ITEM SPECIAL - NOISE BARRIERS

GENERAL

1. DESCRIPTION:
   This work consists of preparing any necessary shop drawings, and manufacturing, testing, transporting, storing, and installing noise barriers at the location shown on the plans. In preparing the shop drawings and shop materials, the contractor shall meet all the requirements of the shop drawings and specifications. Items shall be fabricated from the list below or equal as approved by the governing office of environmental services. The shop drawings shall be prepared by a certified or qualified_shop_drawings

2. DESIGN SPECIFICATIONS:

3. MATERIAL SPECIFICATIONS:
   GALVANIZING: GALVANIZE ALL STRUCTURAL STEEL, BASE PLATES, ANCHOR ADMIXTURE AND 15% BY WEIGHT FLY ASH OR 15-30% GROUND GRANULATED BLAST.

4. DESIGN LOADS:
   WIND LOAD:
   - APPLY WIND LOAD ON POSTS IS 25 PSF @ 45° BEYOND 25°.
   - 25 PSF @ 0° @ BEYOND 45°.

5. LOAD CASES:
   a) "DEAD LOAD" CASE:
   - 1.00* (DEAD LOAD) + 0.40* (WIND LOAD)
   - "EXTREME EVENT" IF LOAD CASE:
   - 1.00* (WIND LOAD) + 0.40* (WIND LOAD)
   - "SERVICE LOAD" CASE:
   - 1.00* (DEAD LOAD)

6. MATERIAL SPECIFICATIONS:
   - REINFORCING STEEL:
     - REINFORCING STEEL SHALL BE EPOXY-COATED AS PER CMS 106.01.2.
     - THE REQUIREMENTS OF CMS 106.01.2 SHALL APPLY TO EPOXY-COATED AND GALVANIZED STEEL.
   - REINFORCING STEEL:
     - CONFORM TO CMS 709.01, GRADE 60.
     - WHEN FABRICATION SHALL CONFORM TO CMS 709.03 OR CMS 209.
     - AND SHALL BE EPOXY-COATED PER CMS 709.04 OR GALVANIZED AFTER FABRICATION PER ASTM A1060.
   - WHEN FABRIC SHALL NOT BE A SUBSTITUTE.
   - CONCRETE:
     - THE COMBINED MATERIALS STRENGTH IS 5,000 PSI (PANELS AND POSTS)
     - COMPRESSIVE STRENGTH IS 3,500 PSI (PANELS AND POSTS)
     - CONCRETE SHALL CONFORM TO CMS 493.08.
   - CONCRETE:
     - THE CONCRETE MIX DESIGN FOR PANELS SHALL CONTAIN A CONCRETE WET BOLT CONCRETE.
     - THE CONCRETE MIX DESIGN FOR PANELS SHALL CONTAIN A CONCRETE.
     - THE CONCRETE MIX DESIGN FOR PANELS SHALL CONTAIN A CONCRETE.
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     - THE CONCRETE MIX DESIGN FOR PANELS SHALL CONTAIN A CONCRETE.

7. NOISE BARRIER HEIGHTS SHALL EQUAL OR EXCEED THE ACOUSTICAL PROFILE:
   - PANEL HEIGHTS:
     - PANEL HEIGHTS PROVIDED IN THIS STANDARD RANGE FROM 2'-0" TO 8'-0" INCLUSIVE.
     - PANEL HEIGHTS PROVIDED IN THIS STANDARD RANGE FROM 2'-0" TO 8'-0" INCLUSIVE.
   - MAXIMUM MASS LOSS = 5% @ 300 CYCLES
   - FIRE RATING:
     - ASTM E84 CLASS A
     - SALT SCAFFOLDING ASTM G87: VISUAL RATING A 0 AFTER 5 CYCLES.
   - SELECT AN ABSORPTIVE MATERIAL SUPPLIER FROM THE FOLLOWING SHOP DRAWING:
     - LABORATORY SERVICES.
   - FIRE RATING:
     - ASTM E84 E00 AND ASTM E414
     - FIRE RATING:
     - ASTM E84 E00 AND ASTM E414
     - FIRE RATING:
     - ASTM E84 E00 AND ASTM E414

8. SHOP DRAWINGS:
   - FOR ALL SHOP DRAWINGS, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE OFFICE OF ENVIRONMENTAL SERVICES.
   - SHOP DRAWINGS SHALL BE SIGNED, SEALED, PREPARED TO THE OFFICE OF ENVIRONMENTAL SERVICES.
   - SHOP DRAWINGS SHALL BE SUBMITTED IN 11' X 17" SHEET SIZE AND ACCEPTANCE ACCORDING TO C&MS 108.06.E.

9. ACCESSORIES:
   - FOR TRUE ACCESSORIES, THE CONTRACTOR SHALL PROVIDE THE SHOP DRAWINGS.
   - FOR TRUE ACCESSORIES, THE CONTRACTOR SHALL PROVIDE THE SHOP DRAWINGS.
   - FOR TRUE ACCESSORIES, THE CONTRACTOR SHALL PROVIDE THE SHOP DRAWINGS.
   - FOR TRUE ACCESSORIES, THE CONTRACTOR SHALL PROVIDE THE SHOP DRAWINGS.

10. BEARING PADS:
    - ALL BOTTOM NOISE BARRIER PANELS REQUIRE A NEOPRENE, PREFORMED BEARING PAD BETWEEN THE BOTTOM OF THE NOISE PANEL AND THE ROLLING SURFACE.
    - THE BEARING PADS SHALL BE AT THE MIDDLE OR 30 SQUARE INCHES.
    - THE BEARING PADS SHALL BE AT THE MIDDLE OR 30 SQUARE INCHES.

11. DRILLED SHAFTS:
    - THE NOISE BARRIER POSTS SHALL BE SUPPORTED BY 30" DIAMETER DRILLED SHAFT FOUNDATIONS UNLESS ANOTHER DRILLED SHAFT FOUNDATION SIZE OR TYPE IS APPROVED BY THE OFFICE OF ENVIRONMENTAL SERVICES.
    - FOR GENERAL DIMENSION REQUIREMENTS REFER TO DETAIL "A" ON SHEET 110-00 FOR POSTS. CAPS MAY BE THE SEALER/COATING AT THE FABRICATION PLANT. FURNISH THE SEALER/COATING MATERIAL FROM A SINGLE SUPPLIER FOR AN ENTIRE PROJECT. THE SEALER/COATING COLORS SHALL BE AS NOTED IN THE PROJECT PLANS.

12. NOISE BARRIER FOUNDATION IN POOR SOIL:
    - NOISE BARRIER FOUNDATION IN BEDROCK:
      - THE CENTER OF DRILLED SHAFTS FOR TYPE C, D AND E POSTS ARE OFFSET FROM THE CENTERLINE OF THE POSTS.
      - THE CENTER OF DRILLED SHAFTS FOR TYPE C, D AND E POSTS ARE OFFSET FROM THE CENTERLINE OF THE POSTS.
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13. NOISE BARRIER FOUNDATION IN POOR SOIL:
    - NOISE BARRIER FOUNDATION IN POOR SOIL:
      - THE CENTER OF DRILLED SHAFTS FOR TYPE C, D AND E POSTS ARE OFFSET FROM THE CENTERLINE OF THE POSTS.
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14. FOAM BACKER ROD:
    - FOAM BACKER ROD:
      - FURNISH FOAM BACKER ROD MEETING ASTM D5249, TYPE 1 OR 3.
      - MATERIALS (PAPER, ROPE AND OPEN CELL FOAM) ARE NOT ACCEPTABLE.
      - THE BACKER ROD SHALL BE AN EXPANDED, CLOSED CELL POLYETHYLENE FOAM.
      - THE BACKER ROD SHALL BE AN EXPANDED, CLOSED CELL POLYETHYLENE FOAM.
      - THE BACKER ROD SHALL BE AN EXPANDED, CLOSED CELL POLYETHYLENE FOAM.

15. PANEL HEIGHTS PROVIDED IN THIS STANDARD RANGE FROM 2'-0" TO 8'-0" INCLUSIVE.
    - PANEL HEIGHTS PROVIDED IN THIS STANDARD RANGE FROM 2'-0" TO 8'-0" INCLUSIVE.
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16. NOISE BARRIER FOUNDATION IN POOR SOIL:
    - NOISE BARRIER FOUNDATION IN POOR SOIL:
      - THE CENTER OF DRILLED SHAFTS FOR TYPE C, D AND E POSTS ARE OFFSET FROM THE CENTERLINE OF THE POSTS.
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GENERAL

1. AVOIDANCE OF UNEXPECTED OBSTRUCTIONS:
   - If the avoidance of unexpected obstructions or other obstructions requires the use of
     additional, different or otherwise unusual materials, the addition of equipment, or
     other unusual or additional work, the Contractor will supply to the Engineer a
     complete description of the Easton and a plan showing the location of such
     unexpected obstructions and their relationship to the work to be performed.

2. THE DEPARTMENT WILL MEASURE THE NOISE BARRIER BY THE NUMBER OF SQUARE FEET.
   - The Contract will determine the area of individual noise barrier segments from the
     project plan and assign a result from the bottom of the panel to the top of the panel,
     and span lengths measured as shown on the project plan details on sheets 8 & 11.

3. THE DEPARTMENT WILL PAY FOR LAYING OUT AND STAKING THE NOISE BARRIER UNDER
   - The Department will pay for laying out and staking the noise barrier under Item 203 - EMBANKMENT.

4. THE DEPARTMENT WILL PAY FOR FURNISHING, ERECTING, MAINTAINING, AND REMOVING
   - The Department will pay for furnishing, erecting, maintaining, and removing temporary fencing and
     other obstruction utilities of air or other obstruction utilities as extra work in accordance with CMS 109.

5. THE DEPARTMENT WILL PAY FOR CLEAVING AND GRUBBING AND TRIMMING TREES UNDER
   - The Department will pay for clearing and grubbing and trimming trees under Item 201 - CLEARING AND

6. THE DEPARTMENT WILL PAY FOR CONSTRUCTING EARTH BERM UNDER
   - The Department will pay for constructing earth berm under Item 201 - CLEARING AND

7. THE DEPARTMENT WILL PAY FOR THE ADDITIONAL LENGTH OF DRILLED SHAFTS
   - The Department will pay for the additional length of drilled shafts constructed at the direction of the
     engineer in unexpected areas of poor soil as extra work in accordance with CMS 109.

8. THE DEPARTMENT WILL PAY FOR THE ADDITIONAL FOUNDATIONS, POSTS, AND PANELS
   - The Department will pay for the additional foundations, posts, and panels furnished and installed in
     accordance with the project schedule. The Department will pay for the additional length of drilled
     shafts necessary to complete the noise barrier.

9. DISPOSE OF ALL EXCESS EXCAVATION IN A MANNER SATISFACTORY TO THE
   - The Department will pay for disposing of all excavations in a manner satisfactory to the

METHOD OF MEASUREMENT

SQ. FT.

DESCRIPTION

NOISE BARRIER (REFLECTIVE), 10' HEIGHT AND UNDER

NOISE BARRIER (REFLECTIVE), OVER 14' TO 20' HEIGHT

NOISE BARRIER (REFLECTIVE), OVER 10' TO 14' HEIGHT

TOLERANCES

1. POST DIMENSIONAL TOLERANCES:
   - A. POST LENGTH AND HEIGHT = `"'
   - B. FLANGE AND WEB WIDTH AND DEPTH = `"'
   - C. SLOT DEPTH AND LOCATION = `"'
   - D. POST VERTICAL SWEEP: `" FOR POSTS LESS THAN OR EQUAL TO 16' TALL
   - E. POSITION OF LIFTING INSERTS: `" ALONG PANEL
   - F. POST OF POSITIONING WORK. FOR CLEARANCE STEEL BASE PLATE = `"" ALONG PANEL LENGTH

2. PANEL DIMENSIONAL TOLERANCES:
   - A. PANEL LENGTH AND HEIGHT = `"'
   - B. PANEL ARCHITECTURAL/ABSORPTIVE MATERIAL THICKNESS = `"'
   - C. PANEL ARCHITECTURAL/ABSORPTIVE MATERIAL SPACING = `"'

3. REINFORCING STEEL TOLERANCES:
   - A. PANEL LENGTH AND HEIGHT = `"'
   - B. POST VERTICAL SWEEP: `" FOR POSTS LESS THAN OR EQUAL TO 16' TALL
   - C. SLOT DEPTH AND LOCATION = `"'
   - D. POST VERTICAL SWEEP: `" FOR POSTS LESS THAN OR EQUAL TO 16' TALL
   - E. PANEL CURVE `" FOR POSTS LESS THAN OR EQUAL TO 16' TALL
   - F. POST VERTICAL SWEEP: `" FOR POSTS LESS THAN OR EQUAL TO 16' TALL

4. BASE PLATE DIMENSIONAL TOLERANCES:
   - A. FURNISH STEEL BASE PLATES ACCORDING TO CMS 653.

5. NOISE BARRIER CONSTRUCTION TOLERANCES:
   - A. POSITION INDIVIDUAL DRILLED SHAVTS WITHIN `" OF THE PLAN LOCATION ON THE
     HORIZONTAL PLANE, AT THE PLAN ELEVATION FOR THE TOP OF THE SHAFT.
   - B. POSITION INDIVIDUAL DRILLED SHAVTS WITHIN `" OF THE CENTER-TO-CENTER
     SPACING SHOWN IN THE PLANS, MEASURED IN THE HORIZONTAL PLANE AT THE TOP
     ELEVATION OF THE SHAFT.
   - C. POSITION AN INDIVIDUAL DRILLED SHAVT WITHIN `" OF THE PLAN ELEVATION
     FOR THE TOP OF THE SHAFT.
   - D. POSITION OF THE CENTER OF THE DRILLED SHAFT, POSITION BASE PLATE ANCHOR BOLTS
     `" IN THE CORRECT PARALLEL TO THE SHORT SLOT.
   - E. POSTS SHALL BE PLUMB.
   - F. INSTALL NOISE BARRIERS SO THE FINAL TOP OF BARRIER ELEVATION IS WITHIN
     `" FROM PROJECT PLAN DIMENSIONS USING A HEIGHT FROM THE BOTTOM OF THE
     Panel, TO THE TOP OF THE Panel, AND SPAN LENGTHS MEASURED AS SHOWN IN
     THE CALCULATED NOISE BARRIER AREA IN THE PROJECT PLANS IS BASED UPON `" INCREMENTAL
     PANEL HEIGHTS. THE DEPARTMENT WILL NOT ADJUST PAY QUANTITIES FOR NOISE BARRIER
     WIDTHS OR LENGTHS GREATER THAN PROJECT PLAN REQUIREMENTS.
REQUIREMENTS:
ONE COAT OF ANY OF THE APPROVED SEALERS SHALL MEET THE FOLLOWING PERFORMANCE CRITERIA. MATERIALS: SELECT AND USE PRODUCTS ONLY FROM THE OFFICE OF MATERIALS MANAGEMENT'S APPROVED LIST. MATERIALS APPROVAL:
SUBMIT CERTIFIED TEST DATA TO THE ENGINEER THAT SHOWS THE SEALER MEETS THE MATERIALS REQUIREMENTS. TAKE A VERSATILE SAMPLE DURING THE COATING OPERATING BY COLLECTING A QUART SAMPLE FROM THE SPRAY OR BLOWING PROCESS AND SEND THE SAMPLE TO THE OFFICE OF MATERIALS MANAGEMENT, 500 W. BROOK ST., COLUMBUS, OH 43215, ATTN CHEM SECTION FOR TESTING, INDICATE THE BRAND NAME, PRODUCER AND LOT NUMBER OF THE MATERIAL. THE SAMPLE IS SUBJECT TO REVIEW OF MATERIALS NOT ACCEPTABLE.

CONTRACTOR TESTING EQUIPMENT
PROVIDE, IN GOOD WORK ORDER, THE FOLLOWING TESTING EQUIPMENT:

1. ONLINE PSYCHROMETER INCLUDING PSYCHOMETRIC TABLES USED TO RELATE HUMIDITY AND DOW POINT TEMPERATURE.
2. TWO STEEL SURFACE THERMOMETERS ACCURATE WITHIN 2 DEGREES F OR ONE PARALLEL INFRARED THERMOMETER AVAILABLE FROM MODEL M300-60 30 DEGREES C TO 200 DEGREES C, 200 DEGREES C TO 400 DEGREES C MANUFACTURED BY RAYTEK INC.
3. STEP-VISUAL STANDARD FOR ARBITRARY BLAST CLEANED STEEL, STEP VIS-89.
4. ONE RECIPROCAL THERMOMETER CAPABLE OF READING THE DATE, TIME AND TEMPERATURE OVER A PERIOD OF 21 HOURS.

SURFACE PREPARATION:
FOR BOTH ABSORPTIVE AND NON-ABSORPTIVE SURFACES, AFTER APPLYING THE SEALER, VISUALLY AND FINGER TEST ALL CONCRETE SURFACES TO DEMONSTRATE THE DESIRED PHYSICAL AND VISUAL EFFECT OF THE SEALER COMPONENTS TO SHOW THE OFFICE OF MATERIALS MANAGEMENT THAT COVERAGE IS COMPLETE AND UNIFORM.

APPLICATION PROCEDURE:
MIX SEALER ACCORDING TO THE MANUFACTURER'S RECOMMENDED MIXING PROCEDURES. MIX TO A UNIFORM CONSISTENCY AND MAINTAIN THAT DURING THE MORTAR INATI ON PERIOD OF 20 MINUTES, PROVIDE FOR FIELD APPLICATION AS INCIDENTAL TO THE SQUARE FOOT COST OF THE NOISE WALL COMPONENTS. APPLY THE SEALER TO ACCELERATED CURED PRECAST AFTER THE CONCRETE HAS REACHED AN AGE OF 13 DAYS. IN ADDITION TO THE REQUIRED CURING PERIOD, THOROUGHLY CLEAN ALL CONCRETE SURFACES. REMOVE MANUFACTURER FOR ANY CHEMICALS AND OTHER CLEANING COMPOUNDS USED TO HELP PRODUCE A SURFACE THAT FEELS AND LOOKS LIKE 100 GRIT SANDPAPER OR COARSER.

FOR NON-ABSORPTIVE SURFACES, USE ONE OR BOTH OF THE FOLLOWING METHODS TO PREPARE A SURFACE THAT FEELS AND LOOKS LIKE 100 GRIT SANDPAPER OR COARSER. FOR NON-ABSORPTIVE SURFACES, USE ONE OF THE FOLLOWING METHODS TO PROVIDE A SURFACE THAT FEELS AND LOOKS LIKE 100 GRIT SANDPAPER OR COARSER.

1. WATER BLAST AT 7000 PSI MINIMUM, OR ABRASIVE BLAST, FOLLOWED BY AIR BROOMING OR POWER SWEEPING, TO REMOVE DUST FROM THE SURFACE AND OPENED PORES.
2. ABRASIVE BLAST, FOLLOWED BY AIR BROOMING OR POWER SWEEPING, TO REMOVE DUST FROM THE SURFACE AND OPENED PORES.
3. WATER BLAST AT 7000 PSI MINIMUM, OR ABRASIVE BLAST, FOLLOWED BY AIR BROOMING OR POWER SWEEPING, TO REMOVE DUST FROM THE SURFACE AND OPENED PORES.

APPLICATION TEMPERATURES:
DO NOT APPLY SEALER IF THE AMBIENT TEMPERATURE IS EXPECTED TO BE BELOW OR ABOVE THE ABOVE TEMPERATURE RANGES FOR UP TO 4 HOURS AFTER APPLICATION. DO NOT APPLY THE SEALER IF RAIN IS ANTICIPATED WITHIN 4 HOURS AFTER APPLICATION.

FOLLOW THE MANUFACTURER'S RECOMMENDED TEMPERATURES OF MORE RESTRICTIVE THAN SPECIFIED ABOVE.

PREPARATION:
NOTE: WHERE APPLICATION HAS STOPPED IF UNABLE TO COMPLETE THE ENTIRE APPLICATION CONTINUOUSLY, RE-INSPECT AND RELAY AT THE START POINT TO COMPLETE SPECIFICATIONS.

APPLY SEALER ACCORDING TO THE MANUFACTURER'S RECOMMENDED WRITING PROCEDURES. MIX TO A UNIFORM CONSISTENCY AND MAINTAIN THAT DURING THE APPLICATION PERIOD.

TEST APPLICATION:
APPLY THE SEALER TO A METERED TEST AREA OF DIFFERENT NEW CONCRETE COMPONENTS TO DEMONSTRATE THE DESIRED PHYSICAL AND VISUAL EFFECT OF THE MATERIALS AS THE NEW CONCRETE AND AIR-DRY FOR THREE DAYS.

APPLICATION PERIOD:
APPLY THE SEALER AFTER NEW CONCRETE HAS AIR-DRYED FOR AT LEAST THREE DAYS IN ACCORDANCE TO THE RECOMMENDED CURING PERIOD. APPLY THE SEALER ON JOINT SEALANTS WHICH HAVE NOT CURED ACCORDING TO THE MANUFACTURER'S WRITTEN DOCUMENTATION ON STORAGE AND CURING REQUIREMENTS. APPLY THE SEALER TO ACHIEVE A UNIFORM APPEARANCE. FOR WALLS WITH BRICK OR STONE, APPLY THE SEALER TO ACHIEVE A UNIFORM APPEARANCE. THE SEALER APPEARANCE SHALL BE UNIFORM FROM PANEL TO PANEL AND EDGE TO BAY.

STORAGE:
STORAGE SEALER COMPONENTS IN TIGHTLY SEALED CONTAINERS IN A DRY LOCATION AND STORED IN THE MANUFACTURER'S WRITTEN DOCUMENTATION ON STORAGE AND CURING REQUIREMENTS.

PROTECTION OF ADJOINING SURFACES AND THE PUBLIC:
PROTECT ASPHALT AND MASTIC TYPE SURFACES FROM SPILLAGE AND HEAVY OVERSPRAY. DO NOT APPLY SEALER ON JOINT SEALANTS WHICH HAVE NOT CURED ACCORDING TO THE MANUFACTURER'S WRITTEN DOCUMENTATION ON STORAGE AND CURING REQUIREMENTS. PROVIDE THE ENGINEER SANDPAPER FOR COMPARISON: SSPC VISUAL STANDARD FOR ABRASIVE BLAST CLEANED STEEL SSPC-VIS 1-89. PROVIDE THE ENGINEER SANDPAPER FOR COMPARISON: SSPC VISUAL STANDARD FOR ABRASIVE BLAST CLEANED STEEL SSPC-VIS 1-89.

EQUIPMENT:
EQUIPMENT SEALER APPLICATION RECOMMENDED BY THE SEALER MANUFACTURER: GRAY EQUIPMENT TANKS, HOSES, NOZZLES, ETC., SHALL BE CLEAN AND FREE OF FOREIGN MATERIAL, OIL RESIDUE AND WATER PRIOR TO APPLYING THE CONCRETE SEALER.
NOTES:

1. FOR GENERAL NOTES REFER TO SHEETS 1-3/13.

2. INTEGRAL CAP DETAILS MAY VARY. REFER TO PROJECT PLANS FOR SPECIFIC DETAILS. BOTTOM PANELS MUST HAVE RUSTICATION GROOVES OR OVERHANGS; PAINTED LINES ARE NOT ALLOWED.

3. THICKNESS OF ABSORPTIVE MATERIAL VARIES ACCORDING TO THE MATERIAL PROPERTIES USED BY THE MANUFACTURER.

4. THE RUSTICATION GROOVE SHALL COINCIDE WITH THE TOP OF THE HIGHEST ADJACENT PANEL.

LEGEND:

AS REQUIRED BY DESIGN AND SHOWN ON PROJECT PLANS
ELEVATION, REINFORCING, AND STORAGE PLAN

TYPICAL POST

DETAILED C - INTEGRAL POST CAP DETAIL

1. Thrushed hole (cast into cap) for 1/8" anchor bolt. Thrushed into 5/8"-ton ferrule loop insert (see Note 3).

2. Perimeter reinforcing (TYP).

3. Stanchion space as shown in tables.

4. Center of drilled shaft.

DETAILED D - NON-INTEGRAL POST CAP DETAIL

1. For general notes refer to sheets 1-3/13.

NOTES:

1. Threaded Rod Length

2. Threaded Rods

3. Panel Cap (TYP)

4. Top of Integral Post Cap (TYP) (See Note 4)

5. Non-Integral Cap Anchor Bolt (See Note 3)

6. Panel Cap (TYP)

7. Top of Integral Panel Cap (TYP) (Stepped Panel)

8. Orientation of View E-E

9. Orientation of View F-F

10. Orientation of Section G-G

11. Orientation of Section H-H

LEGEND:

- Dimension varies with cap detail.
- B = Barrier Height
- TBE = Top of Barrier Elevation
- FPH = Finished Post Height
- NIC = Non-Integral Cap Addition
- W = Center of Drilled Shaft

NOTES:

1. For general notes refer to sheets 1-3/13.

2. Fasten the non-integral cap atop the post by threading a 5/8" anchor bolt into the ferrule loop insert.

3. Non-integral cap anchor bolt shall be galvanized ASTM A325; standard circular washer shall be galvanized ASTM F1436.

4. Bottom of integral cap must have rustication grooves or overhangs; painted lines are not allowed.
NOTES:
1. FOR GENERAL NOTES REFER TO SHEETS 1-3/13.
2. "B" THREADED RODS ARE USED FOR THE STEEL BASE PLATE CONNECTIONS. AS LUGS OF PROVIDING SEPARATE THREADED RODS, THE "B" REBARS MAY BE EXTENDED AND SUPPLIED WITH THREADED ENDS TO CONNECT THE Steel BASE PLATE TO THE BOTTOM OF THE POST. REFER TO THE steel BASE PLATE DETAILS ON SHEET 7/7/12.
3. INSTALL reinforcing steel, WITH A MINIMUM CLEARANCE OF 1" FROM ALL CONCRETE SURFACES UNLESS NOTED OTHERWISE.
4. FOR ADDITIONAL POST DETAILS REFER TO SHEET 7/13.

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#3 STIRRUP SCHEDULE

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<td>BARRIER</td>
</tr>
<tr>
<td>0&quot;h</td>
</tr>
<tr>
<td>0&quot;h</td>
</tr>
<tr>
<td>0&quot;h</td>
</tr>
</tbody>
</table>

0. USE 20" PRECAST CONCRETE POSTS; SEE SHEET 8/12.
NOTES:
1. FOR GENERAL NOTES REFER TO SHEETS 1-3/13.
3. INSTALL REINFORCING STEEL WITH A MINIMUM CLEARANCE OF 1" OF THE WALL ALIGNMENT AND THE POST AXIS.
4. FOR ADDITIONAL POST DETAILS REFER TO SHEET 7/13.

PRECAST CONCRETE PANEL DATA

<table>
<thead>
<tr>
<th>GEOMETRY</th>
<th>TYPE A POST</th>
<th>TYPE B POST</th>
<th>TYPE D POST</th>
<th>TYPE E POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARRIER WALL THICKNESS (IN.)</td>
<td><strong>A</strong> REBAR (TYP)</td>
<td><strong>B</strong> THREADED ROD (TYP)</td>
<td><strong>A</strong> REBAR (TYP)</td>
<td><strong>B</strong> THREADED ROD (TYP)</td>
</tr>
<tr>
<td>POST &amp; DRILLED SHAFT AXES</td>
<td>SIZE</td>
<td>TR.E</td>
<td>TR.E</td>
<td>SIZE</td>
</tr>
<tr>
<td>5&quot; MAX CHAMFER (TYP)</td>
<td>5&quot; MAX CHAMFER (TYP)</td>
<td>5&quot; MAX CHAMFER (TYP)</td>
<td>5&quot; MAX CHAMFER (TYP)</td>
<td></td>
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<td>SIZE</td>
<td>TR.E</td>
<td>TR.E</td>
<td>SIZE</td>
</tr>
</tbody>
</table>

NOTES:
- **A**: PANEL LENGTH DEDUCTION (PLD) DIMENSION AS SHOWN IN THE "PLD TABLE" ON SHEET 5/13.
- **B**: STIRRUP SPACING, SEE SHEET 7/13.
- **C**: IN "PLD TABLE" ON SHEET 5/13.
- **D**: PANEL LENGTH DEDUCTION (PLD) DIMENSION AS SHOWN.
Steel Base Plate Plan

**Additional Plate Material Required For Type C Post**
Along Deep Axis (See Post Details On Pages A-8/A-9)

**Fabricator To Detail Hole Locations And Sizes On Shop Drawings Based Upon Selected Connection Type.**

- **Bolt Holes For Threaded Rods To Be Lapped With Two Outermost "A" Rebars**
- **"A" Bolts Permitted To Be Threaded And Used In Laid Out Of "B" Threaded Rods (See Note 5)**
- **"A" Threaded Rod Or "B" Threaded Rod Starter + 1/8" Max (Typ)**

**Notes:**
1. For General Notes Refer To Sheets 3/3.
2. For Section 4, See Sheet 15/A.
3. Install All Threaded Connections According To The Anchor Bolt Nut Requirements Of CWS 630 Or.
5. In Laid Out Of Providing Separate Threaded Rods, The "A" Rebars May Be Fabricated With Threaded Ends And Externally To Connect The Base Plate To The Bottom Of The Post. Externally "A" Rebars Shall Be Galvanized Full Length. Fabricator To Detail Hole Locations And Sizes On Shop Drawings.

**Fabricator Shall Detail Anchor Bolt Projection On Shop Drawings When Installed. The End Of The Bolt Shall Project At Least Two Thread Lengths Outside The Face Of The Nut.**

**Geometry:**

**Type A Post**

<table>
<thead>
<tr>
<th><strong>Barrier Height (in)</strong></th>
<th><strong>Max Post Spacing</strong></th>
<th><strong>Plate Thickness (in)</strong></th>
<th><strong>Bolt Holes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
<tr>
<td>24</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
<tr>
<td>48</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Type B Post**

<table>
<thead>
<tr>
<th><strong>Barrier Height (in)</strong></th>
<th><strong>Max Post Spacing</strong></th>
<th><strong>Plate Thickness (in)</strong></th>
<th><strong>Bolt Holes</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
<tr>
<td>24</td>
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<tr>
<td>48</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Type C Post**

<table>
<thead>
<tr>
<th><strong>Barrier Height (in)</strong></th>
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<td>1/4</td>
</tr>
<tr>
<td>48</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Base Plate Data For 16" Precast Concrete Posts**

**Geometry:**

<table>
<thead>
<tr>
<th><strong>Barrier Height (in)</strong></th>
<th><strong>Max Post Spacing</strong></th>
<th><strong>Plate Thickness (in)</strong></th>
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</tr>
<tr>
<td>48</td>
<td>32</td>
<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Base Plate Data For 20" Precast Concrete Posts**

**Geometry:**

<table>
<thead>
<tr>
<th><strong>Barrier Height (in)</strong></th>
<th><strong>Max Post Spacing</strong></th>
<th><strong>Plate Thickness (in)</strong></th>
<th><strong>Bolt Holes</strong></th>
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<tr>
<td>48</td>
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<td>1/8</td>
<td>1/4</td>
</tr>
</tbody>
</table>

**Legend:**

- **A.D.E** = Anchor Bolt Embedment Length
- **P.T** = Steel Base Plate Thickness
- **TIE** = Top Of Drilled Shaft Elevation (Elevation Of Precast Concrete Post With Bolted Base Plate Connection To Drilled Shaft)

**Elevation:**

**Fabricated: GANNETT FLEMING, INC.**

**Prepared For Ground-Mounted Application By: Ohio Department Of Transportation**

**State Office Of:**

- **Structural Engineering**
- **Office Of:**
- **Transportation**
- **Original Design Prepared For:**
- **Rev 07-17-09 07-17-15 07-21-17 08-18-14 01-16-15 01-16-09**
**PANEL SEAT ELEVATION**

(THREADED HOLES NOT SHOWN FOR CLARITY)

**NOTE:**
- *DIMENSIONS TO BE EQUAL FROM EACH END OF POST & DRILLED SHFT AXIS.
- PLACE THE STEP BLOCK DIRECTLY ON THE STEEL BASE PLATE AND THEN PLACE THE PREFORMED BEARING PADS ON TOP OF THE STEP BLOCK.

**DETAIL F - STEP BLOCK ANCHOR LAYOUT**

**NOTES:**
1. FOR GENERAL NOTES REFER TO SHEETS 1-3/13.
2. NON-INTEGRAL PRECAST CONCRETE STEP BLOCKS SHALL BE USED FROM A MINIMUM HEIGHT OF 3' TO A MAXIMUM HEIGHT OF POST.
3. ENSURE THAT THE STEP BLOCK IS TOTTALLY SEATED ON THE STEEL BASE PLATE.

**PRECAST CONCRETE STEP BLOCK ANCHOR LOCATION REQUIREMENTS.**
- ENSURE THAT STEP BLOCK ANCHOR LOCATIONS DO NOT INTERFERE WITH PRECAST CONCRETE POST SHEAR REINFORCING. REFER TO DETAIL F ON THIS SHEET FOR ANCHOR LOCATION REQUIREMENTS.
**LEGEND:**

- ☒ Drilled Shaft

**NOTES:**

1. For general notes refer to sheets 1-3/13.
2. Refer to the reinforcing steel list in the project plans for the reinforcing steel details for each drilled shaft design.
1. Construct a trench with a minimum longitudinal slope of 1% under the noise barrier panels as shown in the typical elevation.

2. Provide underdrain slope of 1% minimum or as specified in project plans. Install in accordance with Item 605.

3. Outlet conduit to be spaced at 500' max.; install in accordance with Item 605.

4. At sag points, specify raised panel section.

SLOPED SECTION DRAINAGE NOTES:

- If drainage is needed, specify the appropriate conduit and slope requirements.
- Ensure all conduits are installed per the project plans and specifications.
- Check with the structural engineering office for guidance on any specific drainage notes.