

## BLOCK WALL SOP

Review your landscape package to familiarize yourself with the product, materials, wall locations, and elevations.

Ensure you have all the tools needed to complete the block wall installation:

- Skid steer with bucket and pallet forks
- Excavator
- 600lbs tamper
- 200lbs tamper
- Jumping jack
- Hand tamper
- Cut off saw
- Mixed gas
- Straight gas
- Diesel fuel
- Zip level
- 6' - 4' - 2' level
- String line and stakes
- Pencil and sharpies
- Marking paint
- Tape measure (30' and 100')
- Knife
- Hammer
- Dead blow sledge hammer
- Spade shovels
- Bull rakes
- Wheelbarrows
- 2' screed bars (1" and 1/2")

Ensure you have the necessary materials to install the block wall(s) (equations for material calculations)

### Standard Base

- Block - standard / corners / caps
- 3/4" roadbase
- 1/2" crusherchip
- 3/4" - 1" clear stone
- Filter fabric (if specified)
- Geo-grid (if specified)
- 2" sweeps
- 2" - class 160 conduit
- Structure bond and gun

### Open Graded Base

- Block - standard / corners / caps
- 3/4" - 1" clear stone
- 1/4" - 3/8" clear stone
- Filter fabric
- Biaxial Geo-grid
- Geo-grid (if specified)
- 2" sweeps
- 2" - class 160 conduit
- Structure bond and gun

Ensure you understand CRL's standard specifications for installing a block wall.

Standard Base:

Standard base depth - 8"

7.5" - 3/4" - 1" roadbase

.5" - 1/2" minus crusher chip

Standard base width - 6" over prep then the specified block

Standard block depth below finished grade - 8"  
Standard conduit depth below a block wall - 2" below block  
Standard conduit height above block wall (during construction) - 2' above finished grade  
Standard conduit height above block wall (after construction) - 8" below finished grade  
Standard conduit distance behind block wall - 8"

#### Open Graded Base:

Standard base width - 6" overprep of the specified block  
Filter fabric placed over the subgrade with 6" over prep then the specified block  
Standard base depth - 8"  
    7.5" -  $\frac{3}{4}$ " - 1" clear stone  
    .5" -  $\frac{1}{2}$ " -  $\frac{3}{8}$ " clear stone  
Biaxial Geo-grid - placed at the midpoint of the  $\frac{3}{4}$ " - 1" clear stone and at a width of 6"  
overprep of the specified block  
Standard block depth below finished grade - 8"  
Standard conduit depth below a block wall - 2" below block  
Standard conduit height above block wall (during construction) - 2' above finished grade  
Standard conduit height above block wall (after construction) - 8" below finished grade  
Standard conduit distance behind block wall - 8"

#### Order and arrange product to the jobsite

1. Using the landscape package and project estimate determine the quantities needed to complete the project
2. Arrange delivery of all product and materials

Layout the location of the block wall and it's excavation area. (refer to CRL's setting elevations and layout SOP)

1. Go to the setting out page (L3) within your design package
2. Use the provided measurements to layout the specified area using a tape measure, paint, string lines, and stakes.
3. If the measurements are not shown clearly on the setting out plan, use 2 -3 reference points within the setting out plan to layout the area.
4. Stake the front face of the key points of your block. (ends of walls, corners or transitions of walls)
5. String and paint out the front and back face of your block wall referencing the product dimensions specified on your landscape plan (L1)
6. Using CRL's block wall standards determine the width or area of the base prep for excavation (including over prep if required)
7. Measure out from the front and back face of the wall that has been painted out and mark out the overall excavation area for base prep including your specified overprep.

8. Turn to the grading plan (L4) in your landscape package. (refer to CRL's setting elevations and layout SOP)
9. Determine the scale specified within the grading plan sheet
10. Using your grading plan determine the key grade points that are needed to set out the wall elevations with grade stakes
11. If the landscape package has a site specific section drawing that shows the predetermined heights and elevations for the project reference this to complete the layout and grading stakes for the area
  - a. If a site specific section drawing is not supplied within the landscape package you will need to use CRL's standards combined with the grading plans elevations for TOW and BOW.
    - i. Let's say the specs on the plan show TOW is +34" and BOW is 0"
    - ii. The landscape plan (L1) specifies a valley stone block that is 18"w x 12"d x 8"H and a cap that is 18"w x 12"d x 4"H.
    - iii. The total finished wall height above grade is +34" TOW - 0" BOW = 34"
    - iv. We need to ensure our base block is buried a minimum of 8" below finished grade according to CRL standards.  $34" + 8" = 42"$
    - v. Now we can determine the amount of block we will need to ensure we meet CRL's standards while maintaining that +34 TOW once the wall install is complete.
    - vi. We know our caps are 4" high and blocks are 8" high. How many blocks plus a cap will it take to meet or slightly exceed that 42" minimum that we determined?  $4" + 8" + 8" + 8" + 8" + 8" = 44"$  That is 2" more than we need. However, if we used one less block at 8" in height we would only have a total wall height of 36". This would put our base block only 2" below finished grade and would not meet CRL's standards of having our base block buried a minimum of 8" below final grade so we need to go one block deep to ensure this standard is met. Our new overall height of wall will now be 44" based on product specs and CRL standards.
    - vii. We also need to account for 8" of road base that will make up the base that our block wall is built on as per CRL's standards.  $44" + 8" = 52"$
    - viii. Now that we have these calculations we can determine our excavation depth and set our zip level for excavation.
    - ix. We know that our TOW is to be +34" from the grading plans zero point. We now know our overall height from TOW to TOSG (top of subgrade) is to be 52". If we take  $+34 - 52" = -18"$  This will be the height we excavate to so that we ensure the wall both meets CRL standards and finished at the specified +34"
12. Use a tape measure to determine the measurements that will be used to layout out your individual grade points within the area
13. Install a stake to mark each grade point you have measured.

- a. This is typical done at the corners, ends, and transitions of a retaining wall
14. Determine whether you will need to offset your stakes to allow for excavation
  - a. Typical offset is 3' although a wider or narrower offset is acceptable if the situation allows
15. Label your stake for the specified grade point and mount the stake in that position
16. Continue setting your grade stakes at each key point on the walls layout until the walls elevation have has been completely laid out
17. Set you zip level to the projects zero point
18. With a ground man excavate the wall base that you have laid out checking grade as you go with your zip level
19. Compact the subgrade with a 600lbs tamper and/or a jumping jack by compacting the area 2 - 4 times depending on the sug-grade material.
  - a. If the subgrade is silty material avoid using a jumping jack to compact the sub-base as it can bring the moisture up causing an unstable base layer to continue your base prep with.
  - b. Apply moisture to sub-grades that are sand base or consist of clean fill (no organics) to ensure proper compaction

#### Standard Base

1. Fill the excavated area with 4" of  $\frac{3}{4}$ " - 1" road base
2. Wet and compact the area with a 200lb plate tamper.
  - a. Ensure you make your first passes through the center of the base prep working your way out the edges. This will avoid any roll over on the edges as you compact.
3. Add 4 more inches of  $\frac{3}{4}$ " - 1" road base
4. Before compacting the area ensure your grade is within CRL's specifications of 6" of overprep
5. Wet and compact the area once more
6. Using your 1" x 2' screed bars set a bar every 5' perpendicular to the base to 7.5" above TOSG using your zip level and
  - a. Ensure the screed bars are level to each other at each end of the screed bar and maintain your elevation of +7.5" above subgrade
  - b. If the base runs across a long distance, stake two stakes at either end of the base and string the elevation using your zip level to both ends of the screed bars. This will make it very easy to set your screed bars across the distance and ensure you maintain your elevation (see CRL's string line training video)
  - c. Ensure to pack underneath the screed bars along the distance of them with your fingers so the bars will not shift during screeding. (it should almost verge on hurting your fingers as you press the material under the bar to ensure proper support)
7. Add roadbase between the screed bars and using your 6' screed the area out to full width. Filling in any holes or low spots as you go.
8. Pull the 1" screed bars from the base and wet and compact the area.

9. Set ½" screed bars across the base ensuring you are level and maintaining an elevation of 8" above subgrade across the base width. If you are working on a long run utilize your two string lines to set your screed bars to.
10. Add ½" crusher chip around the screen bars and use your fingers to compact around and underneath the bars to secure them
11. Fill in the areas between the screed bars with ½" crusher chip and using your 6' level screed the area out level. Filling in an low spots of small dips
12. Pull the ½" screed bars out of the base prep and using a trowel fill in the bar lines left in the base.

#### Open Graded Base

13. Install a layer of 4oz filter fabric the width of the excavated base across its length
14. Fill the excavated area with 4" of ¾" - 1" clear stone
15. Compact the area with a 200lb plate tamper.
  - a. Ensure you make your first passes through the center of the base prep working your way out the edges. This will avoid any roll over on the edges as you compact.
16. Install a layer of biaxial geo-grid across the width and length of the base
17. Add 4 more inches of ¾" - 1" clear
18. Before compacting the area ensure your grade is within CRL's specifications of 6" of overprep
19. Compact the area once more
20. Using your 1" x 2' screed bars set a bar every 5' perpendicular to the base to 7.5" above TOSG using your zip level and
  - a. Ensure the screed bars are level to each other at each end of the screed bar and maintain your elevation of +7.5" above subgrade
  - b. If the base runs across a long distance, stake two stakes at either end of the base and string the elevation using your zip level to both ends of the screed bars. This will make it very easy to set your screed bars across the distance and ensure you maintain your elevation (see CRL's string line training video)
  - c. Ensure to pack underneath the screed bars along the distance of them with your fingers so the bars will not shift during screeding. (it should almost verge on hurting your fingers as you press the material under the bar to ensure proper support)
21. Add clear stone between the screed bars and using your 6' screed the area out to full width. Filling in any holes or low spots as you go.
22. Pull the 1" screed bars from the base and wet and compact the area.
23. Set ½" screed bars across the base ensuring you are level and maintaining an elevation of 8" above subgrade across the base width. If you are working on a long run utilize your two string lines to set your screed bars to.
24. Add ¼" - ⅜" clear stone around the screen bars and use your fingers to compact around and underneath the bars to secure them

25. Fill in the areas between the screed bars with ½” crusher chip and using your 6’ level screed the area out level. Filling in an low spots of small dips
26. Pull the ½” screed bars out of the base prep and using a trowel fill in the bar lines left in the base.

#### Installing Block

27. Stake and set a string line just above the height of the first row of block and across the front or back of the block. This will be your guide to layout your first row.
28. Start construction at the lowest elevation of the wall. If the installation has corners, it is recommended to start at the corners first. The other place to start a wall is next to a fixed structure that the wall will end at (e.g. basement foundation wall).
29. Place the first course of units on the prepared base, making sure that the units are leveled front to back and left to right. Small amounts of bedding material can be used to “fine-tune” the level of each unit
  
30. When positioning the first row of units, it is important to take into consideration the
31. setback of the units, as well as the final height of the installation. Determining the
32. position of the first stone will impact the final outcome of the job. For setback walls, each additional row added will reduce the width of the backfill zone.
- 33.
34. Begin laying out your first course of block starting at a corner or starting point using the string as a guide to ensure you are straight