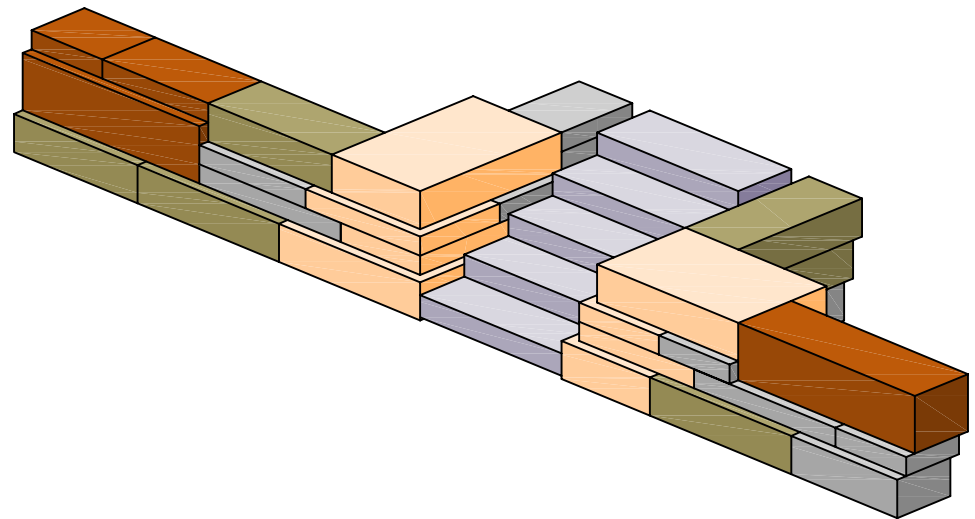


# ROSETTA OUTCROPPING RETAINING WALL SYSTEM

## ST. LOUIS COUNTY MASTERPLAN

### INDEX OF DRAWINGS:

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SHEET 8	STANDARD DESIGN - TRAFFIC SURCHARGE
SHEET 9	STANDARD DESIGN - SLOPING BACKFILL
SHEET 10	STANDARD DESIGN - TIERED WALL



**ROSETTA**  
HARDSCAPES, LLC

OUTCROPPING WALL SYSTEM

**MIDWEST BLOCK AND BRICK**  
12901 St. Charles Rock Road  
Bridgeton, MO 63044  
314-291-3200  
314-291-0265 fax

COVER SHEET

SHEET 1 OF 10

DATE: 1/22/18

# APPLICATION

THE ROSETTA OUTCROPPING WALL SYSTEM IS AN ARCHITECTURALLY ATTRACTIVE CONCRETE BLOCK RETAINING WALL SYSTEM. DESIGN OF THE SOIL STRUCTURES USES WELL ESTABLISHED GUIDELINES THAT ARE READILY AVAILABLE. THE FOLLOWING SPECIFICATIONS AND DETAILS PROVIDE A DESIGN FOR THE PURPOSES OF CONSTRUCTING GRAVITY RETAINING WALLS. PLEASE CONSULT MIDWEST BLOCK AND BRICK FOR ADDITIONAL DETAILS REGARDING DESIGN, APPEARANCE, AND AESTHETIC CONSIDERATIONS.

## STANDARD DESIGN PROCEDURE

THE FOLLOWING DESIGN TABLES ESTABLISHED FOR THE CONSTRUCTION OF GRAVITY RETAINING WALLS ARE BASED UPON GENERALLY ACCEPTED SOIL PARAMETERS IN THE ST. LOUIS COUNTY, MISSOURI AREA. ALL SOIL PARAMETERS ASSUMED IN THE DESIGN ARE WELL-DRAINED, LONG TERM STRENGTH CONDITIONS. HIGH PLASTIC SILTS AND CLAYS SHOULD BE AVOIDED WITHOUT SPECIFIC DESIGN RECOMMENDATIONS FROM LOCAL GEOTECHNICAL ENGINEERS. FROST HEAVE AND SETTLEMENT NEED TO BE ADDRESSED IF WARRANTED BY CONDITIONS. ALSO, SPECIAL PRECAUTIONS ARE NECESSARY FOR WALLS CONSTANTLY IN CONTACT WITH WATER, I.E. NEAR OR AT RIVERS , LAKES, AND PONDS.

FOUR TYPICAL GEOMETRIC CASES WERE SELECTED FOR THESE TABLES. THE FIRST CASE IS A TYPICAL RETAINING WALL WITH HORIZONTAL BACKFILL. THE SECOND CASE IS A TYPICAL RETAINING WALL WITH HORIZONTAL BACKFILL AND A RESIDENTIAL DRIVEWAY (100 PSF) SURCHARGE. THE THIRD CASE IS A 3:1 SLOPING BACKFILL. THE FOURTH CASE IS A TIERED WALL WITH FLAT BACKSLOPE AND NO SURCHARGE. THE FOLLOWING IS A SUMMARY OF THE DESIGN PARAMETERS USED AND THE MINIMUM FACTORS OF SAFETY WHICH THE DESIGNS ARE BASED ON.

### SOIL PROPERTIES

SOIL	FRICTION ANGLE	UNIT WEIGHT	COHESION
DRAINAGE FILL ( $\frac{3}{4}$ "-1" Clean Crushed Limestone)	34°	100 LB/CFT	0 PSF
RETAINED BACKFILL (Low plastic silty clay)	28°	120 LB/CFT	0 PSF
FOUNDATION SOIL (Low plastic silty clay)	28°	120 LB/CFT	0 PSF

FRICTION ANGLE = DEGREES  
UNIT WEIGHT = POUNDS PER CUBIC FOOT  
COHESION = POUNDS PER SQUARE FOOT

### MINIMUM FACTORS OF SAFETY

EXTERNAL SLIDING = 1.5  
INTERNAL SLIDING = 1.5  
OVERTURNING = 1.5  
BEARING CAPACITY = 1,500 PSF



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APPLICATIONS

SHEET 2 OF 10

DATE: 1/22/18

# SPECIFICATIONS - St. Louis County, Missouri Masterplan

## MATERIALS

**RETAINING WALL UNITS** SHALL BE ROSETTA OUTCROPPING BLOCK UNITS AS MANUFACTURED BY MIDWEST BLOCK AND BRICK. THE OUTCROPPING WALL SYSTEM CONSISTS OF (14) WALL UNITS OF VARIOUS SIZES. CONCRETE WALL UNITS SHALL MEET THE REQUIREMENTS OF ASTM C1372 AND BE MADE FROM WET CAST, READY-MIXED CONCRETE IN ACCORDANCE WITH ASTM C-94. UNITS SHALL HAVE A MINIMUM SPECIFIED 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.

**THE WALL BACKFILL** MATERIAL (OUTSIDE OF THE DRAINAGE ROCK) SHALL BE PROPERLY COMPACTED SOIL OR ROCK. THE SOIL SHALL BE FREE OF DEBRIS, CLUMPS, ROCKS LARGER THAN 4", AND ANY ORGANIC OR FROZEN MATERIALS. DO NOT USE HIGH PLASTIC SOILS THAT HAVE A PI>20 OR LL>40.

**THE GEOTEXTILE FILTER FABRIC** SHALL BE A NONWOVEN FABRIC WITH A MINIMUM WEIGHT OF 4.0 OZ/SY.

**THE LEVELING PAD** SHALL BE WELL-GRADED, CRUSHED LIMESTONE SIMILAR TO 1" MINUS, DIMENSIONS SHALL BE A MINIMUM OF 30" WIDE x 6" THICK.

**THE DRAINAGE ROCK** SHALL BE FREE-DRAINING ROCK SUCH AS 3/4" - 1" CLEAN CRUSHED LIMESTONE.

**THE PERFORATED PIPE** SHALL BE 4" DIAMETER HDPE COIL PIPE.

## WALL FOUNDATION

FOUNDATION SOIL SHALL BE EXCAVATED AS REQUIRED FOR THE LEVELING PAD AND THE FILL ZONE TO THE DEPTHS AND LOCATIONS SHOWN ON THE PLAN SHEET. WALLS SHALL HAVE THE BOTTOM COURSE(S) BURIED TO A MINIMUM DEPTH OF 6".

THE EXPOSED FOUNDATION SOIL SHALL BE OBSERVED PRIOR TO CONSTRUCTION TO VERIFY THAT THE EXPOSED MATERIAL IS SUITABLE FOR A NET DESIGN BEARING PRESSURE OF 1,500 PSF AND THAT THE BASE OF THE EXCAVATION IS FREE OF LOOSE SOIL, UNCOMPACTED FILL, HIGH PLASTIC SOIL, WATER, OR FROZEN MATERIAL. CONSULT A SOILS ENGINEER IF IN DOUBT. UNDERCUT ANY UNSUITABLE SOIL. UNDERCUT AREAS SHALL BE FILLED WITH CRUSHED LIMESTONE (1"-2" MINUS) AND PROPERLY COMPACTED.

CONSTRUCT THE CRUSHED ROCK LEVELING PAD AND COMPACT USING A VIBRATING PLATE COMPACTOR.

INSTALL A 4" (100 MM) DIAMETER PERFORATED DRAIN PIPE IN THE LOWEST PORTION OF THE OF THE WALL BACKFILL. DAYLIGHT THE DRAIN PIPE AT THE ENDS AND/OR THROUGH THE FACE OF THE WALL TO ALLOW FOR DRAINAGE.

## WALL CONSTRUCTION

PLACE THE BOTTOM COURSE OF WALL BLOCKS. TAKE CARE TO LEVEL THE BLOCKS BOTH PARALLEL AND PERPENDICULAR TO THE WALL.

PLACE SUCCESSIVE UNITS, DRAINSTONE, AND COMPACTED BACKFILL TO THE DESIRED GRADE/ WALL HEIGHT. WALL BLOCKS ARE SETBACK 3" FOR EVERY 12" OF WALL HEIGHT.

## WALL BACKFILL

WALL BACKFILL MATERIAL SHALL BE PLACED IN MAXIMUM 6" LOOSE LIFTS AND PROPERLY COMPACTED. BACKFILL SHALL BE PLACED, SPREAD, AND COMPACTED IN SUCH A MANNER THAT MINIMIZES MOVEMENT OF THE WALL.

PLACE DRAINAGE ROCK BEHIND UNITS AS SHOWN ON THE ATTACHED SECTIONS.

BACKFILL THE FIRST 12" (300 MM) BEHIND THE BLOCKS WITH  $\frac{3}{4}$ " - 1" CLEAN CRUSHED LIMESTONE. PLACE A LAYER OF NON-WOVEN GEOTEXTILE FABRIC IMMEDIATELY BEHIND THE WALL UNITS AND THE DRAINAGE FILL AND THEN PLACE THE RETAINED SOIL AND SOIL CAP.

DURING BACKFILL PLACEMENT THE 3 FOOT ZONE DIRECTLY BEHIND THE WALL SHALL BE LIMITED TO THE USE OF HAND OPERATED COMPACTION EQUIPMENT ONLY. MONITOR THE WALL BLOCKS FOR MOVEMENT DURING COMPACTION AND RECTIFY IF REQUIRED PRIOR TO PROCEEDING.

## PROTECTION OF WORK

THE SURFACE OF THE WALL BACKFILL SHALL BE GRADED AT THE END OF EACH DAY OF WORK TO PROVIDE POSITIVE SURFACE DRAINAGE AWAY FROM THE WALL. GRADING SHALL INCLUDE PROPER CONTOURING OF FILLS IN ADJACENT AREAS TO PREVENT THE FLOW OF SURFACE WATER INTO THE WALL BACKFILL.

THE DESIGN OF THE WALLS ARE BASED ON CONDITIONS AND LOADS IMPOSED ON THE WALL AT COMPLETION OF THE PROJECT. PRIOR TO PROJECT COMPLETION, THE WALL IS VULNERABLE TO DAMAGES CAUSED BY CONSTRUCTION ACTIVITY ADJACENT TO THE WALL. OF PARTICULAR CONCERN IS GRADING AND PAVEMENT CONSTRUCTION EQUIPMENT ON THE RETAINED BACKFILL AT THE TOP OF THE WALL. ONLY EQUIPMENT WITH A WEIGHT NOT EXCEEDING ONE TON CAN BE USED IN THE 3 FOOT ZONE DIRECTLY BEHIND THE BACK OF THE WALL FACE.

THE SOIL IN FRONT OF THE WALLS SHALL BE PROTECTED FROM FUTURE EROSION. THE TOP OF WALL MUST BE GRADED TO DIRECT SURFACE WATER AWAY FROM THE WALL.

GLOBAL STABILITY IS OUTSIDE THE SCOPE OF THIS DESIGN



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OUTCROPPING WALL SYSTEM

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## **SPECIFICATIONS**

SHEET 3 OF 10

DATE: 1/22/18



**BLOCK 2x.5**

- FACE = 24" x 6"
- WEIGHT = ±250 LBS
- AREA = 1 SQFT



**BLOCK 3x.5**

- FACE = 36" x 6"
- WEIGHT = ±320 LBS
- AREA = 1.5 SQFT



**BLOCK 4x.5**

- FACE = 48" x 6"
- WEIGHT = ±450 LBS
- AREA = 2 SQFT



**BLOCK 3x1**

- FACE = 36" x 12"
- WEIGHT = ±620 LBS
- AREA = 3 SQFT



**BLOCK 3.5x1**

- FACE = 42" x 12"
- WEIGHT = ±750 LBS
- AREA = 3.5 SQFT



**BLOCK 4x1**

- FACE = 48" x 12"
- WEIGHT = ±900 LBS
- AREA = 4 SQFT



**BLOCK 4.5x1**

- FACE = 54" x 12"
- WEIGHT = ±950 LBS
- AREA = 4.5 SQFT



**BLOCK 5x1**

- FACE = 60" x 12"
- WEIGHT = ±1100 LBS
- AREA = 5 SQFT



**BLOCK 5.5x1**

- FACE = 66" x 12"
- WEIGHT = ±1150 LBS
- AREA = 5.5 SQFT



**BLOCK 6x1**

- FACE = 72" x 12"
- WEIGHT = ±1300 LBS
- AREA = 6 SQFT



**BLOCK 5x1.5**

- FACE = 60" x 18"
- WEIGHT = ±1600 LBS
- AREA = 7.5 SQFT



**BLOCK 4x2**

- FACE = 48" x 24"
- WEIGHT = ±1800 LBS
- AREA = 8 SQFT



**12" CORNER BLOCK**

- FACE #1 = 48" x 12"
- FACE #2 = 30" x 12"
- WEIGHT = ±1170 LBS
- AREA = 6.5 SQFT



**6" CORNER BLOCK**

- FACE #1 = 39" x 6"
- FACE #2 = 27" x 6"
- WEIGHT = ±480 LBS
- AREA = 2.75 SQFT

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**BLOCK DETAILS**

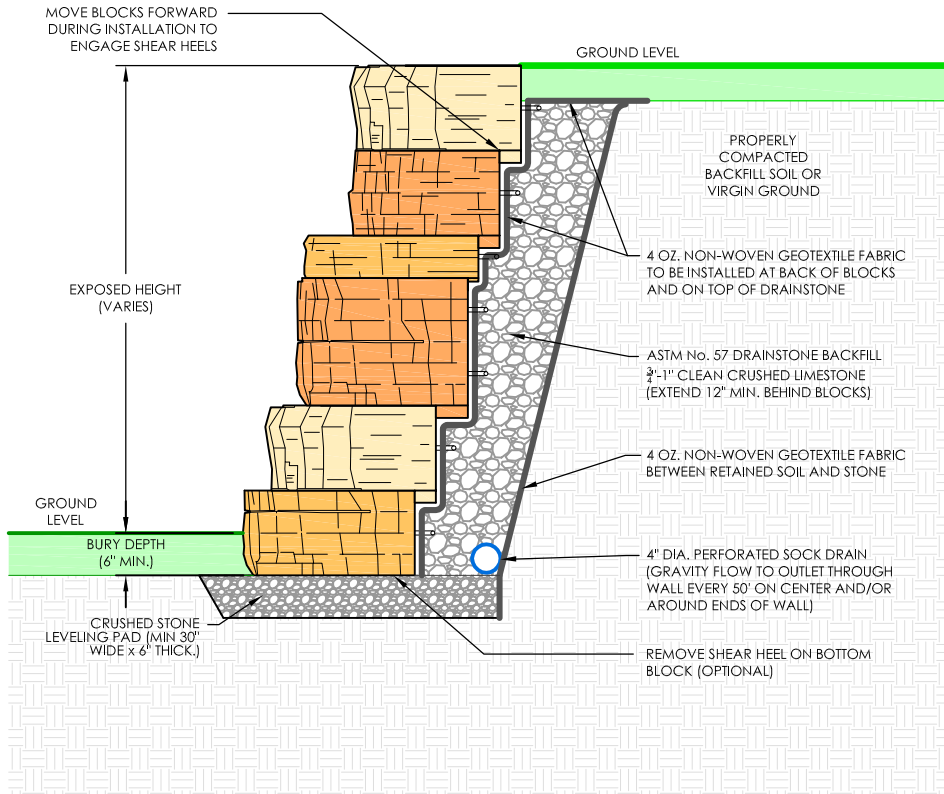
SHEET 4 OF 10

DATE: 1/22/18

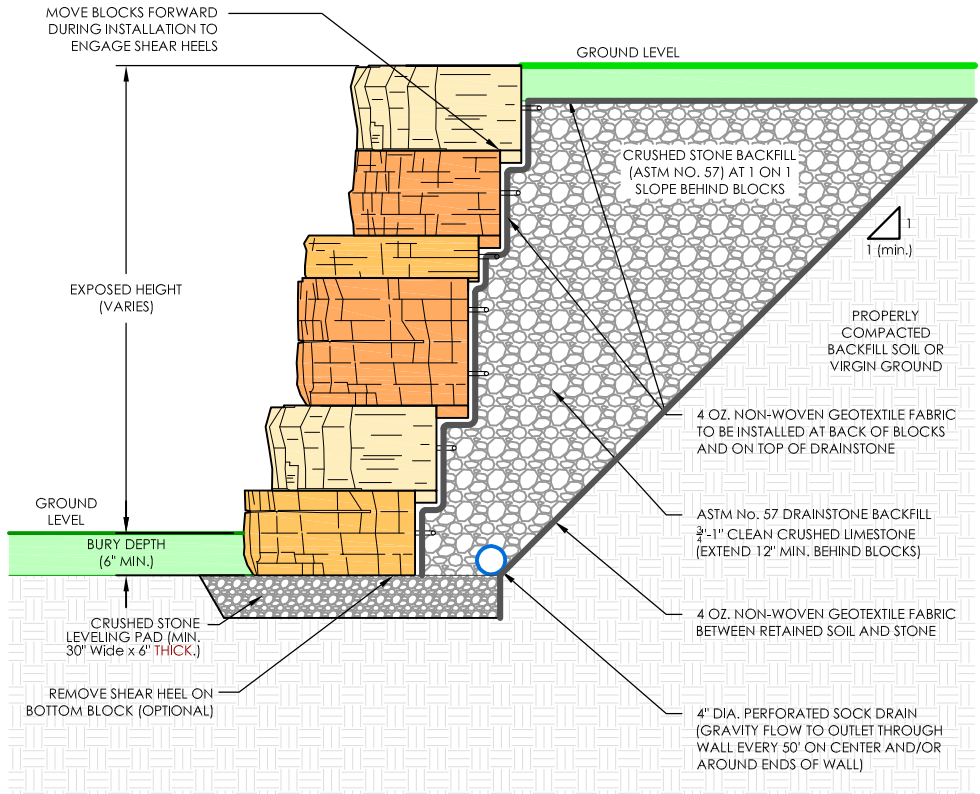


# TYPICAL RETAINING WALL CONSTRUCTION DETAILS

THIS PAGE SHOWS TYPICAL CONSTRUCTION DETAILS FOR OUTCROPPING RETAINING WALLS. THESE DRAWINGS ARE REPRESENTATIVE OF MAJOR COMPONENTS REQUIRED IN WALL CONSTRUCTION. SPECIFIC DETAILS INCLUDING DRAINAGE DETAILS, SOIL REQUIREMENTS, ETC. SHALL BE PER THE ENGINEERED DESIGN FOR THE WALL.



**TYPICAL SECTION #1**  
(MOST GRAVITY APPLICATIONS)



**TYPICAL SECTION #2**  
(EXTENDED HEIGHTS,  
SPECIAL LOADING, ETC.)

· BLOCK SIZES AND PLACEMENT SHOWN ARE FOR REFERENCE ONLY. INDIVIDUAL OUTCROPPING BLOCKS WILL VARY WITH INSTALLATION PATTERN.



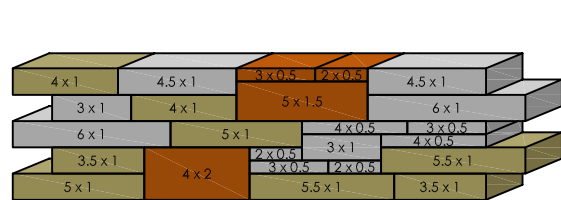
**ROSETTA**  
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TYPICAL SECTIONS

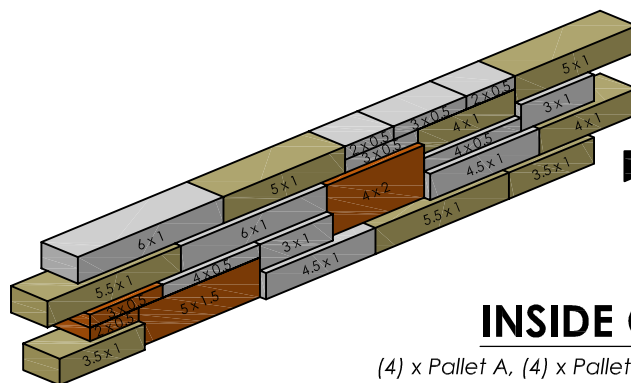
SHEET 5 OF 10

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## 5FT X 18FT WALL PATTERN

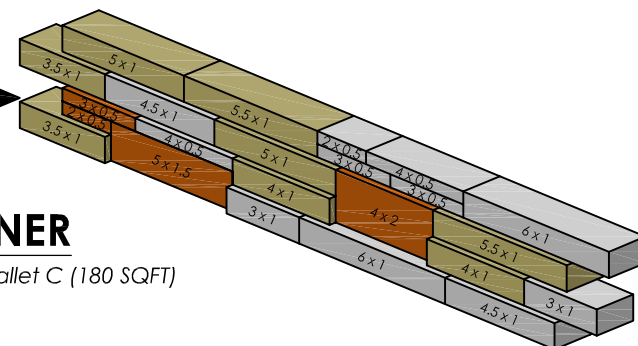
(2) x Pallet A, (2) x Pallet B, (1) x Pallet C (90 SQFT)



## INSIDE CORNER

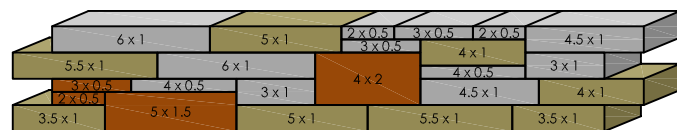
(4) x Pallet A, (4) x Pallet B, (2) x Pallet C (180 SQFT)

THE ATTACHED DETAILS ARE PROVIDED AS A REFERENCE TO DEMONSTRATE HOW DIFFERENT TYPES OF WALLS COULD BE CONSTRUCTED. THOUGH THESE LAYOUT PATTERNS CAN BE HELPFUL, THEY ARE NOT REQUIRED.



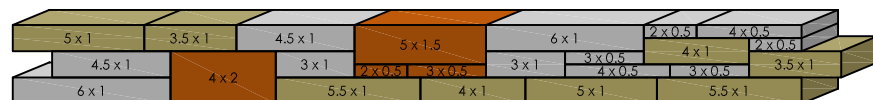
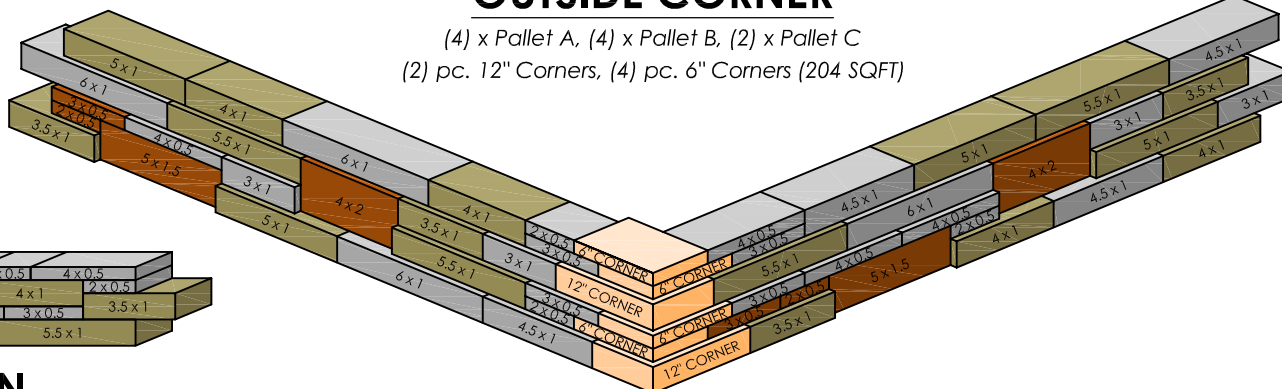
## OUTSIDE CORNER

(4) x Pallet A, (4) x Pallet B, (2) x Pallet C  
(2) pc. 12" Corners, (4) pc. 6" Corners (204 SQFT)



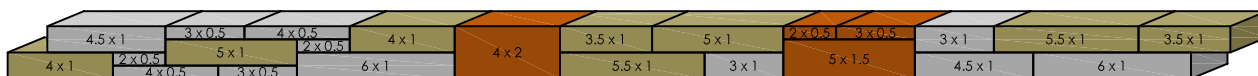
## 4FT X 22.5FT WALL PATTERN

(2) x Pallet A, (2) x Pallet B, (1) x Pallet C (90 SQFT)



## 3FT X 30FT WALL PATTERN

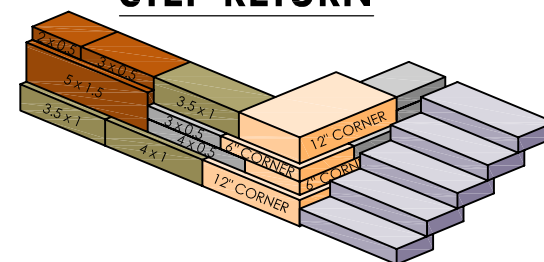
(2) x Pallet A, (2) x Pallet B, (1) x Pallet C (90 SQFT)



## 2FT X 45FT WALL PATTERN

(2) x Pallet A, (2) x Pallet B, (1) x Pallet C (90 SQFT)

## STEP RETURN



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TYPICAL DETAILS

SHEET 6 OF 10

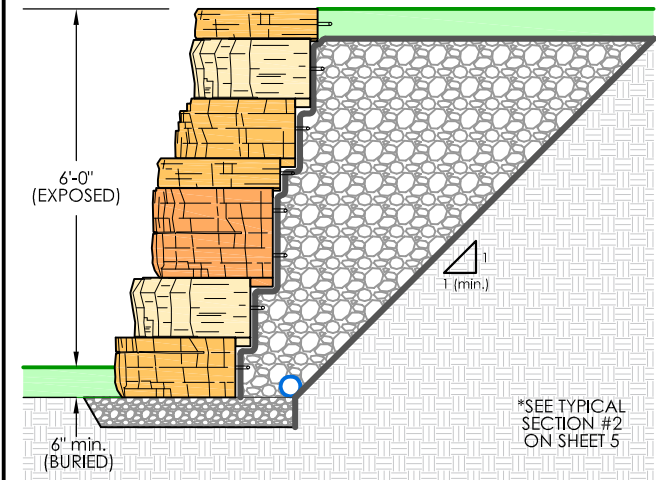
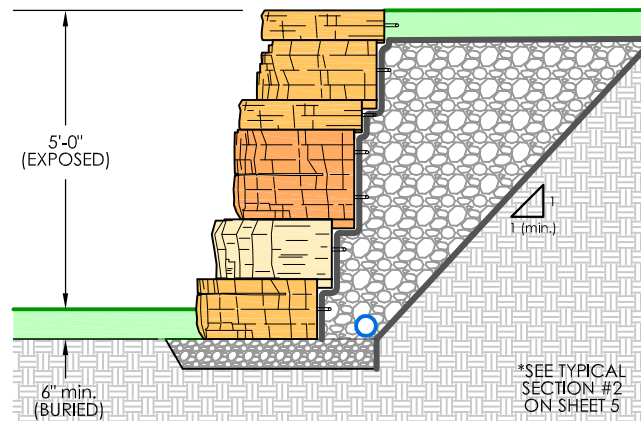
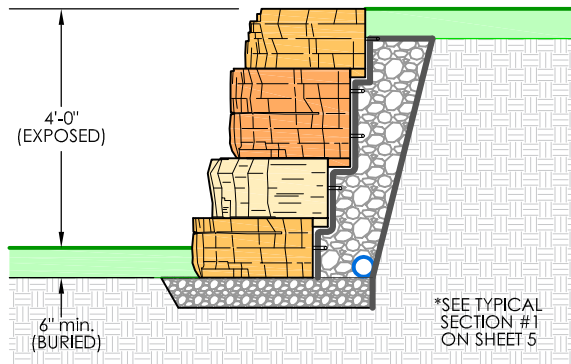
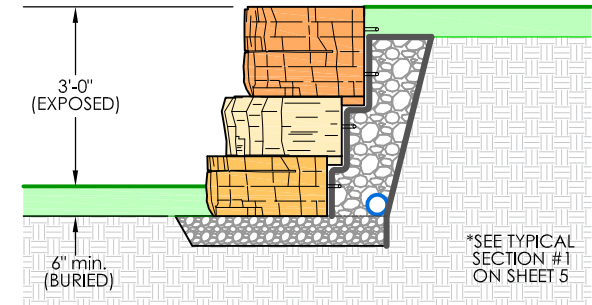
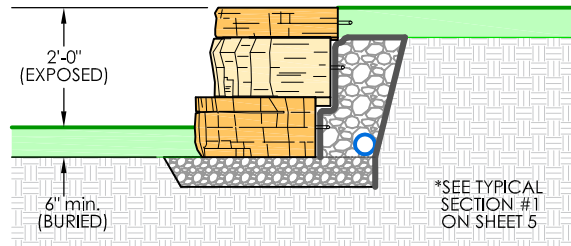
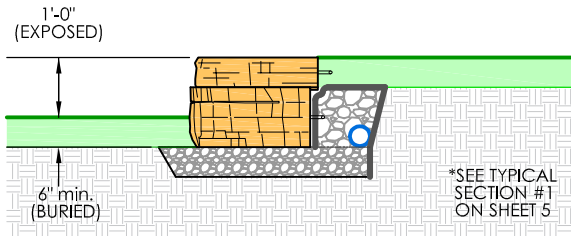
DATE: 1/22/18

# WALL HEIGHT GUIDES

NO BACKSLOPE

NO SURCHARGE

THIS PAGE SHOWS PRELIMINARY GUIDES TO CONSTRUCT A WALL WITH OUTCROPPING COLLECTION BLOCKS SHOWN IN THE CONDITIONS NOTED. SEE TYPICAL SECTIONS AND SPECIFICATIONS FOR TYPICAL CONSTRUCTION NOTES. BLOCK SIZES AND PLACEMENT SHOWN ARE FOR REFERENCE ONLY. INDIVIDUAL OUTCROPPING COLLECTION BLOCKS WILL VARY WITH INSTALLATION PATTERN.



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FLAT BACKFILL

SHEET 7 OF 10

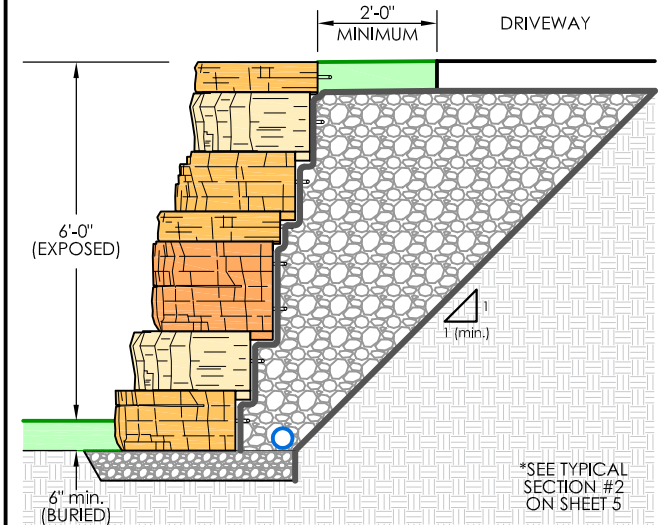
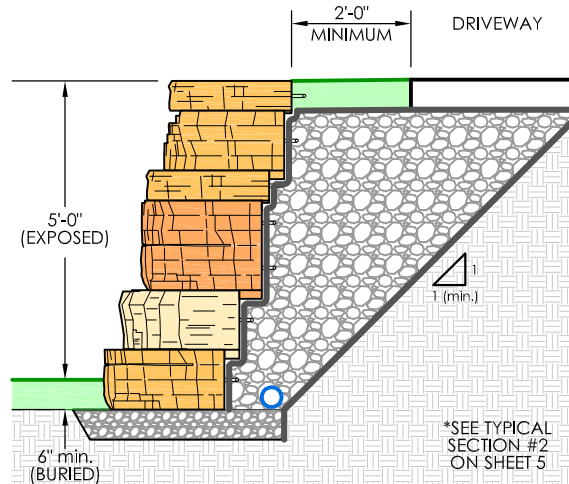
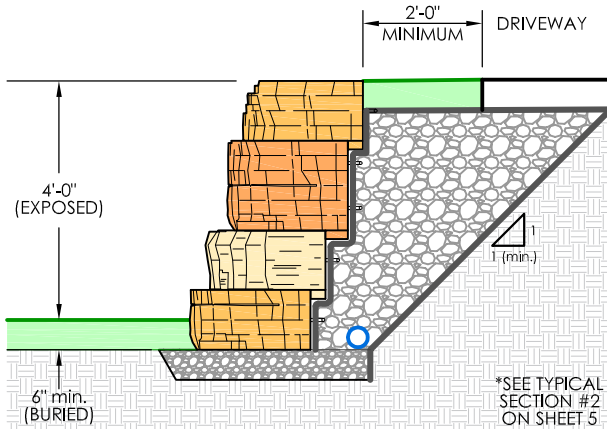
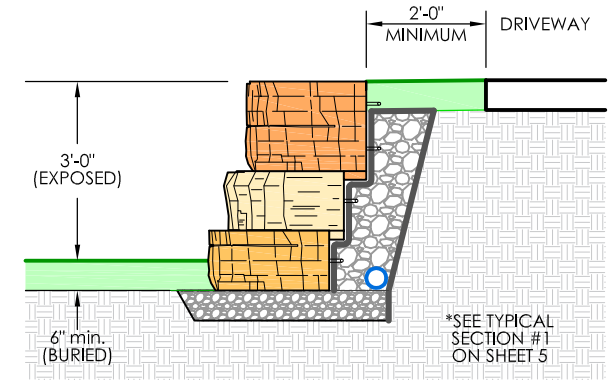
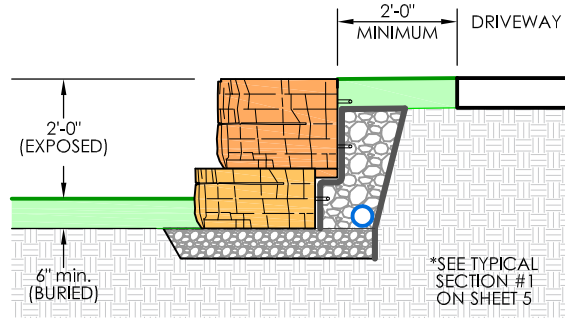
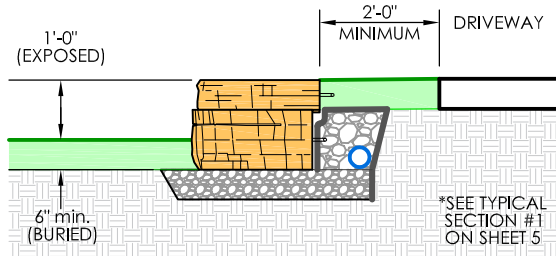
DATE: 1/22/18

# WALL HEIGHT GUIDES

NO BACKSLOPE

LIGHT TRAFFIC SURCHARGE (NO TRUCKS) (100 PSF)

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TRAFFIC SURCHARGE

SHEET 8 OF 10

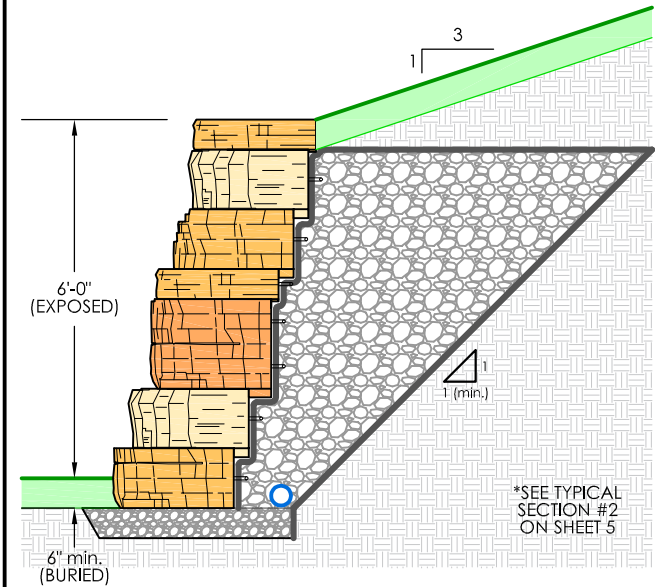
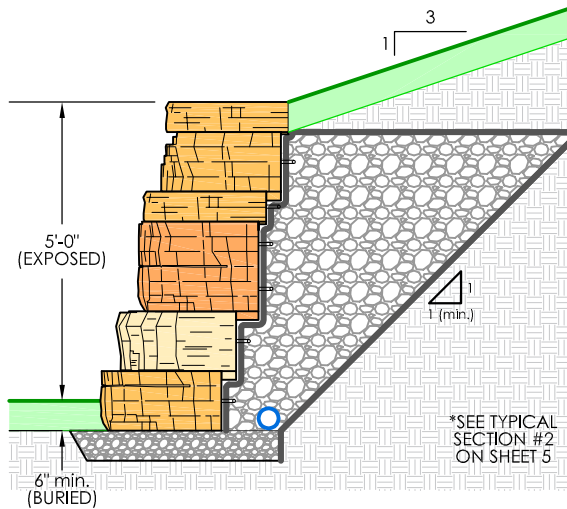
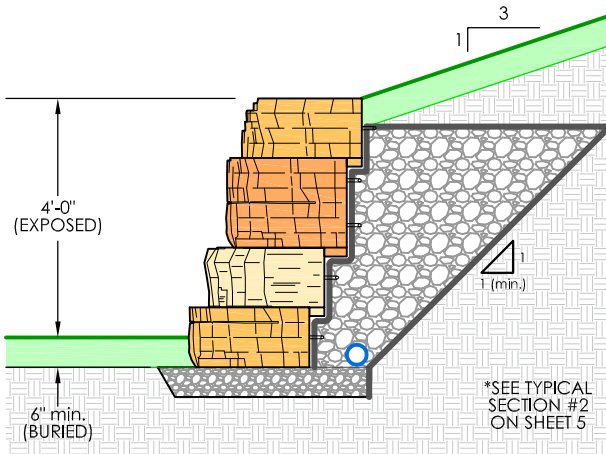
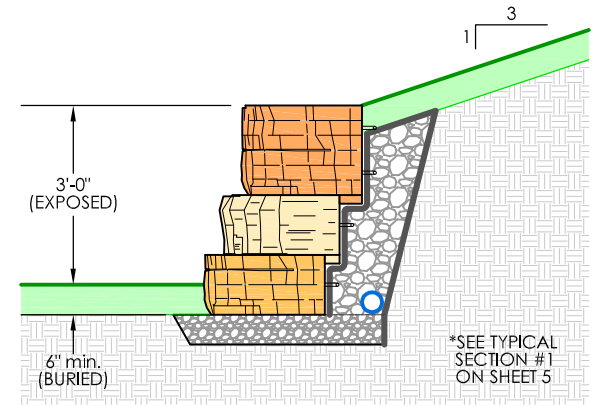
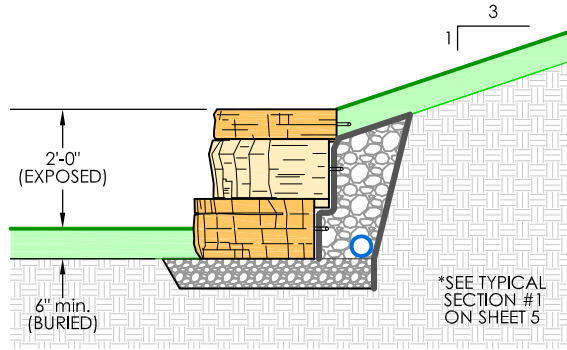
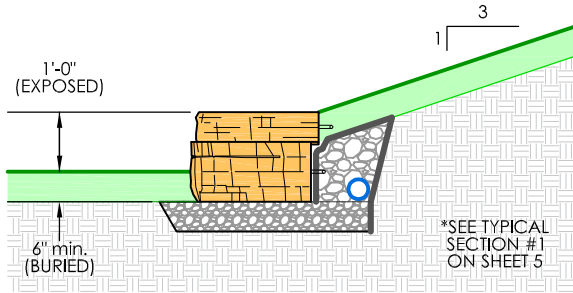
DATE: 1/22/18



# WALL HEIGHT GUIDES

1 on 3 (18.5°) BACKSLOPE NO SURCHARGE

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SLOPING BACKFILL

SHEET 9 OF 10

DATE: 1/22/18

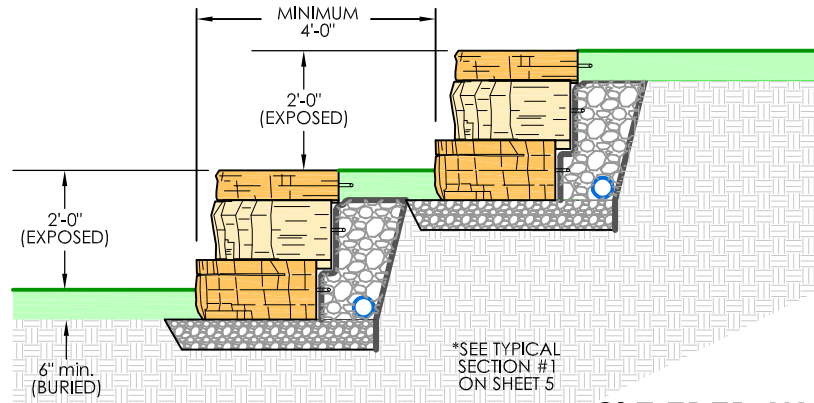
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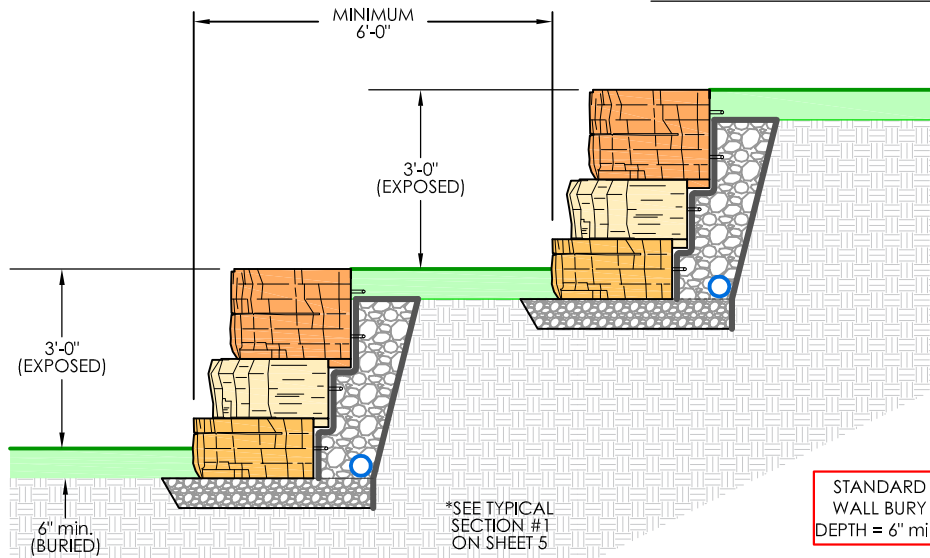
**TIERED**

**NO BACKSLOPE**

**NO SURCHARGE**

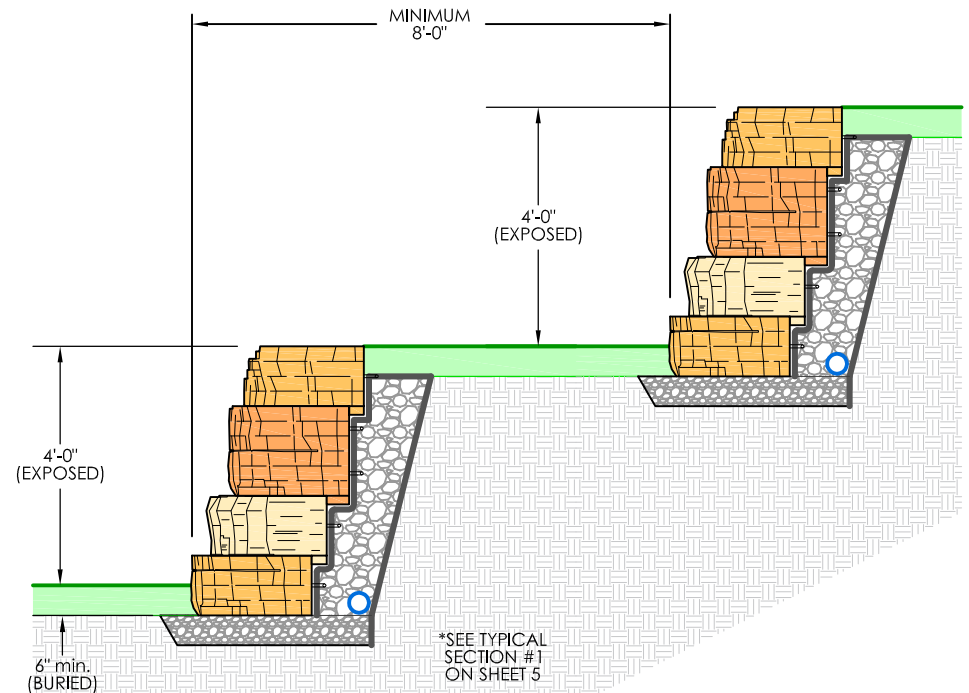


**2' TIERED WALLS**



**3' TIERED WALLS**

STANDARD  
WALL BURY  
DEPTH = 6" min.



**4' TIERED WALLS**

STANDARD  
WALL BURY  
DEPTH = 6" min.



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**TIERED WALLS**

SHEET 10 OF 10

DATE: 1/22/18

*Steven V. Stenger*  
County Executive

Saint Louis  
**COUNTY**  
TRANSPORTATION  
PUBLIC WORKS

*Daniel W. Dreisewerd, P.E., PTOE*  
Acting Director

*Stephanie Leon Streeter, P.E.*  
Deputy Director

February 20, 2018

RE: Application 17BLD-05600 (master plan retaining wall designs for Rosetta Outcropping block)

I am pleased to announce that the Rosetta Outcropping retaining walls designs you submitted are approved for use within this jurisdiction as master plans. The assigned master plan numbers are:

Single tier wall up to 6' high w/ level soil backfill	725-18-11
Single tier wall up to 6' high w/ level soil backfill and 100 psf surcharge	725-18-12
Single tier wall up to 6' high w/ sloping soil backfill (max 1 vert:3 horiz)	725-18-13
Two tier wall with each tier up to 4' high level with a level soil backfill	725-18-14

Anyone applying for a building permit for a retaining wall in our jurisdiction based on these plans must provide:

1. a completed permit application form that includes the appropriate master plan number listed above.
2. municipal zoning approval (if the wall is located within the city limits of a contracting municipality).
3. four (4) copies of the site plan showing the location and length of the wall, drawn to scale. Top and bottom of wall elevations, the direction of drainage, the retained side of the wall, and distances to any structures, parking lots, and property lines must be indicated on the site plan.
4. four (4) copies of the front elevation view of the wall with dimensions.
5. four (4) copies of construction details of the specific wall design to be built. These details (e.g. leveling pad size, block product, backfill material, filter fabric, etc.) must match those in the approved master plan (i.e. the 10 pages of plans and specifications that you submitted and I approved).

If you have any questions, you may contact me at (314) 615-3726.

Sincerely,



Chris Falk, P.E.  
Building Plan Reviewer