | | 76-240 | | Manufacturing & Supplying of M.S. Vertical Lift Gate shutter of 8mm thick M.S. skin plate and stiffener with minimum 75mmx75mmx10mm M.S. angle as frame, horizontal & vertical beam, 75mmx25mmx12mm P-type rubber seal, fixed with 10mm dia x 63.5mm M.S. counter shank bolts with nuts and 40mmx10mm 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 redoxide where necessary as per specification and direction of Engineer in charge.  **76-240-40:** Size 1.95m x 1.65m. | | 1x2x2 = 4 Nos | | 4 Nos | |
| 34 | | 76-260 | | 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.  **76-260-20:** Size 1.95m x 1.35m or 1.95m x 1.65m. | | 1x2x2 = 4 Nos | | 4 Nos | |
| 35 | | 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. | | 1x2x2 = 4 Nos | | 4 Nos | |
| 36 | | 16-130 | | Earth work by manual labour in resectioning of embankment/ canal bank/ river slopes/ road/ compound etc. manually compacted by 7.0 kg iron rammer to avoid any air pocket in 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 profile in layers not exceeding 150mm thickness with clod breaking to a maximum size of 100mm, removing roots & stumps of trees of girth upto 200mm from the ground, benching the side slopes, stripping/ ploughing the base of embankment and borrowpit areas, dug bailing, bail out of water, rough dressing including 150mm cambering at the centre of the crest (where necessary) etc. complete as per direction of Engineer in charge.  16-130-10: 0 m to 3 m height | | Earth work by manual labor in re-sectioning of embankment  Length of embankment =(50.00+50.00 =100.00)  100.00x(4.30+20.50)÷2x2.70 =3348.00 Cum | | 3348.00 Cum. | |
| 37 | | 16-400 | | Earth work by manual labour in all kinds of soil in excavation or reexcavation of channels with the initial lead of 30m and lift of 1.5m including levelling, dressing and throwing the spoils to profile with breaking clods, rough dressing, clearing jungles including cutting trees upto 200mm girth, dug bailing etc. complete as per direction of Engineer in charge. | | C/S- 1x50.00x(8.00+13.40)÷2x1.80 =963.00  R/S- 1x50.00x(7.00+12.40)÷2x1.80 =873.00  Total- =1836.00 | | 1836.00  each | |
| 38 | | 16-170 | | 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. | | Same as Item no 37 | | 1836.00  PltCum | |
| 39 | | 16-450 | | 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. | | =[{(2x90.00)+(2x70.00)}x{(2.00+12.80)}÷2]x2.70  = 6393.60 Cum  Deduction for foundation trenches  of item no.6 (-) = 4169.437  = 2224.163 cum | | 2224.163  Cum | |
| 40 | | 04-280 | | 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 | | Cement mortar gauge  1x2x4.00 =8.00 m | | 8.00  m | |
| 41 | | 16-470 | | 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, (minimum 15m apart from the bank) as per direction of Engineer in charge. | | Measurement of Removing bundh only same as Item no – 40  Considering 40% of Construction only  6393.60 x 40% =2557.44 Cum | | 2557.44 Cum | |
| 42 | | 16-560 | | 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.  16-560-20: Sand of FM>= 0.80 | | Barrel Side  1x2x7.90x(0.50+5.25)÷2x4.75 =215.768 Cum  Wing wall side C/S  1x2x10.40x(0.50+4.625)÷2x(3.375+4.875)÷2  =219.862 Cum  R/S  1x2x7.90x(0.50+4.625)÷2x(3.375+4.875)÷2  =167.010 Cum  Return wall Inside slope C/S+R/S  =2x2x6.90x(0.50+3.70)÷2x3.20  =185.472 Cum  Total-=788.102 Cum | | 788.102  Cum | |
| 43 | | 16-550 | | 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. | | Barrel side  1x7.90x(0.50+5.25)÷2x4.75 =107.884 Cum  Wing wall side C/S  1x2x10.40x(0.50+5.25)÷2x(3.375+4.875)÷2  = 246.67 Cum  R/S  1x2x7.90x(0.50+4.625)÷2x(3.375+4.875)÷2  = 167.010 Cum  Return wall side C/S+R/S  4x6.90x(1.50+4.70)÷2x3.20 = 273.792 Cum  For developing surrounding G.L-3.80  1x2x90.0x50.0x2.26 =20340.00 Cum  Total =21135.356 Cum | | 21135.356 Cum | |
| 44 | | 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. | | 2x2x13x1.65x0.10x0.15 =1.287 Cum | | 1.287  Cum | |
| 45 | | 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. | | Fine dressing and close turfing  = 1x100.00x19.138 **=1913.80 Sqm** | | 1913.80 Sqm | |
| 46 | | 80-260 | | Supplying, fitting and fixing of the different dia G.I. water distribution pipe line, with all special fittings such as bends, elbows, sockets, reducing sockets, tees, unions etc including cutting trench up to an average depth of 0.90m, maintaining proper level, cutting pipes where necessary, making threads etc. all complete, as per direction of Engineer in charge:  **80-260-20 : 50mm dia G.I. pipe line**  **80-260-10 : 40mm dia G.I. pipe line** | | **80-260-20 :** 50mm dia G.I. pipe line  2x2x1.00 =4.00 m  **80-260-10 :** 40mm dia G.I. pipe line  8x1.125 =9.00 m | | 4.00 m  9.00 m | |
| 47 | | 80-230-20 | | Supplying, laying, fitting and fixing of different dia G.I. pipes with all special fittings, such as bends, elbows, sockets, tees, unions, jamnuts 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 mending the damages, fixing in walls with holders and clips, including cutting threads, making necessary connection etc. all complete, and as per direction of Engineer in charge:  80-230-20 : 19mm dia G.I. pipe line | | **80-230-20 :** 20mm dia G.I. pipe line  1x1.125 =1.125 m | | 1.13 m | |
| 48 | | NSI | | Name Plate, As per market Rate | | As per market rate  1x2 **=**2 Nos | | 2.00 Nos | |
|  | |  | | **(C) Construction of Chouganga Khal Regulator (1-vent, 1.50m x 1.80m) at km 24.40** | |  | |  | |
| 1 | | 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 bellow ground level etc. complete including ramming the backfill and the cost of all materials as per direction of Engineer in charge. | | Construction BM Pillar  1 x 2 =2Nos | | 2.00  Nos | |
| 2 | | 04-180 | | Site preparation by manually removing all miscellaneous objectional materials form entire site and removing soil upto 15cm depth including uprooting stumps, jungle clearing, levelling dressing etc. complete as per direction of Engineer in charge. | | Site Preparation  90.00 x 80.00 = 7200.00 Sqm | | 7200.00  Sqm | |
| 3 | | 04-600 | | Providing cork sheet/polysterene sheet in expansion joints of concrete works including supply of all materials etc. complete as per direction of Engineer in Charge.  **04-600-10.** 25mm thick sheets. | | Providing cork sheet/polysterene sheet:  1 x 2 x 2.30 = 4.60 Sqm  1 x 2 x 2 x 0.35 x 4.850 =6.79 Sqm  Total- =11.39 Sqm | | 11.39  Sqm | |
| 4 | | 04-620 | | Filling of expansion joints up to a depth of 40 mm with bitumen mixed with coarse sand (FM>=2.5) in concrete works including supply of all materials etc. complete as per specification and direction of Engineer in charge.  04-620-20. 20 mm wide. | | Filling of expansion joints:  2 x 2.30 =4.60 Sqm  4 x 4.80 = 19.20 Sqm  Total- =23.80 Sqm | | 23.80  Sqm | |
| 5 | | 12-100 | | Installation of Pizeometer including supply of 40mm G.I. Pipe, Brass Strainer, Socket, Labour by wash boring, Lowering, fixing the elevation and providing cover on the top of the well etc. complete as per direction of Engineer in charge. | | Installation of pizometer  1x4 =4.00 Nos | | 4.00  Nos | |
| 6 | | 16-510 | | Earth work in excavation of foundation trenches in all kinds of soil as per layout plan of foundation excavation with all leads and lifts and placing the spoil earth for constructing the ring bundh/offerdam where necessary as per design and specification or disposing it to a safe distance including pushing, levelling, dressing, etc. complete as per direction of Engineer in charge.  16-510-10 : For moving spoil earth upto a distance of 100m from the centre of the pit | | Earth work in excavation of foundation trenches:  Barrel:  1x7.90x(3.50+6.15)÷2x1.325 = 50.50 Cum  1x2x2.70x{(3.50+4.40)÷2+(5.70+4.914)÷2}  ÷2x(1.10+0.225)÷2 =16.558 Cum  Apron C/S & R/S: Slope  1x2x(8.60+6.60)÷2x{(4.464+7.00)÷2  +(4.914+7.85)÷2}÷2x(0.225+0.425)÷2 =29.92 Cum  Above Sand filling  Barrel-  1x7.90x(6.15+16.65)÷2  x(2.475+2.775)÷2 =234.40 Cum  2x2.70x{(5.70+16.80)÷2+(4.914+19.014)÷2}÷2x(2.775+3.525)÷2 =197.45 Cum  Slope Apron CS & RS  2x(8.60+6.60)÷2x{(4.914+7.85)÷2  +(18.414+21.35)÷2}÷2x3.375 =673.67 Cum  R/W  4x(7.00+13.55)÷2x(3.90+17.0)÷2x3.275  =1406.59 Cum  C/S & R/S Side of Sheet Pile Cap 2x18.00x(1.65+1.20)÷2x0.30 =15.40 Cum  Total- **=2624.50 Cum** | | 2624.50  Cum | |
| 7 | | 16-170 | | 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 rate for every additional lift:  Same as Item No-6 = 2624.50 Pltcum | | 2624.50  Pltcum | |
| 8 | | 16-620 | | 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.  16-620-20:  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:  2 x 52.00 x 1.50 =156.0 Sqm  2 x 20.80 x 1.50 =62.40 Sqm  Total- =218.4 Sqm | | 218.4 Sqm | |
| 9 | | 12-310 | | Bailing out of water with all leads and lifts by manual labour or pump, with all arrangements 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  2 Nos Pump- 45 days- 6 hour/days  =2 x45x6x60x60=19,44,000 Cft  =55047.43 Cum  80% Efficiency =44,037.94 Cum  Total =44,037.94 Cum | | 44,037.94 Cum | |
| 10 | | 44-240 | | Supplying at site U-shape hot rolled steel sheet pile of different section of Phosphorus=0.04%(Maximum), Sulphur = 0.04% (Maximum), 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 -incharge.  44-240-10: U-shape, hot- rolled steel sheet pile width= 400mm to 600mm: height=> 100mm, Thickness>=10.5mm. (±0.50mm) | | Supplying at site U-shape  Each Sheet pile length  C/S=4.00 m, R/S=3.00 m  C/S-  6.4+5.0+6.4=17.80÷0.40 =44.5 Piece  Say, 45 Piece  R/S-  6.4+5.0+6.4=17.80÷0.40=44.5 Piece  Say, 45 Piece  C/S- 45.0x3 =135.00 m  R/S- 45.0x4 =180.00 m  =315.00 m  Total- 315.00x0.40=126.00 Sqm  @120 Kg/Sqm=15120 Kg= 15.120 M ton. | | 15.120  M ton. | |
| 11 | | 44-320 | | Cutting of steel sheet piles to design and length and shape as per requirement in design and drawing and as per direction of Engineer in charge. 44-320-10: Up to 10mm thick. | | Each sheet pile full length = 6.00m  C/S- 45.00x3=135.00 m  R/S- 45.00x4=180.00 m  = 315.00 m  Qnty of cutting sheet pile  (315.00÷6)x0.65=34.13 m | | 34.13  m | |
| 12 | | 12-300 | | Construction of sump well with dug holes of size 1.80 m x 2.0 m, laying in position the perforated empty diesel/petrol drum sheet of 1.00 m dia to a depth 1.5m having slot area of 1000 sq.cm/Sqm, slot dia being 30mm each with supply of necessary shrouding materials comprising of 60% 40mm downgraded khoa and 40% coarse sand of FM>=2.50 and placing those around and beneath the drum sheet having thickness of 40cm and 50cm respectively including necessary welding, fitting etc. complete as per direction of Engineer in charge. | | Construction of sump well with dug holes:  =1x5 =5 Nos | | 5 Nos | |
| 13 | | 44-270 | | 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 equipment’s 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 of various sections:  C/S- 45.00x3 =135.00 m  R/S- 45.00x4 =180.00 m  = 315.00  315.00x0.60=189.00 Sqm | | 189.00  Sqm | |
| 14 | | 72-180 | | Provide 1 (one) coat of Zinc phosphate as primary coat and 2 (two) coat of coaltar epoxy coat over primary coat to steel surface with paint of approved colour etc. complete including the cost of all materials as per direction of Engineer in charge. | | Painting of steel sheet piles:  Area same as item No. 13  189.00x2 =378.00 Sqm | | 378.00  Sqm | |
| 15 | | 72-540 | | Epoxy paint 2 coats of approved colour and specification over a priming coat to gate, hoisting device and embedded metal parts including scraping out rust and old paint with chisel, scraper, steel wire brush & emery paper etc. complete in all respect including the cost of all materials as per direction of Engineer in charge. | | Epoxy paint 2 coats of approved colour:  Vertical Lift Gate  1x2x1.65x1.80 =5.94 Sqm  Angles Base Plate  2x1.70x0.150 =0.51  Angles Vertical  2x2x0.57x4.85 =11.058  Angles H/W  2x1.7x0.175 =0.595 Sqm  Sub-Total =18.10 Sqm  18.10x2.50=45.26 Sqm  Total- 45.26 Sqm | | 45.26  Sqm | |
| 16 | | 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 thick hessian cloth:  90x0.65x1.00=58.5 Sqm | | 58.5  Sqm | |
| 17 | | 44-220 | | 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 1.0 kg per 6.50 Sqm | | Supplying and laying single layer polythene:  Barrel: 1x8.30x2.9 =24.07 Sqm  Apron C/S & R/S  11.00x(3.0+6.5)÷2 =52.25  R/W  4x3.35x3.50 =46.90  Total- =123.22 Sqm | | 123.20  Sqm | |
| 18 | | 28-120 | | 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. | | Cement concrete work in leanest mix. 1:3:6  Barrel:  1x8.148x2.30 =18.748 Cum  Apron C/S  1x10.84x(2.30+5.80)÷2 =43.902  Apron R/S  1x8.840x(2.30+5.80)÷2 =35.802  Return Wall Base  4x6.40x2.824 =72.2944  Block Guide Wall  2x5.00x0.30x0.65 =1.95  1x2x6.48x0.30x0.65 =2.527  1x2x0.60x0.30x0.65 =0.234  1x2x6.48x0.30x0.65 =2.527  1x2x0.60x0.30x0.65 =0.234  1x2x16.00x(0.00+0.30)÷2x0.30 =1.44  1x2x8.00x(0.00+0.30)÷2x0.30 =0.72  4x10.00x(0.00+0.30)÷2x0.30 =1.80  Total- =182.18 Cum | | 182.18  Cum | |
| 19 | | 28-100 | | Cement concrete work in leanest mix. 1:4:8, 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.  28-100-10 : With 25mm down graded picked jhama or 1st. class brick chips. | | Cement concrete work in leanest mix. 1:4:8  Block Guide wall base:  Apron bed: 1x2x5.0x0.4x0.05 =0.20 Cum  Slope: 1x2x2x6.48x0.4x0.05 =0.518  Top of Bank: 1x2x2x0.6x0.4x0.05 = 0.048  Total- =0.77 Cum | | 0.77  Cum | |
| 20 | | 28-200 | | 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/mSqm, 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 | | Reinforced cement concrete work in leanest mix. 1:1.5:3  Barrel:  1x7.90x2.30x0.40 = 7.268  1x2x(1.50+1.80)÷2x2.30x0.30 = 2.277  C/S Apron Section 4-4  1x2.84x(2.30+3.264)÷2x(0.60+0.70)÷2 =5.135  C/S Section 4-4 Rest  1x3.60x(3.264+4.55)÷2x(0.60+0.494)÷2 =7.693  1x3.50x(4.55+5.00)÷2x(0.494+0.40)÷2 =7.478  Beyond Section  1x0.90x5.00x0.40 =1.80  Pile Cap C/S, R/S  1x1x5.00x(0.689+1.20)÷2x0.30 =1.417  R/Wall Pile Cap  4x6.4x(0.90+1.20)÷2x0.30 =8.064  R/W Base  4x6.40x2.70x0.30 =20.736  R/W  4x6.40x0.30x2.90 =22.272  R/W Fillet  4x2x6.40x½x0.15x0.15 =0.58  Wing Wall Fillet  1x2x7.90x½x0.15x0.15 =0.18  1x2x9.80x½x0.15x0.15 =0.22  Fillet Barrel Base  1x2x1x7.90x½x0.15x0.15 = 0.18  Fillet Between Wing Wall  4x2x½x0.30x0.30x2.90 =1.04  R/W Base Section 6-6  1x2.84x(2.30+3.511)÷2x(0.70+0.60)÷2  =5.371  1x3.50x(3.511+5.127)÷2x(0.60+0.45)÷2  =7.938  Section 7-7  1x1.60x(5.127+5.80)÷2x(0.45+0.40)÷2  =3.71  1x0.90x5.80x0.40 =2.08  4-4 Wing Wall C/S  1x2x6.30x(0.30+0.40)÷2x(4.10+2.90)÷2  =15.435  C/S 5-5  1x2x3.50x(0.30+0.40)÷2x2.90 =7.105  R/S 6-6  1x2x6.30x(0.30+0.40)÷2x(4.10+2.90)÷2  =15.435  7-7  1x2x1.60x(0.30+0.40)÷2x2.90 =3.248  Barrel Wall  1x2x4.30x0.30x4.40 =11.352  Barrel Fillet  1x2x1x7.90x½x0.15x0.15 =0.18  H/W  1x2x2x1.80x0.40x4.70 =13.536  1x2x1.50x0.30x2.90 =2.61  Bridge Deck  1x4.30x2.30x0.30 =2.967  Operation Deck  Beam 2x2.30x0.25x0.30 =0.345  Roof 2x2.30x0.55x0.25 =0.632  Railing Post 4x3x0.175x0.175x0.90=0.33  Rail Bar 4x2x0.8875x0.175x0.175 =0.217  chute Block C/S  1x2x1.95x0.55x(0.65+0.00)÷2 =0.697  R/S 1x3x1.50x0.35x(0.50+0.0) ÷2 =0.393  Baffle Block  C/S 3x(0.85+0.20)÷2x0.55x0.65 =0.563  R /S 4x(0.70+0.20)÷2x0.35x0.50 = 0.315  End Sill  C/S 6x(1.25+0.15)÷2x0.45x(0.55+0.00)÷2  =0.519  5x1.25x0.45 (0.00+0.312+0.00)÷3 =0.29  R/S  8x(0.95+0.15)÷2x0.30x(0.40+0.00)÷2  =0.264  8x0.95x0.30x(0.00+0.2375+0.00)÷3=0.18  Total- =182.05Cum | | 182.05  Cum | |
| 21 | | 76-120 | | M.S. Work for reinforcement with deformed M.S. bar, fy=400 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 for reinforcement with deformed M.S. bar  20mm Ø bar calculation  @300mm c/c  Ladder  1x2x9x1.55 =27.90  In Pipe  8x1.125 =9.00  20mm Ø bar Total (m) =36.90 m  @2.47 Kg/m =91.14 Kg  20mm Ø bar Total (Kg)- =91.14 Kg  16mm Ø bar calculation  @100mm C/C Section 4-4  Bottom Layer  64x(2.50+4.75)÷2 =232.00  Section 5-5  @ 200 mm C/C  1x18x(4.821+6.00)÷2 =97.39  Beyond Section  1x5x6.00 =30.00  Top Layer 4-4 & 5-5  1x50x(2.50+6.00)÷2 =212.50  1x5x6.00 =30.00  @250 mm C/C  Binder Bottom Layer  1x10x10.91 =109.10  Variable  1x2x7x(10.66+1.16)÷2 =82.74  Top Layer  @200mm C/C  1x12x3.29 =39.48  1x12x8.58 =102.96  Variable  1x2x8x(10.69+1.16)÷2 =94.80  C/S Wing Wall V.Rod E/F  1x2x14x(6.35+5.35)÷2 =163.80  1x2x18x(5.15+4.944)÷2 =181.69  @100mm C/C Short Bar  1x2x14x(3.80+3.70)÷2 =105.00  1x2x18x(3.70+3.60)÷2 =131.40  Section 5-5 @200 mm C/C  Long Bar  1x2x18x(4.944+4.844)÷2 =176.184  Short Bar  1x2x18x(3.894+3.80)÷2 =138.492  Apron Base Bottom Layer  Section 6-6  @100mm C/C  1x64x(2.50+5.327)÷2 =250.46  Section 7-7  @200mm C/C  1x8x(5.615+6.00)÷2 =46.46  Beyond Section  1x5x6.00 =30.00  Top Layer 6-6 & 7-7  1x40x(2.50+6.00)÷2 =170.00  1x5x6.00=30.00  Vertical Bar 6-6  1x2x14x(6.35+5.35)÷2 =163.80  1x2x18x(5.15+4.944)÷2 =181.692  Short Bar @100mm C/C  1x2x14x(3.80+3.70)÷2 =105.00  1x2x18x(3.70+3.60)÷2 =131.40  Section 7-7 Long Bar @200 mm C/C  1x2x8x(4.944+4.844)÷2 =78.304  Short Bar  @ 100 mm C/C  1x2x8x(3.894+3.8)÷2 =61.552  Binder Base Bottom Layer  @250 mm C/C  1x9x8.91 =80.19  Variable  1x2x7x(8.71+1.16)÷2 =69.09  Top Layer  @200 mm C/C  1x12x6.57 =78.84  Variable  1x2x8x(8.71+1.16)÷2 =78.96  R/S W/F V.Bar @200mm C/C  1x2x1x14x(5.010+4.010)÷2 =126.28  1x2x1x18x(3.81+3.56)÷2 =132.66  1x2x1x8x3.56 =56.96  C/S Wing Wall V.Bar W/F 4-4  2x1x14x(5.010+4.010)÷2 =126.28  2x1x18x(3.81+3.56)÷2 =132.66  Section 5-5  2x1x18x3.56 =128.16  C/S Wing Wall Binder  2x2x5x(7.96+10.66)÷2 =186.20  2x2x11x10.66=469.04  2x2x10x(5.89+1.46)÷2 =147.00  R/S Wing Wall Binder  2x2x5x(5.96+8.66)÷2 =146.20  2x2x10x8.66 =346.40  Variable  2x2x10x(5.89+1.41)÷2 =146.0  Barrel Base E/F  @150mm C/C  1x30x13.96 =418.80  6 Nos Bar  2x6x5.76 =69.18  2x1x10x13.56 =271.20  In Grove  2x2x2x5.76 =46.08  Barrel W/F V.Bar  @200mm C/C  1x2x1x22x5.31 =233.64  H/W-W/F V.Bar  1x2x2x10x5.69 =227.6  Operation Deck Beam  2x4x2.5 =20.00  1 Nos Bar in Between Return & Wing Wall  4x1x3.41 =13.64  Sub Total of 16mm Ø bar (m) =6927.26 m  @1.58 Kg/m =10945.07 Kg  16mm Ø bar Total (Kg) =10945.07 Kg  12mm Ø bar calculation  @150mm c/c  Ring Sheet Pile Out Side  1x3x34x2.08 =212.16 m  4x43x1.88 =323.36  4x3x7.06 =84.72  Apron Inside  1x2x34x1.754 =119.272  3x2x6.20 =37.20  2x3x3.385 =20.312  R/W Inside  4x43x1.613 =277.44  4x3x7.06 =84.72  R/W Base Top & Bottom Layer  4x2x45x3.00 =1080.00  R/Wall Base Binder  4x2x20x7.50 =1200.00  R/W V.Rod  4x1x43x3.63 =624.36  R/F @ 200mm C/C  4x1x32x3.33 =426.24  Wall Binder @ 150mm C/C  4x2x20x7.06 =1129.60  Fillet @ 300mm C/C  4x2x21x1.359 =228.312  Section 5-5 Fillet  2x1x34x(1.826+1.401)÷2 =109.718  Section 7-7 Fillet  1x2x1x27x(1.826+1.401)÷2 =87.129  Chut Block C/S  1x2x3x2.75 =16.50  2 Nos U Bar  1x2x2(3.47+2.3)÷2 =11.54  2 Nos U Bar  1x11x2x(2.15+1.65)÷2 =41.80  R/S  3x3x2.25 =20.25  2Nos U Bar  3x2x(2.005+1.861)÷2 =11.60  9 Nos U Bar  3x9x(1.65+1.15)÷2 =37.80  Baffle Block  C/S  3x3x2.273 =20.46  2 Nos U Bar  3x3x(1.25+1.65)÷2 =13.05  3 Nos U Bar  3x3x(1.85+1.25)÷2 =13.95  End Sill R/S  8x3x2.083 =49.99  8x6x0.20 =9.60  7 Nos Bar Continuous Through end sill  1x7x5.00 =35.00  Barrel Base Top  Top Layer  @ 150mm C/C  1x1x53x2.42 =128.260  Bottom Layer Binder  1x2x15x5.26 =157.80  1x2x15x2.754 =82.62  Top Layer Binder  1x15x8.64 =129.60  Fillet  @ 300mm C/C  1x2x15x1.53 =45.90  1x2x2x6x2.067 =49.61  Barrel Wall Binder E/F  @ 200mm C/C  1x2x1x23x4.9 =225.40  H/W E/F  @ 150 mm C/C  1x2x2x31x2.35 =291.40  Barrel Wall W/F  1x2x1x30x4.90 =294.00  H/W Binder W/F  1x2x2x31x2.05 =254.20  Bridge Deck  Top End Bottom Layer  1x2x30x2.42 =145.20  Binder  1x2x15x5.04 =151.20  Drop Wall V.Rod  2x2x12x3.14 =150.72  Binder  1x2x2x20x2.42 =193.60  Ring H/W  2x2x32x0.90 =115.20  U Bar  1x2x2x30x0.78 =93.60  Operation Deck Binder  2x4x1.94 =15.52  Extra Top  1x2x2x4x0.475 =7.60  Rail Post  2x2x3x4x1.05 =50.40  Rail Bar  2x2x2x4x2.44 =78.08  @200mm C/C  1x2x12x0.94 =22.56  Bridge Deck Fillet  @300mm C/C  1x2x15x1.134 =34.02  Sub-Total of 12mm Ø bar (m) =9042.571 m  @0.89 Kg/m =8047.89 Kg  12mm Ø bar Total weight (Kg) =8047.89 Kg  12mm Ø bar Total weight (Kg)=8047.89 Kg  16mm Ø bar Total weight (Kg)=10945.07 Kg  20mm Ø bar Total weight (Kg)=91.14 Kg  **Total (8mm-30mm Ø bar) =19083.53 Kg** | | 19083.53 Kg | |
| 22 | | 76-115 | | M.S Work for reinforcement with Standard deformed bar fy=300 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 | | M.S Work for reinforcement  6mm Ø bar calculation  Operation Deck Bean  Ring @150mm C/C  1x2x15x0.82 =24.60  Sub Total of 6mm Ø bar (m) =24.6 m  @ 0.22 Kg/m =5.41 Kg  6mm Ø bar Total weight (Kg) =5.41 Kg | | 5.41 Kg | |
| 23 | | 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 levelling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge. | | **36-150-60:** Footing, footing beams, grade beams, foundation slab with 60-80mm dia barrack bamboo props.  Pile Cap Base R/W  4x1x6.40x0.675 =17.28  Apron Pile Cap & Base  1x2x5.00x0.775 =7.75  Wing Wall Base  Section 4-4 & 6-6  2x2x2.70x(0.775+0.675)÷2 =7.83  2x1x8x(0.675+0.475)÷2 =9.20  Section 6-6 & 7-7  2x1x6.00x(0.675+0.475)÷2 =6.90 R/W Base E/F  4x1x6.40x0.375 =9.60  4x1x2.70x0.37 =4.00  4x1x(0.90+1.20)÷2x0.375 =1.575  Wall Fillet  4x2x6.40x0.212 =10.854  Wing Wall Fillet  2x1x10.70x0.212 =4.536  2x1x8.70x0.212 =3.688  Barrel Base  1x2x7.90x0.475 =7.505  1x2x1x(1.50+1.80)÷2x0.30 =0.99  Barrel Fillet  1x2x7.90x0.212 =3.349  Chute Block C/S  2x2x1.95x(0.65+0.00)÷2 =2.535  2x1x0.55x0.65 =0.715  R/S  3x2x1.50x(0.50+0.00)÷2 =2.25  3x1x0.35x0.50 =0.525  Buffle Block C/S  3x2x(0.85+0.228)÷2x0.65 =2.102  3x1x0.55x0.65 =1.0725  R/S  4x2x(0.70+0.20)÷2x0.50 =1.80  4x1x0.35x0.50 =0.70  End Sill C/S  6x2x(1.25+0.15)÷2x(0.55+0.00)÷2 =2.31  6x1x0.45x0.55 =1.485  R/S  8x2x(0.80+0.15)÷2x(0.40+0.00)÷2=1.52  8x1x0.30x0.40 =0.96  C/S & R/S Block Guide Wall  4x2x6.48x0.70 =36.288  4x2x0.60x0.70 =3.36  Total- = 152.68 Sqm  **36-150-10:** Vertical and inclined walls, columns, piers with 60-80mm dia barrack  Bamboo props.  R/W  4x2x6.40x2.75 =140.80  4x1x0.30x2.90 =3.48  Wing Wall C/S - E/F  2x1x9.80x2.90 =56.84  Variable Both Face  2x2x6.30x(0.00+1.89)÷2 =23.83  W/F  2x1x9.80x2.75 =53.90  W Wall R/S-E/F  2x1x7.90x2.90 =45.82  Wing Wall Both Face  2x2x6.30x(0.00+2.05)÷2 =25.83  W/F  2x1x7.90x2.75 =43.45  Barrel Wall E/F  2x1x7.90x4.70 =74.26  W/F  2x1x7.90x4.55 =71.89  Fall Board Grove Side  4x2x0.1x4.85 =3.88  Drop Wall Side  2x2x1.70x3.05 =20.74  Fillet between wing and return wall  4x0.848x2.90 =9.8368  Total- =574.56 Sqm  **36-150-20:** Deck slab, operating deck slab, top slab of barrel unto 3.5m height with 60-80mm dia barrack bamboo props.  B/D Fillet  1x2x4.30x0.212 =1.8232  1x1x4.30x1.40 =6.02  Operation Deck  2x0.80x1.50 =2.40  Bean Side  2x1x1.50x0.30 =0.90  2x1x1.50x0.10 =0.30  Outside  2x2x0.80x0.25 =0.80  Total = 12.243 Sqm | | 152.68  Sqm  574.56  Sqm  =574.56 Sqm  12.243  Sqm | |
| 24 | | 76-630 | | Supply and fitting and fixing 23cm wide P.V.C water stops having minimum strength of 13.80 N/mSqm at 225% elongation and of approved quality in contraction 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 water stops:  Vertical 2x4.45 =8.90  Horizontal  1x2.30 =2.30  Sub-Total =11.20 m  2x11.20=22.40 m  Grand Total- =22.40 m | | 22.40  m | |
| 25 | | 16-540 | | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including leveling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labour using mallet/ vibrio compactor) as per direction of Engineer in charge.  16-540-20 : sand of FM>=1.50 | | Supplying and filling sand in foundation by FM>=1.50  C/S In Barrel Foundation  1x7.9x(3.50+6.15)÷2x1.325 =50.505  C/S & R/S  1x2x2.7x{(3.50+4.464)÷2+(6.15+4.917)÷2}  ÷2x(1.325+0.25)÷2 =20.23  2x(8.6+6.6)÷2x{(6.20+4.464)÷2+(4.914+6.852)÷2}÷2x(0.425+0.225)÷2 =27.713  Slope  1x2x8.0x6.48x0.150 =15.552  On Bank Top  1x2x8.0x0.6x0.150 =1.44  R/S  1x4.0x5.0x0.150 =3.00  Slope  1x2x4.0x6.48x0.150 =7.776  On Bank Top  2x1x4.00x5.33x0.150 =6.40  Total =132.63 Cum | | 132.63  Cum | |
| 26 | | 40-520 | | 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:  40-520-20:  Well graded between 40mm to 20mm size.  40-520-30:  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 pick jhama chips as filter in two layers (top and bottom)  40-520-20:  Well graded between 40mm to 20mm size.  Loose Apron C/S  1x8.00x5.00x0.10 =4.00  Slope  1x2x8.00x6.48x0.10 =10.368  Bank Top  1x2x8.00x0.60x0.10 =0.96  Loose Apron R/S  1x4.00x5.00x0.10 =2.00  Slope  1x2x4.00x6.48x0.10 =5.184  Bank Top  1x2x4.00x0.60x0.10 =0.48  Below Base Joint  1x2x2.30x0.60x0.15 =0.414  Wall Side  1x2x2x0.60x0.15x4.875 =1.755  Embankment Top  1x2x2x10.00x0.80x0.05 =1.60  Slope  1x2x2x(10.00+8.78)÷2x8.559x0.05 =16.031  Toe  1x2x2x8.73x0.60x0.05 =1.0476  Total = 43.84 Cum  **40-520-30**:  Well graded between 20mm to 5mm size.  Bed  1x8.00x5.00x0.10 =4.00  Slope  1x2x8.00x6.48x0.10 =10.368  Bank Top  1x2x8.00x0.60x0.10 =0.96  R/S Bed  1x4.00x5.00x0.10 =2.00  Slope  1x2x4.00x6.48x0.10 =5.184  On Bank  1x2x4.00x0.60x0.10 =0.48  Below Base Joint  1x2x2.30x1.20x0.15 =0.83  Wall Joint  1x2x2x1.20x0.15x4.875 =3.51  Embankment Top  2x2x10.00x0.80x0.05 =1.60  Slope  2x2x(10.00+8.73)÷2x8.56x0.05 =16.032  Toe  2x2x8.73x0.60x0.05 =1.0476  Total- = 46.01 Cum | | 43.84  Cum  46.01  Cum | |
| 27 | | 40-500 | | Supplying and placing non-woven needle punched type geotextile fabric as filter materials of elongation>=40%, horizontal and vertical permeability (under 2 km/Sqm pressure) =>2x10E-3 m/sec for effective erosion protection in hydraulic structures/river training works including local handling, placing in position, providing machine seamed joints (with 100% polypropylene or nylon chread) or 35cm lap in dry condition or minimum 10cm lap under water including protecting the geotextile material from UV ray and from any other damages including supply of all materials, labours, equipment’s etc. Complete as per direction of Engineer in Charge.  (Geotextile delivered at site should be certified by ISO and clearly labeled with brand name and grade printed at regular intervals across the body of the fabric.  **40-500-20.** Mass=>250gm/Sqm, thickness (Under 2 kpa pressure) =>2.00mm. EoS<=0.11mm, strip tensile strength =>15kn/m, grab strength =>850N, CBR puncture resistance =>2200N. | | 1x4x(10.30+9.03)÷2x10.56 =408.249 Sqm | | 408.249 Sqm | |
| 28 | | 40-550 | | Supplying and laying sand as filter layers as per specific size ranges and gradation including preparation of surface, compacting in layer etc. complete with supply of all materials and as per direction of Engineer in charge.  40-550-20 : FM : 1.5 to 2.0 | | 40-550-20 : FM : 1.5 to 2.0  Below Barrel base-  1x2x2.30x1.80x0.15 =1.242  Wall Side  1x2x2x1.80x0.15x4.875 =5.268  Total = 6.51 Cum | | 6.51  Cum | |
| 29 | | 40-550 | | Supplying and laying sand as filter layers as per specific size ranges and gradation including preparation of surface, compacting in layer etc. complete with supply of all materials and as per direction of Engineer in charge.  40-550-30 : FM : 1.00 to 1.5 | | 2x2x(10.0+8.73)÷2x8.56x0.15 =48.098  2x2x8.73x0.60x0.15 =3.1428  Total = 51.24 Sqm | | 51.24 Sqm | |
| 30 | | 40-150 | | Manufacturing and supplying C.C. blocks in leanest mix. 1:3:6, with cement, sand (FM>=1.5) and Stone Chips (40mm downgraded), to attain a minimum 28 days cylinder strength of 9.0 N/mSqm 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.   1. 40-150-50 : block size 30cmx30cmx30cm 2. 40-150-40 : block size 40cmx40cmx20cm. | | **a) 40-150-50**: block size 30cmx30cmx30cm.  C/S bed  1x8.00x5.00 =40.00  Slope  1x8.00x6.48 =51.84  Bank Top  1x8.00x0.60 =4.80  Without Filler  1x2x8.00x5.00 =80.00  Slope  1x2x8x6.48 =103.68  Bank  1x2x8x0.60 =9.60  R/S  1x4.00x5.00 =20.00  Slope  1x2x4.00x6.48 =51.84  Bank Top  1x1x4.00x0.60 =2.40  Without Filler  Bed  1x2x4.00x5.00 =40.00  Slope  1x2x4.00x6.48 =51.84  Bank  1x2x4.00x0.60 =4.80  Embankment Top  2x2x8.73x0.60 =20.952  Total = 481.75  Say, 482.00 Nos  b)40-150-40: block size 40cmx40cmx20cm.  Embankment Top  2x2x10.0x0.8 =32.0  Slope  2x2x(10.0+8.73)÷2x8.559 =320.62  Total- = 352.62  Say, 353.00 Nos | | 482.00 Nos  353.00  Nos | |
| 31 | | 40-270 | | Labour charge for protective works in laying CC blocks of different sizes including preparation of base, watering and ramming of base etc. complete as per direction of Engineer in charge.  40-270-10 : Within 200 m. | | Labour charge for protective works in laying CC blocks of different sizes:  Block size 30cmx30cmx30cm  1607.0x0.30x0.30x0.30 =43.38 Cum  Block size 40cmx40cmx20cm  331.0x0.40x0.40x0.20 =10.59 Cum  Total- =53.97 Cum | | 53.97  Cum | |
| 32 | | 76-170 | | M.S. Work in plates, angles, channels, flat bars, Tees etc. including fabricating, machining, cutting, bending, welding, forging, drilling, revetting, embedding anchor bars, staging and fitting, fixing, local handling etc. comlpete 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 in plates, angles, channels, flat bars, Tees etc.  Base Plate  2x1.70x0.150x0.010 =0.0051  2x2x0.570x0.010x4.85 = 0.11058  2x1.70x0.175x0.010 =0.00595  ­­­\_\_\_\_\_\_\_\_\_\_  =0.12 Cum  @7850 Kg/Cum=942Kg  Anchoring base plate  2x9x0.225 =4.05  V. Angle  2x2x3x25x0.225 =67.50  H/W Angle  2x9x0.225 =4.05  =75.60 m  @1.58 Kg/m=119.45 Kg  Total = 942.0+119.45=1061.45 Kg. | | 1061.45  Kg | |
| 33 | | 76-240 | | Manufacturing & Supplying of M.S. Vertical Lift Gate shutter of 8mm thick M.S. skin plate and stiffener with minimum 75mmx75mmx10mm M.S. angle as frame, horizontal & vertical beam, 75mmx25mmx12mm P-type rubber seal, fixed with 10mm dia x 63.5mm M.S. counter shank bolts with nuts and 40mmx10mm 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 redoxide where necessary as per specification and direction of Engineer in charge.  76-240-40 : Size 1.95m x 1.65m. | | 1x1x2 = 2 Nos | | 2 Nos | |
| 34 | | 76-260 | | 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.  76-260-20 : Size 1.95m x 1.35m or 1.95m x 1.65m. | | 1x1x2 = 2 Nos | | 2 Nos | |
| 35 | | 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. | | 1x1x2 = 2 Nos | | 2 Nos | |
| 36 | | 16-130 | | Earth work by manual labour in resectioning of embankment/ canal bank/ river slopes/ road/ compound etc. manually compacted by 7.0 kg iron rammer to avoid any air pocket in 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 profile in layers not exceeding 150mm thickness with clod breaking to a maximum size of 100mm, removing roots & stumps of trees of girth upto 200mm from the ground, benching the side slopes, stripping/ ploughing the base of embankment and borrowpit areas, dug bailing, bail out of water, rough dressing including 150mm cambering at the centre of the crest (where necessary) etc. complete as per direction of Engineer in charge.  16-130-10: 0 m to 3 m height | | Earth work by manual labor in re-sectioning of embankment:  1x100x(4.30+23.50)÷2x3.20=4448.00 Cum | | 4448.00 Cum. | |
| 37 | | 16-400 | | Earth work by manual labour in all kinds of soil in excavation or reexcavation of channels with the initial lead of 30m and lift of 1.5m including levelling, dressing and throwing the spoils to profile with breaking clods, rough dressing, clearing jungles including cutting trees upto 200mm girth, dug bailing etc. complete as per direction of Engineer in charge. | | C/S –  1x50.00x(5.00+11.90)÷2x2.3 =971.75  R/S –  1x50.00x(5.00+10.28)÷2x1.76 =672.32  Total- =1644.07 | | 1644.07  each | |
| 38 | | 16-170 | | 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. | | Same as Item no 37 | | 1644.07  PltCum | |
| 39 | | 16-450 | | 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. | | (2x70.00)+(2x60.00) =260.00  = {260x(2.00+12.80)÷2}x2.70 =5194.80 Cum  Deduction for foundation trenches  of item no.6 (-) = 2624.50  = 2570.30 cum | | 2570.30  Cum | |
| 40 | | 04-280 | | 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 | | Cement mortar gauge  1.00 to 5.00 = 4.00x2=8.00 | | 8.00  m | |
| 41 | | 16-470 | | 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, (minimum 15m apart from the bank) as per direction of Engineer in charge. | | Measurement of Removing bundh only same as Item no – 40.  Considering 45.54% of Construction only  = 5194.80 x 45.54%  = 2365.92 Cum | | 2365.92 Cum | |
| 42 | | 16-560 | | 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.  16-560-20: Sand of FM>= 0.80 | | Barrel side  1x2x(1.925+6.50)÷2x4.575 =38.544  Wing Wall Side  C/S & R/S  1x2x2.7x{(1.925+0.826)÷2+(6.50+4.701)÷2} ÷2x(4.575+3.875)÷2 =79.624  Apron C/S & R/S  2x2x(7.7+5.7)÷2x{(0.80+0.486)÷2+(4.70+3.86)÷2}÷2x(3.875+3.375)÷2 =239.32  Total- =357.49 Cum | | 357.49  Cum | |
| 43 | | 16-550 | | 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. | | Barrel side  1x2x7.9x(0.60+3.878)÷2x2.478 =87.66  C/S Wing Wall  1x2x10.7x(0.6+4.075)÷2x3.475 =173.83  R/S Wing Wall  1x2x8.70x(0.60+4.075)÷2x3.475 =141.34  R/W  4x7x(0.6+3.88)÷2x3.275 =205.41  Total- =608.24 Cum | | 608.24 Cum | |
| 44 | | 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. | | 2x13x1.65x0.10x0.15= 0.6435 Cum | | 0.6435  Cum | |
| 45 | | 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. | | Fine dressing and close turfing  1x100.00x24.52 =2452.00 Sqm | | 2452.00  Sqm | |
| 46 | | 80-260 | | Supplying, fitting and fixing of the different dia G.I. water distribution pipe line, with all special fittings such as bends, elbows, sockets, reducing sockets, tees, unions etc including cutting trench up to an average depth of 0.90m, maintaining proper level, cutting pipes where necessary, making threads etc. all complete, as per direction of Engineer in charge:  80-260-20 : 50mm dia G.I. pipe line  80-260-10 : 40mm dia G.I. pipe line | | **80-260-20 :** 50mm dia G.I. pipe line  2x1.50 =3.00 m  **80-260-10 :** 40mm dia G.I. pipe line  8x1.125 =9.00 m | | 3.00  m  9.00 m | |
| 47 | | 80-230-20 | | Supplying, laying, fitting and fixing of different dia G.I. pipes with all special fittings, such as bends, elbows, sockets, tees, unions, jamnuts 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 mending the damages, fixing in walls with holders and clips, including cutting threads, making necessary connection etc. all complete, and as per direction of Engineer in charge:  80-230-20 : 19mm dia G.I. pipe line | | **80-230-20 :** 20mm dia G.I. pipe line  1x1.55 =1.55 m | | 1.55 m | |
| 48 | | NSI | | Name Plate, As per market Rate | | As per market rate  1x2.00 =2.00 Nos | | 2.00 Nos | |
|  | |  | | **(D) Rehabilitation of 5Nos Regulator (2 vent 1.50m x 1.80m- 2Nos, 1 vent 1.50m x 1.80m- 3Nos)** | |  | |  | |
| 1 | | 12-310 | | Bailing out of water with all leads and lifts by manual labour or pump, with all arrangements 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 | | Total Length of Khal= 9.92 km  10x83.163x(5.70+8.72)÷2x0.85  =5096.69Cum | | 5096.69  Cum | |
| 2 | | 28-120 | | 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. | | Cement concrete work in leanest mix. 1:3:6  Barrel:  5x2x4.5x0.30x0.65 =8.775 Cum | | 8.775  Cum | |
| 3 | | 28-100 | | Cement concrete work in leanest mix. 1:4:8, 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.  28-100-10 : With 25mm downgraded picked jhama or 1st. class brick chips. | | Cement concrete work in leanest mix. 1:4:8  Block Guide wall base:  5x2x4.5x0.40x0.05=0.90Cum | | 0.90  Cum | |
| 4 | | 16-450 | | 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. | | 3x2x(5.00+8.00)÷2x(0.60+2.60)÷2x1.00  =62.40  2x2x(8.00+11.00)÷2x(0.60+2.60)÷2x1.00  =60.80  Total- =123.20 | | 123.20  Cum | |
| 5 | | 16-490 | | Earth work by manual labour in all kinds of soil for excavation/ re-excavation of pond/ tank and constructing bank as per design and specification, throwing the spoil earth in layers of 150mm including breaking clods, dressing, profiling etc. complete with all leads and lifts as per direction of Engineer in charge.  16-490-20: For slushy or percolating soil. | | C/S & R/S  3x2x5.58x5.00x0.30 =50.22  2x2x6.00x6.00x0.2266 = 32.63  Total- = 82.85 Cum | | 82.85  Cum | |
| 6 | | 16-470 | | 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 | | 60% of construction cross bundh/ring bundh  Same as Item No. 4  123.20x60% = 73.92 Cum | | 73.92  Cum | |
| 7 | | 16-540 | | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including leveling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labour using mallet/ vibro compactor) as per direction of Engineer in charge.  16-540-20 : sand of FM>=1.50 | | Supplying and filling sand in foundation by FM>=1.50  C/S  In Barrel Foundation  3x2x2.5x3.0 =45.00 Sqm  2x2x4.0x3.50 =56.00 Sqm  Total- = 101.00 Sqm  101.00x0.150 =15.15 Cum | | 15.15  Cum | |
| 8 | | 40-520 | | 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: | |  | |  | |
| 9 | | 40-520-20 | | 40-520-20:  Well graded between 40mm to 20mm size. | | 3x2x2.5x3.0 =45 Sqm  2x2x4.0x3.50 =56.00 Sqm  Total- = 101.00 Sqm  101.0x0.2 =20.20 Cum  Considering of 50% ==20.20x50%  = 10.10 Cum | | 10.10  Cum | |
| 10 | | 40-520-30 | | 40-520-30:  Well graded between 20mm to 5mm size.  (Combination of sub-item 10 & 30 or 20 & 30 shall be used) | | **40-610-30**:  Well graded between 20mm to 5mm size.  20 to 05  50% Considering of Item **40-610-20:**  101.0x0.2=20.20 Cum  Considering 50%= 10.10 Cum | | 10.10  Cum | |
| 11 | | 40-150 | | Manufacturing and supplying C.C. blocks in leanest mix. 1:3:6, with cement, sand (FM>=1.5) and Stone Chips (40mm downgraded), to attain a minimum 28 days cylinder strength of 9.0 N/mSqm 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.   1. 40-150-50 : block size 30cmx30cmx30cm. | | **40-150-50** : block size 30cmx30cmx30cm.  3x2x2.50x3.00 =45.00 Sqm  2x2x4.00x3.50 =56.00 Sqm  5x2x10x30.255 = 3025.50 sqm  Total = =3126.50 sqm  Deduct. for 5% void (-) 156.325 sqm  Net area =2970.175 sqm  Area of each Block 0.30mx0.30m=0.09sqm  = 2970.175÷0.09= 33002 Nos | | 33002.00  Nos | |
| 12 | | 40-270 | | Labour charge for protective works in laying CC blocks of different sizes including preparation of base, watering and ramming of base etc. complete as per direction of Engineer in charge.  40-270-10 : Within 200 m. | | Labour charge for protective works in laying CC blocks of different sizes  Block size 30cmx30cmx30cm  33000x0.30x0.30x0.30=891.00 Cum  Total =891.00 Cum | | 891.00  Cum | |
| 13 | | 72-540 | | Epoxy paint 2 coats of approved colour and specification over a priming coat to gate, hoisting device and embedded metal parts including scraping out rust and old paint with chisel, scraper, steel wire brush & emery paper etc. complete in all respect including the cost of all materials as per direction of Engineer in charge. | | 3x1x1.60x1.80 =8.68  2x2x1.60x1.80 =11.52  Total = 20.20 Sqm  = 20.20x2.50 =50.50 Sqm | | 50.50  Sqm | |
| 14 | | 40-920 | | Earth work in cutting and filling of eroded bank of river, channel etc. to design slope, including levelling, dressing and compacting the earth in 150mm layers and preparation of the base for bank protection work and use the excess material for filling the ditches on the bank within 50 m or specified in the drawing, if no ditches to be filled then excess material shall be disposed of at least 100 m from the bank line on C/S etc. complete as per direction of Engineer in charge. | | 1Vent Slope  3x2.5x3.00x0.30 =6.75  2 Vent Slope  2x2x4.00x5.00x0.30 =24.00  Total = 30.75 Cum | | 30.75  Cum | |
|  | |  | | **(F) General Item** | |  | |  | |
| 1 | | Approved Analysis Rate | | Preparetion of mobilization of the site for construction of submersoble embankment or other structural components in c/w``Haor Flood Management and Livelihood 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 labor sheds (200Sqm), CI sheet stores (200 Sqm), supply of wooden & cane seated furniture etc. as per specified and as per Contractor's method Statement and as per direction of Engineer in Charge. | | 1 | | 1  SUM | |
| 2 | | 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. | | 1.00 | | 1.00  L.S | |
| 3 | | 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. | | 60.00 | | 60.00  Day | |
| 4 | | 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. | | 1.00 | | 1.00  L.S | |
| 5 | | 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. | | 1.00 | | 1.00  L.S | |
| 6 | | 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 | | 1.00 | | 1.00  L.S | |
| 7 | | NSI | | Construction of Bill board at site with M.S. plates, flat bars, Tees etc of size 8'-0''x12'-0'' including fabricating, machining, cutting, bending, welding, forging, drilling, revetting, staging and fitting, fixing, local supply of labours including the cost of materials as specification and direction of Engineer in Charge. | | 1 | | 1  L.S | |
| 8 | | NSI | | Part Time Employment of environmental inspector for Implementation and reporting on environmental management plan provision for first aid box and medical assistant as per specification and direction of engineer in charge. | | 1.00 | | 1.00  LS | |