1. Work this Index with the Noise Wall Data Tables, and Wall Control Drawings in the Plans.
   A. Prestressed concrete posts with equivalent strength resistance may be substituted for
      conventionally reinforced precast posts shown in this standard, when approved as part
      of a Producer's Quality Control Plan.
   B. Producer shop drawings for prestressed concrete post designs must be approved by the
      State Structures Design Office prior to inclusion in the Quality Control Plan.

2. Construct Noise Walls in accordance with the requirements of Specification Section 534,
   and Auger Cast Piles in accordance with Specification Section 455.

3. Field verify the location of all overhead and underground services shown in the Wall
   Control Drawings.

4. Wall Height is the nominal height of the walls above finished grade. The Wall
   Embedment Depth for design is 1'-0". The actual embedment depth may vary plus or
   minus 6" along the length of the wall.

5. Post Spacing in this Index are nominal, and are measured from centerline to centerline
   of the auger cast piles. Actual post spacing may vary as shown in the Wall
   Control Drawings.

6. Panels:
   A. The sum of the individual stacked panel heights is the Wall Height plus 1'-0"
      (embedment depth).
   B. Where special graphics are required, locate the horizontal panel joints
      outside of the graphics. Where possible, hold horizontal panel joints at a
      constant elevation.
   C. Side Installed Panels are only permitted when reduced overhead clearance
      between posts prohibits installing panels from the top.
      1. For Flush Face panels, install panel into posts from the roadway (front
         face) of the wall. Recessed panels may be installed from the back face
         of the wall.
      2. After panels are installed and centered between posts, grout between
         both panel ends and the adjoining posts (see Sheets 4 and 5 for details).
   D. Individual panel heights should be between 6'-0" and 12'-0" tall. The minimum panel
      height is 4'-0" and may be used where overhead clearance is limited, or where
      graphic panels are required on shorter walls.

7. Concrete And Grout:
   A. Concrete Class and Compressive Strength for:
      1. Precast Panels, Posts, and Post Caps: Class IV
      2. Cast-In-Place Collars: Class IV
   B. Minimum Compressive Strength for form removal and handling of posts and panels:
      1. 2,500 psi for horizontally cast post and panels
      2. 2,000 psi for vertically cast panels or when tilt-up tables are used for
         horizontally cast panel.
   C. Grout for Auger Cast Piles:
      1. Maximum Working Compressive Strength = 2,000 psi
      2. Minimum 28 day strength = 5,000 psi

8. Reinforcing Steel:
   A. In addition to the requirements of Specification Section 415, tie post and pile
      stirrups at the following locations as a minimum:
      1. Post Stirrups Tie at all four corner bars and at every third interior bar
         intersection.
      2. Pile Stirrups Tie to the main vertical reinforcing at alternate intersections
         for circular configurations and at the four corners and at every third
         interior bar intersection for rectangular configurations.
   B. Provide 2" concrete cover unless noted otherwise.

9. Casting Tolerances for precast panels and posts:
   A. Overall Height and Width: +/- ¼"
   B. Thickness: +/- ⅛"/1/16"
   C. Plane of side mold: +/- 1/16"/1/16"
   D. Openings: +/- ⅛"/1/240 panel dimension
   E. Out of Square: ⅛" per 6 ft., but not more than ⅛" total along any side
   F. Warping: 1/16" per foot distance to nearest corner
   G. Bowing: 1/240 panel dimension
   H. Surface Smoothness for Type “A” Smooth Surface Texture Option: +/- 1/16”

10. Provide Plain or Fiber Reinforced Bearing Pads meeting the requirements of
    Specification Section 932 for Ancillary Structures.
    A. For Collar Bearing Points provide:
      1. 4” x 4” x ½” Fiber Reinforced pads;
      2. Plain Pads with a may be substituted for Fiber Reinforced Pads when
         sufficient bearing area is available on the concrete collar for the
         following:
         a. 10’ Post Spacing: 4” x 4” x ½”
         b. 20 Post Spacing and Wall Height < 17 feet: 4” x 4” x ½”
         c. 20 Post Spacing and Wall Height ≥ 17 feet: 4” x 5” x ½”
    B. At panel bearing points between stacked panels, use Plain or Fiber Reinforced
       Bearing Pads.
NOTES:

1. Surfaces shall be formed, rolled, or pressed using form liners in accordance with the Plans and Specifications for Class 3 Surface Finish.

2. See Noise Wall Data Tables for project aesthetic requirements.
HALF ELEVATION
(Front Face Post and Panel Texture Type "H" shown)
(Graphic Type SE-2 shown)
(Two stacked panels shown, three stacked panels similar)

Back Face Panel Texture
(Formed, Rolled or Pressed into Plastic Concrete)

Front Face Panel Texture (Formed)

Top of Wall

Symmetric about Panel

Example Graphic Type SE-2

Form Roller

Precast wall panel

Sealed cavity

Horizontal joint between stacked panels

NOTES:
1. Submit specific form liner samples for approval by the Engineer.
2. Textures and graphics shown are for demonstration purposes only. See Noise Wall Data Tables in the plans for project specific texture and graphic requirements.

TYPICAL FORMING DETAIL
(Front Face Panel Texture Type "H" shown)
(Back Face Panel Texture Type "D" shown)
(Post Forming Details Similar)

Sealed cavity

Single layer flat surface attached to form liner for casting smooth areas of wall design. See plans for project specific graphic drawings. Joints between flat surface and form liner to be sealed watertight.

NOTES:
1. Submit specific form liner samples for approval by the Engineer.
2. Textures and graphics shown are for demonstration purposes only. See Noise Wall Data Tables in the plans for project specific texture and graphic requirements.
**Reinforcing Mat**

* Vertical Steel ~ #4 Bars @ 10" (As=0.24 in²/ft.) (Typ.)
* Horizontal Steel ~ #4 Bars @ 8" (As=0.30 in²/ft.) (Typ.)

**Notes:**
1. See Sheet 3 for allowable methods of applying textures.
2. See plans for panel type and aesthetic requirements.
3. For equal post spacing, side-installed panel length will be shorter than top-installed panel length.

**Section D-D**

*(Showing Recessed Type Panel)*

Texture
Non-Roadway Face (Back Face)

Formed Texture
Front Face

**Continuous V-Groove** (Not required for Bottom Panel)

2 Sp. @ 1⁄2 = 1' 2 Sp. @ 2 1⁄2 = 5'

1⁄2' Chamfer (Typ.)

**Section D-D**

*(Showing Flush Type Panel)*

Texture
Non-Roadway Face (Back Face)

Formed Texture
Front Face

**Detail "A" - SIDE-INSTALLED**

(Typical both ends)

**Detail "B" - SIDE-INSTALLED**

(Typical both ends)

**Detail "A" - TOP-INSTALLED**

(Typical both ends)

**Detail "B" - TOP-INSTALLED**

(Typical both ends)

**TYPICAL PANEL ELEVATION**

*(In lieu of utilizing the standard pick up points below, panels may be cast vertically or cast horizontally then tilted upright using tilt-tables prior to lifting from form. In this case, pick points must be placed in the top of panels only and transported maintaining the vertical orientation. If these criteria are met, the vertical steel may be reduced to #4 Bars @ 1'-3" (As=0.16 in²/ft.).)*

**Panel Length (L) (19'-2" Max.)**

<table>
<thead>
<tr>
<th>Panel Height (H)</th>
<th>0.207 L</th>
<th>0.586 L</th>
<th>0.207 L</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.207 H</td>
<td>0.207 H</td>
<td>0.207 H</td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD PICK UP POINTS FOR PANELS**

(Panels shall be rotated about long axis only)

**Pick up points**

**TYPICAL PANEL DETAILS**

*See Detail "A"*

*See Detail "B"*

**PRECAST NOISE WALLS**

**FY 2017-18 DESIGN STANDARDS**
NOTE:
The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2Δ°) between panels exceeds 7°.

NOTE:
The shop drawings shall include specific pivoting details of panel ends at locations where the deflection angle (2Δ°) between panels exceeds 20°.

PIVOTING DETAILS
(Flush Type Panel)

PIVOTING DETAILS
(Recessed Type Panel)
**DRAINAGE HOLES TYPES A, B, C & D**
*(Front Face of Wall Shown)*
*(Two Holes Shown, One Hole Similar)*

* Hole Types A, B, C and D refer to distance from bottom of panel to center of opening. See Wall Control Drawings in the plans.

**DRAINAGE HOLE DETAILS**

1. Grating shall be ASTM A36 steel welded in accordance with the current edition of ANSI/AWS D1.1 Steel Welding Code. Hot-dip galvanize grate after fabrication in accordance with Specification Section 962.
2. Expansion Anchors: Use \( \frac{1}{2}'' \times 2'' \) min. corrosion resistant (zinc/aluminum alloy or stainless steel) expansion anchors to connect grates to panels.
3. Grating mounted to back face of wall.
4. Blockout textured concrete surface for a strip 2' wide around hole for drainage grate placement.

**BAR BENDING DETAILS (#3 Bars)**

**SECTION F-F**

**SECTION G-G**

**GRATING DETAIL**

**REFERENCES:**

- GRAINING NOTES:
- BAR BENDING DETAILS (#3 Bars)
- DRAINAGE HOLES TYPES A, B, C & D
- PRECAST NOISE WALLS
LOW CLEARANCE OPTION
* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL"
45° POST NOTES:
1. Reference Sheets 8 & 9 for location of Sections.
   Space Bars P7 as shown for Bars P1.
   Space Bars P8 as shown for Bars P2.
2. Match texture thickness with appropriate Panel face.
3. For Post Reinforcing, see sheets 15 & 16.
4. For Pile Length Tables, see sheets 15 & 16.

SECTION H-H
(45° Corner Post)

SECTION J-J
(See Note 2)

Bars P7 (Pairs)
(See Note 2)

SECTION K-K
(Collar Section, 45° Corner Post)

SECTION L-L
(45° Corner Post)

SECTION M-M
(45° Corner Post)

SECTION N-N
(45° Corner Post)

SECTION P-P
(45° Corner Post)

45° POST DETAILS

FY 2017-18
DESIGN STANDARDS

PRECAST NOISE WALLS

INDEX NO. 5200

SHEET NO. 10 of 16
**Low Clearance Option**

* Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".

**90° Corner Post Notes:**
1. For Post Reinforcing, see Sheets 15 and 16.
2. For Pile Length Tables, see Sheets 15 and 16.
3. Reduce typical panel length or adjust pile spacing at each 90° Corner Post.
4. Match texture thickness with appropriate Panel Face.

**90° Corner Post Reinforcement**

(Post Surface Features Not Shown For Clarity)
NOTES:
1. For Pile Length Tables, see Sheets 15 and 16.
2. Trowel finish top of Collar to allow placement of Bearing Pads.
* Extend Post 2' above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".
NOTES:
1. For Pile Length Tables, see Sheets 15 and 16.
2. Trowel Finish top of auger cast pile to allow placement of Bearing Pads.
   * Extend Post 2" above top of high side wall panel when post caps are shown in plans. See Sheet 4, "ELEVATION STEP AT TOP OF WALL".

ELEVATION

SECTION W-W

SECTION V-V

90° CORNER LOW CLEARANCE POST PLACEMENT & PILE REINFORCING STEEL DETAILS
PLAN VIEW
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

VIEW A-A SHOWN, VIEW B-B SIMILAR
(Type "A" Cap Shown, Type "B" & "C" Caps Similar)

CAP PLACEMENT DETAIL
(Type "B" Cap Shown, Type "A" & "C" Caps Similar)
### TABLE 2A - TABLE OF POST REINFORCING STEEL

<table>
<thead>
<tr>
<th>WALL HEIGHT (Feet)</th>
<th>POST LENGTHS</th>
<th>WIND SPEED = 150 MPH</th>
<th>BARS</th>
<th>10'-0&quot; POST SPACING</th>
<th>20'-0&quot; POST SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WITHOUT CAP</td>
<td>WITH CAP</td>
<td>SIZE</td>
<td>DIM.</td>
<td>SIZE</td>
</tr>
<tr>
<td>12</td>
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<td></td>
<td>#4</td>
<td>#4</td>
<td>#4</td>
</tr>
<tr>
<td>13</td>
<td>14'-0&quot;</td>
<td></td>
<td>#4</td>
<td>#4</td>
<td>#5</td>
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<tr>
<td>14</td>
<td>15'-0&quot;</td>
<td></td>
<td>#5</td>
<td>#5</td>
<td>#6</td>
</tr>
<tr>
<td>15</td>
<td>16'-0&quot;</td>
<td></td>
<td>#5</td>
<td>#5</td>
<td>#5</td>
</tr>
<tr>
<td>16</td>
<td>17'-0&quot;</td>
<td></td>
<td>#6</td>
<td>#6</td>
<td>#6</td>
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<tr>
<td>17</td>
<td>18'-0&quot;</td>
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<td>#6</td>
<td>#6</td>
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<tr>
<td>18</td>
<td>19'-0&quot;</td>
<td></td>
<td>#7</td>
<td>#7</td>
<td>#7</td>
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<tr>
<td>19</td>
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<td>21'-0&quot;</td>
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<td>21</td>
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<td>22</td>
<td>23'-0&quot;</td>
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</table>

### TABLE 3A - TABLE OF POST REINFORCING STEEL

<table>
<thead>
<tr>
<th>WALL HEIGHT (Feet)</th>
<th>POST LENGTHS</th>
<th>WIND SPEED = 170 MPH</th>
<th>BARS</th>
<th>10'-0&quot; POST SPACING</th>
<th>20'-0&quot; POST SPACING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WITHOUT CAP</td>
<td>WITH CAP</td>
<td>SIZE</td>
<td>DIM.</td>
<td>SIZE</td>
</tr>
<tr>
<td>12</td>
<td>13'-0&quot;</td>
<td></td>
<td>#4</td>
<td>#4</td>
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<td>23'-0&quot;</td>
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<td>#7</td>
<td>#7</td>
<td>#7</td>
</tr>
</tbody>
</table>

**TABLE NOTE:**
1. Bars D and Bars E are for 47' Corner Posts only.
2. See Contract Plans for project wind speed.
   Soil 2 = Medium Dense Granular Soil, N = 10 to 40.

---

### TABLE 2B - PILE LENGTHS (Feet) - WIND SPEED = 150 MPH

<table>
<thead>
<tr>
<th>WALL HEIGHT (Feet)</th>
<th>POST LENGTHS</th>
<th>H-POSTS</th>
<th>CORNER POSTS</th>
<th>H-POSTS</th>
<th>CORNER POSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WITHOUT CAP</td>
<td>SOIL 1</td>
<td>SOIL 2</td>
<td>SOIL 1</td>
<td>SOIL 2</td>
</tr>
<tr>
<td>10'-0&quot; POST SPACING</td>
<td></td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>15'-0&quot; POST SPACING</td>
<td></td>
<td>30&quot;</td>
<td>30&quot;</td>
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</tbody>
</table>

### TABLE 3B - PILE LENGTHS (Feet) - WIND SPEED = 170 MPH

<table>
<thead>
<tr>
<th>WALL HEIGHT (Feet)</th>
<th>POST LENGTHS</th>
<th>H-POSTS</th>
<th>CORNER POSTS</th>
<th>H-POSTS</th>
<th>CORNER POSTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>WITHOUT CAP</td>
<td>SOIL 1</td>
<td>SOIL 2</td>
<td>SOIL 1</td>
<td>SOIL 2</td>
</tr>
<tr>
<td>10'-0&quot; POST SPACING</td>
<td></td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>30&quot;</td>
</tr>
<tr>
<td>15'-0&quot; POST SPACING</td>
<td></td>
<td>30&quot;</td>
<td>30&quot;</td>
<td>30&quot;</td>
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</tr>
</tbody>
</table>

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**PILE DEPTH & REINFORCING SUMMARY**

**DESCRIPTION:**
FY 2017-18 DESIGN STANDARDS

**INDEX NO.:** 5200

**SHEET NO.:** 16 of 16