TOP OF WALL ELEVATION = 398.10'
TOP OF ARCH ELEVATION = 393.50'
END OF WINGWALL TOP ELEVATION = 388.50'
TOP OF FOOTING ELEVATION = 380.96'
BOTTOM OF WALL FOOTING ELEVATION = 379.46'
BOTTOM OF ARCH FOOTING ELEVATION = 378.46' - 1.5'

HEADWALL/WINGWALL ELEVATION - TYPICAL BOTH SIDES

CIVIL PLAN NOTES:
1. CIVIL PLANS BY BENCHMARK ENGINEERING, INC. AND THEY ARE TO BE FOLLOWED AND HOLD PRECEDENCE OVER THESE PLANS FOR LOCATION INFORMATION.
2. FENCE ALONG HEADWALLS & WINGWALLS AS SHOWN ON SHEET 26 AND IN ACCORDANCE WITH HOWARD COUNTY CHAIN LINK FENCE STANDARD DETAIL G-7.21.

PLATE ARCH STRUCTURAL NOTES:
1. SUBGRADE BEARING CAPACITY 4000PSF TO BE VERIFIED BY OVERSITE ENGINEER OF RECORD;
2. FOOTING CONCRETE 4000 PSI;
3. ALL BACKFILL AROUND ARCH TO BE A-1-A MIN 19' PAST ARCH AND COMPACTED TO 95% STD.
4. PROCTOR MAX. DRY DENSITY;
5. SCOUR ANALYSIS HAS BEEN COMPLETED BY CBC ENGINEERS. SCOUR IS NEXT TO SIDES OF CULVERT. FOOTING EXTENDING 6' INSIDE CULVERT MEETS SCOUR PROTECTION REQUIREMENTS.
6. 2000 PSI LEAN CONCRETE OR VIBRATED #57 STONE TO BE USED BELOW FOOTING SUBGRADE TO ACHIEVE BEARING CAPACITY IF NEEDED.

HEADWALL/WINGWALL COMBINED FOOTING LAYOUT CLOSE-UP

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SPECIALIZING IN STRUCTURAL & GeOTECHNICAL ENGINEERING
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LANE: 724-652-7747
LSB&C: 888-949-5722
Howard County Chain Link Fence Detail for Fence Construction Along Winwalls and Headwalls.

<table>
<thead>
<tr>
<th>Section</th>
<th>Max. Height H</th>
<th>Vertical Reinforcing A</th>
<th>Horizontal Reinforcing B</th>
<th>Section 1 Beam Additional Steel C</th>
<th>Footing Steel D</th>
<th>Footing Steel E</th>
<th>Footing Width F</th>
<th>Footing Thickness G</th>
<th>Footing Toe H</th>
<th>Footing Heel I</th>
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<td>#6 @ 12&quot; O.C.</td>
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Headwall & Wingwall & Plate Arch Dimensions & Reinforcing Details Chart.

Typical Wall Section - See Chart for Dimensions.

Scale: NS

No AS-BUILT Information is Provided on this Sheet.
SELECT EMBOSSING MATERIAL TO BE COMPACTED TO 95% STANDARD PROCTOR DENSITY (MINIMUM). CRITICAL BACKFILL ZONE MATERIAL AS PER GRADING REQUIREMENTS COMPACTED TO 95% STANDARD PROCTOR DENSITY IN MAXIMUM 8" LIFTS.

2-H CUSHION ARCH COMPOSED OF CRITICAL BACKFILL ZONE MATERIAL AS PER NOTE 2 - CROSSING OVER THE TOP.

SECTION
36H BRIDGE-PLATE LOW PROFILE ARCH

CRITICAL BACKFILL ZONE
NOTE SPAN AND RISE DIMENSIONS MEASURED FROM INSIDE CURVE TO INSIDE CURVE NO ZONE

C.S.P. REINFORCED CONCRETE FOOTING (SEE STRUCTURAL LAYOUT)

6-3/4" 1/SPAN

NOTE

ARCH FROM 9'-4" ABOVE TOP OF FOOTING TO FINISHED GRADE.
BACKFILL AND COMPACTED PARALLEL TO ARCH UP TO 9'-4" ABOVE TOP OF FOOTING.

NATURAL GROUND MUST BE CAPABLE OF SUPPORTING STRUCTURAL SOIL ENVIRONMENT AND APPLIED LOADS WITH MINIMAL DIFFERENTIAL SETTLEMENT. REMOVE OR STABILIZE ANY SOFT OR WEAK MATERIAL AS DIRECTED BY THE GEOLOGICAL ENGINEER.

4.0 SPREADING

4.1 HEAVY EQUIPMENT SHALL OPERATE ONLY AS CLOSE TO THE STRUCTURE AS IS ALLOWED BY THE ENGINEER (AS ADVISED BY THE ARMTIC REPRESENTATIVE). MATERIAL IS NOT TO EXCEED 8" WITHIN 1' OF THE STRUCTURE.

4.2 MATERIAL IS NOT TO BE DUMPED ON TOP OF THE STRUCTURE. MATERIAL MUST BE WELL GRADED. MAXIMUM PARTICLE SIZE IS NOT TO EXCEED 5" WITHIN 1' OF THE STRUCTURE.

4.3 MATERIAL SHALL BE PLACED IN LAYERS WHICH SHALL NOT EXCEED 8" IN THICKNESS. TRUCK END DUMPING OR SIDE PLACEMENT AGAINST THE SIDE OF THE STRUCTURE IS ABSOLUTELY NOT PERMITTED.

4.4 TRUCKS CAN UNLOAD IN ROLLED LAYERS STARTING NO CLOSER THAN 3' FROM THE SIDEWALKS WHILE MOVING OUT. ALL DUMP STOPS MUST BE MADE AT A POINT WHERE THE MATERIAL CAN BE TRANSPORTED TO THE STRUCTURE.

4.5 FINISH LEVEL MUST BE MAINTAINED PROVIDING AN ELEVATION DIFFERENCE ALONG EACH SIDE OF THE STRUCTURE.

6.0 CROSSING OVER THE TOP

6.1 WHEN THE BACKFILL REACHES AN ELEVATION OF 9'-4"

6.2 THE INITIAL COVERING OF THE TOP IS THE MOST CRITICAL CROSSING SITUATION AND MUST BE PERFORMED IN THE PRESENCE OF THE ENGINEER OR AN AUTHORIZED REPRESENTATIVE. BACKFILL MUST BE PLACED AT ALL TIMES BETWEEN THE EQUIPMENT AND THE STRUCTURE. THE FIRST COVER (CUSHION ARCH) MUST BE BUILT UP EVENLY FROM BOTH SIDES. THE EQUIPMENT USED SHALL NOT BE HEAVIER THAN A 6'-6" CAT TRACTOR 10100 2WD WITH 24" STEERING FOR SPREADING MATERIAL AND NOT HEAVIER THAN A BULLDOZER BV-750 FOR COMPACTION.

6.3 FOR COVER GREATER THAN 1'-4", THE ENGINEER, AT HIS DISCRETION, MAY PERMIT HEAVIER EQUIPMENT. ACTUAL SIZE OF EQUIPMENT AND OPERATING DISTANCE FROM THE STRUCTURE SHALL BE DETERMINED BY THE ENGINEER USING INFORMATION PROVIDED BY THE MONITORING OF THE SHAPE.

6.4 DESIGN VEHICLES/HIGHWAY TRAFFIC MAY CROSS OVER THE STRUCTURE AFTER IT IS PLACED AND COMPACTED TO FINISHED HEIGHT OF COVER AS SHOWN ABOVE.

6.5 IF THE BACKFILL IS NOT TO BE PLACED IMMEDIATELY TO THE FINISHED ROAD ELEVATION, A WEARING AND TRAVELLING SURFACE IS TO BE BUILT OVER THE CRITICAL BACKFILL ZONE IN ORDER TO PROTECT THE STRUCTURE AND TO PERMIT ITS FUNCTION AS A SAFE STRUCTURE AT ALL TIMES.

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BOX CULVERT PLAN VIEW
SCALE: 1/2"=1'

Culvert Data
Low-flow Profile Aluminum Box Culvert [200-4'-70] w/ Foster Plates
Type: A
Pipe Size: 8'-10" (Cx = 100)
Flow: 270 CFS (Creek & Natural)
Material: Seamless Type 316 Stainless Steel

Culvert Design Data
Culvert Location:
Culvert Closes at: 10.0405' from east to west
Culvert Drains To: 9.4680' from east to west
Flood Plane: 10.0405' from east to west
Natural Design Elevations:
Top: 10.5000'
Bottom: 10.0405'

No A5-BUILT INFORMATION IS PRINTED ON THIS SHEET.

CONCEPT DRAWINGS
ONLY, PROFESSIONALLY
ENGINEERED SHOP
DRAWINGS REQUIRED
FOR APPROVAL.

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LSBC: 888-949-5722
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</tr>
<tr>
<td>10.0</td>
<td>Depth of sand layer</td>
</tr>
</tbody>
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**Geology**

- **Soil Layer 1:** Gravel
- **Soil Layer 2:** Sand
- **Soil Layer 3:** Silt
- **Soil Layer 4:** Clay

**Construction Notes:**

- Boring was conducted at a depth of 10 ft below ground level.
- Water level was recorded at a depth of 8 ft.