GENERAL NOTES

Neoprene in all Bearing Pads shall have a Grade 98 Shore A hardness.

Steel Plates or composite pads shall conform to AISI 4340 or 4140 Grade

TYPICAL SECTION

STRAIGHT BRIDGE

Stainless Steel Plate

2.188

0.65

Steel Plate

1.000

Steel Bearing

Plane

Typical Section

Composite Pad

Steel Bearing Plate

PLAIN

COMPOSITE PAD

FOR TYPE II BEAMS

0.812

0.812

0.812

TYPICAL SECTION

STRAIGHT BRIDGE

Steel Bearing Plate

Typical Section

Composite Pad

Steel Bearing Plate

PLAIN

COMPOSITE PAD

FOR TYPE III BEAMS

1.500

0.67

1.500

TYPICAL SECTION

SKEWED BRIDGE

Steel Bearing Plate

Typical Section

Composite Pad

Steel Bearing Plate

PLAIN

COMPOSITE PAD

FOR TYPE V BEAMS

2.000

TYPICAL SECTION

TYPICAL PAD DETAIL

INTERIOR BEAM

PF3 3D

Stainless Steel Plate

2.375

0.65

Steel Plate

2.375

Steel Bearing Plane

Typical Section

Composite Pad

Steel Bearing Plane

PLAIN

COMPOSITE PAD

FOR TYPE III & IV BEAMS

0.67

TYPICAL SECTION

TYPICAL PAD DETAIL

EXTERIOR BEAM

PF3 3D

Stainless Steel Plate

2.375

0.65

Steel Plate

2.375

Steel Bearing Plane

Typical Section

Composite Pad

Steel Bearing Plane
### Reinforcing Steel Schedule

<table>
<thead>
<tr>
<th>H</th>
<th>O</th>
<th>D</th>
<th>T</th>
<th>BARS J</th>
<th>BARS F</th>
<th>BARS G</th>
<th>BARS H</th>
<th>BARS M</th>
<th>BARS A</th>
<th>BARS K</th>
<th>BARS L</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
</tr>
</tbody>
</table>

**Quantities**

- **Concrete:** Not specified
- **Reinforcement:** Various bars and shapes (J, F, G, H, M, A, K, L)

---

### Reinforcing Steel Schedule Diagram

- **Bending Diagram:** Shows the bending of reinforcement bars.
- **Steel Column:** Diagram of a steel column with reinforcement bars.
- **Cantilever Retaining Walls:** Diagram showing cantilever retaining walls with reinforcement details.

---

### Typical Section

- **Concrete Wall:** Diagram of a concrete wall with reinforcement details.
- **Structural Frame:** Diagram of a structural frame with reinforcement details.

---

### Notes

- **Note:** In addition to the concrete and reinforcement details, additional notes are included regarding the specific requirements for the design.
### Retaining Wall Data

#### Reinforcing Steel Schedule

<table>
<thead>
<tr>
<th>H</th>
<th>B</th>
<th>D</th>
<th>T</th>
<th>Bars J</th>
<th>Bars F</th>
<th>Bars G</th>
<th>Bars H</th>
<th>Bars M</th>
<th>Bars A</th>
<th>Bars K</th>
<th>Bars L</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
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<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
</tr>
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<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Quantities

<table>
<thead>
<tr>
<th>Concrete Cover (in)</th>
<th>Reinforcing Steel Coverage (in)</th>
<th>Concrete Cover (in)</th>
<th>Reinforcing Steel Coverage (in)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

#### Actual Maximum Bar Diameter

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8</td>
<td></td>
</tr>
</tbody>
</table>

### Bending Diagram

- **Note:** Bars B, C, D, and E are connected with Bars F and G. Bars H and I are connected with Bars J and K. The bending diagram shows the arrangement and connections of the steel bars. The bending details are provided for each segment of the retaining wall to ensure proper alignment and support throughout the structure.
### Retaining Wall Data

#### Reinforcing Steel Schedule

<table>
<thead>
<tr>
<th>BARS J</th>
<th>BARS F</th>
<th>BARS G</th>
<th>BARS H</th>
<th>BARS M</th>
<th>BARS A</th>
<th>BARS K</th>
<th>BARS L</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Length (in)</th>
<th>Width (ft)</th>
<th>Depth (ft)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Quantities

- Concrete: 100 ft³
- Steel: 200 lb

#### Maximum Bearing Pressure

- 150 lb/ft²

### Bendig Diagram

- Note: Bars B, C, and D are bent at 90° and placed on the top side of the wall.

### Typical section

- View A-A

---

**Note:** All dimensions are in inches. For more details, please refer to the project drawings and specifications.
## Retaining Wall Data

### Reinforcing Steel Schedule

<table>
<thead>
<tr>
<th>H</th>
<th>B</th>
<th>D</th>
<th>T</th>
<th>BARS J</th>
<th>BARS T</th>
<th>BARS T</th>
<th>BARS H</th>
<th>BARS M</th>
<th>BARS A</th>
<th>BARS K</th>
<th>BARS L</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10</td>
<td>8.79</td>
<td>4</td>
<td>26.50</td>
<td>10.00</td>
<td>5.99</td>
<td>9.80</td>
<td>5.00</td>
<td>2.50</td>
<td>2.50</td>
<td>3.00</td>
</tr>
<tr>
<td>7</td>
<td>11</td>
<td>8.79</td>
<td>4</td>
<td>28.00</td>
<td>10.00</td>
<td>5.99</td>
<td>9.80</td>
<td>5.00</td>
<td>2.50</td>
<td>2.50</td>
<td>3.00</td>
</tr>
<tr>
<td>10</td>
<td>11</td>
<td>8.79</td>
<td>4</td>
<td>30.00</td>
<td>10.00</td>
<td>5.99</td>
<td>9.80</td>
<td>5.00</td>
<td>2.50</td>
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<td>3.00</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>8.79</td>
<td>4</td>
<td>32.50</td>
<td>10.00</td>
<td>5.99</td>
<td>9.80</td>
<td>5.00</td>
<td>2.50</td>
<td>2.50</td>
<td>3.00</td>
</tr>
</tbody>
</table>

### Quantities

- Concrete: 2500 cubic yards
- Concrete: 500 cubic yards
- Steel: 25 tons
- Steel: 50 tons

### Maximum Reinforcement

- Horizontal: 5.00 ft
- Vertical: 5.00 ft

---

### Sizing Diagram

**NOTE:** The diagram shows the layout of the retaining wall with the respective steel and concrete placements. The dimensions and quantities are indicated in the table above. The structural design assumes a load of 50 kips per lineal foot, with a maximum height of 30 feet.

---

**Sizing Diagram:**

- Bars J, T, H, M, A, K, L
- Covers: J, T, H, M, A, K, L
- Bars: J, T, H, M, A, K, L

**Case:** 30 ft. 30 ft. 30 ft. 30 ft. 30 ft. 30 ft. 30 ft. 30 ft. 30 ft. 30 ft.

---

**Cover:**

- J: 3.00 in.
- T: 3.00 in.
- H: 3.00 in.
- M: 3.00 in.
- A: 3.00 in.
- K: 3.00 in.
- L: 3.00 in.

**Diaphragm:**

- 3.00 in. thick

---

**Prefs:**

- LOADS:
  - 50 kips per lineal foot
- HORIZONTAL:
  - 5.00 ft
- VERTICAL:
  - 5.00 ft

---

**References:**

- BS 5400-14
- ACI 318-13
- AISC 360-16

---

**Drawn By:**

- George H. Smith

---

**Drawn With AutoCAD

---

**Scale:**

- 1/4" = 1'-0"

---

**Date:**

- 08/31/2021

---

**Note:**

- 1. The diagram is for a 30 ft. high retaining wall with a load of 50 kips per lineal foot. The design is based on the American Concrete Institute (ACI) 318-13 and the American Institute of Steel Construction (AISC) 360-16 standards.
- 2. The wall is designed to be constructed using concrete and reinforcing steel to withstand the specified loads and heights.
- 3. The covers indicated are for protection and detailing purposes.
- 4. The dimensions and quantities are subject to change based on further engineering analysis and site-specific conditions.

---

**Acknowledgment:**

- The design and analysis were performed by George H. Smith using AutoCAD software.

---

**Signature:**

- George H. Smith

---

**Copyright:**

- All rights reserved.
### Retaining Wall Data

#### Wall Dimensions

<table>
<thead>
<tr>
<th>H</th>
<th>B</th>
<th>D</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>0.072</td>
<td>0.47</td>
<td>0.072</td>
</tr>
</tbody>
</table>

#### Reinforcing Steel Schedule

| BARS | J | BAR | S | LENGTH | NO. | SIZE | SPACING | NO. | SIZE | SPACING | NO. | SIZE | SPACING | NO. | SIZE | SPACING | NO. | SIZE | SPACING | NO. | SIZE | SPACING |
|------|---|-----|---|--------|-----|------|---------|-----|------|---------|-----|------|---------|-----|------|---------|-----|------|---------|-----|------|---------|-----|------|---------|
|      | 0 | 0   | 0   |        | 0   | 0.62 | 0.18   | 0   | 0.62 | 0.18   | 0   | 0.62 | 0.18   | 0   | 0.62 | 0.18   | 0   | 0.62 | 0.18   |

#### Quantities

<table>
<thead>
<tr>
<th>CONCRETE</th>
<th>STEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>PER 100 FT</td>
<td>PER 100 FT</td>
</tr>
<tr>
<td>LENGTH</td>
<td>LENGTH</td>
</tr>
<tr>
<td>0.072</td>
<td>0.47</td>
</tr>
</tbody>
</table>

### Bending Diagram

- **View A-A**

#### Typical Section

- **NOTE**: Steel B & C placed in one interval, 100 ft. divergences in A-B and C-E between 100 ft. intervals.

- **CASE III SIPS/SDT MAX BENDING PRESSURES**: 6 ft. to 10 ft. height.
### Retaining Wall Data

#### Reinforcing Steel Schedule

<table>
<thead>
<tr>
<th>H</th>
<th>B</th>
<th>D</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
<th>L</th>
<th>M</th>
<th>N</th>
<th>O</th>
<th>P</th>
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<td></td>
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</tr>
</tbody>
</table>

#### Shear Key Dimensions

<table>
<thead>
<tr>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Quantities

<table>
<thead>
<tr>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Actual Maximum Bearing Capacity

<table>
<thead>
<tr>
<th>H</th>
<th>B</th>
<th>D</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Bending Diagram

![Bending Diagram](image)

---

### Cantilever Retaining Walls

**State of Florida Department of Transportation**

**Colonial Heights**

<table>
<thead>
<tr>
<th>Case Description (PSID/SGSF MAX Bearing Pressure)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2F to 20F</td>
</tr>
</tbody>
</table>

---

### View A

- **Typical Section**
  - [Diagram of Typical Section]

---

**Notes:**

- [Additional notes and specifications for the retaining wall project, including material quantities and construction details.]
## RETAINING WALL DATA

### REINFORCING STEEL SCHEDULE

<table>
<thead>
<tr>
<th>BARS</th>
<th>LENGTH</th>
<th>S</th>
<th>BARS</th>
<th>LENGTH</th>
<th>S</th>
<th>BARS</th>
<th>LENGTH</th>
<th>S</th>
<th>BARS</th>
<th>LENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>1</td>
<td>10</td>
<td>12</td>
<td>1</td>
<td>8</td>
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<td>1</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

### SHEAR KEY DIMENSIONS

<table>
<thead>
<tr>
<th>H</th>
<th>D</th>
<th>I</th>
<th>SHEAR KEY DIMENSIONS</th>
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</thead>
<tbody>
<tr>
<td>6</td>
<td>6</td>
<td>6</td>
<td>120</td>
</tr>
</tbody>
</table>

### QUANTITIES

- **Steel:**
- **Concrete:**
- **Other:**

### ACTUAL MAXIMUM

- **Steel:**
- **Concrete:**
- **Other:**

---

### BENDING DIAGRAM

- **BARS:**
- **FABRIC:**

### CANTILEVER RETAINING WALLS

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

### CASE STUDY:

**CASE STUDY**

**EXHIBIT:**

- **Actual Height:**
- **Foundation:**

---

**NOTE:**

- **To accommodate the required strength of the structure, the designer may need to consider the use of a different type of reinforcement within the strut and counterstrut, with the amount of steel determined by the engineer in charge at each end of the strut.**

---

**VIEW A-A**

- **Typical Section:**
- **FABRIC:**

---

**FIT TO BE FT. HEIGHT**

- **BARS I:**
- **BARS M:**

---

**NOTES:**

- **To be determined by the designer in charge at each end of the strut.**

---

**TYPICAL SECTION**

- **Steel:**
- **Concrete:**

---

**DATA**

- **Actual:**
- **Required:**

---

**DATE:**

- **23 OF 23 (14.05)**

---

**DATA**

- **Actual:**
- **Required:**

---

**DATE:**

- **23 OF 23 (14.05)**