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| Details estimate for the construction of (A) Sub-Mergible Embankment at Nunnir Haor From km.0.070 to km. 6.541 = 6.534 km(Part-B) , (B) Construction Northern Depression Regulator Regulator (1-V-1.5 x 1.8m ) at km 2.62 (Part-B), Construction of southern Depression Regulator (1-V-1.5 x 1.8m ) at km 6.20 (Part-B), (2nos) (C) Samarbari khal Regulator (4 v- 1.5m x1.8m) at km 0.78 ( Part- C) of Nunnir Haor Sub -Project in C/W Haor flood Management and Livelihood Improvement project Under Kishoreganj W.D Division,BWDB,Kishoreganj during the Financial year 2016-17 & 2017-18. Package No. BWDB/Kish/HFMLIP/PW-04. | | | | |
| **Sl. No:** | **Item no & Code** | **Item Description** |  | **Qnty** |
|  | **Submergible Embankment (Part-B)** | |  |  |
| 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 = 6534.00  Nos of Profile = 6534.00÷50+1  = 132 nos | 132.00  nos |
| 2 | 16-650-20 | Earth work by Mechanical Excavator (Long Boon) in constructing/ re sectioning of embankment/canal bank/ road etc. compacted to 85%/90% maximum dry density at optimum moisture content, with reference to laboratory density test AAHSTO modified hammer, with clayey soil(minimum 30% clay, 0-40% silt, 0-30% sand) within the initial lead of 30m and all lifts including throwing the spoils to profiles in layers not exceeding 230mm in thickness with clod breaking to a maximum size of 100mm, benching the side slopes, removing roots and stumps of trees of girth upto 200mm from the ground, stripping/ploughing the base of embankment and borrow pit area, dug bailing, rough dressing including 150mm cambering at the centre of crest etc. complete, including maintenance of the same for 6 months after completion, (compaction will be done by the contractor with approved equipment, including all ancillary charges for compaction and  testing) as per direction of Engineer in charge. | Total Earth calculation Sheet Attached  = 50421.050 cum  30% earth cutting by mechanical excavator  = 50421.050 x 30% = 15126.315 cum | 15,126.315  cum |
| 3 | 16-410-10 | Earth work by carried earth (by truck/boat or any other means) supplied at contractor's own cost (including royalty) direction of Engineer in charge. Earth work by manual labour in all kinds of soil for excavation/ re-excavation of pond/ tank in layers of 150mm including breaking clods, dressing, profiling etc. complete with all leads and lifts as per direction of Engineer in charge.  16-410-10: 300m to 1.00 km.(85% compaction) | Total Earth = 50421.050 cum  Carried Earth = 40% of total earth  = 50421.050 x 40%  = 20168.420 cum | 20,168.420  cum |
| 4 | 16-120-10 | Earth work by manual labour in constructing/ re sectioning of embankment/canal bank/ road etc. compacted to 85%/90% maximum dry density at optimum moisture content, with reference ... , (compaction will be done by the contractor with approved equipment , including all ancillary charges for compaction and testing) as per direction of Engineer in charge.  **16-120-10** : 0 m to 3 m height with 85% compaction. | Total Earth = 50421.050 cum  Earth Work by manual Labour 30% of total earth = 50421.050 x 30%  = 15126.315 cum | 15,126.315  cum |
| 5 | 16-190 | 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. 3 nos lead = 3x14.57= 43.71 | Extra rate for every additional lead Earth same as item No:- 04,  = 15126.315 cum | 15,126.315  cum |
| 6 | 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 = 6534.00 x 2 x 5.50  =71874.000 sqm | 71,874.000  sqm |
| 7 | 48-130 | Biological protection of bare earth surface by Dholkalmi with minimum 50cm long sapling, planting @ not more than 30 cm apart including supplying, sizing, taping and nursing etc. complete as per direction of the Engineer in charge. | Dholkalmi : 2x3x6534 = 39204.00 m | 39,204.000  m |
| 8 | 56-100 | Earth work in box cutting up to 1.00 m depth, in all kinds of soil with all leads, removing the spoils to a safe distance, including leveling and dressing, maintaining required cambering etc. complete, as per direction of Engineer in charge. | Total Earth = 6534.00 x 20% Length for Road = 1307.00 m  Block Road Box Cutting  = 1307.00 x 3.00 x 0.750  =2940.750 cum | 2,940.750  cum |
| 9 | 56-110 | Construction of improved road sub-grade of sand (FM>=0.8) in maximum 150mm thick layer including dressing, eveling, ramming, watering, cambering and compacting to attain minimum CBR-8% by..drawing and direction of Engineer in charge (payment shall be made on compacted volume). | Sand = 1307.00 x 3.00 x 0.150  = 588.150 cum | 588.150  cum |
| 10 | Analysis Rate | Preparation of Bed by Cutting and filling including watering to bring moisture +- 2% of OMC & compacting by appropriate mechanical means etc to attain minimum compaction 98% oc MDD (standard) to obtain a minimum soaked CBR 4% etc all complete as per direction of the E-I-C. | Sand grade = 1307.00 x 3.00  = 3921.00 sqm | 3,921.000  sqm |
| 11 | Analysis rate | Manufacturing and supplying C.C. blocks in leanest mix. 1:2:4. withcement, sand (FM>=1.5) and Stone Chips (40mm down graded) to attain a28 days cylinder strength of 15 N/mm² including grading, washing stonechips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurablestacks etc. complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge.Block size 30cmx30cmx30cm | Total Length = 1307.00 m  Nos of CC block = (1307.00 x 9)/ 0.300  = 39210.00 nos  Deduct 5% gap (-) = 1960.00  = 37250.00 nos | 37,250.000  nos |
| 12 | Analysis rate | Manufacturing and supplying C.C. blocks in leanest mix. 1:2:4 with cement, sand (FM>=1.5) and Stone Chips (40mm down graded) to attain a28 days cylinder strength of 15 N/mm² including grading, washing stonechips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurablestacks etc. complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge. Block size 100cmx65cmx12.5cm(Av) | Total Length = 1307.00m  Nos Edging block = 1307 x 2/ 1.00  = 2614.00 nos  5% gap (-) = 131.00  = 2483.00 nos | 2,483.000  nos |
| 13 | 24-310-10 | Flush pointing to brick works, in sand cement mortar (sand of FM>=1.3), including scaffolding, curing, raking out joints, clearing the surface etc. complete in all floors including the cost of all materials and as per direction of Engineer in charge. 24-310-10: proportion 1:2 | Flush pointing Length = 1307.00  Flush pointing Area = 1307.00 x 3.00  = 3921.00 sqm | 3,921.000  sqm |
| 14 | 40-220-10 | Labour charge for protective work in laying sand cement blocks of different sizes including preparation of base, ramming of base etc. complete as per direction of the Engineer in charge: 40-220-10: Within 200m. | 30cm x 30cm x 30cm block  = 39210.00 nos  Volume of Block  = 39210.00x0.300x0.300x0.300  =1058.670 cum  100cm x 65cm x 12.50 cm (av) block  = 2414.00 nos  Volume of Block  =2614.00 x 1.00x0.650x0.125  = 212.387 cum  Total = 1271.057 cum | 1,271.057  cum |
| 15 | 36-150-10 | Formwork for centering and water tight shuttering as per drawing with 14 BWG M.S. sheet, fitted and fixed with 40mmx40mmx6mm M.S. angle frame and 25mmx6mm F.I. bar stiffener, with necessary fabrication, welding, making the forms including fitting, fixing of steel forms with necessary ties, battens, struts, nuts & bolts, props etc. as per desired shape and size including levelling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge. **36-150-10:** Vertical and inclined walls, columns, piers with 60-80mm dia barrack bamboo props. | Placing Length  = 10383.00 ÷ 1000.00+1 = 11 nos  22/7x 0.250 = 0.785m  Area of Post = 11x 0.785x1.550  **= 13.384 sqm** | 13.384  sqm |
| 16 | 76-120-10 | M.S. Work for reinforcement with deformed M.S. bar, fy=414 N/mm², (made from billet) in RCC works, including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and binding with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge. 76-120-10: 8mm dia to 30mm dia | D-10 = 6 Nos  Total Length = 11x6x1.500  = 99.00 x 0.62 = 61.380 kg | 61.380  kg |
| 17 | 76-115-10 | M.S Work for reinforcement with Standard deformed bar fy=276 N/mm^2 in RCC works including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and bending with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge. 76-115-10: 6mm dia . | D - 06  Each Ring Length = 22/7 x 0.200  = 0.628+10x0.006  = 0.688m  Nos of ring 8 nos  Total length  = 11x8x0.688 = 60.544 x 0.22  = 13.319 kg | 13.319  kg |
| 18 | 28-200-10 | Reinforced cement concrete work in leanest mix. 1:1.5:3, with 20mm downgraded coarse aggregates and sand of FM>2.0 to FM<=2.5, to attain a minimum 28 day cylinder strength of 22.0 N/mm², including breaking, screening, grading, washing aggregates with clean water, mixing, laying in forms, consolidation to levels, curing, including supply of all materials, excluding cost of M.S. work for reinforcements and formworks etc. complete and as per direction of Engineer in charge.  **28-200-10:** with stone chips. | R.C.C = 11x 22/7 x0.250x1.550  = 13.396 kg | 13.396  kg |
| 19 | 04-110 | Fixing in position, boundary pillars/bench mark pillars/K.M. post etc. of size 110cm height, bottom dia 25cm and top dia 20cm, embedded 45cm below G.L. Including carriage, earth cutting, filling, ramming, etc. complete as per direction of Engineer in charge | Fixing Boundary Pillar = 11 Nos | 11.00  Nos |
|  |  | **Northern + Southern Depression** |  |  |
| 20 | 04-120 | Construction of B.M. Pillars at site with first class bricks in cement mortar (1:4) of size 38cm x 38cm x 75cm on cement concrete (1:2:4) base of size 50cm x 50cm x 7.5cm with 12mm thick cement plastering (1:2) on exposed surfaces of pillar and cement morter on top (1:2), with inscription of "BWDB" with 25cm of the pillar 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 = 2 x4 =8 nos | 8.00  nos |
| 21 | 12-100 | Installation of Pizeo meter 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 pizo meter =2x4=8 nos | 8.00  nos |
| 22 | 12-310-20 | 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  =53.140 x6.100+12.10/2 x 1.50 x30 time  =728.091 x 30 time  = 21842.730 Cum x 2  = 43685.460 Cum | 43685.460  Cum |
| 23 | 16-150 | Earth work in excavation of foundation trenches in all kinds of soils including leveling, dressing, placing, removal of spoils to a safe distance with initial lead of 30m and lift of 1.5m as per direction of Engineer in charge. | Earth work’s in Excavation of foundation teaches  Measurement Authored Pages  =2 x 1968.463 = 3963.926 cum | 3936.926  Cum |
| 24 | 16-200 | Extra rate for every additional lift of 1.0m or part thereof beyond the initial lift of 1.5m (30cm neglected) for all kinds of earth work. 2 nos lift=2x10.99=21.98 | Extra rate for every  Additional lift  Same as item No:23,=1968.463 cum Lift allowed 50% of total  Quantity =1964.463x50%  = 984.231 cum x2 =1968.462 cum | 1968.462  Cum |
| 25 | 16-220 | Earth work by manual labour with clayey soil (minimum 30% clay, 0-40% silt and 0-30% sand) in construction of cross bundh/ ring bundh as per design and specification with all leads and lifts, throwing the earth in layers not exceeding 150mm in thickness, including breaking clods, rough dressing, clearing the jungle, removing stumps, dug bailing and 75mm cambering etc. complete as per direction of Engineer in charge. | Earth for Cross bund ring bund  length = 3.14x100= 314.00  Earth volume  =(11+3)/2 x2x3x314= 4396.00 cum  Deduct fouadth  Volume earth = (-) 1968.463 cum  = 2427.537cum x 2  = 4855.074 cum | 4855.074  Cum |
| 26 | 44-240-30 | Supplying at site U-shape hot rolled steel sheet pile of different section of Phosphorus=0.04%(Maximum), Sulphur = 0.04% (Maximum), Copper= 0.25% (Minimum), Tensile strength=> 490 N/mm2 , Yield strength =>296 N/mm2, Elongation =15% (Minimum) including all taxes, freights, incidental charges etc. Complete as per direction of the Engineer -in- charge.  **44-240-30:** U-shape, hot- rolled steel sheet pile width= 400mm to 600mm: height=> 100mm, Th.=> 10.5: wt. per sqm of pile wall =>120 kg/m2: sectional modulus per one meter of pile wall width => 874 cm3/m. | Supplying at site U-shape  Driving length =11.800m  C/S+R/S Nos of pile = 2 x11.800÷0.400  = 59 nos  Each Sheet pile length = 3.00m  Area of sheet pile  = 59.00x3.00x0.400= 70.800sqm  88.00kg p/sqm = 70.800 x 120.00  = 8496.00x2  =16.992 m ton | 16.992  M ton |
| 27 | 44-320-10 | 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. | Sheet Cutting 50% of total  Nos of pile =59 x 50%=29.50  Nos of cutting = 30 nos  Effective cutting length = 0.650  length of cutting=30 x 0.650=19.50m x 2  = 39.000 m | 39.000  m |
| 28 | 72-180 | Painting of steel sheet piles, 2 coats of bitumen paint, including preparation of surface with sand paper, iron brush etc. including the cost of all materials and labour etc. Complete as per direction of Engineer in charge. | Painting sheet pile C/S & R/S  = 59 nos  Effective length=0.650nos  =59x3.00x0.650 =115.050 sqm x 2  = 230.100 sqm | 230.100  sqm |
| 29 | 44-270-20 | Driving steel sheet piles of various sections and weights of any type of soil, by monkey hammer including handling and placing in position, staging and supplying of all equipments like monkey hammer, pully, rope, bamboo, bullah etc. including correcting leaning beyond tolerance & other defects and any other incidental cost etc. complete (measurement will be taken on projected width x height) as per direction of Engineer in charge. **44-270-20:** U-type or any other type: Up to 4.50m depth. | Driving steel sheet piles  Area of sheet pile = 2x30x3.00x0.650  =117.00sqm x 2  = 234.00 sqm | 234.000  sqm |
| 30 | 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 = 2x2x30x0.650x0.300  = 23.400sqm x 2  = 46.800 sqm | 46.800  sqm |
| 31 | 44-220-10 | Construction of pile yard for casting RCC pile with 50mm thick cement concrete (1:3:6) with cement, sand (FM>=1.5) and 20mm downgraded picked jhama or 1st class brick chips including breaking, screening, grading and washing chips, mixing, laying and compacting to levels, over a brick flat soling with 1st class bricks including preparation of base, sand filling to make a level base, ramming and sand blinding with sand of FM>=0.8 etc. complete with neat cement finish over the concrete surface including the cost for supply of all materials and as per direction of Engineer in charge. 44-220-10: Weighing minimum 1.0 kg per 6.50 sqm. | Supplying and laying single layer polythine sheet-  Sheet pile cap key  =2x11.800x0.900 =21.240sqm  Slope=2x11.800x0.424 =10.006 sqm  C/S+R/S return wall  =2x11.800x0.300 =7.080sqm  C/S+R/S Apron  =2x(5.600+2.30)/2 x9.850 =77.815sqm  Barrel=1x7.300x2.300 =16.790sqm  =132.931 sqm x 2  = 265.862 sqm | 265.862  sqm |
| 32 | 28-120-20 | Cement concrete work in leanest mix. 1:3:6 with sand of FM>=1.5, in foundation or floor including breaking, screening, grading and washing aggregates with clear water, mixing, laying in position, consolidation to levels, curing, including supply of all materials, excluding the cost of formworks etc. complete as per direction of Engineer in charge. **28-120-20:** With 25mm downgraded stone chips | C.C work  Sheet pile Cap  =2x11.80x0.900x0.075 =1.593cum  Slope  =2x11.80x0.424x0.075 =0.750cum  Return wall C/S+R/S  =2x2x93.40x0.300 =4.080cum  Barrel  =1x7.300x2.300x0.075 =1.259cum  =14.659  Section-m-m, C/S+R/S slope  =2x2x2.459x0.300x0.650 =1.918cum  Loose Apron End wall  =2x5.00x0.300x0.650 =1.950 cum  slope toe wall  =2x2x9.00x0.300x0.650 =3.510cum  =22.037cum x2  = 44.074 cum | 44.074  cum |
| 33 | 28-100-20 | 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. 28-100-20: With 25mm downgraded stone chips. | C.C work-(1:4:8)  Slope  = 2x2x2.459x0.400x0.050 = 0.196 cum  Loose Apron End wall  =2x5.00x0.400x0.050 = 0.200 cum  Slope toe wall  =2x2x9.00x0.400x0.050 = 0.360 cum  = 0.756 cum x 2  = 1.512 cum | 1.512  cum |
| 34 | 76-110-10 | M.S. Work for reinforcement with deformed M.S. bar, fy=414 N/mm², (made from billet) in RCC works, including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and binding with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge. **76-110-10:** 8mm dia to 30mm dia | **M.S. Work for reinforcement-**  **Apron Slope R/S =**  Placing Length = 2.846 m  D-12,@0.150 C/C  Nos of Bar = 2.846÷0.150+1 = 20 nos  Each bar Length = 2x20x5.750  =115.200x0.89 **= 102.252 kg x 2**  **= 204.51 kg**  Lapping D-12 = 20x2x40x0.012  =19.200m x 0.89 **= 17.088 kg x 2**  **= 34.176 kg**  **R/S Slope Up to Apron =**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of Bar = 1.800 ÷0.150+1 = 12 nos  Each bar Length  = (2x2.790+2.827) + (2x1.290+3.39)  2  = (8.407+5.947)/2  = 7.189m  Total length  =12x7.189 =86.268m x 0.89  **= 76.778 kg x 2**  **= 153.556 kg**  Lapping = 12x2x40x0.012  =11.520 x 0.89 **= 10.252 kg** x 2  **= 20.504 kg**  **R/S Apron U Bar =**  Placing Length = 7.900 m  D-12,@0.150 C/C  Nos of Bar = 7.900 ÷0.150+1 = 54 nos  Each bar Length  = 1 x 4(2x1.290+3.391) + (2x1.29+5.480)  2  =(5.971+8.060)/2  =7.015m  Total length  =54x7.015= 378.810m x 0.89  **= 337.140 kg x2**  **= 674.28 kg**  Lapping D-12= 54x2x40x0.012  =51.480m x 0.89 **= 46.137 kg x 2**  **= 92.274 kg**  **R/S & C/S Return Wall = Vertical**  Placing Length = 3.100 m  D-12,@0.150 C/C  Nos of Bar = 3.100 ÷0.150+1 = 20 nos  Each bar Length  = 1.590+2x10x0.012  =1.830 m  Total length  =2x2x2x22x1.830 = 322.080m  Total Weight = 322.080 x 0.89  **= 286.651 kg x2**  **= 573.302 kg**  **C/S Apron U Bar =**  Placing Length = 2.846 m  D-12,@0.150 C/C  Nos of Bar = 2.846 ÷0.150+1 = 20 nos  Each bar Length  = 6.160m  Total length  =1x20x6.160=123.200x0.89  **= 109.648 kg x 2**  **= 219.296 kg**  Lapping D-12= 20x2x40x0.012  =19.200 m x 0.89 **= 17.088 kg x2**  **= 34.176 kg**  **C/S Slope Up to Apron**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of Bar = 1.800 ÷0.150+1 = 12 nos  Each bar Length  =7.300m  Total length  =12x7.300 =87.600m x 0.89  **= 77.964 kg x 2**  **= 155.928 kg**  Lapping D-12 = 12x2x40x0.012  =11.520 x 0.89 **= 10.252 kg x2**  **=20.504 kg**  **C/S Apron U-bar**  Placing Length = 7.900 m  D-12,@0.150 C/C  Nos of Bar = 7.900 ÷0.150+1 =54 nos  Each bar Length =7.015 m  Total length = 54x7.015  =378.810m x0.89 **= 337.140 kg x 2**  **=674.28 kg**  Lapping D12 = 54x2x2x40x0.012  =103.680 m x 0.89 **= 92.275 kg x 2**  **= 184.55 kg**  **Sheet pile cop inside ring apron portion C/S&R/S**  Placing Length = 5.100 m  D-12,@0.200 C/C  Nos of Bar = 5.10 ÷0.200+1 =27 nos  Each ring Length =1.021+0.330+0.680+0.240  =2.261 m  Total length = 2x27x2.261  =122.094m x0.89 **= 108.663 kg x 2**  **= 217.326 kg**  **Sheet pile cop outside ring apron portion C/S&R/S**  Placing Length = 5.00 m  D-12,@0.250 C/C  Nos of ring = 5.00 ÷0.250+1 =21 nos  Each ring Length =2x0.690+2x0.330  =2.040 m  Total length = 2x21x2.040 m  = 85.680m x0.89 **= 76.255 kg x2**  **= 152.51 kg**  **Sheet pile cop return portion inside ring C/S&R/S**  Placing Length = 3.400 m  D-12,@0.200 C/C  Nos of Bar = 3.400÷0.200+1 = 18 nos  Each ring Length = 0.738+0.330+0.490  =1.558 m  Total length = 2x2x18x1.558  =112.176m x0.89 **= 99.836 kg x 2**  **= 199.672 kg**  **Return wall Sheet pile cop inside Outside ring C/S&R/S**  Placing Length = 3.400 m  D-12,@0.250 C/C  Nos of Bar = 3.400÷0.250+1 =15 nos  Each ring Length =2x0.490+0.330  =1.310 m  Total length = 2x15x1.310  =39.300m x0.89 **= 34.977 kg x 2**  **= 69.954 kg**  **Return wall base C/S&R/S**  Placing Length = 3.40 m  D-12,@0.250 C/C  Nos of Bar = 3.40÷0.250+1 =18 nos  Each ring Length =1.380  Total length = 2x2x18x1.380  = 99.360m x0.89 **= 88.430 kg x 2**  **= 176.86 kg**  **Return wall binder C/S&R/S**  Placing Length = 1.50 m  D-12,@0.250 C/C  Nos of Bar = 1.50÷0.250+1 =7nos  Each bar Length =3.400  Total length = 2x2x7.00x3.40  =99.200m x0.89 **= 84.728 kg x 2**  **= 169.456 kg**  Lapping D-12 = 2x2x7x0.012  =13.440 m x 0.89 **= 11.961 kg x 2**  **= 23.922 kg**  **Return wall base top short C/S&R/S**  Placing Length = 1.50 m  D-12,@0.150 C/C  Nos of Bar = 1.50÷0.150+1 =11nos  Each bar Length =1.380 m  Total length = 2x2x11x1.380  = 60.720m x0.89 **= 54.040 kg x 2**  **= 108.08 kg**  **Return wall base top layer bender short C/S&R/S**  Placing Length = 1.50 m  D-12,@0.150 C/C  Nos of Bar = 1.50÷0.150+1 =11nos  Each bar Length =3.400 m  Total length = 2x2x11x3.400 m  =149.600m x0.89 **= 133.144 kg x 2**  **= 266.288 kg**  **Return wall binder C/S&R/S**  Placing Length = 1.400 m  D-12,@0.150 C/C  Nos of Bar = 1.400+0.150+1 =10nos  Each bar Length =3.290 m  Total length = 2x2x2x10x3.290m  =263.200m x0.89 **=234.248 kg x 2**  **= 468.496 kg**  Lapping D-12 = 2x2x2x10x40x0.012  =38.400 m x 0.89 **= 34.176 kg x 2**  **= 68.352 kg**  **C/S&R/S Apron bottom bender**  Placing Length = 5.60+2.10=3.850 m  D-12,@0.150 C/C  Nos of Bar = 3.580+0.150+1 =27nos  Each bender Length =2.846+10.00-0.120  =12.726 m  Total length = 2x27x12.726m  =687.204m x0.89 **= 611.611 kg x 2**  **= 1223.22 kg**  D-16 chair = 2x52x1.410  =146.640 m x1.58 **= 231.691 kg x 2**  **= 463.382 kg**  Lapping, D-16= 2x27x4x40x0.016  =138.240 m x0.89 **= 123.033 kg x 2**  **= 246.066 kg**  **C/S&R/S top layer main bar**  Placing Length = 2.846+10.00=12.846 m  D-16,@0.200 C/C  Nos of Bar = 12.846÷0.200+1 =65nos  Each bar Length =(1.980+5.480)/2  =3.730 m  Total length = 2x65x3.730m  =484.900m x1.58 **=766.142 kg x 2**  **= 1532.28 kg**  Lapping, D-16= 2x65x40x0.016  =83.200 m x1.58 **= 131.456 kg x 2**  **= 262.912 kg**  **C/S&R/S apron bender top layer**  Placing Length = (5.60+2.10)/2 =3.850 m  D-16,@0.200 C/C  Nos of Binder = 3.850÷0.200+1 =19nos  Each Binder Length =10.580 m  Total length = 2x19x10.580m  =402.040m x1.58 **= 635.00 kg x 2**  **= 1270.00 kg**  Lapping, D-16= 2x19x4x40x0.016  =97.280 m x1.58 **= 153.702 kg x 2**  **= 307.404 kg**  **C/S&R/S apron Slope bender**  Placing Length = (2.100+2.842)/2 =2.471 m  D-16,@0.200 C/C  Nos of bar = 2.471÷0.200+1 =3nos  Each bar Length =2.846+40x0.016  = 3.486  Total length = 2x2x13x3.846m  =181.272m x1.58 **=286.409 kg x 2**  **= 572.818 kg**  Lapping, D-16= 2x2x13x40x0.016  =33.280 m x1.58 **= 52.582 kg x 2**  **= 105.164 kg**  **C/S&R/S wing wall bender**  Placing Length = 1.400 m  D-12,@ 0.150 C/C  Nos of binder = 10nos  Each binder Length =10.00+2.846 -0.100  =12.446 m  Total length binder = 2x2x10x12.446m  =995.680m x 0.89 **= 886.155 kg x 2**  **= 1772.31 kg**  Lapping, D-12= 2x2x2x10x4x40x0.012  =153.600 m x0.89 **= 136.704 kg x 2**  **= 273.408 kg**  **R/S slope bender**  Placing Length = (1.50+0.00)/2 = 0.750 m  D-12,@0.150 C/C  Nos of binder =0.750÷0.150+1  = 6.00 nos  Each binder Length =(4.646+20.00)/2  =2.323 m  Total length binder = 2x2x6.00x2.323m  =111.504 m x0.89 **= 99.238 kg x 2**  **= 198.476 kg**  **C/S slope bender**  Placing Length = (2.00+0.00)/2 = 1.00 m  D-12,@0.150 C/C  Nos of binder =1.00÷0.150+1  = 8.00nos  Each binder Length =(4.646+20.00)/2  =2.323 m  Total length binder = 2x2x8.00x2.323m  =74.336 m x0.89 **= 66.159 kg x 2**  **= 132.318 kg**  **R/S&C/S apron wing wall vertical water face**  Placing Length = 7.900  D-12,@0.150 C/C  Nos of bar =7.900÷0.150+1 =54nos  Each bar Length =(2.030+2.200)/2  =2.1115m  Total length bar = 2x2x54x2.215m  =456.840 m x0.89 **= 406.587 kg x 2**  **= 813.174 kg**  **R/S&C/S apron middle slope**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of bar =1.800÷0.150+1 =13nos  Each bar Length =(2.200+2.836)/2  =2.515m  Total length bar = 2x2x13x2.515m  =130.780 m x0.89 **= 116.394 kg x 2**  **= 232.788 kg**  **R/S&C/S slope**  Placing Length = 2.846 m  D-12,@0.150 C/C  Nos of bar =2.846÷0.150+1 =20nos  Each bar Length =2.830  =2.515m  Total length bar = 2x2x20x2.830 m  =226.4000 m x0.89 **= 201.446 kg**  **= 402.892 kg**  **Barrel part R/S Sec-3-3 U bar abutment**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of bar =1.800÷0.150+1 =13nos  Each bar Length =2x4.640+2.180+0.600  =12.260m  Total length bar =1x13x12.260 m  =159.380 m x0.89 **= 141.848 kg x 2**  **= 283.696 kg**  Lapping, D-12= 13x4x40x0.012  =24.960 m x0.89 **= 22.214 kg x 2**  **= 44.428 kg**  **Barrel part C/S abutment U bar**  Placing Length = 1.200 m  D-12,@0.150 C/C  Nos of bar =1.200÷0.150+1 =9nos  Each bar Length =2x3.310+2.180  =8.800m  Total length bar =1x9x8.800 m  =79.200 m x0.89 **=70.488 kg x 2**  **= 140.488 kg**  Lapping, D-12= 9x3x40x0.012  =12.960 m x0.89 **= 11.534 kg x 2**  **= 23.068 kg**  **Barrel pier Sec-2-2, U-bar**  Placing Length = 4.300 m  D-12,@0.150 C/C  Nos of bar =4.300÷0.150+1 =30nos  Each bar Length =2x2.500+2.180  =7.180m  Total length =1x30x7.180 m  =215.400 m x0.89 **=191.706 kg x 2**  **= 383.412 kg**  Lapping, D-12= 30x2x40x0.012  =28.800 m x0.89 **= 25.632 kg x 2**  **= 51.264 kg**  **Barrel pier R/S Sec-3-3, W/F vertical**  Placing Length = 0.900 m  D-12,@0.150 C/C  Nos of bar =0.900÷0.150+1 =7nos  Each bar Length =4.710m  Total length =2x7x4.710 m  =37.680 m x0.89 **= 33.535 kg x 2**  **= 67.07 kg**  Lapping, D-12= 2x7x1x40x0.012  =6.720 m x0.89 **= 5.980 kg x 2**  **= 11.96 kg**  **Barrel R/S Trapezium**  Placing Length = 2.300 m  D-12,@0.250 C/C  Nos of bar =2.300÷0.250+1 =10nos  Each bar Length =2.849m  Total length =2.849x10  =28.490 m x0.89 **= 25.356 kg x 2**  **= 50.712 kg**  **C/S Trapezium**  Placing Length = 1.200 m  D-12,@0.250 C/C  Nos of bar =1.200÷0.250+1 =6nos  Each bar Length =2.849m  Total length =2.849x6  =17.094 m x0.89 **=15.213 kg**  **= 30.426 kg**  **Barrel bottom long bar bender**  Placing Length = 1.700 m  D-12,@0.150 C/C  Nos of bar =1.700÷0.150+1 =12nos  Each bar Length =4.300+2x40x0.012  =5.260 m  Total length =1x12x5.260  =63.120 m x0.89 **= 56.176 kg x 2**  **= 112.352 kg**  **Barrel Top layer short bar**  Placing Length = 7.300 m  D-12,@0.150 C/C  Nos of bar =7.300÷0.150+1 =50nos  Each bar Length =2.420 m  Total length =1x50x2.420  =121.00 m x0.89 **=107.690 kg x 2**  **= 215.38 kg**  **Barrel Top layer Long bar**  Placing Length = 1.700 m  D-12,@0.150 C/C  Nos of bar =1.700÷0.150+1 =12nos  Each bar Length =7.430 m  Total length =1x12x7.430  =89.160 m x0.89 **= 79.352 kg x 2**  **= 178.704 kg**  **Barrel part C/S abutment W/F vertical**  Placing Length = 0.750 m  D-12,@0.150 C/C  Nos of bar =0.750÷0.150+1 =6nos  Each bar Length =3.430 m  Total length =2x3x3.430m  = 41.060 m x0.89 **= 36.632 kg x 2**  **= 73.264 kg**  Lapping, D-12= 2x6x40x0.012  =5.760 m x0.89 **= 4.562 kg x 2**  **= 9.124 kg**  **R/S column = D-16,**  Column = 2x2x4 =16 nos  Chanel grove = 2x2 = 4 ,,  = 20nos  Each bar Length =4.960m  Total length =20x4.960m  =99.200 m x1.58 **=156.736 kg x 2**  **= 313.472 kg**  Lapping, D-16= 20x2x40x0.016  =55.600 m x1.58 **= 40.448 kg x 2**  **= 80.896 kg**  **C/S column = D-16,**  Column = 2x2x2 = 8 nos  grove = 2x2 = 4 ,,  = 12nos  Each bar Length =3.210m  Total length =12x3.210m  =38.520 m x1.58 **=60.861 kg x 2**  **= 121.722 kg**  Lapping, D-16=12x1x40x0.016  = 5.760 m x1.58 **= 9.100 kg x 2**  **= 18.20 kg**  **Barrel pPier vertical W/F**  Placing Length = 4.300 m  D-12,@0.200 C/C  Nos of bar =4.300÷0.200+1 =23nos  Each bar Length =2.630 m  Total length =2x23x2.630m  =120.980 m x0.89 **= 107.672 kg x 2**  **= 215.344 kg**  **Deck slab bottom short bar**  Placing Length = 4.300 m  D-12,@0.200 C/C  Nos of bar =4.300÷0.200+1 =23nos  Each bar Length =2.430 m  Total length =1x23x2.430m  =55.890 m x0.89 **= 49.742 kg x 2**  **= 99.484 kg**  **Barrel binder in side = bellow deck slab**  Placing Length = 1.800 m  D-12,@0.200 C/C  Nos of bar =1.800÷0.200+1 =10nos  Each bar Length =4.800 m  Total length =0x2x10x4.800m  =96.00 m x0.89 **= 85.440 kg x 2**  **= 170.88 kg**  **Barrel binder outside with C/S Abutment ring & R/S column ring**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of bar =1.800÷0.150+1 =13nos  Each bar Length =7.200 m  Total length =1x2x13x7.200m  =187.200 m x0.89 **= 166.608 kg x 2**  **= 333.216 kg**  **R/S Abutment inside binder**  Placing Length = 4.050 m  D-12,@0.150 C/C  Nos of bar =4.050÷0.150+1 =28nos  Each bar Length =1.400 m  Total length =2x28x1.400m  =78.400 m x0.89 **= 69.776 kg x 2**  **= 139.552 kg**  **R/S column ring**  Placing Length = 4.050 m  D-12,@0.150 C/C  Nos of bar =4.050÷0.150+1 =28nos  Each bar Length =1.240 m  Total length =2x2x28x1.240m  =138.880 m x0.89 **= 123.603 kg x 2**  **= 247.206 kg**  **C/S column ring**  Placing Length = 2.600 m  D-12,@0.150 C/C  Nos of bar =2.600÷0.150+1 =18nos  Each bar Length =1.240 m  Total length =2x18x1.240m  =44.640 m x0.89 **= 39.729 kg x 2**  **= 79.032 kg**  **Deck slab bottom long bar**  Placing Length = 1.700 m  D-12,@0.200 C/C  Nos of bar =1.700÷0.0.200+1 =10nos  Each bar Length =4.440 m  Total length =1x10x4.440m  =44.400 m x0.89 **= 39.516kg x 2**  **= 79.032 kg**  Lapping, D-12= 10x2x40x0.012  =9.600 m x0.89 **= 8.544 kg x 2**  **= 17.088 kg**  **Deck slab layer bottom short bar**  Placing Length = 4.300 m  D-12,@0.200 C/C  Nos of bar =4.300÷0.0.200+1 =23nos  Each bar Length =2.430 m  Total length =1x23x2.430m  =55.890 m x0.89 **= 49.742kg x 2**  **= 99.484 kg**  **Deck slab top layer long bar**  Placing Length = 1.700 m  D-12,@0.200 C/C  Nos of bar =1.700÷0.0.200+1 =10nos  Each bar Length =4.440 m  Total length =1x10x4.440m  =44.400 m x0.89 **= 39.427kg x 2**  **=78.854 kg**  Lapping, D-12= 10x2x40x0.012  =9.600 m x0.89 **= 8.544 kg x 2**  **= 17.088 kg**  **R/S Abutment extra bar**  Placing Length = 4.050 m  D-12,@0.150 C/C  Nos of bar =4.050÷0.0.150+1 =28nos  Each bar Length =1.700 m  Total length =2x28x1.700m  =95.200 m x0.89 **= 84.728kg x 2**  **= 169.456 kg**  **C/S Abutment extra bar**  Placing Length = 2.600 m  D-12,@0.150 C/C  Nos of bar =2.600÷0.0.150+1 =18nos  Each bar Length =1.100 m  Total length =2x18x1.100m  =39.600 m x0.89 **= 35.244kg x 2**  **= 70.488 kg**  **Return wall fillet C/S & R/S**  Placing Length = 3.100 m  D-12,@0.150 C/C  Nos of fillet =3.100÷0.0.150+1 =22nos  Each fillet Length =1.028 m  Total length =2x2x2x22x1.028m  =180.928 m x0.89 **= 161.025kg x 2**  **= 322.05 kg**  **Apron slope fillet C/S & R/S**  Placing Length = 2.846 m  D-12,@0.150 C/C  Nos of fillet =2.846÷0.0.150+1 =20nos  Each fillet Length =1.594 m  Total length =2x2x20x1.594m  =127.520 m x0.89 **=113.492kg x 2**  **= 226.984 kg**  **C/S & R/S Apron fillet**  Placing Length = 7.900 m  D-12,@0.150 C/C  Nos of fillet =7.900÷0.0.150+1 = 67nos  Each fillet Length =(1.594+1.321)/2  =1.457 m  Total length =2x2x67x1.457m  = 390.476 m x0.89 **= 347.523kg x 2**  **= 695.046 kg**  **Barrel fillet bottom**  Placing Length = 4.300 m  D-12,@0.150 C/C  Nos of fillet =4.300÷0.0.150+1 = 30nos  Each fillet Length =1.179m  Total length =2x30x1.179m  =70.740 m x0.89 **= 62.958 kg x 2**  **= 125.916 kg**  **Barrel fillet top**  Placing Length = 4.300 m  D-12,@0.150 C/C  Nos of fillet =4.300÷0.0.150+1 = 30nos  Each fillet Length =1.038m  Total length =2x30x1.038m  = 62.280 m x0.89 **= 55.429kg x 2**  **= 110.858 kg**  **R/S Abutment fillet**  Placing Length = 1.800 m  D-12,@0.150 C/C  Nos of fillet =1.800÷0.150+1 =13nos  Each fillet Length =1.457m  Total length =2x13x1.594m  =41.444 m x0.89 **= 36.885kg x 2**  **= 73.77 kg**  **C/S Abutment fillet**  Placing Length = 1.200 m  D-12,@0.150 C/C  Nos of fillet =1.200÷0.150+1 = 13nos  Each fillet Length =1.594m  Total length =2x13x1.594m  =28.692 m x0.89 **= 25.535kg x 2**  **= 51.07 kg**  **Horizontal vertical**  Placing Length = 1.500 m  D-12,@0.150 C/C  Nos of fillet =1.500÷0.150+1 = 11nos  Each fillet Length =2.380m  Total length =2x11x2.380m  =52.360 m x0.89 **= 46.600kg x 2**  **= 93.20 kg**  **Head wall binder**  Placing Length = 1.950 m  D-12,@0.150 C/C  Nos of fillet =1.950÷0.150+1 = 13nos  Each fillet Length =2.200m  Total length =2x13x2.200m  =57.200 m x0.89 **= 50.908kg x 2**  **= 101.816kg**  **Head wall short vertical**  Placing Length = 1.500 m  D-12,@0.150 C/C  Nos of fillet =1.500÷0.150+1 = 11nos  Each fillet Length =1.825m  Total length =2x11x1.825m  =20.075 m x0.89 **=17.866 kg**  **= 35.732 kg**  **Railing post R/S D-16**  Post = 9 nos  Each bar length = 1.660m  Total length =4x9x1.660  =59.760x1.58 **= 94.420 kg x 2**  **= 188.84 kg**  **Railing beam R/S D-16**  Post =6 nos  Each bar length = 2.200m  Total length =6x4x2.200m  =52.80x1.58 **= 83.424 kg x 2**  **= 166.848 kg**  **Return wall corner vertical D-16**  Post =4 nos  Each bar length = 1.920m  Total length =4x1.920m  =7.680x1.58 **= 12.134 kg x 2**  **= 24.268 kg**  **Return wall corner fillet bar**  Placing Length = 1.400 m  D-12,@0.150 C/C  Nos of fillet =1.400÷0.150+1 = 10nos  Each fillet Length =1.100m  Total length =1x4x10x1.100m  =44.00 m x0.89 **= 39.160 kg x 2**  **= 78.32 kg**  **Chat block D-12,Main rod**  Each bar Length =2.450m  Total length =2x3x2.450m  =14.700 m x0.89 **=13.083 kg x 2**  **= 26.166 kg**  **D-12,U-bar**  Each bar Length =1.300m  Total length =2x2x6x1.300m  =31.200 m x0.89 **=27.768 kg x 2**  **= 55.536 kg**  **D-12,U-bar**  Each bar Length =1.962m  Total length =2x13x1.962m  =11.772 m x0.89 **=10.477 kg x 2**  **= 20.954 kg**  **Battle block D-12, Main bar**  Each bar Length =2.512m  Total length =2x3x2.512m  =45.216 m x0.89 **= 40.242 kg x 2**  **= 80.484 kg**  **2=D-12, U bar Horizontal**  Each bar Length =1.075m  Total length =2x3x2x1.075m  =12.900 m x0.89 **=11.481 kg x 2**  **= 22.962 kg**    **2=D-12, U bar**  Each bar Length =1.090m  Total length =2x2x3x1.090m  =13.080 m x0.89 **=11.641 kg x 2**  **= 22.282 kg**  **End sill high**  Each bar Length =1.832m  Total length =2x10x2x1.832m  =73.280 m x0.89 **=65.219 kg x 2**  **= 130.438 kg**  **3-D12, Vertical**  Each bar Length =1.350m  Total length =2x10x3x1.350m  =81.00 m x0.89 **=72.090 kg x 2**  **= 144.18 kg**  **3-D12, Horizontal**  Each bar Length =1.350m  Total length =2x10x3x1.350m  =81.00 m x0.89 **=72.090 kg x 2**  **= 144.18 kg**  **End sill low, 2-D12, per end sill**  Each bar Length =1.436m  Total length =2x10x2x1.436m  =57.440 m x0.89 **= 51.121 kg x 2**  **= 102.242 kg**  **7-D12, Continuous through End sill**  Each bar Length =11.680m  Total length =2x7x11.680m  =163.520 m x0.89 **=145.532 kg x 2**  **= 291.064 kg**  Lapping, D-12= 2x7x4x40x0.012  =26.880 m x0.89 **=23.923 kg x 2**  **= 47.846 kg**  D-20mm bar @ 0.300 C/C  Each bar length  = 2x0.200+2x0.400 = 1.600 m  Placing length = 2x2.00 ÷ 0.300+1 = 16 nos  Total length = 1x16x1.600 = 25.600m x2.46  = 62.976 kg x 2  = 125.952 kg    Name plate = 2x4x1.09 = 8.72m x 1.58  **= 13.777 kg x 2**  **= 27.554 kg**  **Total = 22315.278 kg** | 22315.278  kg |
| 35 | 76-115-10 | M.S. Work for reinforcement with deformed M.S. bar, fy = 276 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. **76-115-10:** 6 mm dia. | Railing post ring  Post = 9 nos  Placing length = 0.900  D-6 @ 0.150 C/C  Nos of ring = 0.900/0.150 x 1 = 7nos  Each ring length =0.520nos  Total ring length  = 9x7x0.520= 32.760x0.22 = 7.207kg  Beam ring  Placing length=1.400m  D-6 @ 0.150 C/C  Nos of ring =1.900/0.150+1=14 nos  Each ring length = 0.520  Total ring length  =6x14x0.520=43.680m x 0.22  = 9.609 kg  Name plate  = D-6 @ 0.150 C/C vertical  Placing length=0.700/0.100= 8nos  Each length=0.450+10x0.006  =0.510m  Total length  =2x8x0.510=8.160m x0.22  =1.795 kg  D-6, Binder  Placing length =0.450m  Each bar length =0.738m  Nos of bar =0.450/0.100+1 =6 nos  Total length =2x6x0.738  =8.856x0.22  =1.948kg  = 20.559kg x 2  **= 41.118 kg** | 41.118  kg |
| 36 | 36-150 | Formwork for centering and water tight shuttering as per drawing with 14 BWG M.S. Sheet, fitted and fixed with 40 mm x 40mm x 6mm M.S. Angle frame and 25mmx6mm F.I. bar stiffener, with necessary fabrication, welding, making the forms including fitting, fixing of steel forms with necessary ties, battens, struts, nuts & bolts, props etc. as per desired shape and size including leveling and removing the forms after specified period including the cost of all materials as per direction of Engineer in charge. |  |  |
|  | 36-150-60 | Footing, footing beams, grade beams, foundation slab with 60-80mm dia barrack bamboo props. | Form work for cantering  For C.C work  Sheet pile cap  = 2x11.800x0.075 =1.770sqm  Return wall R/S+C/S End  2x2x1.50x0.075 = 0.450sqm  Return wall R/S+C/S side  2x2x3.400x0.075 =1.020sqm  Apron wall R/S+C/S up to Expression joint  2x2x11.346x0.075 = 3.403sqm  Barrel=2x7.300x0.075 =1.095sqm  Form work C.C work (1:4:8)  Guide wall slope  =2x2x2x2.459x0.050 = 0.983sqm  Floor wall end  =2x5.00x0.050 = 0.500sqm  Slope toe wall  =2x2x4.00x0.050 = 0.800sqm  R/S toe wall  =2x2x5.00x0.050 =1.000sqm  Form work for guide wall Slope  =2x2x2x2.459x0.650 =12.786sqm  Floor wall End  =2x2x5.00x0.650 =13.000sqm  C/S slop to wall  =2x2x4.00x0.650=10.400  R/S toe wall  =2x2x5.00x0.650 = 13.00sqm  Return wall C/S+ R/S  = 2x2x3.400x0.600 = 8.160sqm  Apron End  =1x2x5.00x0.800 = 8.00sqm  =76.367sq  Return wall end R/S & C/S  = 2x2x1.500x0.300 =1.80sqm  Return wall side R/S & C/S  =2x2x3.40x0.300 =4.080sqm  Apron side R/S & C/S =2x2x8.50x0.500+0.750/2 =21.250 sqm  Slope R/S & C/S  = 2x2x2.846x0.700 =7.968sqm  Barrel  =1x2x7.300x0.600 = 8.760sqm  Return wall sheet pile cap sid R/S & C/S =2x2x(1.324+0.900)/2 x0.300 =1.334sqm  =121.559 sqm  Expiation rate Horizontal  = 1x2x2.300x0.782 = 3.597 sqm  Vertical  = 2x2x2.100x0.350 = 2.940sqm  **= 128.096 sqm x 2**  **= 256.192 sqm** | 256.192  sqm |
| 36-150-10 | Vertical and inclined walls, columns, piers with 60-80 mm dia barrack bamboo props. | Return wall  =2x2x2x(3.400+3.10)/2 x1.40 = 36.400sqm  Apron wing wall  =2x2x2x7.300x1.40 = 81.760sqm  Apron slope  =2x2x2x1.800x(1.40+2.00)/2 = 24.480sqm  Slope=2x2x2x2.846x2.00 =45.536sqm  **Barrel below deck slab**  Barrel peer of abutment out side  =1x2x7.300x2.100 =30.660sqm  barrel peir in side  =1x2x4.300x1.800 =15.480sqm  R/S Abutment Wall  = 1x 2 x 1.80x2.100 =7.560sqm  C/S abutment wall  =1x2x0.1.200x2.100 =5.040sqm  R/S Head Wall in side  = 1x1.500x1.900 = 2.925sqm  R/S Head Wall out side  = 1x1.500x2.250 = 3.375sqm  C/S Head Wall Short in side  = 1x1.500x0.650 = 0.975 sqm  C/S Head Wall Short out side  = 1x1.500x1.050 =1.575 sqm  R/S full Board Grove  = 2x2x2x0.100x4.050 = 3.240sqm  C/S full Board Grove  = 2x2x2x0.100x2.600 = 1.040sqm  Railing Post  = 1x9x4x0.900x0.150 = 4.860sqm Railing Beam bottom side  = 2x3x2x2.300x.0150 = 4.140sqm  **= 269.878sqm x 2**  **= 539.756sqm** | 539.756  sqm |
| 36-150-30 | 36-150-30: Deck slab, operating deck slab, top slab of barrel above 3.5m up to 6.5m height with 50mm dia GI pipe props. | Above Deck Slab  R/S Abutment outside  = 2x2x1.800x1.950 =14.040 sqm  C/S Abutment inside  = 2x2x1.800x1.950 =14.040 sqm  C/S Abutment outside + inside  = 2x2x2x1.200x1.121 =10.760 sqm  Deck Slab bottom slab portion  =2x4.300x1.70 = 14.620 sqm  Deck Slab R/S Side  = 2x1.800x1.500 = 5.40 sqm  Deck Slab C/S Side  =2x 1.200x1.500 = 3.600 sqm  Operating Deck slab bottom  = 1.500x0.900 =1.350 sqm  Beam Bottom  = 2x1.500x0.150 = 0.450 sqm  Beam side long  = 1.500x0.300 = 0.450sqm  Out side  = 2x0.900x0.150 = 0.270sqm  Fall Board side  =1x1.50x0.150 = 0.225sqm  = 65.205 sqm x2  **=130.410 sqm** | 130.410  sqm |
| 37 | 16-520-20 | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including leveling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labor using mallet/ vibro compactor) as per direction of Engineer in charge. sand of FM>= 1.50 | Sand filling bellow expansion saint C/S + R/S  =2x3.200x(0.600+0.900)/2 x2x(0.635+0.424) x0.150 x6.400x(0.750+1.059)/2 x0.150  = 1.736 cum  R/S & C/S Vertical  = 2x2x3.150x1.429x0.150 = 2.700cum  Bellow block floor base R/S  = 2x5.00x4.00x0.150 = 6.00 cum  C/S block slope  = 2x2x5.300x2.687x0.150 = 8.544 cum  = 18.544cum x2  = 37.960cum | 37.960  cum |
| 38 | 40-610-30 | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom) as per specific size, range and gradation, including breaking chips, grading, preparation of surface, compacting each layer etc. complete with supply of all materials and as per direction of Engineer in charge. 40-610-30:Well graded between 20mm to 5mm size. (Combination of sub-item 10 and 30 or 20 and 30 shall be used) | Khoa filter  Expanses Bellow  = 1x2x2.900x(0.300+0.600)/2 +  (0.424+0.209)/2 x 0.15  = 2x5.800x(0.450+0.316)/2 x0.150 = 0.666 cum  C/S & R/S vertical  = 2x2x3.150x0.766x0.150 = 1.447 cum  = 2.113 cum  + 14.159  = 16.272 cum x 2  **= 32.544 cum** | 32.544  cum |
| 39 | 40-610-20 | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom) as per specific size, range and gradation, including breaking chips, grading, preparation of surface, compacting each layer etc. complete with supply of all materials and as per direction of Engineer in charge. 40-610-20 . Well graded between 40mm to 20mm size. | Below Expansion Taut C/S & R/S  =2x2.600x(0.600+0.300)/2  x 0.150 = 0.351 cum  C/S&R/S Vertical  = 2x2x3.150x(0.300+0.509)/2  x 0.150 = 0.764 cum  = 1.115 cum  +14.159  =15.274 cum x2  **= 30.548 cum** | 30.548  cum |
| 40 | 44-220-10 | Supplying and laying single layer polythene sheet in floor below cement concrete, RCC slab, on walls etc. complete in all respect as per direction of Engineer in charge. 44-220-10 . Weighing minimum 1.0 kg per 6.50 sqm. | polythene sheet C/S & R/S Apron  = 2x (2.300+5.00)/2 x12.700 = 92.710 sqm  Return Wall  =2x2x3.400x1.50 = 20.400 sqm  Barrel base  = 1x7.300x2.300 = 16.790 sqm  = 129.900 sqm x2  **= 259.800 sqm** | 259.800  sqm |
| 41 | 76-630-10 | Supply and fitting and fixing 23cm wide P.V.C water stops having minimum strength of 13.80N/mm2 at 225% elongation and of approved quality in antraction 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. | P.V.C water stops  Horizontal  = 2x1.900 = 3.800 cum  Vertical R/S  = 2x2.350 = 4.700 cum  Vertical C/S  = 2x2.550 = 5.100 cum  =13.600cum x 2  **= 27.200 cum** | 27.200  cum |
| 42 | 28-200-10 | Reinforced Cement Concrete Work in leanest mix. 1:1.5:3, with 20mm downgraded coarse aggregates and sand of FM>= 2.0 to FM >= 2.5, to attain a minimum 28 day cylinder strength of 22.0 N/mm2, including breaking, screening, grading and washing aggregates with clear 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. | Sheet pile cap bottom = 1x2x11.80  x (0.900+1.324)/2 x0.300 =7.872 cum  R/S +C/S Apron  = 1x2x10.00x(6.100+2.947)/2 x (0.500+0.700)/2  = 2x10.00x4.523x0.600 = 54.726 cum  C/S & R/S Slope  =2x2.746x(2.100+2.947)/2 x0.700  =10.054 cum  Barrel R/S  =2.300x(1.500+1.924) /2 x0.700 =2.756 cum  Barrel C/S  =2.300x(0.900+1.324) /2 x0.700 = 1.790 cum  Barrel Inside Part  =4.052x2.300x40.400 = 3.727 cum  Return Wall base C/S &R/S  =2x2x3.100x1.500x0.300 = 5.580 cum  Return Wall C/S &R/S  =2x2x3.100x1.300x1.400 = 5.208cum  Wing wall C/S & R/S  =2x2x7.90x0.300x1.400 = 13.272 cum  Wing wall slope Apron  =2x2x1.800x(1.999+1.400)/2x0.300 = 3.670 cum  Slope=2x2x2.846x0.300x2.00 = 6.830 cum  Bellow Deck Slab Pier  =1x2x4.300x0.300x1.800 = 4.644 cum  R/S Abutment  = 1x2x1.800x0.400x2.600 = 5.832 cum  C/S Abutment  = 1x2x1.200x0.400x2.600 = 2.496 cum  Deck slab  =1x4.300x2.300x0.300 =2.967 cum  Head Wall short  =1x2.300x6.300x0.650 = 0.448 cum  Head wall Long  =1x2.300x0.300x1.950 =1.345 cum  Operating Deck Slab  =1.900x0.900x0.150 = 0.256 cum  Beam =1.900x0.150x0.150 =0.042 cum  Chute block C/S &R/S  =2x3x1/2 x1.350x0.450x0.300 = 0.546 cum  Battle block C/S & R/S  =2x4x(0.150+0.600)/2 x0.300x0.450x0.300  = 0.450 cum  End sill C/S & R/S High  =2x8x(0.150+0.850)/2 x0.300x0.300 =0.840 cum  End sill C/S & R/S Low  =2x8.50x1/2 x0.850x0.2126x0.350 = 0.537 cum  Railing Post  =3x3x0.150x0.150x0.900 = 0.181cum  Railing beam  = 2x3x0.925x0.150x0.150 = 0.124 cum  Name Plate  =0.750x0.150x0.450 = 0.050 cum  Name plate  =2x0.150x0.150x0.050 = 0.00225 cum  =2x0.125x0.125x0.025 = 0.00078125 cum  =2x0.076x0.076x0.012 = 0.000138624 cum  =2x0.100x0.076x0.075 = 0.00114cum  Fillet Return wall corner  =1x4x1.400x1/2x0.300 = 0.252 cum  Fillet Barrel Horizontal  =1x4x4.300x1/2x0.150x0.150 = 0.193cum  Fillet Barrel Vertical  =1x4x1.800x1/2x0.150x0.150 = 0.081cum  Fillet R/S aboutment  =2x1.800x1/2 x0.150x0.150 = 0.040 cum  Fillet C/S aboutment  =2x1.200x1/2x0.150x0.150 = 0.027 cum  = 136.390 cum x2  **= 272.780 cum** | 272.780  Cum |
| 43 | 04-600-20 | Providing cork sheet/polystyrene sheet in expansion joints of concrete works including supply of all materials etc. complete as per direction of Engineer in charge. 04-600-20: 20 mm thick sheet. | Cork sheet/polystyrene sheet in expansion  Horizontal= 2x2.300x0.782 = 3.597 sqm  Vertical = 2x2x2.50x0.350 =3.500 sqm  = 7.097 sqm x 2  **= 14.194 sqm** | 14.194  sqm |
| 44 | 76-170 | M.S. Work in plates, angles, channels, flat bars, Tees etc. including fabricating, machining, cutting, bending, welding, forging, drilling, reverting, embedding anchor bars, staging and fitting, fixing, local handling etc. complete with energy consumption and supply of labours including the cost of materials as per design, specification and direction of Engineer in charge. | Detail –H-SCC-A-A  Flat Rate = 3x1.800x0.150x0.010 = 0.008 cum  @ 7800 kg P/Cum = 0.0081x7800.00=63.180 kg  Anchor Bars=D-16  225 mm Long @0.200 C/C  Placing Length = 1.800m  Nos of Anchor Belt  = 1.800÷0.200+1 =10 nos  Total Length = 3x10x0.225  = 6.750 x1.58 = 10.664 kg  Detail=K” Gate Grove  Chanel= 2x4.050x0.550x0.010 = 0.04455cum  @7800kg/cum =0.04455x7800 = 347.49 kg  Anchor Belt = D-16 @0.200 C/C  Each Anchor Length = 0.225m  Placing Length = 4.050m  Nos of bolt = 4.050÷0.200+1 = 21 nos  Total length =2x3x21x0.225 = 28.35m  =28.35x1.58 = 44.793 kg  Deck Slab corner Anchor belt  =2x2.300x0.175x0.010 = 0.0081 cum  @7800kg P/cum = 63.18 kg  Anchor belt Placing length = 2.300m  D-16@ 0.300 C/C  Nos of Anchor = 2.300÷0.300+1 = 9 nos  Each Anchor Length = 0.225m  Total length = 2x9x0.225 =4.05m  = 4.05x1.58 = 6.399 kg  Angle = 2x1.20x0.075x0.075x0.010  = 0.000135 cum  @ 7800 kg p/cum = 1.53 kg  = 536.759 kg x2  **= 1073.518 kg** | 1073.518  kg |
| 45 | 04-620-20 | Filling of expansion joints up to a depth of 40mm 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: 20mm wide. | Expansion joints- C/S + R/S  = 2x2.300 =4.60m  C/S+R/S vertical Inside  =2x2x2.55 = 10.20 m  C/S+R/S vertical Outside  = 2x2x2.700 = 10.80 m  = 25.60 m x2  **= 51.200 m** | 51.200  m |
| 46 | 40-140-50 | 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/mm² including grading, washing stone chips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurable stacks etc complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge. 40-140-50: block size 30cm x 30cm x 30 cm. | Manufacturing and supplying C.C. blocks  30 cum x30 cum x30cum  Slope C/S+R/S Length  = 18.600x2.459 = 45.737 sqm  C/S+R/S bed single Layer  = 1x9.00x5.00 = 45.00 sqm  C/S+R/S bed double Layer  = 1x9.00x5.00x2.00 = 90.00 sqm  Top C/S = 2x8.600x0.600 = 10.320 sqm  Top R/S = 2x10.60x0.600 = 12.720 sqm  = 203.777 sqm  Nos of Block @ 0.090 sqm P/block  = 203.777÷0.090 = 2264.00 nos  Deduct 5% gap = (-) 113.00  = 2151.00 x 2  **= 4302.00 nos** | 4302.00  nos |
| 47 | 40-140-40 | 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/mm² including grading, washing stone chips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurable stacks etc complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge. **40-140-40:** Block size 40cm x 40 cm x 20 cm | Approach Road slope  = 2x2x(4.750+4.144)/2 x6.320 = 112.420 sqm  Return wing wall side = 2x2x7.300x(4.144+3.40)/2 =110.420 sqm  = 222.562 sqm  @ 0.160 sqm P/block = 222.562÷0.160  = 1391.00 nos  Deduct 5% gap = (-) 69.00  = 1322.00 nos x2  **= 2644.00 nos** | 2644.00  nos |
| 48 | 80-230-40 | 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 up to 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:  80-230-40: 40 mm dia G.I. Pipe line. | D-40 GI pipe Post = 6 nos  Each Pipe Length = 1.150 m  Total length = 6.00x1.150  = 6.900m x 2  **= 13.80 m** | 13.80  m |
| 49 | 16-130 | Earth work by manual labour in all kinds of soil in excavation or re excavation of channels with the initial lead of 30m and lift of 1.5m including leveling, dressing and throwing the spoils to profile with breaking clods, rough dressing, clearing jungles including cutting trees up to 200mm girth, dug bailing etc. complete as per direction of Engineer in charge | Diver stone channel  R/S = 400.00x(5.00+8.75)/2 x1.25  = 3437.50 cum  C/S = 400.00x(5.00+8.75)/2 x1.25  = 3437.50 cum  = 6875.00 cum x 2  **= 13750.00 cum** | 13750.00  cum |
| 50 | 16-190 | Extra rate for every additional lead of 15m or part thereof beyond the initial lead of 30m up to a maximum of 19 leads (3m neglected) for all kinds of earth work | 1 No Lead = 6875.00 x 2  **= 13750.00 cum** | 13750.00  cum |
| 51 | 04-280-10 | Constructing at site, cement mortar gauge on masonry wall, including engraving in meter, decimeter & centimeter, painting and figuring with black and red water proof paint, etc. complete as per direction of Engineer in charge.  04-280-10: 150mm x 25mm | Constructing at site, cement mortar……………  Gauze = 2x1.40 = 2.80m x 2  **= 5.60 m** | 5.60  m |
| 52 | 16-240 | Earth work by manual labour, in all kinds of soil in removing the cross bundh/ring bundh, including all leads and lifts complete and placing the spoils to a safe distance, (minimum 15m apart from the bank) as per direction of Engineer in charge. | Removing bundh only same as no – 6  = 4369.00 x 80%  = 3516.80 cum x 2  **= 7033.60 cum** | 7033.60  cum |
| 53 | 16-520-20 | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including eveling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual labour using mallet/ vibro compactor) as per direction of Engineer in charge. 16-520-20: sand of FM>=1.50 | Return wall base C/S+R/S  = 2x13x(2.700+5.05)/2 1.175 = 118.381 cum  Return wall base slope part C/S+R/S  =2x13.00x2.375x0.300 = 18.525 cum  Apron C/s + R/S = 2x(7.025+5.550)/2 x{(6.800+3.442)/2 +(9.750+6.392)/2}  =2x6.287x(5.121+8.070)/2 x1.475  = 122.333 cum  R/S+C/S slope  = 1x2x2.700x(3.442+3.500)/2 x(5.792+5.850)/2 x (1.775+1.975)/2  = 2x2.700x3.471x5.826x1.875 =204.748 cum  R/S+C/S slope part  = 1x2x2.700x3.471x5.826x0.300  = 32.759 cum  Barrel = 1x7.300x(4.580+9.130)/2 2.275  = 113.844 cum  =610.590 cum x 2  **= 1221.180 cum** | 1221.180  cum |
| 54 | 16-540-20 | Back filling in hydraulic structures including all leads and lifts in 150mm layer including watering, ramming compacting to 30% relative density etc. complete by compactor or any other suitable method as per direction of Engineer in charge. 16-540-20: Sand of FM>= 0.80 | Return wall Inside slope C/S+R/S  =2x2x3.400x(2.975+5.050)/2 x2.075  = 113.218 cum  Apron sC/S +R/S  =2x2x(7.025+4.950) x (1.775+3.675)/2 x1.990  =2x2x5.987x2.725x1.900 = 123.990cum  Slope = 2x2x2.70x(3.415+5.990)/2 x 1.900  =  Barrel = 1x2x7.300x(3.415+5.990)/2 x2.575  = 176.790 cum  = 413.998 cum x2  **= 827.996 cum** | 827.996  cum |
| 55 | 68-130 | Supplying pressure treated wooden fall boards/stop logs of different size (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. | Wood fall board  R/S= 2x0.150x0.100x2.00 = 0.160 cum  C/S = 2x0.150x0.100x2.20 = 0.66 cum  = 0.126 cum x 2  **= 0.252 cum** | 0.252  cum |
| 56 | 76-240-40 | 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 40mm x10mm M.S. strip as clamp drilled spaces @ 150mm c/c, stem attachment with proper thread, nut, cotter pin and washer as per approved design including the cost of all materials of proper grade & brand new with a prime coat of red oxide where necessary as per specification and direction of Engineer in charge. 76-240-10: Size 1.00m x 1.00m. | Ms Lift Gate = 1 No x 2 = 2 nos | 2.00  nos |
| 57 | 76-260-20 | Labour charge for fitting and fixing of M.S. vertical lift gate/ flap gate shutters of different size including making holes in concrete for hooking arrangements with supply of necessary materials, tools and other accessories required for fitting the same to regulator/sluice and mending the damages with CC (1:2:4), removing the spoils etc. complete including the cost of all materials as per direction of Engineer in charge.  76-260-20: Size 1.95m x 1.35m or 1.95m x 1.65m | Labor charge for Ms Lift Gate  = 1 No x 2  **= 2 nos** | 2.00  nos |
| 58 | 76-190 | Manufacturing, supplying and Installation of Pedestal type lifting device for slide gate with 63 mm 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 red oxide where necessary etc. complete including the cost of all materials as per specification and direction of Engineer in charge. | Manufacturing, supplying and Installation of Pedestal type  = 1 No x 2 **= 2 nos** | 2.00  nos |
| 59 | 16-140-10 | Earth work by manual labor in re sectioning 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. **16-140-10:** 0 m to 3 m height. | Approach Road = 2x50x(4.600+7.200)/2x2.10  = 2289.00 cum x 2  = **4578.00 cum** | 4578.000  cum |
| 60 | NSI | Nameplate Writing, As per market Rate | As per market rate  2 Item | 2.00 nos |
| 61 | NSI | Red Flag, As per market Rate | As per market rate  2 Item | 2.00 nos |
|  |  | **(C) Samarbari Khal Regulator** |  |  |
| 62 | 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 mortar on top (1:2), with inscription of "BWDB" with 25cm of the pillar below ground level etc. complete including ramming the backfill and the cost of all materials as per direction of Engineer in charge. | Bm Pillars – 4 Nos | 4  nos |
| 63 | 04-180 | Site preparation by manually removing all miscellaneous objectionable materials form entire site and removing soil up to 15cm depth including uprooting stumps, jungle clearing, leveling dressing etc. complete as per direction of Engineer in charge. | Site Preparation  = 100.00 x 90.00  = 9000.00 sqm | 9000.00  sqm |
| 64 | Approved rate | Preparation and mobilization of the Site for Construction of Submersible Embankment or other Structural Components in c/w "Hoar Flood Management and Livelihood Improved Improvement Project (BWDB Part) as per Technical Specifications, including land lease, rental charges, obtaining permissions for work, developing work area, preparation of platform for temporary semi pucca site office(40sqm), CI Sheet labour sheds(200sqm), CI Sheet Stores(200sqm), supply of wooden & cane seated furniture etc. as specified and as per Contractor's Method Statement and as per direction of Engineer in charge. | 1 Item = 967050.85 | 967050.85 |
| 65 | 04-620-20 | Filling of expansion joints upto 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. | 1x2x7.96 = 15.92  1x2x2x5.43 = 21.72  Total = 37.624 m | 37.624  m |
| 66 | 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. | = 6 nos | 6.00  nos |
| 67 | 16-310 | 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/ cofferdam 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. | Return R/S + C/S  = (33.400+50.600)/2 x (5.450+22.650)/2 x 4.30  = 42.00x14.050x4.300 = 2537.430 cum  Apron C/S+R/S  =( 2x10.550+1.950)/2 x {(17.00+34.200)/2+10.400+27.600)/2}/2 x4.300  = 2 x6.250x(25.600+19.00)/2 x 4.300  = 1198.625cum  Barrel =7.00 x (10.400+27.600)x4300  = 571.900 cum  R/S Loos Apron Top  =12.300-9.60 = 2.700cum  R/S Loos Apron battom  =12.300-1.00 = 11.300cum  =1x(2.700+11.300)/2 x (17.00+34.200)/2 x4.300  =1x7.00x25.600x4.300 =770.560 cum  R/S Loos Apron Top  =16.300-9.60 =6.700 cum  R/S Loos Apron Bottom  =16.300-1.00 =15.300 cum  **Volume**  =1x(15.300+6.700)/2 x17.00+34.2000/2 x4.300  =11.00x25.600x4.300 = 1210.880 cum  **6289.395 cum** | **6289.395**  **cum** |
| 68 | 16-560-20 | Shoring for slope protection of foundation trench, canal, embankment, road, pond etc. as per design slopes, grades including removal of spoils to a safe distance as per direction of Engineer in charge. 16-560-20: By bamboo post of 6.0m length, c/c fixed with nails. | C/S & R/S  = 1x2x37.940x2 = 151.76  End = 2x30.200 = 60.40  Return = 2x2x7.712 = 30.84  **= 243.00 cum** | 243.00  cum |
| 69 | 12-310-20 | Bailing out of water with all leads and lifts by manual labour or pump, with all arrengements for protection of ring bund and side slopes of foundation pit against erosion or washout etc. complete actual volume of work will be measured by sounding method before starting the work) as per direction of Engineer in charge.  12-310-20: By pump. | Beiling Post = 17.44x70.00x1.50x35 times  = 64087.20 cum | 64087.20  cum |
| 70 | 44-240-10 | Supplying at site U-shape hot rolled steel sheet pile of different section of Phosphorus=0.04%(Maximum), Sulphur = 0.04% (Maximum), Copper= 0.25% (Minimum), Tensile strength=> 490 N/mm2 , Yield strength =>296 N/mm2, Elongation =15% (Minimum) including all taxes, freights, incidental charges etc. complete as per direction of the Engineer -in- charge. 44-240-10 . U- Shape, hot rolled steel sheet pile: width=400 to 600 mm:height=>85mm, Th.=>8.0mm, wt per sqm. of pile wall=> 88.0 kg/m2 ,Section modulus per one meter of pile width => 529 cm3/m | Supply steel sheet pile C/S+R/S 10.50 thinness  =2x31.400= 62.800m  Area of sheet pile  =62.800m x 4.00 = 251.200 sqm  @120 kg P/sqm = 251.200 x120.00  = 30.144 m ton | 30.144  M ton |
| 71 | 44-320-10 | 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. | Nos of Sheet pile  = 62.800÷0.400 = 157 nos  Each sheet Pile =6.00m  Effective Length = 0.650  Total sheet pile Lengh  =157x4.00 = 628.00m  Total nos of cutting sheet Pile  =628.00÷6 =105 nos  Total cutting Length of sheet pile  = 105.00 nos x 0.650 **= 68.250m** | 68.25  m |
| 72 | 44-270-20 | Driving steel sheet piles of various sections and weights of any type of soil, by monkey hammer including handling and placing in position, staging and supplying of all equipments like monkey hammer, pully, rope, bamboo, bullah etc. including correcting leaning beyond tolerance & other efects 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 4.50m depth. | Driving Sheet Pile C/S+R/S = 2x31.400x4.00  **= 251.200 sqm** | 251.200  sqm |
| 73 | 72-180 | Painting of steel sheet piles, 2 coats of bitumen paint, including preparation of surface with sand paper, iron brush etc. including the cost of all materials and labour etc. complete as per direction of Engineer in charge. | Painting of Steel sheet piles C/S+R/S = 157nos  Effective Length = 0.650 m  Total painting sheet pile = 157.00x0.650x4.00  **= 408.200 sqm** | 408.200  sqm |
| 74 | 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. | Hessian Cloth = 20mm theen  Effective Length = 0.650 m  sheet pile top = 157.00x0.650x0.900 **= 91.845 sqm** | 91.845  sqm |
| 75 | 44-220-10 | Supplying and laying single layer polythene sheet in floor below cement concrete, RCC slab, on walls etc. complete in all respect as per direction of Engineer in charge. 44-220-10: Weighing minimum 1.0 kg per 6.50 sqm. | Return wall base + end wall battom  = 1x2x31.400x3.574 = 224.447 sqm  Apron C/S + R/S  =11.550x (15.00+8.100)/2 = 133.402sqm  Barrel= 7.900x8.400 = 66.360sqm  **= 424.209 sqm** | 424.209  sqm |
| 76 | 28-120-20 | Cement concrete work in leanest mix. 1:3:6 with sand of FM>= 1.5, in foundation or floor, including breaking, screening, grading and washing aggregates with clear water, mixing, laying in position, consolidation to levels, curing, including supply of all materials, excluding the cost of formworks etc. complete as per direction of Engineer in charge. 28-120-20: With 25mm downgraded stone chips. | Return Wall C/S+R/S  = 2x2x8.200x3.574x0.075 = 8.792 cum  Apron C/S +R/S  1x2x16.366x(15.00+8.100)/2 x0.075  = 28.354 cum  Barrel = 7.900x8.400x0.075 = 4.977 cum  Slope Build Wall  =2x2x9.83x0.300x0.650 = 7.667 cum  Floor Guide wall long C/S+R/S  =1x2x15.00x0.300x0.650 =5.850 cum  Floor Guide wall length  = 6.00+8.00 = 14.00m  C/S+R/S = 1x2x14.00x0.300x0.650  = 5.460 cum  Black Top R/S =1x2x13.350x1/2x0.300x0.300 = 1.201 cum  Black Top C/S =1x2x17.350x1/2x0.300x0.300 = 1.561 cum  **= 63.861 cum** | 63.861  cum |
| 77 | 28-100-20 | 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. 28-100-20: With 25mm downgraded stone chips. | Slope guide wall  =2x2x9.83x0.400x0.050 = 0.786 cum  Floor guide wall long, C/S +R/S  =1x2x15.00x0.400x0.050 = 0.600 cum  Floor guide wall length total =14.00m  C/S +R/S =1x2x14.00x0.400x0.050  = 0.560 cum  **= 1.946 cum** | 1.946  cum |
| 78 | 28-200-10 | Reinforced Cement Concrete Work in leanest mix. 1:1.5:3, with 20mm down graded coarse aggregates and sand of FM>= 2.0 to FM >= 2.5, to attain a minimum 28 day cylinder strength of 22.0 N/mm2, including breaking, screening, grading and washing aggregates with clear water, mixing, laying in forms, consolidation to levels, curing, including supply of all materials, excluding cost of M.S. work for reinforcements and formworks etc. complete and as per direction of Engineer in charge. 28-200-10: With stone chips. | R.C.C (1:1.5:3)20mm Down Graded stone chips  C/S +R/S Long = 1x2x31.400x(0.900+1.324)/2 x0.300 = 20.950 cum  Return wall base = 2x2x8.200x3.450x0.300  = 33.948 cum  C/S & R/S Apron  = 1x2x1.550x(15.600+9.759)/2 x (0.500+0.700)/2  = 1x2x8.550x12.679x0.600 =130.086 cum  Apron slope  =1x2x3.162x(9.759+8.200)x0.700 = 39.750 cum  Barrel base  = 7.900x8.400x0.400 = 26.544 cum  Barrel R/S & C/S Floor bottom  =2x8.400x (1.500+1.924) /2 x 0.300  = 8.628 cum  Chute block R/S & C/S  =1x2x7x1/2x2.175x0.725x0.500  = 5.519 cum  Battle block R/S & C/S  =1x2x10x0.500x(0.150+0.875)/2 x0.725  =3.715 cum  End still High R/S & C/S  = 1x2x21x0.350x(0.150+1.050)/2 x0.450  =3.969 cum  End still Low R/S & C/S  = 1x2x22x0.350x1/2 x1.050x0.2625  =2.122 cum  Return wall R/S & C/S  = 2x2x8.100x(0.300+0.400)/2 x3.800  = 43.092 cum  Wing wall R/S & C/S  = 2x2x11.900x(0.400+0.300)/2 x 3.800  = 63.308 cum  Wing well slope R/S & C/S  =1x2x2x3.162x(3.800+2.80)/2 x (0.400+0.300)/2  = 1x2x2x3.162x3.300x3.350  =14.608 cum  Barrel base  = 1x8.400x7.900x0.400 = 26.559 cum  Barrel bellow base deck slab – sec-2-2  =1x2x4.300x0.350x1.800 = 5.148 cum  Barrel pier  = 1x3x4.300x0.300x1.800 = 6.966 cum  Barrel abetment key portion sec-3-3  = 1x2x2x1.800x0.450x4.05 = 13.122 cum  Barrel Pier key portion sec-3-3  = 1x2x3x1x1.00 x0.500x4.050 = 21.870 cum  Barrel Fillet bottom Top Horizontal  = 1x4x2x2x4.30x1/2x0.150x0.15  = 0.324 cum  Barrel fillet vertical  = 1x4x4x1.800x1/2x0.150x0.150  = 0.324 cum  Barrel abutment & pier Horizontal  =2x4x2x1.800x1/2x0.180x0.150  = 0.324 cum  Deck slab  = 1x4.900x8.400x0.350  = 14.406 cum  Head wall= 1x2x7.500x0.300x1.900  = 8.550 cum  Operating deck slab = 1x2x7.900x0.150x0.150  = 0.355 cum  **= 497.035 cum** | 497.035  cum |
| 79 | 76-120-10 | M.S. Work for reinforcement with twisted M.S. bar, fy = 414 N/mm2, (made from billet) in RCC works, including local handling, cutting, forging, bending, cleaning and fabrication with supply of twisted 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. | Return wall base battom  Placing length = 8.200 m  D-12@ 0.150 c/c  Nos of bar = 8.200÷0.150+1 = 56 nos  Each bar length = 3.570  Total length  =2x2x56x3.570 = 799.680m x 0.89 kg  = 711.715 kg  Lapping- D-12 = 2x2x56x10x0.012  = 53.760m x0.89 kg = 47.846 kg  Return wall bottom top bender  Placing length = 3.450 m  D-12@ 0.250 c/c  Nos of bar = 3.450÷0.250+1 = 15 nos  Each bar length = 8.260m  Total length  =2x2x15x8.260 = 495.600m x 0.89 kg  = 441.084 kg  Return wall top layer top long bar  Placing length = 3.450 m  D-12@ 0.150 c/c  Nos of bar = 3.450÷0.150+1 = 24 nos  Each bar length = 8.260m  Total length  =2x2x24x8.260 = 792.960m x 0.89 kg  = 705.734 kg  Return wall top layer top Short bar  Placing length = 8.200 m  D-16@0. 150 c/c  Nos of bar = 8.200÷0.150+1 = 56 nos  Each bar length = 3.650m  Total length  =2x2x56x3.650 = 817.600m x 0.89 kg  = 727.664 kg  Return wall vertical C/S & R/S water face  Placing length = 8.200 m  D-12@ 0.150 c/c  Nos of bar = 8.200 ÷0.150+1 =56 nos  Each bar length = 4.290m  Total length  =2x2x56x4.290 = 960.960m x 0.89 kg  = 855.254 kg  Return wall vertical earth face long bar  Placing length = 8.200 m  D-16@ 0.250 c/c  Nos of bar = 8.200 ÷0.250+1 =34 nos  Each bar length =3.800+0.300-0.110+2x0.320  =4.310m  Total length  =2x2x34x4.310 = 586.160m x 1.58 kg  = 926.132 kg  Lapping- D-16 = 2x2x34x40x0.016  = 87.040m x1.58 = 137.523 kg  Return wall vertical earth face short bar  Placing length = 8.200 m  D-16@ 0.250 c/c  Nos of bar = 8.200 ÷0.250=33 nos  Each bar length  =1.350+0.300+0.160+0.160-0.060  =1.910m  Total length  =2x2x33x1.910 =252.120m x 1.58 kg  = 398.349 kg  Return wall bender C/S+R/S  Placing length = 3.800 m  D-12@ 0.150 c/c  Nos of bar = 3.800 ÷0.150+1=26 nos  Each bar length  =8.200-0.110+0.240 =8.330m  Total length  =2x2xx2+26x8.330  =1732.640m x0.89 =1542.049 kg  Lapping- D-12  = 2x2x2x26x3x40x0.12  =299.520x0.89 = 4125.879 kg  Apron C/S & R/S U-bar long  Placing length = 12.00-1.050 = 10.950 m  D-16@ 0.250 c/c  Nos of bar = 10.950 ÷0.250+1=45nos  Each bar length  = (15.480+2x4.350)+(9.639+2x4.550)  2  =(24.80+18.739)/2 = 21.459m  Total length  =1x2x45x21.459  = 1931.310m x1.58 =3051.469 kg  Lapping- D-16  = 2x45x7x40x0.016  = 403.200m x1.58 kg = 637.056kg  Apron C/S & R/S U-bar short  Placing length = 10.950 m  D-16@ 0.250 c/c  Nos of bar = 10.950 ÷0.250=44nos  Each bar length  = 1.580+1.790+10x0.016 = 3.530m  Total length  =2x2x44x3.530  = 621.280m x1.58 = 981.622 kg    =Lapping- D-16  = 2x2x44x1x40x0.016  = 112.640m x1.58 kg = 177.971kg  Apron C/S & R/S slope U-bar long  Placing length = 3.162 m  D-16@ 0.250 c/c  Nos of bar = 3.162 ÷0.250+1=14nos  Each bar length  = (9.639+2x4.550)+(8.180+2x3.910)  2  =(18.730+16.00)/2 = 17.365m  Total length  =1x2x14x17.365  = 486.220m x1.58 =768.227 kg  Lapping- D-16  = 2x14x6x40x0.016  = 107.520m x1.58 kg = 169.881kg  Apron C/S & R/S slope U-bar short  Placing length = 3.162 m  D-16@ 0.250 c/c  Nos of bar = 3.162 ÷0.250=13nos  Each bar length  1.58+1.790+10x0.016 =3.530 m  Total length  =1x2x2x13x3.530  = 183.560m x1.58 kg =290.024 kg  Apron bottom bender C/S & R/S  Placing length = (8.300+15.60)/2 =11.950m  D-12@ 0.150 c/c  Nos of bar = 11.950 ÷0.150+1=81nos  Each bar length  =3.162+12.00+2x10x0.012  =15.402m  Total bar length  =1x2x81x15.402  =2495.124m x0.89kg =2220.6660 kg  Lapping- D-12  = 2x81x5x40x0.012  = 388.8 x0.89 = 346.03 kg  Apron top layer bottom bar C/S & R/S  Placing length = (9.759+15.60)/2 =12.679m  D-16@ 0.200 c/c  Nos of bar = 12.679 ÷0.200+1=64nos  Each bar length  =12.00+40x0.016  = 12640+10+0.016  =12.800m  Total length  =1x2x64x12.800  =1638.400m x1.58kg =2588.672 kg  Lapping- D-16  = 2x64x40x0.016  = 81.920x1.58 = 129.433 kg  Apron slope C/S & R/S  Placing length = (8.300+9.759)/2 =9.029m  D-16@ 0.200 c/c  Nos of bar = 9.029 ÷0.200+1= 46nos  Each bar length  =3.162+40x0.016+10x0.016 =3.162m  Total bar length  =1x2x46x3.962  =364.504m x1.58 kg = 575.916kg  **Apron top layer –top short bar**  Placing length =3.162+12.00 =15.162m  D-16@ 0.200 c/c  Nos of bar = 15.162 ÷0.200+1= 77nos  Each bar length  =(8.500+15.80)/2 = 12.150m  Total length  =1x2x77x12.150  =1871.100m x1.58 kg = 2956.338kg  Lapping- D-16  = 2x2x77x40x0.016  = 197.120x1.58kg = 311.449 kg  **Apron wing wall vertical water fool C/S & R/S**  Placing length  =12.00-1.050 = 10.950m  D-16@ 0.200 c/c  Nos of bar = 10.950 ÷0.200+1= 56nos  Each bar length  =(4.510+4.710)/2 = 4.610m  Total length  =2x2x56x4.610  =1032.640m x1.58 kg = 1631.571kg  **Apron Slope C/S & R/S**  Placing length  =3.162m  D-16@ 0.200 c/c  Nos of bar = 3.162 ÷0.200+1= 17nos  Each bar length  =(4.710+3.92)/2 = 4.310m  Total length  =2x2x17x4.310  =293.080m x1.58 kg = 463.066kg  Lapping- D-16  = 2x2x17x40x0.016  = 43.520m x1.58kg = 68.760 kg  **Apron binder C/S & R/S W/F & E/F**  Placing length = 3.533m  D-16@ 0.200 c/c  Nos of bar = 3.533 ÷0.200+1= 19nos  Each bar length  =3.322+10.890 = 14.212m  Total length  =2x2x2x19x14.212  =2160.224m x1.58 kg = 3413.153kg  Lapping- D-16  = 2x2x19x5x40x0.016  = 486.400 x1.58kg = 768.512 kg  **Return wall trapezium bar C/S & R/S**  Placing length = 8.200m  D-12@ 0.250 c/c  Nos of bar = 8.200 ÷0.250+1= 34nos  Each bar length  =0.490+0.340+0.848+2x10x0.012  =1.918m  Total length  =2x2x34x1.918  =260.848m x0.89kg = 232.154kg  **Trapezium bar apron portion C/S & R/S**  Placing length = 15.00m  D-12@ 0.250 c/c  Nos of bar = 15.00 ÷0.250+1= 61nos  Each bar length  =0.690+0.340+1.021+2x10x0.012  =2.291m  Total length  =1x2x61x2.291  =279.502m x0.89kg = 232.154kg  **Return wall sheet pile outside Rectangle bar C/S & R/S**  Placing length = 8.200m  D-12@ 0.250 c/c  Nos of bar = 8.200 ÷0.250+1= 34nos  Each bar length  =2x0.490+0.340 = 1.320  Total length  =2x2x34x1.320  =179.520m x0.89kg = 159.772kg  **Apron portion Rectangle bar sheet pile outside C/S & R/S**  Placing length = 15.00m  D-12@ 0.250 c/c  Nos of bar = 15.00 ÷0.250+1= 61nos  Each bar length  =2x0.690+0.340+10x2x0.012  =1.960m  Total length  =2x61x1.960  =239.120m x0.89kg = 212.816kg  **Return wall fillet**  Placing length = 7.900m  D-12@ 0.200 c/c  Nos of bar = 7.900 ÷0.200+1= 41nos  Each fillet length  = 0.738x2x0.150+2x10x0.120  =0.738+0.300+0.240  =1.529m  Total length  =2x2x2x41x1.728  =419.184m x0.089 kg = 373.073kg  **Wing wall fillet C/S&R/S**  Placing length =3.162+10.950  =14.112m  D-12@ 0.200 c/c  Nos of bar = 14.112 ÷0.200+1= 72nos  Each fillet length  =(0.879+0.300+0.240)+(0.597+0.300+0.240)  2  =(1.419+1.137)/2 =1.278m  Total length  =2x2x72x1.278  =368.064m x0.089 kg = 327.5763kg  **Expansion fillet**  Placing length =8.300m  D-12@ 0.150 c/c  Nos of bar = 8.300 ÷0.150+1= 43nos  Each bar length = 0.700m  Total length  =2x43x0.700  =60.200m x0.089 kg = 53.578kg  **Expansion Tight straight bar**  = 2x2x8.420  = 33.680m x0.89 =29.975 kg  **Return wall corner fillet bar**  Placing length =3.800m  D-12@ 0.150 c/c  Nos of bar = 3.800 ÷0.150+1=26nos  Each bar length = 1.090m  Total length  =2x2x26x1.090  =113.360m x0.089 kg = 100.890kg  **R/W corner vertical bar**  **=**2x2x3.430  = 13.720m x0.89 =12.210 kg  **Chut block C/S&R/S**  = 2x7 = 14nos  4-D-12 = 0.915+2.075+0.120  =3.110m  Total length =2x7x14x3.110  =174.160m x0.89 =155.002 kg  **Chut block,12 D-12 U bar**  = 2x7x12x(2.330+0.880)/2 +0.400  =64.400x0.89 =57.316  **Baffle block -4-D-12**  Baffle block=10 nos  Each block length = 1.449+0.965+0.050  = 2.464  1x2x10x4x2.464 = 197.120m x0.89  =175.436 kg  **Baffle block -3-D-12-U-bar**  Total block =10 nos  Each length = 2.250 m  Total length = 1x2x3x10x2.250 =135.00mx0.89kg  =120.150kg  **Baffle block Horizontal -2-D-12-U-bar**  1x2x2x10x1.224 = 48.960m x0.89  = 43.574 kg  **End sill high-3D12 per end sill**  Each bar = 1.995  Total length = 1x2x21x3x1.995  = 251.370m x 0.89  = 223.719 kg  **End sill high-3-D12 Horizontal**  Total block = 21nos  Each bar length = 1.400m  Total=2x21x3x1.400  =176.400m x0.89  =156.996 kg  **End sill high-3-D12 vertical**  Total block = 21nos  Each bar length = (1.750+1.150)/2  =1.450m  Total length=2x21x3x1.450  =182.700m x0.89  =162.603 kg  **End sill low-3-D12 per end sill**  Total end sill = 22nos  Each bar length = 1.171+0.600-0.200  =1.571m  Total length=1x2x22x3x1.571  =207.372m x0.89  =184.560 kg  **End sill low-7-D12 continuous through end sill**  Each bar length  = 15.00+2x0.240  =15.480m  Total length=1x2x7x15.480  =216.720m x0.89  =192.880 kg  **Lapping- D-12**  = 2x7x5x40x0.012  = 33.600 x 0.89kg = 29.904kg  **Barrel U-bar**  Placing length = 1.800m  [D-12@0.150](mailto:D-12@0.150) C/C  Nos of bar = 4.300÷0.150+1  = 30 nos  Each bar length =8.280+2x2.430  =13.140m  Total length = 1x30.00x13.140  =394.200m x0.89  =350.838kg  **Lapping D-12**  =30x4x40x0.012  = 57.600m x0.89 =51.264 kg  **Barrel Abutment C/S&R/S key portion**  Placing length=1.800m  d-12@ 0.150c/c  Nos of bar = 1.800÷0.150+1 =13 nos  Each bar length = 8.280+2x5.030  =18.340m  Total length = 2x13x18.340  = 476.840m x0.89  =424.387 kg  **Barrel C/S&R/S key portion Trapezium**  Placing length=1.500m  d-12@ 0.250c/c  Nos of bar = 1.500÷0.250+1 =7 nos  Total bar length = 2x7x4x2.829  = 158.424m x0.89 = 140.997 kg  **Barrel bottom layer extra binder**  Placing length = 4.300m  D-12,@0.250c/c  Nos of bar = 4.300÷0.250+1=35 nos  Each bar length = 4.300+2x40x0.012  =5.260m  Total length= 1x35x5.260  = 184.100m x0.89 = 163.849 kg  Lapping D-12 = 1x35x2x40x0.012  =33.600m x0.89 =29.904 kg  **Barrel abutment & Pier vertical bellow deck slab**  Placing length = 4.300m  D-12,@0.200 c/c  Nos of bar = 4.300÷0.200+1=23 nos  Each bar length = 2.670m  Total length= 1x8x23x2.670  = 491.280 m x0.89 = 437.239 kg  **Barrel abutment outside vertical bar operating slab C/S&R/S.**  Placing length = 1.800 m  D-12,@0.150 c/c  Nos of bar = 1.800÷0.150+1=13 nos  Each bar length = 4.930 m  Total length= 1x2x2x13x4.930  = 256.360m x0.89 = 228.160 kg  Lapping D-12 = 2x2x13x2x40x0.012  =49.920m x0.89 =44.428 kg  **Barrel Top layer bottom bar**  Placing length = 1.500 m  D-12,@0.150 c/c  Nos of bar = 8.400÷0.150+1=57 nos  Each bar length = 8.020 m  Total length= 57x8.020  = 457.140m x0.89 = 406.854 kg  Lapping D-12 = 1x57x3x40x0.012  =82.080m x0.89 73.051 kg  **Barrel top layer Top**  Placing length = 7.900 m  D-12,@0.150 c/c  Nos of bar = 7.900÷0.150+1=54 nos  Each bar length = 8.520 m  Total length= 1x54x8.520  =460.080m x0.89 = 409.471 kg  Lapping D-12 = 54x3x40x0.012  =77.760m x0.89 = 69.206 kg  **Barrel Pier Vertical R/S**  Placing length = 0.900 m  D-12,@0.150 c/c  Nos of bar =0.900÷0.150+1=7 nos  Each bar length = 4.930 m  Total length= 1x8x7x4.930  =276.080m x0.89 = 245.711 kg  **Abetment C/S vertical –W/F**  Placing length = 0.750 m  D-12,@0.150 c/c  Nos of bar =0.750÷0.150+2=7 nos  Each bar length = 4.930 m  Total length= 1x2x8x7x4.930  =69.020m x0.89 = 61.427 kg  **C/S Pier vertical**  Placing length = 0.900 m  D-12,@0.150 c/c  Nos of bar =0.900÷0.150+1=7 nos  Each bar length = 4.930 m  Total length= 3I27I4.930  =207.060m x0.89 = 184.283 kg  **Barrel abetment binder E/F**  Placing length = 2.150 m  D-12,@0.150 c/c  Nos of bar = 2.150÷0.150+1=15 nos  Each bar length = 8.020 m  Total bar length= 1x2x15x8.020  =240.600m x0.89 = 2014.134 kg  Lapping D-12 = 1x2x15x3x40x0.012  =43.200m x0.89 = 38.448 kg  **Barrel Pier Beinder**  Placing length = 2.150 m  D-12,@0.200 c/c  Nos of bar = 2.150÷0.200+1=12 nos  Each bar length = 4.800 m  Total bar length= 1x8x12x4.800  =460.800m x0.89 = 410.112 kg  Lapping D-12 =1x8x12x2x40x0.012  = 92.160m x0.89 = 82.022 kg  **Vertical bar Column D-16,**  R/S = 23+16+16+26 = 81nos  C/S = 26+16+8 = 58 nos  =139 nos  Each bar length = 4.960  Total length of column R/S&C/S  =139x4.960 = 689.440x1.58  =1089.315 kg  **R/S column ring Abutment**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.240 m  Total bar length= 2x2x33x1.240  =163.680m x0.62 = 101.481 kg  **R/S Pier column ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.400 m  Total bar length= 2x3x33x1.400  =277.200 x0.62 = 171.864 kg  **R/S Abutment W/F ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.480 m  Total bar length= 1x2x33x1.480  =97.680m x0.89 = 86.935 kg  **R/S Abutment W/F ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.385 m  Total bar length= 1x3x33x1.385  =137.115m x0.89 = 122.032 kg  **R/S Pier = Rectangle ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 2.600 m  Total bar length= 1x3x33x2.600  =257.400m x0.89 = 229.086 kg  **R/S & C/s Abautment & pier Extra bar**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.700 m  Total bar length=2x8x33x1.700  =897.600m x0.89 = 798.864 kg  **R/S & C/s Abautment & pier Extra bar**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 0.750+2x0.340  =1.670 m  Total length=1x2x33x1.670m  =110.220m x0.89 =98.095 kg  **R/S & C/s Abautment & pier Extra bar**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.165m  Total length=1x2x33x1.165m  =76.890m x0.89 = 68.432 kg  **C/S pier Rectangle ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1=33 nos  Each bar length = 1.450m  Total length=1x3x33x1.450m  =143.550m x0.89 = 127.759 kg  **C/S pier round ring**  Placing length = 4.750m  D-10,@0.150 c/c  Nos of bar = 4.750÷0.150+1= 33 nos  Each ring length =1/2 x22/7 x 0.500 +0.600+2x0.400+0.350+0.400  =0.785+0.600+0.800+0.350+0.400  =2.935m  Total length=1x3x33x2.935m  =290.565m x0.89 =258.602 kg  **Deck slab bottom layer bottom bar**  Placing length = 4.900m  D-10,@0.200 c/c  Nos of bar = 8.400÷0.250+1= 35 nos  Each bar length = 8.520m  Total length=1x35x26x8.520m  =221.520m x0.89 =197.152 kg  **Deck slab bottom layer Top bar**  Placing length = 8.400m  D-10,@0.250c/c  Nos of bar = 4.750÷0.200+1= 26 nos  Each bar length = 5.020m  Total length=1x2x26x5.020m  =175.700m x0.89 =156.376 kg  **Deck slab top layer bottom bar**  Placing length = 4.900m  D-10,@0.200c/c  Nos of bar = 4.900÷0.200+1= 26 nos  Each bar length = 5.020m  Total length=1x26x5.020m  =130.520m x0.89 =116.162 kg  Lapping D-12 =26x2x40x0.12  = 44.960m x0.89 = 22.214 kg  **Deck slab top layer bottom bar**  Placing length = 4.800m  D-10,@0.200c/c  Nos of bar = 4.400÷0.200+1= 43 nos  Each bar length = 8.520m  Total length=1x43x8.520m  =366.360m x0.89 =326.060 kg  **Head wall vertical**  Placing length = 1.500m  D-10,@0.150 c/c  Nos of bar = 1.500÷0.150+1= 11 nos  Each bar length = 2.390m  Total length=2x2x4x11x2.390m  =420.640m x0.89 =374.369 kg  **Head wall bender**  Placing length = 1.900m  D-10,@0.150 c/c  Nos of bar = 1.900÷0.150+1= 14 nos  Each bar length = 8.520m  Total length=2x2x14x8.520m  =477.120m x0.89 =424.636 kg  Lapping D-12 =2x214x3x40x0.12  = 80.640m x0.89 = 71.769 kg  **Operating deck slab long bar C/S&R/S**  Placing length = 1.900m  D-10,@0.150 c/c  Nos of bar = 1.900÷0.150+1= 7 nos  Each bar length = 1.800 m  Total length=2x4x7x1.800m  =100.800m x0.89 =89.712 kg  **Operating deck slab short bar C/S&R/S**  Placing length = 1.900m  D-10,@0.200 c/c  Nos of bar = 1.900÷0.200+1= 11 nos  Each bar length = 0.850 m  Total length=2x4x11x0.850m  =74.800m x0.89 =66.572 kg  **Beam = 4-D-12, C/S&R/S**  Each bar length = 8.140 m  Total length=2x4x8.140m  =65.120m x0.89 =57.956 kg  **C/S&R/S Beam Ring**  Placing length = 7.900m  D-10,@0.200 c/c  Nos of bar = 7.900÷0.200+1= 41 nos  Each bar length = 0.940 m  Total length=2x41x11x0.940m  =77.080m x0.89 =68.601 kg  **Railing post = 36 nos**  Each bar length = 1.380 m  4-D-16  Total length=1x36x4x1.380 m  =198.720 m x 1.58 = 313.977 kg  **Railing Beam = 8 nos**  Each bar length = 8.600 m  Each Beam, 4-D16,  Total length=1x8x4x8.600 m  =275.200 m x0.89 =434.816 kg  Lapping D-16 =1x8x4x3x40x0.016  = 61.441m x0.89 = 97.075 kg  **Ring**  Placing length = 3.800m  D-20,@0.300 c/c  Nos of ring = 3.800÷0.300+1=14 nos  Each ring length =1.650 m  Total ring length=2x14x1.650m  =46.200m x2.46 =113.652 kg  **Gross total = 41665.676 kg** | 41665.676  kg |
| 80 | 76-115-10 | M.S Work for reinforcement with Standard deformed bar fy=276 N/mm^2 in RCC works including local handling, cutting, forging, bending, cleaning and fabrication with supply of deformed M.S. bar in different sizes and bending with 22 to 18 gages G.I. wire etc. complete including the cost of all materials as per direction of Engineer in charge.  76-115-10: 6mm dia | Post ring = C/S&R/S total post = 36nos  Placing length = 0.900m  D-6,@0.150 c/c  Nos of ring = 0.900÷0.150+1=7 nos  Each ring length =0.520 m  Total ring length=1x36x7x0.520m  =131.040m x0.22 =28.828 kg  Reiling beam ring gap= 32 nos  Each gap placing lengh = 0.881m  [D-6@0.150](mailto:D-6@0.150) c/c  Nos of ring = 0.881÷0.150+1=7 nos  Each ring length = 0.520m  Total length = 1x32x7x0.520  = 116.480m x 0.22 = 25.625 kg  **= 54.453 kg** | 54.45  kg |
| 81 | 36-150 | Formwork for centering and water tight shuttering as per drawing with 14 BWG M.S. sheet, fitted and fixed with 0mmx40mmx6mm 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. |  |  |
| a) 36-150-60 | 36-150-60 . Footing, footing beams, grade beams, foundation slab with 60-80mm dia barrack bamboo props. | From work for Entering & water Light Sheltering   1. **36-150-60:Footing beamer grade beamer**   Apron side C/S & R/S  =2x2x15.00x(0.700+0.50)/2 = 36.00 sqm  R/S Wall side  =2x2x7.60m x 0.600 = 18.24 sqm  Return End  =2x2x3.450x0.600 = 8.28 sqm  Apron end  =2x15.00x 0.800 = 24.00 sqm  Expansion km=2x8.400x1.00m =16.80 sqm  Barrel Side C/S  =2x1.80x0.775 =2.79sqm  Barrel Side R/S  =2x1.800x0.775 =2.79sqm  Barrel =2x4.300x0.475  =4.08sqm  =2x2x32x0.650 =83.20sqm  Block=1x22x0.45x0.60 =5.94sqm  Long guide wall Block  =2x2x32x0.650 = 83.20sqm  Guide wall C/S &R/S Block  =2x2x2x8.000.650 = 41.60 sqm  = 2x1/2x22x0.78x0.60 = 9.90 sqm  Battle Block  =2x2x10x(0.150+0.875)/2 x0.75  = 14.87sqm  =1x2x10x0.500x0.725  =7.25 sqm  Clute block=2x2x7x1/2x2.175x0.725  =22.08sqm  Chut block end  = 2x7x0.500x0.725  = 5.080 sqm  End Sill =2x7x0.500x0.725m  =5.080sqm  = 2x21x0.900x0.350 = 13.23 sqm  High end sill = 2x2x21x(0.900+0.150)/2 x0.450 = 19.85 sqm  Low end sill =2x2x22x0.350x0.530  = 16.33 sqm  = 304.00 sqm | 304.00  sqm |
| b) 36-150-10 | 36-150-10 . Vertical and inclined walls, columns, piers with 60-80mm dia barrack bamboo props. | **b)36-150-10 Vertical and inclined walls column**  Return wall=2x2x2x7.60x3.80m =231.04sqm  Side=2x2x3.80x0.30 =4.56sqm  Fillet=2x2x2x7.60x0.244 =14.84sqm  R/S&C/S wing=2x2x12.00x3.80 =182.40sqm  R/S&C/S slope  =2x2x3.00x(3.80+2.80)/2 =39.60sqm  R/S&C/S Fillet=2x2x15x0.212  =12.720sqm  Abutment wall C/S=2x2x4.300x2.15m  =36.980sqm  R/S&C/S Abutment=2x2x1.800x4.05x2  =58.32sqm  Side=2x4.05x0.45x2 =7.28sqm  Bottom Fillet=2x2x2x7.7900x0.212  =13.398sqm  Mid Pier=2x3x1.85mx4.30 =47.73sqm  Abatement Pier C/S&R/S  =2x3x1.800x4.05 =87.48sqm  C/S&R/S pier round  =2x3x1.50x4.05 =38.40sqm  Side=2x2x5x0.45x1.90 =17.10sqm  Head wall=2x2x8.40x1.90m  =63.84sqm  Side=2x2x1.90x0.30 =2.28 sqm  = 793.165 sqm | 793.165  Sqm |
| c) 36-150-20 | 36-150-20 . Deck slab, operating deck slab, top slab of barrel upto 3.5m height with 60-80mm dia barrack bamboo props. | 1. **36-150-20**   Deck Slab-Operation deck slab  Deck slab=4x4.90x1.700 =33.32sqm  Side=2x2x4x1.70x0.40  =10.88sqm  Operation slab=2x4x1.500x1.175  =14.10sqm  Side=2x2x4x1.500x0.15 =3.600sqm  Rail post=2x2x4x11x0.90x0.150  =23.76sqm  Railing beam bottom  = 2x2x2x2x9x0.150x0.912  =9.85sqm  Railing beam side  = 72x2x0.912x0.150  =19.70sqm  Sid beam bottom =  = 2x8.00x0.15 = 2.45 sqm  Grove = 1x2x2x4x4.05x0.350 =22.68sqm  = 126.55 sqm | 126.55  sqm |
| 82 | 76-630-10 | Supply and fitting and fixing 23cm wide P.V.C water stops having minimum strength of 13.80N/mm2 at 225% elongation and of approved quality in attraction and expansion joints with necessary arrangements for modification in shuttering and keeping the water stop in position etc. complete as per design, specification and direction of Engineer in charge. 76-630-10: 3 bulb type. | Supply P.V.C water stops having =  C/S&R/S Horizontal = 2x7.950 = 15.900 m  C/S&R/S vertical = 2x2x3.350 = 13.400 m  ­ = 29.300 m | 29.300  m |
| 83 | 56-430 | Filling up the expansion joints by asphalt, sand and jute waste etc. complete including supply of all materials and as per direction of Engineer in charge. | Expansion joints = 1x9.13 = 9.13 m | 9.13  m |
| 84 | 16-520-20 | Supplying and filling sand in foundation of hydraulic structures, buildings and in protective works with selected sand, in 150mm thick layer, including levelling, dressing, ramming, watering etc. complete (compacted to 50% relative density by manual laqbour using mallet/vibro compactor) as per direction of Engineer in charge. 16-520-20: Sand of FM>= 1.50 | Sand filling C/S&R/S Expansion joints  Bottom = 1x2x8.400x(2.700+1.80)x0.150  **= 5.670 cum**  Vertical = 1x2x2x4x4.05x(2.70+1.80)/2 0.15  **= 21.87 cum**  Apron bar= 2x15x(15.600+8.40)/2 0.150  **= 288.22 cum**  Barrel = 1x8.400x7.900x3.450x0.150  **=9.96 cum**  Return = 1x4x7.600x3.450x0.150  **= 15.74 cum**  **= 341.454 cum** | 341.454  cum |
| 85 | 40-610-20 | Supplying and laying dry 1st class or pick jhama chips as filter in two layers (top and bottom) as per specific size, range and gradation, including breaking chips, grading, preparation of surface, compacting each layer etc. complete with supply of all materials and as per direction of Engineer in charge.  40-610-20: Well graded between 40mm to 20mm size. | R/S Slope = 1x2x9.838x7.050x0.200  = 27.743 cum  R/S Flore = 1x15.00x6.00x0.200  = 18.000 cum  C/S Slope = 1x2x9.838x8.050x0.200  = 31.678 cum  C/S Flore = 1x15.00x8.00x0.200  = 24.00 cum  Top C/S= 1x2x13.350x0.600x0.200  = 3.204 cum  R/S = 1x2x15.300x0.600x0.200  = 3.684 cum  **­­­­­­­­­­­20mm to 5mm C/S &R/S**  Horizontal =1x2x9.00x(1.448+0.975)/2  x 0.150 = 3.271 cum  Vertical = 1x2x2x4.300x(1.448+0.975)/2  X 0.150 = 3.125 cum    **40mm to 20 mm**  Horizontal =1x2x8.700x(0.975+0.719)/2  x 0.150 = 2.223 cum  Vertical = 1x2x2x4.150x(0.975+0.719)/2  X 0.150 = 2.109 cum  ­­­­­­­­­­­­­­­­­­­­­ = 119.037 cum  50% 40mm to 20 mm =119.037x 50%  = 59.518 cum | 59.518 |
| 86 | 40-610-30 | Well graded between 20mm to 5mm size. (Combination of sub-item 10 & 30 or 20 & 30 shall be used) | 50% 20mm to 5 mm = 119.037x50%  =59.518 cum | 59.518  cum |
| 87 | 40-140-50 | Manufacturing and supplying C.C. blocks in leanest mix. 1:2:4 with cement, sand (FM>=1.5) and Stone Chips (40mm down graded) to attain a 28 days cylinder strength of 15 N/mm² including grading, washing stone chips, mixing, laying in forms, consolidation, curing for at least 21 days, including preparation of platform, shuttering and stacking in measurable stacks etc. complete including supply of all materials (steel shutter to be used) as per direction of Engineer in charge.block size 30cmx30cmx30cm | Manufacturing and supplying C.C. blocks  R/S slope = 1x2x13.150x9.838  = 256.771 sqm  R/S floor single Layer  = 1x1x15.00x6.00 = 90.00sqm  R/S floor double Layer  = 1x2x15.00x6.00 = 180.00sqm  C/S floor single Layer  = 1x15.00x8.00 = 120.00sqm  R/S floor double Layer  = 1x2x15.00x8.00 = 240.00sqm  Top C/S = 2x19.350x0.600 = 23.220sqm  Top R/S = 2x13.350x0.600 =16.020sqm  = 1261.486sqm  @ 0.90 sqm P/block = 1261.486 ÷0.090  = 14017 nos  Deduct 5% gap (-) 701  ­ = 13316.00 nos | 13316.000  nos |
| 88 | 40-220-10 | Labour charge for protective works in laying C.C. blocks of different sizes including preparation of base, watering and ramming of base etc. complete as per direction of the Engineer in charge.  40-220-10: Within 200m | Labour charge  Quantity of block  Same as iteam No: 25= 13316.00 Nos  Volume = 13316.00x0.300x0.300  = 359.532 cum | 359.532  cum |
| 89 | 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----------  = 1x16x1.700x0.150x0.010  = 0.048 cum  @7800 kg P/cum = 318.24kg  [D-16, @0.200](mailto:D-16@0.200) C/C  Placing length = 1.700m  Nos of length = 1.700÷0.200+1= 10 nos  Each bar length = 1.800 m  Total length=16x10x0.225  =36.00 x1.58 =56.88 kg  **Deck slab common flate plate**  =2x4x1.700x0.175x0.010 = 0.238 cum  @7800 kg P/cum = 185.64 kg  **Angle bar**  [D-16, @0.200](mailto:D-16@0.200) C/C  Placing length = 1.700m  Nos of length = 1.700÷0.200+1= 10 nos  Total length=8x10x0.225  =18.00 x1.58 =28.44 kg  Volume = 2x8.00x4.050x0.550x0.010  = 0.3564 cum  @ 7800 kg p/cum = 2779.92 kg  **Anchor bar**  [D-16, @0.200](mailto:D-16@0.200) C/C  Placing length = 4.0501.700m  Nos of Anchor bar = 4.050÷0.200+1  = 21 nos  Total length=2x3x8.00x21x0.225  =226.800m x1.58 =358.344 kg  = 3727.464 kg | 3727.464  kg |
| 90 | 80-230-40 | Supplying, laying, fitting and fixing of different dia G.I. pipes with all special fittings, such as bends, elbows, sockets, tees, unions, jam nuts etc. including cutting foundation trenches upto required depth where necessary and filling the same with earth duly compacted, making holes in floors and walls and clips, including cutting threads, making necessary connection etc. all complete including the cost of all materials as per direction of Engineer in charge.  80-230-40 . 40mm dia G.I. pipe line.. | **Supplying D-40 G.I Pipe post**  =1x2x1.125  = 4.50 nos | 4.50  nos |
| 91 | 76-240-40 | Manufacturing & Supplying of M.S. Vertical Lift Gate shutter of 8mm thick M.S. skin plate and stiffener with minimum75mm x 75mm x 10mm M.S. angle as frame, horizontal & vertical beam,t 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 | **M.S. Vertical Lift Gate shutter**  = 1.95x1.65 = 2 x 4  = 8 nos | 8.00  nos |
| 92 | 76-260-20 | Labour charge for fitting and fixing of M.S. vertical lift gate/flap gate shutters of different size including making holes in concrete for hooking arrangements with supply of necessary materials, tools and other accessories required for fitting the same to regulator/sluice and mending the damages with CC (1:2:4), removing the spoils etc. complete including the cost of all materials as per direction of Engineer in charge. 76-260-20: Size 1.95m x 1.35m or 1.95m x 1.65m | Labour charge for fitting and fixing of M.S. vertical lift gate = Same as Item No: 29  = 8 nos | 8.00  nos |
| 93 | 76-190 | Manufacturing, supplying and Installation of Padestal type lifting device for slide gate with 63mm dia threaded steel shaft, 146mm outer dia bronze nut, thrust bearing, steel bevel gear etc. as per approved design including supply of all components, labours with a prime coat of redoxide where necessary etc. complete including the cost of all materials as per specification and direction of Engineer in charge. | Manufacturing, supplying and Installation of Pedestal type lifting device  = 2x4 =8 nos | 8.00  nos |
| 94 | 16-140-10 | 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 includingthrowing the spoils to profile in layers not exceeding 150mm thickness withclod breaking to a maximum size of 100mm, removing roots & stumps oftrees of girth upto 200mm from the ground, benching the side slopes,stripping/ ploughing the base of embankment and borrowpit areas, dugbailing, bail out of water, rough dressing including 150mm cambering at thecentre of the crest (where necessary) etc. complete as per direction of Engineer in charge. 16-140-10: 0 m to 3 m height. | Approach road = 200x(4.300+11.80)/2 x1.25  =2012.50 cum | 2012.50  cum |
| 95 | 16-130 | Earth work by manual labour in all kinds of soil in excavation or re excavation of channels with the initial lead of 30m and lift of 1.5m including leveling, dressing and throwing the spoils to profile with breaking clods, rough dressing, clearing jungles including cutting trees upto 200mm girth, dug bailing etc. complete as per direction of Engineer in charge. | Excavation of cannel  C/S&R/S = 100.00x(15.00+20.220)/2 x1.740  = 3064.14 cum | 3064.140  cum |
| 96 | 16-200 | Extra rate for every additional lift of 1.0m or part thereof beyond the initial lift of 1.5m (30cm neglected) for all kinds of earth work. | Total earth same as Iteam No: 95  = 3064.14cum  Allowed 50% of earth= 3064.14 cum x50%  = 1532.070 cum | 1532.070  cum |
| 97 | 16-220 | Earth work by manual labour, in all kinds of soil in removing the crossbundh/ 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. | Earth work cross bund for channel  = 2x915.00+20.220)/2 x(3.00+9.74)/2 x1.74  =2x17.61x6.37x1.74  = 390.371 cum | 390.371  cum |
| 98 | 04-280-10 | Constructing at site, cement mortar gauge on masonry wall, including gengraving in meter, decimeter & centimeter, painting and figuring with black and red water proof paint, etc. complete as per direction of Engineer in charge. 04-280-10: 150mm x 25mm | Constructing at site, cement mortar gauge  =2x2.80 =5.600m | 5.60  m |
| 99 | 16-270-30 | Earth work by manual labour with clayey soil (minimum 30% clay, 0-40% silt and 0-30% sand) for closing breach or channel, with all leads and lifts within the channel width including profiling, clod breaking, ramming etc. complete as per specification and direction of Engineer in charge.  16-270-30: Up to 60m width. | Earth work  = 46.00m x(4.300+18.34)/2 x 2.226m  = 1159.122 cum | 1159.122  cum |
| 100 | 16-540-20 | Back filling in hydraulic structures including all leads and lifts in 150mmlayer including watering, ramming, compacting to 30% relative density etc. complete by compactor or any other suitable method as per direction of Engineer in charge.  16-540-20: Sand of FM>=0.80 | Return wall end C/S&R/S  = 2x2x(4.050+9.200) x (0.600+9.200)/2 x4.300 =2x2x6.625x4.90x4.300  = 558.355 cum  Return wall side C/S&R/S  =2x2x8.200x(0.600+9.200)/2 x4.300  =691.096 cum  Apron C/s &R/S = 2x2x(11.074+2.474)/2 x(0.600+9.20)/2 x4.300  =2x2x6.774x4.900x4.300 = 570.912 cum  Barrel = 1x2x7.900x(0.600+9.20)/2 4.300  =332.906 cum  ­­­­­­­­­­­­­­­­­­­­­­­­­­­­ = 2153.269 cum | 2153.269  cum |
| 101 | 16-530 | Back filling in hydraulic structures and slope building in protective works including all leads and lifts with selected local soil in layer of 150mm including watering, ramming etc. complete compacted to 20% relative method as per direction of Engineer in charge. | Earth filling Return wall C/S&R/S  End portion = 2x2x(5.450+14.050)/2 x (1.00+8.60)/2 x 4.300  =2x2x9.750x4.83x4.300 =809.991 cum  Return side = 2x2x2x8.200x(1.00+8.60)/2 x4.300  =2x2x2x8.200x4.800x4.300  =1353.984 cum  Apron C/S&R/S = 2x2x(11.074+2.474)/2 x4.900x4.300  =2x2x6.772x4.900x4.300 = 570.744 cum  Barrel = 2x7.900x(1.00+9.200)/2 4.300  = 346.494 cum  = 3081.213 cum  Deduct back filling Item no-100  = (3081.213-2153.269) = 927.944 cum | 927.944  cum |
| 102 | 68-130 | Supplying pressure treated wooden fall boards/stop logs of different sizes (not less than 15cm in depth) of sal, sundari, garjan, shishu or equivalent for regulator/ sluices, including fixing in position with eye hook etc. complete as per direction of Engineer in charge. | Supplying wooden Fall board  Placing Length = 4.050÷0.200+20  =20x0.150x0.200x1.700  = 8.160 cum | 8.16  cum |
| 103 | 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 turf grows properly, maintaining etc. complete (measurement will be given on well grown grass only). as per direction of Engineer in charge. | Turfing = 200.00x6.50  = 1300.00 sqm | 1300.00  sqm |
| 104 | 80-260-20 | 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 | Vent pipe  =1x2x4x2.200  = 17.600m | 17.60  M |
| 105 | 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 Item | 1 |
| 106 | Analysis Rate | Mobilize, strengthen required land based construction equipment such as excavator, dump truck, chain dozer, vibro-compactor, and plants such as generator for site electrification, digital camera for taking photographs and digital video camera for recording/Taking photograph all sequences of works etc for keeping records of the Works by providing following information including transfer to site, complete for the purposes stated in the Technical Specification and Contractor’s Method Statement and as per direction of Engineer in charge. | 1 Item | 1 |
| 107 | Analysis Rate | Provide and maintain 1 (one) no. Engine boat with boatmen having sun and rainproof cover to facilitate supervision by the Engineer/Engineer's Representative during whole construction period of the work as per Technical Specification, Contractor’s Method Statement and as per direction of Engineer in charge. | Engine boat = 1 Item x 60  = 60 day | 60.00  day |
| 108 | Analysis Rate | Providing and maintaining adequate portable water supply by installing 6 Nos. of tube well and sanitation facilities by installing 6 Nos. of sanitary latrines for usage of labours,officials and others for prevailing the hygenic and healthy environment at allover the working site As per direction of the Engineer in charge. | 1 Item | 1 |
| 109 | Analysis Rate | Operate , maintain of plant and equipment such as generator for site electrification, for the purpose stated in the Technical Specification and in the Contractor’s Method Statement and as per direction of Engineer in charge. | 1 Item | 1 |
| 110 | Analysis Rate | Demobilization and clean-up of the site upon completion of the works, as per Specifications and Contractor's Method Statement and as per direction of Engineer in Charge | 1 Item | 1 |

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