

**NAME OF WORK:** *Providing Facilities For Disable Persons at Kumar Chhatralay  
Radhanpur Ta: Radhanpur Dist: Patan*

## **SPECIFICATION**

### **Item No.1**

**Providing and fixing coloured self adhesive PU-Tactile tile, ground surface indicators (made of Polyurethane) of size 300mmx300mm for guiding/direction/warning to the visually impaired visitors in the centre/side of the pedestrian/approach pathway as per design/specification and guidelines complete in all respect to the entire satisfaction of Engineer-in-charge (NS)**

The item itself specifies the requirement for supply and fixing of PU tactile tiles, ground surface indicators (made of Polyurethane) of size 300mmx300mm for guiding/direction/warning to the visually impaired visitors in the center/side of the pedestrian/approach pathway as per design/specification and guidelines complete.

The PU tactile tile shall be fitted on sun-board if installed on wall surface and direct application if any other surface. The quoting price should be inclusive of all types of taxes & duties, packing, forwarding, loading, unloading, installation

Work shall be carried out As Per Direction & Instruction Of The Engineer In Charge.

### **1 Mode of Measurement**

Measurement shall be on **Smt** basis

The payment shall be made on **Smt basis**

## **Item No.2**

**Providing and fiixing acrylic multilingual Braille (raised dots) DIRECTIONAL SIGNBOARDS of size 6" x 9" designed as per accessibility standards and having 4mm thick acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate and having a non-glare acrylic cut arrow pointing in the required direction. Each signboard to be fixed as per manufacturers specifications on the wall at the approved location and at a height of 1200mm from FFL complete as per design/specificaitons and guidelines as per the entire satisfaction of the the Engineer-in-charge (NS)**

The item itself specifies the requirement for supply and fixing of acrylic multilingual Braille (raised dots) DIRECTIONAL SIGNBOARDS of size 6" x 9" designed as per accessibility standards and having 4mm thick acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate and having a non-glare acrylic cut arrow pointing in the required direction. Each signboard to be fixed as per manufacturers specifications on the wall at the approved location and at a height of 1200mm from FFL complete as per design/specificaitons and guidelines complete.

The quoting price should be inclusive of all types of taxes & duties, packing, forwarding, loading, unloading, installation

Work shall be carried out As Per Direction & Instruction Of The Engineer In Charge.

### **1 Mode of Measurement**

Measurement shall be on No basis

The payment shall be made on No basis

### **Item No.3**

**Providing and fixing acrylic multilingual Braille (raised dots) signboards (DOOR SIGNBOARDS) of size 6"x 9" for room titles, designed as per the drawings issued and having 4mm thick blue acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word/s written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate. Grade 2/ Grade 1 Braille to be integral with the sign face and be raised 0.5mm above base plate. Each signboard to be fixed as per manufacturers specifications on the wall adjoining the respective room door at a height of 1200mm from FFL complete as per design/specifications and guidelines as per the entire satisfaction of the the Engineer-in-charge (NS)**

The item itself specifies the requirement for supply and fixing of acrylic multilingual Braille (raised dots) signboards (DOOR SIGNBOARDS) of size 6"x 9" for room titles, designed as per the drawings issued and having 4mm thick blue acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15mm raised not less than 0.8mm above base plate and the equivalent word/s written in Hindi with Devanagari non glare acrylic letters of height 15mm raised not less than 0.8mm above base plate. Grade 2/ Grade 1 Braille to be integral with the sign face and be raised 0.5mm above base plate. Each signboard to be fixed as per manufacturers specifications on the wall adjoining the respective room door at a height of 1200mm from FFL complete as per design/specifications and guidelines complete.

The quoting price should be inclusive of all types of taxes & duties, packing, forwarding, loading, unloading, installation

Work shall be carried out As Per Direction & Instruction Of The Engineer In Charge.

### **1 Mode of Measurement**

Measurement shall be on No basis

The payment shall be made on No basis

#### **Item No.4**

**Providing & Fixing of Pictorial layout plan of size 900mmx600mm as approved design, made of 3mm thick acrylic non glare base plate and non glare cut out symbols with grade One Braille on which individual facility points, like inquiry, reception, restrooms, medical room/ first aid, cafeteria or breakout area, lounge, meeting room, conference room etc. present the respective floors with pictograph wherever needed all in tactile raised by minimum of 1to2 mm in various colours to make it legible for seniors, partial vision impaired etc. All the facility names should be in Braille, along with English or Hindi. The entire block of tactile signs should be mounted on wall or on a slant/ inclined frame for easy reading. The map to be installed at specified locations and installed at a height of 800mm from ground level complete in all respect as per Harmonized guideline & satisfaction of Engineer-in-charges. ( N.S)**

The item itself specifies the requirement for supply and fixing of Pictorial layout plan of size 900mmx600mm as approved design, made of 3mm thick acrylic non glare base plate and non glare cut out symbols with grade One Braille on which individual facility points, like inquiry, reception, restrooms, medical room/ first aid, cafeteria or breakout area, lounge, meeting room, conference room etc. present the respective floors with pictograph wherever needed all in tactile raised by minimum of 1to2 mm in various colours to make it legible for seniors, partial vision impaired etc. All the facility names should be in Braille, along with English or Hindi. The entire block of tactile signs should be mounted on wall or on a slant/ inclined frame for easy reading. The map to be installed at specified locations and installed at a height of 800mm from ground level complete in all respect as per Harmonized guideline complete.

The quoting price should be inclusive of all types of taxes & duties, packing, forwarding, loading, unloading, installation

Work shall be carried out As Per Direction & Instruction Of The Engineer In Charge.

#### **1 Mode of Measurement**

Measurement shall be on No. basis

The payment shall be made on No. Basis

#### **Item No.5**

**Providing and Fixing Ramp Railing Braille Signage of Size 200x50mm Made From 0.5mm SS 304 Grade Matt Finish Braille dots of 1.5mm braille dots are embossed precisely and are uniform in Size and spacing of Required location with required texts as per Instruction of Engineer in Charge.**

The item itself specifies the requirement for Ramp Railing Braille Signage of Size 200x50mm Made From 0.5mm SS 304 Grade Matt Finish Braille dots of 1.5mm braille dots are embossed precisely and are uniform in Size and spacing of Required location with required texts as per Instruction of Engineer in Charge..

The quoting price should be inclusive of all types of taxes & duties, packing, forwarding, loading, unloading, installation

Work shall be carried out As Per Direction & Instruction Of The Engineer In Charge.

#### **1 Mode of Measurement**

Measurement shall be on **No.** basis

The payment shall be made on **No.** Basis

#### **Item No.6**

**Road marking with hot applied thermoplastic paints with reflectorising glass beads on bitumin surface providing and laying a hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads @ 250gms per sqm area, thickness of 2.5mm is excluding of surface applied glass beds as per IRC:35-2015. The finished surface to be level, uniform and free from streaks and holes. zebra patta /bump patta lane/center line/ edge line/cut patta. The white color marking should provide luminance coefficient on cement road shall be min 130 mcd/m<sup>2</sup>/lux and Asphalt road shall be min 100 mcd/m<sup>2</sup>/lux during the service life during the day time. The marking should meet the performance criteria for night time reflectivity, wet reflectivity and skid resistance as mentioned in the section-15 of IRC 35-2015. Warranty for the Retro reflectivity should be two years.**

#### **ROAD MARKINGS:-**

General :-The colour, width and layout of road markings shall be in accordance with the Code of Practice for Road Markings with paints, IRC : 35 - 2015, and as specified in the drawings or as directed by the Engineer.

**Materials:-**

Road markings shall be of ordinary road marking paint, hot applied thermoplastic compound, or reflectorised paint as specified in the item and the material shall meet the requirements as specified below.

**Hot Applied Thermoplastic Road Marking****:- General:-**

- (i) The work under this section consists of marking traffic stripes using a thermoplastic compound meeting the requirements specified herein.
- (ii) The thermoplastic compound shall be screened extruded on to the pavement surface in a molten state by suitable machine capable of controlled preparation and laying with surface application of glass beads at a specific rate. Upon cooling to ambient pavement temperature, it shall produce an adherent pavement marking of specified thickness and width and capable of resisting deformation by traffic.
- (iii) The colour of the compound shall be white or yellow OS colour No. 356) as specified in the drawings or as directed by the Engineer.
- (iv) Where the compound is to be applied to cement concrete pavement, a scaling primer is recommended by the manufacturer, shall be applied to the pavement in advance of placing of the stripes to ensure proper bonding of the compound. On new concrete surface any laitance and/or curing compound shall be removed before the markings are applied

**Thermoplastic Material:**

General:- The thermoplastic material shall be homogeneously composed of aggregate, pigment, resins and glass reflectorizing beads

**Requirements:-**

Composition: The pigment, beads and aggregate shall be uniformly dispersed in the resin. The material shall be free from all skins, dirt and foreign objects and shall comply with requirements indicated in Table below:

Table : PROPORTIONS OF CONSTITUENTS OF MARKING MATERIAL

(Percentage by weight)

Component	White	Yellow
Binder	18.0 Min.	18.0 Min.
Glass Beads	30-40	30-40
Titanium Dioxide	10.0 min.	--
Calcium Carbonate and Inert fillers	42.0 Max.	Refer Note
Yellow Pigments	--	Refer Note

Note:- Amount of yellow pigment, calcium carbonate and inert fillers shall be at the option of the manufacturer, provided all other requirements of this specification are met.

Properties:- The properties of thermoplastic material, when tested in accordance with ASTM D36/BS-3262-(Part-I), shall be as below:

(i)(a)Luminance:-

White: Day light luminance at 45 degree-65 per cent min. as per AASHTO M-249 Yellow:

Day light luminance at 45 degrees-45 per cent min. as per AASHTO M-249.

(b) Drying time: When applied at a temperature specified by the manufacturer and to the required thickness, the material shall set to bear traffic in not more than 15 minutes.

(c) Skid resistance: not less than 45 as per BS 6044.

(d) Cracking resistance at low temperature: The material shall show no cracks on application to concrete blocks.

(e) Softening point: 102.5;±9.5 degree Celsius per ASTM D-36.

(f) Flow resistance: Not more than 25 per cent as per AASHTO M-249.

(ii) Yellowness index (for white thermoplastic paint): not more than 0.12 as per AASHTO M-249.

(iii) Storage life:-The material shall meet the requirements of these specifications for a period of one year. The thermoplastic material must also melt uniformly with no evidence of skins or unmelted particles for the one year storage period. Any material not meeting the above requirements shall be replaced by the manufacturer/supplier/contractor.

(iv) Reflectorisation:- Shall be achieved by incorporation of beads, the grading and other properties of the beads shall be as specified in Reflectorising glass beads.

(v) Marking:- Each container of the thermoplastic material shall be clearly and indelibly marked with the following information:

1. The name, trade mark or other means of identification of manufacturer
2. Batch number
3. Date of manufacturer
4. Colour (white or yellow)
5. Maximum application temperature and maximum safe heating temperature.

(vi) Sampling and testing: The thermoplastic material shall be sampled and tested in accordance with the appropriate ASTM/BS method. The contractor shall furnish to the employer a copy of certified test reports from the manufacturers of the thermoplastic material showing results of all tests specified herein and shall certify that the material meets all requirements of this specification.

#### **REFLECTORISING GLASS BEADS:-**

General:- This specification covers two types of glass beads to be used for the production of reflectorised pavement markings.

Type-1 beads are those which are a constituent of the basic thermoplastic compound vide above table and beads are those which are to be sprayed on the surface vide Clause table.

The glass beads shall be transparent, colourless and free from milkiness, dark particles and excessive air inclusions.

These shall conform to the requirements spelt out in Clause table.

**Specific requirements:-**

- (A) Gradation:- The glass beads shall meet the Gradation requirements for the two types as given table below:

**GRADATIN REQUIREMENTS FOR GLASS BEADS**

Sieve Size	Per Cent retained	
	Type-1	Type-2
1.18 mm	0 to 3	--
850 Micron	5 to 20	Oto 5
600 Micron	--	5 to 20
425 Micron	65 to 95	
300 Micron	--	30 to 75
180 Micron	0 to 10	10 to 30
below 180 Micron	---	Oto 5

- (B) Roundness:- The glass beads shall have a minimum of 70 per cent true spheres.
- (C) Reflective Indes:-The glass beads shall have a minimum reflective index of 1.50.
- (D) Free flowing properties:-The glass beads shall be free of hard lumps and clusters and shall dispense readily under any conditions suitable for paint striping. They shall pass the free flow test.

**Test Methods: The specific requirements shall be tested with the following methods:**

- (i) Free flow test: Spread 100 grams of beads evenly in a 100 mm diameter glass dish. Place the dish in a 250 mm inside diameter desiccator which is filled within 25 mm of the top of a desiccator plate with sulphuric acid water solution. Cover the desiccator and let it stand for 4 hours at 20 to 29 degree C. Remove sample from desiccator, transfer beads to a pan and inspect for lumps or clusters. Then pour beads into a clean, dry glass funnel having a 100 mm stem and 6 mm orifice. If necessary, initiate flow by lightly tapping the funnel. The glass spheres shall be essentially free of lumps and clusters and shall flow freely through the funnel.
- (ii) The requirements of gradation, roundness and refractive index of glass beads and the amount of glass beads in the compound shall be tested as per BS 3262 (Part-I).
- (iii) The Contractor shall furnish to the employer a copy of certified test reports from the manufacturer of glass beads obtained from a reputed laboratory showing results of all tests specified herein and shall certify that the material meets all requirements of this specification. However, if so required, these tests may be carried out as directed by the Engineer.

**Application properties of thermoplastic material:-**



The thermoplastic material shall readily get screeded/extruded at temperatures specified by the manufacturers for respective method of application to produce a line of specified thickness which shall be continuous and uniform in shape having clear and sharp edges. The material upon heating to application temperatures, shall not exude fumes, which are toxic, obnoxious or injurious to persons or property.

**Preparation:-**

- (i) The material shall be melted in accordance with the manufacturer's instructions in a heater fitted with a mechanical stirrer to give a smooth consistency to the thermoplastic material to avoid local overheating. The temperature of the mass shall be within the range specified by the manufacturer, and shall on no account be allowed to exceed the maximum temperature stated by the manufacturer. The molten material should be used as expeditiously as possible and for thermoplastic material which has natural binders or is otherwise sensitive to prolonged heating, the material shall not be maintained in a molten condition for more than 4 hours.
- (ii) After transfer to the laying equipment, the material shall be maintained within the temperature range specified by the manufacturer for achieving the desired consistency for laying.

**Properties of finished road making:-**

- (a) The stripe shall not be slippery when wet.
- (b) The making shall not lift from the pave in freezing weather.
- (c) After application and proper drying, the stripe shall show no appreciable deformation or discolouration under traffic and under road temperatures upto 60 degree C.
- (d) The marking shall not deteriorate by contract with sodium chloride, calcium chloride or oil drippings from traffic.
- (e) The stipe or marking shall maintain its original dimensions and position. Cold ductility of the material shall be such as to permit normal movement with the road surface without chopping or cracking.
- (f) The colour of yellow marking shall conform to IS Colour No.356 as given in IS-164.

**APPLICATION:**

- i) Marking shall be done by machine. For locations where painting cannot be done machine, approved manual methods shall be used with prior approval of the Engineer. The Contractor shall maintain control over traffic while painting operations are in progress so as to cause minimum inconvenience to traffic compatible with protecting the workmen.
- ii) The thermoplastic material shall be applied hot either by screeding on extrusion process. After transfer to the laying apparatus, the material shall be laid at a temperature within the range specified by the manufacturer for the particular method of laying being used. The paint shall be applied using a screed or extrusion machine.
- iii) The pavement temperature shall not be less than 10 decree C during application. All surfaces to be marked shall be thoroughly cleaned of all dust, dirt, grease, oil and all other foreign material before application of the paint.
- iv) The material, when formed into traffic stripes, must be readily renewable by placing an overlay of new material directly over an old line of compatible material. Such new material shall so bond itself to the old line that no splitting or separation takes places.
- v) Thermoplastic paint shall be applied in intermittent or continuous lines of uniform thickness

of at least 2.5 mm unless specified otherwise. Where arrows or letters are to be provided, thermoplastic compound may be hand-sprayed. In addition to the beads included in the material, a further quantity of glass beads of Type-2, conforming to the above noted specification shall be sprayed uniformly into a mono-layer on to the hot paint line in quick succession of the paint spraying operation. The glass beads shall be applied at the rate of 250 grams per square meter area.

- vi) The minimum thickness specified is exclusive of surface applied glass beads. The method of thickness measurement shall be in accordance with Appendices Band C of BS-3262 (Part-3).
- vii) The finished lines shall be free from ruggedness on sides and ends and be parallel to the general alignment of the carriageway. The upper surface of the lines shall be level, uniform and free from streaks upper surface of the lines shall be level, uniform and free from streaks.

**Marking:-** Marking like lane markings, centre line marking and edge line marking shall be done strictly as prescribed in IRC-35-2015

### Performance Criteria

The performance criteria given below are applicable for the white color pavement markings only.

1. Daytime Visibility: The luminance co-efficient under diffuse illumination Qd for road marking on
  - a. Cement Road, shall be min of 130 mcd/m<sup>2</sup>/lux during the expected life service time
  - b. Asphalt Road, shall be min of 100 mcd/m<sup>2</sup>/lux during the expected life service time
2. Nighttime Visibility:
  - i) Dry Retro Reflection
 

Dry retroreflectivity shall be compliant with Table 15.1 of IRC 35-2015 and measured in accordance with the method described in Annexure E of IRC 35-2015.

Table: 15.1 Initial and Min. performance for Dry retro reflectivity during nighttime

S.No.	Design Speed	RL Retro Reflectivity (mcd/m <sup>2</sup> /lux)	
		Initial (7 days)	Min Threshold Level (TL) and warranty Period Required upto 2 years
1	Up to 65	200	80
2	65-100	250	120
3	Above 100	350	150

### MEASUREMENTS AND PAYMENT:-

The painted marking shall be measured in **Square Meters (Sq.Mtr.)** of actual area marked (excluding the gaps, if any). In respect of marking like directional arrows and lettering etc, the measurement shall be by numbers. Contractor shall have to submit the manufacture test certificate before starting the work at no extra cost. Contractor shall have to submit the test report of both thermoplastic paint and glass beads from approved laboratory for paint 7 glass beads at no extra cost before producing bill and then after on end when asked.

**Rate:-**

The contract unit rate for road markings shall be payment in full compensation for furnishing all labour, materials, tools, equipment including all incidental costs necessary for carrying out the work at the site conforming to these specifications complete as per the approved drawings or as directed by the Engineer and all other incidental costs necessary to complete the work to these specification.

The rate shall be for a unit of One sq. meter

**Item No. 7**

**Providing and Fixing CRUSE SET of CERA for handcape Toilet Inlcuding all Necessary Parts like One Piece EWS S Trap 300 mm with Soft Close Seat Cover, CRANE Wall Hung Washbasin 665 X 545 X 190 mm With Single Lever Clinical Faucet also Including Two Piece Wall Mounted Grab bar 600 mm Long ,Wall Mounted Hinged Hand Rail 750 x 100 with all Material and Fixing Charge as per instruction of Engineer In Charge**

**1.0. Materials :**

CERA Cruse Set which includes E.W.C. pan 710x370x810mm (Cat. No.S1021114P) or (Cat. No. S1021113S),

CERA Cistern (Cat. No. S1060106),

CERA Soft Close seat cover (Cat. No.B1520118),

CERA Twin Flush Fitting (Cat. No. B1810112),

CERA Wash Basin 510 x 400mm (Cat. No. S2040101),

CERA Spatula Lever basin Mixer (Cat. No. F9030451),

CERA 2 No. of Wall Mounded Grab bar 600mm long (Cat. No.B2210106),

CERA Wall Mounted Hinged Hand Rail 750x100mm (Cat. No. B2210108),

CERA 288mm Long Bottle Trap (Cat. No.F8060301),

CERA Toilet Paper Holder (Cat. No. F5001109)

**2.0. Workmanship**

Providing and Fixing CRUSE SET of CERA for handcape Toilet Inlcuding all Necessary Parts like One Piece EWS S Trap 300 mm with Soft Close Seat Cover, CRANE Wall Hung Washbasin 665 X 545 X 190 mm With Single Lever Clinical Faucet also Including Two Piece Wall Mounted Grab bar 600 mm Long ,Wall Mounted Hinged Hand Rail 750 x 100 with all Material and Fixing Charge as per instruction of Engineer In Charge

**Mode of measurements and payment**

The rate includes all labours, materials, tools and plant etc. required for satisfactory completion of this item.

The rate shall be for a unit of **One number**

**Item No.24**

***Providing and fixing 90 cm high Stainless steel railing 304 Grade made from anticorrosive S S pipe of 50 mm dia (16Gauge) as hand rail with S S 32 mm dia (16Gauge) as a vertical support fixed in RCC slab at 1.2m c/c including three horizontal S S pipes of 16 mm dia (16Gauge) at equal distance fixed by 18.75 mm dia (16Gauge) S S pipe including accessories as per detailed drawing as directed etc. complete.***

*The item covers the work for providing and fixing 90 cm height railing of SS pipe grade 304. The vertical support of railing shall be of 50mm dia & for railing top & supports at ends shall be of 25mm dia. The supports shall be properly fixed in RCC steps by means of welding or as directed by Engineer in charge.*

*The railing shall be fixed truly in line and level.*

*The fiber glass shall be provided at regular interval as per drawing of Govt. architectural office or instruction of engineer in charge. The quality of fiber glass shall be of approved brand. The design, size, shape, spacing shall be first got approved by Engineer in charge then and then it shall be fixed.*

*The rate includes the cost of 25mm S S pipe required for railing, cost of fiber glass of require shape size & design, labour charges for fixing railing & fiber glass & making it good locking and finished work as per requirement. The fixing of railing shall be truly good and fit with steps of stair, landing, slab, beam as per the instruction & direction in Engineer in charge. No extra claim shall be there for welding, drilling or any other labour or require material for fixing the railing.*

*Clear dimension up to hand railing is taken in to payment.*

*The payment shall be on **Rmt.** Basis.*

***Signature Of Contractor ...***

***Dy. Executive Engineer  
R&B Sub Division  
Radhanpur***