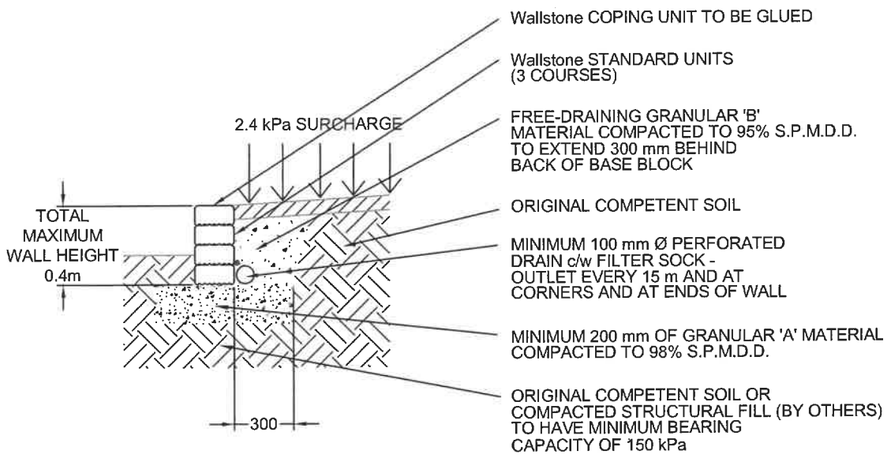
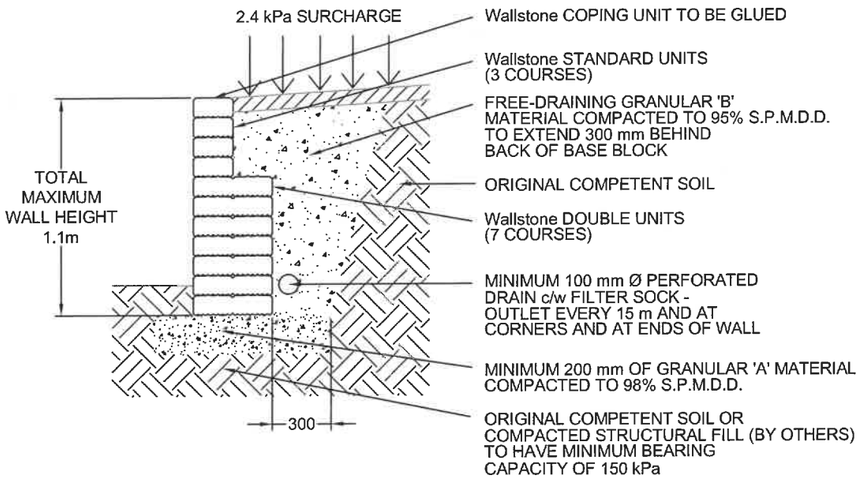
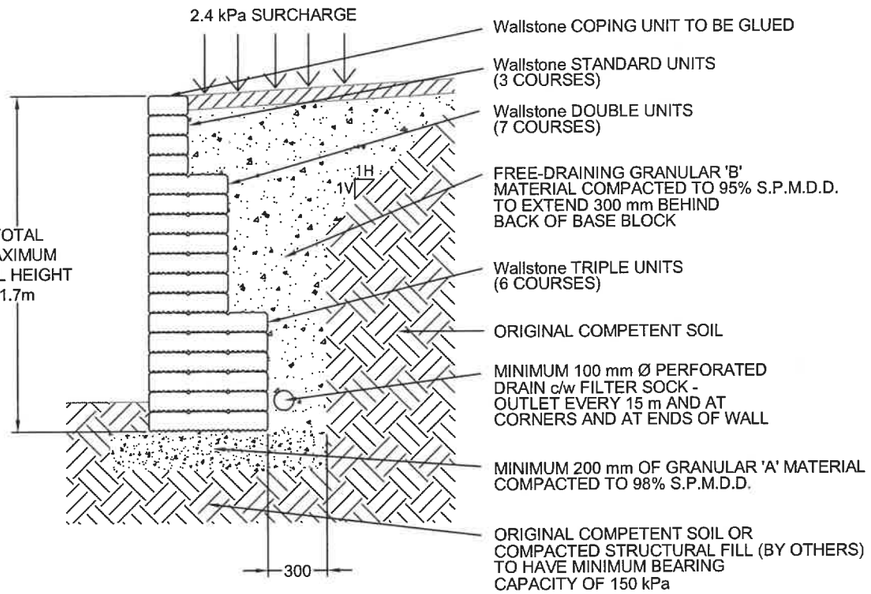






GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT THE TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

8. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

9. TO ACHIEVE A 0° BATTER, DO NOT STEP BACK.

10. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

11. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

12. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

13. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

14. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

15. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
G.P. MITCHELL
3205750
Nov 19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 8/18	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GRAVITY DESIGN
VERTICAL BATTER
TO 1.7 m

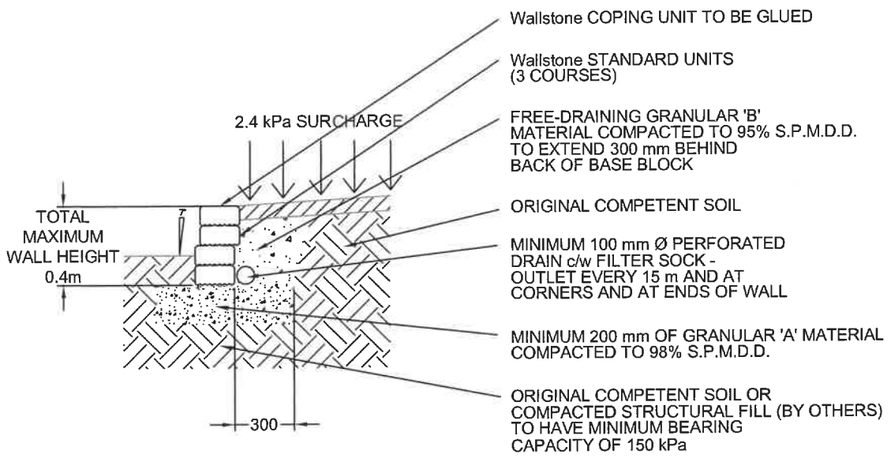
PROJECT: Wallstone
STANDARD ENGINEERING

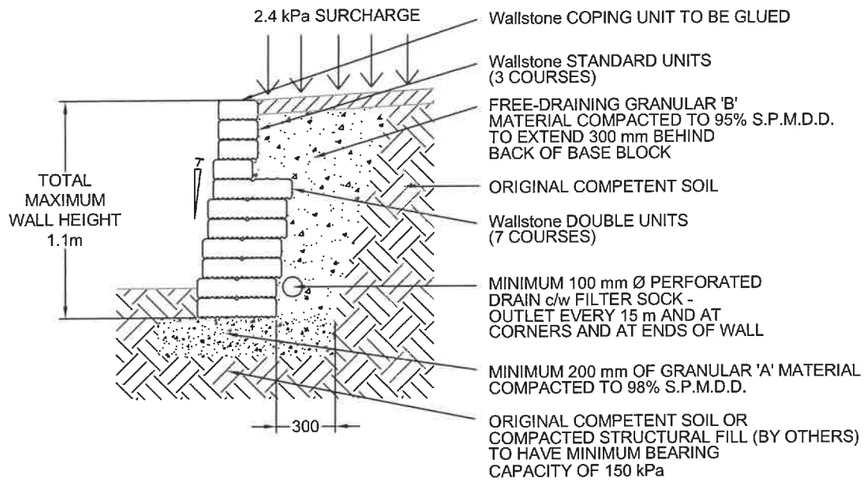
Wallstone®
PERMACON
an Oldcastle® company

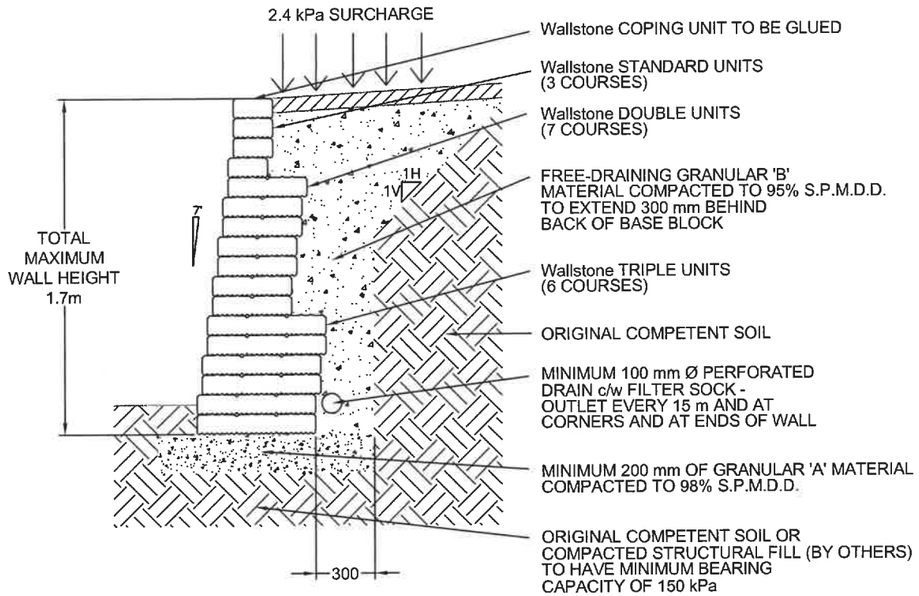
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN BY: DS
CH'D BY:
DATE: NOVEMBER 19, 2007
SCALE: NOT TO SCALE
FILE NAME: WS-SE-GR-Vertical.dwg

DRAWING No.
Wallstone-
SE-GR-VERTICAL







GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT THE TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

8. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

9. TO ACHIEVE A 7° BATTER, STEP BACK EVERY SECOND COURSE.

10. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

11. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

12. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

13. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

14. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

15. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
G.P. MITCHELL
32057507
Nov 19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 6/18	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GRAVITY DESIGN
7° BATTER
TO 1.7 m

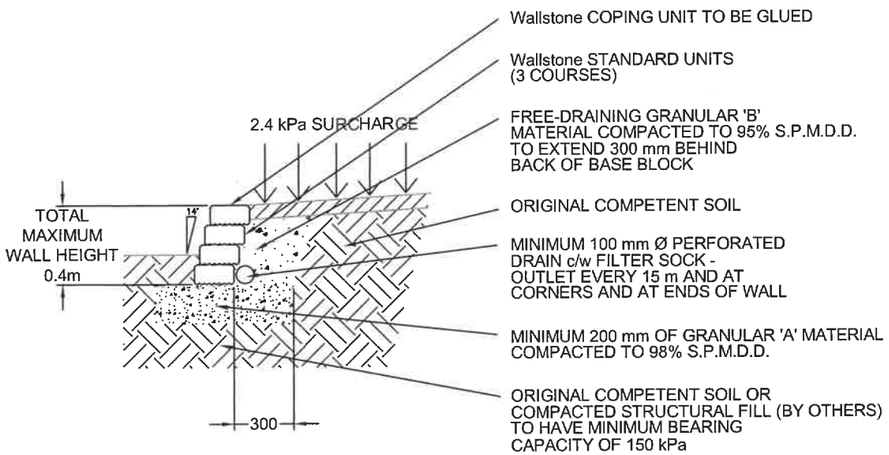
PROJECT: Wallstone
STANDARD ENGINEERING

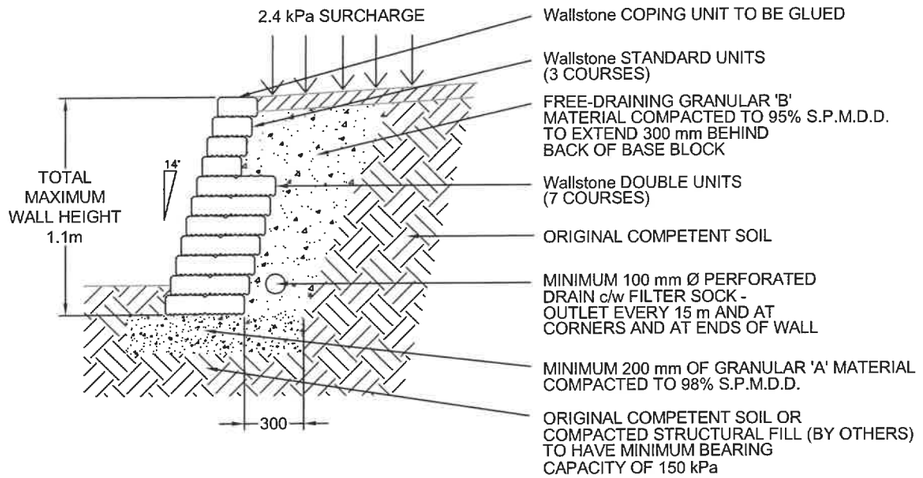
Wallstone®
PERMACON
an Oldcastle® company

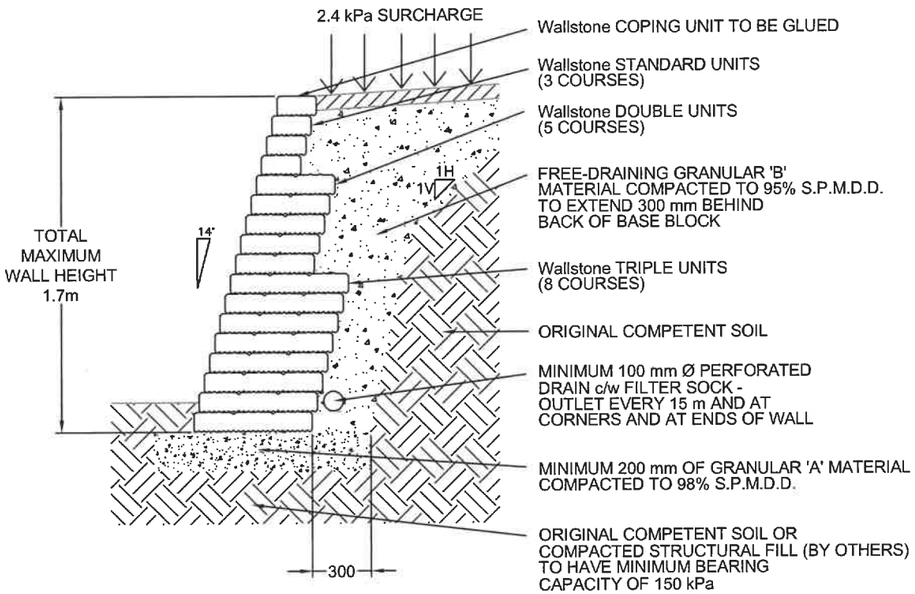
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN BY: DS	CH'D BY:
DATE: NOVEMBER 19, 2007	
SCALE: NOT TO SCALE	
FILE NAME: WS-SE-GR-7 DEGREE.dwg	

DRAWING No.
Wallstone-
SE-GR-7 DEGREE







GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT THE TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

8. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

9. TO ACHIEVE A 14° BATTER, STEP BACK EVERY COURSE.

10. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

11. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

12. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

13. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

14. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

15. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
C.P. MITCHELL
32057507
Nov 19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 8/18	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GRAVITY DESIGN
14° BATTER
TO 1.7 m

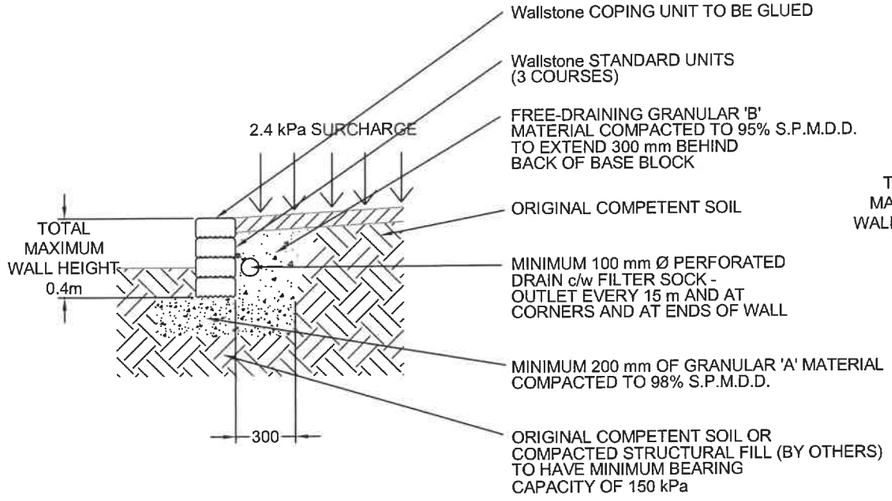
PROJECT: Wallstone
STANDARD ENGINEERING

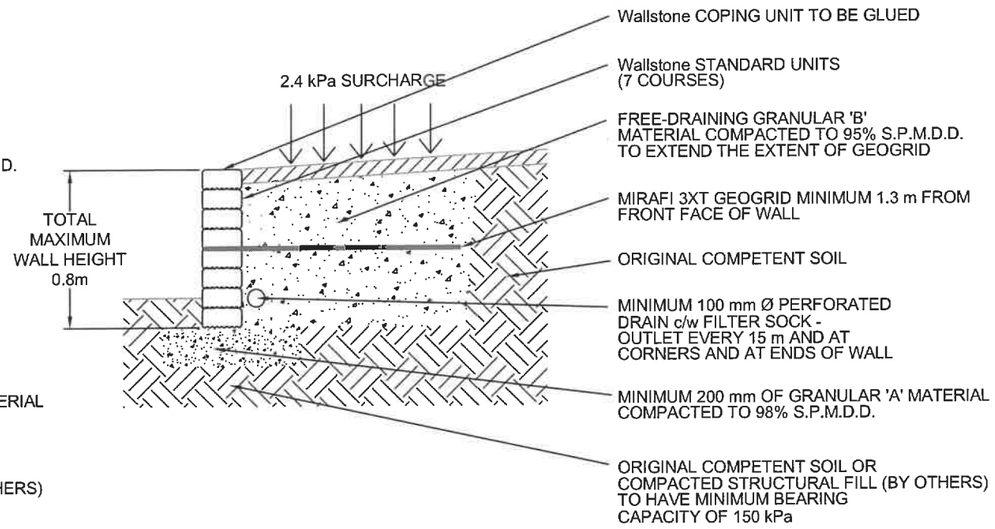
Wallstone®
PERMACON
an Oldcastle® company

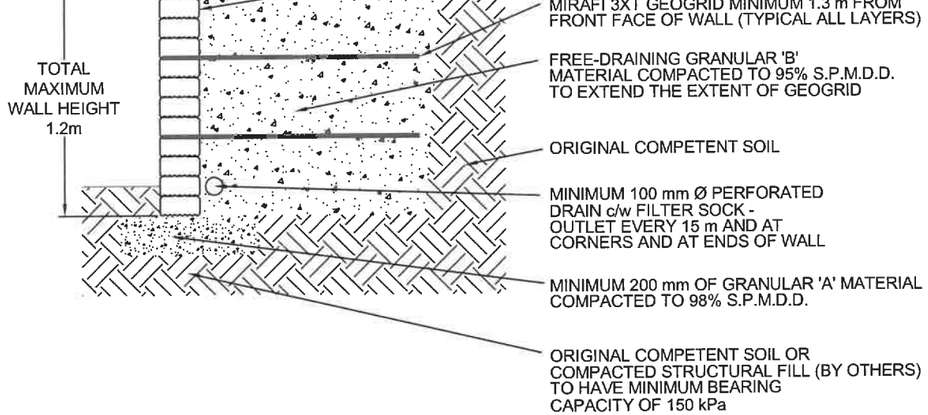
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

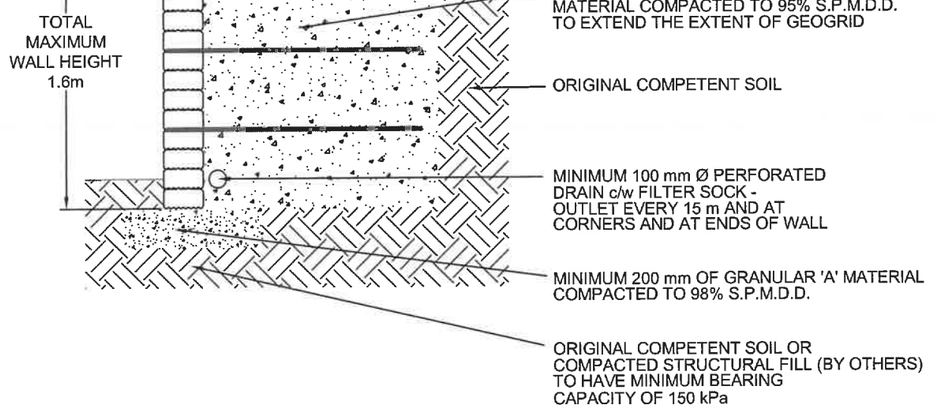
DRAWN BY: DS	CH'D BY:
DATE: NOVEMBER 19, 2007	
SCALE: NOT TO SCALE	
FILE NAME: WS-SE-GR-14 DEGREE.dwg	

DRAWING No.
Wallstone-
SE-GR-14 DEGREE









GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. PLACE THE GEOGRID LAYERS AS THE BACKFILL PROCEEDS, AT THE LOCATIONS SPECIFIED. COMPACT BACKFILL AS THE GEOGRID IS PLACED.

8. THE GEOGRID SHOULD BE CUT TO EXTEND BETWEEN THE UNITS PLUS THE SPECIFIED DISTANCE BEHIND THE WALL AS SHOWN. NO SPLICES PARALLEL TO THE WALL FACE ARE ALLOWED WITHOUT THE PERMISSION FROM THE ENGINEER.

9. ORIENTATION OF THE GEOGRIDS IS OF EXTREME IMPORTANCE. THE STRONGER STRAND OF THE GEOGRID SHOULD BE PERPENDICULAR TO THE WALL FACE. ENSURE THAT THE GEOGRID EXTENDS BETWEEN THE UNITS TO THE FRONT FACE OF THE WALL.

10. AFTER BEING ROLLED OUT, THE GEOGRID SHOULD BE TENSIONED BY HAND UNTIL IT IS TIGHT, FREE OF WRINKLES AND LYING FLAT. THE GEOGRID SHOULD BE HELD FLAT WHILE BACKFILLING. CARE SHOULD BE TAKEN TO AVOID DAMAGING THE GEOGRID DURING BACKFILLING.

11. ADJACENT ROLL WIDTHS SHOULD BE BUTT TIGHT TOGETHER.

12. GEOGRID MUST BE PLACED EVERY 4 COURSES.

13. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

14. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

15. TO ACHIEVE A 0° BATTER, DO NOT STEP BACK.

16. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

17. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

18. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

19. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

20. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

21. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
G.P MITCHELL
32057507
Nov/19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 8/15	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GEOGRID REINFORCED DESIGN VERTICAL BATTER TO 1.6 m

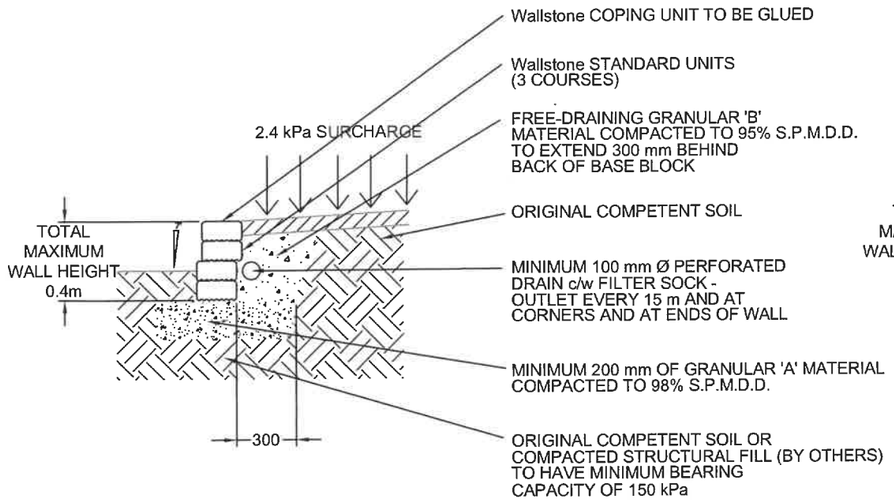
PROJECT: Wallstone STANDARD ENGINEERING

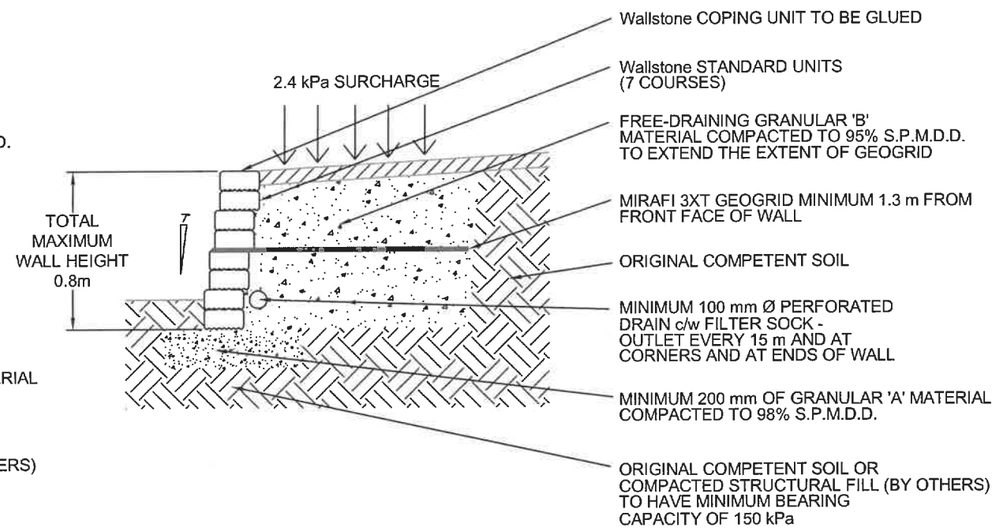
Wallstone®
PERMACON
an Oldcastle® company

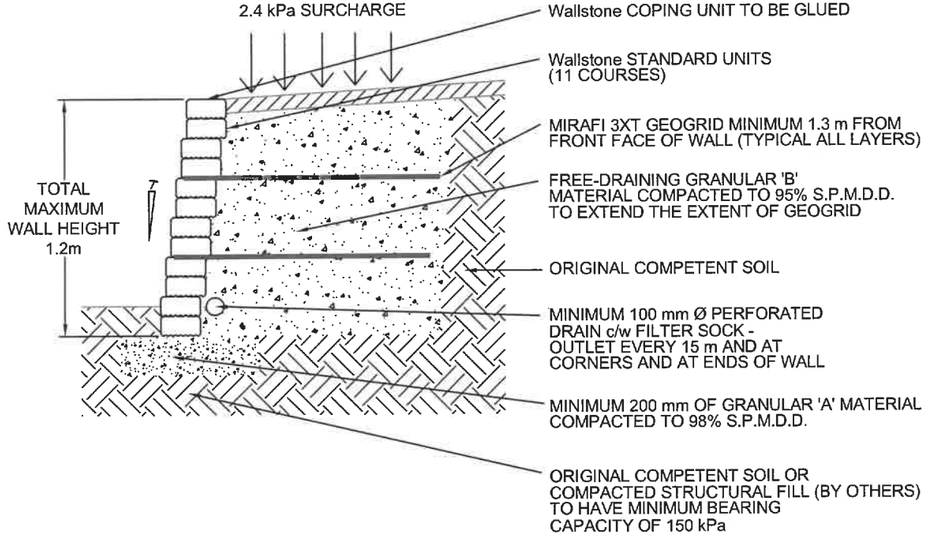
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

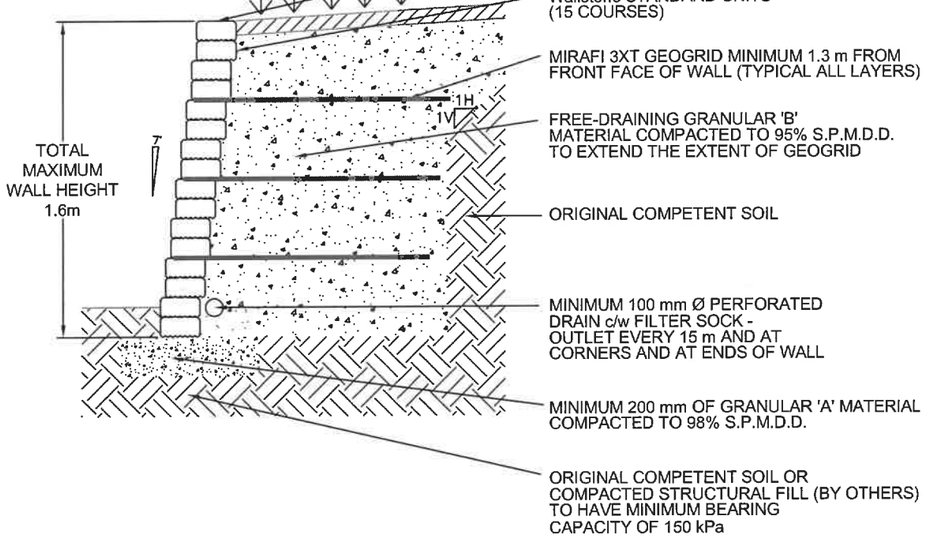
DRAWN BY: DS	CH'D BY:
DATE: NOVEMBER 20, 2007	
SCALE: NOT TO SCALE	
FILE NAME: WS-SE-RI-VERTICAL.dwg	

DRAWING No.
Wallstone-SE-RI-VERTICAL









GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. PLACE THE GEOGRID LAYERS AS THE BACKFILL PROCEEDS, AT THE LOCATIONS SPECIFIED. COMPACT BACKFILL AS THE GEOGRID IS PLACED.

8. THE GEOGRID SHOULD BE CUT TO EXTEND BETWEEN THE UNITS PLUS THE SPECIFIED DISTANCE BEHIND THE WALL AS SHOWN. NO SPLICES PARALLEL TO THE WALL FACE ARE ALLOWED WITHOUT THE PERMISSION FROM THE ENGINEER.

9. ORIENTATION OF THE GEOGRIDS IS OF EXTREME IMPORTANCE. THE STRONGER STRAND OF THE GEOGRID SHOULD BE PERPENDICULAR TO THE WALL FACE. ENSURE THAT THE GEOGRID EXTENDS BETWEEN THE UNITS TO THE FRONT FACE OF THE WALL.

10. AFTER BEING ROLLED OUT, THE GEOGRID SHOULD BE TENSIONED BY HAND UNTIL IT IS TIGHT, FREE OF WRINKLES AND LYING FLAT. THE GEOGRID SHOULD BE HELD FLAT WHILE BACKFILLING. CARE SHOULD BE TAKEN TO AVOID DAMAGING THE GEOGRID DURING BACKFILLING.

11. ADJACENT ROLL WIDTHS SHOULD BE BUTT TIGHT TOGETHER.

12. GEOGRID MUST BE PLACED EVERY 4 COURSES.

13. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

14. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

15. TO ACHIEVE A 7° BATTER, STEP BACK EVERY SECOND COURSE.

16. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

17. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

18. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

19. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

20. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

21. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
G.P. MITCHELL
3205750
Nov 19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 8/18	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GEOGRID REINFORCED DESIGN
7° BATTER
TO 1.6 m

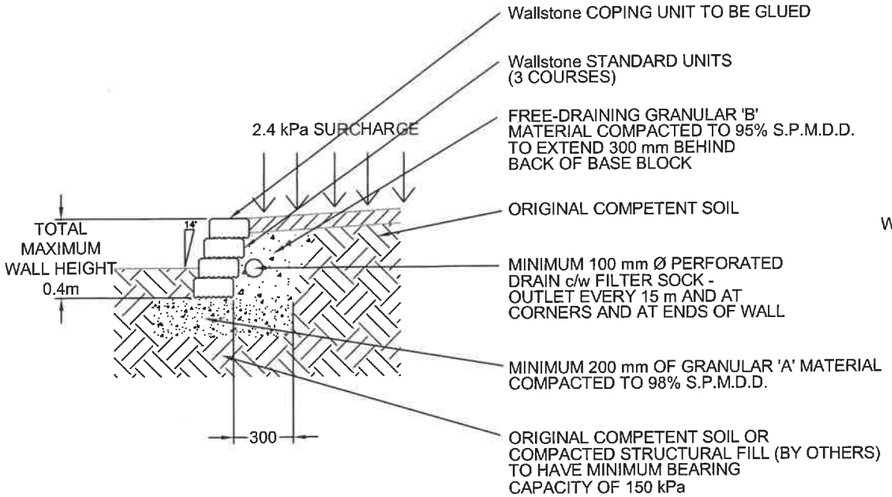
PROJECT: Wallstone
STANDARD ENGINEERING

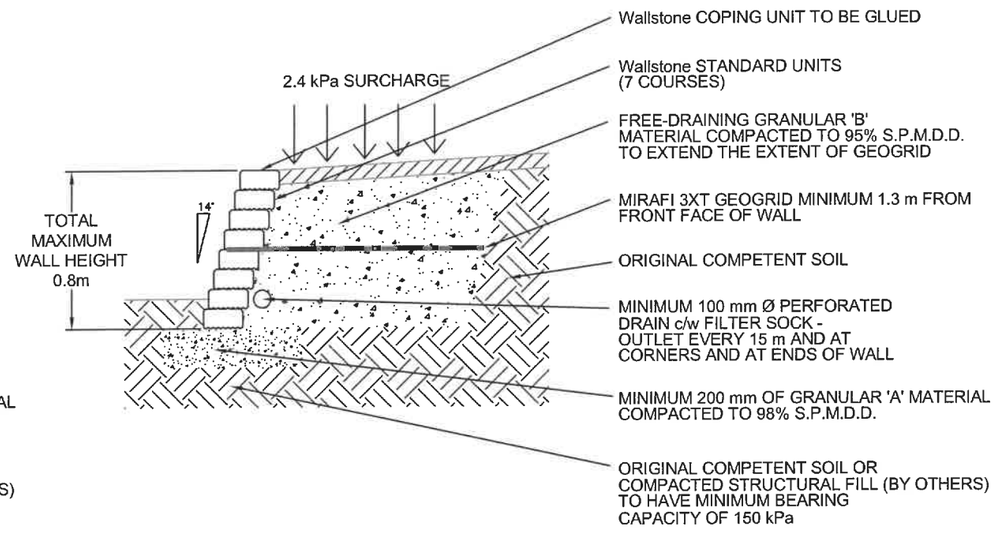
Wallstone®
PERMACON
an Oldcastle® company

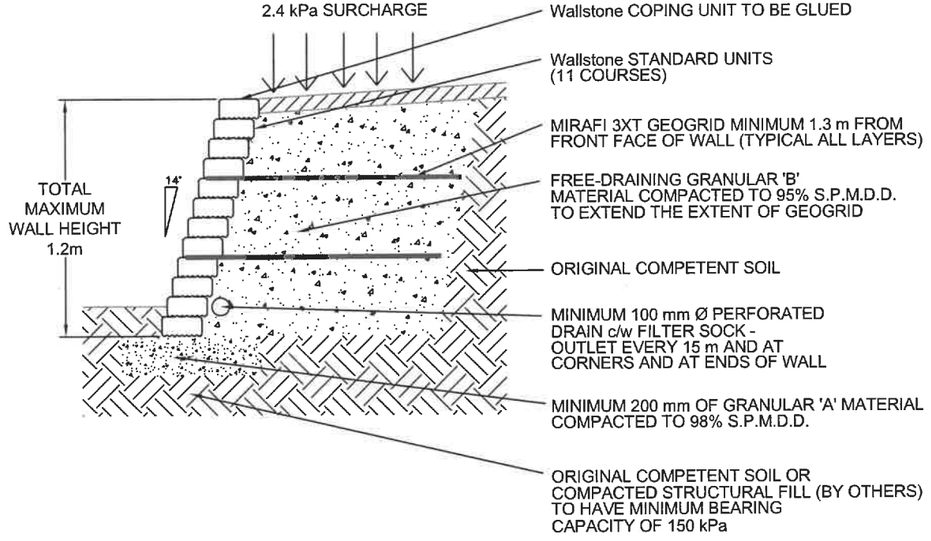
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

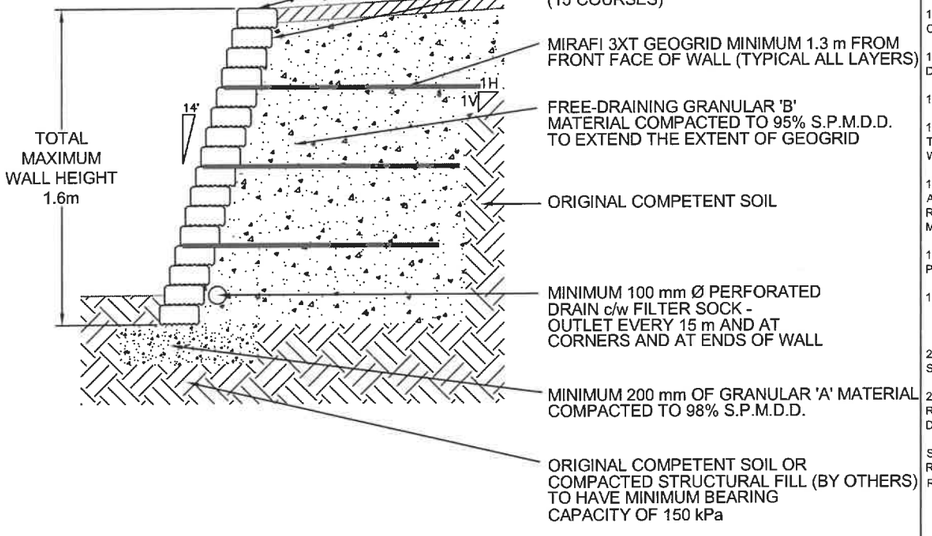
DRAWN BY: DS	CH'D BY:
DATE: NOVEMBER 20, 2007	
SCALE: NOT TO SCALE	
FILE NAME: WS-SE-RI-7 DEGREE.dwg	

DRAWING No.
Wallstone-
SE-RI-7 DEGREE









GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY AND SLOPE STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm OF GRANULAR 'A' MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

6. BACKFILL THE WALL WITH GRANULAR 'B' MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D.

7. PLACE THE GEOGRID LAYERS AS THE BACKFILL PROCEEDS, AT THE LOCATIONS SPECIFIED. COMPACT BACKFILL AS THE GEOGRID IS PLACED.

8. THE GEOGRID SHOULD BE CUT TO EXTEND BETWEEN THE UNITS PLUS THE SPECIFIED DISTANCE BEHIND THE WALL AS SHOWN. NO SPLICES PARALLEL TO THE WALL FACE ARE ALLOWED WITHOUT THE PERMISSION FROM THE ENGINEER.

9. ORIENTATION OF THE GEOGRIDS IS OF EXTREME IMPORTANCE. THE STRONGER STRAND OF THE GEOGRID SHOULD BE PERPENDICULAR TO THE WALL FACE. ENSURE THAT THE GEOGRID EXTENDS BETWEEN THE UNITS TO THE FRONT FACE OF THE WALL.

10. AFTER BEING ROLLED OUT, THE GEOGRID SHOULD BE TENSIONED BY HAND UNTIL IT IS TIGHT, FREE OF WRINKLES AND LYING FLAT. THE GEOGRID SHOULD BE HELD FLAT WHILE BACKFILLING. CARE SHOULD BE TAKEN TO AVOID DAMAGING THE GEOGRID DURING BACKFILLING.

11. ADJACENT ROLL WIDTHS SHOULD BE BUTT TIGHT TOGETHER.

12. GEOGRID MUST BE PLACED EVERY 4 COURSES.

13. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

14. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

15. TO ACHIEVE A 14° BATTER, STEP BACK EVERY COURSE.

16. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

17. APPROPRIATE RESTRAINT MUST BE PROVIDED TO ENSURE PEDESTRIANS CANNOT ACCESS THE TOP OF THE WALL, OTHERWISE AN ENGINEERED HANDRAIL SYSTEM WILL BE REQUIRED ON THE TOP OF THE WALL. PROVISION OF A HANDRAIL ON TOP OF THE WALL MAY REQUIRE DESIGN MODIFICATIONS.

18. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

19. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

20. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

21. FOR OTHER WALL HEIGHTS, SOIL PARAMETERS AND SURCHARGE LOADING NOT REPRESENTED ON THIS DRAWING, PLEASE CONTACT PERMACON FOR SITE SPECIFIC DESIGN.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 34 DEGREES, γ = 21 kN/m³
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m³

LICENSED PROFESSIONAL ENGINEER
G.P. MITCHELL
32057507
Nov 19/19
PROVINCE OF ONTARIO

REV.	DATE	DESCRIPTION	BY
2	11/15/19	ISSUED FOR USE	DAD
1	JUN 8/18	REVISED BRAND	DPS
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING: GEOGRID REINFORCED DESIGN
14° BATTER
TO 1.6 m

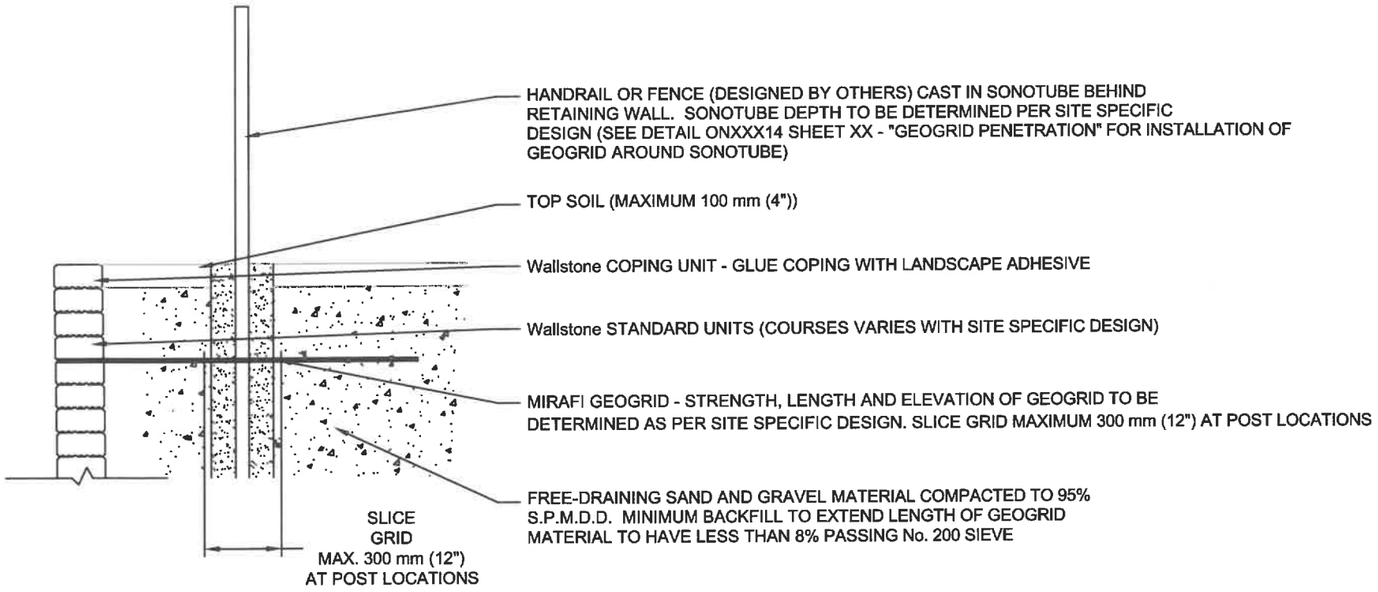
PROJECT: Wallstone
STANDARD ENGINEERING

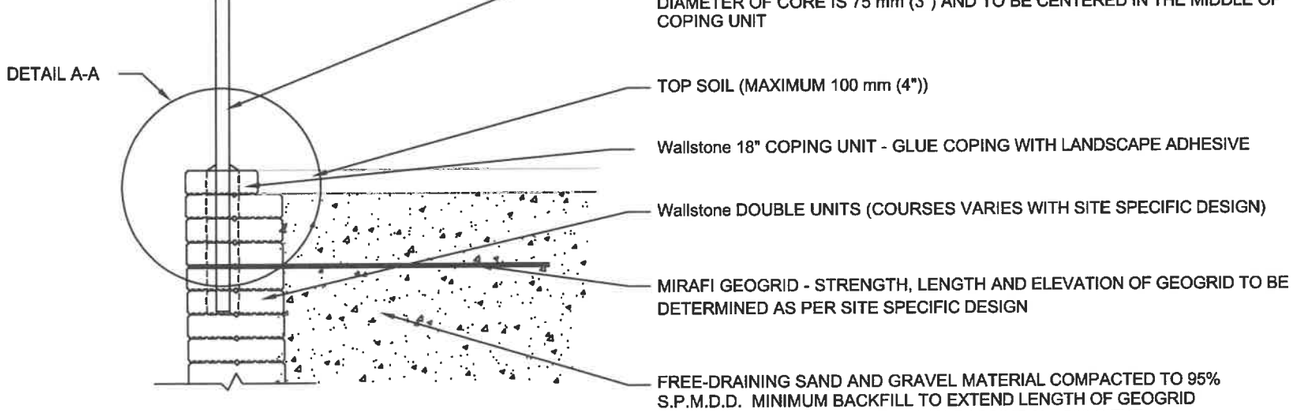
Wallstone®
PERMACON
an Oldcastle® company

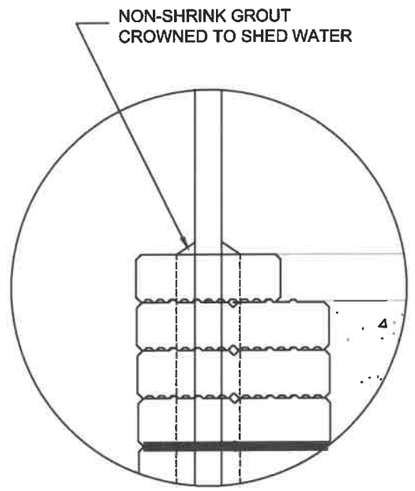
DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN BY: DS	CH'D BY: GH
DATE: NOVEMBER 20, 2007	
SCALE: NOT TO SCALE	
FILE NAME: WS-SE-RI-14 DEGREE.dwg	

DRAWING No.
Wallstone-
SE-RI-14 DEGREE







DETAIL A-A

GENERAL NOTES:

1. HANDRAIL OR FENCE LOADING TO BE DESIGNED ACCORDING TO LOCAL BUILDING CODE REQUIREMENTS UNLESS OTHERWISE SPECIFIED.

2. HANDRAIL OR FENCE ATTACHMENTS TO BE DESIGNED ON A SITE SPECIFIC BASIS BY A PROFESSIONAL ENGINEER.

3. WALLS TO BE BUILT ACCORDING TO SITE SPECIFIC DETAILS AND NOTES PROVIDED ON SITE SPECIFIC DRAWINGS.

4. BACKFILL THE WALL WITH FREE-DRAINING SAND AND GRAVEL MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D. BACKFILL MATERIAL TO HAVE LESS THAN 8% PASSING No. 200 SIEVE.

5. PLACE THE GEOGRID LAYERS AS THE BACKFILLING PROCEEDS, AT THE LOCATIONS SPECIFIED. COMPACT BACKFILL AS THE GEOGRID IS PLACED.

6. THE GEOGRID SHOULD BE CUT TO EXTEND BETWEEN THE UNITS PLUS THE SPECIFIED DISTANCE BEHIND THE WALL AS SHOWN. NO SPLICES PARALLEL TO THE WALL FACE ARE ALLOWED WITHOUT THE PERMISSION FROM THE ENGINEER.

7. ORIENTATION OF THE GEOGRIDS IS OF EXTREME IMPORTANCE. THE STRONGER STRAND OF THE GEOGRID SHOULD BE PERPENDICULAR TO THE WALL FACE. ENSURE THAT THE GEOGRID EXTENDS BETWEEN THE UNITS TO THE FRONT FACE OF THE WALL.

8. AFTER BEING ROLLED OUT, THE GEOGRID SHOULD BE TENSIONED BY HAND UNTIL IT IS TIGHT, FREE OF WRINKLES, AND LYING FLAT. THE GEOGRID SHOULD BE HELD FLAT WHILE BACKFILLING. CARE SHOULD BE TAKEN TO AVOID DAMAGING THE GEOGRID DURING BACKFILLING.

9. ADJACENT ROLL WIDTHS SHALL BE BUTT TIGHT TOGETHER.

10. ALL CONSTRUCTION OPERATIONS INCLUDING GEOGRID PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

11. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

12. BATTER TO BE DETERMINED ON A SITE SPECIFIC BASIS.

13. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE WALL. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE WALL.

14. IF THERE IS NOT SUFFICIENT ROOM BEHIND THE WALL FOR GEOGRID, THE WALL CAN BE DESIGNED FOR HANDRAIL USING LARGER BLOCK SIZES.

15. TO REDUCE THE POTENTIAL FOR STAINING OF THE RETAINING WALL FACE,, PRE-WET ENTIRE BLOCK FACE AREA PRIOR TO CORING. WASH ENTIRE AREA IMMEDIATELY AFTER CORING IS COMPLETE.

16. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

17. THE APPLICABILITY OF THIS RETAINING WALL DETAIL MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	JAN 1/08	ISSUED FOR USE	PAS

DRAWING:
Wallstone WALL
TYPICAL PEDESTRIAN GUARD DETAIL

PROJECT:
Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY:	CH'D BY:
DS	

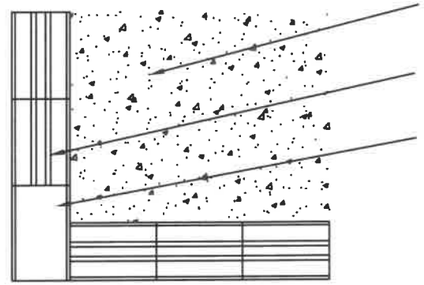
DATE: DECEMBER 4, 2007

SCALE: NOT TO SCALE

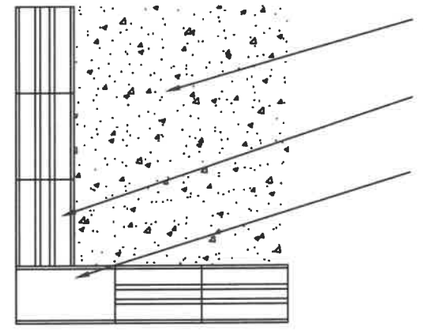
FILE NAME: WS-Handrail.DWG

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Standard
ODD COURSE



PLAN VIEW
Wallstone Standard
EVEN COURSE



GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STANDARD UNIT 270° OUTSIDE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY:	CH'D BY:
DPS	

DATE: MARCH 18, 2020

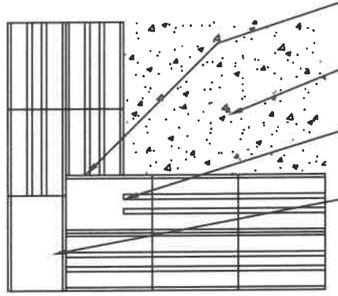
SCALE: NOT TO SCALE

FILE NAME: SU270DOCD.DWG

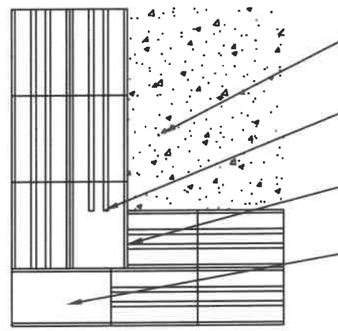
DRAWING No.

WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Standard
ODD COURSE



PLAN VIEW
Wallstone Standard
EVEN COURSE



GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
DOUBLE UNIT 270° OUTSIDE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

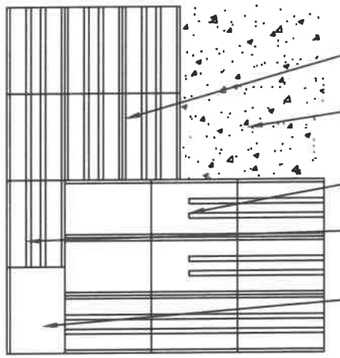
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

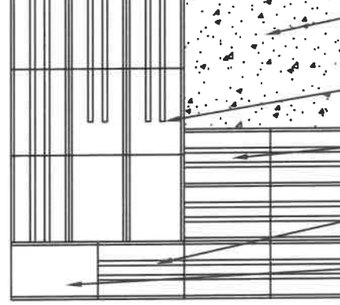
DRAWN BY: DPS
CH'D BY:
DATE: MARCH 18, 2020
SCALE: NOT TO SCALE
FILE NAME: DU270DOCD.DWG

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Standard
ODD COURSE



PLAN VIEW
Wallstone Standard
EVEN COURSE



GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
TRIPLE UNIT 270° OUTSIDE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

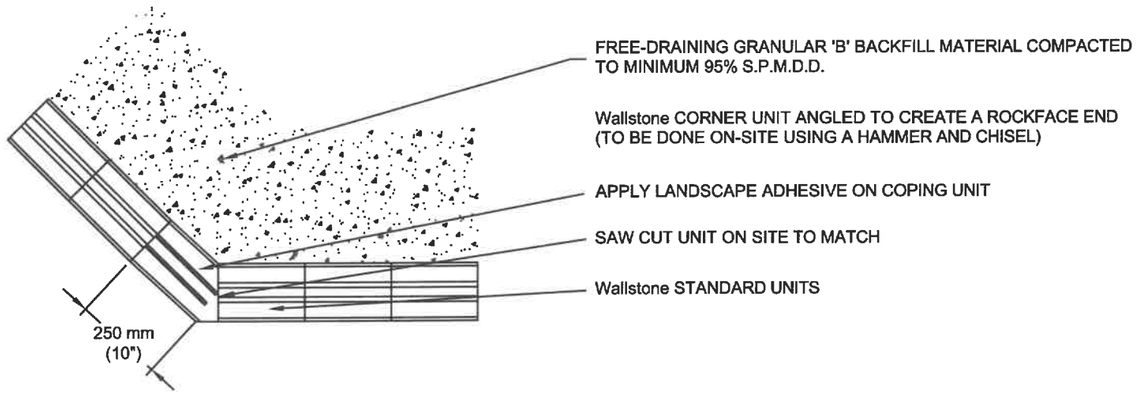
PERMACON
an Oldcastle® company

DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

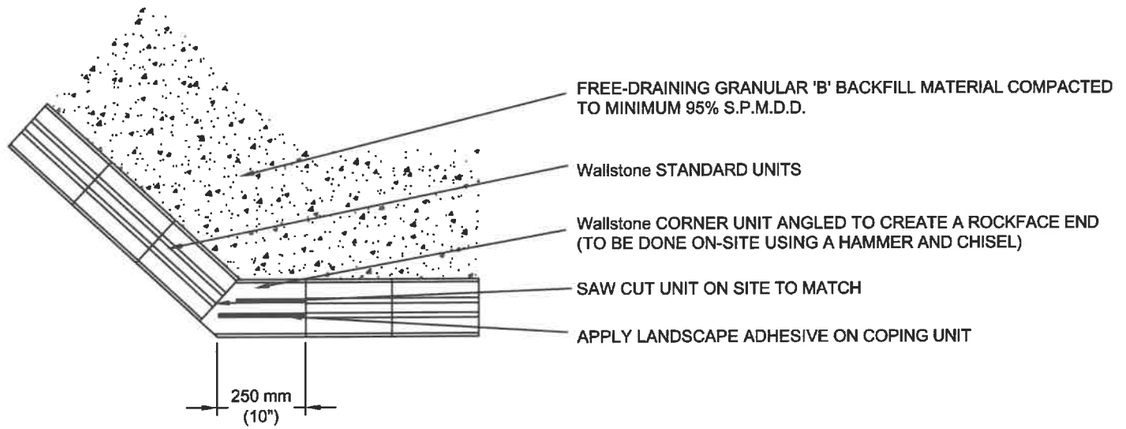
DRAWN BY: DPS
CH'D BY:
DATE: MARCH 18, 2020
SCALE: NOT TO SCALE
FILE NAME: TU270OCD.DWG

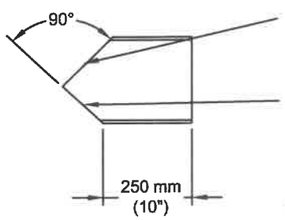
DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Standard
ODD COURSE



PLAN VIEW
Wallstone Standard
EVEN COURSE





CORNER DETAIL

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STANDARD UNIT OUTSIDE ANGLE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

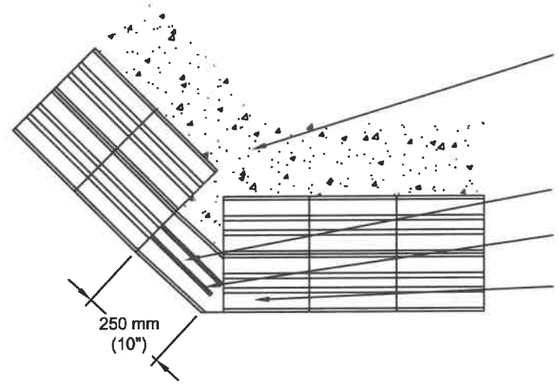
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY: DPS	CH'D BY:
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: SUOACD.DWG	

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Double
ODD COURSE



FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

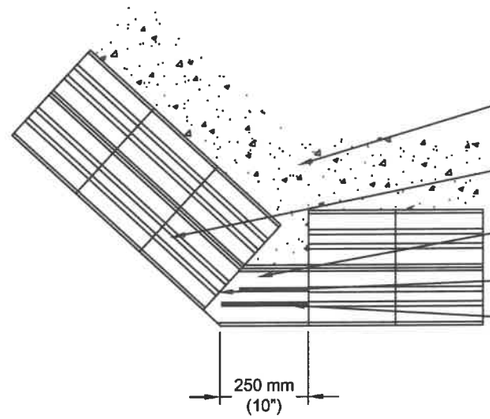
Wallstone CORNER UNIT ANGLED TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON COPING UNIT

SAW CUT UNIT ON SITE TO MATCH

Wallstone DOUBLE UNITS

PLAN VIEW
Wallstone Double
EVEN COURSE



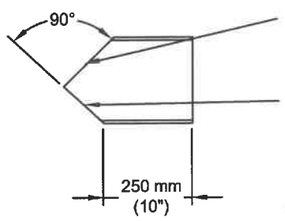
FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

Wallstone DOUBLE UNITS

Wallstone CORNER UNIT ANGLED TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

SAW CUT UNIT ON SITE TO MATCH

APPLY LANDSCAPE ADHESIVE ON COPING UNIT



BACKCUT TO BE MADE ON-SITE (BY OTHERS)

SPLIT FACE TO DESIRED ANGLE (BY OTHERS) TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

CORNER DETAIL

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING:
Wallstone Wall
DOUBLE UNIT OUTSIDE ANGLE CORNER DETAIL

PROJECT:
Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

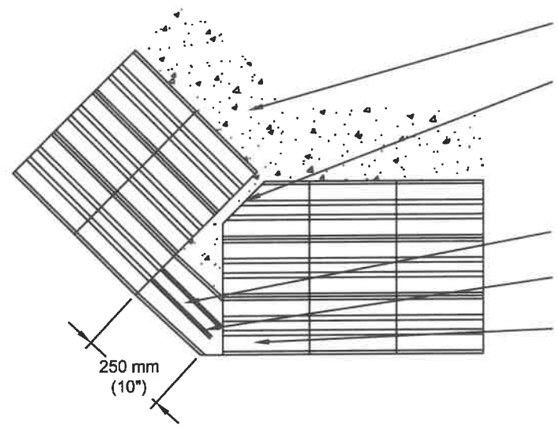
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY: DPS	CH'D BY:
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: DUOACD.DWG	

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Double
ODD COURSE



FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

TRIPLE UNIT MAY REQUIRE ONSITE SAW CUT DEPENDING ON ANGLE OF CORNER

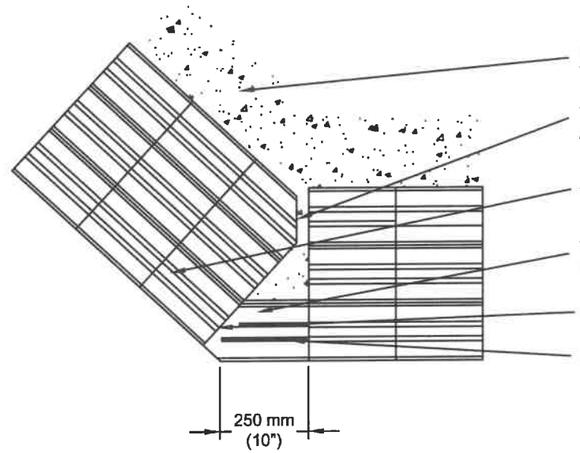
Wallstone CORNER UNIT ANGLED TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON COPING UNIT

SAW CUT UNIT ON SITE TO MATCH

Wallstone TRIPLE UNITS

PLAN VIEW
Wallstone Double
EVEN COURSE



FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

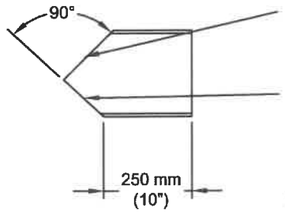
TRIPLE UNIT MAY REQUIRE ONSITE SAW CUT DEPENDING ON ANGLE OF CORNER

Wallstone TRIPLE UNITS

Wallstone CORNER UNIT ANGLED TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

SAW CUT UNIT ON SITE TO MATCH

APPLY LANDSCAPE ADHESIVE ON COPING UNIT



BACKCUT TO BE MADE ON-SITE (BY OTHERS)

SPLIT FACE TO DESIRED ANGLE (BY OTHERS) TO CREATE A ROCKFACE END (TO BE DONE ON-SITE USING A HAMMER AND CHISEL)

CORNER DETAIL

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
TRIPLE UNIT OUTSIDE ANGLE CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON
an Oldcastle® company

DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN BY:	CH'D BY:
DPS	

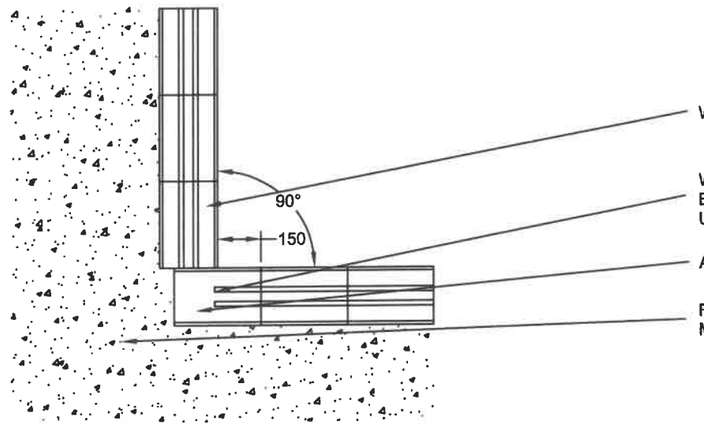
DATE: MARCH 18, 2020

SCALE: NOT TO SCALE

FILE NAME: TUOACD.DWG

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW SINGLE-DEPTH
Wallstone Standard
ODD COURSE



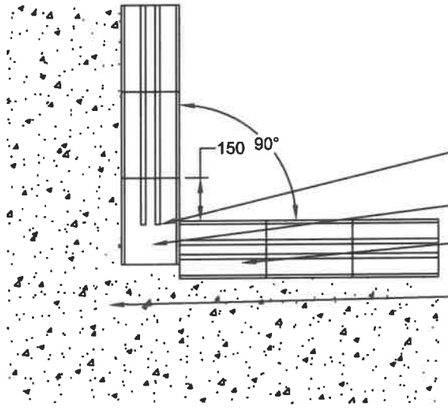
Wallstone STANDARD UNITS

Wallstone STANDARD UNITS REMOVE RIBS TO EXTENT OF BLOCK FACE AS SHOWN (TO BE REMOVED ON-SITE BY CONTRACTOR USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON CORNER UNIT

FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D. BEHIND WALL

PLAN VIEW SINGLE-DEPTH
Wallstone Standard
EVEN COURSE



Wallstone STANDARD UNITS REMOVE RIBS TO EXTENT OF BLOCK FACE AS SHOWN (TO BE REMOVED ON-SITE BY CONTRACTOR USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON CORNER UNIT

Wallstone STANDARD UNITS

FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D. BEHIND WALL

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STANDARD UNIT 90° INSIDE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

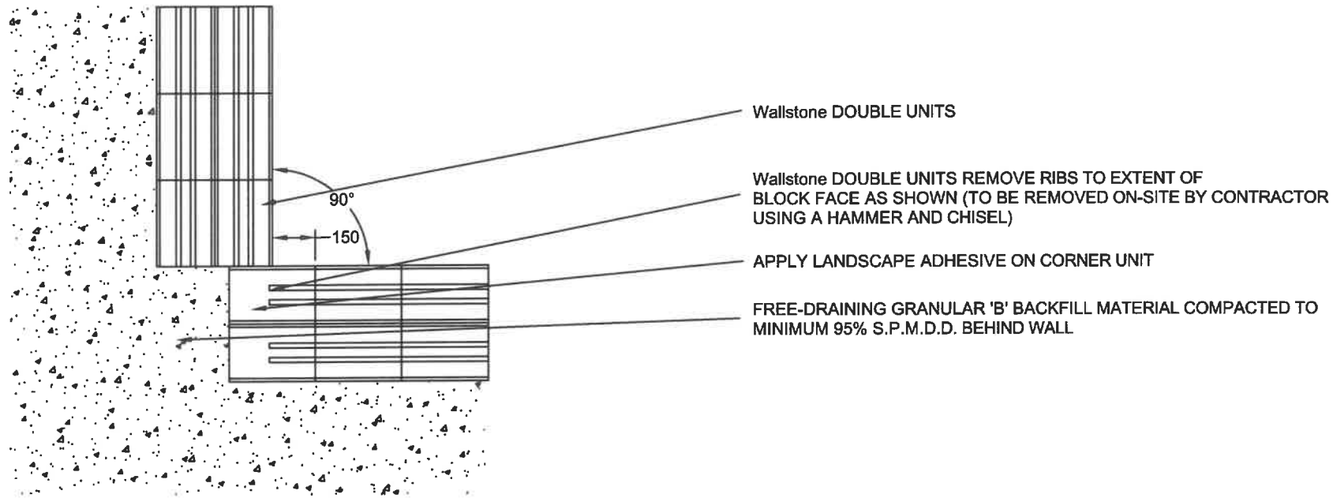
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

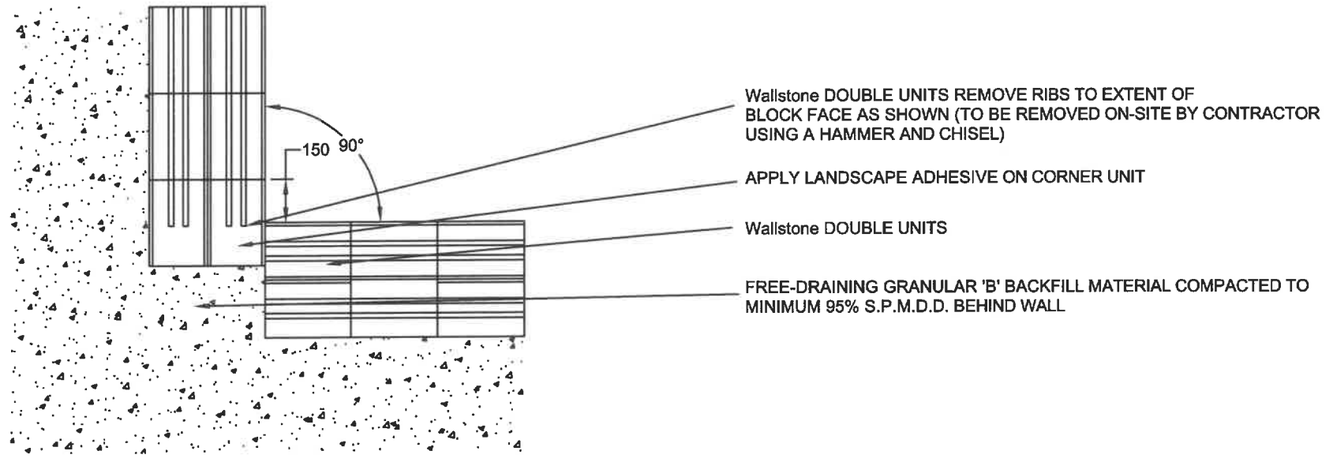
DRAWN BY: DPS	CH'D BY:
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: SU90DICD.DWG	

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW DOUBLE UNIT
Wallstone Standard
ODD COURSE



PLAN VIEW DOUBLE UNIT
Wallstone Standard
EVEN COURSE



GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
   Wallstone - CANADA 1,307,675
   - USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
DOUBLE UNIT 90° INSIDE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

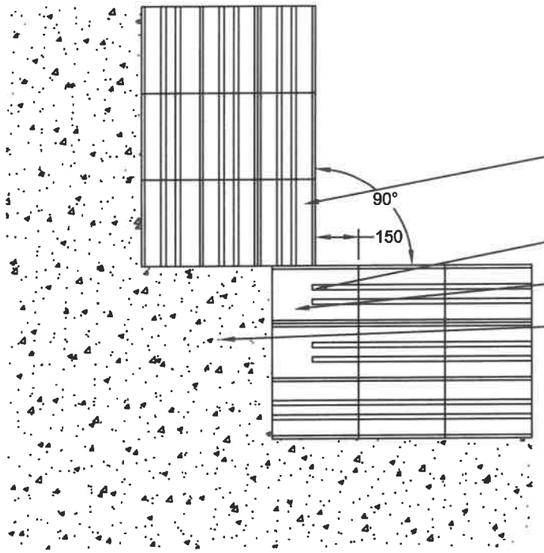
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY:	CH'D BY:
DPS	
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: DU90DICD.DWG	

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW TRIPLE UNIT
Wallstone Standard
ODD COURSE



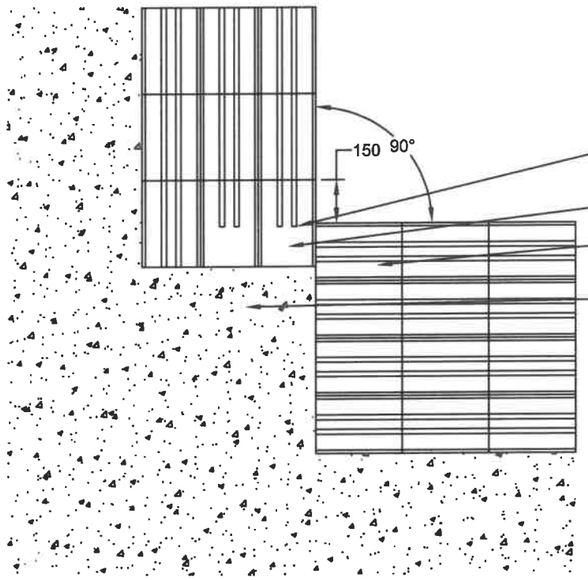
Wallstone TRIPLE UNITS

Wallstone TRIPLE UNITS REMOVE RIBS TO EXTENT OF BLOCK FACE AS SHOWN (TO BE REMOVED ON-SITE BY CONTRACTOR USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON CORNER UNIT

FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 98% S.P.M.D.D. BEHIND WALL

PLAN VIEW TRIPLE UNIT
Wallstone Standard
EVEN COURSE



Wallstone TRIPLE UNITS REMOVE RIBS TO EXTENT OF BLOCK FACE AS SHOWN (TO BE REMOVED ON-SITE BY CONTRACTOR USING A HAMMER AND CHISEL)

APPLY LANDSCAPE ADHESIVE ON CORNER UNIT

Wallstone TRIPLE UNITS

FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 98% S.P.M.D.D. BEHIND WALL

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
TRIPLE UNIT INSIDE 90°
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

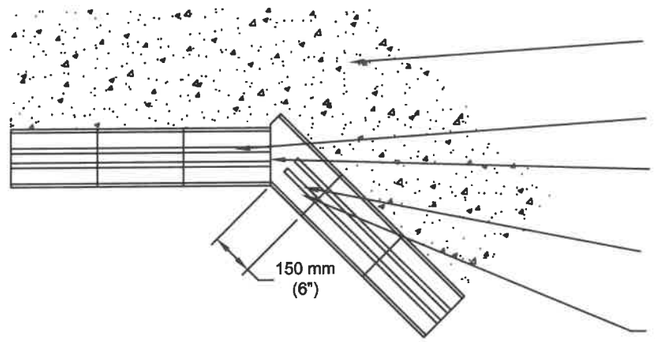
PERMACON
an Oldcastle® company

DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

DRAWN BY: DPS
CH'D BY:
DATE: MARCH 18, 2020
SCALE: NOT TO SCALE
FILE NAME: TU90DICD.DWG

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone Standard
ODD COURSE



FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

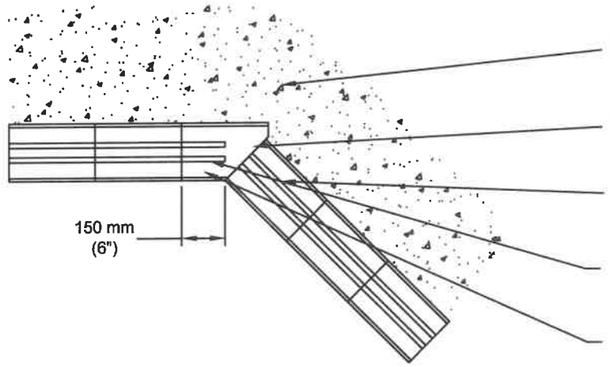
Wallstone STANDARD UNITS

Wallstone STANDARD UNIT CUT TO FACILITATE CORNER ON SITE BY OTHERS

Wallstone STANDARD UNITS CHISEL OFF RIBS AS NECESSARY BEYOND END OF BLOCK TO ALLOW FOR FINGER JOINT CORNER (TO BE DONE ON-SITE)

ADHERED COURSING TOGETHER WITH LANDSCAPE ADHESIVE

PLAN VIEW
Wallstone Standard
EVEN COURSE



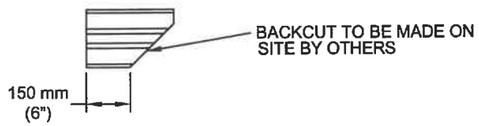
FREE-DRAINING GRANULAR 'B' BACKFILL MATERIAL COMPACTED TO MINIMUM 95% S.P.M.D.D.

Wallstone STANDARD UNIT CUT TO FACILITATE CORNER ON SITE BY OTHERS

Wallstone STANDARD UNITS

Wallstone STANDARD UNITS CHISEL OFF RIBS AS NECESSARY BEYOND END OF BLOCK TO ALLOW FOR FINGER JOINT CORNER (TO BE DONE ON-SITE)

ADHERED COURSING TOGETHER WITH LANDSCAPE ADHESIVE



CORNER UNIT DETAILS

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STANDARD UNIT INSIDE ANGLE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

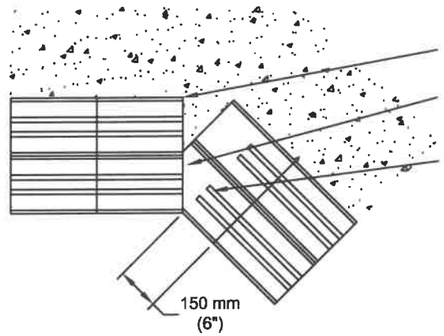
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY: DPS	CH'D BY:
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: SUIACD.DWG	

DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone DOUBLE UNITS
ODD COURSE

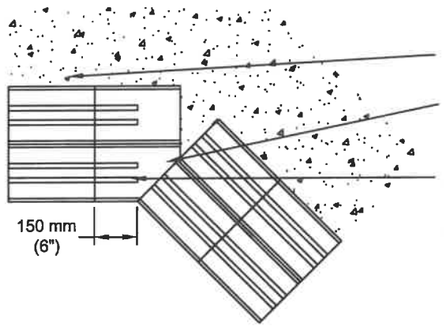


Wallstone DOUBLE UNITS

Wallstone DOUBLE UNIT CUT TO FACILITATE CORNER ON SITE BY OTHERS

Wallstone DOUBLE UNITS CHISEL OFF RIBS AS NECESSARY BEYOND END OF BLOCK TO ALLOW FOR SETBACK IN COURSING (IF NECESSARY)
(TO BE DONE ON-SITE)
(USE LANDSCAPE ADHESIVE IN CORNER)

PLAN VIEW
Wallstone DOUBLE UNITS
EVEN COURSE



Wallstone DOUBLE UNITS

Wallstone DOUBLE UNIT CUT TO FACILITATE CORNER ON SITE BY OTHERS

Wallstone DOUBLE UNITS CHISEL OFF RIBS AS NECESSARY BEYOND END OF BLOCK TO ALLOW FOR SETBACK IN COURSING (IF NECESSARY)
(TO BE DONE ON-SITE)
(USE LANDSCAPE ADHESIVE IN CORNER)

BACKCUT TO BE MADE ON SITE BY OTHERS

CORNER UNIT DETAILS

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone
DOUBLE UNIT INSIDE ANGLE
CORNER DETAIL

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

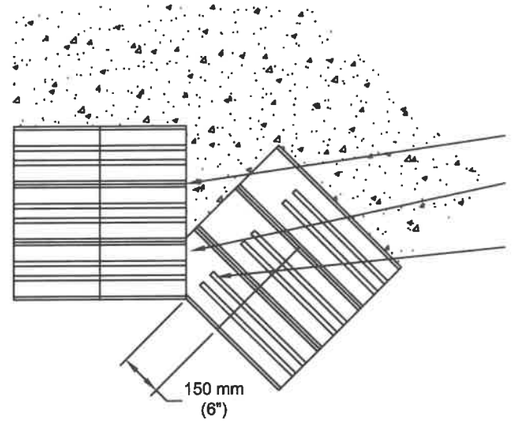
PERMACON
an Oldcastle® company

DESIGN ENGINEER:

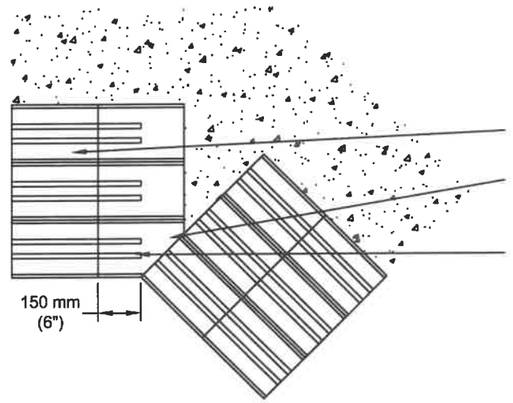
DRAWN BY: DPS	CH'D BY:
DATE: MARCH 18, 2020	
SCALE: NOT TO SCALE	
FILE NAME: DUIACD.DWG	

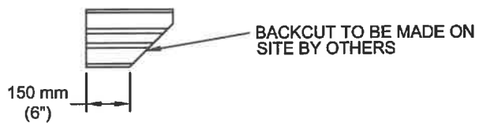
DRAWING No.
WALLSTONE STANDARD DETAIL

PLAN VIEW
Wallstone TRIPLE UNITS
ODD COURSE



PLAN VIEW
Wallstone TRIPLE UNITS
EVEN COURSE





CORNER UNIT DETAILS

GENERAL NOTES:

1. FOR EXCAVATION, BASE PREPARATION, AND CONSTRUCTION DETAILS PLEASE SEE STANDARD ENGINEERING OR SITE SPECIFIC DESIGN.

2. IT IS POSSIBLE TO START ON ODD OR EVEN COURSE.

3. COURSES MUST BE ALTERED ODD...EVEN...ODD...EVEN...ETC.

4. ALMOST ANY ANGLE CAN BE ACHIEVED USING SAME PHILOSOPHY / METHODOLOGY AS SHOWN ON THIS DRAWING.

5. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON PRODUCTS, OR APPROVED FOR USE BY PERMACON PRODUCTS' COMPANIES.

6. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

7. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
0	MAR 18/20	ISSUED FOR USE	DPS

DRAWING: Wallstone TRIPLE UNIT INSIDE ANGLE CORNER DETAIL

PROJECT: Permacon Products Wallstone Wall STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON
an Oldcastle® company

DESIGN ENGINEER:
PML Peto MacCallum Ltd.
CONSULTING ENGINEERS

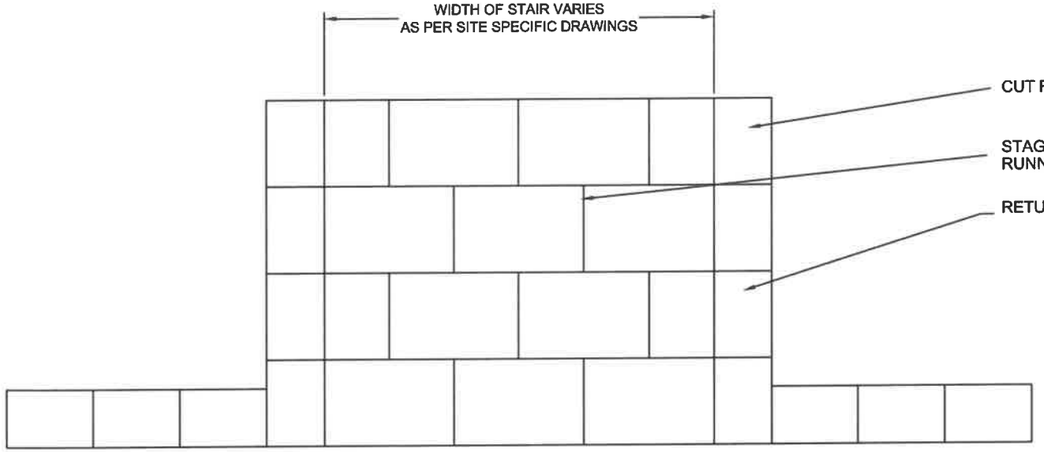
DRAWN BY:	CH'D BY:
DPS	

DATE: MARCH 18, 2020

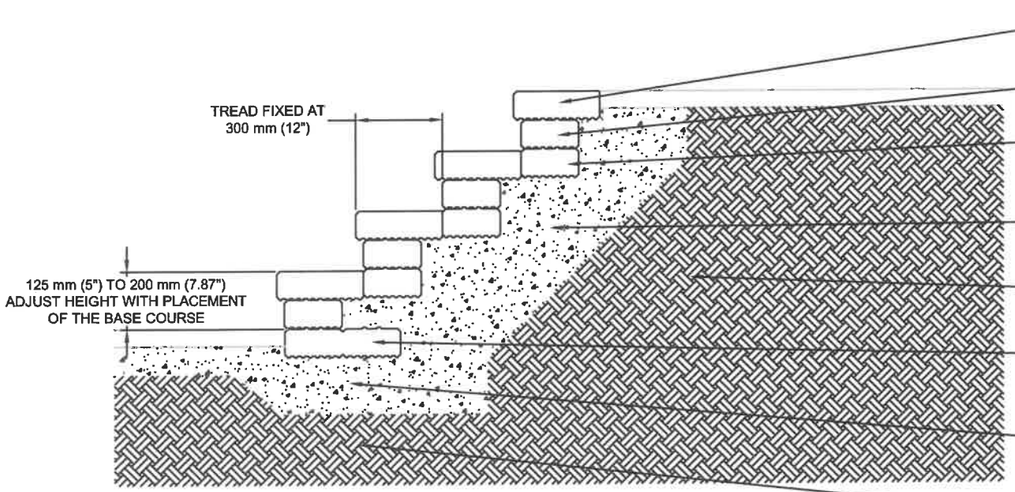
SCALE: NOT TO SCALE

FILE NAME: TUIACD.DWG

DRAWING No.
WALLSTONE STANDARD DETAIL



PLAN VIEW



CROSS-SECTION

GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY, SLOPE STABILITY AND GLOBAL STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm (8") OF 0-19 mm (0-3/4") WELL GRADED CRUSHED ANGULAR GRANULAR MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY. BASE MATERIAL TO HAVE LESS THAN 8% PASSING THE No. 200 SIEVE.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. THE STAIR RISE CAN BE ADJUSTED BY THE PLACEMENT OF THE BASE COURSE. REFER TO LOCAL BUILDING CODES FOR THE MAXIMUM AND MINIMUM STAIR RISERS.

6. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

7. BACKFILL THE STEPS AND RETURN WALLS WITH FREE-DRAINING SAND AND GRAVEL MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D. BACKFILL MATERIAL TO HAVE LESS THAN 8% PASSING No. 200 SIEVE.

8. ALL CONSTRUCTION OPERATIONS INCLUDING BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

9. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

10. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE STEPS AND RETURN WALLS. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE STEPS AND RETURN WALLS.

11. APPROPRIATE RESTRAINT MUST BE PROVIDED AS PER LOCAL BUILDING CODES. PROVISIONS OF A RESTRAINT AND/OR HANDRAIL ON TOP OF THE RETURN WALLS AND ADJACENT TO THE STEPS MAY REQUIRE DESIGN MODIFICATIONS.

12. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

13. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

14. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 35 DEGREES, γ = 22 kN/m3 (140 pcf)
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m3 (120 pcf)

REV.	DATE	DESCRIPTION	BY
0	JAN 12/09	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STAIR DETAIL OPTION No. 2
ADJUSTABLE RISE, FIXED RUN

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

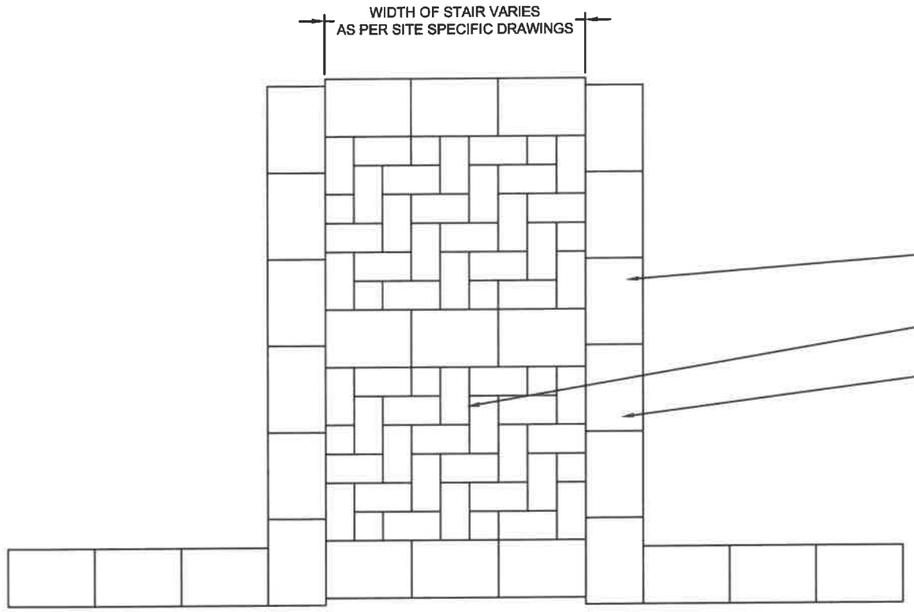
PROJECT ENGINEER:

Wallstone™ Wall
PERMACON
an Oldcastle® company

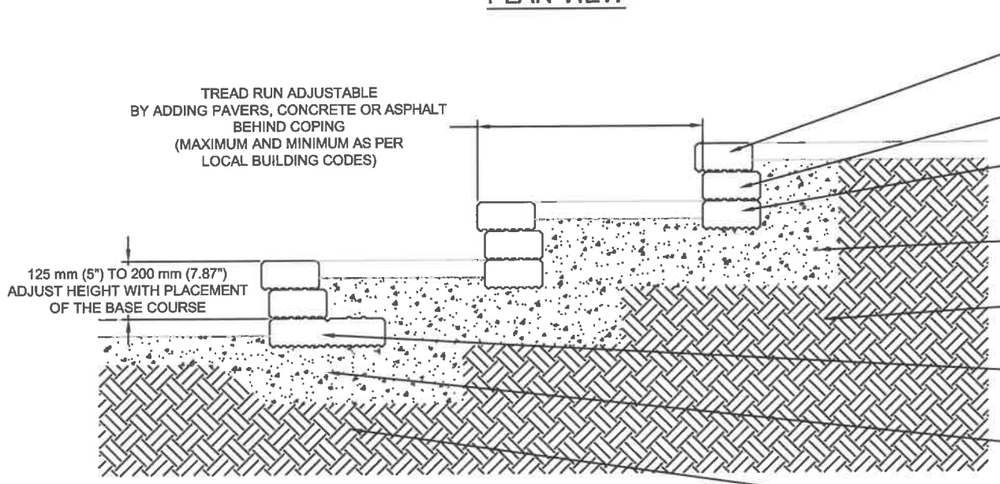
DESIGN ENGINEER:

DRAWN BY: DPS
CH'D BY:
DATE: JANUARY 12, 2009
SCALE: NOT TO SCALE
FILE NAME: WS-STAIR DETAIL OPTION No.2.dwg

DRAWING No.
WALLSTONE STANDARD DETAIL



PLAN VIEW



CROSS-SECTION

CUT RETURN WALLS AS NECESSARY

INFILL TREAD RUN BY ADDING PAVERS (TREAD RUN ADJUSTABLE)
REFER TO LOCAL BUILDING CODES FOR MAXIMUM AND MINIMUM DISTANCES

RETURN WALLS FOR SUPPORT OF STAIRS (IF NECESSARY)

Wallstone 12" COPING UNIT AS STEP UNIT (4 COURSES)
ALL COURSES TO BE ADHERED TOGETHER USING LANDSCAPE ADHESIVE

Wallstone STANDARD UNIT
ALL COURSES TO BE ADHERED TOGETHER USING LANDSCAPE ADHESIVE

BASE REQUIRES MINIMUM ONE COURSE Wallstone STANDARD UNIT
ALL COURSES TO BE ADHERED TOGETHER USING LANDSCAPE ADHESIVE

FREE-DRAINING 0-19 mm (0-3/4") WELL GRADED CRUSHED ANGULAR
MATERIAL WITH LESS THAN 8% PASSING THE No. 200 SIEVE COMPACTED
TO MINIMUM 98% S.P.M.D.D.

ORIGINAL COMPETENT RETAINED SOIL ASSUMED TYPE II

BASE REQUIRES MINIMUM ONE COURSE Wallstone DOUBLE UNIT
AT BOTTOM STEP
ALL COURSES TO BE ADHERED TOGETHER USING LANDSCAPE ADHESIVE

MINIMUM 200 mm (8') OF 0-19 mm (0-3/4") WELL GRADED CRUSHED ANGULAR
MATERIAL WITH LESS THAN 8% PASSING THE No. 200 SIEVE COMPACTED
TO MINIMUM 98% S.P.M.D.D.

ORIGINAL COMPETENT SOIL OR COMPACTED STRUCTURAL FILL (BY OTHERS)
TO HAVE A MINIMUM BEARING CAPACITY OF 150 kPa (3000 psf)

GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY, SLOPE STABILITY AND GLOBAL STABILITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE THICKNESS OF THE WALL PLUS A SUFFICIENT DISTANCE TO ALLOW FOR COMPACTED GRANULAR BACKFILL BEHIND THE WALL. EXCAVATE ON A SUITABLE BACK ANGLE DEEP ENOUGH TO REACH ORIGINAL COMPETENT SOIL.

3. PLACE 200 mm (8") OF 0-19 mm (0-3/4") WELL GRADED CRUSHED ANGULAR GRANULAR MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY. BASE MATERIAL TO HAVE LESS THAN 8% PASSING THE No. 200 SIEVE.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. THE STAIR RISE CAN BE ADJUSTED BY THE PLACEMENT OF THE BASE COURSE. REFER TO LOCAL BUILDING CODES FOR THE MAXIMUM AND MINIMUM STAIR RISERS.

6. THE STAIR RUN CAN BE ADJUSTABLE BY ADDING PAVERS/CONCRETE OR ASPHALT BEHIND THE COPING. REFER TO LOCAL BUILDING CODES FOR THE MAXIMUM AND MINIMUM STAIR RUN.

7. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY OWNER.

8. BACKFILL THE STEPS AND RETURN WALLS WITH FREE-DRAINING SAND AND GRAVEL MATERIAL AS THE HEIGHT INCREASES, IDEALLY EVERY ONE OR TWO COURSES. AT NO TIME SHOULD THE HEIGHT EXCEED 2 COURSES WITHOUT BACKFILLING UNLESS OTHERWISE DIRECTED BY THE ENGINEER. BACKFILL MUST BE COMPACTED TO 95% S.P.M.D.D. BACKFILL MATERIAL TO HAVE LESS THAN 8% PASSING No. 200 SIEVE.

9. ALL CONSTRUCTION OPERATIONS INCLUDING BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

10. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

11. THE TOP MUST BE LANDSCAPED TO PROMOTE SURFACE RUNOFF OVER THE TOP OF THE STEPS AND RETURN WALLS. NO UNUSUAL SURCHARGE LOADING SHOULD BE ADJACENT TO THE TOP OF THE STEPS AND RETURN WALLS.

12. APPROPRIATE RESTRAINT MUST BE PROVIDED AS PER LOCAL BUILDING CODES. PROVISIONS OF A RESTRAINT AND/OR HANDRAIL ON TOP OF THE RETURN WALLS AND ADJACENT TO THE STEPS MAY REQUIRE DESIGN MODIFICATIONS.

14. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

15. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

SOIL PARAMETERS USED IN DESIGNS:
REINFORCED SOIL: ϕ = 35 DEGREES, γ = 22 kN/m3 (140 pcf)
RETAINED SOIL: ϕ = 28 DEGREES, γ = 19 kN/m3 (120 pcf)

REV.	DATE	DESCRIPTION	BY
0	JAN 12/09	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall
STAIR DETAIL OPTION No. 1
ADJUSTABLE RISE AND RUN WITH PAVER TREADS

PROJECT: Permacon Products
Wallstone Wall
STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON
an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY: DPS | CH'D BY:

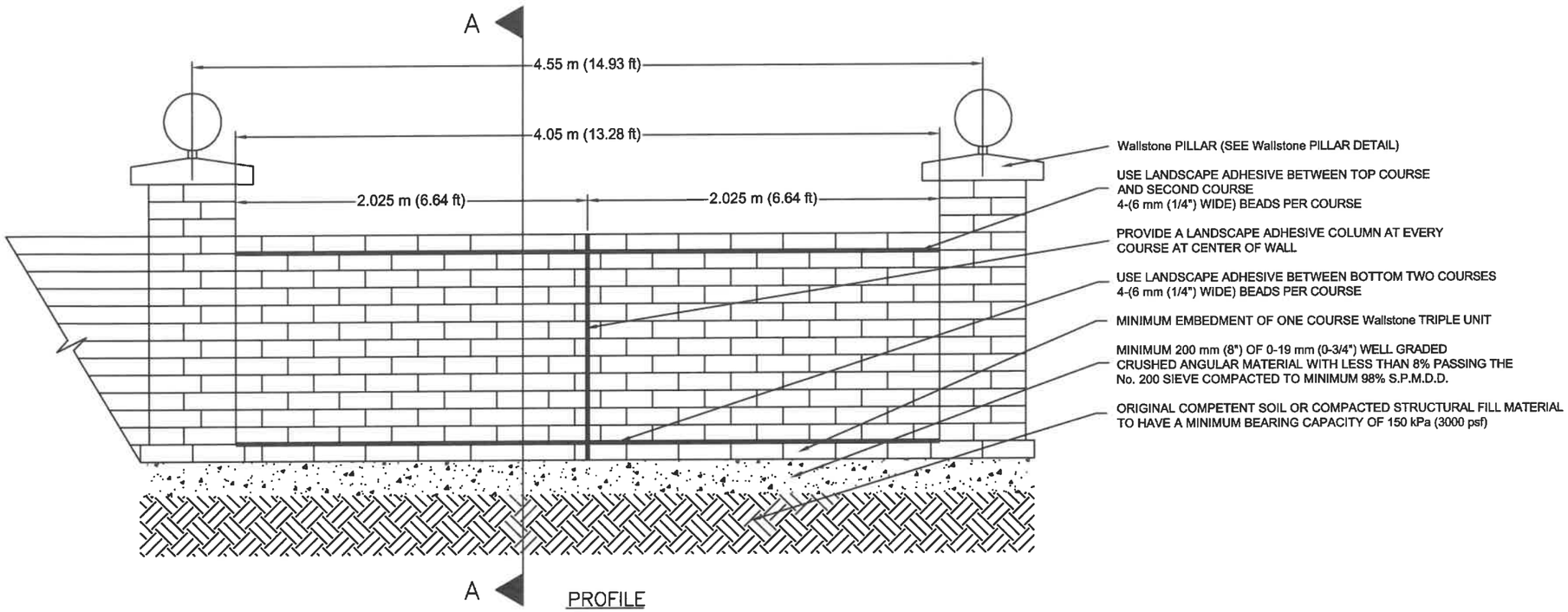
DATE: JANUARY 12, 2009

SCALE: NOT TO SCALE

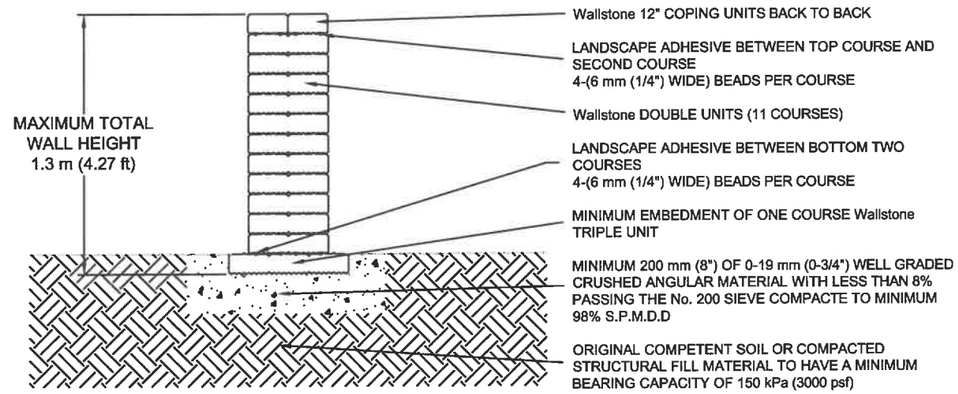
FILE NAME: WS-STAIR DETAIL OPTION No.1.dwg

DRAWING No.

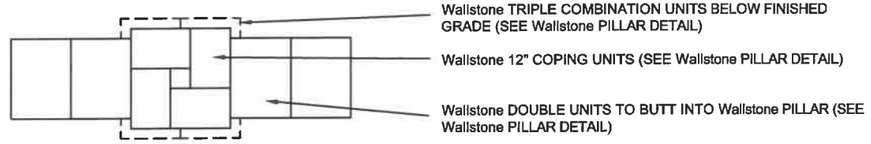
WALLSTONE STANDARD DETAIL



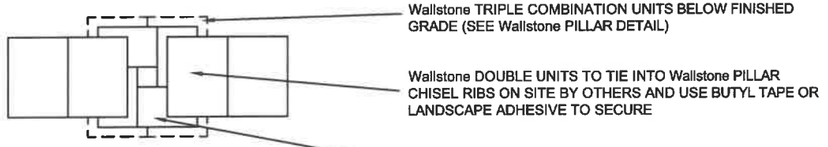
PROFILE



SECTION A–A



ODD COURSE



EVEN COURSE

PILLAR CONNECTION DETAILS

GENERAL NOTES:

1) EXCAVATE FOR FOOTING TO MINIMUM DEPTH OF 300 mm (12 in), OR UNTIL COMPETENT SOIL IS REACHED OR FILL WITH COMPACTED STRUCTURAL FILL (BY OTHERS). THE FOUNDING SOIL MUST BE INSPECTED BY THE GEOTECHNICAL ENGINEER TO CONFIRM ADEQUATE BEARING CAPACITY. WHERE REQUIRED BY GEOTECHNICAL ENGINEER, PLACE ENGINEERED FILL COMPRISING OF APPROVED GRANULAR MATERIAL PLACED IN 250 mm (10") LIFTS AND COMPACTED TO 98% S.P.M.D.D. BACKFILLING AND COMPACTION TO BE CARRIED OUT UNDER GEOTECHNICAL SUPERVISION. PERMACON IS NOT RESPONSIBLE FOR RETAINING A GEOTECHNICAL ENGINEER TO OVERSEE CONSTRUCTION OF RETAINING WALL.

2. EXCAVATION TO ALLOW FOR THE WIDTH OF THE BASE UNIT.

3. PLACE 200 mm (8") OF 0-19 mm (0-3/4") WELL GRADED CRUSHED ANGULAR GRANULAR MATERIAL WITHIN FOOTING EXCAVATION AND COMPACT TO 98% STANDARD PROCTOR MAXIMUM DRY DENSITY. BASE MATERIAL TO HAVE LESS THAN 8% PASSING THE No. 200 SIEVE.

4. LEVEL THE FIRST COURSE AND PLACE TOP FLUSH WITH THE DESIRED FINISHED GRADE IN FRONT OF THE WALL. SLOPES AT TOE OF WALL MAY REQUIRE MORE UNITS TO BE BURIED (CONSULT QUALIFIED PROFESSIONAL ENGINEER FOR GUIDANCE).

5. APPLY BUTYL TAPE AND/OR LANDSCAPE ADHESIVE IN LOCATIONS INDICATED ON THE DRAWING.

6. WALL APPEARANCE TO BE SPLIT FACE AND COLOR TO BE DETERMINED BY.

7. ALL CONSTRUCTION OPERATIONS INCLUDING BLOCK PLACEMENT, BACKFILLING AND COMPACTION TO BE COMPLETED UNDER GEOTECHNICAL SUPERVISION.

8. POOR SOIL CONDITIONS AND EXCESSIVE MOISTURE MAY REQUIRE ALTERNATE DRAINAGE REQUIREMENTS AND DESIGN MODIFICATIONS.

9. WALL TO BE CONSTRUCTED VERTICAL.

10. THIS DRAWING ILLUSTRATES HOW THE FREE-STANDING WALL IS TO BE BUILT BUT DOES NOT NECESSARILY REPRESENT "AS BUILT" CONDITIONS.

11. THIS WALL IS DESIGNED AS A FREE-STANDING ITEM AND IS NOT INTENDED TO SUPPORT A FENCE, GATE AND/OR LAMP POSTS. PLEASE CONSULT PERMACON OR A QUALIFIED ENGINEER FOR DESIGN MODIFICATIONS IF A FENCE, GATE AND/OR HANDRAIL IS TO BE ATTACHED.

12. THIS FREE-STANDING WALL HAS BEEN DESIGNED FOR COMBINED WIND AND HORIZONTAL FORCE OF 1.42 kN/m/m. THE WALL HAS NOT BEEN DESIGNED TO WITHSTAND AGGRESSIVE ACTS OF VANDALISM (FOR THE PURPOSEFUL INTENT TO OVERTURN). DESIGN MODIFICATIONS MAY BE REQUIRED SHOULD LOCAL BUILDING CODE REQUIREMENTS DIFFER FROM THAT OF THIS DESIGN. PLEASE REFER TO YOUR LOCAL BUILDING CODES TO CONFIRM THIS DESIGN WOULD MEET THE REQUIRMENTS.

13. ALL PRODUCT NAMES AND STYLIZED REPRESENTATIONS ARE TRADEMARKS OF PERMACON, OR APPROVED FOR USE BY PERMACON COMPANIES.

14. ALL PRODUCTS ILLUSTRATED ARE SUBJECT TO PATENTS AS FOLLOWS:
Wallstone - CANADA 1,307,675
- USA 4,860,505

15. THE APPLICABILITY OF THESE RETAINING WALL SECTIONS MUST BE REVIEWED ON A SITE SPECIFIC BASIS BY A QUALIFIED PROFESSIONAL ENGINEER.

REV.	DATE	DESCRIPTION	BY
2	JAN 13/06	REVISED COMPANY NAME	DPS
1	DEC 10/03	REVISED TITLE BLOCK	DPS
0	MAY 1/02	ISSUED FOR USE	DPS

DRAWING: Wallstone Wall FREE-STANDING WALL

PROJECT: Permacon Products Wallstone Wall STANDARD ENGINEERING

PROJECT ENGINEER:

Wallstone™ Wall

PERMACON an Oldcastle® company

DESIGN ENGINEER:

DRAWN BY: DPS	CH'D BY:
DATE: MAY 1, 2002	
SCALE: NOT TO SCALE	
FILE NAME: WS-FREE STANDING WALL.dwg	

DRAWING No.

WALLSTONE STANDARD DETAIL