## NEW RETAINING WALL KEY PLAN

SCALE: 1/16" = 1'-0"



- NOTES:

  1. SEE CIVIL DRAWINGS FOR LOCATION, DIMENSIONS AND ADDITIONAL INFORMATION. 2. ALL DIMENSIONS AND ELEVATIONS SHALL BE VERIFIED PRIOR TO INITIATING CONSTRUCTION. 3. FOR HEIGHT OF THE RETAINING WALL, SEE CIVIL DRAWINGS. FOR RETAINING WALL REINFORCING SEE SECTIONS ON RW3. COORDINATE TOP OF WALL ELEVATION WITH WALL PROFILE ON CIVIL DRAWINGS
- 4. FOR GRADES AT BOTH SIDES OF WALL SEE CIVIL DRAWINGS. 5. FOR PIPES RUNNING PARALLEL AND UNDER THE WALL FOUNDATION, SEE 3 & 4/RW2,
- 6. FOR DETAILS OF WALL ANGLE REINFORCING, SEE 5 & 6/RW2. 7. FOR TYPICAL REINFORCING BAR DETAILS SEE 7/RW2. MAXIMUM SPACING OF WALL CONTROL
- JOINTS: 25'-0", SEE DETAIL 1/RW2.
- 8. MAXIMUM SPACING OF WALL EXPANSION JOINTS: 100'-0", SEE DETAIL 2/RW2.
- 9. \$ DENOTES STEP IN FOUNDATION, SEE STEP DETAIL 8/RW2. 10. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING THE FOLLOWING: A. PLAN SHOWING THE WALL LOCATION, HEIGHT, STEPS, CONTROL & EXPANSION JOINTS.
- B. KEY ALL SECTIONS ON THE PLAN. C. ALL REINFORCING.

## GENERAL NOTES

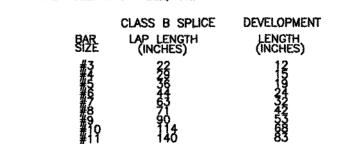
- GENERAL: A. THE FOLLOWING NOTES ARE APPLICABLE TO ALL DRAWINGS. B. APPLICABLE STRUCTURAL CODE - VIRGINIA UNIFORM STATEWIDE BUILDING CODE (USBC), 2012 ED, EFFECTIVE JULY 14, 2014, BASED ON INTERNATIONAL BUILDING CODE, 2012
- C. THE CONTRACTOR SHALL USE MATERIALS AND EMPLOY CONSTRUCTION METHODS IN ORDER TO COMPLY WITH THE DRAWINGS AND SPECIFICATIONS. WHERE A CONFLICT OCCURS, THE STRICTEST DESIGN SHALL GOVERN. ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC. DOES NOT RELIEVE THE CONTRACTOR FROM MEETING THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY SPECIFIC DEVIATIONS AND OBTAIN ENGINEER'S WRITTEN APPROVAL FOR THE SPECIFIC DEVIATION.
- D. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH CIVIL DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF ALL REQUIREMENTS INTO THE SHOP DRAWINGS AND CONSTRUCTION. E. THE STRUCTURE SHOWN ON THESE DRAWINGS IS STRUCTURALLY SOUND ONLY
- IN ITS COMPLETED FORM. THE CONTRACTOR SHALL TEMPORARILY SHORE AND BRACE ALL EARTH, FORMS, CONCRETE TO RESIST GRAVITY, EARTH, WIND, SEISMIC, THERMAL, CONSTRUCTION AND MISCELLANEOUS LOADS DURING CONSTRUCTION. THE CONTRACTOR SHALL HIRE AND PAY A PROFESSIONAL STRUCTURAL ENGINEER REGISTERED IN THE STATE OF
- VIRGINIA TO DESIGN AND INSPECT ALL TEMPORARY SHORING AND BRACING. F. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION. G. CONNECTIONS OF ALL ITEMS SUPPORTED BY THE STRUCTURE ARE THE
- RESPONSIBILITY OF THE DISCIPLINES WHO ARE MAKING THESE ATTACHMENTS. THESE ATTACHMENTS SHALL BE DESIGNED TO RESIST ALL GRAVITY, WIND, WIND UPLIFT, SEISMIC, THERMAL LOADS, ETC.
  H. WHERE A DETAIL, TYPICAL DETAIL, SECTION, TYPICAL SECTION OR A
  NOTE IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR
- SIMILAR CONDITIONS UNLESS OTHERWISE NOTED. I. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS.
- J. UNLESS NOTED, ELEVATIONS SHOWN ARE TO TOP OF FOUNDATIONS. K. UNLESS NOTED. SUBMIT SHOP DRAWINGS OF ALL FABRICATED MATERIALS FOR REVIEW. DESIGN DRAWINGS SHALL NOT BE REPRODUCED FOR USE AS SHOP DRAWINGS. SHOP DRAWINGS WILL NOT BE REVIEWED UNLESS THEY WERE CHECKED, BEAR THE INITIAL OF THE CHECKER AND ARE STAMPED APPROVED" BY THE GENERAL CONTRACTOR

L. ALL REQUIRED TESTING REPORTS SHALL BE AVAILABLE AT THE JOB SITE.

- DESIGN LOADS:
- A. RETAINING WALL DESIGN SOIL PARAMETERS: UNIT WEIGHT OF BACKFILL (SOIL DENSITY) = 120 PCF INTERNAL FRICTION ANGLE = 30° = 40 PSF/FT ACTIVE EARTH PRESSURE
- AT-REST EARTH PRESSURE PASSIVE EARTH PRESSURE COEFFICIENT OF BASE SLIDING ALLOWABLE SOIL BEARING
- B. DESIGN PARAMETERS & TOTAL GLOBAL STABILITY OF THE RETAINING WALL SHALL BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER.
- FOUNDATIONS AND RETAINING WALL:
  - A. DESIGN PARAMETERS: UNLESS NOTED, DESIGN "NET" SOIL BEARING PRESSURE 2500 PSF FOR FOUNDATIONS BEARING ON EXISTING SOIL. FROST PENETRATION 12 INCHES BELOW ADJACENT FINISH GRADE. ALL DESIGN PARAMETERS SHALL BE VERIFIED BY A QUALIFIED GEOTECHNICAL ENGINEER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO REPORT ADVERSE CONDITIONS.
  - B. THE SITE SHALL BE PREPARED IN ACCORDANCE WITH CIVIL DRAWINGS. SPECIFICATIONS AND SUBSURFACE EXPLORATION PER GEOTECHNICAL REPORT PREPARED BY UNITED CONSULTING DATED JUNE 10, 2014 AND EMAIL RESPONSE ON JULY 29, 2015. THE MOST CONSERVATIVE RECOMMENDATIONS
- C. WHERE FILL IS REQUIRED IT SHALL BE PLACED IN ACCORDANCE WITH THE CRITERIA LISTED IN 3.B., AND UNDER THE SUPERVISION OF A QUALIFIED GEOTECHNICAL ENGINEER. D. ALL EXCAVATIONS SHALL BE INSPECTED BY A
- QUALIFIED GEOTECHNICAL ENGINEER TO VERIFY THE DESIGN CRITERIA AND REPORT ADVERSE CONDITIONS. (GEOTECHNICAL ENGINEER TO BE HIRED AND PAID BY THE OWNER.) IN CASE OF CONFLICT BETWEEN THE GEOTECHNICAL REPORT, SPECIFICATIONS AND DRAWINGS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
- E. FOUNDATION ELEVATIONS GIVEN ARE FOR PURPOSE OF CONTRACT AND SHALL BE ADJUSTED (LOWERED) AT TIME OF EXCAVATION TO MEET SOIL CONDITIONS. ENGINEER SHOULD BE CONSULTED.
- F. THE CONTRACTOR SHALL BRING TO THE ATTENTION OF THE ENGINEER THE LOCATION OF EXISTING AND FUTURE UTILITIES AND PROCEED WITH THE WORK ONLY AFTER WRITTEN APPROVAL FROM THE ARCHITECT.
- G. BACKFILL REQUIREMENTS TO BE A "SELECT ENGINEERED FILL" CONSISTING O CLAYEY OR SILTY SAND OR SANDY CLAY SOIL (SC, SM OR CL) WITH A PLASTICITY INDEX OF LESS THAN 25. RETAINING WALL BACKFILL TO BE COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR MAXIMUM DRY
- CONCRETE: A. CONCRETE SHALL CONFORM TO ACI BUILDING CODE (318-LATEST EDITION).
- UNLESS NOTED, CONCRETE SHALL BE NORMAL WEIGHT, 4000 PSI @ 28 DAYS WITH MAXIMUM WATER-CEMENTITIOUS MATERIALS RATIO OF 0.45 B. UNLESS NOTED, CEMENT SHALL CONFORM TO ASTM C150, TYPE I/II AGGREGATES SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
- ADMIXTURES CONTAINING CHLORIDES SHALL NOT BE USED.
- C. CONCRETE EXPOSED TO WEATHER (I.E., CONCRETE WALLS, RETAINING WALLS, ETC.) SHALL BE AIR—ENTRAINED IN ACCORDANCE WITH ACI—318. D. UNLESS NOTED, MAXIMUM SLUMP FOR CONCRETE SHALL BE 5" AT POINT OF PLACEMENT. WHERE APPROVED BY THE ENGINEER OF RECORD, LARGER
- SLUMP IS PERMITTED WITH THE ADDITION OF HIGH RANGE WATER REDUCING ADMIXTURE (SUPERPLASTICIZER) E. FLYASH SHALL NOT EXCEED 12% OF THE CEMENT (BY WEIGHT) AND SHALL NOT EXCEED THE MANUFACTURER'S REQUIREMENTS FOR ADMIXTURES. CURING COMPOUNDS, BOND BREAKERS, ETC. FLYASH SHALL COMPLY WITH
- ASTM C618 CLASS F OR CLASS C. DO NOT USE FLYASH IN COLD WEATHER CONCRETING (REFER TO ACI 306).
- F. CONCRETE CURING SHALL COMPLY WITH ACI 308-LATEST EDITION. CURING PROCESS SHALL START IMMEDIATELY FOLLOWING INITIAL SET.
- G. HOT WEATHER CONCRETING: SPECIAL PRECAUTIONS RECOMMENDED BY ACI 305 SHALL BE TAKEN WHEN THE AMBIENT TEMPERATURE IS ABOVE 90 DEGREES FAHRENHEIT OR WHEN MAXIMUM RATE OF EVAPORATION IN THE CONCRETE EXCEEDS 0.2 LB/SF/HR. THIS RATE IS AFFECTED BY AIR TEMPERATURE, RELATIVE HUMIDITY, CONCRETE TEMPERATURE AND WIND VELOCITY (SEE ACI 305, FIGURE 2.1.5). AFTER FINISHING CONCRETE, USE LIGHT FOG SPRAY UNTIL CURING COMPOUND IS USED, OR WET CURING
- METHOD IS IMPLEMENTED. H. COLD WEATHER CONCRETING: WHEN, FOR MORE THAN THREE (3)
  CONSECUTIVE DAYS, THE MEAN DAILY TEMPERATURE DROPS BELOW 40 DEGREES FAHRENHEIT, SPECIAL MATERIALS AND PROCEDURES SHALL BE PROVIDED DURING PLACING AND CURING OF CONCRETE PER ACI 306.
- I. CURING AND HOT AND COLD WEATHER CONCRETING PROCEDURES ARE GIVEN AS A GUIDE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT CONCRETE DAMAGE AND CRACKS. DAMAGED OR CRACKED CONCRETE SHALL NOT BE ACCEPTED.
- J. ALL FIELD TESTING SHALL BE PERFORMED BY A CERTIFIED ACI FIELD TECHNICIAN, AND SHALL INCLUDE (AT MINIMUM) THE CONCRETE "SLUMP" AND "COMPRESSIVE" STRENGTHS" PER THE REQUIREMENTS OF THE BUILDING DEPARTMENT.
- A. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60 (U.N.) AND GRADE 40 FOR #3 AND SMALLER BARS. MINIMUM LAP 48 DIAMETER (U.N.). GRADE 60 REINFORCING MAY NOT BE RE-BENT OR FIELD BENT WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER

  B. REINFORCING THAT IS WELDED SHALL BE WELDABLE TYPE, ASTM A-706

  C. LAP SPLICES AND DEVELOPMENT LENGTH SHALL BE IN ACCORDANCE
- WITH THE FOLLOWING TABLE, UNLESS NOTED OTHERWISE.



D. COMPRESSION DOWEL EMBEDMENT: 22 BAR DIAMETERS, UNLESS NOTED OTHERWISE.

= 60 PSF/FT

= 0.38= 2500 PSF

= 360 PSF/FT

- 6. RETAINING WALL DRAINAGE: A. DRAINANGE BOARD SYSTEM AT THE RETAINING WALL SHALL BE MIRAFI CCW MIRADRAIN 6000XL/6200XL OR EQUIVALENT AND SHALL BE INSTALLED PER THE MANUFACTURERS DIRECTION AND INSTALLATION PROCEDURES. THE INSTALLER SHALL BE CERTIFIED TO INSTALL THE PRODUCT BY THE
- B. RETAINING WALL DRAINAGE AS SPECIFIED ON THE DRAWINGS OR BY THE CIVIL OR GEOTECHNICAL ENGINEER. THE MOST CONSERVATIVE METHOD SHALL BE
- C. SUBMIT MANUFACTURER'S PRODUCT DATA CERTIFICATES OF COMPLIANCE FOR DRAINAGE COMPOSITES SPECIFIED. 1. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS SHOWING LAYOUT, PROFILES,
- AND PRODUCT COMPONENTS, INCLUDING ACCESSORIES FOR DRAINAGE COMPOSITES. 2. SAMPLES: SUBMIT VERIFICATION SAMPLES FOR PREFABRICATED DRAINAGE
- D. INSTALLER SHALL BE EXPERIENCED TO PERFORM INSTALLATION, WHO HAS SPECIALIZED IN THE INSTALLATION OF WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT, WHO CAN COMPLY WITH MANUFACTURER'S WARRANTY REQUIREMENTS, AND WHO IS AN AUTHORIZED APPLICATOR AS DETERMINED BY MANUFACTURER.
- E. PRE-INSTALLATION MEETINGS: CONDUCT PRE-INSTALLATION MEETING TO VERIFY PROJECT REQUIREMENTS, SUBSTRATE CONDITIONS, MANUFACTURER'S INSTALLATION INSTRUCTIONS AND MANUFACTURER'S WARRANTY REQUIREMENTS. F. PRE-INSTALLATION TESTING: IN ACCORDANCE WITH MANUFACTURER'S
- RECOMMENDATIONS AND WARRANTY REQUIREMENTS, CONDUCT PRE-INSTALLATION TESTING OF SUBSTRATES TO RECEIVE DRAINAGE G. UPON COMPLETION AND ACCEPTANCE OF THE WORK REQUIRED BY THIS SECTION, THE INSTALLER AND MANUFACTURER WILL ISSUE A WARRANTY
- AGREEING TO PROMPTLY REPLACE DEFECTIVE MATERIALS FOR A PERIOD OF 5 H. APPROVED MANUFACTURERS
- 1. PREFABRICATED DRAINAGE COMPOSITE: CCW MIRADRAIN, A 3-DIMENSIONAL DIMPLED CORE AND GEOTEXTILE FABRIC, BY CARLISLE COATINGS
- 7. STRUCTURAL ENGINEER OF RECORD (SER) SITE VISITS: A. CONTRACTOR SHALL NOTIFY ARCHITECT FIVE (5) WORKING DAYS PRIOR TO THE FOLLOWING CONSTRUCTION MILESTONES:
  - 1. FOUNDATIONS: AFTER FOUNDATION REINFORCING IS PLACED AND BEFORE POURING CONCRETE AT THE FOUNDATION. 2. RETAINING WALL CONSTRUCTION: AFTER REINFORCING STEEL IS PLACED
- AND BEFORE CONCRETE IS POURED. B. FAILURE TO NOTIFY ARCHITECT OF ANY CONSTRUCTION MILESTONE MAY RESULT IN CONTRACTOR HAVING TO REMOVE WORK FOR THE PURPOSE OF REVIEW AT CONTRACTOR'S EXPENSE.
- C. PREMATURE NOTIFICATION FOR SITE VISIT WILL RESULT IN AN ADDITIONAL SITE VISIT WITH ALL EXPENSES AND FEES PAID BY THE

SPECIAL INSPECTION	FREQUENCY	REFERENCED STANDARD
CONCRETE: (1705.3)		
1. INSPECTION OF REINFORCING STEEL.	PERIODIC	ACI 318: 3.5, 7.1-7.7
2. INSPECTION OF REINFORCING STEEL WELDING AS REQUIRED BELOW		AWS D1.4 ACI 318: 3.5.2
<ul> <li>verification of weldablity of reinforcing steel other than astm. a. 706</li> </ul>	PERIODIC	
d. Other reinforcing steel	PERIODIC	
4. INSPECT EPOXY ANCHORS AND EXPANSION ANCHORS INSTALLED IN HARDENED CONCRETE.	N/A	PRODUCT ICC-ES REPORT
5. VERIFYING USE OF REQUIRED DESIGN MIX	PERIODIC	ACI 318: Ch. 4, 5.2-5.4
6. SAMPLING FRESH CONCRETE AND PERFORMING SLUMP, AIR CONTENT AND DETERMINING THE TEMPERATURE OF FRESH CONCRETE AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS.	CONTINUOUS	ASTM C 172 ASTM C 31 ACI 318: 5.6,
7. INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	CONTINUOUS	ACI 318: Ch. 5.9, 5.10
11. VERIFICATION OF IN-SITU CONCRETE STRENGTH, PRIOR TO REMOVAL OF SHORES AND FORMS FROM WALLS & FOUNDATIONS	PERIODIC	ACI 318: 6.2
12. INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.	PERIODIC	ACI 318: 6.1.1

SOILS:	(1705.6)	FREQUENCY	REFERENCED STANDARD	
1.	VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.	PERIODIC	GEOTECHNICAL ENGINEERING REPORT	
2.	VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.	PERIODIC		
3.	PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS.	PERIODIC		
4.	VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.	CONTINUOUS	,	
5.	PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY. [ALL UNSUITABLE MATERIAL HAS BEEN REMOVED]	PERIODIC		

Parameters and the		NAMES OF TAXABLE PARTY.	
INSPECT	ION OF	FABRICATO	RS

1) FABRICATION AND IMPLEMENTATION PROCEDURES: THE SPECIAL INSPECTOR SHALL VERIFY THAT THE FABRICATOR MAINTAINS DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES THAT PROVIDE A BASIS FOR INSPECTION, CONTROL OF THE WORKMANSHIP, AND THE FABRICATOR'S ABILITY TO CONFORM TO APPROVED CONSTRUCTION DOCUMENTS AND REFERENCED STANDARDS. THE SPECIAL INSPECTOR SHALL REVIEW THE PROCEDURES FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE

2. WHEN SPECIAL INSPECTIONS ARE REQUIRED BY BUILDING OFFICIAL

CODE REQUIREMENTS FOR THE FABRICATOR'S SCOPE OF WORK.

3. WHEN SPECIAL INSPECTIONS ARE NOT REQUIRED BY THE BUILDING OFFICIAL a) upon completion of fabrication, the approved fabricator shall submit a CERTIFICATE OF THE COMPLIANCE TO THE BUILDING OFFICIAL STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.

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