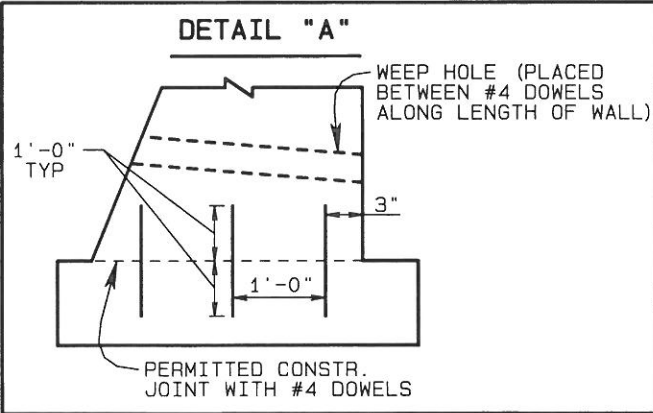


CALCULATION OF BASE (B)

VALUE OF H + 2 (FT)	(H+2) < 6	6 ≤ (H+2) ≤ 9	(H+2) > 9
NO SLOPE CONDITION WITHOUT TRAFFIC SURCHARGE	(.60) x (H+2)	(.60) x (H+2)	(.60) x (H+2)
NO SLOPE CONDITION WITH TRAFFIC SURCHARGE	(.80) x (H+2)	(.75) x (H+2) **	(.70) x (H+2) **
SLOPE CONDITION	(.66) x (H+2)	(.70) x (H+2) **	(.75) x (H+2) **

DO NOT EXCEED 10 FT TOTAL WALL (H+2) HEIGHT

**** KEY IS REQUIRED FOR SLOPE CONDITIONS OR NO SLOPE CONDITION WITH TRAFFIC SURCHARGE WHEN (H+2) IS 6 FT OR GREATER**



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CONCRETE GRAVITY RETAINING WALL

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NOTES:

1. THE STANDARD GRAVITY RETAINING WALL IS BASED ON THE FOLLOWING ASSUMED SOIL PARAMETERS:

- TOTAL UNIT WEIGHT = 120 PCF
- COHESION = 0 PSF
- FRICTION ANGLE = 35 DEGREES IF GROUNDWATER IS WITHIN 5 FT OF THE BOTTOM OF THE FOOTING, 30 DEGREES IF GROUNDWATER IS MORE THAN 5 FT BELOW THE BOTTOM OF THE FOOTING

2. DO NOT USE THE STANDARD GRAVITY RETAINING WALL IF THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR IF GROUNDWATER IS PRESENT ABOVE THE BOTTOM OF THE FOOTING.

3. DO NOT USE THE STANDARD GRAVITY RETAINING WALL WHEN VERY LOOSE, SOFT OR UNSUITABLE SOIL CONDITIONS ARE PRESENT BELOW THE WALL.

4. CONSTRUCT GRAVITY RETAINING WALLS OF CAST-IN-PLACE REINFORCED CONCRETE AND A BRICK VENEER, IF REQUIRED, IN ACCORDANCE WITH THIS STANDARD DRAWING. FURNISH AND PLACE CONCRETE, REINFORCING STEEL, BRICK MASONRY AND TIES, JOINT FILLERS AND SEALERS, CURING AGENTS, AND ALL OTHER MATERIALS AND EQUIPMENT; ERECT AND REMOVE ALL FALSEWORK AND FORMS; PROTECT CONCRETE IN WIND, RAIN, LOW HUMIDITY, HIGH TEMPERATURES, OR OTHER UNFAVORABLE WEATHER; CONSTRUCT JOINTS AND WEEP HOLES; FINISH AND CURE CONCRETE; PROTECT CONCRETE FROM RUST STAINS; PLACE STONE DRAINS AND SUBDRAIN FINE AGGREGATE; PLACE AND COMPACT BACKFILL; AND EXCAVATE FOR WALLS.

5. EXCAVATE AS NECESSARY FOR GRAVITY RETAINING WALLS. NOTIFY THE ENGINEER WHEN FOUNDATION EXCAVATION IS COMPLETE. DO NOT PLACE ANY CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND THE CHARACTER OF THE FOUNDATION MATERIAL. WHERE FOUNDATION MATERIAL IS FOUND TO BE UNACCEPTABLE, UNDERCUT THE FOUNDATION MATERIAL AND BACKFILL WITH AN APPROVED SELECT MATERIAL AS DIRECTED BY THE ENGINEER.

6. IF REQUIRED, INSERT SLEEVES FOR FENCE POSTS IN THE TOP OF WALL IN ACCORDANCE WITH SECTION 866 OF THE NCDOT STANDARD SPECIFICATIONS. USE CLASS A CONCRETE AND PROVIDE A CLASS I SURFACE FINISH FOR ALL EXPOSED SURFACES.

7. IF THE GRADE BEHIND THE WALL SLOPES TOWARD THE WALL, SEAL THE JOINT BETWEEN THE WALL AND THE ASPHALT OR CONCRETE WITH JOINT SEALER. IF A CONCRETE PAVED DITCH IS REQUIRED BEHIND THE WALL, THE SLOPING BACKWALL OF THE GRAVITY RETAINING WALL FORMS HALF THE CONCRETE PAVED DITCH.

8. IF A BRICK VENEER IS REQUIRED AS SHOWN ON THE PLANS, CONSTRUCT BRICK MASONRY IN ACCORDANCE WITH SECTION 830 OF THE NCDOT STANDARD SPECIFICATIONS. ANCHOR BRICK VENEER WITH APPROVED BRICK TO CONCRETE ANCHORS ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS WITH A MINIMUM VERTICAL SPACING OF 16" AND A MINIMUM HORIZONTAL SPACING OF 32" WITH EACH ROW STAGGERED 16" FROM THE ROW OF ANCHORS ABOVE AND BELOW.

9. FIELD DETERMINE EXACT LOCATION, QUANTITIES, BOTTOM OF FOOTING ELEVATION AND WALL HEIGHT WITH THE ENGINEER. DO NOT PLACE CONCRETE UNTIL OBTAINING APPROVAL OF THE EXCAVATION DEPTH AND SOLID PARAMETERS BY THE PROJECT ENGINEER OF RECORD.

10. USE CLASS 'A' CONCRETE AND PROVIDE CLASS I SURFACE FINISHING FOR ALL EXPOSED SURFACES.

11. PROVIDE 3" DIA. WEEPHOLES ON 10 FT CENTERS ALONG THE WALL. SLOPE WEEP HOLES ON A 1" PER FOOT SLOPE THROUGH THE WALL SO THAT WATER DRAINS OUT OF THE FRONT OF THE WALL.

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12. PLACE A STONE DRAIN CONSISTING OF 1 CU. FT. OF #78M STONE CONTAINED IN A BAG OF POUROUS FABRIC AT EACH WEEP HOLE. PLACE SUBDRAIN FINE AGGREGATE BENEATH, AROUND AND OVER THE STONE DRAIN SO THAT THE STONE DRAIN IS COVERED BY A LAYER OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT THICK. PLACE A HORIZONTAL DRAIN OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT SQUARE IN CROSS SECTION TO CONNECT ALL STONE DRAINS.

13. PLACE A VERTICAL DRAIN OF SUBDRAIN FINE AGGREGATE AT LEAST 1 FT SQUARE IN CROSS SECTION AT EACH WEEP HOLE TO AN ELEVATION OF 2 FT BELOW THE SURFACE OF THE EMBANKMENT.

14. PROVIDE GROOVED CONTRACTION JOINT EVERY 10 FT AND EXPANSION JOINTS EVERY 30 FT ALONG THE WALL.

15. DO NOT BACKFILL BEHIND THE WALL UNTIL CONCRETE DEVELOPS A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. COMPACT BACKFILL IN ACCORDANCE WITH SUBARTICLE 235-4(C) OF THE NCDOT STANDARD SPECIFICATIONS. PLACE BACKFILL WITHIN 3 FT OF THE BACK OF THE WALL WITH HAND OPERATED EQUIPMENT. DO NOT OPERATE HEAVY EARTH MOVING EQUIPMENT WITHIN 10 FT OF THE BACK OF THE WALL.

16. WHEN A CONSTRUCTION JOINT IS LOCATED AT THE BASE OF THE WALL, IN SECTION, PROVIDE A MINIMUM OF 3-#4 DOWELS AT AN EQUAL SPACING. SPACE ALL DOWELS AT 1.5 FT CENTERS ALONG THE LENGTH OF THE WALL. WHEN A PERMITTED CONSTRUCTION JOINT IS UTILIZED AS SHOWN ON SHEET 1, THE #4 DOWELS TO BE INSTALLED SHALL BE GRADE 60.

17. THE TRAFFIC SURCHARGE CONDITION (CONSIDERED EQUIVALENT TO A 2 FT SURCHARGE ACCORDING TO AASHTO 3.20.3) REPRESENTS A LIVE LOAD FROM TRUCK TRAFFIC.

18. INSTALL COG STANDARD #445 HANDRAIL OR COG STANDARD #446 SAFETY RAIL AS SPECIFIED ON THE PLANS. WHEN HANDRAIL OR SAFETY RAIL IS REQUIRED, INSERT SLEEVES IN THE TOP OF THE GRAVITY WALL FOR PLACEMENT OF POSTS.

19. REMOVAL OF FORMS SHALL BE PERMITTED ANY TIME AFTER 3 HOURS IF THE CONCRETE IS SUFFICIENTLY SET TO ENABLE FORM REMOVAL WITHOUT DAMAGE TO THE WALL.

20. THE ENGINEER ON RECORD FOR THE PROJECT SHALL REVIEW CLASS A CONCRETE MIX DESIGNS PROVIDED BY ALL CONCRETE SUPPLIERS UTILIZED FOR THE PROJECT. THE COG SHALL RECEIVE A COPY OF THE APPROVED CONCRETE MIX DESIGN FROM THE CONTRACTOR PRIOR TO PLACEMENT OF CONCRETE. IF A GENERIC NCDOT APPROVED CONCRETE MIX IS TO BE USED, ALL REQUIRED NCDOT CONCRETE DOCUMENTATION AND APPLICABLE FORMS ARE TO BE DELIVERED WITH EACH LOAD OF CONCRETE AND PROVIDED TO THE COG CONSTRUCTION INSPECTOR ON SITE FOR ACCEPTANCE. CONCRETE MIXES DELIVERED TO THE PROJECT THAT DO NOT MEET THESE REQUIREMENTS WILL BE REJECTED. WHEN A GENERIC NCDOT APPROVED CONCRETE MIX IS USED, AN APPROVED CONCRETE MIX DESIGN FROM THE ENGINEER ON RECORD WILL NOT BE REQUIRED.

21. GRAVITY RETAINING WALLS WILL BE MEASURED AND PAID FOR AS THE ACTUAL NUMBER OF SQUARE FEET OF EXPOSED FACE AREA INCORPORATED INTO THE COMPLETED AND ACCEPTED WALL. THE WALL HEIGHT IS MEASURED AS THE DIFFERENCE BETWEEN THE TOP AND BOTTOM OF THE WALL. THE BOTTOM OF THE WALL IS DEFINED AS THE POINT WHERE THE FINISHED GRADE INTERSECTS THE FRONT OF THE WALL. THE TOP OF THE WALL IS DEFINED AS THE TOP ELEVATION OF THE COMPLETED WALL, INCLUDING BRICK VENEER IF APPLICABLE. IF A CONCRETE PAVED DITCH IS REQUIRED BEHIND THE WALL, NO PAYMENT WILL BE MADE FOR THE PORTION OF THE DITCH FORMED BY THE SLOPING BACK WALL OF GRAVITY RETAINING WALL. THE PRICE AND PAYMENT WILL BE FULL COMPENSATION FOR ALL ITEMS REQUIRED TO PROVIDE GRAVITY RETAINING WALLS INCLUDING BUT NOT LIMITED TO PORTLAND CEMENT CONCRETE, CURING AGENTS, JOINT FILLERS, JOINT SEALERS, REINFORCING STEEL, SUBDRAIN FINE AGGREGATE, #78M STONE, BRICK AND MORTAR.

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