

COMPLETE BIDDING DOCUMENT VOLUME-II

Providing wire fencing around Govt. Land at Various Loctions in Padadhari Taluka Dist. Rajkot



GOVERNMENT OF GUJARAT
ROAD AND BUILDING DEPARTMENT

This is a generic SBD to be used for Civil works. Each user/concern department needs to examine and put up their particular bidding requirement like; qualification criteria, contract Data etc., marked at [#] while finalizing their own bidding process.

SECTION - 5
TECHNICAL SPECIFICATION

Name of work :: Providing Wire Fencing around Govt. Land at various locations in Padadhari Taluka Dist. Rajkot.

:: SPECIFICATION INDEX ::

Item No.	Item of work	Volume No.	Specification ItemNo.	Page No.	Remarks (Amendment in specification which will be binding upon the contractor upto completion of the work)
1	2	3	4	5	6
1	Providing and fixing Wire Fencing (3 Row) including fixing precast polls at an intervals of 3.00 meters including cost of all materials, conveyance, GST and other taxes as may be admissible and labour charges	I	1	As per detailed specification attached herewith	The Wire fencing shall be fixed at various location in Padadhari taluka as finalized by the Engineer-in-Charge. The Fencing is to be fixed at a distance of 3.00 meters at all the locations. Foundation for fencing shall be excavated and then precast RCC Poles of appropriate size shall be fixed in this pit. The pit shall be finished with Cement Concrete 1:3:6.after fixing the poles.

Signature of contractor

Deputy Executive Engineer,
District (R&B) Sub-Division,
Rajkot.

Executive Engineer
District (R&B) Division
Rajkot.

Name of work :: Providing Wire Fencing around Govt. Land at various locations in Padadhari Taluka Dist. Rajkot.

SPECIFICATIONS OF MATERLAIS (For Road and Bridge works)

M-1 Water

1.1 Water shall not be salty or brackish and shall be clean, **reasonably clear and free from objectionable** quantities of silt and traces of oil and injurious alkalies, salts, organic matter and other deleterious material which will either weaken the mortar or concrete or cause efflorescence or attack the steel in R.C.C. Container for transport, storage and handling of water shall be clean. Water shall conform to the standards specified in I.S. 456-1978.

1.2. If required by Engineer-in-charge it shall be tested by comparison with distilled water. Comparison shall be made by means of standard cement tests for soundness, time of setting and mortar strength as specified in I.S. 269-1976. Any indication of unsoundness, change in time of setting by 30 minutes or more or decrease of more than 10 per cent in strength of mortar prepared with water sample when compared with the results obtained with mortar prepared with distilled water shall be sufficient cause for rejection of water under test.

1.3. Water for curing mortar, concrete or masonry should not be too acidic or too alkaline. It shall be free of elements which significantly affect the hydration reaction or otherwise interfere-with the hardening of concrete during curing or those which produce objectionable stains or other unsightly deposits on concrete or mortar surfaces.

1.4. Hard and bitter water shall not be used for curing.

1.5. Potable water will be generally found suitable for curing mortar or concrete. **M-2. Lime**

2. 1 Lime shall be hydraulic lime as per I.S. 712-1973. Necessary test shall be carried out as per I.S. 6932 (Parts I to X), 1973.

2.2 The following field tests for times are to be carried out:

(1) A very rough idea can be formed about the type of lime by its visual examination i.e. fat lime bears pure white colour, lime in form of porous lumps of dirty white colour indicates quick lime, and solid lumps are unburnt lime stone.

(2) Acid tests for determining the carbonate content in lime. Excessive amount of impurities and rough determination of class of lime.

2.3 Storage shall comply with I.S. 712-1973. The slaked lime, if stored, shall be kept in a weather proof and damp-proof shed with impervious floor and sides to protect it against rain, moisture, weather and extraneous materials mixing with it. All lime that has been damaged in any way shall be rejected and all rejected materials shall be removed from site of work.

2.4 Field testing shall be done according to I.S. 1624- 1974 to show the acceptability of materials.

M-3. Cement

3.1 Cement shall be ordinary portland slag cement as per I.S. 269-1976 or Portland slag cement as per I.S. 455-197,6.

M-4. White Cement

4.1 The white cement shall conform to I.S. 804112-E 1978.

M-5. Coloured Cement

5.1 Coloured cement shall be with white or gray portland cement as specified in the item of the work.

5.2. The pigments used for coloured cement shall be of approved quality and shall not exceed 10% of cement used in the Mix. The mixture of pigment shall be properly grounded to have a uniform

colour and shade. The pigments shall have such properties to provide for durability under exposure to sunlight and weather.

5.3. The pigment shall have the property such that it is neither affected by the cement nor detrimental to it. **M-6. Sand**

6.1. Sand shall be natural sand, clean, well graded, hard strong durable and gritty particle free from injurious amounts of dust clay, kankar nodules, soft or flaky particles shale, alkali, salts organic matter, loam, mica or other deleterious substance and shall be got approved from the Engineer-in-charge. The sand shall not contain more than 8 percent of silt as determined by field test. If necessary the sand shall be washed to make it clean.

6.2. Coarse Sand:

The fineness modulus of coarse sand shall not be less than 2.5 and shall not exceed 3.0. The sieve analysis of coarse sand shall be as under.

L S. Sieve Designation	Percentage by Weight Passing sieve	I S. Sieve Designation	Percentage by Weight Passing through sieve
4.75 mm.	100	600 Micron	30-100
2.36 mm.	90 to 100	300 Micron	5-70
1.18 mm.	70-100	150 Micron	0-50

6.3. Fine Sand:

The fineness modulus shall not exceed 1.0. The sieve analysis of fine sand shall be as under:

L S. Sieve Designation	Percentage by Weight Passing sieve	I S. Sieve Designation	Percentage by Weight Passing through sieve
4.75 mm.	100	600 Micron	40-85
2.36 mm.	100	300 Micron	5-50
1.18 mm.	70-100	150 Micron	0-10

M-7. Stone Dust:

7. 1. This shall be obtained from crushing hard black trap or equivalent. it shall not contain 'more than 8%' silt as determined by field test with measuring cylinder. The method of determining silt contents- by field test is given as under:

7.2. A sample of stone dust to be tested shall be placed without. drying in 200 mm. measuring cylinder. The quantity of the sample shall be such, that it fills the cylinder upto 100 mm. mark. The clean water shall be added upto 150 mm. Mark, The mixture shall be stirred vigorously and the content allowed to settle for 3 hours.

7.3. The height of silt visible as settled layer above the stone dust shall be expressed as percentage of the height of the stone dust below. The stone dust containing more than 8% silt shall be washed so as to, bring the silt content within the allowable limit.

7.4. The fineness modulus of stone dust shall not be less than 1.80.

M-8. Stone Grit

8.1. Grit shall consist of crushed or broken stone and be hard strong, dense, durable, clean, of proper gradation and free from skin or coating likely to prevent adhesion of mortar. Grit shall generally be cubical in shape and as far as possible flaky elongated pieces shall be avoided. It shall generally comply with the provisions of I.S. 383-1970. Unless special stone of particular quarries is mentioned, grit shall be obtained from the best black trap or equivalent hard stone as approved by the Engineer-in-charge. The grit shall have no deleterious reaction with cement.

8.2. The grit shall conform to the following gradation as per sieve analysis

L S. Sieve Designation	Percentage by Weight Passing sieve	I S. Sieve Designation	Percentage by Weight Passing through sieve
12.50 mm	100 %	4.75 mm	0-20 %
10.00 mm	80-100 %	2.36 mm	0-25 %

8.3. The crushing strength of grit will be such as to allow the concrete in which it is used to built up the specified strength of concrete.

8.4. The necessary tests for 'grit shall carried out as per the requirements of I.S. 2386 (Parts I to VII) 1963, as per instructions of the Engineer-in-charge. The necessity of test will be decided by the Engineer-in-charge.

M-9. Cinder:

9.1 Cinder is well burnt furnace residue which has been fused or sintered into lumps of varying sizes.

9.2. Cinder aggregates shall be well burnt furnace residue obtained from furnace using coal fuel only. It shall be sound clean free from clay, dirt, ash or other deleterious matter.

9.3. The average grading for cinder aggregates shall be as mentioned below:

L S. Sieve Designation	Percentage Passing	I S. Sieve Designation	Percentage Passing
20 mm	100	4.75 mm	70
10 mm	86	2.36 mm	52

M-10. Lime Mortar

10. 1. Lime shall conform to specification M-2. Water shall conform to specification M-1.

Sand shall conform to specification M-6.

10.2. Proportion of Mix:

10.2.1. Mortar shall consist of such proportions of slaked lime and sand as may be specified in the item. The slaked lime and sand be measured by volume. **10. 3. Preparation of mortar:** **10.3. 1.** Lime mortar shall be prepared by wet process as per I.S. 1625-1971. Power driven mill shall be used for preparation of lime mortar. The slaked lime shall be placed in the mill in an even layer and ground for the 180 revolutions with a sufficient water. Water shall be added as required during grinding (care being taken not to add more water) that will bring the mixed material to a consistency of stiff paste. Thoroughly wetted sand shall then be added evenly and the mixture ground for another 180 revolutions.

10.4. Storage

10.4. 1. Mortar shall always be kept damp, protected from sun and rain till used up, covering, it by tarpaulin or open sheds.

10.5. Use

10.5. 1. All mortar shall be used as soon as possible after grinding. It should be used on the day on which it is prepared. But in no case mortar made earlier than 36 hours shall be permitted for use.

M- 11. Cement Mortar

11. 1. Water shall conform to specification M71. Cement shall conform to specification M-3. Sand shall conform to

M-6. 11. 2. Proportion of Mix

11.2.1. Cement and sand shall be mixed to specified proportion, sand being measured by-measuring boxed.

The proportion of cement will be by volume on the basis of 50 Kg./Bag of cement being equal to 0.0342

Cu.m. The mortar may be hand mixed or machine mixed as directed.

11.3. Preparation of mortar

11.3.1 In hand mixed mortar cement and sand in the specified proportions shall be thoroughly mixed dry on a clean impervious platform by turning over at least 3 times or more till a homogenous mixture of uniform colour is obtained. Mixing platform shall be so arranged that no deleterious extraneous material shall get mixed with mortar or mortar shall flow out. While mixing, the water shall be gradually added and thoroughly mixed to form a stiff plastic mass of uniform colour so that each particle of sand shall be completely covered with a film of wet cement. The water cement ratio shall be adopted as directed.

11.3.2 The mortar so prepared shall -be used, within 30 minutes of adding water. Only such quantity of mortar shall be prepared as can be used within 30 minutes.

M- 12. Stone Coares Aggregate for Nominal Mix Concrete

12. 1. Coarse aggregate shall be machine crushed stone of black trap or equivalent and be hard, strong, dense, durable, clean and free from skin and coating likely to prevent proper adhesion of mortar.

12.2. The aggregate shall generally be cubical in shape. Unless special stones of particular quarries are mentioned aggregates shall be machine crushed from the best black trap or equivalent hard stone as approved. Aggregate shall have no deleterious reaction with cement. The size of the coarse aggregate for plain cement concrete and ordinary reinforced cement concrete shall generally be as per the table given below.

However in case (if reinforced cement concrete the maximum limit may be restricted to 6 mm. less than the minimum lateral clear distance between bars or 6 mm. less than the cover, whichever is smaller.

TABLE

I.S. Sieve Designation	Percentage passing for single sized aggregates of Nominalsize			I.S. Sieve Designation	Percentage passing for single sized aggregates of Nominalsize		
	40 mm	20 mm	16 mm		40 mm	20 mm	16 mm
80 mm	-	-	-	12.5 mm	-	-	-
63 mm	100	-	-	10 mm	0.5	0.02	0.30
40 mm	85-100	100	-	4.75 mm	-	0.5	0.5
20 mm	0-20	85-100	100	2.35 mm	-	-	-
16 mm		-	85-100				

Note : This percentage may be varied some what by Engineer- in-charge when considered necessary for obtaining better density and strength of concrete.

12.3. The grading test shall be taken in the beginning and at the change of source of materials. The necessary test indicated in I.S. 383-19710 and I.S. 456-1978 shall have to be carried out to ensure the acceptability. The aggregates shall be stored separately and handled in such a manner as to prevent the intermixing of different aggregates. If the aggregates are covered with dust, they shall be washed with water to make them clean.

M- 13. Black Trap or Equivalent Hard Stone Cores.

13.1. Aggregate For Design Mix Concrete : Coarse aggregate shall be of machine crushed stone of black trap or equivalent hard stone and be hard strong dense, durable clean and free from skin and coating likely to prevent proper adhesion of mortar.

13.2. The aggregates shall generally be cubical in shape, Unless special stones of particular quarries are mentioned, aggregates shall be machine crushed from the best, black trap or equivalent hard stones as approved. Aggregate shall have no deleterious reaction with cement.

13.3. The necessary tests indicated in I.S. 383-1970 and I.S. 456-1978 shall have to be carried out to ensure the acceptability of the material.

13.4. If aggregate is covered with dust it shall be washed with water, to make it clean.

M-14. Brick Bats Aggregate

14.1. Brick bat aggregate shall be broken from well burnt or slightly over burnt and dense brick. It shall be homogeneous in texture roughly cubical in shape, clean and free from dirt of any other foreign material. The brick bats shall be of 40 mm. to 50 mm. size unless otherwise specified in the item. The underburnt over burnt brick bats shall not be allowed.

14.2. The brick bats shall be measured by volume by suitable boxes or as directed.

M- 15. Brick

15. 1. The bricks shall be hand or machine moulded and made from suitable soils and kiln-burnt. They shall be free from crack and nodules of free lime. They shall have smooth rectangular faces with sharp corners and shall be of uniform colour.

The bricks shall be moulded with a frog of 100 mm. x 40 mm. and 10 mm. to 20 mm. deep on one of its flat sides. The bricks shall not break when thrown on the ground from a height of 600 mm.

15.2. The size of modular bricks shall be 190 mm. x 90 mm. x 90 mm.,

15.3. The size of the conventional bricks shall be as under
(9" X 4.3/8" X 2.3/4") 225 X 110 X 75 mm.

15.4. Only bricks of one standard size shall be used on one work. The following tolerances shall be permitted in the conventional size adopted in a particular work.

Length + 1/81"(3.0 mm.) Width: + 1/1611 (1.50 mm.) Height: \pm 1/611 (1.50 mm.)

15.5. The crushing strength of the bricks shall not be less than 35 Kg./Sq.Cm. The average water absorption shall not be more than 20 percent by weight. Necessary tests for crushing strength and water absorption etc. shall be carried out as per I.S. 3495 (Part-I to IV) 1976.

M- 16 Stone

16.1. The stone shall be of the specified variety such as Granite / Trap Stone / Quartzite or any other type of good hard stones. The stones shall be obtained only from the approved quarry and shall be hard, sound, durable and free from defects like cavities, cracks, sand holes, flaws, injurious veins, patches of loose or soft materials etc. and weathered portions and other structural defects or imperfections tending to affect their soundness and strength. The stone with round surface shall not be used. The percentage of water absorption shall not be more than 5% of dry weight, when tested in accordance with I.S. 1134- 1974. The minimum crushing strength of the stone shall be 200 Kg./Sq.Cm. unless otherwise specified.

16.2. The samples of the stone to be used, shall be got approved before the work is started.

16.3. The Khanki facing stone shall be dressed by chisel as specified in the item "or khanki facing in required shape and size. The face of stone shall be so dressed that the bushing, on the exposed face shall not project by more than 40 mm. from the general wall surface and on face to be plastered it. shall not project by more than 19 mm. nor shall it have depressions more than 10mm. from the average wall surface.

M- 17. Laterite Stone

17. 1. Laterite stone shall be obtained from the approved quarry. It shall be compacted in texture, sound, durable and free from soft patches. It shall have a minimum crushing strength of 100 Kg./Sq.Cm. in its dry condition. It shall not, absorb water more than 20% of its own weight when immersed for 24 hours in water. After quarrying the stone shall be allowed to weather for some time before using in work.

17.2. The stone shall be dressed into regular rectangular blocks so that all faces are free from waviness and unevenness, edges true and square.

17.3, Those types of stone in which white clay occurs, should not be used.

17.4 Special corner stones shall be provided where so directed.

M- 18. Mild Steel Bars

18.1. Mild steel bars reinforcement for R.C.C. work shall conform to I.S. 432 (Part-11) 1966 and shall be of tested quality. It shall also comply with relevant part. of I.S. 456- 1978.

18.2. All the reinforcement shall be clean and free from dirt, paint, grease, mill scale or loose or thick rust at the time of placing.

18.3. For the purpose of payment, the bar shall be measured correct upto 100 mm. length and weight payable worked out at the rate specified below

1	6 mm	0.22 Kg/Rmt	8	20 mm	2.47 Kg/Rmt
2	8 mm	0.39 Kg/Rmt	9	22 mm	2.98 Kg/Rmt
3	10 mm	0.62 Kg/Rmt	10	25 mm	3.85 Kg/Rmt
4	12 mm	0.89 Kg/Rmt	11	28 mm	4.83 Kg/Rmt
5	14 mm	1.21 Kg/Rmt	12	32 mm	6.31 Kg/Rmt
6	16 mm	1.58 Kg/Rmt	13	36 mm	7.99 Kg/Rmt
7	18 mm	2.00 Kg/Rmt	14	40 mm	9.86 Kg/Rmt

M-19. High Yield Strength Steel Deformed Bars

19.1. High yield strength steel deformed bars be either cold twisted or hot rolled, shall conform to I.S. 11739-1966 and I.S. 11,39-1966 respectively.

19.2. Other provision and requirements shall conform to No. M-18 for Mild steel bars.

M-20 High Tensile Steel Wires

20.1. The high tensile wires for the use in prestressed concrete work shall conform to I.S. 2090-1962.

20.2. The tensile strength of the high tensile steel bars shall be as specified in the Item. In absence of the given strength, the minimum Strength shall be taken as per para 6.1 of I.S. 1785-1962. Testing, shall be done per I.S. requirements.

20.3. The high tensile steel shall be free from loose mill scale, rust oil, grease, or any other harmful matter. Cleaning of steel bars may be carried out by immersion in solvent solution, wire brushing or passing through a pressure box containing carborundum.

20.4. The high tensile wire shall be obtained from manufactures in coil having diameter not less than 350 times the diameter of wire its(-If so that wire springs back straight on being uncoiled.

Name of work :: Providing Wire Fencing around Govt. Land at various locations in Padadhari Taluka Dist. Rajkot.

:: ITEMWISE SPECIFICATION FOR THIS WORK ::

Item No. 1 :: Providing and fixing Wire Fencing (3 Row) including fixing precast polls at an intervals of 3.00 meters including cost of all materials, conveyance, GST and other taxes as may be admissible and labour charges

1.0. Materials :

(1) Wire shall conform to M-1. (2) Barbed wire shall conform to M-78. (3) Precast C.C. Bankada shall be casted in M-200 grade concrete.

2.0. Workmanship

2.1. The pits of the size 0.5 M. x 0.5 M. x 0.5 M. shall first be excavated, true to line and level to receive the post at 2.5 M, CIC. as per following specification

[a] Excavation ::

1.0. General

1.1 Any soil which generally yields to the application of pickaxes and shovels, phawaras, rakes or any such ordinary excavating implement or organic soil, gravel, silt, sand turf loam, clay, peat etc., fall under this category.

2.0. Clearing the site

2.1. I The site on which the structure is to be built shall be Cleared and all obstructions, loose stone, materials and rubbish of all kind, bush, wood and trees shall be removed as directed. The materials so obtained shall be property of the Government and be conveyed and stacked as directed within 50 M. lead. The roots of the trees coming in the sides shall be cut and coated with a hot asphalt,

2.2. The rate of site clearance is deemed to be included in the rate of earth work for which no extra will be paid.

3. 0. Setting out

After clearing the site, the center lines will be given by the Engineer-in-charge. The contractor shall assume full responsibility for alignment, elevation and

dimension of each and all parts of the work. Contractor shall supply labourers, materials, etc. required for setting out the reference marks and bench marks and shall maintain them as long as required and directed.

4.0 Excavation :

The excavation in foundation shall be carried out in true line and level and shall have the width and depth as shown in the drawings or as directed. The contractor shall do the necessary shoring" and shutting or providing necessary slopes to a safe angle, at his own cost. The payment for such precautionary measures shall be paid separately if not specified. The bottom of the excavated area shall be levelled both longitudinally and transversely as directed by removing and watering as required. No earth filling will be allowed for bringing it to level, if by mistake or any other reason excavation is made deeper or, wider than shown on the plan or directed. The extra depth or width shall be made up with concrete of same proportion as specified for the foundation concrete at the cost of the contractor. The excavation upto 1.5 m. depth shall be measured under this item.

5.0. Disposal of the excavated stuff:

5.1. The excavated stuff of the selected type shall be used in filling the trenches and plinth or levelling the ground in layers including ramming and watering etc.

5.2. The balance of the excavated quantity shall be removed by the contractor from the site of work to a place as directed with lead upto 50 M. and all lift.

2.2. The pits shall be filled with a layer of 0.15 M. thick with lean concrete 1:5:10 (1 cement : 5 sand : 10 graded brick bat aggregates 40 mm. nominal size). The M. S. angle 40 mm. x 40 mm, x 6 mm. shall be then placed over the concrete in true to line and plumb. The remaining portion of block shall be filled in with lean concrete 1:5:10 and rammed properly so as to form total 0.5 M. x 0.5 M. x 0.5 M. concrete block. The concrete shall be cured for 7 days to allow it to set.

2.3. The barbed wire shall be stretched and fixed in 5 horizontal rows and two diagonals. The bottom row shall be 140 mm above ground and the rest. at 125

min. centre to centre. The diagonal shall be stretched between adjacent posts from top wire of one post to the bottom wire of 2nd **post**.. The wires shall be fixed to posts by means of staples. The M. S. Angle posts shall be, painted with 3) coats of oil paint of approved tint and shade.

[6] Fixing of Precast poll of appropriate size

The precast C.C. poles casted in M-200 grade concrete shall be brought to the site of the work and it shall be fixed on the Excavated pits as directed. The poles shall be covered with Cement Mortar 1:3:6 or as directed.

[7] Fixing of Barbed wires

The barbed wire shall be stretched and fixed in 5 horizontal rows and two diagonals. The bottom row shall be 140 mm above ground and the rest. at 125 min. centre to centre. The diagonal shall be stretched between adjacent posts from top wire of one post to the bottom wire of 2nd **post**.. The wires shall be fixed to posts by means of staples.

[7] Mode of Measurement and payment ::

7.1. The work shall be measured for the finished work from centre to centre of the posts.

7.2. The rate shall include the cost of all labour and materials involved in the operations described above.

7.3. The rate shall be for a unit of one running metre.