

Name of work :- Mehsana District and sessions court @Mehsana (Tactile Tiles Work Other Misc.Work)

ITEM NO 01: Providing and fixing 15 mm thick 300 mm x 300 mm Tactile warning tiles (Attention Tiles i.e. Tectile Warning Surface Indicator (TWSI) of Johnson Endura Tac Button Yellow plus or equivalent make in flooring laid on 20 mm Thick cement mortar 1:6 (1 Cement : 6 Coarse sand) on new surface and jointed with cement slurry including finished with flush pointing & cleaning the surface for all floors as per detailed drawing etc. completed as directed by Architect or Engineer in charge. These tiles shall be Anti Skid, chemical resistant, Fade Proof, Frost - Heat & Weather proof, High Flexural Strength, Highly durable, Stain resistance. All Tactile warning tiles meet the specific size and dimension standard as per required by ISO / FDIS 23599

1. Scope of Work

This specification covers the complete end-to-end engineering requirements for sourcing, delivering, surface preparation, laying, and finishing tactile warning tiles.

- **Application:** Installed on a new flooring surface at hazard approaches (e.g., pedestrian crossings, platform edges, top of staircases, or ramps).
- **Target Elements:** Warning profiles (Attention/Blister tiles with raised truncated domes) to signal a stop or hazard ahead.
- **Comprehensive Execution:** Includes the provisioning of a 20mm thick cement mortar base, application of a neat cement slurry bond coat, tile positioning, leveling, alignment, flush pointing, and final surface curing/cleaning across all floor levels as per architectural drawings.

2. Materials & Technical Parameters

All structural elements must satisfy rigorous performance thresholds to withstand extreme outdoor and heavy pedestrian environments:

Tactile Tiles (Johnson Endura Tac Button Yellow Plus or Equivalent)

- **Dimensions:** Nominal planar size of 300mm x 300mm with a physical thickness of 15mm
- **Color:** Highly visible safety yellow to assist low-vision pedestrians with structural luminance contrast.
- **Surface Topography:** Truncated domes (Attention/Button profile) meeting the precise geometric layout defined by ISO 23599.
- **Performance Attributes:**
 - Anti-skid surface texture with high slip resistance.
 - Chemical, stain, and fade-proof stability under permanent UV exposure.
 - Frost, heat, and weather-proof material structural matrix.
 - High flexural strength and structural durability to prevent cracking under impact.

Bedding & Jointing Mediums

- **Cement Mortar Bedding:** 20mm thick layered mix of 1:6 ratio (1 Portland Cement to 6 clean, well-graded coarse sand by volume).
- **Bonding Slurry:** Neat cement slurry mixed to a workable consistency, applied at a rate of approximately 3kg/m².
- **Joint Grout:** Matching cement slurry or specialized non-shrink grout matrix for flush pointing.

3. Installation Methodology

Step 1: Base Surface Preparation

- **Clean the concrete slab:** Remove all loose dirt, dust, laitance, oil, and debris from the base floor.
- **Pre-wetting:** Dampen the concrete base uniformly with water prior to layout to prevent the dry slab from pulling moisture out of the fresh mortar.

Step 2: Mixing and Laying Mortar Bed

- **Mix preparation:** Mechanically or manually mix the 1:6 cement-sand mortar thoroughly with just enough water to achieve a workable, semi-dry consistency.
- **Screeding:** Spread and compact the mortar evenly to a uniform thickness of 20mm, meticulously matching the design slopes and levels indicated in the engineering drawings.

Step 3: Fixing Tactile Tiles

- **Slurry application:** Spread a thin, continuous layer of neat cement slurry over the compacted mortar bed immediately before positioning the tile.
- **Tile placement:** Press the 15mm tactile tiles firmly into the wet bedding slurry.
- **Leveling:** Tap the tiles gently using a rubber mallet until they are perfectly flush with the surrounding finished floor level, ensuring no hollow air pockets remain underneath.
- **Alignment:** Maintain perfectly straight joints aligned with the tactile grid paths to avoid breaking the sensory patterns required for continuous navigation.

Step 4: Jointing and Flush Pointing

- **Grouting:** Clean out any excess mortar from the tile joints before it sets.
- **Pointing:** Fill all joints completely with a matching cement slurry or structural grout compound, finishing them perfectly flush with the top tile edges.
- **Surface Cleaning:** Wipe away all excess grout and surface stains immediately using a damp sponge before the material hardens.

Step 5: Curing and Protection

- **Moist Curing:** Protect the finished floor and keep it continuously damp for a minimum period of 7 days using wet gunny bags or light ponding.
- **Traffic Control:** Strictly bar all pedestrian or construction traffic from stepping on the newly laid tiles for at least 48 hours post-installation.

4. Mode of Measurement

- **Unit of Measurement:** The finished, completed work shall be measured in **Square Metres** calculated to the nearest two decimal places.

ITEM NO2: Providing and fixing coloured self adhesive PU Tactile tile, ground surface indicators of Polyurethane of size 300 mm x 300 mm for guiding / warning to the visually visitors in the center / side of the pedestrian / approach pathway as per specification and guidelines complete in all respect to the entire satisfaction of Engineer in charge.

1. Scope of Work

This specification covers the complete end-to-end requirements for sourcing, surface preparation, laying, bonding, and finishing self-adhesive polyurethane tactile floor indicators.

- **Application:** Installed directly onto clean, existing, or newly finished internal or external smooth floor surfaces (e.g., granite, vitrified tiles, marble, polished concrete, or epoxy coatings).
- **Target Elements:**
 - **Guiding/Directional Profiles:** Raised parallel bars to indicate a continuous safe path of travel.
 - **Warning/Attention Profiles:** Raised truncated domes (blisters) to signal a hazard, change of direction, or stop point.
- **Comprehensive Execution:** Includes detailed layout marking, intense surface chemical cleaning, application of structural adhesive/primers (if required by the manufacturer), peel-and-stick application, pressure rolling, and edge sealing to ensure a completely flush, peel-resistant installation.

2. Materials & Technical Parameters

All polyurethane tiles must satisfy rigorous mechanical, thermal, and visual contrast thresholds:

Polyurethane (PU) Tile Properties

- **Dimensions:** Nominal planar size of 300 mm x300mm with a base thickness ranging between 2mm to 3mm. The raised profiles (domes or bars) must project an additional 4mm to 5mm above the base plane to ensure distinct foot and white-cane detectability.
- **Material Composition:** High-grade, UV-stabilized, homogeneous thermoplastic polyurethane (TPU/PU). It must resist yellowing, brittleness, and tearing under extreme weather conditions.
- **Adhesive Backing:** Pre-applied, heavy-duty, industrial-grade acrylic or structural self-adhesive tape protected by a peel-off release liner. The adhesive must exhibit high peel-strength and resistance to water, cleaning chemicals, and thermal expansion.
- **Performance Attributes:**
 - **Anti-Skid:** Exceptional slip resistance rating under wet and dry conditions.
 - **High Flexibility:** Ability to conform slightly to minor substrate surface irregularities without cracking.
 - **Durability:** Highly resistant to abrasive wear from dense pedestrian foot traffic and wheeled carts.
 - **Chemical Resistance:** Completely resistant to standard floor cleaning detergents, oils, and mild acids.

3. Installation Methodology

Step 1: Substrate Surface Preparation

- **Structural Cleaning:** The existing floor must be completely dry, structurally sound, and free of dust, grease, wax, paint flakes, or moisture.
- **Chemical Degreasing:** Wipe the installation zone thoroughly using a fast-evaporating solvent cleaner (such as Isopropyl Alcohol or an approved surface primer) to strip away microscopic oils and films that could compromise bond strength.
- **Layout Marking:** Snap chalk lines or lay masking tape to map out the exact center lines or borders for the pedestrian path as per the approved architectural layouts.

Step 2: Tile Conditioning & Positioning

- **Dry Layout:** Pre-lay the PU tiles along the marked path without removing the adhesive liner to double-check alignment, joints, and pattern continuity.
- **Acclimatization:** Ensure the tiles and the floor substrate are within the manufacturer-recommended installation temperature range (typically between 15c and 35c).

Step 3: Application and Bonding

- **Peel & Stick:** Carefully peel back a section of the protective release liner from the bottom of the tile.
- **Placement:** Align the tile edges accurately with the layout lines and drop the tile into place. Once placed, avoid shifting or pulling the tile back up, as this destroys the adhesive bond matrix.
- **Pressure Application:** Apply heavy, uniform downward pressure across the entire surface of the tile using a manual hand roller or a specialized heavy floor roller (minimum 25kg to 45kg). Pay critical attention to the perimeter edges and corners to ensure no curling or lifting gaps remain.

Step 4: Finishing & Joint Sealing

- **Flush Alignment:** Ensure the joints between adjacent tiles are tightly butted together with zero overlap or wide gaps to prevent tripping hazards.
- **Edge Protection:** If specified for heavy-duty external environments, apply a thin bead of clear, structural PU edge-sealant around the exposed perimeters of the tile layout to prevent dirt and water ingress beneath the adhesive tape.

Step 5: Curing & Traffic Control

- **Initial Bond Cure:** Keep the newly installed tiles completely free of foot traffic for at least 3 to 4 hours post-installation.

- **Full Cure:** Allow 24 hours of curing time before exposing the area to heavy rolling loads, heavy foot traffic, or wet cleaning/washing

4. Mode of Measurement

- **Unit of Measurement:** The complete, installed self-adhesive PU tactile tiles shall be measured in **Square Metres**

ITEM NO: 3 Providing and fixing Acrylic multilingual braille (raised dots) **DIRECTIONAL SIGNBOARDS** of size 225 x 150 mm designed as per accessibility standards and having 3.5 mm thick acrylic base plate with Upper Case San Serif words made of white acrylic non glare cut out letters of height 15 mm raised not less than 0.8 mm above base plate and the equivalent word written in gujarati, English or Hindi non glare acrylic cut arrow pointing in the require direction. Each signboard to be fixed as per manufacturers specifications on the wall at the approved location and at a height of 1200 mm from Floor level complete as per design / specifications and guidelines as per entire satisfaction of the Engineer in charge.

1. Scope of Work

This specification covers the complete end-to-end engineering requirements for the sourcing, custom fabrication, quality testing, transportation, and precise structural installation of tactile and Braille directional signage panels.

- **Structural Intent:** Provision of high-contrast, non-glare, tactile navigation markers to assist low-vision, blind, and literate visitors in public buildings.
- **Target Elements:** Production of multi-script panels integrating **English, Gujarati, and Hindi** text with corresponding raised **Grade-1/Grade-2 Braille dots** and direction-specific tactile arrows.
- **Comprehensive Execution:** Detailed layout template drafting, formal sign schedule approvals, dust-free surface cleaning, mounting area marking, application of heavy-duty industrial structural bonding materials, precision level-checking, and final handover across all floor levels.

2. Materials & Material Parameters

All components used in the fabrication process must satisfy rigorous mechanical, structural, and optical performance thresholds:

Acrylic Base Plate

- **Material Matrix:** Premium, high-impact, cast acrylic polymer sheet conforming to international accessibility guidelines.
- **Thickness:** Minimum **3.5 mm solid thick** structural base plate.
- **Planar Dimensions:** Uniformly cut rectangular blocks of precisely **225 mm × 150 mm** (equivalent to a face surface area of **0.03375 SMT** per individual signboard).
- **Surface Coating:** Meticulously treated with a **matte, non-glare, non-reflective finish** to prevent ambient light glare from obscuring text legibility for low-vision readers.
- **Edge Finishing:** All perimeter edges must be CNC-routed, deburred, and slightly rounded to eliminate sharp corners.

Tactile Typography & Arrow Indicators

- **Font Family:** Upper Case, clean, crisp Sans Serif typeface (e.g., Arial or Helvetica) without any stylized serifs or decorative extensions.
- **Character Height:** Exactly **15 mm** for primary word markers.
- **Relief Height:** Cut-out letters must project **not less than 0.8 mm** (extending up to 1.5 mm) above the face of the acrylic base plate to allow easy fingertip recognition.
- **Material & Contrast:** Solid white, non-glare acrylic components. The final design must provide a stark, high-contrast visual footprint against a dark-colored base backing, meeting a minimum **70% Light Reflectance Value (LRV)** contrast ratio.
- **Directional Arrow:** A crisp, precision-cut, non-glare acrylic arrow profile raised to the same relief height as the text, oriented cleanly in the required direction of travel. [\[1, 2, 3, 4, 5\]](#)

Multilingual Braille Dot Matrix

- **Translation Integrity:** Flawless, professionally verified translation of the English/Hindi text into corresponding regional Gujarati script Braille codes.

- **Dot Profile:** Micro-spherical dome-topped tactile pins (strictly no pointed, sharp, or hollowed apexes).
- **Dimensional Grid Standards:**
 - *Dot Height:* 0.6 mm to 0.9 mm above the base plate surface.
 - *Dot Base Diameter:* 1.4 mm to 1.6 mm.
 - *Cell Spacing:* 2.3 mm to 2.5 mm center-to-center.

3. Installation Methodology

Step 1: Shop Drawing & Proof Validation

- The contractor shall submit a comprehensive Signage Schedule Matrix displaying full-scale layout proofs for each designated room or corridor before starting production.
- The Engineer-in-Charge must formally approve the typographic translations, spelling accuracy in all three languages, and the corresponding directional arrow orientations.

Step 2: Site Preparation & Level Marking

- **Structural Height:** Measure and mark a consistent reference baseline or horizontal center line exactly 1200 mm above the Finished Floor Level (FFL) on the wall surface.
- **Placement Zone:** Position the signboard on the wall adjacent to the latch/handle side of any door frame, maintaining a clear horizontal setback of 150 mm to 200 mm to protect the reader from sudden door movements.
- **Substrate Preparation:** Wipe the surface clean of loose plaster particles, dust, moisture, grease, or peeling paint using an approved surface primer or quick-dry degreasing solution.

Step 3: Structural Adhesion & Fixing

- **Primary Bonding Agent:** Apply heavy-duty, exterior-grade, double-sided acrylic foam core tape (such as 3M VHB structural tape) covering at least 80% of the rear surface of the signboard base plate.
- **Secondary Reinforcement:** Inject a thin bead of neutral-cure, non-staining structural silicone adhesive around the inner tape matrix to prevent long-term environmental degradation.
- **Alignment:** Place the signboard against the wall template line and check alignment using a precision digital spirit level.
- **Pressure Rolling:** Apply firm, continuous manual compression across the entire surface area for at least 30 seconds to initiate immediate, cross-linked structural adhesion.

Step 4: Cleanup & Finishing

- Remove any excess silicone bleed from the outer perimeter using an approved plastic scraper.
- Wipe the entire acrylic face panel using a soft, lint-free microfiber cloth and a mild antistatic cleaning agent.

4. Mode of Measurement (Unit: SMT)

- **Unit of Measurement:** The finished and accepted work shall be computed and recorded in Square Metres (SMT), rounded off to two decimal places.

ITEM NO: 4 Providing and fixing Braille indicator of size 170 mm x 35 mm for hand rails of the approved design and hame have braille dots raised 0.5 mm above the base plate to be installed at specific locations as per direction of Engineer in charge.

1. Scope of Work

This specification covers the complete engineering requirements for sourcing, manufacturing, text verification, formatting, pre-forming, and structurally bonding tactile Braille indicators onto architectural handrails.

- **Application:** Permanently fixed onto the underside or outer curve of handrails at critical transit nodes (e.g., the beginning and end of stair flights, ramp landings, and lift approaches).
- **Target Elements:** Production of custom-worded tactile metal or polymer strips displaying room numbers, floor levels (e.g., "GROUND FLOOR"), or structural hazards in tactile embossed text and Grade-1/Grade-2 Braille.
- **Comprehensive Execution:** Layout design drafting, language translations, handrail diameter profile matching, high-bond structural tape application, precision placement, and final surface polishing/cleanup to the complete satisfaction of the Engineer-in-Charge.

2. Materials & Material Parameters

The material chosen must be highly ductile yet rigid enough to conform permanently to curved handrail surfaces without cracking, lifting, or peeling under heavy friction.

Base Plate Matrix

- Material Option A (Metallic): Marine-grade Stainless Steel (SS 316) or high-grade Anodised Aluminium sheet.
- Material Option B (Polymer): Flexible, high-impact, UV-stabilized polycarbonate or cast acrylic sheet.
- Base Plate Dimensions: Exactly 170 mm in length × 35 mm in width.
- Thickness:
 - *Metallic Plates*: 0.6 mm to 1.0 mm (to facilitate clean cold-forming around circular handrail profiles).
 - *Polymer Plates*: 1.0 mm to 1.5 mm.
- Surface Properties: Matte, non-glare, brushed, or satin finish. This ensures it resists fingerprints, oils, scratches, and sweat from continuous hand contact. All edges must be rounded to a smooth radius to completely eliminate cutting or scratching hazards.

Braille Dot Dimensions & Raised Profiles

- Braille Specifications: Clear, dome-shaped micro-structures mapped accurately to the target text.
- Relief Height: Braille dots must project exactly 0.5 mm above the base plate surface.
- Geometric Matrix:
 - *Dot Base Diameter*: 1.4 mm to 1.5 mm.
 - *Dot Spacing*: 2.3 mm to 2.5 mm center-to-center within a single cell.
- Tactile Text (Optional Companion Text): If raised print letters are integrated alongside Braille, they must be sans-serif characters raised a minimum of 0.8 mm.

Bonding & Adhesion Elements

- Adhesive Matrix: Pre-applied, high-tack, industrial-grade acrylic transfer adhesive tape (e.g., 3M VHB structural grade or equivalent) engineered specifically for high shear-resistance on metallic or wooden substrates.

3. Installation Methodology

Step 1: Text Scheduling & Shop Proofing

- The contractor must compile a comprehensive Handrail Signage Schedule detailing the exact message required for each specific location (e.g., "STAIRS UP TO LOBBY", "LEVEL 2").
- Full-scale layout templates must be formally signed off by the Engineer-in-Charge to verify translation and Braille dot arrangement accuracy before production begins.

Step 2: Surface Preparation of Handrails

- Degreasing: Wipe down the designated attachment area on the handrail using Isopropyl Alcohol (IPA) or an approved chemical degreasing solvent. The surface must be completely free of hand oils, dust, moisture, polish residues, or clear coats.
- Pre-Forming (For Round Rails): If using metallic indicators on circular handrails, the contractor must pre-roll or cold-bend the 170 mm x 35 mm plate to match the exact outer diameter profile of the handrail to eliminate material spring-back tension.

Step 3: Precise Positioning & Fixing

- Location Standard: Position indicators on the horizontal section of the handrail, exactly 150 mm to 300 mm before the steps or ramp slope begin.
- Orientation: Unless specified otherwise by drawings, fix the indicator panel to the underside or lower outer quadrant of the handrail. This allows a user's fingers to trace the dots naturally while their palm rests on top of the rail.
- Application: Peel off the adhesive protective backing liner, position the panel evenly without stretching, and press it firmly into place.
- Compression: Use a specialized hard rubber hand-roller or a heavy-duty clamp block to apply firm, uniform pressure across the entire 170 mm length for a minimum of 40 seconds to cross-link the structural adhesive bond.

Step 4: Final Handover & Inspection

- Inspect all perimeter edges to ensure they are 100% flush with the handrail surface, with zero lifting or gaps that

could trap dirt or scratch passing hands.

- Wipe the installed plate down with a clean, dry microfiber cloth.

4. Mode of Measurement

- Unit of Measurement: The finished, structural handrail Braille indicators shall be measured and paid for on a unit basis, recorded as Each

ITEM NO: 5 Providing and fixing tactile layout plan of size 1800 mm x 1200 mm as approved design, made of 3.0 mm thick acrylic non glare base plate and non glare cut out symbols with 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 floor with pictograph wherever needed all in tactile raised by minimum of 1 mm to 2 mm in various colours to make it legible for seniors, partial vision impaired etc. All the facility name should be in Braille, along with Gujarati, English or Hindi. The entire block of tactile signs should be mount on wall for easy reading. The map to be installed at specified locations and installed at height of 600 mm from ground level complete in all respect as per Harmonized guideline & satisfaction of Engineer in charges.

1. Scope of Work

This specification covers the comprehensive engineering requirements for the design, translation, custom fabrication, quality inspection, transport, and structural wall-mounting of large-format multi-script tactile layout plans.

- Structural Intent: Provision of a master architectural layout map displaying localized floor facilities using high-contrast tactile elements, raised pictographs, and multilingual Braille.
- Target Facilities: Clear, recognizable mapping of individual facility nodes including, but not limited to: inquiry counters, reception desks, restrooms (male/female/accessible), medical/first-aid rooms, cafeterias/breakout zones, lounges, meeting rooms, and conference rooms.
- Comprehensive Execution: Architectural floor plan simplification, multi-script graphic layout drafting, Braille text translation verification, multi-layered color-coded fabrication, structural framework installation, precise wall-alignment at the mandated height, and final protective handover to the entire satisfaction of the Engineer-in-Charge.

2. Materials & Material Parameters

To withstand heavy physical contact and ensure long-term legibility for partial-vision users, the material matrix must balance high tactile definition with extreme durability

Master Base Plate

- Material: Premium structural-grade cast Acrylic sheet.
- Thickness: Minimum 3.0 mm solid thick acrylic backing plate.
- Dimensions: Cleanly cut, rigid rectangular sheet measuring exactly 1800 mm in width × 1200 mm in height.
- Surface Coating: Specially treated with an anti-glare, non-reflective matte finish to eliminate overhead lighting reflections that distort visibility for low-vision or senior visitors.

Tactile Elements, Text & Pictographs

- Relief Profile: All structural floor boundaries, path corridors, facility symbols, text characters, and directional arrows must be raised by a minimum of 1.0 mm to 2.0 mm above the master base plate surface.
- Fabrication Method: Formed using solid non-glare acrylic cut-outs chemically fused to the base, or via advanced high-density, multi-layer UV tactile printing technology that resists peeling and fingernail chipping.
- Color Psychology & Contrast: Executed in various bright, contrasting colors to cleanly demarcate different facility types (e.g., blue for restrooms, red for first aid). Elements must achieve a minimum 70% Light Reflectance Value (LRV) contrast against their immediate background matrix to maximize legibility for partially sighted individuals.
- Typography: Clean, uppercase Sans-Serif fonts (e.g., Arial, Helvetica) for printed scripts. Letter heights for primary titles must be clearly distinguishable, with a minimum height of 15 mm to 25 mm.

Multilingual Braille Dots

- Script Support: Every facility identifier and directional key must be fully translated and presented in three scripts: English, Gujarati, and Hindi.
- Braille Specifications: Standard dome-topped tactile pins (strictly no sharp apexes or hollow profiles).
- Dimensional Grid Standards:
 - *Dot Height*: 0.6 mm to 0.9 mm.
 - *Dot Base Diameter*: 1.4 mm to 1.6 mm.
 - *Cell Spacing*: 2.3 mm to 2.5 mm center-to-center.

Structural Supporting Framework

- Backing Framework: Due to the large 1800 mm x 1200 mm structural footprint, the acrylic map must be rigidly backed by a heavy-duty anodized aluminum profile or a powder-coated mild steel frame matrix (minimum 25 mm x 25 mm section) to prevent physical warping or flexing over time.

3. Installation Methodology

Step 1: Shop Drawing and Accessibility Sign-off

- The contractor shall submit a simplified, scaled layout of the architectural floor plan optimized for tactile reading (removing unnecessary architectural detail like wall wall-thickness lines that confuse tactile readers).
- Pre-production proofs showing exact translations, layout scaling, color schemes, and Braille configurations must be formally approved in writing by the Engineer-in-Charge.

Step 2: Site Layout & Alignment Marking

- Vertical Height Standard: Meticulously measure and mark the installation height on the wall surface. In strict alignment with the Harmonized Guidelines, the bottom edge of the tactile layout plan must sit exactly 600 mm above the finished ground/floor level. This places the map at an optimal ergonomic angle for both standing individuals, seniors leaning forward, and wheelchair users.
- Location Profile: Affix to a prominent, unobstructed wall space near the main building entrance, lift lobby, or primary reception approach pathway.

Step 3: Structural Fixing & Anchor Mounting

- Framework Anchor: Secure the heavy-duty backing frame to the masonry or concrete wall using a minimum of six heavy-duty stainless steel anchor fasteners or expansion plugs distributed symmetrically.
- Panel Assembly: Mount the 1800 mm x 1200 mm tactile acrylic map plate onto the secured frame using tamper-proof architectural stainless steel button-head screws or hidden perimeter channel locks.
- Level Checking: A digital spirit level must be utilized to ensure zero angular tilt along the horizontal plane.

Step 4: Final Inspection & Cleaning

- All joints, edges, and corners must be inspected to ensure they are smooth, deburred, and completely flush against the frame.
- Clean the map face thoroughly using a lint-free microfiber cloth and a specialized antistatic, non-abrasive polymer cleaning solution to remove fingerprints, oils, or construction dust.

4. Mode of Measurement

- Unit of Measurement: The finished, structurally installed tactile layout plan shall be measured and paid for on a unit basis, recorded as Each

ITEM NO: 6 Providing and fixing of acrylic, non-glare, tactile audio pictorial building layout as per the approved size, design and make, having 3 mm thick acrylic non glare base plate of the approved colour and non glare acrylic

cut out symbols raised 3 mm above base plate and Grade - 2 / Grade - 1 Braille to be integral with the sign face and be raised 0.5 mm above base plate. The map to be installed at the specified location as per accessibility standards shall be oriented to the position of the viewer and to be installed at the height of 800 mm from the finished ground / floor level and using the necessary hardware specified by the manufacturer and to be installed complete as per design / specifications and guidelines as per the entire satisfaction of the engineer in charge.

1. Scope of Work

This specification covers the end-to-end engineering requirements for the interactive layout design, translation, custom fabrication, electronics integration, programming, testing, and structural installation of tactile audio-pictorial maps.

- **Structural & Interactive Intent:** Provision of a high-contrast, multi-layered tactile floor plan layout embedded with electronic sensors or physical audio interfaces. When touched or activated, these interfaces deliver clear spoken navigation prompts.
- **Spatial Orientation:** The entire layout panel must be structurally oriented to perfectly match the immediate point-of-view of the standing viewer ("You Are Here" orientation).
- **Comprehensive Execution:** Simplification of architectural maps into touch-optimized tracks, professional multi-script translation, sound file recording and coding in multiple languages, structural frame fabrication, exact low-level wall mounting, electrical or battery termination, calibration testing, and final handover to the satisfaction of the Engineer-in-Charge.

2. Materials & Material Parameters

The material matrix and electronic modules must be selected for maximum tactile feedback, impact resistance, non-fading optical clarity, and robust electronic cyclic life:

Master Base Plate

- **Material:** High-impact, premium cast acrylic polymer plate.
- **Thickness:** Minimum 3.0 mm solid thick base plate sheet.
- **Surface Coating:** Meticulously treated with an anti-glare, matte, non-reflective finish to prevent ambient or overhead spot-lighting from creating reflections that obscure the map for low-vision readers.

Tactile Pictographs & Symbols

- **Relief Height:** Cut-out symbols, facility paths, boundary perimeters, and directional arrows must be raised exactly 3.0 mm above the surface of the base plate.
- **Fabrication Profile:** Precision laser-cut or CNC-milled acrylic components permanently fused chemically to the base sheet, or multi-pass layer-built structural polymer execution. All raised edges must be cleanly deburred and eased to prevent finger abrasion.
- **Color Schemes:** Executed in vibrant, distinct colors to optimize visual contrast for seniors and partially sighted individuals, meeting a minimum 70% Light Reflectance Value (LRV) contrast ratio against the background layout matrix.

Integrated Braille Script

- **Braille Standard:** High-precision Grade-1 or Grade-2 Braille tracking systems integrated directly with the sign face.
- **Relief Height:** Braille dots must be raised exactly 0.5 mm above the immediate sign face layer.
- **Dot Profiles:** Standard smooth dome-topped profiles with a base diameter of 1.4 mm to 1.6 mm and standard cell spacing of 2.3 mm to 2.5 mm center-to-center.

Audio & Electronic Module Requirements

- **Audio Triggers:** Capacitive touch sensors embedded beneath the acrylic sheets, or heavy-duty, tactile mechanical push-buttons assigned to major facility nodes.
- **Audio Storage & Playback:** Industrial-grade, solid-state micro-controller chip with built-in flash memory storing clear, high-fidelity human voice recordings or crisp digital speech synthesis.
- **Output Component:** Vandal-resistant internal speaker system with manual volume controls, or an integrated standard 3.5 mm audio headphone jack setup.

3. Installation Methodology

Step 1: Pre-Fabrication Approvals & Coding

- The contractor shall submit a scaled tactile graphic blueprint alongside a written script of the digital audio recordings for review.
- Written text across all scripts (English, Hindi, Gujarati) and the digital audio files must be formally verified and approved by the Engineer-in-Charge before casting or programming the board matrix.

Step 2: Spatial Orientation & Mapping Alignment

- Prior to mounting, the installer must ensure the map orientation is field-calibrated to the absolute position of the viewer standing in front of it.
- *Example:* If a visitor faces north while looking at the map, facilities physically located to their right must be positioned on the right-hand side of the map layout panel.

Step 3: Site Layout & Structural Mounting

- **Vertical Height Standard:** Meticulously measure and mark the target layout reference lines on the wall substrate. The bottom horizontal edge of the tactile audio signboard panel must sit exactly 800 mm above the Finished Floor Level (FFL) to maintain strict ergonomic compliance with international accessibility standards.
- **Mounting Matrix:** Secure the layout securely to the wall using the manufacturer-specified architectural hardware (such as heavy-duty stainless steel standoff fixtures, security anchors, or a perimeter structural backing frame).
- **Alignment Check:** Use a digital spirit level to confirm zero angular lean.

Step 4: Power Termination & Calibration Testing

- Connect the integrated audio system safely to a concealed 5V/12V DC power adaptor routed from an adjacent internal electrical conduit junction box, or secure the internal long-life lithium battery pack housing.
- Conduct a full operational test of every capacitive touch zone or button to confirm the correct audio track plays, adjusting output volumes to comfortable decibel ranges.

4. Mode of Measurement

- **Unit of Measurement:** The finished, interactive tactile audio-pictorial building layout map shall be measured and paid for on a unit basis, recorded as Each

Deputy Executive Engineer
R& BSub Division
MehsanaMehsana

Executive Engineer
R&B Division